

**TOSHIBA**

**SERVICE MANUAL**  
**MULTIFUNCTIONAL DIGITAL SYSTEMS**

**e-STUDIO0901/1101/1351**



## TRADEMARKS

- The official name of Windows 95 is Microsoft Windows 95 Operating System.
- The official name of Windows 98 is Microsoft Windows 98 Operating System.
- The official name of Windows Me is Microsoft Windows Millennium Edition Operating System.
- The official name of Windows 2000 is Microsoft Windows 2000 Operating System.
- The official name of Windows XP is Microsoft Windows XP Operating System.
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## **IMPORTANT SAFETY NOTICES**

### **PREVENTION OF PHYSICAL INJURY**

1. The copier and its peripherals must be installed and maintained by a service technician who has completed the training course on those models.
2. The copier is quite heavy and weighs approximately 299 kg (659.18 lb.), therefore pay full attention when handling it.
3. Be sure to use a forklift, etc. when unloading the copier from the pallet because it is heavy. Also, be very careful when moving the copier and pay attention that it does not fall, drop or get damaged.
4. Before disassembling or assembling parts of the copier and peripherals, make sure that the copier power cord is unplugged.
5. The wall outlet should be near the copier and easily accessible.
6. Be sure to fix and plug in the power cord securely after the installation so that no one trips over it.
7. Unplug the power cord and clean the area around the prongs of the plug and socket outlet once a year or more. A fire may occur when dust lies on this area.
8. Note that some components of the copier and the paper tray unit are supplied with electrical voltage even if the main power switch is turned off.
9. If any adjustment or operation check has to be made with exterior covers off or open while the main switch is turned on, keep hands away from electrified or mechanically driven components. Avoid exposing your eyes to laser beam.
10. Be careful when removing the covers since there might be the parts with very sharp edges underneath.
11. If the Start key is pressed before the copier completes the warm-up period (the Start key starts blinking red and green alternatively), keep hands away from the mechanical and the electrical components as the copier starts making copies as soon as the warm-up period is completed.
12. The inside and the metal parts of the fusing unit become extremely hot while the copier is operating. Be careful to avoid touching those components with your bare hands.
13. Be sure not to touch high-temperature sections such as the exposure lamp, fuser unit, heater and areas around them.
14. During servicing, be sure to check the rating plate and cautionary labels such as "CAUTION. HOT", "CAUTION. HIGH VOLTAGE", "CAUTION. LASER BEAM", etc. to see if there is any dirt on their surface and if they are properly stuck to the copier.

## **HEALTH SAFETY CONDITIONS**

1. Never operate the copier without the ozone filters installed.
2. Always replace the ozone filters with the specified ones at the specified intervals.
3. Provide proper ventilation since the copier emits a slight amount of ozone.
4. Toner and developer are non-toxic, but if you get either of them in your eyes by accident, it may cause temporary eye discomfort. Try to remove with eye drops or flush with cold water as first aid. If unsuccessful, get medical attention.

## **OBSERVANCE OF ELECTRICAL SAFETY STANDARDS**

1. The NVRAM on the controller board has a lithium battery which can explode if replaced incorrectly. Replace the NVRAM only with an identical type. However, the manufacturer recommends replacing the entire NVRAM, not just the battery. Never recharge or incinerate a used NVRAM battery. Dispose of a used NVRAM or NVRAM battery in accordance with local regulations.
2. The danger of explosion exists if the battery on the controller board is incorrectly replaced. Replace the battery only with the equivalent type recommended by the manufacturer. Discard the used controller board battery in accordance with the manufacturer's instructions and local regulations.
3. Be sure not to touch high-voltage sections such as the chargers, transfer belt, developer, high-voltage transformer, exposure lamp control regulator, inverter for the LCD back-light and power supply unit. Especially, the board of these components should not be touched since the electric charge may remain in the capacitors, etc. on them even after the power is turned OFF.
4. The breaker, door switch, fuse, thermostat, thermistor, IC-RAMs including lithium batteries, etc. are particularly important for safety. Be sure to handle/install them properly. If these parts are short-circuited and their functions become ineffective, they may result in fatal accidents such as burnout. Do not allow a short-circuit or do not use the parts not recommended by Toshiba TEC Corporation.
5. Be very careful to treat the touch panel gently and never hit it. Breaking the surface could cause malfunctions.

### **SAFETY AND ECOLOGICAL NOTES FOR DISPOSAL**

1. Do not incinerate toner bottles or used toner. Toner dust may ignite suddenly when exposed to an open flame.
2. Dispose of used toner, developer, and organic photoconductors in accordance with local regulations. (These are non-toxic supplies.)
3. Dispose of replaced parts in accordance with local regulations.
4. When keeping used lithium batteries in order to dispose of them later, do not put more than 100 batteries per sealed box. Storing larger numbers or not sealing them apart may lead to chemical reactions and heat build-up.
5. Regarding the recovery and disposal of the equipment, parts, supplies, packing materials, used batteries and IC-RAMs including lithium batteries, follow the relevant local regulations or rules.

## LASER SAFETY

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

### WARNING

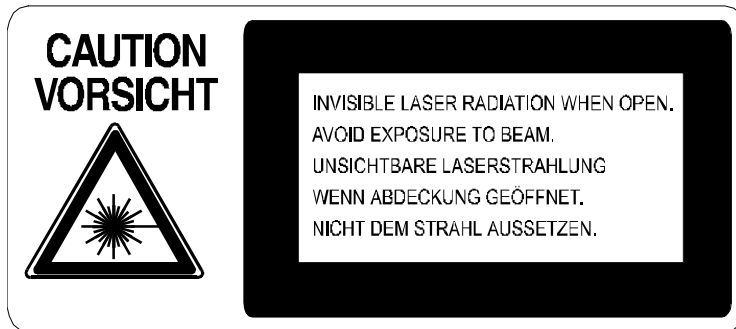
**Use of controls, or adjustment, or performance of procedures other than those specified in this manual may result in hazardous radiation exposure.**

### WARNING

#### WARNING:

1. Turn off the main switch before attempting any of the procedures in the Laser Unit section. Laser beams can seriously damage your eyes.
2. Avoid expose to laser beam during service. This copier uses a laser diode. Be sure not to expose your eyes to the laser beam. Do not insert reflecting parts or tools such as a screwdriver on the laser beam path. Remove all reflecting metals such as watches, rings, etc. before starting service.

#### CAUTION MARKING:

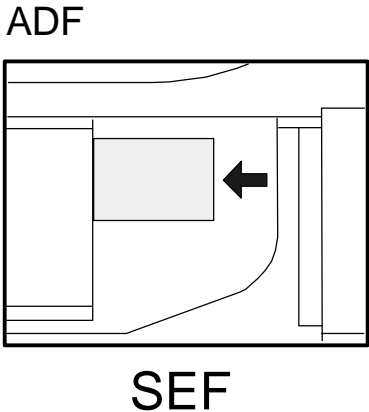
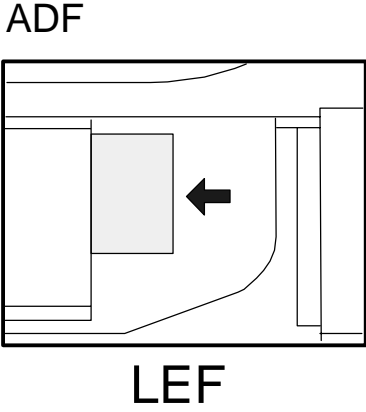


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**Conventions in this Manual**

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
NA	North America
EUR/A	Europe/Asia



## ***Commonly Used Terms***

BCU	Base engine Control Unit
CGB	Charge Grid Bias
FCI	Fine Character Adjustment
FRR	Feed and Reverse Roller
IOB	Input/Output Board
IPU	Image Processing Unit
LE	Leading Edge
MB	Mother Board
MCU	scanner Motor Control Unit
MTF	Modulation Transfer Function
OPU	Operation Panel Unit
PCU	Photoconductor Cleaner Unit
PPG	Pre-charge Potential Grid
PSU-Ea	Power Supply Unit – Engine a
-Eb	Power Supply Unit – Engine b
-c	Power Supply Unit – Controller
PTL	Pre-Transfer Lamp
SBU	Sensor Board Unit
SCS	System Control Service
SIB	Scanner Interface Board
TCRU	Trained Customer Replacement Unit
TE	Trailing Edge

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## **APPENDIX**

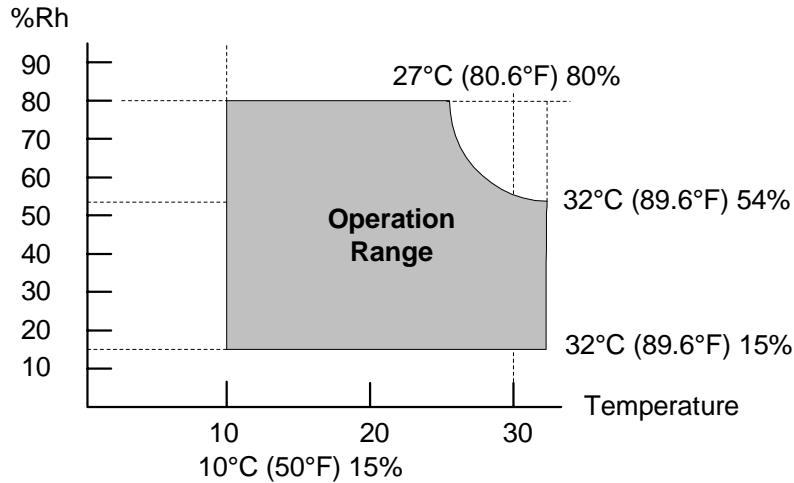
e-STUDIO901/1101/1351 POINT TO POINT DIAGRAM  
e-STUDIO901/1101/1351 ELECTRICAL COMPONENT LAYOUT  
ADF POINT TO POINT DIAGRAM  
ADF ELECTRICAL COMPONENT LAYOUT  
B830 POINT TO POINT DIAGRAM  
B830 ELECTRICAL COMPONENTS LAYOUT  
B832/B834 POINT TO POINT DIAGRAM  
B832 ELECTRICAL COMPONENT LAYOUT  
B834 ELECTRICAL COMPONENT LAYOUT  
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B835 ELECTRICAL COMPONENT LAYOUT  
B836 POINT TO POINT DIAGRAM  
B836 ELECTRICAL COMPONENT LAYOUT

# 1. INSTALLATION PROCEDURES

## 1.1 INSTALLATION REQUIREMENTS

### 1.1.1 ENVIRONMENT

1. Temperature Range: 10°C to 32°C (50°F to 89.6°F)
2. Humidity Range: 15% to 80% RH



B070I900.WMF

3. Ambient Illumination: Less than 1,500 lux (do not expose to direct sunlight or strong light)
4. Ventilation: Room air should turn over at least 3 times per hour per person
5. Ambient Dust: Less than 0.075 mg/m<sup>3</sup>
6. If the place of installation is air-conditioned or heated, do not place the machine where it will be:
  - 1) Subjected to sudden temperature changes
  - 2) Directly exposed to cool air from an air-conditioner
  - 3) Directly exposed to heat from a heater
7. Do not place the machine where it will be exposed to corrosive gases.
8. Do not install the machine at any location over 2,000 m (6,500 feet) above sea level.

9. Place the copier on a strong and level base.
10. Do not place the machine where it may be subjected to strong vibrations.
11. Do not connect the machine to a power source shared with another electrical appliance.
12. The machine can generate an electrical field which could interfere with radio or television reception.

### **1.1.2 MACHINE LEVEL**

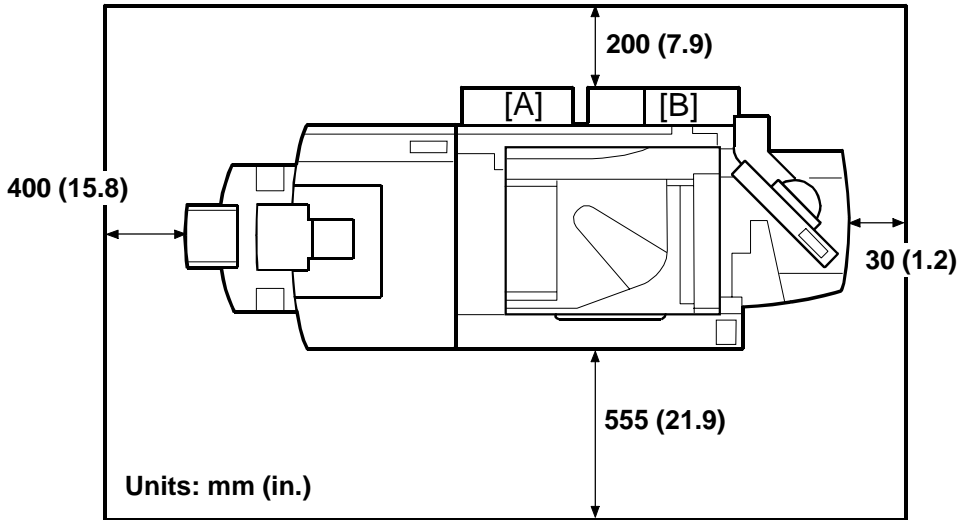
1. Front to back:                      Within 5 mm (0.2") of level
2. Right to left:                      Within 5 mm (0.2") of level

**NOTE:** The machine legs may be raised or lowered in order to level the machine. Set a carpenter's level on the exposure glass.

### 1.1.3 MINIMUM SPACE REQUIREMENTS

Place the copier near the power source, providing clearance as shown below. The same amount of clearance is necessary when optional equipment is installed.

Installation



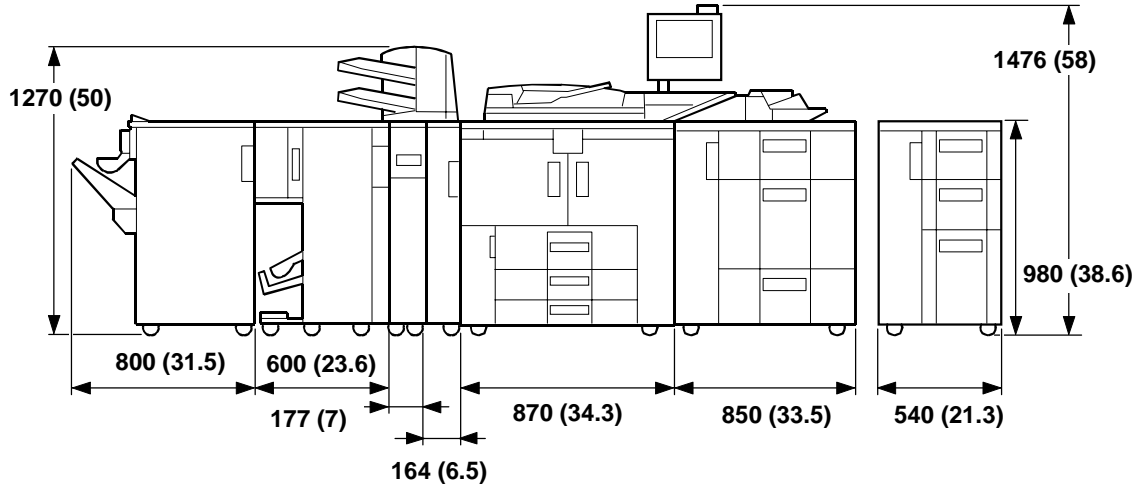
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**NOTE:** The controller box door [A] and PSU door [B] on the back of the machine swing open and can be removed. Both doors can be removed to allow the machine to pass through a narrow doorway. (☛1.3.4)



### 1.1.4 DIMENSIONS

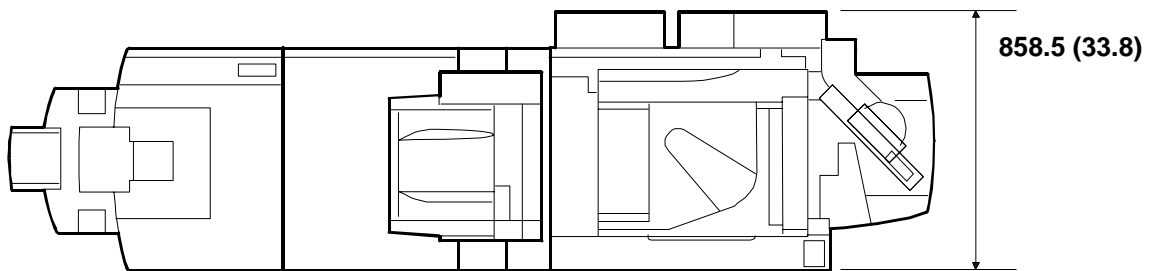
#### Side View



Units: mm (in.)

B234I412.WMF

#### Top View



B234I412B.WMF

Units: mm (in.)

### 1.1.5 POWER REQUIREMENTS

<p><b>⚠ CAUTION</b></p> <ol style="list-style-type: none"> <li><b>1. Make sure that the wall outlet is near the copier and easily accessible. Make sure the plug is firmly inserted in the outlet.</b></li> <li><b>2. Avoid multi-wiring.</b></li> <li><b>3. Be sure to ground the machine.</b></li> <li><b>4. Never set anything on the power cord.</b></li> </ol>
---

Input Voltage Level	
<b>Machine</b>	<b>Area: North America</b>
e-STUDIO901	208 - 240V 60 Hz Minimum 20A
e-STUDIO1101	
e-STUDIO1351	
Permissible voltage fluctuation: 10%	

<p><b>⚠ CAUTION</b></p> <p><b>Never turn off the main power switch when the power LED is lit or flashing. To avoid damaging the hard disk or memory, press the operation power switch to switch the power off, wait for the power LED to go off, and then switch the main power switch off.</b></p>
---

The Main Power LED (Ⓢ) lights or flashes at the following times:

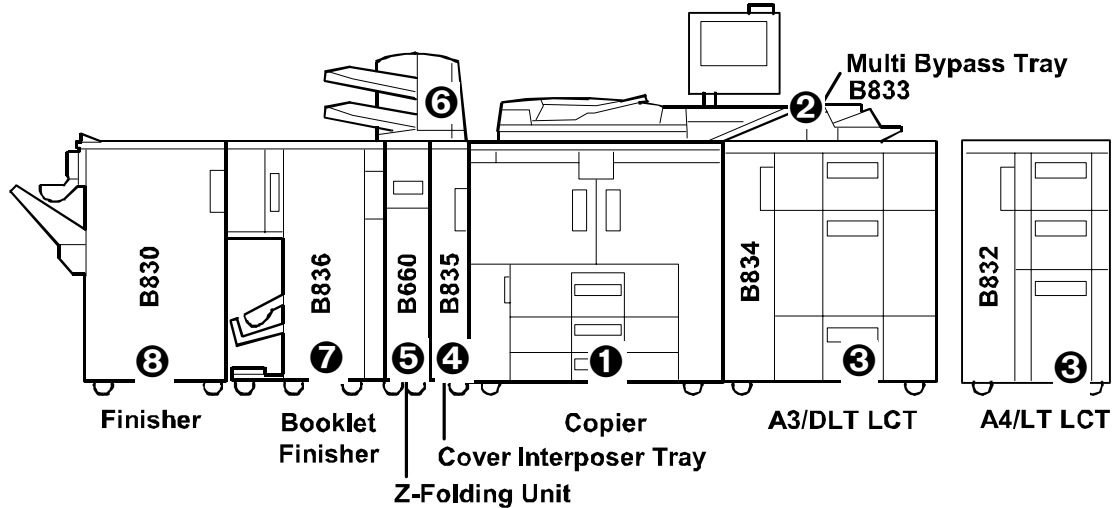
- While the platen cover or ADF is open
- While the copier is communicating with the network server
- While the machine is accessing the hard disk or memory when reading or writing data.

There are two power switches on the machine:

- **Main Power Switch.**  
 Located on the front left corner of the machine and covered by a plastic cover. This switch should always remain on unless the machine is being serviced.
- **Operation Power Switch.**  
 Located on the right side of the operation panel. This is the switch normally used by the customer to power the machine on and off.

## 1.2 BEFORE YOU BEGIN...

### 1.2.1 OVERVIEW OF OPTIONAL PERIPHERALS



B234I412C.WMF

There are many peripherals available for this machine. Install them in this order:

- ❶ Copier (e-STUDIO901/1101/1351)
- ❷ Multi Bypass Tray BY5000 (B833)
- ❸ LCIT RT5010 (B834), or LCIT RT5000 (B832)  
**Important!** The Multi Bypass Tray (B833) must be installed on the LCT before the LCT is docked to the copier.
- ❹ Cover Interposer Tray CI5000 (B835) (Transport unit)
- ❺ Z-Folding Unit ZF4000 (B660) (or next peripheral in line)

#### **Important!**

- The Transport Unit (base) of the Cover Interposer Tray is narrow and cannot fully support its tray unit. Part of the tray unit must rest on top of the Z-folding unit (or the next peripheral device installed to the left of the cover interposer).
  - To prevent the Cover Interposer Tray from falling, always install the next peripheral device in line before installing the tray unit ❹ of the Cover Interposer Tray.
- ❻ Cover Interposer Tray CI5000 (B835) (Tray unit)
  - ❼ Booklet Finisher BK5000 (B836)
  - ❽ Finisher SR5000 (B830)

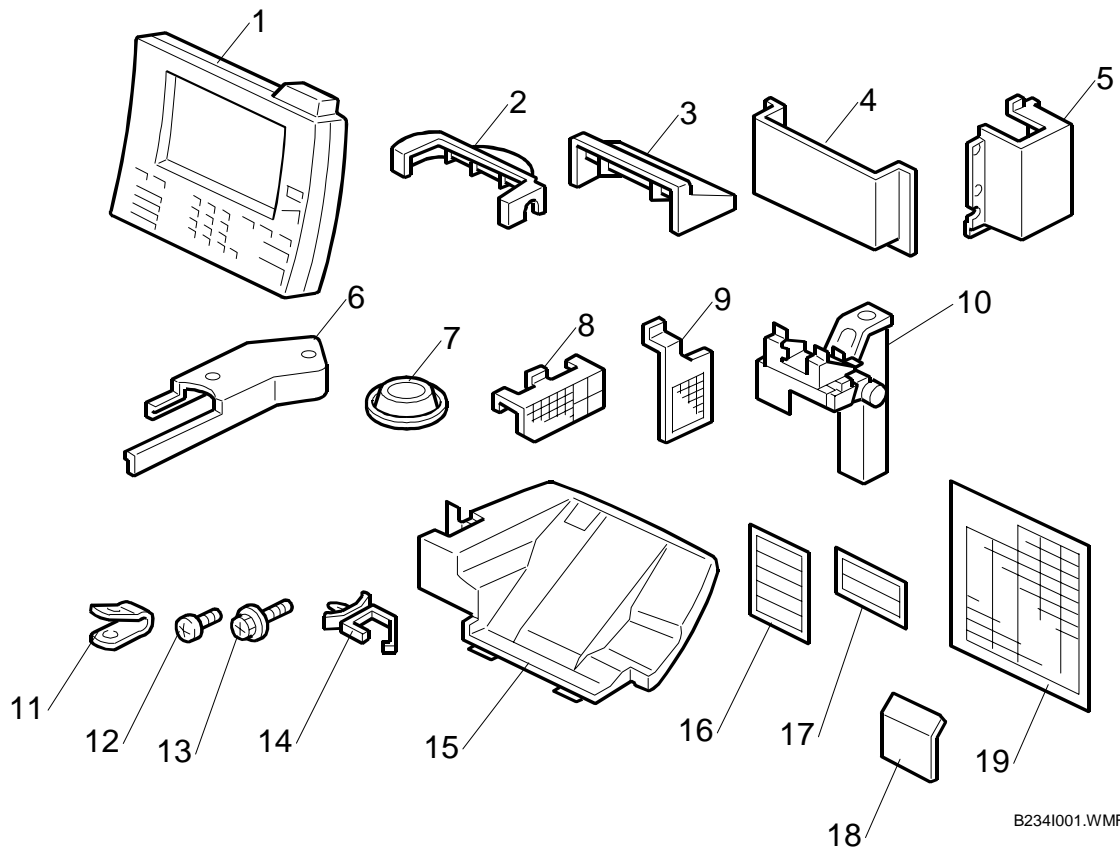
## 1.2.2 SPECIAL POINTS ABOUT INSTALLATION

This table summarizes the recommended order of installation procedures, and describes some special points about installation of individual units.

Item	Code	Comments
1.3 Copier (e-STUDIO901/1101/1351)		<ul style="list-style-type: none"> <li>First, install the copier (☛section 1.3.2).</li> </ul>
1.4 A3/11"x17" Tray Unit	B331-11	
1.5 LCIT RT5000	B832	This CIS of the image position sensor unit in the LCT must be calibrated at installation for both LCT units, B832 and B834 (procedure: ☛1-46). If you install the bypass tray, you must install it on the LCT before you dock the LCT with the machine.
1.6 LCIT RT5010	B834	
1.7 Multi Bypass Tray BY5000	B833	The bypass tray can be installed on either the B832 (☛1-55, 1-59) or B834 (☛1-57, 1-59).
1.8 Cover Interposer Tray CI5000	B835	The next peripheral device must be installed before completing the installation of the cover interposer tray (☛1-671)
1.9 Z-Folding Unit ZF4000	B660	<ul style="list-style-type: none"> <li>Before installing the Z-folding unit with the e-STUDIO1351 (135 cpm) a gear must be replaced so the unit can keep pace with the higher speed of the e-STUDIO1351 (☛1-73)</li> <li>The breaker switch of the Z-folding unit must be tested before the unit is docked (☛1-77)</li> </ul>
1.10 Booklet Finisher BK5000	B836	The booklet finisher has no corner stapler. Corner stapling is done by the B830.
1.11 Finisher SR5000	B830	The punch unit is installed in the B830 only.
1.12 Punch Unit PU5000	B831	
1.13 Skew And Side-To-Side Adjustment		Due to the length of the paper path, if more than two peripheral devices are installed, the system must be tested and adjusted after installation. Do this procedure after installation of all peripheral units, or after adding a peripheral unit to the system after installation. (☛1-100)
1.14 MFP Controller Options		<ul style="list-style-type: none"> <li>Only one slot is available for applications. If more than one application is to be installed, all the applications must be merged onto 1 SD card. If the PostScript3 option will be installed, the applications must be copied onto the PostScript3 SD card. (☛1-110)</li> <li>Once an SD card is copied, it cannot be used in another machine. Copied SD cards serve as proof of purchase by the customer; therefore, copied SD cards must be stored on site inside the copier. (☛1-113)</li> </ul>
1.3 Copier (e-STUDIO901/1101/1351)		<ul style="list-style-type: none"> <li>Then, complete the installation (☛section 1.3.3).</li> </ul>

## 1.3 COPIER (e-STUDIO901/1101/1351)

### 1.3.1 ACCESSORIES



B234I001.WMF

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



<b>Description</b>	<b>Q'ty</b>
1. Operation Panel .....	1
2. Lower Cover - Operation Panel Holder .....	1
3. Upper Cover - Operation Panel Holder .....	1
4. Operating Instruction Holder .....	1
5. Right Arm Cover .....	1
6. Operation Panel Arm.....	1
7. Leveling Shoes .....	4
8. Optics Dust Filter .....	1
9. Dust Filter.....	1
10. Operation Panel Unit Arm .....	1
11. Metal Cable Clamp.....	1
12. Philips Pan Head Screw - M4 x 6.....	1
13. Tapping Screw - M4 x 12 .....	27
14. Nylon Harness Clamp .....	1
15. ADF Exit Tray.....	1
16. Face-up Decals.....	1
17. Paper Loading Decals.....	3
18. Copier Emblem .....	1
19. Paper Size Decals .....	1
Model Name Plate (-10, -15, -22 machines) – not shown .....	1
Operating Instructions – not shown.....	1

### 1.3.2 UNPACKING AND INSTALLATION

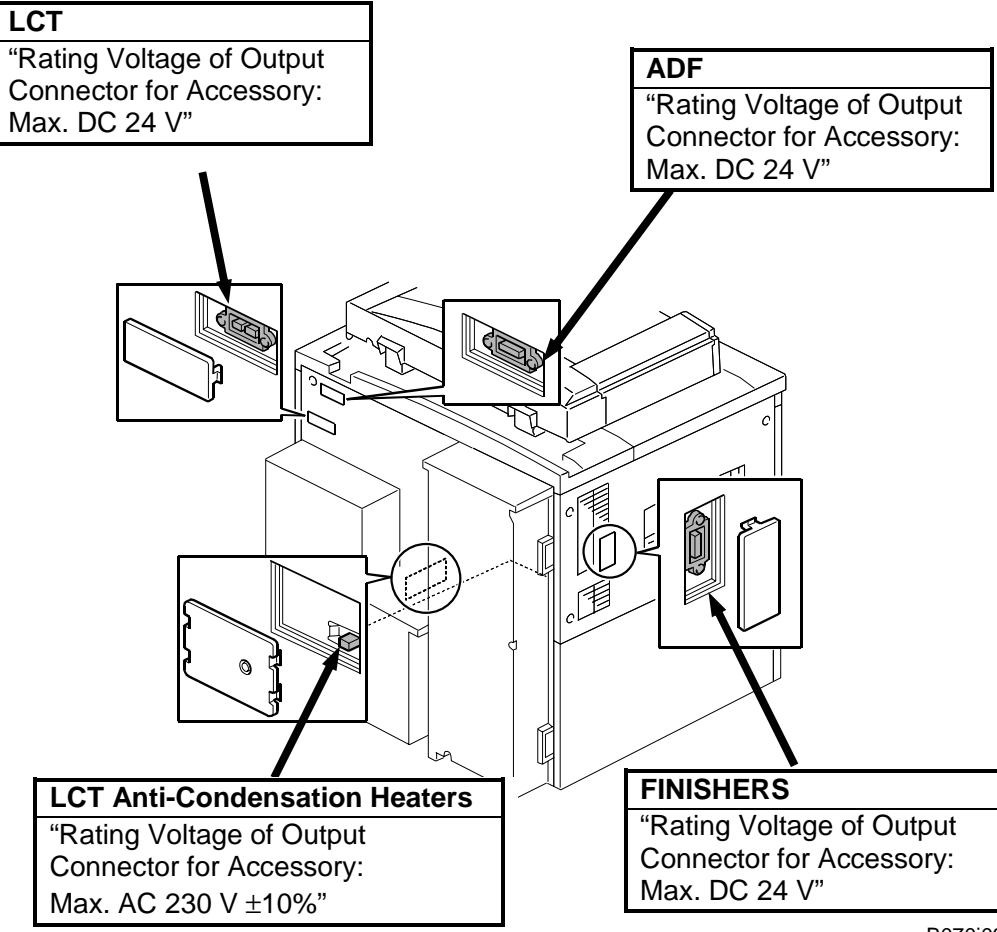
#### **NOTE**

1. The copier is quite heavy and weighs approximately 299 kg (659.18 lb.), therefore pay full attention when handling it.
2. Make sure there is enough space in which to unpacking the equipment.

#### **CAUTION**

##### **Rating Voltage for Peripherals**

Make sure to plug the cables into the correct sockets.



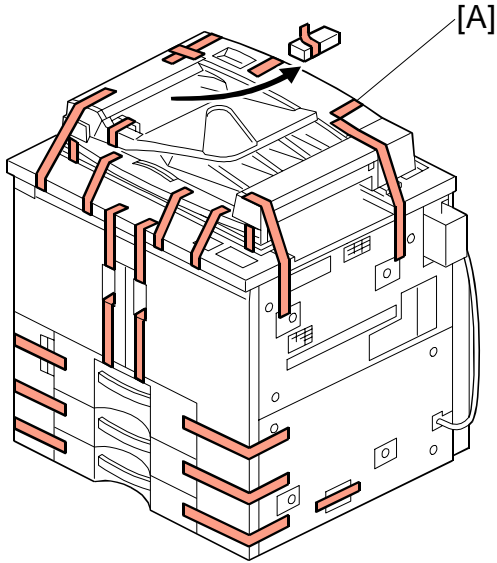
B070i025.WMF

### External Tape and Retainers

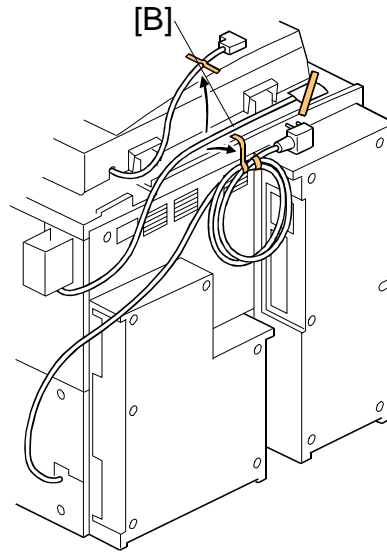
The installation procedure is not packed with the copier. Always bring this service manual with you.

#### **CAUTION**

Before performing the following procedures, make sure that the machine is unplugged from the power source.



B2341006.WMF

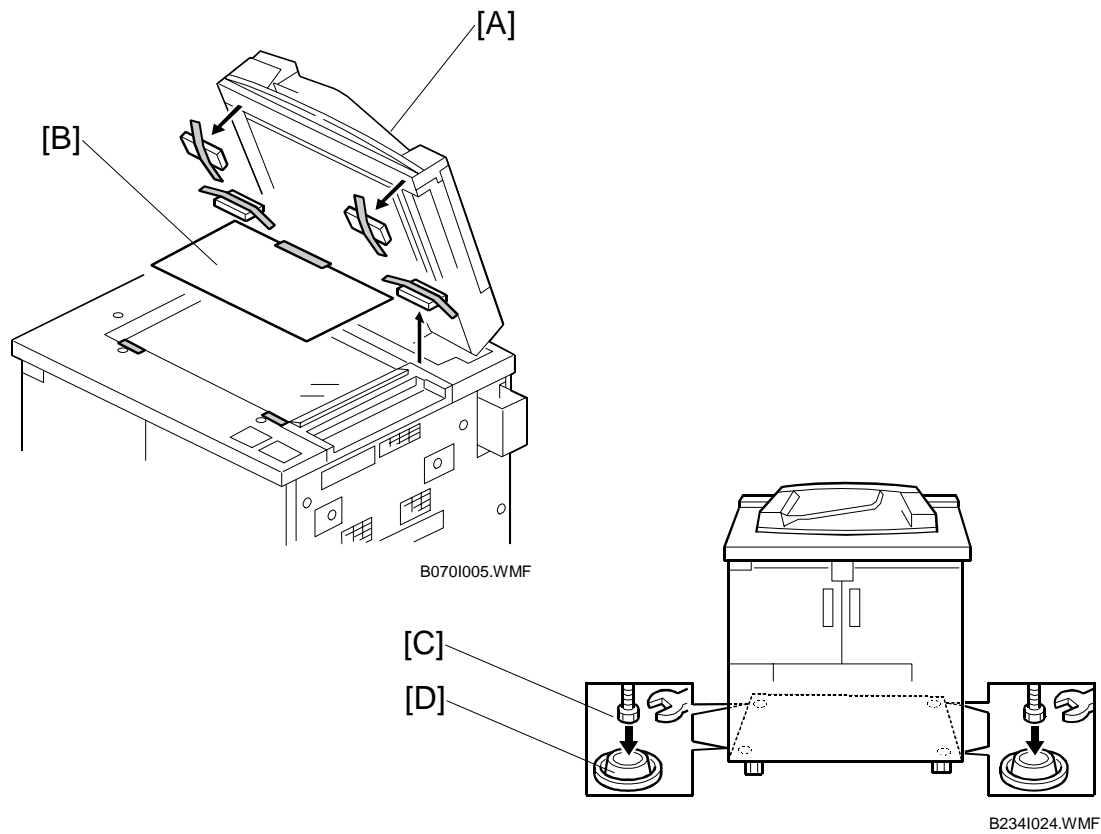


B2341004.WMF

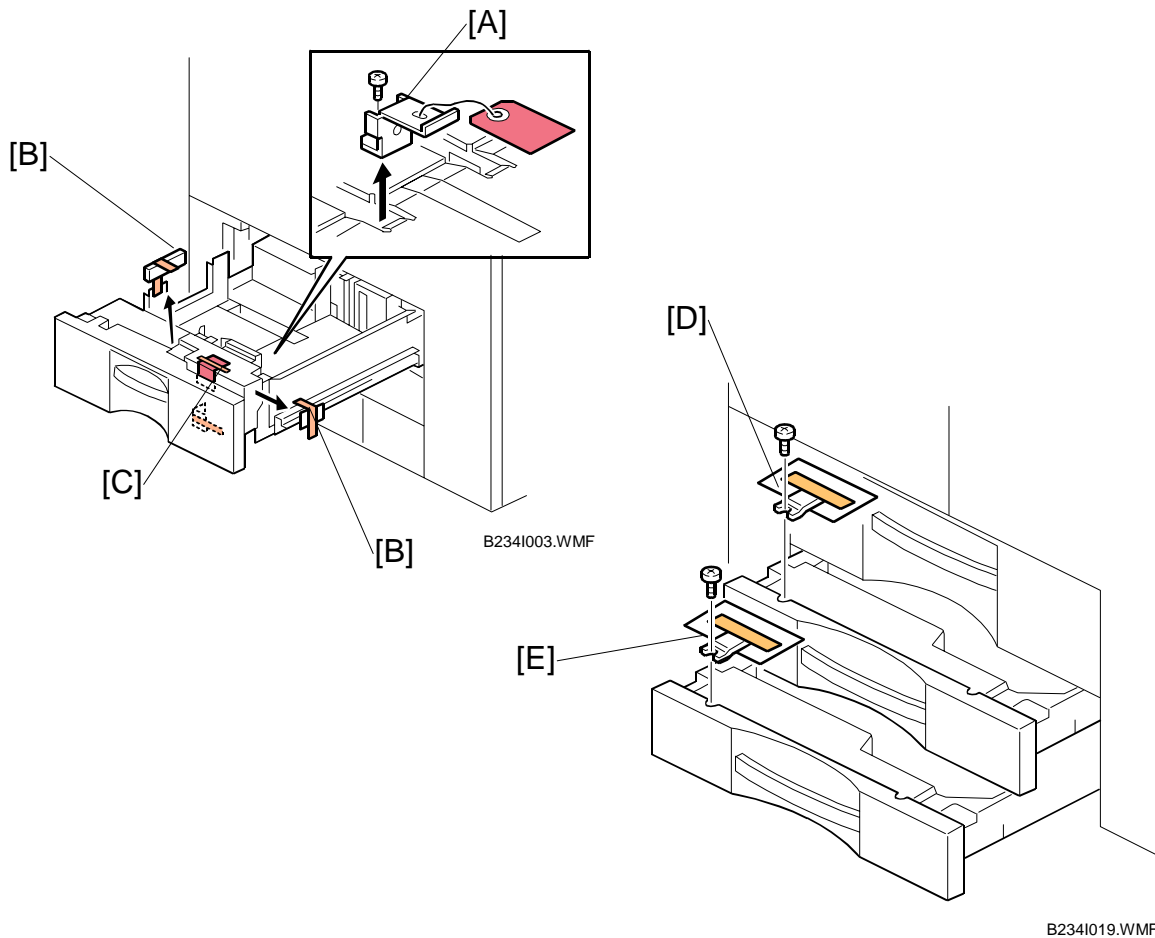
1. Remove all tape from the exterior [A].
2. Remove the tape and retainers from the power cord and cables [B].

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



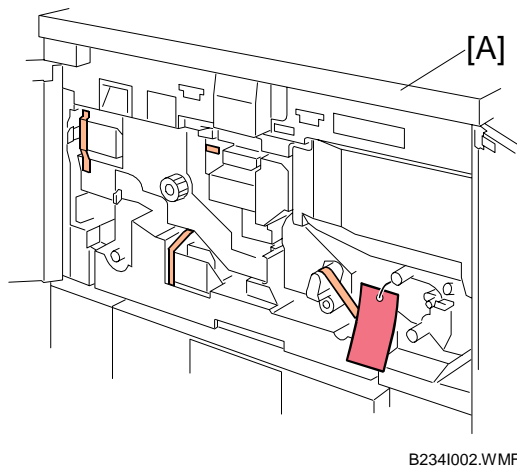


3. Remove all tape and retainers from under the ADF [A].
4. Remove A3 paper [B].
5. Set the leveling shoes [C] (x 4) under the feet [D], then level the machine.

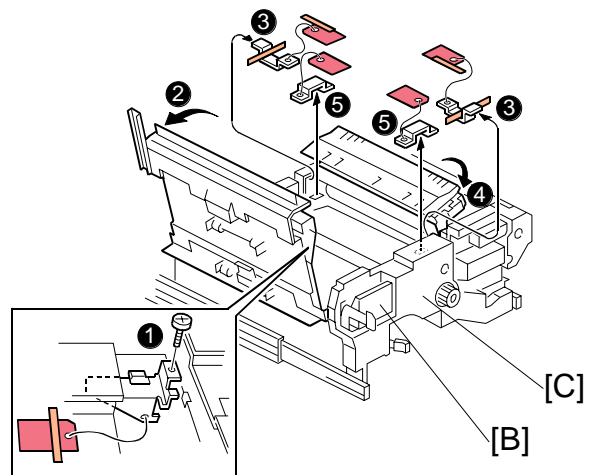
**Internal Tape and Retainers: Paper Trays**

1. Pull out the tandem tray (1st tray) completely, remove the tray lock plate [A] (🔩 x 1) and remove the cushion [B].
2. Push in the right tray of the tandem tray, then remove the cushion [C].
3. Pull out the 2nd tray and remove the lock plate [D] (🔩 x 1).  
**NOTE:** Be sure the re-attach the screw to the same hole. Do not discard the screw.
4. Pull out the 3rd tray and remove the lock plate [E] (🔩 x 1).  
**NOTE:** Be sure the re-attach the screw to the same hole. Do not discard the screw.

**Internal Tape and Retainers: Fusing Unit**



B234I002.WMF

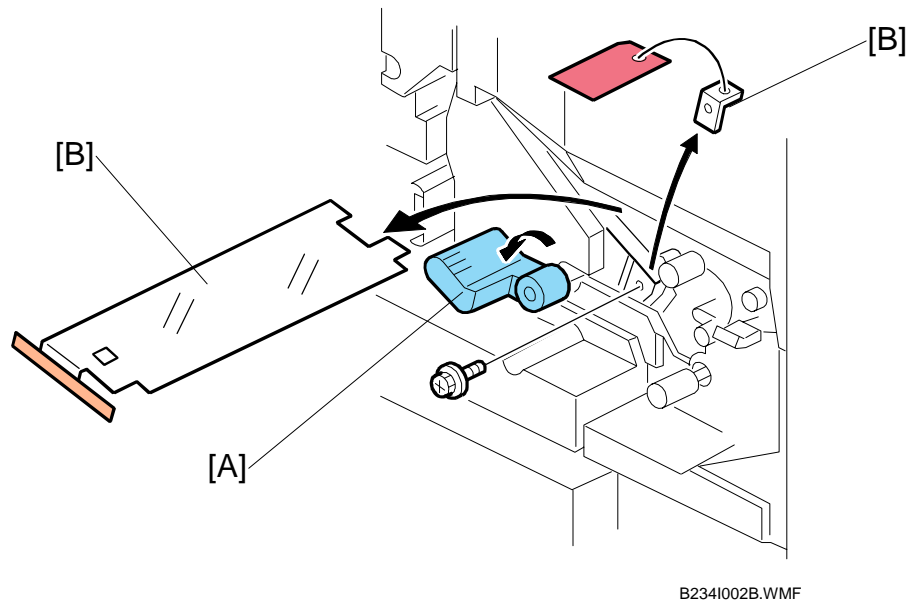


B234I002A.WMF

1. Open the front doors and remove all visible tape and retainers from inside the machine [A].
2. Press down lever **D2** [B], pull out the fusing unit [C], and remove all tape and retainers from the fusing unit:
  - ① Retainer (🔧 x1)
  - ② Raise **D3**.
  - ③ Remove retainer.
  - ④ Raise **D4**.
  - ⑤ Remove retainer.
3. Push in the fusing unit.

**Internal Tape and Retainers: Transfer Unit**

Installation



1. Lower the lever **C1** [A].
2. Remove all tape, tags, and retainers [B] from the transfer unit (🔧 x1).

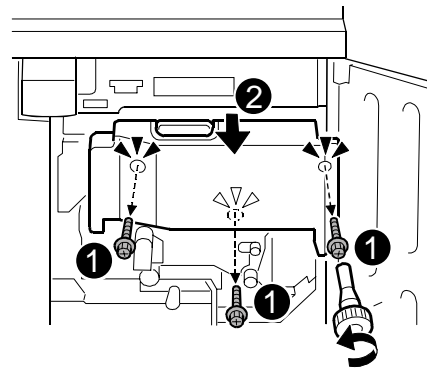
**Internal Tape and Retainers: Drum Cleaning Unit**

1. Open the right front door.
2. Remove the black screws at ❶ (⚙️ x3).
3. Take off the inner cover ❷.

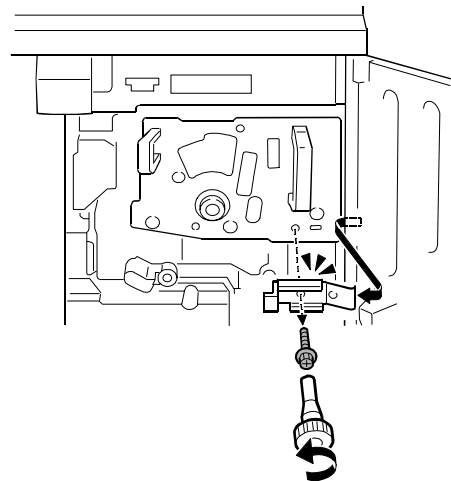
**NOTE:** These illustrations show removal using the hex driver provided to the customer. This tool is not required for removal of these screws. You can use a common Phillips head (plus) screwdriver to remove these screws.

**Important!** This cover functions as a duct in the ventilation path of the machine. It must be reinstalled.

4. Remove the ground plate (⚙️ x1)

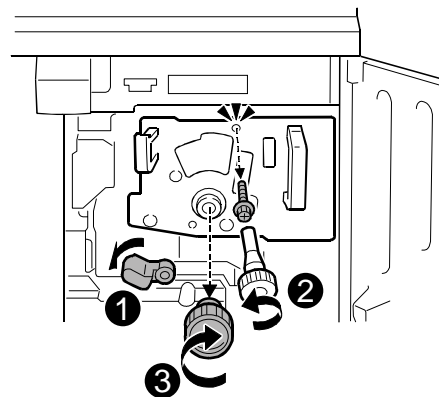


B234i107.WMFF



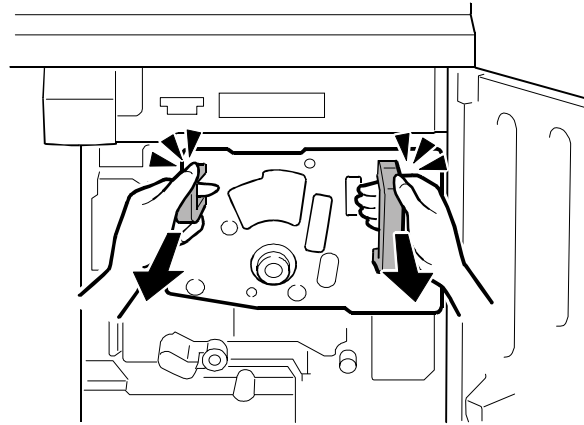
B234i110E.WMF

5. Remove the faceplate.
  - ❶ Lower C1 and remove the retainer (⚙️ x1).
  - ❷ Screw (⚙️ x)
  - ❸ Remove the knob.



B234i110.WMF

6. Remove the faceplate.

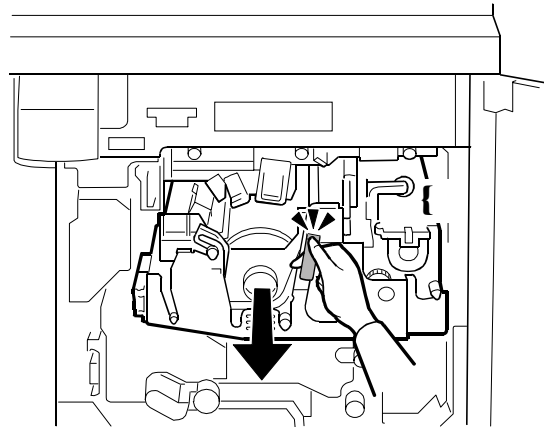


Installation

B234i110A.WMF

7. Pull the purple handle toward you until the drawer stops.

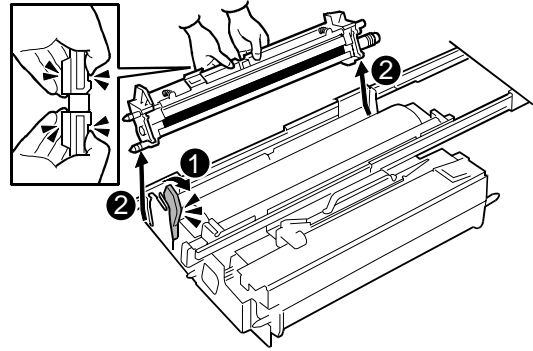
**NOTE:** The development unit [ ] will shift slightly to the right as you pull the drawer out.



B234i111.WMFF

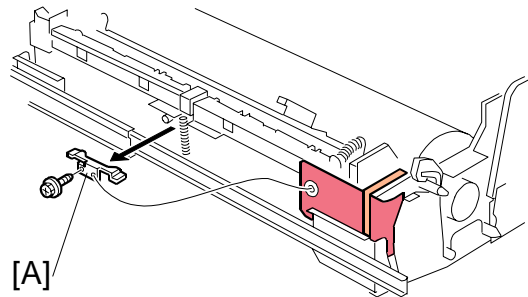
8. Remove the drum cleaning unit.
- Raise the purple lever ① and pull the cleaning unit to the left ② until it disengages the lever
  - Lift the unit out of the drawer

**Important:** Grasp the cleaning unit by its handles as shown and lift it straight up.



B2341113.WMF

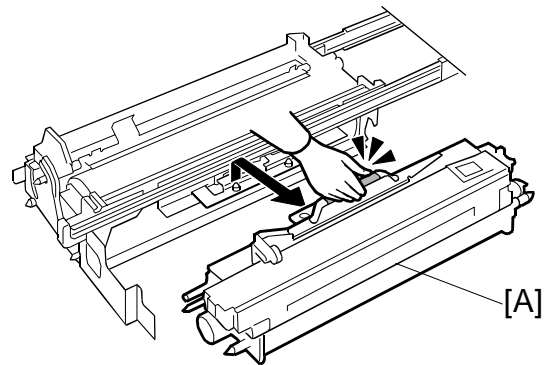
9. Remove the retainer [A] from the cleaning unit (⚙️ x1).



B2341117.WMF

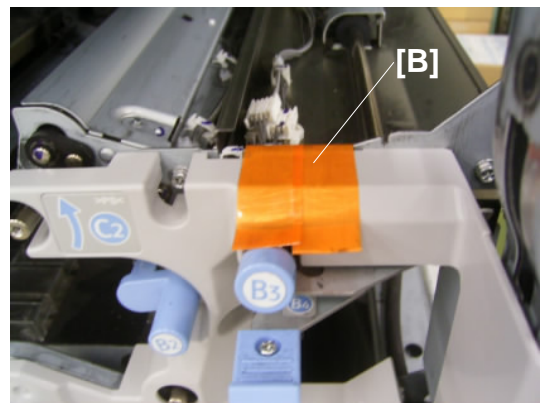
**Pouring Developer**

1. Lift the development unit [A] by its purple handle and hold it level as you remove it.



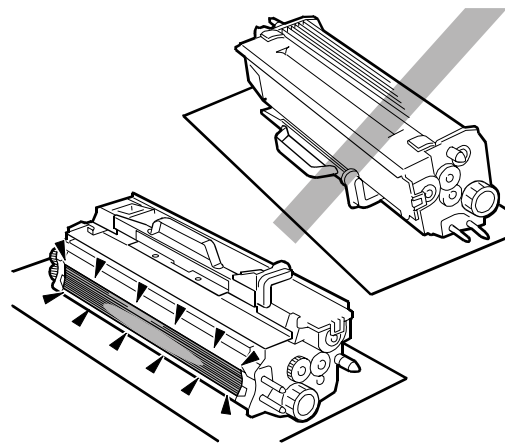
B234i112.WMFF

2. Remove the shipping tape from the inner cover [B].



RIMG1901.BMPP

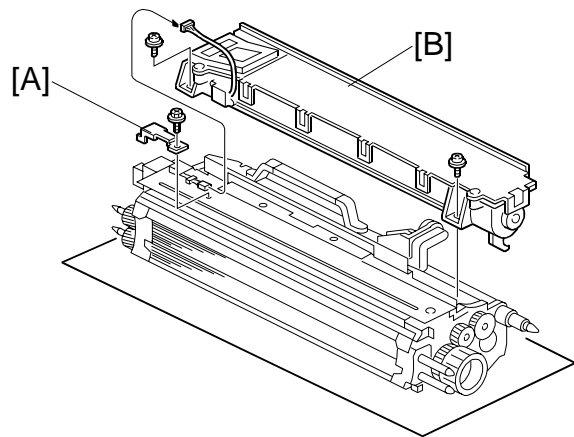
3. Place the development unit on the spread paper as shown.



B234i112C.WMF

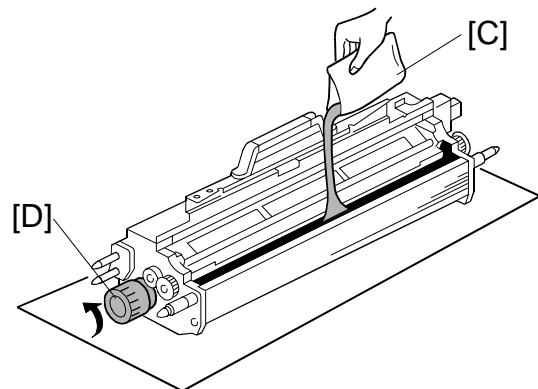


4. Remove the bracket [A] (⚙️ x1).
5. Disconnect the toner hopper [B] (🔌 x1, ⚙️ x2)
6. Tilt the hopper slightly when you remove it.



B234I902.WMFF

7. Pour the developer into the development unit.
  - Move the toner packet [C] from side to side while you pour a small amount of toner across the length of the gap.
  - Stop pouring and turn the knob [D] so the toner settles into the development unit.
  - Repeat this sequence until the packet is empty.



B234I903.WMFF

8. Reattach the hopper to the development unit. (🔌 x1, ⚙️ x2)

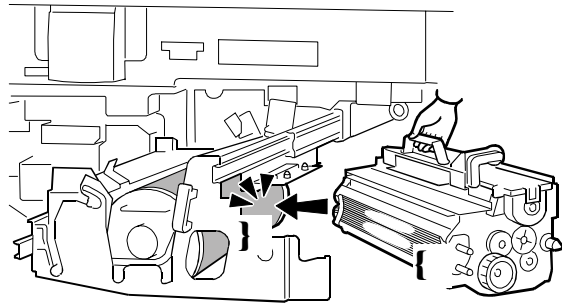
**Important:**

- Confirm that the TD harness is connected properly.
  - Confirm that the harness is not pinched.
9. Set the connected harnesses between the toner hopper and the metal plate.
  10. Re-attach the bracket (see the previous page) (⚙️ x1).

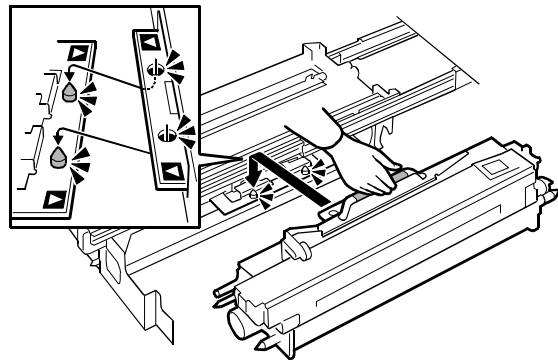
***Reinstalling the Development Unit***

**Important:** When you reinstall the development unit, handle it carefully.

- Never allow the development roller { to hit the OPC drum } or any other part of the frame of the development unit drawer.
  - Scratches or other damage to either the drum or development roller will adversely affect the operation of the machine.
1. Align the triangular reference marks of the development unit and drawer frame.
  2. Place the holes on the edge of the development unit over the pegs on the drawer frame.
  3. Push the development unit drawer into the machine, reattach the faceplate and inner cover, then close the right front door.

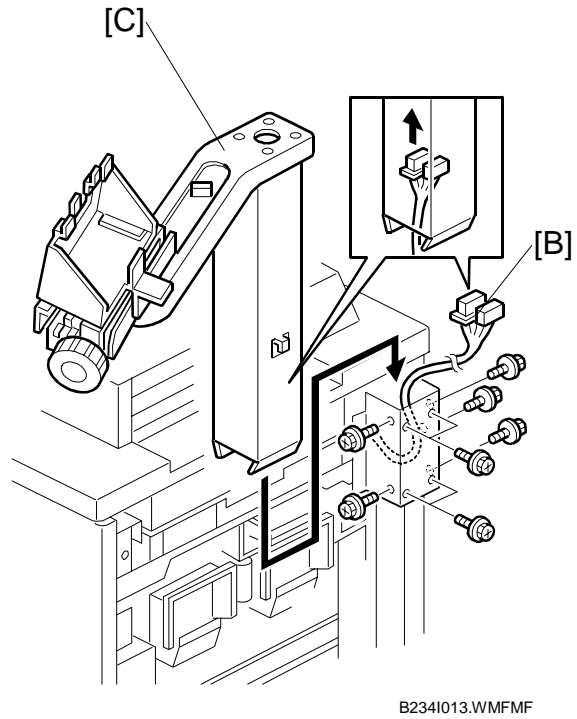
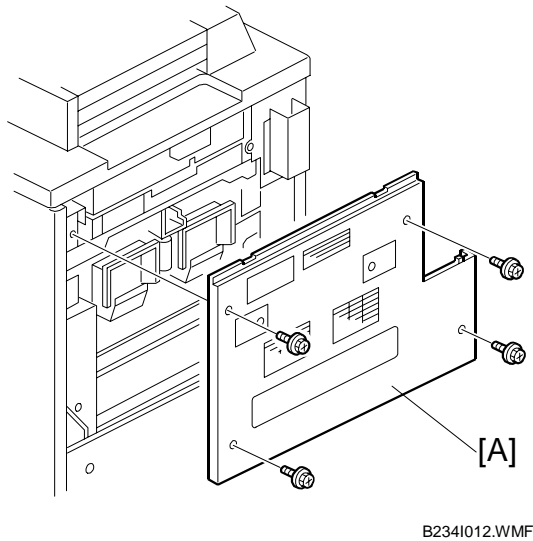


B234i112B.WMF

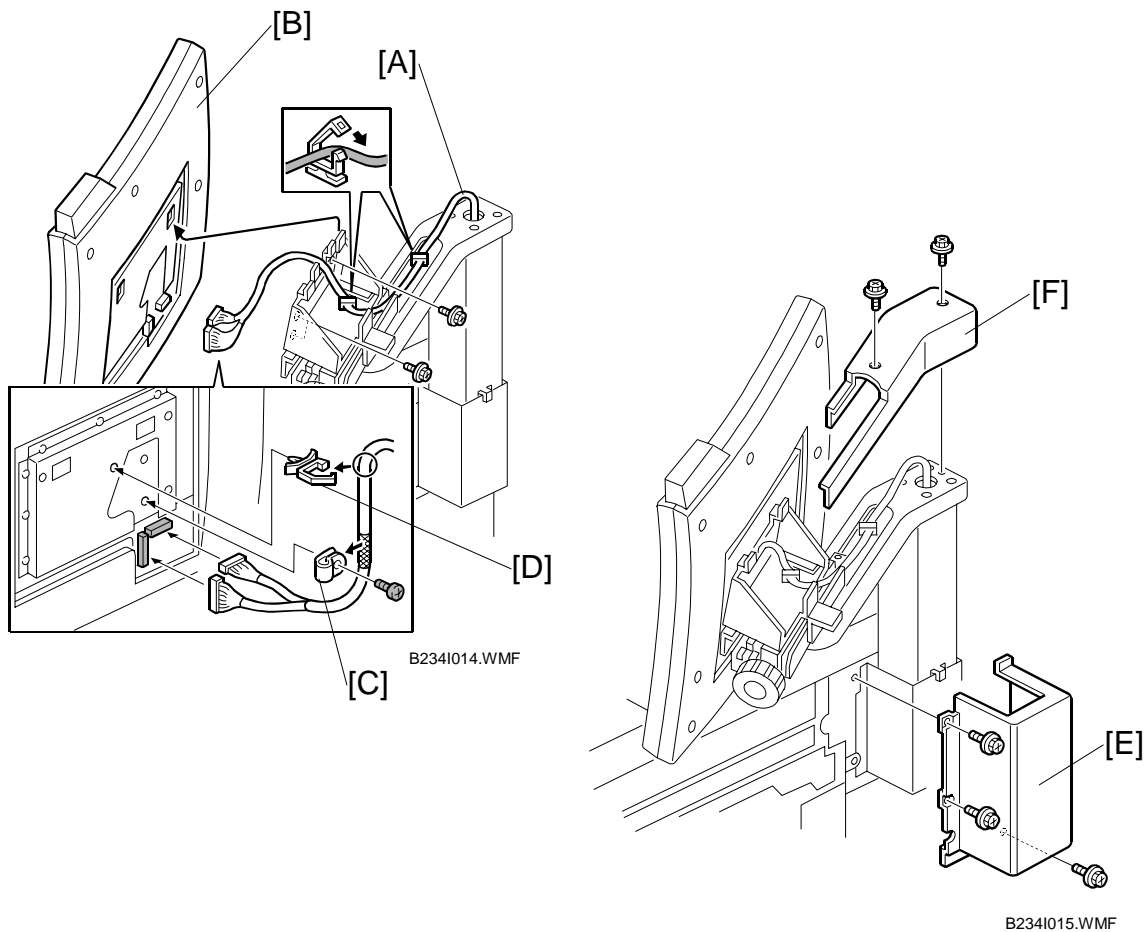


B234i112A.WMF

**Operation Panel**

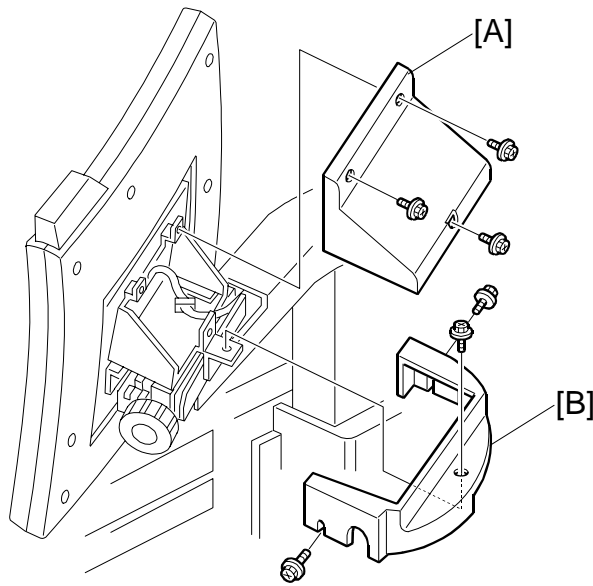


1. Remove the right upper cover [A] (⚙ x 4).
2. Pass the harness [B] through the arm [C].
3. Install the arm [C] (⚙ x 9).

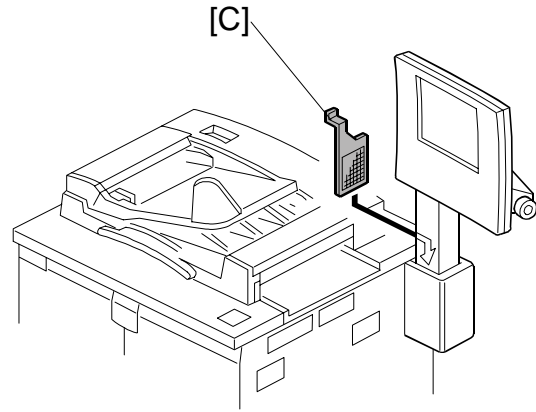


4. Pull the harness [A] through the top of the arm and connect it to the operation panel [B] (⚙️ x2).
5. Secure the harness clamp [C] on the operation panel (⚙️ x 1, M4 x 6 brass pan head).
6. Install the operation panel on the arm (⚙️ x 4).
7. Set the harness clamp [D].
8. Pass the harness through the clamps (⚙️ x3).
9. Install the right arm cover [E] (⚙️ x 3).
10. Install the arm upper cover [F] (⚙️ x 2).

**Filters, Original Exit Tray**

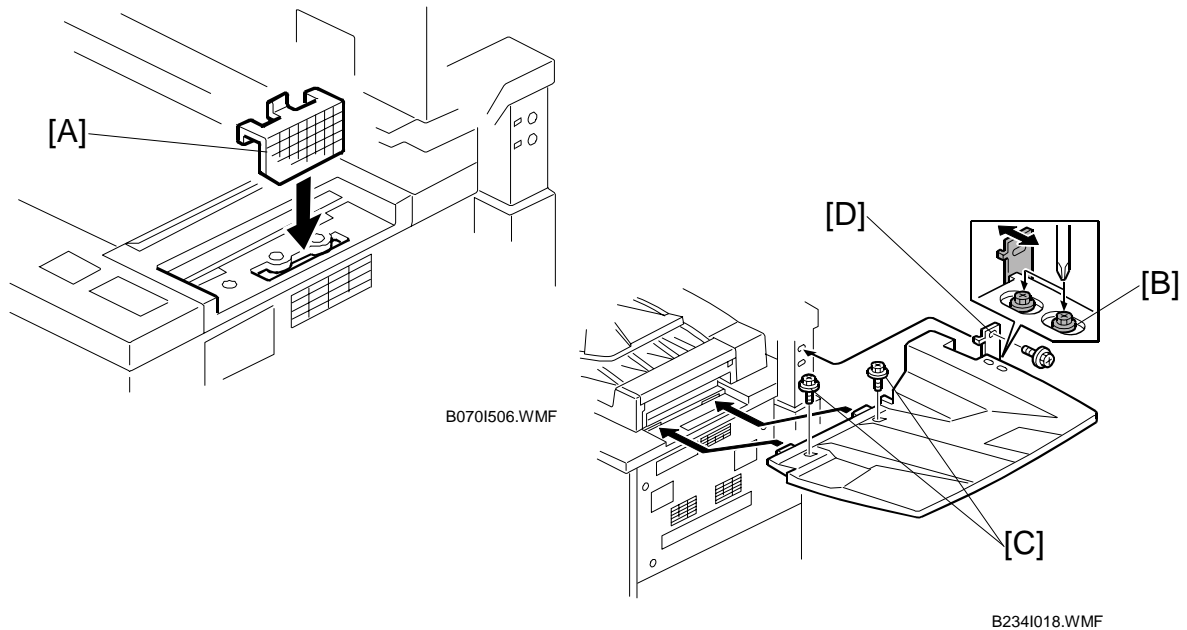


B2341016.WMF



B2341017.WMF

1. Install the upper cover [A] (⌘ x 3)
2. Install the lower cover [B] (⌘ x 3).
3. Set the drum dust filter [C].
4. Loosen the bottom knob, adjust the view angle of the operation panel, then tighten the knob.
5. Loosen the side knob, adjust the tilt of the operation panel, then tighten the knob.



6. Set the optics dust filter [A].
7. Loosen the two screws of the bracket [B].
8. Attach the original exit tray at [C] (⌀ x 2) and [D] (⌀ x 1)
9. Re-tighten the screws of the bracket [B] (⌀ x 2).
10. Re-attach the right upper cover (⌀ x 4).
11. Remove the tape from the operating instructions holder and attach it to one of the front doors.
12. At the back of the machine, connect the ADF to the copier body.

**Testing the Copier Breaker Switch**

1. Plug the copier power cord into its power source.  
**NOTE:** Do not turn on the copier. The copier should be off.
2. Use the tip of a small screwdriver to push the breaker test button.



BRKSI904.BMPP

The breaker switch should flip to the "O" position. This indicates that the breaker switch is operating normally.

If the breaker switch does not flip to the "O" position, the switch must be replaced.

3. Raise the switch to the "I" position for normal operation.

**Important**

- The copier will not turn on if the breaker switch is not returned to the "I" position.



BRKSI901.BMPP

## ***Initializing the Machine***

### **Important:**

- Before you do this procedure, make sure that the front doors of the machine are closed.
1. Plug in the power cord and turn the main switch on.
  2. Install the toner bottles.  
**NOTE:** Be sure to set the toner bottle to the lower holder first.
  3. When the machine is ready, enter SP mode:
    - 1) Press **[C/⊗]**.
    - 2) Enter "107".
    - 3) Hold down **[C/⊗]** for more than 3 seconds.
  4. Press "Copy SP" on the LCD, and perform the TD initial setting:
    - 1) Select **SP2801** (TD Sensor Initial Setting)
    - 2) Use the keys displayed on the screen and the numeric keys on the LCD to enter the developer Lot No., then press **[#]**.  
**NOTE:** The Lot No. is embossed on the top edge of the developer packet.
    - 3) Press "Execute" on the LCD.  
**NOTE:** This executes the TD initial setting. After about 1 minute, "Completed" is displayed on the screen, and the execution stops automatically.
  5. Start to supply toner from the toner bank to the toner hopper:
    - 1) Select **SP2207 002** (Toner Bank Toner Setup).
    - 2) Press "Execute" on the LCD.  
This procedure supplies toner to the toner hopper and the toner transport path. It will stop automatically in about 6 minutes. If **SP2207 002** fails after **SP2801** is completed (an SC code is displayed), repeat only **SP2207 002**.
  6. Execute **SP2962** (Auto Process Control Execution).  
**NOTE:** In step 2, if you enter SP mode immediately after switching the machine on, the system will not execute process control automatically. To ensure that process control calibrates its settings, use this SP to execute process control manually.  
If SP 2962 fails, the setting of 3901 001 changes from 'on' to 'off'.



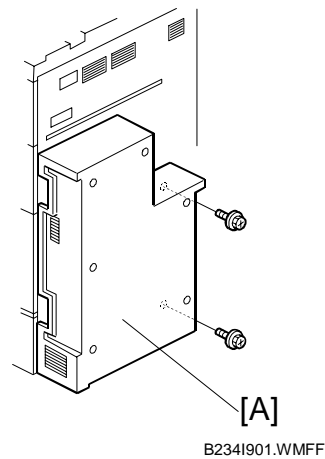
### **Connecting the Copier Tray Heaters**

The machine comes from the factory with the tray heaters already installed but disconnected. Tray heater connection is optional. The heaters should be connected if the location has high humidity.

Consult with the customer before connecting the tray heaters.

Doing this procedure connects the following anti-condensation heaters inside the copier at the following locations:

- One unit below the transfer unit
  - Two units in the paper tray unit (if installed)
  - One unit in the scanner unit (if installed)
  - One unit in the LCT (if installed)
1. Switch off the main power switch and disconnect the power cord from the power source.
  2. Open the PSU box (⚙ x 2).

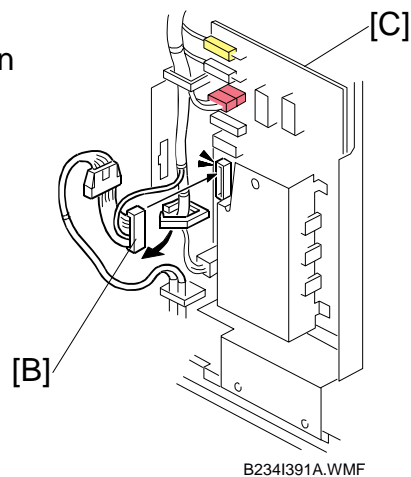


### **To set the connector**

3. Connect the white connector [B] to **CN602** on the AC drive board [C].

#### **NOTE:**

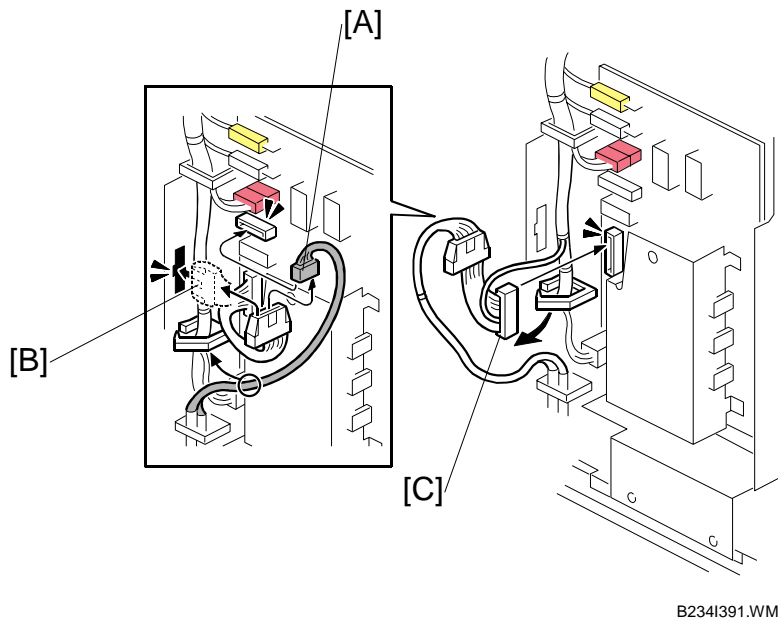
- Connect the large connector clamped beneath the board.
- This step is not required if the LCT anti-condensation heater will be connected.



### To supply power 24 hours a day

Doing the connection in the previous procedure assures that power is supplied to the machine for the heaters even after the copier is switched off with the main power switch (for example, in auto off mode). However, with only this connection, the heaters do not operate while the copier is operating.

Another connection can be done so the heaters in the paper tray unit will switch on and off while the copier is operating. This connection will also allow the LCT heater (option) to operate while the copier is switched off with the main power switch (for example, in auto off mode). In energy saver and low power modes, the heaters switch off.



B2341391.WMF

1. Remove the small connector [A] from the relay connector, then connect it to connector **CN606**.
2. Clamp the relay connector [B] to bracket of the AC drive board.
3. Connect the large connector [C] to connector **CN602** as described in the previous procedure.

### 1.3.3 COMPLETING THE INSTALLATION

#### *Setting Paper Sizes for the Paper Trays*

1. Set the required paper sizes for all paper trays.

Unit	Name	No.	Setting
Copier	1st Tray	1	<b>SP5019 002</b>
	2nd Tray	2	Automatic side fence detection.
	3rd Tray	3	Automatic side fence detection.
A4/LT LCT (B832)	1st Tray	4	Paper size dial at rear of tray
	2nd Tray	5	Paper size dial at rear of tray.
	3rd Tray	6	<b>SP5019 007</b>
A3/DLT LCT (B834)	1st Tray	4	Automatic side fence detection.
	2nd Tray	5	Automatic side fence detection.
	3rd Tray	6	Automatic side fence detection.
Bypass Tray (B833)	---	7	Automatic side fence detection.
Cover Inserter (B835)	1st and 2nd Tray	---	Automatic side fence detection.

**NOTE:** If the customer wants to use a custom size, they must press the Tray Paper Settings button, then press the icon for the appropriate tray. Then they must press the Paper Size tab, select 'Custom Size', then input the required paper size.

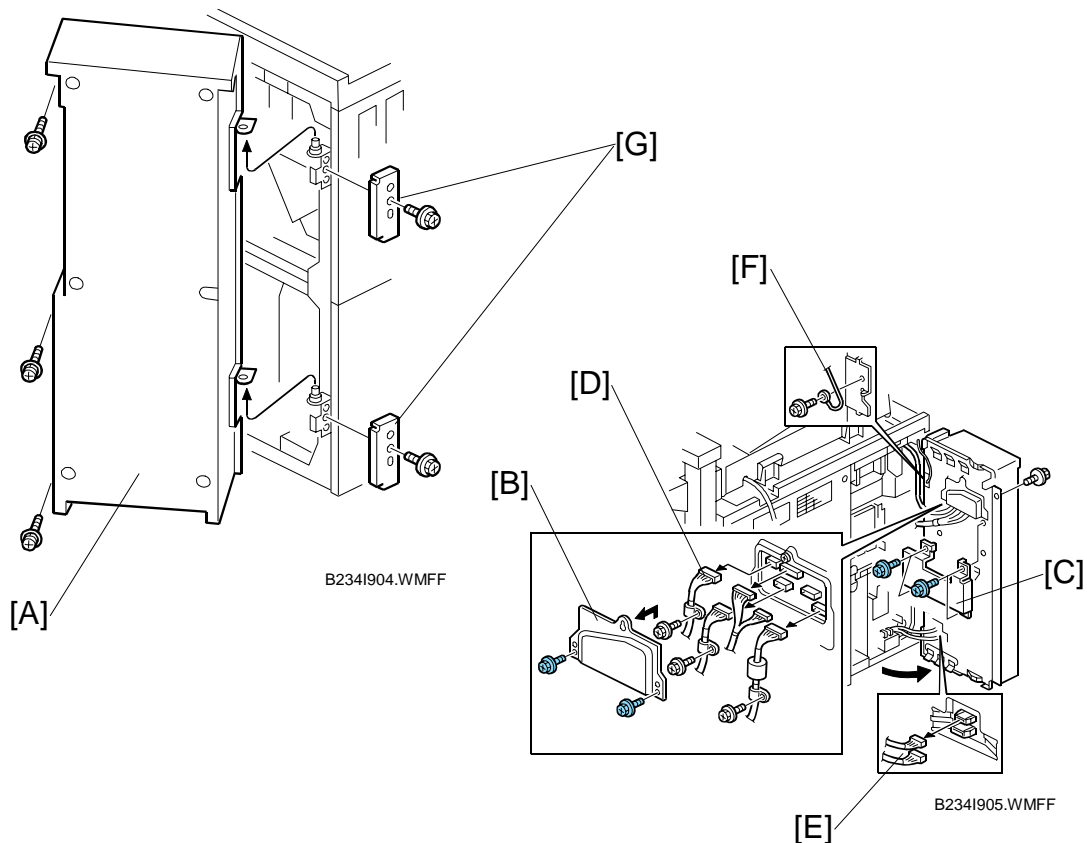
2. Attach the appropriate paper size decal to each tray (decals are provided in the accessories bag).
3. Attach the face-up decal to the ADF.
4. Check copy quality and machine operation.
 

**NOTE:** The first time the ADF is used, dust on the ADF transport belt will transfer to the exposure glass. To remove this dust, perform **SP6008-3** (DF Output Check) for 3 minutes, then check the exposure glass for dust and remove it.
5. Input the supply name with **SP5841** (Supply Name Settings).
6. Install the stamp data (**SP5853**). (☛5.10.5)
7. Input the following telephone numbers with SP 5812.
  - Service technician telephone number: SP 5812 001
  - Service technician fax number: SP 5812 002
  - For ordering consumables: SP 5812 003
  - Sales representative: SP 5812 004

### 1.3.4 CONTROLLER BOX, PSU BOX REMOVAL

Remove the controller box and PSU box only if the machine is too large to pass through a narrow door or passageway.

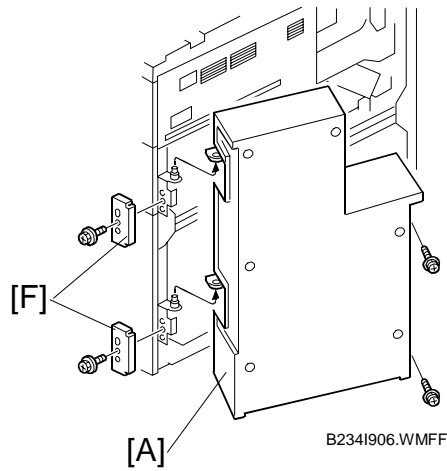
#### Controller Box Removal



1. Open the controller box [A] (⚙ x 3 with washers).
2. Remove 1st connector cover [B] (⚙ x2).
3. Remove 2nd connector cover [C] (⚙ x2)
4. Disconnect [D], [E] (⚡ x9)
5. Disconnect the ground wire [F] (⚙ x1)
6. Remove the hinge covers (top, bottom [G]) (⚙ x2)
7. Remove the controller box [A]

**PSU Box Removal**

1. Open the PSU box [A] (⚙️ x 2).

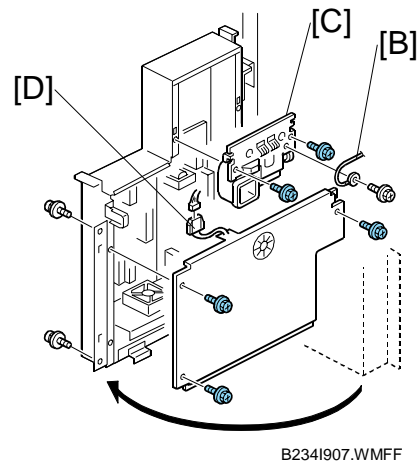


2. Disconnect ground wire [B] (⚙️ x 1).

3. Remove duct [C] (⚙️ x 3)

4. Disconnect [D] (⚙️ x1).

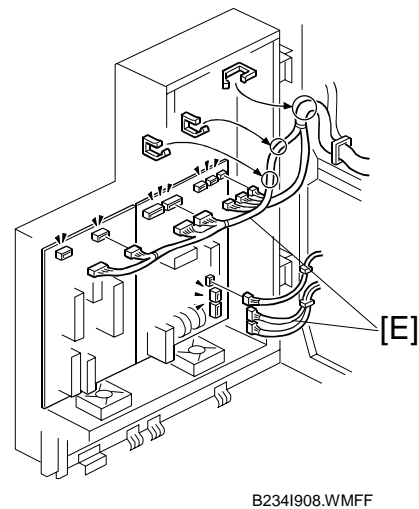
5. Remove the cover ❶ (⚙️ x 3).



6. Disconnect connectors [E] (⚙️ x10)

7. Remove the hinge covers (top, bottom) [F] (⚙️ x 2)

8. Remove the PSU box.



### 1.3.5 TRANSPORTING THE COPIER

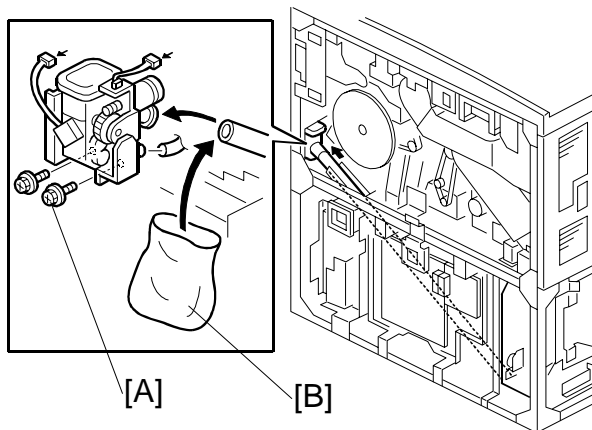
To prevent blockages in the toner supply path, always follow the procedure below before transporting the copier. If this procedure is not done, **SC592** (Toner Bank Motor Error) or **SC495** (Toner Bottle Unit Error) may be displayed, requiring replacement of the toner transport hose and screw.

#### **⚠ CAUTION**

**To prevent damaging the toner supply coil inside the toner hose, never bend the toner hose. If the coil is bent, SC592 will be displayed and the hose must be replaced.**

#### ***Before Moving the Copier***

1. Use **SP5804 041** (Upper Bottle) and **SP5804 042** (Lower Bottle) to close the toner caps.
2. Turn off the operation switch.  
**NOTE:** If you turn off the main power switch, you cannot remove the toner bottles.
3. Then remove the toner bottles from the bank.
4. Remove the rear cover.
5. Open the PSU box and controller box (do not remove them!).
6. Remove the left upper cover, left lower cover, and right upper cover.
7. Remove the two screws [A] securing the toner supply cylinder.
8. Cover the end of the toner transport coil tube [B] with a plastic bag.
9. Turn on the operation switch.
10. Execute **SP5804 038** (Output Check – Toner Bank Motor) and **SP5804 039** (Output Check – Toner Supply Coil Clutch) to actuate the toner bank motor and toner supply coil clutch for 2 minutes and remove all toner in the supply hose.
11. Re-install all removed parts except the toner bottles.
12. Make sure that three tubes are connected to the toner supply cylinder when putting it back.



B234I909.WMFF

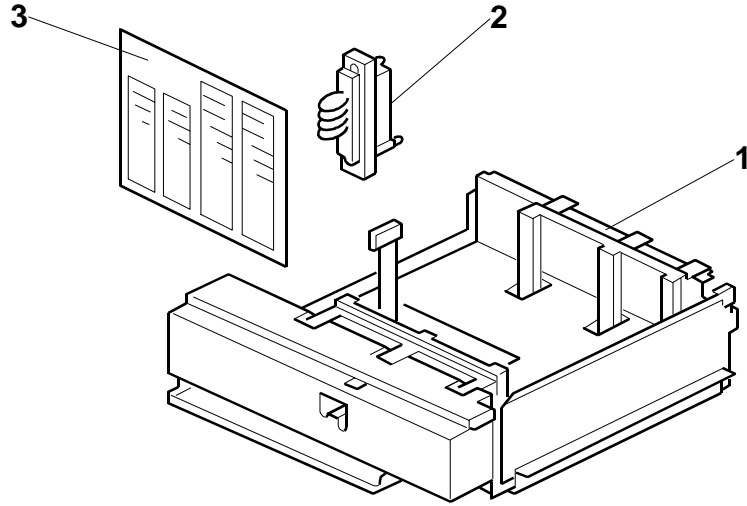
***After Moving the Copier***

1. Turn the main power switch on.
2. Load the toner bottles into the toner bank.
3. Start to supply toner from the toner bank to the toner hopper:
  - 1) Select SP2207 002 (Toner Bank Toner Setup).
  - 2) Press "Execute" on the LCD.

This procedure supplies toner to the toner hopper and the toner transport path. It will stop automatically in about 6 minutes. If **SP2207 002** fails after **SP2801** is completed (an SC code is displayed), repeat only **SP2207 002**.

# 1.4 A3/11"x17" TRAY UNIT TK5000 (B331-11)

## 1.4.1 ACCESSORIES



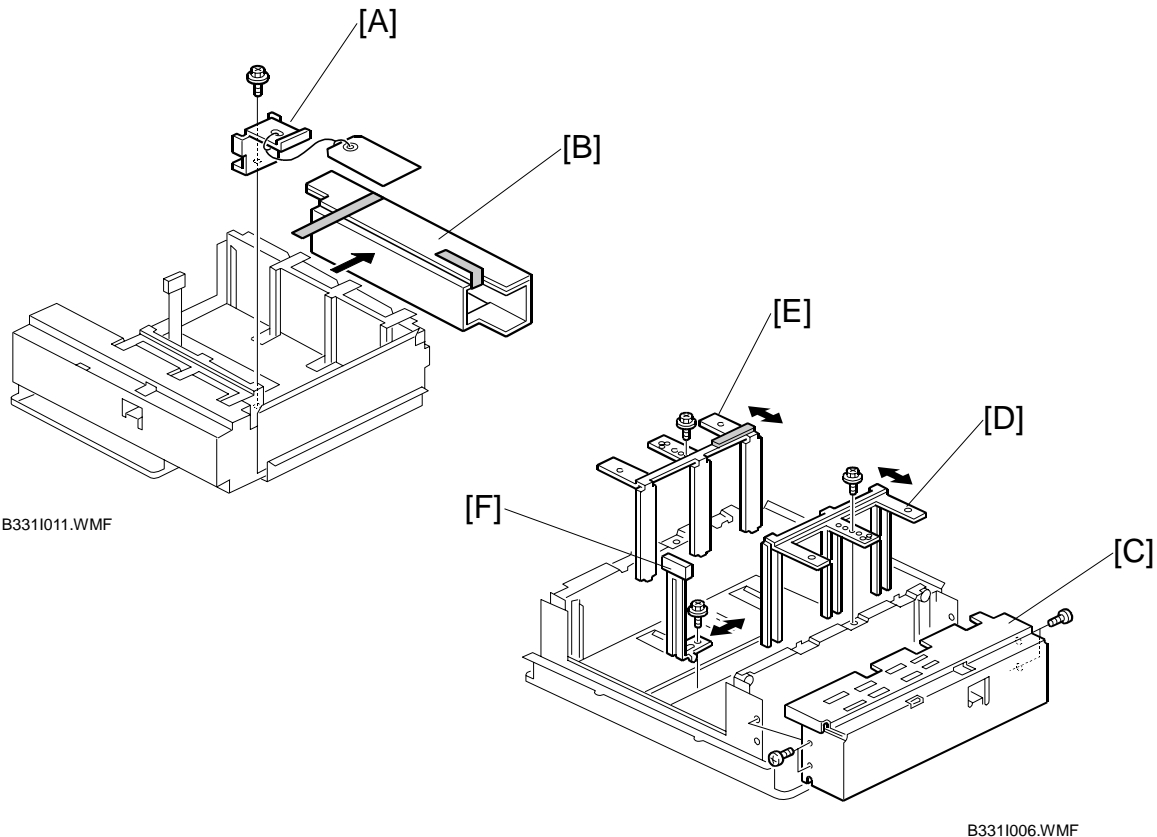
B3311001.WMF

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

Description	Q'ty
1. A3/DLT Tray.....	1
2. Short Connector.....	1
3. Paper Size Decal .....	1



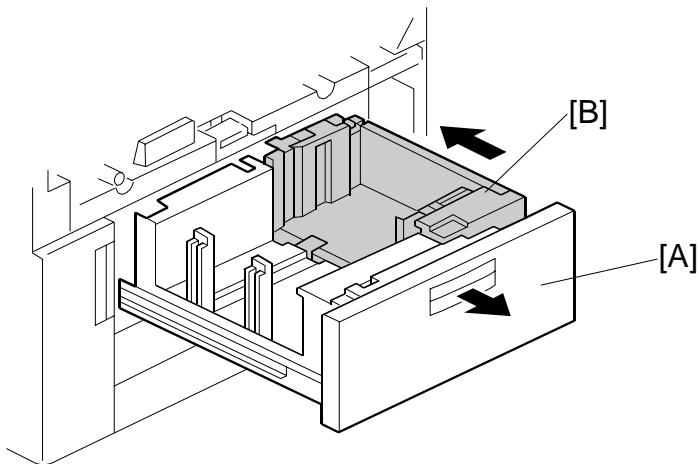
## 1.4.2 INSTALLATION



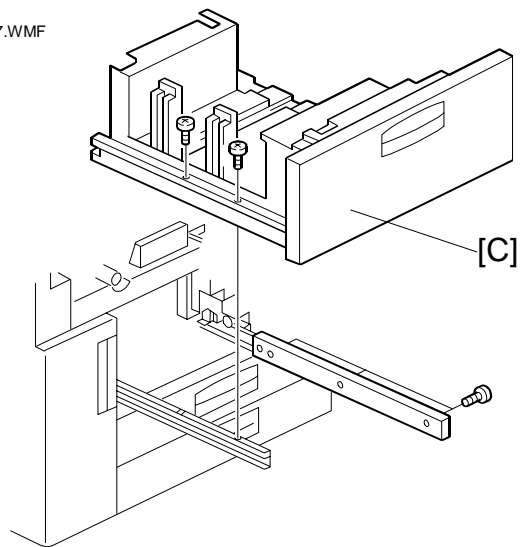
### **⚠ CAUTION**

**Switch the machine off and unplug it from the power source before starting the following procedure.**

1. Remove the shipping material [A] and metal retainer [B] (⚙ x 1).
2. Check the position of the front and back side fences and make sure that they are set for DLT or A3.
3. If you need to adjust the positions of the side fences for the paper to be loaded in the tray, remove the front panel [C] (⚙ x 4).
4. Remove the fences and adjust their positions for the paper to be loaded: front fence [D] (⚙ x 1), back fence [E] (⚙ x 1), and end fence [F] (⚙ x 1)

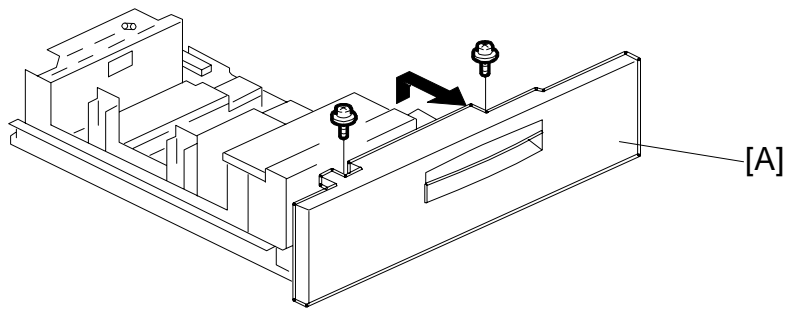


B3311707.WMF

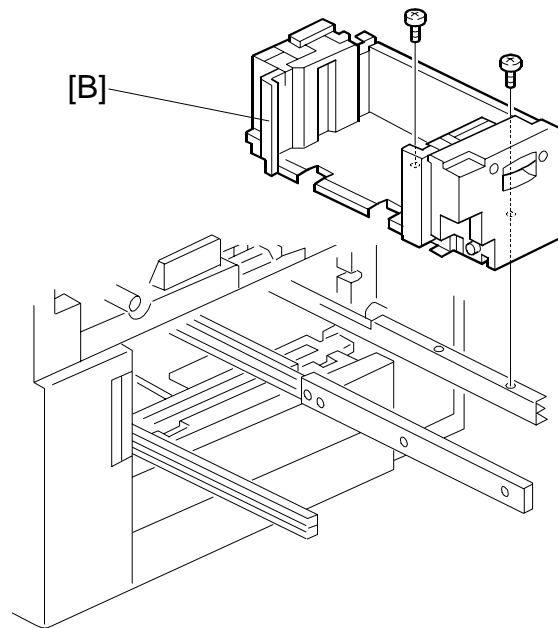


B3311708.WMF

5. Open the front doors.
6. Pull out the tandem feed tray [A] completely.
7. Push the right tandem tray [B] into the machine.
8. Remove the left tandem tray [C] (⚙ x 2 left, ⚙ x 3 right).

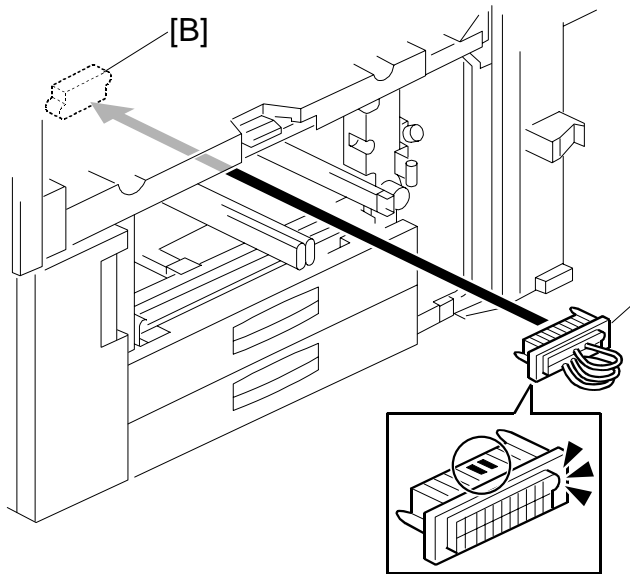


B3311002A.WMF

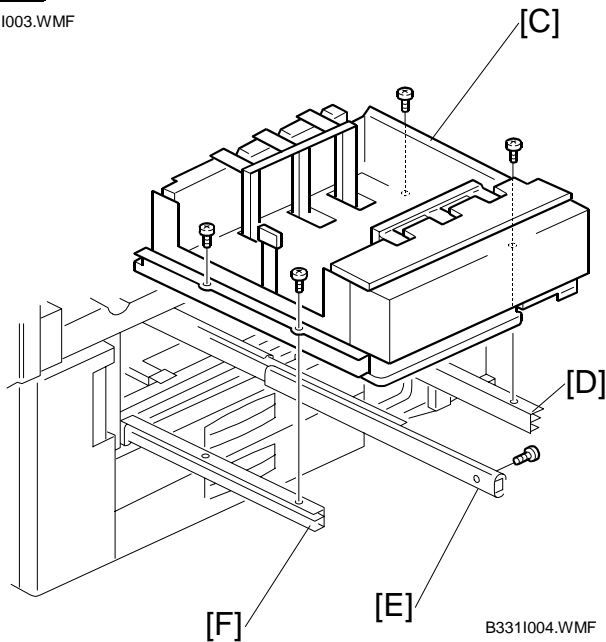


B3311709.WMF

9. From the left tandem tray, remove the front cover [A] (⚙ x 2).
10. Pull out the right tandem tray [B] then remove it. (⚙ x 2).

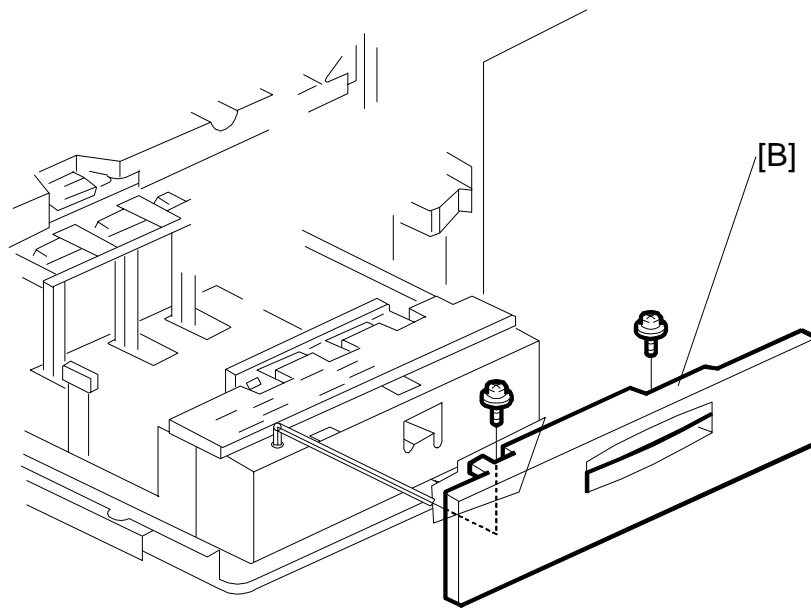


B3311003.WMF



B3311004.WMF

11. Insert the short connector [A] into the socket inside the machine [B].  
**NOTE:** Hold the connector as shown in the illustration.
12. Using the screws removed in Steps 8 and 11, install the tray [C] on the right rail [D], center rail [E], left rail [F].  
**NOTE:** You must use the short, silver screws on the left and right rails. If you use one of the longer screws, it will block the movement of the tray on the rails.



B3311005A.WMF

13. Re-install the front cover [A] (⚙ x 2).
14. Use **SP5019 002** to select the paper size for Tray 1 (A3 or DLT).
15. After selecting the paper size, switch the machine off and on to change the indicator on the operation panel.

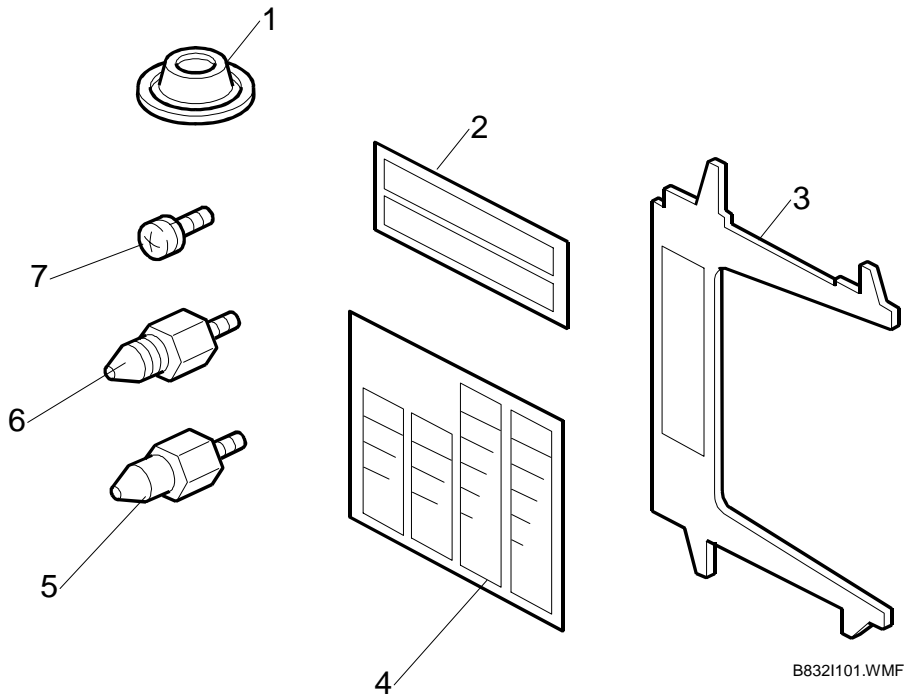
## 1.5 LCIT RT5000 (B832)

### 1.5.1 ACCESSORIES

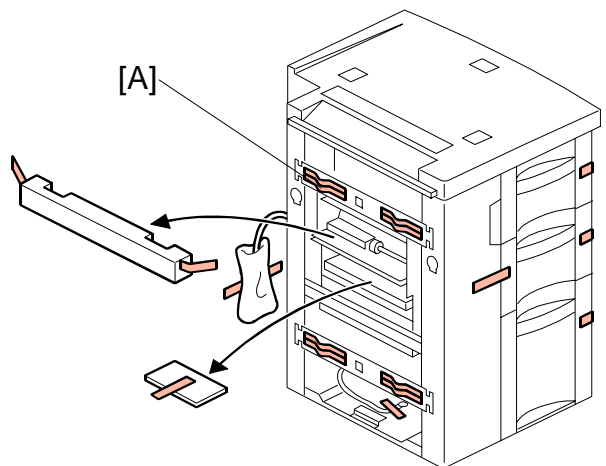
Check the quantity and condition of the accessories in the box against the following list:

Description	Q'ty
1. Leveling Shoes .....	3
2. Decal - Paper Set.....	3
3. Tab Paper End Fence .....	1
4. Decal - Paper Size .....	1
5. Lower Joint Pins.....	2
6. Upper Joint Pins.....	2
7. Philips Screw - M4 x 8.....	1
Installation Procedure - English (not shown).....	1

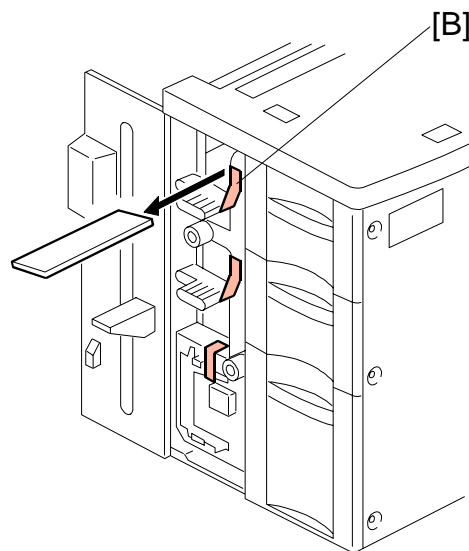
**NOTE:** The tab paper end fence (3) is located in the LCT unit, mounted on hooks behind the front door.



## 1.5.2 INSTALLATION



B8321103.WMF

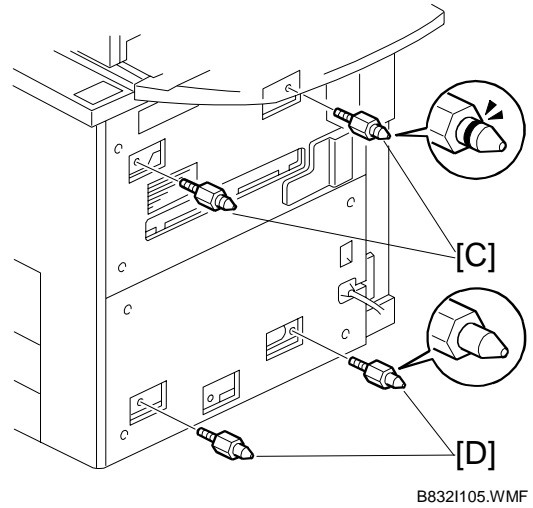
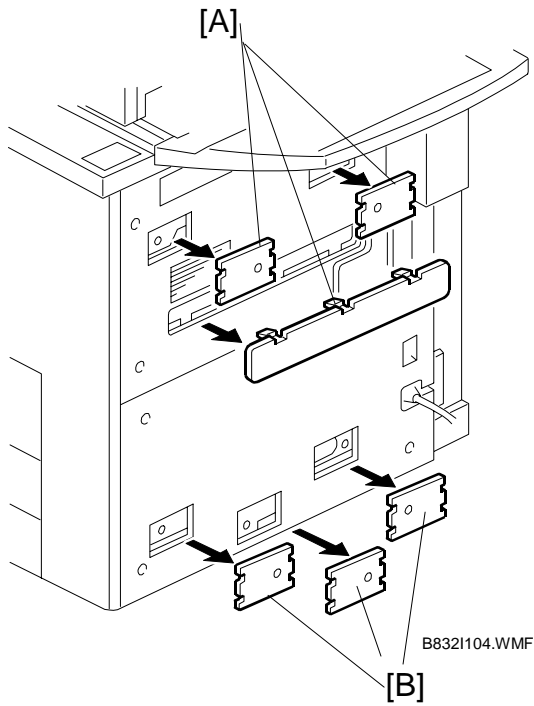


B8321102.WMF

**⚠ CAUTION**

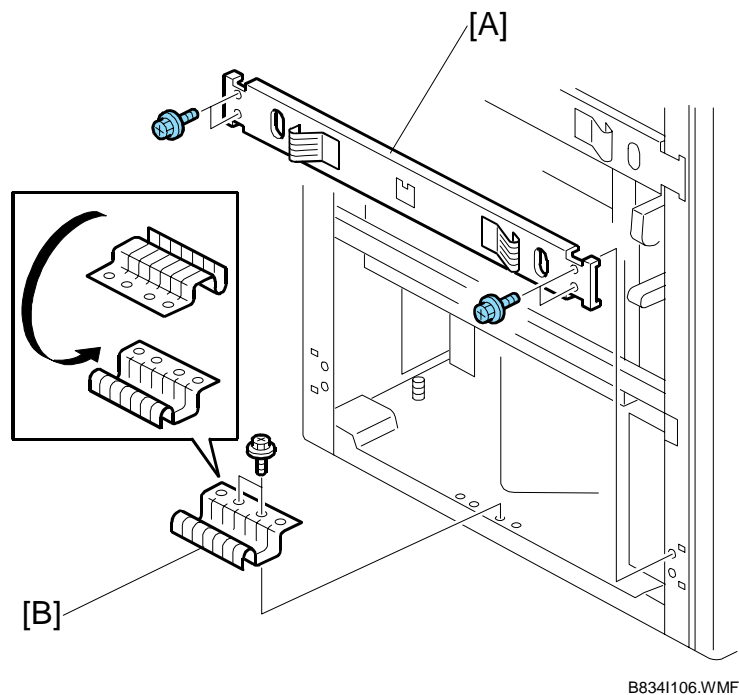
**Unplug the power cord before starting the following procedure.**

1. Remove the visible tape and other items [A] from the covers and left side of the LCT.
2. Open the LCT door and remove the shipping retainers and tape [B] holding the levers.



3. Remove the covers [A] from the right upper side.
4. Remove the covers [B] from the right lower side.
5. Install the pins with the grooved rings [C] on the right upper cover.
6. Install the other pins [D] on the right lower cover.

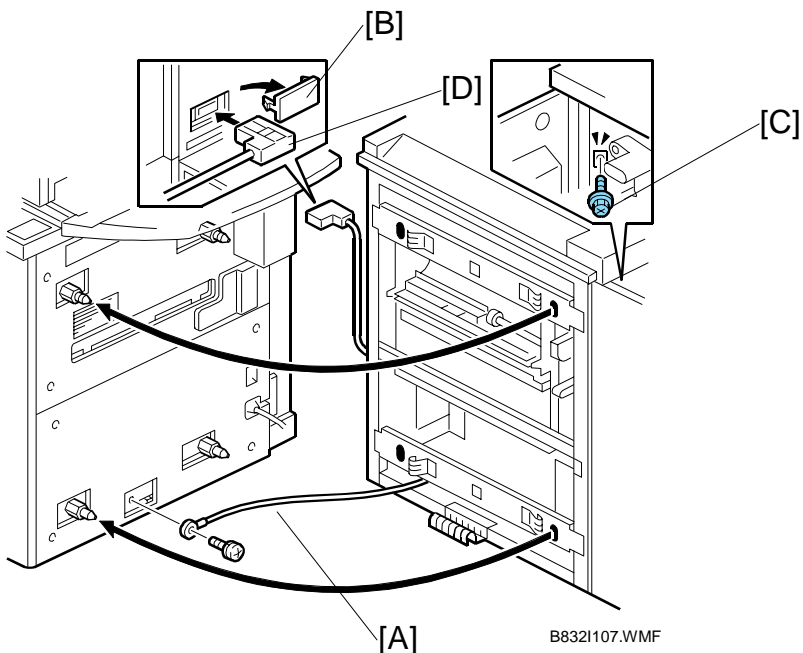




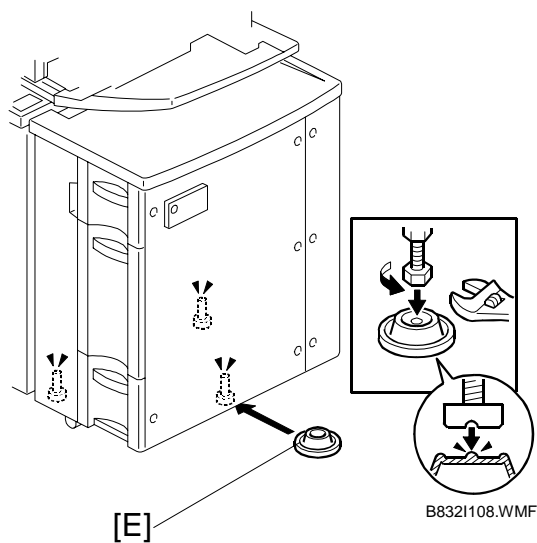
7. Remove the lower stay [A] (⚙ x 4).
8. Remove the two screws that secure the ground plate [B].
9. Turn over the ground plate and use the screws to fasten it to the same holes as shown (⚙ x 2).

**Important!**

- If you are going to install the Multi Bypass Tray B833, it must be installed before the LCT is docked to the copier. (☞1.7)



10. Move the LCT to the right side of the copier.
11. Fasten the ground wire [A] (⚙ x 1).
12. Remove cover [B].
13. Open the LCT front door and remove screw [C] (⚙ x 1).
14. Align the LCT on the joint pins, and dock the LCT with the right side of the copier.
15. Fasten screw [C] to lock the LCT to the side of the copier.
16. Attach connector [D].
17. Insert the leveling shoes [E] (x 3) under the leveling feet and level the LCT.
18. Attach the appropriate decals to the trays.

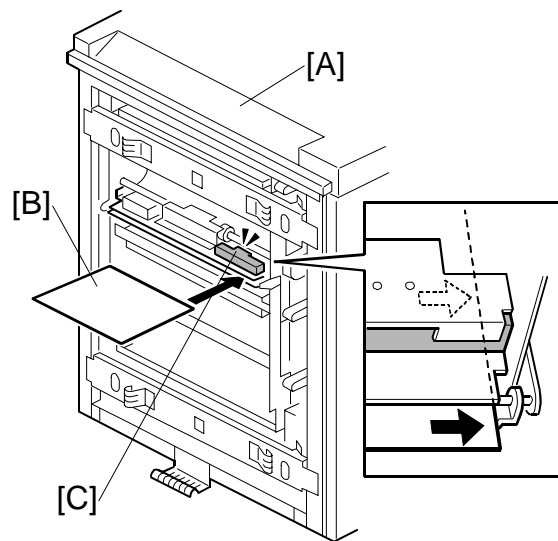


### 1.5.3 ADJUSTING IMAGE POSITION SENSOR STRENGTH AND SIDE-TO-SIDE REGISTRATION

The CIS inside the LCT must be calibrated. The two CIS assemblies inside the copier are calibrated at the factory. This is not possible for the LCT because the LCT and copier are not together at the factory.

This is a common procedure that must be done for either LCT (B832 or B834).

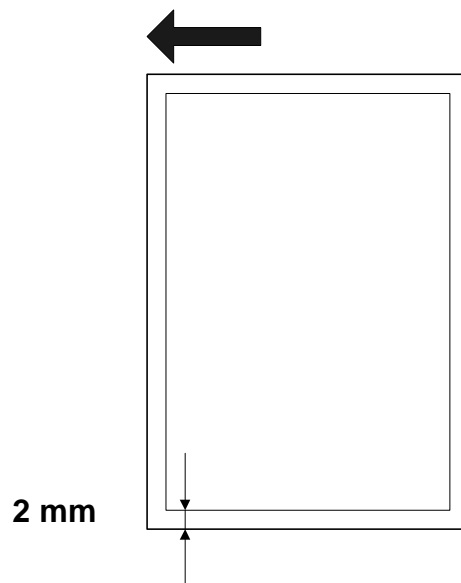
1. Turn off the main power switch.
2. Disconnect the LCT from the copier.
3. With the LCT [A] separated from the copier, reconnect the LCT cable to the copier.
4. Turn on the main power switch.
5. Insert one sheet of plain white paper [B] in the paper path.
6. Make sure that the paper covers the entire area below the image position sensor (CIS) [C].
7. Enter the SP mode and do **SP1910 002** (CIS Image Position Adjustment: LED Strength - LCT). This calibrates the amount of light to be emitted from the CIS.



B8341125.WMF

8. Do **SP1909 002** (CIS Image Position Adjustment: PWM After Adjustment - LCT).
  - If the displayed value is between 20 (14h) and 40 (28h), the CIS is calibrated successfully. (The display is in hexadecimal code.)
  - If the value is outside this range, do **SP 1910 002** and **1909 002** again. If the value does not come between 20 and 40, the CIS may be defective.
9. Exit the SP mode.
10. Reinstall the LCT to the side of the copier.
11. Press [User Tools]> [Adjust Settings for Operators].
12. Do **SP1911** for Trays 4, 5, 6, 7 and set the value for each tray to "0" (OFF).
13. Exit from SP 1911 and return to the SP mode menu.

14. Adjust the image positions in the main scan direction.
  - Do **SP2902 003**, select Pattern **27**, and then print the trimming pattern.
  - Do **SP1002** and adjust the image position in the main scan direction for Trays 4, 5, 6, and 7.
  - Print the trimming pattern from each tray of the LCT and from the bypass tray (if installed).
  - To do this, press "Copy Window" in the SP display, select a tray, and then press [Start].
  - The distance of the test pattern line from the paper edge for each tray must be 2 mm. If it is not 2 mm, adjust with **SP1002 004** to **007**, depending on which tray is not within the specified 2 mm.
15. Print the trimming pattern (pattern27) one more time.
16. Do **SP1912 002** (CIS Image Position Adjustment: Normal Paper). This sets the CIS for operation with standard copy paper.
17. Exit the SP mode.
18. Press [User Tools]> [Adjust Settings for Operators].
19. Once again, do **SP1911** (CIS Image Position Adjustment: Feed Setting) and reset the values for Trays 4, 5, 6, and 7 to "1" (ON).



B2341999.WMF

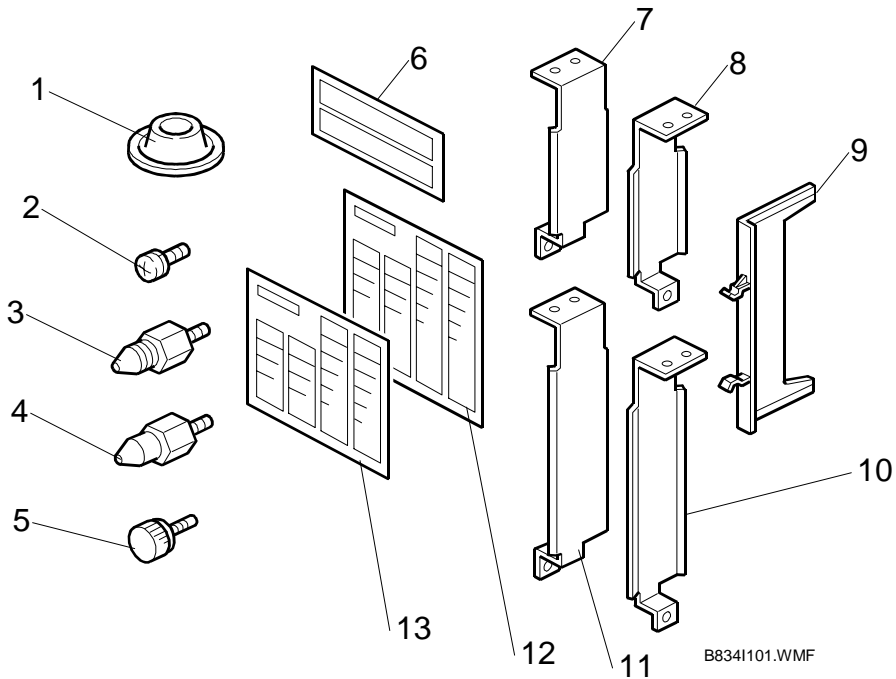
## 1.6 LCIT RT5010 (B834)

### 1.6.1 ACCESSORIES

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

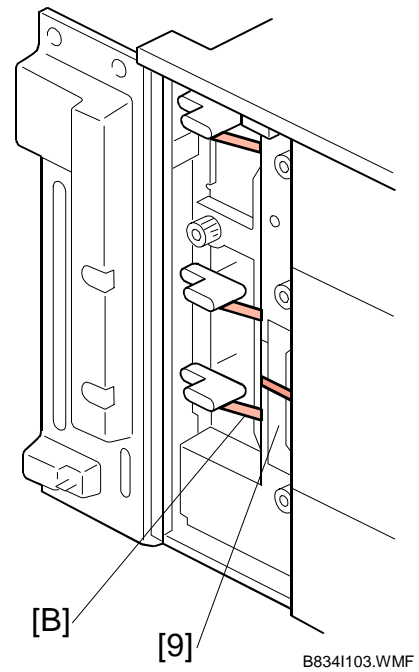
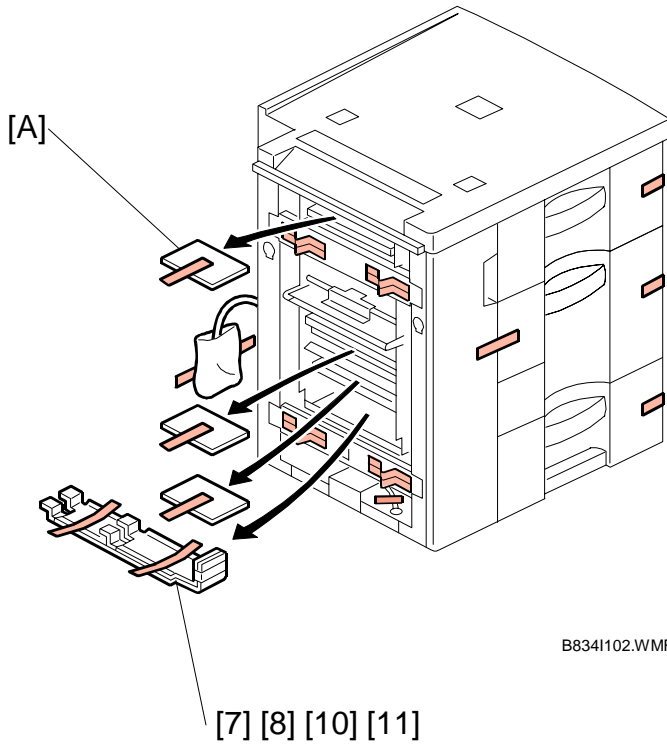
Description	Q'ty
1. Leveling Shoes.....	4
2. Philips Screw - M4 x 8.....	1
3. Upper Joint Pins.....	2
4. Lower Joint Pins.....	2
5. Knob Screws (Installed with LCIT RT5010) .....	4
6. Decal – Paper Set .....	3
7. Postcard fence – tray 4 or 6 (packed with the LCIT TR5010).....	1
8. Postcard fence – tray 4 or 6 (packed with the LCIT TR5010).....	1
9. Tab Paper End Fence .....	1
10. Postcard fence – tray 5 (packed with the LCIT TR5010).....	1
11. Postcard fence – tray 5 (packed with the LCIT TR5010).....	1
12. Decals – Paper Size.....	1
13. Decals – Paper Size.....	1
• Installation Procedure – (not shown).....	1

**NOTE:** The tab paper end fence (9) is located in the LCT unit, mounted on hooks behind the front door.



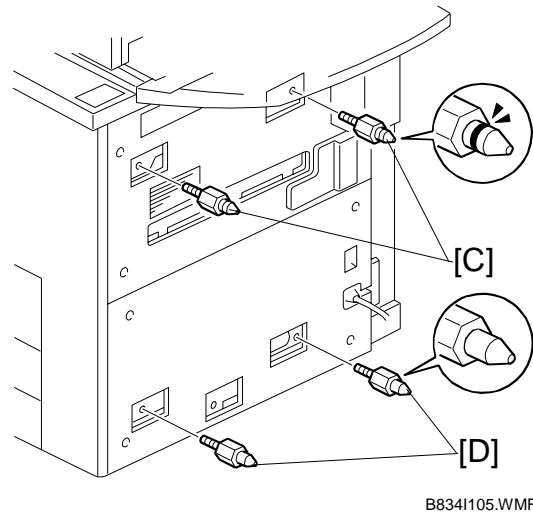
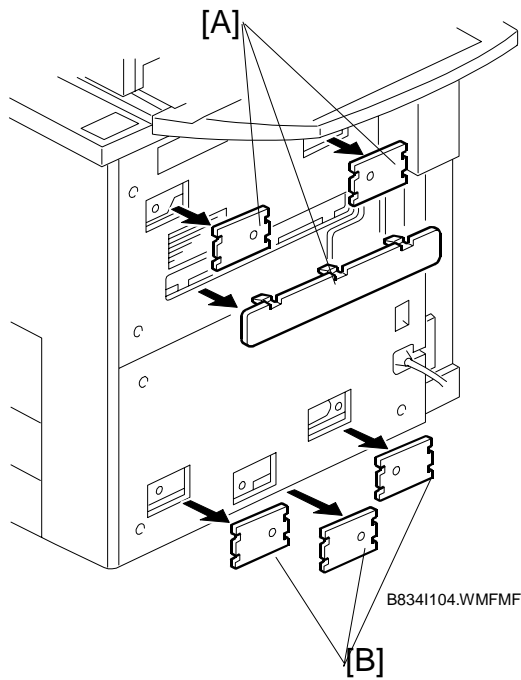
### 1.6.2 INSTALLATION

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

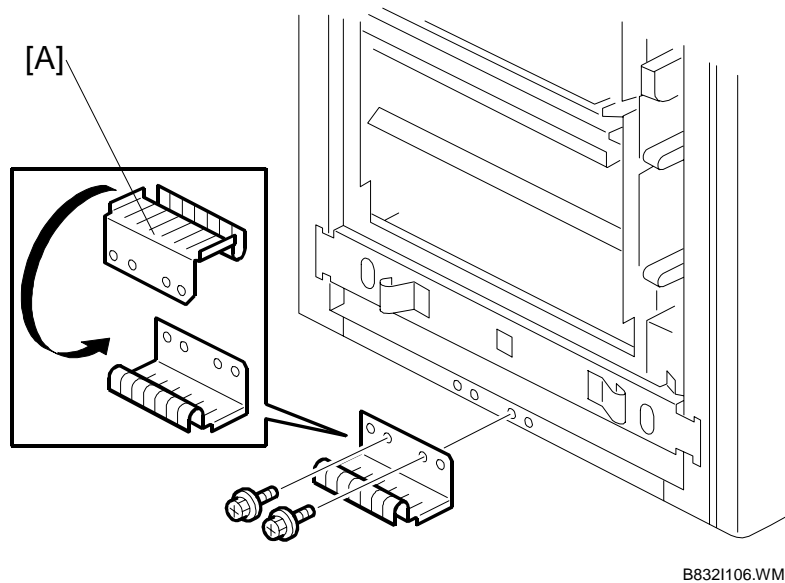


1. Remove all the visible strips of tape and packing materials [A] from the covers and left side of the LCT.
2. Open the LCT door and remove the shipping retainers and strips of tape [B] holding the levers.

**NOTE:** [7]: Postcard fence  
[8]: Postcard fence  
[10]: Postcard fence  
[11]: Postcard fence  
[9]: Tab Paper End Fence

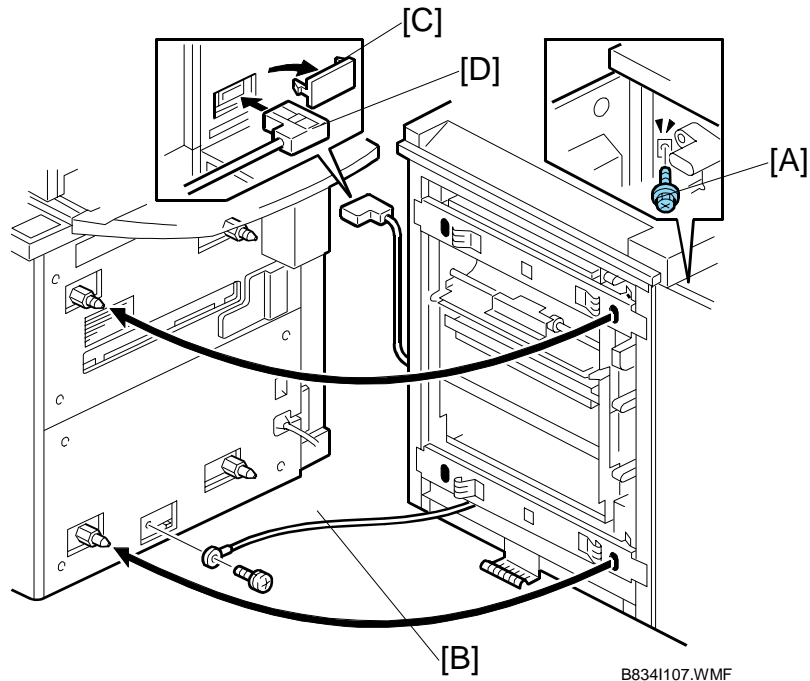


3. Remove the covers [A] from the right upper side.
4. Remove the covers [B] from the right lower side.
5. Install the pins with the grooved rings [C] on the right upper cover.
6. Install the other pins [D] on the right lower cover.

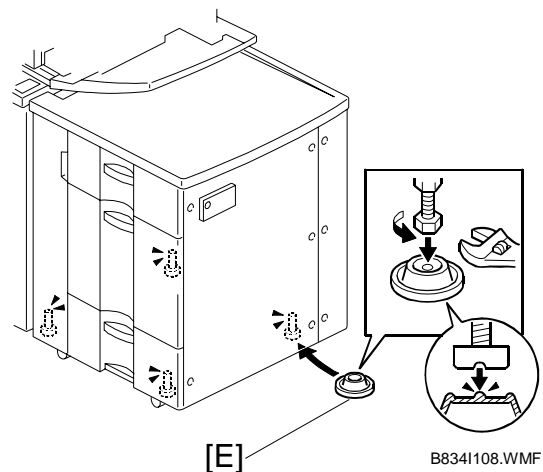


7. Remove the two screws that secure the ground plate [A].
8. Turn over the ground plate and use the screws to fasten it to the same holes as shown (⌀ x 2).  
Important!
  - If you are going to install the Multi Bypass Tray B833, it must be installed before the LCT is docked to the copier. (☛1.7)





9. Move the LCT to the right side of the copier.
10. Open the LCT front cover and remove screw [A] (⚙ x 1).
11. Fasten the ground wire [B] (⚙ x 1).
12. Remove cover [C] from the back side of the copier.
13. Attach connector [D].
14. Align the LCT on the joint pins, and dock the LCT with the right side of the copier.



15. Fasten screw [A] to lock the LCT to the side of the copier.
16. Insert the leveling shoes [E] (x 4) under the leveling feet and level the LCT.
17. Attach the appropriate decals to the trays.

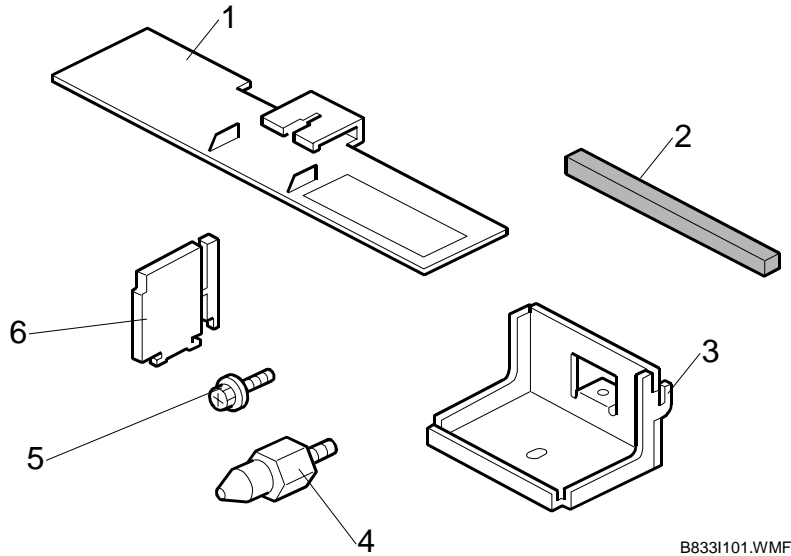
**Important!**

- The CIS inside the LCT must be calibrated. Do this now. (☛1.5.3)

## 1.7 MULTI BYPASS TRAY BY5000 (B833)

### 1.7.1 ACCESSORIES

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



B8331101.WMF

Description	Q'ty
1. Tab Sheet Fence .....	1
2. Sponge Strip .....	1
3. Bracket .....	1
4. Joint Pins .....	2
5. Tapping Screws .....	4
6. End Fence.....	1

#### Important!

- The Multi Bypass Unit must be installed on top of the LCT B834 or B832 before the LCT is docked to the copier.
- If the LCT is already installed, it must be disconnected from the copier before installation of the Multi Bypass Tray BY5000 (B833).

## 1.7.2 INSTALLATION

The Multi Bypass Tray B833 can be installed on either the LCIT RT5000 B832 or the LCIT RT5010 B834.

<b>⚠ CAUTION</b>
------------------

<b>Switch the machine off and unplug the machine before starting the following procedure.</b>
---

### Before Installing the Multi Bypass Tray

If the LCT is connected to the machine, disconnect it.

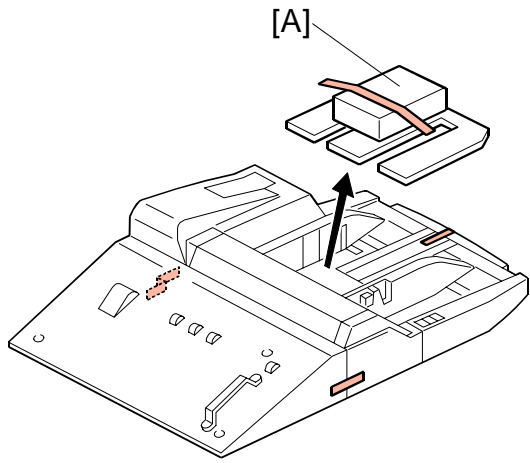
To prevent damage to the connectors and ground wire, before pulling the LCIT away from the copier:

- Pull the LCIT about 20 cm (8") away from the copier.
- Disconnect the connectors and the ground wire (🔧 x 1)
- Pull the LCIT completely away from the machine.

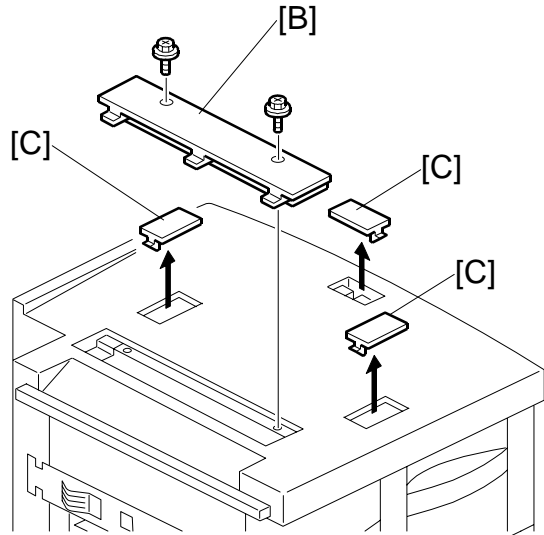
Be sure to follow the correct tray installation procedure depending on which LCIT will be installed.

LCIT Type	Mounting	Connection
• LCIT RT5000 B832	Do the procedure starting on page 1-55.	Do the procedure starting on page 1-59.
• LCIT RT5010 B834	Do the procedure starting on page 1-57.	

**LCIT RT5000 B832**

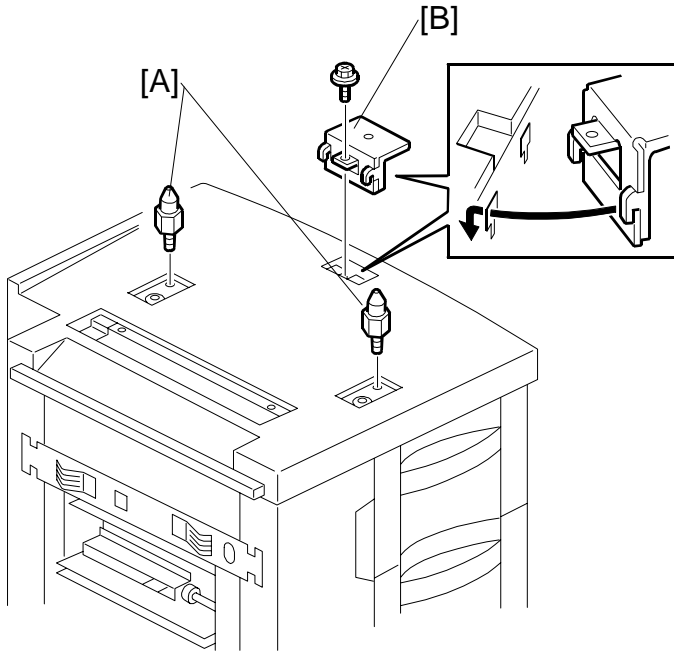


B8331102.WMF

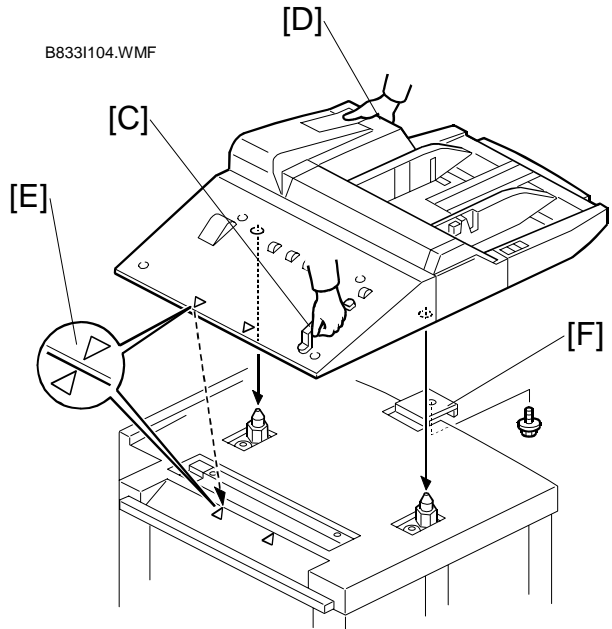


B8331103.WMF

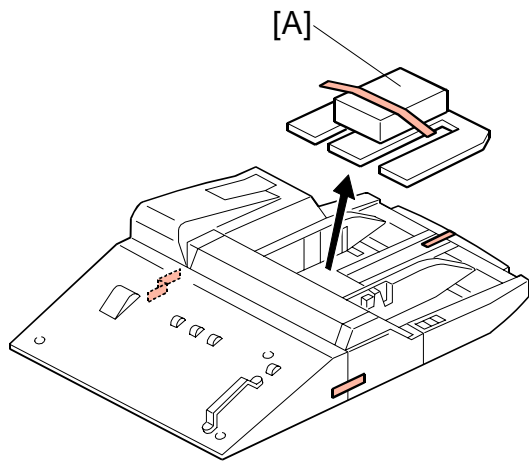
1. Remove the accessory packet [A].
2. Remove all other tape and shipping materials.
3. Remove the paper slot cover [B] (⚙ x 2) and discard the screws.
4. Use the edge of a fine tip flathead screwdriver to remove the smaller three covers [C].



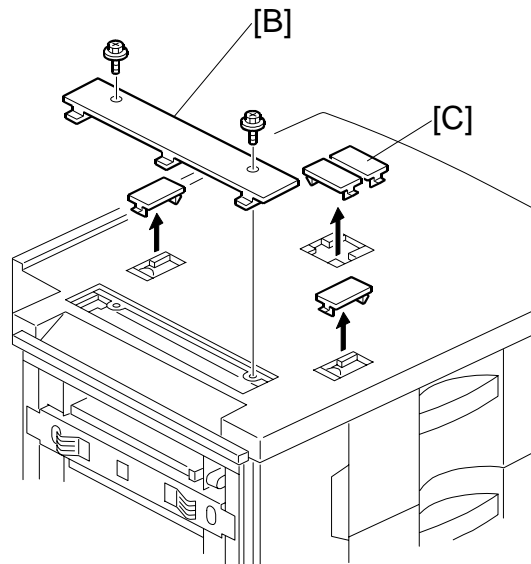
5. Screw in the guide pins [A].
6. Attach the bracket [B] (⚙ x 1).
7. Grip the bypass tray unit handle [C] and place your hand under the corner [D] diagonal to the handle, lift the unit and set it on top of the LCT.
8. Align the embossed arrows on the top left cover [E] of the bypass tray with the arrows on the LCT top.
9. Fasten the bypass tray to the right bracket [F] (⚙ x 1).



B8331107.WMF

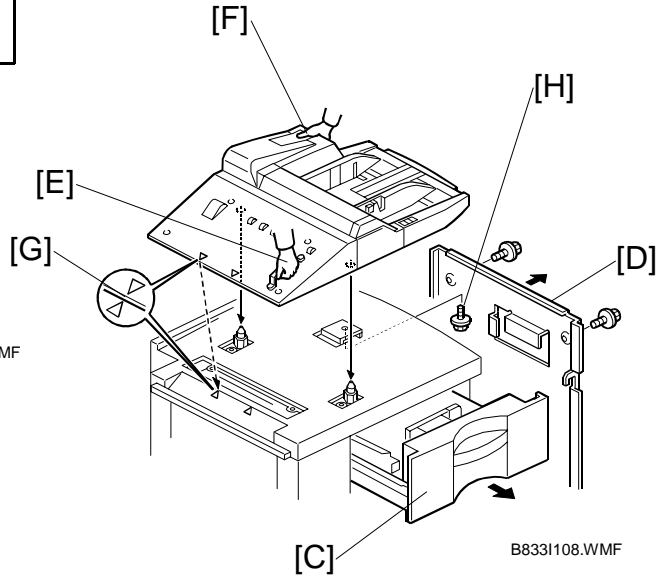
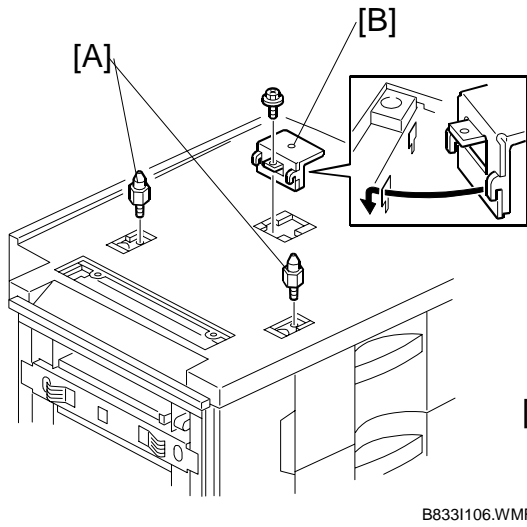
**LCIT RT5010 B834**

B8331102.WMF



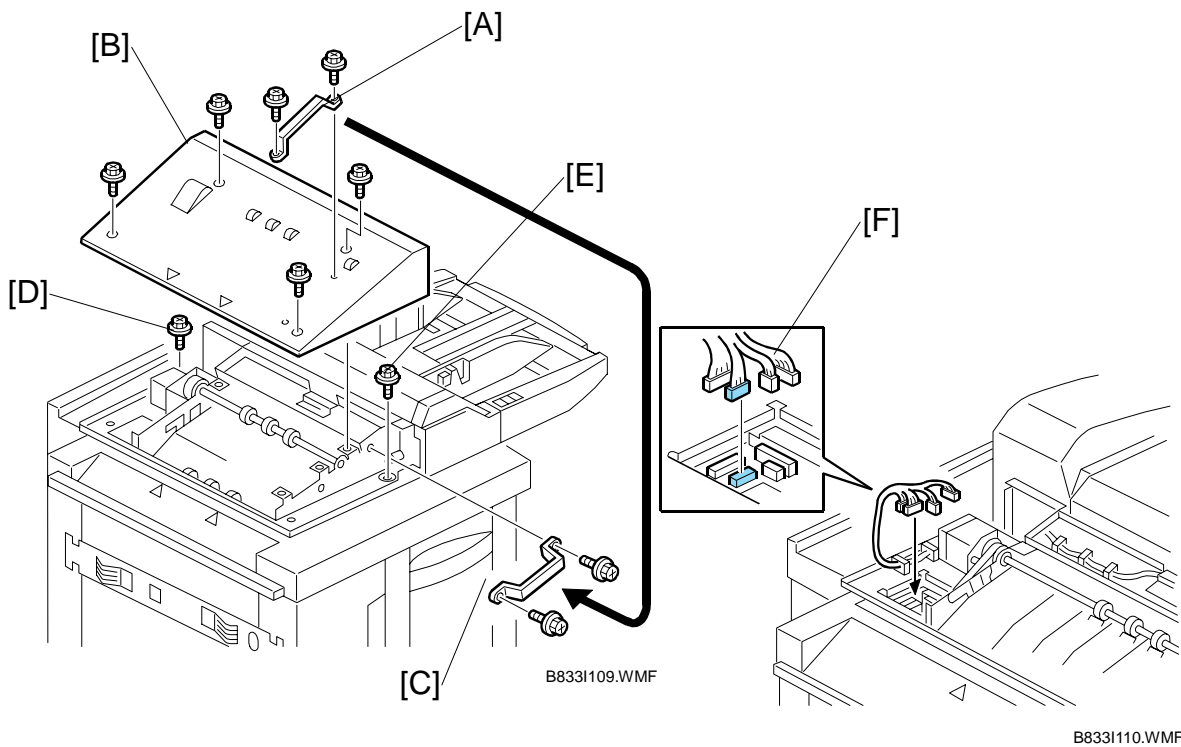
B8331105.WMF

1. Remove the accessory packet [A].
2. Remove all other tape and shipping materials.
3. Remove the paper slot cover [B] (⚙ x 2) and discard the screws.
4. Use the edge of a fine tip flathead screwdriver to remove the smaller four covers [C].



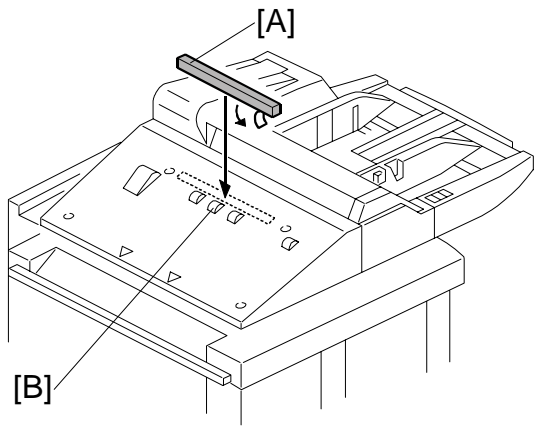
5. Screw in the guide pins [A].
6. Attach the bracket [B] (⚙ x 1).
7. Open Tray 1 [C].
8. Remove the right cover [D] (⚙ x 6).
9. Grip the bypass tray unit handle [E]. Then place your hand under the corner [F] diagonal to the handle, then lift the unit and set it on top of the LCT.
10. Align the embossed arrows on the top left cover [G] of the bypass tray with the arrows on the LCT top.
11. Under the top of the LCT, attach the lock screw [H].
12. Close Tray 1, and then reattach the right cover.

**LCIT RT5000 B832/LCIT RT5010 B834**

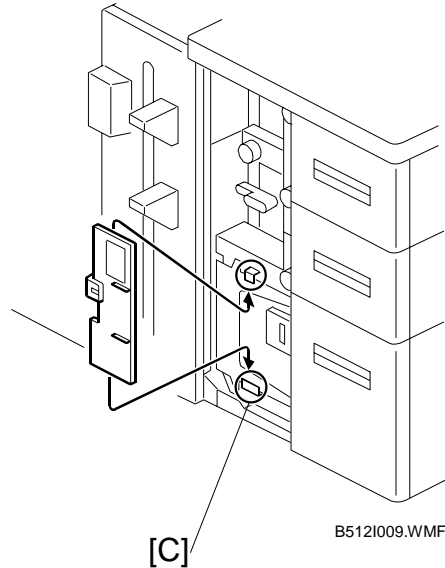


1. Remove the handle [A] (⚙ x 2). Save these screws.
2. Remove the cover [B] (⚙ x 4).
3. Use the screws removed above to attach the handle [C] to the front frame.
4. Fasten the bypass tray rear frame [D] to the LCT (⚙ x 1).
5. Fasten the bypass tray front frame [E] to the LCT (⚙ x 1).
6. Connect the bypass tray harness [F] to the LCIT (🔌 x4).
7. Re-attach the cover [B].





B833I111.WMF



B512I009.WMF

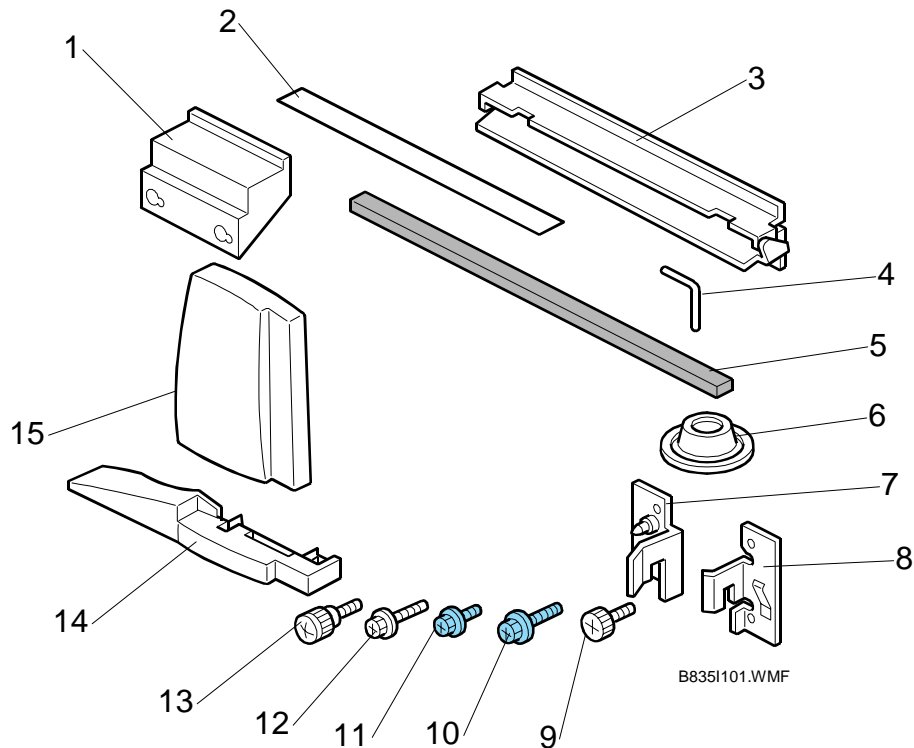
8. Remove the tape from the sponge strip [A] and attach it to the top left cover of the bypass tray.
9. Position the strip in the center above the three roller housings [B].  
**NOTE:** The sponge strip prevents paper or other objects from accidentally falling between the output tray and the left cover.
10. Attach the end fence (follow the instructions on the decal attached to the top of the bypass tray).  
**NOTE:** Open the LCT front door. Hang the tab sheet fence on the hooks [C] on top of the LCT tab fence. When feeding tab sheets from the bypass tray, follow the decal instructions on the tab fence to install the fence.

## 1.8 COVER INTERPOSER TRAY CI5000 (B835)

### 1.8.1 ACCESSORIES

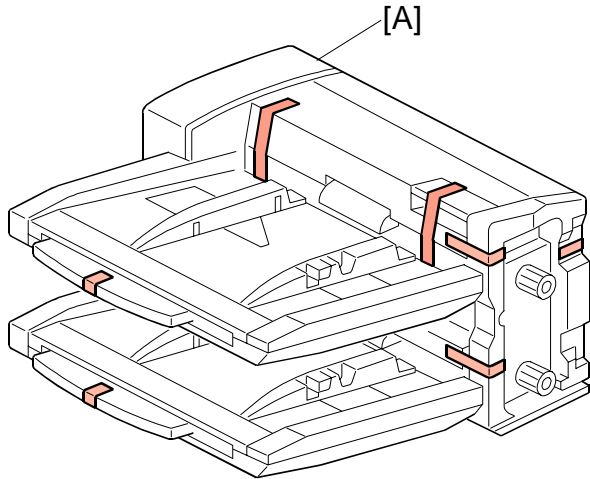
Check the quantity and condition of the accessories in the box against the following list.

Description	Q'ty
1. Spacer.....	1
2. Black Mylar .....	1
3. Relay Guide Plate .....	1
4. "L" Hinge Pins (Tray Unit Front Cover) .....	2
5. Sponge Strip .....	1
6. Leveling Shoes .....	4
7. Rear Docking Bracket.....	1
8. Front Docking Bracket.....	1
9. Flat Knob Screw.....	1
10. Screw (M4 x 8).....	4
11. Screw (M3 x 6).....	2
12. Screw (M4 x 12).....	2
13. Knob Screw.....	3
14. Base Cover (Tray Unit) .....	1
15. Rear Cover.....	1

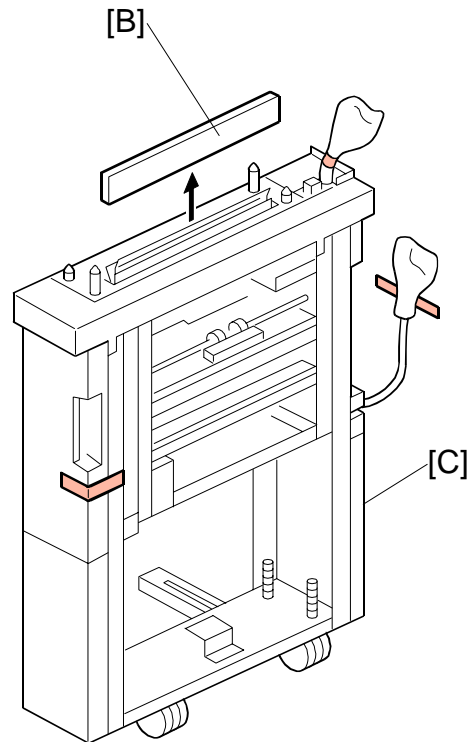


## 1.8.2 INSTALLATION

### *Setting Up the Unit and Docking to the Copier*



B8351102.WMF

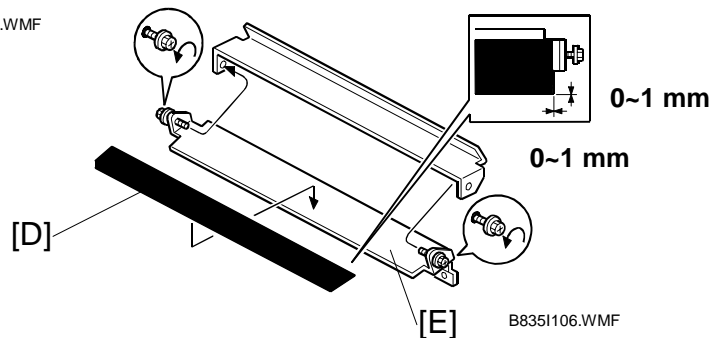
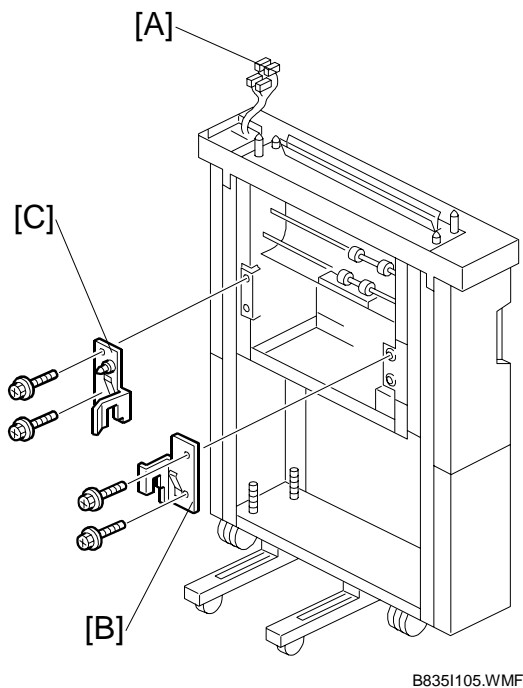


B8351103.WMF

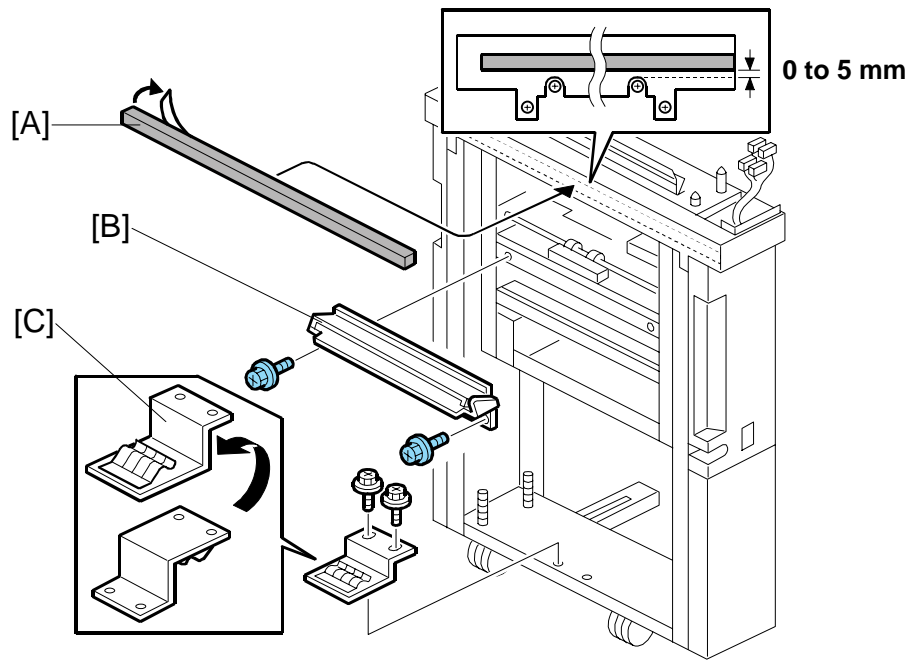
**⚠ CAUTION**

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

1. Remove all the tape and shipping materials from the tray unit [A].
2. Remove cover [B].
3. Remove all tape and shipping materials from the transport unit [C].

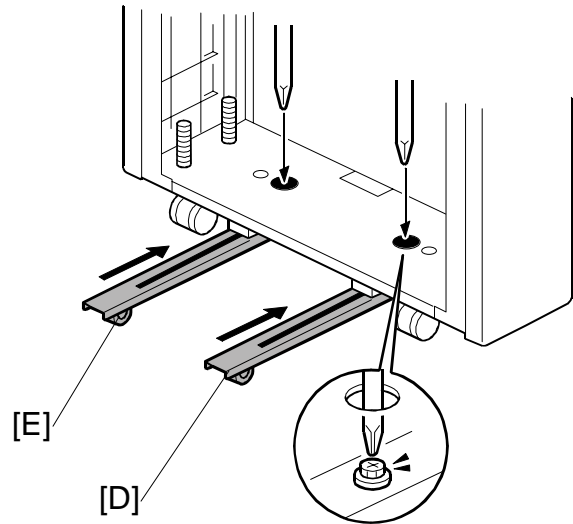
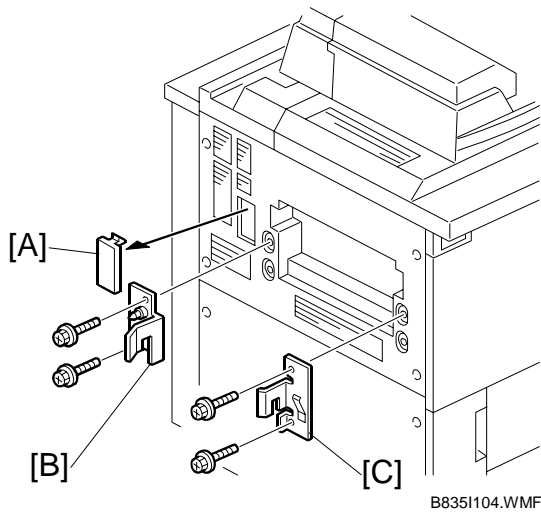


4. Confirm that the connectors [A] are free.
5. Attach the front docking plate [B] (⌀ x2).
6. Attach the rear docking plate [C] (⌀ x2).  
**NOTE:** These are the docking plates for the next device to be installed in the paper feed line.  
**NOTE:** The shape of the docking plate may be different from that in the illustration depending on the next device
7. Attach the black mylar [D] to the relay guide plate [E] of the next finishing device to be installed to the left of the cover interposer tray (Z-folding unit, booklet finisher, or finisher).

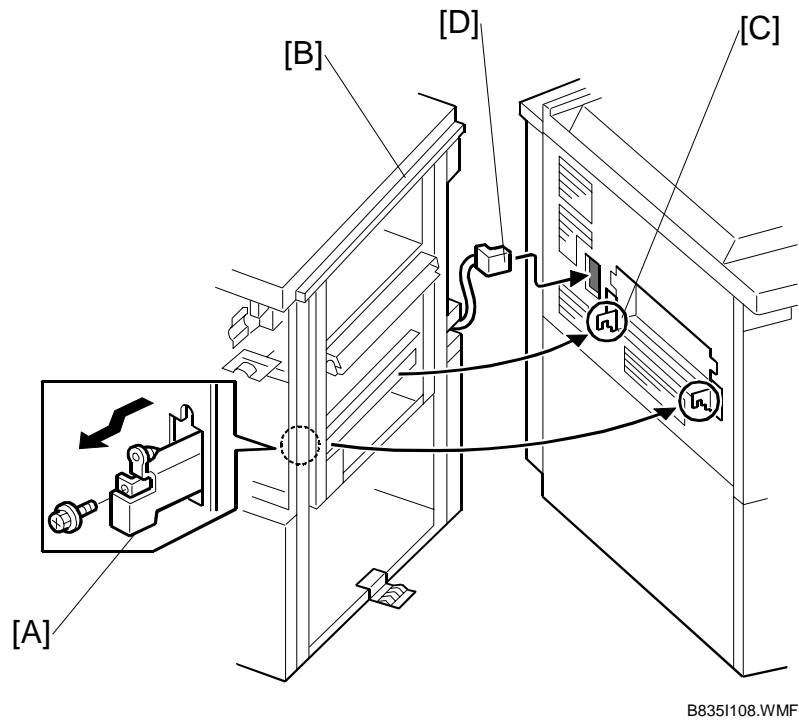


B8351107.WMF

8. Peel the tape from the back of the sponge strip [A] and attach it as shown.
9. Attach the relay guide plate [B] (⚙️ x2).
10. Remove the ground plate [C] from the bottom cross-piece (⚙️ x2).
11. Turn the ground plate over.
12. Reattach the ground plate with the same screws as shown (⚙️ x2).



13. Remove the interface connector cover [A].
14. Attach the rear docking bracket [B] (⚙ x2).
15. Attach the front docking bracket [C] (⚙ x2).
16. If the Z-Folding Unit will be installed, loosen the screws for the rear runner [D] and front runner [E].
17. Push the runners in and re-fasten them again with the screws.



18. Open the front door of the cover interposer tray.
19. Pull out the locking lever [A].
20. Align the finisher [B] with the joint brackets [C], and then slowly push the finisher onto the brackets.
21. Connect the finisher cable [D] to the copier
22. Push in the locking lever [A].
23. Check that the top edges of the finisher are parallel with edges of the finisher (or copier) to the right.
24. Fasten the locking lever [A] (⚙ x 1)
25. Close the front door.

### ***Docking the Next Peripheral Device***

The next peripheral device to the left of the cover interposer tray must be installed before you can mount the tray unit on top of the transport unit of the cover interposer tray.

- The tray unit of the cover interposer tray is supported by the top of the next peripheral device in line to the left, as well as the transport unit of the cover interposer tray.
- The next peripheral device to the left of the cover interposer tray must be set up and docked to the cover interposer tray before the transport unit of the cover interposer tray can be mounted.

The table below shows which section to see for instructions on connecting the cover interposer tray.

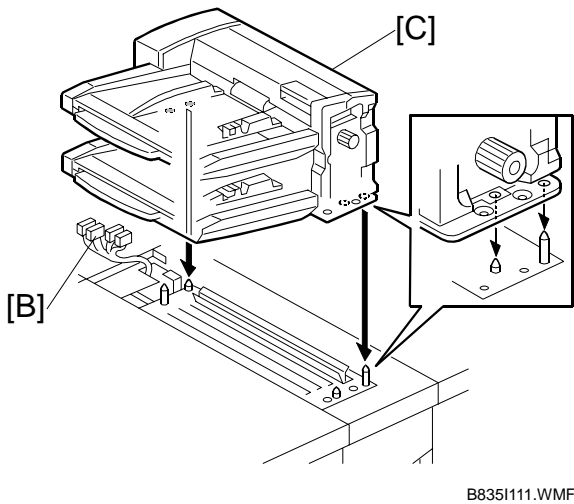
<b>Connect Cover Interposer Tray</b>	
Z-Folding Unit (B660)	(☛1.9 )
Booklet Finisher BK5000 (B836)	(☛1.10)
Finisher SR5000 (B830)	(☛1.11)

#### **⚠ CAUTION**

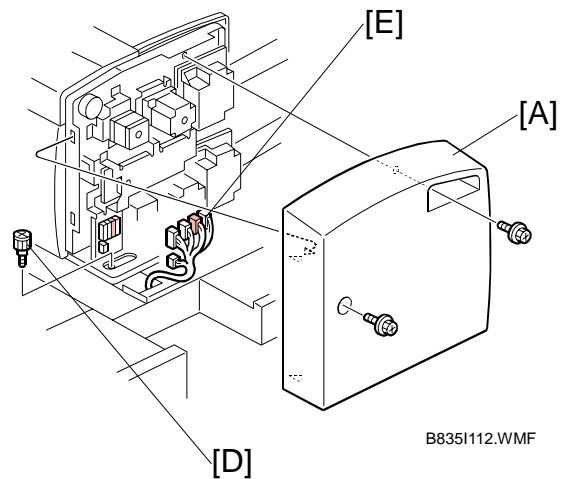
- **Never attempt to mount the cover interposer tray until the next device in line (Z-Folding Unit B660, Booklet Finisher BK5000 B836, or Finisher SR5000 B830) has been docked to the transport unit (base) of the cover interposer tray.**
- **To prevent bending the frame of the tray unit and damaging its alignment, always remove the tray unit from the cover interposer tray transport unit: 1) before disconnecting either the cover interposer tray or the next peripheral device to the left, or 2) before doing any maintenance on either the cover interposer tray or the next peripheral device to the left.**



### Mounting the Tray Unit

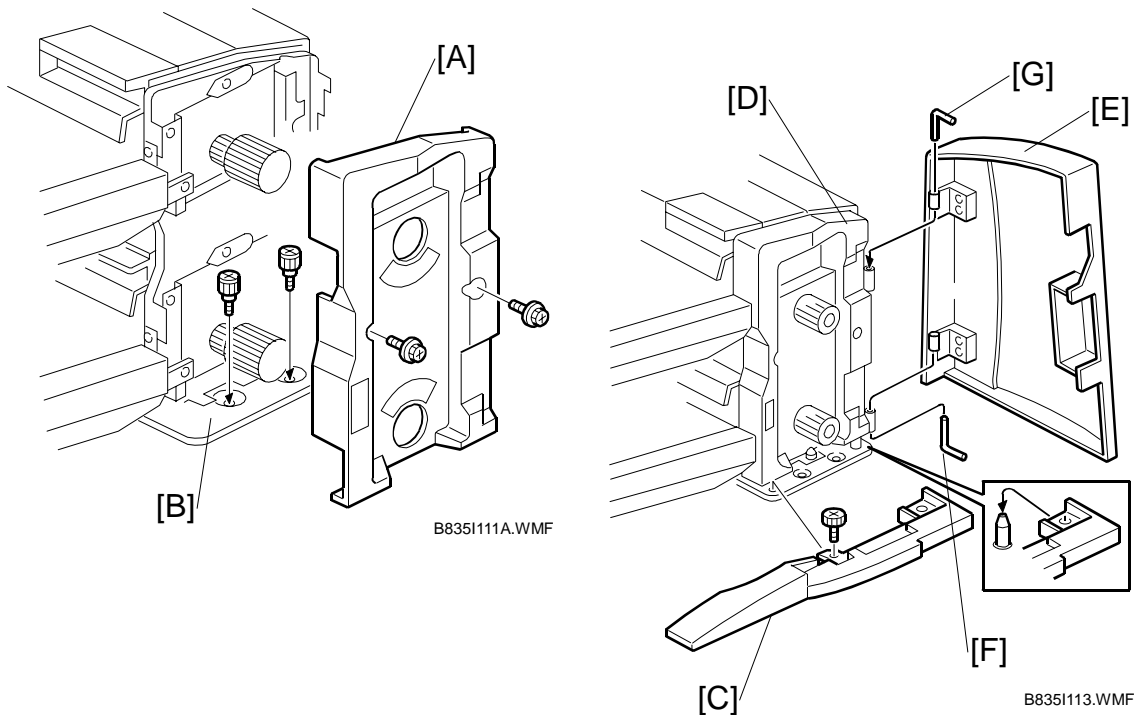


B835I111.WMF

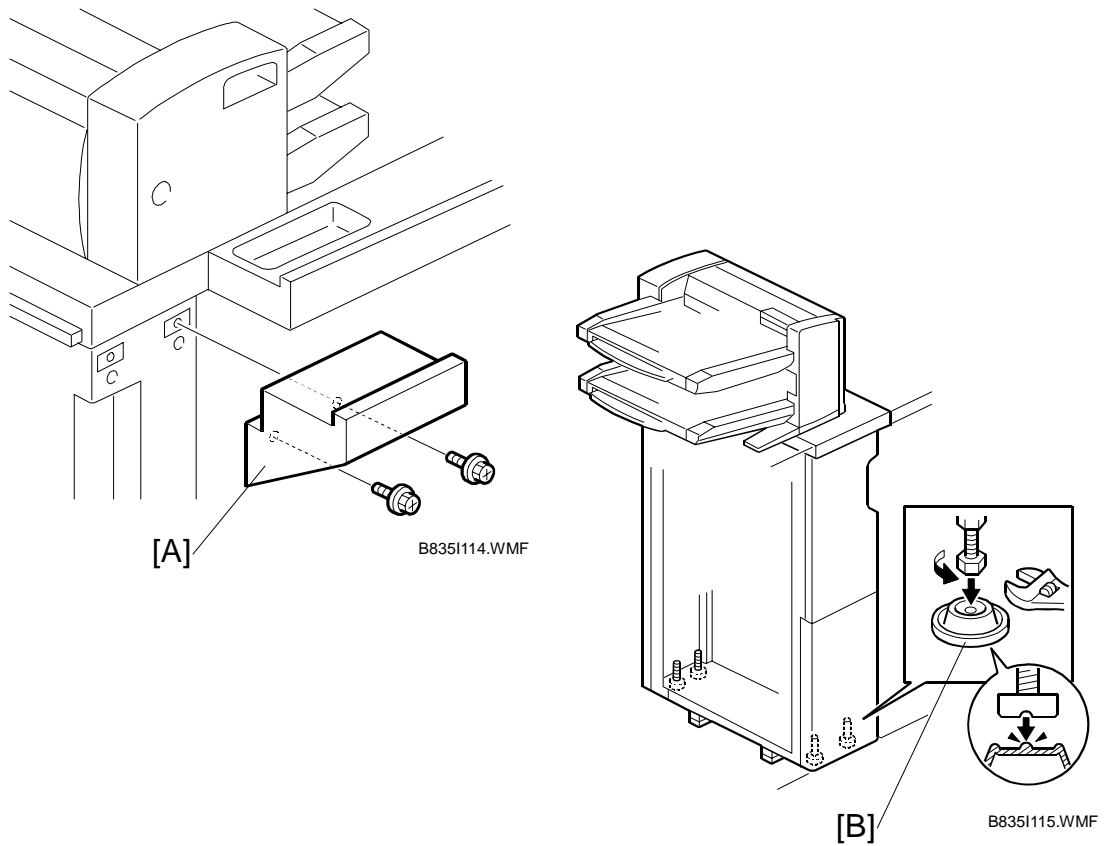


B835I112.WMF

1. Remove the rear cover [A] (⚙️ x2).
2. Confirm that the connectors [B] are free.
3. Place the tray unit [C] on top of the cover interposer transport unit.
4. Attach the knob screw [D] (⚙️ x1).
5. Connect the harness connectors [E] (🔌 x5)
6. Reattach the rear cover.



7. Remove the front inner cover [A] from the dual tray (⚙️ x2).
8. Fasten the tray unit to the top of the transport unit with the knob screws [B] (⚙️ x2).
9. Attach the base cover [C] (⚙️ x1).  
**Important:** Make sure the holes in the cover are matched with the positions of the reference pins.
10. Re-attach the front inner cover [D] (removed at [A] above).
11. Position the tray unit front door [E] so its hinges match the posts on the frame of the tray unit.
12. Hold the lower L-pin [F] as shown, insert it halfway, push it up, then rotate it into its groove.
13. Hold the upper L-pin [G] as shown, insert it halfway, push it down, then rotate it into its groove.



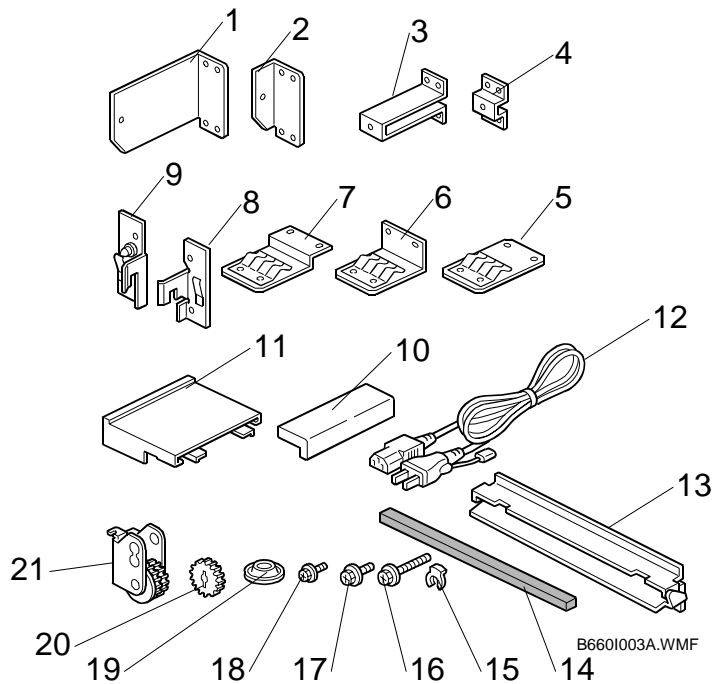
14. Attach the spacer [A] to the rear of the transport unit (⚙ x2).
15. Set the leveling shoes [B] (x4) under the feet.
16. Turn the nuts to adjust the height of the cover interposer until it is level.

# 1.9 Z-FOLDING UNIT ZF4000 (B660)

## 1.9.1 ACCESSORY CHECK

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

Description	Q'ty
1. Lock Bracket – Rear (Cover Interposer Tray) .....	1
2. Lock Bracket – Rear .....	1
3. Lock Bracket – Front (Cover Interposer Tray)*1 .....	1
4. Lock Bracket – Front.....	1
5. Ground Plate (Cover Interposer Tray) .....	1
6. Ground Plate (Z-folding unit) .....	1
7. Ground Plate (Finisher or Cover Interposer Tray) .....	1
8. Right Docking Bracket.....	1
9. Left Docking Bracket .....	1
10. Front Spacer .....	1
11. Rear Spacer .....	1
12. Power Cord.....	1
13. Guide Plate .....	1
14. Sponge Strip .....	1
15. Teflon C-Clamp.....	2
16. Screws M4x10 .....	4
17. Screws M3 x 6 .....	8
18. Screws M4 x 8 .....	4
19. Leveling Shoes .....	3
20. Drive Gear (Black - for e-STUDIO1351 only) .....	1
21. Drive Gear Assembly (Black - for e-STUDIO1351 only) .	1

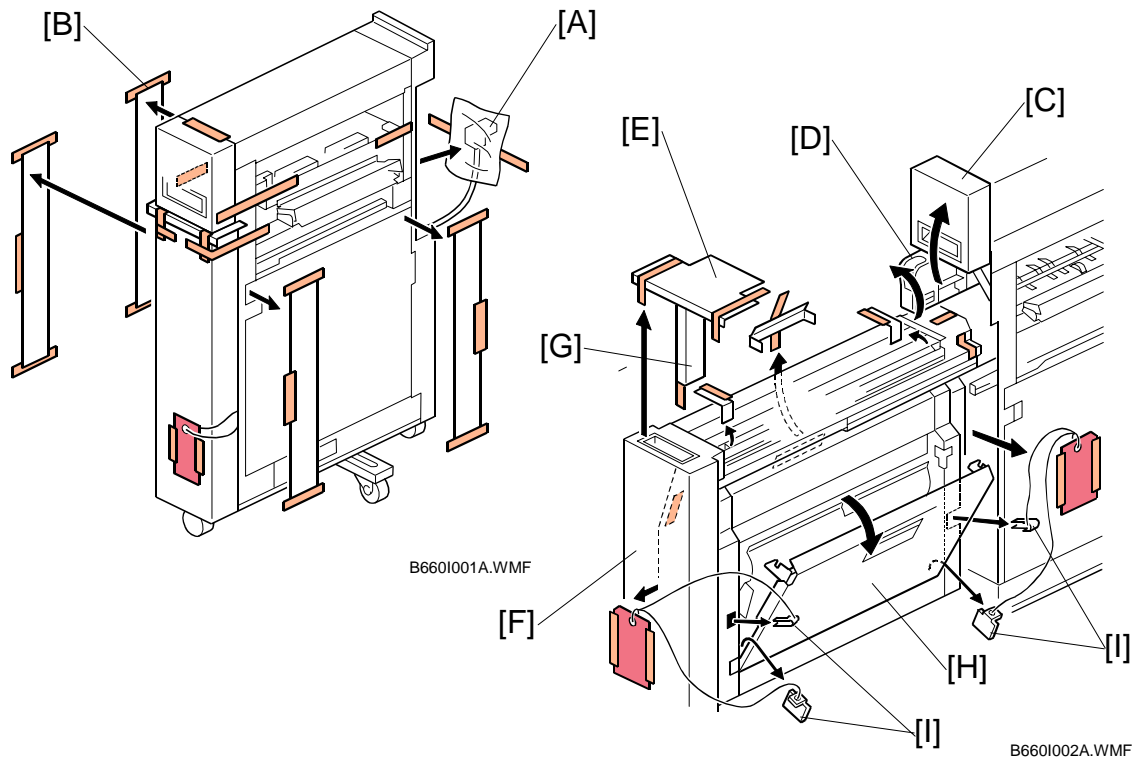


## 1.9.2 INSTALLATION

### ⚠ CAUTION

Always switch the machine off and unplug the machine before doing any of the following procedures.

#### Unpacking



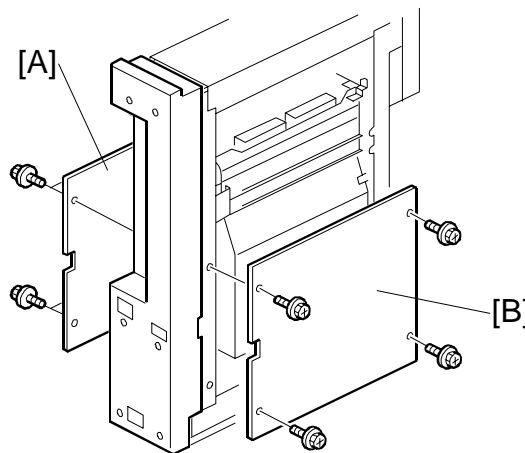
1. Detach the head of the I/F connector [A].
2. Remove all external tape [B] and shipping materials.
3. Open the front door [C].
4. Raise the horizontal transport plate [D] and remove the cushion [E].
5. Pull out the Z-folding mechanism [F] and remove the cushion [G].
6. Open the right vertical transport cover [H] completely (2 steps).
7. Remove six screws and take off the front cover, and remove four spacers [I] by pulling on the string.

**Replacing the Gear for e-STUDIO1351 only**

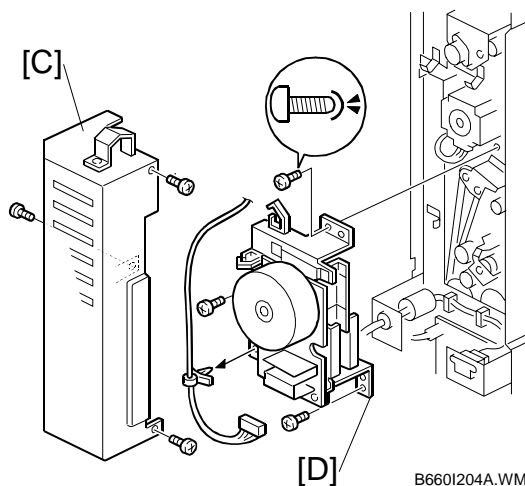
**Important:**

- This procedure is not required for e-STUDIO901 and e-STUDIO1101.
- Do this procedure only for e-STUDIO1351. The gear replacement must be done to accommodate the faster line speed of the 135 cpm.
- If the gears are not replaced in the e-STUDIO1351, this could cause paper jams.

1. Remove the right cover [A] (⚙️ x5)
2. Remove the left cover [B] (⚙️ x4)
3. Pull out the Z-folding mechanism.
4. Remove the motor cover [C] (⚙️ x3).
5. Remove the feed motor assembly [D] (🔌 x1, ⬅️ x3 ⚙️ x3).

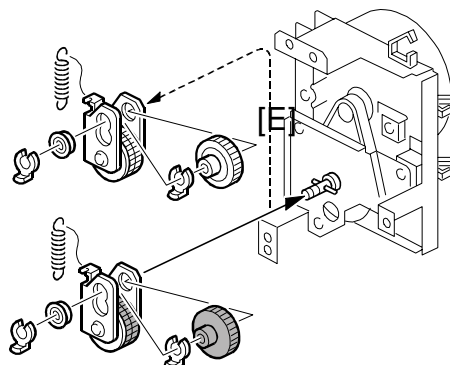


B660I203A.WMF

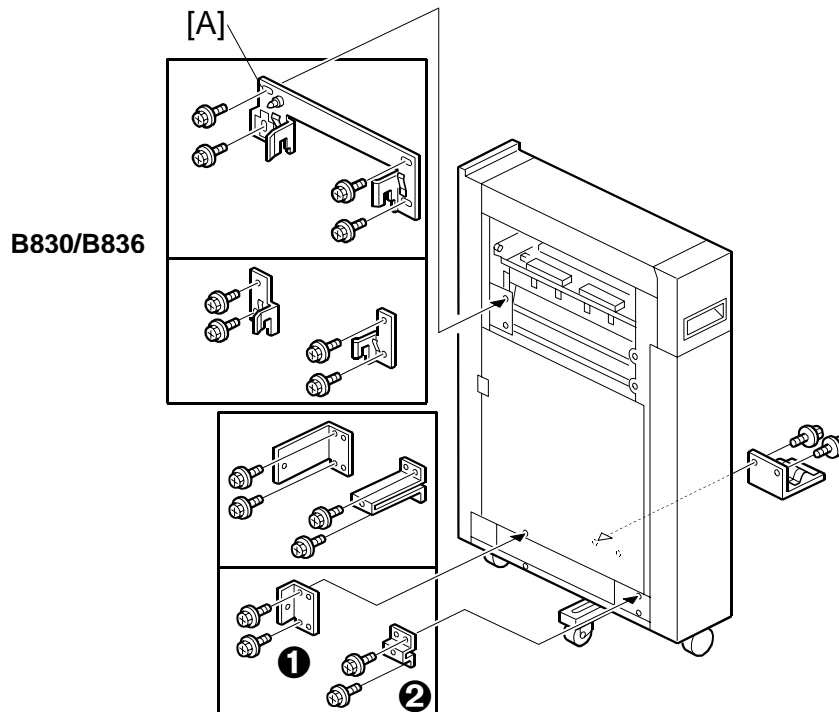


B660I204A.WMF

6. Remove the white gear [E] (spring x1, ⚙️ x2).
7. Apply a small amount of grease to the black gear [F] provided with the accessories, and then install it (spring x1, ⚙️ x2).



[F] B660I205.WMF

**Attaching the Brackets**

B660I004A.WMF

**e-STUDIO901/1101/1351**

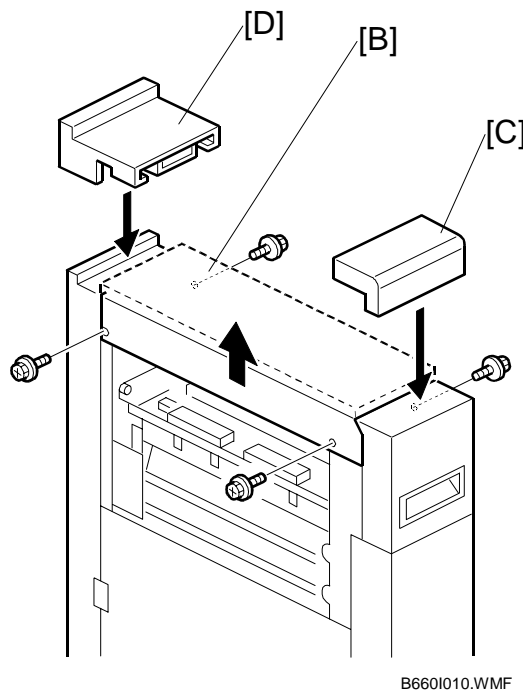
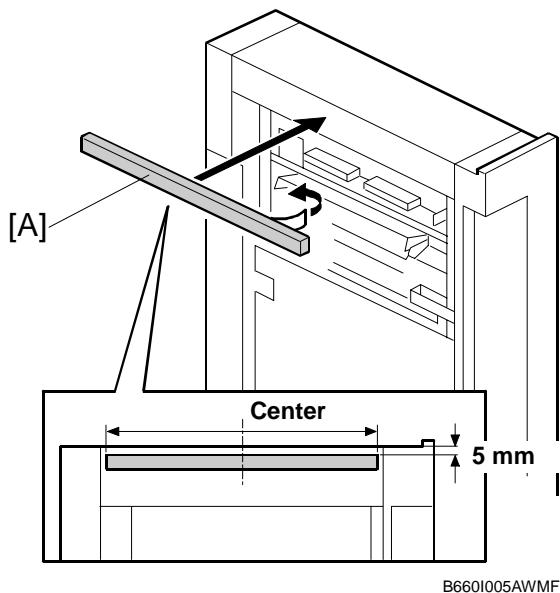
1. Attach the long connection bracket [A] to the unit (Finisher B830 or Cover Interposer Tray B835) to the left of the Z-folding unit (⚙ x4 M4x10).

**NOTE:** Use the long screws provided with the Z-folding unit accessories.

2. Attach the brackets to the lower left corner of the Z-folding unit.

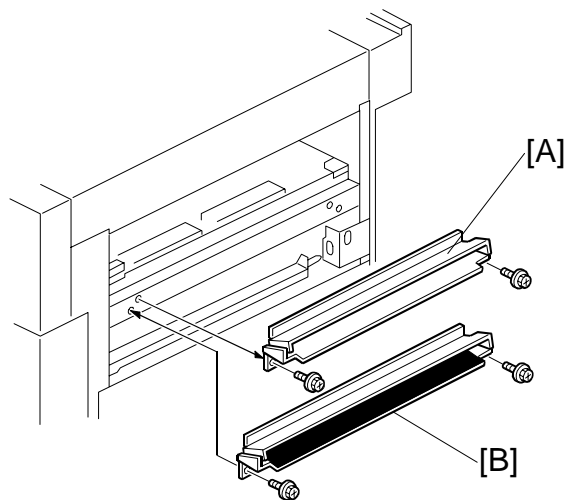
**Important**

- If the Finisher B830 will be docked to the Z-folding unit, attach only bracket ❶ (⚙ x2).
  - If the Booklet Finisher B836 will be docked to the Z-folding unit, attach both brackets ❶ and ❷ (⚙ x2 ea.).
3. Attach the ground (earth) plate [B] to the side of the Z-folding unit facing the copier.

**Preparing for Docking**

1. Remove the seal from the sponge [A] and attach it to the Z-folding unit.
2. Remove the top cover [B] (⚙ x 4).
3. Remove the seal from the double-sided tape on the bottom of the front spacer [C], and then attach the front spacer [C].
4. Remove the seal from the double-sided tape on the bottom of the rear spacer [D], and then attach the rear spacer [D].  
**NOTE:** The spacers align the top of the Z-folding unit with the edge of the Copier.
5. Reattach the top cover [B] (⚙ x 4).  
**NOTE:** Make sure that the top cover is level with the tops of the rear and front spacers.



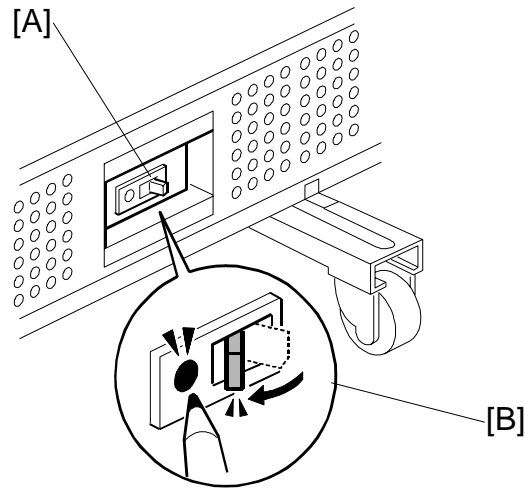


B660I003B.WMF

6. Replace the entrance guide plate [A] with the longer guide plate [B] provided with the accessories (2 x 2).

**Important:** Attach the mylar as shown in the illustration only to the guide plate provided with the Cover Interposer Tray B835.

### Testing the Breaker

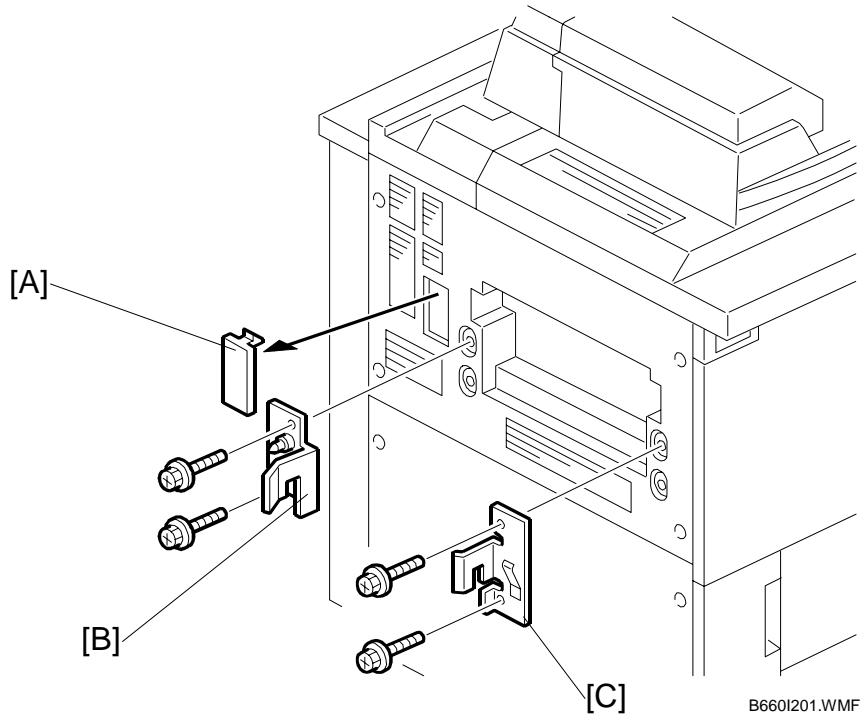


B660I003C.WMF

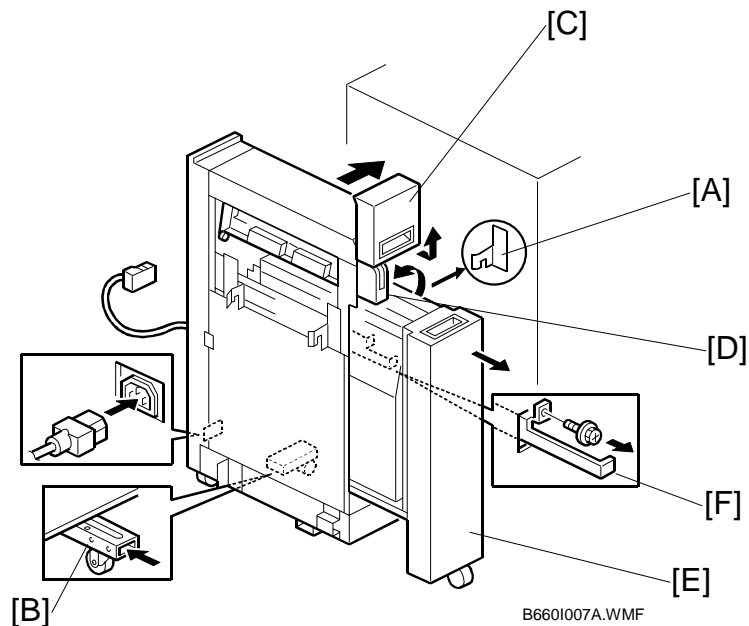
1. The breaker switch is at the lower right side of the Z-folding Unit. Confirm that the manual breaker switch [A] is set to the right.  
**NOTE:** When the breaker switch is set to the right (the "—" mark will be visible) the copier is ready to be turned on.
2. Connect the Z-folding Unit power cord to the Z-folding Unit and connect the other end of the cord to an AC power source.
3. Push in the breaker test button with the tip of a screw driver until the breaker switch snaps to the OFF position [B].
4. Confirm that the breaker switch is at the OFF position [B].
5. If the breaker switch does not move to the OFF position:
  - Confirm that the power cord is securely connected to the power supply.
  - Push the test button again.
  - If the breaker switch does not snap to the OFF position, the breaker switch must be replaced.
6. Reset the breaker switch to the ON position [A].



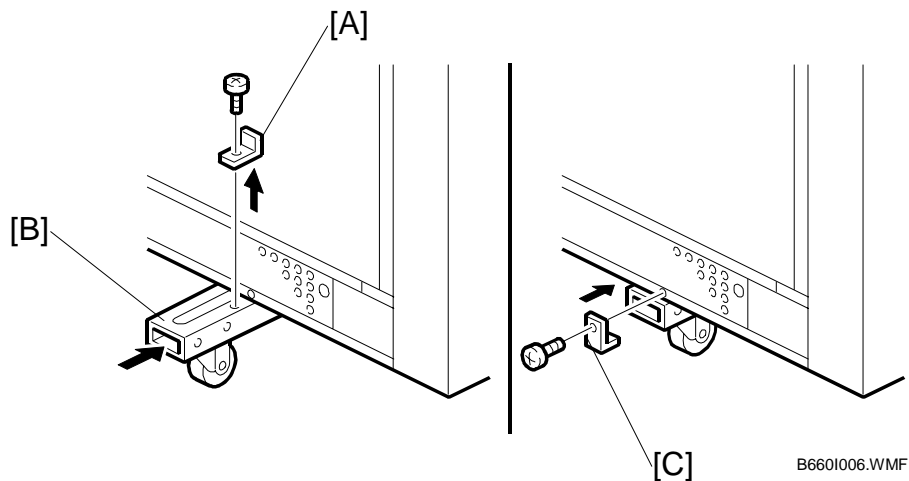
*Z-Folding Unit B660 → Copier*



1. Remove the connector plate [A] from the Copier.
2. Attach the rear docking bracket [B] to the Copier.
3. Attach the front docking bracket [C] to the Copier.
4. Connect the Z-folding unit to the Copier.

**Connecting the Z-Folding Unit B660**

1. Fasten brackets [A] (x2) (provided accessories) to the Cover Interposer Tray B835 (or Copier) (⚙ x 2 each).
2. Remove support screw and bracket [B], push in the support, then reattach the screw and bracket.
3. Pull the top cover [C] toward you then raise it.
4. Raise the horizontal transport plate [D] to the left.
5. Pull out the Z-folding mechanism [E].
6. Pull out the Z-folding unit lock lever [F] (⚙ x 1).
7. At the right bottom edge of the Z-folding unit, confirm that the breaker switch is ON.  
**NOTE:** This switch should display “—”. If you see “O”, set the switch to “—”.  
 The machine will not recognize the Z-folding unit if this switch is OFF.
8. Dock the Z-folding unit to the cover interposer tray (or Copier).
9. Push in the lock lever [F] and fasten it (⚙ x 1).
10. Push in the Z-folding mechanism [E], lower the horizontal transport plate [D], and then close the front cover [C].
11. Connect the Z-Folding unit to the copier.



12. At the left bottom edge of the Z-folding unit, remove the bracket [A] (⚙ x 1).
13. Push in the support [B].
14. Reattach the bracket [C] (⚙ x 1).

**⚠ CAUTION****With the support retracted, the Z-folding unit tips easily!**

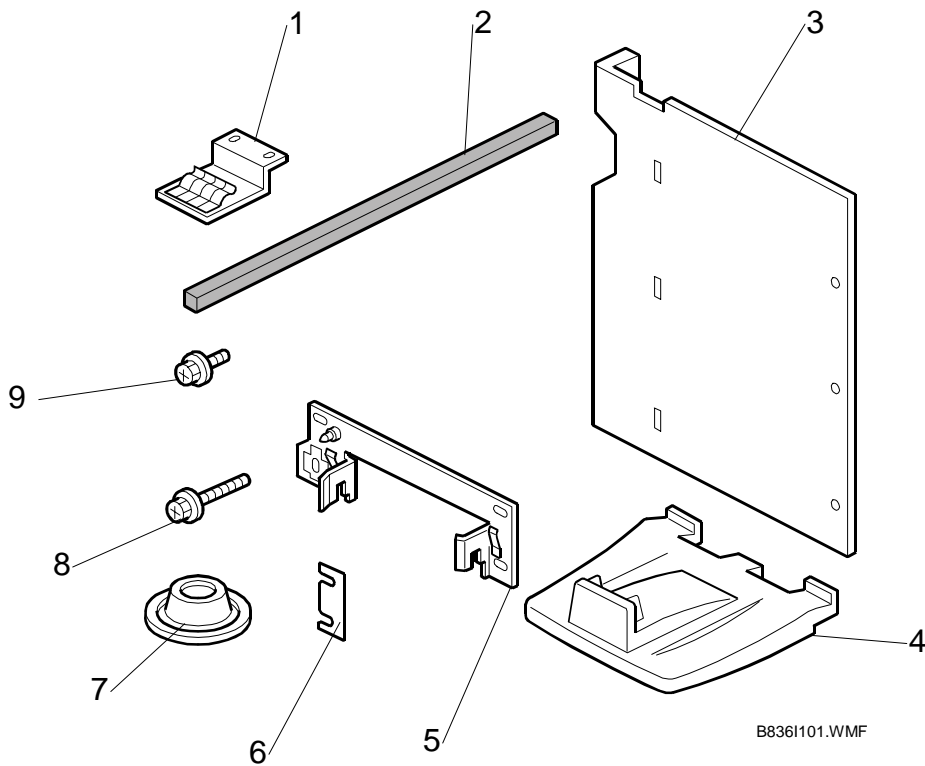
15. Attach the I/F cable to the cover interposer tray (or Copier).
16. Connect the power cord to the Z-folding unit.

## 1.10 BOOKLET FINISHER BK5000 (B836)

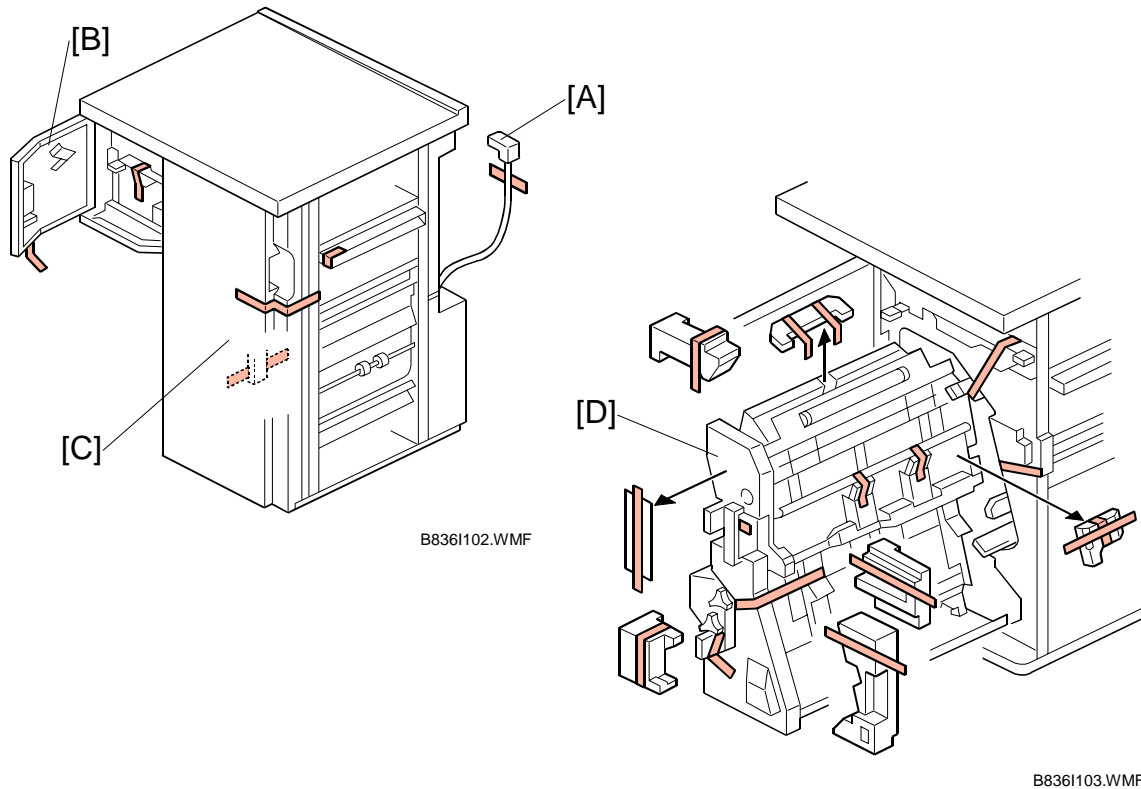
### 1.10.1 ACCESSORIES

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

Description	Q'ty
1. Ground (earth) plate.....	1
2. Sponge Strip .....	1
3. Right Cover (For B830) .....	1
4. Output Tray .....	1
5. Joint Bracket .....	1
6. Spacers (attached to base plate with screws).....	2
7. Leveling Shoes .....	3
8. Tapping Screw (M4 x 14).....	4
9. Tapping Screw (M3 x 6).....	8



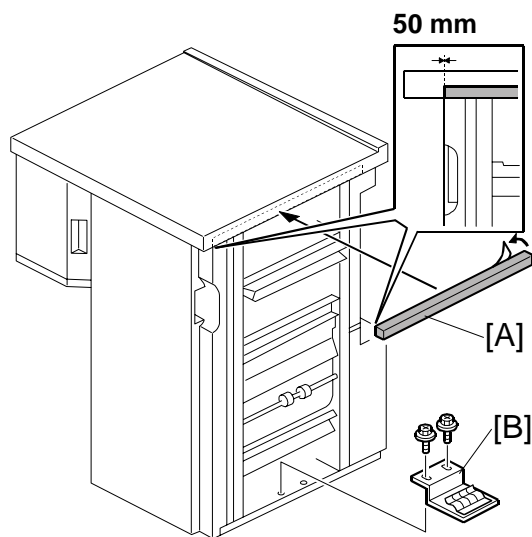
## 1.10.2 INSTALLATION



1. Remove all external filament tapes and shipping materials.
2. Remove the tape from the interface connector [A].
3. Open the small front door [B].
4. Remove all tapes and packing materials.
5. Open the large front door [C].
6. Pull the jogger unit [D] out of the finisher.
7. Remove all tapes and retainers.

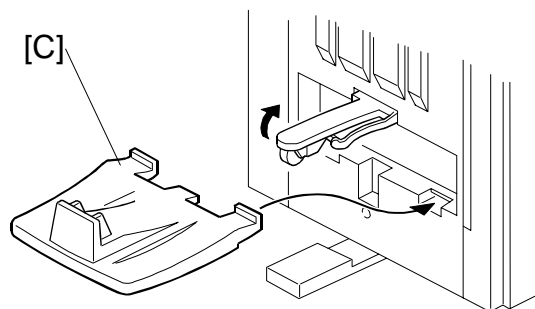


8. Remove the strip from the sponge cushion [A].
9. Attach the cushion to the finisher as shown.
10. Use a short screwdriver to attach the grounding plate [B] (⌀ x 2, M3 x 6).



B8361105.WMF

11. Attach the output tray [C].



B8361107.WMF

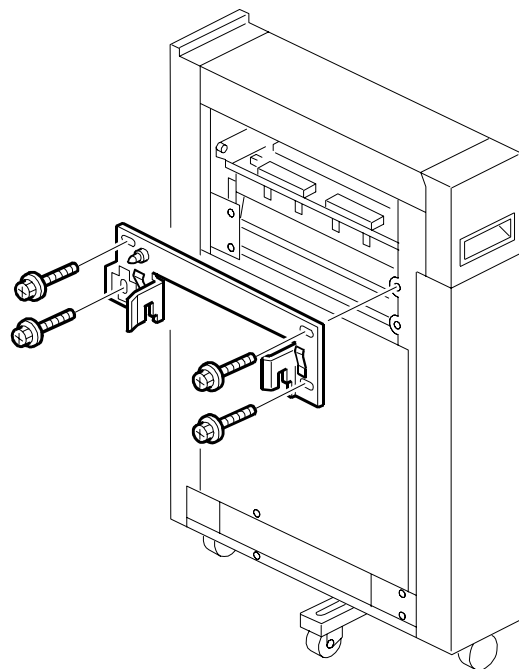
***Docking the Booklet Finisher B836***

The Booklet Finisher B836 is docked to:

- Z-folding unit
- Cover Interposer tray (when Z-folding unit is not installed).
- Copier (when neither Z-folding unit nor cover interposer tray is installed).

***Booklet Finisher B836 → Z-Folding Unit (B660)***

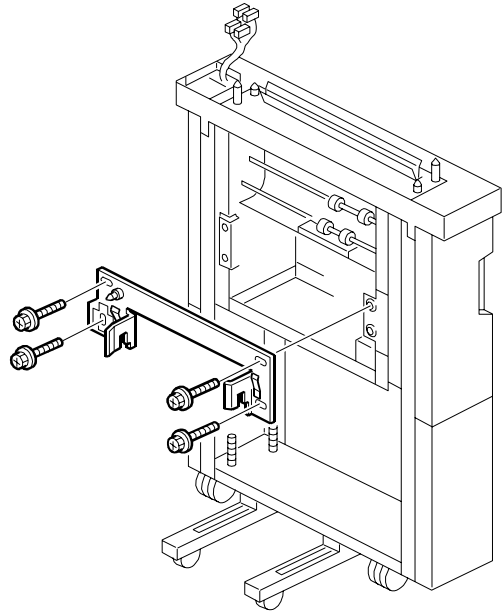
1. Fasten the joint bracket to the Z-Folding Unit B660. (⚙ x4 M4x10)
2. Dock the finisher. (Go to “Connecting the Booklet Finisher B836”)



B836I202.WMF

***Booklet Finisher B836 → Cover Interposer Tray B835***

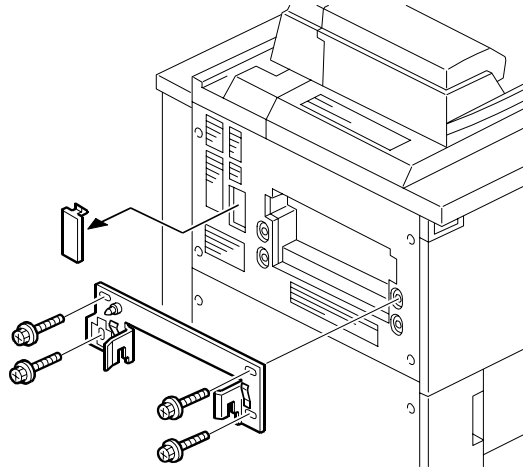
1. Fasten the joint bracket to the Cover Interposer Tray B835. (⚙ x4 M4x14)
2. Dock the finisher. (Go to “Connecting the Booklet Finisher B836”)



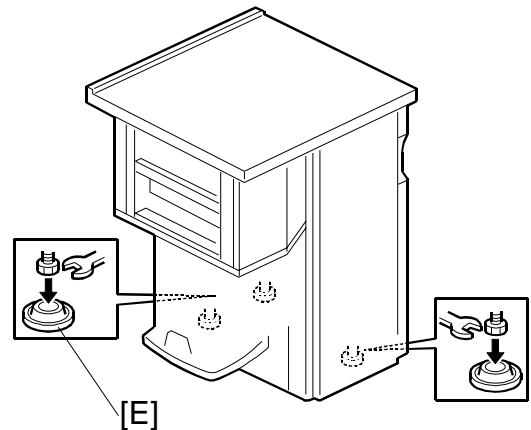
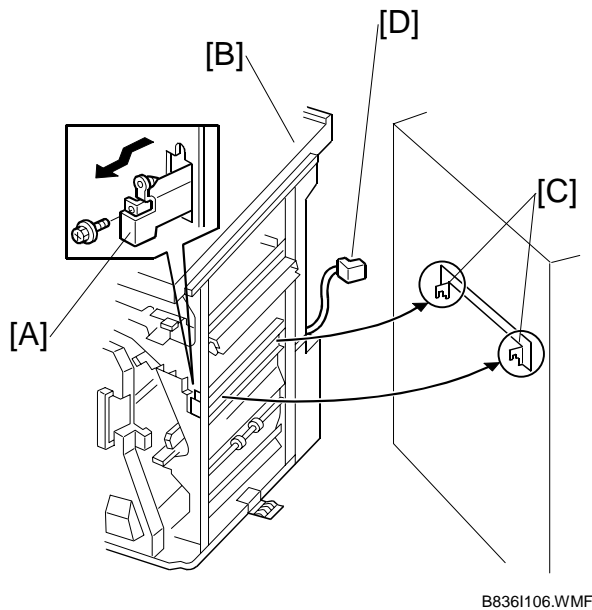
B8361201.WMF

***Booklet Finisher B836 → Copier***

1. Remove the connector cover
2. Fasten the joint bracket to the Copier (⚙ x4 M4x14).
3. Dock the finisher. (Go to “Connecting the Booklet Finisher B836”)



B8361104.WMF

**Connecting the Booklet Finisher B836**

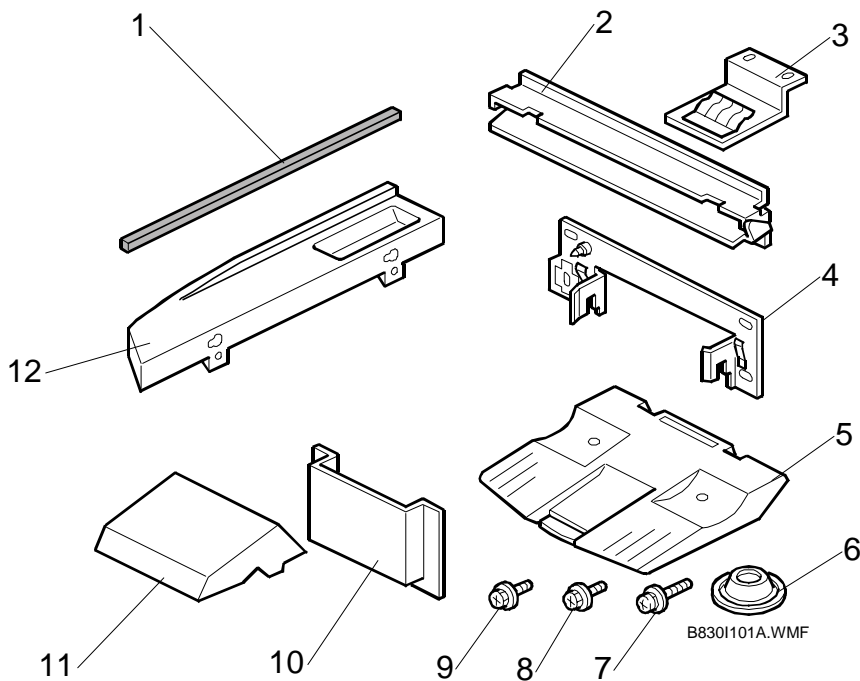
1. Open the front door of the finisher.
2. Pull out the locking lever [A] (🔧 x1).
3. Align the finisher [B] with the joint brackets [C], and then slowly push the finisher onto the joint brackets.
4. Connect the finisher interface cable [D] to the copier
5. Push in the locking lever [A].
6. Check that the top edges of the finisher are parallel with edges of the finisher (or copier) to the right.
7. Fasten the locking lever [A] (🔧 x 1)
8. Close the front door.
9. Set the leveling shoes [E] (x3) under the feet.
10. Turn the nuts to adjust the height of the finisher until it is level.

## 1.11 FINISHER SR5000 (B830)

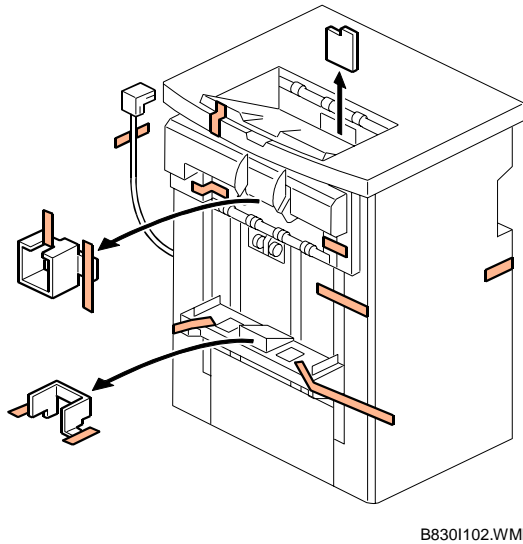
### 1.11.1 ACCESSORIES

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

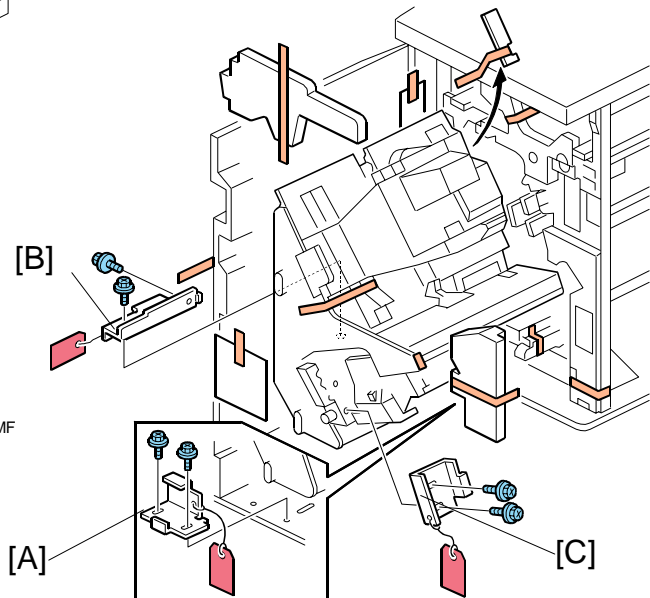
Description	Q'ty
1. Sponge .....	1
2. Entrance Guide Plate .....	1
3. Ground Plate .....	1
4. Joint Bracket .....	1
5. Shift Tray .....	1
6. Leveling Shoes.....	4
7. Tapping Screws – M4 x 12.....	4
8. Tapping Screws – M3 x 6.....	8
9. Tapping Screws – M4 x 8.....	2
10. Support Plate Pocket.....	1
11. Support Plate .....	1
12. Side Tray .....	1



## 1.11.2 INSTALLATION



B8301102.WMF



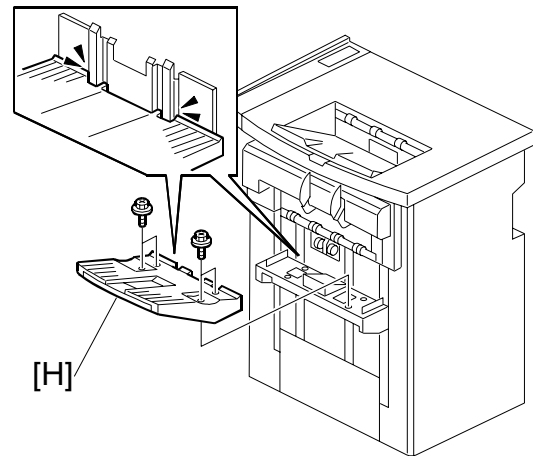
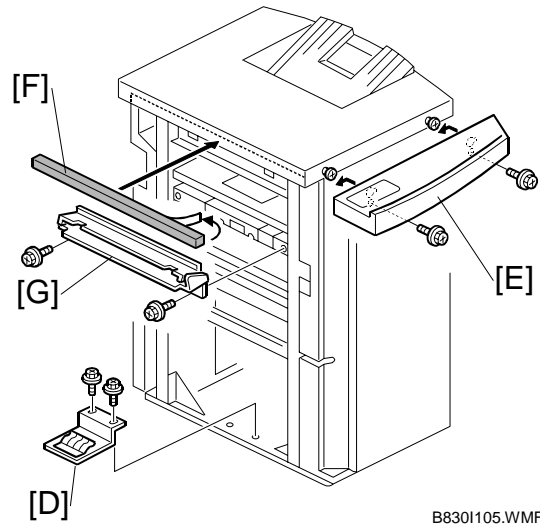
B8301103.WMF

**⚠ CAUTION**

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

1. Unpack the finisher and remove all tapes and shipping retainers.
2. Open the front door and remove the shipping retainers.
3. Remove the brackets with tag and wire in this order: [A]→[B]→[C] (2 x 2 each).

4. Install the ground plate [D] (🔩 x 2) (M3 x 6).  
**NOTE:** Set the ground plate so that there is no gap between the plate and the bottom frame of the finisher.
5. Install the side tray [E] (🔩 x 2) (M4 x 8).  
**NOTE:** The edge of the side tray should be aligned with the edge of the finisher.
6. Attach the sponge [F] to the right side of the finisher upper cover.
7. Install the entrance guide plate [G] (🔩 x 2) (M3 x 6).
8. Insert the shift tray [H] properly into the grooves and fasten it (🔩 x 4) (M3 x 6).



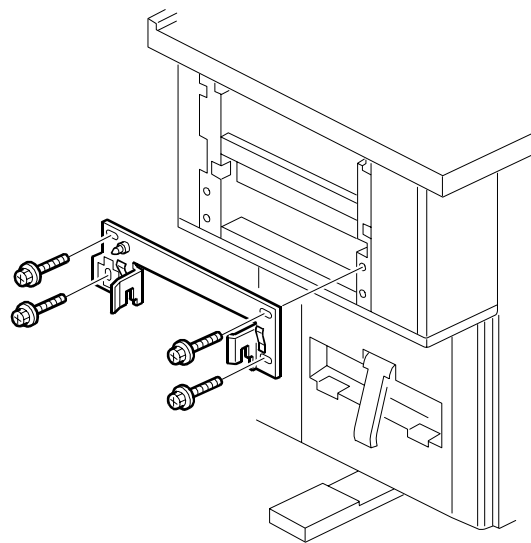
### ***Docking the Finisher B830***

The Finisher (B830) is docked to:

- Booklet Finisher B836
- Z-folding unit B660 (when the Booklet Finisher B836 is not installed.)
- Cover Interposer tray B835 (when Booklet Finisher B836 and Z-Folding Unit B660 are not installed.)
- Copier (when Booklet Finisher B836, Z-Folding Unit B660, and Cover Interposer Tray B835 are all not installed.)

### ***Finisher B830 → Booklet Finisher B836***

1. Install the joint bracket to the Booklet Finisher B836.
2. Dock the finisher. (Go to Connecting the Finisher B830)

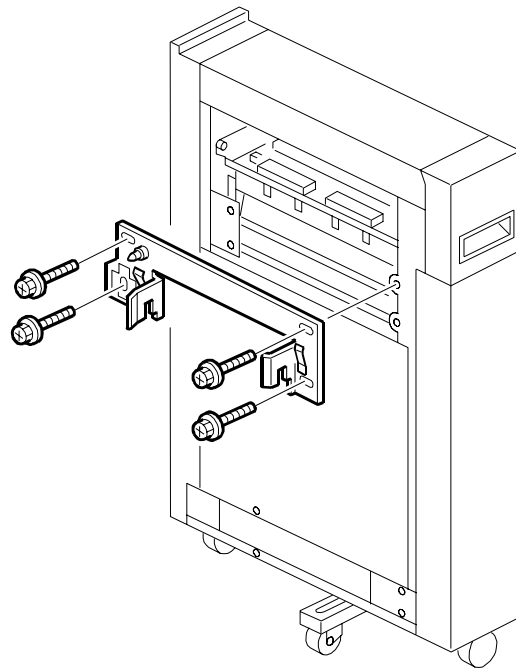


B830I205.WMF



***Finisher B830 → Z-Folding Unit B660***

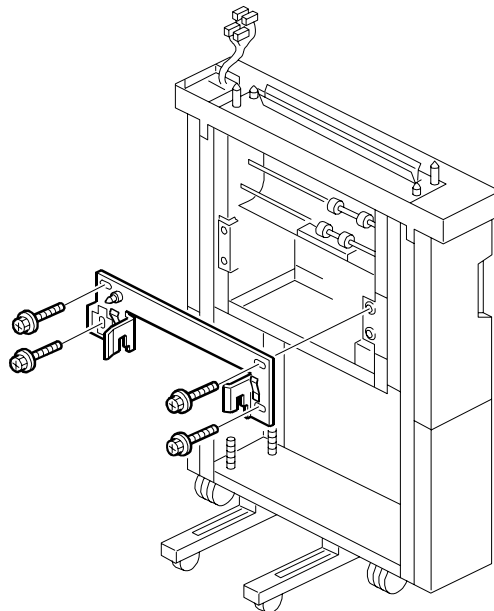
1. Install the joint bracket to the Z-Folding Unit B660.
2. Dock the finisher. (Go to Connecting the Finisher B830)



B830I204.WMF

***Finisher B830 → Cover Interposer Tray B835***

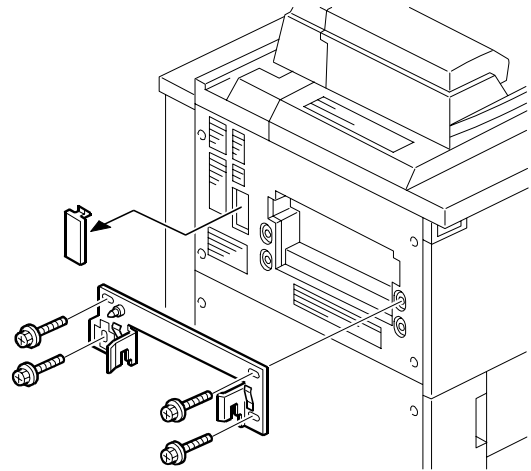
1. Install the joint bracket to the Cover Interposer Tray B835.
2. Dock the finisher. (Go to Connecting the Finisher B830)



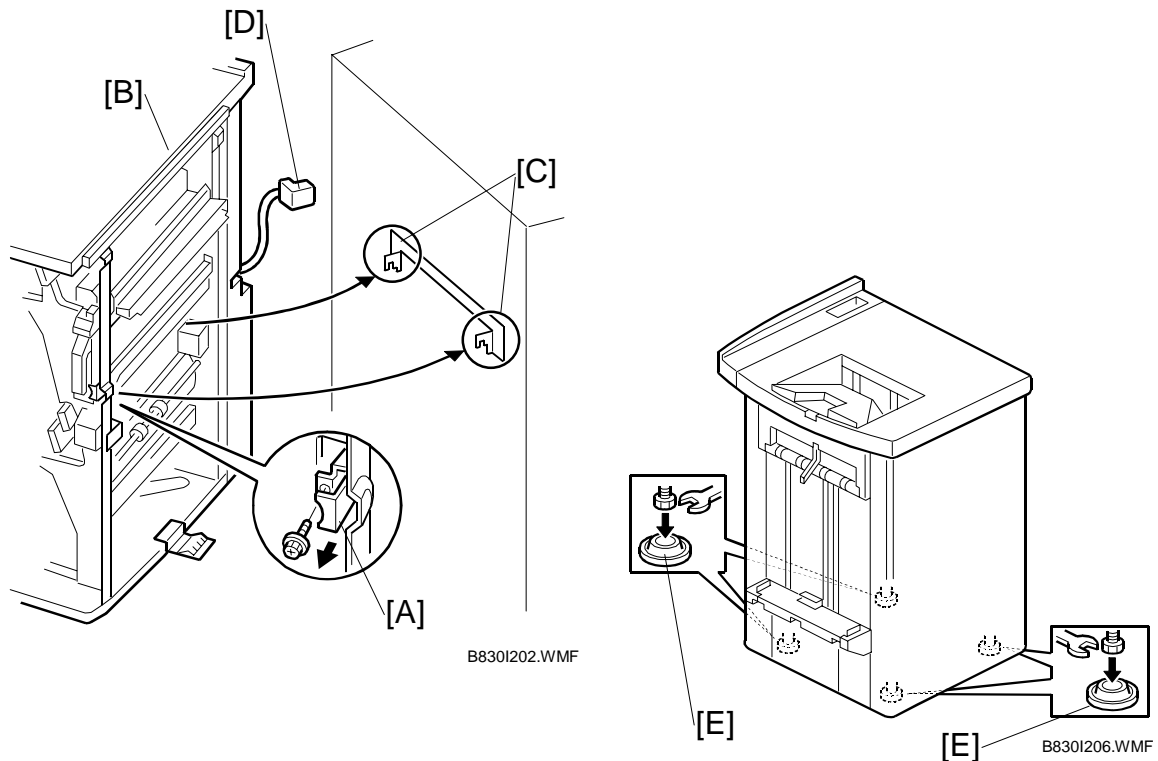
B830I203.WMF

***Finisher B830 → Copier***

1. Remove the connector cover
2. Install the joint bracket to the Copier.
3. Dock the finisher. (Go to Connecting the Finisher B830)



B830I201.WMF

**Connecting the Finisher B830**

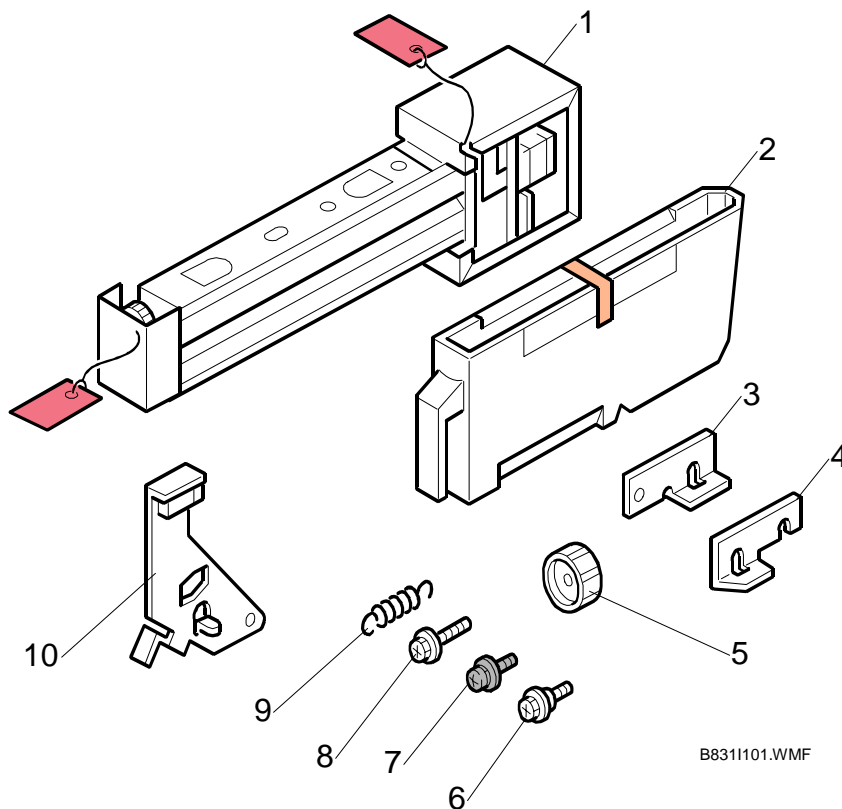
1. Open the front door of the finisher.
2. Pull out the locking lever [A] (⚙️ x1).
3. Align the finisher [B] with the joint brackets [C], and then slowly push the finisher onto the joint brackets.
4. Connect the finisher interface cable [D] to the copier
5. Push in the locking lever [A].
6. Check that the top edges of the finisher are parallel with edges of the finisher (or copier) to the right.
7. Fasten the locking lever [A] (⚙️ x 1)
8. Close the front door.
9. Set the leveling shoes [E] (x4) under the feet.
10. Turn the nuts to adjust the height of the finisher until it is level.

## 1.12 PUNCH UNIT PU5000 (B831)

### 1.12.1 ACCESSORIES

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

Description	Q'ty
1. Punch Unit .....	1
2. Punch Waste Collection Hopper .....	1
3. Spacer (1 mm) .....	2
4. Spacer (2 mm) .....	1
5. Knob.....	1
6. Step Screw (M3 x 4) .....	1
7. Screw (M4 x 6) Black.....	1
8. Screw (M3 x 10).....	2
9. Spring.....	1
10. Sensor Arm and Sensor.....	1

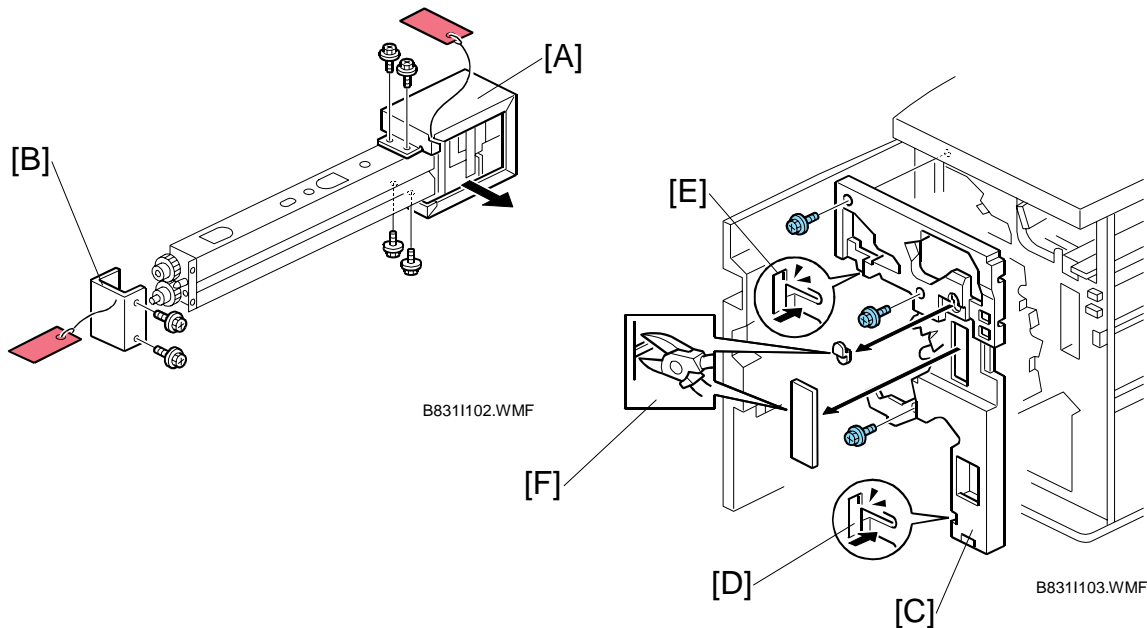


B8311101.WMF

## 1.12.2 INSTALLATION

### Important!

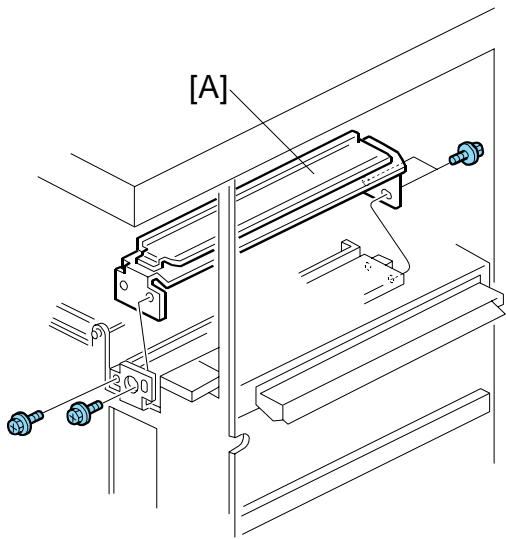
- This punch unit (B831) is for the Finisher B830 only. It cannot be installed in the Booklet Finisher BK5000 (B836).
- This punch unit (B831) cannot be used with e-STUDIO1351 (135 cpm).



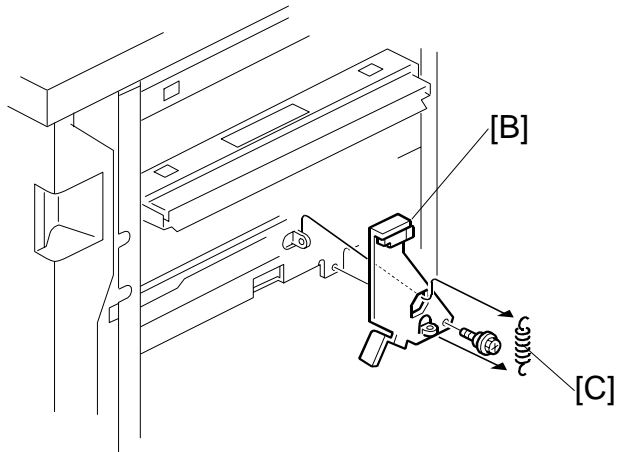
### **⚠ CAUTION**

**Switch the machine OFF and unplug the power cord before starting the following procedure.**

1. If the finisher is connected to the machine, disconnect it.
2. Open the front door and remove the rear cover (🔩 x 2).
3. Unpack the punch unit and remove the motor protector plate [A] (🔩 x 4, Step screw x1).
4. Remove the cam lock plate [B] (🔩 x 1).
5. Remove the three screws to release the inner cover [C] (🔩 x 3).
6. Press the lock tabs (behind the inner cover at [D] and [E]) to the right, and remove the inner cover [C] from the frame.
7. Remove the plastic knockouts [F].

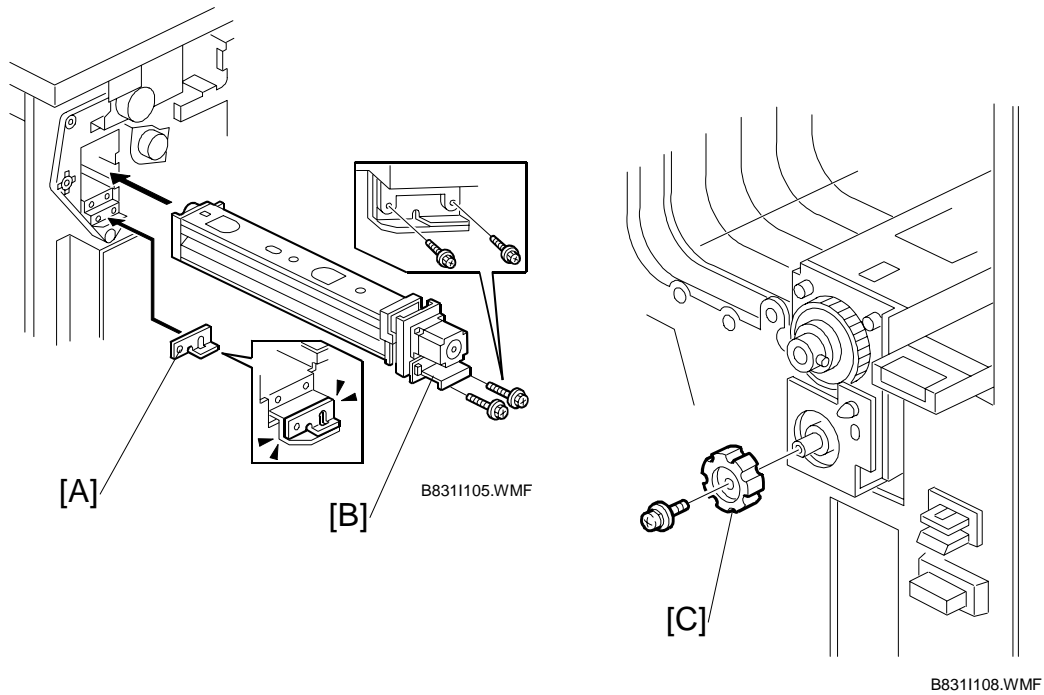


B8311104.WMF

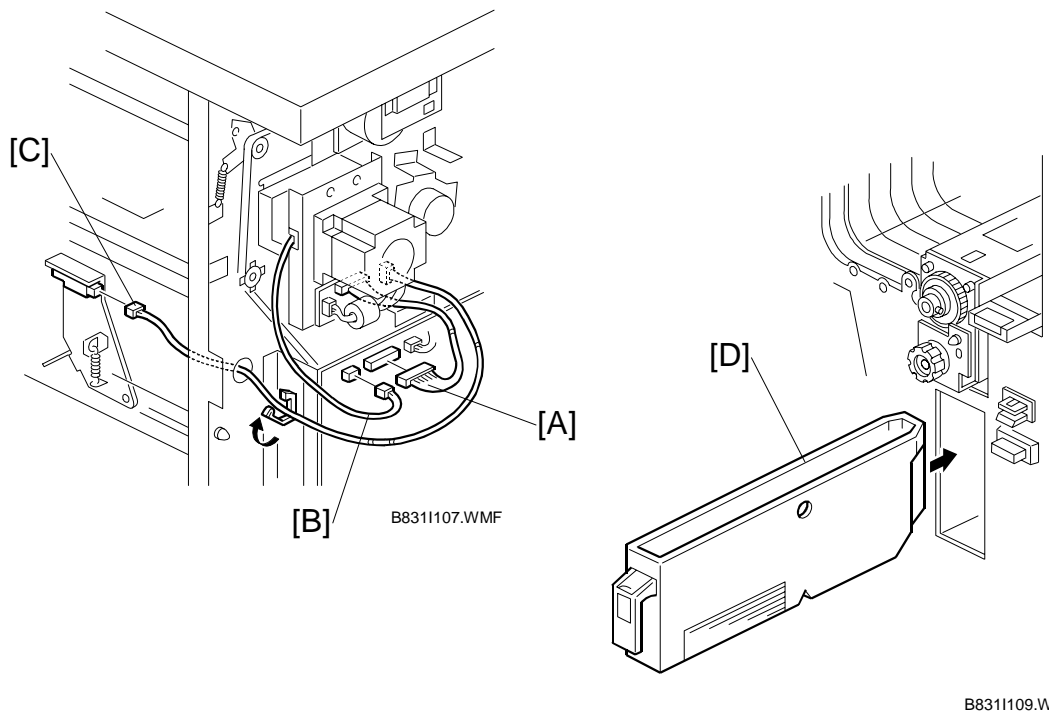


B8311106.WMF

8. Remove the paper guide [A] (4).
9. Install the sensor arm [B] (1, step screw (M3 x 4)).  
**NOTE:** Make sure that the sensor arm swings freely on the step screw.
10. Attach the spring [C].



11. Position the 2 mm spacer [A] and attach the punch unit [B] (⌀ x 2, M3 x 10).
12. Use one of the screws removed from the motor protector plate to fasten the remaining two spacers (1mm) to the frame as shown.  
**NOTE:** These extra spacers (1mm) can be used to adjust the position of the punch holes (front to rear, across the page).
13. At the front, fasten the punch unit knob [C] (⌀ x 1, M4 x 6).



14. Connect the PCB harness connector [A] to **CN135** of the finisher PCB and to **CN600** of the punch unit PCB.

15. Connect the harness [B] to **CN136** of the finisher PCB.

16. Connect the single end of the hopper full sensor connector cable [C] to the hopper full sensor on the arm (⏏ x 1, ⏏ x 2).

**NOTE:** No special DIP switch settings are required for this punch unit. A signal from the punch identifies itself by sending a signal to the copier.

17. Slide the punch waste collection hopper [D] into the finisher.

18. Re-attach the inner cover and rear cover.

19. Close the front door and connect the finisher to the machine.



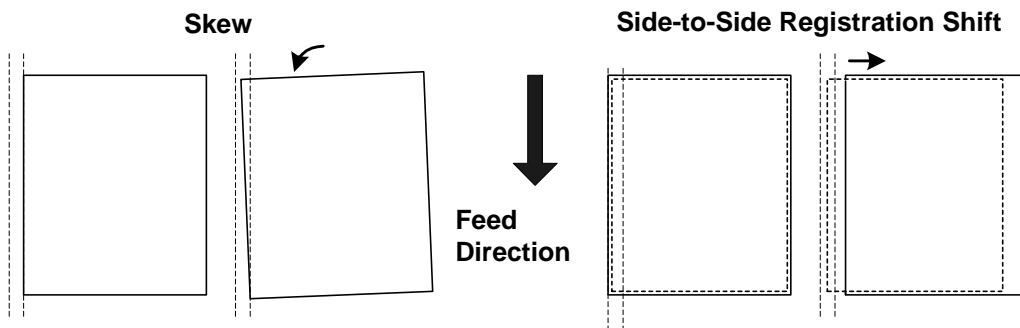
## 1.13 SKEW AND SIDE-TO-SIDE ADJUSTMENT

### 1.13.1 SKEW AND SIDE-TO-SIDE REGISTRATION ADJUSTMENT

#### *What Is Skew and Side-to-Side Registration Shift?*

The paper feed path is extremely long when all the post-processing feed options are installed. In such a long path, the cumulative effect of paper skew and deviation in side-to-side registration may require adjustment.

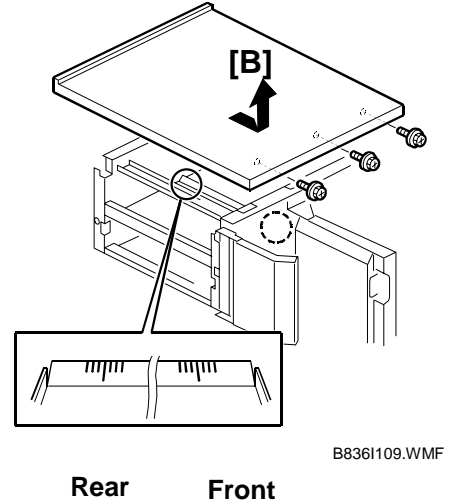
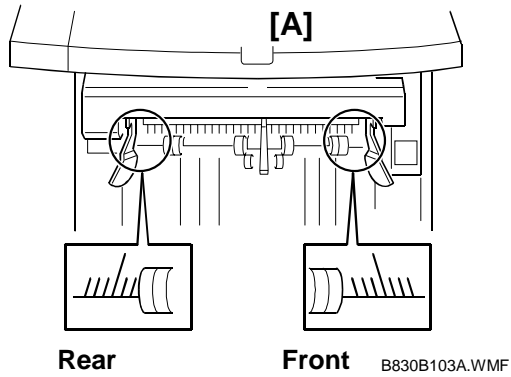
Skew appears when the paper rotates away from the direction of paper feed. If side-to-side registration shifts, the sheet remains straight but shifts left or right away from center.



B2341912.WMF

**Where Skew and Side-to-Side Registration Are Measured**

Installation



You can measure the skew and registration at two locations.

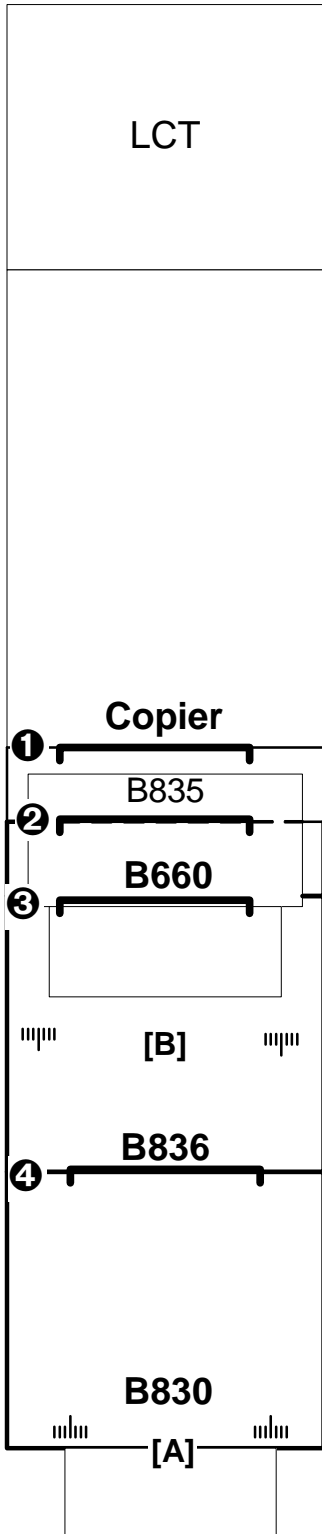
- At the output slot of the finisher (B830) [A]
- Inside the booklet finisher (B836) [B] if you remove the upper cover.

At both locations, two scales are provided so that you can visually measure the amount of skew or deviation in side-to-side registration.

Important! Only one scale is read, depending on the type of paper. Be sure to read the correct scale for the paper size.

<b>Rear</b>	DLT (11" x 17") size paper only
<b>Front</b>	A3 size paper only

**Where Skew and Side-to-Side Registration Are Adjusted**



B234I920.WMF

There are four locations where you can adjust the joint bracket (chapter 1.13.2) to correct for paper skew or side-to-side registration shift with all the optional peripheral units installed.

- ❶ At the output from the copier
- ❷ At the output from the cover interposer tray (B835)
- ❸ At the output from the Z-folding unit (B660)
- ❹ At the output from the booklet finisher (B836)

Here are some general rules you should follow for testing and adjusting for paper skew or a shift in side-to-side registration.

With all the optional peripherals installed:

- If you detect a problem at [A], do the adjustment on the bracket ❹ attached to the booklet finisher (B836).
- If you detect a problem at [B], (cover removed from the booklet finisher (B836), do the adjustment on the bracket ❸ attached to the Z-folding unit (B660).
- If you detect a problem at [A] when the finisher (B830) is the only peripheral installed, do the adjustment on the bracket ❶ attached to the copier.

**Important**

- The bracket adjustment is done at ❶ only if the finisher (B830) is the only peripheral installed.
- If both the finisher (B830) and booklet finisher (B836) are installed, the adjustment can be done at ❸ and ❹. First, do the adjustment at ❸, and do another test. If there still a problem with skew or side-to-side registration, do the adjustment at ❹.

Here is a table you can use to determine where to do the adjustments based on the configuration of the system.

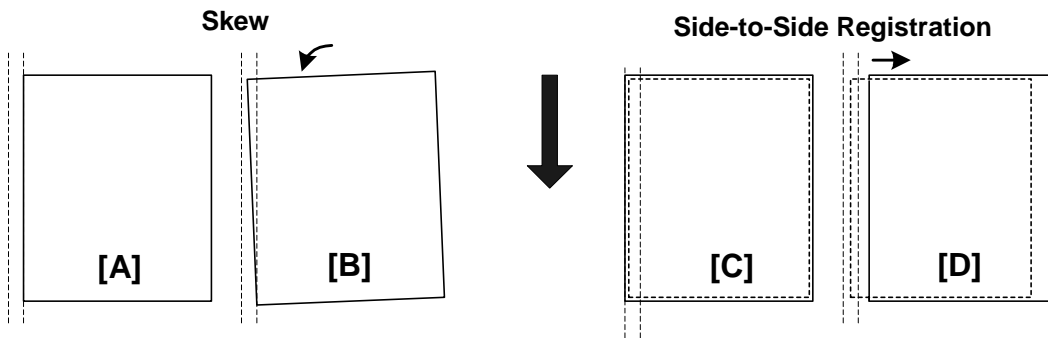
	System Configuration							
	Type 1	Type 2	Type 3	Type 4	Type 5	Type 6	Type 7	Type 8
Copier	O	O	O	O	O	O	O	O
Cover InterposerTray B835	O	O	X	X	O	O	X	X
Z-Folding Unit B660	O	X	O	X	O	X	O	X
Booklet Finisher B836	O	O	O	O	X	X	X	X
Finisher B830	O	O	O	O	O	O	O	O
<b>Adjust At:*</b> <sup>1</sup>	<b>③</b> <b>④</b>	<b>②</b> <b>④</b>	<b>③</b> <b>④</b>	<b>①</b> <b>④</b>	<b>③</b>	<b>②</b>	<b>③</b>	<b>①</b>

O: Installed, X: Not Installed

\*1 Refer to diagram for locations shown on previous page by ① to ④.

**When Skew and Side-to-Side Registration Should Be Adjusted**

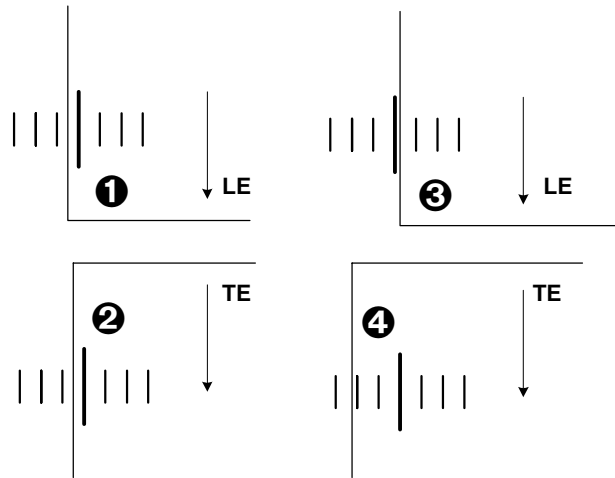
The edge of A3 [DLT] paper should be aligned with the long line of the front [rear] scale as it exits, or should not deviate from that line by more than ±2 mm.



B2341912.WMF

- [A] No deviation from center, no skew
- [B] Skew present. The leading edge and trailing edge of each sheet exit at points separated by more than ±2 mm on the rear scale.
- [C] No deviation in side-to-side registration.
- [D] Deviation in side-to-side registration. The leading edge and trailing edit exit at the same point, but that point deviates more than ±2 mm from center on the rear scale.

**Example: Skew at Rear Scale (DLT)**

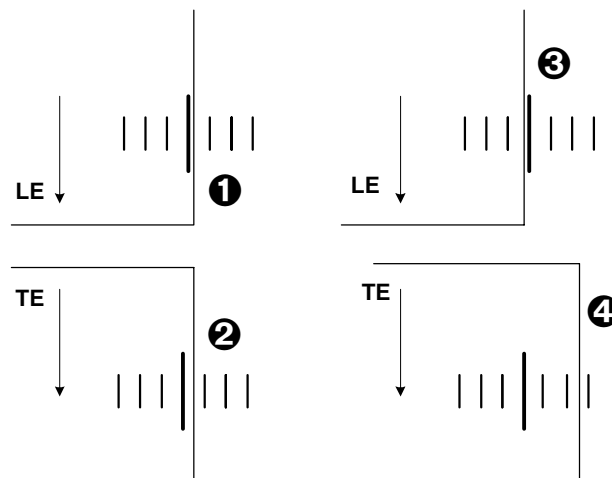


B234I913.WMF

- ➊➔➋ There is some deviation but no adjustment is necessary.
- ➌➔➍ Deviation is more than 2 mm. Adjustment is necessary.

Scale: 2 mm

**Example: Skew at Front Scale (A3)**



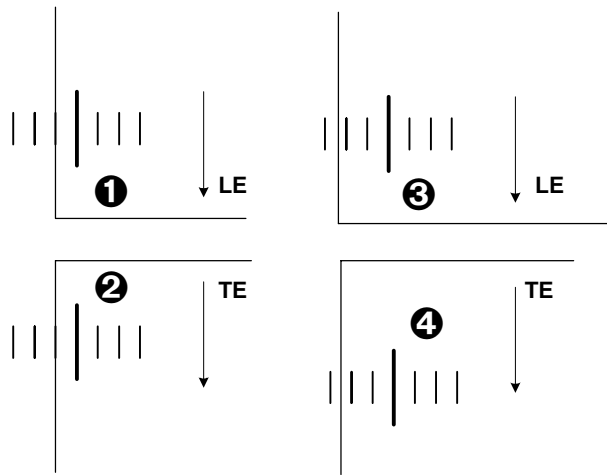
B234I914.WMF

- ➊➔➋ There is some deviation but no adjustment is necessary.
- ➌➔➍ Deviation is more than 2 mm. Adjustment is necessary.

LE: Leading Edge

TE: Trailing Edge

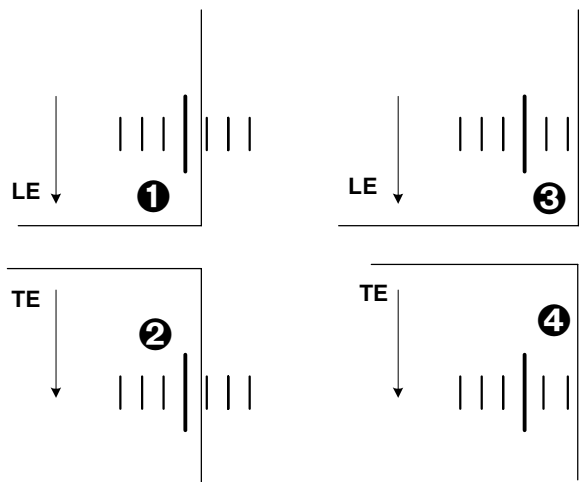
**Example: Side-to-Side Shift at Rear Scale (DLT)**



B234I915.WMF

- ➊➔➋ There is some deviation but no adjustment is necessary.
- ➌➔➍ Deviation is more than 2 mm. Adjustment is necessary.

**Example: Side-to-Side Shift at Front Scale (A3)**



B234I916.WMF

- ➊➔➋ There is some deviation but no adjustment is necessary.
- ➌➔➍ Deviation is more than 2 mm. Adjustment is necessary.

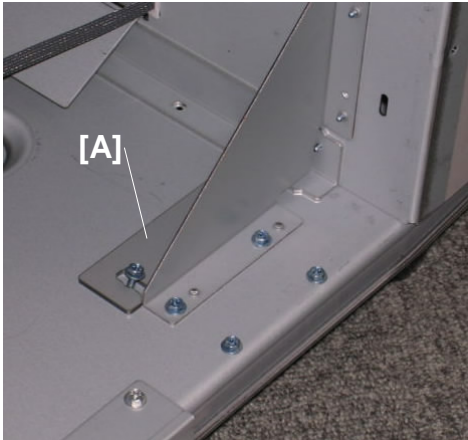
LE: Leading Edge

TE: Trailing Edge

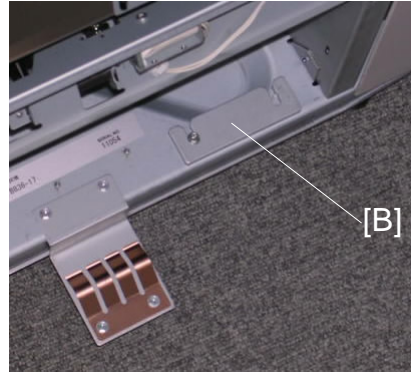
### 1.13.2 HOW TO ADJUST SKEW, SIDE-TO-SIDE REGISTRATION

1. Do a copy job with shift mode selected for the finisher.  
**NOTE:** Use A3 or DLT paper.
2. At the output slot of the finisher B830 and B836, watch the edge of the paper at the scale to see if it deviates more the  $\pm 2$  mm from the center line.
  - Watch the front scale for A3 paper
  - Watch the rear scale for DLT paper
3. If the leading/trailing edges are exiting at different points, there is some skew.  
If the deviation is within 2 mm, no adjustment is necessary.  
-or-  
If the deviation is more than 2 mm, do the skew adjustment (see the following procedure).
4. If the leading/trailing edges are exiting at the same point slightly left or right of center, there is some deviation in the side-to-side registration.  
If the deviation is within 2 mm, no adjustment is necessary.  
-or-  
If the deviation is more than 2 mm, do the side-to-side registration adjustment (see the following procedure).

**Skew Adjustment**



B234I917.BMP



B234I918.BMP

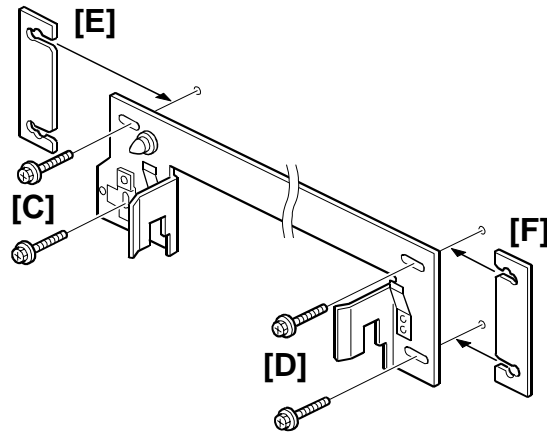
1. Spacers are provided inside the finisher B830 [A] and inside the booklet finisher B836 [B].
2. If trailing edge is skewing toward the front of the machine, insert a spacer under front end of the joint bracket.

-or-

If the trailing edge is skewing toward the rear of the machine, insert a spacer under the rear end of the joint bracket.

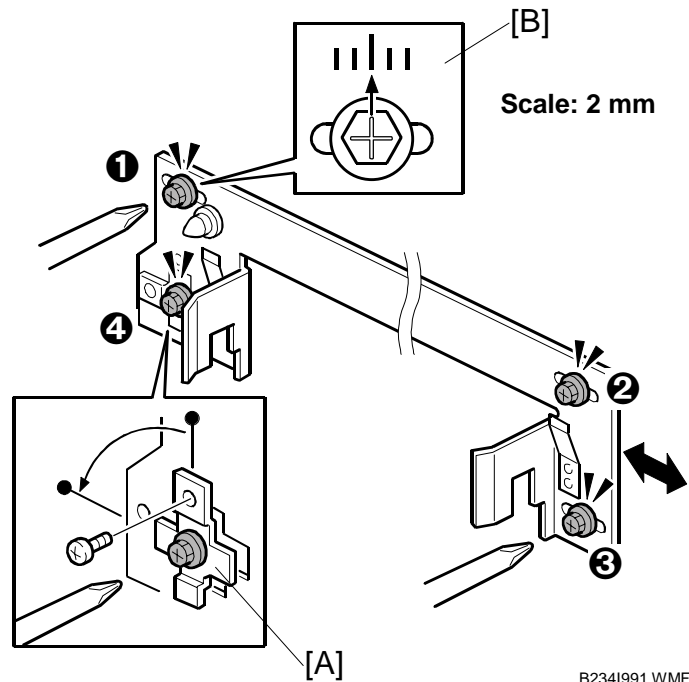
The procedure is as follows:

- 1) Loosen the screws (x2) [C] or [D] where the adjustment is required so the spacer can be inserted.
- 2) Insert one spacer [E] or [F].
- 3) Fasten the screws (x2) [C] or [D].
- 4) Do some more test prints to check the adjustment.  
If skew is still present, insert another spacer at the same location.



B234I993.WMF



**Side-to-Side Registration Adjustment**

B234I991.WMF

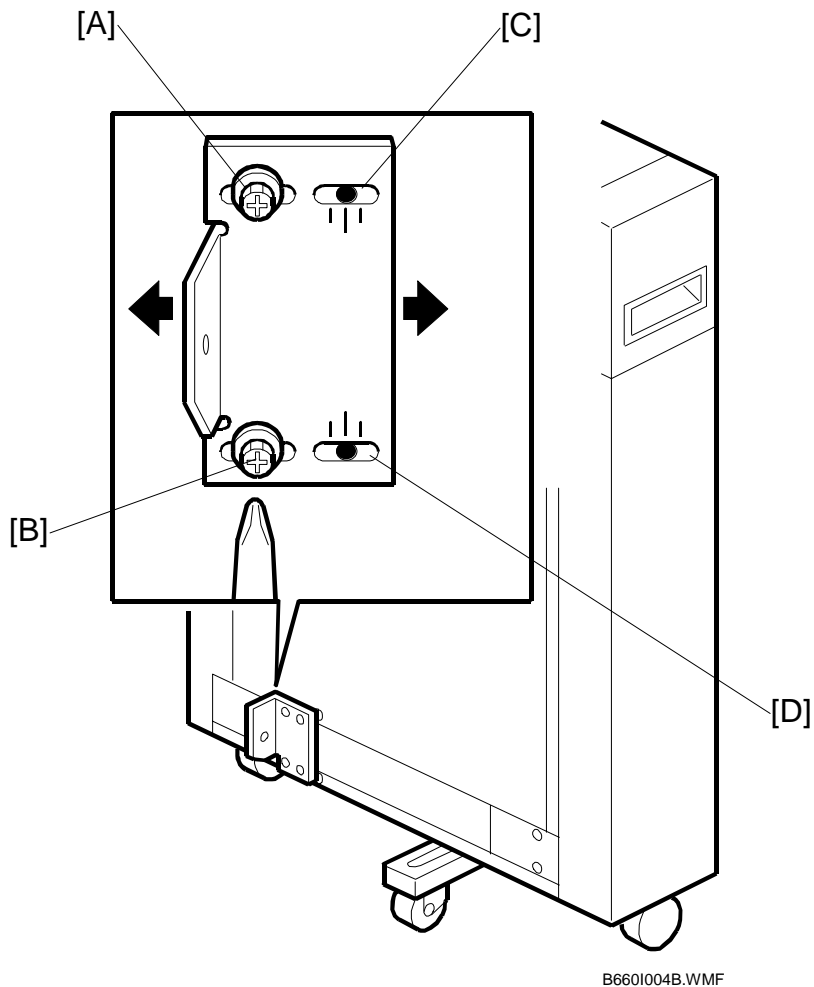
**Important**

- This adjustment can be done on the left side of the copier, at the Z-Folding unit B660, at the cover interposer tray B835, and at the booklet finisher B836.

1. Loosen screws ①, ②, ③, ④).
2. Remove the bracket [A] (1x1) and rotate it 90 degrees, then refasten it.  
**NOTE:** Re-positioning the bracket aligns the oval cut-out horizontally so that you can slide the joint bracket to slide from side-to-side.
3. Use the scale [B] at the top of the rear end of the bracket.  
If the deviation from center was toward the front of the machine, slide the bracket to the front and fasten it with the screw.

-or-

If the deviation from center was toward the back of the machine, slide the bracket to the rear and fasten it with the screw.



B660I004B.WMF

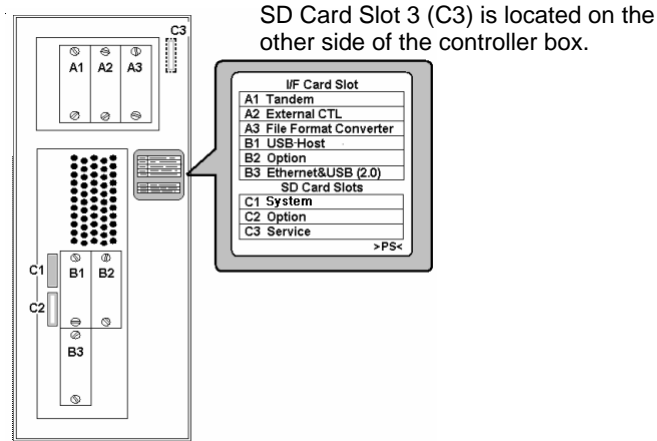
If you are doing this adjustment on the side of the Z-Folding unit:

- At the base of the unit, loosen screws [A] and [B].
  - Slide the plate left or right.
  - Move the plate on the scales [C] and [D] by the same amount as the adjustment done above on the long bracket.
  - Retighten the screws.
4. Do some more test prints and repeat the adjustment until it is correct.

## 1.14 INSTALLATION OF MFP CONTROLLER OPTIONS

### 1.14.1 OVERVIEW

Six slots for boards and three slots for SD cards are provided on the controller box. Each board or SC card must be inserted into its assigned slot. The slot assignment of each item is listed in the table below. A decal with the same information is attached to the controller box cover.



Left side of controller box B234I999.BMP

### MFP Option Slot/Card Assignment

Slot	Name on Decal	Description
A1	Tandem	Copy Connector Type 3260 (B328)
A2	External CTL	EFI Printer Controller EB-135 (G847)
A3	File Format Converter	File Format Converter ( <b>Not Applicable</b> )
B1	USB Host	USB Host ( <b>Not Applicable</b> )
B2	Option	<ul style="list-style-type: none"> <li>• IEEE 1284 Centronics (<b>Not Applicable</b>)</li> <li>• IEEE 1394 Interface Board (<b>Not Applicable</b>)</li> <li>• IEEE 802.11b Interface Unit (<b>Not Applicable</b>)</li> <li>• Bluetooth Interface Unit (<b>Not Applicable</b>)</li> <li>• Cumin-M (<b>Not Applicable</b>)</li> </ul>
B3	Ethernet & USB (2.0)	Ethernet & USB 2.0 Gigabit Ethernet Type 7300 (G381) (includes USB 2.0) <b>Note:</b> Only one of these boards can be inserted at a time.
C1	System	System Slot (Holds the system software. Never remove this SD card!)
C2	Option	<ul style="list-style-type: none"> <li>• Printer/Scanner Unit GM-2090</li> <li>• Data Overwrite Unite Type F(B735)</li> <li>• PostScript3 Unit Type 1350 (B613)</li> </ul> <b>Note:</b> This is the only SD card slot available for applications. If more than one application is to be used, the applications must be merged onto one SD card.
C3	Service	SD card for machine firmware update by the service engineer.

## 1.14.2 MERGING APPLICATIONS ON ONE SD CARD

### Overview

The machine has three SD card slots:

- Slot 1 (C1) is used for the system card (never remove the system SD card from Slot 1).
- Slot 2 (C2) is used for application programs.
- Slot 3 (C3) is used for servicing (firmware updates).

Only one SD card slot (C2) is available for SD card applications. If the customer wants to use more than one application, the applications must be copied onto the same SD card.

### Important

- The data necessary for authentication is transferred with the application program to the target SD card.
- Do not use an SD card if it was used with a computer before this time. Correct operation is not guaranteed if this type of SD card is used.
- The SD card is the only evidence that the customer is licensed to use the application program. Also, the service engineer may occasionally need to check the SD card and its data to solve problems. For these reasons SD cards must be stored behind the copier emblem cover. (☛ Chapter 1.14.3 1-114)
- A licensing agreement prohibits copying of the PostScript3 SD card. However, you can copy any application from another SD card to the PostScript3 SD card.
- Once an SD card has been used to combine applications on that card, that SD card cannot be used for a different function.
- Never remove the System SD Card from Slot C1.
- Before uploading to an SD card, always make sure that the write-protect switch is OFF. (It is very easy to accidentally turn on the write-protect switch when inserting or removing an SD card.)

### ***Merging Applications***

Do this procedure to put more than one application on one SD card.

1. Turn off the copier.
2. Remove the SD card slot cover (🔑 x1).
3. Put the Source SD card in **Slot 3** (C3). This card contains the application that you want to copy.  
**NOTE:** The PS SD card cannot be the source card (it cannot be copied).
4. Make sure that the target SD write-protect switch is OFF.
5. Put the Target SD card in **Slot 2** (C2). The application on the card in **Slot 3** (C3) will be copied to this card.
6. Open the front door of the copier.
7. Turn the copier ON.
8. Go into the SP mode and select **SP5873 001**.
9. Press "Execute".
10. Read the instructions on the display and press "Execute" to start copying.
11. When the display tells you copying is completed, press "Exit".
12. Turn the copier off.
13. Remove the Source SD card from **Slot 3** (C3). Keep the target SD card in **Slot 2** (C2).
14. Turn the copier ON.
15. Go into the User Tools mode and check that all the applications on the SD card in Slot 2 are enabled:  
User Tools> System Settings> Administrator Tools> Firmware Version
16. Turn the copier off again, then:
  - Reattach the SD card slot cover.
  - Attach the rear cover of the machine.
  - Store the SD cards that were copied. (👁 Chapter 1.14.31-114)

### **Important!**

- After an SD card has been copied, it cannot be used. However, it must be stored in the machine to serve as proof of purchase by the customer.
- The original card can also be used to perform an undo procedure (SP 5873 002). Before you store an SD card, label it carefully so it can be identified easily if you need to do the undo procedure (see the next page).

***Undo Exec***

1. Turn the main switch OFF.
2. Put the SD card holding the merged applications in SD Card **Slot 2** (C2).
3. Put the original destination SD card (the one removed from storage) into **Slot 3** (C3).

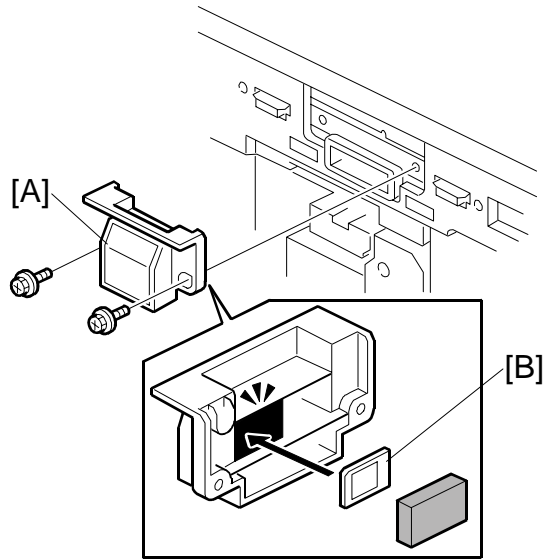
**NOTE:** The SD card in **Slot 3** must be the original SD card of the application you want to move from **Slot 2** to **Slot 3**. You cannot use any blank SD card in **Slot 3**.

4. Turn the main switch ON.
5. Go into the SP mode and do **SP5873-002** (Undo Exec)
6. Follow the messages on the operation panel to complete the procedure.
7. Turn the main switch OFF.
8. Remove the SD cards from the slots.
9. Turn the main switch ON.

### 1.14.3 COMMON PROCEDURES FOR MFP OPTIONS

#### *Storing SD Application Cards on Site*

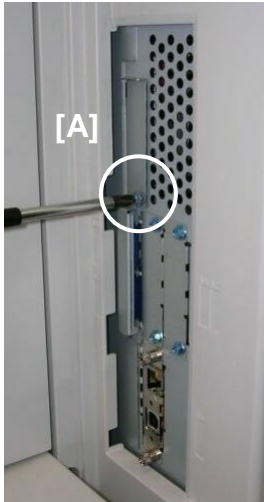
1. Open both front doors of the copier.
2. Remove the emblem cover [A] (⚙️ x2).
3. Set the copied SD card [B] in one of the compartments.
4. Reattach the emblem cover and close the front doors.



B2341501.WMF

### Removing Slot Covers

To remove the SD card slot cover



B234I205.BMP



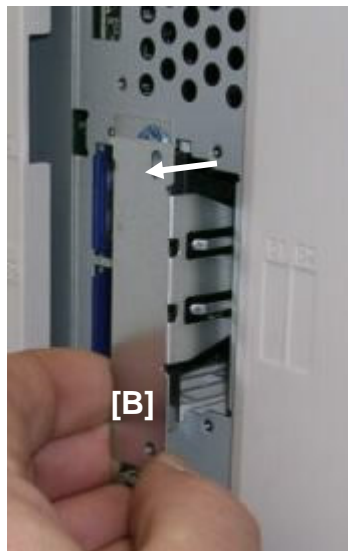
B234I206.BMP

1. Remove the SD card slot cover screw [A] (⚙ x1).
2. Lift the SD card slot cover [B] and pull it away to remove it.

To remove a board slot cover



B234I207.BMP



B234I208.BMP

1. Remove the board slot cover screws [A] (⚙ x2).
2. Pull out the board slot cover and bracket [B].



**1.14.4 PRINTER/SCANNER UNIT GM-2090 (B840)**

**Accessories**

<b>Description</b>	<b>Q'ty</b>
1. Caution Decal .....	1
2. Printer/Scanner SD Card .....	1
3. Printer Keytops (English/Symbol) .....	2
4. Scanner Keytops (English/Symbol).....	2
5. EULA Sheet .....	1
6. FCC Decal .....	1
7. 128 MB Memory DIMM .....	2
8. 256 MB Memory DIMM .....	1

**Important**

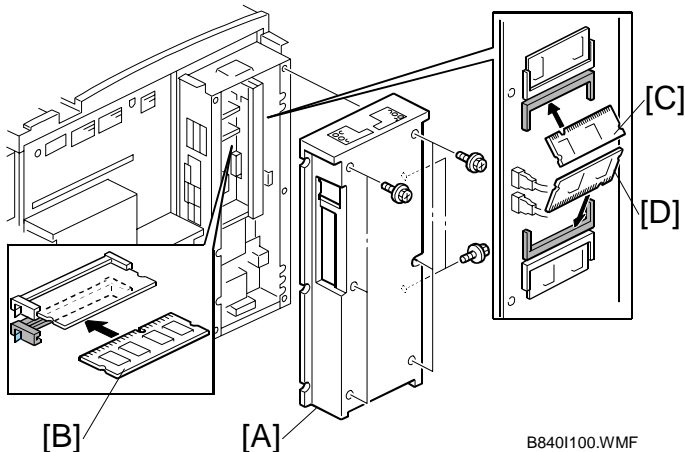
- Only one slot (**C2**) is available for applications on SD cards. If more than one application is will be used, the applications must be merged onto one SD card with **SP5873 001**. (☛1.14.2)

**Installation****⚠ CAUTION**

**Before you begin this procedure, switch the machine OFF and disconnect the power plug from the power source.**

Installation

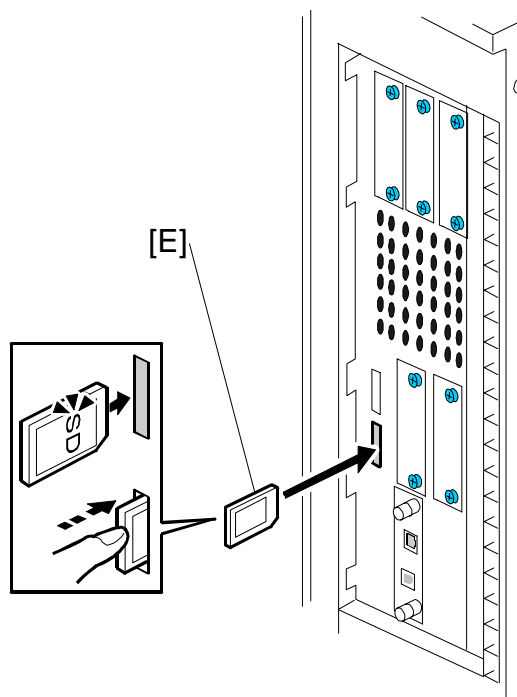
1. Switch the machine OFF.
2. Remove the controller box cover [A] (⚙ x 9).
3. Insert the 256 MB memory DIMM [B].
4. Insert the 128 MB memory DIMM [C] and [D] (x2) in the mother board.
5. Re-attach the controller box cover.

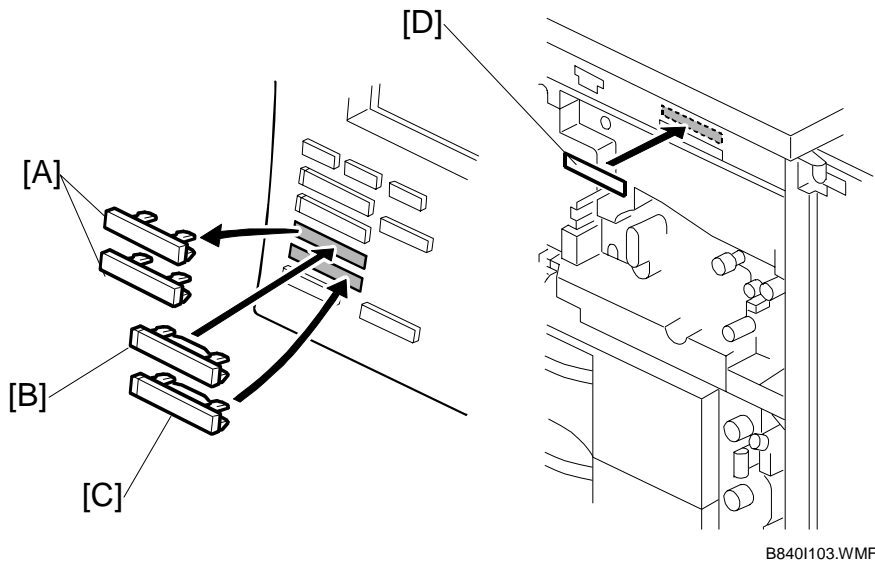


6. Hold the Printer/Scanner SD Card [E] with its label facing the as shown in figure, and then insert it into Slot C2.

**Important**

- Pushing in the SD Card releases it for removal.
- Make sure the SD Card is inserted and locked in place. If it is partially out of the slot, push it in gently until it locks in place.





7. On the operation panel, remove the keytops [A] and discard them.
8. Install the “Printer” keytop [B] then the “Scanner” keytop [C]. Select either the English set or Symbol set for installation. The correct order is:
  - Printer (upper)
  - Scanner (lower)
9. Attach the serial number decal [D] to the copier.
10. Plug in the power cable and turn the main power switch ON.
11. Change SP 5985 001 and 002 from ‘0’ to ‘1’.
12. Turn the main power switch OFF and ON.
13. Follow the instructions in the Operation Instructions to complete the installation for the Printer/Scanner Unit.

### 1.14.5 POSTSCRIPT3 UNIT TYPE 1350 (B613)

#### Accessories

Description	Q'ty
1. PostScript3 SD Card.....	1
2. Decal.....	1

#### Important

- Only one slot (**C2**) is available for applications on SD cards. If more than one application is will be used, the applications must be merged onto one SD card with **SP5873 001**. (☛1.14.2)

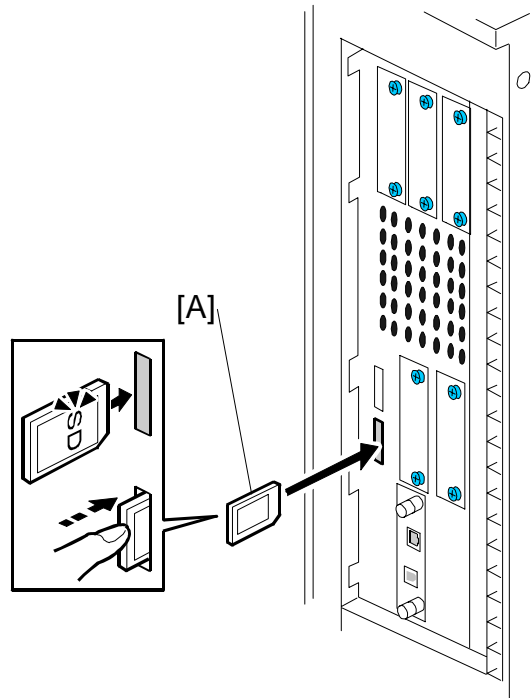
#### Installation

1. Switch the machine OFF.
2. Remove the SD card slot cover (🔩 x 1).
3. Hold the PostScript3 SD Card [A] with its label facing the as shown in figure, and then insert it into Slot C2.

**NOTE:** Pushing in the SD Card releases it for removal.

Make sure the SD Card is inserted and locked in place. If it is partially out of the slot, push it in gently until it locks in place.

4. Switch the machine ON.



B6131201.WMF

### 1.14.6 DATA OVERWRITE SECURITY UNIT F (B735)

**Accessories**

Description	Q'ty
1. Data Overwrite Security SD Card .....	1
2. Operating Instructions CD-ROM .....	1

**Before You Begin...**

1. Confirm that the Data Overwrite Security SD card is the correct type for the machine. The correct type for this machine is type "F".

**Important: Do this now. If you install any version other than type "F", you will have to replace the NVRAM and do this installation procedure again.**

2. Make sure that the following settings are not at the factory default settings:
  - Supervisor login password
  - Administrator login name
  - Administrator login password

**Important:** These settings must be set up by the customer before the Data Overwrite Security unit can be installed.

3. Confirm that "Admin. Authentication" is on:

[User Tools]> "System Settings"> "Administrator Tools"> "Administrator Authentication Management"> "Admin. Authentication"> "On"

If this setting is "Off" tell the customer that this setting must be "On" before you can do the installation procedure.

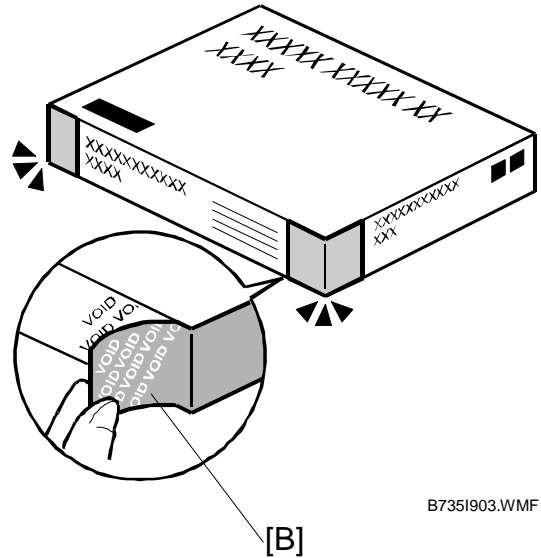
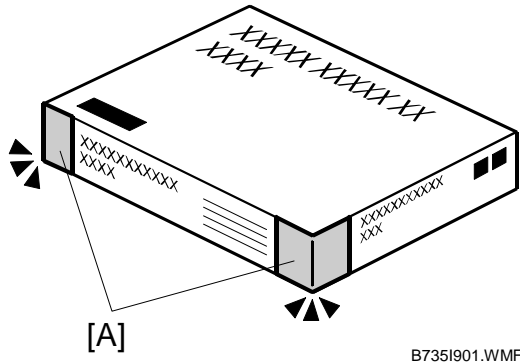
4. Confirm that "Administrator Tools" is selected and enabled:

[User Tools]> "System Settings"> "Administrator Tools"> "Administrator Authentication Management"> "Available Settings"

**NOTE:** "Available Settings" is not displayed until Step 2 is done.

If this setting is not selected tell the customer that this setting must be selected before you can do the installation procedure.

### Seal Check and Removal



**⚠ CAUTION**  
**TURN OFF THE MAIN POWER SWITCH AND DISCONNECT THE POWER SUPPLY CORD.**

1. Check the two box seals [A] on the corners of the box.
  - Make sure that the seals are attached at both corners.
  - The surfaces of the tapes must be blank. If you see “VOID” on the tapes, do not install the components in the box. Contact your sales division.
2. If the surfaces of the tapes do not show “VOID”, remove them from the corners of the box.
3. After you remove each seal, the “VOID” marks [B] become visible. This prevents them from being reattached to the box.

## Installation

### Important

- The Data Overwrite Security SD card must be inserted in SD card slot **C2**.
- If the PostScript3 option is also installed, you must move the DOS application to the PostScript3 SD card with **SP5873 001**. (☛1.14.2)

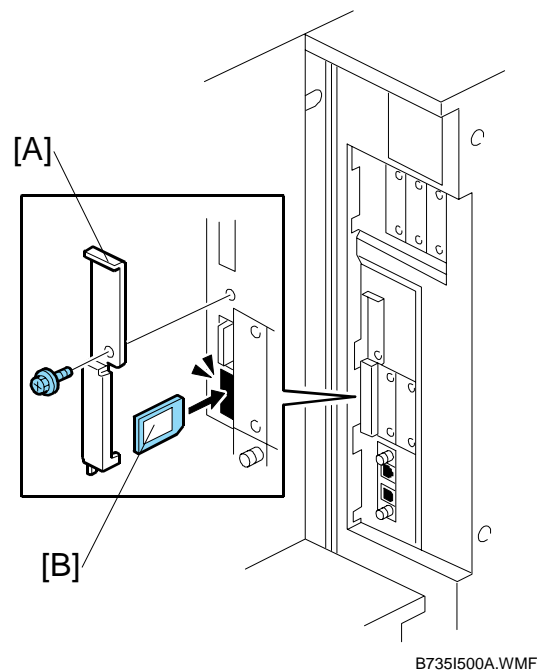
1. Turn the main power switch OFF.
2. Disconnect the network cable.
3. Turn the main power switch ON.
4. Turn the operation switch and main power switch OFF.
5. Remove the SD card slot cover [A] (☛x1).
6. Hold the SD card [B] as shown and push it into SD card slot **C2**.
7. Reconnect the network cable.
8. Turn the main power switch ON.
9. Do **SP5878** and press [EXECUTE].
10. Go out of the SP mode.
11. Turn the operation switch OFF, and then turn the main power switch OFF.
12. Do **SP5990 005** to print the SMC report.
13. Read the SMC report. Confirm that the numbers under "ROM No. / Firmware Version" are the same as the numbers under "Loading Program" in the 2nd and 3rd columns under each heading.

You should see two numbers in the 2nd and 3rd column like "B735nnn" and "n.nn". The actual numbers displayed will be different depending on the version installed. The numbers, however, must be the same.

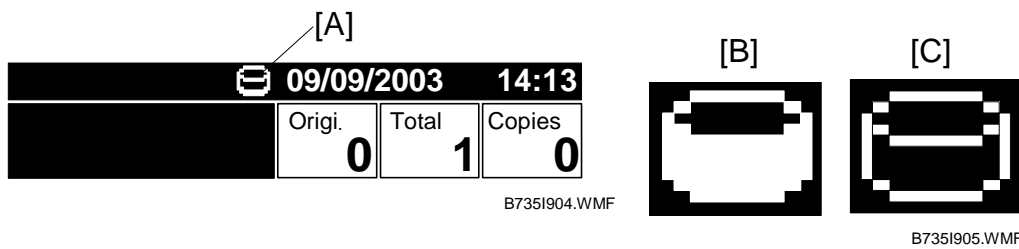
### If the numbers are not the same....

If the numbers are not identical, this means the option was not installed correctly.

- Confirm that the label on the box of the Data Overwrite Security Unit says "F".
- If you have installed the incorrect type, replace the NVRAM.
- Do the Data Overwrite Security unit installation again.



B7351500A.WMF



14. Turn "Auto Erase Memory Setting" ON:

[User Tools]> "System Settings"> "Administrator Tools"> "Auto Erase Memory Setting"> "On"

15. Exit User Tools.

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 [B] changes to [C] when job data is stored in the hard disk.
- The icon goes back to its usual shape [B] after this function has completed a data overwrite operation on the hard disk.



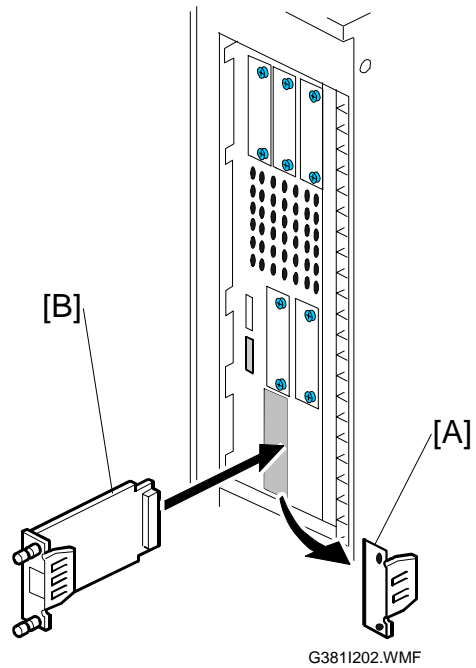
### 1.14.7 GIGABIT ETHERNET TYPE 7300 (G381)

**Accessories**

Description	Q'ty
1. Gigabit Ethernet Board .....	1
2. Ferrite Core (not used).....	1

**Installation**

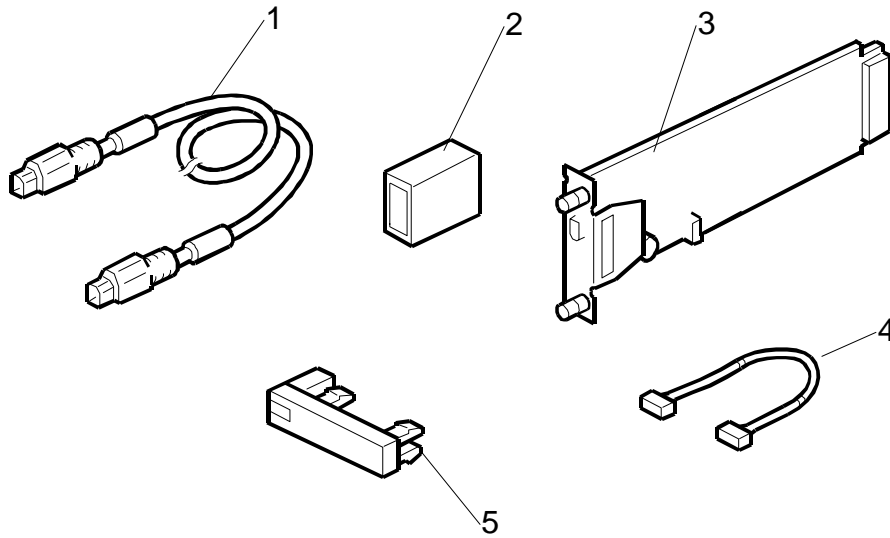
1. Switch the machine OFF.
2. Remove the cover [A] of Slot **B3** (⚙ x 2).
3. Insert the Gigabit Ethernet Board [B] into Slot **B3** and fasten it with the screws.
4. Print a configuration page to confirm that the machine recognizes the installed board for USB2.0:  
 User Tools > Printer Features > List/Test Print > Configuration Page



# 1.15 CONNECTION KIT TYPE 3260 (B328)

## 1.15.1 ACCESSORIES

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



Description	Q'ty
1. Interface Cable 1394.....	3
2. Repeater Hub 1394.....	2
3. Connection PCB .....	2
4. Power Repeater Cable .....	2
5. "Other Function" Keytops (NA, EU 1 ea.).....	2

### 1.15.2 PREPARATION

Before you start the installation procedure, decide how many interface cables and repeater hubs you will need. This will depend on the distance between the two connected machines.

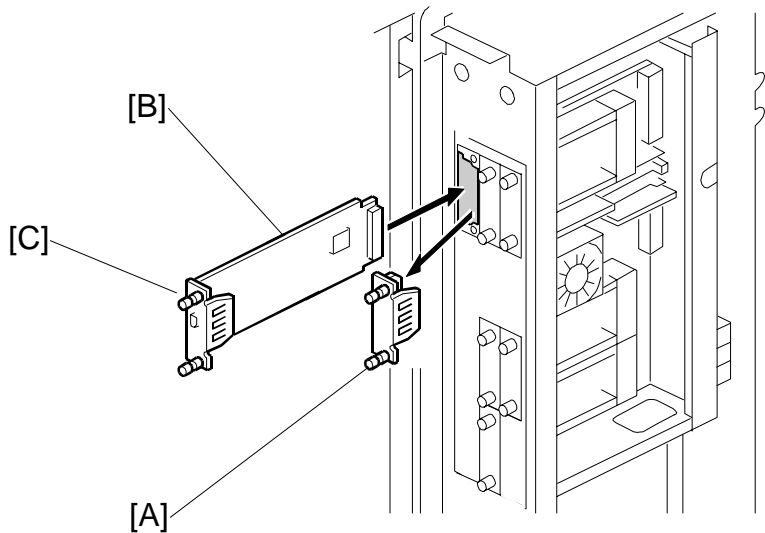
See the following table:

<b>DISTANCE</b>	<b>POWER REPEATER HUBS</b>	<b>INTERFACE CABLES</b>
Up to 4.5 m (14.8 ft.)	None	1
4.5 ~ 9.0 m (14.8 ~ 29.5 ft)	1	2
9.0 ~ 13.5 m (29.5 ~ 112.5 ft.)	2	3

### 1.15.3 INSTALLATION PROCEDURE

#### ⚠ CAUTION

Before you start this procedure, switch the machine off and unplug the machine power cord.

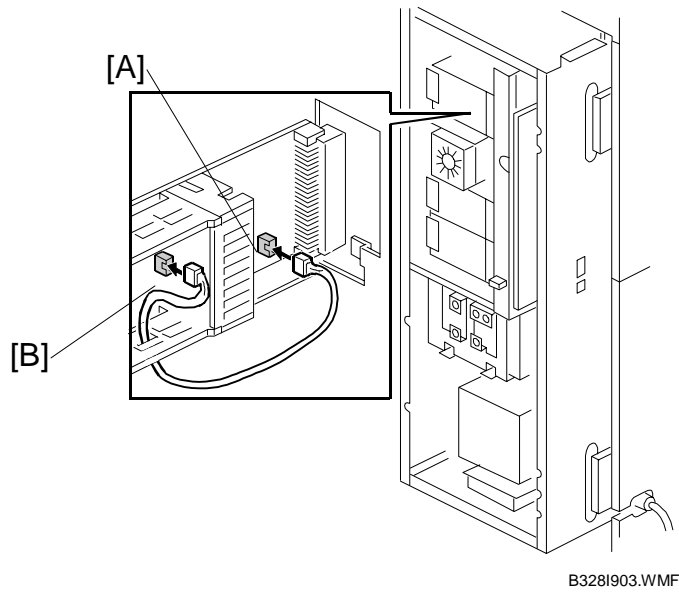


B328I902.WMF

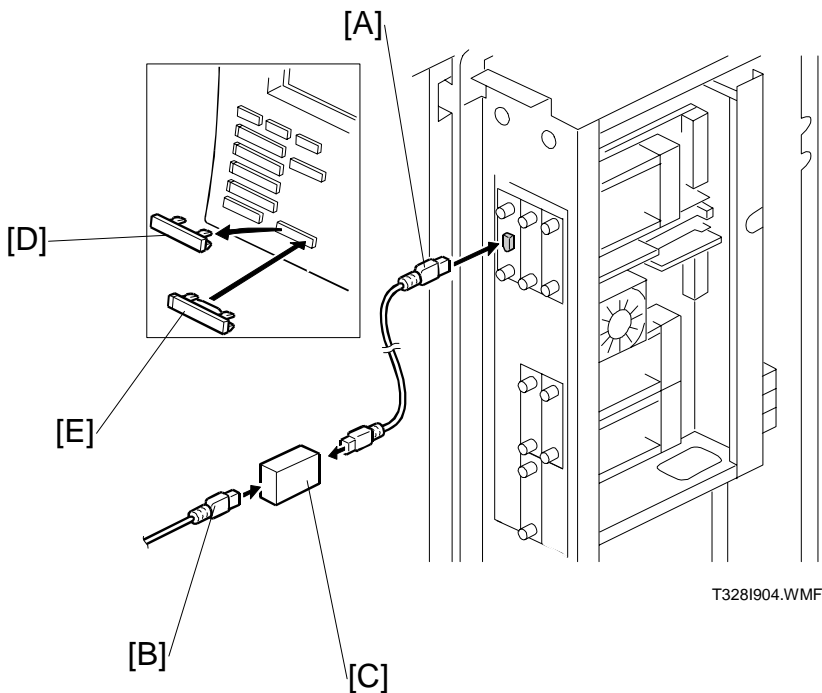
1. Switch the main power switch off.
2. Remove the controller box cover. (⚙ x8)
3. Remove the cover [A] from slot A1.
4. Align the PCB with the bottom groove, and push the connection PCB [B] into the slot.

**NOTE:** Make sure that the edge of the PCB is in the groove before you push the card into the machine.

5. Fasten the PCB with the attached screws [C].



6. Connect the power repeater cable [A] to the motherboard at CN593.
7. Connect the other end of the power repeater cable to the connection PCB [B].
8. Re-attach the controller box cover.
9. Repeat Steps 1 thru 8 to install the connection PCB on the slave machine.



10. Insert one end of the interface cable [A] to the connection PCB (Slot A1).
11. If you need more interface cables, connect the cables [B] with the repeater hubs [C].
12. On the operation panel of the both machines, remove the cover from the bottom [D].
13. Attach the “Other Function” key [E].
14. Attach the other end of the connection cable to the connection PCB installed in the other machine.



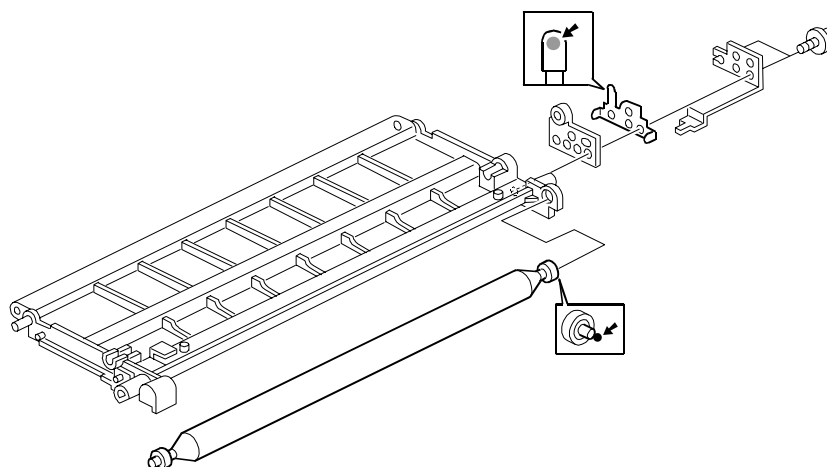
## 2. PREVENTIVE MAINTENANCE

### 2.1 PM COUNTER

The PM Counter main menu and submenu allows you to review the PM counts for both units and individual components.

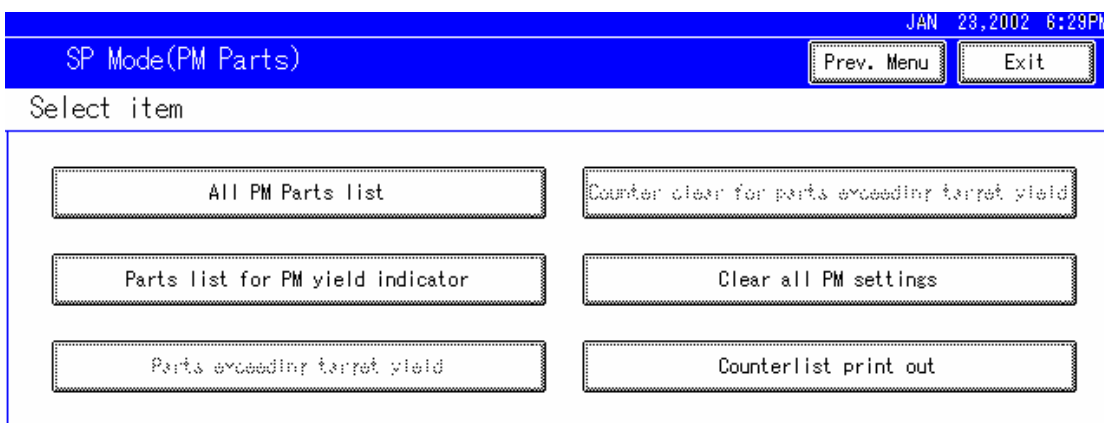
#### 2.1.1 DISPLAYING THE PM COUNTER

1. Press [Clear Modes] (◀) "107" > [Clear/Stop] (C).



B234P901.BMP

2. Press [PM Counter].



B234P902.BMP

- ① **All PM Parts List:** Displays all PM items (all PM items, not only PM units). Lists all PM items regardless of PM yield indicator settings. (●Pg.2-4)
- ② **Parts list for PM yield indicator:** Displays on the items with their PM yield indicator settings set to "Yes". (●Pg.2-4)
- ③ **Clear all PM settings:** Resets all PM counter settings to "0" at the same time. PM items can be reset one by one with the [Clear] button. (●Pg.2-4)
- ④ **Counter list print out:** Prints the PM counter on paper.

Preventive Maintenance



## 2.1.2 PM PARTS SCREEN DETAILS

### All PM Parts list: Main Menu

The "All PM Parts list" displays all PM units and individual items. This list shows all PM items, regardless of their "PM yield indicator settings". (☛Pg.2-4)

No	Description	PM Yield	Current	Target	
001	#Development Unit	YES	00000012	0350K	Clear
002	Developer	YES	00000012	0600K	Clear
003	#Drum Unit	YES	00000012	0600K	Clear
004	Drum Pick-off Pawls	YES	00000012	0600K	Clear
005	#Drum Cleaning Unit	YES	00000012	0500K	Clear
006	Cleaning Blade	YES	00000012	0600K	Clear
007	Cleaning Brush	YES	00000012	0600K	Clear
008	Drum Cleaning Filter	YES	00000012	0400K	Clear
009	#Charge Unit	YES	00000012	0400K	Clear
010	Grid Plate	YES	00000070	1000K	Clear
011	Charge Corona Wire	YES	00000070	1000K	Clear

B234P903.BMP

[A] [B] [C] [D] [E] [F]

- [A]: Number buttons: Pressing a number button opens a submenu. (☛Pg.2-4)
- [B]: Descriptions: The # mark denotes a "unit" (not individual item).
- [C]: PM yield buttons. Function is the same as the "PM yield indicator settings" button. (☛Pg.2-4).
- [D]: Current PM counter value
- [E]: Target PM interval: This can be changed by pressing a number button [A].
- [F]: PM counter clear button: Function is the same as the [Clear current counter] button.

### Number button submenu

Press any number button to open the submenu for a part. In the example below, the number button [001] #Development Unit was pressed.

001		#Development Unit	
Current counter	00000012	[A]	Clear current counter
Target yield	0350K	[B]	Change target yield
Latest1	[D] 0000000	[C]	PM yield indicator settings
Latest2	0000000		No
Latest3	0000000		Yes
Exit		▲ Prev.	▼ Next

B234P904.BMP

- [A]: **Clear current counter:** Press to reset the selected PM counter (in this example 001 #Development Unit) to "0". You can also clear the settings by pressing the [Clear] button on the right side of the PM Counter Main Menu ([F] on the previous page).
- [B]: **Change target yield:** Press the change the target PM yield. To change the setting:
- Press [Change target yield]
  - Enter the number for the new target with the 10-key pad.
  - Press [#] on the operation panel.
- [C]: **PM yield indicator settings:** [Yes] is the default. Press [No] to remove the current item from the "Parts list for PM yield indicator".
- When set to "Yes", items marked with the # mark (# = a unit) will not have their individual items displayed automatically in the "Parts list for PM yield indicator list".
  - When set to "No", items marked with the # mark (# = a unit) only the individual components will appear in the list (the units will not appear).
- [D]: **PM counter history:** This is a summary of the most recent counts
- Latest 1. The latest PM count since the unit (or part) was replaced.
  - Latest 2. The previous PM count since the unit (or part) was replaced.
  - Latest 3. The previous but one PM count since the unit (or part) was replaced.

**Parts list for PM yield indicator**

This list shows the PM Parts Main Menu with only items set to "Yes" displayed.

No	Description	Exceed	Current	Target	
001	#Development Unit	[A]	0112	0350K	Clear
003	#Drum Unit		0112	0600K	Clear
005	#Cleaning Unit		0112	0500K	Clear
009	#Charge Unit		0112	0400K	Clear
014	#Pre-Charge Unit		0011	1000K	Clear
017	#Fusing Unit		0011	1000K	Clear
021	#Fusing Cleaning Unit		0112	0350K	Clear
025	#Toner Suction Bottle		0112	0350K	Clear
026	#Toner Suction Motor		0112	0350K	Clear
027	#Feed Roller - Tray 1		0112	0350K	Clear
028	#Pick-Up Roller - Tray 1		0112	0350K	Clear

B234P905.BMP

Note the following:

- The # mark denotes a unit.
- Items without the # (for example, 065 ITB) denote individual components.
- An asterisk \* will appear in the Exceed column [A] to show items that have exceeded their target PM yields.

## 2.2 PM TABLES

The amounts mentioned (K=1,000) as the PM interval indicate the number of prints or copies unless stated otherwise. These numbers are based on the PM counter.

### Symbol Key for PM Tables

- I:** Inspect. Clean, replace, or lubricate as needed.
- A:** Adjust
- C:** Cleaning required.
- R:** Replacement required.
- L:** Lubrication required.
- Exp:** Expected service life.

** WARNING**

**Turn off the main power switch and unplug the machine before performing any procedure in this section. Laser beams can seriously damage the eyes.**

## 2.2.1 MAIN MACHINE

### Main Unit PM Parts

OPTICS	500K	1000K	3000K	Note
Exposure glass	I	R		Dry cloth.
1st - 3rd mirrors	I			Optics cloth.
APS sensors	I			Dry cloth.
Scanner rail	I			Dry cloth
Optics dust filter	C			Blower brush.
Toner shield glass	C			Optics cloth.
Scanner Wire Tension Adjustment			A	Scanner Positioning Pin.

DEVELOPMENT	500K	Exp	Note
Side seals (x2)	C		Blower brush, dry cloth
Development roller	C		Cleaning required when developer is replaced. Use a dry cloth. * <sup>1</sup>
Doctor blade	C		Cleaning required when developer is replaced. Insert the paper dust cleaner behind the blade to rub away the paper dust.
Entrance seal	C		Blower brush or dry cloth
Toner hopper (outside)	I		Blower brush or dry cloth
Gears (all)	I		Blower brush
Developer	R		SP2801 (TD Sensor Initial Setting). Before execution, be sure to enter the Lot No. for the new developer.
Development roller gear: 21Z (X2)		4000K	
Paddle roller gear: 42Z		4000K	
Idle gear: 23Z		1500K	
Toner collection bottle		650K * <sup>1</sup>	Discard the used toner when a near end or end alert is displayed.
Toner suction bottle		About 3000K * <sup>1</sup>	Replace when near end or end alert is displayed.
Toner suction motor		About 2500K * <sup>1</sup>	Replace when near end or end alert is displayed.

\*<sup>1</sup>: K count assumes copying and printing on A4 LEF with 6% test chart.

AROUND THE DRUM	500K	550K	1100K	Exp	
Side seals		I			Blower brush, dry cloth
Ground plate screw	I				Conductivity check. Alcohol or water
Drum dust filter		C			Blower brush
Toner filter		R			
Cleaning unit		I			Blower brush, dry cloth
Cleaning brush seal		I			
Cleaning entrance seal		C			
Cleaning brush		R			Section 3.7.8.
Main cleaning blade		R			
Cleaning unit filters		R			Two filters
Pre-transfer lamp		C			Dry cloth
ID sensor		C			
Drum potential sensor		C			Blower brush
Quenching lamp shield glass		C			Blower brush, dry cloth
Corona wire casing	C				Dry cloth
Grid plate (charge)	R				
Charge corona wire	R				
Corona wire cleaner (charge)	R				
Wire cushion (charge)	R				
Pre-charge corona wire	R				
Pre-charge grid plate	R				
Drum pick-off pawls			R		
Transfer unit entrance stay		C			
Transfer belt			R		
Transfer belt bias brush			C		Blower brush
Transfer belt and bias roller cleaning blades			R		Replace at the same time as the transfer belt
Rear casing guide			C		Dry cloth
Exit bias plate			C		Blower brush when transfer belt is replaced.
Belt drive roller			C		Alcohol, when transfer belt is replaced.
Belt roller			C		
Transfer bias roller			C		Alcohol, when transfer belt is replaced. Apply conductive grease to electrical contacts.
Cleaning bias roller			C		Cleaning when Transfer belt cleaning blade is replaced
Ozone filter				15,000K	
Carrier catcher		I			Dry cloth

FUSING UNIT		500K	700K	750K		
Pressure roller, cleaning roller bearings		I			Inspect only *1	
Fusing lamps (x3)		I			Inspect only	
Pressure roller cleaning roller		C			Dry cloth (water or alcohol can also be used if necessary)	
Fusing entrance guide plate (lower)		C			Water or alcohol	
Fusing cleaning fabric	NA			R	Section 3.11.4	
Fabric pressure roller	NA			R		
Supply roller stopper	NA			R		
Hot roller			R			
Hot roller strippers			R		Dry cloth <ul style="list-style-type: none"> <li>• Cleaning required when fusing cleaning fabric is replaced.</li> <li>• Should be replaced with hot roller.</li> </ul>	
Hot roller ball bearings			I		Inspect only	
Hot roller bushings			I		When replacing hot roller, lubricate with Barrierta 55L or S552R on the bushings.	
Hot roller gears		C/L			Lubricate (Barrierta 55L or SS552R)	
Pressure roller				R	When replacing, lubricate with Barrierta 55L or S552R on the bushings.	
Pressure roller ball bearings				I		
Pressure roller bushings				I	Inspect only	
Pressure roller strippers		I			Dry cloth	
Fusing exit roller		I			Water, alcohol	
Fusing exit guide plates (upper, lower)		I			Dry cloth wrapped around a metal scale	
Cooling entrance guide plate		I				
Exit Roller		C			Dry cloth	
Vertical Relay Roller-Duplex		C				
Vertical Relay Roller		C				
Horizontal Exit Roller		C				
Transport Roller Driven :Horizontal Guide plate		C				
Transport Roller-Driven :Entrance Guide		C				
Transport Roller-Driven :Guide Plate-Exit		C				
Cooling Transport Belt		C				
Discharge Brush :Cooling Transport Belt		I				Blower Brush
Discharge Brush :Entrance		I				
Discharge Brush :Exit Guide Plate		I				
Job Time Sensor		I			Blower Brush	
Exit Sensor		I				
Drive Shaft		C			Dry Cloth	
Cooling pipe		C				
Exit Motor		C			Grease Barrierta-JFE 5 5/2	

Preventive Maintenance

<b>PAPER FEED</b>	<b>500K</b>	<b>1000K</b>	<b>Note</b>
Paper feed rollers x3		R	Replace together.
Pick-up rollers x3		R	
Separation rollers x3		R	
Grip rollers	C		Damp cloth
Relay rollers	C		Damp cloth
Paper feed guide plate	I		Damp cloth
Upper and lower registration rollers	C		Damp cloth
Registration sensor	C		Blower brush
Relay sensor	C		Blower brush
Paper dust remover	C		Remove paper dust.
Paper feed sensors	C		Blower brush

<b>DUPLEX UNIT</b>	<b>500K</b>	<b>Note</b>
Transport rollers	C	Damp cloth
Feed rollers	C	
Reverse transport roller	C	
Reverse feed roller	C	
Inverter feed rollers	C	
Inverter transport rollers	C	
Entrance sensor	C	Blower brush
Anti-static brush	I	
Duplex inverter sensor	C	Blower brush, inspect feeler movement.
Duplex transport sensor	C	Blower brush
Horizontal transport feed roller (resin roller)	C	Damp cloth

<b>GW CONTROLLER</b>	<b>500K</b>	
Controller filter	C	Blower brush

<b>PSU</b>	<b>500K</b>	
PSU filter	C	Blower brush

<b>Exterior</b>	<b>500K</b>	
Heat pipe cooling fan suction duct	C	Blower brush

<b>OTHERS</b>	<b>1 Year</b>	
Breaker switches	I	Test the operation of the two breaker switches (copier, z-folding unit) once every year.



### 2.2.2 ADF

The PM interval is for the number of originals that have been fed.

	80K	120K	140K	Note
Transport belt			R	Clean with damp cloth, or alcohol
Feed belt		R		
Separation roller		R		
Pick-up roller		R		
Sensors	I	I		Blower brush
Drive gears	I	I		Lubricate with a very small amount of G501.

### 2.2.3 FINISHER SR5000 B830

	500K	2500K	3000K	Exp	Note
Driver rollers	I				Alcohol, dry cloth
Idle rollers	I				Alcohol, dry cloth
Discharge brush	I				Alcohol, dry cloth
Alignment brush roller		R			
Bushings					Lubricate with Silicone or Launa oil if noisy.
Sensors	I				Blower brush.
Jogger fences	I				Make sure screws are tight.
Staple unit				R	500K Staple Sheets
Positioning roller		R			
Shift positioning roller			R		

### 2.2.4 PUNCH UNIT PU5000 B831

	Exp	Note
Punch unit B531	I	1 million punches

### 2.2.5 LCIT RT5000 B832

The PM interval is for the number of sheets that have been fed.

	500K	1000K	Note
Paper feed roller x3		R	
Pick-up rollers x3		R	
Separation rollers x3		R	
Transport guide plate	I		
Grip rollers (drive, idle rollers)	I		

## 2.2.6 MULTI-BYPASS TRAY B833

The PM interval is for the number of sheets that have been fed.

	500K	1000K	Note
Paper feed roller		R	
Pick-up roller		R	
Separation roller		R	
Transport guide plate	I		
Grip rollers (drive, idle rollers)	I		

Preventive  
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## 2.2.7 LCIT RT5010 B834

The PM interval is for the number of sheets that have been fed.

	500K	1000K	Note
Paper feed roller x3		R	
Pick-up rollers x3		R	
Separation rollers x3		R	
Transport guide plate	I		
Grip rollers (drive, idle rollers)	I		

## 2.2.8 COVER INTERPOSER TRAY CI5000 B835

The PM interval is for the number of sheets that have been fed.

	60K	As Needed	Note
Drive rollers		C	Dry cloth
Idle rollers		C	Dry cloth
Feed belt	R		
Separation roller	R		
Pick-up roller	R		
Sensors		C	Blower brush.
Drive gears		I	Lubricate with very small amount of G501.

## 2.2.9 BOOKLET FINISHER BK5000 B836

	500K	EXP	Note
Drive Rollers	I		Damp cloth, dry cloth
Idle Rollers	I		Damp cloth, dry cloth
Anti-Static Brush	I		Dry cloth
Bushings	I		Silicone or Launa oil
Sensors	I		Blower brush
Booklet Stapler		R	Replace the unit if the staple count is 200K.

**2.2.10 Z-FOLDING UNIT ZF4000 B660**

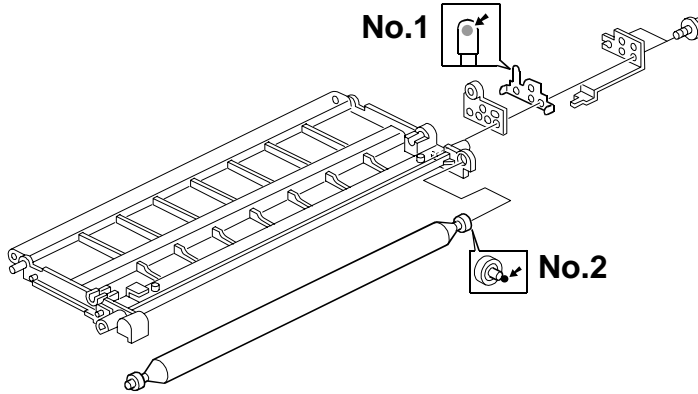
	<b>As Needed</b>	<b>Note</b>
Drive Rollers	C	Dry cloth.
Idle Rollers	C	Dry cloth.
Anti-Static Brush	C	Dry cloth.
Bushings	L	Silicone Oil
Sensors	C	Dry cloth.
Breaker switches	I	Test the operation of the two breaker switches (copier, z-folding unit) once every year.

## 2.3 LUBRICATION POINTS

### Types of Grease

<b>a</b>	Grease – KS660 – SHIN-ETSU
<b>b</b>	Grease Barrierta – JFE 5 5/2

### 2.3.1 TRANSFER BELT UNIT



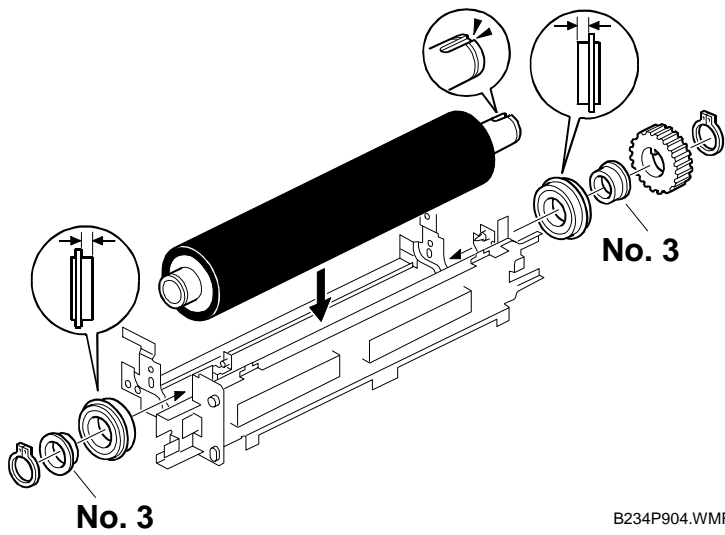
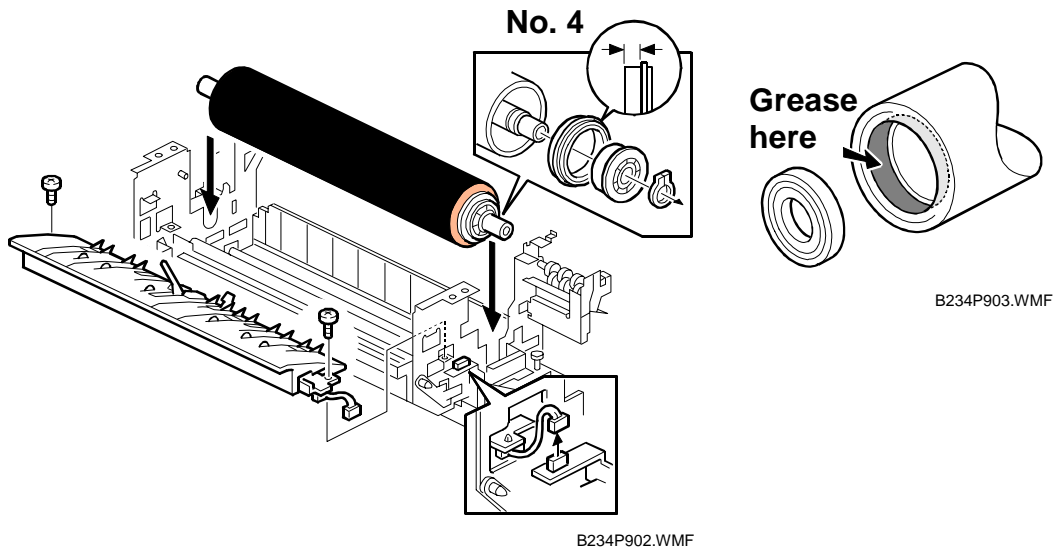
B234P901.WMF

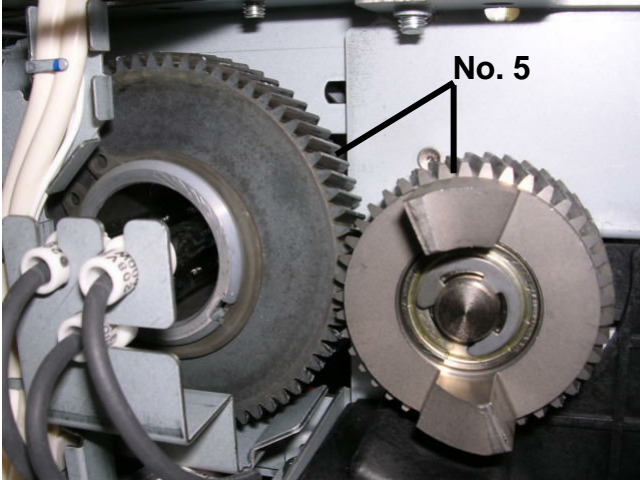
No.	Lubrication Point	Type of Grease
1	Upper part of the bias roller terminal	a
2	Rear end of the bias roller	a

Preventive Maintenance

### 2.3.2 FUSING UNIT

No.	Lubrication Point	Type of Grease
3	Outer, inner surfaces of bushings	b
4	Inner surface of both ends of the pressure roller where it contacts the ball bearing	b
5	Fusing unit drive gears	b





B234P906.BMP

Preventive  
Maintenance



### 3. REPLACEMENT AND ADJUSTMENT

#### NOTES

There are sharp edges as shown in the pictures below. Be very careful when disassembling.

#### 1. Rear left door of the Copier

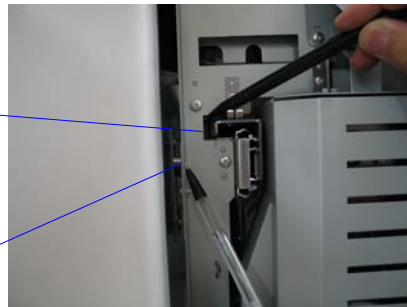
Edge of frame



#### 2. Rear side of the Z-folding Unit (1)

Edge of window

Edge of frame



#### 3. Rear side of the Z-folding Unit (2)

Raised frame

Edge of window



Replacement  
Adjustment



## 3.1 GENERAL CAUTIONS

1. Do not turn OFF either of the power switches while any of the electrical components are active. Doing so might cause damage to units such as the transfer belt, drum, and development unit when they are pulled out of or put back into the copier.
2. When the parts are disassembled, reassembly is the reverse of disassembly unless otherwise noted in this manual or other related document. Be careful not to install small parts such as screws, washers, pins, E-rings, star washers in the wrong places.
3. Basically, the copier should not be operated with any parts removed or disassembled.
4. Make sure that the copier will not operate before touching potentially dangerous places (e.g. rotating/operating sections such as gears, belts pulleys, fans and laser beam exit of the laser unit).

### 3.1.1 OPC DRUM

An organic photoconductor (OPC) drum is more sensitive to light and ammonia gas than a selenium drum. Follow the cautions below when handling an OPC drum.

1. Never expose the drum to direct sunlight.
2. Never expose the drum to direct light of more than 1,000 Lux for more than a minute.
3. Never touch the drum surface with bare hands. When the drum surface is touched with a finger or becomes dirty, wipe it with a dry cloth or clean it with wet cotton. Wipe with a dry cloth after cleaning with wet cotton.
4. Never use alcohol to clean the drum; alcohol dissolves the drum surface.
5. Store the drum in a cool, dry place away from heat.
6. Take care not to scratch the drum, because the drum layer is thin and is easily damaged.
7. Never expose the drum to corrosive gases such as ammonia gas.
8. Always keep the drum in the protective sheet when keeping the drum unit, or the drum itself, out of the copier. This avoids exposing it to bright light or direct sunlight, and will protect it from light fatigue.
9. Dispose of used drums in accordance with local regulations.
10. When installing a new drum, execute **SP2962** (Auto Process Control Execution).

### 3.1.2 DRUM UNIT

1. Before pulling out the drum unit, place a sheet of paper under the drum unit to catch any spilt toner.
2. Make sure that the drum unit is set in position and the drum stay is secured with a screw before the main switch is turned on. If the drum unit is loose, poor contact of the drum connectors may cause electrical noise, resulting in unexpected malfunctions (RAM data change is the worst case).
3. To prevent drum scratches, remove the development unit before removing the drum unit.

### 3.1.3 TRANSFER BELT UNIT

1. Never touch the transfer belt surface with bare hands.
2. Take care not to scratch the transfer belt, because the surface is easily damaged.
3. Before installing the new transfer belt, clean all the rollers and the inner part of the transfer belt with a dry cloth to prevent the belt from slipping.

### 3.1.4 SCANNER UNIT

1. When installing the exposure glass, make sure that the white paint is at the rear left corner.
2. Clean the exposure glass with alcohol or glass cleaner to reduce the amount of static electricity on the glass surface.
3. Use a cotton pad or optical cloth to clean the mirrors and lens.
4. Do not bend or crease the exposure lamp flat cable.
5. Do not disassemble the lens unit. This will put the lens and the copy image out of focus.
6. Do not turn any of the CCD positioning screws. This will put the CCD out of position.

### 3.1.5 LASER UNIT

1. Do not loosen the screws that secure the LD drive board to the laser diode casing. This will put the LD unit out of adjustment.
2. Do not adjust the variable resistors on the LD unit, because they are adjusted in the factory.
3. The polygon mirror and F-theta lenses are very sensitive to dust. Do not open the optical housing unit.
4. Do not touch the glass surface of the polygon mirror motor unit with bare hands.
5. After replacing the LD unit, do the laser beam pitch adjustment. Otherwise, an SC condition will be generated.

### 3.1.6 CHARGE CORONA UNIT

1. Clean the corona wires with a dry cloth. Never use sandpaper or solvent.
2. Clean the charge corona casing with water first to remove NOx based compounds. Then clean it with alcohol if any toner still remains on the casing.
3. Clean the end block with a blower brush first to remove toner and paper dust. Then clean with alcohol if any toner still remains.
4. Do not touch the corona wires with bare hands. Oil stains from fingers may cause uneven image density on copies.
5. Make sure that the wires are correctly between the cleaner pads and that there is no foreign material (iron filings, etc.) on the casing.
6. When installing new corona wires, do not bend or scratch the wire surface. Doing so may cause uneven charge. Also be sure that the corona wires are correctly positioned in the end blocks.
7. Clean the grid plate with a blower brush (not with a dry cloth).
8. Do not touch the charge grid plate with bare hands. Also, do not bend the charge grid plate or make any dent in it. Doing so may cause uneven charge.

### 3.1.7 DEVELOPMENT

1. Be careful not to nick or scratch the development roller.
2. Place the development unit on a sheet of paper after removing it from the copier.
3. Never disassemble the development roller assembly. The position of the doctor plate is set with special tools and instruments at the factory to ensure the proper gap between the doctor blade and the development roller.
4. Clean the drive gears after removing used developer.
5. Dispose of used developer in accordance with local regulations.
6. Never load types of developer and toner into the development unit other than specified for this model. Doing so will cause poor copy quality and toner scattering.
7. Immediately after installing new developer, the TD sensor initial setting procedure should be performed with **SP2801** (TD Sensor Initialization) to avoid damage to the copier. Do not perform the TD sensor initial setting with used developer. Do not make any copies before doing the TD sensor initial setting.
8. When using a vacuum cleaner to clean the development unit casing, always ground the casing with your fingers to avoid damaging the TD sensor with static electricity.
9. When replacing the TD sensor, replace the developer, then execute **SP2801** (TD Sensor Initialization) and **SP2962** (Auto Process Control Execution).

Replacement  
Adjustment

### 3.1.8 CLEANING

1. When servicing the drum cleaning section, be careful not to damage the edges of the main cleaning blade and 2nd cleaning blade.
2. Do not touch the cleaning blade with bare hands.
3. Before disassembling the cleaning section, place a sheet of paper under it to catch any toner falling from it.

### 3.1.9 FUSING UNIT

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

### **3.1.10 PAPER FEED**

1. Do not touch the surface of the pick-up, feed, and separation rollers.
2. To avoid paper misfeeds, the side fences and end fence of the paper tray must be positioned correctly to align with the actual paper size.

### **3.1.11 USED TONER**

1. We recommend checking the amount of used toner at maintenance (650K).
2. Dispose of used toner in accordance with local regulations. Never throw toner into an open flame, because toner dust may ignite.

### 3.2 SPECIAL TOOLS AND LUBRICANTS

#### 3.2.1 SPECIAL TOOLS

Part No.	Description
A0069104	Scanner Positioning Pin (4 pcs./set)
A2929500	Test Chart – S5S (10 pcs./set)
A0299387	Digital Multimeter – FLUKE 87
B6455010	SD (Secure Digital) Card – 64 MB
G0219350	Loop Back Connector

#### 3.2.2 LUBRICANTS

Part No.	Description
A2579300	Grease Barrierta – JFE 5 5/2
52039502	Silicon Grease G-501

Replacement  
Adjustment

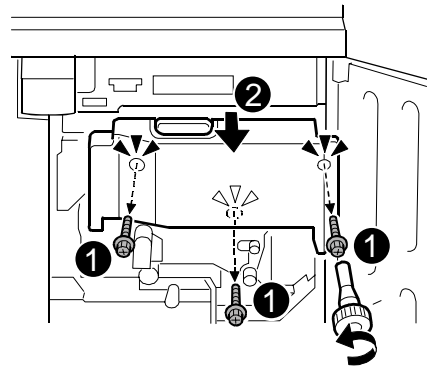
### 3.3 COMON PROCEDURES

#### 3.3.1 PULLING THE DEVELOPMENT UNIT DRAWER OUT

**NOTE:** These illustrations show removal with the hex driver provided to the customer, but the screws can be removed with any Phillips head (+) screwdriver.

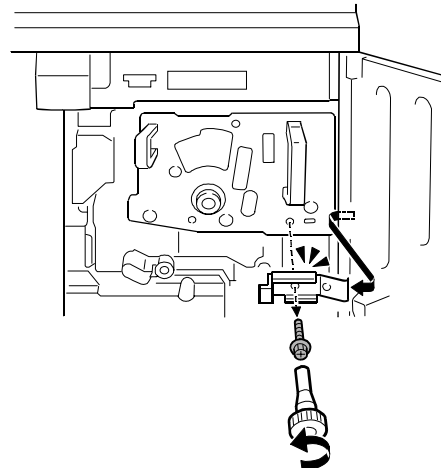
1. Open the right front door.
2. Remove the black screws at ❶.
3. Take off the inner cover ❷.

**Important!** This cover functions as a duct in the ventilation path of the machine. It must always be reinstalled.



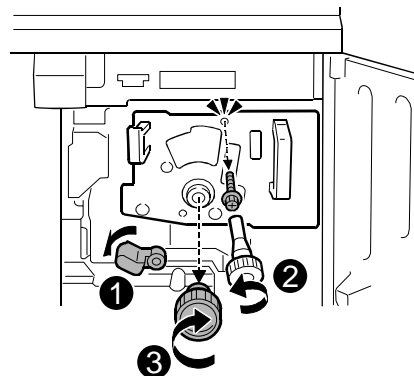
B234R903.WMF

4. Remove the ground plate (⚡ x1).



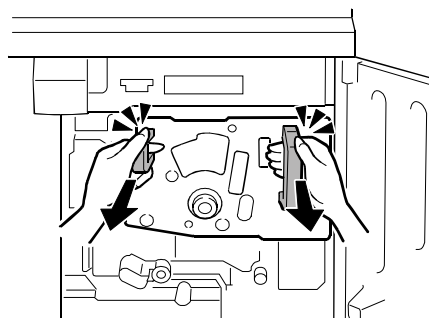
B234I110E.WMF

5. Gently lower Lever **C1** **1**.
6. Remove the black screw **2** (⚙️ x1).
7. Rotate the black knob **3** clockwise and remove it.



B234R904.WMF

8. Pull the purple handles toward you and remove the faceplate.



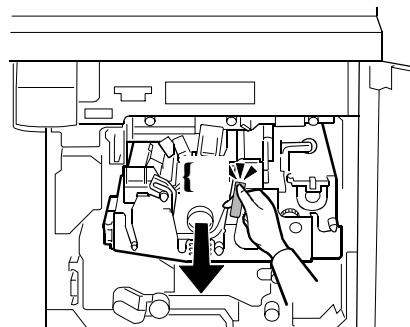
B234R913.WMF

Replacement Adjustment

9. Pull the purple handle toward you until the drawer stops.

**NOTE:** The development unit drawer **f** will shift slightly to the right when you pull the drawer out.

**Important:** Use a sheet of clean paper to cover the slit in the PCU where the drum is visible. This protects the photo-sensitive surface of the drum from overhead light and direct sunlight.

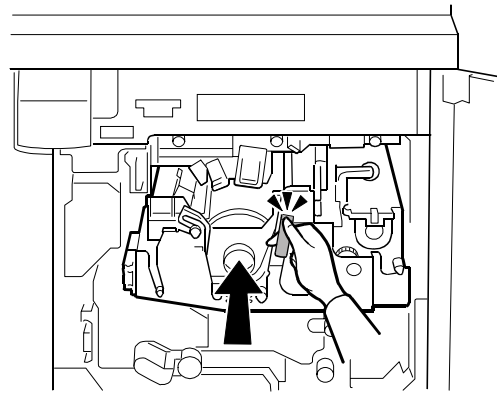


B234R914.WMF



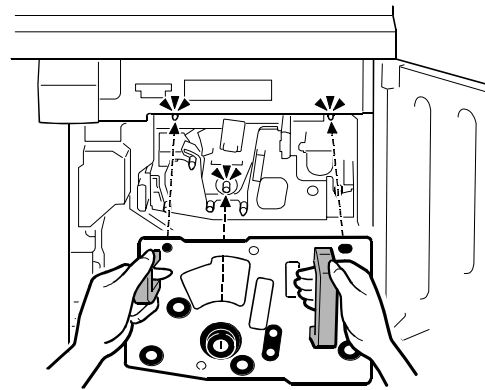
### 3.3.2 PUTTING THE DEVELOPMENT UNIT DRAWER IN

1. Gently and firmly push the purple handle into the machine until the drawer stops and locks.



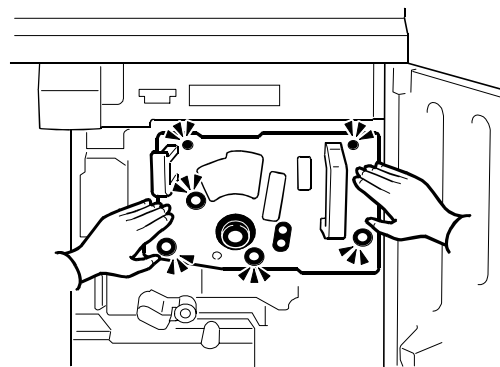
B234R915.WMF

2. Mount the faceplate holes over the pegs.



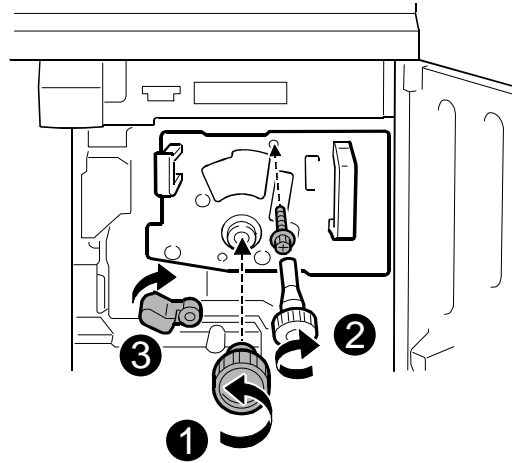
B234R916.WMF

3. Push in on each corner and edge of the faceplate to make sure that it is locked and mounted correctly.



B234R917.WMF

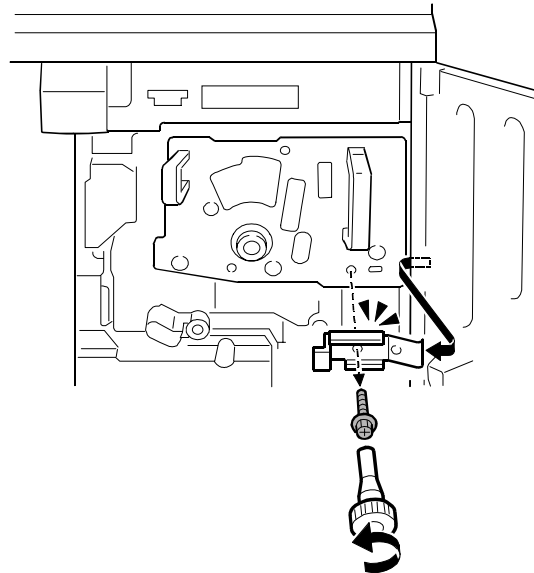
4. In this order:
- Attach knob ①
  - Fasten screw ②
  - Gently rotate lever C1 ③ up.



B234R918.WMF

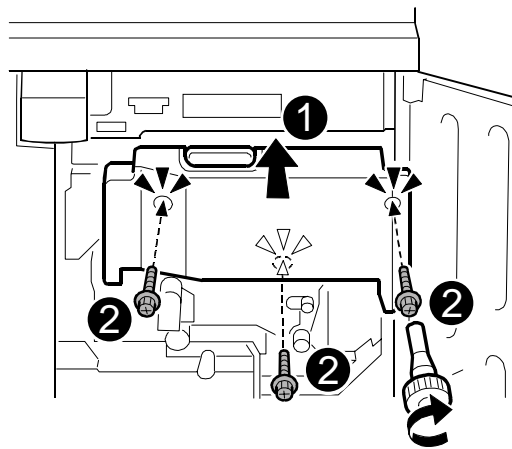
Replacement  
Adjustment

5. Reattach the ground plate (⚡ x1).



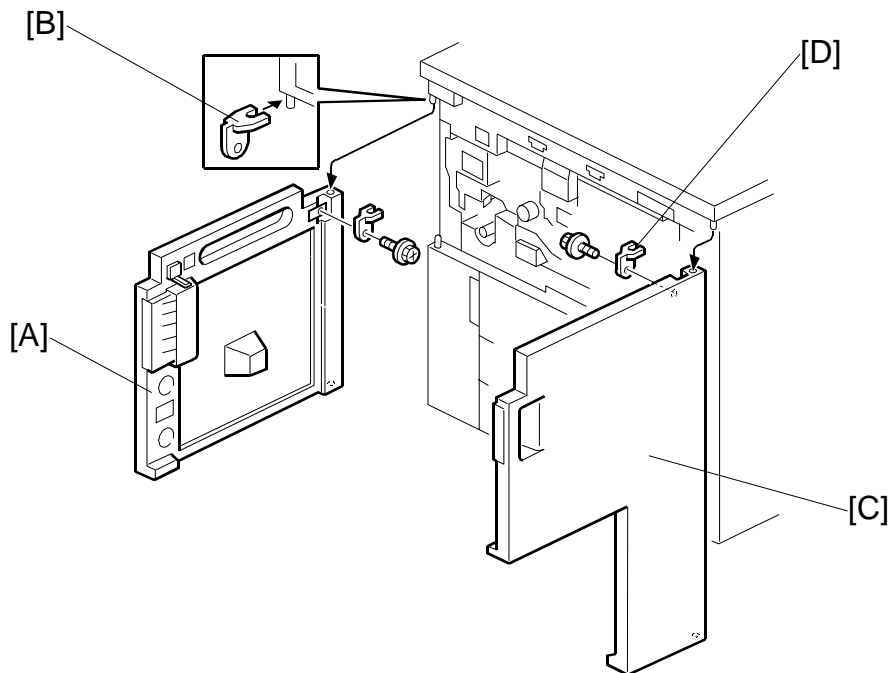
B234I110E.WMF

6. Mount the inner cover.
- Attach the screws ②.
  - Tighten all the screws.
7. Close the right front door.



B234R920.WMF

### 3.3.3 FRONT DOORS



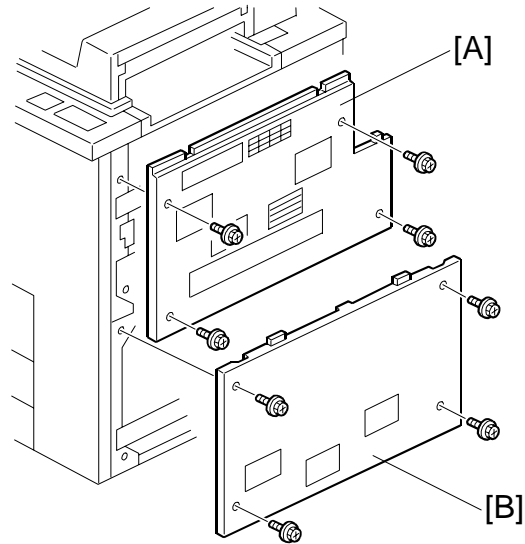
B234R945.WMF

**⚠ CAUTION**

Turn off the main power switch and unplug the machine before attempting any procedure in this section.

1. Open the left door [A].
2. Bracket [B] (⚙ x 1).
3. Lift up the left door and remove it.
4. Open the right door [C].
5. Bracket [D] (⚙ x 1).
6. Lift up the right door and remove it.

### 3.3.4 RIGHT COVERS

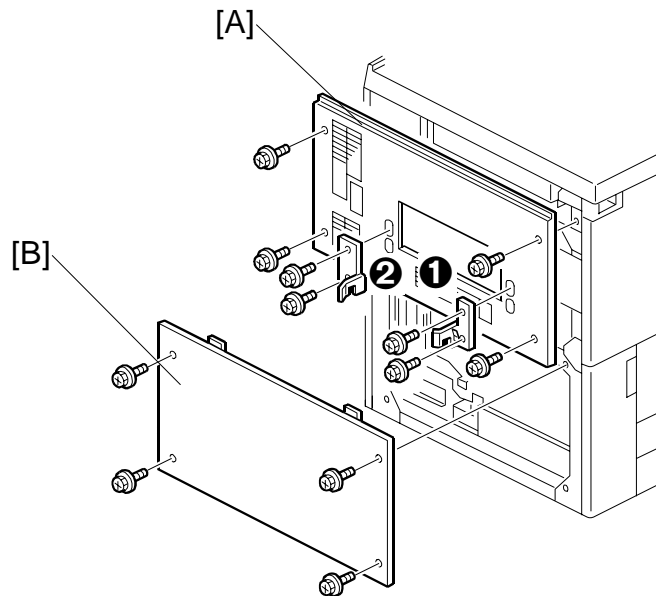


B234R921.WMF

1. Right upper cover [A] (⚙️ x 4).
2. Right lower cover [B] (⚙️ x 4).

Replacement  
Adjustment

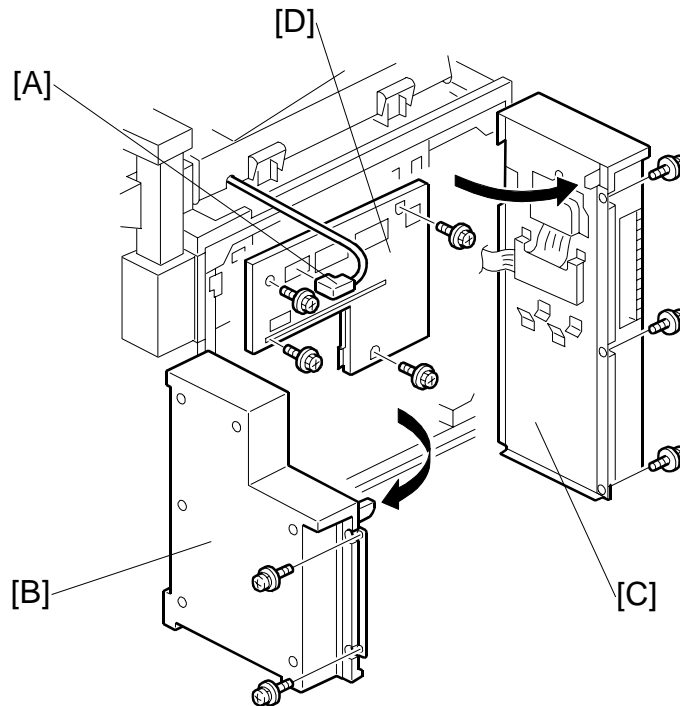
### 3.3.5 LEFT COVERS



B234R910.WMF

1. Disconnect the optional finisher, if it is installed.
2. If the optional finisher was installed:
  - Remove the front joint bracket **1** (⌘ x 2).
  - Remove the rear joint bracket **2** (⌘ x 2).
3. Left upper cover [A] (⌘ x 4)
4. Left lower cover [B] (⌘ x 4).

### 3.3.6 REAR UPPER COVER

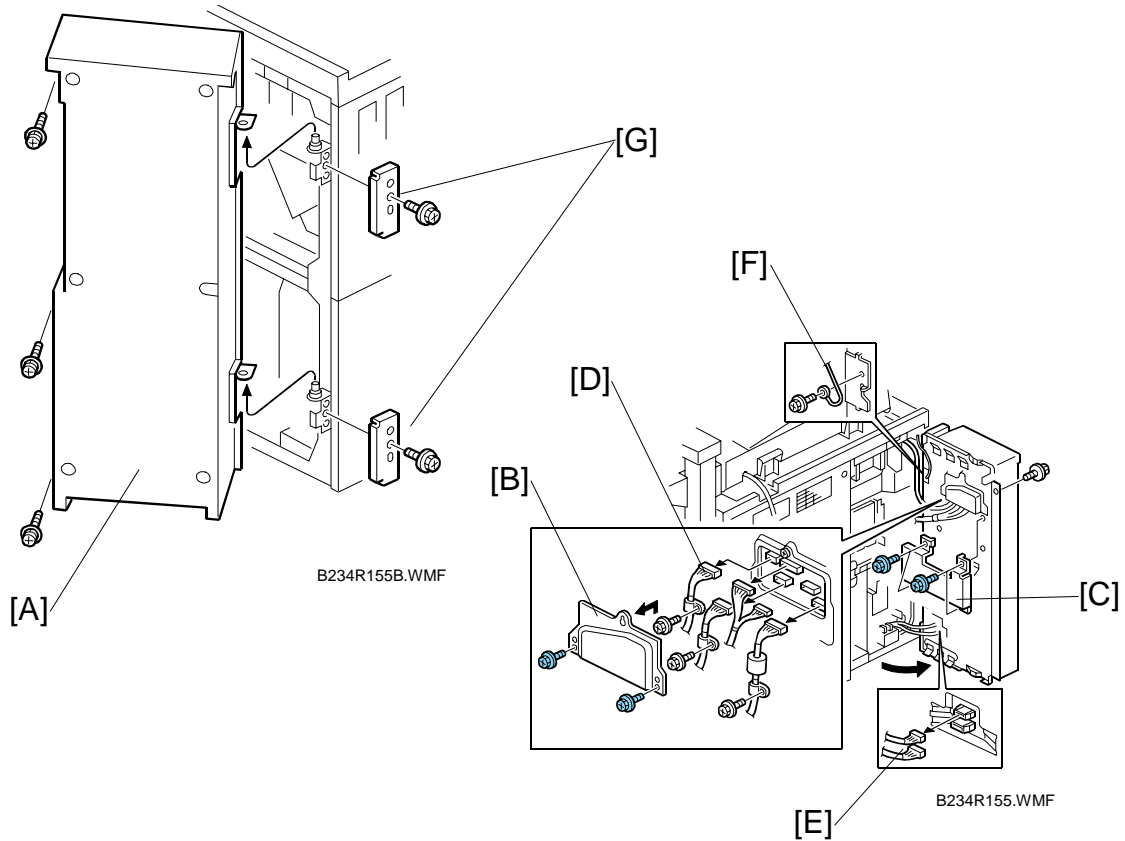


B234R911.WMF

1. Disconnect the ADF connector [A].
2. Open the PSU box [B] (⚙ x 2).
3. Open the controller box [C] (⚙ x 3).
4. Rear upper cover [D] (⚙ x 4).

Replacement  
Adjustment

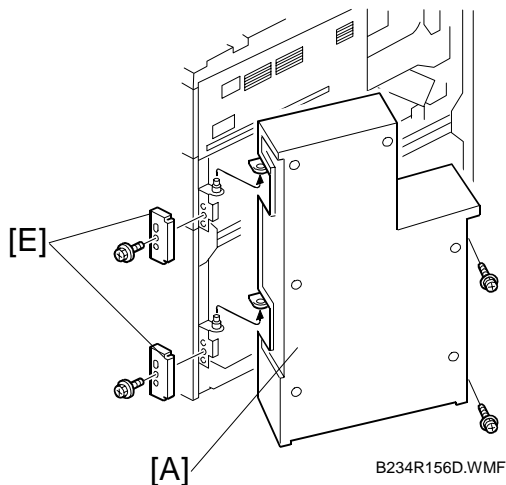
### 3.3.7 CONTROLLER BOX



1. Open the controller box [A] (⚙ x 3 with washers).
2. Remove 1st connector cover [B] (⚙ x2).
3. Remove 2nd connector cover [C] (⚙ x2)
4. Disconnect [D], [E] (⚙ x9)
5. Disconnect the ground wire [F] (⚙ x1)
6. Remove the hinge covers (top, bottom) [G] (⚙ x2)
7. Remove the controller box [A].

### 3.3.8 PSU BOX

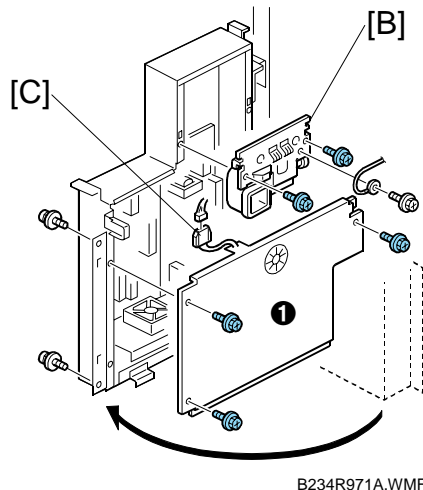
1. Open the PSU box [A] (⚙️ x 2).



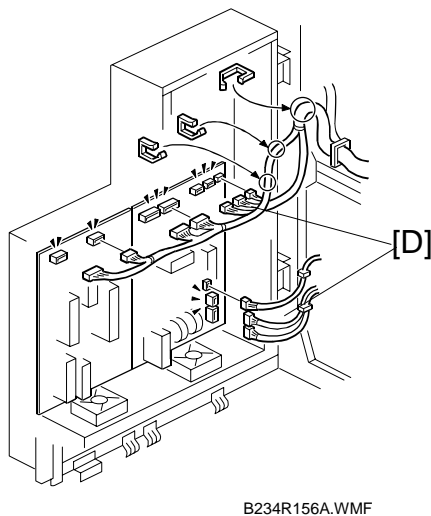
Replacement  
Adjustment

2. Duct [B] (⚙️ x 3)
3. Disconnect [C] (🔌 x1)

**NOTE:** You do not need to remove the cover ❶ as shown.



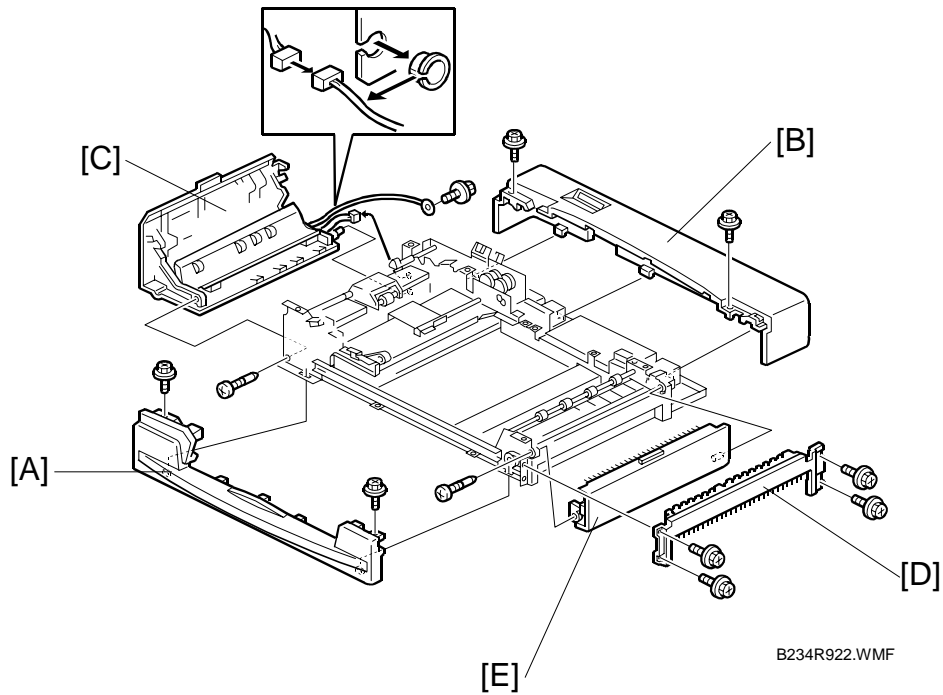
4. Disconnect connectors [D] (🔌 x10)
5. Remove the hinge covers (top, bottom) [E] (⚙️ x 2)
6. Remove the PSU box [A]





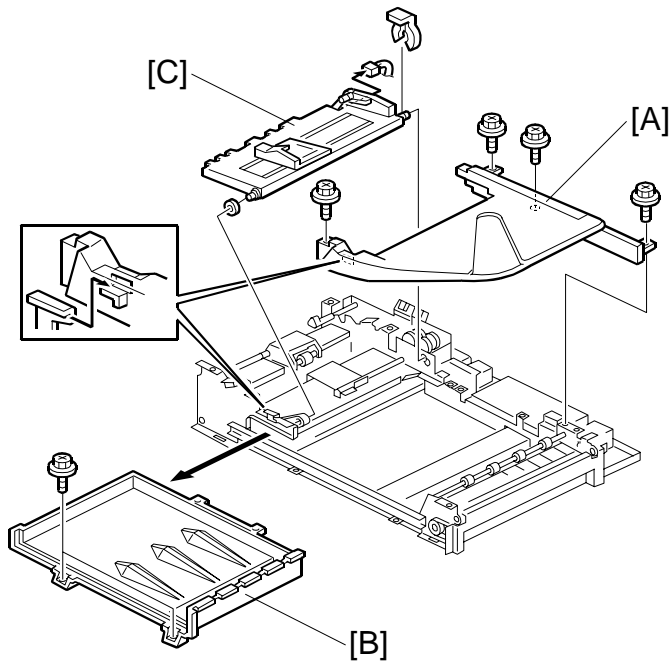
## 3.4 DOCUMENT FEEDER

### 3.4.1 ADF COVERS



1. Front cover [A] (⚙ x 2).
2. Rear cover [B] (⚙ x 2).
3. Left cover [C] (⚙ x 2, 📏 x 2).
4. Original exit tray. (➡3.5.6)
5. Right cover [D] (⚙ x 4, 📏 x 2).
6. Upper exit cover [E] (⚙ x 1).

### 3.4.2 ORIGINAL TRAY, ORIGINAL TABLE COVER AND BOTTOM PLATE



Replacement  
Adjustment

B234R923.WMF

#### **Original Tray**

1. Remove the ADF front and rear covers. (☛3.4.1)
2. Original tray [A] (🔩 x 4).

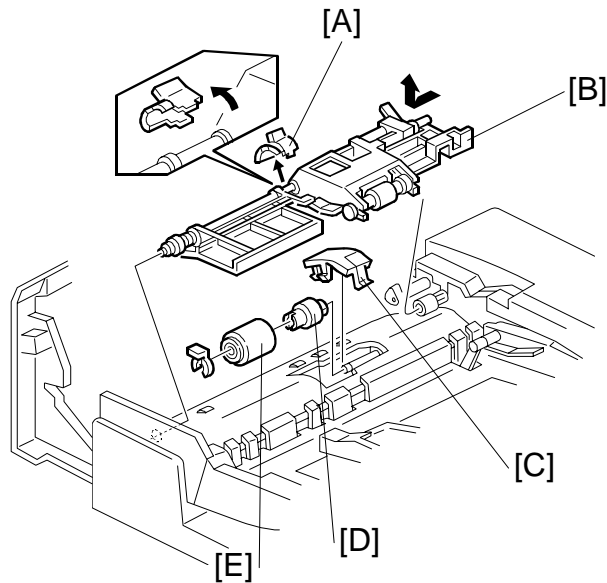
#### **Original Table Cover**

1. Remove the ADF front and rear covers. (☛3.4.1)
2. Remove the original tray [A].
3. Original table cover [B] (🔩 x 2).

#### **Bottom Plate**

1. Remove the ADF front and rear covers. (☛3.4.1)
2. Remove the original tray [A].
3. Bottom plate [C] (🔩 x 1, 🛠️ x 1).

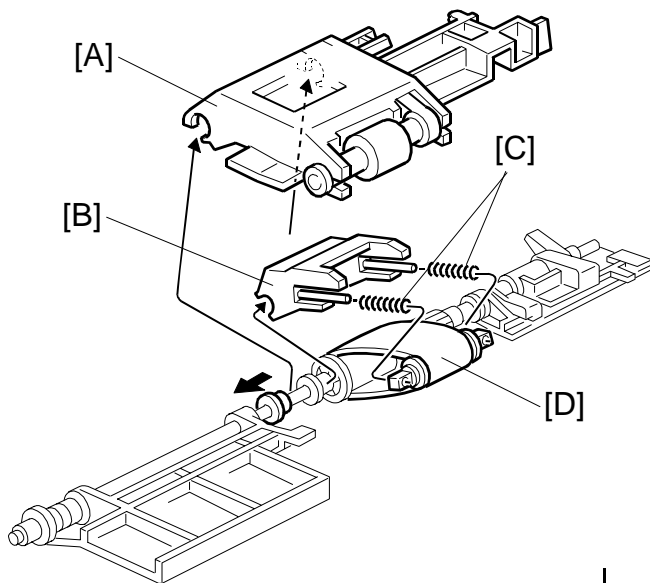
### 3.4.3 FEED UNIT AND SEPARATION ROLLER



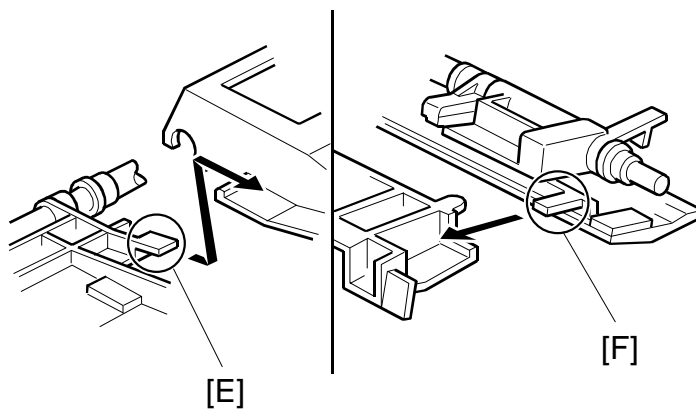
B234R924.WMF

1. Open the left cover.
2. Clip [A].
3. Remove the feed unit [B]. Pull the feed unit to the front, release the shaft at the rear, and release the front bushing.
4. Separation roller cover [C].
5. Torque limiter [D] and separation roller [E] (⌀ x 1).

### 3.4.4 FEED BELT



B234R925.WMF

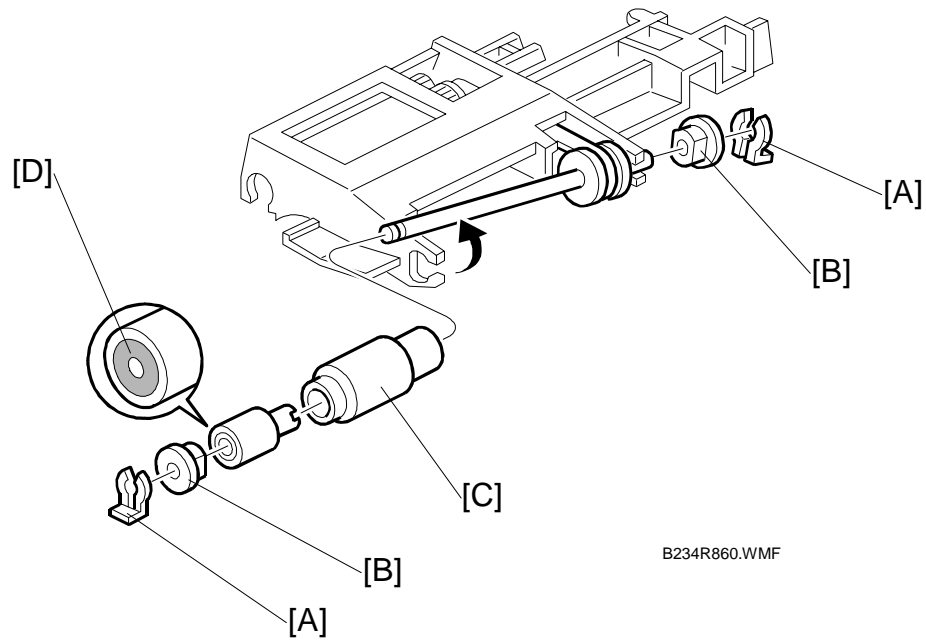


B234R926.WMF

Replacement  
Adjustment

1. Feed unit. (☛3.4.3)
2. Pick-up roller unit [A].
3. Feed belt holder [B].  
**NOTE:** The springs [C] come off the feed belt cover easily.
4. Feed belt [D].  
**NOTE:** When reinstalling the pick-up roller unit, make sure that levers [E] and [F] on the front and rear original guides are resting on the pick-up roller unit cover.

### 3.4.5 PICK-UP ROLLER



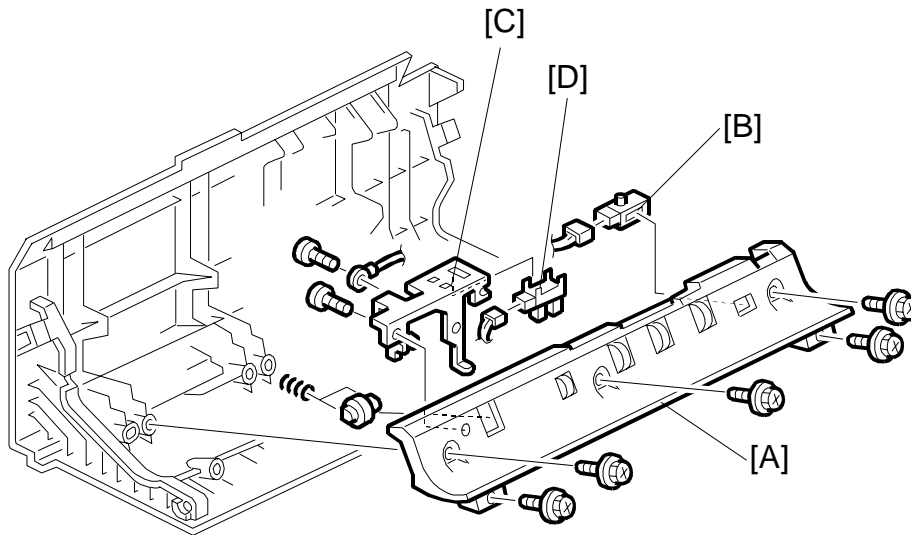
B234R860.WMF

1. Open the left cover.
2. Feed unit (☛3.4.3)
3. Snap rings [A] (☞ x 2).
4. Two bushings [B].
5. Pick-up roller [C].

**NOTE:** When reinstalling the pick-up roller, make sure that the one-way clutch [D] is not on the gear side.

### 3.4.6 ADF SENSORS

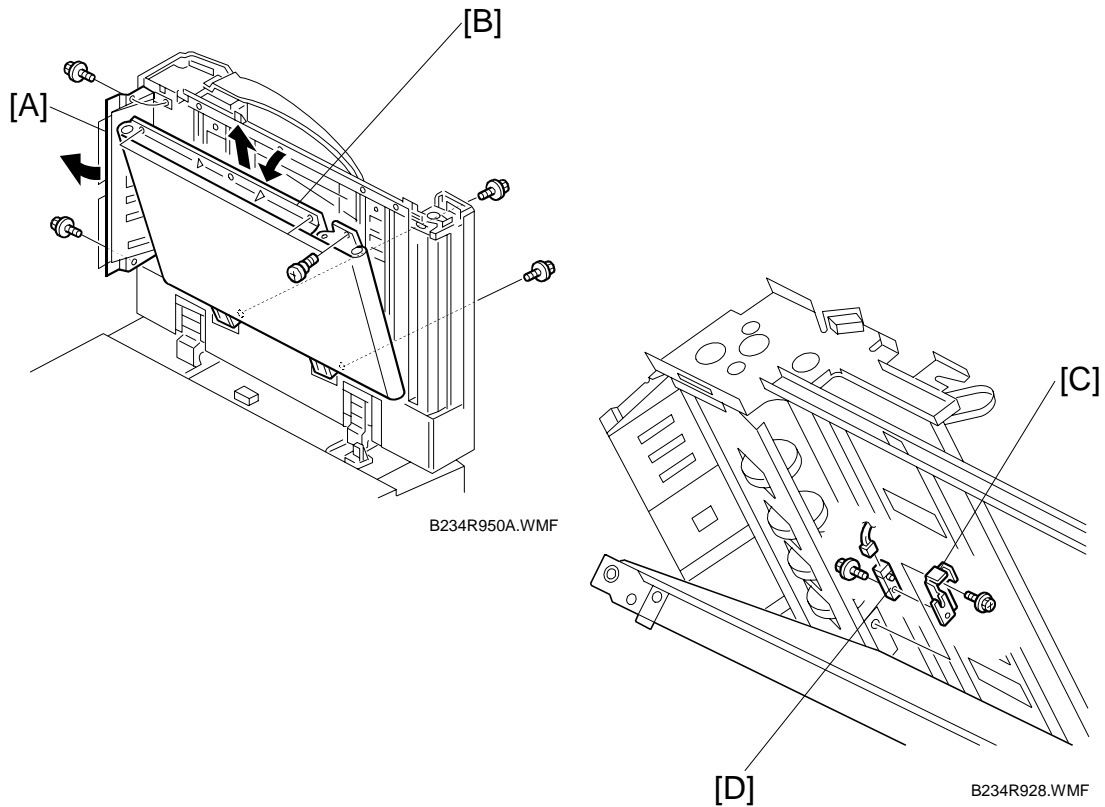
#### *Entrance Sensor and Length Sensor*



Replacement  
Adjustment

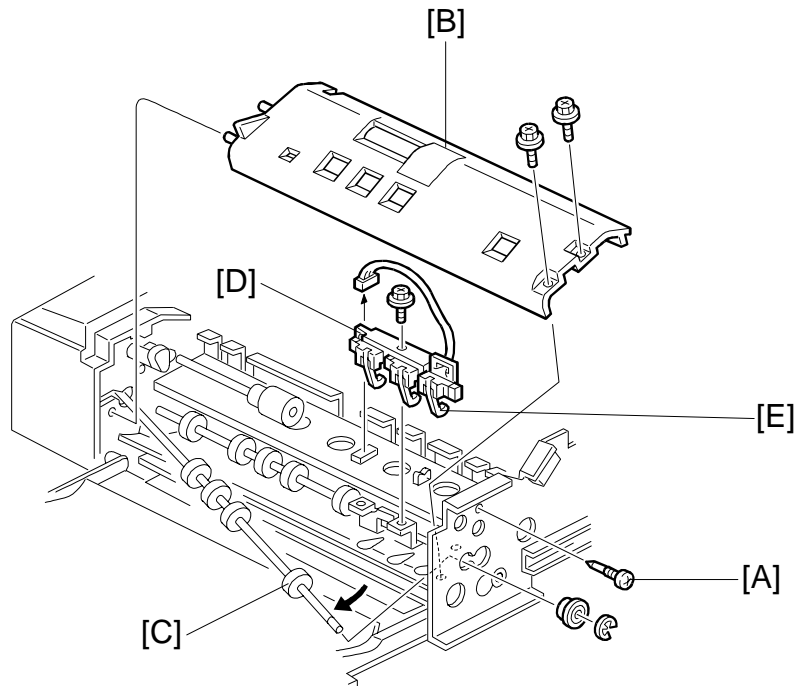
B234R861.WMF

1. Left cover. (●3.4.1)
2. Guide plate [A] (⚙ x 5).
3. Entrance sensor [B] (🔌 x 1).
4. Length sensor bracket [C] (⚙ x 2).
5. Length sensor [D] (🔌 x 1).

**Registration Sensor**

1. ADF front cover. (☛3.4.1)
2. ADF left cover. (☛3.4.1)
3. Release the entrance guide [A] (🔩 x 2).
4. Release the transport belt unit [B] (🔩 x 3).
5. Sensor bracket [C] (🔩 x 1).
6. Registration sensor [D] (🔩 x 1, 📏 x 1).

**Width Sensors**

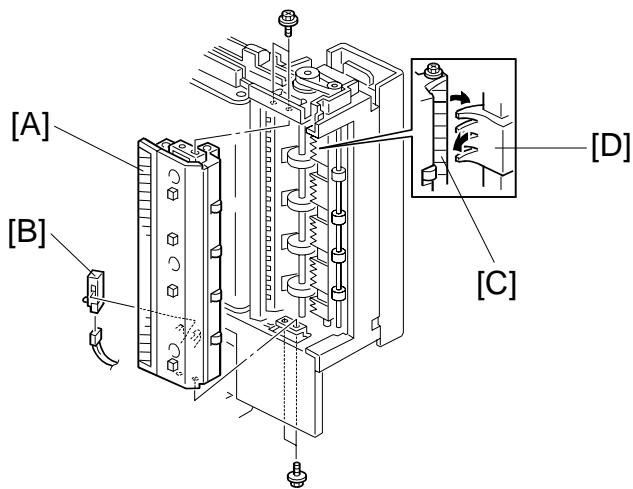


Replacement  
Adjustment

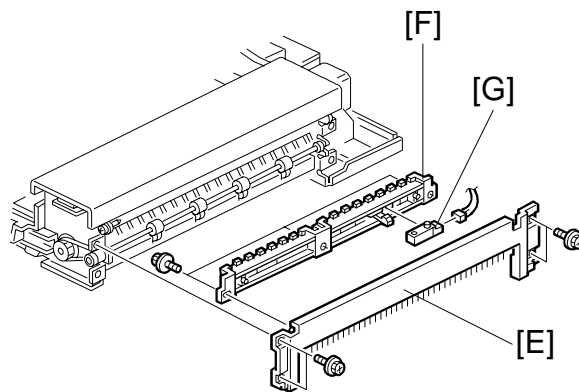
B234R929.WMF

1. ADF front cover. (☛3.4.1)
2. Feed unit. (☛3.4.3)
3. Stopper screw [A].
4. Guide plate [B] (🔩 x 2).
5. Release the front end of the upper transport roller [C] (bushing x 1, Ⓢ x 1).
6. Sensor bracket [D] (🔩 x 1).
7. Width sensors [E] (🔩 x 1 each).



**Exit Sensor, Inverter Sensor**

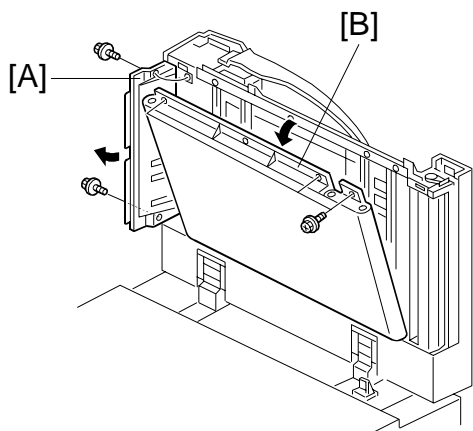
B234R927.WMF



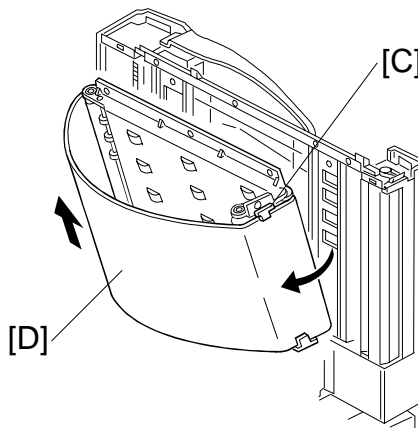
B234R930.WMF

1. Front and rear covers. (●3.4.1)
2. Original tray. (●3.4.2)
3. Exit guide unit [A] (🔩 x 4, 📏 x 1).
4. Exit sensor [B] (📏 x 1).  
**NOTE:** When reinstalling the exit guide unit, make sure that the guide plate [C] on the exit unit is over the exit gate [D].
5. Right cover [E] (●3.4.1)
6. Guide plate [F] (🔩 x 3).
7. Inverter sensor [G] (📏 x 1).

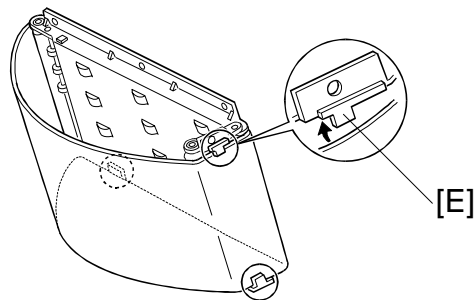
### 3.4.7 TRANSPORT BELT



B234R932.WMF



B234R931.WMF



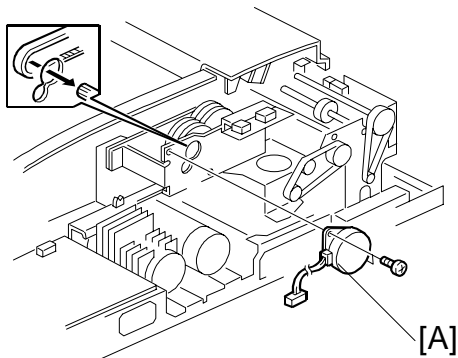
B234R933.WMF

Replacement  
Adjustment

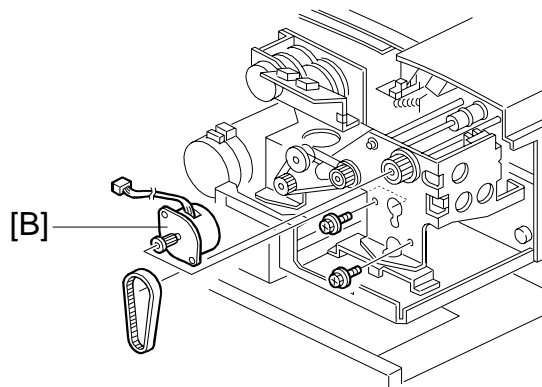
1. Front cover. (☛3.4.1)
2. Release the entrance guide [A] (⚙ x 2).
3. Release the transport belt unit [B] (⚙ x 3).
4. Fold the transport belt assembly extension [C].
5. Transport belt [D].
 

**NOTE:** When installing the transport belt, make sure that the belt passes under the upper and lower belt guide spacers [E].
6. Execute **SP6009** (DF Free Run) to do an ADF free run for 3 minutes. After the free run is finished, clean off any dust on the exposure glass.

### 3.4.8 ADF MOTORS



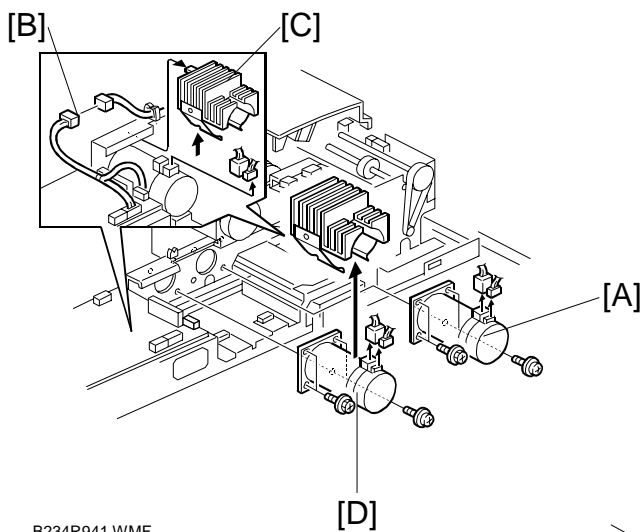
B234R934.WMF



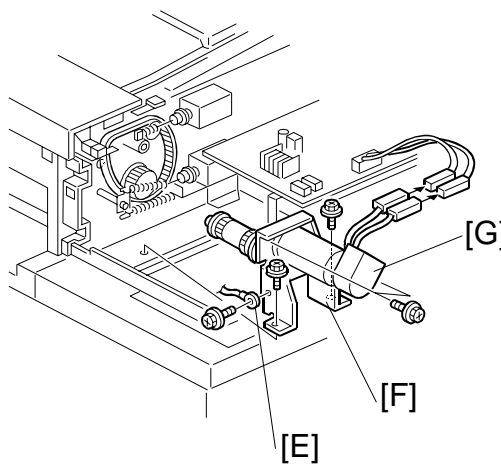
B234R936.WMF

#### ***Bottom Plate Motor, Pick-up Motor***

1. Rear cover. (☛3.4.1)
2. Bottom plate motor [A] (☛ x 2, ☛ x 1).
3. Pick-up motor [B] (☛ x 2, ☛ x 1).



B234R941.WMF



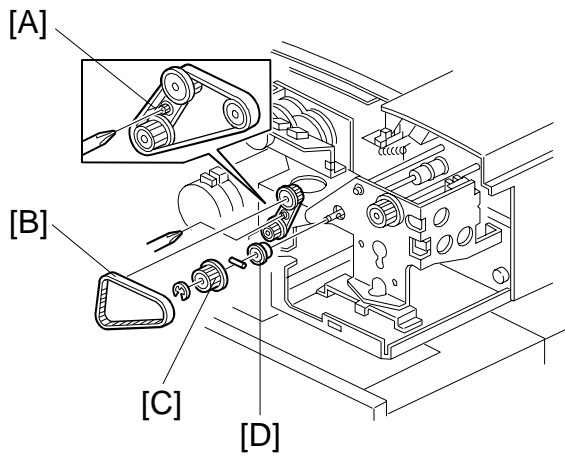
B234R942.WMF

Replacement Adjustment

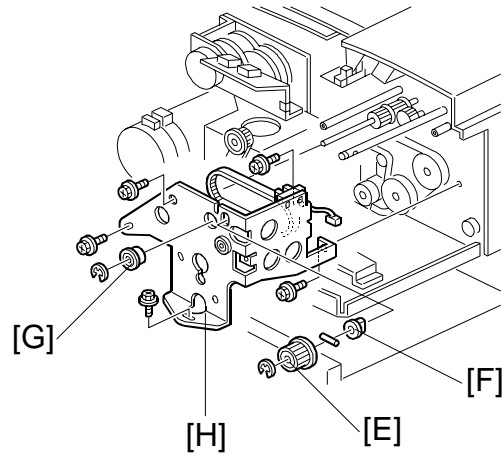
***Feed-in, Transport, Feed-out Motors***

1. Rear cover. (☛3.4.1)
2. Feed-in motor [A] (🔩 x 4, 🛠️ x 2).
3. Connector [B]
4. Fins [C]
5. Transport motor [D] (🔩 x 4, 🛠️ x 2).
6. Grounding wire [E] (🔩 x 1).
7. Feed-out motor assembly [F] (🔩 x 2, 🛠️ x 2).
8. Feed-out motor [G] (🔩 x 2).

### 3.4.9 FEED-IN CLUTCH

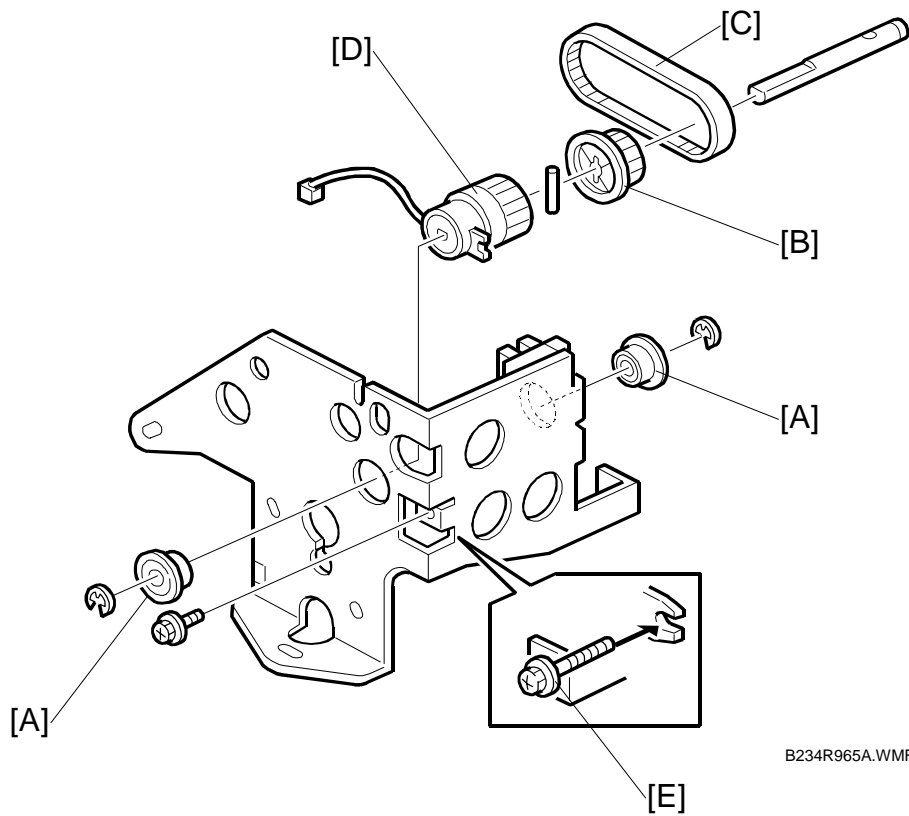


B234R943.WMF



B234R944.WMF

1. Rear cover. (➔3.4.1)
2. Remove screw [A].
3. Timing belt [B].
4. Pulley [C] and bearing [D] from the feed-in drive shaft (Ⓢ x 1, pin x 1).
5. Pulley [E] and bushing [F] from the pick-up roller cam shaft (Ⓢ x 1, pin x 1)
6. Bearings [G] from the feed belt drive shaft (Ⓢ x 1).
7. Feed-in clutch assembly [H] (⚙ x 5, ⚙ x 1).



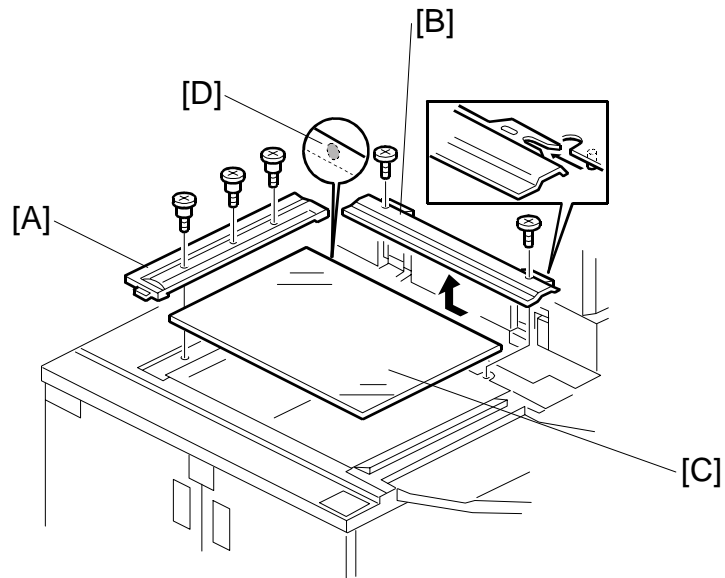
B234R965A.WMF

Replacement  
Adjustment

8. Two bearings [A] from the feed-in clutch shaft (Ⓢ x 1 each).
  9. Pulley [B] (Ⓢ x 1), pin and timing belt [C].
  10. Feed-in clutch [D].
- NOTE:** When re-installing the feed-in clutch, put the stopper screw [E] in the clutch hook.

## 3.5 SCANNER UNIT

### 3.5.1 EXPOSURE GLASS

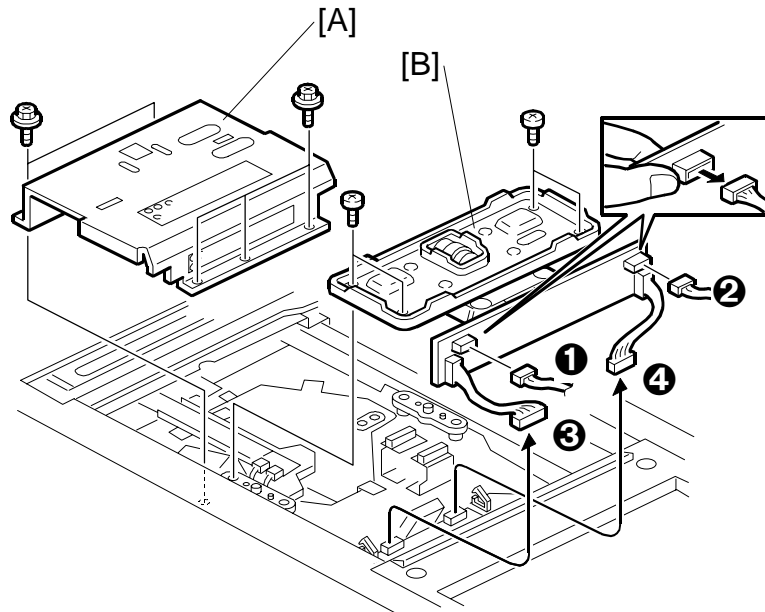


B234R001.WMF

1. Left scale [A] (⚙ x 3).
2. Rear scale [B] (⚙ x 2). Slide in the direction of the arrow to remove.
3. Exposure glass [C].

**NOTE:** When positioning the exposure glass for re-installation, make sure that the white dot [D] is at the rear left corner.

### 3.5.2 LENS BLOCK



B234R003.WMF

Replacement  
Adjustment

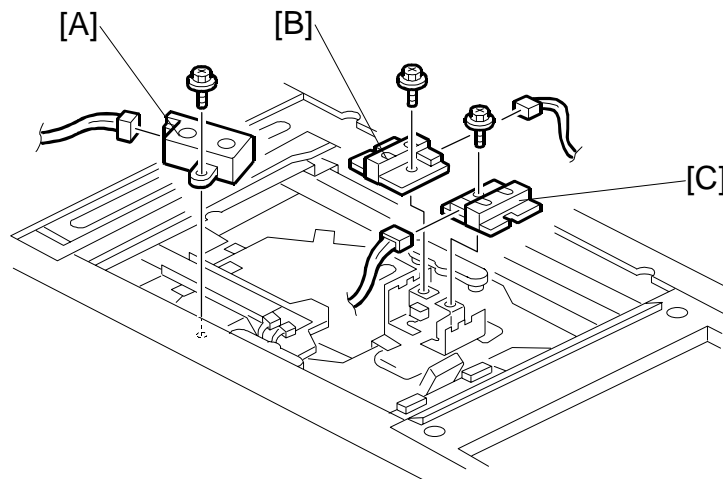
**⚠ WARNING**  
 Turn off the main power switch and unplug the machine before performing this procedure. Laser beams can seriously damage the eyes.

1. Exposure glass (☛3.5.1).
2. Lens cover [A] (🔩 x 5).
3. Lens block [B] (🔩 x 4, ⏏x2, 📏 x 4).
  - Hold the board to disconnect connectors ❶, ❷. (They are difficult to disconnect if you do not hold the board.)
  - Disconnect the connectors ❸, ❹ from the relay board, then remove the lens block.
4. After reassembly, do the scanner and printer copy adjustments. (☛3.18)

**NOTE:** There are no field adjustments for the lens block.



### 3.5.3 ORIGINAL SIZE SENSORS



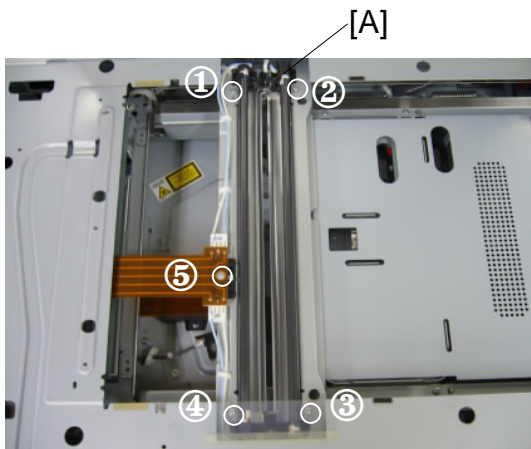
B234R052.WMF

**⚠ CAUTION**

Turn off the main switch and unplug the machine before performing this procedure. Laser beams can seriously damage the eyes.

1. Exposure glass. (☛3.5.1)
2. Lens block. (☛3.5.2)
3. Original width sensor [A] (🔧 x 1, 📏 x 1).
4. Original length sensor 1 [B] (🔧 x 1, 📏 x 1).
5. Original length sensor 2 [C] (🔧 x 1, 📏 x 1).
6. After re-assembly, do the scanner and printer copy adjustments. (☛3.18)

### 3.5.4 EXPOSURE LAMPS



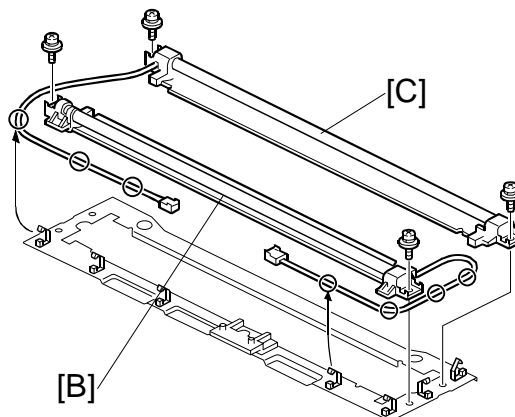
B234R943.BMP



B234R902.BMP

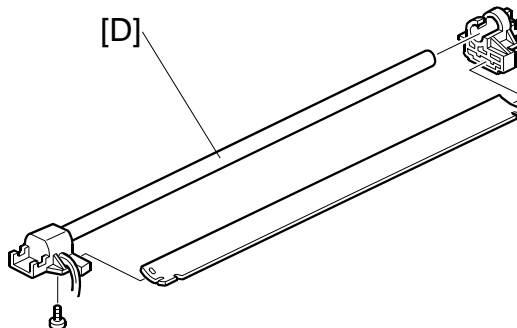
Replacement Adjustment

1. Exposure glass. (☛3.5.1).
2. Open the front door, then remove the top front cover. (☛3.5.8)
3. Exposure lamp unit [A]  
(☛ x ① to ⑤, ☛ x 2)
4. 1st exposure lamp [B]  
(☛ x 2, ☛ x 1, ☛ x 4).
5. 2nd exposure lamp [C]  
(☛ x 2, ☛ x 1, ☛ x 3).



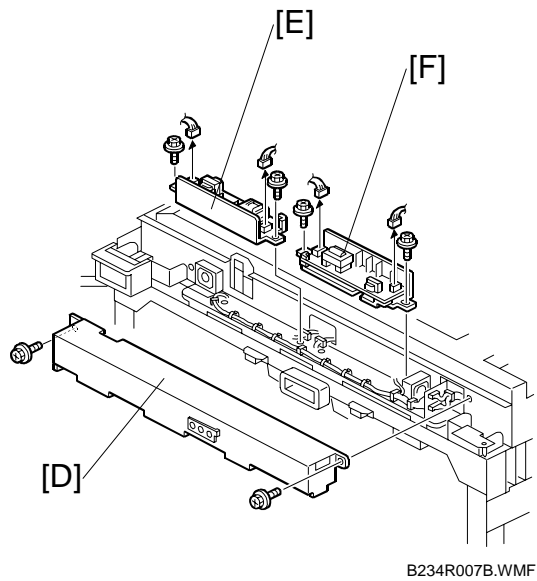
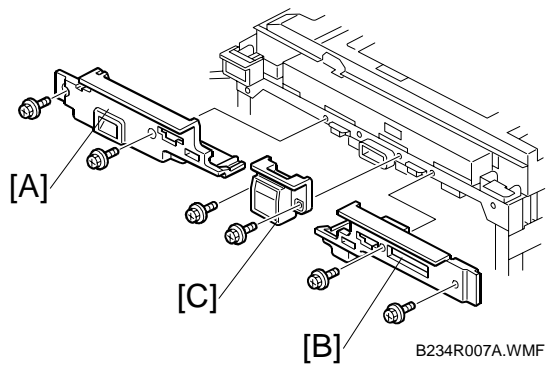
B234R050A.WMF

6. Exposure lamps [D] (☛ x 1).



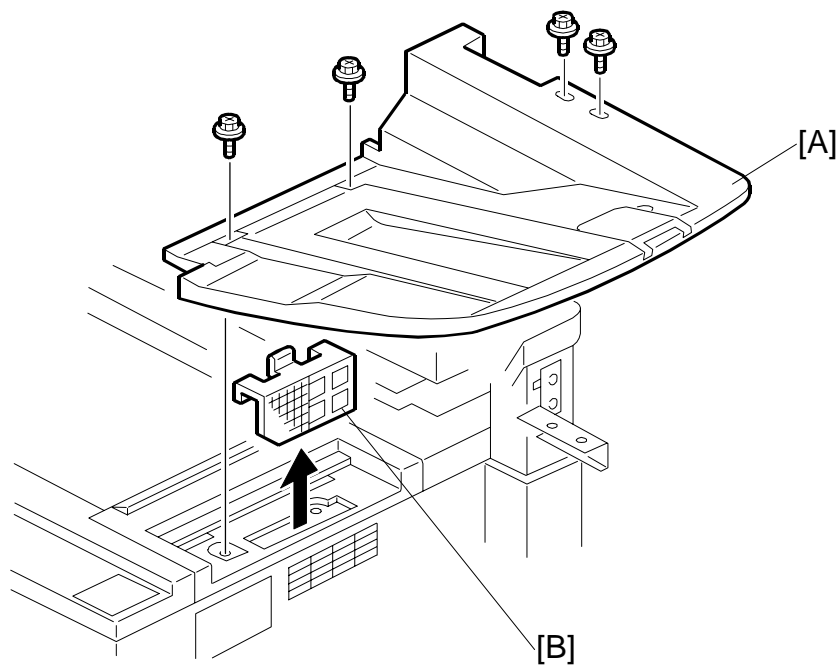
B234R050B.WMF

### 3.5.5 LAMP REGULATORS



1. Exposure glass. (☛3.5.1)
2. Open the front door, then remove the top front cover. (☛3.5.8)
3. Remove
  - [A]: Left inner cover (🔩 x 2)
  - [B]: Right inner cover (🔩 x 2)
  - [C]: Middle inner cover (🔩 x 2)
  - [D]: Lamp regulator cover (🔩 x 2)
  - [E]: Left lamp regulator (🔩 x 2, 🛠️ x 2)
  - [F]: Right lamp regulator (🔩 x 2, 🛠️ x 2)

### 3.5.6 OPTICS DUST FILTER, ORIGINAL EXIT TRAY

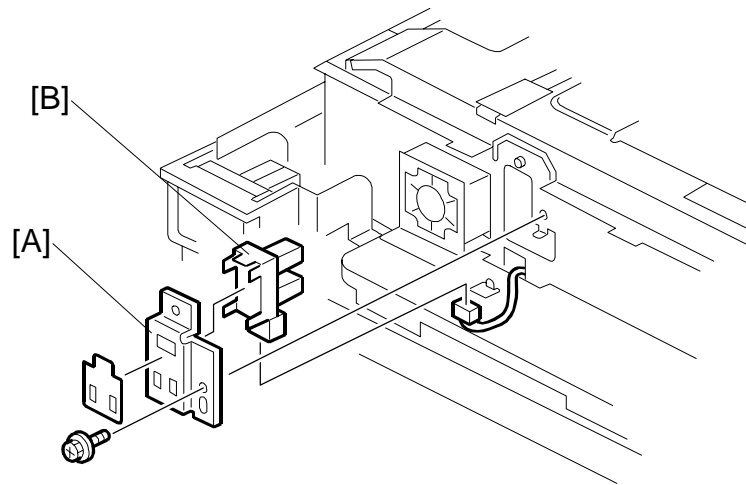


B234R006.WMF

Replacement  
Adjustment

1. Original exit tray [A] (⚙️ x 4).
2. Optics dust filter [B].

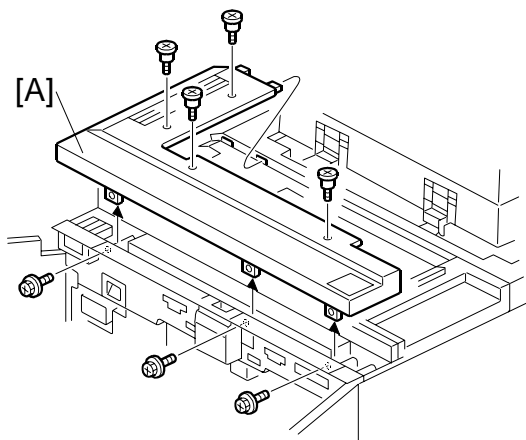
### 3.5.7 SCANNER HP SENSOR



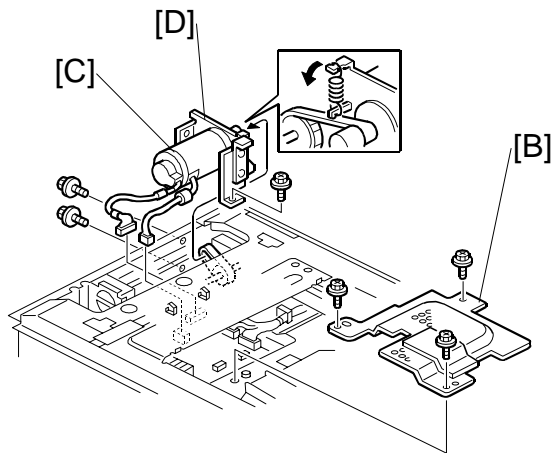
B234R017.WMF

1. Top front cover (☛3.5.8)
2. Left lamp regulator (☛3.5.5)
3. Scanner HP sensor bracket [A] (🔩 x 1).
4. Scanner HP sensor [B] (📏 x 1, Pawls x4).

### 3.5.8 SCANNER MOTOR



B234R058.WMF



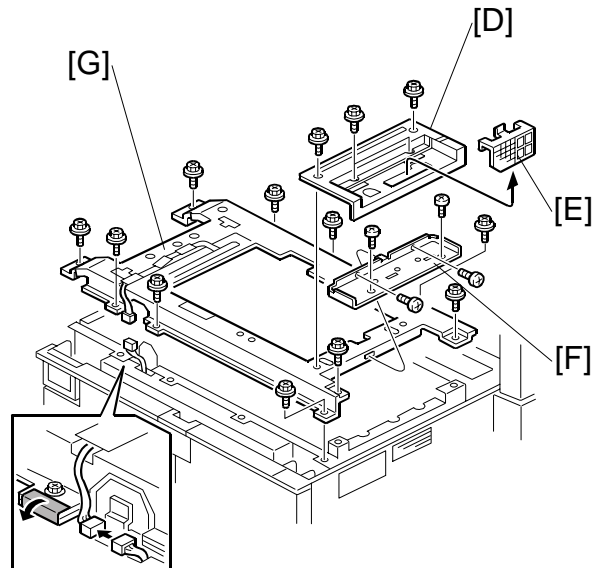
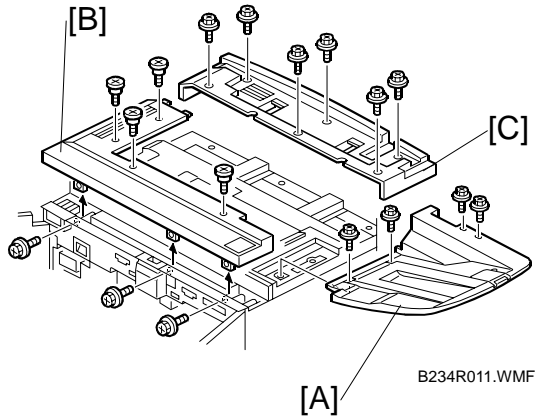
B234R016.WMF

Replacement Adjustment

1. Exposure glass. (☛3.5.1).
2. Left upper cover. (☛3.3.5).
3. Top front cover [A] (🔩 x 7).
4. Remove the MCU cover [B] (🔩 x 3).
5. Scanner motor assembly [C] (☛x2, 📁 x 2, 🔩 x 3).
6. Scanner motor from the bracket [D] (🔩 x 3).
7. After reassembly, do the copy image adjustments. (☛ 3.18)

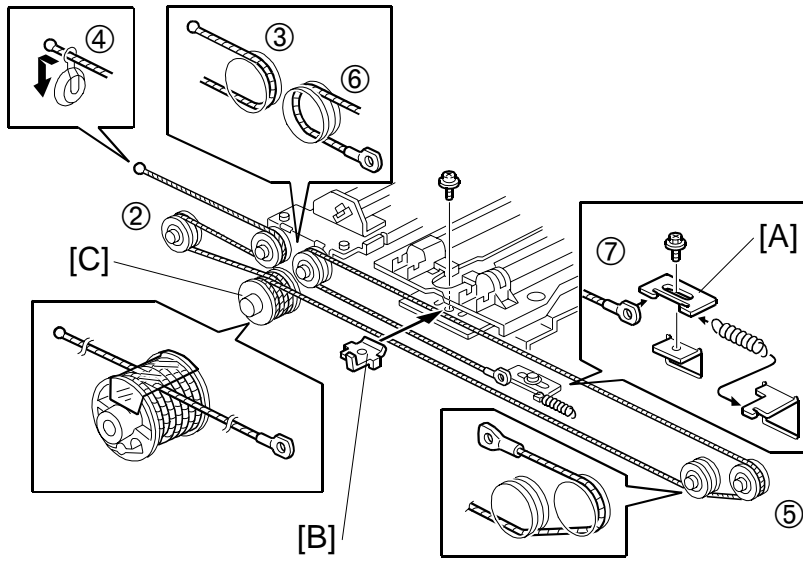
### 3.5.9 SCANNER WIRES

#### Preparation



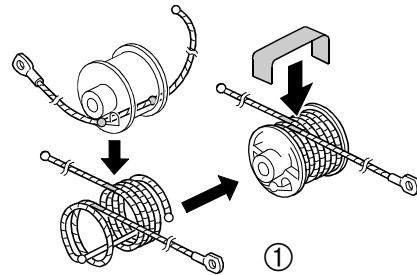
1. Remove the ADF (☞ x 2).
2. Original exit tray [A] (☞ x 4).
3. Exposure glass (☞3.5.1)
4. Top front cover [B] (☞ x 7).
5. Top rear cover [C] (☞ x 6).
6. Top right cover [D] (☞ x 4)
7. Filter [E]
8. Bracket [F] (☞ x 4).
9. Scanner frame [G] (☞ x 12, ☞ x 1).

**Front, Rear Scanner Wires**



Replacement  
Adjustment

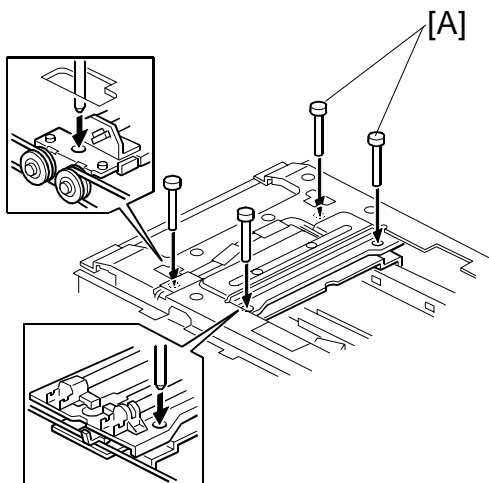
1. Wire tension bracket [A] (⚙ x 1).
2. Front scanner wire bracket [B].
3. Front scanner wire.



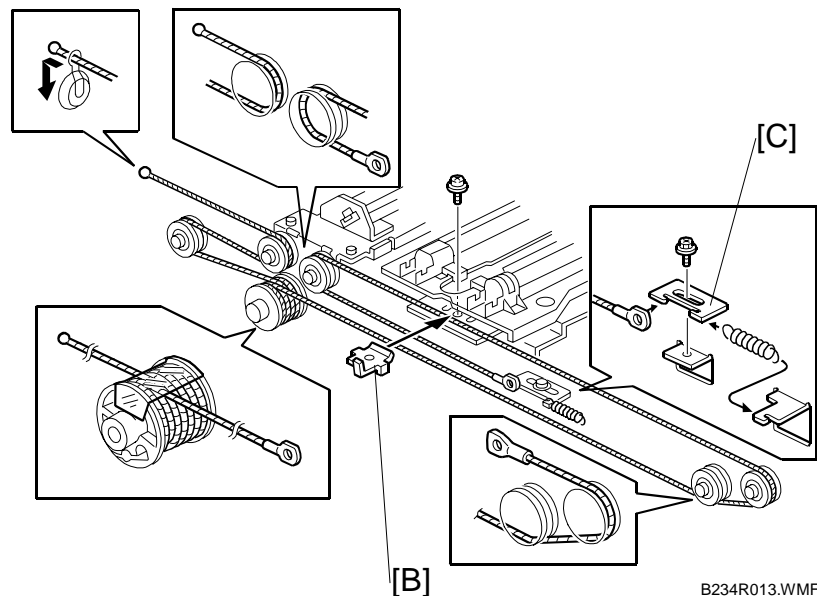
**Reinstallation**

1. Scanner wire pulley [C] (⚙ x 1).
2. While making sure of the direction, place the beads on the middle of the wire on the pulley openings. Then wind the wire (ball side) 3 times and the other side (ring side) once as shown ①. Secure the pulley with tape to keep this condition.
3. Install the pulley on the scanner drive shaft (⚙ x 1).
4. Wind the end of the wire with the ball as shown (②,③,④).
5. Wind the end of the wire with the ring as shown (⑤,⑥,⑦).
6. Install the tension spring on the tension bracket, and slightly tighten the tension bracket (⚙ x 1).





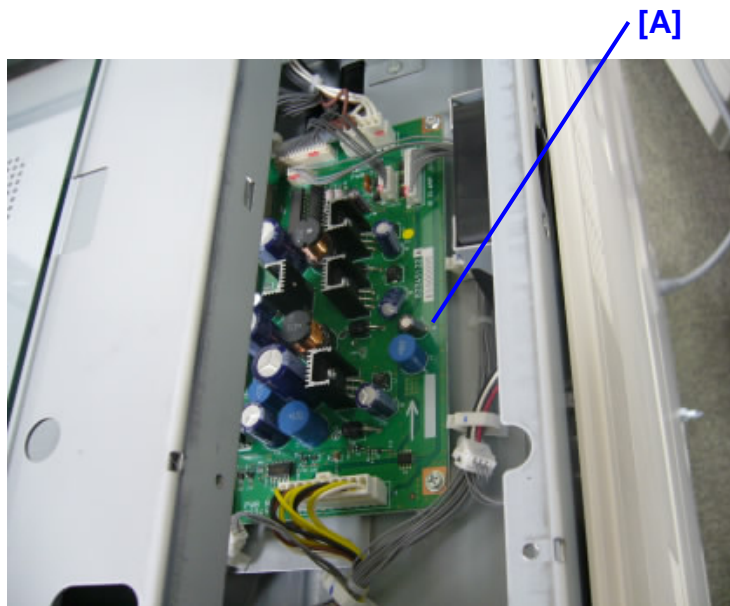
B234R015.WMF



B234R013.WMF

7. Install the 1st scanner and adjust the position with the positioning tools [A].
8. Secure the 1st scanner with the scanner wire bracket [B] (1 x 1).
9. Tighten the tension bracket [C] and remove the tape.
10. Remove the positioning tools. After sliding the scanner to the right and left several times, set the positioning tools to check the scanner wire bracket and the tension bracket again.
11. Reassemble the scanner and do the scanner and copy adjustments (●3.18)  
**NOTE:** The tension of the scanner wire must be adjusted every 3000K. To do this adjustment, set the positioning tools [A], then loosen the screw [B] and retighten it.

### 3.5.10 SIB



B234R903.BMP

Replacement  
Adjustment

Remove: (☛3.5.9)

- Original exit tray
- Top right cover
- Filter
- Bracket

[A] SIB (🔩 x4, 📏 x9)

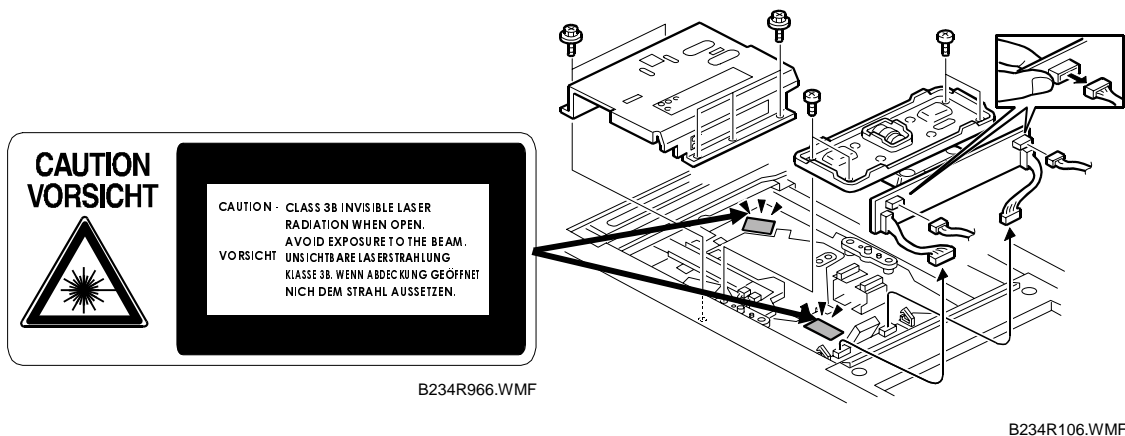
## 3.6 LASER UNIT

### WARNING

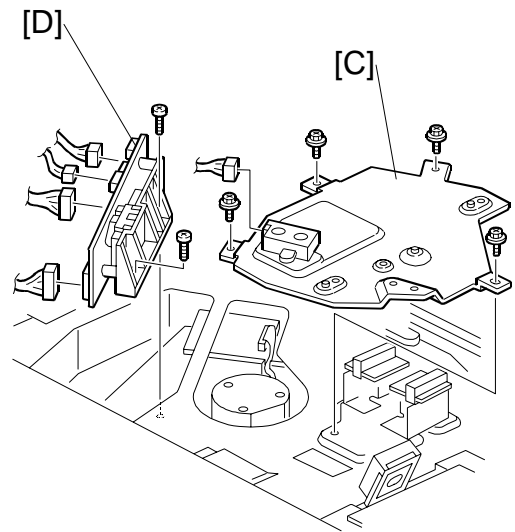
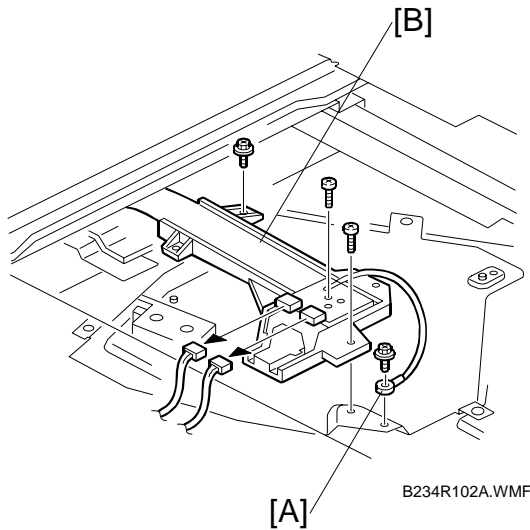
- This laser unit employs 8 laser beams produced by a Class III LDA with a wavelength of 788 nm and intensity of 10 mW. Direct exposure to the eyes could cause permanent blindness.
- Before any performing any replacement or adjustment of the laser unit, press the main power switch to power the machine off then unplug the machine from the power source. Allow the machine to cool for a few minutes. The polygon motor continues to rotate for approximately one to three minutes.
- Never power on the machine with any of these components removed: 1) LD unit, 2) polygon motor cover, 3) synchronization detect sensor.

### 3.6.1 CAUTION DECALS

Two caution decals are provided for the laser section.



### 3.6.2 LD UNIT



Replacement  
Adjustment

#### **⚠ WARNING**

**Turn off the main power switch and unplug the machine before attempting this procedure. Laser beams can seriously damage the eyes.**

**NOTE:** To avoid damaging the board with static electricity, never touch the printed circuit board.

1. Exposure glass (☛3.5.1).
2. Lens block cover and lens block. (☛3.5.2)
3. Ground wire [A] (🔩 x 1).
4. Flat film connector guide [B] (🔩 x 3, 📏 x 2).
5. LD cover [C] (🔩 x 4, 📏 x 1).
6. LD unit [D] (🔩 x 2, 📏 x 4).
  - Four spacers, each of a different colour, are placed under the LD unit in the factory in order to do a fine positioning adjustment on the LD unit position. Before you remove the LD unit, take a careful note of where these spacers are. When replacing the LD unit, these spacers must be in exactly the same position.
  - Be sure to remove the mylar from the underside of the old LD unit and attach it to the new one.

7. After installing the LD unit, execute **SP2115 001 to 009** to input the pitch settings for the main scan beams.

**NOTE:** The correct settings for these SP codes are printed on a decal attached to the mounting bracket of the LD unit.

<LD Unit Lot No.>  
 SP2115 001/SP2115 002/SP2115 003/SP2115 004/SP2115 005/SP2115 006  
 SP2115 007/SP2115 008/SP2115 009

B234R901.WMF

The 9 numbers printed on the label correspond to the correct settings of the SP codes shown in the diagram above.

Here is an example

-10/-2/+10/-100/+0/+100  
 -10/-10/-10

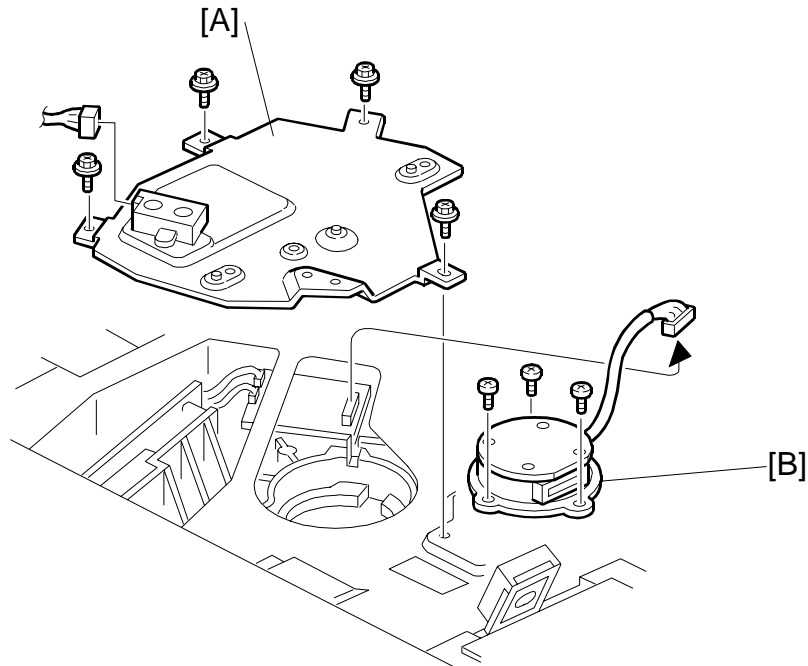
To enter these numbers, you would execute

<b>SP2115 001</b>	⊗ 1 0 #	<ul style="list-style-type: none"> <li>• Press ⊗ to enter the minus sign.</li> <li>• Press # after each entry.</li> <li>• A key press is not required for the plus sign.</li> </ul>
<b>SP2115 002</b>	⊗ 2 #	
<b>SP2115 003</b>	1 0 #	
<b>SP2115 004</b>	⊗ 1 0 0 #	
<b>SP2115 005</b>	0 #	
<b>SP2115 006</b>	1 0 0 #	
<b>SP2115 007</b>	⊗ 1 0 #	
<b>SP2115 008</b>	⊗ 1 0 #	
<b>SP2115 009</b>	⊗ 1 0 #	

**CAUTION:** This example is for instructional purposes only. When you do this adjustment, you must enter the numbers printed on the label attached to the LD unit.

8. Do **SP2962** (Auto Process Control Execution).
9. Make some test copies and check that the magnification is correct. If not correct, please do the printer copy adjustments. (➡3.15)

### 3.6.3 POLYGON MIRROR MOTOR



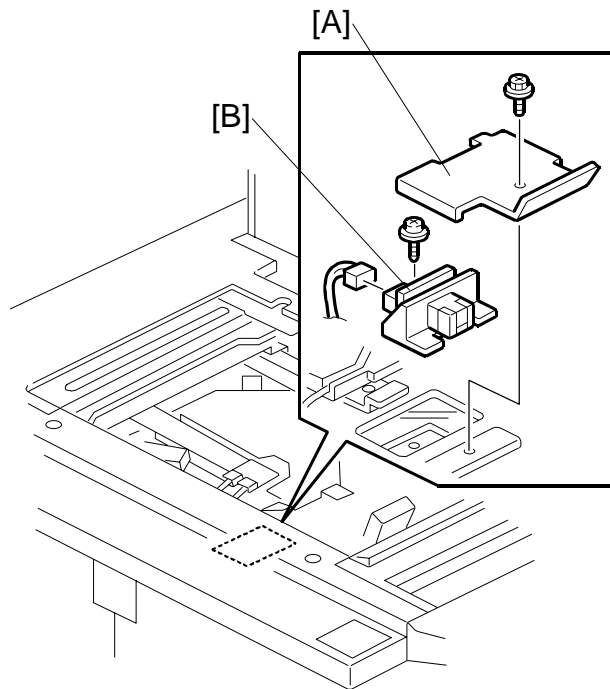
B234R101.WMF

Replacement  
Adjustment

**NOTE:** To avoid damaging the polygon motor, switch the machine off and wait 3 minutes to allow the motor to stop rotating before removing it.

1. Turn off the main power switch and unplug the machine.
2. Exposure glass (☛3.5.1).
3. Lens block cover and lens block. (☛3.5.2)  
**NOTE:** You do not need to remove the lens block completely. Lift it gently and move it to the right.
4. LD cover [A] (🔩 x 4, 🛠️ x 1).
5. Polygon mirror motor [B] (🔩 x 3, 🛠️ x 1).  
**NOTE:** 1) When reinstalling, make sure that the polygon mirror opening faces the right.  
 2) Never touch the glass surface of the polygon mirror motor with bare hands.
7. After reassembly, do the scanner and printer copy adjustments. (☛3.18)

### 3.6.4 LASER SYNCHRONIZATION DETECTOR



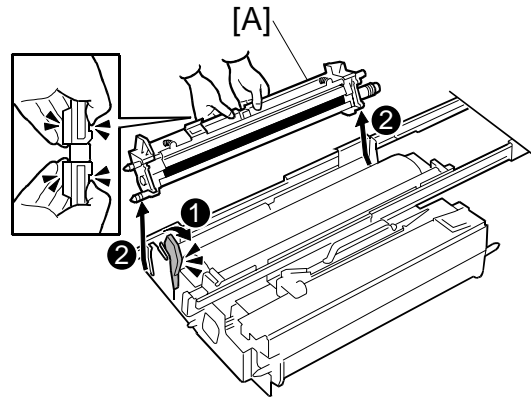
B234R105.WMF

1. Turn off the main power switch and unplug the machine.
2. Exposure glass (☛3.5.1)
3. Lens block cover and lens block. (☛3.5.2).  
**NOTE:** You do not need to remove the lens block completely. Lift it gently and move it to the right.
4. Detector cover [A] (🔧 x 1).
5. Laser synchronization detector [B] (🔧 x 1, 📏 x 1).

### 3.7 AROUND THE DRUM

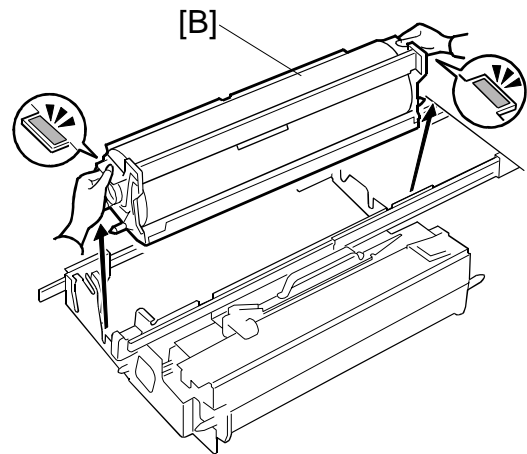
#### 3.7.1 CLEANING UNIT, PCU, DRUM

1. Pull out the development unit drawer. (☛3.3.1)
2. Remove the cleaning unit [A].
  - Raise the purple lever ❶ and pull the cleaning unit to the left ❷ until it disengages the lever
  - Lift the unit out of the drawer
  - Grasp the cleaning unit by its handles as shown and lift it straight up.
3. Lift the PCU [B] by its purple handles and remove it.



B234R948.WMF

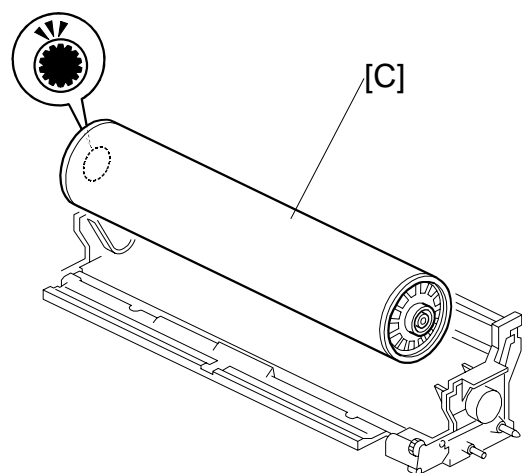
Replacement Adjustment



B234R949.WMF

4. Remove the drum [C].
5. Cover the drum with a sheet of clean paper to protect its photosensitive surface.

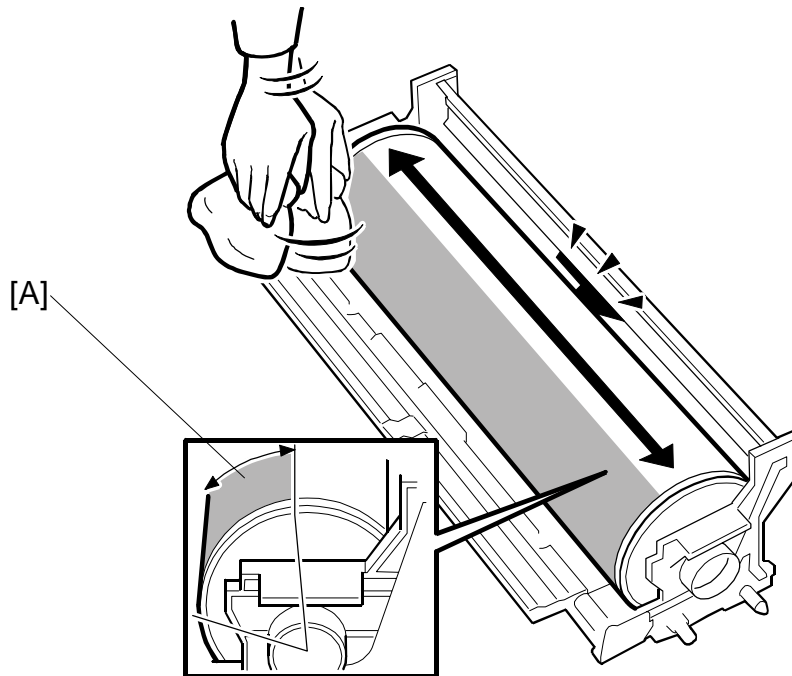
**Important:** If you leave the drum exposed to direct sunlight or strong overhead light, this can cause its photosensitive surface to deteriorate and shorten its service life.



B234R201.WMF



### Re-installing the Drum

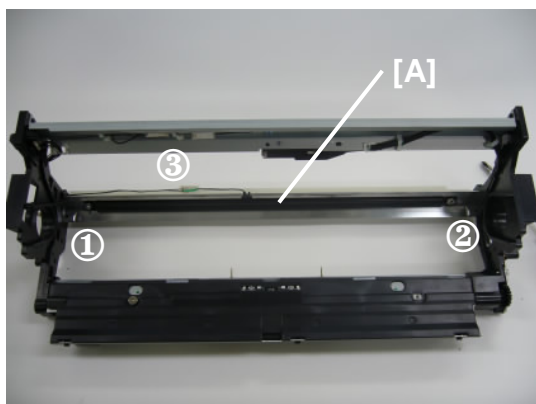


B234R977.WMF

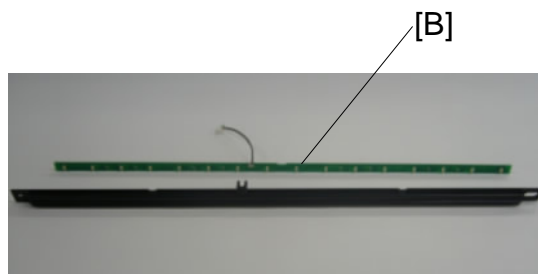
#### Important

- Apply a sufficient amount of setting powder (B234861) to the drum as far as the edges.
  - You need to only apply the powder where the drum will be exposed to the cleaning blades.
  - Use clean toner if drum setting powder is not available.
  - Never touch the surface of the drum with bare hands.
1. Set the drum in the PCU.
  2. Cover the area of the drum [A] that will be under the cleaning blades with drum setting powder as shown above.
  3. Do **SP3905** (OPC drum initial setting) and **SP2962** (Auto process control execution) for the new drum.

### 3.7.2 PTL (PRE-TRANSFER LAMP)



B234R904.BMP



B234R905.BMP

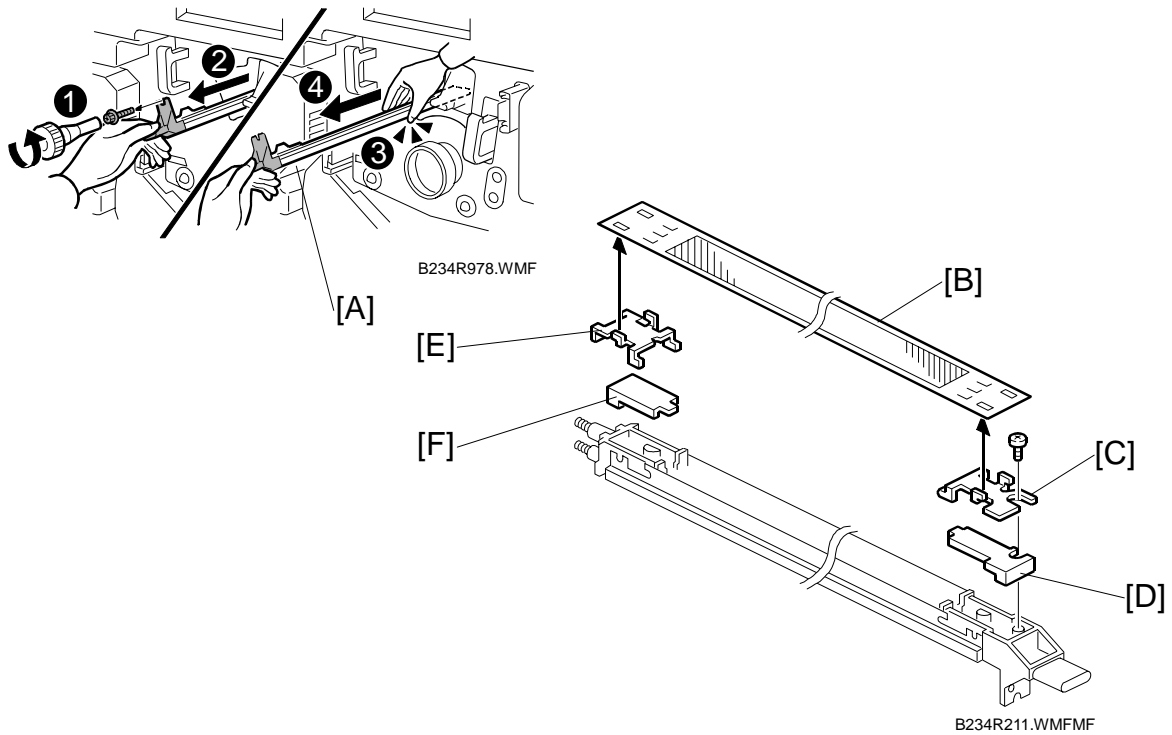
Replacement  
Adjustment

1. Drum. (☛3.7.1)

**NOTE:** Wrap a protective sheet or a few sheets of paper around the drum to protect it from light.

2. PTL unit [A] (☛ x2 ①, ②, ☛ x1 ③)
3. PTL [B].

### 3.7.3 PRE-CHARGE UNIT



• Inner cover (☛3.3.1)

1. Pre-charge unit [A] (🔩 x 1)

2. Grid [B] (🔩 x 1 M4 x 6).

**Important**

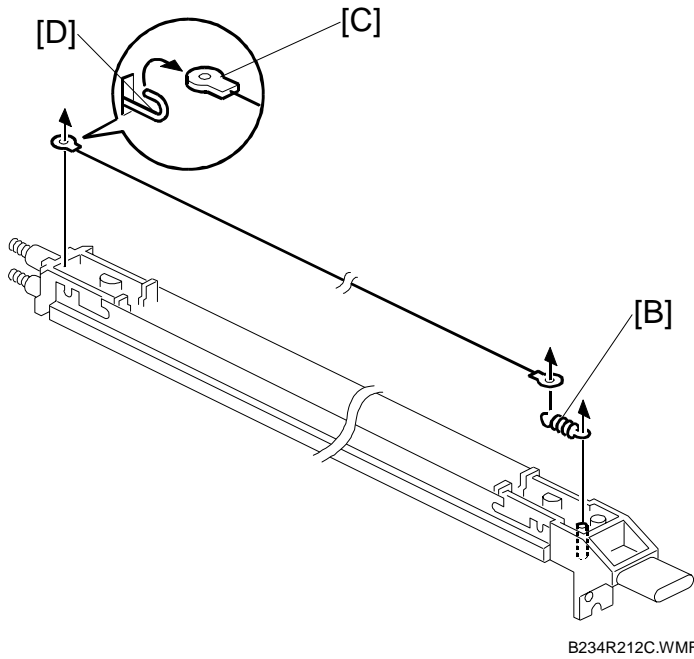
- Hold the grid carefully at both ends.
- Do not touch the wire mesh and avoid bending it.

3. Front lock plate [C] (Pawls x2)

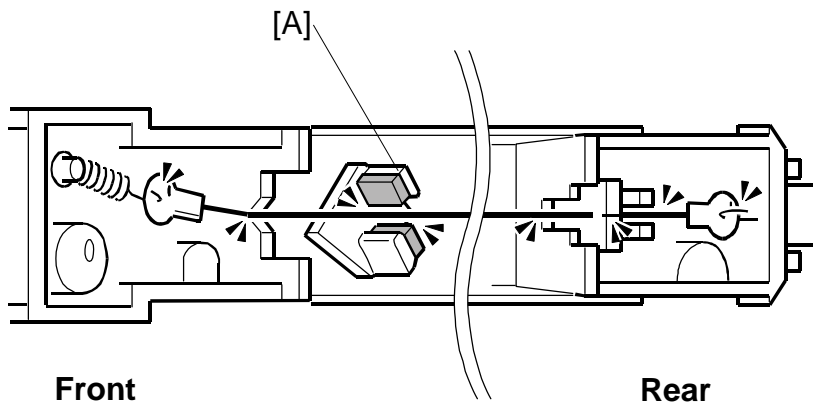
4. Front cover [D].

5. Rear lock plate [E] (Pawls x2).

6. Rear cover [F].



Replacement  
Adjustment



B234R212Z.WMF

7. Move the wire cleaner [A] to the home position (front side).
8. Spring [B].
9. Corona wire [C] from the hook of the rear spring [D].

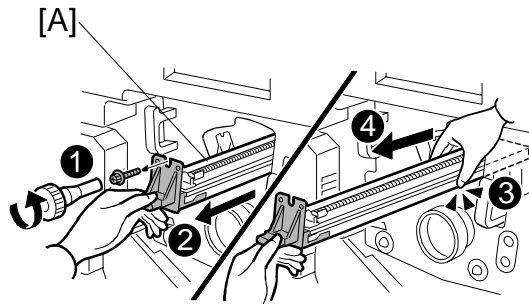
**Important:**

- Always hold the wire by the eyelets on both ends.
- Never touch any other part of the wire.
- Handle the wire carefully to avoid bending it.

### 3.7.4 CHARGE CORONA UNIT

- Inner cover (☛3.3.1)

1. Charge corona unit [A]



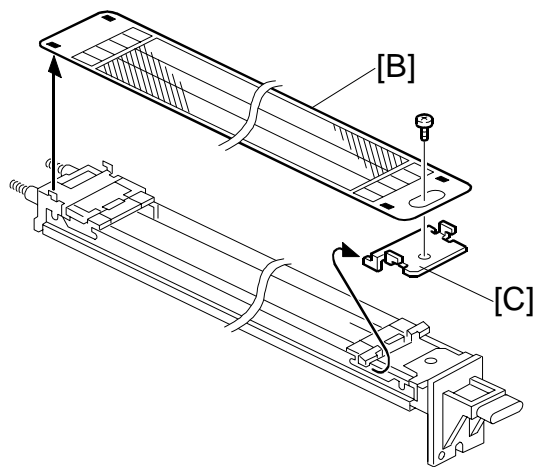
B234R979.WMF

2. Grid [B] (⚙ x 1 M4 x 8)

**Important:**

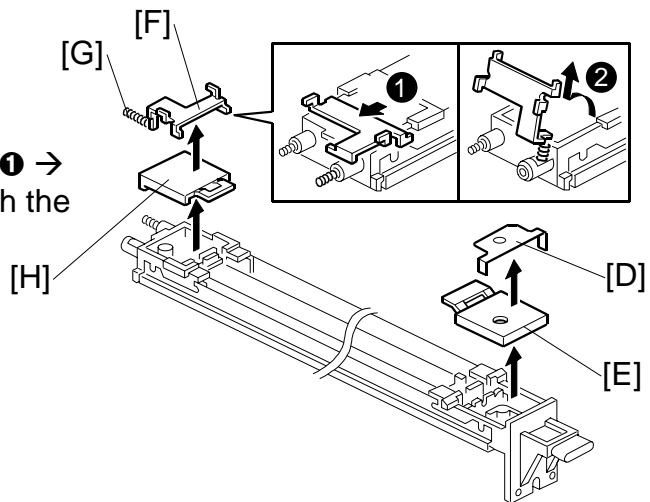
- Always handle the grid carefully by its edges.
- Never touch any part of the wire mesh. Handle it carefully to avoid bending it.

3. Front lock plate [C] (Pawls x2)

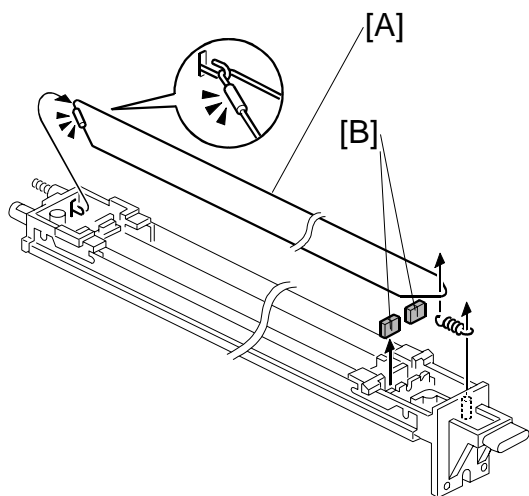


B234R206.WMF

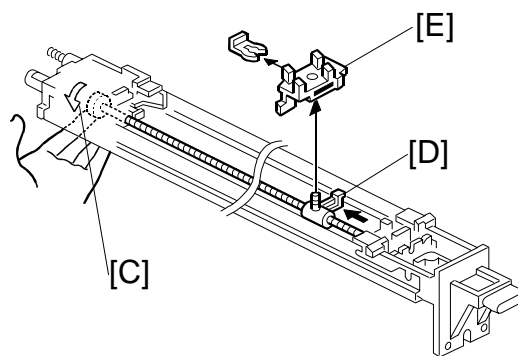
4. Terminal plate [D].
5. Front cover [E].
6. Slide off the rear lock plate [F] ① → ② (Pawls x4) and remove it with the spring [G].
7. Rear cover [H].



B234R207.WMF



B234R209.WMF



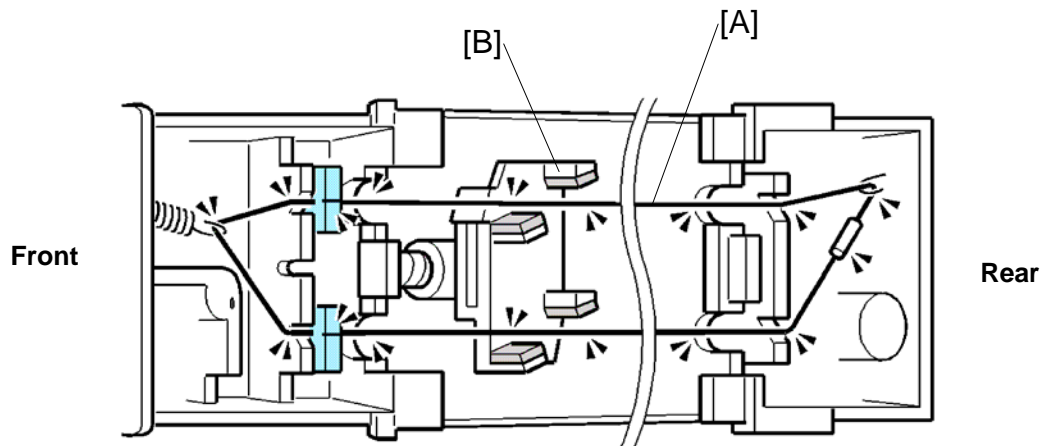
B234R210.WMF

Replacement  
Adjustment

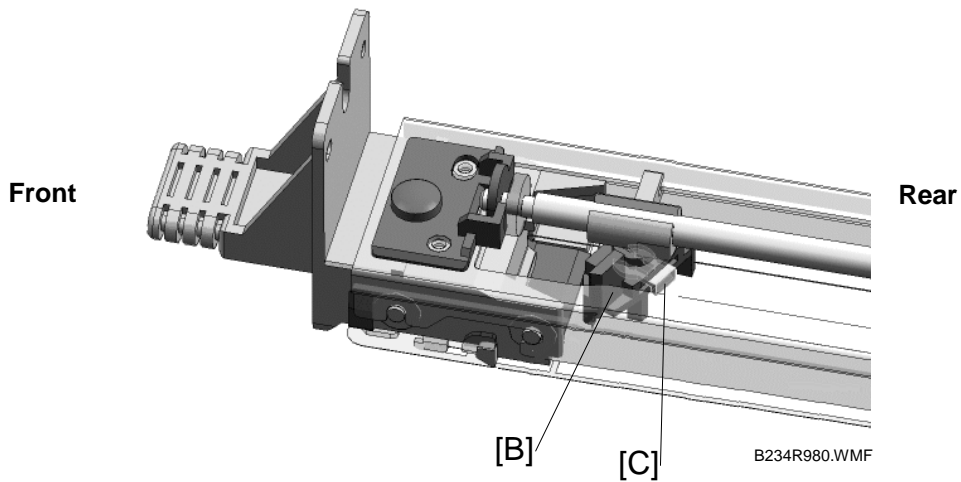
1. Corona wire [A] (Spring x1)
2. Two cushions [B].

**Important**

- Always hold the wire by its metal fitting and its opposite end.
  - Never touch any other part of the wire.
  - Handle the corona wire carefully to avoid bending it.
3. Turn the gear [C] to move the cleaner assembly [D] to a location where the cleaner is easy to access.
  4. Cleaner pad [E] (☹ x1).



B234R209A.WMF



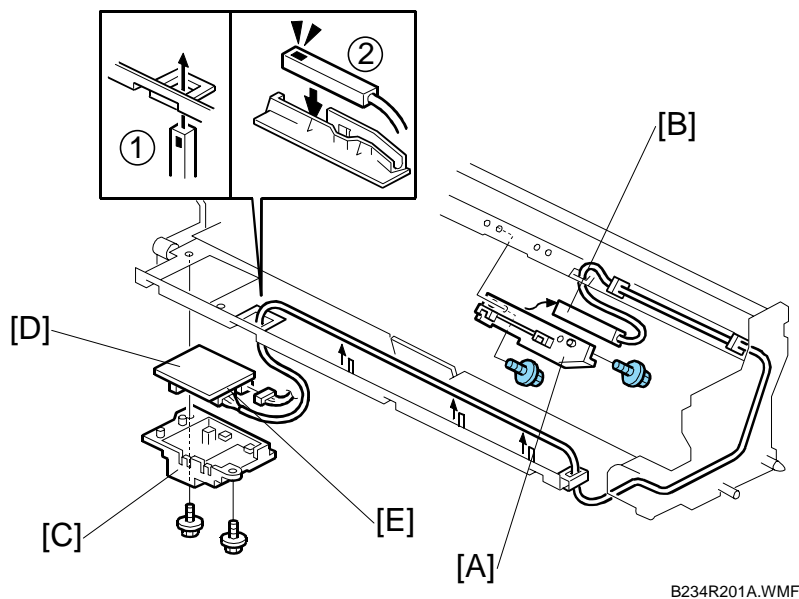
B234R980.WMF

5. Re-assemble the charge corona unit.

**Important:** Check the following:

- Make sure the corona wire [A] and cleaning pad [B] are positioned as shown.
  - Make sure that the lip of the snap ring [C] faces down toward the grid wire.
6. After installing new wires, reset SP codes **SP2001 001** to **2001 006** (Corona Voltage and Current) to their defaults.
7. Execute **SP2962** (Auto Process Control Execution).

### 3.7.5 DRUM POTENTIAL SENSOR



Replacement  
Adjustment

#### Remove

- Drum (☛3.7.1)

#### Remove:

- [A] Drum potential sensor cover (🔩 x2, Hook x1)
- [B] Drum potential sensor
- [C] Drum potential sensor unit (☞x5, ☞x1)
- [D] Drum potential sensor PCB (🔩 x2, Hook x1)

**Important:** Do not attempt to disconnect the drum potential sensor harness [E] from the PCB.

#### Reinstallation

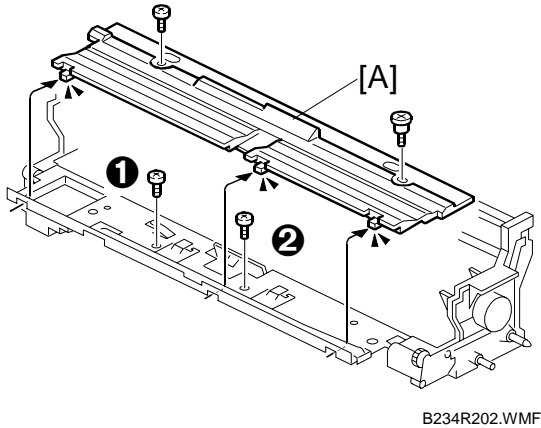
**Important:** The drum potential sensor is fragile. Handle it carefully.

- First, insert the drum potential sensor and harness through the hole ①.
- Next, fasten the drum potential sensor to its cover ②.
- Execute **SP2962** (Auto Process Control Execution).

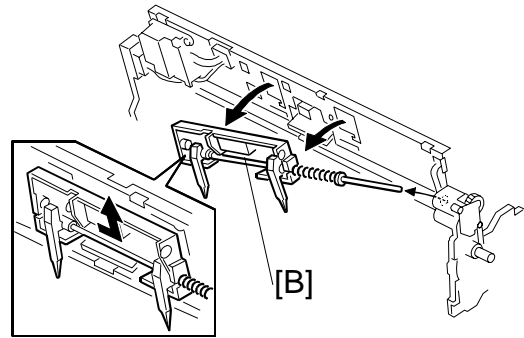
**NOTE:** After replacing the drum potential sensor, you must always execute **SP2962**.



### 3.7.6 PICK-OFF PAWLS



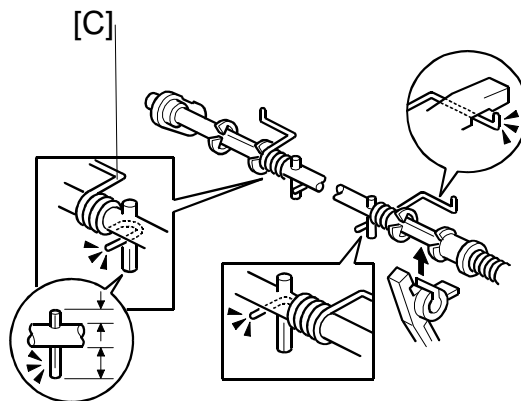
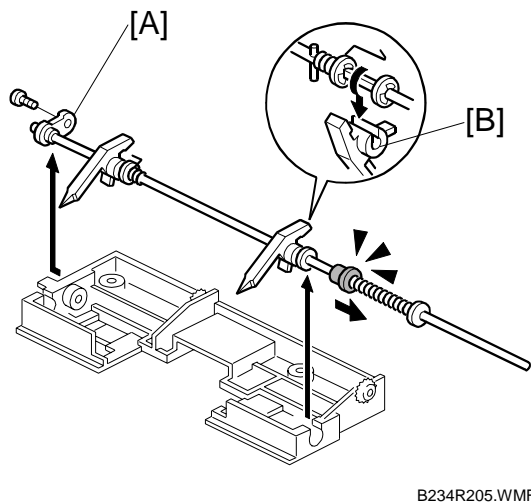
B234R202.WMF



B234R203.WMF

#### Remove

- Drum (☛3.7.1)
- 1. Cover [A] (🔩 x2)
- 2. Pick-off pawl unit screws 1, 2 (🔩 x2)
- 3. Pick-off pawl unit [B].



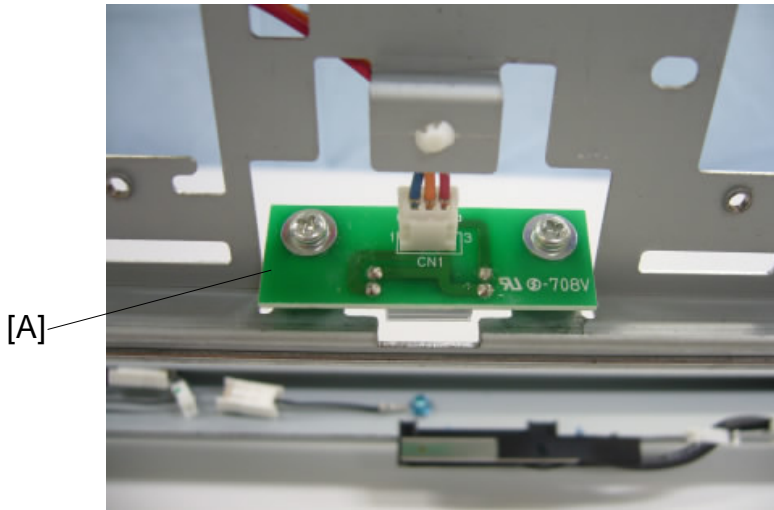
Replacement Adjustment

4. Detach the front end of the shaft [A] (1 x1) then lift the shaft out of the grooves.
5. Rotate the pick-off pawl [B] 45 degrees, then remove it.
6. Install a new pick-off pawl by rotating it onto the shaft.
7. Do not forget to hook the tension springs [C].
8. Follow the same procedure to replace the other pick-off pawl.

**Important**

- Do not allow the pawl springs to catch inside the pick-off pawl.
- After replacing the pick-off pawls, press down on each one to confirm that it moves freely.

### 3.7.7 ID SENSOR



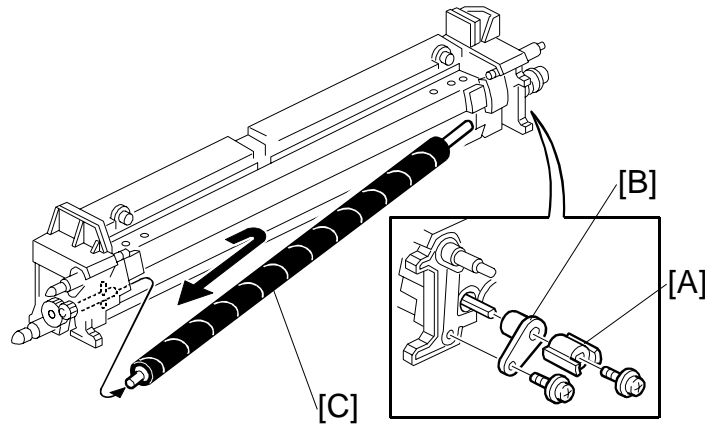
B234R906.BMP

Remove:

- Drum (☛3.7.1)
  - Cover (☛3.7.6)
1. Pick-off pawl unit [☛ x2]. (☛3.7.6)
  2. ID sensor [A] (☛ x2, ☛ x1, ☛x1)

**NOTE:** After installing a new ID sensor, do **SP3001 002** (ID Sensor Settings – ID Sensor Initialization).

### 3.7.8 CLEANING BRUSH



B234R216.WMF

Replacement  
Adjustment

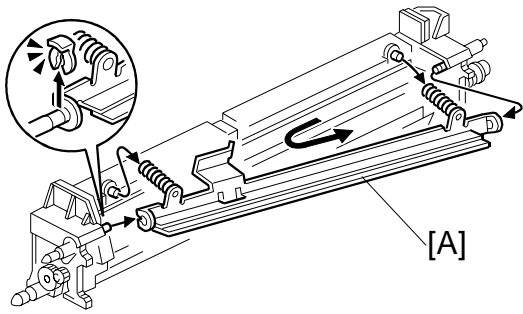
#### Remove

- Cleaning unit (☛3.7.1)
1. Coupling [A] (🔧 x1)
  2. Bushing [B] (🔧 x1)
  3. Pull the cleaning brush shaft to the rear to release the cleaning brush [C], then remove it.

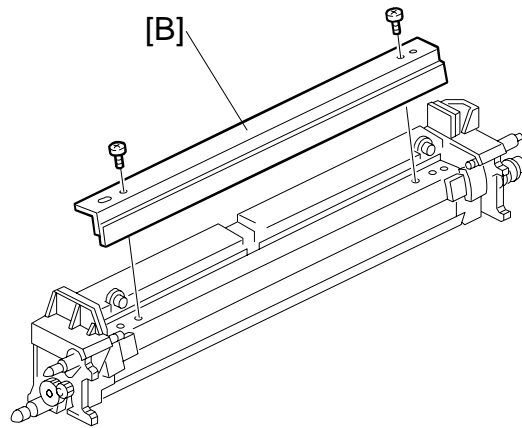
#### Important

- Never touch the soft surface of the cleaning brush.
- When installing the cleaning brush, avoid bending or damaging the entrance seal with the cleaning brush.

### 3.7.9 CLEANING BLADES



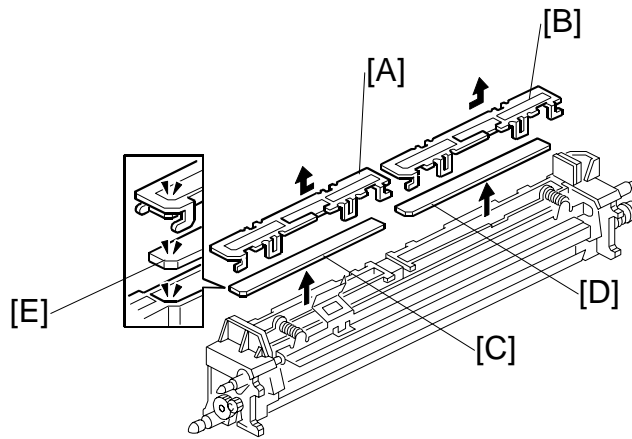
B234R214.WMF



B234R215.WMF

- Remove the drum cleaning unit. (☛3.7.1)
  1. 2nd cleaning blade [A] (☞ x1).
  2. Main cleaning blade [B] (☞ x2).

### 3.7.10 CLEANING UNIT FILTERS



B234R213.WMF

Replacement  
Adjustment

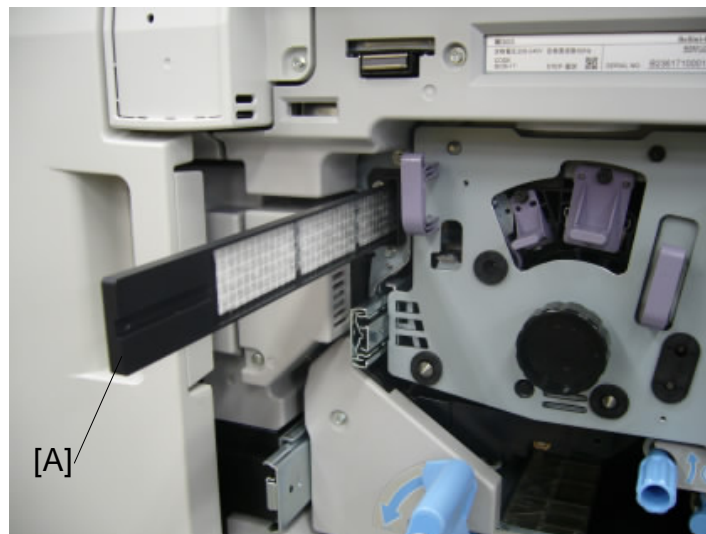
Remove:

- Cleaning unit. (☛3.7.1)
- 2nd cleaning blade (☞ x1) (☛3.7.9).

1. Front filter bracket [A] (Pawls x2)
2. Rear filter bracket [B] (Pawls x2)
3. Front filter [C]
4. Rear filter [D]

**Important:** When you install the new filters, confirm that the notched corners [E] of the filters fit tightly to the beveled corners of the plastic below.

### 3.7.11 TONER FILTER



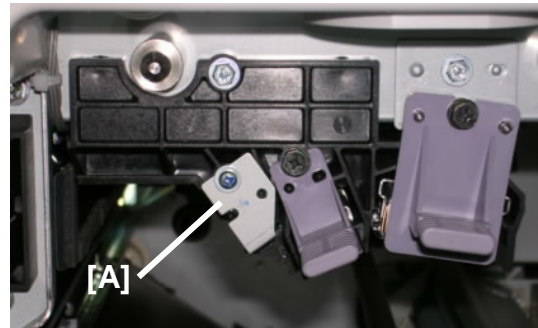
B234R907.BMP

Remove:

- Inner cover (☛3.3.1)
1. Toner filter [A].

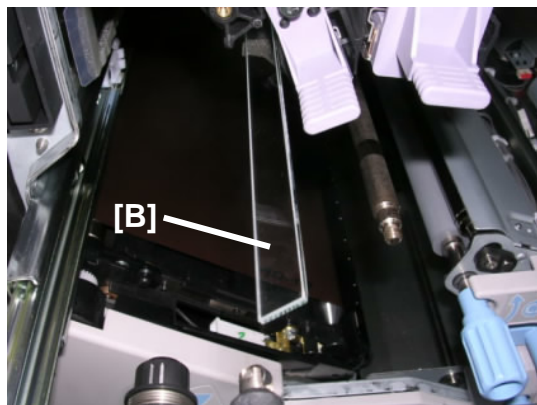
### 3.7.12 QUENCHING LAMP SHIELD GLASS

1. Pull the development unit drawer out (☛3.3.1).
2. Stopper [A] (🔧 x1).



B234R908.BMP

3. Quenching lamp shield glass [B].



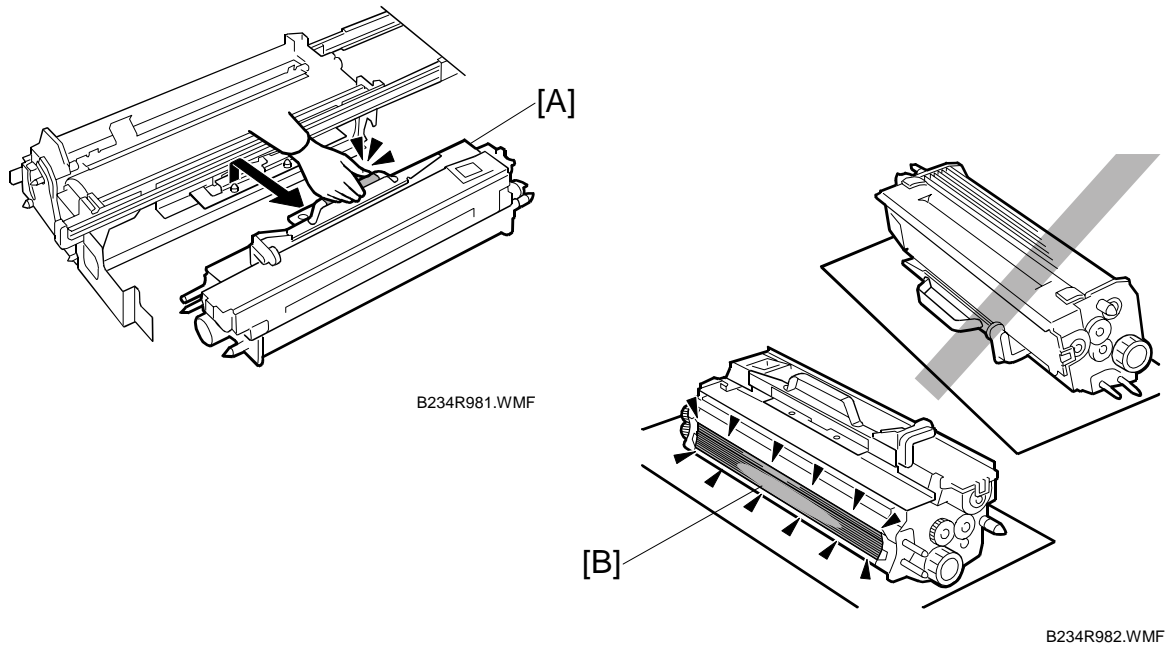
B234R909.BMP

Replacement  
Adjustment



## 3.8 DEVELOPMENT AND TONER SUPPLY

### 3.8.1 DEVELOPMENT UNIT REMOVAL

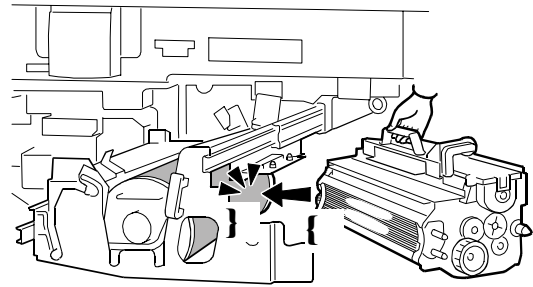


1. Pull out the development unit drawer. (☛3.3.1)
2. Lift the development unit [A] by its purple handle and hold it level when you remove it.  
**Important:** Hold the development unit level to prevent spillage.
3. Place the development unit on some paper.

### Re-installing the Development Unit

**Important:** When you reinstall the development unit, handle it carefully.

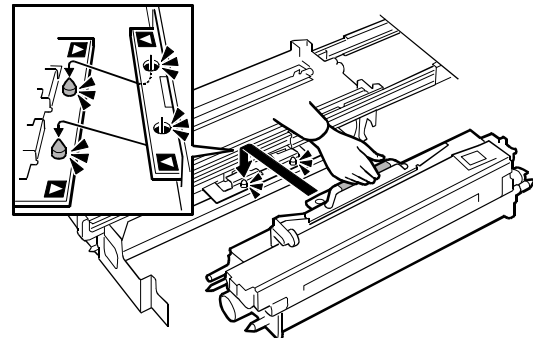
- Never allow the corner of the development roller [ to hit the OPC drum ] or any other part of the frame of the development unit drawer.
- Scratches or other damage to either the drum or development roller will adversely affect the operation of the machine.



B234R983.WMF

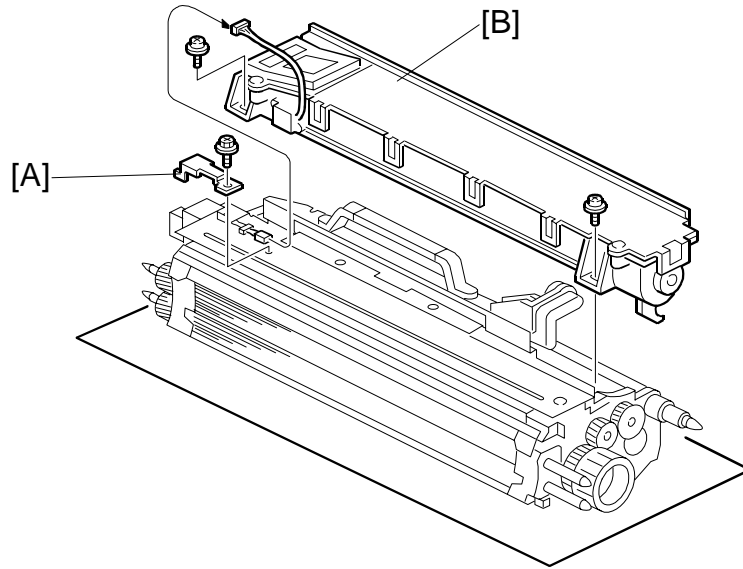
### To reinstall the development unit

1. Align the triangular reference marks of the development unit and drawer frame.
2. Place the holes on the edge of the development unit over the pegs on the drawer frame.
3. Push the development unit drawer into the machine, reattach the faceplate and inner cover, then close the right front door. (➡3.3.2)
4. Reconnect the power cable and other cables.
5. Press the main power switch to turn the machine on and wait for the machine to warm up.



B234R984.WMF

### 3.8.2 TONER HOPPER REMOVAL



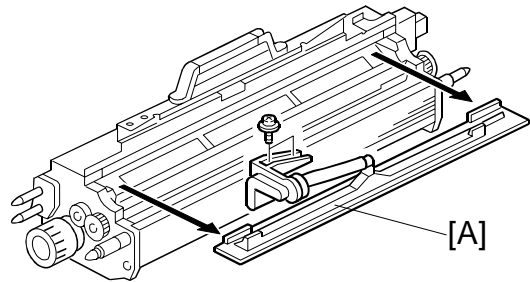
B234R516.WMF

- Development unit (☛3.8.1)
- [A] Bracket (🔩 x1)
- [B] Toner hopper [A] (🔩 x2, 📏 x1)

### 3.8.3 DEVELOPER REPLACEMENT

- Development unit (☛3.8.1)
- Toner hopper (☛3.8.2)

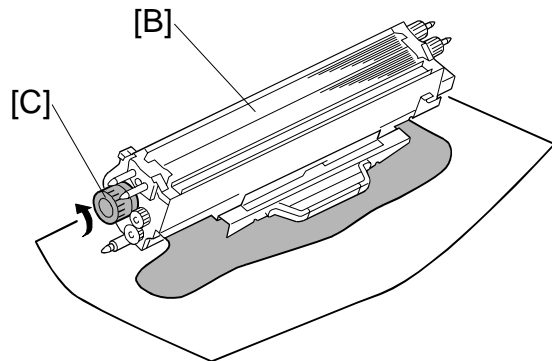
1. Top cover [A] (🔩 x2)



B234R522.WMF

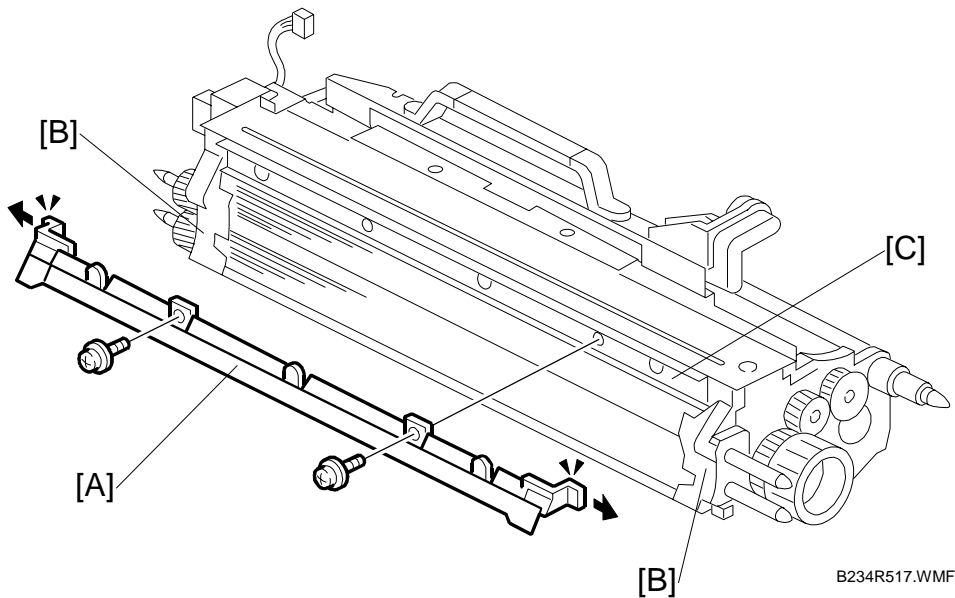
2. Turn the development unit [B] upside down.
3. Rotate the knob [C] counter-clockwise to push out the developer.

**Important:** When you dispose of the developer, follow the local laws and regulations regarding the disposal of such items.

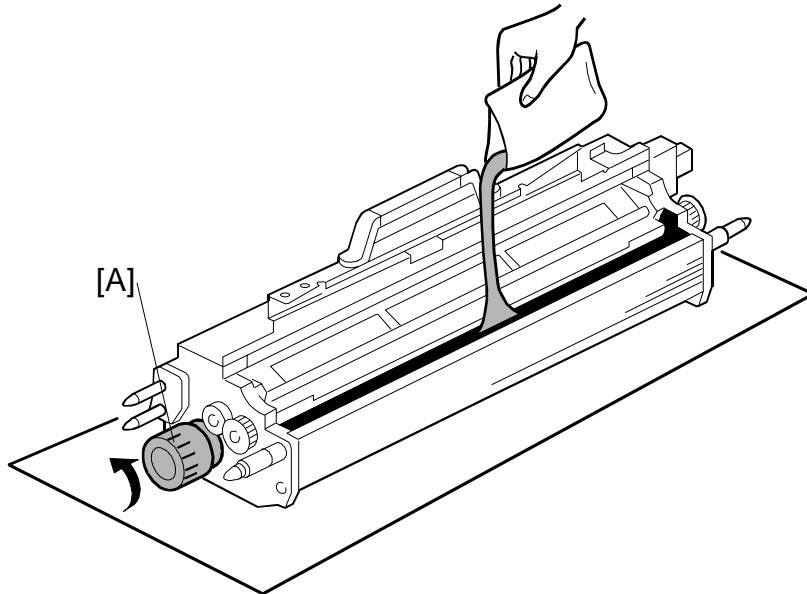


B234R523.WMF

Replacement  
Adjustment



4. Remove the entrance seal [A] (⚙️ x2) and clean it.
5. Clean the side seals [B].  
**Important:** Handle the side seal carefully to avoid twisting or bending it.
6. Clean the development sleeves (upper / lower development roller).
7. Install the entrance seal [A] (⚙️ x2).
8. If you are installing a new development unit, go to the next step.  
 -or-  
 If you are only replacing the developer, clean the doctor blade [C] before you pour in the developer (➡️ 3.8.4).



Replacement  
Adjustment

B234R521.WMF

9. While turning knob [A] pour in one pack of developer evenly across the width of the development unit.
10. Reinstall the top cover and toner hopper.

***Initializing the TD Sensor***

1. Turn on the main switch and do **SP2801** (TD Sensor Initial Setting).
2. Use the keys on the screen to enter the Developer Lot No, then press **#**. (The Lot No. is embossed on the top edge of the developer packet.)
3. Press "Execute" on the screen.  
This executes the TD initial setting.

After about 1 minute, "Completed" is displayed on the screen, and the operation stops.

**Important:**

- Do not make copies with new developer until after executing **SP2801**; otherwise, toner density control will be abnormal.
- If the developer initial setting did not complete correctly, you cannot exit the SP mode by pressing the "Quit" key.
- If this problem occurs, turn the main switch off and on, then perform the initial setting again.
- If the result is the same, see "**SC372**" (TD Sensor Adjustment Error 2) (☛ "4.2.4 SC CODE DESCRIPTIONS").

### 3.8.4 CLEANING THE DOCTOR BLADE

The doctor blade must be cleaned:

- At every PM visit.
- When replacing developer.

This procedure may need to be done more often if the customer is using paper that contains a large amount of paper dust.

The dust tends to collect at the front and on the back side of the blade, causing the doctor gap to become narrower. Cleaning is required when:

- There is toner scatter from both ends of the development unit.
- White lines appear on copies.
- Faint reproduction of the image appears around the edges of the paper.

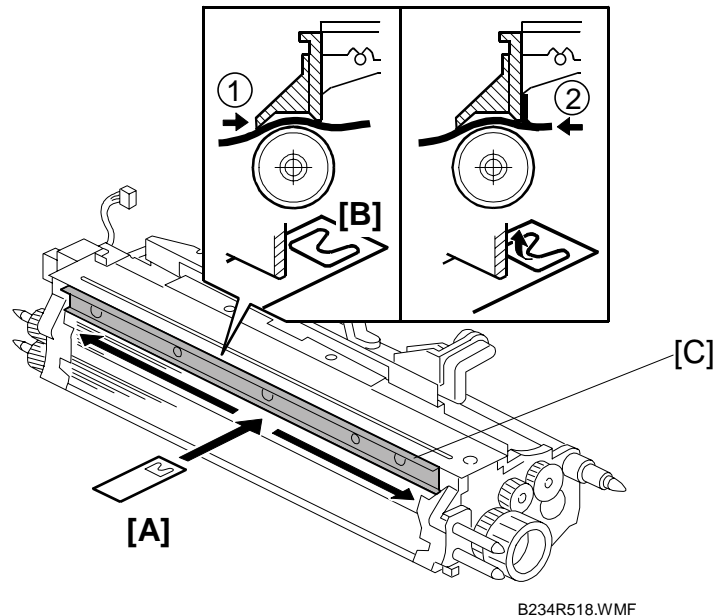
To do this procedure, you need a special tool “Paper Dust Cleaner”.

Part Number	Description
A2949560	Paper Dust Cleaner - 5pcs/set

**NOTE:** The tool is made of flexible plastic and can be re-used. However, before you use it, make sure that it is perfectly flat.

Replacement  
Adjustment



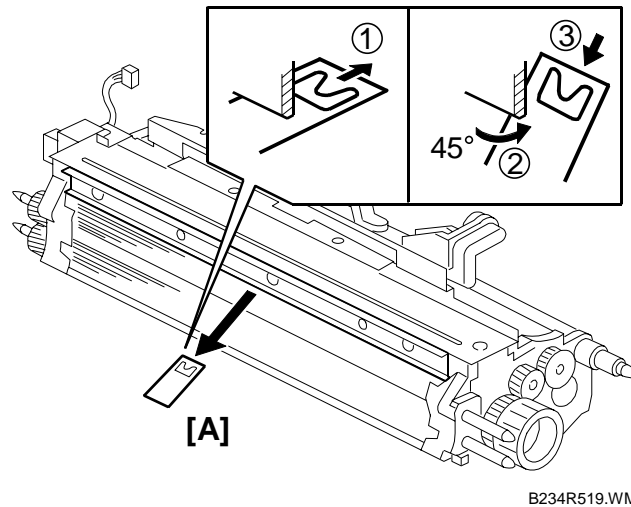
**Important:**

- Always clean the doctor blade [C] before refilling the development unit with new developer.
- The paper dust cleaner [A] is made of soft, thin plastic.
- Always make sure that the paper dust cleaner [A] is completely horizontal before you use it.

1. Development unit (☛3.8.1)
2. Toner hopper (☛3.8.2)
3. Entrance seal (☛3.8.3)
4. Flatten the paper dust cleaner [A] before you use it.
5. Hold the paper dust cleaner perfectly level.
6. Insert the dust cleaner into the gap ① until the flap [B] is not visible.
7. Gently pull the paper dust cleaner toward you slowly ② until you feel slight resistance. Then the flap catches and flips up on the rear side of the doctor blade.

**Important:** If you pull with too much force, the flap will lose contact with the rear side of the doctor blade or could break.

8. Continue to pull gently on the paper dust cleaner so that it remains in contact with the back side of the doctor blade. At the same time, slide the cleaning tool 5 times completely to the left and right. This removes paper dust from the back of the doctor blade.




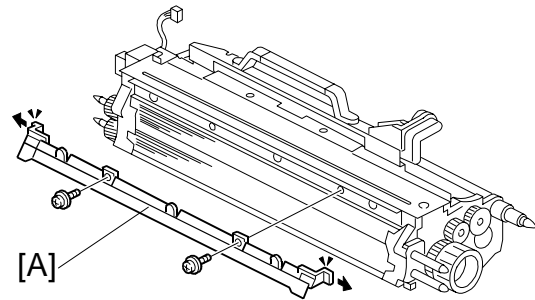
9. When you are ready to remove the paper dust cleaner [A]:
  - Push in the paper dust cleaner slightly about 10 mm (1/2") ①. This releases the flap from the back of the doctor blade and allows it to lie flat.
  - Tilt the paper dust cleaner up to about a 45-degree angle ②, then slowly pull it out of the slit ③.
  - Turn the paper paper dust cleaner slightly to the left or right if you feel any resistance.
10. After removing the dust cleaner, rotate the development roller toward you about 10 mm (1/2").
11. Use a vacuum cleaner to remove toner dust or developer.
 

**Important:**

  - Collect all of the paper dust and developer.
  - Never touch the front surface of the development roller.
12. Repeat the cleaning steps 5 or 6 times.
13. Hold the development unit upside down, and shake it gently to remove any remaining paper dust or developer.
14. Clean the work area thoroughly with the vacuum cleaner.
15. To complete the procedure, return to Step 8 in Section 3.8.3.

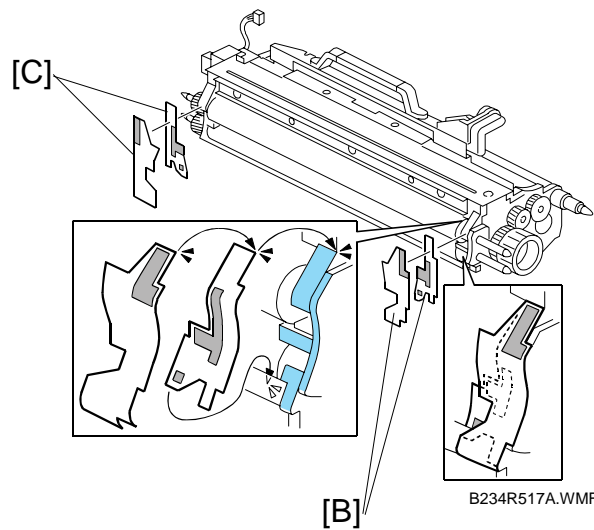
### 3.8.5 DEVELOPMENT ENTRANCE, FRONT, REAR SIDE SEALS

1. Remove the developer and save it.
2. Replace the developer entrance seal [A] (  x 2, hooks x 2).



B234R517.WMF

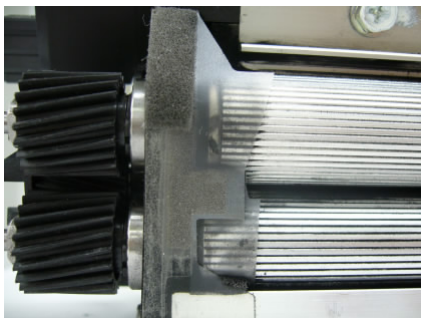
3. Replace the front side seals [B].
4. Replace the rear side seals [C].



B234R517A.WMF

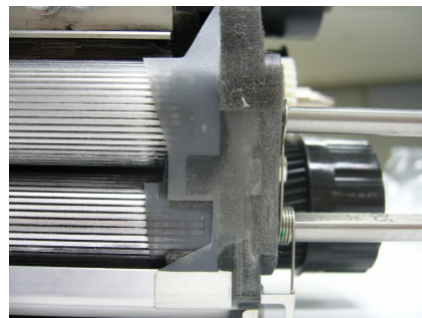
#### Reassembly

- When re-assembling the development unit, make sure the edges of the new side seals align with the edges.



B234R911.BMP

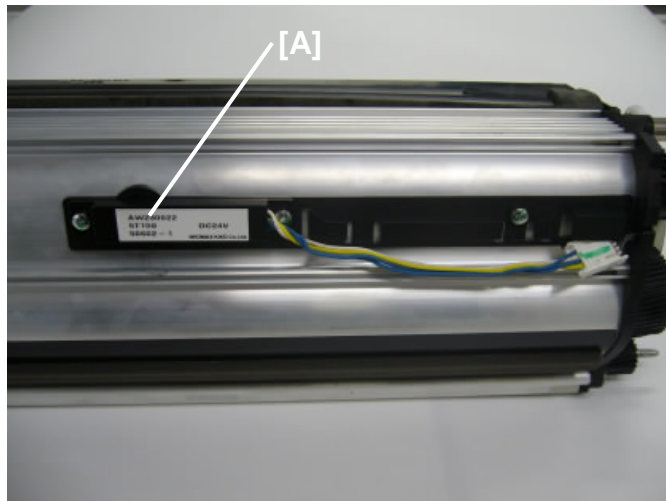
Rear



B234R910.BMP

Front

### 3.8.6 TONER DENSITY SENSOR (TD SENSOR)



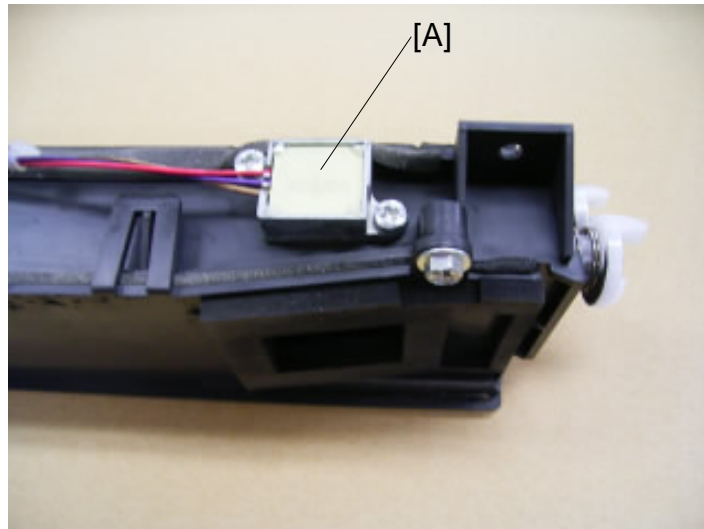
B234R912.BMP

Replacement  
Adjustment

- Remove the developer. (☛3.8.3)
  1. Remove the TD sensor [A] (⚙ x 2, 🛠 x1).
  2. Thoroughly clean the development unit, so no carrier particles remain in the gap between the TD sensor and the development unit casing.
  3. Install the new TD sensor (🛠 x1, ⚙ x 2).
  4. Install new developer and reassemble the development unit. (☛3.8.3)
  5. Execute **SP2801** (TD Sensor Initial Setting).
  6. Execute **SP2962** (Auto Process Control Execution).

**NOTE:** Do not make any copies until you have executed **SP2801** (TD Sensor Initial Setting).

### 3.8.7 TONER HOPPER SENSOR



B234R913.BMP

1. Take out the toner hopper. (☛3.8.2)
2. Toner hopper sensor [A] (🔧 x 2).

### 3.8.8 DEVELOPMENT UNIT GEARS

- Development unit (☛3.8.1)



B234R914.BMP

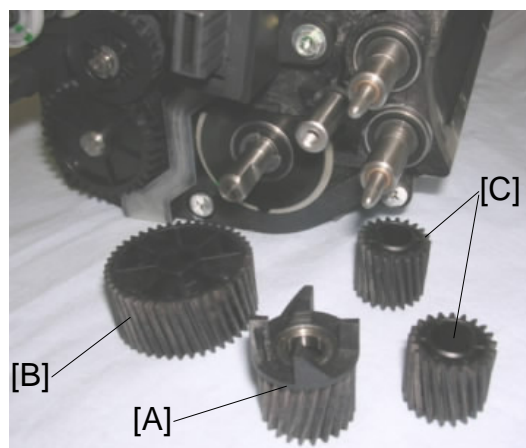
Replacement  
Adjustment

Remove:

[A] Idle gear 23Z (☛x1)

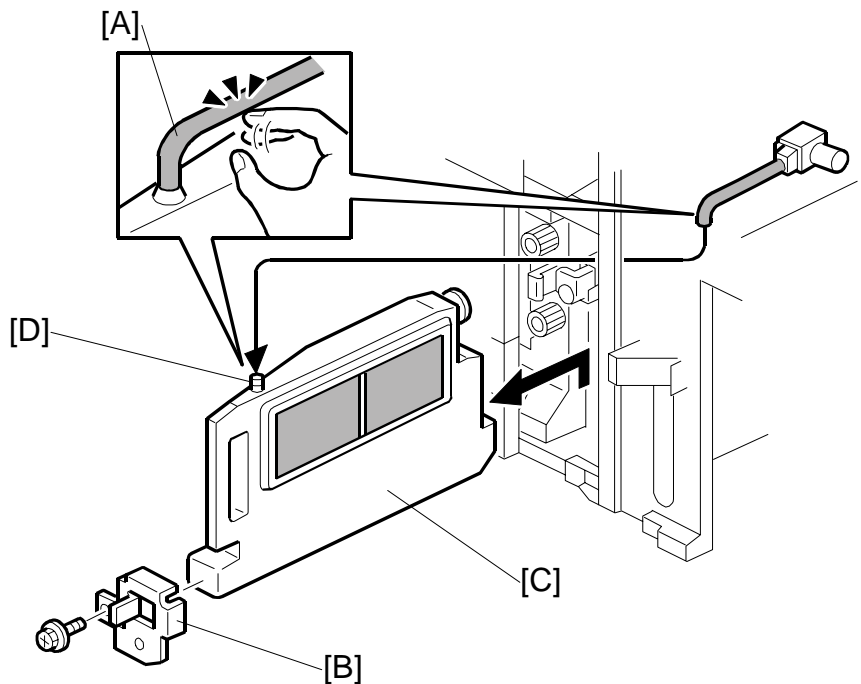
[B] Paddle roller gear 42Z

[C] Development roller gears (x2) 21Z



B234R915.BMP

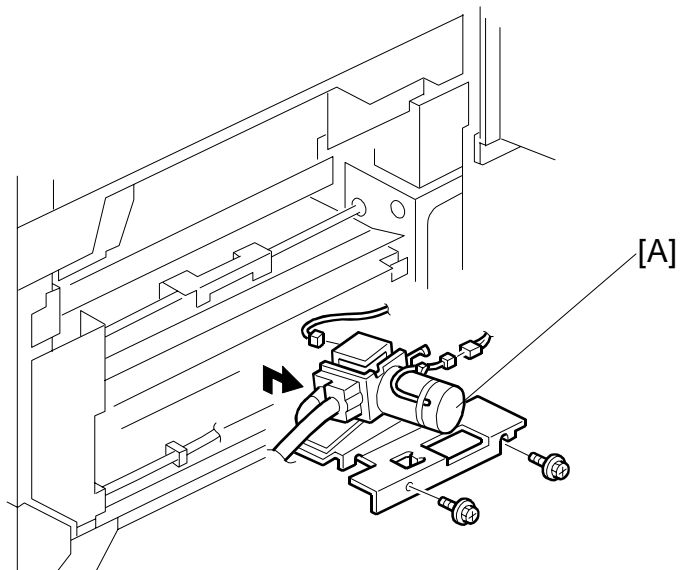
### 3.8.9 TONER SUCTION BOTTLE



B234R165.WMF

1. Remove the right upper cover. (☛3.3.4)
2. Open the right front door.
3. Tap the hose [A] to clear toner from the opening of the hose.
4. Bracket [B] (🔩 x 1).
5. Toner suction bottle [C] (hose x 1).  
**NOTE:** During transport and disposal of the used toner suction bottle, make sure that toner does not spill from top opening [D].
6. After replacing or emptying the toner suction bottle, do **SP2972** and reset it to "0".

### 3.8.10 TONER SUCTION MOTOR



B234R163.WMF

Replacement  
Adjustment

1. Right upper cover (⚙️ x 4).
2. Toner suction motor unit [A] (⚙️ x 2, hoses x 2, ⚙️ x 2)
3. After replacing the toner suction motor, do **SP2973** and reset it to "0".

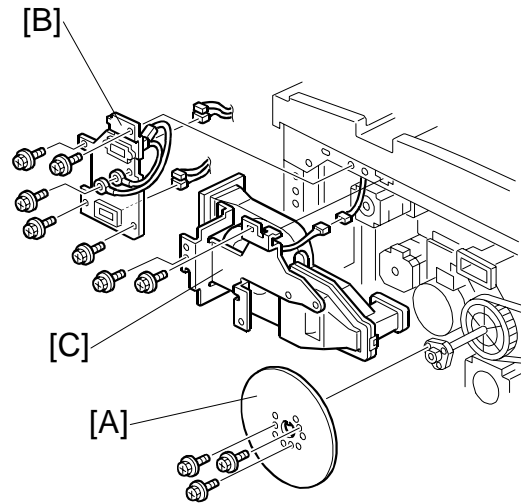


### 3.8.11 DEVELOPMENT MOTOR UNIT

- Open the PSU box (➡3.3.8)
- Rear upper cover (🔧 x4)

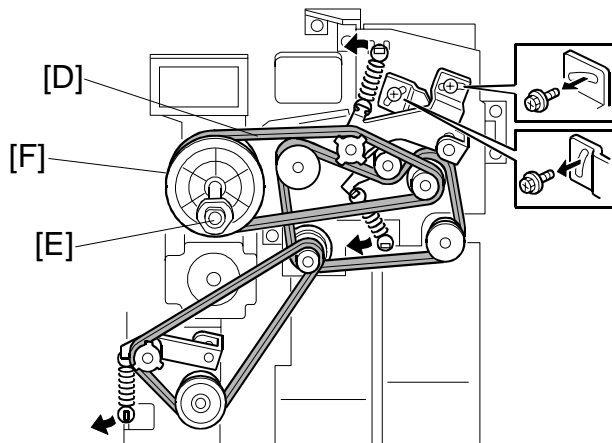
Remove:

- [A] Flywheel (🔧 x3)
- [B] Harness bracket (🔧 x4, 📏 x5)
- [C] Left duct unit (🔧 x2, 📏 x1)



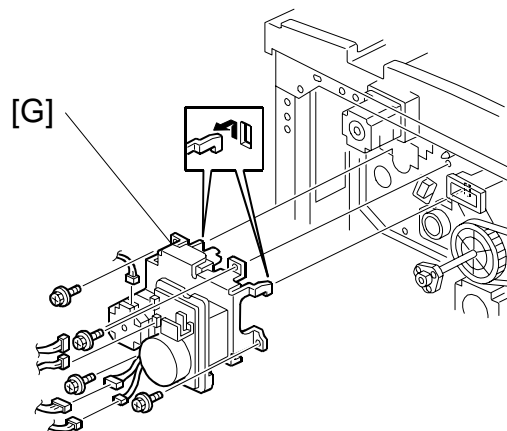
B234R919A.WMF

- [D] Timing belt (🔧 x1)
- [E] Flywheel holder (🔧 x2)
- [F] Drum pulley (🔧 x3)



B234R962.WMF

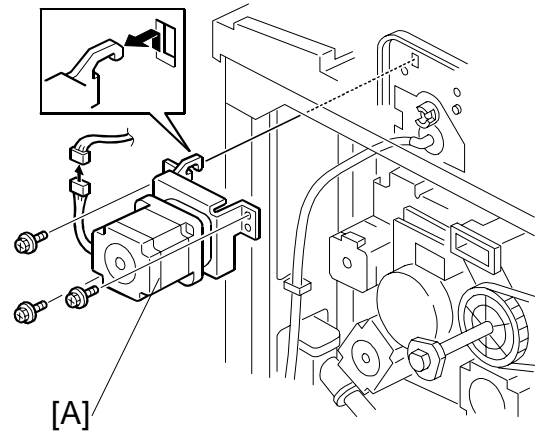
- [G] Development motor unit (🔧 x4, 📏 x5, ⬅️x1)



B234R919B.WMF

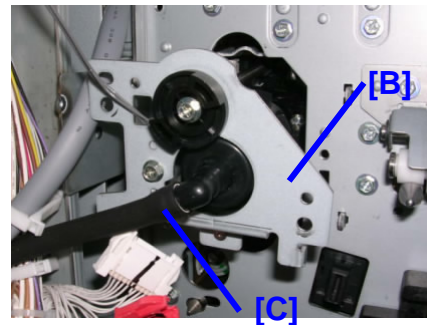
### 3.8.12 TONER PUMP MOTOR, TONER PUMP MOTOR SENSOR

- Development motor unit (☛3.8.11)
- [A] Toner pump motor unit (🔩 x3, 🛠️ x1)

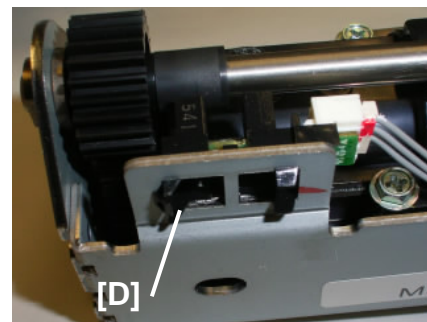


Replacement  
Adjustment

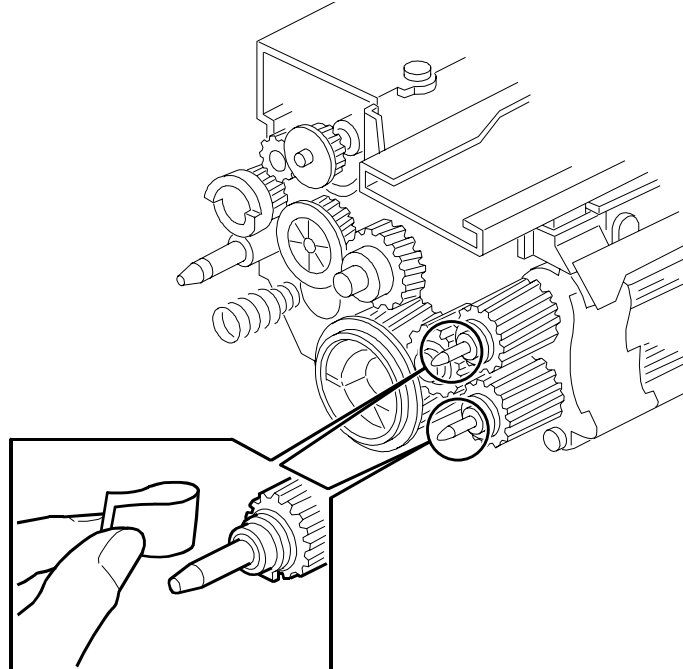
- [B] Toner pump unit (🔩 x3, 🛠️ x1)
  - [C] Disconnect the tube.
- NOTE:** Keep the end of the tube pointing upwards, so that toner does not come out.



- [D] Toner pump motor sensor (🛠️ x1)



### 3.8.13 DEVELOPMENT ROLLER SHAFT CLEANING

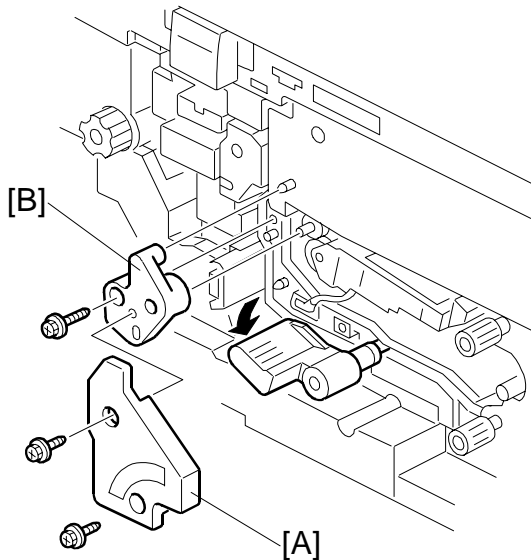


B234R985.WMF

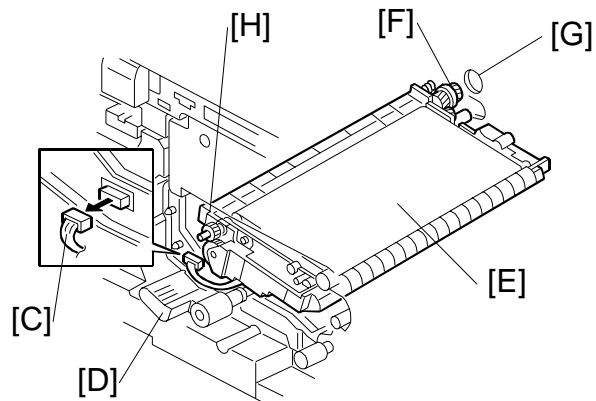
1. Remove the development unit. (☛3.8.3.1.71)
2. Use Teflon tape to remove toner and developer from the development roller shafts.

## 3.9 TRANSFER BELT UNIT

### 3.9.1 TRANSFER BELT UNIT REMOVAL



B234R401.WMF



B234R402.WMF

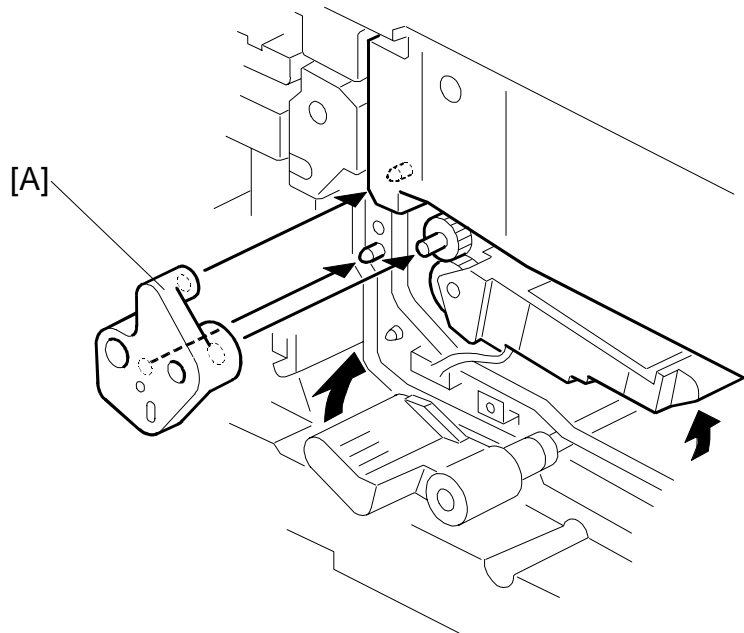
Replacement  
Adjustment

1. Turn off the main switch.
2. Remove the inner cover. (☛3.3.1)
3. Remove the transfer belt unit cover [A] (🔩 x 2).
4. Remove the transfer belt unit holder [B] (🔩 x 1).
5. Connector [C] (🔌 x 1).
6. While turning the lever [D] counterclockwise, take out the transfer belt unit [E].

**NOTE** 1) Never touch the transfer belt with bare hands.  
2) Work carefully to avoid scratching the drum with the transfer belt unit.

#### Reassembly:

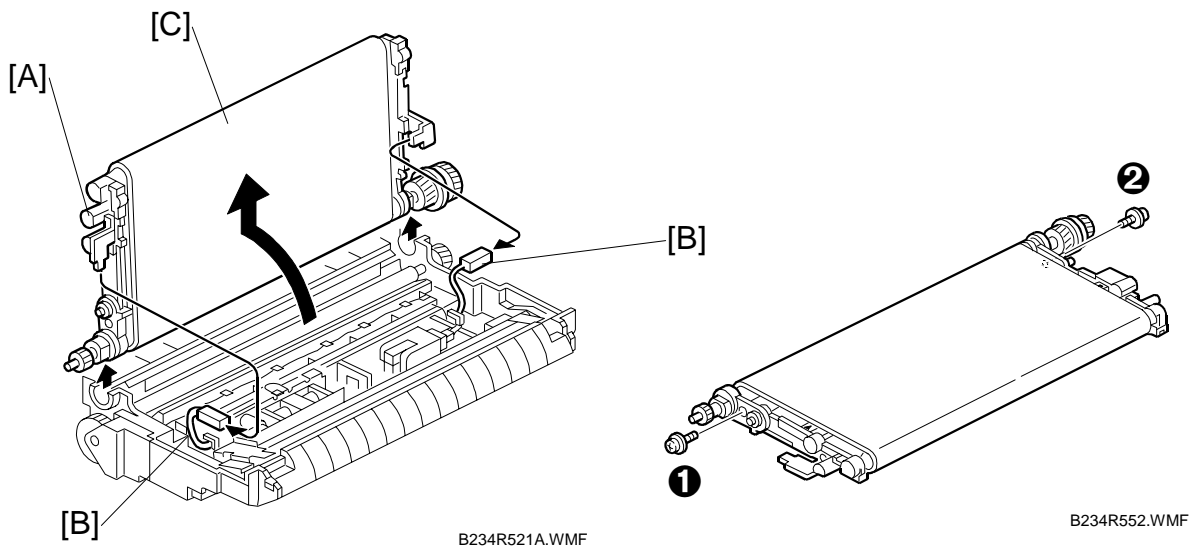
1. Rotate the lever [D] fully counterclockwise, then install the transfer belt unit [E].
2. Insert the gear [F] into the opening [G] in the rear frame.
3. Place the slot [H] in the transfer belt unit on the rail.
4. Connect the connector [C] (🔌 x 1).



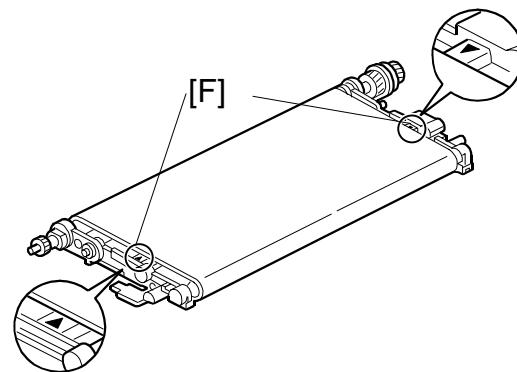
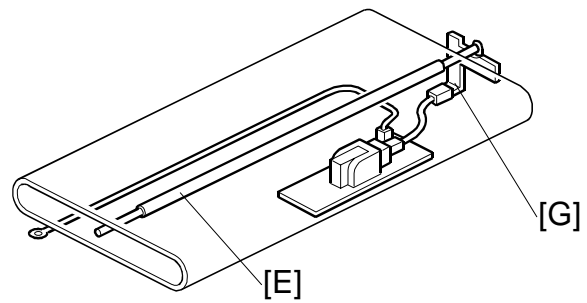
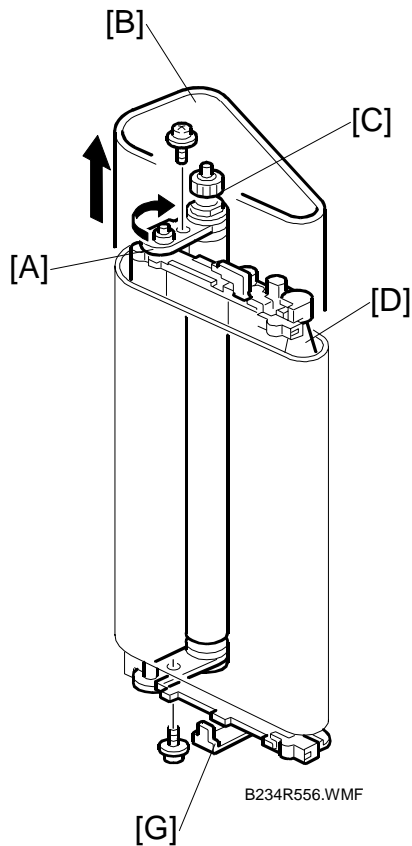
B234R403.WMF

5. Attach the transfer belt unit holder [A] (1 x 1).  
**NOTE:** Align the three holes with the three projections as shown with the arrows.
6. After installation, check the following points:
  - The transfer belt unit must move up and down smoothly.
  - The transfer belt unit must be behind the drum stay.

### 3.9.2 TRANSFER BELT



1. Remove the transfer belt unit. (☛3.9.1)
2. Raise knob [A], then disconnect the connectors [B] (☛ x 2).
3. Turn the transfer belt upper unit [C] 90 degrees counterclockwise, then raise and remove it.
4. Remove the screws ❶, ❷ (☛ x 2).



5. Turn the belt drive roller holder [A] clockwise (front view) and remove the transfer belt [B].
6. Clean both sides of the transfer belt with a dry cloth.  
**Important:** Do not use alcohol.

***Before Installing the Transfer Belt***

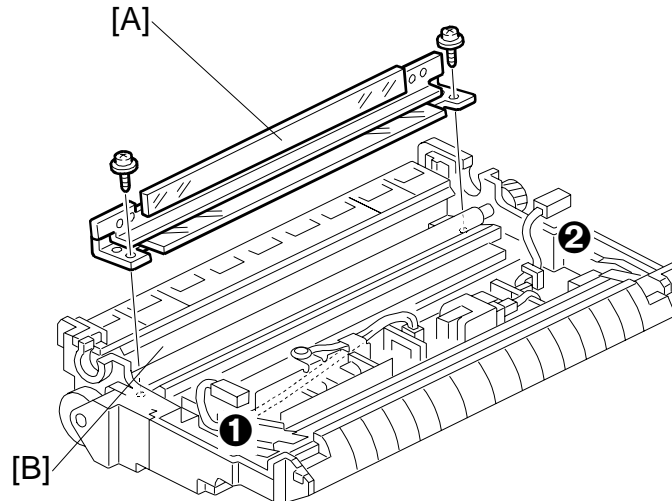
Clean the following items with alcohol:

- [C] Belt drive roller
- [D] Belt roller
- [E] Bias roller

***Installing the Transfer Belt***

1. Position the transfer belt at the center of the belt roller [D] so both marks [F] are visible.
2. Position the transfer belt under the bias terminals [G].

### 3.9.3 TRANSFER BELT BLADE / BIAS ROLLER CLEANING BLADE



Replacement  
Adjustment

B234R108.WMF

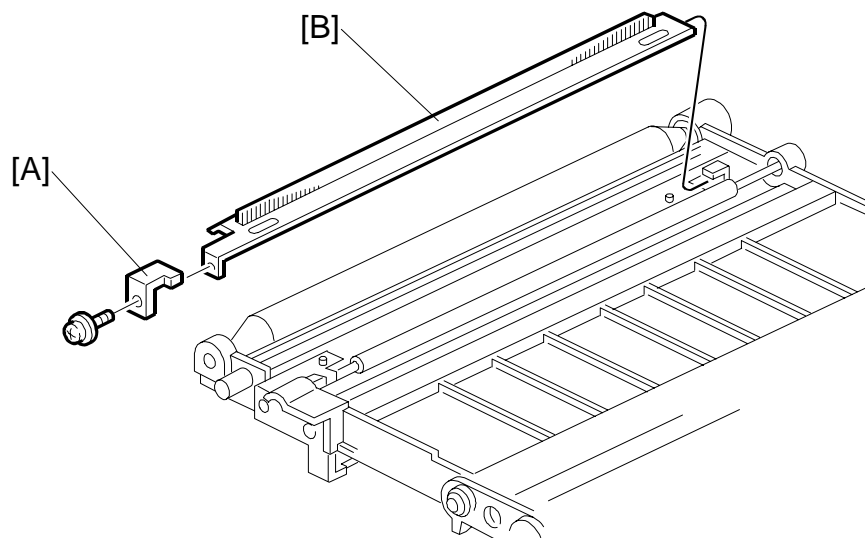
- Remove the transfer belt unit. (☛3.9.1)
- 1. Transfer belt cleaning blade / bias roller cleaning blade [A] (☛ x 2).
- 2. Clean the cleaning bias roller [B].
 

**NOTE:** Before vacuuming, remove the power pack connectors ① and ② to protect the transfer power pack from static electricity.
- 3. Install the new cleaning blade.
 

**NOTE:** Never touch the edge of the cleaning blade. If the setting powder (B234861) on the blade edge is accidentally removed at some point, apply setting powder or toner at that point before installation.



### 3.9.4 TRANSFER BELT BIAS BRUSH



B234R455.WMF

- Remove transfer belt. (☛3.9.2)

Remove:

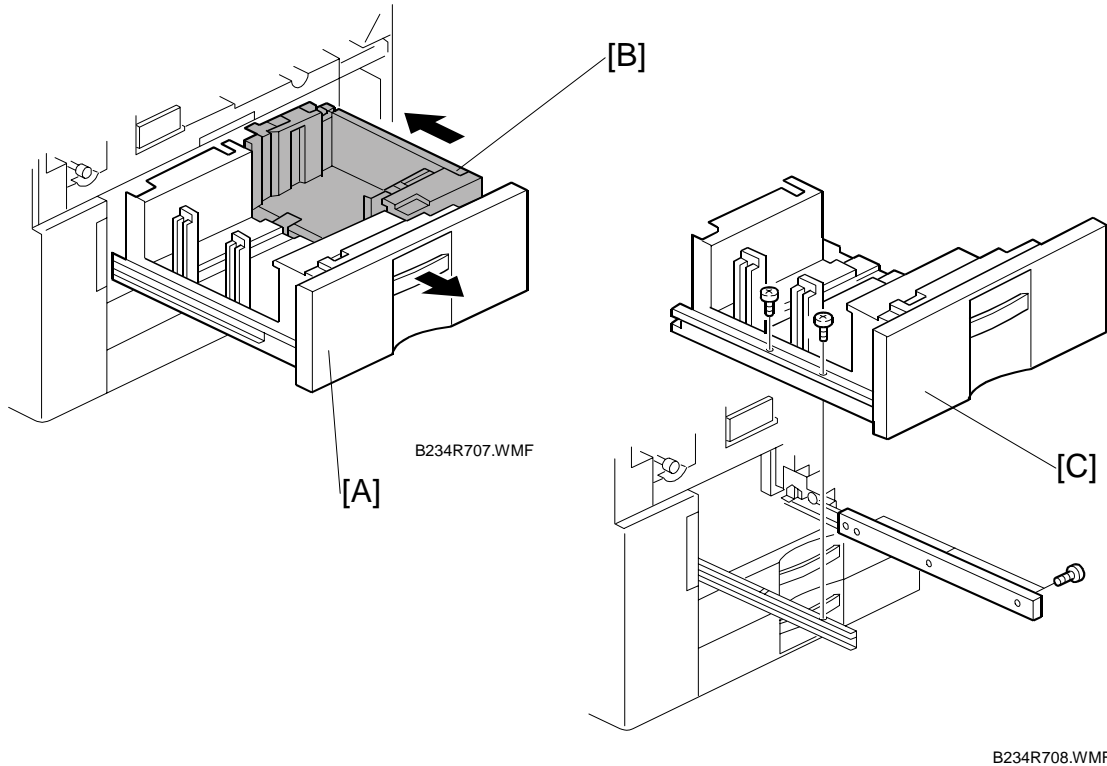
[A] Stopper (🔩 x1)

[B] Transfer belt bias brush unit

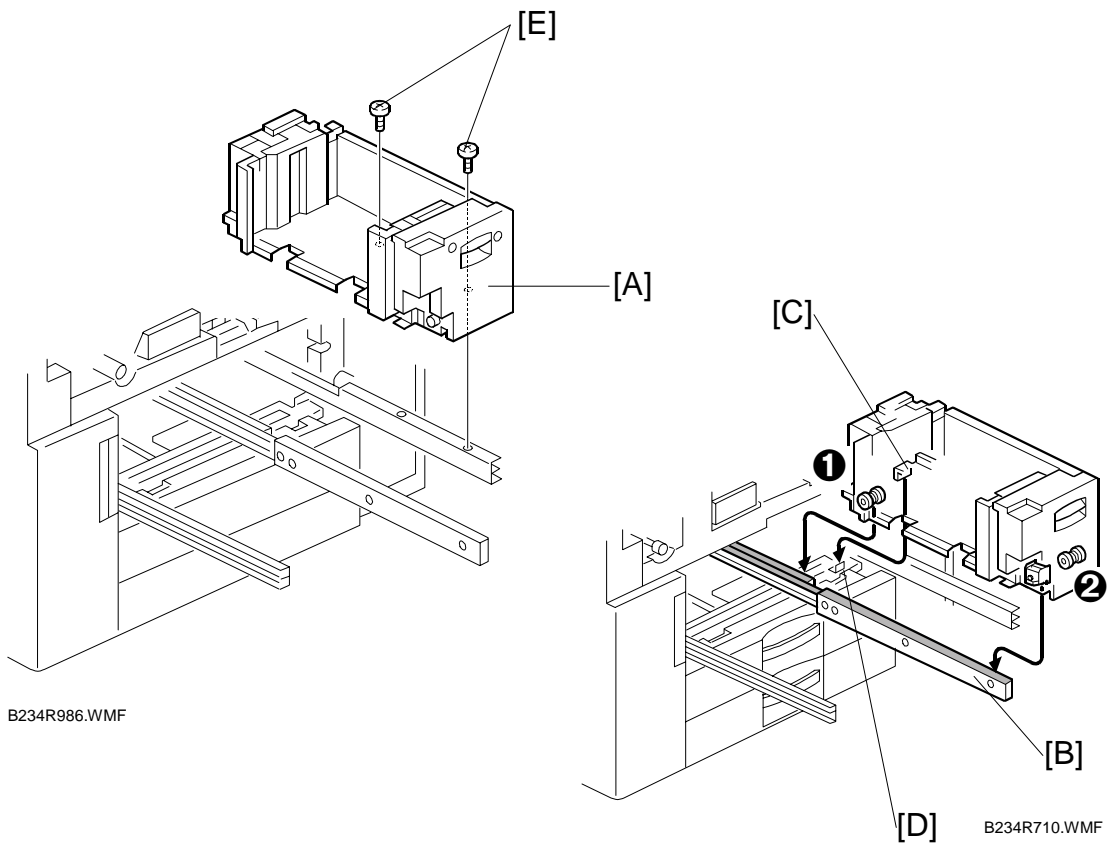
### 3.10 PAPER FEED

#### 3.10.1 PAPER TRAYS

##### *Tandem Tray (Tray 1)*



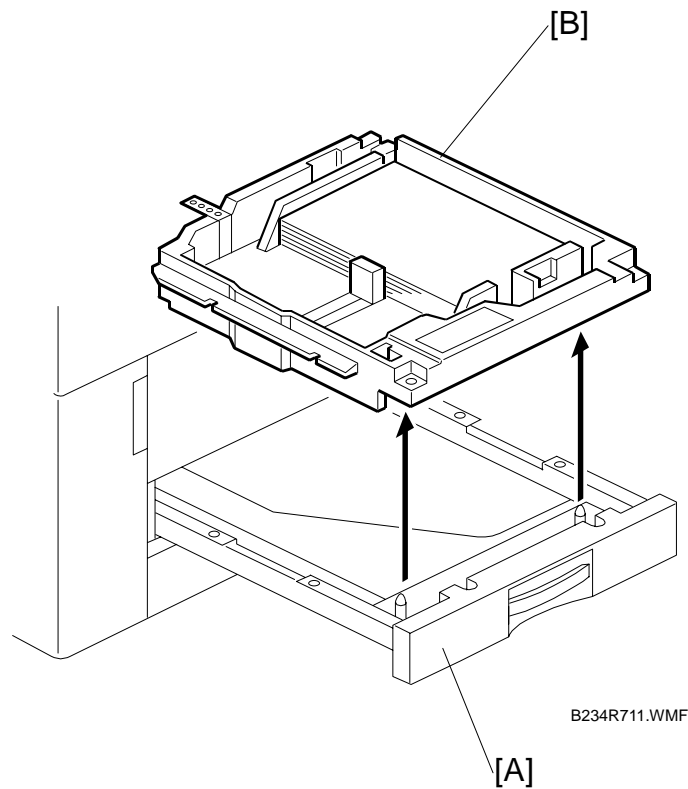
1. Open the front doors.
2. Open the tandem feed tray [A] so the right tandem tray [B] fully separates from the left tray.
3. Push in the right tandem tray.
4. Left tandem tray [C] (⚙ x 5).



5. Right tandem tray [A] (2 x).

- NOTE:**
- 1) When re-installing the right tandem tray, make sure that the wheels ❶, ❷ ride on the slide rail [B].
  - 2) When re-installing the right tandem tray, make sure that the tandem tray stopper [C] is set behind the stopper [D] on the copier frame.
  - 3) Use M4 x 4 screws [E] to secure the right tandem tray. Screws longer than 4 mm will prevent the right tandem tray from sliding out and in smoothly.

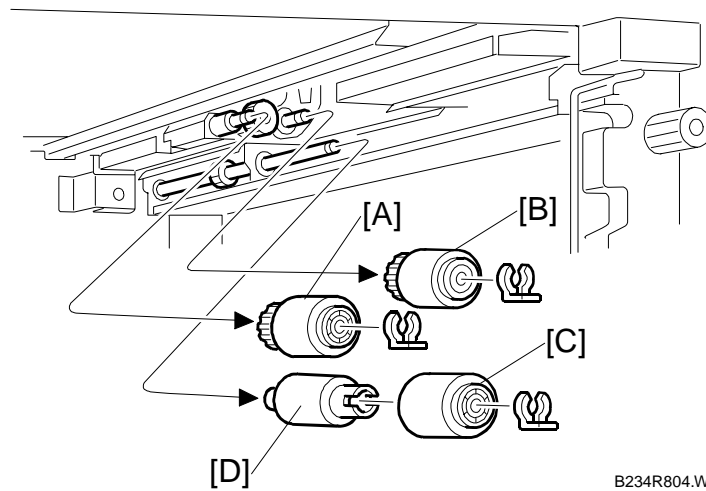
**Universal Tray (Tray 2 and 3)**



1. Pull open tray 2 or tray 3 [A].
2. Lift the tray [B] out of the drawer.

Replacement  
Adjustment

### 3.10.2 PAPER FEED ROLLERS



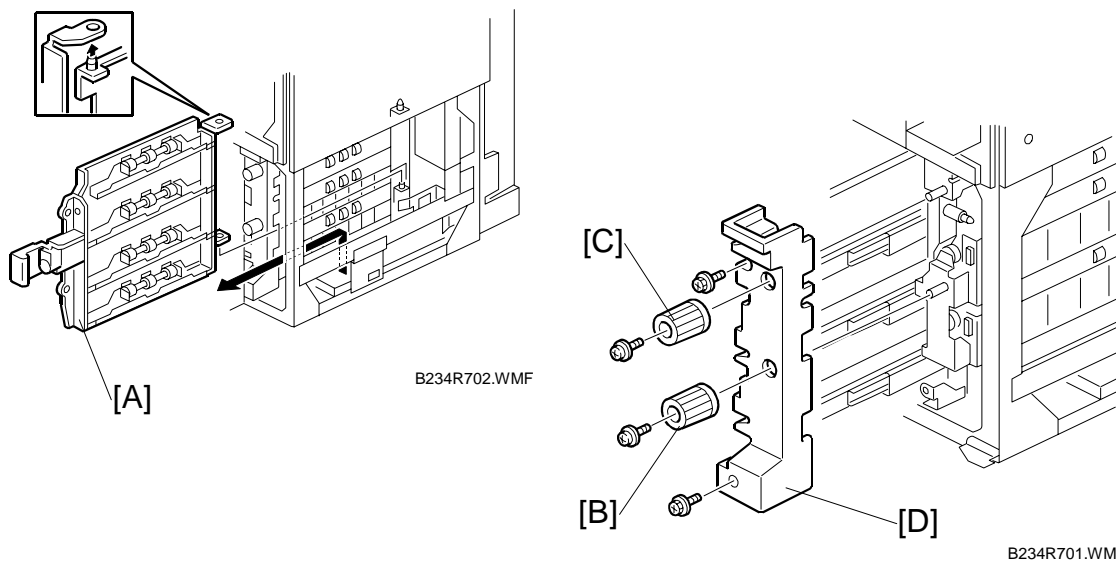
B234R804.WMF

1. Turn off the main switch.
2. Paper tray for the appropriate feed unit. (☛3.10.1)
3. Pick-up roller [A] (☞ x 1).
4. Feed roller [B] (☞ x 1).
5. Remove separation roller [C] from the torque limiter [D] (☞ x 1).

#### Important

- The feed rollers of the main copier and the LCT are not interchangeable because they turn in different directions.
  - After replacing a feed roller in the copier, always make sure that it turns counterclockwise in the direction of paper feed.
  - Do not touch the surface of the rollers with your bare hands.
6. Reset the PM count to zero for the new rollers (see section 2.1.2).

### 3.10.3 PAPER FEED UNITS 1, 2, 3

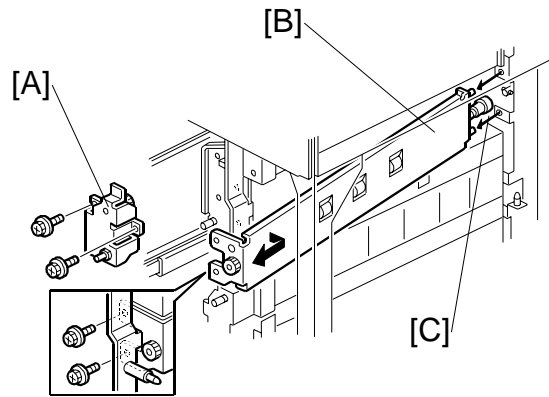


**NOTE:** This procedure uses the 1st feed unit as an example. The procedures for the 2nd and 3rd trays are the same.

1. Turn off the main switch.
2. Right front door. (☛3.3.3)
3. Right lower cover. (☛3.3.4)  
**NOTE:** If the LCT is installed, disconnect it.
4. Toner suction bottle (☛3.8.9)
5. Lift the vertical transport guide [A] and remove it.
6. Remove knob [B] (🔧 x 1).
7. Remove knob [C] (🔧 x 1).
8. Pull out the three trays and remove the paper tray unit inner cover [D] (🔧 x 2).

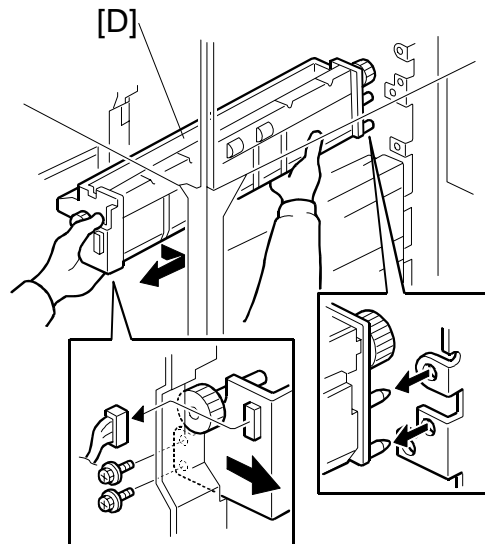
- 9. Upper gear bracket [A] (⚙️ x 3)
- 10. Inner vertical transport guide [B] (⚙️ x 2).

**NOTE:** When re-installing the inner vertical transport guide, set the pin [C] of the inner vertical transport guide into the slot on the main body.



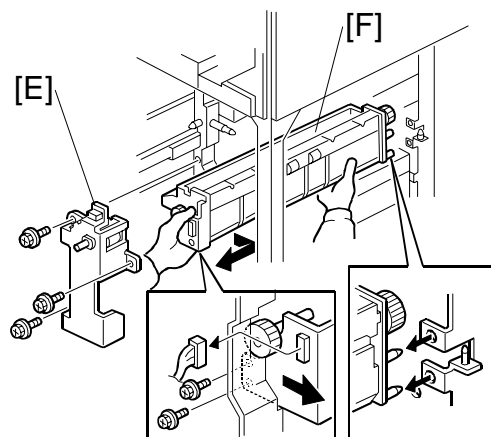
B234R703A.WMF

- 11. 1st paper feed unit [D] (⚙️ x 2, 📄 x1).



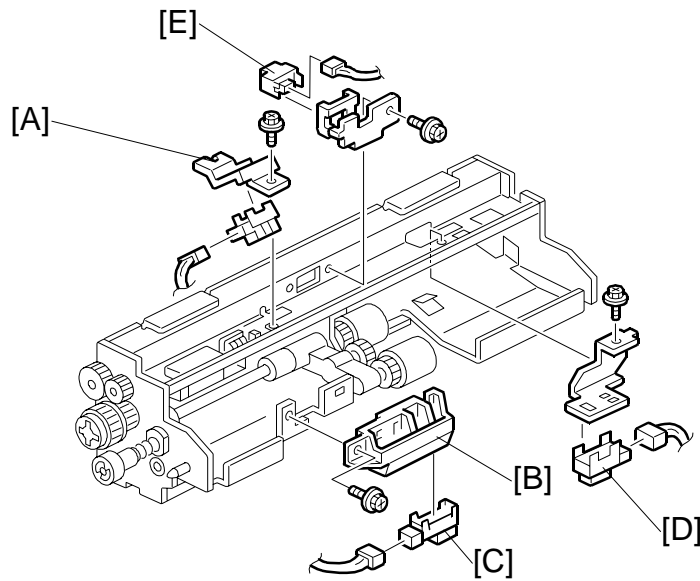
B234R703B.WMF

- 12. Lower gear bracket [E] (⚙️ x3, 📄x1).
- 13. 2nd or 3rd paper feed unit [F] (⚙️ x 2, 📄 x1).



B234R704.WMF

### 3.10.4 PAPER FEED, PAPER END, TRAY LIFT SENSOR



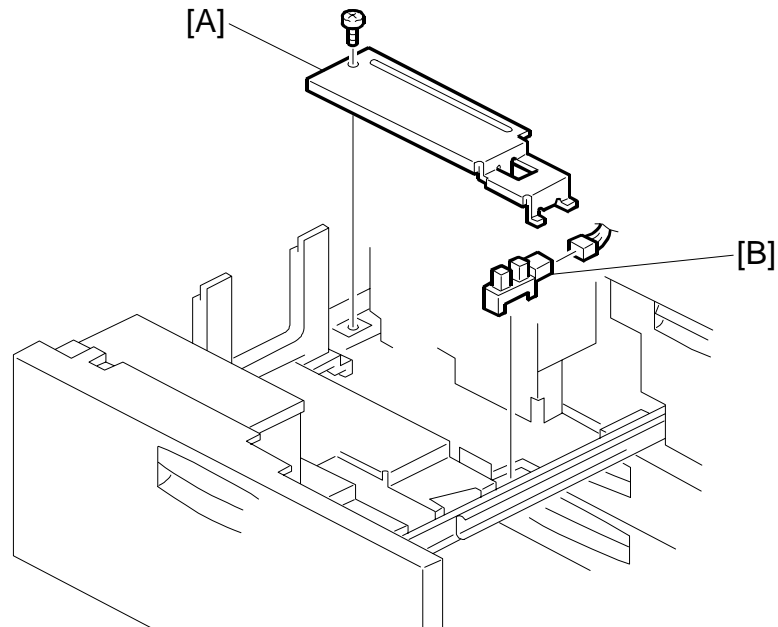
B234R705.WMF

Replacement  
Adjustment

1. Remove the paper feed unit (☛3.10.3)
2. Remove:
  - [A]: Tray lift sensor (☛ x 1, ☞ x 1).
  - [B]: Paper end sensor assembly (☛ x 1, ☞ x 1)
  - [C]: Paper end sensor
  - [D]: Paper feed sensor (☛ x 1, ☞ x 1)
  - [E]: Vertical transport sensor (☛ x1, ☞ x1)



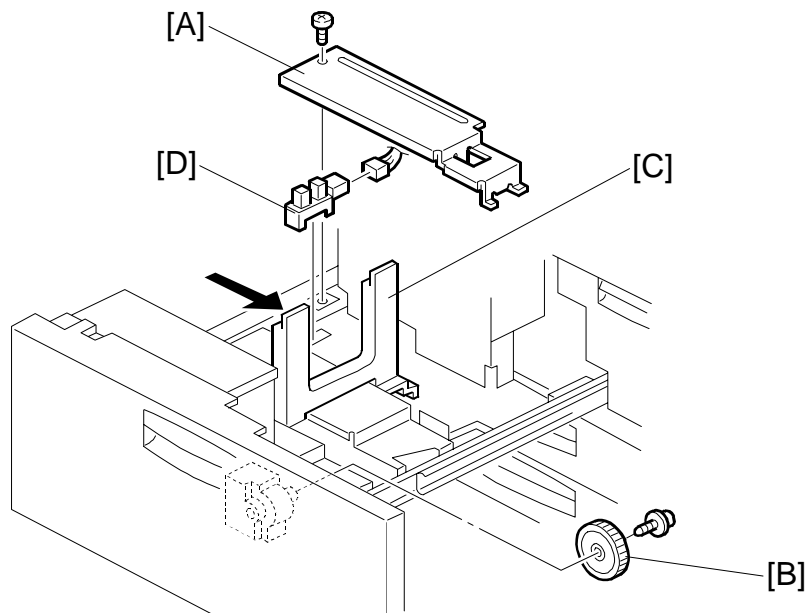
### 3.10.5 REAR FENCE RETURN SENSOR



B234R987.WMF

1. Turn off the main switch.
2. Pull out the left tandem tray.
3. Rear bottom plate [A] (🔩 x 1).
4. Rear fence return sensor [B] (🔌 x 1).

### 3.10.6 REAR FENCE HP SENSOR

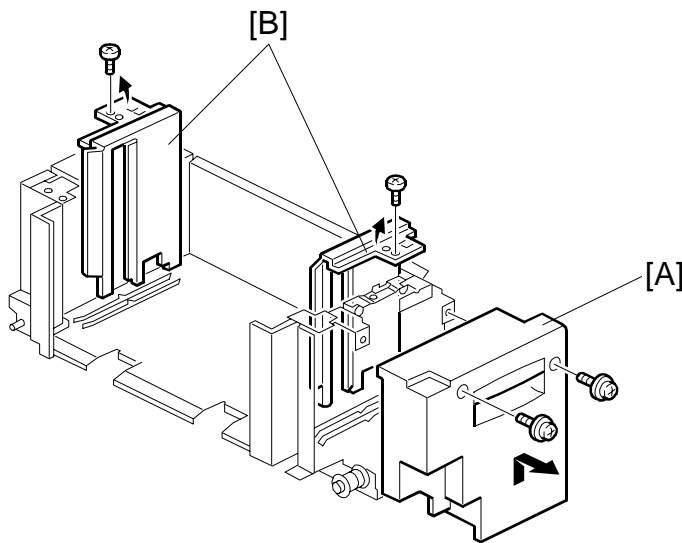


B234R988.WMF

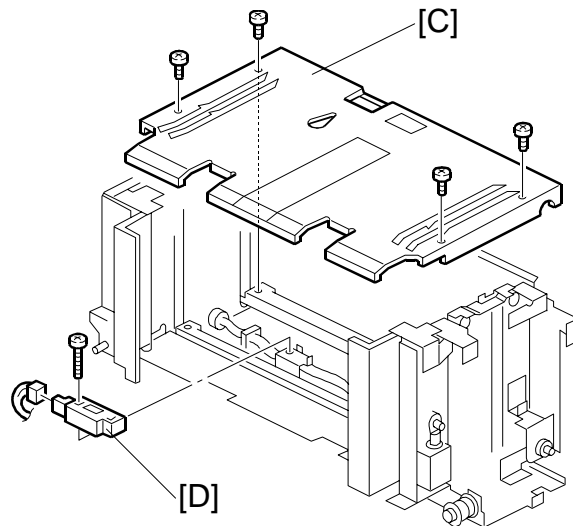
Replacement  
Adjustment

1. Turn off the main switch.
2. Pull out the left tandem tray.
3. Rear bottom plate [A] (🔩 x 1).
4. Rear fence transport gear [B] (🔩 x 1).
5. Move the rear fence [C] to the right.
6. Rear fence HP sensor [D] (🔩 x 1).

### 3.10.7 1ST TRAY RIGHT PAPER SENSOR



B234R999.WMF

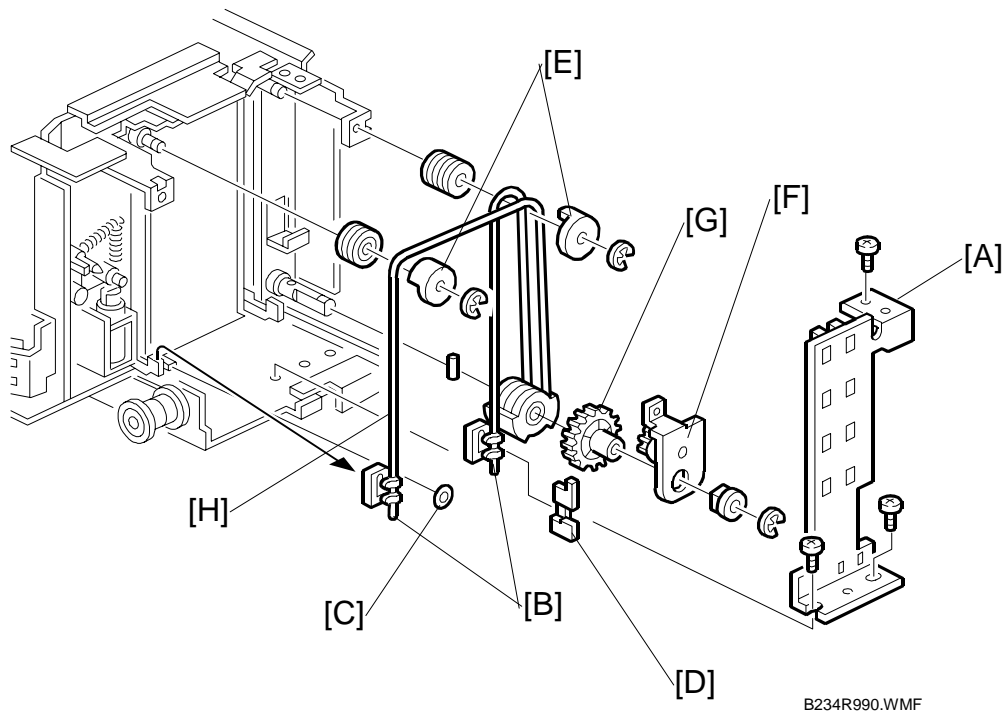


B234R989.WMF

1. Turn off the main switch.
2. Right tandem tray. (☛3.10.1)
3. Tandem tray cover [A] (🔧 x 2).
4. Side fences [B] (🔧 x 1 each).  
**NOTE:** When re-installing the side fences, make sure that the position of the side fences is correct.  
 A4: Outer, LT: Inner
5. Bottom plate [C] (🔧 x 4).
6. Right 1st tray paper sensor [D] (🔧 x 1, 📄 x 1).

### 3.10.8 BOTTOM PLATE LIFT WIRE

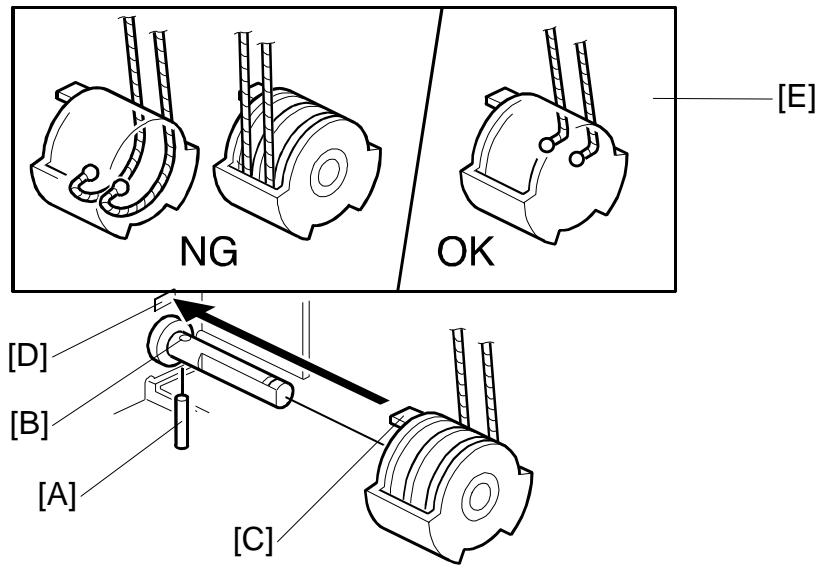
**NOTE:** Before replacing the rear bottom plate lift wire, remove the front bottom plate lift wire. The procedure for the two wires is the same.



Replacement  
Adjustment

Remove:

- Right tandem tray. (☛3.10.1)
  - Tandem tray cover (☛ x 2). (☛3.10.7)
1. Sensor bracket [A] (☛ x 3) (Front Only).
  2. Slightly lift the front bottom plate and unhook the wire stoppers [B], remove stopper [C] and actuator [D].
  3. Wire covers [E] (☉ x 1 each).
  4. Bracket [F] (☛ x 1, ☉ x 1, bushing x 1) (Front Only).
  5. Gear [G] (Front Only).
  6. Bottom plate lift wire [H].



B234R991.WMF

### Re-installation

When re-installing the bottom plate lift wire:

1. Set the positioning pin [A] in the hole [B].
2. Set the projection [C] in the hole [D].
3. Position the wire as shown [E].

**NOTE:** Do not cross the wires.

### 3.10.9 PAPER DUST TRAY, REGISTRATION SENSOR, DOUBLE-FEED SENSOR CLEANING

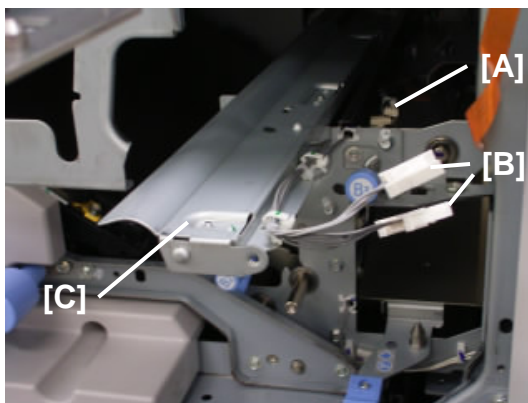
1. Remove:
  - Development unit (☞3.7.1)
  - Cleaning unit (☞3.7.1)
  - PCU (☞3.7.1)
  - Knob **C2, B1** (🔧 x 1 ea.)
  - Inner cover



B234R918.BMP

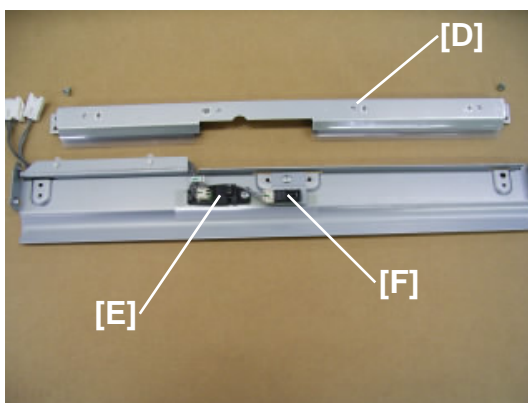
Replacement Adjustment

2. Release clamp [A].
3. Disconnect [B] (🔧 x 2).
4. Guide plate [C] (🔧 x 1)



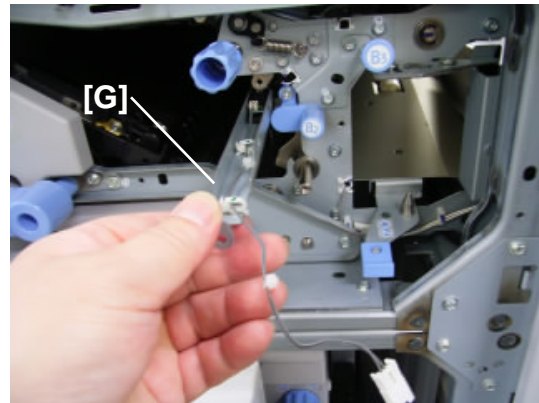
B234R919.BMP

5. Paper dust tray [D] (🔧 x 2).
6. Use a clean dry cloth to remove the paper dust.
7. Use a blower brush to clean the double-feed sensor [E] and registration sensor [F].



B234R920.BMP

8. Double-feed sensor bracket [G] (🔧 x1, 📏 x1, 📐 x2).



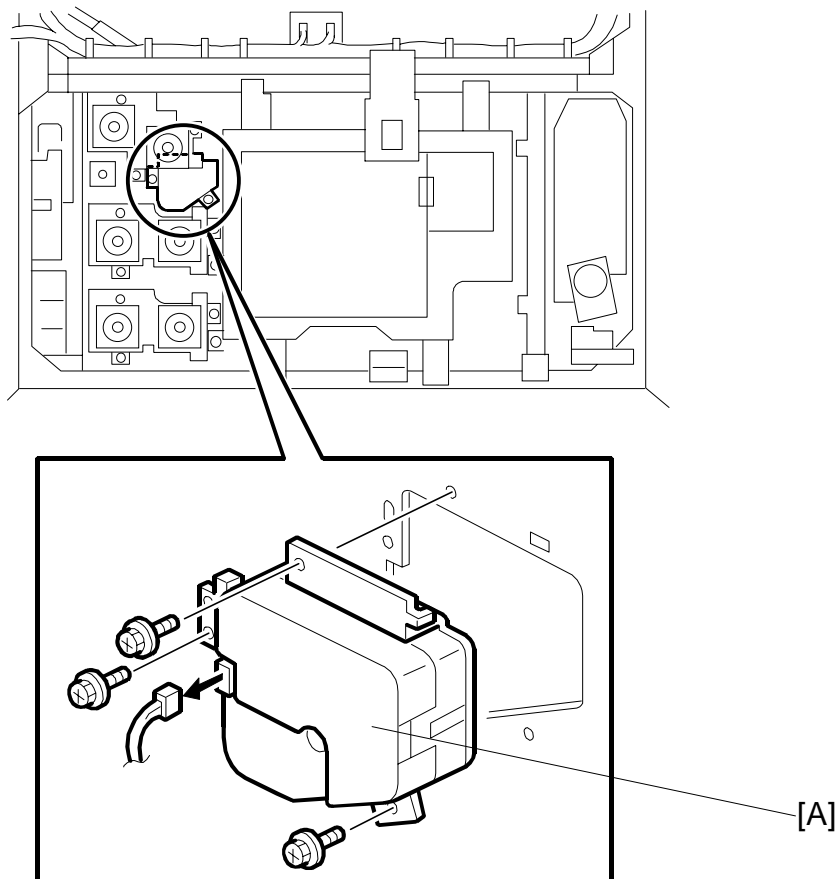
B234R921.BMP

9. Clean the double-feed sensor LED.



B234R922.BMP

### 3.10.10 LIFT MOTORS



Replacement  
Adjustment

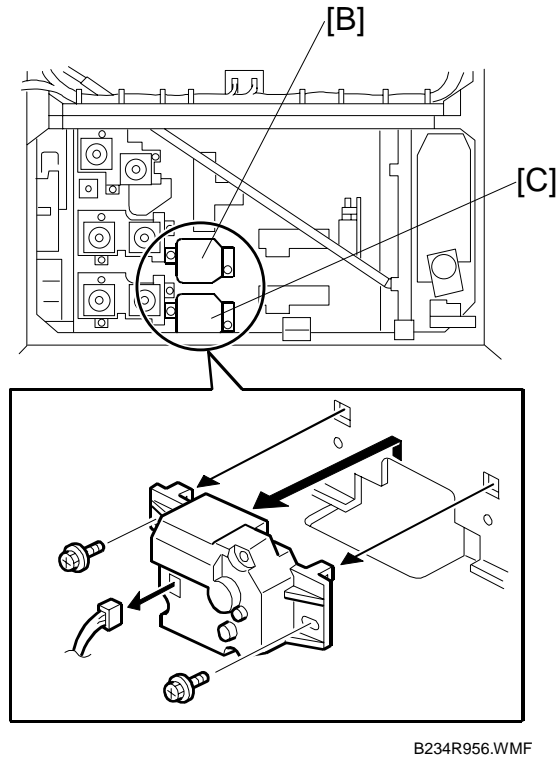
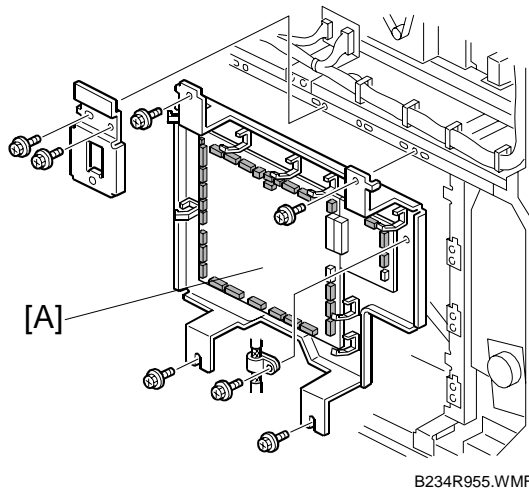
B234R953.WMF

#### **1st Tray Lift Motor**

- Remove AC drive board unit (☛3.14.7)
1. 1st tray paper feed unit (☛3.10.12)
  2. 1st tray lift motor [A] (🔩 x3, 🛠️ x1)

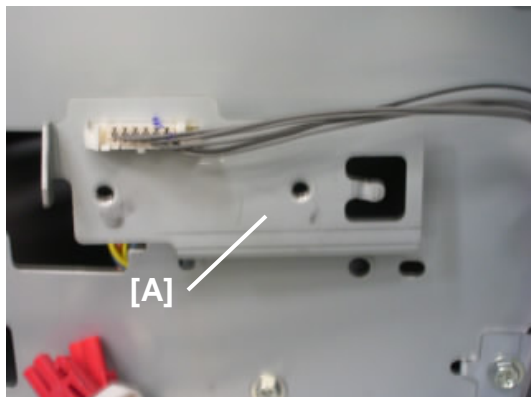


### 2nd, 3rd Tray Lift Motors

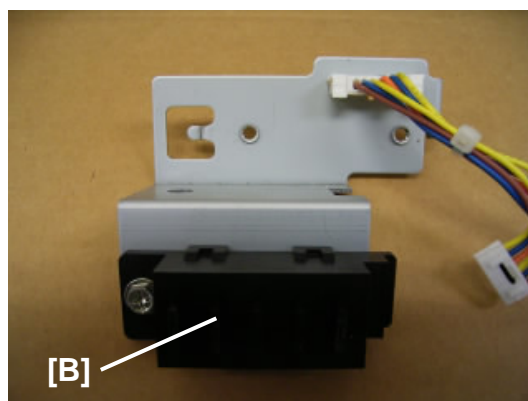


1. Remove the BCU-IOB unit [A] (☛3.14.4)
2. 2nd tray lift motor [B] (☛ x 1, ⚙ x 2).
3. 3rd tray lift motor [C] (☛ x 1, ⚙ x 2).

### 3.10.11 2ND, 3RD TRAY SIZE SWITCHES



B234R923.BMP



B234R924.BMP

Replacement  
Adjustment

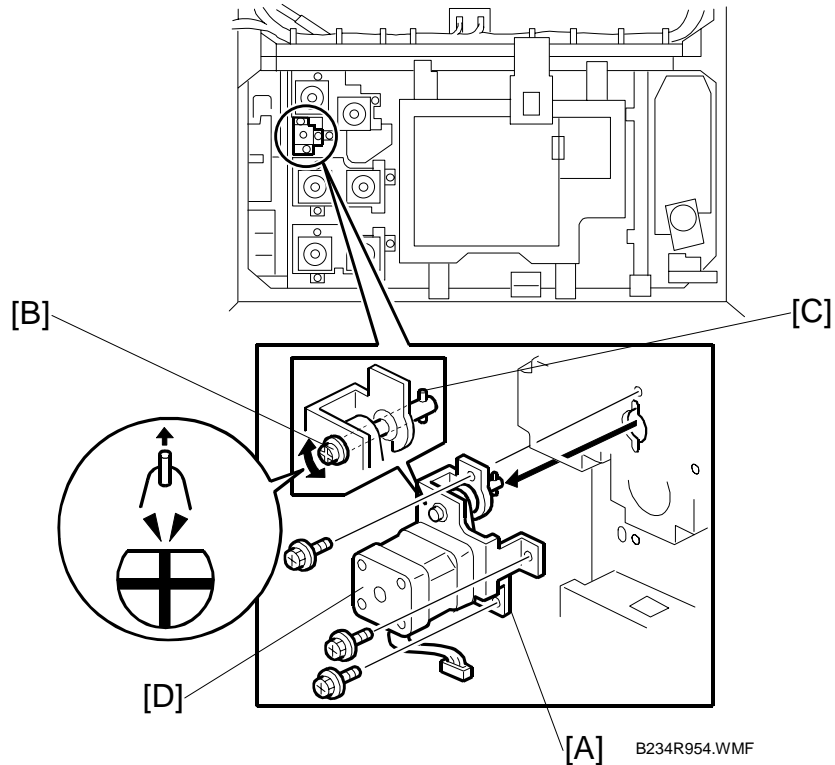
Remove:

- BCU-IOB unit (☛ 3.14.4)

1. 2nd / 3rd tray size switch bracket [A] (🔩 x2 🛠️ x1)
2. 2nd / 3rd tray size switch [B] (🔩 x1 🛠️ x1)

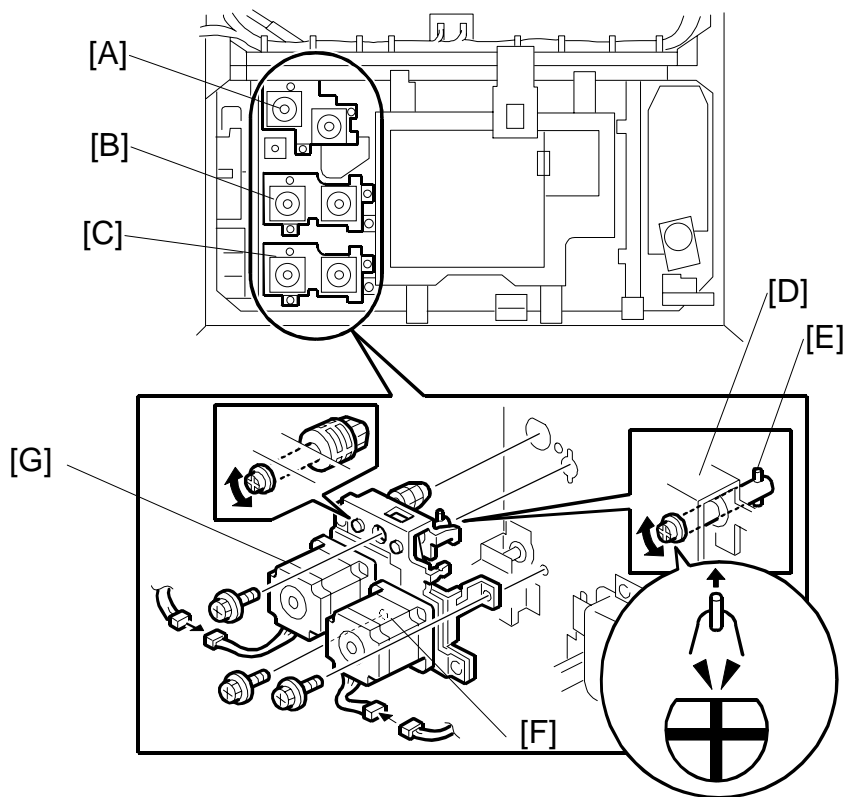
### 3.10.12 FEED MOTORS

#### *Vertical Relay Motor*



- Remove the AC drive board unit (⚙️ x4, 🛠️ x7) (☛3.14.7)
  1. Vertical relay motor unit [A] (⚙️ x3 M4x6, 🛠️ x1)
  2. Rotate the drive shaft [B] until the drive pin [C] is pointing up, then remove the motor unit.
  3. Remove the vertical relay motor [D] (⚙️ x2, Timing belt x1)

**Feed Motor, Grip Motor**



B234R952.WMF

Replacement  
Adjustment

1. Remove the paper feed unit:

[A] 1st tray (⚙️ x3, 📄 x2)

[B] 2nd tray (⚙️ x3, 📄 x2)

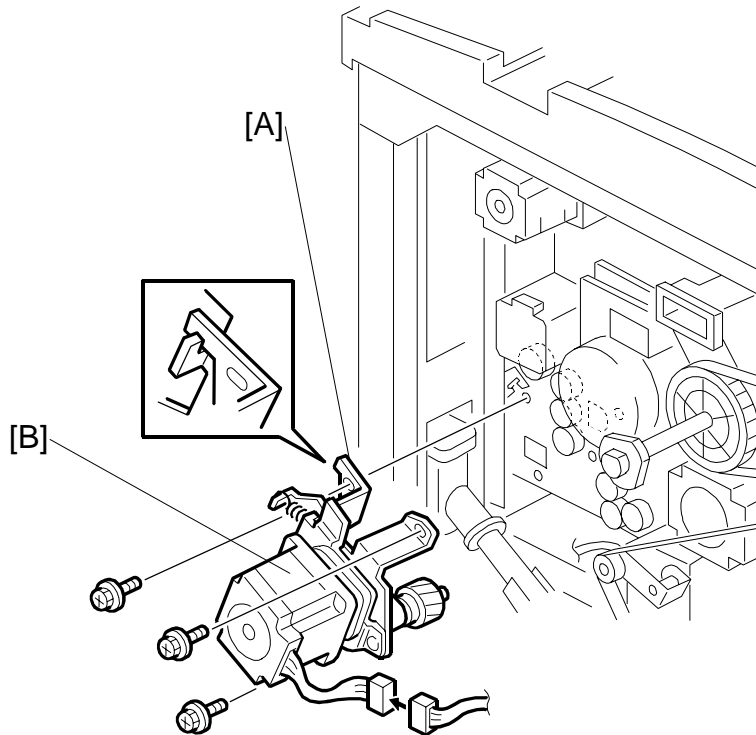
[C] 3rd tray (⚙️ x3, 📄 x2)

**NOTE:** Rotate the drive shaft [D] until the drive pin [E] is pointing up, then remove the paper feed unit.

2. Feed motor [F] (⚙️ x3, Spring x1, Timing belt x1)

3. Grip motor [G] (⚙️ x3, Spring x1, Timing belt x1)

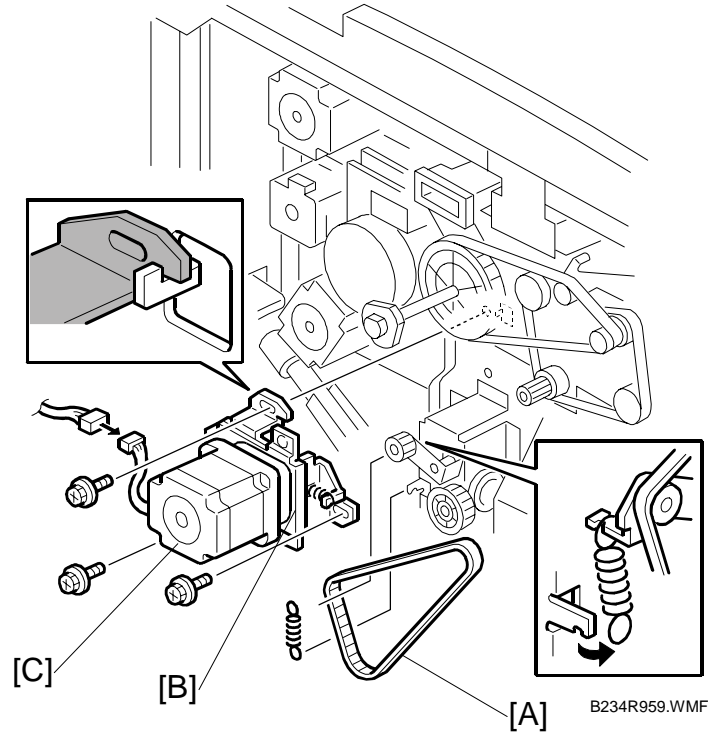
### 3.10.13 UPPER RELAY MOTOR



B234R957A.WMF

1. Open the PSU box. (☛3.3.8)
2. Rear upper cover. (☛3.3.6)
3. Flywheel (⚙ x 3). (☛3.8.11)
4. Upper relay motor unit [A] (⚙ x 3, 📏 x 1).
5. Upper relay motor [B] (⚙ x3, Timing belt x1, Spring x1)

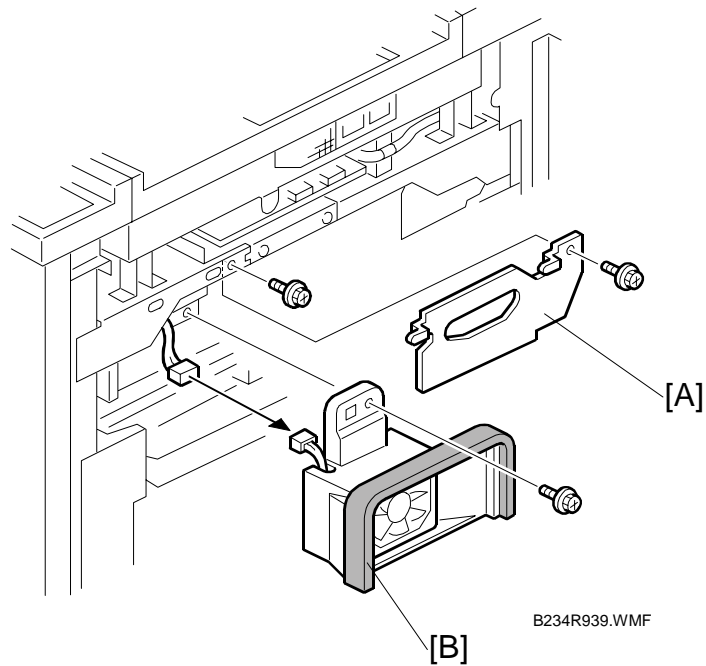
### 3.10.14 REGISTRATION MOTOR



Replacement  
Adjustment

1. Open the PSU box. (☛3.3.8)
2. Rear upper cover. (☛3.3.6)
3. Flywheel (⚙ x 3). (☛3.8.11)
4. Timing belt [A].
5. Registration motor unit [B] (Spring x1, ⚙ x 3, ⚙ x 1).
6. Registration motor [C] (⚙ x 3, timing belt x 1, spring x 1).

### 3.10.15 DEVELOPMENT FAN MOTOR



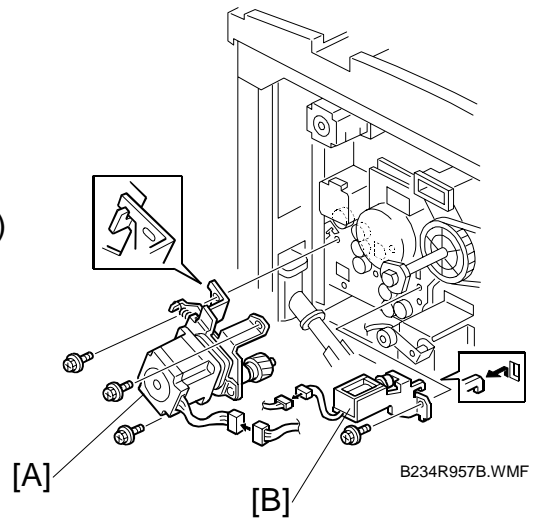
Remove:

- Right upper cover (🔩 x4) (➡3.3.4)
- 1. Tube cover [A] (🔩 x1).
- 2. Development fan motor unit [B] (🔩 x 1, 📏 x1).
- 3. Development fan motor (🔩 x 2)

### 3.10.16 REGISTRATION UNIT

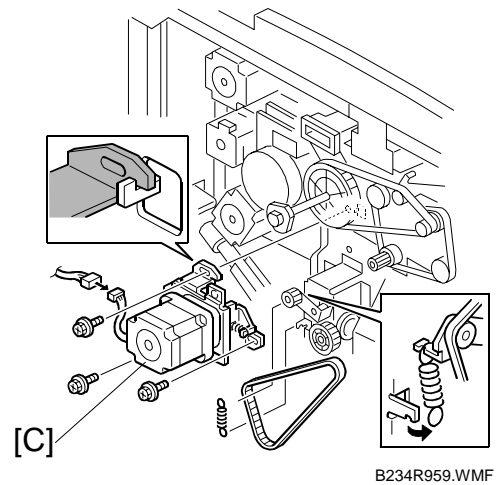
1. Remove:

- Development fan motor unit (☛3.10.15)
- Toner suction motor (☛3.8.10)
- Upper relay motor [A] (☛3.10.13)
- Guide plate solenoid [B] (🔧 x1, 📡 x1)

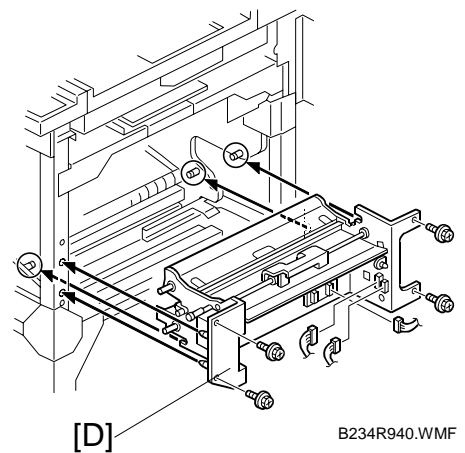


Replacement  
Adjustment

2. Registration motor [C] (☛3.10.14)



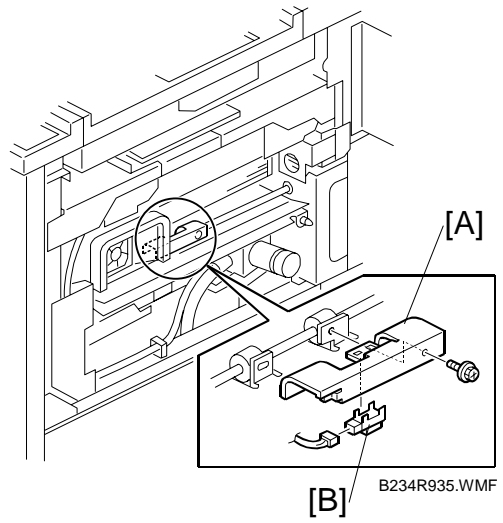
3. Registration unit [D] (🔧 x4, 📡 x3)



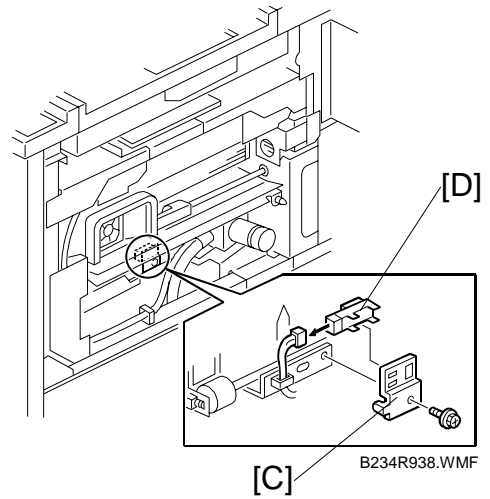


### 3.10.17 LCT RELAY AND RELAY SENSORS

1. Right upper cover (⚙️ x 4). (➡️3.3.4)
2. LCT relay sensor bracket [A] (⚙️ x 1, 📡 x 1).
3. LCT relay sensor [B].



4. Upper relay sensor bracket [C] (⚙️ x 1, 📡 x 1).
5. Upper relay sensor [D].



### 3.10.18 IMAGE POSITION SENSORS

#### *Image position sensor unit (Tray)*

- Right upper cover (⚙️ x 4). (➡️3.3.4)

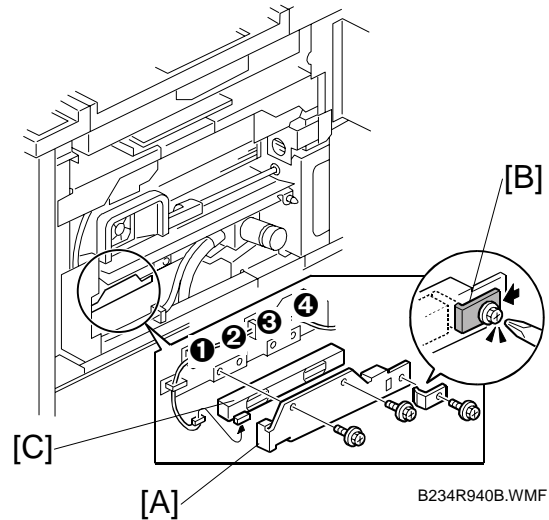
[A]: Image position sensor unit (Tray) (⚙️ x2, 📏 x1)

[B]: Stopper (⚙️ x1)

[C]: Image position sensor

**NOTE:**

- The left screws (❶, ❸) are for paper widths of 140 – 330 mm.
- The right screws (❷, ❹) are for paper widths of less than 140 mm.



B234R940B.WMF

#### *Image position sensor unit (Duplex)*

- Registration unit (➡️0)

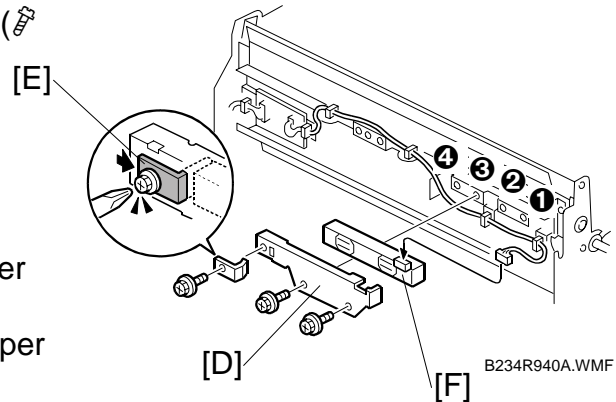
[D]: Image position sensor unit (duplex) (⚙️ x2, 📏 x1)

[E]: Stopper (⚙️ x1)

[F]: Image position sensor

**NOTE:**

- The left screws (❷, ❹) are for paper widths of 140 – 330 mm.
- The right screws (❶, ❸) are for paper widths of less than 140 mm.

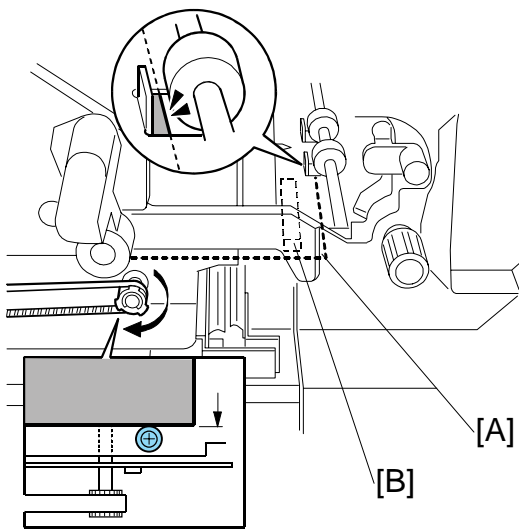


B234R940A.WMF

After replacement, the CIS must be calibrated. (See next page.)

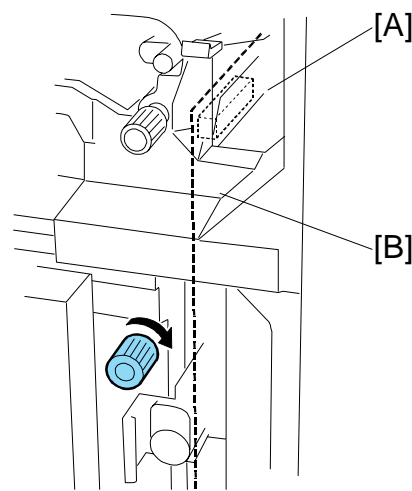
**CIS Image Position Adjustment: LED Strength**

1. Turn off the main power switch.
2. Remove the right upper cover. (☛3.3.4)
3. Remove the duplex unit inner cover. (☛3.12.2)
4. Turn on the main power switch.



B234R975.WMF

**CIS (Duplex)**



B234R976.WMF

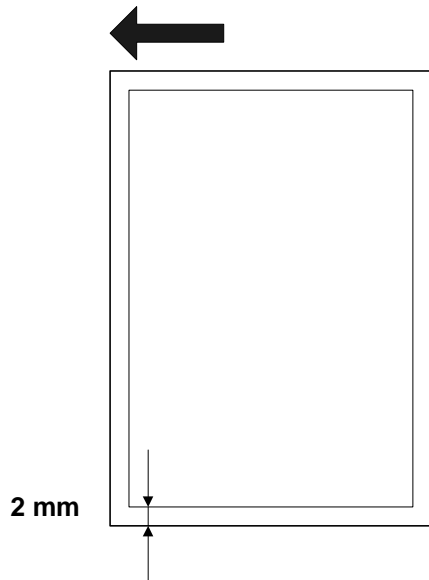
**CIS (Tray)**

5. Insert one sheet of plain white paper [A] in the paper path.
6. Make sure that the paper covers the entire area below the image position sensor (CIS) [B].
7. Enter the SP mode and do **SP1910 001 and 003** (CIS Image Position Adjustment: LED Strength). This calibrates the amount of light to be emitted from the CIS.
8. Do **SP1909 001 and 003** (CIS Image Position Adjustment: PWM Duty After Adjustment).
  - If the displayed value is between 20 (14h) and 40 (28h), the CIS is calibrated successfully. (The display is in hexadecimal code.)
  - If the value is outside this range, do **SP1910 001 and 003, 1909 001 and 003** again. If the value does not come between 20 and 40, the CIS may be defective.
9. Exit the SP mode.

**CIS Image Position Adjustment: Normal Paper**

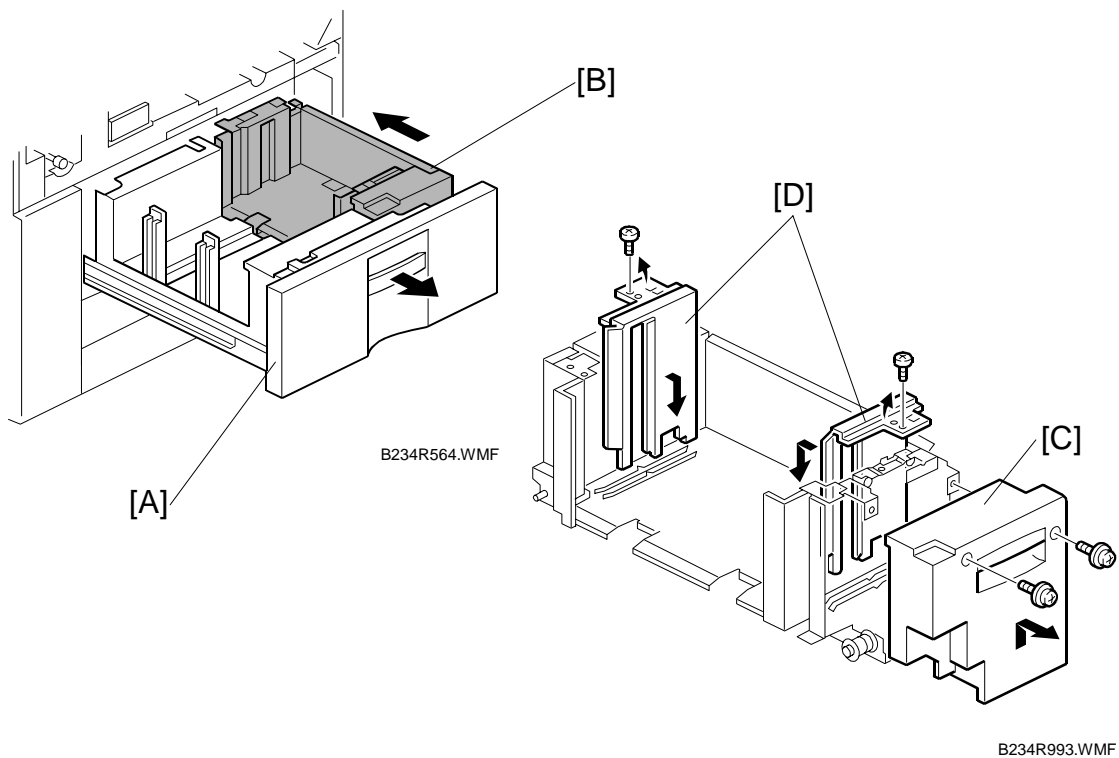
1. Press [User Tools]> [Adjust Settings for Operators].
2. Do **SP1911** for Trays 1, 2, 3, duplex and set the value for each tray to "0" (OFF).
3. Exit from **SP1911** and return to the SP mode menu.
4. Adjust the image positions in the main scan direction.
  - Do **SP2902 003**, select Pattern **27**, then print the trimming pattern.
  - Do **SP1002 001, 002, 003** and **008** and adjust the image position in the main scan direction for Trays 1, 2, 3, and duplex.
  - Print the trimming pattern from each tray and duplex.
  - To do this, press "Copy Window" in the SP display, select a tray, then press [Start].
  - The distance of the test pattern line from the paper edge for each tray must be 2 mm. If it is not 2 mm, adjust with **SP1002 001, 002, 003** and **008**, depending on which tray is not within the specified 2 mm.
5. Do **SP1912 001** and **003** (CIS Image Position Adjustment: Normal Paper). This sets the CIS for operation with standard copy paper.
6. Exit the SP mode.
7. Press [User Tools]> [Adjust Settings for Operators].
8. Once again, do **SP1911** (CIS Image Position Adjustment: Feed Setting) and reset the values for Trays 1, 2, 3, duplex to "1" (ON).

Replacement Adjustment



B234R992.WMF

### 3.10.19 TANDEM FEED TRAY PAPER SIZE CHANGE

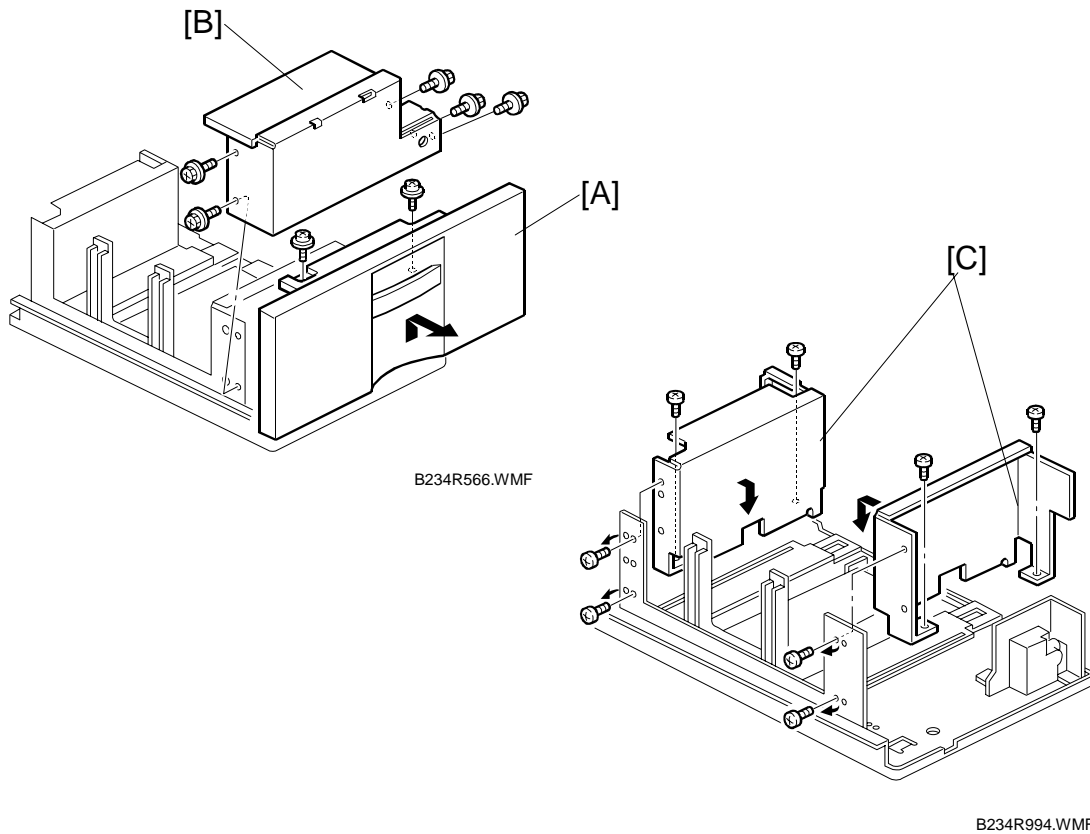


**NOTE:** This tray is set up for A4 or LT LEF at the factory. Only A4 or LT LEF paper can be used for tandem feed.

1. Open the front door.
2. Pull out the tandem feed tray [A] and remove the left and right tandem trays. (☛ 3.10.1)

#### ***Setting the Paper Size for the Right Tandem Tray***

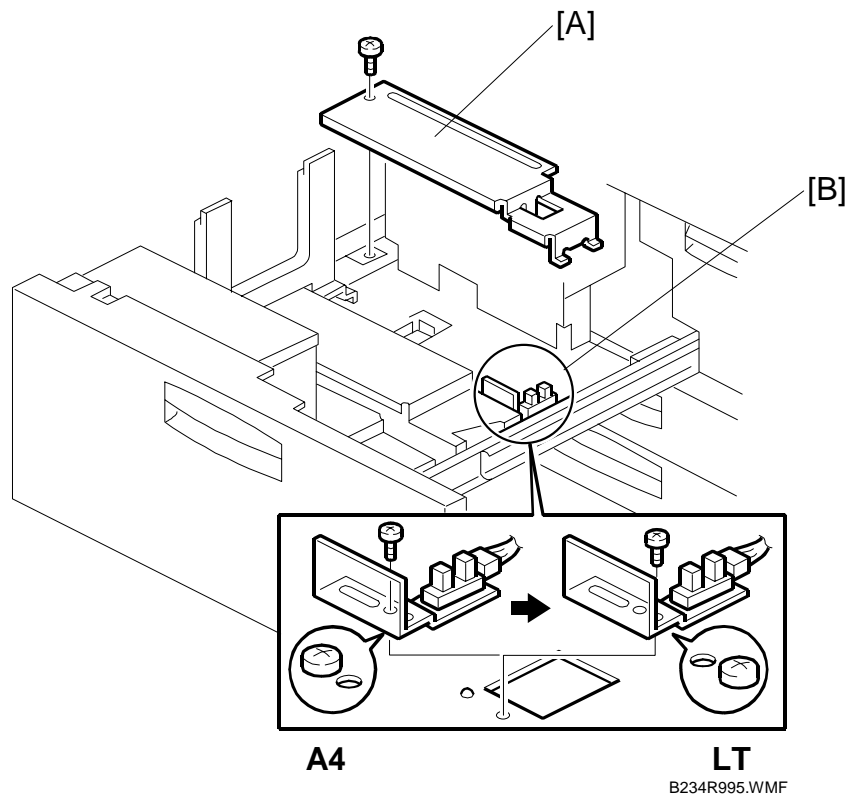
1. Right tandem inner cover [C]. (☛ x 2)
2. Re-position the side fences [D] (☛ x 1 each).  
**NOTE:** Outer: A4, Inner: LT.
3. Re-install the right tandem inner cover [C].



Replacement Adjustment

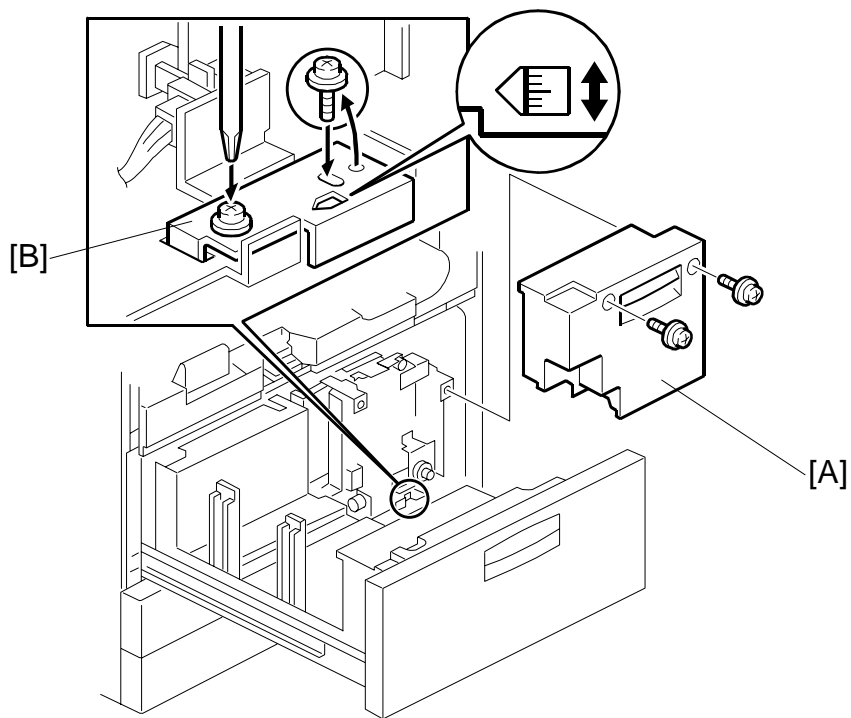
***Setting the Paper Size for the Left Tandem Tray***

1. Tray cover [A] (⚙️ x 2).
2. Motor cover [B] (⚙️ x 5).
3. Re-position the side fences [C] (⚙️ x 4 each).  
**NOTE:** Outer: A4, Inner: LT.
4. Re-install the motor cover and the tray cover.



5. Rear bottom plate [A] (🔩 x 1).
6. Re-position the return position sensor bracket [B] (🔩 x 1). To use the paper tray for A4 size, put the screw in the left hole.  
**NOTE:** For LT size, the screw should be placed on the right.
7. Re-install the rear bottom plate.
8. Change the paper size for the 1st Tray (Tandem Tray) with **SP5019 002**.

### 3.10.20 TANDEM TRAY SIDE REGISTRATION



B234R996.WMF

Replacement  
Adjustment

Normally the side registration of the image can be adjusted in the SP mode.

If the punch hole positions are not aligned from a particular feed station, however, you can manually adjust the side registration by changing the tray cover position for that tray, and then adjust the side registration of the image and CIS image position. (☛ 3.10.18)

1. Pull out the tray and remove the right inner cover [A].
2. Loosen the screws and adjust the position of the plate [B].  
Adjustment range:  $0 \pm 2.0$  mm adjustment step: 1.0 mm/step



## 3.11 FUSING UNIT

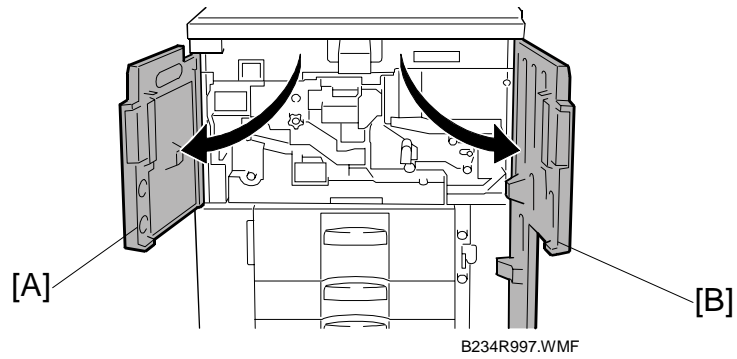
### 3.11.1 REMOVING THE FUSING UNIT

**⚠ CAUTION**

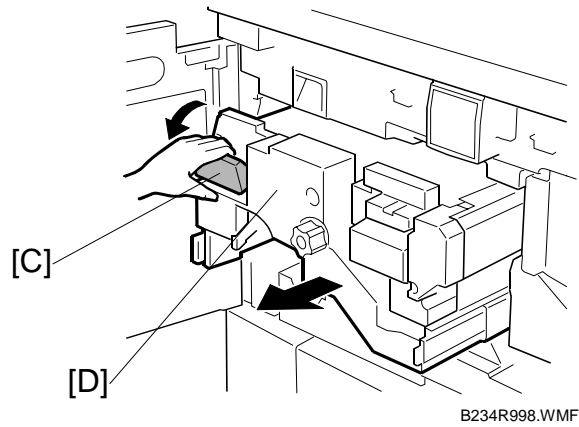
- To prevent electrical shock, switch off the main power switch and disconnect the power cord from the power source.
- Disconnect all other cables (USB, network, etc.) if they are connected.
- The fusing unit becomes extremely hot during operation, so to prevent minor burns, switch the machine off and allow it to cool for at least 30 minutes before you remove the fusing unit.
- The fusing unit weighs approximately 14 kg (30.9 lb.) so handle it carefully when you remove it to avoid dropping it and causing damage or minor injuries.

**Important**

- Confirm that the replacement fusing unit is the correct type for the machine.
- A fusing unit with a black top is for the e-STUDIO901 (90 ppm) or e-STUDIO1101 (110 ppm).
- A fusing unit with a yellow top is for the e-STUDIO1351 (135 ppm only).
- If you install the incorrect fusing unit for the machine, the machine will display a message and the machine will not operate until a correct fusing unit is installed.



1. Open the left front door [A] and right front door [B].

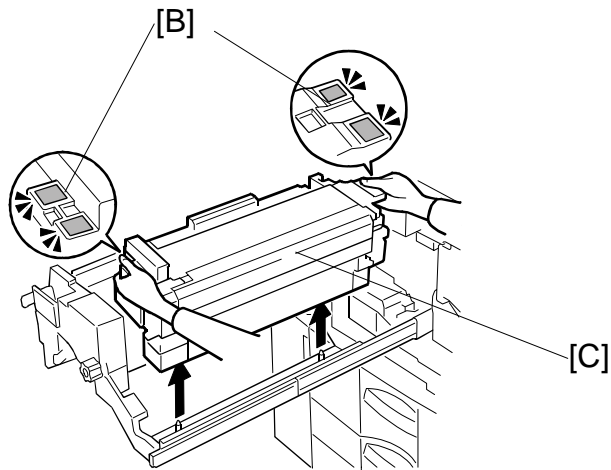


2. Grasp handle **D2** [C] of the fusing unit drawer [D] and pull out the drawer gently until it stops.



B234R925.BMP

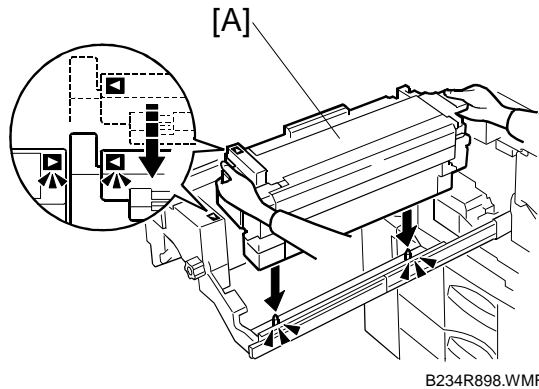
3. Raise lever **D3** [A] until it stops.



B234R899.WMF

4. Firmly grip the purple handles [B] of the fusing unit [C] with both hands, lift the fusing unit and remove it.  
**CAUTION:** The fusing unit weights approximately 14 kg (30.9 lb.). Handle it carefully when you lift it and set it down.
5. Set the fusing unit down on its bottom.

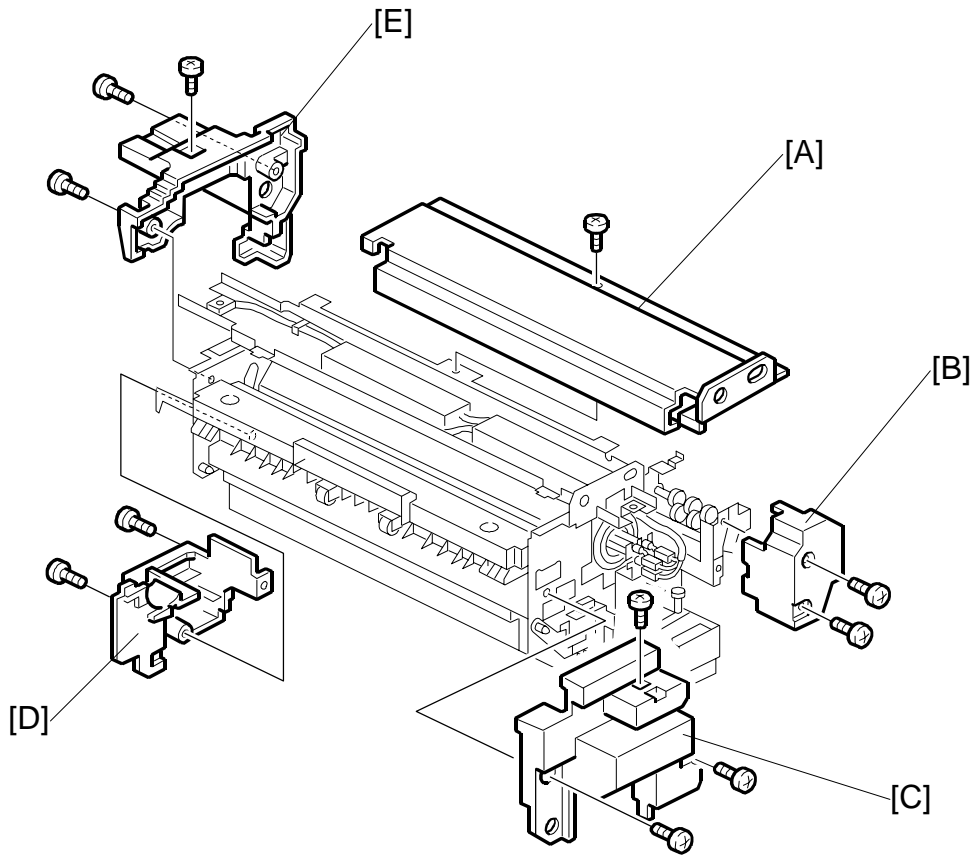
### 3.11.2 REINSTALLING THE FUSING UNIT



1. Raise lever **D3**.
2. Hold the fusing unit [A] so the triangular reference marks are aligned as shown
3. Lower the fusing unit onto the frame.
4. Make sure that holes of the fusing unit are properly mounted onto the pegs below.

Replacement  
Adjustment

### 3.11.3 FUSING UNIT COVERS

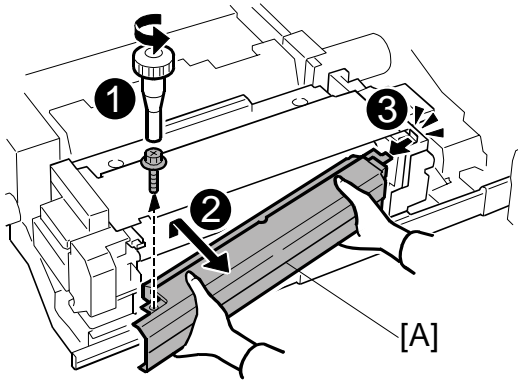


B234R501.WMF

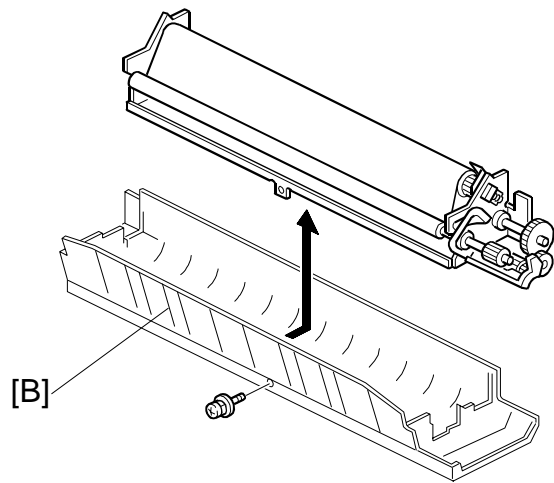
- [A] Top cover (🔩 x1)
- [B] Fusing cleaning unit cover (fabric unit) (🔩 x2)
- [C] Front cover (🔩 x3)
- [D] Rear lower cover (🔩 x2)
- [E] Rear upper cover (🔩 x3)

### 3.11.4 FUSING CLEANING UNIT

#### *Disassembling the Fusing Cleaning Unit*



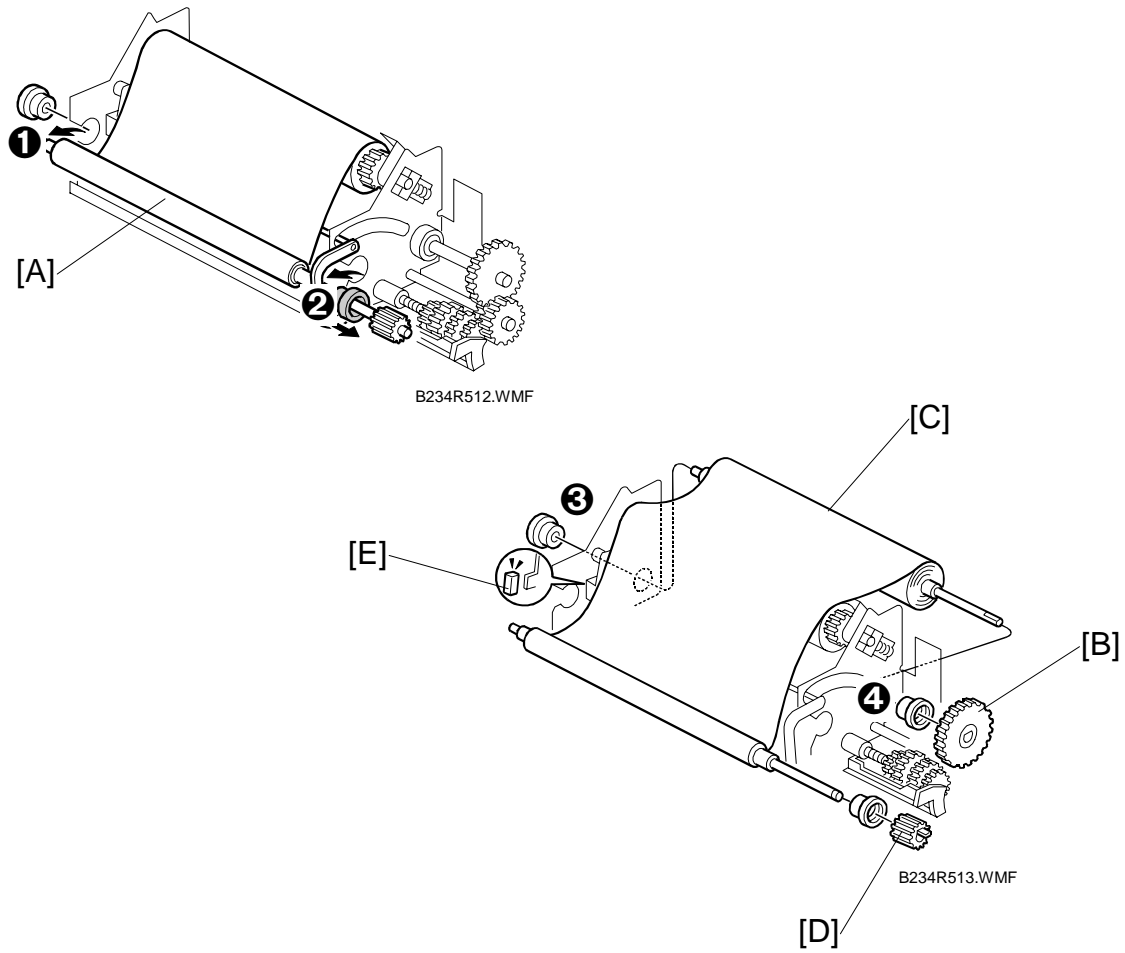
B234R897.WMF



B234R511.WMF

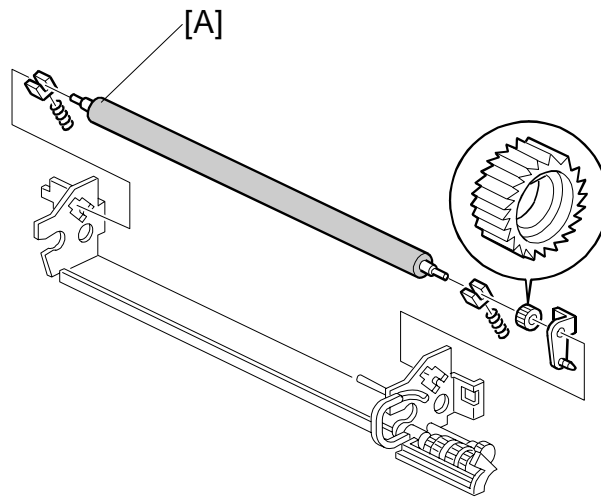
Replacement  
Adjustment

1. Pull out the fusing unit drawer (☛3.11.1)
2. Remove the fusing cleaning unit [A] (🔧 x1).
3. Fusing entrance guide [B] (🔧 x1).



4. Bearings ①, ②.
5. Fusing cleaning fabric supply roller [A].
6. Bushings ③, ④.
7. Gear Z50 [B].
8. Cleaning fabric take-up roller [C].
9. Gear Z23 [D] off the shaft to remove the gear.
10. Remove the stopper [E].

***Fabric Pressure Roller***



B234R896.WMF

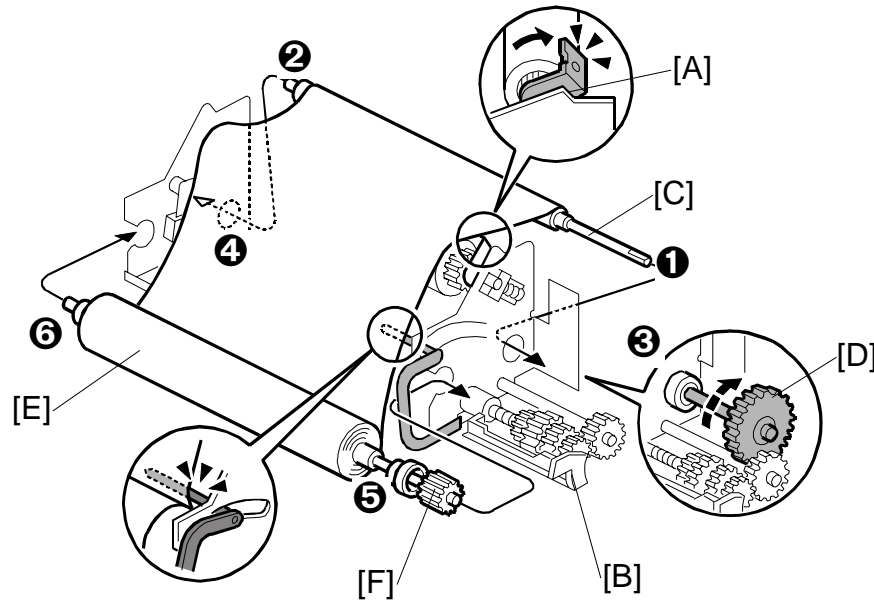
Replacement  
Adjustment

Remove:

[A] Fabric pressure roller (Bushing x2, Spring x2)



### Reassembling the Fusing Cleaning Unit



B234R514.WMF

#### Checklist Before You Begin

- Gear [A] rotates only counter-clockwise?
- Is the plastic [B] straight and not bent?

1. Insert the cleaning fabric take-up roller [C]. Insert the front end ❶ then the rear end ❷.

**Important:** Handle the rollers carefully to keep them clean.

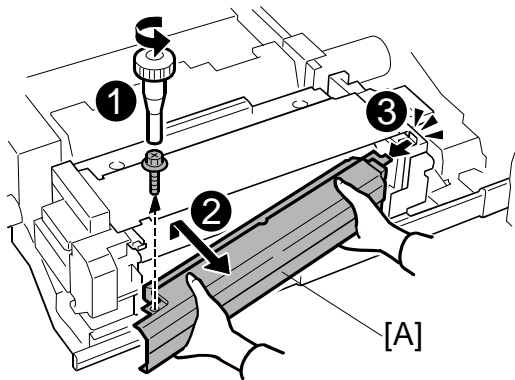
2. Set the bushings ❸, ❹ on the shaft of the cleaning fabric take-up roller.
3. Attach Gear Z50 [D]. Its teeth must mesh with the teeth of the small gear below.
4. Mount the cleaning fabric supply roller [E] (apply some pressure to position it correctly).
5. Set the bearings ❺, ❻ on the shaft of the cleaning fabric supply roller.
6. Gear Z23 [F]
  - Engage the key of the gear with its groove.
  - Attach it to the notch in the outer plate on the cleaning fabric supply side.
  - Turn the gear to take up the slack of the cleaning fabric.
7. Rotate Gear Z50 [D] clockwise 3 times.

8. Apply a small amount of grease (Barrierta S552R) to Gear Z50 [D].

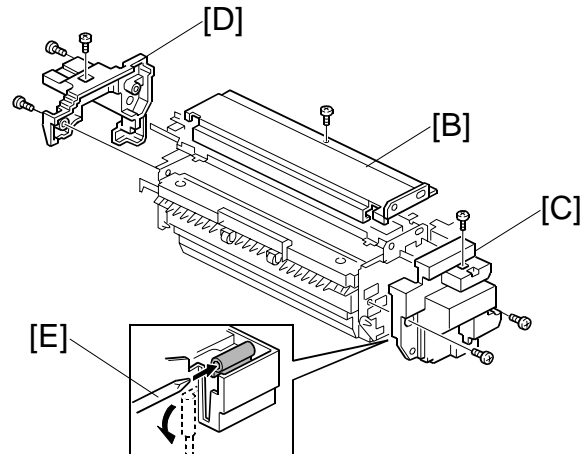
**Checklist**

- Cleaning fabric is not riding up on the metal plate?
  - Is the pressure lever down on the back of the fabric?
  - Gear Z50 clicks normally when it is turned?
  - No slack in the cleaning fabric between the supply and take-up rollers?
9. Place the frame unit above the fusing entrance guide plate, push it forward, then attach it (⚙️ x1).
- Important:** Attach the guide plate inside without allowing any of the 4 bearings or bushings to slip off.
10. Make sure that the fusing entrance guide plate is installed without riding up on the pawls (x2) on the bottom of the plate.
11. If a new fabric is installed:
- Execute **SP1902 001** (Fabric Motor Control> Fabric Consumption), and set the value to 0. Switch the machine off/on after changing the setting.

### 3.11.5 HOT ROLLER UNIT

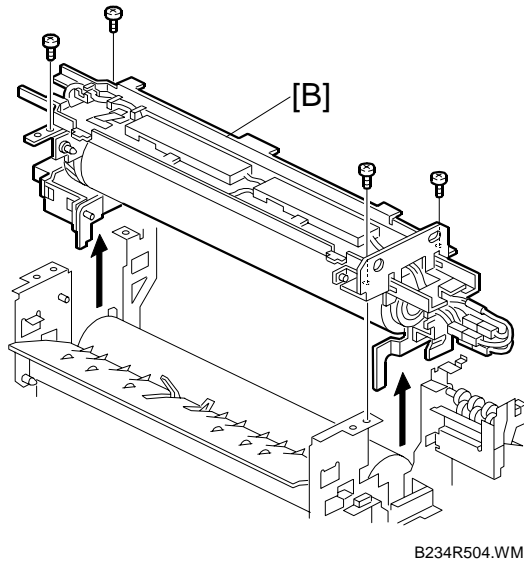
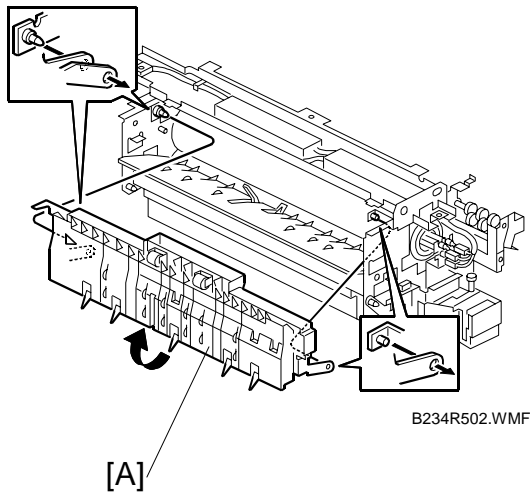


B234R895.WMF



B234R501A.WMF

1. Remove the fusing cleaning unit [A] (⚙️ x1). (➡️ 3.11.4)
2. Top cover [B] (⚙️ x1).  
**Important:** The top cover of the e-STUDIO901/1101 is black, the cover of the e-STUDIO1351 is yellow.
3. Front cover [C] (⚙️ x3).
4. Rear upper cover [D] (⚙️ x3).
5. Insert a screwdriver [E] and turn 90 degrees down in the direction of the arrow to release the nip between the hot roller and the pressure roller.

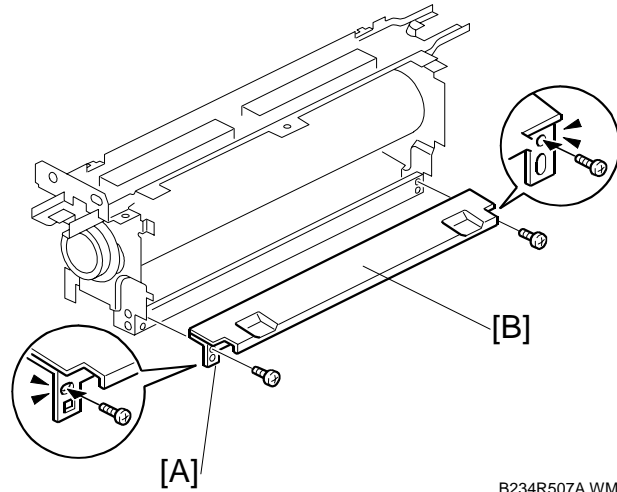


Replacement  
Adjustment

6. Turn the hot roller stripper unit [A] 160 degrees in the direction of the arrow, then slide it to the front and remove it.
7. Hot roller unit [B] (⚙ x4).

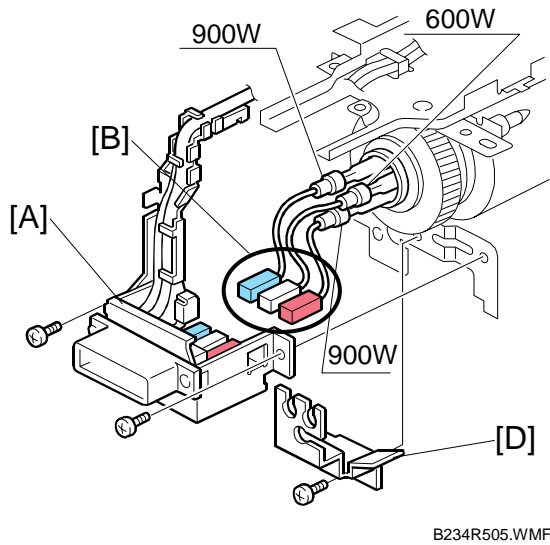
### 3.11.6 HOT ROLLER

#### *Removing the Fusing Lamps*

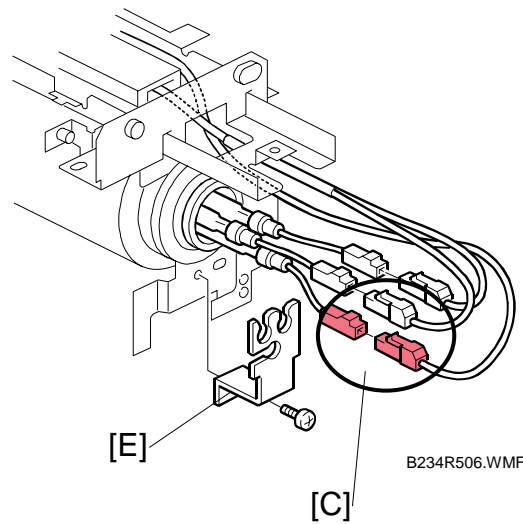


B234R507A.WMF

1. Hot roller unit (☛3.11.5)
2. Entrance plate [A] (🔩 x2).
3. Clean the front surface of the entrance guide plate [B] with a dry cloth.



B234R505.WMF



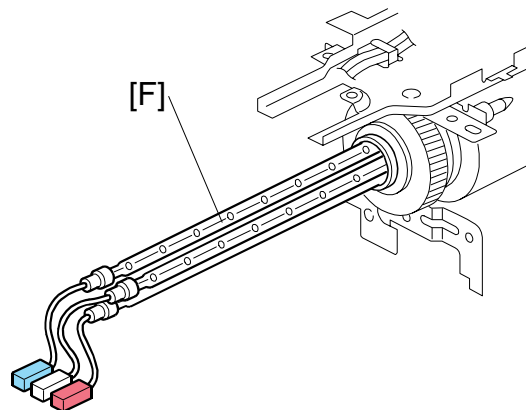
B234R506.WMF

Replacement  
Adjustment

4. Harness terminal bracket [A]. (⚙️ x2)
5. Disconnect the rear fusing lamp cables [B]. (x3)
6. Disconnect the front fusing lamp cables [C]. (x3)
7. Front lamp holder [D]. (⚙️ x1)
8. Rear lamp holder [E]. (⚙️ x1)
9. Fusing lamps [F], one at a time.

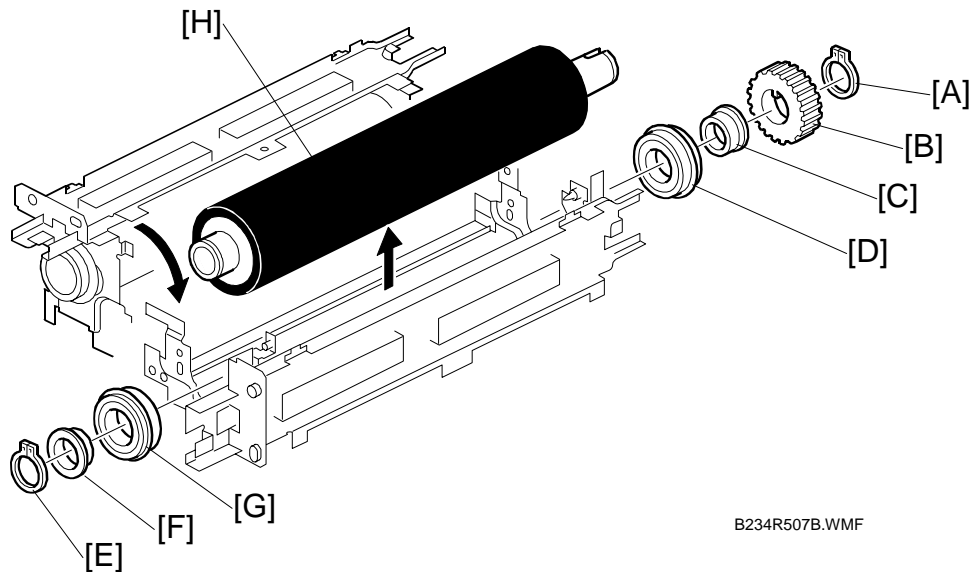
**Important!:**

- Do not touch the glass surfaces of the fusing lamps.
- Handle the lamps carefully to avoid breaking them.



B234R505A.WMF

**Disassembling the Hot Roller**



B234R507B.WMF

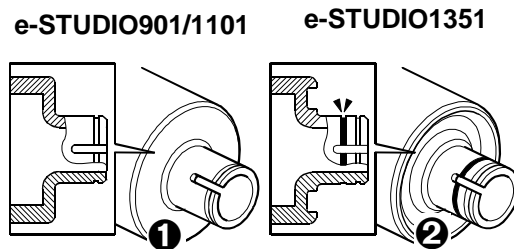
1. Position the hot roller as shown.
2. Remove:
  - [A] C-ring
  - [B] Gear
  - [C] Bushing
  - [D] Bearing
3. Remove:
  - [E] C-ring
  - [F] Bushing
  - [G] Bearing
4. Remove the hot roller [H].

**Reinstallation**

When you install the new hot roller, make sure that you install the correct type.

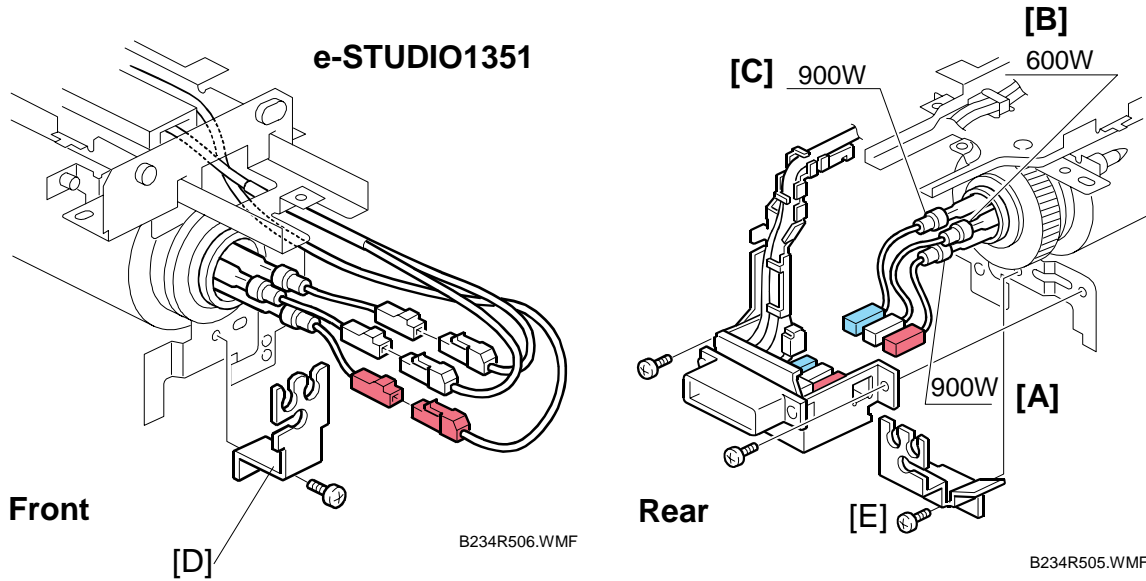
- The shape of the end ❶ of the hot roller for the e-STUDIO901/1101 is different from the e-STUDIO1351 ❷.

Lubricate the outer and inner surfaces of bushings [C] and [F] with Barrierta – JFE55/2.



B234R507E.WMF

**Re-installing the Fusing Lamps**



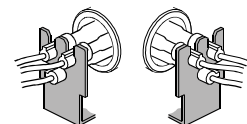
Replacement Adjustment

1. Insert each fusing lamp [A], [B], [C] into the rear of the hot roller, then gently push the fusing lamps into the roller.  
**Important:** Never touch the glass surface of a fusing lamp with bare fingers. Handle the lamps carefully to avoid breaking them.
2. Lay the tip of each fusing lamp into any round hole in the front holder [D] and fasten the holder (⚙ x1).
3. Insert the tip of each fusing lamp into a round hole in the rear holder [E] and fasten the holder (⚙ x1).  
**NOTE:** Make sure the lamps are perfectly parallel inside the hot roller.
4. Attach the connectors. Refer to the table below.

**Connection Table**

e-STUDIO901/1101		e-STUDIO1351	
Front	Rear	Front	Rear
Red	Red	Red	Red
White	White	Yellow	Yellow
White	Blue	White	Blue

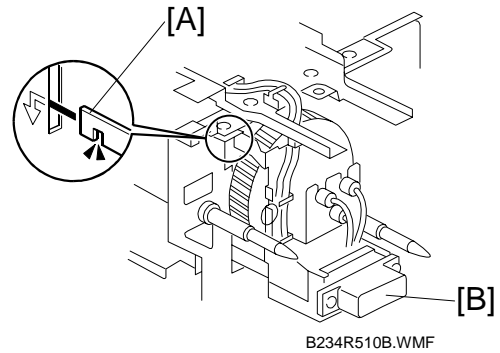
5. Make sure the ends of the fusing lamps fit snugly into the holes in the bracket.



B234R505B.WMF

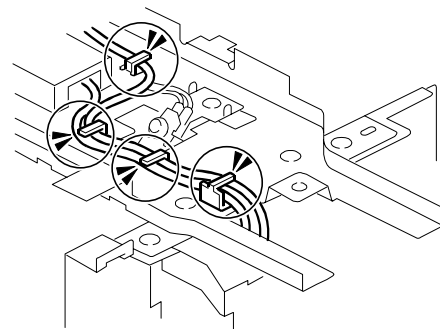


6. Connect hooks [A] of the harness terminal brackets [B] to the slots in the frame at two points and fasten (⚙️ x2).



**Checklist**

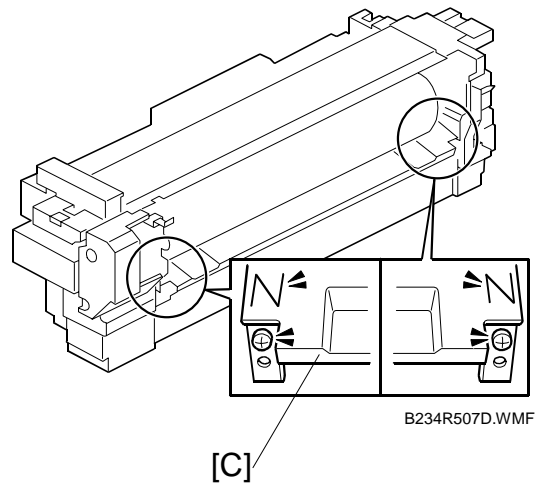
- End of each fusing lamp securely inserted into holders at each end?
- Connectors connected properly (refer to previous table)?
- Are all the connectors tightly fastened?
- Are the cables all secured properly by the 4 terminal bracket clamps as shown?



7. Attach the fusing entrance guide [C] (⚙️ x2).
8. Clean the entire fusing unit with a blower brush. Rotate the hot roller gear while vacuuming.

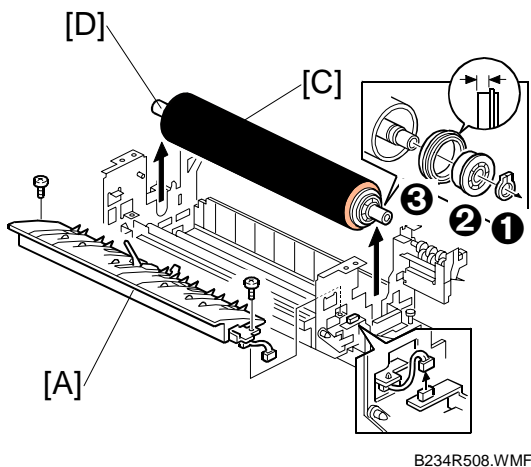
**Checklist**

- Is the surface of the hot roller clean and free of dirt, scratches, dust?
- Are the holes on the top of the fusing entrance guide plate free?

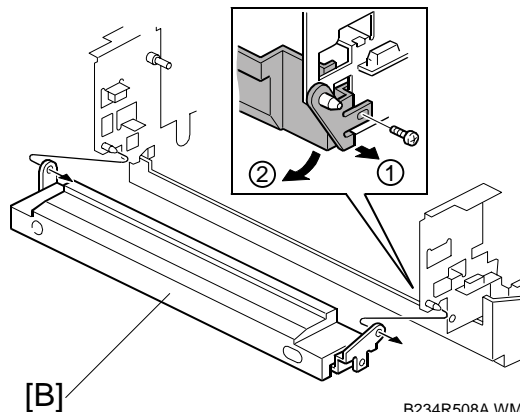


9. If you change the entrance guide, check for a stamp on both ends of the entrance guide, to make sure that you install the correct type of entrance guide:
  - N: North America
  - No stamp: EU/ASIA

### 3.11.7 PRESSURE ROLLER



B234R508.WMF



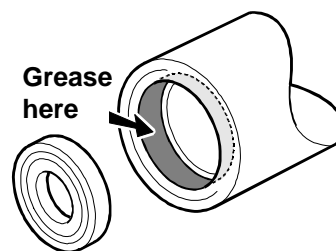
B234R508A.WMF

Replacement Adjustment

1. Hot roller unit (☛3.11.5)
2. Pressure roller stripper unit [A] (☛ x1, ☛ x2)
3. Pressure roller cleaning unit [B] (☛ x1).
4. Pressure roller [C].
5. On both ends of the pressure roller remove:
  - ① C-rings (1 front / back)
  - ② Bushings (1 front / back)
  - ③ Bearings (1 front / back)

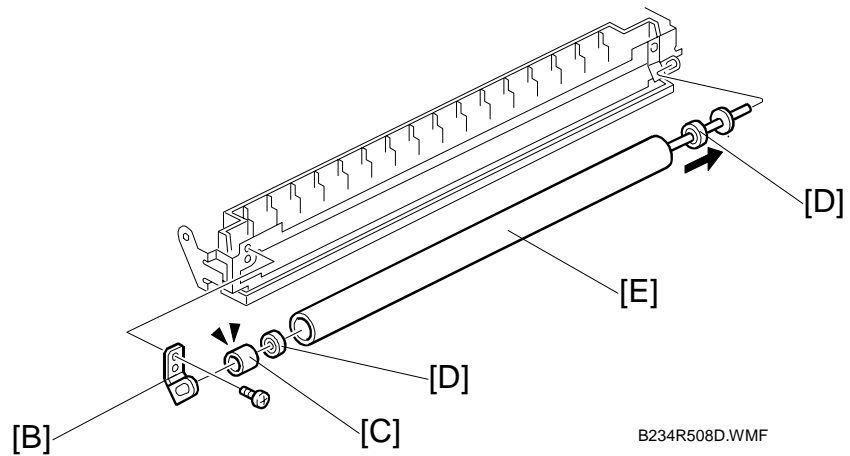
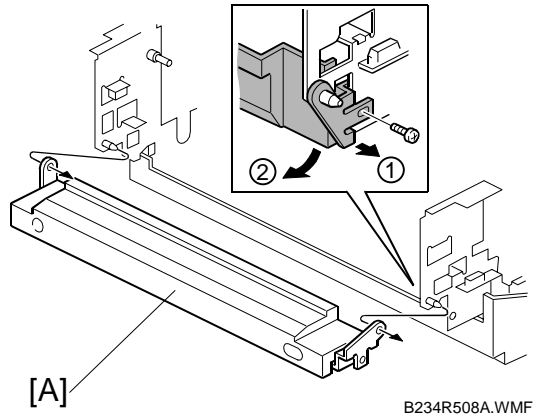
#### Reinstallation

Lubricate the inner surface at both ends of the pressure roller with Barrierta – JFE55/2.



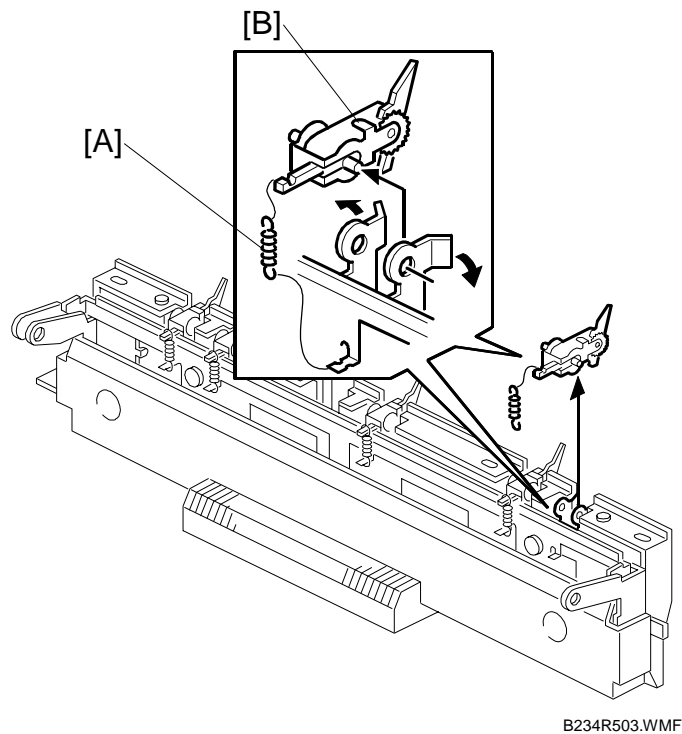
B234R894.WMF

### 3.11.8 PRESSURE ROLLER CLEANING ROLLER



1. Pressure roller cleaning unit [A] (1 x1). (☛3.11.7)
2. Remove:
  - [B] Plate (1 x1)
  - [C] Bushing x1
  - [D] Bearings (x2)
  - [E] Cleaning roller
3. Clean the pressure roller cleaning roller with a dry cloth.

### 3.11.9 HOT ROLLER STRIPPERS



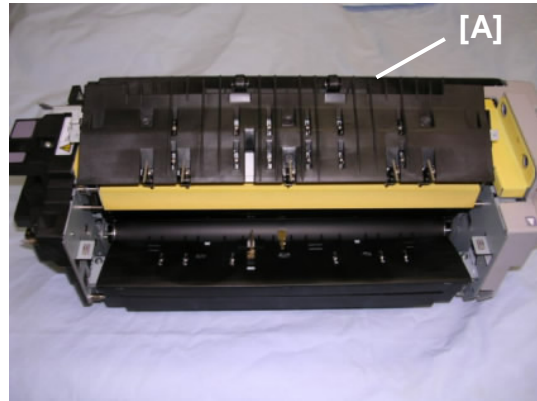
Replacement  
Adjustment

- Hot roller stripper unit (☛3.11.5)
  1. Spring [A].
  2. Spread the left and right sides of the holder as shown, then remove the hot roller stripper [B].
  3. Follow the same procedure to remove the stripper pawls at four other locations.

### 3.11.10 PRESSURE ROLLER STRIPPER

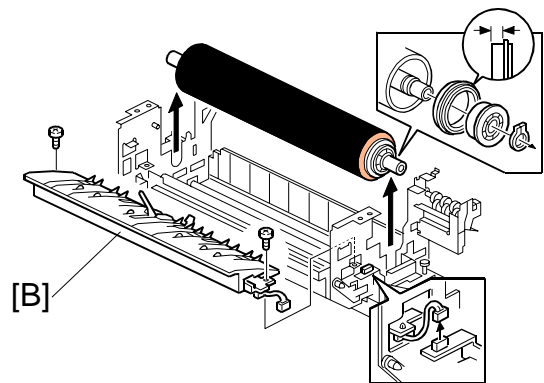
- Fusing unit (☛3.11.1)
- Front cover (☛3.11.3)

1. Raise the hot roller stripper unit [A].



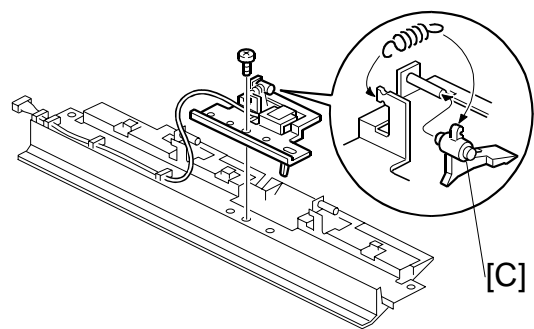
B234R926.BMP

2. Pressure roller stripper unit [B]  
 (⚙️ x2, 📏 x1).



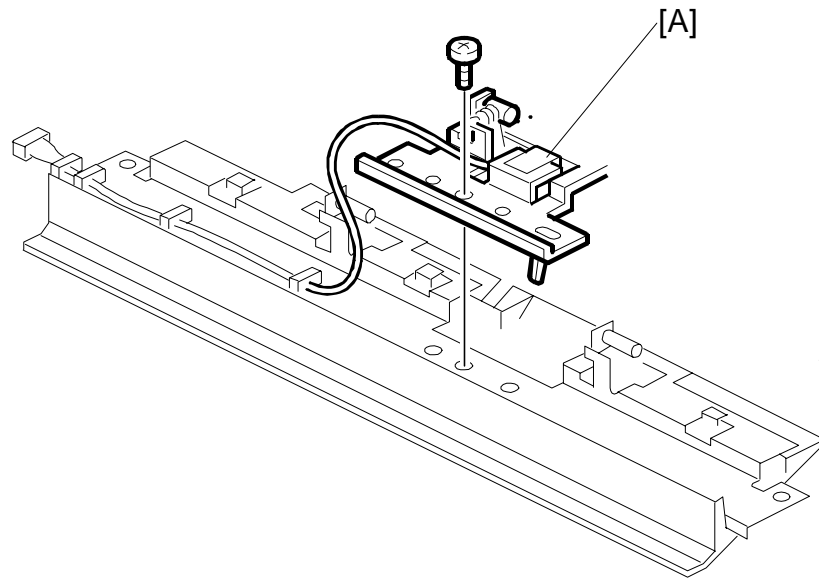
B234R508.WMF

3. Pressure roller stripper [C]  
 (⚙️ x1, Spring x1).



B234R509A.WMF

### 3.11.11 FUSING EXIT SENSOR



B234R509.WMF

Replacement  
Adjustment

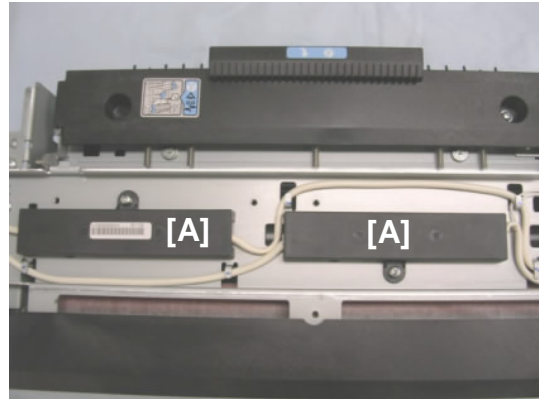
- Pressure roller stripper unit (☛3.11.10)
1. Remove the fusing exit sensor [A] (🔧 x1, 📏 x1, ⏪ x4)

### 3.11.12 FUSING UNIT THERMOSTATS, THERMISTOR

- Fusing unit (☛3.11.1)
- Fusing unit front cover, rear cover (☛3.11.3)

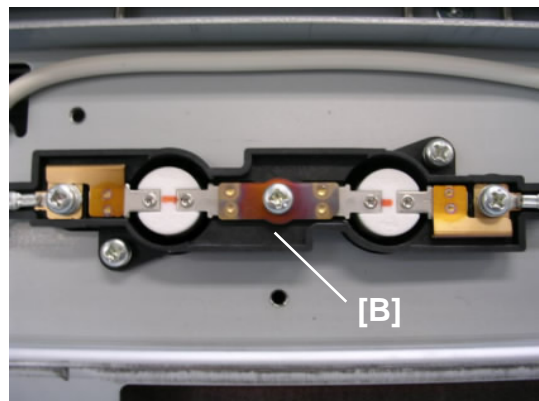
Remove:

1. Remove thermostat covers [A] (🔧 x1 ea.)



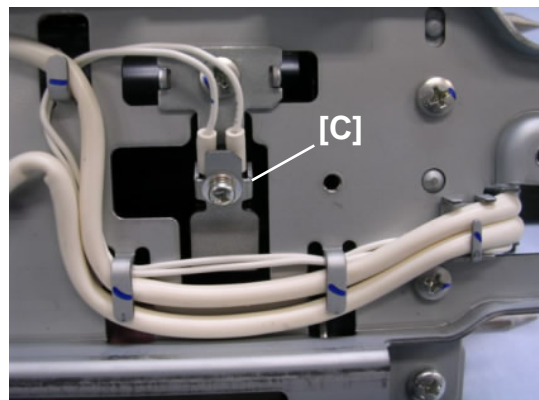
B234R927.BMP

2. Remove thermostat unit [B] (🔧 x3).



B234R928.BMP

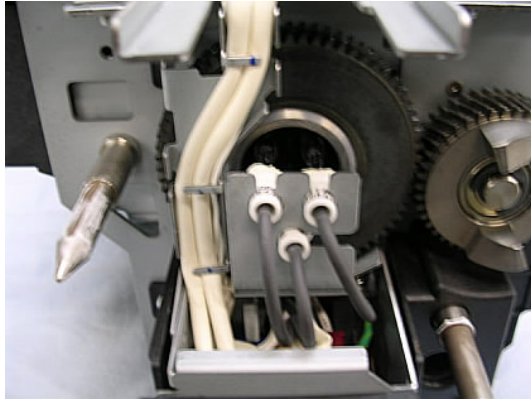
3. Remove thermistor [C] (🔧 x1, 🛠️ x1).



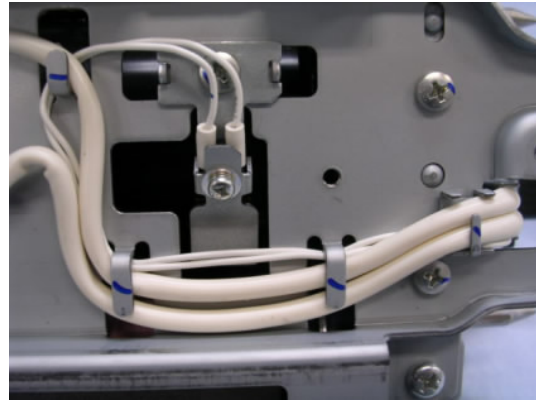
B234R929.BMP

### Reinstallation

Make sure the harnesses are positioned as shown below.



B234R931.BMP

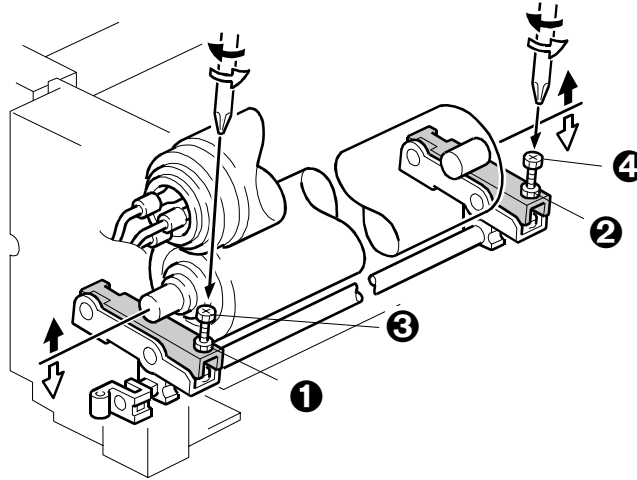


B234R930.BMP

Replacement  
Adjustment



### 3.11.13 FUSING PRESSURE ADJUSTMENT



B234R893.WMF

**NOTE:** The nip width  $11.5 \pm 0.5$  mm (the difference between front and rear measurements should be less than 0.5 mm).

1. Execute **SP1109** (Fusing Check) to enter the fusing nip band check mode.
2. Make a copy using an A4/LT OHP sheet. Copying will start. It will stop in the fusing unit for 30 seconds and then will exit.  
**NOTE:** If an OHP sheet is not available, use a solid black copy on plain paper (make the copy with the ADF open – the copy will be all black).

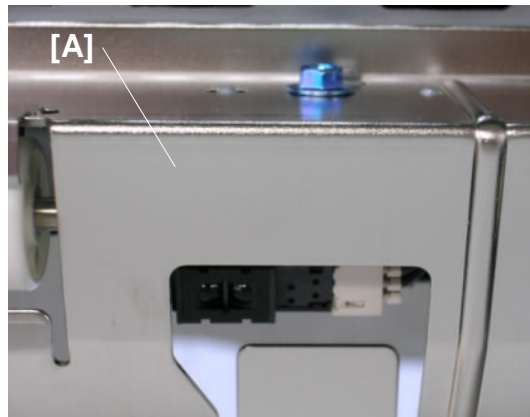
3. Measure the nip band width (the shiny band) at both ends.
4. If the nip band width is not within specifications at both ends:
  - Loosen the lock nuts **1**, **2**
  - Turn screws **3**, **4** to adjust pressure (clockwise increases the pressure, counterclockwise decreases the pressure).
  - Re-tighten the nuts **1**, **2** after adjusting.

5. Repeat steps 1 to 4 to check the nip band width.

**Important!** After doing this procedure, switch off **SP1109**. If this SP remains on, this will cause paper to jam in the fusing unit (SC559).

### 3.11.14 JOB TIME SENSOR

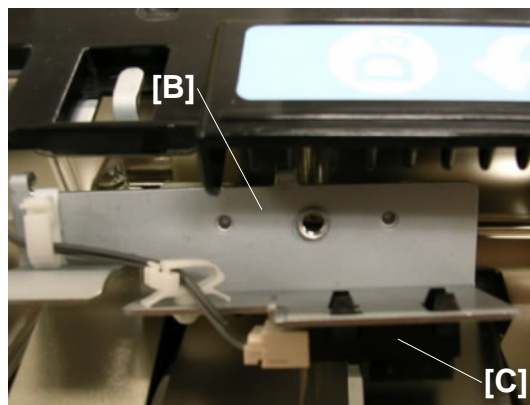
1. Pull out the fusing unit drawer. (☛3.11.1)
2. Raise the upper guide plate [A].



B234R932.BMP

Replacement  
Adjustment

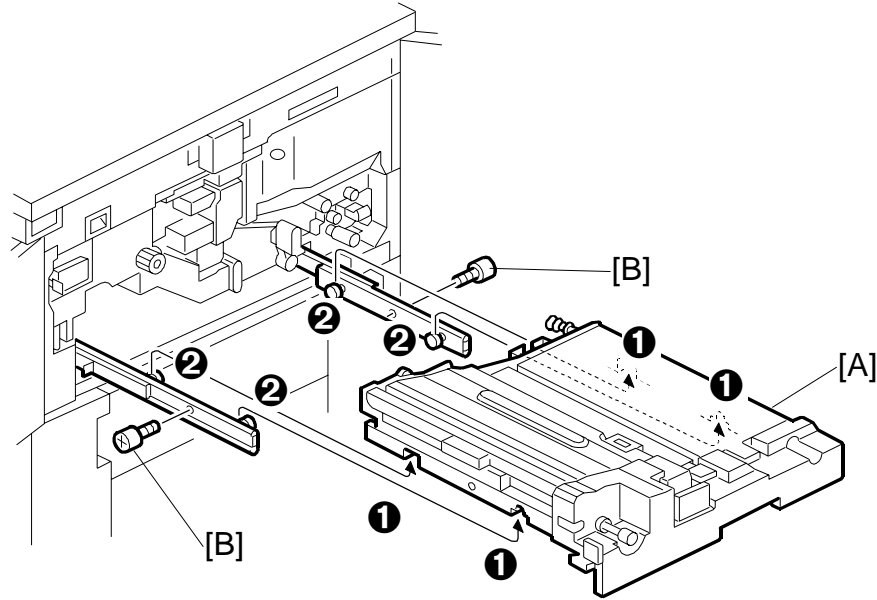
3. Job time sensor bracket [B] (🔧 x1)
4. Job time sensor [C] (🔌 x1, ⏪x1)



B234R933.BMP

## 3.12 DUPLEX UNIT

### 3.12.1 DUPLEX UNIT

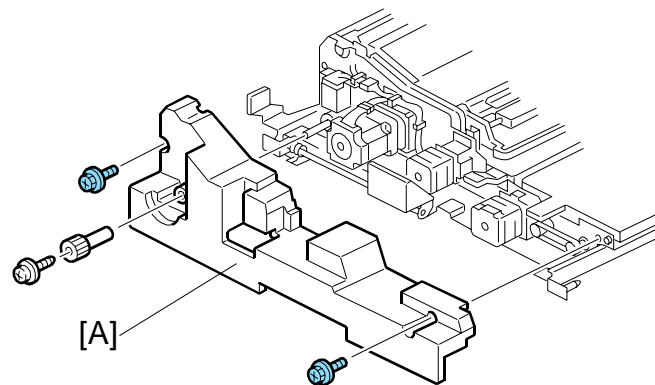


B234R801.WMF

1. Open the left and right front doors and pull out the duplex unit [A].
2. Remove the shoulder screws [B] (⌀ x 2).
3. Lift up the duplex unit [A].

**NOTE:** When re-installing the duplex unit, align the cutouts ❶ with projections ❷ on the slide rail.

### 3.12.2 DUPLEX UNIT INNER COVER

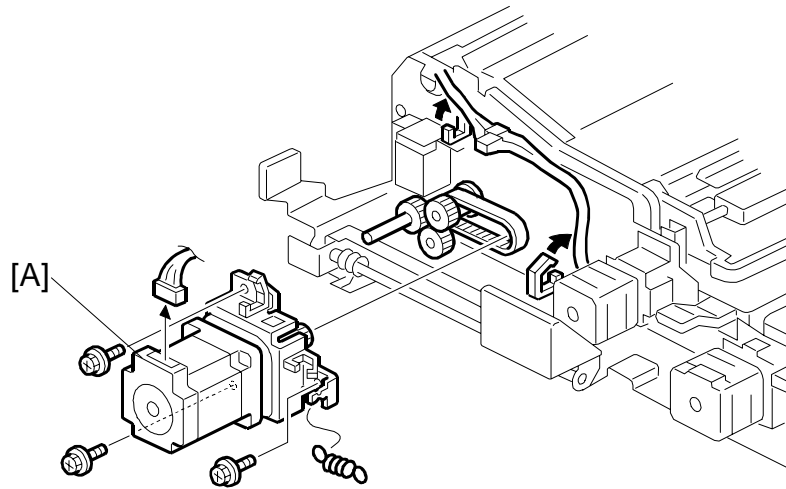


B234R802.WMF

Replacement  
Adjustment

1. Open both front doors.
2. Pull out the duplex unit.
3. Duplex unit inner cover [A] (⌀ x 3, Knob x 1).

### 3.12.3 DUPLEX INVERTER MOTOR

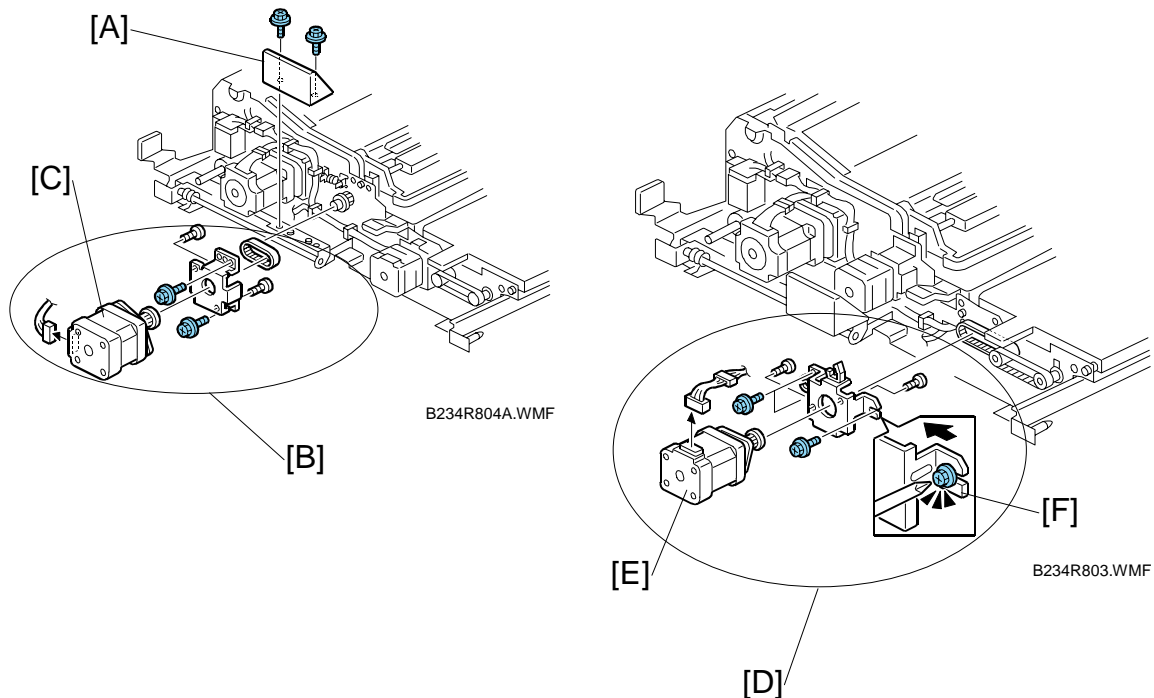


B234R805.WMF

Remove:

- Duplex unit inner cover. (☛3.12.2)
- [A]: Duplex inverter motor (☛ x3, ☛ x1, ☛ x2, Spring x1)

### 3.12.4 DUPLEX SWITCHBACK MOTOR AND TRANSPORT MOTOR



Replacement  
Adjustment

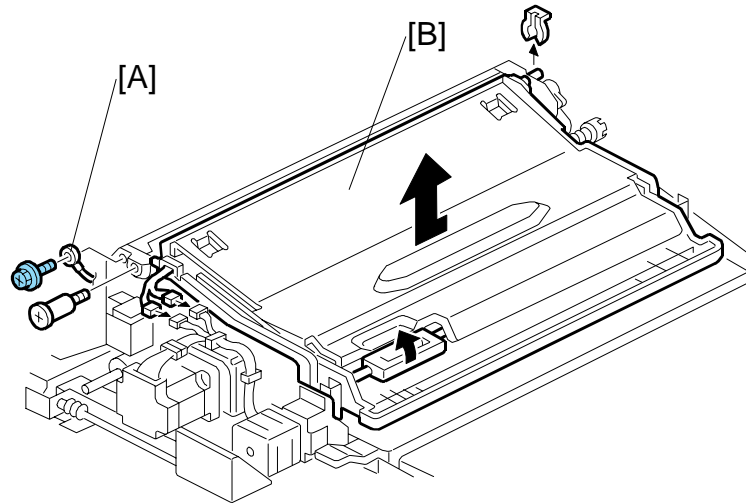
Remove:

- Duplex unit inner cover. (☛3.12.2)
- 1. Duplex grip handle [A] (🔩 x2)
- 2. Switchback motor unit [B] (🔩 x3, 🌀 x1, Timing belt x1)
- 3. Switchback motor [C] (🔩 x2)
- 4. Duplex transport motor unit [D] (🔩 x3, 🌀 x1, Timing belt x1, ⬅️x2)
- 5. Duplex transport motor [E] (🔩 x2)

#### Re-assembly

- Push the duplex transport motor bracket [F] slightly to the left to put some tension on the timing belt, then tighten the screw.

### 3.12.5 DUPLEX ENTRANCE GUIDE UNIT



B234R806.WMF

- Duplex unit inner cover. (☛3.12.2)
- [A]: Ground (earth) wire (🔩 x1)
- [B]: Duplex entrance guide unit (🔩 x1, 🌀 x1, ☛x2, 📏 x2)

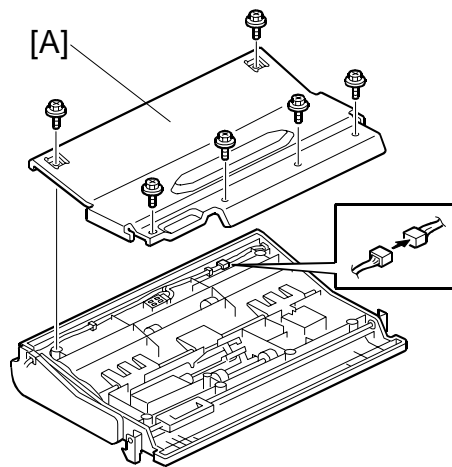
### 3.12.6 DUPLEX ENTRANCE SENSOR, INVERTER SENSOR

Remove:

- Duplex entrance guide unit (3.12.5)

Remove:

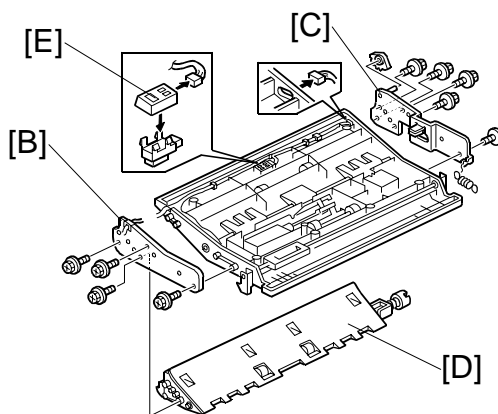
[A]: Cover (x6)



B234R807.WMF

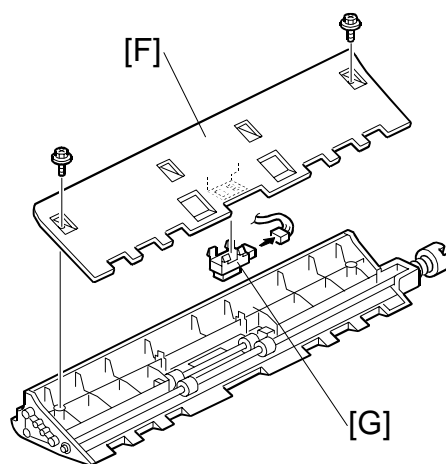
Replacement Adjustment

- [B]: Front side plate (x4, x1)
- [C]: Rear side plate (x5, Spring x1)
- [D]: Lower entrance guide (x1)
- [E]: Duplex entrance sensor (x1, x1)



B234R808.WMF

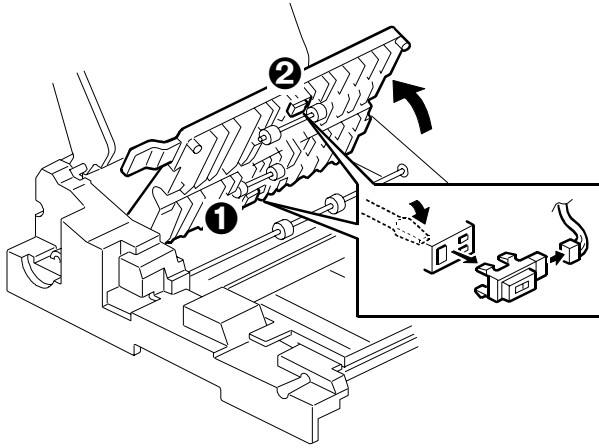
- [F]: Lower entrance guide cover (x2)
- [G]: Inverter sensor (x1)



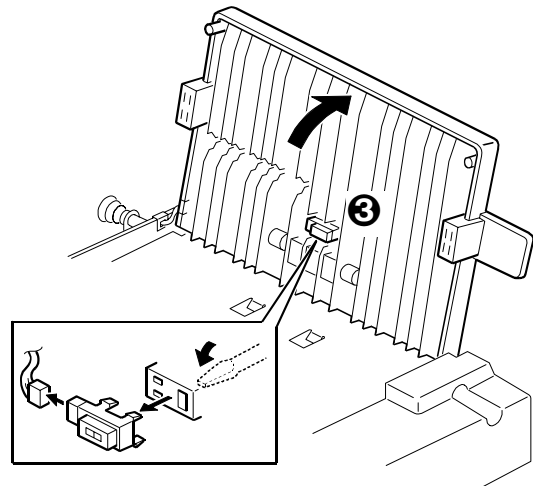
B234R809.WMF



### 3.12.7 DUPLEX TRANSPORT SENSORS 1, 2, 3



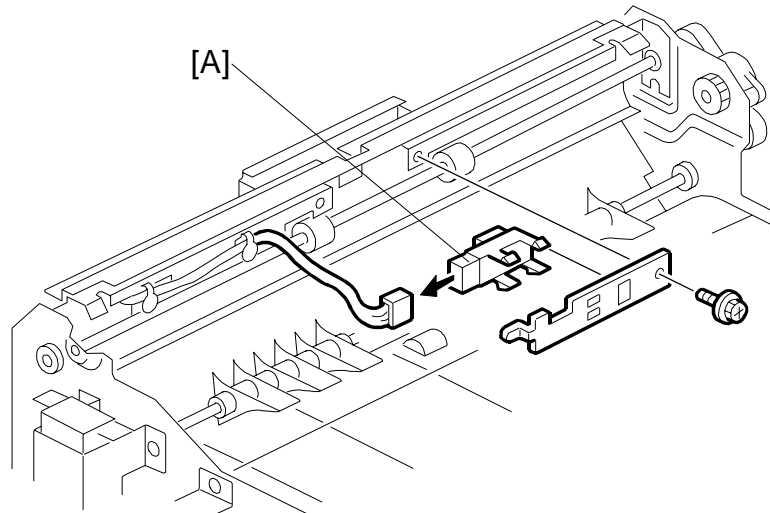
B234R811.WMF



B234R812.WMF

1. Open both front doors.
2. Pull out the duplex unit.
3. Remove:
  - ❶ Duplex transport sensor 1 (☞ x1)
  - ❷ Duplex transport sensor 2 (☞ x1)
  - ❸ Duplex transport sensor 3 (☞ x1)

### 3.12.8 INVERTER RELAY SENSOR



B234R810.WMF

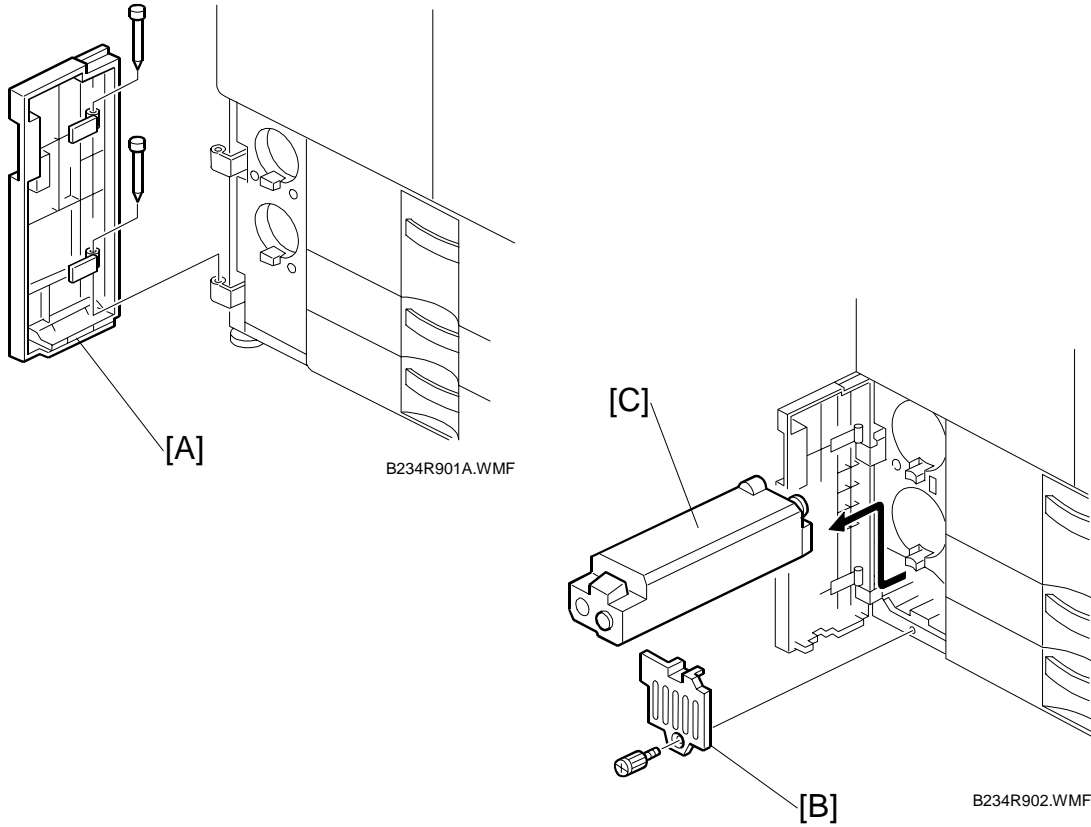
Replacement  
Adjustment

Remove:

- Duplex entrance guide unit (☛3.12.5)
- [A]: Inverter relay sensor (🔧 x1, 📏 x1)

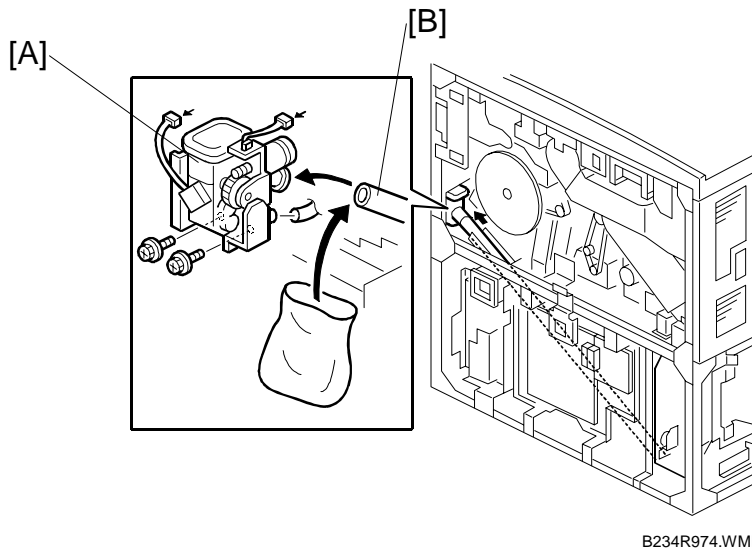
### 3.13 TONER BANK

#### 3.13.1 TONER COLLECTION BOTTLE



1. Toner bank door [A] (pins x 2).
2. Used toner bottle cover [B] (Knob x 1).
3. Toner collection bottle [C].

### 3.13.2 TONER BANK UNIT



B234R974.WMF

Replacement  
Adjustment

**NOTE:** Work carefully to avoid spilling toner during removal.

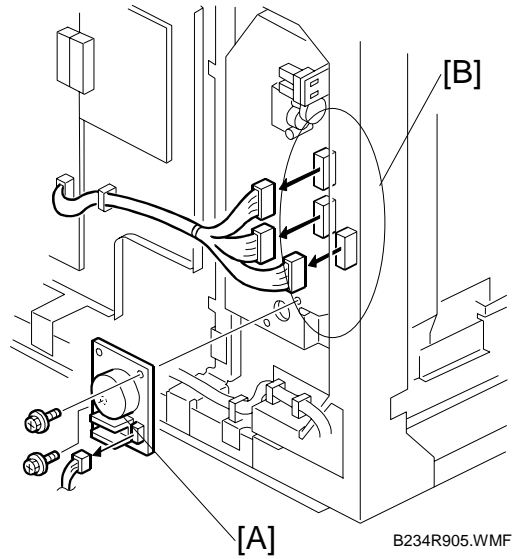
1. Execute **SP5804 041** (upper bottle) and **042** (lower bottle) to close the caps.
2. Turn OFF the operation switch on the operation panel.  
**NOTE:** You will not be able to remove the toner bottles if you switch of the main power switch on the front of the machine.
3. Remove the toner bottles (upper and lower) from the bank.
4. Remove the rear upper cover. (☛3.3.6)
5. Open the controller box (🔧 x 3). (☛3.3.7)
6. Open the PSU box (🔧 x 2). (☛3.3.8)
7. Left lower cover, right upper cover. (☛3.3.5 and 3.3.4)
8. Remove the toner supply cylinder [A]. (🔧 x 2, tubes x 2)  
**NOTE:** Work carefully to avoid spilling toner.
9. Cover the end of the toner transport coil tube [B] with a plastic bag.

#### Important

- To avoid toner spillage, hold the end of the disconnected tube up.
  - Do not to bend the toner transport coil tube [B].
  - If it is bent, this could overload, lock, or damage the coil.
  - **SC592** (Toner Bank Motor Error) will be displayed, and the coil (screw) inside should be replaced.
10. Turn on the operation switch and execute **SP5804 038** and **039** to discharge toner from the toner bank.
  11. Turn off the main switch and unplug the power cord.

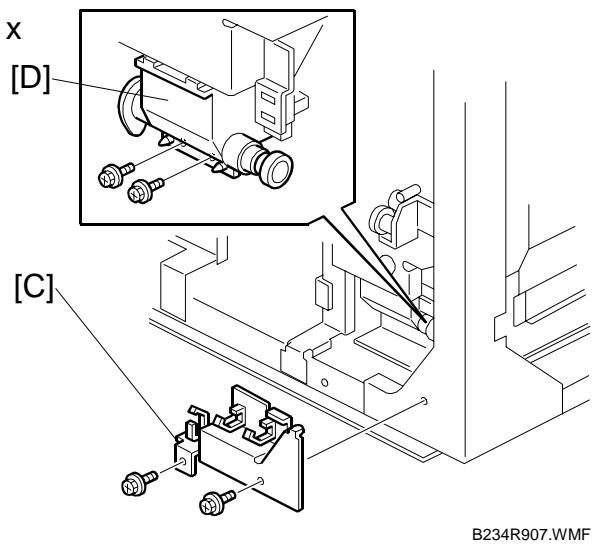
12. Toner bank motor [A] (⚙️ x 2, ⚙️ x 1)

13. Connectors [B] (⚙️ x 2, ⚙️ x 3).

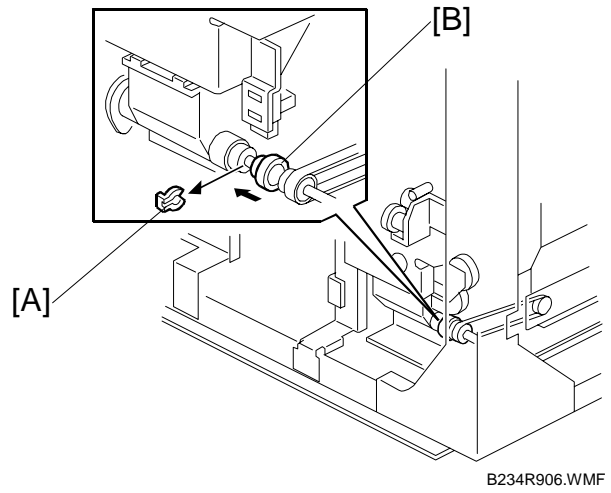


14. Harness clamp bracket [C] (⚙️ x 2, ⚙️ x 3).

15. Toner transport coil casing [D].



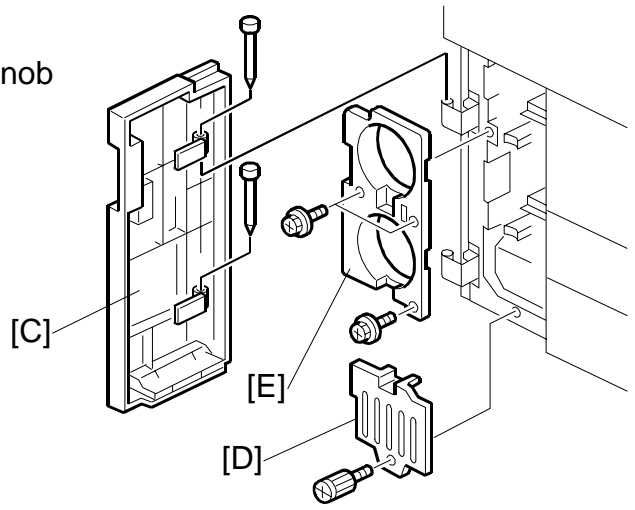
- 16. Snap ring [A]
- 17. Slide coupling [B] to the left.



B234R906.WMF

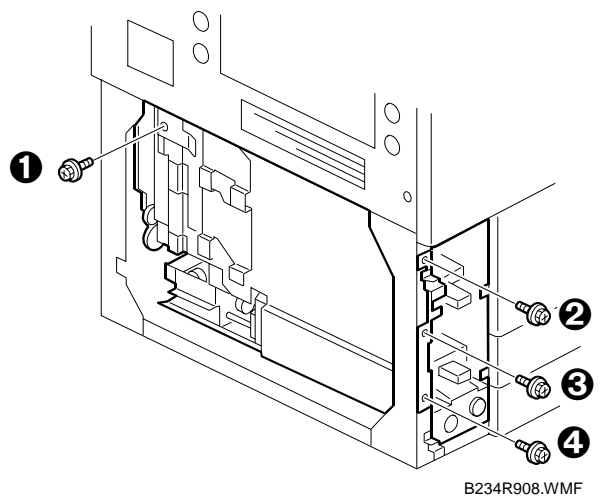
Replacement  
Adjustment

- 18. Toner bank door [C] (pins x 2).
- 19. Waste toner bottle cover [D] (Knob x 1).
- 20. Toner bank inner cover [E] (Knob x 3).

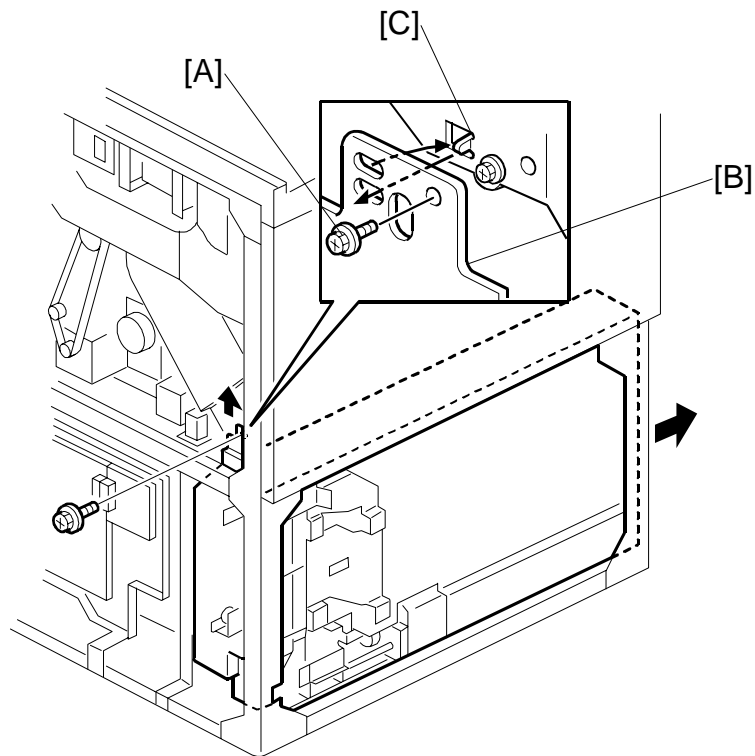


B234R638.WMF

- 21. Remove screw ❶ and screws ❷, ❸, ❹ that secure the toner bank unit [F].



B234R908.WMF




B234R909.WMF

22. Screw [A] securing the toner recycling and collection casing [B].
23. Lift the toner recycling and collection casing [B], pull out the pin [C] from the hole under the case, then pull out the toner bank unit.

**Important**

- When pulling out the toner bank unit, toner may leak out of the junction between the tube and toner bank.
- Place a cloth on the machine bottom plate so that the plate does not become dirty.
- Set the toner bank unit on a sheet of paper or cloth.

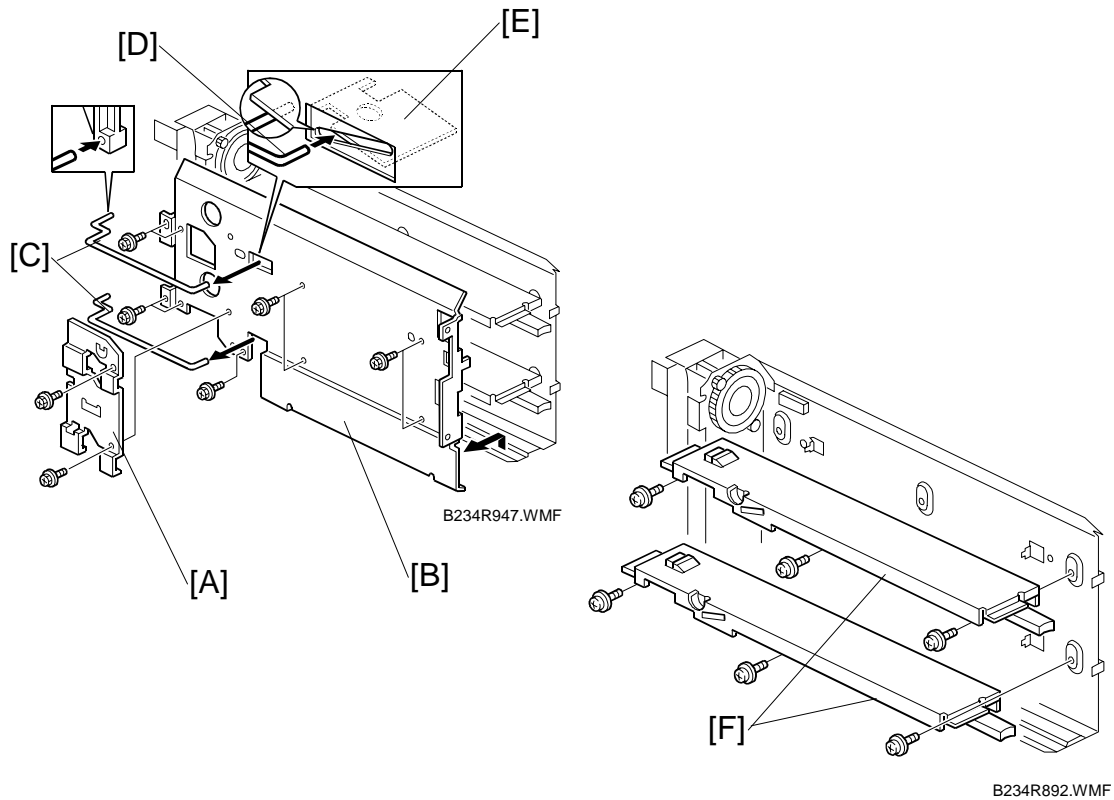
***After Re-installing the Toner Bank Unit***

1. Remove the plastic bag from the toner transport coil tube. Re-connect the toner supply cylinder to the toner transport coil tube (  x 2, tubes x 2).
2. Turn the main power switch on.
3. Load the toner bottles into the toner bank unit.
4. Start to supply toner from the toner bank unit to the toner hopper:
  - 1) Select **SP2207 002** (Toner Bank Toner Setup).
  - 2) Press "Execute" on the LCD.

This procedure supplies toner to the toner hopper and the toner transport path. It will stop automatically in about 6 minutes. If **SP2207 002** fails after **SP2801** is completed (an SC code is displayed), repeat only **SP2207 002**.



### 3.13.3 ACCESS TO INSIDE THE TONER BANK UNIT

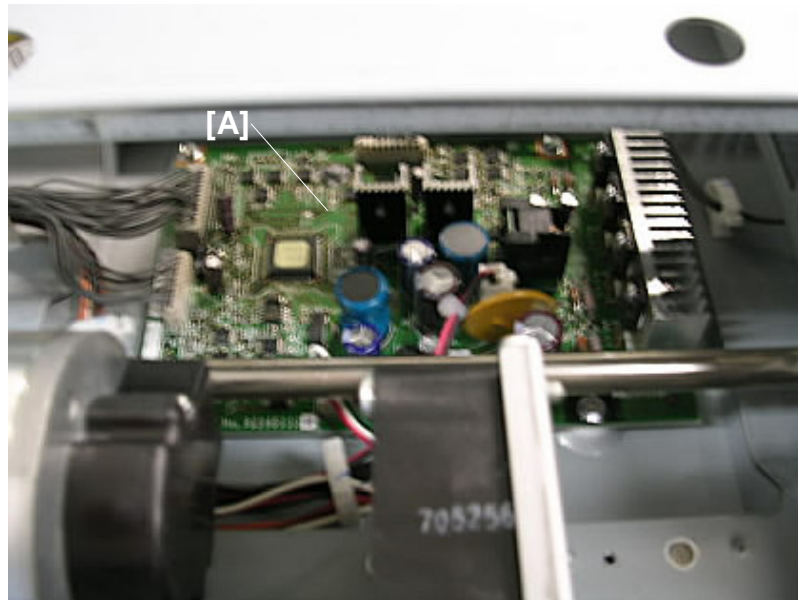


**NOTE:** The toner bottle sensors and toner collection bottle set switch are inside the toner bank unit.

1. Toner bank unit. (☛3.13.2)
2. Toner release link bracket [A] (🔩 x 2).
3. Left side plate [B], disconnect two links [C] (🔩 x8 M4x8, 🔩 x2 M3x6, 📏 x1, ⬅️ x1)  
**NOTE:** When re-attaching the links [C], place the front pin [D] under the lock plate [E].
4. Toner bottle bottom plates [F] (🔩 x 3 each).

## 3.14 BOARDS

### 3.14.1 MCU BOARD

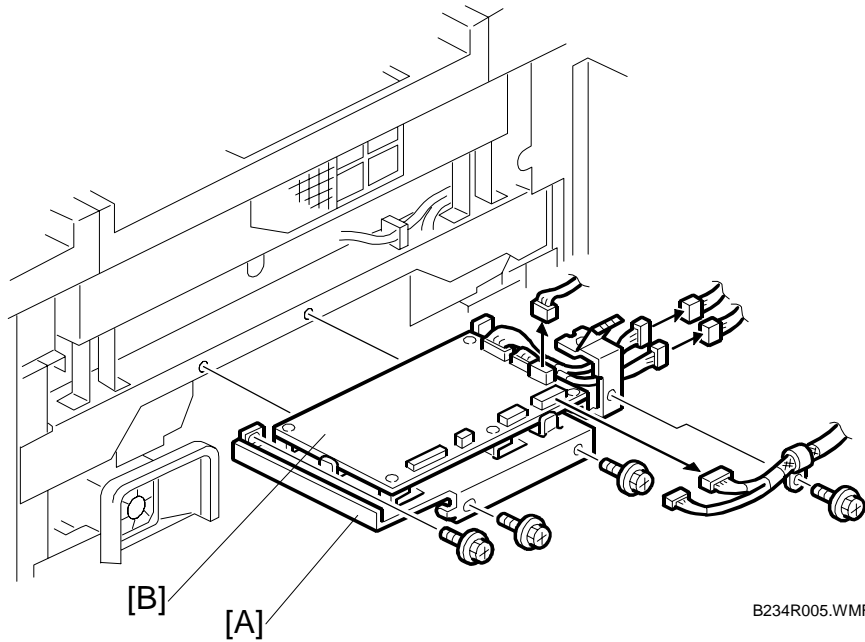


B234R934.BMP

- Exposure glass. (☛3.5.1)
  - Top front cover. (☛3.5.8)
  - Remove the MCU cover. (☛3.5.8)
- [A] MCU board (🔧 x3, 🛠️ x7)

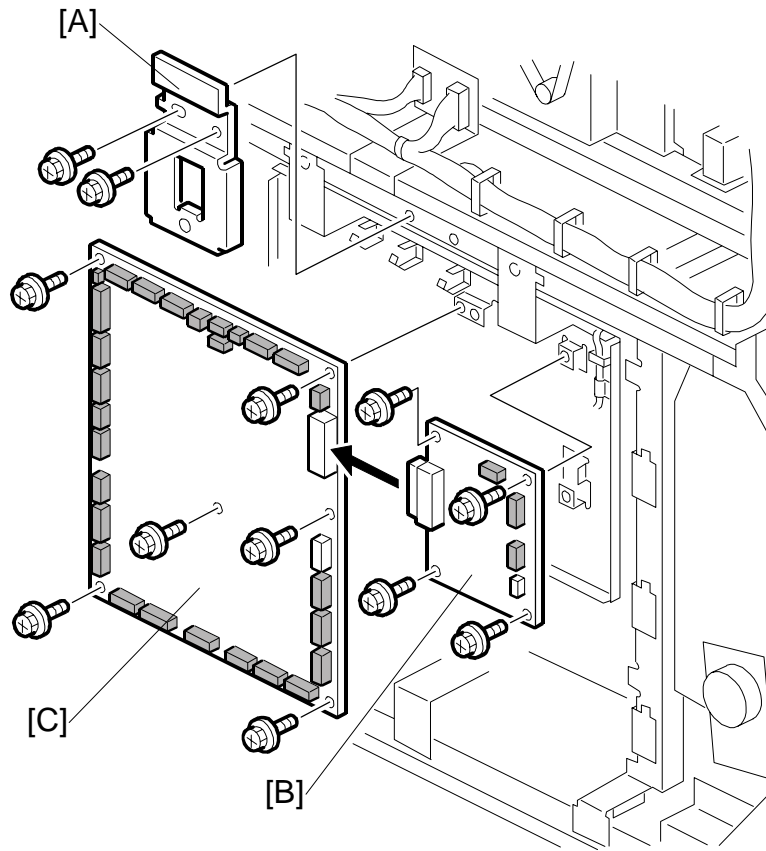
Replacement  
Adjustment

### 3.14.2 OPU BOARD



- Right upper cover (☛3.3.4)
  - [A] OPU (Operation Panel Unit) (☛ x4, ☛ x5)
  - [B] OPU board (☛ x5)

### 3.14.3 BCU / IOB



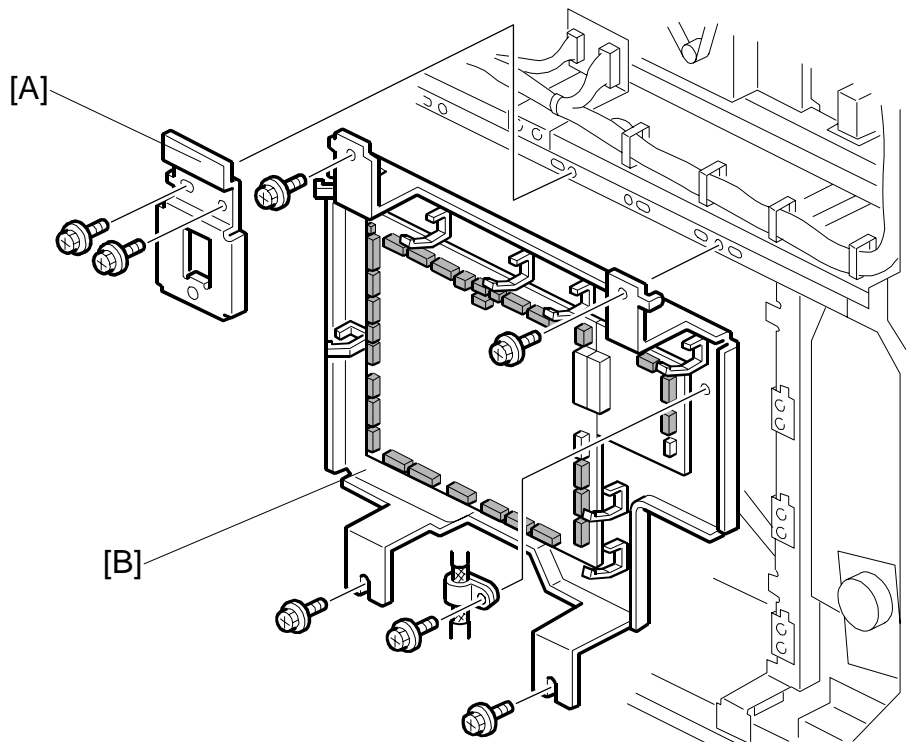
B234R969.WMF

Replacement  
Adjustment

1. Open:
    - Controller box (🔩 x3) (➡3.3.7)
    - PSU box (🔩 x2) (➡3.3.8)
  2. Remove:
    - Rear upper cover (🔩 x4)
- [A]: PSU box positioning plate (🔩 x2)  
 [B]: BCU (🔩 x3, 🛠️ x4)  
 [C]: IOB (🔩 x28, 🛠️ x6)

**NOTE:** The IOB screws must also be removed in order to remove only the BCU. However, it is not necessary to disconnect the IOB harnesses.

### 3.14.4 BCU-IOB UNIT



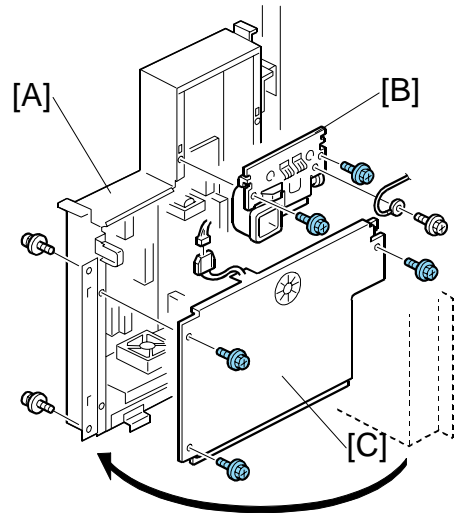
B234R955.WMF

1. Open:
  - Controller box (☞ x3) (☞3.3.7)
  - PSU box (☞ x2) (☞3.3.8)
2. Rear upper cover. (☞3.3.6)
3. PSU box positioning plate [A] (☞ x2).
4. BCU-IOB unit [B] (☞ x5, ☞ x31).

### 3.14.5 PSU-EA (POWER SUPPLY UNIT-ENGINE A) / PSU-EB (POWER SUPPLY UNIT-ENGINE B)

<p><b>⚠ CAUTION</b></p> <ul style="list-style-type: none"> <li>• Before replacing any part of the PSU (especially PSU Ea, PSU Eb), switch the machine off, disconnect it from the power source, and allow the machine to stand at least 10 minutes before you open the PSU box.</li> <li>• Letting the machine stand for 10 minutes allows residual charges to dissipate from the large capacity electrolytic condensers on PSU Ea, Eb.</li> </ul>
--

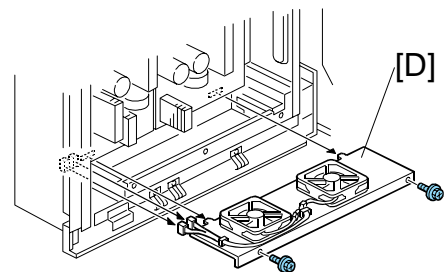
1. Open the PSU box [A] (🔩 x 2). (☞3.3.8)
2. Remove  
 [B] Duct, ground wire (🔩 x3)  
 [C] PSU cover (🔩 x3, 📏 x1)



B234R971A.WMF

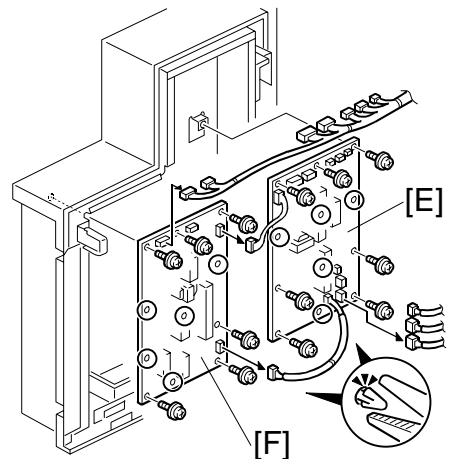
Replacement Adjustment

- [D] Fan motor unit (🔩 x3, 📏 x2)



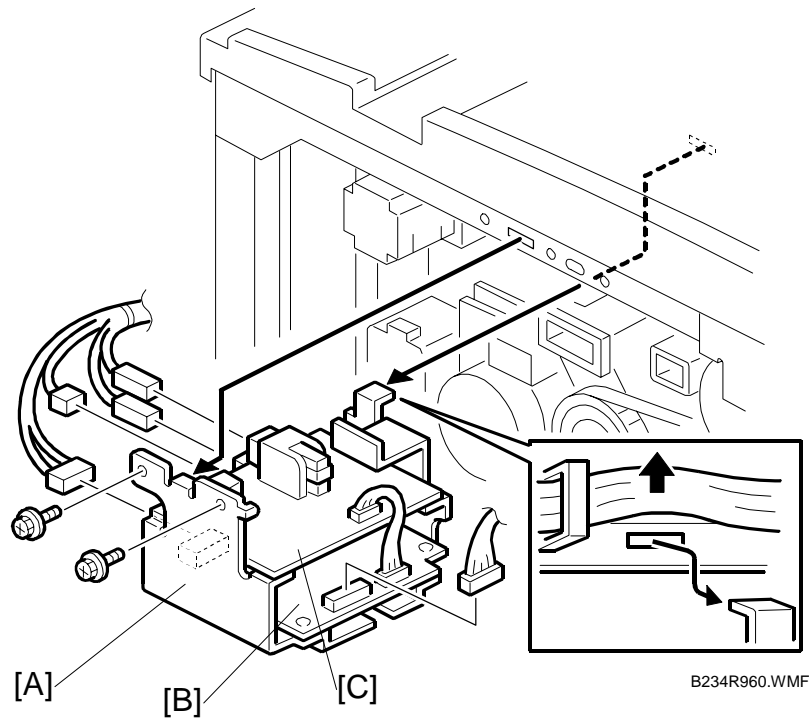
B234R972.WMF

- [E] PSU-Ea (🔩 x7, 📏 x10, Standoffs x5)  
 [F] PSU-Eb (🔩 x6, Standoffs x4, 📏 x4)



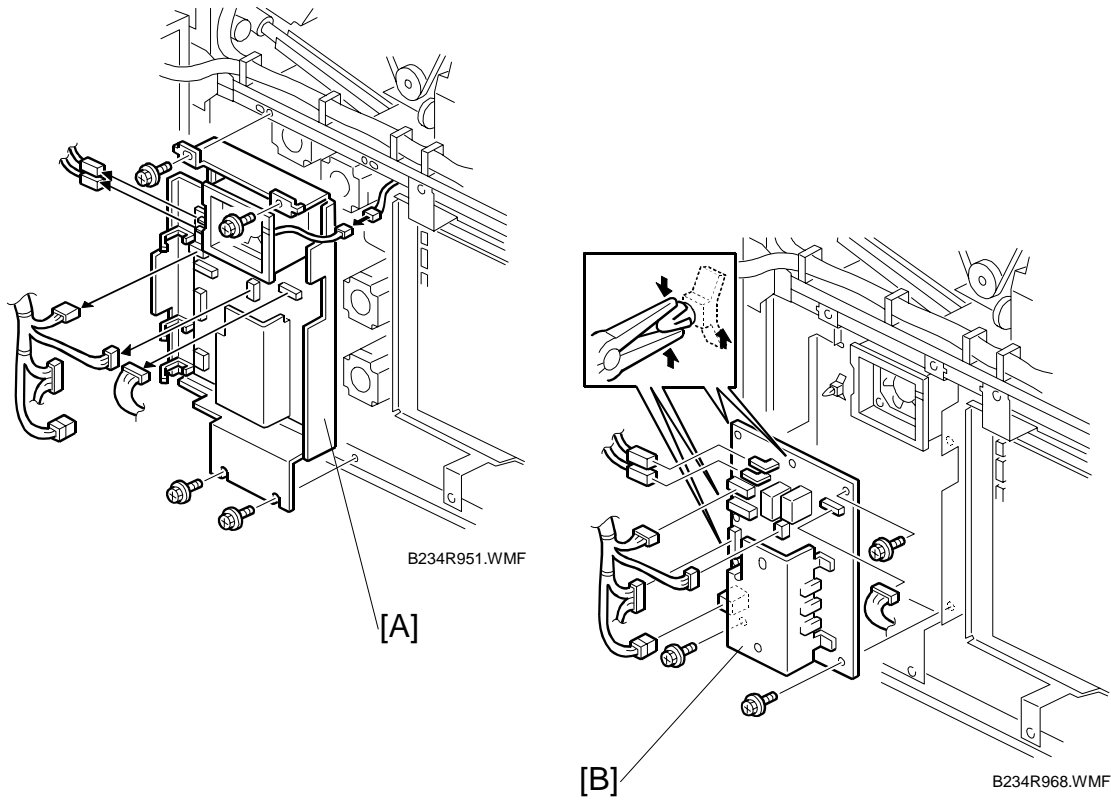
B234R973.WMF

### 3.14.6 PPG POWER PACK / CGB POWER PACK



1. Remove the rear upper cover (⚙ x 4). (☛3.3.6)
2. Power pack unit [A] (⚙ x 2, 📏 x 5).  
([B]: CBG power pack, [C]: PPG power pack)

### 3.14.7 AC DRIVE BOARD

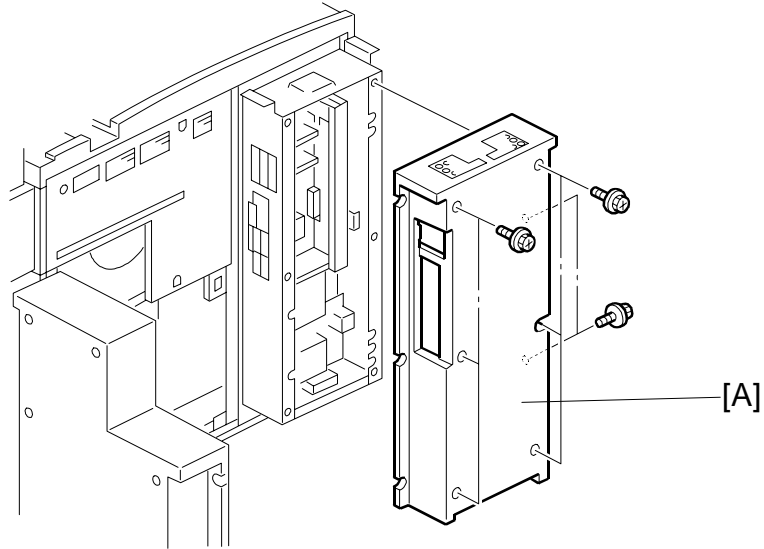


1. Open the PSU box (⚙️ x 2). (➡️ 3.3.8)
2. AC drive board unit [A] (🔧 x8, ⚙️ x4)
3. AC drive board [B] (🔧 x7, ⚙️ x3, Standoffs x4)



### 3.15 CONTROLLER BOARDS, HDD

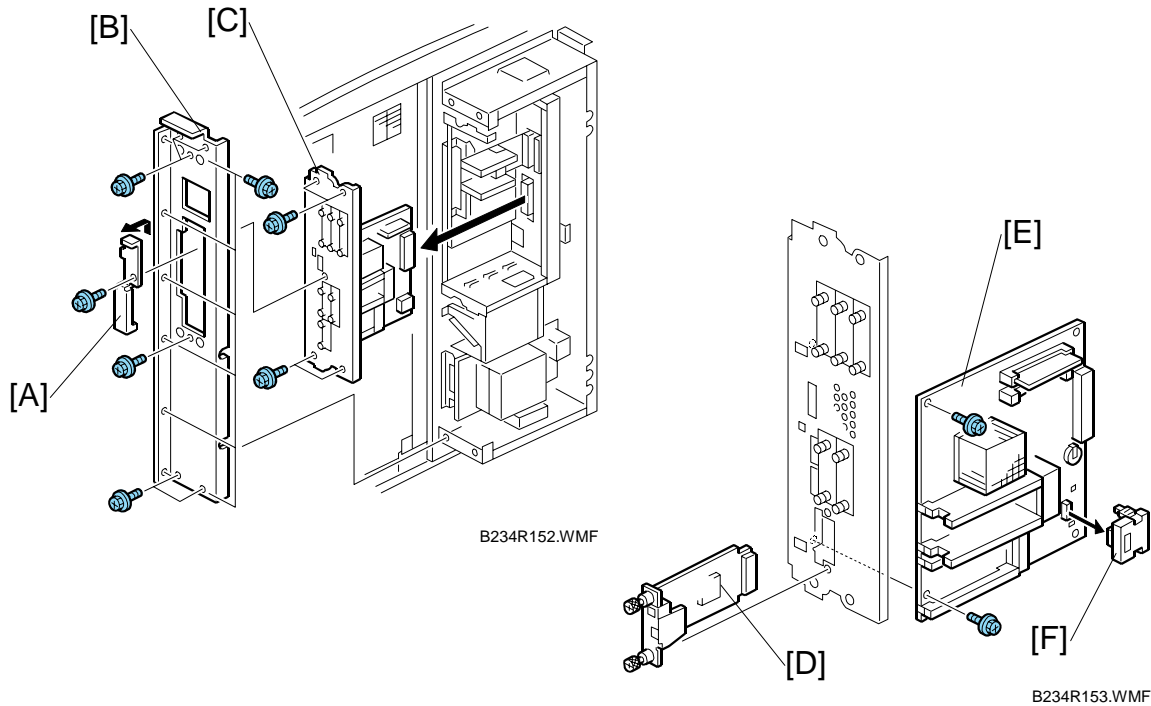
#### 3.15.1 CONTROLLER BOX COVER



B234R151.WMF

1. Remove the controller box cover [A] (⚙ x8)

### 3.15.2 CONTROLLER BOARD, NVRAM



1. Controller box cover. (☛3.15.1)
2. Open the controller box (🔧 x 3). (☛3.3.7)
3. Remove
  - [A]: Slot cover (🔧 x 1)
  - [B]: Left bracket (🔧 x 12)
  - [C]: Controller board unit (🔧 x 4)

**NOTE:** When re-installing, make sure that board is between the ground plates.

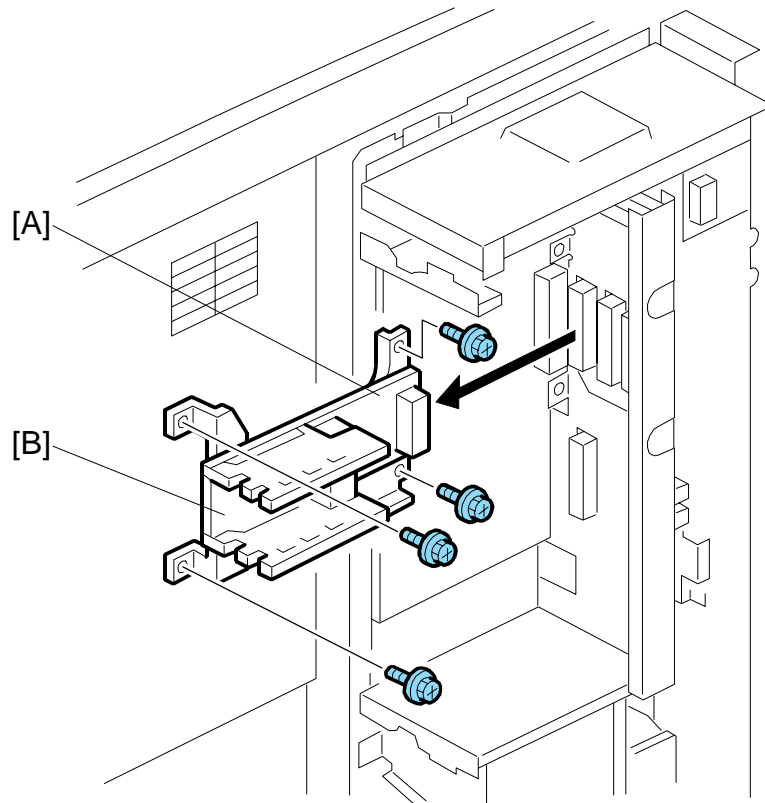
  - [D]: NIB (🔧 x 4)
  - [E]: Controller board (🔧x2)
  - [F]: NVRAM.

**NOTE:** When installing a new controller board, be sure to remove the NVRAM from the old board and attach it to the new board.

**NOTE:** If you replace the NVRAM, the Data Overwrite Security Unit will not work. The user must buy a new one.

**NOTE:** When you replace the NVRAM with a new one, operations in 5.10.5 is required.

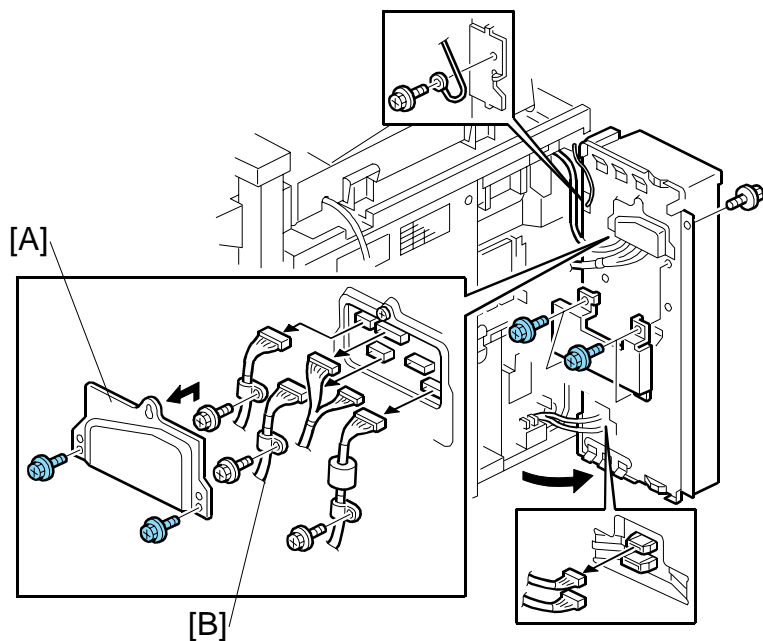
### 3.15.3 INTERFACE BOARD



B234R154.WMF

1. Controller board unit (☛3.15.2)
2. Interface board unit [A] (🔩 x 4)
3. Interface board [B] (🔩 x 4)

### 3.15.4 IPU



B234R155.WMF

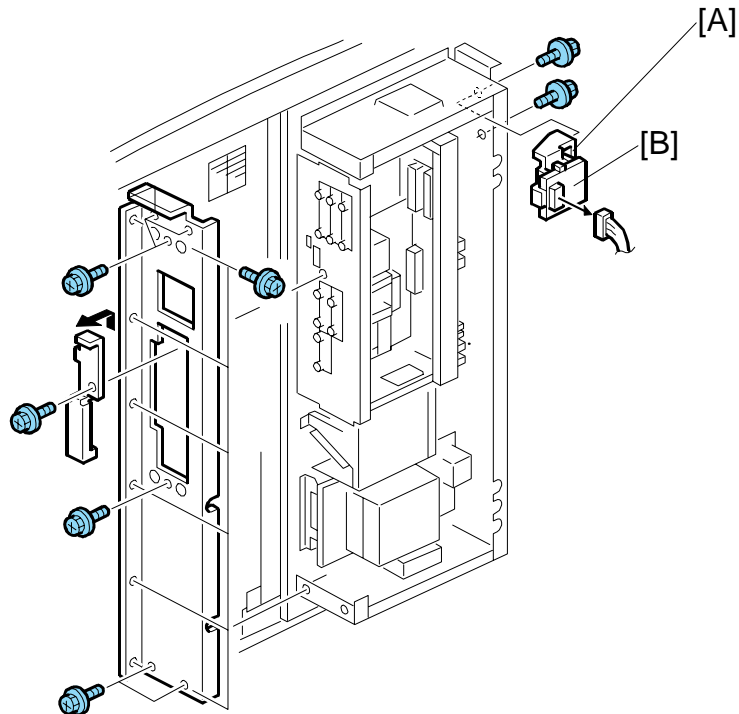
Replacement  
Adjustment

1. Open the controller box (⚙ x 3). (➡3.3.7)
2. Remove:
  - Controller box cover (➡3.15.1)
  - Controller board unit (➡3.15.2)
  - Interface board unit (➡3.15.3)
3. Remove connector cover [A] (⚙ x 2).
4. Behind the IPU board, disconnect the connectors [B] (🔌 x7).
5. Remove the IPU [C] (⚙ x 5).



B234R935.BMP

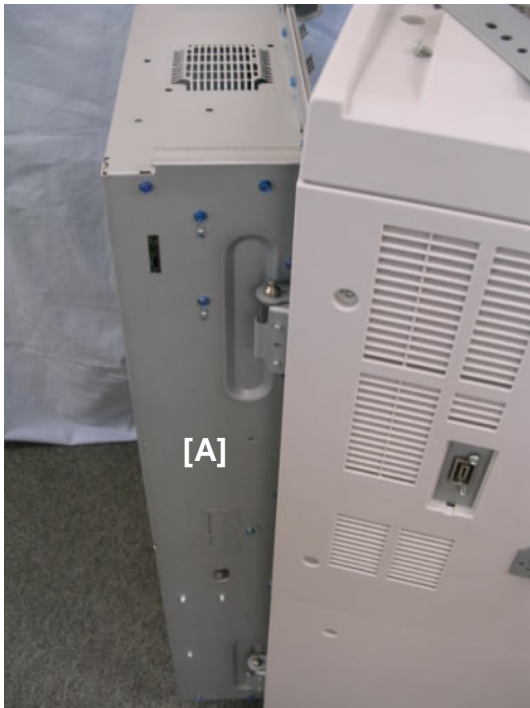
### 3.15.5 SD CARD UNIT



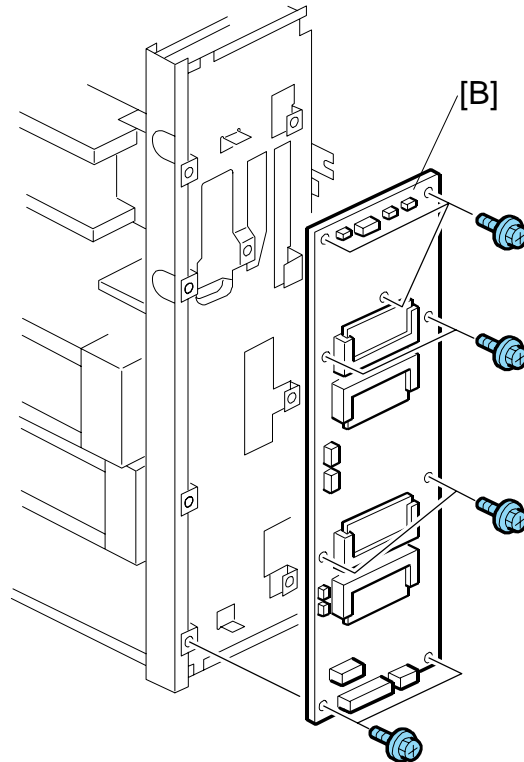
B234R157.WMF

1. Remove the controller box cover. (☛3.15.1)
2. Remove SD card bracket with SD slot board [A] (☛ x2, ☛ x1)
3. SD slot board [B] (☛ x4)

### 3.15.6 MB (MOTHER BOARD)



B234R936.BMP

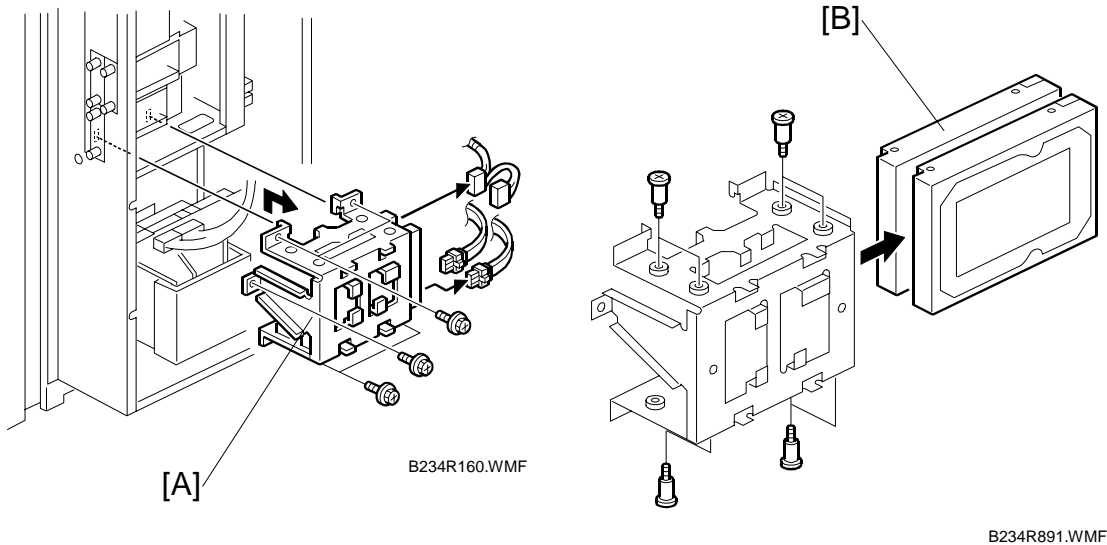


B234R159.WMF

Replacement  
Adjustment

1. Remove:
  - Controller box cover. (☛3.15.1)
  - SD slot board bracket (with SD slot board). (☛3.15.5)
2. Remove the mother board cover [A]
  - Upper hinge cover (🔩 x1)
  - Lower hinge cover (🔩 x1)
  - Cover (🔩 x10, ⏏x3)
3. Remove the mother board [B] (🔩 x 9, 🏠 x 7).

### 3.15.7 HARD DISKS

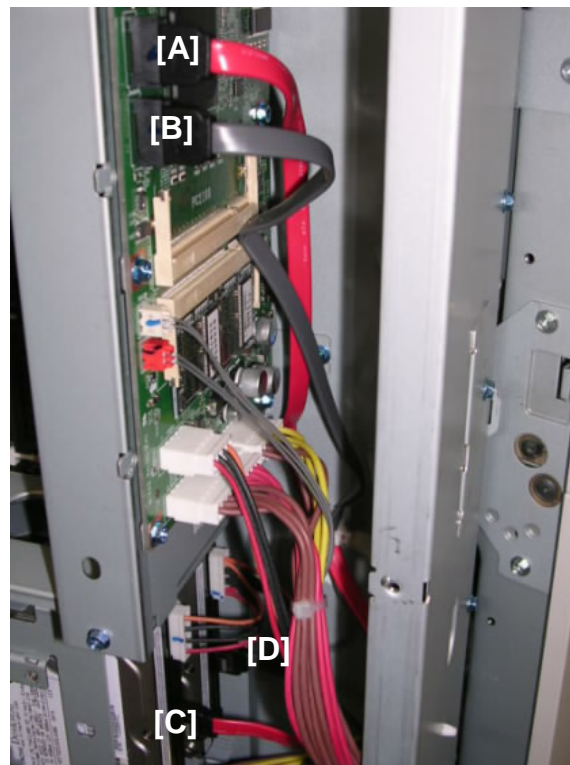


**NOTE:** The controller recognizes both disks as one disk unit. Both disks must always be replaced together, or there will be errors.

1. Remove the controller box cover. (☛3.15.1)
2. HDD bracket [A] (🔩 x 5, 📏 x 4).
3. Hard disks [B] (🔩 x 8).
4. If you intend to re-install the same disks in the machine, confirm the correct connections before disconnecting. After the disks have been formatted, they are not identical, and each disk must be connected to the correct connector.
5. Install the new disks.
 

**NOTE:** If the disks are new and unformatted, they are both identical, and can be connected in either position.
6. Turn the main switch on and execute **5832 001** (HDD Formatting – All) to format the new disks.
7. Install the stamp data using **SP5853**. (☛"Stamp Data Installation", 5. Service Tables.)
8. Switch the machine off and on to enable the fixed stamps for use.

## Reinstallation



B234R937.BMP

This photo shows the correct connection of the harnesses.

- [A] Red
- [B] Black
- [C] Red (Front)
- [D] Black (Rear)

Replacement  
Adjustment



***Disposal of HDD Units***

- Never remove an HDD unit from the work site without the consent of the client.
- If the customer has any concerns about the security of any information on the HDD, the HDD must remain with the customer for disposal or safe keeping.
- The HDD may contain proprietary or classified (Confidential, Secret) information. Specifically, the HDD contains document server documents and data stored in temporary files created automatically during copy job sorting and jam recovery. Such data is stored on the HDD in a special format so it cannot normally be read but can be recovered with illegal methods.

***Reinstallation***

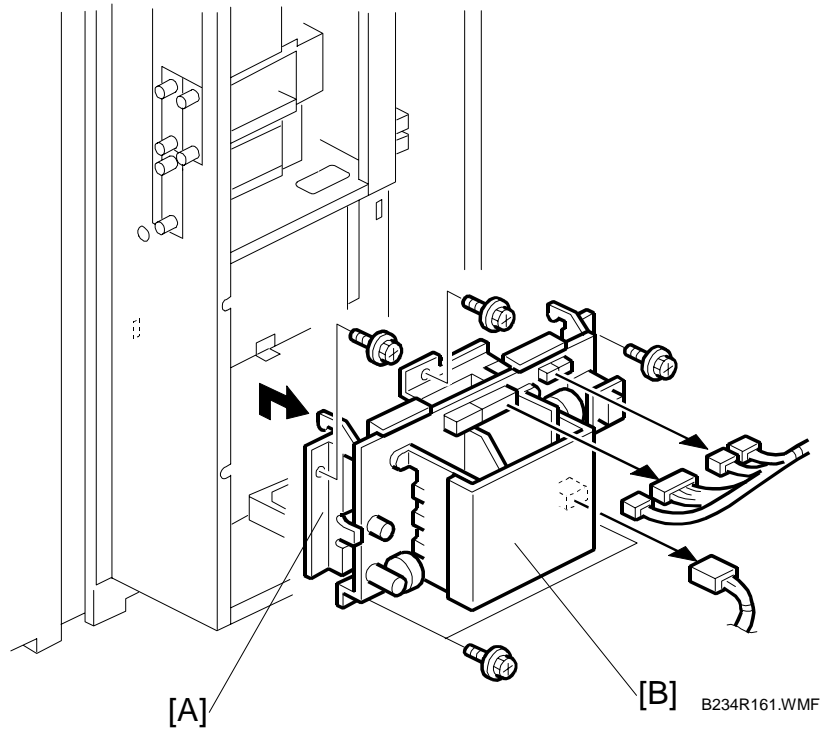
Explain to the customer that the following information stored on the HDD is lost when the HDD is replaced:

- Document server documents
- Custom-made stamps
- Document server address book

The address book and document server documents (if needed) must be input again.

If the customer is using the Data Overwrite Security feature, the Data Overwrite Security function must be set up again. For more, see Section "1.14.6 Installation".

### 3.15.8 PSU-C (POWER SUPPLY UNIT-CONTROLLER)



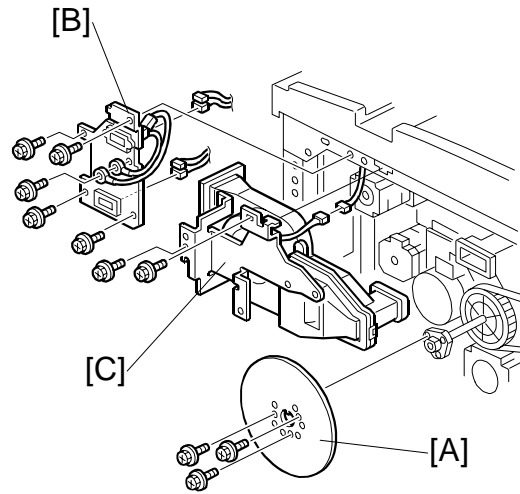
1. Remove the controller box cover. (☛3.15.1)
2. PSU-C unit [A] (🔩 x 5, 📏 x 5).
3. PSU-C [B] (🔩 x 6).

**NOTE:** Please note that the screw that fastens the ground wire is different. Use the same screw to re-fasten the ground wire.

### 3.16 MOTORS

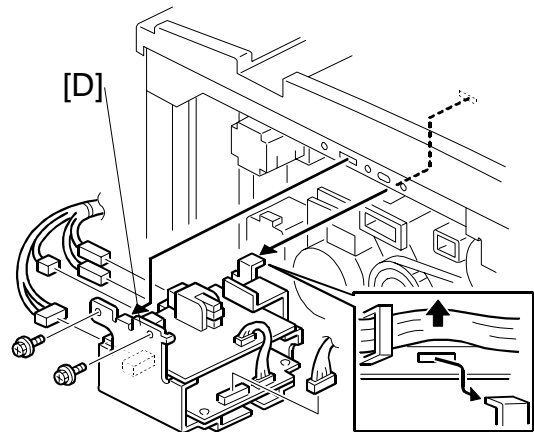
#### 3.16.1 DRUM MOTOR

- Open the PSU box (☛3.3.8)
- Open the controller box (☛3.3.7)
- Remove the rear upper cover (☛3.3.6)
- Fly wheel [A] (☛3.8.11)
- Harness bracket [B] (☛3.8.11)
- Left duct unit [C] (☛3.8.11)



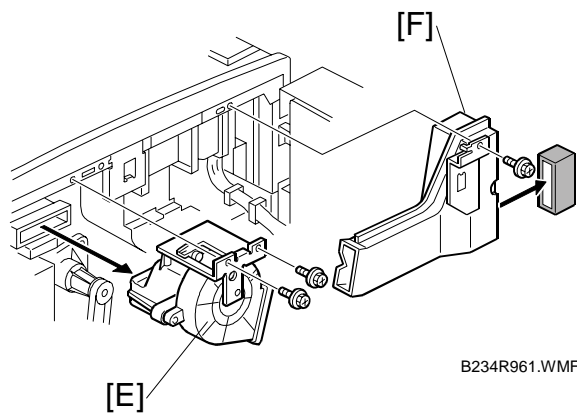
B234R919A.WMF

- Power pack unit [D] (☛3.14.6)



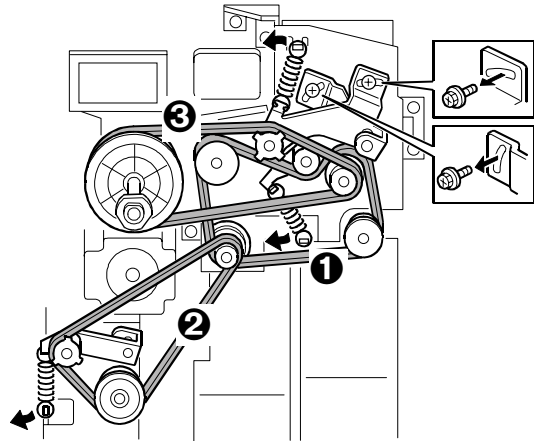
B234R960.WMF

1. Fan motor unit [E] (🔧 x2, 📏 x1)
2. Right duct unit [F] (🔧 x1)



B234R961.WMF

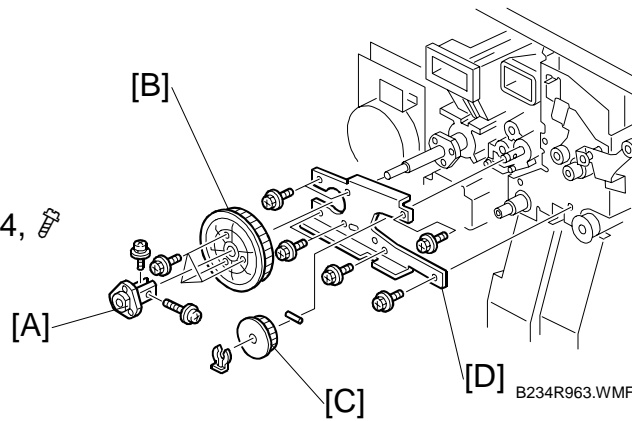
3. Timing belts ❶, ❷, ❸ (Springs x3, ❸x2)



B234R962.WMF

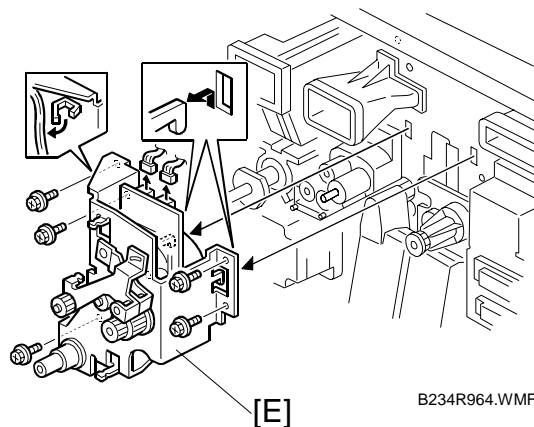
Replacement Adjustment

4. Flywheel holder [A] (❸ x2)  
 5. Drum pulley [B] (❸ x3)  
 6. Cleaning drive pulley [C] (❸ x1, Pin x1)  
 7. Drum motor plate [D] (Tapping ❸ x4, ❸ x3)



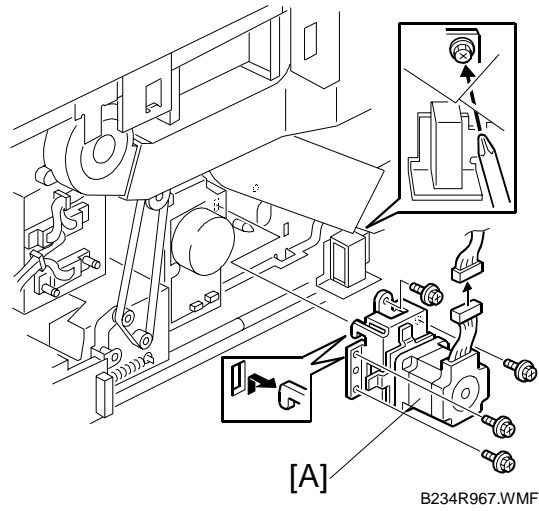
B234R963.WMF

8. Drum motor unit [E] (❸ x2, ❸ x1, ❸ x5)  
 9. Drum motor (❸ x4)



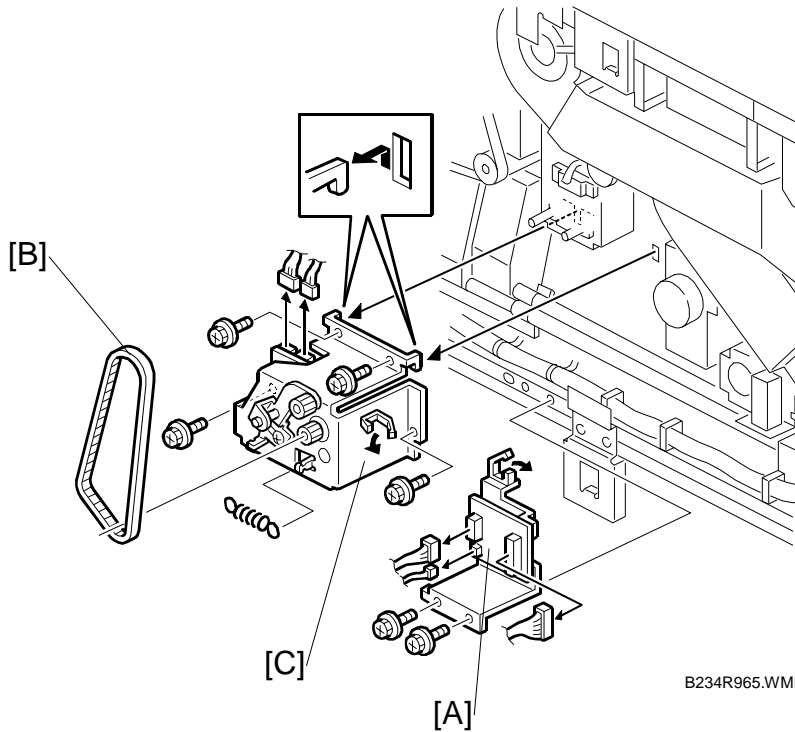
B234R964.WMF

### 3.16.2 DUPLEX ENTRANCE MOTOR



- Open the controller box (➔ 3.3.7)
1. Remove the duplex entrance motor unit [A] (🔩 x4, 📡 x1)

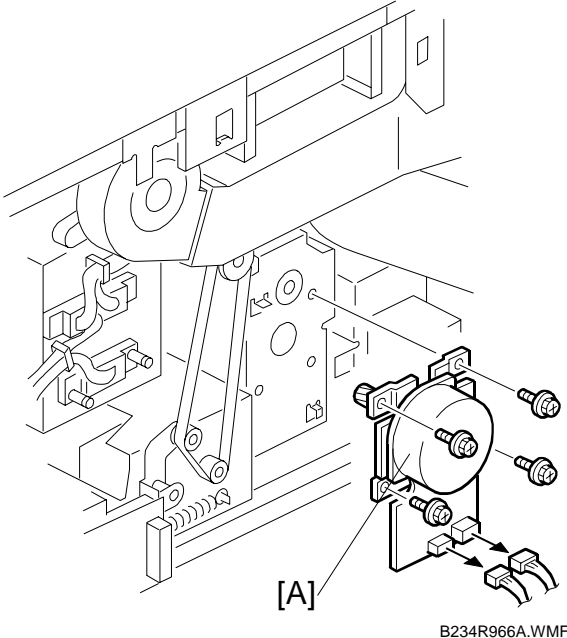
### 3.16.3 FUSING MOTOR



Replacement  
Adjustment

- Open the PSU box (☛3.3.8)
  - Open the controller box (☛3.3.7)
  - Remove the rear upper cover (☛3.3.6)
1. Relay board [A] (🔩 x2, 🛠️ x3, ⏪x1)
  2. Timing belt [B] (Loosen 🔩 x1, Spring x1)
  3. Fusing motor unit [C] (🔩 x4, 🛠️ x2)

**3.16.4 EXIT MOTOR**



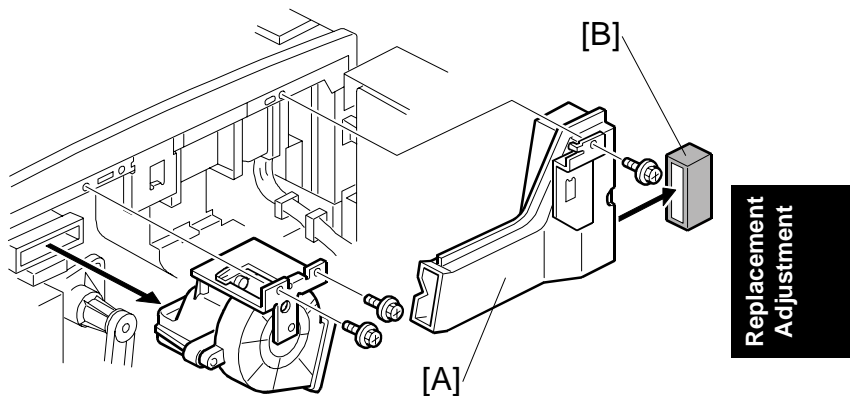
- Open the controller box (☛3.3.7)
- [A] Exit motor (🔩 x4, 📡 x2)

### 3.17 OZONE FILTER

- Open the controller box. (☛3.3.7)
- Open the PSU box.
- Remove the rear upper cover.
- Remove the fan motor unit. (☛3.16.1)

[A]: Right duct unit (☛ x1)

[B]: Ozone filter



B234R961.WMF



## 3.18 COPY IMAGE ADJUSTMENT: PRINTING/SCANNING

**NOTE:** 1) You need to perform these adjustment(s) after replacing any of the following parts:

- Scanner Wires
- Lens Block
- Scanner Motor
- Polygon Mirror Motor
- Paper Side Fences
- Memory All Clear

2) For more details about accessing SP modes, refer to section 4.

### 3.18.1 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 (**SP2902 003**, No. 27) to print the test pattern for the following procedures.

3) Set **SP2902 003** to **0** again after completing these printing adjustments.

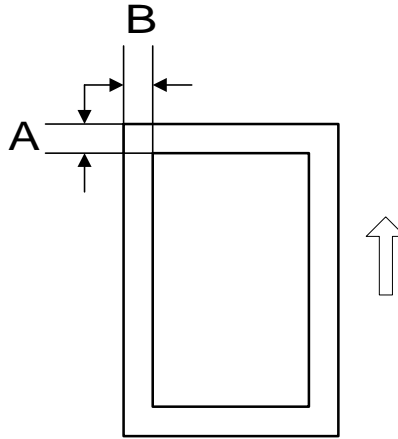
#### ***Registration – Leading Edge***

1. Check the leading edge registration using the Trimming Area Pattern, and adjust it using **SP1001** if necessary. The specification is:  $0 \pm 3$  mm.

**Registration – Side-to-Side**

Do the parallel image adjustment after the side-to-side registration adjustment.

*Using SP Mode*



B070R633.WMF

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

Replacement Adjustment

1. Check the side-to-side registration for each paper feed station using the Trimming Area Pattern. Adjust them using the following SP modes if necessary. For more details, refer to "Image Position Sensors" (3.10.18).

	SP mode		Specification
1st paper tray	SP1002 001	SP1912 001	2 ± 1.5 mm
2nd paper tray	SP1002 002		
3rd paper tray (Optional PFU tray 1)	SP1002 003		
4th paper tray (LCT)	SP1002 004	SP1912 002	
5th paper tray (LCT)	SP1002 005		
6th paper tray (LCT)	SP1002 006		
7th paper tray (Bypass)	SP1002 007	SP1912 003	
Duplex	SP1002 008		

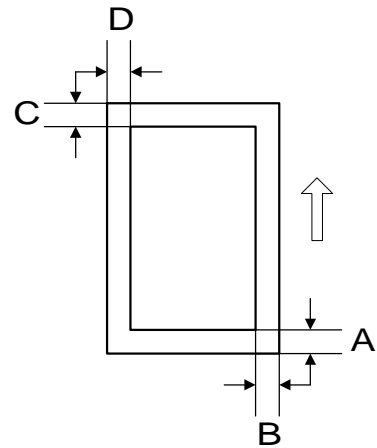
**Blank Margin**

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

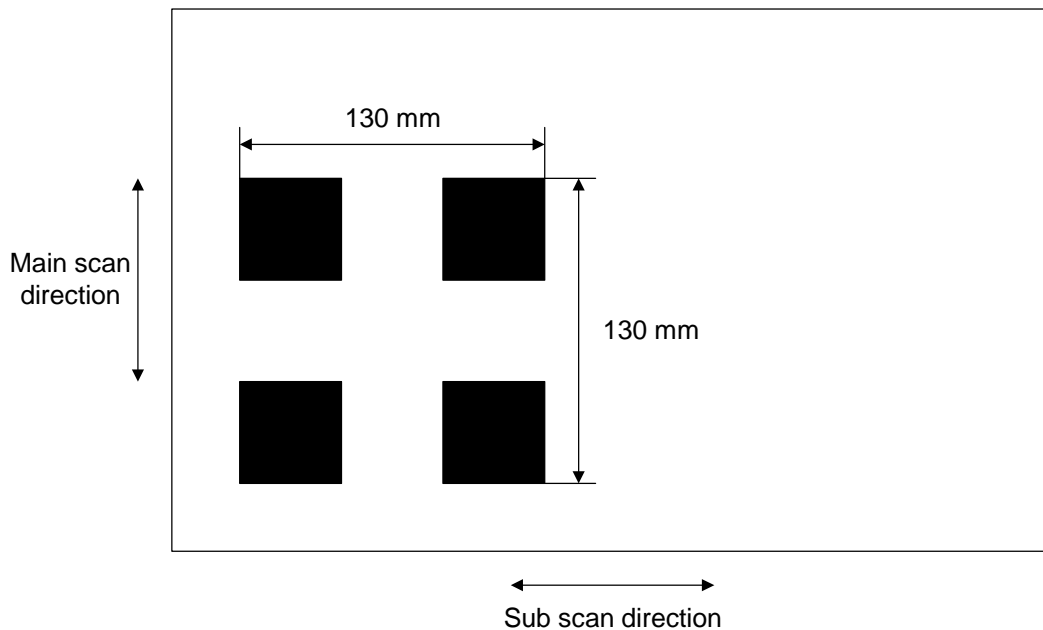
1. Check the trailing edge and right side edge blank margins using the Trimming Area Pattern, and adjust them using the following SP modes if necessary.

	<b>SP mode</b>	<b>Specification</b>
Trailing edge	<b>SP2101 002</b>	$3 \pm 2.0$ mm
Right edge	<b>SP2101 004</b>	$2 \pm 1.5$ mm
Leading edge	<b>SP2101 001</b>	$4 \pm 2.0$ mm
Left edge	<b>SP2101 003</b>	$2 \pm 1.5$ mm

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



B234R889.WMF

**Magnification Adjustment**

Replacement  
Adjustment

B234R888.WMF

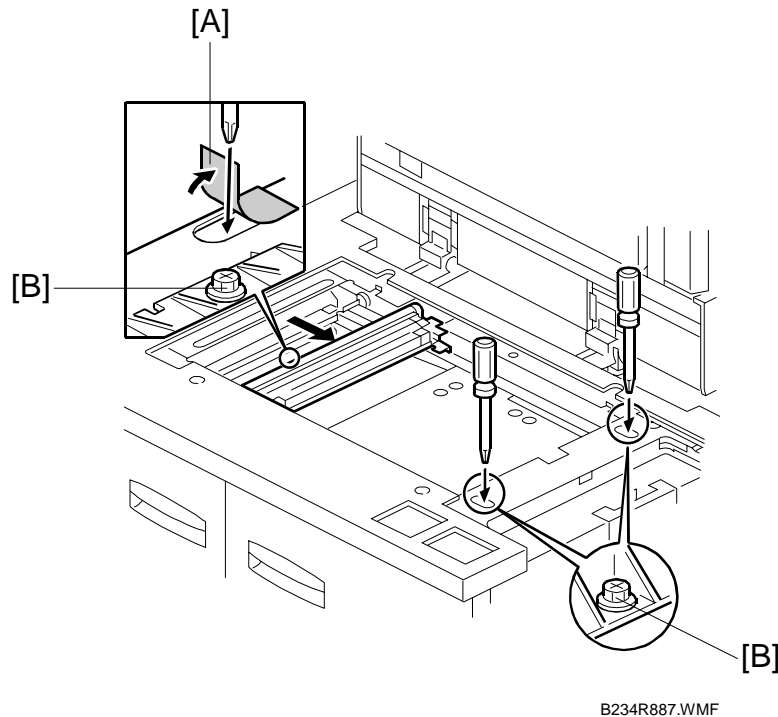
1. Enter SP mode and access **SP2902 003** (Test Pattern).
2. Select pattern 4 (Alternating Dot pattern – 1024 dots) and make a print using A3 (DLT) paper.
3. Check the length between the edges of the black squares. The length should be 130 mm in the sub scan direction.
  - 1) If the magnification in the sub scan direction is not within  $100 \pm 1.0\%$ , adjust using **SP2910** (Writing Sub Scan Magnification).
  - 2) After main scan adjustment, use **SP2909** (Main Scan Magnification) **001** (Copy), **002** (Printer) to adjust main scan magnification for the copy and print images.
  - 3) Next, use **SP4008** (Scanner Sub Scan Magnification) to adjust magnification in the sub scan direction.
  - 4) If the magnification in the main scan direction is not within  $100 \pm 0.5\%$ , adjust using **SP2910**.

**NOTE:** Check the magnification after the paper cools.

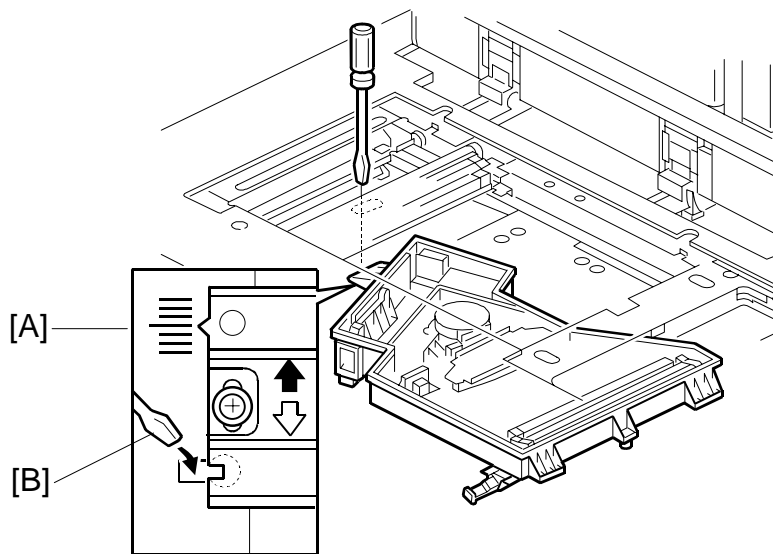
### 3.18.2 PARALLELOGRAM IMAGE ADJUSTMENT

If a parallelogram type image is printed while using a trimming area pattern, do the following to adjust the printing registration or the printing margin.

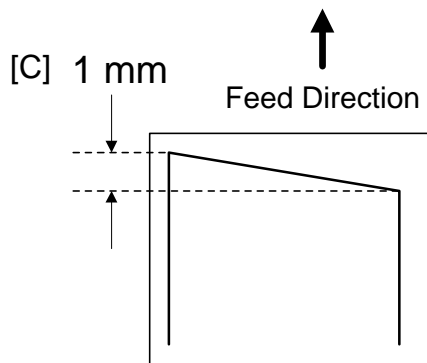
- NOTE:** 1) The following procedure should be done after adjusting the side-to-side registration for each paper tray.  
 2) This adjustment is only effective for a parallelogram image caused by the printer. It should not be applied if the skew is caused by the scanner.



1. Check whether a parallelogram image appears as shown on the next page when printing a trimming area pattern (**SP2902 003**, No. 27). If it appears, do the following.
2. Remove the exposure glass (see Replacement and Adjustment – Exposure Glass Removal).
3. Remove the original exit tray and the scanner right cover. (See Replacement and Adjustment – 3.5.9 Scanner Wires)
4. Peel away the mylar [A] covering the opening in the frame.
5. Loosen the three screws [B] that hold the laser unit.



B234R886.WMF



B234R885.WMF

Replacement Adjustment

6. Make a note of the position of the laser unit using the scale [A].
7. Adjust the laser unit position using a flat screwdriver [B] as shown.  
If the right side of the trimming area pattern is down by about 1 mm as shown [C], the laser unit should be rotated about one graduation in the direction of the black arrow. If the opposite side is down, adjust in the opposite direction.
8. Tighten the three screws to secure the laser unit.
9. Print the trimming area pattern to check the image. If it is still the same, repeat steps 2 to 7.

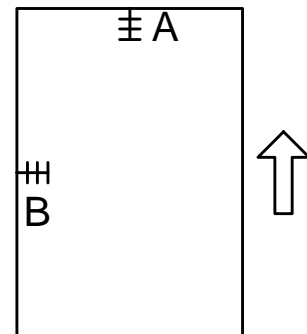
### 3.18.3 SCANNING

- NOTE:** 1) Before doing the following scanner adjustments, check the printing registration/side-to-side adjustment and the blank margin adjustment.  
 2) Use an OS-A3 test chart to perform the following adjustments.

**Registration: Platen Mode**

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

	<b>SP mode</b>
Leading Edge	<b>SP4010</b>
Side-to-side	<b>SP4011</b>



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

B234R884.WMF

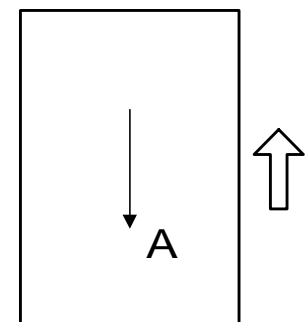
**Magnification**

**NOTE:** Use an OS-A3 test chart to perform the following adjustment.

**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, and adjust it using the following SP mode if necessary. The specification is within  $\pm 1\%$ .

	<b>SP mode</b>
Scanner Sub Scan Magnification	<b>SP4008</b>



A: Sub Scan Magnification

B234R883.WMF

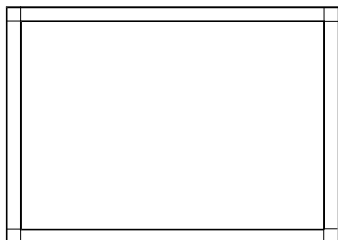
### 3.18.4 ADF IMAGE ADJUSTMENT

#### Registration

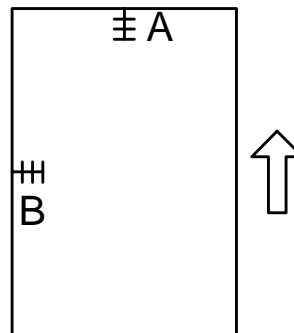
**NOTE:** Make a temporary test chart as shown below left, using A3/DLT paper.

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

	SP mode
Side-to-side Registration	SP6006 001
Leading Edge Registration (Thin original mode)	SP6006 003
Leading Edge Registration (Single-sided/Duplex: front)	SP6006 005
Leading Edge Registration (Duplex: rear)	SP6006 006



B234R881.WMF



B234R882.WMF


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

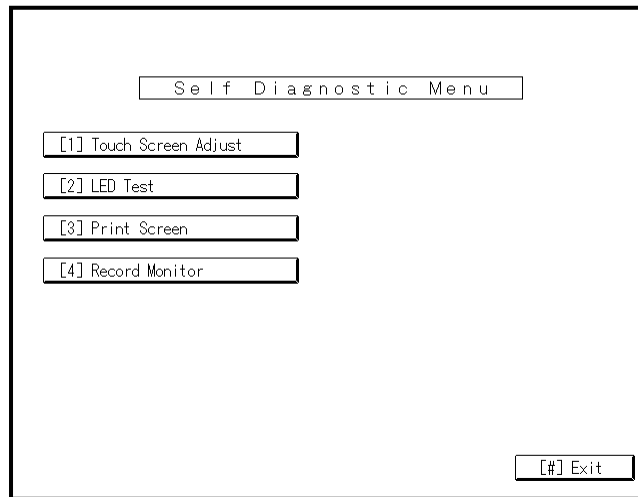
Replacement Adjustment



### 3.19 TOUCH SCREEN CALIBRATION

When the touch panel detection mechanism is not working properly, calibrate the touch screen as follows:

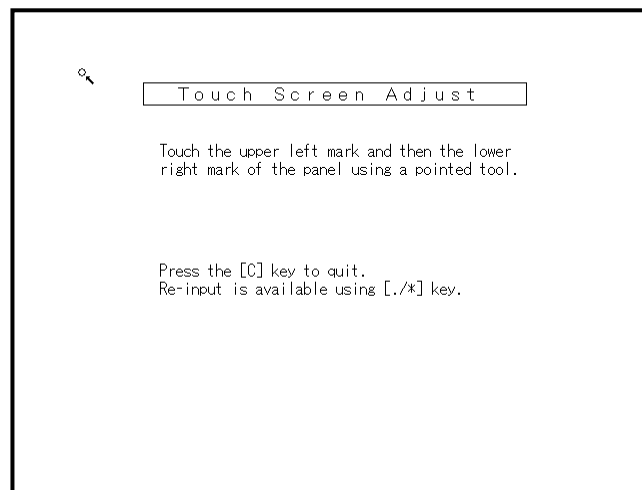
1. Press [Clear] ()<sup>Clear</sup>, press **1993**, and then press [Clear] 5 times.




B234R879.WMF

2. Select “[1] Touch Screen Adjust”.

**NOTE:** [2] tests the LEDs on the operation unit, not the machine’s main operation panel. Keys [3] [4] [5] [6] [7] are for factory use only. Do not use unless directed by senior technical staff.



B234R878.WMF

3. The "Touch Screen Adjustment" calibration screen will appear. Touch the center of the circle in the upper left corner then the lower right corner of the panel using a pointer (but not sharp!) tool.
4. Touch a few spots on the LED touch panel, and confirm that the marker appears on the screen at exactly the same location as where it is touched. If it does not, touch "Re-input" (or press the  key) and repeat the calibration procedure.
5. Press "OK" on the adjustment screen.`
6. Press "Exit" to exit the self diagnostic mode.



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## 4. TROUBLESHOOTING

### 4.1 PROGRAM DOWNLOAD

#### 4.1.1 OVERVIEW

Here are some important points to keep in mind when downloading software:

- If an error interrupts download processing, the machine cannot operate normally with the program software only partially downloaded.
- When download processing execution starts, “Downloading...” is displayed and when downloading has completed successfully, the message is cleared.
- If the download is interrupted when the “Downloading ...” message is displayed, the machine does not attempt a re-try.
- The program that downloads firmware from an SD card is part of the GW controller software. If downloading this software is interrupted, the program stored in the machine may be corrupted. Because of this, it may not be possible to restart the downloading program. (In addition, if the GW controller software cannot be downloaded, other software on other SD cards cannot be downloaded.) However, it may be possible to restart the program without replacing the board by setting DIP SW 1 on the controller to ON, and re-starting.

#### 4.1.2 RECOVERY METHODS

When an error occurs during downloading, an error code is displayed on the operation panel.

- If the download procedure can be re-started, re-start the download procedure.
- If the download procedure cannot be downloaded for other than the GW controller, replace the board where the downloaded program is stored.
- If the download procedure cannot be downloaded for the GW controller, set DIP SW 1 to ON. Power the machine OFF and ON to start the downloading program. After downloading has completed, set the DIP SW to OFF then power the machine OFF and ON again.

### 4.1.3 DOWNLOAD ERROR CODES

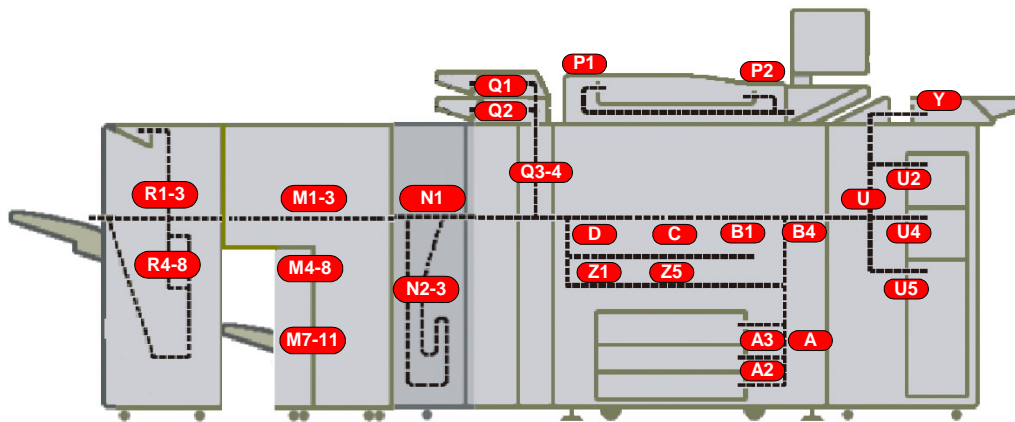
	Display	Details	Recovery
01	Reboot after card insert E01 ↓ Module ID Card No. xx/xx	Controller ROM update error 1	<ul style="list-style-type: none"> <li>Use the correct card</li> </ul>
		When the update break data is stored in NVRAM, the break module information and the decompression module capable of writing do not match.	
02	Download Error E02 Power off/on	Controller ROM update error 2.	<ul style="list-style-type: none"> <li>Cycle the machine OFF/ON to rewrite</li> </ul>
		Error occurs during ROM update program initialization.	
03	Download Error E03 Power off/on	Controller ROM update error 3	<ul style="list-style-type: none"> <li>Cycle the machine OFF/ON</li> <li>Install the missing ROM DIMM</li> </ul>
		The ROM for the write operation does not exist.	
04	Download Error E04 Power off/on	Controller ROM update error 4	<ul style="list-style-type: none"> <li>Cycle the machine OFF/ON</li> <li>Set DIP SW 1 to ON and retry</li> <li>Replace RAM DIMM</li> <li>Replace controller board</li> </ul>
		GZIP data confirmation fails. (CRC value check)	
05	Download Error E05 Power off/on	Controller ROM update error 5	<ul style="list-style-type: none"> <li>Cycle the machine OFF/ON</li> <li>Set DIP SW 1 to ON and retry</li> <li>Replace RAM DIMM</li> <li>Replace controller board</li> </ul>
		Error occurs when writing to the device.	
06	Download Error E06 Power off/on	Controller ROM update error 6	<ul style="list-style-type: none"> <li>Turn the machine power OFF/ON.</li> <li>Set controller DIPSW-1 to ON to force the machine to write to ROM.</li> <li>If you cannot force the machine to write, replace the controller board.</li> </ul>
		CPU clock error.	
19	Download Error E19 Power off/on	Controller ROM update error 7	<ul style="list-style-type: none"> <li>Software defective</li> </ul>
		Schedule data is unclear.	
20	Down Error E20 Power Off/On	System error 1 (+SC991)	<ul style="list-style-type: none"> <li>Cycle the machine OFF/ON and re-try</li> <li>Replace controller board</li> </ul>
		The physical address cannot be mapped. Software/hardware is defective	
21	Download Error E21 Power Off/On	System error 2 (+SC991)	<ul style="list-style-type: none"> <li>Cycle the machine OFF/ON and re-try.</li> <li>Replace RAM</li> <li>Replace the controller board</li> </ul>
		There is not sufficient memory to download.	

	Display	Details	Recovery
22	Download Error E22 Module ID Card No xx/xx	System error 3 (+SC991) Data fails to decompress. Card defective.	<ul style="list-style-type: none"> <li>• Cycle the machine OFF/ON and re-try.</li> <li>• Replace card</li> <li>• Replace controller board</li> </ul>
		SC991 System error 4 "Selfupdate" does not execute. Software defective.	
23	Download Error E24 Power Off/On	System error 5 Card read/write error. Software or card defective.	<ul style="list-style-type: none"> <li>• Cycle the machine OFF/ON and re-try</li> <li>• Replace the card</li> <li>• Replace the controller board</li> </ul>
30	No Valid Data E30	Download dysfunction 1 Print download is not possible. Cannot download to HDD because HDD not installed or defective.	<ul style="list-style-type: none"> <li>• HDD defective</li> <li>• HDD harness disconnected, defective</li> </ul>
31	Reboot After Card Insert E31 Module ID Card No. xx/xx	Download dysfunction 2 Download continuity error with more than one card. The second or later card is not compatible.	<ul style="list-style-type: none"> <li>• Set the correct cards in the correct order</li> </ul>
32	Reboot After Card Insert E32 Module ID Card No. xx/xx	Download dysfunction 3 Download interrupted because card is not correct, or power failure interrupted download.	<ul style="list-style-type: none"> <li>• Use the correct card</li> <li>• If power failure caused the failure, remove the card and insert another.</li> </ul>
33	No Valid Data E33	Download dysfunction 4 Card version error. Attempted to download program using a card with the wrong version number.	<ul style="list-style-type: none"> <li>• Use the correct card</li> </ul>
34	No Valid Data E34	Download dysfunction 5 Specification error. DOM card set in EXP machine, or vice versa.	<ul style="list-style-type: none"> <li>• Use the correct card</li> </ul>
35	No Valid Data E35	Download dysfunction 6 Wrong model. The inserted card is for another model.	<ul style="list-style-type: none"> <li>• Use the correct card</li> </ul>
36	No Valid Data E36	Download dysfunction 7 Module error. The program that you are attempting to download does not exist on the machine, or the contact points at the card and the machine slot are not connected.	<ul style="list-style-type: none"> <li>• Use the correct card, inserted correctly</li> <li>• Install a ROM DIMM if none is installed</li> </ul>
37	No Valid Data E37	Download dysfunction 8 Edit option card error. You attempted to employ a used card.	<ul style="list-style-type: none"> <li>• Use an unused card</li> </ul>
40	Download Error E40 Module ID Card No. xx/xx	Download result failure 1 Engine download failure.	<ul style="list-style-type: none"> <li>• Cycle the machine OFF/ON and re-try</li> </ul>
41	Download Error E41 Module ID Card No. xx/xx	Download result failure 2 Fax download failure.	<ul style="list-style-type: none"> <li>• Cycle the machine OFF/ON and re-try</li> </ul>

Trouble-shooting

	<b>Display</b>	<b>Details</b>	<b>Recovery</b>
42	Download Error E42 Module ID Card No. xx/xx	Download result failure 3 Operation panel or language download failed. For this error, sometimes the message may not be displayed.	<ul style="list-style-type: none"> <li>• Cycle the machine OFF/ON and re-try</li> </ul>
43	Download Error E43 Module ID Card No. xx/xx	Download result failure 4 Print download failed.	<ul style="list-style-type: none"> <li>• Cycle the machine OFF/ON and re-try</li> </ul>
44	Download Error E44 Module ID Card No.	Download result failure 5 The data targeted for the write operation could not be accessed.	<ul style="list-style-type: none"> <li>• Turn the machine power OFF/ON.</li> <li>• Replace the SD card with the start-up SD card that has the source data.</li> <li>• Set controller DIPSW-1 to ON to force the machine to write</li> <li>• If you cannot force the machine to write, replace the controller board.</li> </ul>
50	No Valid Data E50	Download invalid The source data for the update could not be authenticated.	<ul style="list-style-type: none"> <li>• Use the correct SD card.</li> </ul>
51	(no display)	Remote ROM update failure 1 The source data for the ROM update is corrupted because the machine is operating and an SC code has been issued.	<ul style="list-style-type: none"> <li>• Turn the machine power OFF/ON and try again.</li> </ul>
52	(no display)	Remote ROM update failure 2 The source data received for the ROM update is corrupted; it failed a SUM check due to its abnormal length.	<ul style="list-style-type: none"> <li>• Try again with the correct data.</li> </ul>
53	(no display)	Download result failure 6 The previous download in progress was cancelled.	<ul style="list-style-type: none"> <li>• Do the download procedure again.</li> </ul>

### 4.1.4 PAPER JAM CODES



B234T050.WMF

When a jam occurs, a graphic illustration of the copier, finisher, booklet finisher, Z-folding unit, cover interposer tray, LCT and bypass tray appears on the operation panel screen.

The location of the jammed paper becomes lit (does not flash) in the graphic illustration.

A jam code is displayed on the operation panel to indicate the cause and location of the jam. For more details, please refer to the tables on the following pages.

**Note concerning the tables**

- Late: Paper should be at the sensor, but it is not
- Lag: There should be no paper at the sensor, but paper is present

Trouble-shooting



**Paper Jam Locations – Copier e-STUDIO901/1101/1351**

Display	No.	Jam Cause
A	3	1st Paper Feed Sensor – Late
A3	4	2nd Paper Feed Sensor – Late
A2	5	3rd Paper Feed Sensor – Late
U2	6	4th Paper Feed Sensor – Late
U4	7	5th Paper Feed Sensor – Late
U5	8	6th Paper Feed Sensor – Late
V	9	7th Paper Feed Sensor – Late
B1	10	1st Transport Sensor - Late
B1	11	2nd Transport Sensor - Late
B1	12	3rd Transport Sensor - Late
U	13	4th Transport Sensor - Late
U	14	5th Transport Sensor - Late
U	15	6th Transport Sensor - Late
U	16	7th Transport Sensor - Late
B4	17	LCT Relay Sensor - Late
B4	18	LCT Exit Sensor - Late
B1	19	Upper Relay Sensor - Late
C	20	Registration Sensor - Late
D	21	Job Time Sensor – Late
D	22	Exit Sensor - Late
Z1	23	Duplex Entrance Sensor - Late
Z4	24	Duplex Transport Sensor 1 – Late
Z4	25	Duplex Transport Sensor 2 – Late
Z4	26	Duplex Transport Sensor 3 – Late
Z1	27	Duplex Inverter Sensor - Late
Z1	28	Duplex Inverter Relay Sensor - Late
A	53	1st Paper Feed Sensor – Lag
A3	54	2nd Paper Feed Sensor – Lag
A2	55	3rd Paper Feed Sensor – Lag
U2	56	4th Paper Feed Sensor – Lag
U4	57	5th Paper Feed Sensor – Lag
U5	58	6th Paper Feed Sensor – Lag
V	59	7th Paper Feed Sensor – Lag
U	60	1st Transport Sensor - Lag
U	61	2nd Transport Sensor - Lag
U	62	3rd Transport Sensor - Lag
U	63	4th Transport Sensor - Lag
U	64	5th Transport Sensor - Lag
U	65	6th Transport Sensor - Lag
U	66	7th Transport Sensor - Lag
B4	67	LCT Relay Sensor – Lag
U	68	LCT Exit Sensor - Lag
B1	69	Upper Relay Sensor - Lag
C	70	Registration Sensor - Lag
D	71	Job Time Sensor – Lag
D	72	Exit Sensor - Lag
Z1	73	Duplex Entrance Sensor - Lag
Z4	74	Duplex Transport Sensor 1 – Lag
Z4	75	Duplex Transport Sensor 2 – Lag
Z4	76	Duplex Transport Sensor 3 – Lag
Z1	77	Duplex Inverter Sensor - Lag
Z1	78	Duplex Inverter Relay Sensor - Lag
B1	99	Double-Feed Sensor

**Paper Jam Locations – Finisher SR5000 (B830)**

Display	No.	Jam Cause
R1~3	101	Entrance Sensor - Late
R1~3	102	Entrance Sensor – Lag
R1~3	103	Upper Tray Exit Sensor – Late
R1~3	104	Upper Tray Exit Sensor – Lag
R1~3	105	Shift Tray Exit Sensor – Late
R1~3	106	Shift Tray Exit Sensor – Lag
R4~8	107	Staple Tray Exit Sensor – Late
R4~8	108	Staple Tray Exit Sensor – Lag
R4~8	109	Pre-Stack Paper Sensor - Late
R4~8	110	Pre-Stack Paper Sensor – Lag
R4~8	111	Stack Feed-Out Belt HP Sensor
R1~3	112	Transport Motors
R1~3	113	Shift Tray Lift Motor
R4~8	114	Jogger Motor
R1~3	115	Shift Motor
R4~8	116	Staple Motor
R4~8	117	Stack Feed-Out Belt Motor
R1~3	118	Punch Motor
R4~8	119	
R4~8	120	Pre-Stack Transport Motor
R1~3	121	

**Paper Jam Locations – Cover Interposer Tray CI5000 (B835)**

Display	No.	Jam Cause
Q1	130	1st Paper Feed Sensor – Late
Q1	131	1st Paper Feed Sensor – Lag
Q2	132	2nd Paper Feed Sensor – Late
Q2	133	2nd Paper Feed Sensor – Lag
Q3~4	134	1st Transport Sensor – Late
Q3~4	135	1st Transport Sensor – Lag
Q3~4	136	2nd Transport Sensor – Late
Q3~4	137	2nd Transport Sensor – Lag
Q3~4	138	1st Vertical Transport Sensor - Late
Q3~4	139	1st Vertical Transport Sensor - Lag
Q3~4	140	2nd Vertical Transport Sensor - Late
Q3~4	141	2nd Vertical Transport Sensor - Lag
Q3~4	142	Vertical Exit Sensor – Late
Q3~4	143	Vertical Exit Sensor - Lag
Q3~4	144	Entrance Sensor – Late
Q3~4	145	Entrance Sensor – Lag
Q3~4	146	Exit Sensor – Late
Q3~4	147	Exit Sensor – Lag
Q1	148	1st Lift Motor
Q2	149	2nd Lift Motor
Q1	150	1st Pick-Up Motor
Q2	151	2nd Pick-Up Motor

Trouble-shooting

**Paper Jam Locations – Booklet Finisher BK5000 (B836)**

Display	No.	Jam Cause
M1-M3	160	Entrance Sensor – Late
M1-M3	161	Entrance Sensor – Lag
M4-M6	162	Stapling Tray Paper Sensor – Late
M4-M6	163	Stapling Tray Paper Sensor – Lag
M7-11	164	Stack Present Sensor – Late
M7-11	165	Stack Present Sensor – Lag
M7-11	166	Fold Unit Entrance Sensor – Late
M7-11	167	Fold Unit Entrance Sensor – Lag
M7-11	168	Fold Unit Exit Sensor – Late
M7-11	169	Fold Unit Exit Sensor – Lag
M7-11	170	Exit Sensor – Late
M7-11	171	Exit Sensor – Lag
M7-11	174	Jogger Fence
M7-11	175	Stack Feed-Out Belt
M7-11	176	Booklet Stapler – Front
M7-11	177	Booklet Stapler – Rear
M7-11	178	Stack Junction Gate Motor
M7-11	179	Clamp Roller Retraction Motor
M7-11	180	Bottom Fence Lift Motor
M7-11	181	Fold Plate Motor

**Paper Jam Locations – Z-Folding Unit (B660)**

Display	No.	Jam Cause
N1	200	Feed Sensor – Late
N1	201	Feed Sensor – Lag
N2-N3	202	Fold Timing Sensor – Late
N2-N3	203	Fold Timing Sensor – Lag
N2-N3	204	Leading Edge Sensor – Late
N2-N3	205	Leading Edge Sensor – Lag
N2-N3	206	Upper Stopper HP Sensor – Late
N2-N3	207	Upper Stopper HP Sensor – Lag
N1	208	Upper Exit Sensor 1 – Late
N1	209	Upper Exit Sensor 1 - Lag
N2-N3	210	Lower Exit Sensor 2 – Late
N2-N3	211	Lower Exit Sensor 2 – Lag
N2-N3	212	Lower Exit Sensor 3 – Late
N2-N3	213	Lower Exit Sensor 3 – Lag
N1	214	Feed Motor
N2-N3	215	Lower Stopper Motor
N2-N3	216	Upper Stopper Motor
N2-N3	217	Fan Motor

## 4.2 SERVICE CALL (SC) CONDITIONS

### 4.2.1 SERVICE MODE LOCK/UNLOCK

At locations where the machine contains sensitive data, the service 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.

1. If you cannot go into the SP mode, ask the Administrator to log in with the Operator Tool and then set "Service Mode Lock" to OFF. After he or she logs in:  
Operator Tools > System Settings > Administrator Tools > Service Mode Lock > OFF
  - This unlocks the machine and lets you get access to all the SP codes.
  - The service engineer 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.

## 4.2.2 SERIES SERVICE CALL CONDITIONS

There are 4 levels of Service Call (SC) conditions.

Level	Definition	Reset Procedure
A	Fusing unit SCs displayed on the operation panel. The machine is disabled. The operator cannot reset the SC.	Enter SP mode, then turn the main power switch OFF and ON.
B	SCs that disable only the features that use the defective item. These SCs are not shown to the operator 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	Turning the operation switch (or main power switch) off then on resets these SCs. These SCs are displayed on the operation panel and displayed again if the error reoccurs.	Turn the operation switch (or main power switch) OFF and ON.

### 4.2.3 SC CODE DESCRIPTIONS


#### Important

- If a problem concerns a circuit board, disconnect and reconnect the connectors and then test the machine. Often a loose or disconnected harness is the cause of the problem. Always do this before you decide to replace the PCB.
- If a motor lock error occurs, check the mechanical load before you decide to replace the motor or sensors.
- When a Level “A” or “B” SC occurs while in an SP mode, the machine cannot display the SC number. If this occurs, check the SC number after leaving the SP mode.
- If you set **SP 5875** to ‘on’, the machine reboots automatically when the machine issues a Level “B&D” SC code. This is done for Level “D” SC codes only.

#### CAUTION

**Never turn OFF the main power switch when the power LED is lit or flashing. To avoid damaging the hard disk or memory, press the operation switch to switch the power off, wait for the power LED to go off, and then switch the main power switch OFF.**

Trouble-  
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**NOTE:** The main power LED () lights or flashes while the platen cover or ADF is open, while the main machine is communicating with a facsimile or the network server, or while the machine is accessing the hard disk or memory for reading or writing data.

**SC Code Group Designations**

<b>Group</b>	<b>SC</b>	<b>System</b>
Scanning	100	Lamp Control
	120	Scanning
	140	Magnification
	160	Filter Processing
	190	Other
Image Creation	300	Charge
	320	Image Writing (Exposure)
	340	Development
	360	Image Memory
	400	Transfer
	410	Separation
	420	Cleaning
	430	Quenching
	440	Drum
490	Other	
Feed, Transport, Duplexing, Fusing	500	Feed, Transport
	520	Duplexing
	540	Fusing
	590	Other
Communication	600	Internal Communication
	620	External Communication
	690	Other
Peripheral Devices	700	ADF
	720	Finishers
	790	Other
Other	900	Counters
	920	Memory
	990	Other

**4.2.4 SC CODE DESCRIPTIONS**

<b>SC101</b>	<b>B</b>	<b>Exposure Lamp Error</b>	
		The standard white level was not detected properly when scanning the white plate.	<ul style="list-style-type: none"> <li>• Exposure lamp defective</li> <li>• Lamp stabilizer defective</li> <li>• Exposure lamp connector defective</li> <li>• Scanner motor control unit (MCU board) defective</li> <li>• SBU defective</li> <li>• Dirty standard white plate</li> <li>• Dirty scanner mirror or scanner mirror or lens block out of position</li> </ul>

<b>SC120</b>	<b>B</b>	<b>Scanner Home Position Error 1</b>	
		The scanner home position sensor does not detect the OFF condition during initialization or copying	<ul style="list-style-type: none"> <li>• Scanner home position sensor defective</li> <li>• Poor connection between scanner home position sensor and MCU board</li> <li>• Scanner motor control unit (MCU board) defective</li> <li>• Scanner drive wire, timing belt, pulleys, or carriage out of position</li> <li>• Scanner motor defective</li> <li>• Poor connection or defective harness between MCU board and scanner motor</li> </ul>

<b>SC121</b>	<b>B</b>	<b>Scanner Home Position Error 2</b>	
		Scanner home position sensor does not detect ON.	<ul style="list-style-type: none"> <li>• Scanner home position sensor defective</li> <li>• Poor connection between MCU board and scanner home position sensor</li> <li>• Harness between MCU board and scanner home position sensor defective</li> <li>• MCU board defective</li> <li>• Scanner drive wire, timing belt, pulleys, or carriage out of position</li> <li>• Scanner motor defective</li> <li>• Harness between MCU board and scanner motor disconnected</li> </ul>

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<b>SC124</b>	<b>B</b>	<b>Encoder Signal Error</b>	
		The scanner motor encoder connector is not set correctly, or the encoder signal was not input.	<ul style="list-style-type: none"> <li>• Scanner motor encoder connector disconnected</li> <li>• Scanner motor lead connector disconnected</li> <li>• Scanner motor defective</li> <li>• MCU (scanner motor control unit) board defective</li> <li>• Scanner drive wire, timing belt, pulleys, or carriage installation incorrect</li> <li>• Power supply connector disconnected (+38V ±24V)</li> <li>• Power supply unit (PSU-E board) defective</li> </ul>

<b>SC125</b>	<b>B</b>	<b>Scanner Motor Error 1</b>	
		Scanner motor stopped before feedback from scanner HP sensor detected, or motor speed too slow when detected at scanner HP sensor.	<ul style="list-style-type: none"> <li>• Scanner motor defective (high torque)</li> <li>• Overload on scanner drive mechanism</li> <li>• MCU (scanner motor control unit) control board defective</li> </ul>

<b>SC126</b>	<b>B</b>	<b>Scanner Motor Error 2</b>	
		The scanner motor does not stop within 15 mm after the scanner home position sensor turns on when the scanner returns.	<ul style="list-style-type: none"> <li>• Scanner motor defective (low torque)</li> <li>• Overload on scanner drive mechanism</li> <li>• MCU (scanner motor control unit) board defective</li> </ul>

<b>SC127</b>	<b>B</b>	<b>Scanner Motor Error 3</b>	
		The scanner motor rotates in the opposite direction to the signal from the MCU board.	<ul style="list-style-type: none"> <li>• Scanner motor defective (motor lead connected incorrectly)</li> <li>• MCU board defective (scanner motor control unit)</li> </ul>

<b>SC128</b>	<b>C</b>	<b>Scanner Motor Error 4</b>	
		The scanner motor speed does not reach the target speed by the time the scanning start point is reached.	<ul style="list-style-type: none"> <li>• Scanner motor defective</li> <li>• Overload on scanner mechanism</li> <li>• PSU-Eb board defective</li> <li>• MCU (scanner motor control unit) board defective</li> </ul>

<b>SC129</b>	<b>C</b>	<b>Scanner Motor Error 5</b>	
		The scanner motor speed is abnormal. The machine will not stop scanning even after the machine detects that motor speed is abnormal.	<ul style="list-style-type: none"> <li>• Scanner motor defective</li> <li>• Scanner drive mechanism defective</li> <li>• PSU-Eb board defective</li> <li>• MCU (scanner motor control unit) board defective</li> </ul>

<b>SC141</b>	<b>B</b>	<b>Black level detection error</b>	
		When the scanner was turned ON, AGC (automatic gain control) failed to achieve the target value of $10 \pm 3$ .	<ul style="list-style-type: none"> <li>• SBU <math>\leftrightarrow</math> IPU harnesses defective</li> <li>• BCU <math>\leftrightarrow</math> IPU harnesses defective</li> <li>• SBU defective</li> <li>• IPU defective</li> <li>• BCU defective</li> </ul>

<b>SC142</b>	<b>B</b>	<b>White level detection error</b>	
		When the scanner was turned ON, the second sampling by AGC (automatic gain control) failed to achieve a value within the range $-7$ to $0$ of the target value $128$ .	<ul style="list-style-type: none"> <li>• Standard white plate defective, dirty</li> <li>• Moisture inside the scanner unit</li> <li>• SBU <math>\leftrightarrow</math> IPU harnesses defective</li> <li>• BCU <math>\leftrightarrow</math> IPU harnesses defective</li> <li>• SBU defective</li> <li>• IPU defective</li> <li>• BCU defective</li> </ul>

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<b>SC143</b>	<b>C</b>	<b>SBU Error 1</b>	
		When the scanner was turned ON, the SBU (Sensor Board Unit) level adjustment, black level check, and final SBU white level check failed.	<ul style="list-style-type: none"> <li>• SBU defective</li> <li>• IPU defective</li> <li>• BCU defective</li> <li>• Harness between the SBU and IPU defective</li> <li>• Harness between the BCU-IPU defective</li> <li>• Standard white plate not installed correctly, or is dirty</li> <li>• Scanner mirrors and/or lenses are dirty or installed incorrectly</li> </ul>

<b>SC144</b>	<b>B</b>	<b>SBU Error 2</b>	
		<p>At power ON:</p> <ul style="list-style-type: none"> <li>• The SYDI terminal signal did not go HIGH within 1 s</li> <li>• The specified SBU (Sensor Board Unit) ID (GASBUP and LM98513) could not be read after 3 tries</li> </ul>	<ul style="list-style-type: none"> <li>• SBU defective</li> <li>• BCU defective</li> <li>• Harness between SBU and IPU defective</li> </ul>

<b>SC161</b>	<b>B</b>	<b>IPU Error</b>	
		At power on, or when the machine returns from an energy save mode, the self-diagnostic program returned an IPU error.	<ul style="list-style-type: none"> <li>• IPU defective</li> <li>• Connection between SBU and IPU is loose, broken, or defective</li> </ul>

<b>SC165</b>	<b>A</b>	<b>Illegal Copy Data Security Error</b>	
		The "Data Security for Copying Feature" in the User Tools is set to "ON" without the ICIB-2 installed.	<ul style="list-style-type: none"> <li>• Copy Data Security Unit option board is not installed</li> <li>• Copy Data Security Unit board is defective</li> </ul> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>• The "Data Security for Copying" feature in the User Tools must be set to "OFF" before the ICIB-2 is removed.</li> <li>• To switch this feature OFF/ON: [User Tools]&gt; System Settings&gt; Administrator Tools&gt; Next.&gt; Data Security for Copying&gt; Select Off/On.</li> </ul>

<b>SC180</b>	<b>B</b>	<b>Scanner Unit Fan Error: Scanner Intake Fan</b>	
		The MCU issued a lock signal fro the scanner intake fan (rear, right).	<ul style="list-style-type: none"> <li>• Fan, MCU, SIB harnesses loose or defective</li> <li>• Scanner intake fan motor defective</li> <li>• MCU defective</li> <li>• SIB defective</li> </ul>

<b>SC181</b>	<b>B</b>	<b>Scanner Unit Fan Error: Lamp Regulator Fan (Right)</b>	
		The MCU issued a lock signal for the lamp regulator fan (front, right).	<ul style="list-style-type: none"> <li>• Fan, MCU harness loose, defective</li> <li>• Lamp regulator (right) fan motor defective</li> <li>• MCU defective</li> <li>• SIB defective</li> </ul>

<b>SC182</b>	<b>B</b>	<b>Scanner Unit Fan Error: SBU Cooling Fan</b>	
		The MCU issued a motor lock signal for the SBU cooling fan in the scanner unit	<ul style="list-style-type: none"> <li>• Scanner unit harness loose, defective</li> <li>• Fan, MCU harness loose, defective</li> <li>• SBU Fan motor defective</li> <li>• MCU defective</li> <li>• SIB defective</li> </ul>

<b>SC183</b>	<b>B</b>	<b>Scanner Unit Fan Error: Lamp Regulator Fan (Left)</b>	
		The MCU issued a lock signal for the lamp regulator fan (front, left).	<ul style="list-style-type: none"> <li>• Scanner unit harness loose, defective</li> <li>• Fan, MCU harness loose, defective</li> <li>• Lamp regulator (left) fan motor defective</li> <li>• MCU defective</li> <li>• SIB defective</li> </ul>

<b>SC185</b>	<b>B</b>	<b>Exposure Lamp 1 Lamp Regulator (Right) Error</b>	
		The MCU detected a defect in the lamp regulator (right) when the 1st exposure lamp lit. .	<ul style="list-style-type: none"> <li>• 1st exposure lamp defective</li> <li>• 1st lamp flat film cable loose or defective</li> <li>• MCU ↔ lamp regulator (left) harness defective</li> <li>• Lamp regulator (left) is defective</li> <li>• MCU defective</li> <li>• SIB defective</li> </ul>

<b>SC186</b>	<b>B</b>	<b>Exposure Lamp 2 Lamp Regulator (Left) Error</b>	
		The MCU detected a defect in the lamp regulator (left) when the 2nd exposure lamp lit. .	<ul style="list-style-type: none"> <li>• 2nd exposure lamp defective</li> <li>• 2nd lamp flat film cable loose or defective</li> <li>• MCU ↔ lamp regulator (left) harness defective</li> <li>• Lamp regulator (left) is defective</li> <li>• MCU defective</li> <li>• SIB defective</li> </ul>

<b>SC187</b>	<b>B</b>	<b>Scanner Unit Fan Error: Scanner Unit Exhaust Fan</b>	
		The MCU issued a lock signal for the scanner unit exhaust fan (rear, left).	<ul style="list-style-type: none"> <li>• Scanner unit harness loose, defective</li> <li>• Fan, MCU harness loose, defective</li> <li>• Scanner unit exhaust fan motor defective</li> <li>• MCU defective</li> <li>• SIB defective</li> </ul>

<b>SC188</b>	<b>B</b>	<b>Scanner Unit Fan Error: Scanner Motor Cooling Fan</b>	
		The MCU issued a lock signal for the scanner motor cooling fan.	<ul style="list-style-type: none"> <li>• Scanner unit harness loose, defective</li> <li>• Fan, MCU harness loose, defective</li> <li>• Scanner unit exhaust fan motor defective</li> <li>• MCU defective</li> <li>• SIB defective</li> </ul>

<b>SC202</b>	<b>B</b>	<b>Polygon Motor Error 1: ON Timeout</b>	
		The polygon mirror motor did not reach its operating speed within 20 s after the polygon motor switched on.	<ul style="list-style-type: none"> <li>• Connection between the polygon mirror motor control board and the motor is loose, broken, or defective</li> <li>• Polygon mirror motor defective</li> <li>• Polygon mirror motor control board defective</li> <li>• IPU defective</li> <li>• BCU defective</li> </ul>

Trouble-shooting

<b>SC203</b>	<b>B</b>	<b>Polygon Motor Error 2: OFF Timeout</b>	
		<p>The polygon mirror motor did not go off within 3 s after the motor was switched off.</p>	<ul style="list-style-type: none"> <li>• Connection between the polygon mirror motor control board and the motor is loose, broken, or defective</li> <li>• Polygon mirror motor defective</li> <li>• Polygon mirror motor control board defective</li> <li>• IPU defective</li> <li>• BCU defective</li> </ul>

<b>SC204</b>	<b>B</b>	<b>Polygon Motor Error 3: XSCRDY Signal (polygon mirror motor lock signal) Error</b>	
		<p>The machine detected that the polygon mirror motor XSCRDY signal went inactive :</p> <ul style="list-style-type: none"> <li>• While an image was being created</li> <li>• During the output of a synchronous laser detection signal</li> </ul>	<ul style="list-style-type: none"> <li>• Switch the machine OFF/ON (problem was probably due to electronic noise)</li> <li>• Replace the harness if cycling the machine OFF/ON does not solve the problem</li> <li>• Polygon motor defective</li> <li>• Polygon mirror motor control board defective</li> <li>• IPU defective</li> <li>• BCU defective</li> </ul>

<b>SC205</b>	<b>B</b>	<b>Polygon Motor Error 4: Unstable Timeout</b>	
		<p>The machine detected that the polygon mirror motor signal went inactive at some time other than:</p> <ul style="list-style-type: none"> <li>• While an image was being created</li> <li>• During the output of a synchronous laser detection signal</li> </ul>	<ul style="list-style-type: none"> <li>• Switch the machine OFF/ON (problem was probably due to electronic noise)</li> <li>• Replace the harness if cycling the machine OFF/ON does not solve the problem</li> <li>• Polygon motor defective</li> <li>• Polygon mirror motor control board defective</li> <li>• IPU defective</li> </ul>

<b>SC220</b>	<b>B</b>	<b>Synchronization Detector Error 1: LD0</b>	
		<p>When LD0 fired with the polygon mirror motor rotating at normal speed, an synchronous detection signal was not output within 250 ms.</p>	<ul style="list-style-type: none"> <li>• Cycle the machine OFF/ON</li> <li>• Harness connector of the laser synchronization detector board is loose, broken, defective</li> <li>• Laser synchronization detector board defective or installed improperly</li> <li>• LD unit defective</li> <li>• IPU defective</li> <li>• BCU defective</li> </ul>

<b>SC221</b>	<b>B</b>	<b>Synchronization Detection Error 2: Other Than LD0</b>	
		When a laser diode (other than LD0) fired with the polygon mirror motor rotating at normal speed, an synchronous detection signal was not output within 250 ms.	<ul style="list-style-type: none"> <li>• Cycle the machine OFF/ON</li> <li>• Harness connector of the laser synchronization detector board is loose, broken, defective</li> <li>• Laser synchronization detection board defective or installed improperly</li> <li>• LD unit defective</li> <li>• IPU defective</li> <li>• BCU defective</li> </ul>

<b>SC230</b>	<b>B</b>	<b>FGATE Error 1: Signal Failed to Turn On</b>	
		The FGATE signal did not switch on within 1 s of when the lasers were supposed to start writing the image.	<ul style="list-style-type: none"> <li>• Cycle the machine OFF/ON</li> <li>• Check the harnesses, connectors of the IPU, Controller, BCU</li> <li>• GAVD on the IPU board defective</li> <li>• Controller defective</li> <li>• BCU defective</li> </ul>

<b>SC231</b>	<b>B</b>	<b>FGATE Error 2: Signal Failed to Turn Off</b>	
		The FGATE signal did not switch off within 7 s of when the lasers started writing the image, or remained off at the beginning of the next job.	<ul style="list-style-type: none"> <li>• Cycle the machine OFF/ON</li> <li>• Check the harnesses, connectors of the IPU, Controller, BCU</li> <li>• GAVD on the IPU board defective</li> <li>• Controller defective</li> <li>• BCU defective</li> </ul>

<b>SC240</b>	<b>B</b>	<b>LD Error</b>	
		The LD error terminal of the LDB asserted an error.	<ul style="list-style-type: none"> <li>• Cycle the machine OFF/ON</li> <li>• LDB harness connectors loose, broken, defective</li> <li>• LDB defective</li> <li>• IPU defective</li> <li>• BCU defective</li> </ul>

<b>SC300</b>	<b>B</b>	<b>Charge Corona Error 1: Charge Leak</b>	
		A abnormal detection signal (H) was detected for more than 60 ms. Also, during this time, the detected voltage remained below -4V for more than 50 ms.)	<ul style="list-style-type: none"> <li>• Cycle the machine OFF/ON</li> <li>• CGB power pack harness connectors loose, broken, defective</li> <li>• Corona wire caps loose, missing</li> <li>• CGB power pack defective</li> <li>• Charge corona unit connectors loose, broken, defective</li> </ul>

Trouble-shooting

<b>SC304</b>	<b>B</b>	<b>Charge Corona Error 2: Grid Leak</b>	
		<p>A high feedback voltage (H) for the charge corona 60 ms. Also, during this time, the voltage of the charge grid remained less than -400V</p>	<ul style="list-style-type: none"> <li>• Cycle the machine OFF/ON</li> <li>• Charge unit set incorrectly (not locked in place)</li> <li>• Charge unit connector loose, broken, defective</li> </ul>

<b>SC305</b>	<b>C</b>	<b>Charge Corona Wire Cleaner Error 1</b>	
		<p>One of these occurred after the charge corona wire cleaner motor was switched on:</p> <ul style="list-style-type: none"> <li>• The charge corona wire cleaner motor remained locked within 10 sec after the motor switched on.</li> <li>• The charge corona wire cleaner motor failed to lock within 45 s after the start of cleaning.</li> </ul>	<ul style="list-style-type: none"> <li>• Cycle the machine OFF/ON</li> <li>• Charge corona wire cleaner motor defective</li> </ul>

<b>SC306</b>	<b>D</b>	<b>Charge Corona Wire Cleaner Error 2</b>	
		<p>The cleaning pad of the charge corona wire cleaner mechanism failed to return to its home position.</p>	<ul style="list-style-type: none"> <li>• Connectors between motor and IOB loose, broken, defective</li> <li>• Charge corona wire dirty, defective, broken</li> <li>• Wire cleaning pad defective</li> <li>• Motor or motor board in motor unit defective</li> </ul>

<b>SC312</b>	<b>C</b>	<b>Pre-Charge Output Error 1: Leak</b>	
		<p>An abnormal signal (H) was detected continuously for 60 ms. During this time the pre-charge unit voltage remained less than -3 kV for more than 50 ms.</p>	<ul style="list-style-type: none"> <li>• Pre-charge unit set incorrectly.</li> <li>• Pre-charge unit contact is broken or defective.</li> </ul>

<b>SC313</b>	<b>C</b>	<b>Pre-Charge Output Error 1: Grid Output</b>	
		<p>An abnormal signal (H) was detected continuously for 60 ms. During this time the pre-charge grid voltage remained less than -400V for more than 50 ms.</p>	<ul style="list-style-type: none"> <li>• Pre-charge unit set incorrectly</li> <li>• Pre-charge unit contact is broken or defective</li> </ul>

<b>SC320</b>	<b>B</b>	<b>Development Bias Error</b>	
		<p>An abnormal detection signal (H) was detected continuously for 60 ms. During this time the voltage exceeded -90µA for more than 50 ms.</p>	<ul style="list-style-type: none"> <li>• Development power pack connectors loose, broken, defective</li> <li>• Development unit connectors loose, broken, defective</li> <li>• Development power pack defective</li> </ul>

<b>SC344</b>	<b>C</b>	<b>Development Unit Set Error</b>	
		The development is not installed, or it is installed incorrectly. The development unit set switch is checked every time the machine is turned ON and when the front doors are closed.	<ol style="list-style-type: none"> <li>1. Pull out the development unit.</li> <li>2. Install it again.</li> <li>3. Close the front doors</li> <li>4. Cycle the machine OFF/ON</li> </ol>

<b>SC360</b>	<b>C</b>	<b>TD Sensor Output Error 1: Vt Above Upper Limit</b>	
		The result of the check of the TD sensor output (Vt) after every copy for 10 continuous copies was $V_t \geq 4.0V$ (out of range).	<ul style="list-style-type: none"> <li>• TD sensor dirty or defective</li> <li>• TD sensor connector to BCU loose, broken, defective</li> <li>• IOB defective</li> <li>• BCU defective</li> </ul>

<b>SC364</b>	<b>C</b>	<b>TD Sensor Output Error 2: Vt Below Lower Limit</b>	
		The result of the check of the TD sensor output (Vt) after every copy for 10 continuous copies was $V_t \leq 0.5V$ (out of range).	<ul style="list-style-type: none"> <li>• TD sensor dirty or defective</li> <li>• TD sensor connector to BCU loose, broken, defective</li> <li>• IOB defective</li> <li>• BCU defective</li> </ul>

Trouble-shooting

<b>SC368</b>	<b>B</b>	<b>TD Sensor Adjustment Error 1</b>	
		The value for Vref could not be set because: <ul style="list-style-type: none"> <li>• The target voltage could not reach 2.5V with maximum PWM (255) application</li> <li>• The target voltage exceeded 2.5V with minimum PWM (0) application.</li> </ul>	<ul style="list-style-type: none"> <li>• TD sensor connector or harness to the IOB loose, broken, defective</li> <li>• TD sensor defective</li> <li>• IOB defective</li> <li>• BCU defective</li> </ul>

<b>SC372</b>	<b>B</b>	<b>TD Sensor Adjustment Error 2</b>	
		The TD sensor output voltage is not adjusted to $2.5 \pm 0.1 V$ within 60 s during initialization of the TD sensor with <b>SP2801</b> . <b>Note:</b> When an abnormal condition occurs, "0" is displayed for <b>SP2906</b> (Vcont Manual Setting).	<ul style="list-style-type: none"> <li>• TD sensor connector, harness loose, broken, defective</li> <li>• TD sensor defective</li> <li>• IOB defective</li> </ul>



<b>SC396</b>	<b>B</b>	Drum Motor Error	
		The drum motor lock signal is longer than 2 s while the drum motor is on.	<ul style="list-style-type: none"> <li>• Drum motor connector, harness loose, broken, defective</li> <li>• Drum motor defective</li> <li>• Mechanical problem with the drum unit, transfer belt, toner collection unit</li> </ul>

<b>SC400</b>	<b>C</b>	ID Sensor Error 1: Background Adjustment Error	
		<p>One of the following ID sensor output voltages was detected for Vsg (the reading of the bare drum surface) at ID sensor initialization.</p> <ul style="list-style-type: none"> <li>• The reading was less than 4V at PWM=255 (Maximum PWM).</li> <li>• The reading was over 4V at PWM=0 (Minimum PWM)</li> </ul>	<ul style="list-style-type: none"> <li>• ID sensor harness, connector was loose, broken, defective</li> <li>• ID sensor dirty</li> <li>• ID sensor defective</li> <li>• IOB defective</li> <li>• BCU defective</li> <li>• LD unit defective</li> <li>• CGB / PPG power pack defective</li> </ul>

**NOTE**

- The most recent correct PWM value is used for control.
- The value displayed by **SP3103** (ID Sensor Output Display) is the actual, incorrect value.

<b>SC401</b>	<b>C</b>	ID Sensor Error 2: Background Output Error	
		<p>One of the following conditions were detected when checking the ID sensor pattern:</p> <ul style="list-style-type: none"> <li>• <math>V_{sg} \leq 2.5 \text{ V}</math></li> <li>• <math>V_{sg} = 0 \text{ V}</math></li> <li>• The ID sensor output voltage = 5.0 V and PWM signal input to ID sensor = 0</li> </ul> <p>Note: Vsg is the ID sensor output after checking the bare drum surface in the ID sensor pattern.</p>	<ul style="list-style-type: none"> <li>• ID sensor harness, connector is loose, broken, or defective</li> <li>• ID sensor dirty</li> <li>• ID sensor defective</li> <li>• IOB defective</li> <li>• LD Unit defective</li> <li>• BCU defective</li> <li>• CGB / PPG power pack defective</li> </ul>

**NOTE**

- The SC code is not displayed; only the logging data is incremented.
- When this SC is issued, only the TD sensor output (Vt) (even for jobs less than 10 copies) and Vref is not updated.
- After an abnormal condition is detected, **SP3103** (ID Sensor Output Display) shows "Vsp = Vsg = 0" (or "5.0V").
- If the next ID sensor pattern check is normal, this restores normal operation.

<b>SC402</b>	<b>C</b>	<b>ID Sensor Error 3: ID Sensor Pattern Error</b>	
		One of the following ID sensor output voltages was detected when checking the covered area of the ID sensor pattern: <ul style="list-style-type: none"> <li>• Vsp ≥ 2.5 V</li> <li>• Vsp = 0 V</li> </ul>	<ul style="list-style-type: none"> <li>• ID sensor harness, connector is loose, broken, or defective</li> <li>• ID sensor dirty</li> <li>• ID sensor defective</li> <li>• IOB defective</li> <li>• LD Unit defective</li> <li>• BCU defective</li> <li>• Development power pack defective</li> </ul>

**NOTE**

- The SC code is not displayed; only the logging data is incremented.
- When this SC is issued, only the TD sensor output (Vt) (even for jobs less than 10 copies) and Vref is not updated.
- After an abnormal condition is detected, **SP3103** (ID Sensor Output Display) shows "Vsp = Vsg = 0" (or "5.0V").
- If the next ID sensor pattern check is normal, this restores normal operation.

<b>SC406</b>	<b>C</b>	<b>ID Sensor Error 4: ID Sensor Pattern Not Detected</b>	
		At the ID sensor pattern check of the covered area of the ID sensor pattern, the value of the edge voltage was not 2.5 V for 1.5 seconds.	<ul style="list-style-type: none"> <li>• ID sensor harness, connector is loose, broken, or defective</li> <li>• ID sensor dirty</li> <li>• ID sensor defective</li> <li>• IOB defective</li> <li>• LD Unit defective</li> <li>• BCU defective</li> <li>• Development power pack defective</li> </ul>

**NOTE**

- The SC code is not displayed; only the logging data is incremented.
- When this SC is issued, only the TD sensor output (Vt) (even for jobs less than 10 copies) and Vref is not updated.
- After an abnormal condition is detected, **SP3103** (ID Sensor Output Display) shows "Vsp = Vsg = 0" (or "5.0V").
- If the next ID sensor pattern check is normal, this restores normal operation.

<b>SC420</b>	<b>C</b>	<b>Drum Potential Sensor Error 1: Vd Adjustment Error</b>	
		When Vd (drum potential of the latent ID sensor pattern before exposure) was adjusted during auto process control: After 5 adjustments by Vg (voltage output of the charge corona unit) Vd failed to attain the value of <b>SP2001 006</b> (total corona voltage for Photo Mode at normal speed) or Vd failed to attain the value of <b>SP2001 012</b> for the CPM down mode (but not Photo Mode).	<ul style="list-style-type: none"> <li>• Drum potential sensor harness, connector is loose, broken, defective</li> <li>• Drum potential sensor dirty</li> <li>• Drum potential sensor defective</li> <li>• Drum connector, harness loose, broken, defective</li> <li>• Development power pack defective</li> <li>• BCU defective</li> </ul>

Trouble-shooting

<b>SC424</b>	<b>C</b>	<b>Drum Potential Sensor Error 2: VI Error</b>	
		<p>At auto process control initialization, the VL detected after creation of the ID sensor pattern is greater than 400.</p> <p><b>Note:</b> VI is the drum potential after maximum laser exposure, determined by reading the white patches of the potential sensor pattern. To change VI, the machine adjusts the input current of the laser diodes.</p>	<ul style="list-style-type: none"> <li>• Drum worn</li> <li>• LD unit dirty</li> <li>• Poor drum ground connection</li> </ul>

<b>SC428</b>	<b>C</b>	<b>Drum Potential Sensor Error 3: Vh Adjustment Error</b>	
		<p>The correct value for Vh (standard drum potential for halftones) could not be detected after 45 consecutive adjustments of LD power:</p> <ul style="list-style-type: none"> <li>• The value for <b>SP3904 001</b> could not be attained for normal speed, or the value of <b>SP3904 002</b> could not be attained for low speed mode.</li> <li>• The LD power adjustments exceeded the upper and lower limits (+185 and -70).</li> </ul>	<ul style="list-style-type: none"> <li>• Drum potential sensor harness, connector is loose, broken, defective</li> <li>• Drum potential sensor dirty</li> <li>• Drum potential sensor defective</li> <li>• Drum unit connector, harness loose, broken, defective</li> <li>• Poor drum ground connection</li> <li>• LD unit defective</li> <li>• BCU defective</li> </ul>

<b>SC435</b>	<b>C</b>	<b>PCU Set Error</b>	
		<p>The PCU is not installed, or it is installed incorrectly. The PCU unit set switch is checked every time the machine is turned on and when the front doors are closed.</p>	<ol style="list-style-type: none"> <li>1. Pull out the PCU unit.</li> <li>2. Install it again.</li> <li>3. Close the front doors</li> <li>4. Cycle the machine OFF/ON</li> </ol>

<b>SC437</b>	<b>C</b>	<b>Drum Potential Sensor Error 4: Vd Detection Error</b>	
		<p>During execution of auto process control for normal speed and CPM down mode when VD was detected VG= -900V</p>	<ul style="list-style-type: none"> <li>• Do <b>SP3902 001</b> to determine if auto process control has been turned off. If this SP is off, turn it on.</li> </ul>

<b>SC438</b>	<b>B</b>	<b>Drum Potential Sensor Error 5: ID Sensor Pattern Potential</b>	
		<p>When the ID sensor potential (Vp) was measured after a cold start, or at the end of a job, the total of this reading and the value of the setting of <b>SP2201 004</b> did not exceed 800V (development unit power pack output) after 10 continuous samplings.</p>	<ul style="list-style-type: none"> <li>• Drum potential sensor defective</li> <li>• BCU defective</li> <li>• IOB defective</li> <li>• Poor drum unit connection or connectors defective</li> <li>• Poor drum ground connection</li> <li>• LD defective</li> <li>• Poor drum cleaning ground connection</li> <li>• Drum worn</li> <li>• Dirty laser optics</li> </ul>

<b>SC439</b>		<b>Drum Potential Sensor Error 6: Vh Abnormal</b>	
		<p>When the LD power was adjusted during auto process control, the first value detected for the Vh pattern (used to set standard drum potential for halftones) exceeded -730V.</p>	<ul style="list-style-type: none"> <li>• Drum potential sensor harness, connector loose, broken, defective</li> <li>• Drum potential sensor defective</li> <li>• LD unit defective (pattern could not be created)</li> </ul>

<b>SC440</b>	<b>B</b>	<b>Transfer Output Error</b>	
		<p>One of the following conditions was detected for 17 counts (about 100 ms) when the transfer voltage was applied with the main motor operating:</p> <ul style="list-style-type: none"> <li>• The value for the transfer current was set for 70uA, but the feedback voltage was less than 0.75V (less than 1.5 KV).</li> <li>• When the feedback current was less than 0.16V (10uA), the feedback voltage was less than 0.15V (less than 300V) due to a poor input connection.</li> <li>• When the feedback current was less than 0.16V (10uA), the feedback voltage was less than 3.05V (over 6.1 KV) due to a poor output connection.</li> </ul>	<ul style="list-style-type: none"> <li>• Transfer power pack harness, connectors loose or broken</li> <li>• Transfer power pack harness or connectors have short circuited</li> <li>• Transfer power pack is defective</li> </ul>

<b>SC441</b>	<b>B</b>	<b>Development Motor Lock</b>	
		<p>While the motor is operating, the motor lock signal remained LOW 2 s.</p>	<ul style="list-style-type: none"> <li>• Development motor lock due to overload</li> <li>• IOB defective</li> </ul>

Trouble-shooting

<b>SC487</b>	<b>B</b>	<b>Toner Collection Unit Lock</b>	
		The toner collection coil rotation sensor did not detect rotation of the coil within 5 s after the drum motor turned on due to toner clumping in the collection unit.	<ul style="list-style-type: none"> <li>• Empty or replace the toner collection bottle.</li> <li>• Enter "0" in SP2-950-001 and cycle the machine off/on</li> </ul>

**NOTE:**

- The drive gear that drives the cleaning and toner transport mechanism is equipped with a torque limiter. If the rotation of the toner collection coil becomes overloaded, the torque limiter disengages the drive gear.
- The sensor (a photo interrupter) detects the change in the position of the gear triggers the error.
- After 8K pages are fed following detection, this SC is issued and the machine will stop.

<b>SC488</b>	<b>C</b>	<b>2nd Cleaning Blade Operation Error</b>	
		The push-switch signal from the cleaning blade solenoid was incorrect. The signal is detected 1 sec. after the solenoid operates.	<ul style="list-style-type: none"> <li>• 2nd cleaning blade solenoid connector loose, broken defective</li> <li>• 2nd cleaning blade solenoid defective</li> <li>• Release mechanism defective</li> </ul>

<b>SC489</b>	<b>C</b>	<b>Drum Cleaning Unit Set Error</b>	
		The drum cleaning unit is not set properly. The drum cleaning unit set switch is set every time the machine is turned on and when the front doors are closed.	<ol style="list-style-type: none"> <li>1. Remove the drum cleaning unit</li> <li>2. Install it again.</li> <li>3. Close the front doors</li> <li>4. Cycle the machine OFF/ON</li> </ol>

<b>SC491</b>	<b>B</b>	<b>Polygon Mirror Motor Cooling Fan Motor Lock</b>	
		The polygon mirror motor cooling fan motor lock signal remains HIGH for 5 s while the polygon mirror motor cooling fan motor is on.	<ul style="list-style-type: none"> <li>• Drive mechanism overload</li> <li>• Obstruction has stopped the fan</li> <li>• Fan connector loose, broken, defective</li> </ul>

<b>SC492</b>	<b>B</b>	<b>Development Unit Suction Motor Lock</b>	
		While the development unit toner suction motor is operating, the lock sensor output did not change for 1 s An electrical overload in the PCB inside the motor unit has caused the motor to malfunction.	<ul style="list-style-type: none"> <li>• Replace the motor.</li> </ul>

<b>SC494</b>	<b>B</b>	<b>Toner Transport Unit Error</b>	
		<p>One of the following has occurred during toner transport from the toner bank to the toner supply cylinder:</p> <ul style="list-style-type: none"> <li>• An obstruction (clumped toner, other foreign material) is blocking the toner supply coil</li> <li>• The coil torque limiter is broken</li> <li>• Toner bottle end sensor is broken</li> </ul>	<ul style="list-style-type: none"> <li>• Cycle the machine OFF/ON</li> <li>• Clean the toner transport coil, tubing, toner supply clutch, torque limiter</li> <li>• Defective toner supply coil</li> <li>• Defective toner supply tube</li> <li>• Defective toner supply clutch</li> <li>• Defective torque limiter</li> </ul>

<b>SC495</b>	<b>B</b>	<b>Toner Bottle Unit Error</b>	
		<p>During toner transport from the toner supply cylinder to the toner hopper, the toner hopper sensor cannot detect toner even after the toner supply pump switches on for 2 s and switches off 10 times during copying.</p>	<ul style="list-style-type: none"> <li>• Toner supply pump motor harness, connector loose, broken, defective</li> <li>• Toner supply pump motor defective</li> <li>• Blockage in the toner supply tube</li> <li>• Toner supply tube disconnected</li> <li>• Blockage in the toner supply cylinder</li> <li>• Toner-end sensor in the toner supply cylinder defective</li> <li>• Agitator in the toner supply cylinder defective</li> <li>• Toner supply cylinder agitator motor defective</li> </ul>

<b>SC496</b>	<b>B</b>	<b>Toner Collection Bottle Error</b>	
		<p>The toner collection bottle set switch remained off for 3 s.</p>	<ul style="list-style-type: none"> <li>• Used toner collection bottle is set incorrectly</li> <li>• Used toner collection bottle harness, connector loose, broken, defective</li> </ul>

<b>SC497</b>	<b>B</b>	<b>Development Unit Toner Suction Bottle Error</b>	
		<p>During machine operation, the development unit toner suction bottle set sensor goes off for 3 s.</p>	<ul style="list-style-type: none"> <li>• Toner suction bottle is not installed</li> <li>• Toner suction bottle set sensor connector is loose, broken, defective</li> </ul>

Trouble-shooting

<b>SC501</b>	<b>D</b>	<b>1st Tray Lift Mechanism</b>	
		<p>One of the following conditions is detected in the 1st tray (tandem tray) of the main machine:</p> <ul style="list-style-type: none"> <li>• The 1st tray lift sensor is not activated for 10 s after the 1st tray lift motor turned on.</li> <li>• Upper limit is not detected within 10 s while the paper tray is lifting during paper feed.</li> <li>• The 1st tray lift sensor is already activated when the 1st tray is placed in the machine.</li> </ul>	<ul style="list-style-type: none"> <li>• Poor 1st tray lift motor connection</li> <li>• Remaining paper or another obstruction has stopped the tray and motor</li> <li>• 1st pick-up solenoid connector is loose</li> <li>• 1st pick-up solenoid is blocked by an obstruction</li> </ul>

<b>SC502</b>	<b>D</b>	<b>2nd Tray Lift Malfunction</b>	
		<p>One of the following conditions is detected in the 2nd tray of the main machine:</p> <ul style="list-style-type: none"> <li>• The 2nd tray lift sensor is not activated for 10 s after the 2nd tray lift motor turned on.</li> <li>• Upper limit is not detected within 10 s while the paper tray is lifting during paper feed.</li> <li>• The 2nd tray lift sensor is already activated when the 2nd tray is placed in the machine.</li> </ul>	<ul style="list-style-type: none"> <li>• Poor 2nd tray lift motor connection</li> <li>• Remaining paper or another obstruction has stopped the tray and motor</li> <li>• 2nd pick-up solenoid connector is loose</li> <li>• 2nd pick-up solenoid is blocked by an obstruction</li> </ul>

<b>SC503</b>	<b>D</b>	<b>3rd Tray Lift Malfunction</b>	
		<p>One of the following conditions is detected in the 3rd tray of the main machine:</p> <ul style="list-style-type: none"> <li>• The 3rd tray lift sensor is not activated for 10 s after the 3rd tray lift motor turned on.</li> <li>• Upper limit is not detected within 10 s while the paper tray is lifting during paper feed.</li> <li>• The 3rd tray lift sensor is already activated when the 3rd tray is placed in the machine</li> </ul>	<ul style="list-style-type: none"> <li>• Poor 3rd tray lift motor connection</li> <li>• Remaining paper or another obstruction has stopped the tray and motor</li> <li>• 3rd pick-up solenoid connector is loose</li> <li>• 3rd pick-up solenoid is blocked by an obstruction</li> </ul>

<b>SC504</b>	<b>D</b>	<b>4th Tray (LCT Tray 1) Lift Malfunction</b>	
		<p>One of the following conditions is detected in the 4th tray:</p> <ul style="list-style-type: none"> <li>• The LCT 1st lift sensor is not activated for 10 s after the LCT 1st tray lift motor turned on.</li> <li>• Upper limit is not detected within 10 s while the paper tray is lifting during paper feed.</li> <li>• The LCT 1st lift sensor is already activated when the LCT 1st tray is placed in the machine.</li> </ul>	<ul style="list-style-type: none"> <li>• Poor LCT 1st tray lift motor connection</li> <li>• Remaining paper or another obstruction has stopped the tray and motor</li> <li>• LCT 1st pick-up solenoid connector is loose</li> <li>• LCT 1st pick-up solenoid is blocked by an obstruction</li> </ul>

<b>SC505</b>	<b>D</b>	<b>5th Tray (LCT Tray 2) Lift Malfunction</b>	
		<p>One of the following conditions is detected in the 5th tray:</p> <ul style="list-style-type: none"> <li>• The LCT 2nd lift sensor is not activated for 10 s after the LCT 2nd tray lift motor turned on.</li> <li>• Upper limit is not detected within 10 s while the paper tray is lifting during paper feed.</li> <li>• The LCT 2nd lift sensor is already activated when the LCT 2nd tray is placed in the machine.</li> </ul>	<ul style="list-style-type: none"> <li>• Poor LCT 2nd tray lift motor connection</li> <li>• Remaining paper or another obstruction has stopped the tray and motor</li> <li>• LCT 2nd pick-up solenoid connector is loose</li> <li>• LCT 2nd pick-up solenoid is blocked by an obstruction</li> </ul>

Trouble-shooting



<b>SC506</b>	<b>D</b>	<b>6th Tray (LCT Tray 3) Lift Malfunction</b>	
		<p>One of the following conditions is detected in the 6th tray.</p> <ul style="list-style-type: none"> <li>• The LCT 3rd lift sensor is not activated for 20 s after the LCT 3rd tray lift motor turned on.</li> <li>• Upper limit is not detected within 20 s while the paper tray is lifting during paper feed.</li> <li>• The LCT 3rd lift sensor is already activated when the LCT 3rd tray is placed in the machine.</li> </ul>	<ul style="list-style-type: none"> <li>• Poor LCT 3rd tray lift motor connection</li> <li>• Remaining paper or another obstruction has stopped the tray and motor</li> <li>• LCT 3rd pick-up solenoid connector is loose</li> <li>• LCT 3rd pick-up solenoid is blocked by an obstruction</li> </ul>

<b>SC507</b>	<b>D</b>	<b>7th Tray (Bypass Tray) Lift Mechanism</b>	
		<p>One of the following conditions is detected in the optional bypass tray.</p> <ul style="list-style-type: none"> <li>• The bypass tray lift sensor is not activated for 10 s after the tray lift motor turned on.</li> <li>• Upper limit is not detected within 10 s while the paper tray is lifting during paper feed.</li> <li>• The bypass tray lift sensor is already activated paper is placed in the 7th tray.</li> </ul>	<ul style="list-style-type: none"> <li>• Poor bypass tray lift motor connection</li> <li>• Remaining paper or another obstruction has stopped the tray and motor</li> <li>• Bypass tray pick-up solenoid connector is loose</li> <li>• Bypass tray pick-up solenoid is blocked by an obstruction</li> </ul>

<b>SC529</b>	<b>C</b>	<b>Exit Junction Gate HP Sensor Error</b>	
		<p>The exit junction gate did not return to its home position.</p>	<ul style="list-style-type: none"> <li>• Cycle the machine OFF/ON</li> </ul>

<b>SC531</b>	<b>B</b>	<b>Fusing Motor Lock</b>	
		<p>A fusing motor lock signal is detected for more than 2 s during operation due to an electrical overload in the motor driver board.</p>	<ul style="list-style-type: none"> <li>• Motor driver board defective. Replace motor.</li> </ul>

<b>SC541</b>	<b>A</b>	<b>Fusing Thermister Open</b>	
		<p>The fusing temperature detected by the thermistor was below 7°C for 15 s.</p>	<ul style="list-style-type: none"> <li>• Fusing thermistor defective or out of position</li> <li>• Poor thermistor terminal connection</li> </ul>

<b>SC542</b>	<b>A</b>	<b>Fusing Temperature Warm-up Error</b>	
		One of the following occurred: <ul style="list-style-type: none"> <li>• <b>B234/B235:</b> Hot roller did not reach target operation temperature within 360 sec. after the machine was powered or 360 sec. minutes after the doors were closed.</li> <li>• <b>B236:</b> Hot roller did not reach target operation temperature within 465 sec. after the machine was powered or 465 sec. minutes after the doors were closed.</li> <li>• Fusing temperature rose only 5°C toward the fusing temperature within 20 s after the machine was powered on, or after the doors were closed.</li> <li>• Fusing temperature rose only 5°C toward the fusing temperature within 20 s after thermistor started monitoring hot roller temperature. (The thermistors starts monitoring 25 s after the hot roller starts rotating.)</li> </ul>	<ul style="list-style-type: none"> <li>• Fusing lamp(s) disconnected</li> <li>• Thermistor out of position</li> </ul>

<b>SC543</b>	<b>A</b>	<b>Fusing Overheat Error 1: Software</b>	
		A fusing temperature of over 210°C is detected for 5 s by the fusing thermistor. This prevents the fusing lamps from switching on without a fusing lamp trigger signal.	<ul style="list-style-type: none"> <li>• AC drive board defective (TRIAC short)</li> <li>• BCU defective</li> <li>• BCU firmware defective</li> </ul>

<b>SC544</b>	<b>A</b>	<b>Fusing Overheat Error 2: Hardware</b>	
		The fusing temperature monitoring circuit detects abnormal fusing temperature.	<ul style="list-style-type: none"> <li>• AC drive board defective (TRIAC short)</li> <li>• BCU defective</li> <li>• BCU firmware defective</li> </ul>

<b>SC545</b>	<b>A</b>	<b>Fusing Overheat Error 3: Continuous Lamp On</b>	
		After warm-up and while the hot roller is not rotating, the fusing lamps remain on at full power for 45 s (e-STUDIO901/1101) 90 s (e-STUDIO1351).	<ul style="list-style-type: none"> <li>• Fusing thermistor out of position</li> <li>• One or more fusing lamp is disconnected</li> </ul>

<b>SC547</b>	<b>A</b>	<b>Zero-Cross Signal Not Detected</b>	
		The applied bandwidth is detected above 66 Hz or below 45 Hz, and no zero-cross signal detected for 5 s with the power relay ON.	<ul style="list-style-type: none"> <li>• Noise on the ac power line</li> <li>• Cycle the machine OFF/ON</li> <li>• If the problem continues, install a noise filter</li> </ul>

Trouble-shooting

<b>SC557</b>	<b>C</b>	<b>Zero-Cross Signal Over</b>	
		Noise was detected on the power supply line.	<ul style="list-style-type: none"> <li>• Cycle the machine OFF/ON</li> <li>• If the problem continues, install a noise filter</li> </ul>

<b>SC559</b>	<b>A</b>	<b>Fusing Unit Jam Error</b>	
		The paper cooling job time sensor detected paper late for 3 counts. This SC only occurs if <b>SP1159</b> is on, and a jam occurred in the fusing unit for three consecutive sheets of paper.	<ul style="list-style-type: none"> <li>• Remove the paper that is jammed in the fusing unit. Then make sure that the fusing unit is clean and has no obstacles in the paper feed path.</li> </ul>

<b>SC585</b>	<b>C</b>	<b>Double-Feed LED Adjustment Error</b>	
		The calibration of the double-feed LED for the paper type failed reach the target voltage. The print job completed without the double-feed detection operating. The target voltages are: <ul style="list-style-type: none"> <li>• Normal paper 3.0V±1%</li> <li>• Translucent paper: 3.8V±2%</li> <li>• OHP: 4.0V±2%</li> </ul>	<ul style="list-style-type: none"> <li>• Double-feed sensor/LED dirty</li> <li>• Sensor/LED connector loose, broken, defective</li> </ul>

<b>SC592</b>	<b>B</b>	<b>Toner Bank Motor Error</b>	
		An abnormal signal was received from the toner bank motor.	<ul style="list-style-type: none"> <li>• Toner bank motor defective</li> <li>• Bank motor connector loose</li> <li>• Mechanical overload on the drive mechanism</li> </ul>

<b>SC593</b>	<b>B</b>	<b>Toner Suction Motor Replace Alert</b>	
		The total operation time of the motor exceeded 600 hours. Note: A near-end message appears on the operation panel when the service life of the motor exceeds 570 hours.	<ul style="list-style-type: none"> <li>• The toner suction motor has reached the end of its service life.</li> </ul>

<b>SC601</b>	<b>B</b>	<b>Communication Error Between BCU and MCU</b>	
		One or more of the following occurred: <ul style="list-style-type: none"> <li>• The BCU cannot communicate with the MCU within 100 ms after power on after 3 tries.</li> <li>• A BREAK signal was detected after connection between the BCU and MCU.</li> <li>• After a communication error, three tries to communicate with the MCU failed.</li> </ul>	<ul style="list-style-type: none"> <li>• Poor connection between BCU and MCU</li> <li>• BCU defective</li> <li>• MCU defective</li> </ul>
<b>SC620</b>	<b>B</b>	<b>Communication Error Between BCU and ADF 1</b>	
		There was no response from the ADF 100 ms after the ACK signal was sent to the ADF. Three attempts to resend the data failed.	<ul style="list-style-type: none"> <li>• Poor connection between the BCU board and the ADF main board</li> <li>• Interference from external noise on the harness between the BCU and ADF</li> </ul>
<b>SC621</b>	<b>B</b>	<b>Communication Error Between BCU and ADF 2</b>	
		The machine detected a break signal (LOW) from the line connection between the BCU and ADF.	<ul style="list-style-type: none"> <li>• Serial line connection unstable</li> <li>• Harness, connectors between ADF and BCU loose, broken, defective</li> </ul>
<b>SC622</b>	<b>B</b>	<b>Communication Error Between BCU and ADF 3</b>	
		Software error after improper user operation.	<ul style="list-style-type: none"> <li>• Software error</li> <li>• Cycle the machine OFF/ON</li> </ul>
<b>SC625</b>	<b>B</b>	<b>Communication Error Between BCU and Finisher</b>	
		The BCU cannot communicate with the finisher properly. here was no response from the ADF 100 ms after the ACK signal was sent to the ADF. Three attempts to resend the data failed.	<ul style="list-style-type: none"> <li>• Poor connection between the BCU board and the finisher main board</li> </ul>
<b>SC626</b>	<b>B</b>	<b>Communication Error Between BCU and Finisher</b>	
		A break signal (LOW) was detected.	<ul style="list-style-type: none"> <li>• Poor connection between the BCU board and the finisher main board</li> <li>• Finisher main board defective</li> <li>• BCU board defective</li> <li>• External electrical noise on the interface cable caused the serial line to become unstable</li> </ul>

Trouble-shooting

<b>SC630</b>	<b>B</b>	CSS Communication
		<b>Japan Only</b>

<b>SC632</b>	<b>B</b>	Charge Unit Device Error 1
		<b>Japan Only</b>

<b>SC633</b>	<b>B</b>	Charge Unit Device Error 2
		<b>Japan Only</b>

<b>SC650</b>	<b>D</b>	<b>NRS Modem Communication Error (Not Use)</b>	
		One of the following factors could be the cause of this error: <ul style="list-style-type: none"> <li>• In the User Tools, check the settings for the dial-up user name and dial up password.</li> <li>• Modem has been disconnected.</li> <li>• Modem board disconnected.</li> </ul>	Check the following for a machine that is using Cumin (NRS modem): <ul style="list-style-type: none"> <li>• An error was returned during the dialup connection</li> <li>• A network was detected at startup</li> <li>• At startup the machine detected that the NIB was disabled, or did not detect a modem board</li> </ul>

**NOTE:** For more details about this SC code error, execute **SP5990** to print an SMC report so you can read the error code. The error code is not displayed on the operation panel. Here is a list of error codes:

<b>Error</b>	<b>Problem</b>	<b>Solution</b>
1	Failure to certify dial-up	In the User Tools, check the dial-up user and dial-up password settings
4	Illegal modem setting	Check the setting of <b>SP5816 160</b> to determine whether the setting for the AT command is correct. If this SP setting is correct, then the problem is a bug in the software.
5	Poor connection due to low power supply on the line.	The problem is on the external power supply line, so there is no corrective action on the machine.
11	Data in the NVRAM became corrupted when the network enable switch and Cumin-M were enabled at the same time.	Use <b>SP5985 1</b> and set the NIC to "0" (Disable) to disable the network board.
12	The modem board could not enable the NIB.	Replace the modem board.

<b>SC651</b>	<b>C</b>	<b>Illegal Remote Service Dial-up (Not Use)</b>	
		An expected error occurred when Cumin-M dialed up the NRS Center.	<ul style="list-style-type: none"> <li>• Software bug</li> <li>• No action is required because only the count is logged</li> </ul>

<b>SC670</b>	<b>B</b>	<b>Engine Startup Error (Not Use)</b>	
		<p>At power on or after the machine leaves the energy conservation mode:</p> <ul style="list-style-type: none"> <li>• ENGRDY signal does not assert</li> <li>• IPURDY signal does not assert</li> </ul> <p>After power on and the prescribed time has elapsed:</p> <ul style="list-style-type: none"> <li>• No EC response from the engine</li> <li>• No PC response from the engine</li> <li>• No SC response from the engine</li> </ul> <p>During machine operation mode:</p> <ul style="list-style-type: none"> <li>• Write to Rapi drive failure (could not locate destination on the PCI)</li> <li>• After the /ENGRDY signal asserts with no effect.</li> </ul>	<ul style="list-style-type: none"> <li>• BCU ← → Controller Board disconnected</li> <li>• BCU board defective</li> <li>• Controller board defective</li> <li>• Mother board defective</li> <li>• Software error; switch OFF/ON, if that fails, change the engine firmware</li> <li>• PSU-E or PSU-C defective</li> </ul>

<b>SC672</b>	<b>B</b>	<b>Controller Startup Error</b>	
		<p>The line between the controller board and the operation panel does not open correctly when the machine is powered on, or after the machine was powered on communication between the controller and operation panel is suspended.</p> <p>The controller board and operation panel could not exchange the handshake (FDH) and acknowledge (FEH) signals within 15 s of the operation panel reset after power on, or after 2 retries there was no response to the transmission line confirmation command issued every 30 s from the operation panel to the controller board.</p>	<ul style="list-style-type: none"> <li>• Controller board defective</li> <li>• Controller board installed incorrectly</li> <li>• Operation panel harness connection loose or incorrect</li> </ul>

Trouble-shooting

<b>SC701</b>	<b>B</b>	<b>ADF Pick-up Roller Release Malfunction</b>	
		<p>The pick-up roller HP sensor does not activate or de-activate when the pick-up motor turns on.</p>	<ul style="list-style-type: none"> <li>• HP sensor connector, harness loose, broken, defective</li> <li>• Pick-up motor connector, harness loose, broken defective</li> <li>• Pick-up roller HP sensor defective</li> <li>• Pick-up motor defective</li> <li>• ADF main control board defective</li> </ul>

<b>SC702</b>	<b>B</b>	<b>ADF Feed-In Motor Error</b>	
		<p>While the feed motor is operating, the encoder pulse signal is not received within the specified time, or the paper size length encoder signal cannot be detected within the specified time (the encoder is built into the feed-in motor).</p>	<ul style="list-style-type: none"> <li>• Feed-in motor connector, harness loose, broken, defective</li> <li>• Paper length sensor connector, harness loose, broken, defective</li> <li>• Feed-in motor defective</li> <li>• Paper length sensor or encoder is defective</li> <li>• ADF main control board defective</li> </ul>

<b>SC703</b>	<b>B</b>	<b>ADF Transport Belt Motor Error</b>	
		While the motor is operating, the encoder pulse signal is not received within the specified time and the transport belt motor does not turn properly.	<ul style="list-style-type: none"> <li>• Transport belt motor defective</li> <li>• Poor connection between the transport motor and ADF main board</li> <li>• ADF main board defective</li> </ul>

<b>SC704</b>	<b>B</b>	<b>ADF Feed-Out Motor Error</b>	
		While the feed-out motor is operating, the encoder pulse signal is not received within the specified time, and the feed-out motor does not turn properly	<ul style="list-style-type: none"> <li>• Feed-out motor defective</li> <li>• Poor connection between the feed-out motor and ADF main board</li> <li>• ADF main control board defective</li> </ul>

<b>SC705</b>	<b>B</b>	<b>ADF Original Table Lift Malfunction</b>	
		<p>One of the following conditions was detected.</p> <ul style="list-style-type: none"> <li>• The bottom plate position sensor does not activate when the bottom plate motor lifts the original table.</li> <li>• The bottom plate HP sensor does not activate when the bottom plate motor lowers the original table.</li> </ul>	<ul style="list-style-type: none"> <li>• The harnesses, connectors of the bottom plate position sensor, bottom plate HP sensor, bottom plate motor loose, broken, defective</li> <li>• Bottom plate position sensor defective</li> <li>• Bottom plate HP sensor defective</li> <li>• Bottom plate motor defective</li> <li>• ADF main control board defective</li> </ul>

<b>SC720</b>	<b>B</b>	<b>Finisher Upper Transport Motor Error</b>	
		The encoder pulse signal of the upper transport motor in the 3000-Sheet Finisher B830 did not change within the specified time. The upper transport motor did not rotate properly.	<ul style="list-style-type: none"> <li>• Motor harness, connector loose, broken, defective</li> <li>• Motor overloaded</li> <li>• Motor defective</li> <li>• Finisher main control board defective</li> </ul>

<b>SC721</b>	<b>B</b>	<b>Finisher Lower Transport Motor Error</b>	
		The encoder pulse signal of the lower transport motor in the 3000-Sheet Finisher B830 did not change within the specified time. The lower transport motor did not rotate properly.	<ul style="list-style-type: none"> <li>• Motor harness, connector loose, broken, defective</li> <li>• Motor overloaded</li> <li>• Motor defective</li> <li>• Finisher main control board disconnected, defective</li> </ul>

<b>SC723</b>	<b>D</b>	<b>Positioning Roller Motor Error (3000-Sheet Finisher B830)</b>	
		The positioning roller motor of the 3000-Sheet Finisher is not operating correctly.	<ul style="list-style-type: none"> <li>• Cycle the machine OFF/ON</li> <li>• Motor harness loose, defective</li> <li>• Motor defective</li> <li>• Finisher main control board disconnected, defective</li> <li>• MCU defective</li> </ul>

<b>SC724</b>	<b>D</b>	<b>Finisher Staple Hammer Motor Error</b>	
		<p>Stapling does not finish within the specified time (450 ms) after the staple hammer motor turned on.</p>	<ul style="list-style-type: none"> <li>• Positioning roller HP sensor loose, broken, defective</li> <li>• Positioning mechanism overloaded</li> <li>• Positioning roller motor overloaded due to obstruction</li> <li>• Main control board connectors loose, broken, defective</li> <li>• Main control board defective</li> </ul>

<b>SC725</b>	<b>D</b>	<b>Finisher Stack Feed-Out Motor Error</b>	
		<p>The stack feed-out belt HP sensor does not activate within the specified time after the stack feed-out belt motor turned on.</p>	<ul style="list-style-type: none"> <li>• Positioning roller HP sensor loose, broken, defective</li> <li>• Positioning mechanism overloaded</li> <li>• Positioning roller motor overloaded due to obstruction</li> <li>• Main control board connectors loose, broken, defective</li> <li>• Main control board defective</li> </ul>

<b>SC726</b>	<b>D</b>	<b>Finisher Shift Motor Error: 3000-Sheet Finisher B830</b>	
		<p>The state of the shift tray half-turn sensor status did not change after the shift motor turns on.</p>	<ul style="list-style-type: none"> <li>• Positioning roller HP sensor loose, broken, defective</li> <li>• Positioning mechanism overloaded</li> <li>• Positioning roller motor overloaded due to obstruction</li> <li>• Main control board connectors loose, broken, defective</li> <li>• Main control board defective</li> </ul>

<b>SC728</b>	<b>D</b>	<b>Shift Jogger Retraction Motor Error: 3000-Sheet Finisher B830</b>	
		<p>The side fences do arrive at the home position within the specified time. -or- The side fences did not leave the home position within the specified time. <b>Note:</b> The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.</p>	<ul style="list-style-type: none"> <li>• If the motor is rotating, positioning roller HP sensor loose, broken, defective</li> <li>• If the motor is not rotating: <ul style="list-style-type: none"> <li>• Positioning mechanism overloaded</li> <li>• Positioning roller motor overloaded due to obstruction</li> <li>• Positioning roller motor disconnected, defective</li> </ul> </li> <li>• Main control board connectors loose, broken, defective</li> <li>• Main control board defective</li> </ul>

Trouble-shooting



<b>SC730</b>	<b>D</b>	<b>Lower Transport Motor Error: 3000-Sheet Finisher B830</b>	
		No encoder pulse signal is detected for the lower transport motor within 600 ms. The 1st failure issues an original jam message, and the 2nd failure issues this SC code.	<ul style="list-style-type: none"> <li>• Lower transport motor disconnected, defective</li> <li>• Finisher connection to lower transport motor loose, defective</li> <li>• Lower transport motor blocked by an obstruction</li> <li>• Lower transport motor defective</li> <li>• Finisher main board defective</li> </ul>

<b>SC731</b>	<b>B</b>	<b>Upper Transport Motor Error (Proof Tray): 3000-Sheet Finisher B830</b>	
		No encoder pulse signal is detected for the upper transport motor within 600 ms. The 1st failure issues this SC code.	<ul style="list-style-type: none"> <li>• Upper transport motor disconnected, defective</li> <li>• Finisher connection to upper transport motor loose, defective</li> <li>• Upper transport motor blocked by an obstruction</li> <li>• Upper transport motor defective</li> <li>• Finisher main board defective</li> </ul>

<b>SC732</b>	<b>D</b>	<b>Shift Tray Exit Motor: 3000-Sheet Finisher B830</b>	
		The shift tray exit motor is not operating.	<ul style="list-style-type: none"> <li>• Motor harness loose, broken, defective</li> <li>• Motor is blocked by an obstruction</li> <li>• Motor defective</li> <li>• Finisher main control board defective</li> </ul>

<b>SC733</b>	<b>D</b>	<b>Stapler Exit Motor: 3000-Sheet Finisher B830</b>	
		The stapler exit motor is not operating.	<ul style="list-style-type: none"> <li>• Motor harness loose, broken, defective</li> <li>• Motor is blocked by an obstruction</li> <li>• Motor defective</li> <li>• Finisher main control board defective</li> </ul>

<b>SC734</b>	<b>B</b>	<b>Upper Tray Junction Gate Motor: 3000-Sheet Finisher B830</b>	
		<p>The upper tray junction gate HP sensor did not detect the gate at the home position within 200 ms after two attempts.</p> <p>-or-</p> <p>The HP sensor twice detected the gate at the home position for more than 200 ms after it was supposed to open.</p>	<ul style="list-style-type: none"> <li>• Junction gate did not arrive at the home position within the specified time</li> <li>• Junction gate did not leave the home position within the specified time</li> </ul>

<b>SC735</b>	<b>B</b>	<b>Staple Junction Gate Motor Error: 3000-Sheet Finisher B830</b>	
		<p>The staple tray junction gate HP sensor did not detect the gate at the home position within 200 ms after two attempts.</p> <p>-or-</p> <p>The HP sensor twice detected the gate at the home position for more than 200 ms after it was supposed to open.</p>	<ul style="list-style-type: none"> <li>• Junction gate did not arrive at the home position within the specified time</li> <li>• Junction gate did not leave the home position within the specified time</li> </ul>

<b>SC736</b>	<b>D</b>	<b>Pre-Stack Junction Gate Motor Error: 3000-Sheet Finisher B830</b>	
		<p>The pre-stack junction gate HP sensor did not detect the gate at the home position for within 200 ms after two attempts.</p> <p>-or-</p> <p>The HP sensor twice detected the gate at the home position for more than 200 ms after it was supposed to open.</p>	<ul style="list-style-type: none"> <li>• Junction gate did not arrive at the home position within the specified time</li> <li>• Junction gate did not leave the home position within the specified time</li> </ul>

<b>SC737</b>	<b>D</b>	<b>Pre-Stack Transport Motor Error: 3000-Sheet Finisher B830</b>	
		<p>The pre-stack transport motor is not operating.</p>	<ul style="list-style-type: none"> <li>• Motor harness loose, broken, defective</li> <li>• Motor is blocked by an obstruction</li> <li>• Motor defective</li> <li>• Finisher main control board defective</li> </ul>

<b>SC738</b>	<b>D</b>	<b>Pre-Stack Junction Gate Release Motor Error: 3000-Sheet Finisher B830</b>	
		<p>The pre-stack junction gate release HP sensor did not detect the gate at the home position within 200 ms after two attempts.</p> <p>-or-</p> <p>The HP sensor twice detected the gate at the home position for more than 200 ms after it was supposed to open.</p>	<ul style="list-style-type: none"> <li>• Junction gate did not arrive at the home position within the specified time</li> <li>• Junction gate did not leave the home position within the specified time</li> </ul>

Troubleshooting

<b>SC740</b>	<b>D</b>	<b>Finisher Corner Stapler Motor Error: 3000-Sheet Finisher B830</b>	
		<p>The stapler motor did not switch off within 600 ms after operating. The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.</p>	<ul style="list-style-type: none"> <li>• Number of sheets in the stack exceeded the limit for stapling</li> <li>• If error occurred during stapling, stapler rotation sensor 1 defective (replace stapler)</li> <li>• If error did not occur during stapling: staple jam:                             <ol style="list-style-type: none"> <li>1. Motor blocked by an obstruction</li> <li>2. Stapler motor harness loose, broken, defective</li> <li>3. Corner stapler motor defective</li> <li>4. Main control board defective</li> </ol> </li> </ul>

<b>SC741</b>	<b>D</b>	<b>Finisher Corner Stapler Rotation Motor Error: 3000-sheet Finisher B830</b>	
		<p>The stapler did not return to its home position within the specified time after stapling. -or- The stapler failed to leave the home position within the specified time. The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.</p>	<ul style="list-style-type: none"> <li>• If the motor is running,                             <ol style="list-style-type: none"> <li>1. Stapler rotation home position sensor harnesses are broken, loose, or defective</li> <li>2. Stapler rotation home position sensors are defective</li> </ol> </li> <li>• If the motor is not running:                             <ol style="list-style-type: none"> <li>1. Motor is blocked by an obstruction</li> <li>2. Motor harness is loose, broken, defective</li> <li>3. Motor is defective</li> </ol> </li> </ul>

<b>SC742</b>	<b>D</b>	<b>Finisher Stapler Movement Motor Error: 3000-Sheet Finisher B830</b>	
		<p>The stapler did not return to its home position within the specified time after stapling. -or- The stapler failed to leave the home position within the specified time The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.</p>	<ul style="list-style-type: none"> <li>• If the motor is running,                             <ol style="list-style-type: none"> <li>1. Stapler home position sensor harness is broken, loose, or defective</li> <li>2. Stapler home position sensor is defective</li> </ol> </li> <li>• If the motor is not running:                             <ol style="list-style-type: none"> <li>1. Motor is blocked by an obstruction</li> <li>2. Motor harness is loose, broken, defective</li> <li>3. Motor is defective</li> </ol> </li> </ul>

<b>SC743</b>	<b>D</b>	<b>Booklet Stapler Motor Error 1: Front Motor (Booklet Finisher)</b>	
		<p>The front stapler unit saddle-stitch motor does not start operation within 600 ms. The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.</p>	<ul style="list-style-type: none"> <li>• Front motor harness loose, broken, defective</li> <li>• Front motor overloaded due to obstruction</li> <li>• Front motor defective</li> <li>• Booklet finisher control board defective</li> </ul>

<b>SC744</b>	<b>D</b>	<b>Booklet Stapler Motor Error 2: Rear Motor (Booklet Finisher)</b>	
		<p>The rear stapler unit saddle-stitch motor does not start operation within 500 ms. The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.</p>	<ul style="list-style-type: none"> <li>• Rear motor harness loose, broken, defective</li> <li>• Rear motor overloaded due to obstruction</li> <li>• Rear motor defective</li> <li>• Booklet finisher control board defective</li> </ul>

<b>SC745</b>	<b>D</b>	<b>Feed-Out Belt Motor Error (Booklet Finisher)</b>	
		<p>The stack feed-out belt HP sensor does not activate within the specified time after the stack feed-out belt motor turns on. The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.</p>	<ul style="list-style-type: none"> <li>• If the motor is operating                             <ol style="list-style-type: none"> <li>1. Stack feed-out HP sensor harness loose, broken, defective</li> <li>2. Stack feed-out HP sensor defective</li> </ol> </li> <li>• If the motor is not operating:                             <ol style="list-style-type: none"> <li>1. Feed-out motor blocked by an obstruction</li> <li>2. Feed-out motor harness loose, broken, defective</li> <li>3. Feed-out motor defective</li> <li>4. Booklet finisher main board defective</li> </ol> </li> </ul>

<b>SC746</b>	<b>D</b>	<b>Stack Plate Motor Error 1: Front Motor (3000-Sheet Finisher B830)</b>	
		<p>The stack plate HP sensor (front) does not activate within 500 ms after the motor turns on. The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.</p>	<ul style="list-style-type: none"> <li>• If the motor is operating                             <ol style="list-style-type: none"> <li>1. Front stack plate HP sensor harness loose, broken, defective</li> <li>2. Front stack plate HP sensor defective</li> </ol> </li> <li>• If the motor is not operating:                             <ol style="list-style-type: none"> <li>1. Motor blocked by an obstruction</li> <li>2. Motor harness loose, broken, defective</li> <li>3. Motor defective</li> <li>4. Booklet finisher main board defective</li> </ol> </li> </ul>

<b>SC747</b>	<b>D</b>	<b>Stack Plate Motor Error 2: Center Motor (3000-Sheet Finisher B830)</b>	
		<p>The stack plate HP sensor (center) does not activate within 500 ms after the motor turns on. The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.</p>	<ul style="list-style-type: none"> <li>• If the motor is operating                             <ol style="list-style-type: none"> <li>1. Center stack plate HP sensor harness loose, broken, defective</li> <li>2. Center stack plate HP sensor defective</li> </ol> </li> <li>• If the motor is not operating:                             <ol style="list-style-type: none"> <li>1. Motor blocked by an obstruction</li> <li>2. Motor harness loose, broken, defective</li> <li>3. Motor defective</li> <li>4. Booklet finisher main board defective</li> </ol> </li> </ul>

Trouble-shooting

<b>SC748</b>	<b>D</b>	<b>Stack Plate Motor Error 3: Rear Motor (3000-Sheet Finisher B830)</b>	
		<p>The stack plate HP sensor (rear) does not activate within 500 ms after the motor turns on. The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.</p>	<ul style="list-style-type: none"> <li>• If the motor is operating                             <ol style="list-style-type: none"> <li>1. Rear stack plate HP sensor harness loose, broken, defective</li> <li>2. Rear stack plate HP sensor defective</li> </ol> </li> <li>• If the motor is not operating:                             <ol style="list-style-type: none"> <li>1. Motor blocked by an obstruction</li> <li>2. Motor harness loose, broken, defective</li> <li>3. Motor defective</li> <li>4. Booklet finisher main board defective</li> </ol> </li> </ul>

<b>SC750</b>	<b>D</b>	<b>Tray 1 (Upper Tray Lift) Motor Error: 3000-Sheet Finisher B830</b>	
		<p>The upper tray paper height sensor does not change its status within 20 sec. after the tray raises or lowers. The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.</p>	<ul style="list-style-type: none"> <li>• Tray lift motor disconnected, defective</li> <li>• Upper tray paper height sensor disconnected, defective</li> <li>• Finisher main board connection to motor loose</li> <li>• Finisher main board defective</li> </ul>

<b>SC753</b>	<b>D</b>	<b>Stacking Roller Motor Error: 3000-Sheet Finisher B830</b>	
		<p>The return drive HP sensor did not detect the stacking roller at the HP sensor within 1 sec. -or- The stacking roller did not leave the home position at the specified time.</p>	<ul style="list-style-type: none"> <li>• If the motor is operating                             <ol style="list-style-type: none"> <li>1. Return drive HP sensor harness loose, broken, defective</li> <li>2. Return drive HP sensor defective</li> </ol> </li> <li>• If the motor is not operating:                             <ol style="list-style-type: none"> <li>1. Motor blocked by an obstruction</li> <li>2. Motor harness loose, broken, defective</li> <li>3. Motor defective</li> <li>4. Finisher main board defective</li> </ol> </li> </ul>

<b>SC754</b>	<b>D</b>	<b>Stacking Roller Drag Motor Error: 3000-Sheet Finisher B830</b>	
		<p>The stacking roller drag motor did not turn on.</p>	<ul style="list-style-type: none"> <li>• Motor harness loose, broken, defective</li> <li>• Motor defective</li> <li>• Finisher control board defective</li> </ul>

<b>SC755</b>	<b>D</b>	<b>Shift Motor Error: 3000-Sheet Finisher B830</b>	
		<p>The shift tray half-turn sensors: Failed twice to detect the shift tray at the home position at the specified time. -or- Failed twice to detect that the shift tray had left the home position.</p>	<ul style="list-style-type: none"> <li>• If the motor is operating                             <ol style="list-style-type: none"> <li>1. Half-turn sensor 1, 2 harnesses loose, broken, defective</li> <li>2. One of the half-turn sensors defective</li> </ol> </li> <li>• If the motor is not operating:                             <ol style="list-style-type: none"> <li>1. Motor blocked by an obstruction</li> <li>2. Motor harness loose, broken, defective</li> <li>3. Motor defective</li> <li>4. Finisher main board defective</li> </ol> </li> </ul>
<b>SC760</b>	<b>B</b>	<b>Punch Motor Error: 3000-Sheet Finisher B830</b>	
		<p>The punch HP sensor is not activated within the specified time after the punch motor turned on. The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.</p>	<ul style="list-style-type: none"> <li>• If the motor is operating:                             <ol style="list-style-type: none"> <li>1. Punch HP sensor loose, broken, defective</li> <li>2. Punch HP sensor defective</li> </ol> </li> <li>• If the motor is not operating:                             <ol style="list-style-type: none"> <li>1. Motor blocked by an obstruction</li> <li>2. Motor harness loose, broken, defective</li> <li>3. Motor defective</li> <li>4. Finisher main board defective</li> </ol> </li> </ul>
<b>SC761</b>	<b>D</b>	<b>Fold Plate Motor Error: Booklet Finisher</b>	
		<p>The fold plate moves but: The fold plate HP sensor did not detect it at the home position within the specified time. -or- The plate remained at the home position longer than the specified time. The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.</p>	<ul style="list-style-type: none"> <li>• If the motor is operating:                             <ol style="list-style-type: none"> <li>1. Punch HP sensor loose, broken, defective</li> <li>2. Punch HP sensor defective</li> </ol> </li> <li>• If the motor is not operating:                             <ol style="list-style-type: none"> <li>1. Motor blocked by an obstruction</li> <li>2. Motor harness loose, broken, defective</li> <li>3. Motor defective</li> <li>4. Finisher main board defective</li> </ol> </li> </ul>
<b>SC765</b>	<b>D</b>	<b>Fold Unit Bottom Fence Lift Motor Error</b>	
		<p>The fold unit bottom fence did not return to the home position within the specified time.</p>	<ul style="list-style-type: none"> <li>• Fold bottom fence mechanism overloaded due to an obstruction</li> <li>• Fold bottom fence HP sensor connector loose, broken, defective</li> <li>• Fold bottom fence HP sensor defective</li> <li>• Fold bottom fence lift motor connector loose, broken, defective</li> <li>• Fold bottom fence lift motor defective</li> <li>• Main control board defective</li> </ul>

Trouble-shooting

<b>SC766</b>	<b>D</b>	<b>Clamp Roller Retraction Motor</b>	
		<p>The clamp roller did not return to the home position within the specified time.</p>	<ul style="list-style-type: none"> <li>• Clamp roller mechanism overloaded due to an obstruction</li> <li>• Clamp roller HP sensor connector loose, broken, defective</li> <li>• Clamp roller HP sensor defective</li> <li>• Clamp roller retraction motor connector loose, broken, defective</li> <li>• Clamp roller retraction motor defective</li> <li>• Main control board defective</li> </ul>

<b>SC767</b>	<b>D</b>	<b>Stack Junction Gate Motor</b>	
		<p>The stack junction gate did not return to the home position within the specified time.</p>	<ul style="list-style-type: none"> <li>• Stack junction mechanism overloaded due to an obstruction</li> <li>• Stack junction gate HP sensor connector loose, broken, defective</li> <li>• Stack junction gate HP sensor defective</li> <li>• Stack junction gate motor connector loose, broken, defective</li> <li>• Stack junction gate motor defective</li> <li>• Main control board defective</li> </ul>

<b>SC770</b>	<b>D</b>	<b>Cover Interposer Lift Motor 1 Error</b>	
		<p>In the first tray:</p> <ul style="list-style-type: none"> <li>• The upper limit sensor did not detect the bottom plate within the specified time after the lift motor switched on to lift the bottom plate.</li> <li>• The lower limit sensor did not direct the bottom plate within the specified time after the lift motor switched on to lower the bottom plate.</li> </ul> <p><b>Note:</b> In both cases, 1 error count indicates a jam, 2 error counts issue this SC code.</p>	<ul style="list-style-type: none"> <li>• Lift motor, upper limit sensor, lower limit sensor harnesses, connectors loose, broken, defective</li> <li>• Lift motor defective</li> <li>• Upper limit sensor defective</li> <li>• Lower limit sensor defective</li> </ul>

<b>SC771</b>	<b>D</b>	<b>Cover Interposer Lift Motor 2 Error</b>	
		<p>In the second tray:</p> <ul style="list-style-type: none"> <li>• The upper limit sensor did not detect the bottom plate within the specified time after the lift motor switched on to lift the bottom plate.</li> <li>• The lower limit sensor did not direct the bottom plate within the specified time after the lift motor switched on to lower the bottom plate.</li> </ul> <p><b>Note:</b> In both cases, 1 error count indicates a jam, 2 error counts issue this SC code.</p>	<ul style="list-style-type: none"> <li>• Lift motor, upper limit sensor, lower limit sensor harnesses, connectors loose, broken, defective</li> <li>• Lift motor defective</li> <li>• Upper limit sensor defective</li> <li>• Lower limit sensor defective</li> </ul>

<b>SC772</b>	<b>D</b>	<b>Cover Interposer Pick-up Motor 1 Error</b>	
		<p>In the first tray:</p> <ul style="list-style-type: none"> <li>• While the pick-up roller motor was on, the pick-up roller HP sensor did not detect the pick-up roller at the home position <u>within</u> the specified number of pulses.</li> <li>• While the pick-up roller motor was on, the pick-up roller HP sensor did not detect the pick-up roller at the home position <u>above</u> the specified number of pulses.</li> </ul> <p><b>Note:</b> In both cases, 1 error count indicates a jam, 2 error counts issue this SC code.</p>	<ul style="list-style-type: none"> <li>• The pick-up motor, pick-up roller HP sensor harnesses, connectors were loose, broken, defective</li> <li>• Pick-up motor overload due to an obstruction</li> <li>• Pick-up motor defective</li> <li>• Pick-up roller HP sensor defective</li> </ul>

<b>SC773</b>	<b>D</b>	<b>Cover Interposer Pick-up Motor 2 Error</b>	
		<p>In the second tray:</p> <ul style="list-style-type: none"> <li>• While the pick-up roller motor was on, the pick-up roller HP sensor did not detect the pick-up roller at the home position <u>within</u> the specified number of pulses.</li> <li>• While the pick-up roller motor was on, the pick-up roller HP sensor did not detect the pick-up roller at the home position <u>above</u> the specified number of pulses.</li> </ul> <p><b>Note:</b> In both cases, 1 error count indicates a jam, 2 error counts issue this SC code.</p>	<ul style="list-style-type: none"> <li>• The pick-up motor, pick-up roller HP sensor harnesses, connectors were loose, broken, defective</li> <li>• Pick-up motor overload due to an obstruction</li> <li>• Pick-up motor defective</li> <li>• Pick-up roller HP sensor defective</li> </ul>

<b>SC775</b>	<b>D</b>	<b>Jogger Top Fence Motor: 3000-Sheet Finisher B830</b>	
		<p>The top fence HP sensor detected that: The top fence did not arrive at the home position within the specified number of pulses. -or- The top fence failed to leave the home position within the specified number of pulses.</p>	<ul style="list-style-type: none"> <li>• If the jogger top fence motor is operating:             <ol style="list-style-type: none"> <li>1. Top fence HP sensor harness loose, broken, defective</li> <li>2. Top fence HP sensor defective</li> </ol> </li> <li>• If the jogger top fence motor is not operating:             <ol style="list-style-type: none"> <li>1. Motor blocked by an obstruction</li> <li>2. Motor harness loose, broken, defective</li> <li>3. Motor defective</li> <li>4. Finisher main board defective</li> </ol> </li> </ul>

Trouble-shooting



<b>SC776</b>	<b>D</b>	<b>Jogger Bottom Fence Motor: 3000-Sheet Finisher B830</b>	
		<p>The bottom fence HP sensor detected that: The bottom fence did not arrive at the home position at the specified time. -or- The bottom fence failed to leave the home position at the specified time.</p>	<ul style="list-style-type: none"> <li>• If the jogger bottom fence motor is operating:                             <ol style="list-style-type: none"> <li>1. Bottom fence HP sensor harness loose, broken, defective</li> <li>2. Bottom fence HP sensor defective</li> </ol> </li> <li>• If the jogger bottom fence motor is not operating:                             <ol style="list-style-type: none"> <li>1. Motor blocked by an obstruction</li> <li>2. Motor harness loose, broken, defective</li> <li>3. Motor defective</li> <li>4. Finisher main board defective</li> </ol> </li> </ul>

<b>SC780</b>	<b>D</b>	<b>Z-Fold Feed Motor Error</b>	
		<p>The feed motor that drives the feed rollers and exit rollers in the Z-folding unit is not operating. The 1st alert signals a jam, the 2nd alert triggers this SC.</p>	<ul style="list-style-type: none"> <li>• Motor harness loose, broken, defective</li> <li>• Motor blocked by an obstruction</li> <li>• Motor defective</li> </ul>

<b>SC781</b>	<b>D</b>	<b>Z-Fold Lower Stopper Motor Error</b>	
		<p>The lower stopper failed to leave the home position with the specified number of motor pulses. <b>Note:</b> The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.</p>	<ul style="list-style-type: none"> <li>• Lower stopper motor disconnected, defective</li> <li>• Lower stopper motor overloaded due to obstruction</li> <li>• Lower stopper HP sensor disconnected, defective</li> </ul>

<b>SC782</b>	<b>D</b>	<b>Z-fold Upper Stopper Motor</b>	
		<p>The upper stopper failed to leave the home position with the specified number of motor pulses. <b>Note:</b> The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.</p>	<ul style="list-style-type: none"> <li>• Upper stopper motor disconnected, defective</li> <li>• Upper stopper motor overloaded due to obstruction</li> <li>• Upper stopper HP sensor disconnected, defective</li> </ul>

<b>SC784</b>	<b>D</b>	<b>Z-Fold Timing Sensor Adjustment Error 1</b>	
		<p>The output voltage light emitted from the sensor changed, but the return input was not sufficient to attain V0.</p>	<ul style="list-style-type: none"> <li>• Sensor, mirror dirty from paper dust, other particles</li> <li>• Harness loose, broken, defective</li> <li>• Mirror out of position</li> </ul>

<b>SC785</b>	<b>D</b>	<b>Z-Fold Timing Sensor Adjustment Error 2</b>	
		The output voltage light emitted from the sensor changed, but the return input was not sufficient to attain V0.	<ul style="list-style-type: none"> <li>• Sensor, mirror dirty from paper dust, other particles</li> <li>• Harness loose, broken, defective</li> <li>• Mirror out of position</li> </ul>

<b>SC786</b>	<b>D</b>	<b>Z-Fold Memory Error</b>	
		Several attempts to write to the Z-fold memory failed.	<ul style="list-style-type: none"> <li>• Cycle the machine OFF/ON</li> <li>• EEPROM defective</li> </ul>

<b>SC790</b>	<b>D</b>	<b>Booklet Stapler Jogger Motor Error</b>	
		The jogger fence HP sensor failed to detect the jogger fence at the home position within the specified time.	<ul style="list-style-type: none"> <li>• If the booklet stapler jogger motor is operating:                             <ol style="list-style-type: none"> <li>1. Jogger fence HP sensor harness loose, broken, defective</li> <li>2. Jogger fence HP sensor defective</li> </ol> </li> <li>• If the jogger bottom fence motor is not operating:                             <ol style="list-style-type: none"> <li>1. Motor blocked by an obstruction</li> <li>2. Motor harness loose, broken, defective</li> <li>3. Motor defective</li> <li>4. Finisher main board defective</li> </ol> </li> </ul>

<b>SC791</b>	<b>D</b>	<b>Booklet Stapler Output Motor</b>	
		The stack feed out belt HP sensor failed to detect the feed out belt at the home position within the specified time.	<ul style="list-style-type: none"> <li>• If the booklet stapler output motor is operating:                             <ol style="list-style-type: none"> <li>1. Stack feed out belt HP sensor harness loose, broken, defective</li> <li>2. Stack feed out belt HP sensor defective</li> </ol> </li> <li>• If the booklet stapler output motor is not operating:                             <ol style="list-style-type: none"> <li>1. Motor blocked by an obstruction</li> <li>2. Motor harness loose, broken, defective</li> <li>3. Motor defective</li> <li>4. Finisher main board defective</li> </ol> </li> </ul>

Trouble-shooting

<b>SC817</b>	<b>D</b>	<b>Monitor Error</b>	
		This is a file detection and electronic file signature check error when the boot loader attempts to read the self-diagnostic module, system kernel, or root system files from the OS Flash ROM, or the items on the SD card in the controller slot are false or corrupted.	<ul style="list-style-type: none"> <li>• OS Flash ROM data defective; change the controller firmware</li> <li>• SD card data defective; use another SD card</li> </ul>

**Error Codes**

<b>Code</b>	<b>Meaning</b>
0x0000 0000	BIOS boot error
0x0000 0001	Primary boot start load error
0x0000 0002	Secondary boot load error (Boot3.Elf)
0x0000 0003	Self-diagnostic module error (Diag.Elf)
0x0000 0004	Kernel start error (Netbsd)
0x0000 0005	Root file system file read error (Rootfs)
0xffff ffff	Other error

**Example:** Data in the self-diagnostic module, system kernel, or root system files are corrupted or do not exist in OS flash ROM or on the SD card  
Files in the self-diagnostic module, kernel, or root file system on the SD card have been falsified or altered

- Before discarding the SD card, try to update the data on the card. If the error occurs again, the card may be defective.
- Be sure to use an SD card that contains the correct electronic signature.

<b>SC833</b>		<b>Self-Diagnostic Error 7: Engine I/F ASIC</b>	
	<b>C</b>	A read/write verify error done on the resident RAM on the mother board (Engine I/F board failed).	<ul style="list-style-type: none"> <li>• Replace RAM DIMM on the mother board.</li> <li>• Replace mother board</li> </ul>

**NOTE:** For more details about this SC code error, execute **SP5990** to print an SMC report so you can read the error code. The error code is not displayed on the operation panel.

<b>SC834</b>	<b>D</b>	<b>Self-Diagnostic Error: Memory/RAM/DIMM</b>	
		An error occurred while the machine was performing the write/verify check for the optional RAM chip on the engine motherboard.	<ul style="list-style-type: none"> <li>• The memory on the motherboard is defective</li> <li>• The motherboard itself is defective</li> </ul>

<b>SC851</b>	<b>D</b>	<b>IEEE 1394 I/F Error</b>	
		Driver setting incorrect and cannot be used by the 1394 I/F.	<ul style="list-style-type: none"> <li>• NIB (PHY), LINK module defective; change the Interface Board</li> <li>• Controller board defective</li> </ul>

<b>SC853</b>	<b>D</b>	<b>Wireless LAN Error 1 (Not Used)</b>	
		The board that holds the wireless LAN card can be accessed, but the wireless LAN card (802.11b/Bluetooth) itself could not be accessed while the machine was starting up.	<ul style="list-style-type: none"> <li>• Wireless LAN card has been removed</li> </ul>

<b>SC854</b>	<b>D</b>	<b>Wireless LAN Error 2 (Not Used)</b>	
		The board that holds the wireless LAN card can be accessed, but the wireless LAN card (802.11b/Bluetooth) itself cannot be accessed while the machine was operating.	<ul style="list-style-type: none"> <li>• Wireless LAN card has been removed</li> </ul>

<b>SC855</b>	<b>D</b>	<b>Wireless LAN Error 3 (Not Used)</b>	
		An error is detected for the wireless LAN card (802.11b or Bluetooth).	<ul style="list-style-type: none"> <li>• Wireless LAN card defective</li> <li>• Wireless card connection not tight</li> </ul>

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<b>SC856</b>	<b>D</b>	<b>Wireless LAN Error 4 (Not Used)</b>	
		An error is detected for the wireless LAN board (802.11b or Bluetooth).	<ul style="list-style-type: none"> <li>• Wireless LAN card board defective</li> <li>• PCI connector loose (External controller interface board)</li> </ul>

<b>SC857</b>	<b>D</b>	<b>USB I/F Error 1</b>	
		The USB driver is unstable and generated an error. The USB I/F cannot be used.	<ul style="list-style-type: none"> <li>• USB board or controller board defective</li> </ul>

<b>SC860</b>	<b>D</b>	HDD Error 1	
		The driver could not acquire the status of the hard disks within 30 s, or the HDD is connected, but the driver detected one of the following errors:	<ul style="list-style-type: none"> <li>• Hard disks are not formatted</li> <li>• Hard disk corrupted; reformat the disks with SP mode</li> </ul>
		SS_NOT_READY	One or both HDDs are not ready.
		SS_BAD_LABEL	Partition types are different
		SS_READ_ERROR	Error returned during label read or label check
		SS_WRITE_ERROR	Error returned during label write or label check
		SS_FS_ERROR	File system repair failed
		SS_MOUNT_ERROR	File system mount failed
		SS_COMMAND_ERROR	Drive does not answer the command
		SS_KERNEL_ERROR	Kernel internal error
		SS_SIZE_ERROR	Driver size is too small
	SS_NO_PARTITION	Specified partition does not exist	
	SS_NO_FILE	Device files do not exist	

<b>SC861</b>	<b>B</b>	HDD Error 2: HDD Startup	
		The hard disks were detected at power on, but the disks were not detected within 30 s after recovery from the energy conservation mode.	<ul style="list-style-type: none"> <li>• Cable between the hard disks and controller board disconnected or loose</li> <li>• Hard disk power connector loose</li> <li>• One of the hard disks is defective</li> <li>• Controller or mother board defective</li> </ul>

<b>SC862</b>	<b>A</b>	HDD Error 3: Bad Sectors	
		The number of bad sectors on the HDD in the area for storing images exceeds 101.	<ul style="list-style-type: none"> <li>• Too many bad sectors accumulated on the HDDs.</li> <li>• Execute <b>SP5832 002</b> (HDD Formatting – IMH) to format the HDD and replace the bad sectors; copy the stamp data after doing this (use <b>SP 5853</b>).</li> <li>• HDD replacement is recommended because an HDD unit that generates bad sectors is probably of poor quality and performs poorly.</li> </ul>

<b>SC863</b>	<b>B</b>	HDD Error 4: HDD Read Error	
		The system cannot read the data written on the hard disks.	<ul style="list-style-type: none"> <li>• Sectors on the disks have become corrupted during operation; replace the hard disks</li> </ul>

<b>SC864</b>	<b>B</b>	HDD Error 5: Data CRC Error	
		During HDD operation, the HDD could not respond to a CRC error query.	<ul style="list-style-type: none"> <li>• Mother board defective</li> </ul>

<b>SC865</b>	<b>B</b>	<b>HDD Error 6: Access Error</b>	
		HDD responded to an error during operation for a condition other than those for SC863, SC864.	<ul style="list-style-type: none"> <li>• HDD defective</li> </ul>

<b>SC866</b>	<b>B</b>	<b>SD Card Error 1: Confirmation</b>	
		<p>The machine detects an electronic license error in the application on the SD card inserted in the controller slot when the machine is powered on.</p> <p>The program stored on the SD card contains electronic confirmation license data. If the program does not contain this license data, or if the result of the check reveals the license data in the program on the SD card is incorrect, then the checked program cannot execute and this SC code is displayed.</p>	<ul style="list-style-type: none"> <li>• Required program missing or incorrect</li> <li>• Download the correct program for this machine onto the SD card.</li> </ul>

Trouble-shooting

<b>SC867</b>	<b>B</b>	<b>SD Card Error 2: SD Card Removal</b>	
		The SD card inserted in the system slot when the machine was powered on was removed while the machine was still switched on.	<ul style="list-style-type: none"> <li>• SD card removed from boot slot on the controller</li> <li>• Cycle the machine OFF/ON</li> </ul>

<b>SC868</b>	<b>B</b>	<b>SD Card Error 3: SD Card Access</b>	
		An error is returned during an operation using an SD card. Debug console acquires more detailed information about the error.	<ul style="list-style-type: none"> <li>• SD card not inserted completely</li> <li>• SD card defective</li> <li>• Controller board defective</li> </ul> <p><b>Note:</b> If this SC code is displayed again after cycling the machine OFF and ON, use another SD card. If this does not solve the problem, replace the controller board.</p>

<b>SC870</b>	<b>B</b>	<b>Address Book Data Error</b>	
		<p>Address book data stored on the hard disk was detected as abnormal when it was accessed from either the operation panel or the network.</p> <p>The address book data cannot be read from the HDD or SD card where it is stored, or the data read from the media is defective.</p>	<ul style="list-style-type: none"> <li>• Software defective; switch OFF/ON, and change the controller firmware if the problem is not solved</li> <li>• HDD defective</li> </ul>
		<p><b>Recommended Recovery</b></p> <ul style="list-style-type: none"> <li>• Execute <b>SP5846 050</b> (UCS Settings – Initialize all Directory Info.) to initialize all address book data.</li> <li>• Initialize the user information with <b>SP5832 006</b> (HDD Formatting– User Information 1) and <b>SP5832 007</b> (HDD Formatting – User Information 2).</li> <li>• Replace the HDDs.</li> <li>• Boot the machine from the SD card.</li> </ul>	

<b>SC880</b>	<b>D</b>	<b>Media Link Board Error</b>	
		<p>A request for access to the Media Link Board was not answered within the specified time.</p>	<ul style="list-style-type: none"> <li>• Media Link Board defective</li> </ul>

<b>SC900</b>	<b>C</b>	<b>Electrical Total Counter Error</b>	
		<p>The total counter contains data that is not a number.</p>	<ul style="list-style-type: none"> <li>• NVRAM disturbed unexpectedly</li> <li>• NVRAM defective</li> <li>• NVRAM data corrupted</li> </ul>

<b>SC901</b>	<b>B</b>	<b>Mechanical Total Counter Error</b>	
		<p>The mechanical total counter is disconnected.</p>	<ul style="list-style-type: none"> <li>• User removed the counter while it was operating</li> <li>• Poor connection</li> <li>• Mechanical total counter defective</li> </ul>

<b>SC910</b>	<b>D</b>	<b>External Controller Error 1</b>	
<b>SC911</b>	<b>D</b>	<b>External Controller Error 2</b>	
<b>SC912</b>	<b>D</b>	<b>External Controller Error 3</b>	
<b>SC913</b>	<b>D</b>	<b>External Controller Error 4</b>	
<b>SC914</b>	<b>D</b>	<b>External Controller Error 5</b>	
		<p>The external controller alerted the machine about an error.</p>	<ul style="list-style-type: none"> <li>• Please refer to the instructions for the external controller.</li> </ul>

<b>SC919</b>	<b>B</b>	<b>External Controller Error 6</b>	
		While EAC (External Application Converter), the conversion module, was operating normally, the receipt of a power line interrupt signal from the FLUTE serial driver was detected, or BREAK signal from the other station was detected.	<ul style="list-style-type: none"> <li>• Power outage at the EFI controller</li> <li>• EFI controller was rebooted</li> <li>• Connection to EFI controller loose</li> </ul>

<b>SC920</b>	<b>D</b>	<b>Printer Error 1</b>	
		An internal application error was detected and operation cannot continue.	<ul style="list-style-type: none"> <li>• Software defective; switch OFF/ON, or change the controller firmware if the problem is not solved</li> <li>• Insufficient memory</li> </ul>

<b>SC921</b>	<b>D</b>	<b>Printer Error 2</b>	
		When the printer application started, the font to use could not be found on the SD card.	<ul style="list-style-type: none"> <li>• The font is not on the SD card</li> </ul>

Trouble-shooting



<b>SC925</b>	<b>B</b>	NetFile Function Error	
		<ul style="list-style-type: none"> <li>• The NetFile file management on the HDD cannot be used, or a NetFile management file is corrupted and operation cannot continue.</li> <li>• The HDDs are defective and they cannot be debugged or partitioned, so the Scan Router functions (delivery of received faxes, document capture, etc.), Fabric services, and other network functions cannot be used. (HDD status codes displayed on the debug console are described below.)</li> </ul>	<ul style="list-style-type: none"> <li>• HDD defective</li> <li>• Power supply to machine cut occurred while writing data to HDD</li> <li>• Software error</li> <li>• Please refer to the detailed descriptions below for recovery procedures.</li> </ul>

**HDD Status Codes Displayed on Debug Console**

Display	Meaning
(-1)	HDD not connected
(-2)	HDD not ready
(-3)	No level
(-4)	Partition type incorrect
(-5)	Error returned during level read or check
(-6)	Error returned during level read or check
(-7)	“filesystem” repair failed
(-8)	“filesystem” mount failed
(-9)	Drive does not answer command
(-10)	Internal kernel error
(-11)	Size of drive is too small
(-12)	Specified partition does not exist
(-13)	Device file does not exist

**Recovery Procedure 1**

If the machine returns SC codes for HDD errors (SC860 to SC865), please follow the recovery procedures described for these SC codes.

**Recovery Procedure 2**

If the machine does not return one of the five HDD errors (SC860 to SC865), cycle the machine OFF and ON. If this does not solve the problem, then initialize the NetFile partition on the HDD with **SP5832 011** (HDD Formatting – Ridoc I/F).

NetFiles: Jobs printed from the document server using a PC and DeskTopBinder

Before initializing the NetFile partition on the HDD please inform the client that:

1. Received faxes on the delivery server will be lost
2. All captured documents will be lost
3. DeskTopBinder/Print Job Manager/Desk Top Editor job history will be cleared
4. Documents stored on the document server, included scanned documents, will not be lost.
5. The first time the network accesses the machine, the management information must be reconfigured (this will require a significant amount of time).

Before initializing the Netfile partition with **SP5823 011**, do the following:

6. Enter the User Tools mode and execute "Delivery Settings" to print all received fax documents scheduled for delivery and delete them.
7. In the User Tools mode, execute Document Management> Batch Delete Transfer Documents.
8. Execute **SP5832 011** then cycle the machine OFF and ON.

**Recovery Procedure 3**

If "Procedure 2" does not solve the problem, execute **SP5832 001** (HDD Formatting – All), then cycle the machine OFF and ON.

Executing **SP5832 001** erases all document and address book data stored on the hard disks. Be sure to consult with the customer before executing this SP code.

**Recovery Procedure 4**

If "Recovery Procedures 1 to 3" fail to correct the problem, replace the HDD.

<b>SC951</b>	<b>B</b>	<b>F-Gate Signal Error</b>	
		When the IPU has already received the F-GATE signal (laser writing start trigger signal), the IPU receives another F-GATE signal.	<ul style="list-style-type: none"> <li>• Firmware defective</li> <li>• Update the BCU firmware.</li> <li>• BCU defective</li> </ul>

<b>SC953</b>	<b>B</b>	<b>Scanner Image Setting Error</b>	
		The settings required for image processing using the scanner are not sent from the IPU.	<ul style="list-style-type: none"> <li>• Check the harnesses, connectors between the MCU and BCU</li> <li>• Update the BCU, MCU firmware</li> <li>• MCU defective</li> <li>• BCU defective</li> <li>• IPU defective</li> </ul>

<b>SC954</b>	<b>B</b>	<b>Printer Image Setting Error</b>	
		The settings that are required for image processing using the printer controller are not sent from the IPU.	<ul style="list-style-type: none"> <li>• Check the harnesses, connectors to the LDB and IPU</li> <li>• Check the harnesses, connectors between IPU/LDB, LDB/Polygon Mirror Motor PCB</li> <li>• Update the BCU firmware</li> <li>• LD defective</li> <li>• IPU defective</li> <li>• Polygon mirror motor or polygon mirror motor PCB defective</li> </ul>

Trouble-shooting

<b>SC955</b>	<b>B</b>	<b>Memory Setting Error</b>	
		The settings that are required for image processing using the memory are not sent from the IPU.	<ul style="list-style-type: none"> <li>• Software bug</li> <li>• Hard disk unit defective</li> <li>• Controller defective</li> <li>• MCU defective</li> <li>• IPU defective</li> </ul>

<b>SC964</b>	<b>B</b>	<b>Scanner Start Error</b>	
		During scanned image processing, another command to start scanning was received.	<ul style="list-style-type: none"> <li>• Software bug</li> </ul>

<b>SC965</b>	<b>B</b>	<b>Print Start Error</b>	
		During print processing, another command to start printing was received.	<ul style="list-style-type: none"> <li>• Software bug</li> </ul>

<b>SC966</b>	<b>B</b>	<b>Polygon Mirror Motor Ready Error</b>	
		The polygon mirror motor does not reach ready status within 15 s after the copy paper is detected by the registration sensor. (15 s after the write request was issued for the IPU, the F-GATE signal remained LOW.)	<ul style="list-style-type: none"> <li>• Polygon mirror motor harness, connections to BCU loose, broken, defective</li> <li>• Polygon mirror motor drive board harness, connector to BCU loose, broken, defective</li> <li>• Polygon mirror motor defective</li> <li>• Polygon mirror motor drive board defective</li> <li>• BCU defective</li> </ul>

<b>SC970</b>	<b>B</b>	<b>Scanner Ready Error</b>	
		The scan ready signal is not generated by the MCU for more than 10 s after the read start signal is sent to the MCU.	<ul style="list-style-type: none"> <li>• Software bugSoftware bugny 6</li> <li>• Harnesses, connectors to the MCU loose, broken, defective</li> <li>• MCU defective</li> <li>• BCU defective</li> </ul>

<b>SC990</b>	<b>B</b>	Software Performance Error 1	
		An unexpected operation was encountered by the software.	<ul style="list-style-type: none"> <li>• Software crash; reboot the machine</li> </ul>
<p><b>Procedure 1</b></p> <p>If the HDDs have just been replaced, be sure to download the stamp data (<b>SP 5853</b>).</p> <p><b>Procedure 2</b></p> <p>With <b>SP5990 004</b> (SMC Report – Logging Data), print the most recent information for SC990.</p> <p>The SC990 information displays the file name, line number, and value. Report this information to your technical supervisor. For example:</p> <p><b>Function.c LINE: 123 VAL:0</b></p>			

<b>SC991</b>	<b>C</b>	Software Error	
		The software performs an unexpected function and the program cannot continue. Recovery processing allows the program to continue.	<ul style="list-style-type: none"> <li>• Software defective, re-boot<sup>*1</sup></li> </ul>

\*1: In order to get more details about SC991:

- 1) Execute **SP7403** or print an SMC Report (**SP5990**) to read the history of the 10 most recent logged errors.
- 2) If you press the zero key on the operation panel with the SP selection menu displayed, you will see detailed information about the recently logged SC991, including the software file name, line number, and so on. Of these two methods "1)" is the recommended method, because another SC could write over the information for the previous SC.

<b>SC994</b>	<b>C</b>	Operation Panel Management Records Exceeded	
		An error occurred because the number of records exceeded the limit for images managed in the service layer of the firmware. This can occur if there if there are too many application screens open on the operation panel.	<ul style="list-style-type: none"> <li>• No action required because this SC does not interfere with operation of the machine.</li> </ul>

<b>SC997</b>	<b>B</b>	Application Selection Error	
		An application did not start after pressing the appropriate key on the operation panel.	<ul style="list-style-type: none"> <li>• Software bug; change the firmware for the application that failed</li> <li>• A RAM or DIMM option required by the application is not installed or not installed correctly.</li> </ul>

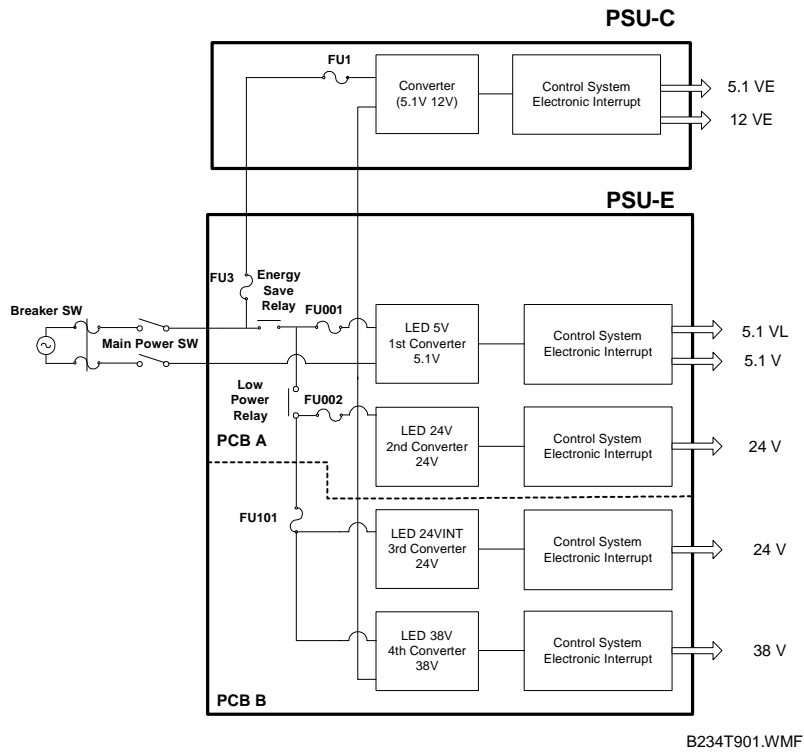
<b>SC998</b>	<b>B</b>	Application Start Error	
		Register processing does not execute for any application within 60 s after the machine is powered on. No application starts correctly, and all end abnormally.	<ul style="list-style-type: none"> <li>• Software defective; change the firmware for the application that failed</li> <li>• A RAM or DIMM option required by the application is not installed or not installed correctly.</li> </ul>

Trouble-shooting

<b>SC999</b>	<b>B</b>	<p><b>Program Download Error</b></p> <p>The program download from the SD card does not execute normally. This SC is not logged.</p>	<ul style="list-style-type: none"> <li>• Card installed incorrectly</li> <li>• BCU defective</li> <li>• SD card defective</li> <li>• Controller board defective</li> <li>• Power down during program downloading</li> <li>• Wrong type of card inserted (see Section 5 "Service Tables" for downloading procedures)</li> </ul>
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## 4.2.5 PSU PROTECTION CIRCUITS

### Overview



Trouble-shooting

The diagram above shows the outputs of each converter listed in Table 1.

PSU-C and PSU-E comprise the PSU. PSU-E consists of two PCBs: PCB-A and PCB-B. There are a total of five converters:

- PSU-C contains the energy save converter.
- PCB-A of PSU-E contains the 1st and 2nd converter.
- PCB-B of PSU-E contains the 3rd and 4th converter.

The PSU contains several protective circuits that will cut power to prevent damage to the machine and dangerous fire hazards that could be caused by harness short circuits or damage to the PSU circuits due an accidental power overload. These protective circuits are provided at three locations:

- AC input
- Converter control points
- Output points

Even if one or more of these protective circuits should fail, the others will act as backup to cut power to the machine if a problem occurs,

The output points are provided with electronic interrupt circuits, so fuses are not required at these locations.

**Table 1: PSU Converters and Output System**

<b>Converter</b>	<b>Output Name</b>	<b>Output Volatge</b>	<b>Output Connector</b>
Energy Save	VccE	5.1V	CN733-1p to 5p
	VcaE	12.0V	CN734-1p to 3p
1st	VccL	5.1V	CN711-1p to 3p
	Vcc	5.1V	CN712-1p to 3p
2nd	Vaa1	24.0V	CN713-1p to 2p
	Vaa2	24.0V	CN713-3p to 6p
	Vaa3	24.0V	CN714-1p to 6p
3rd	Vaa4	24.0V	CN715-1p to 2p
	Vaa5	24.0V	CN715-3p to 4p
4th	Vmm1	38.0V	CN716-1p
	Vmm2	38.0V	CN716-2p

**AC Input Module**

The AC input module has the following 5 fuses.

Input Fuse	Rating
FU1	3.15A / 250V
FU3	4A / 250V
FU001	3.15A / 250V
FU002	6.3A / 250V
FU101	6.3A / 250V

The AC input area of the PSU has fuses to cut AC power to the board in case of damage to the PSU board or one or more short circuits in the output area.

The location of the board where output is interrupted is different, depending on which fuse blows. Table 2 shows which areas of the PSU are affected by each fuse.

As shown in Table 2, FU1 cuts all circuits if damage or short circuits occur at PSU-C, which operates independently of the other circuits while the machine is in the sleep (energy conservation) mode. A short circuit in an input harness or other problem on PSU-C will also cause FU3 to blow and will cut all power output from the PSU.

Trouble-shooting

**Table 2: PSU Fuses and Related Power Output Interrupts**

Converter	Output Name	FU1	FU3	FU001	FU002	FU101
Energy Save	VccE	○	○			
	VcaE	○	○			
1st	VccL	○	○	○		
	Vcc	○	○	○		
2nd	Vaa1	○	○	○	○	
	Vaa2	○	○	○	○	
	Vaa3	○	○	○	○	
3rd	Vaa4	○	○	○	○	○
	Vaa5	○	○	○	○	○
4th	Vmm1	○	○	○	○	○
	Vmm2	○	○	○	○	○

If there is damage or a short circuit inside the 1st converter of the control system in PSU-E, FU001 blows and power is interrupted in the output of the 1st, 2nd, 3rd, and 4th converters.

If there is damage or a short circuit inside the 2nd converter of the control system in PSU-E, FU002 blows and power is interrupted in the output of the 2nd, 3rd, and 4th converters.

If there is damage or a short circuit inside the 3rd or 4th converter of the control system in PSU-E, FU101 blows and power is interrupted in the output of the 3rd and 4th converters.



**Converter Control Module**

The following devices provide primary protection against current surges:

- Energy save converter
- 1st Converter
- 2nd Converter
- 3rd Converter
- 4th Converter

Each converter generates the dc currents that are used by the CPU, motor drive boards, and other parts of the mainframe. Each converter is provided with a protection circuit to detect power surges.

As shown in Table 3, the power supply to the mainframe that is interrupted depends on which protection circuit is opened as a result of a power surge:

- The protection circuit of the energy save converter cuts all power if a problem occurs in the energy save converter.
- If the problem occurs in the 1st converter, power to the 1st, 2nd, 3rd, and 4th converters is interrupted.
- If the problem occurs in the 2nd converter, power to the 2nd, 3rd, and 4th converters is interrupted.
- If the problem occurs in the 3rd converter, power to only the 3rd converter is interrupted.
- If the problem occurs in the 4th converter, power to only the 4th converter is interrupted.

**Table 3: Converter Protection Circuits and Related Output Power Interrupts**

Converter	Output Name	Energy Save	1st	2nd	3rd	4th
Energy Save	VccE	O				
	VcaE	O				
1st	VccL	O	O			
	Vcc	O	O			
2nd	Vaa1	O	O	O		
	Vaa2	O	O	O		
	Vaa3	O	O	O		
3rd	Vaa4	O	O	O	O	
	Vaa5	O	O	O	O	
4th	Vmm1	O	O	O		O
	Vmm2	O	O	O		O

**Important!**

To reset the machine after a protection circuit has opened:

1. Switch OFF the operation switch.
2. Switch OFF the main power switch.
3. Allow the machine to remain off for at least 5 minutes.
4. Turn ON the main power switch.

**Output Module**

The PSU output module is provided with the following interrupt devices:

- Control system electronic interrupt: 5.1V, 12V
- Drive system electronic interrupt: 24V, 38V

The output fuses of previous models have been replaced by electronic interrupt circuits. These electronic interrupt circuits hav protect the machine from excessive current, excessive voltages, and overheating.

- Excessive current can be caused by a short at the power supply.
- Excessive voltage can be caused by damage to the PSU board, short circuits in external harnesses, or an unexpected surge in the external power supply.
- Overheating occurs when the temperature level of the elements in the control circuits of the converters becomes too high due to the failure of the PSU cooling fan, for example.

Table 4 shows how the electronic interrupt circuits react to these three problems.

**Table 4: Electronic Interrupt Detection Locations**

Converter	Output Name	Over Current	Over Voltage	Over Heating
Energy Save	VccE	○	○	○
	VcaE	○	○	○
1st	VccL	○	○	
	Vcc	○	○	
2nd	Vaa1	○	○	○
	Vaa2	○	○	○
	Vaa3	○	○	○
3rd	Vaa4	○	○	○
	Vaa5	○	○	○
4th	Vmm1	○	○	○
	Vmm2	○	○	○



**Important!**

To reset the machine after a protection circuit has opened:

1. Switch OFF the operation switch.
2. Switch OFF the main power switch.
3. Allow the machine to remain off for at least 5 minutes.
4. Turn ON the main power switch.

**PSU LED Display**

Four converters are built into PSU-E. Each converter is provided with one LED that lights when the converter is activated.

**PSU-E Converter LEDs**

Converter	LED Name
1st Converter	5V
2nd Converter	24V
3rd Converter	24VINT
4th Converter	38V

With the PSU box door open:

- LED 5V (1st Converter) and LED 24V (2nd Converter) are on PCB-A on the right.
- LED 24VINT (3rd Converter) and LED 38V (4th Converter) are on PCB-B on the left.

You can see which system is operating abnormally by checking whether these LEDs are on or off. If an LED is off, the converter for that LED is defective (see the above table).

The table below shows what will interrupt the output from a converter.

**Converter On/Off States According to Mode**

Converter	Output Name	Copy	Standby	Door Open	Energy Saver	Low Power	Off/Sleep
Energy Save	VccE	ON	ON	ON	ON	ON	ON
	VcaE	ON	ON	ON	ON	ON	ON
1st	VccL	ON	ON	ON	ON	ON	OFF
	Vcc	ON	ON	ON	ON	OFF	OFF
2nd	Vaa1	ON	ON	ON	ON	OFF	OFF
	Vaa2	ON	ON	ON	ON	OFF	OFF
	Vaa3	ON	ON	ON	ON	OFF	OFF
3rd	Vaa4	ON	ON	OFF	OFF	OFF	OFF
	Vaa5	ON	ON	OFF	OFF	OFF	OFF
4th	Vmm1	ON	ON	ON	OFF	OFF	OFF
	Vmm2	ON	ON	ON	OFF	OFF	OFF

### ***PSU-E Replacement***

Before replacing any part of the PSU (especially PCB-A, PCB-B):

- Switch the machine off.
- Disconnect it from the power source.
- Allow the machine to stand at least 10 minutes before you open the PSU box door.

PCB-A and PCB-B of the PSU-E are both provided with a large capacity electrolytic condenser.

Such large condensers store a large residual charge that can cause electrical shock if a board is handled too soon after the machine is turned off.



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## 5. SERVICE TABLES

### 5.1 SERVICE PROGRAM MODE OPERATION

The service program (SP) mode is used to check electrical data, change modes, and adjust values.

#### CAUTION



**Never turn off the main power switch when the power LED is lit or flashing. To avoid damaging the hard disk or memory, press the operation switch to switch the power off, wait for the power LED to go off, and then switch the main power switch off.**

#### *Service Mode Lock/Unlock*


At locations where the machine contains sensitive data, the service 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.

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 service technician 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 **SP5169** to "1".
3. After machine servicing is completed:
  - Change **SP5169** 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.

**To Enter and Exit the SP Mode**

1. Press Clear Modes key .
2. On the operation panel keypad, press ①⑦⑦.
3. Hold down Clear key  more than 3 seconds.  
The Copy SP or PM Counter items are displayed. If the printer or scanner/printer option is installed, the Printer SP and Scanner SP items are also available.
4. Press Copy SP.
5. To exit the SP mode, just press Exit in the upper right corner of the SP mode screen.

**To Switch to the Copy Window for Test Printing**

1. In the SP mode display, press Copy Window to switch to the copy operation screen when you need to select paper for a test print.
2. Use the copy window (copier mode) to select the appropriate settings (paper size, etc.) for the test print.
3. Press Start key  to execute the test print.
4. Press SP Mode (highlighted) to return to the SP mode screen and repeat from step 1.

### ***Using the SP Mode***


SP command numbers can be entered directly (if you know the entire number) or the command can be selected from the menus.

#### ***Direct Entry***

If you know all seven digits of the SP code, enter the seven numbers and press Enter key (#).

However, if you do not know all the numbers, enter only the first four numbers of the seven-digit SP and press Enter key (#). The display goes immediately to the first SP of that group. Then you can use the buttons to browse to the desired selection.

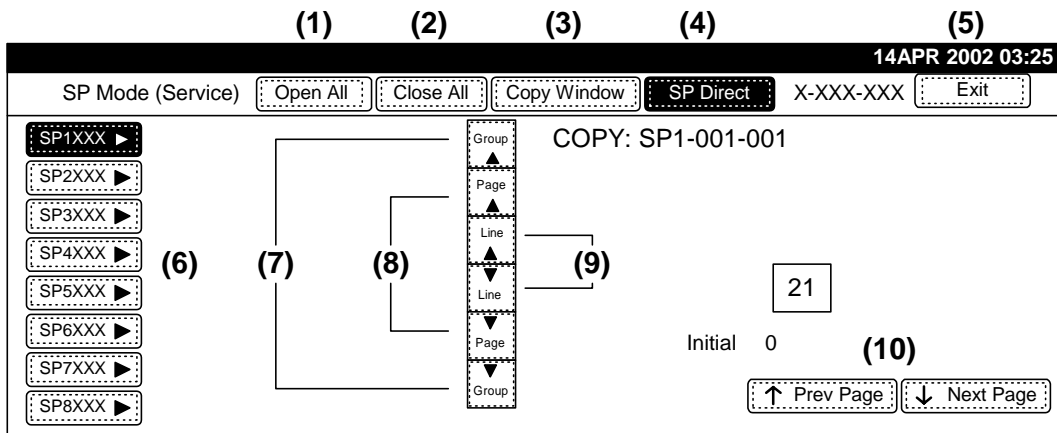
#### ***Button Selection Entry***

1. Refer to the SP Mode Tables at the end of this section to find the SP that you want to adjust.
2. Press the Group number on the left side SP Mode window that contains the SP that you want to adjust.
3. Use the scrolling buttons in the center of the SP mode window to display the SP number that you want to open, then, press that number to expand the list.
4. Use the center touch-panel buttons to scroll to the number and title of the item that you want to set, and press Enter key (#). The small entry box on the right is activated and displays the default or the current setting below.
5. To enter a setting
  - Press (\*) key to enter a minus sign. Then use the keypad to enter the appropriate number. The number you enter will write over the previous setting.
  - Press (#) to enter the setting. (If you enter a number that is out of range, the key press is ignored.)
  - Press Clear key  to cancel the data.
6. If you need to perform a test print, press Copy Window to open the copy window and select the settings for the test print. Press Start (D) key.
7. Press SP Mode (highlighted) in the copy window to return to the SP mode display.
8. When you are finished, press Exit twice to return to the copy window.



**SP Mode Button Summary**

Here is a short summary of the touch-panel buttons.



B234S902.WMF

(1)	<b>Open All</b> Opens all SP groups and sublevels.
(2)	<b>Close All</b> Closes all open groups and sublevels and restores the initial SP mode display.
(3)	<b>Copy Window</b> Opens the copy window (copy mode) so you can make test copies. To return to the SP mode screen, press SP Mode (highlighted) in the copy window.
(4)	<b>SP Direct</b> Enter the SP code directly with the number keys if you know the SP number, then press Enter key (#). (SP Direct must be highlighted before you can enter the number. Just press SP Direct if it is not highlighted.)
(5)	<b>Exit</b> Press twice to leave the SP mode and return to the copy window to resume normal operation.
(6)	<b>SPnXXX</b> Press any group number to open a list of SP codes and titles for that group. For example, to open the SP code list for SP1-nnn, press SP1XXX. If an SP has sublevels, it is marked with a right pointing triangle.
(7)	<b>Group</b> Press to scroll the display to the previous or next group.
(8)	<b>Page</b> Press to scroll to the previous or next display in segments the size of the screen display (page).
(9)	<b>Line</b> Press to scroll the display to the previous or next line, line by line.
(10)	<b>Prev Page / Next Page</b> Press to move the highlight on the left to the previous or next selection in the list.

**User, Super User SP Mode**

The new user and super user SP modes allow everyday users and trained users (super users) to adjust the machine operation for variable conditions such as paper type, changes in temperature and humidity around the machine, the effects of wear on machine parts over time, and so on.

There are two types of users:

- **Users:** Individuals who use the machine every day for copying and printing and are familiar with the operation of the machine.
- **Super Users:** Individuals who also use the machine for copying and printing. However, super users are also trained in basic replacement procedures for key components such as the development unit, charge corona unit, and so on. All the replacement procedures in the TCRU (Trained Customer Replacement Unit) manual require opening the Super User Program Mode tables and doing important adjustments after a component is replaced.

Access to the Super User Program Mode tables is restricted:

- A "Super User" is assigned an access code that allows access to all the features in the Super User Program Mode service tables.
- A user is not assigned an access code, but he or she can use the User Program Mode.

Most of the User/Super User SP codes duplicate the functions of the SP codes in the main service tables. The table below is a list of the "Engine SP" codes in the main service tables that have equivalent SP codes in the User/Super User SP service tables.

Engine SP	Engine SP Name	User SP	User SP Name	User	Super
1001	Leading Edge Registration	1710	Shift Image With Feed	O	O
1002	Side-to-Side Registration	1720	Shift Image Across Feed	O	O
1003	Paper Buckle Adjustment	1730	Adjust Paper Skew	X	O
1105	Fusing Temperature Adjustment	1740	Set Fusing Temperature	X	O
1902 001	Web Motor Control - Web Consumption	1750	Unit Initialization	X	O
---		2710	Adjust Image Density	X	O
3902	Process Control Data Display	001	Step 1	X	O
2201	Development Bias Adjustment	002	Step 2	X	O
2207 002	Toner Supply	003	Step 3	X	O
---		2720	Adjust Image Quality	X	O
2301 001	Transfer Current Adjustment – 1st Copy Side	001	Front Side	X	O
2301 005	Transfer Current Adjustment – 2nd Copy Side	002	Back Side	X	O
2803	Charge Corona Cleaner On	003	Reduce Halftone Streaks	X	O
None		004	Reduce White Spots	X	O

Service Tables

Engine SP	Engine SP Name	User SP	User SP Name	User	Super
---		2730	Unit Initialization	X	O
2801 001	TD Sensor Initial Setting	001	Development Unit	X	O
2962 001	Auto Process Control Execution	002	Drum/Charge Unit	X	O
2985 001	Coat Drum With Toner	003	Drum/Cleaning Unit	X	O
2909	Main Scan Magnification	2750	Magnification Across Feed	X	O
2910 001	Writing Sub Scan Magnification	2760	Magnification Adjustment With Feed	X	O
2913	Temp/Humidity	2770	Temperature/Humidity Display	X	O
---		3710	Sensor Settings	X	O
3103 001	ID Sensor Output Display – Vsg (Present)	001	1 ID Sensor 1	X	O
3103 002	ID Sensor Output Display – Vsg (Initial)	002	2 ID Sensor 2	X	O
3902 001	Process Control Data Display – Auto Process Control	003	3 Process Control On/Off	X	O
2220 001	Vref Manual Setting	004	TD Sensor Reference	X	O
2223 001	Vt Display	005	TD Sensor Output	X	O
7617	Parts PM Counter Display	3720	PM Counts	X	O
7618	Parts PM Counter Reset	3730	Clear PM Counts	X	O
2902	Test Pattern	3740	Select Test Pattern	X	O
None		3750	Reset to Defaults	X	O
6100	Staple Position Adjustment	6700	Staple Position Adjustment	O	O
6101	Punch Hole Position Adjustment	6705	Adj Punch Hole: With Feed	O	O
6102	Fine Adjust Stapler Jogger Fences	6710	Staple Jog Adjust Across Feed	X	O
6103	Adjust Output Jog Position	6715	Jogger Adjustment Across Feed	X	O
6105	Adj Leading Edge Stopper Pressure	6720	Staple Jog Adjust With Feed	X	O
6200	Adj Booklet Stapling Position	6730	Adjust Booklet Stapling Position	O	O
6201	Adjust Booklet Fold Position	6735	Adjust Booklet Fold Position	O	O
6202	Fine Adjust Staple Jogger Fence Position	6740	Fine Adjust Booklet: Adjust Across Feed	O	X
6203	Set Number of Folds	6745	Book Fold Repetitions	O	O
6301 001 - 009	Fine Adj Z-Fold 1	6755	Fine Adjust Z-Fold 1	O	X
6301 010 - 016	Fine Adj Z-Fold 1	6760	Fine Adjust Z-Fold 2	O	X

O: In the menu, X: Not in the menu

## 5.2 MAIN SERVICE PROGRAM MODE TABLES

**NOTE:** The Service Program Mode is for use only by service engineers so that they can properly maintain product quality. If this mode is used by anyone other than a service engineer for any reason, data might be deleted or settings might be changed. In such a case image quality can no longer be guaranteed.

### Service Table Key

Notation	What it means
[range / <b>default</b> / step]	[-9~+9 / <b>+3.0</b> / 0.1 mm] The default setting +3.0 can be adjusted in 0.1mm steps in the range ±9.
<i>Italics</i>	Comments added for reference.
<b>DFU</b>	Denotes "Design or Factory Use". Do not change this value.
<b>NA</b>	The feature or item is for North America.
<b>EU/ASIA</b>	The feature or item is for Europe / Asia.
<b>Japan only</b>	The feature or item is for Japan only.
SEF	Short Edge Feed
LEF	Long Edge Feed
NIA	No Information Available
<b>User SP</b>	This SP is part of the user/super user SP mode.
<b>Super User Only</b>	This denotes that the SP will be visible only to super users who have opened the Super User Program Mode with their access code. These SP codes are not available to users who display the SP codes by touching the [User Program] button. All the SP codes described below are available to super users.

Service  
Tables

### 5.2.1 COPIER SERVICE PROGRAM MODE TABLES

#### *SP1-nnn Feed*

1001	Leading Edge Registration	
	Adjusts the printing leading edge registration for feeding from the trays and duplex tray using the trimming area pattern (SP2-902-3, No.15). Use the "• / *key to enter the minus (-) before entering the value. The specification is 4± 2 mm	
001	Copier/LCT Paper Tray	[-9.0~+9.0 / <b>0</b> / 0.5 mm]
002	Duplex Tray	[-9.0~+9.0 / <b>0</b> / 0.5 mm]
003	Copier//LCT Paper Tray (Low Speed)	[-9.0~+9.0 / <b>0</b> / 0.5 mm]
004	Duplex Tray (Low Speed)	[-9.0~+9.0 / <b>0</b> / 0.5 mm]

1002	Side-to-side Registration	
	Adjusts the printing side-to-side registration from the 1st paper feed station using the trimming area pattern (SP2-902-3, No.15). Use the "• / *key to enter the minus (-) before entering the value. Specification: 0 ± 2.0 mm.	
001	1st Tray (Copier Tandem Tray)	[-9.0~+9.0 / <b>-0.1</b> / 0.5 mm]
002	2nd Tray (Copier)	[-9.0~+9.0 / <b>-0.6</b> / 0.5 mm]
003	3rd Tray (Copier)	[-9.0~+9.0 / <b>-0.3</b> / 0.5 mm]
004	4th Tray (LCT Tray 1)	[-9.0~+9.0 / <b>-0.8</b> / 0.5 mm]
005	5th Tray (LCT Tray 2)	[-9.0~+9.0 / <b>-0.8</b> / 0.5 mm]
006	6th Tray (LCT Tray 3)	[-9.0~+9.0 / <b>+0.3</b> / 0.5 mm]
007	7th Tray (Bypass Tray)	[-9.0~+9.0 / <b>-0.3</b> / 0.5 mm]
008	Duplex Tray (Copier)	[-9.0~+9.0 / <b>0</b> / 0.5 mm]

1003	Paper Buckle Adjustment (Registration)	
	Adjusts the relay clutch timing at registration. The relay clutch timing determines the amount of paper buckle at registration. (A plus or minus setting increases or decreases the amount of buckle.)	
001	Copier Paper Tray	[-9~+9 / <b>+4</b> / 1 mm]
002	LCT	[-9~+9 / <b>+4</b> / 1 mm]
003	Duplex Tray	[-9~+9 / <b>+4</b> / 1 mm]
004	Adjust Buckle Amount	Manual adjustment

1016	Fine Adjust Reg Roller Speed	
	This SP adjusts the speed of the registration roller. The speed can be adjusted independently for paper feed 1) when the paper is fed for 1st side printing and 2) when paper is fed for 2nd side printing after the 1st side has been printed.	
001	Font Side	-3 to +3 / 0 / 0.1 mm
002	Back Side	

1105	Fusing Temperature Adjustment	
001	Standby (Normal Temp Mode)	
	Sets standby temperature for normal temperature mode. [140~190*/1 deg C] * e-STUDIO901: <b>153</b> * e-STUDIO1101: <b>165</b> * e-STUDIO1351: <b>178</b>	
002	Standby (Low Temp Mode)	
	Sets standby temperature for low temperature mode. [140~190*/1 deg C] * e-STUDIO901: <b>163</b> * e-STUDIO1101: <b>175</b> * e-STUDIO1351: <b>188</b>	
003	Standby (High Temp Mode)	
	Sets standby temperature for high temperature mode. [140~190*/1 deg C] * e-STUDIO901: <b>148</b> * e-STUDIO1101: <b>160</b> * e-STUDIO1351: <b>173</b>	
004	Low Limit (Normal Temp Mode)	
	Sets the low limit for the fusing temperature in normal temperature mode. If the fusing temperature falls below this temperature while operating in the normal temperature mode, the machine will stop. After the fusing temperature rises above this temperature, the machine resumes operation in normal temperature mode. [120~180*/1 deg C] * e-STUDIO901: <b>133</b> * e-STUDIO1101: <b>145</b> * e-STUDIO1351: <b>158</b>	
005	Low Limit (Low Temp Mode)	
	Sets the low limit for the fusing temperature in low temperature mode. If the fusing temperature falls below this temperature while operating in the low temperature mode, the machine will stop. After the fusing temperature rises above this temperature, the machine resumes operation in low temperature mode. [120~180*/1 deg C] * e-STUDIO901: <b>143</b> * e-STUDIO1101: <b>155</b> * e-STUDIO1351: <b>168</b>	

Service  
Tables

006	Low Limit (High Temp Mode)
	Sets the low limit for the fusing temperature in high temperature mode. If the fusing temperature falls below this temperature while operating in the high temperature mode, the machine will stop. After the fusing temperature rises above this temperature, the machine resumes operation in high temperature mode. [120~180*/1 deg C] * e-STUDIO901: <b>128</b> * e-STUDIO1101: <b>140</b> * e-STUDIO1351: <b>153</b>
007	Fusing Temp Correction: Small
	Sets the amount to raise the fusing temperature above the standby temperature to print on paper sizes smaller than A4/LT LEF. [0~20 / <b>10</b> / 1 deg C] <b>Note:</b> You can use SP1105 011 to lower the threshold for the small size to B5.
008	Fusing Temp Correction: Normal
	Sets the amount to raise the fusing temperature above the standby temperature to print on paper sizes A4/LT and wider. [0~10 / <b>5</b> / 1] <b>Note:</b> If the threshold paper size is lowered to B5 with SP1105 013, this 008 takes effect for paper sizes wider than B5.
009	Fusing Temp Correction (Translucent Sheets)
	Specifies the amount to raise or lower the fusing from the standby temperature to print on translucent paper. [-10 ~ +10 / <b>0</b> / 1 deg C]
010	Fusing Lamp Switching (at Warm-up)
	Specifies the fusing temperature at which 1 lamp of the 3 fusing lamps is switched off. The lamp that is switched off is the one heating the center of the hot roller. Switching this lamp off prevents overshooting the warm-up temperature. [20~190*/1 deg C] * e-STUDIO901: <b>99</b> * e-STUDIO1101: <b>99</b> * e-STUDIO1351: <b>95</b>
011	Fusing Temp Adjustment (Low Power Mode)
	Sets the target temperature of the hot roller for low power mode. The hot roller remains at this temperature until the machine leaves low power mode. [20~170*/1 deg C] * e-STUDIO901: <b>95</b> * e-STUDIO1101: <b>107</b> * e-STUDIO1351: <b>107</b>
012	Fusing Idling Start Temp
	Sets the temperature at which fusing idling starts. Fusing idling rotates the hot roller with no paper feed to ensure that the hot roller heats uniformly. [100~160/ <b>160</b> /1 deg C]
013	Select Paper Size for Temp Correction (0:LT,1:B5)
	Sets the paper size used to define "small paper" for SP codes 1105 007, SP1105 008. [0~1 / <b>1</b> / 1] 0: LT/A4 LEF 1: B5 LEF (257 mm wide)

014	Fusing Lamp Switching After Low Power Mode
	<p>Specifies the temperature at which 1 of the 3 fusing lamps is switched off before reaching the target standby temperature when the machine returns from the low power mode. The 3rd lamp is switched off before reaching the target standby temperature to prevent overshooting the target temperature.</p> <p style="text-align: center;"><b>SP1105-1 – SP1104 14 = Actual Temperature</b></p> <p>[-20 ~ 0/ */1 deg C]                  * e-STUDIO901: <b>-10</b>                  * e-STUDIO1101: <b>-10</b>                  * e-STUDIO1351: <b>-20</b></p>
015	1st Print After Low Power Mode
	<p>Sets the temperature at which the first sheet is allowed to print before the hot roller reaches the target standby temperature after returning from low power mode.</p> <p>[-50 ~ 0/ */ 1 deg C]                  * e-STUDIO901: <b>-20</b>                  * e-STUDIO1101: <b>-20</b>                  * e-STUDIO1351: <b>-5</b></p>
016	Fusing Temp Switch
	<p>This SP can be adjusted for the paper type, efficiency of fusing, and to reduce paper curl.</p> <p>0: Medium                  1: Low                  2: High</p> <ul style="list-style-type: none"> <li>• Raise the temperature setting if you see loose toner, indicating that the toner has not fused completely with the surface of the paper.</li> <li>• Lower the temperature setting if the paper is excessively curled after it leaves the machine.</li> </ul> <p><b>Note:</b> This SP is equivalent to Super User SP Mode <b>SP1740 001</b>.                  [0~2 / 0 / 1]</p>
017	Small Size (2 Copies)
	<p>This SP adjusts the fusing temperature for "#2 Copies". These are small paper sizes (B5 SEF and smaller). The value entered here is added to the "Ready" temperature (standby temperature). The job will begin when the hot roller reaches: Standby Temp. + SP1105 17 setting.                  [0~20 / 10 / 1 degrees]</p>
018	Small Size (Switch to 1 Lamp)
	<p>This SP selects one fusing lamp for small paper sizes (B5 SEF and smaller).                  [0~2 / 1 / 1]</p>
019	Small Size (Switch to 2 Lamps)
	<p>This SP selects two fusing lamps for small paper sizes (B5 SEF and smaller).                  [0~2 / 1 / 1]</p>

Service Tables

1106	Fusing Temperature Display	
	Displays the fusing temperature.	

1107	Fusing Idling Time Setting	
001	Normal/High Temp Mode	Sets the length of time the hot roller is allowed to rotate before the first sheet is fed. This idling time allows the hot roller to heat up faster. [0~60 / 10 / 1 s]
002	Low Temp Mode	



1109	Fusing Nip Band Check
	Use OHP to execute this SP and feed 1 sheet between the hot roller and pressure roller where it remains for 30 s and is then fed out so you can measure the nip band width. [OFF, ON] <b>Note:</b> This SP must be switched off after the nip band check is completed. If this SP remains on, this will cause paper to jam in the fusing unit (SC559).

1159	Fusing Jam: SC Setting
	This SP determines what the machine does if paper jams occur in the fusing unit for three consecutive sheets of paper. 0 (default): A jam alert is shown on the screen. The customer can remove the jam and the machine works normally after that. 1: SC559 occurs. The technician must remove the jam.

1902	Web Motor Control		
001	Web Consumption		
	Displays how much of the web has been used, expressed as a percentage of the roll consumed. Switch the machine off/on after changing this setting. [0~107 / 0 / 1%] <i>When you install a partially used roll from another machine, read this SP before removal, then input that value with this SP on the next machine. Otherwise, the machine has no way of knowing how much of the partially used roll has been consumed.</i>		
002	Web Motor Drive Interval		
	Determines how often the web motor turns on. [3 to 130/*0.1 sec.] <b>Note:</b> The default setting is different depending on the area and model (see below).		
	<b>Model</b>	<b>NA</b>	<b>EU/Asia</b>
	e-STUDIO901	<b>19.8</b>	<b>13.2</b>
	e-STUDIO1101	<b>16.2</b>	<b>10.8</b>
	e-STUDIO1351	<b>12.9</b>	<b>8.6</b>
003	Web Motor Drive Time		
	Changes the time that the web motor is driven. [0.3~3.5 / 2.8 / 0.1 s]		
004	Web Near End Setting		
	Changes the web consumption ratio at which web near end is displayed. EUR/A: [0~100 / 90 / 1%] NA: [0~100 / 92 / 1%]		
005	Web Motor Drive Interval (Low Speed)		
	Determines how often the web motor turns on in Low Speed mode. [3~130/*0.1s] <b>Note:</b> The default setting is different depending on the area and model (see below).		
	<b>Model</b>	<b>NA</b>	<b>EU/Asia</b>
	e-STUDIO901	<b>19.8</b>	<b>13.2</b>
	e-STUDIO1101	<b>19.8</b>	<b>13.2</b>
	e-STUDIO1351	<b>16.2</b>	<b>10.8</b>

1903	Web Drive Time	
001	Web Total Time Display (x 200ms)	
	Displays the total amount of time (seconds) elapsed during web roll feed.	
002	Web Actual Time Display (x 100ms)	
	Displays the total amount of web roll motor operation time (seconds) for feeding the current web roll.	

1909	CIS Image Position Adj: PWM Duty After Adj	
	Displays the results of the settings done with SP1910.	
001	Tray 1, 2, 3	
002	LCT	
003	Duplex	

1910	CIS Image Pos Adj: LED Strength	
	Press [Execute] to do the adjustment.	
	<b>Note:</b>	
	<ul style="list-style-type: none"> <li>For more about adjustment of the CIS components in the copier, see Section "3. Replacement and Adjustment".</li> <li>The CIS of the LCT should be adjusted at installation. For more see Section "1. Installation".</li> </ul>	
001	Tray 1, 2, 3	Press [Execute].
002	LCT	
003	Duplex	

1912	CIS Image Pos Adj: Normal Paper	
	There are three image position sensors units (1 in the LCT and 2 in the copier). Each image position sensor unit contains a CIS. Each CIS can be adjusted independently for normal paper.	
	<b>Note:</b>	
	<ul style="list-style-type: none"> <li>For more about adjustment of the CIS components in the copier, see Section "3. Replacement and Adjustment".</li> <li>The CIS of the LCT should be adjusted at installation. For more see Section "1. Installation".</li> </ul>	
001	Tray 1, 2, 3	
002	LCT	
003	Duplex	

Service Tables

1914	CIS Image Pos Adj: Get Pixels	
	Displays the dot (pixel) data resulting from the execution of SP1912.	
001	Tray 1, 2, 3	Range: 0~1216
002	LCT	
003	Duplex	

1915	Fine Adjust CIS <b>DFU</b>
------	----------------------------

1916	Adjust Duplex/Invert Tray <b>DFU</b>
------	--------------------------------------

**SP2-*nnn* Drum**

2001	Charge Corona Bias Adjustment
001	Grid Voltage in Imaging Area (Auto Process Control OFF)
	Adjusts the voltage applied to the grid plate during copying when auto process control is <b>off</b> . [-600~-1800 / <b>-900</b> / 10 V] Normally, there is no need to adjust this. However, if there is an ID or TD sensor problem, the machine goes into fixed toner supply mode. After replacing the drum or charge corona wire, reset this value to the default.
002	Grid Voltage in ID Sensor Pattern (Auto Process Control OFF)
	Adjusts the voltage applied to the grid plate when making the ID sensor pattern, when auto process control is switched <b>off</b> . [-600~-1800 / <b>-770</b> / 10 V] Normally, there is no need to adjust this. If the user wants high-density copies, the sensor pattern must be lighter, so this voltage must be a higher negative voltage.
003	Grid Voltage in Imaging Area (Auto Process Control ON)
	Adjusts the voltage applied to the grid plate during copying when auto process control is switched <b>on</b> . [-600~-1800 / <b>-1000</b> / 10 V] This voltage changes every time auto process control starts up (every time the machine is switched on)
004	Total Current – Normal Mode
	Adjusts the amount of current used to apply voltage to the grid plate during normal operation mode (Text, Text/Photo, Pale, Generation copies). [-1000~-1800 / <b>-1550</b> / 10 $\mu$ A]
005	Total Corona Current (Photo Mode)
	Adjusts the current applied to the charge corona wire for Photo mode. [-1000~-1800 / <b>-1600</b> / 10 $\mu$ A]
006	Vd (Auto Process Control)
	Adjusts the target VD voltage for Process Control Initial Setting. [-700~-950 / <b>-800</b> / 5 V]
007	Grid Voltage in Imaging Area (Auto Process Control off / Low Speed)
	Adjusts the voltage applied to the grid plate during copying when auto process control is switched off and the machine is in the low speed mode. [-600~-1800 / <b>-850</b> / 10 V]
008	Grid Voltage in ID Sensor Pattern (Auto Process Control off / Low Speed)
	Adjusts the voltage applied to the grid plate when making the ID sensor pattern, when auto process control is switched <b>off</b> and the machine is in the low speed mode. [-600~-1800 / <b>-710</b> / 10 V]
009	Grid Voltage Correction in Auto Process Control (Low Speed)
	Adjusts the voltage applied to the grid plate when auto process control is on and the machine is in the low speed mode. [-600~-1800 / <b>-900</b> / 10 V]
010	Total Corona Current (Low Speed)
	Adjusts the current applied to the charge corona wire when the machine is in the low speed mode and normal copy mode (any mode except Photo Mode). [-1000~-1800 / <b>-1550</b> / 10 $\mu$ A]
011	Total Corona Current for Photos
	Adjusts the current applied to the charge corona wire when the machine is in the low speed mode and Photo Mode. [-1000~-1800 / <b>-1600</b> / 10 $\mu$ A]
012	Vd (Auto Process Control)
	[700~950 / <b>800</b> / 5 V]

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Tables

2002	Charge Corona Bias Adj: Pre-Charge
	These SP code allow you to display and change the settings for the operation mode of the pre-charge unit. <b>Note:</b> The pre-charge unit supplements the function of the charge unit by reducing latent images and preventing low drum potential sensor readings in the first copy cycle.
001	Set Pre-Charge Mode
	Determines how the pre-charge unit operates after it is cycled off/on for a reset in response to pre-charge unit SC code SC312 or SC313. [0~2 / 1 / 1] 0: Off. Pre-charge unit does not operate after the machine is cycled off/on. 1: On. Pre-charge unit operates after the machine is cycled off/on. 2: Pre-charge unit operates only after the main motor turns on. Notes This display is turned off If the machine returns a pre-charge related SC code when this SP code is set to "0" (Off).
002	Pre-Charge Total Current
	Sets the total amount of current used to apply a charge to the drum when the pre-charge unit turns on for normal copy jobs. This setting does not apply to low speed mode copying. [500~1500 / <b>600</b> / 10 $\mu$ ]
003	Pre-Charge Current (Low Speed)
	Sets the total amount of current used to apply a charge to the drum when the pre-charge unit turns on for low speed copy jobs. This setting applies to low speed only. [500~1500 / <b>600</b> / 10 $\mu$ ]

2101	Printing Erase Margin
001	Leading Edge
	Adjusts the leading edge erase margin. [0~9.0 / <b>3.5</b> / 0.1 mm]
002	Trailing Edge
	Adjusts the trailing edge erase margin. [0~9.0 / <b>2.5</b> / 0.1 mm]
003	Left edge
	Adjusts the left side erase margin. [0~9.0 / <b>2.0</b> / 0.1 mm]
004	Right edge
	Adjusts the right side erase margin. [0~9.0 / <b>2.0</b> / 0.1 mm]

2103	LD Power Adjustment	
	This SP mode corrects the banding caused by: 1) changes in drum characteristics over time, and 2) LD power fluctuations.	
001	LD0 Power Adjustment	Adjusts 1200 dpi. [-70 to +185 / 0 / 1] If you adjust one or more of these SP codes, you must select the appropriated SP (009 to 016 below) to enable adjustment.
002	LD1 Power Adjustment	
003	LD2 Power Adjustment	
004	LD3 Power Adjustment	
005	LD4 Power Adjustment	
006	LD5 Power Adjustment	
007	LD6 Power Adjustment	
008	LD7 Power Adjustment	
	The SP codes below switch SP2103 001 to 008 on and off. For example, after adjusting SP2103 001, set SP2103 009 to "1".	
009	LD0 Power Adjustment Start/End	[0~1 / 0 / 1]
010	LD1 Power Adjustment Start/End	0: Off
011	LD2 Power Adjustment Start/End	1: On (enables adjustment)
012	LD3 Power Adjustment Start/End	
013	LD4 Power Adjustment Start/End	
014	LD5 Power Adjustment Start/End	
015	LD6 Power Adjustment Start/End	
016	LD7 Power Adjustment Start/End	

2104	LD Power Adjustment (for ID Sensor Pattern) <b>DFU</b>	
	This SP sets the LD power level for the creation of the ID sensor pattern and the Vh pattern when process control is on and operating (enabled with SP3901). These SP codes are automatically reset to their defaults after:	
	<ul style="list-style-type: none"> <li>Leaving the SP mode.</li> <li>The copier is switched off and on.</li> </ul>	
	LD Power Adjustment – ID Sensor Pattern	
001	Normal Speed	[0~15 / 6 / 1]
002	Low Speed	
	LD Power Adjustment – Vh Pattern	
003	Normal Speed	[0~15 / 6 / 1]
004	Low Speed	

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2105	LD Power Correction
	These SP codes correct the banding caused by: 1) changes in drum characteristics over time, and 2) LD power fluctuations.
001	Correction in Printer Mode
	If switched ON, this allows each channel to be adjusted for 1200 dpi print output with the SP settings below (LD0 ~ LD7). [0~1 / <b>1</b> / 1] 0: OFF, 1: ON
002	Correction in Copy Mode
	If switched ON, this allows each channel to be adjusted for copy output with the SP settings below (LD0 ~ LD7). [0~1 / <b>0</b> / 1] 0: OFF, 1: ON
003	LD0 Power Correction
	Correct the power of LD0 after either SP2105-001 or -002 is switched on. [-40~+40 / <b>-2</b> / 1]
004	LD1 Power Correction
	Corrects the power of LD1 after either SP2105-001 or -002 is switched on. [-40~+40 / <b>-2</b> / 1]
005	LD2 Power Correction
	Corrects the power of LD2 after either SP2105-001 or -002 is switched on. [-40~+40 / <b>+2</b> / 1]
006	LD3 Power Correction
	Corrects the power of LD3 after either SP2105-001 or -002 is switched on. [-40~+40 / <b>+2</b> / 1]
007	LD4 Power Correction
	Corrects the power of LD4 after either SP2105-001 or -002 is switched on. [-40~+40 / <b>+2</b> / 1]
008	LD5 Power Correction
	Corrects the power of LD5 after either SP2105-001 or -002 is switched on. [-40~+40 / <b>+2</b> / 1]
009	LD6 Power Correction
	Corrects the power of LD6 after either SP2105-001 or -002 is switched on. [-40~+40 / <b>-2</b> / 1]
010	LD7 Power Correction
	Corrects the power of LD7 after either SP2105-001 or -002 is switched on. [-40~+40 / <b>-2</b> / 1]

2111	FCI Shade Detection	
	Allows shading detection if FCI (Fine Character Adjustment) smoothing is on. With this SP switched on, photos and painted areas are detected, and FCI is not applied in these areas. FCI is used for printer mode output only.	
001	Matrix Size (600 dpi)	[0~128 / <b>18</b> / 1] 0: OFF
002	Threshold Value (600 dpi)	[0~128 / <b>4</b> / 1] 0: OFF
003	Matrix Size (400 dpi)	[0~128 / <b>18</b> / 1] 0: OFF
004	Threshold Value (400 dpi)	[0~128 / <b>4</b> / 1] 0: OFF

2114	Printer Dot Edge Parameter Setting	
	Allows setting a parameter for binary edge processing for the printer application with FCI switched off. This SP allows adjustment of image quality if the desired effect cannot be achieved with the default settings for edge processing. In general, increasing the values produces thicker lines and decreasing them produces thinner lines. However, some settings could cause defective images on white paper.	
001	Leading Dot Level Setting (1200 dpi)	[2~8 / <b>5</b> / 1]
002	Trailing Dot Level Setting (1200 dpi)	[2~8 / <b>5</b> / 1]
003	Multiple Dot Level Setting (1200 dpi)	[2~8 / <b>8</b> / 1]
004	Independent Dot Level Setting (1200 dpi)	[2~8 / <b>6</b> / 1]
005	Leading Dot Level Setting (600 dpi)	[2~16 / <b>12</b> / 1]
006	Trailing Dot Level Setting (600 dpi)	[2~16 / <b>12</b> / 1]
007	Multiple Dot Level Setting (600 dpi)	[2~16 / <b>16</b> / 1]
008	Independent Dot Level Setting (600 dpi)	[2~16 / <b>12</b> / 1]

Service  
Tables



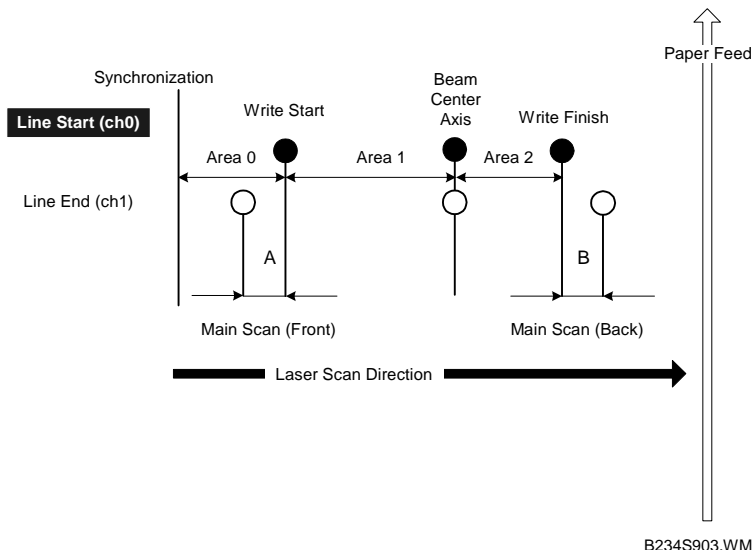
2115	Main Scan Beam Pitch Adjustment	
	A label attached to the LD unit service part lists the correct settings.	
001	Pitch Adjustment Between LD0 and LD2 (LD0)	[-100~100 / 0 / 1 μm]
002	Pitch Adjustment Between LD0 and LD4 (LD0)	[-100~100 / 0 / 1 μm]
003	Pitch Adjustment Between LD0 and LD6 (LD0)	[-100~100 / 0 / 1 μm]
004	Pitch Adjustment Between LD1 and LD3 (LD1)	[-100~100 / 0 / 1 μm]
005	Pitch Adjustment Between LD1 and LD5 (LD1)	[-100~100 / 0 / 1 μm]
006	Pitch Adjustment Between LD1 and LD7 (LD1)	[-100~100 / 0 / 1 μm]
007	Pitch Adjustment Between LD0 and LD1 (Ch0 ~ Ch1)	[-99~99 / 0 / 1 μm]
008	Between LD0 and LD1 (Ch0 ~ Ch1 – Front Main Scan)	[-99~99 / 0 / 1 μm]
009	Between LD0 and LD1 (Ch0 ~ Ch1 – Rear Main Scan)	[-99~99 / 0 / 1 μm]

Two adjustments have been added to adjust:

- The timing of the clock that controls image writing in the sub scan direction
- The speed of the revolution of the polygon mirror motor that affects image writing in the sub scan direction

There are three new SP codes for laser beam pitch adjustment: SP2115 007, 008, 009. These new SPs are provided to correct errors in the rate of magnification from the time the line scan starts until it ends.

The rate of the main scan magnification error is the amount of correction to be done for the magnification rate based on the length of the distance in the main scan direction for line end LD1 (ch1) with reference to line start LD0 (ch0). These are the lengths of the distances "A" and "B" in the illustration below.



B234S903.WMF

With SP2115 007 set to "0", there can be as much variation in the pitch as shown above in the front area ("A") and the rear area ("B"). To correct this problem the pitches of Area 1 and Area 2 can be adjusted independently with two SP codes.

SP2115 008 is used to adjust the pitch of Area-1. SP2115 009 is used to adjust the pitch of Area-2.

2201	Development Bias Adjustment		
001	Image Area (Normal Speed)		
	Adjusts the development bias for copying. [-200~-800 / <b>-550</b> / 10 V] <i>This can be adjusted as a temporary measure if faint copies appear due to an aging drum.</i>		
002	ID Sensor Pattern (Auto Process Control OFF)		
	Adjusts the development bias for making the ID sensor pattern for VSP measurement when the auto process control is set to off. [-200~-800 / <b>-400</b> / 10 V] <i>This should not be used in the field, because it affects ID sensor pattern density, which affects toner supply.</i>		
003	Transparencies		
	Adjusts the development bias for copying on Transparencies. [-200~-800 / <b>-240</b> / 10 V]		
004	ID Sensor Development Potential		
	Adjusts the development potential for making the ID sensor pattern for the Vsp measurement when the auto process control is set on. [140~380 / <b>-480</b> / 10 V]		
005	Image Area (Low Speed)		
	Adjusts the development bias for copying in low speed mode. [200~800 / <b>-370</b> / 10 V]		
006	ID Sensor Pattern (Auto Process Control OFF/Low Speed)		
	Adjusts the development bias for making the ID sensor pattern for VSP measurement when the auto process control is set to off and the machine is in low speed mode. [0~200 / * / 10 V] <b>Note:</b> The default setting is different depending on the model and geographical area.		
	<b>Model</b>	<b>NA</b>	<b>EU/ASIA</b>
	e-STUDIO901	<b>0</b>	<b>0</b>
	e-STUDIO1101	<b>0</b>	<b>0</b>
	e-STUDIO1351	<b>30</b>	<b>30</b>

Service Tables

2207	Toner Supply Forced Toner Supply
001	Press [Execute]. Pressing [Execute] switches on the drum motor, development motor, development bias, and charge unit to operate toner supply for 10 consecutive 1 sec. intervals from the toner bank to the toner hopper. This mode finishes automatically after the toner supplied 10 times. Use to determine if toner supply is operating correctly. If forcing toner supply with this SP does not darken the image, then toner supply is not operating correctly.
002	Toner Bank Toner Setup
	Press [Execute]. Pressing [Execute] checks the toner lever in the toner supply cylinder and the toner hopper. The toner transport mechanism then supplies toner to the cylinder or hopper (or both) if the toner level is low. The 1) toner bank motor, 2) toner supply clutch, and 3) cylinder agitator motor turn on to supply toner to the toner supply cylinder, then switch off with the toner reaches a sufficient level. To supply toner to the toner hopper, in addition to the 3 items above that turn on to supply toner to the toner supply cylinder, the 4) development agitator motor, and 5) toner pump motor turn on. This requires about 4 minutes. <b>Note:</b> Use this SP to fill the toner transport path with toner after cleaning the toner supply unit, or at installation.

2208	Toner Supply Mode
	Selects the toner supply mode: Sensor Control or Image Pixel Count. [0~1 / <b>0</b> / 1] 0: Sensor Control 1: Pixel Count <i>Select Image Pixel Count only if the TD sensor has failed and cannot be replaced immediately, so that the customer can use the machine. Return the setting to Sensor Control after replacing the sensor.</i>

2209	Toner Supply Rate
	Adjust the toner supply amount from the hopper for the normal operation. [100~2000 / <b>1300</b> / 10 mg/s] <i>Increasing this value reduces the toner supply roller clutch on time. Use a lower value if the user tends to make lots of copies that have a high proportion of black.</i>

2210	ID Sensor Pattern Interval
	Changes the interval for making the ID sensor pattern (VSP/VSG detection). [1~500 / <b>10</b> / 1 copy] <i>If the user normally makes copies with a high proportion of black, reduce the interval.</i>

2220	Vref Manual Setting
	<p>Adjusts the TD sensor reference voltage (Vref) manually.                  [0~5.0 / <b>2.5</b> / 0.01 V]</p> <p>Change this value after replacing the development unit with another one that already contains toner. To use a development unit from another machine for test purposes:</p> <ol style="list-style-type: none"> <li>1) Check the value of SP2220 and SP2906 in both the machine containing the test unit and the machine that you are going to move it to.</li> <li>2) Install the test development unit, then input the VREF for this unit into SP2220 and the Vcont for this unit into SP2906.</li> <li>3) After the test, put back the old development unit, and change SP2220 and SP2906 back to the original value.</li> </ol>

2223	Vt Display
	<p>Displays the current TD sensor output voltage.                  [0~5.0 / <b>2.5</b> / 0.01 V]</p>

2226	Toner Bank Toner Discharge
	<p>This SP removes toner from the toner bank and sends it to the toner hopper. After turning the toner supply motor and the toner bank motor on, the toner supply coil clutch turns ON and OFF at 2 seconds interval. The motors and clutch stop when the toner near-end sensor (in the toner bank unit) detects no toner. Even if the sensor continues to detect toner, this operation stops when the clutch has been turned on and off 10 times, so this SP may have to be repeated to clean out the system completely.</p>

2227	Toner Supply Mode Display
	<p>Displays the toner supply mode used for the last copy.</p> <ol style="list-style-type: none"> <li>1: ID Sensor and TD Sensor (from the 11th copy, using VT – VREF)</li> <li>2: ID Sensor and TD Sensor (using VSP/VSG) – before the 10th copy of a job</li> <li>3: TD Sensor – temporary mode when ID sensor output is abnormal</li> <li>4: Image Pixel Count</li> </ol>

Service Tables

2301	Transfer Current Adjustment	
	Adjusts the current applied to the transfer belt during copying, depending on the side, media type, and operation mode (normal or low speed).	
001	1st Copy Side	[10~200 / * / 10 $\mu$ A]
002	Thick Paper	* e-STUDIO901: <b>100</b> * e-STUDIO1101: <b>110</b> * e-STUDIO1351: <b>130</b>
003	Transparencies	[10~200 / <b>140</b> / 1 $\mu$ A]
004	Translucent Sheets	[10~200 / * / 10 $\mu$ A]
005	2nd Copy Side	* e-STUDIO901: <b>100</b> * e-STUDIO1101: <b>110</b> * e-STUDIO1351: <b>130</b>
006	Between Papers	[10~200 / <b>20</b> / 1 $\mu$ A]
007	Postcard	[10~200 / <b>140</b> / 1 $\mu$ A]
008	1st Copy Side (Low Speed)	[10~200 / * / 1 $\mu$ A]
009	Thick Paper (Low Speed)	* e-STUDIO901: <b>100</b> * e-STUDIO1101: <b>100</b> * e-STUDIO1351: <b>110</b>
010	Transparencies (Low Speed)	[10~200 / <b>140</b> / 1 $\mu$ A]
011	Translucent Sheets (Low Speed)	[10~200 / * / 1 $\mu$ A]
012	2nd Copy Side (Low Speed)	* e-STUDIO901: <b>100</b> * e-STUDIO1101: <b>100</b> * e-STUDIO1351: <b>110</b>
013	Between Papers (Low Speed)	[10~200 / <b>20</b> / 1 $\mu$ A]
014	Postcard (Low Speed)	[10~200 / <b>140</b> / 1 $\mu$ A]

2506	Cleaning Interval-Multiple Copy	
001	On / Off	
	<p>Selects whether multiple jobs are stopped at regular intervals in order to 1) reverse the drum to clean the cleaning blade edge, or 2) create an ID sensor pattern to correct toner density control. This SP switches this feature on and off. SP2506 002 sets the interval.</p> <p>[0~1 / <b>1</b> / 1] 0: OFF, 1: ON <i>Use if the drum gets dirty or images get too pale or too dark during long copy jobs.</i></p>	
002	Interval	
	<p>Selects the interval at which multi copy jobs are stopped for blade cleaning.</p> <p>[1~100 / <b>30</b> / 1 min] <i>Reduce the value if a large amount of paper dust is causing black lines on the copy.</i></p>	

2507	Pattern During Jobs	
001	Set Operation	This On/Off setting determines whether the toner entry patterns are created on the drum during and at the end of jobs. Default: OFF (no patterns)
002	Set Interval	This SP sets the count for the number of sheets to print before the patterns are created on the drum. When the count exceeds this setting, the machine retracts the transfer belt from the drum, creates the patterns, resets the transfer belt against the drum and continues the job. [1~2000 / <b>50</b> / 1 K sheets]
003	Set Number of Patterns	This setting determines the number of patterns to be created on the drum. [1~200 / <b>10</b> / 1]

SP2602	PTL Settings	
	Use this SP to adjust the on/off timing of the PTL (pre-transfer lamp). <b>Note:</b> <ul style="list-style-type: none"> <li>This PTL light emitted from the PTL is intended to reduce charge on the drum and improve image transfer from drum to paper.</li> <li>However, adjusting the on/off of the PTL can caused blurred images appear at the leading edges of the paper. Therefore, the default setting for SP2602 001 is set to "Off".</li> </ul>	
001	Front – On/Off Setting	
	Switches the PTL on and off for the front side of the paper passing through the fusing unit at normal speed. <b>Note:</b> When feeding thick paper or OHP transparencies, this setting is always off. [0~1 / <b>0</b> / 1] 0: Off <b>1: On</b> PTL timing can be adjusted with SP2602 002.	
002	Front – Off Timing Adj.	
	This SP adjusts the length of the space from the leading edge where the PTL quenching is applied to the front side at normal speed. For example, if you set +5, 5 mm from the leading edge will be quenched. [-5~10 / <b>2</b> / 0.1 mm]	
003	Back – On/Off Setting	
	Switches the PTL on and off for the rear side of the paper passing through the fusing unit in the duplex mode at normal speed. [0~1/ <b>0</b> / 1] <b>0: Off</b> 1: On <b>Note:</b> <ul style="list-style-type: none"> <li>When this setting is switched on, make sure that the setting of SP2940 008 is the same as the default setting of SP2940 001.</li> <li>When feeding thick paper or OHP transparencies, this setting is always off.</li> </ul>	
004	Back – Off Timing Adj.	
	This SP adjusts the length of the space from the leading edge where the PTL quenching is applied to the rear side at normal speed. For example, if you set +5, 5 mm from the leading edge will be quenched. [-5~10 / <b>2</b> / 0.1 mm]	

Service Tables

005	Front – On/Off Setting: Low Speed Mode
	Switches the PTL on and off for the front side of the paper passing through the fusing unit in the low speed mode. <b>Note:</b> When feeding thick paper or OHP transparencies, this setting is always off. [0~1/ <b>0</b> / 1] <b>0: Off</b> 1: On
006	Front – Off Timing Adj.: Low Speed Mode
	This SP adjusts the length of the space from the leading edge where the PTL quenching is applied to the front side in low speed mode. For example, if you set +5, 5 mm from the leading edge will be quenched. [-5~10 / <b>2</b> / 0.1 mm]
007	Back– On/Off Setting: Low Speed Mode
	Switches the PTL on and off for the rear side of the paper passing through the fusing unit in the duplex mode in low speed mode. [0~1 / <b>0</b> / 1] <b>0: Off</b> 1: On <b>Note:</b> <ul style="list-style-type: none"> <li>When this setting is switched on, make sure that the setting of SP2940 016 is the same as the default setting of SP2940 009.</li> </ul> When feeding thick paper or OHP transparencies, this setting is always off.
008	Back – Off Timing Adj.: Low Speed Mode
	This SP adjusts the length of the space from the leading edge where the PTL quenching is applied to the rear side in slow speed mode. For example, if you set +5, 5 mm from the leading edge will be quenched. [-5~10 / <b>2</b> / 0.1 mm]

2801	TD Sensor Initial Setting
	Performs the TD sensor initial setting. This SP mode controls the voltage applied to the TD sensor to make the TD sensor output about 2.5 V. After finishing this, the TD sensor output voltage is displayed. Press Start to execute. You must enter the developer lot number. (The lot number is stenciled on the top edge of the developer package.) <i>Use this mode only after changing the TD sensor or the developer.</i>

2803	Charge Corona Cleaner On
	Turns on the corona wire cleaner manually. Press Start to execute. <i>When copy density across the paper is uneven, clean the wire with this SP.</i>

2804	Charge Corona Cleaner Setting
001	Corona Wire Cleaner Operation Setting
	Selects when automatic corona wire cleaning is done. [0~2 / <b>2</b> / 1] <b>0: OFF</b> 1: At the beginning process control and at intervals selected with SP2804 002 2: At intervals selected with SP2804 002 only (not at the beginning of process control).
002	Corona Wire Cleaner Interval
	Selects the interval for automatic corona wire cleaning. [100~10000 / <b>5000</b> / 100 copies]

2902	Test Pattern
001	IPU Scanning Test Pattern
	Prints the scan test patterns for the IPU chip. Prints 17 patterns for selection. [0~17 / 0 / 1]
002	IPU Printing Test Pattern
	Prints the print test pattern for the IPU chip. Presents 4 selections for selection. [0~8 / 0 / 1]
003	Printing Test Pattern
	Presents 42 selections for selection.
004	Select SBU Pattern
	[0~4 / 0 / 1]
005	SBU Pattern Output Level
	[0~1023 / 0 / 1]

2906	Vcont Manual Setting
	Adjusts the TD sensor control voltage (Vcont) manually. [4.0~24.0 / 9.7 / 0.1 V] <i>Change this value after replacing the development unit with another one that already contains toner. For example, when using a development unit from another machine for test purposes.(See SP2220.)</i>

2909	Main Scan Magnification
001	Copy
	Adjusts the magnification in the main scan direction for copy mode. (☛3.18) [-2.0~+2.0 / 0 / 0.1%] <i>Use the “• / *key to enter the minus (-) before entering the value.</i>
002	Printer
	Adjusts the magnification in the main scan direction for printing mode. (☛3.18) [-2.0~+2.0 / 0 / 0.1%] <i>Use the “• / *key to enter the minus (-) before entering the value.</i>

2910	Writing Sub Scan Magnification
	Fine adjusts the magnification in the sub scan direction. (☛3.18) [-1.0~+1.0 / 0 / 0.1%] <i>Use the “• / *key to enter the minus (-) before entering the value.</i> <b>Note:</b> Normally this SP adjustment is done at the factory. However, this SP may require adjustment in the field after replacement of the polygon mirror motor or LD unit.

Service  
Tables



2911	Transfer Current On / Off Timing
001	La (ON)
	Adjusts the transfer current on timing at the leading edge. [-30~+30 / <b>0</b> / 1 mm]
002	Lb (Switch)
	Adjusts the transfer current on/off exchange timing. [0~60 / <b>45</b> / 1 mm]
003	Lc (OFF)
	Adjusts the transfer current off timing (for example: -5 mm is 5 mm after the trailing edge). [-30~+30 / <b>0</b> / 1 mm]
004	Med Thick La (Switch)
	For medium thick paper. [-15 to +20 / <b>0</b> / 1 mm]
005	Med Thick Lb (Switch)
	For medium thick paper. [0 to 45 / <b>0</b> / 1 mm]
006	Med Thick Lc (Switch)
	For medium thick paper. [-40 to +40 / <b>0</b> / 1 mm]
007	After Punch La (Switch)
	For punched paper. [-15 to +20 / <b>1</b> / 1 mm]
008	After Punch Lb (Switch)
	For punched paper [0 to 45 / * / 1 mm] * e-STUDIO901: <b>20</b> * e-STUDIO1101: <b>20</b> * e-STUDIO1351: <b>26</b>
009	After Punch Lc (Switch)
	For punched paper. [-40 to +40 / * / 1 mm] * e-STUDIO901: <b>-25</b> * e-STUDIO1101: <b>-30</b> * e-STUDIO1351: <b>-38</b>

2912	Drum Reverse Rotation Interval
001	1st Reverse Rotation
	Sets the length of time the drum is reversed to clean the main cleaning blade. [0~7 / <b>2</b> / 20 ms]
002	Forward Rotation After 1st Reverse Rotation
	Sets the length of time the drum is rotated forward after the 1st reverse rotation. [0~7 / <b>0</b> / 20 ms]
003	2nd Reverse Rotation
	Sets the length of time the drum is reversed for the 2nd reverse rotation to clean the main cleaning blade again. [0~7 / <b>0</b> / 20 ms]

2913	Temp/Humidity	Display the Temperature and Humidity Levels Inside the Machine
		This SP displays readings of the current temperature and humidity inside the machine.
001	Internal Temp	Displays current temperature inside the machine. [-20 to 60/ <b>None</b> /1°C]
002	Internal Humid	Current humidity level inside the machine. [0 to 100 / None / 1% RH]

2920	LD Off Check	
		Checks whether the LD turns off or on when the front door is opened. <b>DFU</b> [0~1 / <b>0</b> / 0] 0: ON 1: OFF

2930	2nd Cleaning Blade Operation	
		Use this SP to set up how the 2nd cleaning blade operates. The temperature/humidity sensor measures the temperature and humidity, then the machine calculates the absolute humidity. Based on this calculation of absolute humidity: <ul style="list-style-type: none"> <li>• If the absolute humidity is above the critical level set with SP2930 008 below, the settings of SP2930 001-003 control the operation of the 2nd cleaning blade.</li> <li>• If the absolute humidity below the critical level set with SP2930 008, the settings of SP2930 004-007 control the operation of the 2nd cleaning blade.</li> </ul>
001	Condition 1	
		This SP setting determines when 2nd blade cleaning is done. <b>Note:</b> This setting takes effect only when the calculated absolute humidity is above the level of SP2930 008. [0~2 / <b>1</b> / 1] 0: Off. 2nd blade cleaning is never done. However, the 2nd blade cleaning can be done manually with SP2930 004. 1: After process control execution but only when SP3901 is set to ON to enable process control and: <ul style="list-style-type: none"> <li>• The temperature of the machine is less than 100°C when it is powered on.</li> <li>• SP2966 is ON. This SP sets process control to execute if the machine remains on and idle for longer than 24 hours.</li> </ul> 2: After the prescribed number of pages has printed. The number of pages is prescribed by SP2930 002. If the count exceeds the number of pages during a job, process control does not execute until the job has finished.
002	Interval 1	
		This SP sets the number of pages to count before 2nd blade cleaning. 2nd blade cleaning is done when the count exceeds this value, but only if SP2930 001 is set to "2". [1~100 / <b>10</b> / 1K] <b>Note:</b> This setting takes effect only when the calculated absolute humidity is above the level of SP2930 008.
003	Time 1	
		This SP sets the length of time the 2nd cleaning blade is held against the drum. At the end of this time, the 2nd cleaning blade is retracted and does not touch the drum until the next cleaning. [10~90 / <b>20</b> / 1 s] <b>Note:</b> This setting takes effect only when the calculated absolute humidity is above the level of SP2930 008.

Service Tables

004	Force 2nd Blade Cleaning
	Press [Start] to force cleaning the drum with the 2nd cleaning blade.
005	Condition 2
	This SP setting determines when 2nd blade cleaning is done. <b>Note:</b> This setting takes effect only when the calculated absolute humidity is below the level of SP2930 008. [0~2 / 1 / 1] 0: Off. 2nd blade cleaning is never done. However, the 2nd blade cleaning can be done manually with SP2930 004. 1: After process control execution but only when SP3901 is set to ON to enable process control and: <ul style="list-style-type: none"> <li>• The temperature of the machine is less than 100°C when it is powered on.</li> <li>• SP2966 is ON. This SP sets process control to execute if the machine remains on and idle for longer than 24 hours.</li> </ul> 2: After the prescribed number of pages has printed. The number of pages is prescribed by SP2930 002. If the count exceeds the number of pages during a job, process control does not execute until the job has finished.
006	Interval 2
	This SP sets the number of pages to count before 2nd blade cleaning. 2nd blade cleaning is done when the count exceeds this value, but only if SP2930 001 is set to "2". [1~100 / 10 / 1K] <b>Note:</b> This setting takes effect only when the calculated absolute humidity is below the level of SP2930 008.
007	Time 2
	This SP sets the length of time the 2nd cleaning blade is held against the drum. At the end of this time, the 2nd cleaning blade is retracted and does not touch the drum until the next cleaning. [10~90 / 20 / 1 s] <b>Note:</b> This setting takes effect only when the calculated absolute humidity is below the level of SP2930 008.
008	Set Level
	This SP sets the critical level of the absolute humidity that determines which SP codes above are used to control the operation of 2nd blade cleaning. [0~3 / 1 / 1] 0: No switching (calculated absolute humidity is ignored) 1: 0.0022 2: 0.0040 3: 0.0060
009	Operation Display
	This SP displays a number that tells you which mode is controlling the operation of the 2nd cleaning blade. [0~1 / 1] Default: None 0: Normal. Absolute humidity is above the level set for SP2930 008 (SP2930 001-003 control operation of 2nd blade cleaning.) 1: Low. Absolute humidity is below the level set for SP2930 008 (SP2930 005-007 control operation of 2nd blade cleaning.)

2940	Leading Edge Transfer Current	
	Adjusts the leading edge transfer current for each paper feed station at normal and low speed.	
001	Tray 1	Tandem Tray – Copier, Normal Speed e-STUDIO901: [10~200 / <b>25</b> / 1 μA] e-STUDIO1101: [10~200 / <b>30</b> / 1 μA] e-STUDIO1351: [10~200 / <b>35</b> / 1 μA]
002	Tray 2	Universal Tray – Copier, Normal Speed e-STUDIO901: [10~200 / <b>25</b> / 1 μA] e-STUDIO1101: [10~200 / <b>30</b> / 1 μA] e-STUDIO1351: [10~200 / <b>35</b> / 1 μA]
003	Tray 3	Universal Tray – Copier, Normal Speed e-STUDIO901: [10~200 / <b>25</b> / 1 μA] e-STUDIO1101: [10~200 / <b>30</b> / 1 μA] e-STUDIO1351: [10~200 / <b>35</b> / 1 μA]
004	Tray 4	LCT 1st Tray, Normal Speed e-STUDIO901: [10~200 / <b>25</b> / 1 μA] e-STUDIO1101: [10~200 / <b>30</b> / 1 μA] e-STUDIO1351: [10~200 / <b>35</b> / 1 μA]
005	Tray 5	LCT 2nd Tray, Normal Speed e-STUDIO901: [10~200 / <b>25</b> / 1 μA] e-STUDIO1101: [10~200 / <b>30</b> / 1 μA] e-STUDIO1351: [10~200 / <b>35</b> / 1 μA]
006	Tray 6	LCT 3rd Tray, Normal Speed e-STUDIO901: [10~200 / <b>25</b> / 1 μA] e-STUDIO1101: [10~200 / <b>30</b> / 1 μA] e-STUDIO1351: [10~200 / <b>35</b> / 1 μA]
007	Tray 7 (Bypass)	Bypass Tray, Normal Speed e-STUDIO901: [10~200 / <b>25</b> / 1 μA] e-STUDIO1101: [10~200 / <b>30</b> / 1 μA] e-STUDIO1351: [10~200 / <b>35</b> / 1 μA]
008	Duplex Tray	Duplex Tray – Copier, Normal Speed e-STUDIO901: [10~200 / <b>100</b> / 1 μA] e-STUDIO1101: [10~200 / <b>110</b> / 1 μA] e-STUDIO1351: [10~200 / <b>130</b> / 1 μA]
009	Tray 1 (Low Speed)	Tandem Tray – Copier, Low Speed [10~200 / <b>80</b> / 1 μA]
010	Tray 2 (Low Speed)	Universal Tray – Copier, Low Speed [10~200 / <b>80</b> / 1 μA]
011	Tray 3 (Low Speed)	Universal Tray – Copier, Low Speed [10~200 / <b>80</b> / 1 μA]
012	Tray 4 (Low Speed)	LCT 1st Tray, Low Speed [10~200 / <b>80</b> / 1 μA]
013	Tray 5 (Low Speed)	LCT 2nd Tray, Low Speed [10~200 / <b>80</b> / 1 μA]
014	Tray 6 (Low Speed)	LCT 3rd Tray, Low Speed [10~200 / <b>80</b> / 1 μA]
015	Tray 7 (Low Speed)	Bypass Tray, Low Speed [10~200 / <b>80</b> / 1 μA]
016	Duplex Tray (Low Speed)	Duplex Tray – Copier, Low Speed [10~200 / <b>80</b> / 1 μA]

Service  
Tables

2950	Pages Allowed After Toner Collection Unit Lock
	<p>This SP displays the number of sheets allowed after the Toner Collection Unit Lock is detected. After detection, the "Replacement of Toner Recycling Unit will soon be necessary" message is displayed at the bottom of the operation panel. When this number reaches 8K, SC487 is issued and the machine stops.</p> <p>Enter "0" and cycle the machine off/on to reset this symptom.</p> <p>[0~8 / 0 / 1 K]</p>

2961	Developer Initialization (Factory)	<b>DFU</b>
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2962	Auto Process Control Execution
	<p>Press Start to execute and automatically adjust the following:</p> <ol style="list-style-type: none"> <li>1. Drum potential sensor</li> <li>2. ID sensor</li> <li>3. Charge grid voltage Vg (by changing Vd)</li> <li>4. LD power (by changing Vh)</li> <li>5. VL detection.</li> </ol> <p>Note: Before using this SP, auto process control should be on (SP3-901). After changing the drum, ID sensor, drum potential sensor, LD unit, charge corona wires, or TD sensor, this SP should be executed.</p>

2966	Periodical Auto Process Control
	<p>Selects whether auto process control is done after 24 hours have elapsed after the last copy job.</p> <p>[0~1 / 0 / 1]</p> <p>0: OFF</p> <p>1: ON</p> <p><i>This setting is required for a customer who keeps the main switch on all day.</i></p>

2967	Auto Image Density Adjustment
	<p>Selects whether auto image density adjustment is done during machine warm up. This mode is to counter dirty background that occurs when a machine is used in an area that contains ammonia.</p> <p>[0~1 / 0 / 1]</p> <p>0: OFF</p> <p>1: ON</p> <p>If Periodical Auto Process Control (SP2-966) is used, this adjustment is done also after the auto process control is finished.</p>

2968	Toner Density Correction
	<p>To prevent the image density dropping during continuous copying after a long interval (this is caused by a sudden increase of Q/M), VREF is changed by -0.06 V every (100 X [SP2-974 value + 1]) prints. This correction is applied from when the auto process control is done, until "(the number of prints set in this SP mode) X (SP2-974 value +1)" has been made.</p> <p>[0~20 / 0 / 1K copies]</p>

2969	ID Sensor Pattern Interval-Multiple Copy
	<p>Twenty ID patterns are made in an interval of about 1 minute during a continuous copy process just after process control is completed. Image density will be stabilized. However, printing productivity will be reduced.</p> <p>[0~1 / 0 / 1]                  0: OFF                  1: ON</p>

2972	Toner Suction Collection Bottle Operation Time
	<p>Displays the total operation time of the development unit toner collection bottle.</p> <p>[0~600 / 0 / 1 hour]                  Need to replace soon: 580 hours                  Need to replace now: 600 hours                  After the bottle is replaced, reset the value to "0" by pressing 0 and # (Enter).</p>

2973	Toner Suction Motor Operation Time
	<p>Displays the total operation time of the development toner suction motor.</p> <p>[0~600 / 0 / 1 hour]                  Need to replace soon: 570 hours                  Need to replace now: 600 hours                  After the motor is replaced, reset the value to 0 (zero) by pressing 0 and #.</p>

2974	Toner Supply Interval
	<p>Adjusts how often toner is supplied</p> <p>[0~3 / 0 / 1]                  0: 1/1 (every print)                  1: 1/2 (every 2 prints)                  2: 1/3 (every 3 prints)                  3: 1/4 (every 4 prints)</p> <p><i>The operation of SP2968 now depends on this SP mode setting. In this machine, the Vref update interval has been changed from "every 100 prints" to "every [100 X (SP2-974 value + 1)] prints". For example, if set to 1, toner is supplied every 2 prints, and SP2-974 value + 1 = 3.</i></p>

Service Tables

2975	Toner Recycle Cut Counter	
001	ON Counter	
	Determines how often all recycled toner is discarded. The purpose of this feature is to periodically remove all recycled toner contaminated with paper dust. [0~999 / <b>200</b> / 1 K copies] <i>This setting determines when the toner separation solenoid closes the shutter and shunts all toner to the used toner bottle. For details, see "Toner Recycling" in Section 6.</i>	
002	OFF Counter	
	This setting determines how long all toner is shunted to the used toner bottle (no recycling). [0~255 / <b>25</b> / 1 K copies] <i>This setting determines when the toner separation solenoid opens the shutter and toner recycling starts.</i>	
003	Level Setting	
	Adjusts recycling according to ambient conditions. [0~4 / <b>1</b> / 1]	

2977	Toner Supply/Transport Display	
	This SP displays information about toner supply operation.	
001	Toner Bank Mtr: Total On Time	[0~999 / 0 / 1 Hour]
002	Toner Supply CL: On/Off Times	[0~999 / 0 / 1 K Prints]
003	TCB Agitator: Total On Time	[0~999 / 0 / 1 Hour]
004	TS Cylinder: Total On Time	[0~999 / 0 / 1 Hour]
005	Toner Pump: Total On Time	[0~999 / 0 / 1 Hour]

2978	Recycle Status Display	
001	Status	This SP displays whether recycling is on or off. [0~1 / 0] 0: On 1: Off
002	Page Count	Displays the number of 1,000 pages printed with recycling on.

2981	Toner Hopper Agitator	
	This SP displays information about operation of the toner hopper agitator.	
001	Standard On time	[2~5000 / <b>500</b> / 1 ms]
002	On Time	[2~5000 / <b>500</b> / 1 ms]
003	Total On Time	[0~9999 / <b>0</b> / 1 hour]
004	Page Count	[10~1000 / <b>100</b> / 1 page]

2985	Coat Drum With Toner	
	Press [Execute] to coat the drum with toner.	

2986	Refresh Mode
	This SP code is used periodically to discard toner in the developer/toner mixture and replenish it with fresh toner. Over a long period of time the quality of the toner in the developer/toner mixture may deteriorate. This can occur with machines that are used infrequently or on machines where the average copy or print is of very low density.
001	Interval
	Sets the interval between refresh executions. The toner refresh is done when the count exceeds this number. [0~25 / 0 / 1 K] <b>Note:</b> <ul style="list-style-type: none"> <li>• "KMAI" Means K sheets (1,000 sheets).</li> <li>• The machine will execute the refresh mode immediately as soon as the count exceeds this setting, even if this occurs during a print job.</li> </ul> When the count is exceeded during a print job the job will pause and a message tell the operator to wait while the machine makes the adjustment.
002	Level
	Selects the Vsp value that will trigger toner refresh. Toner is refreshed if the value of Vsp drops below the selected level. [0~4 / 2 / 1] 0: Vsp = 0.8 1: Vsp = 1.0 2: Vsp = 1.2 3: Vsp = 1.5 4: Vsp = 1.8 <b>Note:</b> Vsp is the ID sensor output after it measures the toner density of the ID sensor pattern.
003	Repetitions
	Sets the number of times the refresh cycle is repeated for one refresh execution. [1~3 / 2 / 1 times]

Service  
Tables

2990	Adjust Start Timing
	This SP adjusts the timing of the first copy or print to ensure the quality of the first copy. Clean toner is occasionally consumed when the drum starts to rotate. This can lead to poor cleaning and other poor conditions on the drum. [0~2 / 0 / 1] 0: Normal timing 1: Timing Adjustment 1. The transfer belt separation from the drum is delayed for the 1st rotation of the drum to keep the belt against the drum in order to counter the effects of a possible faulty reading by the drum potential sensor. 2: Timing Adjustment 2. The transfer belt separation from the drum is delayed for two drum rotations to keep the belt against the drum to counter the effects of faulty readings by the drum potential sensor or poor drum cleaning.



**SP3-*nnn* Processing**

3001	ID Sensor Initial Setting
001	ID Sensor PWM Setting
	This SP mode recovers the machine when an SC condition occurs because ID Sensor Initial Setting is not done after doing an NVRAM Clear or replacing the NVRAM. Reset this SP to the factory setting in this case. [0~255 / <b>62</b> / 1] The PWM data is stored when ID Sensor Initial Setting is done.
002	ID Sensor Initialization
	Performs the ID sensor initial setting. The ID sensor output for the bare drum (VSG) is adjusted to $4.0 \pm 0.2$ V. This SP mode should be performed: 1) After replacing or cleaning the ID sensor, 2) After replacing the NVRAM or doing an NVRAM clear.

3103	ID Sensor Output Display
001	Vsg (Present)
	Displays the current value of the ID sensor output after checking the bare drum surface.
002	Vsg (Initial)
	Displays Vsg when the Vsp adjustment is done.
003	Vsp
	Displays the current value of the ID sensor output after checking the ID sensor pattern image.
004	Vsdp
	Displays the value of the ID sensor output immediately after Vsp is output when the charge potential drops. This reading is used to test and determine characteristics for design. <b>DFU</b>

3901	Auto Process Control Setting
001	Auto Process Control Setting
	Determines whether machine checks and corrects drum potential (Vd) and LD power when the fusing temperature is lower than 100°C at power-on. [0~1 / <b>1</b> / 1] 0: OFF 1: ON This setting attempts to change the Vd setting consistent with the OPC, the charge corona unit, and environment to improve the reliability of the system.
002	VL Correction Control Setting
	Determines whether VL detection and correction are performed during process control every 1K copies. [0~1 / <b>0</b> / 1] <b>DFU</b> 0: OFF 1: ON Even with this SP switched ON, VL detection and correction will not be performed if SP3901 001 is OFF.

3902	Process Control Data Display
001	Auto Process Control
	Displays whether auto process control is switched on or off [0:Off, 1:On] When auto process control is on and the potential sensor is calibrated correctly, "ON" appears on the operation panel. Auto process control is not executed when this SP is switched off. After RAM is cleared, this SP setting goes off.
002	VD
	Displays the drum potential.
003	VH
	Displays the standard halftone drum potential, used for laser power adjustment.
004	VG
	Displays the charge grid voltage resulting from the latest Vd adjustment.
005	LD Power (Correction)
	Displays the LD power correction value as a result of the latest Vh adjustment.
006	V ID
	Displays the latest drum surface voltage measured on the ID sensor pattern.
009	VD Correction
	Shows whether VD correction is being done or not 0: Not being done; process control is using the value of SP2001 007 only 1: Being done; process control is using the value of SP2001 007 + 50V
008	VL (Auto Process Control)
	Displays the value of VL at auto process control initialization.
009	VL Correction (Auto Process Control)
	Displays the amount of correction ( $\Delta VL_{ref}$ ) according to results of the VL detection at auto process control.
010	VL
	Displays the latest value of VL.
011	VL Correction
	Displays the amount of correction ( $\Delta VL_{ref}$ ) according to the latest VL detection results.
012	VB (Latest)
	Displays the value of the current image development bias output, determined by the results of VL detection.
013	VG
	Displays the value of Vg (charge corona grid voltage).
014	Line Speed
	Displays the line speed.

Service  
Tables

3903	VD Correction Counter
	Adjusts the starting point for the VD Correction. Displays whether the VD correction is being performed. The target value is "the value of SP2001 007 + 50". [0-999 / <b>200</b> / 1 K copies] Reduce the setting if dirty background occurs. The counter is automatically reset to 0 (zero) when SP2801 is performed.

3904	VH Adjustment	
	<p>These SP codes allow adjustment of the target Vh (standard drum potential for halftone) for process control. Adjust setting for a drum that has been in use for a long period of time if the text is not sharp. This problem can occur with drums designed for longer service life. Raising the value reduces the amount of light fired from the LD unit. However, if the adjust is set too high, this can lower image density and cause poor reproduction of low contrast images.</p> <p><b>Note:</b> Changing this SP resets the standard for <b>SC428</b> (Drum Potential Sensor Error 3: Vh Adjustment Error). If the target is adjusted to 300V, for example, the standard for drum potential sensor sampling of Vh will be reset to 300V±20.</p>	
001	VH Adjustment	<p>This resets the target Vh for machine operation (but not low speed mode).</p> <p>[100~500 / <b>300</b> / 10V]</p>
002	VH Adjustment (Low Speed)	<p>This resets the target Vh for low speed mode only.</p> <p>[100~500 / <b>300</b> / 10V]</p>

3905	OPC Drum Initial Setting	
	<p>Press [Execute]</p> <p>This sets the initial count for the drum to zero. This SP must be executed after the OPC is replaced.</p>	

3906	VB Correction	
	<p>Vb (development bias) is used during process control to control drum potential. Normally, VB is recalibrated every 11,400 minutes (about every 8 days).</p>	
001	On/Off Setting	<p>Switches periodic calibration of Vb off on.</p> <p>[0~1 / <b>1</b> / 1]</p> <p>0: Off 1: On</p>
002	Correction Counter	<p>When SP3906 1 is on, use this SP to adjust the interval between VB calibrations.</p> <p>[3800~9999999 / <b>11400</b> / 1 min.]</p>

**SP4-*nnn* Scanner**

4008	<p>Scanner Sub Scan Magnification</p> <p>Adjusts the magnification in the sub scan direction for scanning. If this value is changed, the scanner motor speed is changed. (●3.18)                  [-0.9~+0.9 / <b>0</b> / 0.1 percent]</p> <p><i>Use the "• / *key to enter the minus (-) before entering the value.                  Setting a lower value reduces the motor speed and lengthens the image in the sub scan direction (paper direction). Setting a larger value increases the motor speed and shortens the image in the sub scan direction.</i></p>
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4010	<p>Scanner Leading Edge Registration</p> <p>Adjusts the leading edge registration for scanning. (●3.18)                  [-9.0~+9.0 / <b>0</b> / 0.1 mm]</p> <p><i>Use the "• / *key to enter the minus (-) before entering the value.                  A minus setting moves in the direction of the leading edge. A larger value shifts the image away from the leading edge, and a smaller value shifts the image toward the leading edge.</i></p>
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4011	<p>Scanner Side-to-Side Registration</p> <p>Adjusts the side-to-side registration for scanning. (●3.18)                  [-3.0~+3.0 / <b>0</b> / 0.1 mm]</p> <p>(-): The image disappears at the left side.                  (+): The image appears at the left side.</p> <p><i>Use the "• / *key to enter the minus (-) before entering the value.</i></p>
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4012	<p>Set Scale Mask</p> <p>Adjusts the erase margin for scanning. The leading, trailing, right and left margins can be set independently. Do not adjust this unless the user wishes to have a scanner margin that is greater than the printer margin.                  [0~3.0 / <b>0.5</b> / 0.1 mm]</p>	
001	Sub: LE	Leading edge, sub scan direction
002	Sub: TE	Trailing edge, sub scan direction
003	Main: LE	Front, main scan direction
004	Main: TE	Back, main scan direction

4013	<p>Scanner Free Run</p>	
001	Scanner Free Run: Lamp OFF	Allows scanner free running with exposure lamp off.
002	Scanner Free Run: Lamp ON	Allows scanner free running with the exposure lamp on.

Service Tables

4015	Scanner Speed Adjustment
	Displays the value of the scanner speed fine adjustment. [-20~+20 / <b>0</b> / 1] <i>Scanner speed fine adjustment is automatically done when the main switch is turned on, and the current setting is overwritten.</i>

4301	APS Sensor Output Display
	Displays the APS sensor output signals when an original is placed on the exposure glass.

4303	APS A5 / HLT Size Detection
	Selects whether or not the machine detects the original as A5 or HLT size when the APS sensor does not detect the size. [0~1 / <b>0</b> / 1] 0: Not detected 1: A5 length/5 1/2" x 8 1/2" <i>If 1 is selected, the paper size is determined as A5 length / 5 1/2" X 8 1/2" even if the paper size is too small to be detected on the exposure glass.</i>

4400	Original Edge Mask	
	This SP sets the mask area to remove shadows when scanning originals from the exposure glass in Book mode. <b>Note:</b> "LE" denotes "leading edge" and "TE" denotes "trailing edge".	
001	Sub: LE	[0~3 / 0 / 0.1 mm]
002	Sub: TE	
003	Main: LE	
004	Main: TE	

4429	ICI Output Level <b>DFU</b>
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4460	Scanner Digital AE Setting	
	This SP sets the lower limit and level for background removal when background removal is selected with a scanner application.	
001	Set Low Limit	[0~1023 / <b>392</b> / 1]
002	Background Level	[0~1023 / <b>980</b> / 1]

4550	Scanner: Text/	
4551	Scanner: Text	
4552	Scanner: Dropout Color: Text	
4553	Scanner: Text/Photo	
4554	Scanner: Photo	
4565	Scanner: Grayscale	
4570	Scanner: Color: Text/Photo	
4571	Scanner: Color: Photo	
4572	Scanner: Auto Color	
005	MTF Filter:0-15	Sets the MTF level (Modulation Transfer Function) designed to improve image contrast. Set higher for stronger effect, lower for weaker effect. [0~15 / 1]
006	Smoothing Filter:0-7	Use to remove "jaggies" if they appear. Set higher for smoother. [0~7 / 1]
007	Brightness:1-255	Set higher for darker, set lower for lighter. [1~255 / 1]
008	Contrast:1-255	Set higher for more contrast, set lower for less contrast. [1~255 / 1]
009	Isolated Dot Removal:0-7	This SP sets the level for removing dots when a color original is scanned with a scanner software application. The higher the setting, the greater the effect applied for removing background dots. [0~7 / 0 / 1]

4600	Read SBU ASIC ID
	Displays the SBU ID code confirmed by reading the SBU after the SBU adjusts automatically at power on. <b>DFU</b> [0~FFFF / <b>B550</b> / 0]

4605	Scanner Adjustment
001	Display Flag
	Displays a flag to indicate whether density control adjustment was executed with the standard white board for the CCD. <b>DFU</b> [0~1 / <b>0</b> / 1] 0: Not executed. 1: Executed
002	Factory Start
	Starts the density adjustment for the CCD using the standard white board. Place 10 sheets of A3 plain paper on the exposure glass, then press Execute. A message is displayed to indicate the success or failure of the adjustment. <b>DFU</b>

Service Tables

4609	Standard White Level Adjustment 1
4610	Standard White Level Adjustment 2
4611	Standard White Level Adjustment 3
4615	Standard White Level Adjustment 4
4616	Standard White Level Adjustment 5
4617	Standard White Level Adjustment 6
4628	Gain Range Adj Value (Next) 1
4629	Gain Range Adj Value (Next) 2
4630	Gain Range Adj Value (Next) 3
4631	Gain Adjust Value (Next) 1
4632	Gain Adjust Value (Next) 2
4633	Gain Adjust Value (Next) 3
4641	White Adjust Loop
4646	SBU Adjustment Error Flag
4647	SBU Hard Error Flag
4677	Gain Range Adj Value 1 (Factory Setting)
4678	Gain Range Adj Value 2 (Factory Setting)
4679	Gain Range Adj Value 3 (Factory Setting)
4680	Gain Adj Value 1 (Factory Setting)
4681	Gain Adj Value 2 (Factory Setting)
4682	Gain Adj Value 3 (Factory Setting)
4690	White Level Peak Reading
4691	White Level Peak Reading 2
4692	White Level Peak Reading 3
4693	Black Level Reading 1
4694	Black Level Reading 2
4695	Black Level Reading 3
4800	FL Differential Calibration Setting
4803	FL Diff Cal Detection Result 1
4804	FL Diff Cal Detection Result 2
4820	Lamp Malfunction Detection
4830	Scanner Image Test

**DFU**

4901	Scan Correction
001	Shading Correction: AEREF Setting
	Changes the AEREF (Automatic Exposure Reference) value used in shading correction for the image scanned from the front side (SBU). <b>DFU</b> [0~63 / <b>0</b> / 1]
002	Shading Correction: Shading Data Output
	Changes the AEREF (Automatic Exposure Reference) value used in digital A/E processing. <b>DFU</b> [0~1 / <b>0</b> / 1] 0: Normal 1: Output
003	Digital AE: AEREF Setting
	Changes the AEREF (Automatic Exposure Reference) value used in digital A/E processing for the image data. <b>DFU</b> [-63~+63 / <b>-12</b> / 1]
004	Digital AE: Low Limit
	Sets the low limit at 120 for the value used in digital A/E processing for the image data. <b>DFU</b> [0~1 / <b>1</b> / 1] <b>0</b> : No low limit 1: Low limit set
020	Background Erase: Blue Original (Lighter)
	Sets the strength of background blue erase when orange original mode is selected. [168~255 / <b>180</b> / 1] <i>A higher setting erases more background and a lower setting less.</i>
021	Background Erase: Blue Original (Normal)
	Sets the strength of background blue erase when the green original mode is selected. [131~167 / <b>155</b> / 1] <i>A higher setting erases more background and a lower setting less.</i>
022	Background Erase: Blue Original (Darker)
	Sets the strength of background blue erase when blue original mode is selected [25~130 / <b>105</b> / 1] <i>A higher setting erases more background and a lower setting less.</i>

Service  
Tables



4903	Image Quality Adjustment	
001	Text Mode (25.0 - 55.0 %)	Adjusts the sharpness and texture of images processed in Text mode. [0~10 / 5 / 1] 0: Softest 1: Soft Mode 2: ↑ 3: ↑ 4: ↑ 5: Normal (Default) 6: ↓ 7: ↓ 8: ↓ 9: Sharp Mode 10: Sharpest
002	Text Mode (55.5 - 75.0 %)	
003	Text Mode (75.5 - 160.0 %)	
004	Text Mode (160.5 - 400.0 %)	
005	Photo Mode Dithering (25.0 - 55.0 %)	Adjusts the sharpness and texture of images processed in Photo mode with dithering [0~6 / 3 / 1] 0: Softest 1: ↑ 2: ↑ 3: Print Original Mode (Default) 4: ↓ 5: ↓ 6: Sharpest
006	Photo Mode Dithering (55.5 - 75.0 %)	
007	Photo Mode Dithering (75.5 - 160.0 %)	
008	Photo Mode Dithering (160.5 - 400.0 %)	
009	Photo Mode Error Diffusion (25.0 - 55.0 %)	Adjusts the sharpness and texture of images processed in Photo mode with error diffusion. [0~6 / 1 / 1] <b>10</b> Softest 1: ↑ 2: ↑ 3: Normal (Default) 4: ↑ 5: ↑ 6: Sharpest
010	Photo Mode Error Diffusion (55.5 - 75.0 %)	
011	Photo Mode Error Diffusion (75.5 - 160.0 %)	
012	Photo Mode Error Diffusion (160.5 - 400.0 %)	
013	Text / Photo Mode (25.0 - 55.0 %)	Adjusts the sharpness and texture of images processed in Text/Photo mode. [0~10 / 5 / 1] 0: Softest 1: Photo Priority 2: ↑ 3: ↑ 4 ↑ 5 Normal (Default) 6 ↓ 7 ↓ 8 ↓ 9 Text Priority 10 Sharpest
014	Text / Photo Mode (55.5 - 75.0 %)	
015	Text / Photo Mode (75.5 - 160.0 %)	
016	Text / Photo Mode (160.5 - 400.0 %)	

017	Pale Mode (25.0 - 55.0 %)	Adjusts the sharpness and texture of images processed in Pale mode. [0~10 / <b>5</b> / 1] 1: Softest 2: Soft Mode↑ 3: ↑ 4: ↑ 5: Normal (Default) 6: ↓ 7: ↓ 8: ↓ 9: Sharp 10: Sharpest
018	Pale Mode (55.5 - 75.0 %)	
019	Pale Mode (75.5 - 160.0 %)	
020	Pale Mode (160.5 - 400.0 %)	
021	Generation Mode (25.0 -55.0 %)	Adjusts the sharpness and texture of images processed in Generation mode. [0~10 / <b>5</b> / 1] 0: Softest 1: Soft 2: ↑ 3: ↑ 4: ↑ 5: Normal (Default) 6: ↓ 7: ↓ 8: ↓ 9: Sharp 10: Sharpest
022	Generation Mode (55.5 -75.0 %)	
023	Generation Mode (75.5 - 160.0 %)	
024	Generation Mode (160.5 - 400.0 %)	
060	Independent Dot Erase: Text Mode	Sets the level for independent dot erasure. [0~14 / <b>8</b> / 1] 0: Off The higher the setting, the stronger the effect.
061	Independent Dot Erase: Photo Mode	[0~14 / <b>0</b> / 1] 0: Off
062	Independent Dot Erase: Text / Photo Mode	
063	Independent Dot Erase: Pale Mode	
064	Independent Dot Erase: Generation Mode	[0~14 / <b>8</b> / 1] 0: Off
070	Background Erase: Text Mode	Sets the level for background erase. [0~255 / <b>0</b> / 1] The higher the setting, the stronger the effect.
071	Background Erase: Photo Mode	
072	Background Erase: Text / Photo Mode	
073	Background Erase: Pale Mode	
074	Background Erase: Generation Mode	

Service Tables

080	Line Width Correction: Text Mode Select	Selects the level of line width correction for Text mode. [0~8 / 2 / 1] The higher the setting, the thicker the line.
081	Line Width Correction: Text Mode (Main Scan)	Switches on line width correction in the main scan direction in text mode. [0~1 / 1 / 1] 0: Line width correction OFF 1: Line width correction ON
082	Line Width Correction: Text Mode (Sub Scan)	Switches on line width correction in the sub scan direction in text mode. [0~1 / 1 / 1] 0: Line width correction OFF 1: Line width correction ON
083	Line Width Correction: Photo Mode Select	Selects the level of line width correction for photo mode. [0~8 / 4 / 1] The higher the setting, the thicker the line.
084	Line Width Correction: Photo Mode (Main Scan)	Switches on line width processing for the main scan direction in photo mode. [0~1 / 1 / 1] 0: Line width correction OFF 1: Line width correction ON
085	Line Width Correction: Photo Mode (Sub Scan)	Switches on line width correction in the sub scan direction in Photo mode. [0~1 / 1 / 1] 0: Line width correction OFF 1: Line width correction ON
086	Line Width Correction: Text / Photo Mode Select	Selects the level of line width processing for text/photo mode. [0~8 / 4 / 1] The higher the setting, the thicker the line.
087	Line Width Correction: Text / Photo Mode (Main Scan)	Switches on line width processing for the main scan direction in text/photo mode. [0~1 / 1 / 1] 0: Line width correction OFF 1: Line width correction ON
088	Line Width Correction: Text / Photo Mode (Sub Scan)	Switches on line width processing for the the sub scan direction in text/photo mode. [0~1 / 1 / 1] 0: Line width correction OFF 1: Line width correction ON
089	Line Width Correction: Pale Mode Select	Selects the level of line width processing for pale mode. [0~8 / 4 / 1] The higher the setting, the thicker the line.
090	Line Width Correction: Pale Mode (Main Scan)	Switches on line width processing for the main scan direction in pale mode. [0~1 / 1 / 1] 0: Line width correction OFF 1: Line width correction ON

091	Line Width Correction: Pale Mode (Sub Scan)	Switches on line width processing for the sub scan direction in pale mode [0~1 / 1 / 1] 0: Line width correction OFF 1: Line width correction ON
092	Line Width Correction: Generation Mode Select	Selects the level of line width processing for generation mode. [0~8 / 1 / 1] The higher the setting, the thicker the line.
093	Line Width Correction: Generation Mode (Main Scan)	Switches on line width processing for the main scan direction in generation mode. [0~1 / 1 / 1] 0: Line width correction OFF 1: Line width correction ON
094	Line Width Correction: Generation Mode (Sub Scan)	Switches on line width processing for the sub scan direction in generation mode. [0~1 / 1 / 1] 0: Line width correction OFF 1: Line width correction ON

4904	Image Quality / Exposure Thin Line	
002	Image Process Setting: Photo Mode	Selects the image processing mode for Photo Mode. [0~3 / 3 / 1] 0: 106 line dither processing 1: 141 line dither processing 2: 212 line dither processing 3: Error diffusion processing
005	User Stamp Binarization	This SP determines whether an original user stamp is digitized as black-and-white or whether error diffusion is used when it is stored on the HDD. [0~1 / 0 / 1] 0: Off (error diffusion) 1: On (black-and-white digitization)
020	Text Mode	Selects the line width correction level for Text mode. [0~2 / 0 / 1] 0: No processing 1: Low (thin) 2: High (thick)
021	Photo Mode	Selects the line width correction level for Photo mode. [0~2 / 0 / 1] 0: No processing 1: Low (thin) 2: High (thick)
022	Text / Photo Mode	Selects the line width correction level for Text/Photo mode. [0~2 / 0 / 1] 0: No processing 1: Low (thin) 2: High (thick)

Service Tables

023	Pale Mode	Selects the line width correction level for Pale mode. [0~2 / <b>0</b> / 1] 0: No processing 1: Low (thin) 2: High (thick)
024	Generation Mode	Selects the line width correction level for Generation mode. [0~2 / <b>0</b> / 1] 0: No processing 1: Low (thin) 2: High (thick)

4909	Image Processing Through <b>DFU</b>	
001	IPU Scan Image Module	[0~15 / <b>0</b> / 1]
002	IPU Plotter Image Module	[0~127 / <b>0</b> / 1]

4993	Highlight Correction	
001	Sensibility	Sets the level of sensitivity for the removal of shadows that can be caused with originals that have been marked up with highlighter pens. [0~9 / <b>4</b> / 1] Lowering the setting reduces the removal effect, and raising the setting increases the removal effect.
002	Region	Sets the region where highlight removal is applied. [0~9 / <b>4</b> / 1] A lower setting increases the size of the region, and a higher setting reduces the size of the region.

4994	Scanner Text/Photo Judgment	
	Use this SP to adjust the copier capability to distinguish between text and photo areas of images. This adjustment applies only to scanner applications using the high compression PDF mode. [0~2 / <b>1</b> / 1] 0: Nearer text 1: Default 2: Nearer photo	

**SP5-*nnn* Mode**

5019	Tray Paper Size Selection	
	Selects the paper size for the trays. [LT LEM: USA version A4 LEM: Other versions	
002	Tray 1	
005	Tray 4	
006	Tray 5	
007	Tray 6	

5024	mm/inch Selection	
	Selects whether mm or inches are used in the display. Note: After selecting the number, you must turn the main power switch off and on. Europe/Asia model: [0 = mm / 1 = inch] American model: [0 = mm / 1 = inch]	

5040	Custom Size: Vertical	
	Adjusts the vertical dimension of custom size paper for Tray 1. 'Custom size' must be selected with SP 5019-2.	
002	Tray 1	[210.0~305.0 / <b>297.0</b> / 0.1 mm]
005	Tray 4	
006	Tray 5	
007	Tray 6	

5041	Custom Size: Horizontal	
	Adjusts the horizontal dimension of custom size paper for Tray 1. 'Custom size' must be selected with SP 5019-2.	
002	Tray 1	[210.0~305.0 / <b>297.0</b> / 0.1 mm]
005	Tray 4	
006	Tray 5	
007	Tray 6	

5045	Accounting Counter	
	Selects the counting method if the meter charge mode is enabled with SP5-930-001. Note: You can change the setting only one time. [0 to 1/ 1] 0: Development counter. Shows the total counts for color (Y,M,C) and black (K). 1: Paper counter. Shows the total page counts for: Color Total, Black Total, Color Copies, Black Copies, Color Prints, Black Prints.	

Service  
Tables

5047	Reverse Display	
001	Reverse Paper Display	Determines whether the tray loaded with paper printed on one side is displayed on the operation panel. [0~1 / 0 / 1] 0: Not displayed 1: Displayed
002	Punched Paper	Determines whether the tray loaded with punched paper is displayed on the operation panel. [0~1 / 1 / 1] 0: Disable 1: Enable
003	Heavy Paper	Determines whether the tray loaded with heavy paper is displayed on the operation panel. [0~1 / 1 / 1] 0: Disable 1: Enable

5055	Display IP Address	
	Switches the banner display of MFP device display on and off. [OFF] ON	

5056	Coverage Counter Display	
	NIA [0~1 / 0 / 1] 0: Display off 1: Display on	

5057	Assign Eye-Catch Icons	
	Determines whether the eye-catch icons are displayed in the color mode for copying and scanning. [0~1 / 0 / 1] 0: Display off 1: Display on	

5062	Parts PM Display Setting	
	Switches the banner of the PM parts display screen off and on. [ON] OFF	

5104	A3/DLT Double Count
	Specifies whether the counter is doubled for A3/DLT. "Yes" counts except from the bypass tray. When "Yes" is selected, A3 and DLT paper are counted twice, that is A4 x2 and LT x2 respectively.

5112	Non-Std. Paper Sel.
	Determines whether a non-standard paper size can be input for the universal trays (Tray 2, Tray 3) [0~1 / 1] 0: No 1: Yes. If "1" is selected, the customer will be able to input a non-standard paper size using the UP mode.

5113	Optional Counter Type
	1 Default Optional Counter Type
	Selects the type of counter: 0: None 1: Key Card (RK3, 4) Japan only 2: Key Card Down 3: Pre-paid Card 4: Coin Lock 5: MF Key Card 11: Exp Key Card (Add) 12: Exp Key Card (Deduct)
2 External Optional Counter Type	
Enables the SDK application. This lets you select a number for the external device for user access control. Note: "SDK" refers to software on an SD card. [0~3 / 1] 0: None 1: Expansion Device 1 2: Expansion Device 2 3: Expansion Device 3	

5118	Disable Copying
	Temporarily denies access to the machine. Japan Only [0~1 / 1] 0: Release for normal operation 1: Prohibit access to machine

Service  
Tables



5120	Mode Clear Opt. Counter Removal
	Do not change. Japan Only [0~2 / 1] 0: Yes. Normal reset 1: Standby. Resets before job start/after completion 2: No. Normally no reset

5121	Counter Up Timing
	Determines whether the optional key counter counts up at paper feed-in or at paper exit. [0~1 / 1] 0: Feed count 1: No feed count

5126	Original Size: Set F-Size
	There are presently three F-type sizes (8½ x 13, 8 ¼ x 13, 8 x 13) and the APS sensors are not sensitive enough to distinguish between these types. Use this SP to select the F-type size that the customer uses most frequently so the ASP sensors can detect an F-type size accurately. [0~2 / 0 / 1] 0: 8 ½ x 13 1: 8 ¼ x 13 2: 8 x 13

5127	APS OFF Mode
	This SP can be used to switch APS (Auto Paper Select) off when a coin lock or pre-paid key card device is connected to the machine. [0~1 / 1] 0: On 1: Off

5131	Paper Size Type Selection
	Selects the paper size type (for originals and copy paper). (The default setting depends on the setting of DIP SW 1 and 2 on BCU.) [JP]: Japan [NA]: North America [EU]: Europe [CH]: China After changing the value, turn the main power switch off and on.

5148	Size Detection Off	
	This SP switches off paper size detection for the paper feed trays in the LCT. Each tray can be selected independently. The number of trays displayed will depend on whether the LCT and bypass unit are installed.	
005	Tray 4 (0 :ON 1:OFF)	
006	Tray 5 (0 :ON 1:OFF)	
007	Tray 6 (0 :ON 1:OFF)	

5158	Cover Feeder Size Change	
	This SP sets the priority paper size setting for the cover interposer tray.	
001	Priority (All)	0: A3 1: 12"x18"
002	EU/CH	0: 8½" x 13" 1: 8½" x 13" 2: 8¼" x 13"
003	NA	0: 8½" x 14" 1: 8½" x 13"
004	NA	0: LT LEF 1: 10½" x 7¼"
005	NA	0: LT SEF 1: 8" x 10"
006	EU/CH	0: Taiwan 8-Kai 1: DLT
007	EU/CH	0: Taiwan 16-Kai 1: LT SEF
008	EU/CH	0: Taiwan 16-Kai 1: LT LEF

Service  
Tables

5162	App. Switch Method	
	Controls if the application screen is changed with a hardware switch or a software switch. [0~1 / 1] 0: Soft Key Set 1: Hard Key Set	

5169	CE Login	
	If you will 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 / 1] 0: Off. Printer bit switches cannot be adjusted. 1: On. Printer bit switches can be adjusted.	

5182	HDD Page Mgmt	
	<p>These SP codes are used to change the configuration of the TEMP partition for raw data on the HDD so the local storage (LS) area can be expanded. The SP codes below cannot be set together. If one is selected that SP is enabled and the other reset to its default value. For example, if 002 is set to on (1) while 001 set to on (1), 002 is set to and 001 is automatically reset to its default (0: Normal).</p>	
001	Release LS Limit	
	<p>Normally LS can handle up to 15,000 pages. Use this SP code to select expansion of the page storage area.                  [0~1 / 0 / 1]                  0: Normal                  1: Allow Expansion</p>	
002	Change Pages/Doc	
	<p>The configuration of the TEMP area on the HDD must be changed in order to increase the number of pages that 1 document can hold when it is stored on the HDD. If the size of the LS area is increased, the size of the TEMP area must be decreased. Changing this SP increases the default value for the size of the LS area from 5,000 pages to 20,000 pages. A larger setting is not possible.                  [0~1 / 0 / 1]                  0: Normal                  1: Allow Expansion</p>	

5185	TCRU: Set Machine <b>DFU</b>	
	<p>NIA                  [Asymmetrical] Symmetrical</p>	

5187	PM Counter Print Out in UP	
	<p>This setting determines whether parts without standard counts print in addition to the normal counter list                  [0~1 / 0 / 1]                  0: No                  1: Yes</p>	

5212	Page Numbering	
003	Duplex Printout Left/Right Position	<p>Horizontally positions the page numbers printed on both sides during duplexing.                  [-10~+10 / 1 mm]                  0 is center, minus is left, + is right.</p>
004	Duplex Printout High/Low Position	<p>Vertically positions the page numbers printed on both sides during duplexing.                  [-10~+10 / 1 mm]                  0 is center, minus is down, + is up.</p>

5227	Page Numbering
220	Change Page No. Display
	This SP code determines whether the page number adjustment display is on or off. [0~1 / 0 / 1] 0: Display off 1: Display on
221	Allow Page No. Entry
	This SP specifies the number of digits to display for the entry of the starting page number. [2~9 / 9 / 1]
222	Zero Surplus Setting
	This setting determines whether page numbers are prefixed with excess zeros when the number is smaller than the number of assigned digits. For example, with this setting on and 3 digits have been specified, the number "3" appears as "003". With this setting off, the number "3" will appear as a "3" without the zeros. [0~1 / 0 / 1] 0: No excess zeros 1: Excess zeros displayed

5302	Set Time <b>DFU</b>
	Sets the time clock for the local time. This setting is done at the factory before delivery. The setting is GMT expressed in minutes. [-1440~1440 / 1 min.] JA: +540 (Tokyo) NA: -300 (NY) EU: +6- (Paris) CH: +480 (Peking) TW: +480 (Taipei) AS: +480 (Hong Kong)

5305	Auto Off Function Release Setting
	This SP prevents the user from easily disabling the auto off timer. This is done to conform with international Energy Star standards that specifically state that the user shall not be able to easily switch off the auto off feature. 0: On (Auto Off cannot be released) 1: Off (Auto Off can be released)

Service  
Tables

5307	Summer Time	
	Lets you set the machine to adjust its date and time automatically with the change to Daylight Savings time in the spring and back to normal time in the fall. This SP lets you set these items:	
	<ul style="list-style-type: none"> <li>• Day and time to go forward automatically in April.</li> <li>• Day and time to go back automatically in October.</li> <li>• Set the length of time to go forward and back automatically.</li> </ul>	
	The settings for 002 and 003 are done with 8-digit numbers:	
	<b>Digits</b>	<b>Meaning</b>
	1st, 2nd	Month. 4: April, 10: October (for months 1 to 9, the first digit of 0 cannot be input, so the eight-digit setting for 002 or 003 becomes a seven-digit setting)
	3rd	Day of the week. 0: Sunday, 1: Monday
	4th	The number of the week for the day selected at the 3rd digit. If "0" is selected for "Sunday", for example, and the selected Sunday is the start of the 2nd week, then input a "2" for this digit.
5th, 6th	The time when the change occurs (24-hour as hex code). Example: 00:00 (Midnight) = 00, 01:00 (1 a.m.) = 01, and so on.	
7th	The number of hours to change the time. 1 hour: 1	
8th	If the time change is not a whole number (1.5 hours for example), digit 8 should be 3 (30 minutes).	
001	Setting	Enables/disables the settings for 002 and 003. [0~1 / 1] 0: Disable 1: Enable
003	Rule Set (Start)	The start of summer time.
004	Rule Set (End)	The end of summer time.

5401	Access Control <b>DFU</b>		
	This SP stores the settings that limit uses access to SDK application data.		
	200	SDK1 Unique ID	"SDK" is the "Software Development Kit". This data can be converted from SAS (VAS) when installed or uninstalled. <b>DFU</b>
	201	SDK1 Certification Method	
	210	SDK2 Unique ID	
	211	SDK2 Certification Method	
	220	SDK3 Unique ID	
221	SDK3 Certification Method		

5404	User Code Count Clear	
	Clears the counts for the user codes assigned by the key operator to restrict the use of the machine. Press [Execute] to clear.	

5501	PM Alarm	
	Sets the count level for the PM alarm. [0~9999 / 0 / 1] 0: Alarm disabled <i>The PM alarm goes off when the print count reaches this value multiplied by 1,000.</i>	

5504	<b>Jam Alarm Japan Only</b>
	Sets the alarm to sound for the specified jam level (document misfeeds are not included). <b>RSS use only</b> [0~3 / <b>3</b> / 1 step] 0:Zero (Off) 1:Low (2.5K jams) 2:Medium (3K jams) 3:High (6K jams)

5505	<b>Error Alarm</b>
	Sets the error alarm level. <b>Japan only DFU</b> [0~255 / <b>50</b> / 100 copies per step]

5507	<b>Supply Alarm</b>	
001	Paper Supply Alarm (0:Off 1:On)	Switches the control call on/off for the paper supply. <b>DFU</b> <b>0: Off, 1: On</b> 0: No alarm. 1: Sets the alarm to sound for the specified number transfer sheets for each paper size (A3, A4, B4, B5, DLT, LG, LT, HLT)
002	Staple Supply Alarm (0:Off 1:On)	Switches the control call on/off for the stapler installed in the finisher. <b>DFU</b> <b>0: Off, 1: On</b> 0: No alarm 1: Alarm goes off for every 1K of staples used.
003	Toner Supply Alarm (0:Off 1:On)	Switches the control call on/off for the toner end. <b>DFU</b> <b>0: Off, 1: On</b> If you select "1" the alarm will sound when the copier detects toner end.
128	Interval: Others	The "Paper Supply Call Level: nn" SPs specify the paper control call interval for the referenced paper sizes. <b>DFU</b> [00250 ~ 10000 / <b>1000</b> / 1 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	

Service Tables

5508	<b>CC Call Japan Only</b>	
001	Jam Remains	Enables/disables initiating a call. [0~1 / 1] 0: Disable 1: Enable
002	Continuous Jams	
003	Continuous Door Open	
004	Low Call Mode	Enables/disables the new call specifications designed to reduce the number of calls. [0~1 / 1] 0: Normal mode 1: Reduced mode
011	Jam Detection: Time Length	Sets the length of time to determine the length of an unattended paper jam. [03~30 / 1] This setting is enabled only when SP5508-004 is enabled (set to 1).
012	Jam Detection Continuous Count	Sets the number of continuous paper jams required to initiate a call. [02~10 / 1] This setting is enabled only when SP5508-004 is enabled (set to 1).
013	Door Open: Time Length	Sets the length of time the remains opens to determine when to initiate a call. [03~30 / 1] This setting is enabled only when SP5508-004 is enabled (set to 1).
021	Jam Operation: Time Length	Determines what happens when a paper jam is left unattended. [0~1 / 1] 0: Automatic Call 1: Audible Warning at Machine
022	Jam Operation: Continuous Count	Determines what happens when continuous paper jams occur. [0~1 / 1] 0: Automatic Call 1: Audible Warning at Machine
023	Door Operation: Time Length	Determines what happens when the front door remains open. [0~1 / 1] 0: Automatic Call 1: Audible Warning at Machine

5513	Parts Alarm Level Count <b>Japan Only</b>	
001	Normal	
	Sets the parts replacement alarm counter to sound for the number of copies. [1~9999 / <b>350</b> / 1]	
002	DF	
	Sets the parts replacement alarm counter to sound for the number of scanned originals. [1~9999 / <b>350</b> / 1]	

5514	Parts Alarm Level	<b>Japan Only</b>
001	Normal	[0~1 / <b>1</b> / 1]
002	DF	[0~1 / <b>0</b> / 1]

5515	SC/Alarm Setting	
	With NRS (New Remote Service) in use, these SP codes can be set to issue an SC call when an SC error occurs. If this SP is switched off, the SC call is not issued when an SC error occurs.	
001	SC Call	[0~1 / <b>1</b> / 1]
002	Near End Call	0: Off
003	End Call	1: On
004	User Call	
005	Not Used	
006	TX Test	
007	Device Information	
008	Alarm	
009	Illegal Toner	
010	Auto Order Supplies	[0~1 / <b>0</b> / 1]
011	Supply Management Report	
012	Jam/Door Open	[0~1 / <b>1</b> / 1]

Service Tables

5516	Individual PM Alarm Call	
	This SP sets an alarm to send a notice to the service center when one of the seven service parts covered by the TCRU replacement procedures has reached the end or near end of service life. <b>Note:</b> The service parts covered in the TCRU replacement procedures are: 1) development unit, 2) pre-charge unit, 3) charge unit, 4) drum cleaning unit, 5) PCU, 6) fusing unit, 7) fusing cleaning unit	
001	Disable/Enable Setting (0:Not Send 1:Send)	This SP switches this feature ON/OFF. Default <b>0</b> : Not send.
002	Alarm Flag (0: Ready 1: Already Sent)	Displays the status of the most recent alarm.
003	Alarm Flag Clear [Execute]	Clears the most recent alarm.



5801	Memory Clear	Resets NVRAM data to the default settings. Before executing any of these SP codes, print an SMC Report.
001	All Clear	Initializes items 2 ~ 15 below.
002	Engine Clear	Initializes all registration settings for the engine and copy process settings.
003	SCS	Initializes default system settings, SCS (System Control Service) settings, operation display coordinates, and ROM update information.
004	IMH Memory Clear	Initializes the image file system. (IMH: Image Memory Handler)
005	MCS	Initializes the automatic delete time setting for stored documents. (MCS: Memory Control Service)
006	Copier application	Initializes all copier application settings.
008	Printer application	Initializes the printer defaults, programs registered, the printer SP bit switches, and the printer CSS counter.
009	Scanner application	Initializes the defaults for the scanner and all the scanner SP modes.
010	Web Service/Network application	Deletes the Netfile (NFA) management files and thumbnails, and initializes the Job login ID. Netfiles: Jobs to be printed from the document server using a PC and the DeskTopBinder software
011	NCS	Initializes the system defaults and interface settings (IP addresses also), the SmartNetMonitor for Admin settings, WebStatusMonitor settings, and the TELNET settings. (NCS: Network Control Service)
014	Clear DCS Setting	Initializes the DCS (Delivery Control Service) settings.
015	Clear UCS Setting	Initializes the UCS (User Information Control Service) settings.
016	MIRS Setting	Initializes the MIRS (Machine Information Report Service) settings.
017	CCS	Initializes the CCS (Certification and Charge-control Service) settings.
018	SRM Clear	Initializes the SRM (System Resource Manager) settings.
019	LCS Clear	Initializes the LCS (Log Count Service) settings.
020	Web Uapl	NIA

5802	Printer Free Run
	Makes a base engine free run [0~1 / 0 / 1] 0: Release free run mode 1: Enable free run mode <i>Return this setting to off (0) after testing is completed.</i> <i>Finisher connectors should be disconnected and duplex mode should be off.</i>

5803	Input Check
	Displays signals received from sensors and switches. This is the input check for the main machine. (☛5.4.1)

5804	Output Check
	Turns on the electrical components individually for testing. This is the output check for the main machine. (☛5.5.1)

5807	Option Connection Check
	This SP displays whether the devices listed below are connected or not: 1: Connected 0: Not connected.
001	ADF (1:Connect)
002	LCT (1:Connect)
003	FIN (1:Connect)

5811	Machine No. Setting
	This SP presents the soft keyboard used to enter the 11-digit number of the machine. The allowed entries are "A" to "Z" and "0" to "9". The setting is done at the factory, and should not be changed in the field. <b>DFU</b>

5812	Service Tel. No. Setting	
001	Service	Inputs the telephone number of the CE (displayed when a service call condition occurs.)
002	Facsimile	Use this to input the fax number of the CE printed on the Counter Report (UP mode).
003	Supply	Displayed on the initial SP screen.
004	Operation	Sales representative telephone number.

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Tables

5816	Remote Service <b>(Not use)</b>
001	I/F Setting
	Turns the remote diagnostics off and on. [0~2 / 1] 0: Remote diagnostics off. 1: Serial (CSS or NRS) remote diagnostics on. 2: Network remote diagnostics.
002	CE Call
	Lets the service engineer start or end the remote machine check with CSS or NRS; to do this, push the center report key
003	Function Flag
	Enables and disables remote diagnosis over the NRS network. [0~1 / 1] 0: Disables remote diagnosis over the network. 1: Enables remote diagnosis over the network.
007	SSL Disable
	Controls if RCG (Remote Communication Gate) confirmation is done by SSL during an RCG send for the NRS over a network interface. [0~1 / 1] 0: Yes. SSL not used. 1: No. SSL used.
008	RCG Connect Timeout
	Sets the length of time (seconds) for the time-out when the RCG (Remote Communication Gate) connects during a call via the NRS network. [1~90 / 1 sec.]
009	RCG Write to Timeout
	Sets the length of time (seconds) for the time-out when sent data is written to the RCG during a call over the NRS network. [0~100 / 1 sec.]
010	RCG Read Timeout
	Sets the length of time (seconds) for the timeout when sent data is written from the RCG during a call over the NRS network. [0~100 / 1 sec.]
011	Port 80 Enable
	Controls if permission is given to get access to the SOAP method over Port 80 on the NRS network. [0~1 / 1] 0: No. Access denied 1: Yes. Access granted.
021	RCG – C Registered
	This SP displays the Cumin installation end flag. 1: Installation completed 2: Installation not completed
022	RCG – C Registered Detail
	This SP displays the Cumin installation status. 0: Basil not registered 1: Basil registered 2: Device registered
023	Connect Type (N/M)
	This SP displays and selects the Cumin connection method. <b>0</b> : Internet connection 1: Dial-up connection

061	<b>Cert. Expire Timing DFU</b>	
	Proximity of the expiration of the certification.	
062	<b>Use Proxy</b>	
	This SP setting determines if the proxy server is used when the machine communicates with the service center.	
063	<b>HTTP Proxy Host</b>	
	<p>This SP sets the address of the proxy server used for communication between Cumin-N and the gateway. Use this SP to set up or display the customer proxy server address. The address is necessary to set up Cumin-N.</p> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>• The address display is limited to 127 characters. Characters beyond the 127<sup>th</sup> character are ignored.</li> <li>• This address is customer information and is not printed in the SMC report.</li> </ul>	
064	<b>HTTP Proxy Port Number</b>	
	<p>This SP sets the port number of the proxy server used for communication between Cumin-N and the gateway. This setting is necessary to set up Cumin-N.</p> <p><b>Note:</b> This port number is customer information and is not printed in the SMC report.</p>	
065	<b>HTTP Proxy Certification User Name</b>	
	<p>This SP sets the HTTP proxy certification user name.</p> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>• The length of the name is limited to 31 characters. Any character beyond the 31st character is ignored.</li> <li>• This name is customer information and is not printed in the SMC report.</li> </ul>	
066	<b>HTTP Proxy Certification Password</b>	
	<p>This SP sets the HTTP proxy certification password.</p> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>• The length of the password is limited to 31 characters. Any character beyond the 31st character is ignored.</li> <li>• This name is customer information and is not printed in the SMC report.</li> </ul>	
067	<b>CERT: Up State</b>	
	Displays the status of the certification update.	
	0	The certification used by Cumin is set correctly.
	1	The certification request (setAuthKey) for update has been received from the GW URL and certification is presently being updated.
	2	The certification update is completed and the GW URL is being notified of the successful update.
	3	The certification update failed, and the GW URL is being notified of the failed update.
	4	The period of the certification has expired and new request for an update is being sent to the GW URL.
	11	A rescue update for certification has been issued and a rescue certification setting is in progress for the rescue GW connection.
	12	The rescue certification setting is completed and the GW URL is being notified of the certification update request.
	13	The notification of the request for certification update has completed successfully, and the system is waiting for the certification update request from the rescue GW URL.
	14	The notification of the certification request has been received from the rescue GW controller, and the certification is being stored.
	15	The certification has been stored, and the GW URL is being notified of the successful completion of this event.

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	16	The storing of the certification has failed, and the GW URL is being notified of the failure of this event.
	17	The certification update request has been received from the GW URL, the GW URL was notified of the results of the update after it was completed, but an certification error has been received, and the rescue certification is being recorded.
	18	The rescue certification of No. 17 has been recorded, and the GW URL is being notified of the failure of the certification update.
068	CERT: Error	
	Displays a number code that describes the reason for the request for update of the certification.	
	0	Normal. There is no request for certification update in progress.
	1	Request for certification update in progress. The current certification has expired.
	2	An SSL error notification has been issued. Issued after the certification has expired.
	3	Notification of shift from a common authentication to an individual certification.
	4	Notification of a common certification without ID2.
	5	Notification that no certification was issued.
	6	Notification that GW URL does not exist.
069	CERT: Up ID	
	The ID of the request for certification.	
083	Firmware Up Status	
	Displays the status of the firmware update.	
084	Non-HDD Firm Up	
	This setting determines if the firmware can be updated, even without the HDD installed.	
085	Firm Up User Check	
	This SP setting determines if the operator can confirm the previous version of the firmware before the firmware update execution. If the option to confirm the previous version is selected, a notification is sent to the system manager and the firmware update is done with the firmware files from the URL.	
086	Firmware Size	
	Allows the service technician to confirm the size of the firmware data files during the firmware update execution.	
087	CERT: Macro Version	
	Displays the macro version of the NRS certification	
088	CERT: PAC Version	
	Displays the PAC version of the NRS certification.	
089	CERT: ID2 Code	
	Displays ID2 for the NRS certification. Spaces are displayed as underscores (_). Asterisks (*) indicate that no NRS certification exists.	
090	CERT: Subject	
	Displays the common name of the NRS certification subject. CN = the following 17 bytes. Spaces are displayed as underscores (_). Asterisks (*) indicate that no DESS exists.	
091	CERT: Serial Number	
	Displays serial number for the NRS certification. Asterisks (*) indicate that no DESS exists.	
092	CERT: Issuer	
	Displays the common name of the issuer of the NRS certification. CN = the following 30 bytes. Asterisks (*) indicate that no DESS exists.	

093	CERT: Valid Start	
	Displays the start time of the period for which the current NRS certification is enabled.	
094	CERT: Valid End	
	Displays the end time of the period for which the current NRS certification is enabled.	
200	Manual Polling	
	No information is available at this time.	
150	Selection Country	
	Select from the list the name of the country where Cumin-M is installed in the machine. After selecting the country, you must also set the following SP codes for Cumin-M: <ul style="list-style-type: none"> <li>• SP5816-153</li> <li>• SP5816-154</li> <li>• SP5816-161</li> </ul>	
	0: Japan	6: Italy
	1: USA	7: Netherlands
	2: Canada	8: Belgium
	3: UK	9: Luxembourg
	4: Germany	10: Spain
	5: France	
151	Line Type Authentication Judgment	
	Press [Execute]. Setting this SP classifies the telephone line where Cumin-M is connected as either dial-up or push type, so Cumin-M can automatically distinguish the number that connects to the outside line. <ul style="list-style-type: none"> <li>• The current progress, success, or failure of this execution can be displayed with SP5816 152.</li> <li>• If the execution succeeded, SP5816 153 will display the result for confirmation and SP5816 154 will display the telephone number for the connection to the outside line.</li> </ul>	
152	Line Type Judgment Result	
	Displays a number to show the result of the execution of SP5816 151. Here is a list of what the numbers mean.	
	0: Success	
	1: In progress (no result yet). Please wait.	
	2: Line abnormal	
	3: Cannot detect dial tone automatically	
	4: Line is disconnected	
	5: Insufficient electrical power supply	
	6: Line classification not supported	
	7: Error because fax transmission in progress – ioctl ( ) occurred.	
	8: Other error occurred	
	9: Line classification still in progress. Please wait.	

Service Tables

153	Selection Dial/Push
	<p>This SP displays the classification (tone or pulse) of the telephone line to the access point for Cumin-M. The number displayed (0 or 1) is the result of the execution of SP5816 151. However, this setting can also be changed manually.</p> <p>[0~1 / <b>0</b> / 1]</p> <p>0: Tone Dialing Phone          1: Pulse Dialing Phone</p> <p>Inside Japan "2" may also be displayed:          0: Tone Dialing Phone          1: Pulse Dialing Phone 10PPS          2: Pulse Dialing Phone 20PPS</p>
154	Outside Line/Outgoing Number
	<p>The SP sets the number that switches to PSTN for the outside connection for Cumin-M in a system that employs a PBX (internal line).</p> <ul style="list-style-type: none"> <li>• If the execution of SP5816 151 has succeeded and Cumin-M has connected to the <u>external</u> line, this SP display is completely blank.</li> <li>• If Cumin-M has connected to an <u>internal</u> line, then the number of the connection to the external line is displayed.</li> <li>• If Cumin-M has connected to an external line, a comma is displayed with the number. The comma is inserted for a 2 sec. pause.</li> <li>• The number setting for the external line can be entered manually (including commas).</li> </ul>
155	Remove Service: PPP Recognition Timeout
	<p>Sets the length of the timeout for the Cumin-M connection to its access point. The timeout is the time from when the modem sends the ATD to when it receives the result code.</p> <p>[1~65536 / <b>60</b> / 1]</p>
156	Dial Up User Name
	<p>Use this SP to set a user name for access to remote dial up. Follow these rules when setting a user name:</p> <ul style="list-style-type: none"> <li>• Name length: Up to 32 characters</li> <li>• Spaces and # allowed but the entire entry must be enclosed by double quotation marks (").</li> </ul>
157	Dial Up Password
	<p>Use this SP to set a password for access to remote dial up. Follow these rules when setting a user name:</p> <ul style="list-style-type: none"> <li>• Name length: Up to 32 characters</li> <li>• Spaces and # allowed but the entire entry must be enclosed by double quotation marks (").</li> </ul>
159	Remote Service: Carrier Send Level
	<p>This SP sets the level of the carrier signal for Cumin-M data transmissions.</p> <p>[0~15 / <b>3</b> / 1]</p>
160	Remote Service: AT command
	<p>This SP allows you to add an AT command to the initialization of the Cumin-M modem. This SP sets the AT command for both initialization and wait time of and outgoing call. It also includes the NULL instruction.</p> <p>Default: 0, up to 8 characters allowed.</p>
161	Local Phone Number
	<p>Use this SP to set the telephone number of the line where Cumin-M is connected. This number is transmitted to and used by the Call Center to return calls.</p> <p>Limit: 24 numbers (numbers only)</p>

162	<p>Connection Timing Adjustment: Incoming</p> <p>When the Call Center calls out to a Cumin-M modem, it sends a repeating ID tone (*#1#). This SP sets the line remains open to send these ID tones after the number of the Cumin-M modem is dialed up and connected. [0~24 / 1 / 1] The actual amount of time is this setting x 2 sec. For example, if you set "2" the line will remain open for 4 sec.</p>										
163	<p>Access Point</p> <p>This is the number of the dial-up access point for Cumin-M. If no setting is done for this SP code, then a preset value (determined by the country selected) is used. Default: 0 Allowed: Up to 16 alphanumeric characters</p>										
164	<p>Line Connecting</p> <p>This SP sets the connection conditions for the customer. This setting dedicates the line to Cumin-M only, or sets the line for sharing between Cumin-M and a fax unit. [0~1 / 0 / 1] 0: Line shared by Cumin-M/Fax 1: Line dedicated to Cumin-M only <b>Note:</b>  <ul style="list-style-type: none"> <li>• If this setting is changed, the copier must be cycled off and on.</li> <li>• SP5816 187 determines whether the off-hook button can be used to interrupt a Cumin-M transmission in progress to open the line for fax transaction.</li> </ul> </p>										
173	<p>Modem Serial Number</p> <p>This SP displays the serial number registered for the Cumin-M.</p>										
174	<p>Retransmission Limit</p> <p>Normally, it is best to allow unlimited time for certification and ID2 update requests, and for the notification that the certification has been completed. However, Cumin-M generates charges based on transmission time for the customer, so a limit is placed upon the time allowed for these transactions. If these transactions cannot be completed within the allowed time, do this SP to cancel the time restriction.</p>										
187	<p>FAX/TX Priority</p> <p>This SP determines whether pushing the off-hook button will interrupt a Cumin-M transmission in progress to open the line for fax transaction. This SP can be used only if SP5816 164 is set to "0". [0~1 / 0 / 1] 0:Disable. Setting the fax unit off-hook does not interrupt a fax transaction in progress. If the off-hook button is pushed during a Cumin-M transmission, the button must be pushed again to set the fax unit on-hook after the Cumin-M transmission has completed. 1:Enable. When Cumin-M shares a line with a fax unit, setting the fax unit off-hook will interrupt a Cumin-M transmission in progress and open the line for a fax transaction.</p>										
201	<p>Regist: Status</p> <p>Displays a number that indicates the status of the NRS service device.</p> <table border="1"> <tr> <td>0</td> <td>Neither the NRS device nor Cumin device are set.</td> </tr> <tr> <td>1</td> <td>The Cumin device is being set. Only Box registration is completed. In this status the Basil unit cannot answer a polling request.</td> </tr> <tr> <td>2</td> <td>The Cumin device is set. In this status the Basil unit cannot answer a polling request.</td> </tr> <tr> <td>3</td> <td>The NRS device is being set. In this status the Cumin device cannot be set.</td> </tr> <tr> <td>4</td> <td>The NRS module has not started.</td> </tr> </table>	0	Neither the NRS device nor Cumin device are set.	1	The Cumin device is being set. Only Box registration is completed. In this status the Basil unit cannot answer a polling request.	2	The Cumin device is set. In this status the Basil unit cannot answer a polling request.	3	The NRS device is being set. In this status the Cumin device cannot be set.	4	The NRS module has not started.
0	Neither the NRS device nor Cumin device are set.										
1	The Cumin device is being set. Only Box registration is completed. In this status the Basil unit cannot answer a polling request.										
2	The Cumin device is set. In this status the Basil unit cannot answer a polling request.										
3	The NRS device is being set. In this status the Cumin device cannot be set.										
4	The NRS module has not started.										

Service Tables



202	Letter Number		
	Allows entry of the number of the request needed for the Cumin device.		
203	Confirm Execute		
	Executes the inquiry request to the NRS GW URL.		
204	Confirm Result		
	Displays a number that indicates the result of the inquiry executed with SP5816 203.		
	0	Succeeded	
	1	Inquiry number error	
	2	Registration in progress	
	3	Proxy error (proxy enabled)	
	4	Proxy error (proxy disabled)	
	5	Proxy error (Illegal user name or password)	
	6	Communication error	
	7	Certification update error	
205	Confirm Place		
	Displays the result of the notification sent to the device from the GW URL in answer to the inquiry request. Displayed only when the result is registered at the GW URL.		
206	Register Execute		
	Executes Cumin Registration.		
207	Register Result		
	Displays a number that indicates the registration result.		
	0	Succeeded	
	2	Registration in progress	
	3	Proxy error (proxy enabled)	
	4	Proxy error (proxy disabled)	
	5	Proxy error (Illegal user name or password)	
	6	Communication error	
	7	Certification update error	
	8	Other error	
208	Error Code		
	Displays a number that describes the error code that was issued when either SP5816 204 or SP5816 207 was executed.		
	<b>Cause</b>	<b>Code</b>	<b>Meaning</b>
	Illegal Modem Parameter	-11001	Chat parameter error
		-11002	Chat execution error
		-11003	Unexpected error
	Operation Error, Incorrect Setting	-12002	Inquiry, registration attempted without acquiring device status.
		-12003	Attempted registration without execution of an inquiry and no previous registration.
		-12004	Attempted setting with illegal entries for certification and ID2.
	Error Caused by Response from GW URL	-2385	Attempted dial up overseas without the correct international prefix for the telephone number.
		-2387	Not supported at the Service Center
		-2389	Database out of service
		-2390	Program out of service

		-2391	Two registrations for same device
		-2392	Parameter error
		-2393	Basil not managed
		-2394	Device not managed
		-2395	Box ID for Basil is illegal
		-2396	Device ID for Basil is illegal
		-2397	Incorrect ID2 format
		-2398	Incorrect request number format
209	Remote Setting Clear		
	Releases a machine from its Cumin setup.		
250	CommLog Print		
	Prints the communication log.		

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

5824	NVRAM Data Upload		
	Uploads the UP and SP mode data (except for counters and the serial number) from NVRAM on the control board to an SD card. <b>Note:</b> While using this SP mode, always keep the front door open. This prevents a software module accessing the NVRAM during the upload.		

5825	NVRAM Data Download		
	Downloads data from an SD card to the NVRAM in the machine. After downloading is completed, remove the SD card and turn the machine power off and on.		

Service Tables

5828	Network Setting				
050	1284 Compatibility (Centro)	Enables and disables bi-directional communication on the parallel connection between the machine and a computer. [0~1 / 1] 0:Off 1: On			
052	ECP (Centro)	Disables and enables the ECP feature (1284 Mode) for data transfer. [0~1 / 1] 0: Disabled 1: Enabled			
065	Job Spool Setting	Switches job spooling spooling on and off. 0: No spooling 1: Spooling enabled			
066	Job Spool Clear	This SP determines whether the job interrupted at power off is resumed at the next power on. This SP operates only when SP5828 065 is set to 1. 1: Resumes printing spooled jog. 0: Clears spooled job.			
069	Job Spool Protocol	This SP determines whether job spooling is enabled or disabled for each protocol. This is a 8-bit setting.			
		0	LPR	4	BMLinks (Japan Only)
		1	FTP (Not Used)	5	DIPRINT
		2	IPP	6	Reserved (Not Used)
		3	SMB	7	Reserved (Not Used)
084	Print Settings List	Prints a list of the NCS parameter settings.			
090	TELNET (0:OFF 1:ON)	Disables or enables Telnet operation. If this SP is disabled, the Telnet port is closed. [0~1 / 1] 0: Disable 1: Enable			
091	Web (0:OFF 1:ON)	Disables or enables the Web operation. [0~1 / 1] 0: Disable 1: Enable			
092	Primary WINS Server IPv4 Address	This SP is used to set and later refer to the WINS IPv4 primary address used by the Ethernet or the wireless LAN (802.11b). The current address is displayed and printed in the SMC report as aaa.bbb.ccc.ddd and is entered as 8-bit data. For example, if the number "192.168.000.001" is entered, it is recorded as "0C0A80001h".			

096		This SP disables/enables Rendezvous operation. This is a set of protocols that allows a device on an IP network to automatically recognize and connect with other devices (such as a printer) on a network. Once a new device is connected to the network, it can be used immediately by every computer on the network. No special setup procedures or configuration settings are required 1: Enable 0: Disable
145	Operation IPv6 Link Local Address	This is the IPv6 local address link referenced on the Ethernet or wireless LAN (802.11b) in the format: "Link Local Address" + "Prefix Length" The IPv6 address consists of a total 128 bits configured in 8 blocks of 16 bits each.
147	Operation IPv6 Status Address 1	These SPs are the IPv6 status addresses (1 to 5) referenced on the Ethernet or wireless LAN (802.11b) in the format: "Status Address" + "Prefix Length" The IPv6 address consists of a total 128 bits configured in 8 blocks of 16 bits each.
149	Operation IPv6 Status Address 2	
151	Operation IPv6 Status Address 3	
153	Operation IPv6 Status Address 4	
155	Operation IPv6 Status Address 5	
156	IPv6 Manual Setting Address	This SP is the IPv6 manually set address referenced on the Ethernet or wireless LAN (802.11b) in the format: "Manual Set Address" + "Prefix Length" The IPv6 address consists of a total 128 bits configured in 8 blocks of 16 bits each.
157	Operation IPv6 Manual Setting Address	This SP is the operation IPv6 manually set address referenced on the Ethernet or wireless LAN (802.11b) in the format: "Operation Set Address" + "Prefix Length" The IPv6 address consists of a total 128 bits configured in 8 blocks of 16 bits each.
158	IPv6 Gateway Address	This SP is the IPv6 gateway address referenced on the Ethernet or wireless LAN (802.11b). The IPv6 address consists of a total 128 bits configured in 8 blocks of 16 bits each.
159	Operation IPv6 Gateway Address	This SP is the IPv6 operation gateway address referenced on the Ethernet or wireless LAN (802.11b). The IPv6 address consists of a total 128 bits configured in 8 blocks of 16 bits each.
162	IPv6 Access Control Display	This SP enables the display for access control of the IPv6 addresses.

Service Tables

5831	Initial Setting Mode Clear
	Press [Execute] to restore the initial settings of all SP codes to their initial (factory) settings. <b>Note:</b> This SP does not reset time settings or user tool settings.

5832	HDD
	Enter the SP number for the partition to initialize, then press #. When the execution ends, cycle the machine off and on.
001	HDD Formatting (All)
002	HDD Formatting (IMH)
003	HDD Formatting (Thumbnail)
004	HDD Formatting (Job Log)
005	HDD Formatting (Printer Fonts)
006	HDD Formatting (User Info1)
007	HDD Formatting (User Info2)
008	HDD Formatting (Scanner Initial)
009	HDD Formatting (Data for Design)
010	<del>HDD Formatting (Log)</del>
011	HDD Formatting (Ridoc I/F) (for Ridoc Desk Top Binder)

5836	Capture Setting	
001	Capture Function (0:Off 1:On)	
	With this function disabled, the settings related to the capture feature cannot be initialized, displayed, or selected.	
	[0~1 / 1]	
	0: Disable	
	1: Enable	
002	Panel Setting	
	Determines whether each capture related setting can be selected or updated from the initial system screen.	
	[0~1 / 1]	
	0: Disable	
	1: Enable	
	The setting for SP5836-001 has priority.	
003	Print Back-up Function	
	Determines whether the print back-up function setting can be changed.	
	[0~1 / <b>0</b> / 1]	
	0: Disable	
	1: Enable	
071	Reduction for Copy Color	[0~3/1] 0:1 1:1/2 2:1/3 3:1/4 <b>DFU</b>
072	Reduction for Copy B&W Text	[0~6/1] 0:1 1:1/2 2:1/3 3:1/4 6:2/3
073	Reduction for Copy B&W Other	[0~6/1] 0:1 1:1/2 2:1/3 3:1/4 6:2/3
074	Reduction for Printer Color	[0~3/1] 0:1 1:1/2 2:1/3 3:1/4 <b>DFU</b>
075	Reduction for Printer B&W	[0~6/1] 0 1 1:1/2 2:1/3 3:1/4 6:2/3
076	Reduction for Printer B&W HQ	[1~5/1] 1:1/2 3:1/4 4:1/6 5:1/8
077	Reduction for Printer Col 1200 dpi	

078	Reduction for Printer B&W 1200 dpi	
081	Format for Copy Color <b>DFU</b>	[0~3 / 1] 0: JFIF/JPEG, 1: TIFF/MMR, 2: TIFF/MH, 3: TIFF/MR
082	Format for Copy B&W Text	[0~3 / 1] 0: JFIF/JPEG, 1: TIFF/MMR, 2: TIFF/MH, 3: TIFF/MR
083	Format Copy B&W Other	[0~3 / 1] 0: JFIF/JPEG, 1: TIFF/MMR, 2: TIFF/MH, 3: TIFF/MR
084	Format for Printer Color <b>DFU</b>	[0~3 / 1] 0: JFIF/JPEG, 1: TIFF/MMR, 2: TIFF/MH, 3: TIFF/MR
085	Format for Printer B&W	[0~3 / 1] 0: JFIF/JPEG, 1: TIFF/MMR, 2: TIFF/MH, 3: TIFF/MR
086	Format for Printer B&W HQ	[0~3 / 1] 0: JFIF/JPEG, 1: TIFF/MMR, 2: TIFF/MH, 3: TIFF/MR
091	Default for JPEG	[5~95 / 1] Sets the JPEG format default for documents sent to the document management server with the MLB, with JPEG selected as the format. <i>Enabled only when optional File Format Converter (MLB: Media Link Board) is installed.</i>
092	Capture Setting: Page Quality for JPEG (High Quality)	Determines the quality level of JPEG images for high quality sent to the Document Server via the MLB (Media Link Board). [5~95 / <b>60</b> / 1]
093	Capture Setting: Page Quality for JPEG (Low Quality)	Determines the quality level of JPEG images for low quality sent to the Document Server via the MLB (Media Link Board). [5~95 / <b>40</b> / 1]
094	Default Format for Backup Files	Sets the format for backup files created when the print backup function is used. [0~4 / <b>0</b> / 1] 0: TIFF 1: JPEG 2: J2K 3: PDF Single 4: PDF Multi
095	Default Resolution for Backup Files	Sets the resolution for backup files (JPEG, TIFF) when the print backup function is used. This SP can be used only after JPEG or TIFF is selected for SP583f6 094. [0~6 / <b>2</b> / 1] 0: 1/1 1: 1/2 3: 1/4 6: 2/3 (Unavailable for some models)
096	Default User Name for Backup Files	Sets the user name when the print backup function is used. Limit: 8 alphanumeric characters.
097	Default Compression for Backup Files	This SP sets the compression rate for JPEG backup files when the print backup function is used. This SP operates only after SP5826 0094 has been set for "1" (JPEG). [0~2 / <b>0</b> / 1]

Service Tables

098	Capture Setting: Gamma SW for Backup File
	Removes the ghost images transferred from the back sides of double-sided originals. 1: Enable 0: Disable

5839	IEEE 1394
	This SP is displayed only when an IEEE 1394 (firewire) card is installed.
007	Cycle Master
	Enables or disables the cycle master function for the 1394 bus standard. [0~1 / 1] 0: Disable (Off) 1: Enable (On)
008	BCR Mode
	Determines how BCR (Broadcast Channel Register) operates on the 1394 standard bus when the independent node is in any mode other than IRM. (NVRAM: 2-bits) [Always Effective]
009	IRM 1394a Check
	Conducts a 1394a check of IRM when the independent node is in any mode other than IRM. [0~1 / 1] 0: Checks whether IRM conforms to 1394a 1: After IRM is checked, if IRM does not conform then independent node switches to IRM.
010	Unique ID
	Lists the ID (Node_Unique_ID) assigned to the device by the system administrator. Bit0: Off Bit1: On OFF: Does not list the Node_Unique_ID assigned by the system administrator. Instead, the Source_ID of the GASP header in the ARP is used. ON: The Node_Unique_ID assigned by the system administrator is used, and the Source_ID of the GASP header in the ARP is ignored. Also, when the serial bus is reset, extra bus transactions are opened for the enumeration.
011	Logout
	Handles the login request of the login initiator for SBP-2. (1-bit) Bit0: Off Bit1: On OFF: Disable (refuse login). Initiator retry during login. Login refusal on arrival of login request (standard operation) ON: Enable (force logout). Initiator retry during login. Login refusal on arrival of login request, and the initiator forces the login.
012	Login
	Enables or disables the exclusive login feature (SBP-2 related). Bit0: Off Bit1: On OFF: Disables. The exclusive login (LOGIN ORB exclusive it) is ignored. ON: Enables. Exclusive login is in effect.

013	Login MAX
	Sets the maximum number of logins from the initiator (6-bits) [0~63 / 1] 0: Reserved 63: Reserved

5840	IEEE 802.11b
006	Channel MAX
	Sets the maximum range of the bandwidth for the wireless LAN. This bandwidth setting varies for different countries. [1~14 / 1]
007	Channel MIN
	Sets the minimum range of the bandwidth for operation of the wireless LAN. This bandwidth setting varies for different countries. [1~14 / 1]
011	WEP Key Select
	Determines how the initiator (SBP-2) handles subsequent login requests. [0~1 / 1] 0: If the initiator receives another login request while logging in, the request is refused. 1: If the initiator receives another login request while logging in, the request is refused and the initiator logs out. Note: Displayed only when the wireless LAN card is installed.

5841	Supply Name Setting	
	Press the User Tools key. These names appear when the user presses the Inquiry button on the User Tools screen.	
001	Toner Name Setting: Black	
011	Staple Std 1	Finisher
012	Staple Std 2	
013	Staple Std 3	
014	Staple Std 4	
021	StapleBind 1	Booklet Finisher
022	StapleBind 2	
023	StapleBind 3	

5842	GWS Analysis Mode Setting <b>DFU</b>
	This settings select the output mode for debugging information as each network file is processed.
001	Setting 1
002	Setting 2

Service Tables



5844	USB
001	Transfer Rate
	Sets the speed for USB data transmission. [Full Speed] [Auto Change]
002	Vendor ID
	Sets the vendor ID: Initial Setting: 0x05A Ricoh Company [0x0000~0xFFFF/1] <b>DFU</b>
003	Product ID
	Sets the product ID. [0x0000~0xFFFF / 1] <b>DFU</b>
004	Device Release No.
	Sets the device release number of the BCD (binary coded decimal) display. [0000~9999 / 1] <b>DFU</b> Enter as a decimal number. NCS converts the number to hexadecimal number recognized as the BCD.

5845	Delivery Server Setting
	These are delivery server settings.
001	FTP Port No.
	[0~65535 / 1]
002	IP Address
	Use this SP to set the Scan Router Server address. The IP address under the transfer tab can be used with the initial system setting. [0~FFFFFFFF/1]
005	Capture Server IP Address
	Sets the IP address that is assigned to the PC that the capture server (eCabinet or Scan Router) operates. This IP address is set remotely when the delivery server (Scan Router) IO device is registered. This SP only enables the IP address permit access to the DNS browser names.
006	Delivery Error Display Time
	Use this setting to set the length of time that the message is shown when a test error occurs during document transfer with the NetFile application and an external device. [0~999/1]
008	IP Address (Secondary)
	Sets the IP address that is given to the computer that is the secondary delivery server for Scan Router. This SP lets you set only the IP address, and does not refer to the DNS setting.

009	Delivery Server Model
	Lets you change the model of the delivery server that is registered by the I/O device. [0~4 / 1] 0: Unknown 1: SG1 Provided 2: SG1 Package 3: SG2 Provided 4: SG2 Package
010	Delivery Svr. Capability
	Changes the functions that the registered I/O device can do. [0~255 / 1] Bit7 = 1 Comment information exists Bit6 = 1 Direct specification of mail address possible Bit5 = 1 Mail RX confirmation setting possible Bit4 = 1 Address book automatic update function exists Bit3 = 1 Fax RX delivery function exists Bit2 = 1 Sender password function exists Bit1 = 1 Function to link MK-1 user and Sender exists Bit0 = 1 Sender specification required (if set to 1, Bit6 is set to "0")
011	Delivery Svr.Capability (Ext)
	These settings are for future use. They will let you increase the number of registered devices (in addition to those registered for SP5845 010). There are eight bits (Bit 0 to Bit 7). All are unused at this time.
013	Delivery Server Scheme (Primary)
	NIA
014	Delivery Server Port Number (Primary)
	NIA
015	Delivery Server URL Path (Primary)
	NIA
016	Delivery Server Scheme (Secondary)
	NIA
017	Delivery Server Port Number (Secondary)
	NIA
018	Delivery Server URL Path (Secondary)
	NIA
019	Capture Server Scheme
	NIA
020	Capture Server Port Number
	NIA
021	Capture Server URL Path
	NIA

Service Tables

5846	UCS Setting
001	Machine ID (for Delivery Server)
	<p>Displays the unique device ID in use by the delivery server directory. The value is only displayed and cannot be changed.</p> <p>This ID is created from the NIC MAC or IEEE 1394 EUI.</p> <p>The ID is displayed as either 6-byte or 8-byte binary.</p> <p>6-byte %02X.%02X.%02X.%02X.%02X.%02X</p> <p>8-byte %02X.%02X.%02X.%02X.%02X.%02X.%02X.%02X</p>
002	Machine ID Clear (Delivery Server)
	<p>Clears the unique ID of the device used as the name in the file transfer directory. Execute this SP if the connection of the device to the delivery server is unstable. After clearing the ID, the ID will be established again automatically by cycling the machine off and on.</p>
003	Maximum Entries
	<p>Changes the maximum number of entries that UCS can handle. [2000~50000 / 1]</p> <p>If a value smaller than the present value is set, the UCS managed data is cleared, and the data (excluding user code information) is displayed.</p>
006	Delivery Server Retry Timer
	<p>Sets the interval for retry attempts when the delivery server fails to acquire the delivery server address book. [0~255 / 1 s]</p> <p>0: No retries</p>
007	Delivery Server Retry Times
	<p>Sets the number of retry attempts when the delivery server fails to acquire the delivery server address book. [0~255 / 1]</p>
008	Delivery Server Maximum Entries
	<p>Lets you set the maximum number of account entries and information about the users of the delivery server controlled by UCS. [20000~50000 / 1]</p>
010	LDAP Search Timeout
	<p>Sets the length of the time-out for the search of the LDAP server. [1~255 / 1]</p>

<p>040</p>	<p><b>Addr Book Migration (SD -&gt; HDD)</b></p> <p>This SP moves the address book data from an SD card to the HDD. You must cycle the machine off and on after executing this SP.</p> <ol style="list-style-type: none"> <li>1. Turn the machine off.</li> <li>2. Install the HDD.</li> <li>3. Insert the SD card with the address book data in SD card Slot.</li> <li>4. Turn the machine on.</li> <li>5. Do SP5846 040.</li> <li>6. Turn the machine off.</li> <li>7. Remove the SD card from SD card Slot.</li> <li>8. Turn the machine on.</li> </ol> <p>Notes:</p> <ul style="list-style-type: none"> <li>• Executing this SP overwrites any address book data already on the HDD with the data from the SD card.</li> <li>• We recommend that you back up all directory information to an SD card with SP5846 051 before you execute this SP.</li> <li>• After the address book data is copied to HDD, all the address book data is deleted from the source SD card. If the operation fails, the data is not erased from the SD card.</li> </ul>
<p>041</p>	<p><b>Fill Addr Acl Info.</b></p> <p>This SP must be executed immediately after installation of an HDD unit in a basic machine that previously had no HDD. The first time the machine is powered on with the new HDD installed, the system automatically takes the address book from the NVRAM and writes it onto the new HDD. However, the new address book on the HDD can be accessed only by the system administrator at this stage. Executing this SP by the service technician immediately after power on grants full address book access to all users.</p> <p>Procedure</p> <ol style="list-style-type: none"> <li>1. Turn the machine off.</li> <li>2. Install the new HDD.</li> <li>3. Turn the machine on.</li> <li>4. The address book and its initial data are created on the HDD automatically. However, at this point the address book can be accessed by only the system administrator or key operator.</li> <li>5. Enter the SP mode and do SP5846 041. After this SP executes successfully, any user can access the address book.</li> </ol>
<p>046</p>	<p><b>Initialize All Settings &amp; Address Book DFU</b></p> <p>The SP clears all the setting information managed in UCS and address book information (local, delivery, LDAP) and restores these settings to their default values. Use this SP to initial the account information (user codes and passwords) for system managers and users as well.</p> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>• Be sure to cycle the machine off and on after you execute this SP code.</li> <li>• Once this SP has been executed, a message on the screens of applications that use the address book will prompt users that the address book is being updated. This prevents the machine from issuing SC870.</li> <li>• The machine initializes to determine if the address book is stored on the HDD or on an SD card. In order for the machine to determine whether to recognize an address book on the HDD or the SD card, the machine must be cycled off and on once more to determine whether the machine should recognize the address book on the HDD or the SD card.</li> </ul>

Service Tables

047	Initialize Local Address Book	
	Clears all of the address information from the local address book of a machine managed with UCS.	
048	Initialize Delivery Addr Book	
	Press [Execute] to delete all items (this does not include user codes) in the delivery address book that is controlled by UCS.	
049	Initialize LDAP Addr Book	
	Press [Execute] to delete all items (this does not include user codes) in the LDAP address book that is controlled by UCS.	
050	Initialize All Addr Book	
	Clears everything (including users codes) in the directory information managed by UCS. However, the accounts and passwords of the system administrators are not deleted.	
051	Backup All Addr Book	
	Uploads all directory information to the SD card.	
052	Restore All Addr Book	
	Downloads all directory information from the SD card.	
053	Clear Backup Info.	
	Deletes the address book uploaded from the SD card in the slot. Deletes only the files uploaded for that machine. This feature does not work if the card is write-protected. Note: After you do this SP, go out of the SP mode, turn the power off. Do not remove the SD card until the Power LED stops flashing.	
060	Search Option	
	This SP uses bit switches to set up the fuzzy search options for the UCS local address book.	
	Bit	Meaning
	0	Checks both upper/lower case characters
	1	Japan Only
	2	
	3	
	4	--- Not Used ---
	5	--- Not Used ---
	6	--- Not Used ---
7	--- Not Used ---	
062	Complexity Option 1	
	Use this SP to set the conditions for password entry to access the local address book. Specifically, this SP limits the password entry to <u>upper case</u> and sets the length of the password. [0~32 / 1] Note: <ul style="list-style-type: none"> <li>This SP does not normally require adjustment.</li> <li>This SP is enabled only after the system administrator has set up a group password policy to control access to the address book.</li> </ul>	

063	<p>Complexity Option 2</p> <p>Use this SP to set the conditions for password entry to access the local address book. Specifically, this SP limits the password entry to <u>lower case</u> and defines the length of the password. [0~32 / 1]</p> <p>Note:</p> <ul style="list-style-type: none"> <li>• This SP does not normally require adjustment.</li> <li>• This SP is enabled only after the system administrator has set up a group password policy to control access to the address book.</li> </ul>
064	<p>Complexity Option 3</p> <p>Use this SP to set the conditions for password entry to access the local address book. Specifically, this SP limits the password entry to <u>numbers</u> and defines the length of the password. [0~32 / 1]</p> <p>Note:</p> <ul style="list-style-type: none"> <li>• This SP does not normally require adjustment.</li> <li>• This SP is enabled only after the system administrator has set up a group password policy to control access to the address book.</li> </ul>
065	<p>Complexity Option 4</p> <p>Use this SP to set the conditions for password entry to access the local address book. Specifically, this SP limits the password entry to <u>symbols</u> and defines the length of the password. [0~32 / 1]</p> <p>Note:</p> <ul style="list-style-type: none"> <li>• This SP does not normally require adjustment.</li> <li>• This SP is enabled only after the system administrator has set up a group password policy to control access to the address book.</li> </ul>
091	<p>FTP Auth. Port Settings</p> <p>Sets the FTP port to get the delivery server address book that is used in the individual authorization mode. [0~65535 / 1]</p>
094	<p>Encryption Start</p> <p>Shows the status of the encryption function of the address book on the LDAP server. [0~255 / 1] No default</p>

Service  
Tables

5847	Repository Resolution Reduction		
	5847 001 through 5847 006 changes the default settings of image data sent externally by the Net File page reference function. [0~2 / 1] 5847 021 sets the default for JPEG image quality of image files controlled by NetFile. "Repository" refers to jobs to be printed from the document server with a PC and the DeskTopBinder software.		
002	Rate for Copy B&W Text	[0~6 / 1]	0: 1x 1: 1/2x 2: 1/3x 3: 1/4x 4: 1/6x 5: 1/8x 6: 2/3x <sup>1</sup> <sup>1</sup> : "6: 2/3x" applies to 003, 005, 006 only.
003	Rate for Copy B&W Other	[0~6 / 1]	
005	Rate for Printer B&W	[0~6 / 1]	
006	Rate for Printer B&W HQ	[0~6 / 1]	
021	Network Quality Default for JPEG		
	Sets the default value for the quality of JPEG images sent as NetFile pages. This function is available only with the MLB (Media Link Board) option installed. [5~95 / 1]		

5848	Web Service	
	5847 002 sets the 4-bit switch assignment for the access control setting. Setting of 0001 has no effect on access and delivery from Scan Router. 5847 100 sets the maximum size of images that can be downloaded. The default is equal to 1 gigabyte.	
001	Access Control. : NetFile (Lower 4 Bits Only)	
	Bit switch settings. 0000: No access control 0001: Denies access to Desk Top Binder. Access and deliveries from Scan Router have no effect on capture.	
002	Acc. Ctrl.: Repository (only Lower 4 Bits)	0000: No access control 0001: Denies access to DeskTop Binder.
003	Acc. Ctrl.: Doc. Svr. Print (Lower 4 Bits)	Switches access control on and off. 0000: OFF, 0001: ON
004	Acc. Ctrl.: User Directory (Lower 4 Bits)	
005	Acc. Ctrl.: Delivery Input (Lower 4 Bits)	
007	Acc. Ctrl Comm. Log Fax (Lower 4 Bits)	
009	Acc. Ctrl.: Job Control (Lower 4 Bits)	
011	Acc. Ctrl: Device Management (Lower 4 Bits)	
013	Acc. Ctrl: Fax (Lower 4 Bits)	
021	Acc. Ctrl: Delivery (Lower 4 Bits)	
022	Acc. Ctrl: User Administration (Lower 4 Bits)	
041	Acc. Ctrl: Security Setting (Lower 4 Bits only)	
100	Repository: Download Image Max. Size	[1~1024 / 1 K]
210	Setting: Log Type: Job 1	
211	Setting: Log Type: Job 2	
212	Setting: Log Type: Job 3	

5849	Installation Date	
	Displays or prints the installation date of the machine.	
001	Display	The "Counter Clear Day" has been changed to "Installation Date" or "Inst. Date".
002	Switch to Print	Determines whether the installation date is printed on the printout for the total counter. [0~1 / 1] 0: No Print 1: Print

5850	Address Book Function	
	001	Switch Module
002	Select Title	Selects the default heading of the address book. [2~4 / 1] 2: Heading 1 3: Heading 2 4: Heading 3

5851	Bluetooth Mode	
	Sets the operation mode for the Bluetooth Unit. Press either key. [0:Public] [1: Private]	

5853	Stamp Data Download	
	Press [Execute] 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", "Secret", etc.). You must always execute this SP after replacing the HDD or after formatting the HDD. Always switch the machine off and on after executing this SP.	

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

Service  
Tables



5857	Save Debug Log
001	On/Off (1:ON 0:OFF)
	Switches on the debug log feature. The debug log cannot be captured until this feature is switched on. [0~1 / 1] 0: OFF 1: ON
002	Target (2: HDD 3: SD Card)
	Selects the destination where the debugging information generated by the event selected by SP5858 will be stored if an error is generated [2~3 / 1] 2: HDD 3: SD Card
005	Save to HDD
	Specifies the decimal key number of the log to be written to the hard disk.
006	Save to SD Card
	Specifies the decimal key number of the log to be written to the SD Card.
009	Copy HDD to SD Card (Latest 4 MB)
	Takes the most recent 4 MB of the log written to the hard disk and copies them to the SD Card. A unique file name is generated to avoid overwriting existing file names on the SD Card. Up to 4MB can be copied to an SD Card. 4 MB segments can be copied one by one to each SD Card.
010	Copy HDD to SD Card Latest 4 MB Any Key)
	Takes the log of the specified key from the log on the hard disk and copies it to the SD Card. A unique file name is generated to avoid overwriting existing file names on the SD Card. Up to 4 MB can be copied to an SD Card. 4 MB segments can be copied one by one to each SD Card. This SP does not execute if there is no log on the HDD with no key specified.
011	Erase HDD Debug Data
	Erases all debug logs on the HDD
012	Erase SD Card Debug Data
	Erases all debug logs on the SD Card. If the card contains only debugging files generated by an event specified by SP5858, the files are erased when SP5857 010 or 011 is executed. To enable this SP, the machine must be cycled off and on.
013	Free Space on SD Card
	Displays the amount of space available on the SD card.
014	Copy SD to SD (Latest 4MB)
	Copies the last 4MB of the log (written directly to the card from shared memory) onto an SD card.
015	Copy SD to SD (Latest 4MB Any 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.
016	Make HDD Debug
	This SP creates a 32 MB file to store a log on the HDD.
017	Make SD Debug
	This SP creates a 4 MB file to store a log on an SD card.

5858	Debug Save When	
	These SPs select the content of the debugging information to be saved to the destination selected by SP5857 002. SP5858 003 stores one SC specified by number.	
001	Engine SC Error (0:OFF 1:ON)	Stores SC codes generated by copier engine errors.
002	Controller SC Error (0:OFF 1:ON)	Stores SC codes generated by GW controller errors.
003	Any SC Error (0:OFF 1:ON)	[0~65535 / 0 / 1]
004	Jam (0:OFF 1:ON)	Stores jam errors.

5859	Debug Log Save Function	
001	Key 1	These SPs allow you to set up to 10 keys for log files for functions that use common memory on the controller board. [-9999999~9999999/1]
002	Key 2	
003	Key 3	
004	Key 4	
005	Key 5	
006	Key 6	
007	Key 7	
008	Key 8	
009	Key 9	
010	Key 10	

5860	SMTP/POP3/IMAP4	
020	Partial Mail Receive Timeout	[1~168 / 72 / 1] Sets the amount of time to wait before saving a mail that breaks up during reception. The received mail is discarded if the remaining portion of the mail is not received during this prescribed time.
021	MDN Response RFC2298Compliance	Determines whether RFC2298compliance is switched on for MDN reply mail. [0~1 / 1] 0: No 1: Yes
022	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 / 1] 0: No. "From" item not switched. 1: Yes. "From" item switched.

Service Tables

025	SMTP Auth Direct Sending	
	Occasionally, all SMTP certifications may fail with SP5860 006 set to "2" to enable encryption during SMTP certification for the SMTP server. This can occur if the SMTP server does not meet RFC standards. In such cases you can use this SP to set the SMTP certification method directly. However, this SP can be used only after SP5860 003 has been set to "1" (On). Bit0: LOGIN Bit1: PLAIN Bit2: CRAM_MD5 Bit3: DIGEST_MD5 Bit4 to Bit 7: Not Used	

5864	Mail Text Clear	
	This SP clears mail text information. When this SP is called at the request to write the SP mode data, the mail text information stored on the DCS server is reset to its default value. This is used as a trigger to clear mail text information when the system is initialized with the User Tools.	

5866	E-Mail Report	
	This SP controls operation of the email notification function.	
001	NIA	Disables and re-enables the email notification feature. [0~1 / 0 / 1] 0: Enable 1: Disable
005	NIA	Disables and re-enables the addition of a date field to the email notification. [0~1 / 0 / 1]

5870	Common Key Info Writing	
	Writes to flash ROM the common proof for validating the device for NRS specifications.	
001	Writing	Note: These SPs are for future use and currently are not used.
003	Initialize	

5873	SD Card Apli.	
	Allows you to move applications from one SD card another. For more, see "Merging Applications on One SD Card" in Section "1. Installation".	
001	Move Exec	Executes the move from one SD card to another.
002	Undo Exec	This is an undo function. It cancels the previous execution.

5875	SC Auto Reboot	
	This SP determines whether the machine reboots automatically when an SC error occurs. <b>Note:</b> The reboot does not occur for Type A and C SC codes.	
001	Reboot Setting	[0~1 / 0 / 1] 0: On, 1: Off On: default: 0 (Reboots automatically) 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. OFF: 1 (Does not reboot automatically. Changing this setting to "0" sets the machine to reboot automatically after an SC occurs.
002	Reboot Type	This setting determines how the machine reboots after an SC code is issued. [0~1 / 0 / 1] 0: Allows manual reboot, 1: Automatic reboot

5878	Option Setup
	This SP enables the DOS application (Data Overwrite Security). Do this SP after installing Data Overwrite Security Unit F B735.

5881	NIA DFU
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5885	WIM Settings DFU	
020	This SP is a bit switch setting.	
	<b>Bit</b>	<b>Meaning</b>
	0	Forbid all document server access (1)
	1	Forbid user mode access (1)
	2	Forbid print function (1)
	3	Forbid fax TX (1)
	4	Forbid scan sending (1)
	5	Forbid downloading (1)
	6	Forbid delete (1)
7	Reserved	

5886	Permit ROM Update DFU
	This SP determines whether the ROM can be updated. [0-1 / 0 / 1] 0: On 1: Off

Service Tables

5907	Plug & Play Maker/Model Name
	<p>Selects the brand name and the production name for Windows Plug &amp; Play. This information is stored in the NVRAM. If the NVRAM is defective, these names should be registered again.</p> <p>After selecting, press the "Original Type" key and "#" key at the same time. When the setting is completed, the beeper sounds five times.</p>

5915	Mechanical Counter Detection
	<p>Displays whether the mechanical counter is installed in the machine.</p> <p>[0~2]</p> <p>0: Not detected 1: Detected 2: Unknown</p>

5967	Copy Server: Set Function
	<p>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.[0~1 / 1]</p> <p>0: ON 1: OFF</p>

5974	Cherry Server
	<p>Selects which version of the Scan Router application program, "Light" or "Full (Professional)", is installed.</p> <p>[0 ~ 1 / 0 / 1 /step]</p> <p>0: Light version (supplied with this machine) 1: Full version (optional)</p>

5985	Device Setting	
	<p>The NIC and USB support features are built into the GW controller. Use this SP to enable and disable these features. In order to use the NIC and USB functions built into the controller board, these SP codes must be set to "1".</p>	
001	On Board NIC	<b>0: Disable</b> 1: Enable
002	On Board USB	

5990	SP Print Modef	SMC Print
	In the SP mode, press Copy Window to move to the copy screen, select the paper size, then press Start. Select A4/LT (Sideways) or larger to ensure that all the information prints. Press SP Window to return to the SP mode, select the desired print, and press Execute.	
001	All (Data List)	
002	SP (Mode Data List)	
003	User Program Data	
004	Logging Data	
005	Diagnostic Report	
006	Non-Default (Prints only SPs set to values other than defaults.)	
007	NIB Summary	
008	Capture Log	
021	Copier User Program	
022	Scanner SP	
023	Scanner User Program	

**SP6-*nnn* Peripherals**

6006	DF Registration Adjustment
001	Side-to-Side
	Adjusts the printing side-to-side registration in the ADF mode. [-3~+3 / 0 / 0.1 mm] <i>Use the “•/*” key to toggle between + and –.</i>
003	Leading Edge (Thin Original)
	Adjusts the original stop position. [-10~+10 / 0 / 0.13 mm] <i>Use the “•/*” key to toggle between + and –.</i>
005	Leading Edge (Duplex 1st)
	Adjusts the original stop position against the original left scale in one-sided original mode, and the first side of duplex originals. [-29~+29 / 0 / 0.13 mm] <i>Use the “•” key to toggle between + and –.</i>
006	Leading Edge (Duplex-2nd)
	Adjusts the original stop position against the original left scale for the second side of duplex originals. [-29~+29 / 0 / 0.13 mm] <i>Use the “•” key to toggle between + and –.</i>

6007	ADF Input Check (☛5.4.2)
001	Group 1
	Displays the signals received from sensors and switches of the ADF.
002	Group 2
	Displays the signals received from sensors and switches of the ADF.
003	Group 3
	Displays the signals received from sensors and switches of the ADF.

6008	ADF Output Check
	Turns on the ADF electrical components individually for testing. (☛5.5.2)

6009	DF Free Run
	Performs an ADF free run in two-sided original mode. Press “1” to start. <i>This is a general free run controlled from the copier</i>

6019	ADF Motor Speed Auto Adjustment
	After pressing the Start key, the machine automatically adjusts the speeds of the ADF motors in the following order: Feed-in motor → Transport Motor → Feed-out Motor (High) → Feed-out Motor (Low)

6100	Staple Position Adjustment	
	<p>Use this SP to shift the position of the stapling done by the corner stapler of the finisher (B830). This SP shifts the staple position forward and back across the direction of paper feed.</p> <ul style="list-style-type: none"> <li>• Use the “•” key to toggle between + and –.</li> <li>• A larger value shifts the stapling position to shift forward.</li> <li>• A smaller value shifts the stapling position backward.</li> </ul>	
001	A3 SEF	<p>The settings are done for each paper size. SEF denotes "Short Edge Feed". LEF denotes "Long Edge Feed". [-2 to +2 / 0 / 0.5 mm]</p>
002	B4 SEF	
003	A4 SEF	
004	A4 LEF	
005	B5 SEF	
006	B5 LEF	
007	DLT	
008	LG	
009	LT SEF	
010	LT LEF	
011	Custom Size	

6101	Punch Hole Position Adjustment	
	<p>Use this SP to shift the position of the punching done by the Punch Unit B831. This SP shifts the punching position left and right in the direction of paper feed. There are three versions of the Punch Unit B831 1) NA 2/3 (2 or 3 hole punching selectable for the job), 2) NA 4 (4 hole punching only), and 3) EU 2/4 (2 or 4 hole punching selectable for the job) [-7.5~+7.5 / 0 / 0.5 mm]</p> <ul style="list-style-type: none"> <li>• Use the “•/*” key to toggle between + and –.</li> <li>• A larger value shifts the punch holes away from the edge of the paper.</li> <li>• A smaller value shifts the punch holes toward the edge of the paper.</li> </ul>	
001	2-Hole: JPN	<b>Japan Only</b>
002	3-Hole: NA	North America, 3-hole punching
003	4-Hole: Europe	Europe, 4-hole punching
004	4-Hole: NA	North America, 4-hole punch
005	2-Hole: NA	North America, 2-hole punching
006	1-Hole: JPN	<b>Japan Only</b>

Service  
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6102	Fine Adjust Stapler Jogger Fences	
	<p>Use this SP code to adjust the positions of the jogger fences when the pages are aligned (jogged) horizontally in the stapling tray for corner stapling in the Finisher B830. These jogger fences close in on the sides of the stack on the paper tray. These side fences move in and out perpendicular to the direction of paper feed.</p> <ul style="list-style-type: none"> <li>• The higher the setting, the narrower the jogger span and the smaller the gaps between the fences and the edges of the paper. Stacking is tighter.</li> <li>• The lower the setting, the wider the jogger span and the wider the gaps between the fences and the edges of the paper. Stacking is not as precise.</li> </ul>	
001	A3 SEF	<p>The settings are done for each paper size. SEF denotes "Short Edge Feed". LEF denotes "Long Edge Feed". [-2.0 to +1.5 / 0 / 0.5 mm]</p>
002	B4 SEF	
003	A4 SEF	
004	A4 LEF	
005	B5 SEF	
006	B5 LEF	
007	DLT	
008	LG	
009	LT SEF	
010	LT LEF	
011	Custom Size	

6103	Adjust Output Jog Position	
	<p>Use this SP code to adjust the positions of the jogger fences when the pages are aligned (jogged) horizontally in the stapling tray for stapling in the Booklet Finisher B836. The jogger fences close in on the sides of the stack on the paper tray. These side fences move in and out perpendicular to the direction of paper feed.</p> <p>[-3 to +3 / 0 / 0.1 mm]</p> <ul style="list-style-type: none"> <li>• The higher the setting, the narrower the jogger span and the smaller the gaps between the fences and the edges of the paper. Stacking is tighter.</li> <li>• The lower the setting, the wider the jogger span and the wider the gaps between the fences and the edges of the paper. Stacking is not as tight.</li> </ul>	
001	A3 SEF	<p>The settings are done for each paper size. SEF denotes "Short Edge Feed". LEF denotes "Long Edge Feed".</p>
002	B4 SEF	
003	A4 SEF	
004	A4 LEF	
005	B5 SEF	
006	B5 LEF	
007	DLT	
008	LG	
009	LT SEF	

6104	Pre-Stack Adjustment	
001	A4 LEF	[-3 to +3 / 0 / 0.1]
002	B5 LEF	
003	LT LEF	
004	Other	

6105	Adj Leading Edge Stopper Pressure	
001	A4 LEF	[-5.0~+10.0 / 0 / 0.1]
002	B5 LEF	[-5.0~+2.0 / 0 / 0.11]
003	LT LEF	[-5.0~+10.0 / 0 / 0.1]
004	Other	[-5.0~+10.0 / 0 / 0.1]

6106	Staple Jogging Repeat Settings	
	Allows you to increase by 1 the number of times the stack is jogged on the stapling tray. [DEFAULT] +1	

6107	Staple Tray Jog Off/On	
	Allows you to switch jogging on the stapling tray off and on for the paper sizes listed below.	
001	A3 SEF 0:On 1:Off	The default for each paper size is 0 (On)
002	B4 SEF 0:On 1:Off	
003	A4 SEF 0:On 1:Off	
004	A4 LEF 0:On 1:Off	
005	A5 SEF 0:On 1:Off	
006	B5 SEF 0:On 1:Off	
007	B5 LEF 0:On 1:Off	
008	DLT SEF 0:On 1:Off	
009	LG SEF 0:On 1:Off	
010	LT SEF 0:On 1:Off	
011	LT LEF 0:On 1:Off	
012	HLT SEF 0:On 1:Off	
013	Other 0:On 1:Off	

6112	Finisher Input Check	
	Displays the signals received from sensors and switches of the finisher. (●5.4.3)	

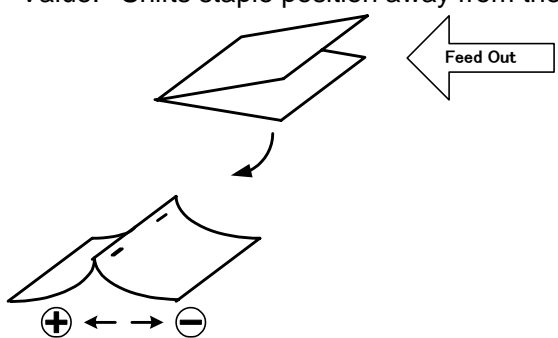
6113	Finisher Output Check	
	Turn on the electrical components of the finisher individually for test purposes. (●5.5.3)	

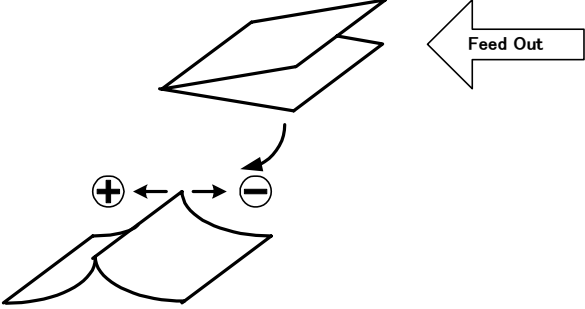
Service  
Tables

6114	Finisher Free Run	
001	Free Run 1	Systems free run. A4 LEF at 90 ppm, with simulated staple mode.
002	Free Run 2	Free run for durability testing. All motors and solenoids operate to simulate full staple mode run for durability testing.
003	Free Run 3	Shipping free run. Simulates standby conditions during shipping.
004	Free Run 4	Shift free run. A4 LEF at 90 ppm with simulated output jogging with the shift jogger unit mounted on the side of the finisher.

6116	Sheet Conversion (Thick Paper)	
	Divide the normal limit for stapling by this number to determine the staple limit number for thick paper mode. [1~3 / 3 / 1]	

6119	Punch Function Enabled (Thick Paper)	
	Determines whether punch mode is enabled in thick paper mode. [0~1 / 0 / 1] 0: Disabled 1: Enabled	

6200	Adj Booklet Stapling Position	
	Use this SP to adjust the stapling position of the booklet stapler when paper is stapled and folded in the Booklet Finisher B836.	
001	A3 SEF	[-3.0 to +3.0 / 0 / 0.2 mm] + Value: Shifts staple position toward the crease. - Value: Shifts staple position away from the crease. 
002	B4 SEF	
003	A4 SEF	
004	B5 SEF	
005	12" x 18" SEF	
006	DLT	
007	LG	
008	LT SEF	
009	Custom Size	

6201	Adjust Booklet Fold Position	
	This SP corrects the folding position when paper is stapled and folded in the Booklet Finisher B836.	
001	A3 SEF	<p>[-3~+3 / 0 / 0.2 mm]</p> <p>+ Value: Shifts staple position toward the crease.</p> <p>- Value: Shifts staple position away from the crease.</p>  <p style="text-align: right;">B132S924.WMF</p>
002	B4 SEF	
003	A4 SEF	
004	B5 SEF	
005	12"x18" SEF	
006	DLT SEF	
007	LG SEF	
008	LT SEF	
009	Custom Size	

6202	Fine Adjust Staple Jogger Fence Position	
	This SP adjusts the distance between the jogger fences and the sides of the stack on the finisher stapling tray in the Booklet Finisher B836. The adjustment is done perpendicular to the direction of paper feed.	
001	A3 SEF	<p>[-1.5 to +1.5 / 0 / 0.5 mm]</p> <p>+ Value: Increases distance between jogger fences and the sides of the stack.</p> <p>- Value: Decreases the distance between the jogger fences and the sides of the stack.</p>
002	B4 SEF	
003	A4 SEF	
004	A4 LEF	
005	B5 SEF	
006	B5 LEF	
007	DLT SEF	
008	LG SEF	
009	LT SEF	
010	LT LEF	
011	12"x18"	
012	Custom Size	

Service Tables

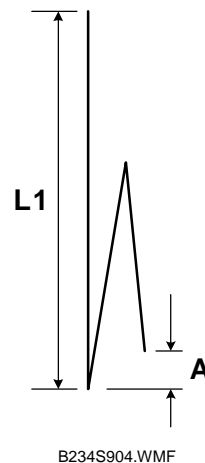
6203	Set Number of Folds	
	This SP sets the number of times the folding rollers are driven forward and reverse to sharpen the crease of a folded booklet before it exits the folding unit of the Booklet Finisher B836. When set at the default (0):	
	<ul style="list-style-type: none"> <li>• The folding blade pushes the center of the stack into the nip of the folding roller.</li> <li>• The folding rollers rotate ccw to crease the booklet, reverse cw, then rotate ccw again to crease the booklet fold twice before feeding to the folding unit exit rollers.</li> </ul>	
	[-1 to 28 / 0 / 1]	
	0: 2 folds	

6204	Thick Paper Count (Book Fin)
	NIA 10/29 [1~3 / 3 / 1]

6206	Booklet Finisher Input Check
	Displays the signals received from sensors and switches of the booklet finisher. (☛5.4.4)

6207	Booklet Finisher Output Check
	Turn on the electrical components of the booklet finisher individually for test purposes. (☛5.5.4)

6301	Fine Adj Z-Fold 1
	Use this SP code to adjust the position of the first fold [A]. This adjustment decreases or increases the distance (A) between the leading edge [B] and the crease of the 2nd fold [C]. (Refer to B660-18) [-2 to +4 / 0 / 0.2 mm]
001	A3 (1st Fold Position)
002	B4 (1st Fold Position)
003	A4 (1st Fold Position)
004	DLT (1st Fold Position)
005	LG (1st Fold Position)
006	LT (1st Fold Position)
008	Others (1st Fold Position)
009	A3 (2nd Fold Position)
010	B4 (2nd Fold Position)
011	A4 (2nd Fold Position)
012	DLT (2nd Fold Position)
013	LG (2nd Fold Position)
014	LT (2nd Fold Position)
016	Others (2nd Fold Position)



6400	Cvr Inserter Input Check
	Displays the signals received from sensors and switches of the cover interposer tray. (☛5.4.5)

6401	Cvr Inserter Output Check
	Turn on the electrical components of the cover interposer tray individually for test purposes. (☛5.5.5)

6904	Punch Function Enabled (Z-Fold)
	This SP enables and disables the punch unit when Z-folding is used. [DISABLE] ENABLE

**SP7-*nnn* Data Logs**

7001	Main Motor Operation Time
	Displays the total drum rotation time in minutes.

7401	Total SC Counter	Total SC Counter
	Displays the total number of SCs logged.	

7403	SC History
	Displays the latest 10 service call codes
001	Latest
002	Latest 1
003	Latest 2
004	Latest 3
005	Latest 4
006	Latest 5
007	Latest 6
008	Latest 7
009	Latest 8
010	Latest 9

7502	Total Paper Jam Counter
	Displays the total number of copy jams.

7503	Total Original Jam Counter
	Displays the total number of copy jams.

Service  
Tables

7504	Paper Jam Counter by Jam Location – Copier e-STUDIO901/1101/1351		
	<p>Displays the list of possible locations where a jam could have occurred. These jams are caused by the failure of a sensor to activate. These are jams when the paper does not activate the sensor.</p> <ul style="list-style-type: none"> <li>• Paper late error: Paper failed to arrive at prescribed time.</li> <li>• Paper lag error: Paper failed to leave at prescribed time.</li> </ul>		
	<b>On Screen</b>	<b>What It Means</b>	
1	At Power On	Jam att Power On	
3	1st Paper Tray	Paper late error	
4	2nd Paper Tray		
5	3rd Paper Tray		
6	4th Paper Tray		
7	5th Paper Tray		
8	6th Paper Tray		
9	7th Paper Tray		
10	1st Transport Sensor		
11	2nd Transport Sensor		
12	3rd Transport Sensor		
13	4th Transport Sensor		
14	5th Transport Sensor		
15	6th Transport Sensor		
16	7th Transport Sensor		
17	LCT Relay Sensor		
18	LCT Exit Sensor		
19	Relay Sensor		
20	Registration Sensor		
21	Heat Pipe Exit Sensor		
22	Exit Sensor		
23	Duplex Entrance Sensor		
24	Duplex Transport Sensor 1		
25	Duplex Transport Sensor 2		
26	Duplex Transport Sensor 3		
27	Inverter Tray Paper Sensor		
28	Registration Sensor		
53	1st Paper Tray (Stay On)		Paper lag error
54	2nd Paper Tray (Stay On)		
55	3rd Paper Tray (Stay On)		
56	4th Paper Tray (Stay On)		
57	5th Paper Tray (Stay On)		
58	6th Paper Tray (Stay On)		
59	7th Paper Tray (Stay On)		
60	1st Transport Sensor (Stay On)		
61	2nd Transport Sensor (Stay On)		
62	3rd Transport Sensor (Stay On)		
63	4th Transport Sensor (Stay On)		
64	5th Transport Sensor (Stay On)		
65	6th Transport Sensor (Stay On)		
66	7th Transport Sensor (Stay On)		
67	LCT Relay Sensor (Stay On)		
68	LCT Exit Sensor (Stay On)		

69	Relay Sensor (Stay On)	
70	Registration Sensor (Stay On)	
71	Heat Pipe Exit Sensor (Stay On)	
72	Exit Sensor (Stay On)	
73	Duplex Entrance Sensor (Stay On)	
74	Duplex Transport Sensor 1 (Stay On)	
75	Duplex Transport Sensor 2 (Stay On)	
76	Duplex Transport Sensor 3 (Stay On)	
77	Inverter Tray Paper Sensor (Stay On)	
78	Registration Sensor (Stay On)	
99	Double-Feed Sensor	

7504	Paper Jam Loc	Paper Jam Locations – Finisher B830
	<p>Displays the list of possible locations where a jam could have occurred. Press the appropriate key to display the jam count for that location. These jams are caused by the failure of a sensor to activate.</p> <ul style="list-style-type: none"> <li>• Paper late error: Paper failed to arrive at prescribed time.</li> <li>• Paper lag error: Paper failed to leave at prescribed time.</li> </ul>	
	<b>On Screen</b>	<b>What It Means</b>
101	Entrance Sensor – Fin.	Paper late error
102	Entrance Sensor – Fin. (Stay On)	Paper lag error
103	Upper Tray Exit Sensor – Fin	Paper late error
104	Upper Tray Exit Sensor – Fin (Stay On)	Paper lag error
105	Shift Tray Exit Sensor – Fin	Paper late error
106	Shift Tray Exit Sensor – Fin (Stay On)	Paper lag error
107	Staple Tray Exit Sensor – Fin	Paper late error
108	Staple Tray Exit Sensor – Fin (Stay On)	Paper lag error
109	Staple Tray Paper Sensor – Fin	Paper late error
110	Staple Tray Paper Sensor – Fin (Stay On)	Paper lag error
111	Stack Feed-Out Belt HP Sensor	Malfunction
112	Transport Motors	
113	Shift Tray Lift Motor	
114	Jogger Motor	
115	Shift Motor	
116	Staple Motor	
117	Stack Feed-Out Belt Motor	
118	Punch Motor	
119	Z-Fold Jam – Fin	
120	Pre-Stack Transport Motor	
121	Abnormal Signal – Fin	
122	Upper Stopper Motor Lock	
123	Not Used	

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Tables



7504	Paper Jam Loc	Paper Jam Locations – Cover Interposer Tray B835
	<p>Displays the list of possible locations where a jam could have occurred. Press the appropriate key to display the jam count for that location. These jams are caused by the failure of a sensor to activate.</p> <ul style="list-style-type: none"> <li>• Paper late error: Paper failed to arrive at prescribed time.</li> <li>• Paper lag error: Paper failed to leave at prescribed time.</li> </ul>	
	<b>On Screen</b>	<b>What It Means</b>
130	1st Paper Feed Sensor – Late	Paper late error
131	1st Paper Feed Sensor – Lag	Paper lag error
132	2nd Paper Feed Sensor – Late	Paper late error
133	2nd Paper Feed Sensor – Lag	Paper lag error
134	1st Transport Sensor – Late	Paper late error
135	1st Transport Sensor – Lag	Paper lag error
136	2nd Transport Sensor – Late	Paper late error
137	2nd Transport Sensor – Lag	Paper lag error
138	1st Vertical Transport Sensor - Late	Paper late error
139	1st Vertical Transport Sensor - Lag	Paper lag error
140	2nd Vertical Transport Sensor - Late	Paper late error
141	2nd Vertical Transport Sensor - Lag	Paper lag error
142	Vertical Exit Sensor – Late	Paper late error
143	Vertical Exit Sensor - Lag	Paper lag error
144	Entrance Sensor – Late	Paper late error
145	Entrance Sensor – Lag	Paper lag error
146	Exit Sensor – Late	Paper late error
147	Exit Sensor – Lag	Paper lag error
148	1st Lift Motor	Malfunction
149	2nd Lift Motor	
150	1st Pick-Up Motor	
151	2nd Pick-Up Motor	

7504	Paper Jam Loc	Paper Jam Locations – Booklet Finisher B836
	<p>Displays the list of possible locations where a jam could have occurred. Press the appropriate key to display the jam count for that location. These jams are caused by the failure of a sensor to activate.</p> <ul style="list-style-type: none"> <li>• Paper late error: Paper failed to arrive at prescribed time.</li> <li>• Paper lag error: Paper failed to leave at prescribed time.</li> </ul>	
	<b>On Screen</b>	<b>What It Means</b>
160	Entrance Sensor – Late	Paper late erro
161	Entrance Sensor – Lag	Paper lag error
162	Stapling Tray Paper Sensor – Late	Paper late erro
163	Stapling Tray Paper Sensor – Lag	Paper lag error
164	Stack Present Sensor – Late	Paper late erro
165	Stack Present Sensor – Lag	Paper lag error
166	Fold Unit Entrance Sensor – Late	Paper late erro
167	Fold Unit Entrance Sensor – Lag	Paper lag error
168	Fold Unit Exit Sensor – Late	Paper late erro
169	Fold Unit Exit Sensor – Lag	Paper lag error
170	Exit Sensor – Late	Paper late erro
171	Exit Sensor – Lag	Paper lag error
174	Jogger Fence	Malfunction
175	Stack Feed-Out Belt	
176	Booklet Stapler – Front	
177	Booklet Stapler – Rear	
178	Stack Junction Gate Motor	
179	Clamp Roller Retraction Motor	
180	Bottom Fence Lift Motor	
181	Fold Plate Motor	

Service  
Tables

7504	Paper Jam Loc	Paper Jam Locations – Z-Folding Unit B660
	Displays the list of possible locations where a jam could have occurred. Press the appropriate key to display the jam count for that location. These jams are caused by the failure of a sensor to activate.	
	<ul style="list-style-type: none"> <li>• Paper late error: Paper failed to arrive at prescribed time.</li> <li>• Paper lag error: Paper failed to leave at prescribed time.</li> </ul>	
	<b>On Screen</b>	<b>What It Means</b>
200	Feed Sensor – Late	Paper late error
201	Feed Sensor – Lag	Paper lag error
202	Fold Timing Sensor – Late	Paper late error
203	Fold Timing Sensor – Lag	Paper lag error
204	Leading Edge Sensor – Late	Paper late error
205	Leading Edge Sensor – Lag	Paper lag error
206	Upper Stopper HP Sensor – Late	Paper late error
207	Upper Stopper HP Sensor – Lag	Paper lag error
208	Upper Exit Sensor 1 – Late	Paper late error
209	Upper Exit Sensor 1- Lag	Paper lag error
210	Exit Sensor 2	Paper late error
211	Exit Sensor 2	Paper lag error
212	Lower Exit Sensor 2 – Late	Paper late error
213	Lower Exit Sensor 2 – Lag	Paper lag error
214	Feed Motor	Feed Motor
215	Lower Stopper Motor	Lower Stopper Motor
216	Upper Stopper Motor	Upper Stopper Motor
217	Fan Motor	Fan Motor

7505	Original Jam Counter by Jam Location	
	Displays the list of possible locations where an original jam could have occurred. These jams are caused by the failure of a sensor to activate.	
003	ADF Feed-in Sensor	
004	ADF Feed-out Sensor	

7506	Jam Count by Paper Size	
	Displays the total number of jams by paper size.	
005	A4 LEF	Displays the total number of jams by paper size.
006	A5 LEF	
014	B5 LEF	
038	LT LEF	
044	HLT LEF	
132	A3	
133	A4 SEF	
134	A5 SEF	
141	B4 SEF	
142	B5 SEF	
160	DLT SEF	
164	LG SEF	
166	LT SEF	
172	HLT SEF	
255	Others	

7507	Plotter Jam History	
001	Last	Displays the copy jam history (the most recent 10 jams) Sample Display: CODE:007 SIZE:05h TOTAL:0000334 DATE:Mon Mar 15 11:44:50 2000 where: <b>CODE</b> is the SP7504-* number (see above). <b>SIZE</b> is the ASAP paper size code in hex. <b>TOTAL</b> is the total jam error count <b>DATE</b> is the date the jams occurred.
002	Latest 1	
003	Latest 2	
004	Latest 3	
005	Latest 4	
006	Latest 5	
007	Latest 6	
008	Latest 7	
009	Latest 8	
010	Latest 9	

Size	Code	Size	Code	Size	Code
A4 (S)	05	A3 (L)	84	DLT (L)	A0
A5 (S)	06	A4 (L)	85	LG (L)	A4
B5 (S)	0E	A5 (L)	86	LT (L)	A6
LT (S)	26	B4 (L)	8D	HLT (L)	AC
HLT (S)	2C	B5 (L)	8E	Others	FF

7508	Original Jam History	
Displays the original jam history of the transfer unit in groups of 10, starting with the most recent 10 jams. Display contents are as follows: <b>CODE</b> is the SP7-505-* number. <b>SIZE</b> is the paper size code in hex. (See "Paper Size Hex Codes" below.) <b>TOTAL</b> is the total jam error count (SP7-003) <b>DATE</b> is the date the previous jam occurred		
001	Last	Sample Display: CODE: 007 SIZE: 05h TOTAL: 0000334 DATE: Mon Mar 15 11:44:50 2000
002	Latest 1	
003	Latest 2	
004	Latest 3	
005	Latest 4	
006	Latest 5	
007	Latest 6	
008	Latest 7	
009	Latest 8	
010	Latest 9	

Service Tables

**Paper Size Hex Codes**

These codes are displayed by SP7507 and SP7508.

Paper Size	Code (hex)	Paper Size	Code (hex)
A4 LEF	05	B4 SEF	8D
A5 LEF	06	B5 SEF	8E
B5 LEF	0E	DLT SEF	A0
LT LEF	26	LG SEF	A4
HLT LEF	2C	LT SEF	A6
A3 SEF	84	HLT SEF	AC
A4 SEF	85	Others	FF
A5 SEF	86		

7617	Parts PM Counter Display	
001	Copy Paper Standard	
002	Original Paper Standard	

7618	Parts PM Counter Reset	
001	Copy Paper Standard	Clears the counter of SP7617- 001. <b>Japan Only</b>
002	Copy Paper Standard	Clears the counter of SP7617- 002 <b>Japan Only</b>

7622	Clear PM Count	
	This SP clears the PM counts for the components below.	
001	Development Unit	
003	Drum Unit	
005	Drum Cleaning Unit	
009	Charge Corona Unit	
014	Pre-Charge Unit	
017	Fusing Unit	

7623	PM Standard Count	
	NIA	
001	Development Unit	
003	Drum Unit	
005	Drum Cleaning Unit	
009	Charge Corona Unit	
014	Pre-Charge Unit	
017	Fusing Unit	

7801	ROM Version	Displays the ROM versions for these items.
001	System/Copy	
002	Engine	
003	LCDC	
004	PL	
005	ADF	
007	Finisher	
015	Scanner	
018	NIB	
020	Cover Interposer Tray	
022	BIOS	
100	Language-1	
101	Language-2	
150	RPCS	
151	PS	
152	RPDL	
153	R98	
154	R16	
155	RPGL	
156	R55	
157	RTIFF	
158	PCL	
159	PCLXL	
160	MSIS	
161	MSIS (Option)	
180	FONT	
181	FONT1	
182	FONT2	
183	FONT3	
201	Copy Application	
202	NetFile Application	
204	Printer Application	
205	Scanner Application	
211	Web System	
212	WebDocBox	

Service  
Tables

7803	PM Counter Display
	Displays the PM counter since the last PM.

7804	PM Counter Reset
	Resets the PM counter.

7807	SC/Jam Counter Reset	
	Resets the SC and jam counters. To reset, press [1]. This SP does not reset the jam history counters: SP7-507, SP7-508.	

7826	MF Error Counter <b>Japan Only</b>	
	Displays the number of counts requested of the card/key counter.	
001	Error Total	A request for the count total failed at power on. This error will occur if the device is installed but disconnected.
002	Error Staple	The request for a staple count failed at power on. This error will occur if the device is installed but disconnected.

7827	MF Error Counter Clear	
	Press Execute to reset to 0 the values of SP7826. <b>Japan Only</b>	

7832	Self-Diagnostic Report Details	
	Push [#] to display a list of error codes. Nothing is displayed if no errors have occurred.	

7836	Total Memory Size	
	Displays the contents of the memory on the controller board.	

7901	Assert Info. . <b>DFU</b>	
001	Filename	Used for debugging.
002	Line No.	
003	Value	

7999	Engine Debug Log Switch <b>DFU</b>			
	This SP sets the debug log switch for one of the settings listed below. [0~100 / 0 / 1]			
	00	Rapi Commands	10	Toner Supply Motor
	01	Queue Check	11	Semiphore
	02	Plotter Queue	12	Registration REP
	03	Scanner Queue	13	Exit REP
	04	Block I/F	14	Transfer SC
	05	IPU I/F	15	Drum Charge SC
	06	ASAP I/F* <sup>1</sup>	16	Charge Grid SC
	07	Task	17	Development Bias SC
	08	Memory Pool	18	LCT (B832) Tray Lift
	09	Watchdog Cycle	19	Serial Signal Send/Receive
		* <sup>1</sup> : Finisher, ADF, MCU		

**SP8-*nnn*: 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.

**NOTE:** This machine does not have a fax function.

SP Numbers	What They Do
SP8211 to SP8216	The number of pages scanned to the document server.
SP8401 to SP8406	The number of pages printed from the document server
SP8691 to SP8696	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.
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.

Service Tables



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 and Print) used to store the job on the document server, for example.
Dev Counter	Development Count, no. of pages developed.
Dup, Duplex	Duplex, printing on both sides
Emul	Emulation
FC	Full Color
FIN	Post-print processing, i.e. finishing (punching, stapling, etc.)
Full Bleed	No Margins
GenCopy	Generation Copy Mode
GPC	Get Print Counter. For jobs 10 pages or less, this counter does not count up. For jobs larger than 10 pages, this counter counts up by the number that is in excess of 10 (e.g., for an 11-page job, the counter counts up 11-10 =1)
IFax	Internet Fax
ImgEdt	Image Edit performed on the original with the copier GUI, e.g. border removal, adding stamps, page numbers, etc.
K	Black (YMCK)
LS	Local Storage. Refers to the document server.
LSize	Large (paper) Size
Mag	Magnification
MC	One color (monochrome)
NRS	New Remote Service, which allows a service center to monitor machines remotely. "NRS" is used overseas, "CSS" is used in Japan.
Org	Original for scanning
OrgJam	Original Jam
Palm 2	Print Job Manager/Desk Top Editor: A pair of utilities that allows print jobs to be distributed evenly among the printers on the network, and allows files to moved around, combined, and converted to different formats..
PC	Personal Computer
PGS	Pages. A page is the total scanned surface of the original. Duplex pages count as two pages, and A3 simplex count as two pages if the A3/DLT counter SP is switched ON.
PJob	Print Jobs

ABBREVIATION	WHAT IT MEANS
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. (Not used)
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 and Black

**NOTE:** All of the Group 8 SPs are reset with SP5 801 001 Memory All Clear, or the Counter Reset SP7 808.

8001	T:Total Jobs	These SPs count the number of times each application is used to do a job. [0~9999999/ 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.
8002	C:Total Jobs	
8004	P:Total Jobs	
8005	S:Total Jobs	
8006	L:Total Jobs	

- 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.
- 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.

8011	T:Jobs/LS	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. [0~9999999 / 0 / 1] The L: counter counts the number of jobs stored from within the document server mode screen at the operation panel.
8012	C:Jobs/LS	
8014	P:Jobs/LS	
8015	S:Jobs/LS	
8016	L:Jobs/LS	
8017	O:Jobs/LS	

- 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.

8021	T:Pjob/LS	These SPs reveal how files printed from the document server were stored on the document server originally. [0~9999999 / 0 / 1] The L: counter counts the number of jobs stored from within the document server mode screen at the operation panel.
8022	C:Pjob/LS	
8024	P:Pjob/LS	
8025	S:Pjob/LS	
8026	L:Pjob/LS	
8027	O:Pjob/LS	

- 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.

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8031	T:Pjob/DesApl	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.
8032	C:Pjob/DesApl	
8034	P:Pjob/DesApl	
8035	S:Pjob/DesApl	
8036	L:Pjob/DesApl	
8037	O:Pjob/DesApl	

- 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.

8041	T:TX Jobs/LS	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). [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.
8042	C:TX Jobs/LS	
8044	P:TX Jobs/LS	
8045	S:TX Jobs/LS	
8046	L:TX Jobs/LS	
8047	O:TX Jobs/LS	

- 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.

8051	T:TX Jobs/DesApl	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). 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.
8052	C:TX Jobs/DesApl	
8054	P:TX Jobs/DesApl	
8055	S:TX Jobs/DesApl	
8056	L:TX Jobs/DesApl	
8057	O:TX Jobs/DesApl	

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

8061	T:FIN Jobs [0~9999999 / 0 / 1]	
	These SPs total the finishing methods. The finishing method is specified by the application.	
8062	C:FIN Jobs [0~9999999 / 0 / 1]	
	These SPs total finishing methods for copy jobs only. The finishing method is specified by the application.	
8064	P:FIN Jobs [0~9999999 / 0 / 1]	
	These SPs total finishing methods for print jobs only. The finishing method is specified by the application.	
8065	S:FIN Jobs [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.	
8066	L:FIN Jobs [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.	
8067	O:FIN Jobs [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.	
806x 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 SP8066 001)
806x 2	Stack	Number of jobs started out of Sort mode.
806x 3	Staple	Number of jobs started in Staple mode.
806x 4	Booklet	Number of jobs started in Booklet mode. If the machine is in staple mode, the Staple counter also increments.
806x 5	Z-Fold	Number of jobs started In any mode other than the Booklet mode and set for folding (Z-fold).
806x 6	Punch	Number of jobs started in Punch mode. When Punch is set for a print job, the P: counter increments. (See SP8064 006.)
806x 7	Other	Reserved. Not used.

Service Tables

8071	T:Jobs/PGS		[0~9999999 / 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.		
8072	C:Jobs/PGS		[0~9999999 / 0 / 1]
	These SPs count and calculate the number of copy jobs by size based on the number of pages in the job.		
8074	P:Jobs/PGS		[0~9999999 / 0 / 1]
	These SPs count and calculate the number of print jobs by size based on the number of pages in the job.		
8075	S:Jobs/PGS		[0~9999999 / 0 / 1]
	These SPs count and calculate the number of scan jobs by size based on the number of pages in the job.		
8076	L:Jobs/PGS		[0~9999999 / 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.		
8077	O:Jobs/PGS		[0~9999999 / 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.		
807x 1	1 Page	807x 8	21~50 Pages
807x 2	2 Pages	807x 9	51~100 Pages
807x 3	3 Pages	807x 10	101~300 Pages
807x 4	4 Pages	807x 11	301~500 Pages
807x 5	5 Pages	807x 12	501~700 Pages
807x 6	6~10 Pages	807x 13	701~1000 Pages
807x 7	11~20 Pages	807x 14	1001~ Pages

- For example: When a copy job stored on the document server is printed in document server mode, the appropriate L: counter (SP8076 0xx) increments.
- 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 (SP 8072) and scan jobs (SP 8075), 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 (SP 8072).
- When printing the first page of a job from within the document server screen, the page is counted.

8131	T:S-to-Email Jobs	[0~9999999 / 0 / 1]
	These SPs count the total number of jobs scanned and attached to an e-mail, regardless of whether the document server was used or not.	
8135	S:S-to-Email Jobs	
	These SPs count the number of jobs scanned and attached to an e-mail, without storing the original on the document server.	

- 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).

8141	T:Deliv Jobs/Svr	[0~9999999 / 0 / 1]
	These SPs count the total number of jobs scanned and sent to a Scan Router server.	
8145	S:Deliv Jobs/Svr	
	These SPs count the number of jobs scanned in scanner mode and sent to a Scan Router server.	

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- 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.



8151	T:Deliv Jobs/PC	[0~9999999 / 0 / 1]
	These SPs count the total number of jobs scanned and sent to a folder on a PC (Scan-to-PC). <b>Note:</b> At the present time, 8151 and 8155 perform identical counts.	
8155	S:Deliv Jobs/PC	
	These SPs count the total number of jobs scanned and sent with Scan-to-PC.	

- 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.

8191	T:Total Scan PGS	These SPs count the pages scanned by each application that uses the scanner to scan images. [0~9999999 / 0 / 1]
8192	C:Total Scan PGS	
8195	S:Total Scan PGS	
8196	L:Total Scan PGS	

- SP 8191 to 8196 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.

8201	T:LSize Scan PGS	[0~9999999 / 0 / 1]
	These SPs count the total number of large pages input with the scanner for scan and copy jobs. <b>Note:</b> These counters are displayed in the SMC Report, and in the User Tools display.	
8205	S:LSize Scan PGS	[0~9999999 / 0 / 1]
	These SPs count the total number of large pages input with the scanner for scan jobs only. <b>Note:</b> These counters are displayed in the SMC Report, and in the User Tools display..	

8211	T:Scan PGS/LS	These SPs count the number of pages scanned into the document server . [0~9999999 / 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
8212	C:Scan PGS/LS	
8215	S:Scan PGS/LS	
8216	L:Scan PGS/LS	

- 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.

8221	ADF Org Feeds		[0~9999999 / 0 / 1]
	These SPs count the number of pages fed through the ADF for front and back side scanning.		
8221 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.)	
8221 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.

8231	Scan PGS/Mode		[0~9999999 / 0 / 1]
	These SPs count the number of pages scanned by each ADF mode to determine the work load on the ADF.		
8231 1	Large Volume	Selectable. Large copy jobs that cannot be loaded in the ADF at one time.	
8231 2	SADF	Selectable. Feeding pages one by one through the ADF.	
8231 3	Mixed Size	Selectable. Select "Mixed Sizes" on the operation panel.	
8231 4	Custom Size	Selectable. Originals of non-standard size.	
8231 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.
- 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.

8241	T:Scan PGS/Org	[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.					
8242	C:Scan PGS/Org	[0~9999999 / 0 / 1]				
	These SPs count the number of pages scanned by original type for Copy jobs.					
8245	S:Scan PGS/Org	[0~9999999 / 0 / 1]				
	These SPs count the number of pages scanned by original type for Scan jobs.					
8246	L:Scan PGS/Org	[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					
		<b>8241</b>	<b>8242</b>	<b>8243</b>	<b>8245</b>	<b>8246</b>
824x 1: Text		Yes	Yes	Yes	Yes	Yes
824x 2: Text/Photo		Yes	Yes	Yes	Yes	Yes
824x 3: Photo		Yes	Yes	Yes	Yes	Yes
824x 4: GenCopy, Pale		Yes	Yes	No	Yes	Yes
824x 5: Map		Yes	Yes	No	Yes	Yes
824x 6: Normal/Detail		Yes	No	Yes	No	No
824x 7: Fine/Super Fine		Yes	No	Yes	No	No
824x 8: Binary		Yes	No	No	Yes	No
824x 9: Grayscale		Yes	No	No	Yes	No

- 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.

8251	T:Scan PGS/ImgEdt	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> [0~9999999 / 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.
8252	C:Scan PGS/ImgEdt	
8256	L:Scan PGS/ImgEdt	
8257	O:Scan PGS/ImgEdt	

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.

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8281	T:Scan PGS/TWAIN	These SPs count the number of pages scanned using a TWAIN driver. These counters reveal how the TWAIN driver is used for delivery functions. [0~9999999 / 0 / 1] <b>Note:</b> At the present time, these counters perform identical counts.
8285	S:Scan PGS/TWAIN	

8291	T:Scan PGS/Stamp	These SPs count the number of pages stamped with the stamp in the ADF unit. [0~9999999 / 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
8295	S:Scan PGS/Stamp	
8296	L:Scan PGS/Stamp	

8301	T:Scan PGS/Size	[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 [SP 8-441].	
8302	C:Scan PGS/Size	[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 [SP 8-442].	
8305	S:Scan PGS/Size	[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 [SP 8-445].	
8306	L:Scan PGS/Size	[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 [SP 8-446].	
830x 1	A3	
830x 2	A4	
830x 3	A5	
830x 4	B4	
830x 5	B5	
830x 6	DLT	
830x 7	LG	
830x 8	LT	
830x 9	HLT	
830x 10	Full Bleed	
830x 254	Other (Standard)	
830x 255	Other (Custom)	

8311	T:Scan PGS/Rez	[0~9999999 / 0 / 1]
	These SPs count by resolution setting the total number of pages scanned by applications that can specify resolution settings.	
8315	S:Scan PGS/Rez	[0~9999999 / 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, SP8311 and SP8315 perform identical counts.	
831x 1	1200dpi ~	
831x 2	600dpi~1199dpi	
831x 3	400dpi~599dpi	
831x 4	200dpi~399dpi	
831x 5	~199dpi	

- Copy resolution settings are fixed so they are not counted.

8381	T:Total PrtPGS	These SPs count the number of pages printed by the customer. The counter for the application used for storing the pages increments. [0~9999999 / 0 / 1] 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.
8382	C:Total PrtPGS	
8384	P:Total PrtPGS	
8385	S:Total PrtPGS	
8386	L:Total PrtPGS	
8387	O:Total PrtPGS	

- When the A3/DLT double count function is switched on with SP5104, 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.

Service Tables

8391	LSize PrtPGS	[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.	

8401	T:PrtPGS/LS	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]
8402	C:PrtPGS/LS	
8404	P:PrtPGS/LS	
8405	S:PrtPGS/LS	
8406	L:PrtPGS/LS	

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

8411	Prints/Duplex	This SP counts the amount of paper (front/back counted as 1 page) used for duplex printing. Last pages printed only on one side are not counted. [0~9999999 / 0 / 1]
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8421	T:PrtPGS/Dup Comb	[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.	
8422	C:PrtPGS/Dup Comb	[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.	
8424	P:PrtPGS/Dup Comb	[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.	
8425	S:PrtPGS/Dup Comb	[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.	
8426	L:PrtPGS/Dup Comb	[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.	
8427	O:PrtPGS/Dup Comb	[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	
842x 1	Simplex> Duplex	
842x 2	Duplex> Duplex	
842x 3	Book> Duplex	
842x 4	Simplex Combine	
842x 5	Duplex Combine	
842x 6	2>	2 pages on 1 side (2-Up)
842x 7	4>	4 pages on 1 side (4-Up)
842x 8	6>	6 pages on 1 side (6-Up)
842x 9	8>	8 pages on 1 side (8-Up)
842x 10	9>	9 pages on 1 side (9-Up)
842x 11	16>	16 pages on 1 side (16-Up)
842x 12	Booklet	
842x 13	Magazine	

Service Tables

- These counts (SP8421 to SP8427) 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:

<b>Booklet</b>	
<b>Original Pages</b>	<b>Count</b>
1	1
2	2
3	2
4	2
5	3
6	4
7	4
8	4

<b>Magazine</b>	
<b>Original Pages</b>	<b>Count</b>
1	1
2	2
3	2
4	2
5	4
6	4
7	4
8	4

8431	T:PrtPGS/ImgEdt	[0~9999999 / 0 / 1]
	These SPs count the total number of pages output with the three features below, regardless of which application was used.	
8432	C:PrtPGS/ImgEdt	[0~9999999 / 0 / 1]
	These SPs count the total number of pages output with the three features below with the copy application.	
8434	P:PrtPGS/ImgEdt	[0~9999999 / 0 / 1]
	These SPs count the total number of pages output with the three features below with the print application.	
8436	L:PrtPGS/ImgEdt	[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.	
8437	O:PrtPGS/ImgEdt	[0~9999999 / 0 / 1]
	These SPs count the total number of pages output with the three features below with Other applications.	
843x 1	Cover/Slip Sheet	Total number of covers or slip sheets inserted. The count for a cover printed on both sides counts 2.
843x 2	Series/Book	The number of pages printed in series (one side) or printed as a book with booklet right/left pagination.
843x 3	User Stamp	The number of pages printed where stamps were applied, including page numbering and date stamping.

8441	T:PrtPGS/Ppr Size	[0~9999999 / 0 / 1]
	These SPs count by print paper size the number of pages printed by all applications.	
8442	C:PrtPGS/Ppr Size	[0~9999999 / 0 / 1]
	These SPs count by print paper size the number of pages printed by the copy application.	
8444	P:PrtPGS/Ppr Size	[0~9999999 / 0 / 1]
	These SPs count by print paper size the number of pages printed by the printer application.	
8445	S:PrtPGS/Ppr Size	[0~9999999 / 0 / 1]
	These SPs count by print paper size the number of pages printed by the scanner application.	
8446	L:PrtPGS/Ppr Size	[0~9999999 / 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.	
8447	O:PrtPGS/Ppr Size	[0~9999999 / 0 / 1]
	These SPs count by print paper size the number of pages printed by Other applications.	
844x 1	A3	
844x 2	A4	
844x 3	A5	
844x 4	B4	
844x 5	B5	
844x 6	DLT	
844x 7	LG	
844x 8	LT	
844x 9	HLT	
844x 10	Full Bleed	
844x 254	Other (Standard)	
844x 255	Other (Custom)	

Service Tables

- These counters do not distinguish between LEF and SEF.

8451	PrtPGS/Ppr Tray	[0~9999999 / 0 / 1]
	These SPs count the number of sheets fed from each paper feed station.	
8451 1	Bypass	Bypass Tray
8451 2	Tray 1	Copier
8451 3	Tray 2	Copier
8451 4	Tray 3	Paper Tray Unit (Option)
8451 5	Tray 4	Paper Tray Unit (Option)
8451 6	Tray 5	LCT (Option)
8451 7	Tray 6	Currently not used.
8451 8	Tray 7	Currently not used.
8451 9	Tray 8	Currently not used.
8451 10	Tray 9	Currently not used.

8461	T:PrtPGS/Ppr Type	[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>	
8462	C:PrtPGS/Ppr Type	[0~9999999 / 0 / 1]
	These SPs count by paper type the number pages printed by the copy application.	
8464	P:PrtPGS/Ppr Type	[0~9999999 / 0 / 1]
	These SPs count by paper type the number pages printed by the printer application.	
8466	L:PrtPGS/Ppr Type	[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.	
846x 1	Normal	
846x 2	Recycled	
846x 3	Special	
846x 4	Thick	
846x 5	Normal (Back)	
846x 6	Thick (Back)	
846x 7	OHP	
846x 8	Other	

8471	PrtPGS/Mag	[0~9999999 / 0 / 1]
	These SPs count by magnification rate the number of pages printed.	
8471 1	~49%	
8471 2	50%~99%	
8471 3	100%	
8471 4	101%~200%	
8471 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%.

8481	T:PrtPGS/TonSave	
8484	P:PrtPGS/TonSave	
	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]	

Service  
Tables

8511	T:PrtPGS/Emul		[0~9999999 / 0 / 1]	
	These SPs count by printer emulation mode the total number of pages printed.			
8514	P:PrtPGS/Emul		[0~9999999 / 0 / 1]	
	These SPs count by printer emulation mode the total number of pages printed.			
8514 1	RPCS			
8514 2	RPDL			
8514 3	PS3			
8514 4	R98			
8514 5	R16			
8514 6	GL/GL2			
8514 7	R55			
8514 8	RTIFF			
8514 9	PDF			
8514 10	PCL5e/5c			
8514 11	PCL XL			
8514 12	IPDL-C			
8514 13	BM-Links			Japan Only
8514 14	Other			

- SP8511 and SP8514 return the same results as they are both limited to the Print application.
- Print jobs output to the document server are not counted.

8521	T:PrtPGS/FIN	[0~9999999 / 0 / 1]
	These SPs count by finishing mode the total number of pages printed by all applications.	
8522	C:PrtPGS/FIN	[0~9999999 / 0 / 1]
	These SPs count by finishing mode the total number of pages printed by the Copy application.	
8524	P:PrtPGS/FIN	[0~9999999 / 0 / 1]
	These SPs count by finishing mode the total number of pages printed by the Print application.	
8525	S:PrtPGS/FIN	[0~9999999 / 0 / 1]
	These SPs count by finishing mode the total number of pages printed by the Scanner application.	
8526	L:PrtPGS/FIN	[0~9999999 / 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.	
852x 1	Sort	
852x 2	Stack	
852x 3	Staple	
852x 4	Booklet	
852x 5	Z-Fold	
852x 6	Punch	
852x 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.

Service Tables

8531	Staples	This SP counts the amount of staples used by the machine. [0~9999999 / 0 / 1]
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8541	T: GPC Counter	<b>Japan Only</b>
8544	C: GPC Counter	

8581	T:Counter	[0~9999999 / 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. <b>Note:</b> This SP is expanded for color MFP and color LP machines. For this machine, the count is done for black only.	

8591	O:Counter	[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.	
8591 1	A3/DLT	
8591 2	Duplex	
8591 3	Staple	

8651	T:S-to-Email PGS	[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. <b>Note:</b> This SP is expanded for color MFP and color LP machines. For this machine, the count is done for black only.	
8655	S:S-to-Email PGS	[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. <b>Note:</b> This SP is expanded for color MFP and color LP machines. For this machine, the count is done for black only.	

**NOTE:**

- 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.
- 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).
- 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).
- 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).

8661	T:Deliv PGS/Svr	[0~9999999 / 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. <b>Note:</b> This SP is expanded for color MFP and color LP machines. For this machine, the count is done for black only.	
8665	S:Deliv PGS/Svr	[0~9999999 / 0 / 1]
	These SPs count by color mode the total number of pages sent to a Scan Router server by the Scan application. <b>Note:</b> This SP is expanded for color MFP and color LP machines. For this machine, the count is done for black only.	

- 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.

8671	T:Deliv PGS/PC	[0~9999999 / 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. <b>Note:</b> This SP is expanded for color MFP and color LP machines. For this machine, the count is done for black only.	
8675	S:Deliv PGS/PC	[0~9999999 / 0 / 1]
	These SPs count by color mode the total number of pages sent with Scan-to-PC with the Scan application. <b>Note:</b> This SP is expanded for color MFP and color LP machines. For this machine, the count is done for black only.	

Service Tables

8691	T:TX PGS/LS	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.
8692	C:TX PGS/LS	
8694	P:TX PGS/LS	
8695	S:TX PGS/LS	
8696	L:TX PGS/LS	

- 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.



8701	TX PGS/Port		[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.		
8701 1	PSTN-1		
8701 2	PSTN-2		
8701 3	PSTN-3		
8701 4	ISDN (G3,G4)		
8701 5	Network		

8711	T:Scan PGS/Comp		[0~9999999 / 1]
	These SPs count the number of compressed pages scanned into the document server, counted by the formats listed below.		
8711 1	JPEG/JPEG2000		
8711 2	TIFF (Multi/Single)		
8711 3	PDF		
8711 4	Other		

8715	S:Scan PGS/Comp		[0~9999999 / 1]
	These SPs count the number of compressed pages scanned by the scan application, counted by the formats listed below.		
8715 1	JPEG/JPEG2000		
8715 2	TIFF (Multi/Single)		
8715 3	PDF		
8715 4	Other		

8741	RX PGS/Port		[0~9999999 / 0 / 1]
	These SPs count the number of pages received by the physical port used to receive them.		
8741 1	PSTN-1		
8741 2	PSTN-2		
8741 3	PSTN-3		
8741 4	ISDN (G3,G4)		
8741 5	Network		

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

8781	Pixel Coverage Ratio		
	This SP displays the number of toner bottles used. The count is done based on the equivalent of 1,000 pages per bottle.		

8791	LS Memory Remain	This SP displays the percent of space available on the document server for storing documents. [0~100 / 0 / 1]
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8801	Toner Remain	[0~100 / 0 / 1]
	<p>This SP displays the percent of toner remaining for each color. This SP allows the user to check the toner supply at any time.</p> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>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).</li> <li>This SP is expanded for color MFP and color LP machines. For this machine, the count is done for black only.</li> </ul>	

8851	Toner Coverage 0-10%		[0~9999999]
	These SPs count the percentage of dot coverage for black other color toners.		
8851 1	K	Black toner	Do not display for this machine.
8851 2	M	Magenta toner	
8851 3	C	Cyan toner	
8851 4	Y	Yellow toner	

8861	Toner Coverage 11-20%		[0~9999999]
	These SPs count the percentage of dot coverage for black other color toners.		
8861 1	K	Black toner	Do not display for this machine.
8861 2	M	Magenta toner	
8861 3	C	Cyan toner	
8861 4	Y	Yellow toner	

8871	Toner Coverage 21-30%		[0~9999999]
	These SPs count the percentage of dot coverage for black other color toners.		
8871 1	K	Black toner	Do not display for this machine.
8871 2	M	Magenta toner	
8871 3	C	Cyan toner	
8871 4	Y	Yellow toner	

8881	Toner Coverage 31 -%		[0~9999999]
	These SPs count the percentage of dot coverage for black other color toners.		
8881 1	K	Black toner	Do not display for this machine.
8881 2	M	Magenta toner	
8881 3	C	Cyan toner	
8881 4	Y	Yellow toner	

Service Tables

8891	Page/Toner Bottle	Total number of pages per toner bottle.
8921	Cvr Cnt/Total	Total number of pages to date.

8901	Coverage Display (Toner Bottle: Previous) <b>DFU</b>	
8911	Coverage Display (Toner Bottle: Before Previous) <b>DFU</b>	

8941	Machine Status	[0~99999999 / 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.	
8941 1	Operation Time	Engine operation time. Does not include time while controller is saving data to HDD (while engine is not operating).
8941 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.
8941 3	Energy Save Time	Includes time while the machine is performing background printing.
8941 4	Low Power Time	Includes time in Energy Save mode with Engine on. Includes time while machine is performing background printing.
8941 5	Off Mode Time	Includes time while machine is performing background printing. Does not include time machine remains powered off with the power switches.
8941 6	SC	Total down time due to SC errors.
8941 7	PrtJam	Total down time due to paper jams during printing.
8941 8	OrgJam	Total down time due to original jams during scanning.
8941 9	Supply PM Wait End	Total down time due to toner end.

8951	AddBook Register		
	These SPs count the number of events when the machine manages data registration.		
8951 1	User Code	User code registrations.	[0~99999999 / 0 / 1]
8951 2	Mail Address	Mail address registrations.	
8951 4	Group	Group destination registrations.	
8951 6	F-Code	F-Code box registrations.	
8951 7	Copy Program	Copy application registrations with the Program (job settings) feature.	[0~255 / 0 / 255]
8951 9	Printer Program	Printer application registrations with the Program (job settings) feature.	
8951 10	Scanner Program	Scanner application registrations with the Program (job settings) feature.	

### 5.2.2 PRINTER SERVICE TABLE

1001	Bit Switch		
001	Bit SW 1	00H	Adjusts the bit switch settings. <b>Note: These bit switches are currently not used</b>
002	Bit SW 2	00H	
003	Bit SW 3	00H	
004	Bit SW 4	00H	
005	Bit SW 5	00H	
006	Bit SW 6	00H	
007	Bit SW 7	00H	
008	Bit SW 8	00H	

1003	Clear setting		
001	Initialize Printer System		Initializes the settings in the printer feature settings of UP mode.
002	Clear CSS Counter <b>DFU</b>		
003	Delete Program <b>DFU</b>		

1004	Print Summary		
	Prints the printer summary sheets.		
001	Print Summary 1		
002	Print Summary 2		

1005	Display Version.		
002	Printer Application Version		Displays the version of the controller firmware.

<b>1006</b>	Sample/Proof Print		
	This SP disables/enables use of the document server. [0~1/0/1] 0: Enabled. Document server can be used. 1: Disabled. Document server cannot be used.		

7910	PDL No. Information		
	Returns the character string for the PDL version.		

7911	PDL Version Information		
	Returns the character string for the PDL version.		

Service Tables

**5.2.3 SCANNER SERVICE TABLE**

1001	System	
001	Model Name	Displays the model name.
002	Scanner Firmware Version	Displays the scanner firmware version.
003	Scanner Firmware Number	Displays the firmware's part number.
004	Detail Model Name	Displays the detail model name.

1002	Error Log Display	
	Displays the error log data.	

1004	Compression Type	
	Selects the compression type for binary picture processing. [1-3 / 1 / 1] 1: MH, 2: MR, 3: MMR	

1005	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> [0-5 / 0 / 1mm]	

1006	Auto Reset Timer	
	Adjusts the auto reset timer for the scanner function. <i>If this is "0", the auto reset function is disabled.</i> [0, 10-99 / 60 / 1s]	

1007	Store Priority	
	Selects the default setting of the store priority when the main switch is turned on. [1-3 / 1 / 1] <b>1: Send only</b> 2: Store only 3: Send + Store	

2002	Text Mode Setting	
001	MTF Filter Coefficient (Main scan)	
	Selects the MTF filter coefficient in the main scan direction for Text mode. <i>Select a higher number for a stronger filter.</i> <i>If this is "0", the MTF filter is not applied.</i> [0~13 / <b>7</b> / 1]	
002	MTF Filter Coefficient (Sub scan)	
	Selects the MTF filter coefficient in the sub scan direction for Text mode. <i>Select a higher number for a stronger filter.</i> <i>If this is "0", the MTF filter is not applied</i> [0~13 / <b>7</b> / 1]	
003	MTF Filter Strength (Main scan)	
	Selects the MTF filter strength in the main scan direction for Text mode. <i>Select a higher number for a stronger filter.</i> [0~7 / <b>2</b> / 1]	
004	MTF Filter Strength (Sub scan)	
	Selects the MTF filter strength in the sub scan direction for Text mode. <i>Select a higher number for a stronger filter.</i> [0~7 / <b>2</b> / 1]	
005	Smoothing Filter	
	Selects the smoothing pattern for Text mode. <i>A larger value is smoother. A smaller value could cause moiré to appear in the image.</i> [0~7 / <b>0</b> / 1]	
006	Scanner Gamma	
	Selects the scanner gamma type for Text mode. [0~7,11 / <b>4</b> / 1] 0:Normal, 1:Smooth, 2:Distinct, 3:Sharp, 4:Text, 6:Text/Photo, 7: Photo, 11: Grayscale <i>4~7 is used for delivery scanner mode.</i>	
007	Notch 7(Lighter): Brightness	The following SPs adjust the image density (brightness, contrast, and thresholds) for each image density level (from 7 to 1) for Text mode. The settings are reflected in the gamma table. [1~255 / <b>128</b> / 1]
008	Notch 7(Lighter): Contrast	
009	Notch 7(Lighter): Threshold	
010	Notch 6: Brightness	
011	Notch 6: Contrast	
012	Notch 6: Threshold	
013	Notch 5: Brightness	
014	Notch 5: Contrast	
015	Notch 5: Threshold	
016	Notch 4(Middle): Brightness	
017	Notch 4 (Middle): Contrast	
018	Notch 4 (Middle): Threshold	
019	Notch 3: Brightness	
020	Notch 3: Contrast	
021	Notch 3: Threshold	

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022	Notch 2: Brightness	
023	Notch 2: Contrast	
024	Notch 2: Threshold	
025	Notch 1(Darker): Brightness	
026	Notch 1 (Darker): Contrast	
027	Notch 1(Darker): Threshold	
028	Independent Dot Erase	
029	Unevenness Correction	Selects the unevenness correction. [0~1 / <b>0</b> / 1] 0: OFF 1: ON

2003	Text/Photo Mode Setting	
001	MTF Filter Coefficient (Main scan)	
		Selects the MTF filter coefficient in the main scan direction for Text/Photo mode. <i>Select a higher number for a stronger filter.</i> <i>If this is "0", the MTF filter is not applied.</i> [0~13 / <b>6</b> / 1]
002	MTF Filter Coefficient (Sub scan)	
		Selects the MTF filter coefficient in the sub scan direction for Text/Photo mode. <i>Select a higher number for a stronger filter.</i> <i>If this is "0", the MTF filter is not applied</i> [0~13 / <b>6</b> / 1]
003	MTF Filter Strength (Main scan)	
		Selects the MTF filter strength in the main scan direction for Text/Photo mode. <i>Select a higher number for a stronger filter.</i> [0~7 / <b>2</b> / 1]
004	MTF Filter Strength (Sub scan)	
		Selects the MTF filter strength in the sub scan direction for Text/Photo mode. <i>Select a higher number for a stronger filter.</i> [0~7 / <b>2</b> / 1]
005	Smoothing Level	
		Selects the smoothing pattern for Text/Photo mode. <i>A larger value is smoother. A smaller value could cause moiré to appear in the image.</i> [0~7 / <b>0</b> / 1]

006	Gamma Setting	
	Selects the scanner gamma type for Text/Photo mode. [0~7,11 / 6 / 1] 0:Normal, 1:Smooth, 2:Distinct, 3:Sharp, 4:Text, 6:Text/Photo, 7: Photo, 11: Grayscale <i>4~7 is used for delivery scanner mode.</i>	
007	Notch 7(Lighter): Brightness	The following SPs adjust the image density (brightness, contrast, and thresholds) for each image density level (from 7 to 1) for Text/Photo mode. The settings are reflected in the gamma table. [1~255 / 128 / 1]
008	Notch 7(Lighter): Contrast	
009	Notch 7(Lighter): Threshold	
010	Notch 6: Brightness	
011	Notch 6: Contrast	
012	Notch 6: Threshold	
013	Notch 5: Brightness	
014	Notch 5: Contrast	
015	Notch 5: Threshold	
016	Notch 4(Middle): Brightness	
017	Notch 4 (Middle): Contrast	
018	Notch 4 (Middle): Threshold	
019	Notch 3: Brightness	
020	Notch 3: Contrast	
021	Notch 3: Threshold	
022	Notch 2: Brightness	
023	Notch 2: Contrast	
024	Notch 2: Threshold	
025	Notch 1(Darker): Brightness	
026	Notch 1 (Darker): Contrast	
027	Notch 1 (Darker): Threshold	

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2004	Photo Mode Setting
001	MTF Filter Coefficient (Main scan)
	Selects the MTF filter coefficient in the main scan direction for Photo mode. <i>Select a higher number for a stronger filter.</i> <i>If this is "0", the MTF filter is not applied.</i> [0~13 / <b>0</b> / 1]
002	MTF Filter Coefficient (Sub scan)
	Selects the MTF filter coefficient in the sub scan direction for Photo mode. <i>Select a higher number for a stronger filter.</i> <i>If this is "0", the MTF filter is not applied</i> [0~13 / <b>0</b> / 1]
003	MTF Filter Strength (Main scan)
	Selects the MTF filter strength in the main scan direction for Photo mode. <i>Select a higher number for a stronger filter.</i> [0~7 / <b>0</b> / 1]
004	MTF Filter Strength (Sub scan)
	Selects the MTF filter strength in the sub scan direction for Photo mode. <i>Select a higher number for a stronger filter.</i> [0~7 / <b>0</b> / 1]
005	Smoothing Level
	Selects the smoothing pattern for Photo mode. <i>A larger value is smoother. A smaller value could cause moiré to appear in the image.</i> [0~7 / <b>7</b> / 1]
006	Gamma Setting
	Selects the scanner gamma type for Text/Photo mode. [0~7,11 / <b>7</b> / 1] 0:Normal, 1:Smooth, 2:Distinct, 3:Sharp, 4:Text, 6:Text/Photo, 7: Photo, 11: Grayscale <i>4~7 is used for delivery scanner mode.</i>
007	Dither Pattern
	Selects the dither pattern. [1~11 / <b>5</b> / 1] 1: 8 x 4 45° 2: 6 x 6 90° 3: 4 x 4 spiral 4: 8 x 8 90°, 5: 70 line 6: 95 line 7: 140 line 8: 180 line 9: 16 x 16 90° 10: 8x8 spiral 11: 106 line

008	Notch 7(Lighter): Brightness	The following SPs adjust the image density (brightness, contrast, and thresholds) for each image density level (from 7 to 1) for Photo mode. The settings are reflected in the gamma table. [1~255 / <b>128</b> / 1]
009	Notch 7(Lighter): Contrast	
010	Notch 7(Lighter): Threshold	
011	Notch 6: Brightness	
012	Notch 6: Contrast	
013	Notch 6: Threshold	
014	Notch 5: Brightness	
015	Notch 5: Contrast	
016	Notch 5: Threshold	
017	Notch 4(Middle): Brightness	
018	Notch 4 (Middle): Contrast	
019	Notch 4 (Middle): Threshold	
020	Notch 3: Brightness	
021	Notch 3: Contrast	
022	Notch 3: Threshold	
023	Notch 2: Brightness	
024	Notch 2: Contrast	
025	Notch 2: Threshold	
026	Notch 1(Darker): Brightness	
027	Notch 1 (Darker): Contrast	
028	Notch 1 (Darker): Threshold	

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2005	Grayscale Mode Setting		
	001	MTF Filter Coefficient (Main scan)	
		Selects the MTF filter coefficient in the main scan direction for Grayscale mode. <i>Select a higher number for a stronger filter.</i> <i>If this is "0", the MTF filter is not applied.</i> [0~13 / <b>0</b> / 1]	
	002	MTF Filter Coefficient (Sub scan)	
		Selects the MTF filter coefficient in the sub scan direction for Grayscale mode. <i>Select a higher number for a stronger filter.</i> <i>If this is "0", the MTF filter is not applied</i> [0~13 / <b>0</b> / 1]	
	003	MTF Filter Strength (Main scan)	
		Selects the MTF filter strength in the main scan direction for Grayscale mode. <i>Select a higher number for a stronger filter.</i> [0~7 / <b>0</b> / 1]	
	004	MTF Filter Strength (Sub scan)	
		Selects the MTF filter strength in the sub scan direction for Grayscale mode. <i>Select a higher number for a stronger filter.</i> [0~7 / <b>0</b> / 1]	
	005	Smoothing Level	
		Selects the smoothing pattern for Grayscale mode. <i>A larger value is smoother. A smaller value could cause moiré to appear in the image.</i> [0~7 / <b>0</b> / 1]	
	006	Gamma Setting	
		Selects the scanner gamma type for Grayscale mode. [0~7,11 / <b>11</b> / 1] 0:Normal, 1:Smooth, 2:Distinct, 3:Sharp, 4:Text, 6:Text/Photo, 7: Photo, 11: Grayscale <i>4~7 is used for delivery scanner mode.</i>	
	007	Notch 7(Lighter): Brightness	The following SPs adjust the image density (brightness, contrast, and thresholds) for each image density level (from 7 to 1) for grayscale mode. The settings are reflected in the gamma table. [1~255 / <b>128</b> / 1]
	008	Notch 7(Lighter): Contrast	
	009	Notch 7(Lighter): Threshold	
	010	Notch 6: Brightness	
	011	Notch 6: Contrast	
	012	Notch 6: Threshold	
013	Notch 5: Brightness		
014	Notch 5: Contrast		
015	Notch 5: Threshold		
016	Notch 4(Middle): Brightness		
017	Notch 4 (Middle): Contrast		
018	Notch 4 (Middle): Threshold		
019	Notch 3: Brightness		

	020	Notch 3: Contrast	
	021	Notch 3: Threshold	
	022	Notch 2: Brightness	
	023	Notch 2: Contrast	
	024	Notch 2: Threshold	
	025	Notch 1(Darker): Brightness	
	026	Notch 1 (Darker): Contrast	
	027	Notch 1 (Darker): Threshold	

2006	Grayscale Compression	
	001	Standard
		Sets the rate of compression when Standard is selected for handling JPEG files. [5~95 / <b>50</b> / 1] 95: Low compression (larger file) 5: High compression (smaller file)
	002	High Quality
		Sets the rate of compression when High is selected for handling JPEG files. [5~95 / <b>60</b> / 1] 95: Low compression (larger file) 5: High compression (smaller file)
003	Low Quality	
	Sets the rate of compression when Low is selected for handling JPEG files. [5~95 / <b>40</b> / 1] 95: Low compression (larger file) 5: High compression (smaller file)	

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## 5.2.4 USER SERVICE PROGRAM MODE TABLES

Do either procedure to display the SP codes for operators or skilled operators (Super Users).

### Adjustment Settings for Operators

1. Press [User Tools].
2. Press [Adjustment Settings for Operators].  
The operator SP codes are displayed.
  - You will not see the SP codes marked "Super User Only" in the SP tables below.
  - These "Super User" SP codes are displayed only after you enter the user SP mode with the procedure below.

### Adjustment Settings for Skilled Users

To open the user SP mode with this procedure, you must have an assigned user name and password.

The user name and password must be assigned by the system administrator.

For more details, please refer to the TCRU (Trained Customer Replacement Units) manuals.

1. Press [User Tools].
2. Press [Adjustment Settings for Skilled Operators].
3. Press [Enter] to the right of "Login User Name".
4. On the soft keyboard enter your assigned user name and press [OK].
5. Press [Enter] to the right of "Login Password".
6. On the soft keyboard enter your assigned password and press [OK].  
The operator and skilled operator SP codes are displayed.

**SPxxx Feed**

<b>1710</b>	Shift Image With Feed	
<b>User SP</b>	Adjusts the printing leading edge registration for feeding from the copier trays and the duplex tray. Use the trimming area pattern printed with <b>SP3740</b> . Press ./* to enter a minus sign (-) before you enter the value with number keys. [-2 to +2 / 0 / 0.1 mm]	
001	Front Side	Image on front side of a copy.
002	Back Side	Image on back side of a copy (duplex copied)
003	Front Side (Low Speed Mode)	Image on back side of a copy (duplex copied in low speed mode)
004	Back Side (Low Speed Mode)	Image on front side of a copy (copied in low speed mode)

<b>1720</b>	Shift Image Across Feed	
<b>User SP</b>	Adjusts the printing side-to-side registration for sheets printed on paper from the feed sources listed below. The adjustment is done with the trimming pattern printed with <b>SP3740</b> . Press ./* to enter a minus sign (-) before you enter the value with number keys.	
001	Tray 1	[-2 to +2 / 0 / 0.1 mm]
002	Tray 2	
003	Tray 3	
004	Tray 4 LCT	
005	Tray 5 LCT	
006	Tray 6 LCT	
007	Tray 7 Bypass	
008	Duplex	

<b>1730</b>	Adjust Paper Skew	<b>Super User Only</b>
<b>User SP</b>	Paper skew in the paper path is corrected by switching off the registration motor for a very short time. The paper continues to feed and then straightens by buckling against the stopper roller. This SP adjusts the amount of time the registration roller motor remains off to create the buckle that straightens the paper. <ul style="list-style-type: none"> <li>• A positive value increases the amount of buckle for more correction. The registration roller motor and roller remain idle for a longer time.</li> <li>• A minus value decreases the amount of buckle for less correction. The registration roller motor and roller remain idle for a shorter time.</li> <li>• Press ./* to enter a minus sign (-) before you enter the value with number keys.</li> </ul>	
001	Tray 1,2,3	[0 to 3 / 0 / 1 mm]
002	Tray 4,5,6 LCT	
003	Duplex	
004	Tray 7 (Bypass)	

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1740	Set Fusing Temperature	Super User Only
<b>User SP</b>	<p>This SP allows you to raise or lower the fusing temperature. Three fusing lamps inside the hollow hot roller generate enough heat to fuse toner when each sheet passes between the hot roller above and pressure roller below. The copier will not start copying until the hot roller reaches the temperature prescribed for the job.</p> <p>[0 to 2 / 0 / 1 step]</p> <p>0: Medium 1: Low 2: High</p> <ul style="list-style-type: none"> <li>• Raise the temperature setting if you see loose toner, indicating that the toner has not fused completely with the surface of the paper.</li> <li>• Lower the temperature setting if the paper is excessively curled after it leaves the machine.</li> </ul>	

1750	Unit Initialization	Super User Only
<b>User SP</b>	<p>After you replace the fusing unit, do this SP and press [Execute].</p> <p>Use this SP code to initialize the control mechanism of the web cleaner inside the fusing unit.</p> <p>The web cleaner (a web supply roller and a take-up roller) is mounted above and slightly to the right of the hot roller. The roll (24 m long), a soft web material saturated with silicone oil, touches the surface of the hot roller as it rotates. The soft, lubricating surface of the web cleans the surface of the hot roller by scavenging toner, paper dust, and other foreign matter that collects on the hot roller.</p>	

1908	Double-Feed Detection	Super User Only
	<p>This SP code switches double-feed detection off/on for the trays listed below.</p> <p>[0~1 / 1 / 1]</p> <p>1: On, 0: Off</p>	
001	Tray 1	
002	Tray 2	
003	Tray 3	
004	Tray 4 (LCT Tray 1)	
005	Tray 5 (LCT Tray 2)	
006	Tray 6 (LCT Tray 3)	
007	Tray 7 (Bypass)	
008	After Double-Feed Detection	<p>This SP setting determines what happens when a double-feed is detected.</p> <p>[0~1 / 0 / 1]</p> <p>0: Sends the double-feed sheet to the upper tray. 1: Signals a jam alert.</p>

1911	CIS Img Pos Adj: Feed Setting	Super User Only
	NIA	
001	Tray 1	
002	Tray 2	
003	Tray 3	
004	Tray 4 (LCT Tray 1)	
005	Tray 5 (LCT Tray 2)	
006	Tray 6 (LCT Tray 3)	
007	Tray 7 (Bypass)	
008	Duplex Tray	

**SP2xxx Drum**

2710	Adjust Image Density	Super User Only
<b>User SP</b>	Use this SP code to improve the appearance of images that are either too light or too dark. Do these SP codes in order. Between each Step do some test prints to determine if the image density has become better or worse.	
001	Step 1	
	Adjusts Vb (development bias) and Vg (voltage supplied to the charge unit) to lighten or darken density. [0 to 3 / 1 / 1 step] 0: Light, 1: Normal, 2: Darker, 3: Darkest	
002	Step 2	
	Adjusts the development bias used to develop the ID sensor pattern for Vsp measurement. Changing this setting affects the amount of toner supplied to the development unit. [0 to 3 / 1 / 1 step] 0: Light, 1: Normal, 2: Darker, 3: Darkest	
003	Step 3	
	After you replace the development unit, do this SP and press [Execute]. This SP executes two important tasks: <ul style="list-style-type: none"> <li>• It forces toner supply for 10 seconds from the toner bank through the toner hopper to the development unit. Press Start to force toner supply. If forcing toner supply with this SP does not darken the image, then toner supply is not operating correctly. Replace the development unit.</li> <li>• It turns on the drum motor, development motor, development bias, toner supply motor and charge corona. Then it turns on the toner supply coil motor to supply toner to the toner hopper (no toner is supplied to the development unit). This SP requires about 7 minutes to complete.</li> </ul>	

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2720	Adjust Image Quality	Super User Only
<b>User SP</b>	<p>These SP codes adjust the amount of current applied to the transfer belt. When the paper on the transfer belt passes between the belt and drum above, the charge roller below the transfer belt applies a positive (+) charge to the belt above. This positive charge attracts the negatively charged toner of the image from the drum above, effectively transferring the image from drum to paper.</p> <p>The image transfer current can be adjusted separately for four separate items: Front, Back, Reduce Halftone, No White Spots.</p>	
001	Front Side	<p>Adjusts transfer current for images on the front side of copies.</p> <p>[0 to 3 / 1 / 1 step]</p> <p>0: Light, 1: Normal, 2: Darker, 3: Darkest</p>
002	Back Side	<p>Adjusts transfer current for images on the back side of copies during duplexing.</p> <p>[0 to 3 / 1 / 1 step]</p> <p>0: Light, 1: Normal, 2: Darker, 3: Darkest</p>
003	Reduce Halftone Streaks	<p>Do this SP and press [Execute] to reduce the density of halftone areas of images on both the front and back sides of copies.</p>
004	Reduce White Spots	<p>Do this SP and press [Execute] to reduce the occurrence of white spots in areas of dark coverage on both the front and back sides of copies. To accomplish this, the machine thoroughly cleans the surface of the drum with the 2nd cleaning blade.</p>

2730	Unit Initialization	Super User Only
<b>User SP</b>		
001	Development Unit	
	<p>Use this SP code to initialize the TD sensor of a new development unit. After you press [Execute] this SP performs two tasks:</p> <ul style="list-style-type: none"> <li>• Initializes the TD sensor to control the voltage applied to the TD sensor to make its about 2.5V. Press [Start] after you sees the voltage displayed.</li> <li>• Supplies toner to the toner hopper (but not the development unit).</li> </ul> <p><b>Note:</b> The machine requires about 7 minutes to complete this SP adjustment.</p>	
002	Drum/Charge Unit	
	<p>After you press [Execute] to do this SP, it does important adjustments that affect the operation of the machine to ensure that the supply of toner to develop each image remains constant. Always do this SP after replacing:</p> <ul style="list-style-type: none"> <li>• Pre-charge unit</li> <li>• Charge unit</li> </ul> <p>Development unit</p>	
003	Drum/Cleaning Unit	
	<p>Do this SP before you remove the drum cleaning unit or the PCU unit. After you press [Execute], the drum rotates and is coated with a light coat of toner.</p> <p><b>Note:</b> Coating the surface of the drum with toner before removing the drum cleaning unit ensures that the drum will not be damaged against the edge of a new main cleaning blade.</p>	

<b>2750</b>		<b>Magnification Across Feed</b>		<b>Super User Only</b>	
<b>User SP</b>		These SP codes fine adjust the magnification of the copy image across the page at a right-angle to the direction of paper feed. These magnification adjustments are done separately for 1) Copy mode, and 2) Print mode and from the front/backside of pages. [-0.3~+0.3 / 0 / 0.1%] <b>Note:</b> <ul style="list-style-type: none"> <li>• To enter a negative value, press [./*] on the keypad.</li> <li>• "Copy mode" denotes copying images from originals and printing them.</li> <li>• "Print mode" denotes doing a print job with a software application and using the printer driver to print them on the machine.</li> </ul>			
001	Copy Image: Front Side	Copy Mode: Imaged copied onto the front side of the sheet			
002	Copy Image: Back Side	Copy Mode: Image copied onto the back side of the machine (duplexing)			
003	Print Image: Front Side	Print Mode: Image printed onto the front side of the sheet			
004	Print Image: Back Side	Print Mode: Image printed onto the back side of the sheet (duplexing).			

<b>2760</b>		<b>Magnification Adjustment With Feed</b>		<b>Super User Only</b>	
<b>User SP</b>		This SP code fine adjusts the magnification of the copy image along the direction of paper feed. [-0.3~+0.3 / 0 / 0.1%] <b>Note:</b> <ul style="list-style-type: none"> <li>• To enter a negative value, press [./*] on the keypad.</li> </ul>			

<b>2770</b>		<b>Temperature/Humidity Display</b>		<b>Super User Only</b>	
<b>User SP</b>		This SP displays readings of the current temperature and humidity inside the machine.			
001	Internal Temperature	Displays urrent temperature inside the machine. [-20 to 60 / <b>None</b> / 1°C]			
002	Internal Humidity	Current humidity level inside the machine. [0 to 100 / None / 1% RH]			

Service Tables

**SP3xxx Process**

<b>3710</b>	Sensor Settings		<b>Super User Only</b>
<b>User SP</b>			
001	ID Sensor 1	ID sensor reading: Bare drum (Vsg)	
	Displays the present value of the ID sensor output (Vsg) after the ID sensor reads the bare surface of the drum in the ID sensor pattern.		
002	ID Sensor 2	ID sensor reading: Vsg when Vsp adjustment was done	
	Displays the value of ID sensor reading of the bard drum surface (Vsg) when the Vsp reading was done.		
003	Process Control On/Off		
	Displays "On" or "Off" to indicate the present status of the auto process control operation. <ul style="list-style-type: none"> <li>• "ON" is displayed when auto process control is on and the drum potential sensor has been calibrated correctly.</li> <li>• "OFF" is displayed when auto process control has been switched off with SP3901 001.</li> </ul>		
004	TD Sensor Reference		
	Use this SP to adjust the TD sensor reference voltage (Vref) manually. After you replace the development unit, set the reference voltage to 2.5. [0~5.0 / <b>2.5</b> / 0.01 V]		
005	TD Sensor Output		
	Use this SP to display the present output of the TD sensor (Vt). Do this SP after you replace the development unit and execute SP3710 004 to confirm that the TD sensor is set for 2.5V (the correct reference voltage). [0~5.0 / <b>2.5</b> / 0.01 V]		

<b>3720</b>	PM Counts		<b>Super User Only</b>
<b>User SP</b>			
	Use these SP codes to display the PM counts for the TCRU units. The PM count gradually increases as the unit reaches the end of its service life. These counts are for the TCRU units only. The TCRU units are the units designated for removal and replacement at the work site by trained users.		
001	Development	Development unit	
002	PCU	PCU unit	
003	Cleaning	Drum cleaning unit on the left side of the drum	
004	Charge	Main charge unit above the drum and to the right of the pre-charge unit. The charge unit is larger than the pre-charge unit.	
005	Pre-Charge	Pre-charge unit above the drum and to the left of the charge unit. The pre-charge unit is smaller than the charge unit.	
006	Fusing Unit	Fusing unit. This is the entire fusing unit, including the fusing cleaning unit (web roll).	
007	Fusing Cleaning	The web roller and web take-up roller comprise the fusing cleaning unit.	

<b>3730</b>	Clear PM Counts	<b>Super User Only</b>
<b>User SP</b>	Use these SP codes to clear the PM count of each TCRU unit after it is replaced. These SP codes clear the PM counts for the TCRU units only. The PM count must be set to "0" for each replacement unit so the machine can maintain an accurate record for its service lift. The TCRU units are the units designated for removal and replacement at the work site by trained users.	
001	Development Unit	Clears PM count for a new development unit
002	PCU	Clears PM count for a new PCU unit
003	Drum Cleaning Unit	Clears PM count for a new drum cleaning unit on the left side of the drum
004	Charge Corona Unit	Clears PM count for a new charge unit. The charge unit is above the drum and to the right of the pre-charge unit. The charge unit is larger than the pre-charge unit.
005	Pre-Charge Unit	Clears PM count for a new pre-transfer unit. The Pre-charge unit is above the drum and to the left of the charge unit. The pre-charge unit is smaller than the charge unit.
006	Fusing Unit	Clears PM count for a new fusing unit only. The fusing unit includes the fusing cleaning unit so you must also reset the PM count for the fusing cleaning unit with SP3730 007.
007	Fusing Cleaning Web Unit	The web roller and web take-up roller comprise the fusing cleaning unit. You must do this SP 1) after replacing only the fusing cleaning unit and 2) after replacing the fusing unit.

<b>3740</b>	Select Test Pattern	<b>Super User Only</b>
<b>User SP</b>	In the image adjustment mode, the machine prints the Trim Pattern when the [Start] key is pressed. The trim pattern prints a very large rectangle with a narrow margin between each side of the rectangle and each edge of the paper. The trim pattern is used to measure the margins and determine whether the side-to-side registration and other adjustments are set correctly. [0 to 1 / 0 / 1 step] 0: Copy Image (normal operation) 1: Trim Pattern (prints trim pattern)	
001	Trim Pattern	To do a trim pattern: 1. Do this SP and select "1". 2. Press [Copy Screen] on the display to open the normal copier screen. 3. Select the paper size and color then press the [Start] key to print the trim pattern. 4. After the trim pattern prints, touch [SP Screen]. 5. Check the margins of the trim pattern and do the required adjustments. 6. Repeat Steps 2 to 3 to print more patterns to check the effect of the adjustments. 7. After completing all adjustments, do <b>SP3740</b> again and select "0" to reset the machine for normal operation.

Service Tables

<b>3750</b>	Reset to Defaults	<b>Super User Only</b>
<b>User SP</b>	Do this SP and press [Execute] to reset all the settings for the TCRU units and their components. <ul style="list-style-type: none"> <li>• The TCRU units are the units designated for removal and replacement at the work site by trained users.</li> <li>• The reset done with this SP does not affect the PM counters. The PM counters must be reset with SP3730</li> </ul>	
001	Reset to Defaults	Resets all the settings for the TCRU units to their factory defaults.

**SP6xxx Peripherals**

<b>6700</b>	Staple Position Adjustment	
<b>User SP</b>	Use this SP to shift the position of the stapling done by the corner stapler of the 3000-Sheet finisher (B830). This SP shifts the staple position forward and back across the direction of paper feed. <ul style="list-style-type: none"> <li>• Use the “•” key to toggle between + and –.</li> <li>• A larger value shifts the stapling position to shift forward.</li> <li>• A smaller value shifts the stapling position backward.</li> </ul>	
001	A3 SEF	The settings are done for each paper size. SEF denotes "Short Edge Feed". LEF denotes "Long Edge Feed". [-2 to +2 / 0 / 0.5 mm]
002	B4 SEF	
003	A4 SEF	
004	A4 LEF	
005	B5 SEF	
006	B5 LEF	
007	DLT SEF	
008	LG SEF	
009	LT SEF	
010	LT LEF	
011	Custom Size	

<b>6705</b>	Adj Punch Hole: With Feed	
<b>User SP</b>	Use this SP to shift the position of the punching done by the Punch Unit B831 installed in the 3K finisher. This SP shifts the punching position left and right in the direction of paper feed. There are three versions of the Punch Unit B831 1) NA 2/3 (2 or 3 hole punching selectable for the job), 2) NA 4 (4 hole punching only), and 3) EU 2/4 (2 or 4 hole punching selectable for the job) [-7.5~+7.5 / 0 / 0.5 mm] <ul style="list-style-type: none"> <li>• Use the “•/*” key to toggle between + and –.</li> <li>• A larger value shifts the punch holes away from the edge of the paper.</li> <li>• A smaller value shifts the punch holes toward the edge of the paper.</li> </ul>	
001	2-Hole: JPN	<b>Japan Only</b>
002	3-Hole: NA	North America, 3-hole punching
003	4-Hole: Europe	Europe, 4-hole punching
004	4-Hole: NA	North America, 4-hole punch
005	2-Hole: NA	North America, 2-hole punching
006	1-Hole: JPN	<b>Japan Only</b>

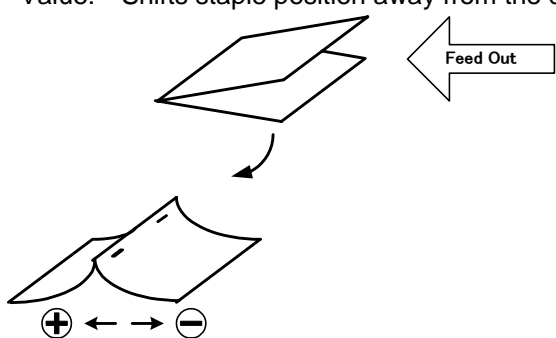
<b>6710</b>		<b>Staple Jog Adjust Across Feed</b>		<b>Super User Only</b>	
<b>User SP</b>		Use this SP code to adjust the positions of the jogger fences when the pages are aligned (jogged) horizontally in the stapling tray for corner stapling in the Finisher B830. These jogger fences close in on the sides of the stack on the paper tray. These side fences move in and out perpendicular to the direction of paper feed. <ul style="list-style-type: none"> <li>• The higher the setting, the narrower the jogger span and the smaller the gaps between the fences and the edges of the paper. Stacking is tighter.</li> <li>• The lower the setting, the wider the jogger span and the wider the gaps between the fences and the edges of the paper. Stacking is not as precise.</li> </ul>			
001	A3 SEF	The settings are done for each paper size. SEF denotes "Short Edge Feed". LEF denotes "Long Edge Feed". [-2 to +1.5 / 0 / 0.5 mm]			
002	B4 SEF				
003	A4 SEF				
004	A4 LEF				
005	B5 SEF				
006	B5 LEF				
007	DLT SEF				
008	LG SEF				
009	LT SEF				
010	LT LEF				
011	Custom Size				

<b>6715</b>		<b>Jogger Adjustment Across Feed</b>		<b>Super User Only</b>	
<b>User SP</b>		Use this SP code to adjust the positions of the jogger fences when the pages are aligned (jogged) horizontally in the stapling tray for stapling in the 3K Finisher B830. The jogger fences close in on the sides of the stack on the paper tray. These side fences move in and out perpendicular to the direction of paper feed. <p>[-3 to +3 / 0 / 0.1 mm]</p> <ul style="list-style-type: none"> <li>• The higher the setting, the narrower the jogger span and the smaller the gaps between the fences and the edges of the paper. Stacking is tighter.</li> <li>• The lower the setting, the wider the jogger span and the wider the gaps between the fences and the edges of the paper. Stacking is not as tight.</li> </ul>			
001	A3 SEF	The settings are done for each paper size. SEF denotes "Short Edge Feed". LEF denotes "Long Edge Feed".			
002	B4 SEF				
003	A4 SEF				
004	A4 LEF				
005	A5 SEF				
006	A5 LEF				
007	B5 SEF				
008	B5 LEF				
009	DLT				
010	LG				
011	LT SEF				
012	LT LEF				
013	HLT SEF				
014	HLT LEF				
015	Custom Size				

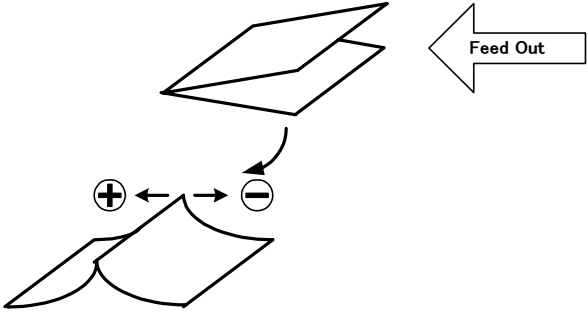
Service Tables

6720		Staple Jog Adjust With Feed		Super User Only	
<b>User SP</b>		Use this SP code to adjust the position of the jogger fence when the pages are aligned (jogged) vertically in the stapling tray for corner stapling in the Finisher B830. The jogger fences close in on the sides of the stack on the paper tray. These side fences move in and out perpendicular to the direction of paper feed. [-5 to +10 / 0 / 0.1 mm]			
		<ul style="list-style-type: none"> <li>• The higher the setting, the narrower the jogger span and the smaller the gaps between the fences and the edges of the paper. Stacking is tighter.</li> <li>• The lower the setting, the wider the jogger span and the wider the gaps between the fences and the edges of the paper. Stacking is not as precise.</li> </ul>			
001	A4 LEF	The settings are done for each paper size. SEF denotes "Short Edge Feed". LEF denotes "Long Edge Feed".			
002	B5 LEF				
003	LT LEF				
004	Custom Size				

6730		Adjust Booklet Stapling Position	
<b>User SP</b>		Use this SP to adjust the stapling position of the booklet stapler when paper is stapled and folded in the Booklet Finisher B836.	
001	A3 SEF	[-3.0 to +3.0 / 0 / 0.2 mm] + Value: Shifts staple position toward the crease. - Value: Shifts staple position away from the crease.	
002	B4 SEF		
003	A4 SEF		
004	B5 SEF		
005	12" x 18" SEF		
006	DLT SEF		
007	LG SEF		
008	LT SEF		
009	Custom Size		



6735		Adjust Booklet Fold Position	
<b>User SP</b>		This SP corrects the folding position when paper is stapled and folded in the Booklet Finisher B836.	
001	A3 SEF	[-3~+3 / 0 / 0.2 mm] + Value: Shifts staple position toward the crease. - Value: Shifts staple position away from the crease.	
002	B4 SEF		
003	A4 SEF		
004	B5 SEF		
005	DLT SEF		
006	LG SEF		
007	LT SEF		
008	12"x18"		
009	Custom Size		



<b>6740</b>	Fine Adjust Booklet: Adjust Across Feed		<b>Super User Only</b>
<b>User SP</b>	This SP adjusts the distance between the jogger fences and the sides of the stack on the finisher stapling tray in the Booklet Finisher B836. The adjustment is done perpendicular to the direction of paper feed.		
001	A3 SEF	[-1.5 to +1.5 / 0 / 0.5 mm] + Value: Increases distance between jogger fences and the sides of the stack. - Value: Decreases the distance between the jogger fences and the sides of the stack.	
002	B4 SEF		
003	A4 SEF		
004	A4 LEF		
005	12"x18" SEF		
006	DLT SEF		
007	LG SEF		
008	LT SEF		
009	Custom Size		

<b>6745</b>	Book Fold Repetitions	
<b>User SP</b>	This SP sets the number of times the folding rollers are driven forward and reverse to sharpen the crease of a folded booklet before it exits the folding unit of the Booklet Finisher B836. When set at the default (0): <ul style="list-style-type: none"> <li>• The folding blade pushes the center of the stack into the nip of the folding roller.</li> <li>• The folding rollers rotated counter-clockwise to create the booklet, reverse clockwise, then rotate counter-clockwise again create the booklet fold twice before feeding to the folding unit exit rollers.</li> </ul> [0~6 / 0 / 1 Step] Each number represents the number 1 cycle of forward/reverse feed between the rollers.	
	0: 2	4: 20
	1: 5	5: 25
	2: 10	6: 30
	3: 15	

Service Tables



6755		Fine Adjust Z-Fold 1		Super User Only	
User SP		Use this SP code to adjust the position of the first fold [A]. This adjustment decreases or increases the distance (A) between the leading edge [B] and the crease of the 2nd fold [C]. [-2 to +4 / 0 / 0.2 mm]			
001	1st Fold: A3 SEF				
002	1st Fold: B4 SEF				
003	1st Fold: A4 SEF				
004	1st Fold: DLT SEF				
005	1st Fold: LG SEF				
006	1st Fold: LT SEF				
007	1st Fold: 12" x 18"				
008	1st Fold: Custom Size				

6760		Fine Adjust Z-Fold 2		Super User Only	
User SP		Use this SP code to adjust the position of the 2nd fold [C] to decrease or increase the length (L1) of the sheet between the trailing edge [D] and the 2nd fold. [-2 to +2 / 0 / 0.2 mm]			
001	2nd Fold: A3 SEF				
002	2nd Fold: B4 SEF				
003	2nd Fold: A4 SEF				
004	2nd Fold: DLT SEF				
005	2nd Fold: LG SEF				
006	2nd Fold: LT SEF				
007	2nd Fold: 12" x 18"				
008	2nd Fold: Custom Size				

**SP7xxx Data Log**

7620	PM Parts Clear	Super User Only
	Clears the PM count for the units listed below. <b>Note:</b> These are the units covered by the TCRU replacement procedures for replacement and adjustment.	
001	Development Unit	
003	Drum Unit	
005	Drum Cleaning Unit	
009	Charge Unit	
014	Pre-Charge Unit	
017	Fusing Cleaning Unit	

7621	Display PM Count	Super User Only
	Displays the PM count for the units listed below. <b>Note:</b> These are the units covered by the TCRU replacement procedures for replacement and adjustment.	
001	Development Unit	
003	Drum Unit	
005	Drum Cleaning Unit	
009	Charge Unit	
014	Pre-Charge Unit	
017	Fusing Cleaning Unit	

Service  
Tables

### 5.3 PRINTING TEST PATTERNS

**NOTE:** Do not operate the machine until the test pattern is printed out completely. Otherwise, an SC may occur.

1. Access the SP mode which contains the test pattern you need.
2. Press the “Copy Window” key on the operation panel to access the copy mode display.
3. Select the paper size.
4. Press the “Start” key to print the test pattern.
5. After checking the test pattern, exit copy mode by pressing the “SP Mode” key.
6. Exit the SP mode.

#### 5.3.1 IPU SCANNING TEST PATTERN (SP2-902-001)

No.	Test Pattern
0	OFF
1	Vertical 1-dot Line
2	Vertical 2-dot Line
3	Horizontal 1-dot Line
4	Horizontal 2-dot Line
5	Independent 1-dot
6	Cross Stripes 1-dot Lines
7	Vertical Stripes
8	Horizontal Grayscale
9	Vertical Grayscale
10	16-step Grayscale
11	Cross
12	Slant Cross Stripes
13	256-Color Density Pattern
14	64-Color Density Pattern
15	Trimming Region
16	Vertical Frequency Spec.
17	Horizontal Frequency Spec.

#### 5.3.2 IPU PRINTING TEST PATTERN (SP2-902-002)

No.	Test Pattern
0	OFF
1	1200 Date Image 1
2	1200 Date Image 2
3	Vertical Grayscale
4	Caterpillar

**5.3.3 PRINTING TEST PATTERN (SP2-902-003)**

No.	Test Pattern
0	None
1	1-dot Independent Pattern
2	2-dot Independent Pattern
3	4-dot Independent Pattern
4	2048-dot Independent Pattern
5	Grid 1-dot Line (0ch)
6	Grid 1-dot Line (1ch)
7	Grid 1-dot Line (2ch)
8	Grid 1-dot Line (3ch)
9	Grid 1-dot Line (4ch)
10	Grid 1-dot Line (5ch)
11	Grid 1-dot Line (6ch)
12	Grid 1-dot Line (7ch)
13	Vertical 1-dot Line
14	Vertical 2-dot Line
15	Horizontal 1-dot Line
16	Horizontal 2-dot Line
17	Grid 1-dot Parallel Lines
18	Checker Flag
19	Slanted Grid 1-dot Line
20	Slanted Grid 2-dot Line
21	Argyle 670
22	Argyle 012
23	All Black
24	Grid 2-dot Line
25	Vertical Belt Pattern
26	Horizontal Belt Pattern
27	Trim 1-dot Line
28	Trim 2-dot Line
29	Stair Pattern
30	Grayscale Horizontal (20 mm Wide)
31	Grayscale Horizontal (40 mm Wide)
32	Grayscale Vertical (20 mm Wide)
33	Grayscale Vertical (40 mm Wide)
34	Grayscale Horizontal (20 mm Wide Without Loop)
35	White Paper (Test: No Output)
36	Grid 1-dot Line (0ch) OR External
37	Trim 1-dot Line OR External
38	Slanted Grid Pattern OR External



## 5.4 INPUT CHECK

### 5.4.1 COPIER INPUT CHECK: SP5803

This procedure allows you to test sensors and other components of the machine (copier). After you select one of the categories below by number, you will see a small 8-bit table with the number of the bit and its current setting (0 or 1). The bits are numbered 0 to 7, reading right to left.

1. Enter the SP mode and select **SP5803**.
2. Enter the class 3 number 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 where "0" means "Off" and "1" means "On". The bits are arrayed as shown below.

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

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

[1]	[2]	[3]
bit-7 Exit Unit Set Sensor	bit-7 Cleaning Unit Set	bit-7 -
bit-6 Exit Sensor	bit-6 Pre-Charge Grid	bit-6 -
bit-5 Job Time Sensor	bit-5 Pre-Charge Corona	bit-5 -
bit-4 Exit Junction Gate HP Sensor	bit-4 Total Counter Set	bit-4 -
bit-3 Abnormal Development Bias	bit-3 Polygon Mirror Motor Cooling Fan	bit-3 -
bit-2 Abnormal Charge Grid	bit-2 -	bit-2 -
bit-1 Abnormal Charge Corona	bit-1 -	bit-1 -
bit-0 Drum Motor Overload	bit-0 -	bit-0 Front Door Safety Switch
[4]	[5]	[6]
bit-7 -	bit-7 Fusing Exit Sensor	bit-7 -
bit-6 -	bit-6 Fusing Unit Set (Lower Drawer)	bit-6 Paper Remains: 2nd Tray 2
bit-5 -	bit-5 ADF Open/Close	bit-5 Paper Remains: 2nd Tray 1
bit-4 Fusing Unit Set: e-STUDIO1351	bit-4 Original Set	bit-4 Development Toner Bottle Set Sensor
bit-3 Fusing Unit Set: e-STUDIO901/1101	bit-3 Key Counter Set	bit-3 Paper Remains: 3rd Tray 2
bit-2 Toner Collection Coils Sensor	bit-2 -	bit-2 Paper Remains: 3rd Tray 1
bit-1 Cleaning Web End Sensor	bit-1 -	bit-1 Lower Limit Sensor
bit-0 Fusing Motor Overload	bit-0 -	bit-0 -

<b>[7]</b>		<b>[8]</b>		<b>[9]</b>	
bit-7	Tray 3 Paper Size Detection 1	bit-7	Paper Remains: 1st Tray 4	bit-7	Rear Fence Return Sensor
bit-6	Tray 3 Paper Size Detection 2	bit-6	Paper Remains: 1st Tray 2	bit-6	Left Tandem Tray Paper Sensor
bit-5	Tray 3 Paper Size Detection 3	bit-5	Paper Remains: 1st Tray 3	bit-5	Upper Toner Bottle Sensor
bit-4	Tray 3 Paper Size Detection 4	bit-4	Paper Remains: 1st Tray 4	bit-4	Toner Collection Bottle Agitator Sensor
bit-3	Tray 3 Paper Size Detection 5	bit-3	Rear Side Fence Closed Sensor	bit-3	Upper Toner Bottle Inner Cap Sensor
bit-2	Front Side Fence Open Sensor	bit-2	Right Tandem Tray Paper Sensor	bit-2	Toner Bank TE Sensor
bit-1	Front Side Fence Closed Sensor	bit-1	Tandem Left Tray Set Sensor	bit-1	Toner Collection Bottle Set Sensor
bit-0	Rear Side Fence Open Sensor	bit-0	Rear Fence HP Sensor	bit-0	Toner Collection Bottle Overflow Sensor
<b>[10]</b>		<b>[11]</b>		<b>[12]</b>	
bit-7	Lower Toner Bottle Sensor	bit-7	-	bit-7	Right Tandem Tray Set Sensor
bit-6	Toner Bank Motor Solenoid Overload	bit-6	-	bit-6	-
bit-5	Lower Toner Bottle Inner Cap Sensor	bit-5	-	bit-5	-
bit-4	-	bit-4	-	bit-4	-
bit-3	-	bit-3	Toner Collection Bottle Near Full Sensor	bit-3	-
bit-2	-	bit-2	-	bit-2	-
bit-1	-	bit-1	-	bit-1	Key Card Set
bit-0	-	bit-0	-	bit-0	-
<b>[13]</b>		<b>[14]</b>		<b>[15]</b>	
bit-7	-	bit-7	Duplex Transport Sensor 3	bit-7	-
bit-6	-	bit-6	Duplex Inverter Relay Sensor 2	bit-6	-
bit-5	-	bit-5	Duplex Entrance Sensor	bit-5	Guide Plate Open Sensor
bit-4	-	bit-4	Duplex Transport Sensor 1	bit-4	IOB Board Type 1
bit-3	-	bit-3	Duplex Inverter Relay Sensor 1	bit-3	IOB Board Type 2
bit-2	-	bit-2	Model Detect 2	bit-2	IOB Board Type 3
bit-1	-	bit-1	Model Detect 1	bit-1	Drum Unit Set
bit-0	Duplex Transport Sensor 2	bit-0	Duplex Unit Set	bit-0	-

Service Tables

<b>[16]</b>		<b>[17]</b>		<b>[18]</b>	
bit-7	DIP SW1	bit-7	Exit Motor OL	bit-7	-
bit-6	DIP SW2	bit-6	-	bit-6	-
bit-5	DIP SW3	bit-5	-	bit-5	-
bit-4	DIP SW4	bit-4	-	bit-4	-
bit-3	DIP SW5	bit-3	-	bit-3	-
bit-2	DIP SW6	bit-2	-	bit-2	Toner End Sensor
bit-1	DIP SW7	bit-1	-	bit-1	Development Unit Set
bit-0	DIP SW8	bit-0	-	bit-0	Toner Suction Motor Sensor
<b>[19]</b>		<b>[20]</b>		<b>[21]</b>	
bit-7	Toner Pump Motor Sensor	bit-7	-	bit-7	3rd Tray Lift Sensor
bit-6	Toner Cylinder TE Sensor	bit-6	-	bit-6	2nd Tray Lift Sensor
bit-5	Development Motor Overload	bit-5	-	bit-5	Vertical Transport Sensor 2
bit-4	1st Paper Feed Sensor	bit-4	-	bit-4	3rd Paper End Sensor
bit-3	1st Paper End Sensor	bit-3	-	bit-3	3rd Paper Feed Sensor
bit-2	1st Tray Lift Sensor	bit-2	-	bit-2	-
bit-1	Vertical Transport Sensor 1	bit-1	-	bit-1	-
bit-0	-	bit-0	-	bit-0	-
<b>[22]</b>		<b>[23]</b>	-	<b>[24]</b>	-
bit-7	-	bit-7	-	bit-7	-
bit-6	Tray 2 Paper Size Detection 5	bit-6	-	bit-6	-
bit-5	Tray 2 Paper Size Detection 4	bit-5	-	bit-5	-
bit-4	Tray 2 Paper Size Detection 3	bit-4	-	bit-4	-
bit-3	Tray 2 Paper Size Detection 2	bit-3	-	bit-3	-
bit-2	Tray 2 Paper Size Detection 1	bit-2	-	bit-2	-
bit-1	-	bit-1	-	bit-1	-
bit-0	-	bit-0	-	bit-0	-

<b>[35]</b>		<b>[36]</b>		<b>[37]</b>	
bit-7	-	bit-7	3rd Vertical Transport Sensor 1 (LCT)	bit-7	1st Paper Width Sensor 1 (LCT)
bit-6	-	bit-6	1st Vertical Transport Sensor 2 (LCT)	bit-6	1st Paper Width Sensor 2 (LCT)
bit-5	-	bit-5	1st Vertical Transport Sensor 1 (LCT)	bit-5	1st Paper Width Sensor 3 (LCT)
bit-4	LCT Front Door Safety Switch	bit-4	-	bit-4	1st Paper Length Sensor (LCT)
bit-3	-	bit-3	-	bit-3	1st Paper Feed Sensor (LCT)
bit-2	-	bit-2	-	bit-2	1s Paper End Sensor (LCT)
bit-1	2nd Vertical Transport Sensor 1 (LCT)	bit-1	-	bit-1	1st Tray Lift Sensor (LCT)
bit-0	LCT Exit Sensor	bit-0	-	bit-0	1st Transport Sensor (LCT)
<b>[38]</b>		<b>[39]</b>		<b>[40]</b>	
bit-7	1st Paper Height Sensor 1 (LCT)	bit-7	2nd Paper Width Sensor 1 (LCT)	bit-7	2nd Paper Height Sensor 1 (LCT)
bit-6	1st Paper Height Sensor 2 (LCT)	bit-6	2nd Paper Width Sensor 2 (LCT)	bit-6	2nd Paper Height Sensor 2 (LCT)
bit-5	1st Paper Height Sensor 3 (LCT)	bit-5	2nd Paper Width Sensor 3 (LCT)	bit-5	2nd Paper Height Sensor 3 (LCT)
bit-4	1st Paper Height Sensor 4 (LCT)	bit-4	2nd Paper Length Sensor (LCT)	bit-4	2nd Paper Height Sensor 4 (LCT)
bit-3	-	bit-3	2nd Paper Feed Sensor (LCT)	bit-3	-
bit-2	-	bit-2	2nd Paper End Sensor (LCT)	bit-2	-
bit-1	-	bit-1	2nd Tray Lift Sensor (LCT)	bit-1	-
bit-0	-	bit-0	2nd Transport Sensor (LCT)	bit-0	-
<b>[41]</b>		<b>[42]</b>		<b>[43]</b>	
bit-7	3rd Paper Width Sensor 1 (LCT)	bit-7	3rd Paper Height Sensor 1 (LCT)	bit-7	Bypass Paper Width Sensor 1
bit-6	3rd Paper Width Sensor 2 (LCT)	bit-6	3rd Paper Height Sensor 2 (LCT)	bit-6	Bypass Paper Width Sensor 2
bit-5	3rd Paper Width Sensor 3 (LCT)	bit-5	3rd Paper Height Sensor 3 (LCT)	bit-5	Bypass Paper Width Sensor 3
bit-4	3rd Paper Length Sensor (LCT)	bit-4	3rd Paper Height Sensor 4 (LCT)	bit-4	Bypass Paper Width Sensor 4
bit-3	3rd Paper Feed Sensor (LCT)	bit-3	-	bit-3	Bypass Paper Width Sensor 5
bit-2	3rd Paper End Sensor (LCT)	bit-2	-	bit-2	Bypass Paper Length Sensor
bit-1	3rd Tray Lift Sensor (LCT)	bit-1	-	bit-1	-
bit-0	3rd Transport Sensor (LCT)	bit-0	-	bit-0	-

Service Tables



<b>[44]</b>		<b>[45]</b>		<b>[46]</b>	-
bit-7	-	bit-7	Bypass Paper Height Sensor 1	bit-7	-
bit-6	-	bit-6	Bypass Height Sensor 2	bit-6	-
bit-5	-	bit-5	-	bit-5	-
bit-4	-	bit-4	Bypass Lower Limit Sensor	bit-4	-
bit-3	Bypass Paper Feed Sensor	bit-3	Bypass Tray Lift	bit-3	-
bit-2	Bypass Paper End Sensor	bit-2	-	bit-2	-
bit-1	Bypass Tray Lift Sensor	bit-1	Bypass Connection Detection	bit-1	-
bit-0	Bypass Transport Sensor	bit-0	Bypass Slide Open	bit-0	-

**5.4.2 ADF INPUT CHECK: SP6007**

Class No.	Bit No.	Description	Reading	
			0	1
1	7	Inverter Sensor	No original	Original detected
	6	Exit Sensor	No original	Original detected
	5	Registration Sensor	No original	Original detected
	4	Entrance Sensor	No original	Original detected
	3	Original Width Sensor 3	No original	Original detected
	2	Original Width Sensor 2	No original	Original detected
	1	Original Width Sensor 1	No original	Original detected
	0	Original Set Sensor	No original	Original detected
2	7	ADF Feed-in Motor Encoder Pulse	Change the "0" and "1" during rotation	
	6	Pick-up Roller HP Sensor	At home position	Not home position
	5	Bottom Plate Position Sensor	Detected	Not detected
	4	Bottom Plate HP Sensor	At home position	Not home position
	3	Exit Cover Sensor	Close	Open
	2	Feed Cover Sensor	Close	Open
	1	APS Start Sensor	Start	Off
	0	DF Position Sensor	Down	Up
3	7	Not Used		
	6	Not Used		
	5	Not Used		
	4	Not Used		
	3	Not Used		
	2	Original Length Sensor	No original	Original detected
	1	ADF Feed-out Motor Encoder Pulse	Change the "0" and "1" during rotation	
	0	ADF Transport Motor Encoder Pulse	Change the "0" and "1" during rotation	

Service Tables

**5.4.3 FINISHER INPUT CHECK (B830): SP6112**

001	Entrance Sensor	026	Exit Guide Open Sensor
002	Upper Exit Tray Sensor	027	Stapler Rotation Sensor 2
003	Shift Tray Exit Sensor 1	028	Staple Ready Sensor
004	Stapler Tray Exit Sensor	029	Stack Plate HP Sensor (Front)
005	Shift Tray Lower Limit Sensor	030	Stack Plate HP Sensor (Back)
006	Shift Tray Near Full Sensor	031	Positioning Roller HP Sensor
007	Feed-Out Belt HP Sensor	032	Return Drive HP Sensor
008	Jogger HP Sensor	033	Stapling Paper Height Sensor
009	Shift Tray Half-Turn Sensor 1	034	Shift Lower Limit Sensor (Large Paper)
010	Stapler HP Sensor (Front/Rear)	035	Punch HP Sensor 2
011	Stapler HP Sensor	036	Shift Jogger Sensor
012	Staple Out Sensor	037	Shift Jogger HP Sensor
013	Staple Tray Paper Sensor	038	Shift Jogger Retraction HP Sensor
014	Front Door Open Switch]	039	Emergency Stop Switch
015	Punch Detection Sensor	040	Top Fence HP Sensor
016	Punch HP Sensor 1	041	Bottom Fence HP Sensor
017	Punch-out Hopper Full Sensor	042	Lower Tray Full Sensor (Z-Folded Paper)
018	Stapling Paper Height Sensor	043	Shift Tray Exit Sensor 2
019	Staple Mode HP Sensor	044	Upper Tray Junction Gate HP Sensor
020	Jam Detection Sensor	045	Staple Junction Gate HP Sensor
021	Upper Tray Full Sensor	046	Pre-Stack Junction Gate HP Sensor
022	Stapler Rotation Sensor 1	047	Pre-Stack Sensor (Right)
023	Stapler Trimmings Hopper Full Sensor	048	Pre-Stack Junction Gate Release HP Sensor
024	Pre-Stack Sensor	049	Shift Tray Half-Turn Sensor 2
025	Stack Plate HP Sensor (Center)	050	Staple Trimmings Hopper Set Sensor

**5.4.4 BOOKLET FINISHER INPUT CHECK (B836): SP6206**

<b>No.</b>	<b>Description</b>
001	Fold Unit Exit Sensor
002	Stack Present Sensor
003	Upper Tray Exit Sensor
004	Fold Unit Entrance Sensor
005	Jogger Fence HP Sensor
006	Clamp Roller HP Sensor
007	Stack Junction Gate HP Sensor
008	Fold Bottom Fence HP Sensor
009	Fold Plate HP Sensor
010	Fold Plate Cam HP Sensor
011	Stack Feed-Out Belt HP Sensor
012	Lower Tray Full Sensor - Front
013	Lower Tray Full Sensor - Rear
014	Front Door Safety Switch
015	Stapling Tray Paper Sensor
016	Finisher Entrance Sensor
017	Pre-Stack Tray Exit Sensor
018	Left Front Door Sensor
019	Booklet Stapler Motor: Front
020	Booklet Stapler Staples: Front
021	Booklet Stapler Leading Edge: Front
022	Booklet Stapler Motor: Rear
023	Booklet Stapler Staples: Rear
024	Booklet Stapler Leading Edge: Rear

**5.4.5 COVER INTERPOSER TRAY INPUT CHECK (B835): SP6400**

<b>No.</b>	<b>Description</b>
001	1st Paper Feed Sensor
002	2nd Paper Feed Sensor
003	1st Transport Roller
004	2nd Transport Roller
005	1st Vertical Transport Sensor
006	2nd Vertical Transport Sensor
007	Output Sensor
008	Entrance Sensor
009	Exit Sensor
010	1st Pick-up Roller HP Sensor
011	2nd Pick-up Roller HP Sensor
012	1st Upper Limit Sensor
013	2nd Upper Limit Sensor
014	1st Lower Limit Sensor
015	2nd Lower Limit Sensor
016	1st Paper Near End Sensor
017	2nd Paper Near End Sensor
018	1st Paper End Sensor
019	2nd Paper End Sensor
020	1st Paper Length Sensor
021	2nd Paper Length Sensor
022	1st Paper Width Sensor 1
023	1st Paper Width Sensor 2
024	1st Paper Width Sensor 3
025	1st Paper Width Sensor 4
026	1st Paper Width Sensor 5
027	2nd Paper Width Sensor 1
028	2nd Paper Width Sensor 2
029	2nd Paper Width Sensor 3
030	2nd Paper Width Sensor 4
031	2nd Paper Width Sensor 5
032	1st Feed Cover Sensor
033	2nd Feed Cover Sensor
034	Cover Vertical Transport Switch
035	Front Door Open Switch

## 5.5 OUTPUT CHECK

### 5.5.1 COPIER OUTPUT CHECK: SP5804

**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.

#### ***Copier Output Check (SP5-804)***

1. Open SP mode 5-804.
2. Select the SP number that corresponds to the component you wish to check. (Refer to the table on the next page.)
3. Press On then press Off to test the selected item.

No.	Description	No.	Description
001	1st Pick-up SOL	043	Toner Collection Bottle Agitator Motor
002	2nd Pick-up SOL	044	Hopper Agitator Motor
003	3rd Pick-up SOL	045	Toner Cylinder Agitator Motor
004	LCT 1st Pick-up SOL	051	Guide Plate Solenoid
005	LCT 2nd Pick-up SOL	052	LCT Guide Plate Solenoid
006	LCT 3rd Pick-up SOL	053	Duplex Inverter Gate Solenoid
007	Bypass Pick-up SOL	054	Reverse Roller Solenoid
008	1st Separation Roller SOL	055	Inverter Guide Plate Solenoid
009	2nd Separation Roller SOL	056	Toner Recycling Shutter Solenoid
010	3rd Separation Roller SOL	057	2nd Cleaning Blade Solenoid
011	LCT 1st Separation Roller SOL	058	Transfer Belt Lift Solenoid]
012	LCT 2nd Separation Roller SOL	061	ID Sensor LED
013	LCT 3rd Separation Roller SOL	062	Quenching Lamp
014	Bypass Separation Roller SOL	063	Charge Corona
015	1st Tray Lift Motor	064	Grid Plate
016	2nd Tray Lift Motor	065	Development Bias
017	3rd Tray Lift Motor	066	Transfer Belt Bias
018	Rear Fence Drive Motor	067	Pre-Charge Grid
019	Tandem Tray Connect Solenoid	068	Charge Corona Grid
020	Front Side Fence Solenoid	069	ID Sensor
021	Rear Side Fence Solenoid	070	PTL
022	Left 1st Tray Lock Solenoid	081	Polygonal Motor Mirror Cooling Fan
031	Drum Motor	082	Exhaust Fan (Low)
032	Fusing/Exit Motor	083	Exhaust Fan (High)
033	Fusing Motor	084	Drum Cooling Fan (Low)
034	Web Motor	085	Drum Cooling Fan (High)
035	Development Motor	086	Paper Cooling Pipe Fan1
036	Upper Toner Bottle Motor	087	Paper Cooling Pipe Fan2
037	Lower Toner Bottle Motor	088	Steam Removal Fan (Low)
038	Toner Bank Motor	089	Steam Removal Fan (High)
039	Toner Supply Coil Clutch	090	Development Unit Cooling Fan1

Service Tables

No.	Description	No.	Description
040	Toner Suction Motor	091	Development Unit Cooling Fan2
041	Upper Bottle Cap Motor	092	Duplex Entrance Cooling Fan
042	Lower Bottle Cap Motor	093	Duplex Cooling Fan
094	Cleaning Unit Cooling Fan	132	5th Grip Motor (High Speed)
095	Toner Collection Cooling Fan	133	6th Grip Motor (Low Speed)
098	Laser Diode	134	6th Grip Motor (High Speed)
099	Total Counter	135	7th Grip Motor (Low Speed)
101	1st Paper Feed Motor (Low Speed)	136	7th Grip Motor High Speed)
102	1st Paper Feed Motor (High Speed)	137	4th Transport Motor (Low Speed)
103	2nd Paper Feed Motor (Low Speed)	138	4th Transport Motor (High Speed)
104	2nd Paper Feed Motor (High Speed)	139	5th Transport Motor (Low Speed)
105	3rd Paper Feed Motor (Low Speed)	140	5th Transport Motor (High Speed)
106	3rd Paper Feed Motor (High Speed)	141	6th Transport Motor (Low Speed)
107	1st Transport Motor (Low Speed)	142	6th Transport Motor (High Speed)
108	1st Transport Motor (High Speed)	143	7th Transport Motor (Low Speed)
109	2nd Transport Motor (Low Speed)	144	7th Transport Motor High Speed)
110	2nd Transport Motor (High Speed)	145	LCT Exit Motor (Low)
111	3rd Transport Motor (Low Speed)	146	LCT Exit Motor (High)
112	3rd Transport Motor (High Speed)	151	1st Vertical Transport Clutch
113	Upper Relay Motor (Low Speed)	152	2nd Vertical Transport Clutch
114	Upper Relay Motor (High Speed)	153	3rd Vertical Transport Clutch
115	Vertical Relay Roller (Low Speed)	154	LCT 1st Grip Clutch
116	Vertical Relay Roller (High Speed)	155	LCT 2nd Grip Clutch
117	Registration Motor	156	LCT 3rd Grip Clutch
118	Registration Motor	157	Bypass Grip Clutch
121	4th Paper Feed Motor (Low Speed)	158	Relay Clutch
122	4th Paper Feed Motor (High Speed)	159	LCT Relay Clutch
123	5th Paper Feed Motor (Low Speed)	161	Inverter Gate Solenoid
124	5th Paper Feed Motor (High Speed)	162	Duplex Transport Motor1
125	6th Paper Feed Motor (Low Speed)	163	Toner Supply Pump Motor
126	6th Paper Feed Motor (High Speed)	164	Toner Supply Roller Motor
127	7th Paper Feed Motor (Low Speed)	202	Fusing Lamp 1
128	7th Paper Feed Motor (High Speed)	203	Fusing Lamp 2
129	4th Grip Motor (Low Speed)	204	Lamp Regulator Far (Left)
130	4th Grip Motor (High Speed)	205	Scanner Motor Cooling Fan
131	5th Grip Motor (Low Speed)	206	Scanner Unit Intake Fan

**5.5.2 ADF OUTPUT CHECK: SP6008**

<b>No.</b>	<b>Description</b>	<b>0</b>	<b>1</b>
1	Feed-in Motor (High)	OFF	ON
2	Feed-in Motor (Low)	OFF	ON
3	Transport Motor (Forward)	OFF	ON
4	Transport Motor (Reverse)	OFF	ON
5	Feed-out Motor	OFF	ON
6	Exit Gate Solenoid	OFF	ON
7	Inverter Solenoid	OFF	ON
8	LEDs (Operation Panel)	OFF	ON
9	Pick-up Motor	OFF	ON
10	Bottom Plate Motor	OFF	ON
11	Feed-in Clutch	OFF	ON



**5.5.3 FINISHER OUTPUT CHECK (B830): SP6113**

No.	Description
001	OFF (Stop)
002	Upper Transport Motor
003	Shift Tray Exit Motor
004	Upper Tray Junction Gate Motor
005	Shift Tray Lift Motor
006	Jogger Motor
007	Shift Jogger Motor
008	Staple Hammer Motor
009	Punch Motor
010	Staple Junction Gate Motor
011	Positioning Roller Motor
012	Stack Feed-Out Belt Motor
013	Shift Motor
014	Stapler Rotation Motor
015	Lower Transport Motor
016	Exit Guide Motor
017	Stack Plate Motor (Center)
018	Pre-Stack Junction Gate Motor
019	Pre-Stack Junction Gate Release Motor
020	Stack Plate Motor (Front)
021	Stack Plate Motor (Rear)
022	Stacking Roller Motor
023	Stacking Roller Drag Motor
024	Shift Jogger Motor
025	Shift Jogger Lift Motor
026	Jogger Top Fence Motor
027	Jogger Bottom Fence Motor
028	Lower Transport Motor
029	Upper Tray Exit Motor
030	Positioning Transport Motor
031	Pre-Stack Transport Motor
032	Staple Trimming Shooter Solenoid

**5.5.4 BOOKLET FINISHER OUTPUT CHECK (B836): SP6207**

No.	Description
001	OFF (Stop)
002	Finisher Entrance Motor
003	Lower Transport Motor
004	Upper Tray Exit Motor
005	Positioning Roller Motor
006	Jogger Fence Motor
007	Feed-Out Belt Motor
008	Stack Junction Gate Motor
009	Fold Unit Bottom Fence Lift Motor
010	Clamp Roller Retraction Motor
011	Fold Plate Motor
012	Fold Roller Motor
013	Stapling Tray Junction Gate Solenoid 1
014	Stapling Edge Pressure Plate Solenoid
015	Positioning Roller Solenoid
016	Booklet Pressure Roller Solenoid
017	Booklet Stapler Motor - Front
018	Booklet Stapler Motor - Rear

**5.5.5 COVER INTERPOSER TRAY OUTPUT CHECK (B835): SP6401**

No.	Description
001	OFF (Stop)
002	1st Pick-up Motor
003	2nd Pick-up Motor
004	1st Paper Feed Motor
005	2nd Paper Feed Motor
006	1st Transport Motor
007	2nd Transport Motor
008	Vertical Transport Motor
009	Horizontal Transport Motor

Service Tables

## 5.6 SMC LISTS

The SMC list prints system parameters and report data.

1. Access the SP mode corresponding to the list that you wish to print.

SP5-990-1:	All (Data List)
SP5-990-2:	SP (Mode Data List)
SP5-990-3:	User Program Data
SP5-990-4:	Logging Data
SP5-990-5:	Diagnostic Report
SP5-990-7:	Non-Default (Prints only SPs set to values other than defaults.)
SP5-990-8:	NIB Summary
SP5-990-21:	Capture Log
SP5-990-22:	Copier User Program
SP5-990-23:	Scanner SP

2. Press the "Copy Window" key to access the copy mode display.
3. Select the paper size and press the "SP Mode" key to return the SP mode.
4. Press the "Execute" key to print the list.
5. Exit SP mode.

## 5.7 MEMORY ALL CLEAR: SP5801

As a rule, you should always print an SMC Report before initializing or adjusting the SP settings. The SMC Report provides a concise list of all the SP commands and their current settings. The report can be used for reference if the service manual is not available.

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

SP5-811-1:	Machine serial number
SP5-907:	Plug & Play Brand Name and Production Name Setting

1. Execute SP5990 to print out all SMC Data Lists.
2. Open SP5801.
3. Press the number for the item that you want to initialize. The number you select determines which application is initialized. For example, press 1 if you want to initialize all modules.

No.	What It Initializes	Comments
1	All modules	Initializes items 2 to 5 below.
2	Engine	Initializes all registration settings for the engine and copy process settings.
3	SCS (System Control Service) /SRM	Initializes default system settings, CSS settings, operation display coordinates.
4	IMH	Initializes the image file system.
5	MCS (Memory Control Service)	Initializes the automatic delete time setting for stored documents.
6	Copier application	Initializes all copier application settings.
8	Printer application	Initializes the printer defaults, programs registered, the printer SP bit switches, and the printer CSS counter.
9	Scanner application	Initializes the defaults for the scanner and all the scanner SP modes.
10	Network application	Initializes all service-mode settings about access to the document server from the DeskTopBinder software on a PC. For example, initializes the resolution of images the PC gets using the image converter board option.
11	NCS (Network Control Service)	Initializes the system defaults and interface settings (IP addresses also), the SmartNetMonitor for Admin settings, WebStatusMonitor settings, and the TELNET settings.
14	DCS	Initializes the DCS (Delivery & Receive Control Server) settings.
15	UCS	Initializes the UCS (User Directory Control Server) settings.

Service Tables

4. Press [Execute], and then follow the prompts on the display to complete the procedure.
5. Make sure that you perform the following settings:
  - Do the printer and scanner registration and magnification adjustments. (☛ 3-17).
  - Execute SP2115 – Main Scan Beam Pitch Adjustment
  - Do the touch screen calibration (☛ Section 3.19 “Touch Screen Calibration”).
  - Referring to the SMC data lists, re-enter any values, which had been changed from their factory settings.
  - Execute SP 3001 002 – ID Sensor Initial Setting
  - Switch SP 3901 001 (Auto Process Control Setting) to 1 (On), if you wish auto process control to be used.
6. Check the copy quality and the paper path, and do any necessary adjustments.



## 5.8 SOFTWARE AND COPY SETTING RESET (UP MODE)

### 5.8.1 SOFTWARE RESET

The software can be rebooted when the machine hangs up. Use the following procedure.

Turn the main power switch OFF and ON.

- or -

Press and hold down   together for over 10 seconds. When the machine beeps once, release both buttons. After “Now loading. Please wait” is displayed for a few seconds, the copy window will open. The machine is ready for normal operation.

### 5.8.2 RESETTING THE SYSTEM

The system settings in the UP mode can be reset to their defaults using the following procedure.

1. Make sure that the machine is in the copier standby mode.
2. Press the User Tools key.
3. Hold down the “#” key and press the “System Setting” key.
4. A confirmation message will be displayed, then press “Yes”.

### 5.8.3 RESETTING COPY/DOCUMENT SERVER FEATURES ONLY

The copy/document server settings in the UP mode can be reset to their defaults using the following procedure.

1. Make sure that the machine is in the copier standby mode.
2. Press the User Tools key.
3. Hold down the “#” key and press “Copy/Document Server Features” key.
4. A confirmation message will be displayed, then press “Yes”.

#### **5.8.4 RESETTING SCANNER FEATURES ONLY**

The scanner settings in the UP mode can be reset to their defaults using the following procedure

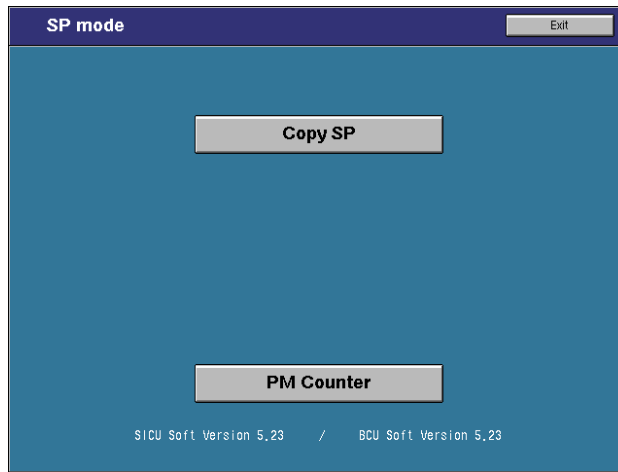
1. Make sure that the machine is in the copier standby mode.
2. Press the User Tools key.
3. Hold down the “#” key and press “Scanner Features” key.
4. A confirmation message will be displayed, then press “Yes

## 5.9 PM COUNTER

### 5.9.1 ACCESSING THE PM COUNTERS

Each PM part has a counter which counts up at the appropriate time. (For example, the counter for the hot roller counts up every copy, and the counter for a feed roller counts up when paper is fed from the corresponding tray.) These counters should be used as references for part replacement timing.

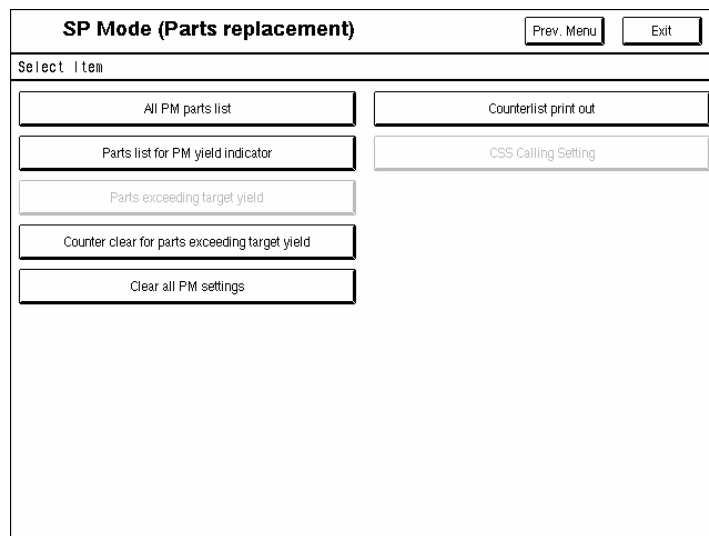
- 1) Press the following keys in sequence.  
[Clear Modes]> 1 0 7 > [Clear] for 3 sec.  
Hold the [Clear] key for more than 3 seconds  
The SP mode menu is displayed.



A29FGH4M001.PCX



- 2) Press [PM Counter] on the display.
- 3) The following menu appears on the display.



A294M013.PCX



### All PM Parts List

Displays all the counters for PM parts.

No	Description	PM yield	Current	Target	
001	Developer	Yes	0000236	0000K	Clear
002	Oil Supply & Cleaning Web	Yes	0000236	0300K	Clear
003	Web Cleaning Roller	Yes	0000236	0300K	Clear
004	Hot Roller	Yes	0000236	0450K	Clear
005	Pressure Roller	Yes	0000236	0450K	Clear
006	Pressure Roller Cleaning Roller	Yes	0000236	0300K	Clear
007	Hot Roller Strippers	Yes	0000236	0300K	Clear
008	Development Filter	Yes	0000236	0300K	Clear
009	Toner Hopper Filter - Center	Yes	0000236	0300K	Clear
010	Toner Hopper Filter - Front	Yes	0000236	0300K	Clear
011	Feed Roller - Tray 1	Yes	0000228	0300K	Clear
012	Pick-up Roller - Tray 1	Yes	0000228	0300K	Clear
013	Separation Roller - Tray 1	Yes	0000228	0300K	Clear
014	Feed Roller - Tray 2	Yes	0000000	0300K	Clear
015	Pick-up Roller - Tray 2	Yes	0000000	0300K	Clear
016	Separation Roller - Tray 2	Yes	0000000	0300K	Clear
017	Feed Roller - Tray 3	Yes	0000000	0300K	Clear
018	Pick-up Roller - Tray 3	Yes	0000000	0300K	Clear

A294M014.PCX

On this screen, the current counter and the target yield of each PM part can be checked.

Additionally, the PM yield indicator setting can be changed. To change the setting press [Yes/No] key in the “PM yield” column.

When “Parts list for PM yield” is selected in the parts replacement menu, only the parts with [Yes] in the “PM yield” are listed.

To clear a counter, press [Clear] on the display. The following appears.

No	Description	Exceed	Current	Target	
001	Developer		0000236	0000K	Clear
002	Oil Supply & Cleaning Web		0000236	0300K	Clear
003					
004					
005					
006					
007					
008					
009					
010					
011					
012					
013	Separation Roller - Tray 1		0000228	0300K	Clear
014	Feed Roller - Tray 2		0000000	0300K	Clear
015	Pick-up Roller - Tray 2		0000000	0300K	Clear
016	Separation Roller - Tray 2		0000000	0300K	Clear
017	Feed Roller - Tray 3		0000000	0300K	Clear
018	Pick-up Roller - Tray 3		0000000	0300K	Clear

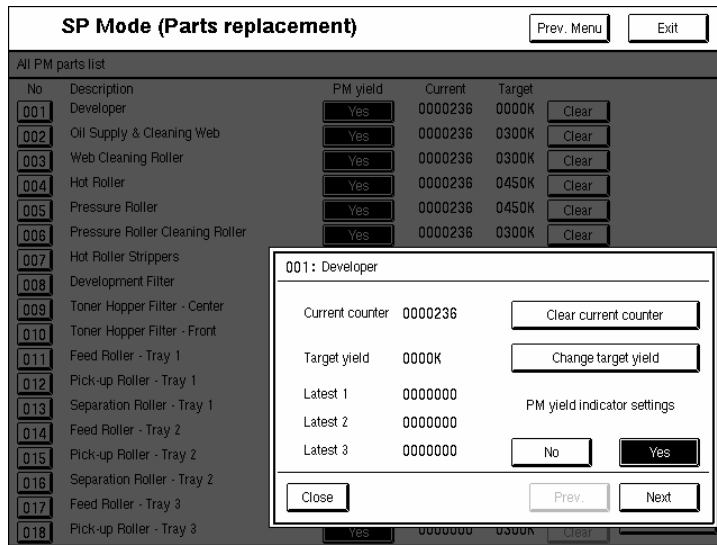
001: Developer  
**Current settings will be cleared**  
**Execute ?**

YES No

A294M016.PCX

Then press [Yes] to clear the counter.

If one of the keys in the “No” column is pressed, the following appears on the display.



A294M017.PCX

On this screen, the records of the last three part replacements are displayed. When ‘Clear current counter’ is pressed, the current counter is cleared, the current counter is overwritten to “Latest 1”, the Latest 1 counter is overwritten to “Latest 2”, and the Latest 2 counter is overwritten to “Latest 3”.

Additionally, the target yield can be changed on this screen. To change the target yield setting, do the following:

- 1) Press [Change target yield] on the screen.
- 2) Input the target yield using the ten-key pad.
- 3) Press the # key.

**Parts List for PM Yield Indicator**

SP Mode (Parts replacement)					Prev. Menu	Exit
Parts list for PM yield indicator						
No	Description	Exceed	Current	Target		
001	Developer		0000236	0000K	Clear	
002	Oil Supply & Cleaning Web		0000236	0300K	Clear	
003	Web Cleaning Roller		0000236	0300K	Clear	
004	Hot Roller		0000236	0450K	Clear	
005	Pressure Roller		0000236	0450K	Clear	
006	Pressure Roller Cleaning Roller		0000236	0300K	Clear	
007	Hot Roller Strippers		0000236	0300K	Clear	
008	Development Filter		0000236	0300K	Clear	
009	Toner Hopper Filter - Center		0000236	0300K	Clear	
010	Toner Hopper Filter - Front		0000236	0300K	Clear	
011	Feed Roller - Tray 1		0000228	0300K	Clear	
012	Pick-up Roller - Tray 1		0000228	0300K	Clear	
013	Separation Roller - Tray 1		0000228	0300K	Clear	
014	Feed Roller - Tray 2		0000000	0300K	Clear	01/01
015	Pick-up Roller - Tray 2		0000000	0300K	Clear	Previous page
016	Separation Roller - Tray 2		0000000	0300K	Clear	Next page
017	Feed Roller - Tray 3		0000000	0300K	Clear	
018	Pick-up Roller - Tray 3		0000000	0300K	Clear	

A294M015.PCX

On this screen, only the parts selected in the “All PM parts list” screen are displayed. Normally, the PM parts counters should be checked on this screen.

If the current counter exceeds the target yield, there is a \* mark in the “Exceed” column.

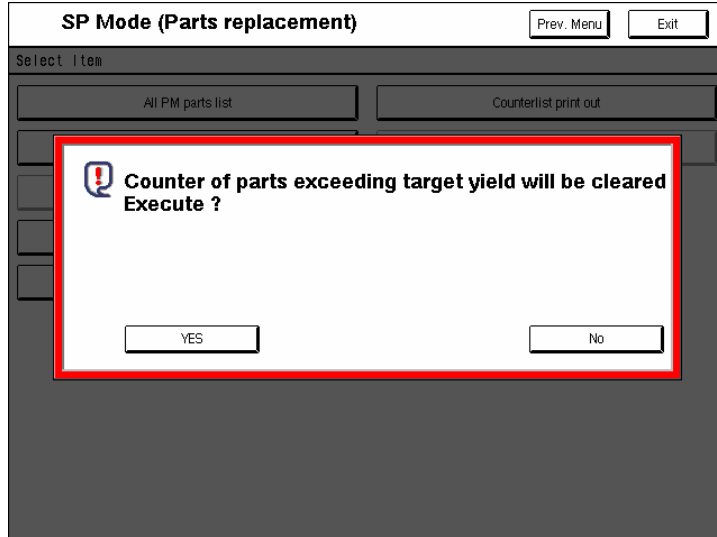
Each counter can also be cleared on this screen. To clear all counters on this screen at once, see ‘Counter Clear for Parts Exceeding Target Yield’ on the next page.

**Parts Exceeding Target Yield**

Only the parts whose counters are exceeding the target yield are displayed. If none of the PM counters is exceeding the target yield, this item cannot be selected from the parts replacement menu.

### **Counter Clear for Parts Exceeding Target Yield**

Clears all the counters which are exceeding the target yield. When this item is selected, the following appears on the display.



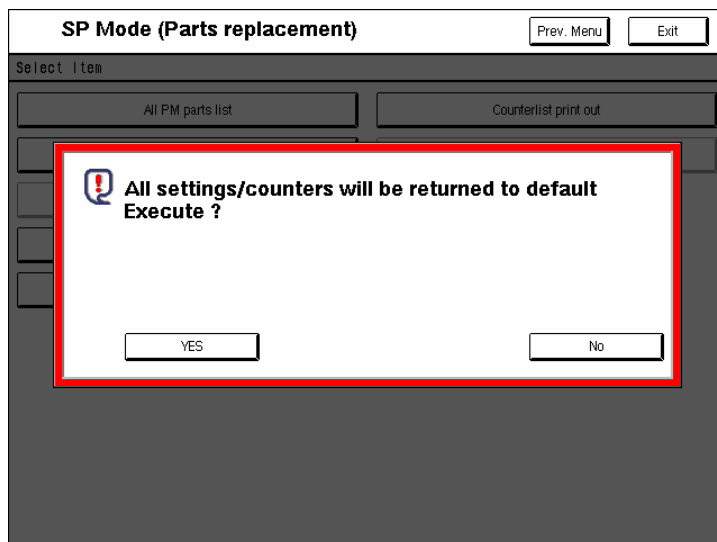
A294M018.PCX

Press [Yes] to clear the counters.

### **Clear All PM Settings**

Clears all the PM counters and returns all the settings (PM parts list and target yield) to the defaults. When this item is selected, the following appears.

Service  
Tables

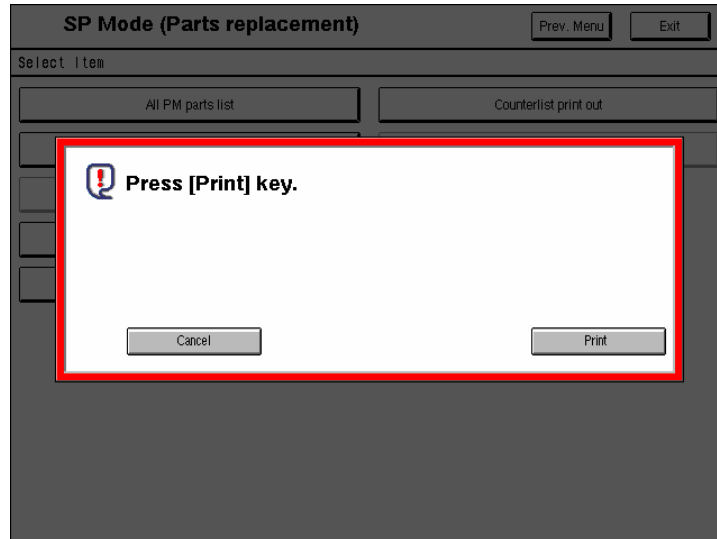


A294M019.PCX

Press [Yes] to clear the settings.

**Counter List Print Out**

Prints a list of all the PM part counters. When this item is selected, the following appears on the display.



A294M010.PCX

Press [Print] to print out the counter list.

**CSS Calling Setting (RSS Function)**

This function is for Japanese machines only.

## 5.10 FIRMWARE UPDATE


To update the firmware for this machine, you must have the new version of the firmware downloaded onto an SD (Secure Digital) Card. The SD Card is inserted into the C3 slot on the right side of the controller box, viewed from the back of the machine.

### 5.10.1 BEFORE YOU BEGIN...

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

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

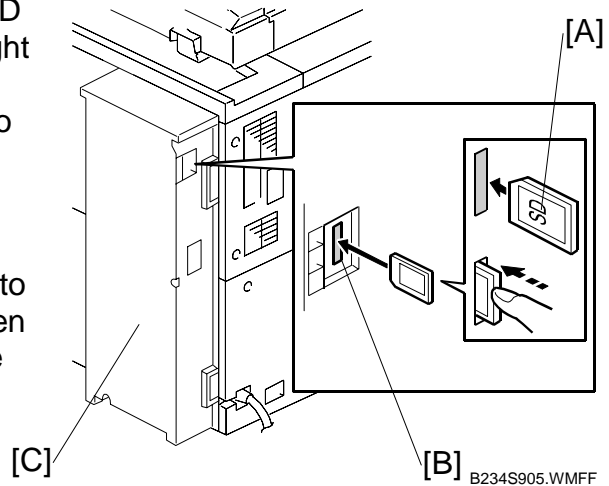
Keep the following points in mind while you are using the firmware update software:

- The SD Card can contain firmware for only the e-STUDIO1351 Series product.
- Firmware and Language Data cannot co-exist on the same SD Card.
- “Upload” means to send data from the machine to the SD card, and “download” means to send data from the SD card to the machine.
- To select an item on the LCD, press the appropriate button on the soft touch-screen of the LCD, or press the appropriate number key on the 10-key pad of the operation panel. For example, “Exit (0)” displayed on the screen means you can press the “Exit” button on the screen, or press the  button on the operation panel of the copier.
- Before starting the firmware update procedure, always make sure that the machine is disconnected from the network to prevent a print job for arriving while the firmware update is in progress.

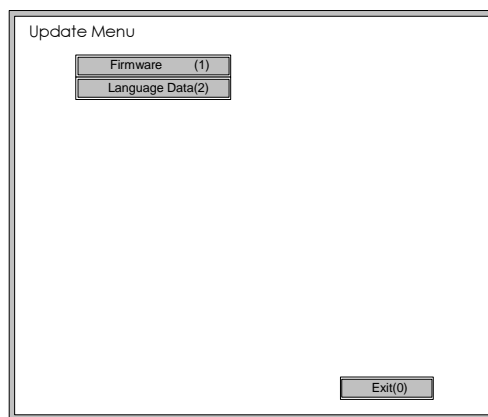
### 5.10.2 UPDATING FIRMWARE

1. Turn the main power switch OFF.
2. With the label on the SD card [A] facing as shown in the diagram, insert the SD card into service slot C3 [B] on the right side of the controller box [C]. Slowly push the SD card once into the slot so it locks in place.
3. Make sure the SD card is locked in place.

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



4. If the machine is connected to a network, disconnect the network cable from the copier.
5. Turn the main power switch ON. After about 10 seconds, the initial version update screen appears on the LCD in English.

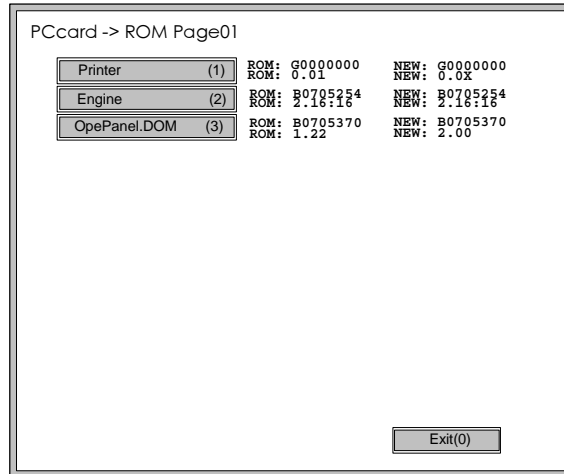


B234S906.WMF

Key	What it Does
Firmware (1)	Press this button on the touch-screen (or ① on the 10-key pad) to open the firmware update screen.
Language Data (2)	Press this button on the touch-screen (or ② on the 10-key pad) to open the language update screen.
Exit (0)	Press this key on the touch-screen (or ① on the 10-key pad) to quit the update procedure and return to normal machine operation.

**NOTE:** The firmware update and language update cannot be performed during the same session. If you need to do both, do the firmware update, switch the machine OFF and ON to confirm the successful update of the firmware, then do the language update.

6. Press “Firmware (1)” to open the firmware update screen.



B234S907.WMF

ROM/NEW	What it means
ROM	Tells you the number of the module and name of the version presently installed. The first line is the module number, the second line the version name.
NEW	Tells you the number of the module and name version on the SD card. The first line is the module number, the second line the version name.

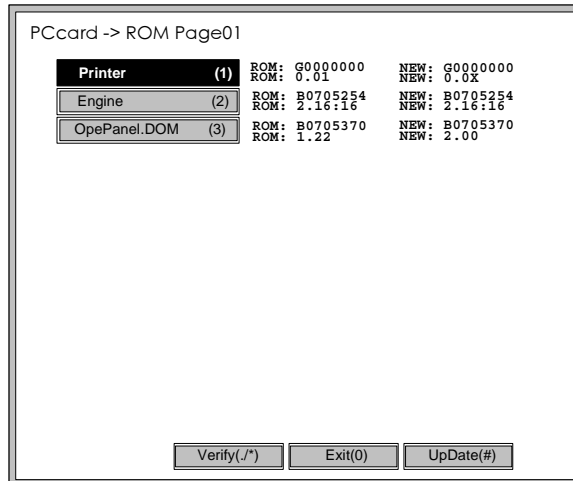
Service Tables

7. On the screen, press the button or the corresponding number key on the operation panel to select the item in the menu that you want to update.



- After pressing the module button, or entering the appropriate number with the 10-key pad to select the module, the “Update” keys appear at the bottom of the screen.

**NOTE:** The screen below shows only the “Printer” option selected for update.

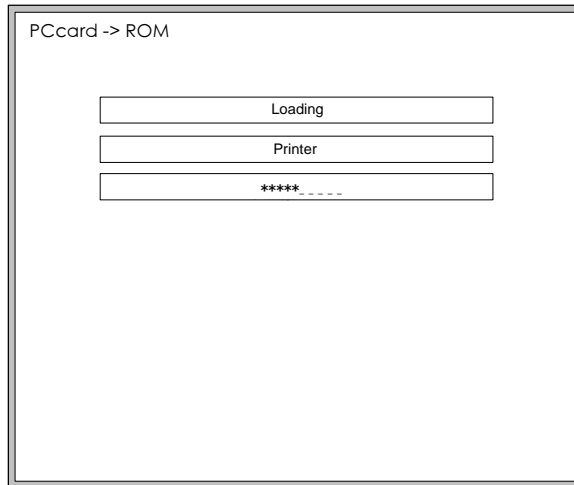


B234S908.WMF

Key	What it Does
Update(#)	Press this button (or $\text{\textcircled{\#}}$ ) to upgrade the selected module.
Exit(0)	Press this button (or $\text{\textcircled{0}}$ ) to return to the previous screen.

- To start the update, touch “UpDate (#)” (or  $\text{\textcircled{\#}}$ ).

After selecting “Update”, three lines are displayed on the screen:



B234S909.WMF

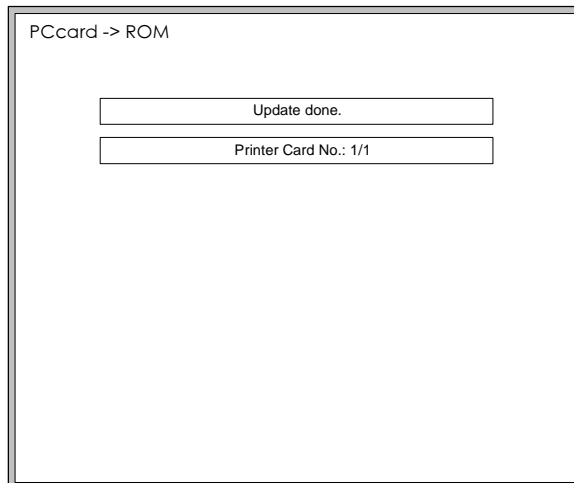
The first line tells you what is happening, the second line is the name of the module, and the third line tells you about the progress of the operation. As the update progresses, the underscores ( \_ ) in the progress bar are replaced by asterisks.

The update is finished after all 10 underscores are replaced by asterisks.

**NOTE:** The progress bar (\* \_ \_ \_ \_) is not displayed for the operation panel firmware after you press “OpePanel”. While the LCDC firmware is updating, the power on key flashes on and off at 0.5 s intervals. When the update is finished, the power key flashes on and off slower at 3 s intervals.

Service  
Tables

When the update is finished, you will see a screen like the one below:



B234S910.WMF

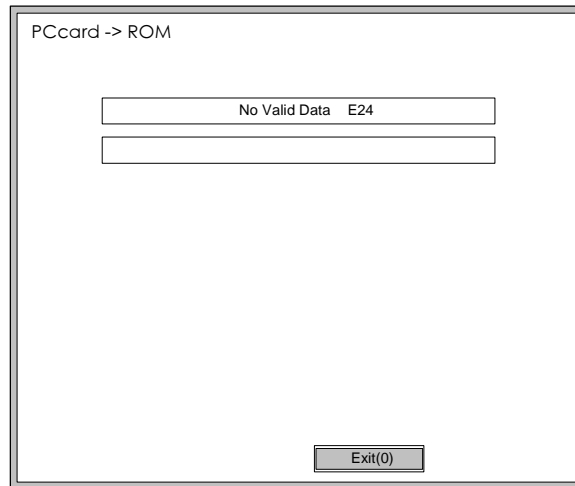
The first line prompts you that the update is finished, and the second line tells you the name of the module that has just been updated.

**NOTE:** If you have selected more than one module for updating, only the screen for the last module updated will be displayed.

10. When you see the “Update Done” message, switch the copier main power switch OFF.
11. Press in the SD card to release it, and then remove it from the slot.
12. Switch the copier ON for normal operation.

### **Error Messages**

If an error occurs during the download, an error message will be displayed in the first line.



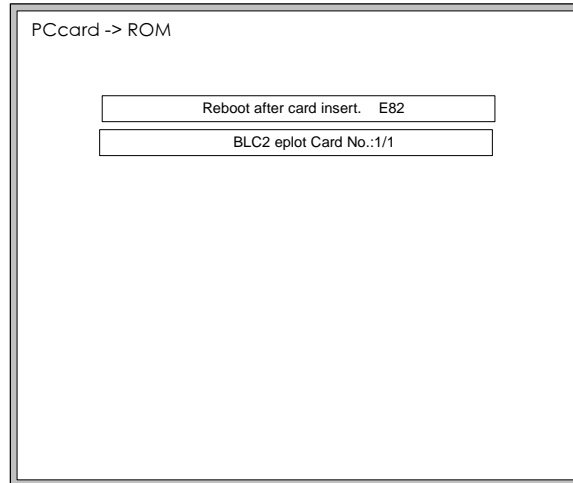
B234S911.WMF

The error code consists of the letter “E” and a number. The example above shows error “E24” displayed. For details, refer to the Error Message Table.

(👁 4.1.3)

### Firmware Update Error

If a firmware update error occurs, this means the update was cancelled during the update because the module selected for update was not on the SD card.



B234S912.WMF

### Recovery After Power Loss

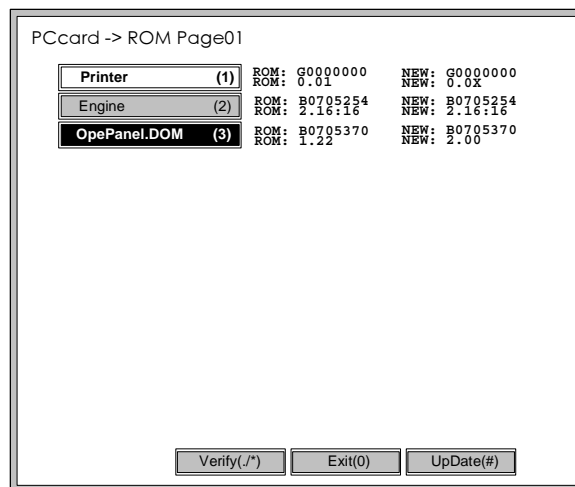
If the ROM update is interrupted as a result of accidental loss of power while the firmware is updating, then the correct operation of the machine cannot be guaranteed after the machine is switched ON again. If the ROM update does not complete successfully for any reason, then in order to ensure the correct operation of the machine, the ROM update error will continue to be displayed until the ROM is updated successfully.

In this case, just insert the card once again and switch on the machine to continue the firmware download automatically from the card without the menu display.

### 5.10.3 UPDATING THE LCDC FOR THE OPERATION PANEL

Follow this procedure to update the LCDC (LCD Control Board).

1. Turn the copier main switch OFF.
2. Insert the SD card into service slot C3.
3. Switch the copier main switch ON.
4. After about 10 seconds the initial screen opens in English.
5. Press "OpePanel".



B234S913.WMF

6. Press "UpDate(#)" (or **#**) to start the update.  
 After about 9 seconds, the downloading starts and a progress bar appears.
  - While the data is downloading, the [Start] key LED flashes RED slowly then rapidly near completion.
  - When the update is finished, the [Start] key flashes GREEN.
  - The LCDC update requires about 15 minutes to complete.
7. Switch the copier main power switch OFF, remove the SD card, then switch the copier ON again.

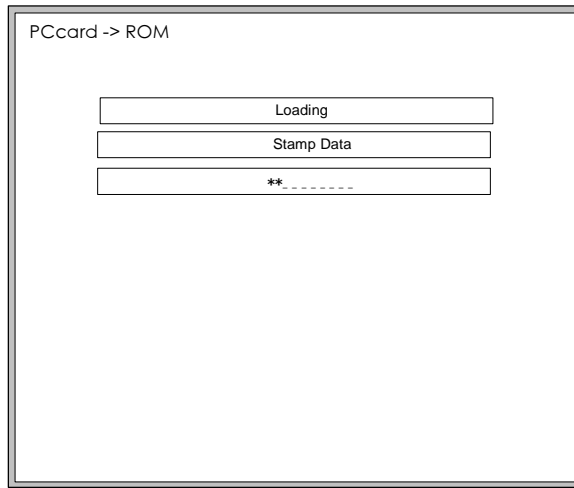
### 5.10.4 DOWNLOADING STAMP DATA

The stamp data should be downloaded from the controller firmware to the hard disks:

- When the machine is installed.
- After the hard disks have been replaced.

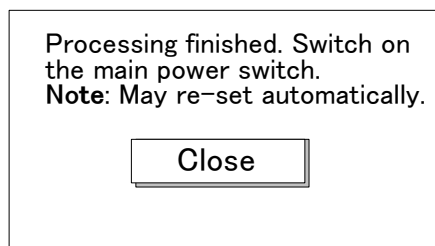
The print data contains the controller software, so execute SP5853 to download the fixed stamp data required by the hard disks.

1. Enter the SP mode.
2. Select SP5853 then press “Execute”. The following screen opens while the stamp data is downloading.



B234S914.WMF

The download is finished with the message prompts you to close.



B234S915.WMF

3. Press the “Close” button then cycle the copier OFF and ON again.



## 5.10.5 NVRAM DATA UPLOAD/DOWNLOAD

### *Uploading Content of NVRAM to an SD card*

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

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

1. Before switching the machine OFF, execute SP5990 001 (SMC Print). You will need a record of the NVRAM settings if the upload fails.
2. Switch the copier main power switch OFF.
3. Insert the SD card into service slot C3, then switch the copier ON.
4. Execute SP5824 001 (NVRAM Data Upload) then press the "Execute" key  
When uploading is finished, the following files are copied to an NVRAM folder on the SD card. The file is saved to the path and filename:

**NVRAM\<serial number>.NV**

Here is an example with Serial Number "B0700017":

**NVRAM\B0700017.NV**

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

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

### ***Downloading an SD Card to NVRAM***

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

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

1. Switch the copier main power switch OFF.
2. Insert the SD card with the NVRAM data into service slot C3.
3. Switch the copier main power switch ON.
4. Execute SP5825 001 (NVRAM Data Download) and press the "Execute" key.  
**NOTE:** In order for the NVRAM data to download successfully, the serial number of the file on the SD card must match the serial number of the machine. If the serial numbers do not match, the download will fail.

This procedure downloads the following data to the NVRAM:

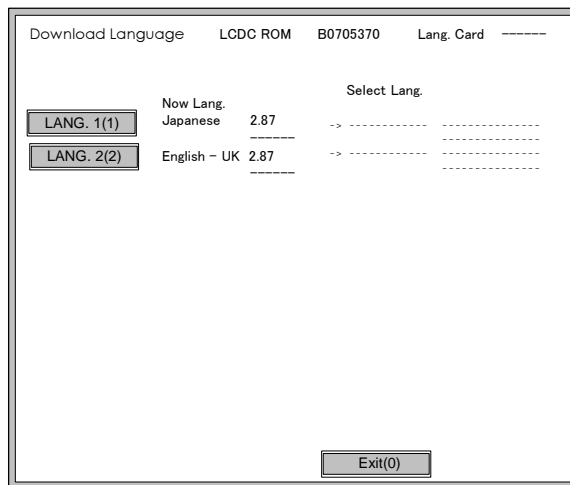
- Total Count
- C/O, P/O Count



### 5.10.6 INSTALLING ANOTHER LANGUAGE

Many languages are available for selection, but only two can be selected for switching. Follow this procedure to select the two languages, either of which can be selected for the user interface on the operation panel.

1. Switch the copier main power switch OFF.
2. Insert the SD card with the language data into service slot C3.
3. Switch the copier main power switch ON. The initial screen opens after about 10 seconds.
4. Press the “Language (2)” on the screen (or press ②).

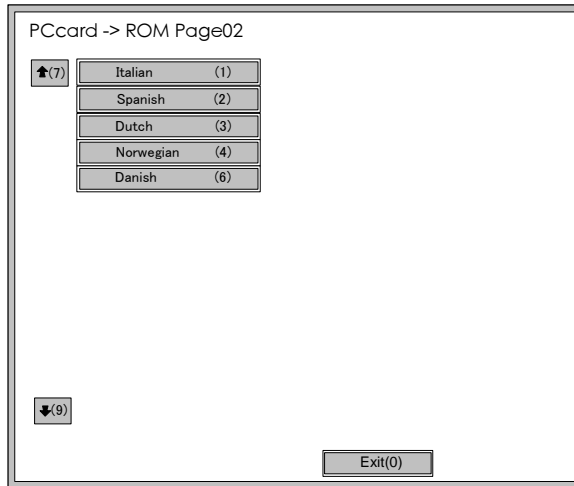


B234S916.WMF

5. Press “LANG. 1(1)” or “LANG 2(2)

Key	What it does
LANG. 1(1)	Press this button on the screen (or press ① on the 10-key pad) to open the next screen so you can select the 1st language.
LANG. 1(2)	Press this button on the screen (or press ② on the 10-key pad) to open the next screen so you can select the 2nd language.
Exit(0)	Press this key on the screen (or press ① on the 10-key pad) to quit the update procedure and return to normal screen.

6. To select the 1st Language, press “LANG 1(1)”.  
-or-  
To select the 2nd Language, press “LANG(2)”.



B234S917.WMF

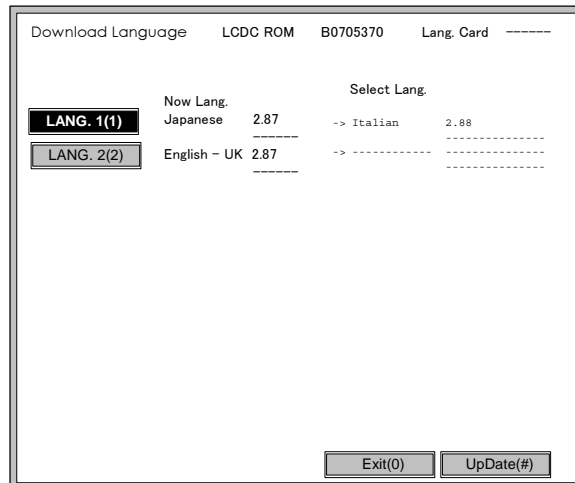
7. Press the appropriate button on the screen (or press the number on the 10-keypad) to select a language as the 1st (or 2nd) Language.  
If a language is already selected, it will be displayed in reverse.  
Pressing “Exit(0)” also returns the previous screen.
8. If you do not see the language that you want to select, press “↑(7)” or “↓(9)” on the screen (or press 7 or 9) to display more choices.

After you select a language, the Download Screen opens.

The 1st or 2nd language selected for updating is displayed.

To the right of the selection, the first column displays the language currently selected and the 2nd column displays the language selected to replace that language.

The example below shows that the download will replace “Japanese” with “Italian” as the 1st language.



B234S918.WMF

9. Press “Update(Ⓝ)” on the screen (or press Ⓝ) to start the download.  
Another screen with a progress bar is not displayed while the language is downloading.  
While the language is downloading:
  - The operation panel switches off.
  - The LED on the power on key flashes rapidly.
10. After the Start LED begins to flash slowly, switch the copier main power switch OFF, and then remove the SD card from the slot.
11. Switch the copier main power switch ON to resume normal operation.

## 5.10.7 HANDLING FIRMWARE UPDATE ERRORS

If an error occurs during a download, an error message will be displayed in the first line. The error code consists of the letter “E” and a number (“E20”, for example).

**Error Message Table**

CODE	MEANING	SOLUTION
20	Cannot map logical address	Make sure SD card inserted correctly, or use another SD card.
21	Cannot access memory	HDD connection incorrect or replace hard disks.
22	Cannot decompress compressed data	Incorrect ROM data on the SD card, or data is corrupted.
23	Error occurred when ROM update program started	Controller program abnormal. If the second attempt fails, replace controller board.
24	SD card access error	Make sure SD card inserted correctly, or use another SD card.
30	No HDD available for stamp data download	HDD connection incorrect or replace hard disks.
31	Data incorrect for continuous download	Insert the SD card with the remaining data required for the download, the re-start the procedure.
32	Data incorrect after download interrupted	Execute the recovery procedure for the intended module download, then repeat the installation procedure.
33	Incorrect SD card version	Incorrect ROM data on the SD card, or data is corrupted.
34	Module mismatch - Correct module is not on the SD card)	SD update data is incorrect. Acquire the correct data (Japan, Overseas, OEM, etc.) then install again.
35	Module mismatch – Module on SD card is not for this machine	SD update data is incorrect. The data on the SD card is for another machine. Acquire correct update data then install again.
36	Cannot write module – Cause other than E34, E35	SD update data is incorrect. The data on the SD card is for another machine. Acquire correct update data then install again.
40	Engine module download failed	Replace the update data for the module on the SD card and try again, or replace the BCU board.
42	Operation panel module download failed	Replace the update data for the module on the SD card and try again, or replace the LCDC.
43	Stamp data module download failed	Replace the update data for the module on the SD card and try again, or replace the hard disks.
44	Controller module download failed	Replace the update data for the module on the SD card and try again, or replace controller board.
50	Electronic confirmation check failed	SD update data is incorrect. The data on the SD card is for another machine. Acquire correct update data then install again.

## **5.11 USER PROGRAM MODE**

### **5.11.1 ENTERING AND EXITING USER PROGRAM MODE**

The user program (UP) mode is accessed by users, and by sales and service staff. UP mode is used to input the copier's default settings.

Press the User Tools/Counter button, and then select the UP mode program. After finishing the UP mode program, press "Exit" key to exit UP mode.

## 5.12 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.



The Save Debug Log feature provides two main features:

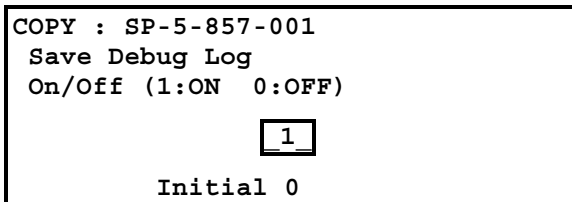
- Switching on the debug feature so error information is saved directly to the HDD for later retrieval.
- Copying the error information from the HDD to an SD card.


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.

### 5.12.1 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.
  - Press “Copy SP”.
  - On the LCD panel, open SP5857.
2. Under “5857 Save Debug Log”, press “1 On/Off”.



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.



- Next, select the target destination where the debug information will be saved. Under “5857 Save Debug Log”, press “2 Target”, enter “2” with the operation panel key to select the hard disk as the target destination, then press (#).

```

COPY : SP-5-857-002
Save Debug Log
Target (2:HDD 3:SD Card)

  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.

- Now press “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**

Press the appropriate items(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**

Press “3 Any SC Error”, enter the 3-digit SC code number with the control panel number keys, then press (#). This example shows an entry for SC670.

```

COPY : SP-5-858-001
Debug Save When
Any SC Error

  670
    
```

**NOTE:** For details about SC code numbers, please refer to the SC tables in Section “4. Troubleshooting”.

- Next, select the one or more memory modules for reading and recording debug information. Press “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  <div style="border: 1px solid black; display: inline-block; padding: 2px;">2222</div>
---

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)

Service Tables

**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 SP5-857-002) for the events that you selected SP5-858 and the memory modules selected with SP5-859.



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.

### **5.12.2 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.

### 5.12.3 RECORDING ERRORS MANUALLY

Since only SC errors and jams are recorded to the debug log automatically, for any other errors that occur while the service 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.

## 5.12.4 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***

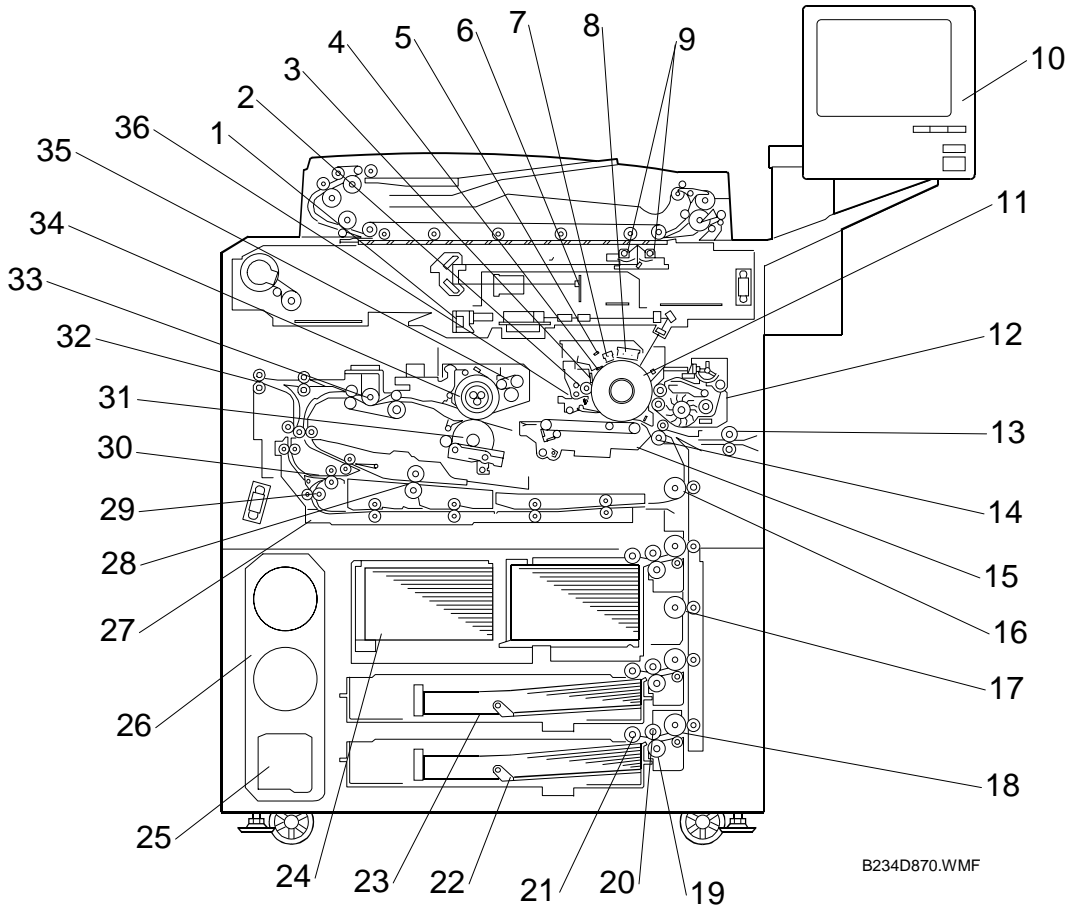
This SP creates a 32 MB file to store a log on the HDD. However, this is not a completely empty file. The created file will hold the number “2225” as the SCS key number and other non-volatile information. Even if this SP is not executed, a file is created on the HDD when the first log is stored on the 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 DESCRIPTIONS

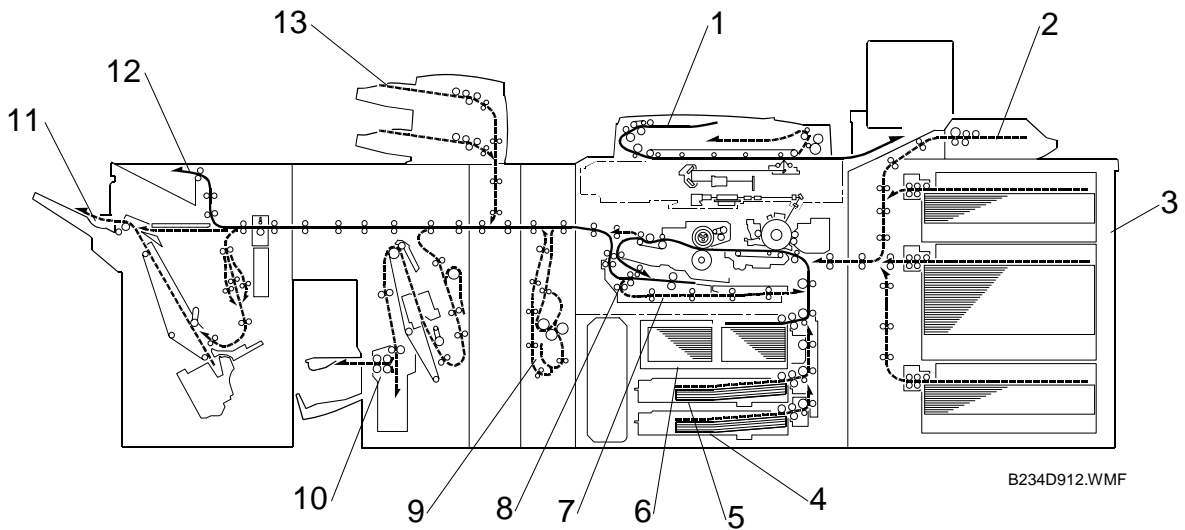
### 6.1 COMPONENT LAYOUT



- |                            |   |
|----------------------------|---|
| 1. Laser Diode Board       | 19. 3rd Separation Roller                     |
| 2. Cleaning Brush          | 20. 3rd Paper Feed Roller                     |
| 3. (Main) Cleaning Blade   | 21. 3rd Pick-up Roller                        |
| 4. 2nd Cleaning Blade      | 22. 3rd Tray (500 Sheets)                     |
| 5. Quenching Lamp          | 23. 2nd Tray (500 Sheets)                     |
| 6. SBU (Sensor Board Unit) | 24. 1st Tray (Tandem Tray, 1,000 Sheets Each) |
| 7. Pre-Charge Unit         | 25. Toner Collection Bottle                   |
| 8. Charge Corona Unit      | 26. Toner Bank Unit                           |
| 9. Exposure Lamps x2       | 27. Duplex Tray                               |
| 10. Operation Panel        | 28. Switchback Roller                         |
| 11. Drum                   | 29. Inverter Roller 2                         |
| 12. Development Unit       | 30. Inverter Roller 1                         |
| 13. LCT Relay Roller       | 31. Pressure Roller                           |
| 14. Registration Roller    | 32. Exit Roller                               |
| 15. Transfer Belt Unit     | 33. Paper Cooling Pipe                        |
| 16. Upper Relay Roller     | 34. Hot Roller                                |
| 17. Vertical Relay Roller  | 35. Cleaning Fabric                           |
| 18. 3rd Grip Roller        | 36. Drum Cleaning Unit                        |

Detailed Descriptions

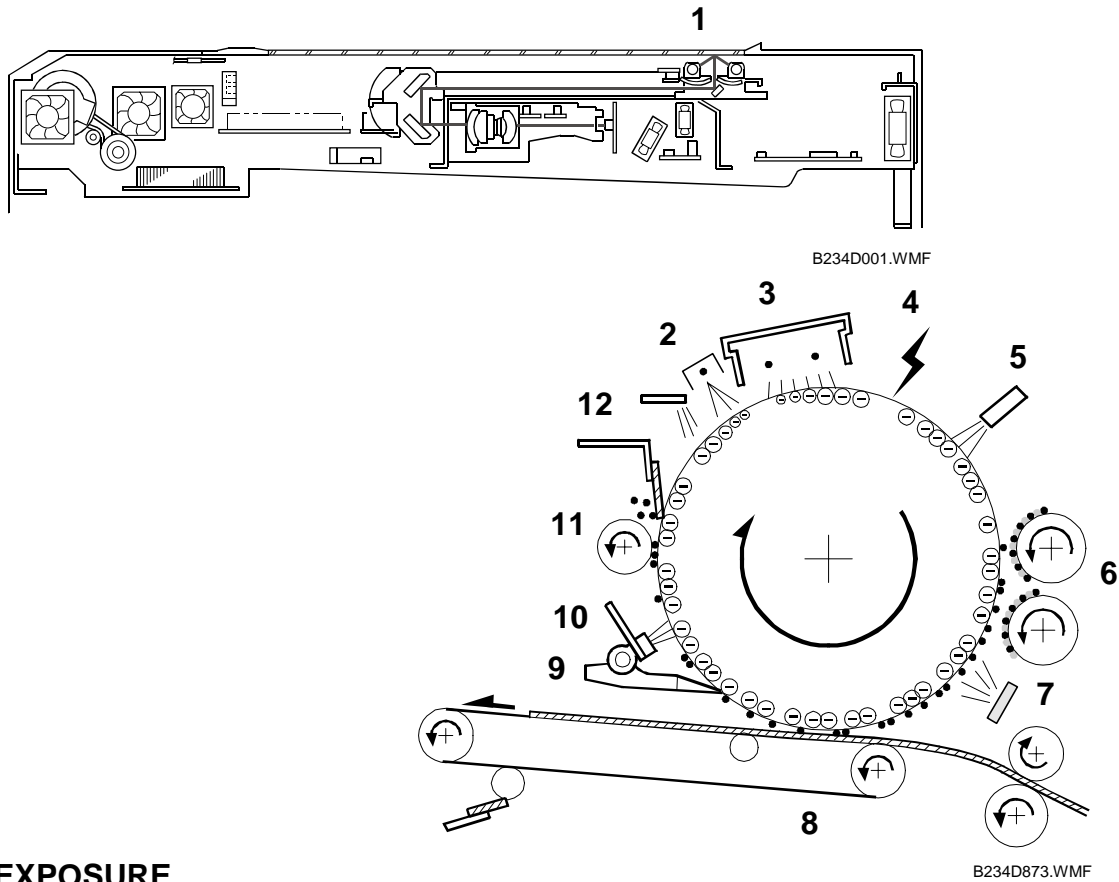
## 6.2 PAPER PATH



B234D912.WMF

- |                 |                           |
|-----------------|---------------------------|
| 1. ADF          | 8. Inverter Unit          |
| 2. Bypass Tray  | 9. Z-Folding Unit         |
| 3. Optional LCT | 10. Booklet Finisher      |
| 4. Tray 3       | 11. Shift Tray            |
| 5. Tray 2       | 12. Proof Tray            |
| 6. Tray 1       | 13. Cover Interposer Tray |
| 7. Duplex Unit  |                           |

### 6.3 COPY PROCESS



#### EXPOSURE

A Xenon lamp [1] exposes the original. Light reflected from the original passes to the CCD, where it is converted into an analog data signal. This data is converted to a digital signal, processed, and stored in the memory. At the time of printing, the data is retrieved and sent to the laser diode. For multi-copy runs, the original is scanned once only and stored to the hard disk.

#### DRUM CHARGE

An OPC (organic photoconductor) drum is used in this machine. In the dark, first the pre-charge unit [2] and then the charge corona unit [3] give a negative charge to the drum. The grid plate ensures that corona charge is applied uniformly. The charge remains on the surface of the drum because the OPC layer has a high electrical resistance in the dark.

#### LASER EXPOSURE

The processed data from the scanned original is retrieved from the hard disk and transferred to the drum by four laser beams, which form an electrostatic latent image on the drum surface. The amount of charge remaining as a latent image on the drum depends on the laser beam intensity, which is controlled by the LDB [4] (laser diode board).

Detailed Descriptions

**DRUM POTENTIAL MEASUREMENT**

The drum potential sensor [5] detects the electric potential on the drum to correct various process control elements.

**DEVELOPMENT**

The development rollers [6] turn and carry the developer to the drum. When the magnetic developer brush on the development rollers contacts the drum surface, the high negative charge of the white areas in the latent image force the toner with its low negative charge into the black areas. This forced migration of toner over the latent image forms the copy image on the drum.

**PRE-TRANSFER**

Light from the pre-transfer lamp [7] reduces the amount of charge on the drum surface to improve the ease of image transfer.

**IMAGE TRANSFER**

Paper is fed to the area between the drum surface and the transfer belt [8] at the proper time to align the copy paper and the developed image on the drum. Then, the transfer bias roller and brush apply a high positive charge to the reverse side of the paper through the transfer belt. This positive charge pulls the toner particles from the drum to the paper. At the same time, the paper is electrically attracted to the transfer belt.

**PAPER SEPARATION**

Paper separates from the drum as a result of the electrical attraction between the paper and the transfer belt. The pick-off pawls [9] also help separate the paper from the drum.

**ID SENSOR PATTERN WRITING/DETECTION**

The laser projects a sensor pattern on the drum surface. The ID sensor [10] measures the reflectivity of this pattern. The output signal from this measurement is one of the factors used for toner supply control.

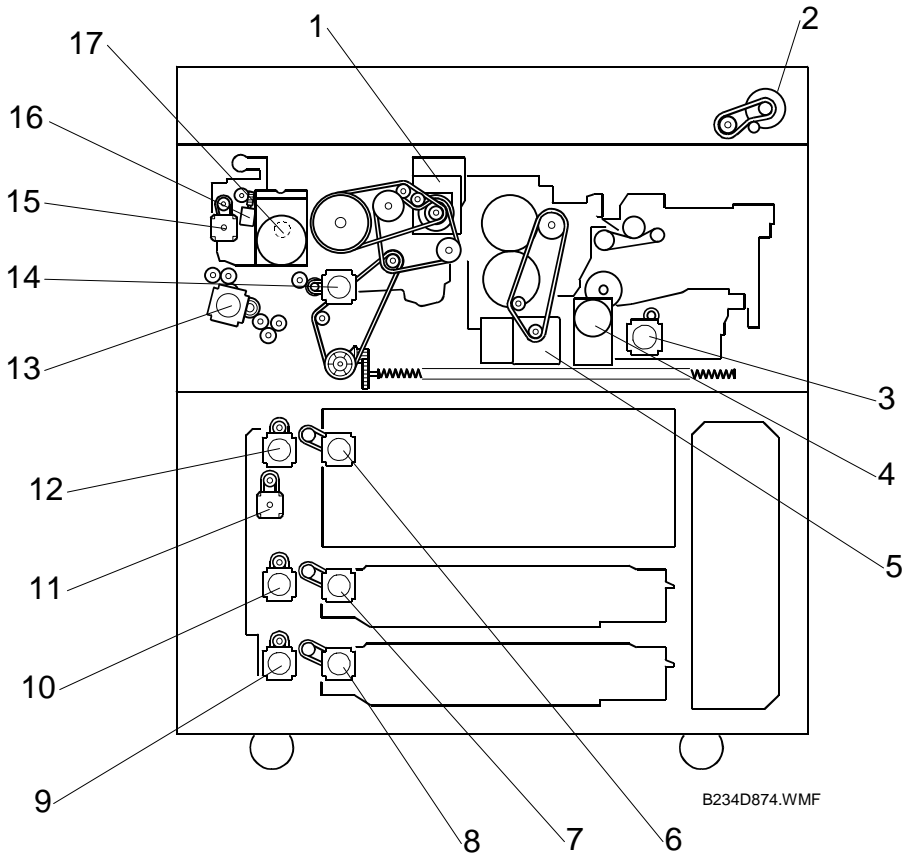
**DRUM CLEANING**

The cleaning brush [11] removes toner remaining on the drum after image transfer. The main cleaning blade and a retractable 2nd clean toner from the surface of the drum.

**QUENCHING**

The light from the quenching lamp [12] electrically neutralizes the charge on the drum surface.

### 6.4 DRIVE LAYOUT



- |                          |                           |
|--------------------------|---------------------------|
| 1. Drum Motor            | 9. 3rd Grip Motor         |
| 2. Scanner Motor         | 10. 2nd Grip Motor        |
| 3. Duplex Inverter Motor | 11. Vertical Relay Motor  |
| 4. Exit Motor            | 12. 1st Grip Motor        |
| 5. Fusing Motor          | 13. Upper Relay Motor     |
| 6. 1st paper Feed Motor  | 14. Registration Motor    |
| 7. 2nd Paper Feed Motor  | 15. Toner Supply Motor    |
| 8. 3rd Paper Feed Motor  | 16. Hopper Agitator Motor |

Detailed Descriptions



## 6.5 ELECTRICAL COMPONENT DESCRIPTIONS

Refer to the electrical component layout on the reverse side of the point-to-point diagram for the location of the components using the symbols and index numbers.

### 6.5.1 COPIER ENGINE

Number	Name	Description
<b>Clutches</b>		
CL1	Toner Supply Coil Clutch	Transfers drive from the toner bank motor to the toner transport coil, to transport toner towards the toner supply cylinder.
<b>Heaters</b>		
H1	Optics Anti-condensation Heater	Turns on when the main switch is off to keep the scanner unit dry.
H2	Transfer Anti-Condensation Heater	Turns on when the main switch is off to keep the transfer unit dry.
H3	Tray Anti-Condensation Heater 1 (Upper)	Turns on when the main switch is off to keep paper dry in the paper trays.
H4	Tray Anti-Condensation Heater 2 (Lower)	Turns on when the main switch is off to keep paper dry in the paper trays.
<b>Lamps</b>		
L1	Exposure Lamp 1	Applies high intensity light to the original for exposure.
L2	Exposure Lamp 2	Applies high intensity light to the original for exposure.
L3	Fusing Lamp 1	Provides heat to the hot roller.
L4	Fusing Lamp 2	Provides heat to the hot roller.
L5	Fusing Lamp 3	Provides heat to the hot roller.
L6	PTL	Pre-Transfer Lamp. Just before image transfer, the PTL flashes light on the drum to weaken the attraction between the toner and the drum. This makes the toner transfer to the paper easier.
QL1	Quenching Lamp	Neutralizes any charge remaining on the drum surface after cleaning.

Number	Name	Description
<b>Motors</b>		
M1	1st Paper Feed Motor	Performs two functions: 1) Drives the pick-up roller in the 1st tray, and 2) Drives the grip roller that feeds paper from the 1st tray to the grip roller.
M2	1st Grip Motor	Performs two functions: 1) Drives the separation roller in the 1st tray, and 2) Drives the grip roller that feeds paper from the 1st tray into the vertical feed path.
M3	1st Tray Lift Motor	Raises and lowers the bottom plate in the 1st paper tray.
M4	2nd Paper Feed Motor	Performs two functions: 1) Drives the pick-up roller in the 2nd tray, and 2) Drives the grip roller that feeds paper from the 2nd tray to the grip roller.
M5	2nd Grip Motor	Performs two functions: 1) Drives the separation roller in the 2nd tray, and 2) Drives the grip roller that feeds paper from the 2nd tray into the vertical feed path.
M6	2nd Tray Lift Motor	Raises and lowers the bottom plate in the 2nd paper tray.
M7	3rd Paper Feed Motor	Performs two functions: 1) Drives the pick-up roller in the 3rd tray, and 2) Drives the grip roller that feeds paper from the 3rd tray to the grip roller.
M8	3rd Grip Motor	Performs two functions: 1) Drives the separation roller in the 3rd tray, and 2) Drives the grip roller that feeds paper from the 3rd tray into the vertical feed path.
M9	3rd Tray Lift Motor	Raises and lowers the bottom plate in the 3rd paper tray.
M10	Charge Corona Wire Cleaner Motor	Drives the charge corona wire cleaner.
M11	Cleaning Unit Cooling Fan	Cools the area around the cleaning unit.
M12	Cleaning Fabric Motor	Drives the oil supply/cleaning fabric.
M13	Development Motor	Drives the development unit.
M14	Development Unit Cooling Fan Motor 1	Removes heat from the development unit.
M15	Development Unit Cooling Fan Motor 2	Removes heat from the development unit.
M16	Drum Cooling Fan	Blows cool air around the drum.
M17	Drum Exhaust Fan	Draws hot air from around the drum and the charge corona unit.
M18	Drum Motor	Drives the drum, cleaning unit, and transfer belt unit.
M19	Duplex Cooling Fan	Removes heat from the horizontal paper path of the duplex/inverter unit. Note: Number of duplex fans has increased to 3
M20	Duplex Entrance Cooling Fan 1	Removes heat from around the entrance to the duplex/inverter unit. Note: Number of duplex fans has increased to 3
M21	Duplex Entrance Cooling Fan 2	Removes heat from around the entrance to the duplex/inverter unit. Note: Number of duplex fans has increased to 3

Detailed Descriptions

Number	Name	Description
<b>Motors</b>		
M22	Duplex Entrance Motor	Feeds paper to the duplex unit.
M23	Duplex Transport Motor	Drives the transport rollers of the duplex unit.
M24	Duplex Inverter Motor	Drives these rollers in the duplex unit: (1) Duplex transport roller 2, (2) Duplex transport roller 1, (3) Inverter roller 1, (4) Inverter roller 2, (5) Inverter relay roller.
M25	Exit Junction Gate Motor	Operates the duplex junction gate which guides paper straight out of the machine or sends it down into the inverter/duplexer.
M26	Exit Motor	Drives the exit rollers that feed the paper out of the machine.
M27	Fusing Motor	Drives the fusing unit.
M28	Hopper Agitator Motor	Drives the agitator that agitates the toner in the toner hopper to prevent clumping.
M29	Lamp Regulator Fan (Left)	Cools the area around the left lamp regulator.
M30	Lamp Regulator Fan (Right)	Cools the area around the right lamp regulator.
M31	Lower Bottle Cap Motor	Opens and closes the inner cap of the lower toner bottle.
M32	Lower Toner Bottle Motor	Rotates the lower toner bottle to supply toner to the toner entrance tank.
M33	Moisture Removal Fan	Removes water vapor from around the fusing unit.
M34	PSU Box Fan 1	Cools the PSU-E board.
M35	PSU Box Fan 2	Cools the PSU-E board.
M36	PSU Box Fan 3	Cools the PSU-E board.
M37	Paper Cooling Pipe Fan 1	Cools the paper cooling pipe.
M38	Paper Cooling Pipe Fan 2	Cools the paper cooling pipe.
M39	Polygon Mirror Motor	Drives the polygon mirror in the laser optics unit
M40	Polygon Mirror Motor Cooling Fan	Removes heat from around the polygon mirror motor.
M41	Rear Fence Drive Motor	Moves the paper stack in the left tandem tray to the right tandem tray.
M42	Registration Motor	Drives the registration rollers.
M43	Cleaning Collection Pipe Cooling Fan	Cools the pipe that carries collected toner away from the development unit.
M44	SBU Cooling Fan	Removes heat from around the SBU.
M45	Scanner Intake Fan	Cools the scanner optics.
M46	Scanner Motor	Drives the 1st and 2nd scanners.
M47	Scanner Motor Cooling Fan	Cools the scanner motor.
M48	Scanner Unit Exhaust Fan	Cools the scanner optics.
M49	Switchback Motor	Drives the switchback roller in the duplex unit.
M50	Toner Bank Motor	Drives the toner transport coil, which feeds fresh toner from the toner bank to the toner supply cylinder.
M51	Toner Collection Bottle Agitator Motor	Drives the coil that agitates the used toner in the toner collection bottle.

Number	Name	Description
<b>Motors</b>		
M52	Toner Cylinder Agitator Motor	Drives the agitator inside the toner supply cylinder to prevent clumping inside the cylinder.
M53	Toner Suction Motor	Drives the air pump that creates the vacuum to draw loose toner from the development unit to the development unit toner collection bottle.
M54	Toner Supply Motor	An independent stepper motor that drives the toner supply roller.
M55	Toner Supply Pump Motor	Mounted between the toner hopper and the toner supply cylinder, this pumps the toner that the supply cylinder has received from the toner bank into the toner hopper.
M56	Toner Transport Pipe Cooling Fan	Cools the toner transport pipe between the toner entrance bank and the toner cylinder.
M57	Upper Bottle Cap Motor	Opens and closes the inner cap of the upper toner bottle.
M58	Upper Relay Motor	Drives the upper relay rollers that transport paper to the registration rollers, the duplex exit roller, and the LCT relay roller.
M59	Upper Toner Bottle Motor	Rotates the upper toner bottle to supply toner to the toner entrance tank.
M60	Vertical Relay Motor	Feeds paper between the 2nd transport rollers below and the 1st transport rollers below. This motor is needed due to the height of the 1st tray.
M61	Controller Box Cooling Fan	Cools the controller box interior.

Number	Name	Description
<b>PCBs</b>		
PCB1	AC Drive Board	Drives the AC components (fusing lamps, anti-condensation heaters).
PCB2	BCU	BCU (Base-Engine Control Unit): Main control board, controls the engine sequence, timing for peripherals, image processing, and the video data path
PCB3	Interface Board	Sorts and routes signals to electrical components.
PCB4	Controller Board	Controls the memory and all peripheral devices. The GW architecture allows the board to control all applications, i.e. copying, printing, and scanning. In order to add an option (printer, scanner), the appropriate ROM DIMM must be installed on the controller.
PCB5	IOB	IOB (Input/Output Board): The IOB handles the following functions: (1) Drive control for the sensors, motors, and solenoids of the main unit, (2) PWM (pulse width modulation) control for the high voltage supply board, (3) Serial interface with peripherals, (4) Fusing control.

Detailed Descriptions

Number	Name	Description
<b>PCBs</b>		
PCB6	IPU	IPU (Image Processing Unit): Contains large-scale integrated circuits that process the digital data sent from the SBU. Some processes may require enough working memory to store a page of image data.
PCB7	Interlock Relay Board	The microswitches that toggle the power to the laser unit off/on when the doors are open/close are mounted on this small board.
PCB8	LDB	LDB (Laser Diode Board): The LDB contains and controls the laser diodes.
PCB9	Lamp Regulator (Left)	Controls the Xenon exposure lamp in the flat bed scanner
PCB10	Lamp Regulator (Right)	Controls the Xenon exposure lamp in the flat bed scanner
PCB11	Laser Synchronization Detector Board	Detects when the laser is about to start another main scan line across the OPC
PCB12	MCU	MCU (Motor Control Unit). Controls the scanner motor.
PCB13	Mother Board	Controls the memory and all peripheral devices. The GW architecture allows the board to control all applications, i.e. copying, printing, and scanning. In order to add an option (printer, scanner), the appropriate ROM DIMM must be installed on the controller.
PCB14	PSU-Ea	PSU-E (Power Supply Unit-Engine A): Supplies DC power for the IOB, LCT, OPU, IPU.
PCB15	PSU-Eb	PSU-E (Power Supply Unit-Engine B): Supplies DC power for the two PSU fans, the MCU and the Relay Interlock Switch.
PCB16	PSU-c	PSU-C (Power Supply Unit-Controller): Supplies DC power for the controller.
PCB17	Polygon Mirror Motor Control Board	Controls the polygon motor.
PCB18	SBU	SBU (Sensor Board Unit): Contains the CCD. Converts the CCD output to digital before sensing it to the IPU (Image Processing Unit).
PCB19	SIB	The SIB (Scanner Interface Board) controls the scanner, and serves as the signal I/F board for the IPU and MCU.
PCB20	OPU	The operation panel unit interfaces with the CPU and runs the copier user interface.
PCB21	Image Position Sensor Board (Tray)	The image position sensor in the paper bank that detects the edges of paper fed from the copier paper bank (trays 1, 2, 3) for image position correction during simplex printing.
PCB22	Image Position Sensor Board (Duplex)	The image position sensor in the paper bank that detects the edges of paper fed from the copier paper bank (trays 1, 2, 3) for image position correction of during duplex printing.
PCB23	SD Slot Board (Service)	The board for the service slot (C3).

Number	Name	Description
<b>PCBs</b>		
PCB24	Operation Panel	The board that controls the operation of the operation panel keys.
PCB25	Connector Board	Interfaces between the SBU and SIB.
PCB26	Relay Board	Interlock switch relay.

Number	Name	Description
<b>Power Packs</b>		
PP1	CGB Power Pack	Provides high voltage for the charge corona wires, grid plate, and the development roller.
PP2	PPG Power Pack	Provides high voltage for the corona wires and grid plate in the pre-charge unit.
PP3	Transfer Power Pack	This power pack supplies the charge to the image transfer roller that pulls the image off the drum and onto the paper.

Number	Name	Description
<b>Sensors</b>		
S1	1st Paper End Sensor	Informs the CPU when tray 1 runs out of paper.
S2	1st Paper Feed Sensor	Controls the 1st paper feed motor on/off timing and the 1st pick-up solenoid off timing.
S3	1st Tray Lift Sensor	Detects the correct paper height for feeding in the 1st tray.
S4	1st Tray Paper Height 1 Sensor	Detects the paper height in the 1st tray (tandem tray), stage 1.
S5	1st Tray Paper Height 2 Sensor	Detects the paper height in the 1st tray (tandem tray), stage 2.
S6	1st Tray Paper Height 3 Sensor	Detects the paper height in the 1st tray (tandem tray), stage 3.
S7	1st Tray Paper Height 4 Sensor	Detects the paper height in the 1st tray (tandem tray), stage 4.
S8	2nd Paper End Sensor	Informs the CPU when tray 2 runs out of paper.
S9	2nd Paper Feed Sensor	Controls the 2nd paper feed motor on/off timing and the 1st pick-up solenoid off timing.
S10	2nd Tray Lift Sensor	Detects the correct paper height for feeding in the 2nd tray.
S11	3rd Paper End Sensor	Informs the CPU when tray 3 runs out of paper.
S12	3rd Paper Feed Sensor	Controls the 3rd paper feed motor on/off timing and the 1st pick-up solenoid off timing.
S13	3rd Tray Lift Sensor	Detects the correct paper height for feeding in the 3rd tray.
S14	Cleaning Fabric End Sensor	Detects when the oil supply/cleaning fabric has been used up.

Detailed Descriptions

Number	Name	Description
<b>Sensors</b>		
S15	Double-Feed Detection LED	The paper detection LED and sensor are used in the new automatic double-feed detection feature. This LED emits light which is reflected from the paper to the double-feed detection sensor to test the translucence of each sheet.
S16	Double-Feed Detection Sensor	Receives the light emitted from the double-feed detection LED and reflected from the surface of each sheet in the paper path. Signals an error if the thickness of the paper (due to a double-feed) is not the same as the previous sheet.
S17	Drum Potential Sensor	Detects the drum surface potential.
S18	Duplex Entrance Sensor	Detects the leading and trailing edges of the paper to determine the reverse roller solenoid on or off timing.
S19	Duplex Inverter Relay Sensor	Monitors timing of sheets in the vertical paper path and detects paper jams.
S20	Duplex Inverter Sensor	Detects when to turn the inverter gate and exit gate solenoids off and checks for misfeeds.
S21	Duplex Transport Sensor 1	Detects the position of paper in the duplex unit.
S22	Duplex Transport Sensor 2	Detects the position of paper in the duplex unit.
S23	Duplex Transport Sensor 3	Detects the position of paper in the duplex unit.
S24	Exit Junction Gate HP Sensor	Detects the home position of the exit junction gate.
S25	Exit Sensor	Detects misfeeds.
S26	Front Side Fence Closed Sensor	Detects whether the tandem tray front side fence is closed.
S27	Front Side Fence Open Sensor	Detects whether the tandem tray front side fence is opened.
S28	Fusing Exit Sensor	Detects misfeeds.
S29	ID Sensor	Image density sensor detects the density of the ID sensor pattern on the drum.
S30	Image Position Sensor (Duplex)	A CIS located in the duplex path where the inverted sheets reenter the paper feed path for printing on the 2nd side. Detects the edges of the paper and corrects the side-to-side image position within 1 mm.
S31	Image Position Sensor (Tray)	A CIS located in the vertical feed path before the last pair of transport rollers before the registration roller. Detects the edges of the paper and corrects the side-to-side image position within 1 mm.

Number	Name	Description
<b>Sensors</b>		
S32	Job Time Sensor	Mounted above the paper path to the left of the cooling pipe. This photo sensor switches off when it detects the leading edge of the first sheet of a job, then switches on 2 sec. after the trailing edge of the last sheet exits from under the cooling pipe. This sensor measures the time between its off/on states. The machine uses this time count to calculate the rate of consumption of the fusing fabric.
S33	LCT Relay Sensor	Detects misfeed.
S34	Left 1st Tray Paper Sensor	Detects whether there is paper in the left side of the 1st tray.
S35	Lower Bottle Inner Cap Sensor	Detects when the inner cap of the upper toner bottle is opened.
S36	Lower Limit Sensor	After the tandem tray is empty, the tray lowers until this sensor detects the tray.
S37	Lower Toner Bottle Sensor	Detects when the lower toner bottle is set.
S38	Original Length Sensor 1	Detects the original length.
S39	Original Length Sensor 2	Detects the original length.
S40	Original Width Sensors	APS1 (a board) holds 3 original width sensors under the exposure glass. The detection combinations of these sensors are sent to the CPU to determine the width of the original on the exposure glass positioned for LEF. Each sensor consists of an LED and receptor pair to detect the width of paper on the exposure glass above. APS2, APS3 (boards) each hold 1 original length sensor under the exposure glass. The detection combinations of these sensors are sent to the CPU to determine the length of the original on the exposure glass positioned for SEF. Each sensor consists of an LED and receptor pair to detect the width of paper on the exposure glass above.
S41	Rear Fence HP Sensor	Informs the CPU when the tandem tray rear fence is in the home position.
S42	Rear Fence Return Sensor	Informs the CPU when the tandem tray rear fence is in the return position.
S43	Rear Side Fence Closed Sensor	Detects whether the tandem tray rear side fence is closed.
S44	Rear Side Fence Open Sensor	Detects whether the tandem tray rear side fence is opened.
S45	Registration Sensor	Detects misfeeds and controls registration motor on/off timing.
S46	Right Tray Paper Set Sensor	Detects paper in the right side of the tandem tray (Tray 1).
S47	Scanner HP Sensor	Informs the CPU when the 1st and 2nd scanners are at home position.

Detailed Descriptions



Number	Name	Description
<b>Sensors</b>		
S48	TD Sensor	The Toner Density sensor (TD sensor) measures the concentration of toner in the toner-developer mixture.
S49	Temperature/Humidity Sensor	Monitors the temperature and humidity inside the machine.
S50	Toner Bottle End Sensor	Located in the toner entrance bank, this sensor detects toner falling from the toner supply bottle. When the bottle runs out of toner, this sensor signals the machine to switch to the other toner bottle.
S51	Toner Collection Bottle Agitator Sensor	Detects when the toner collection bottle agitator motor locks.
S52	Toner Collection Bottle Overflow Sensor	Detects when the toner collection bottle is full.
S53	Toner Collection Coil Sensor	Detects whether the coil of the toner collection unit is rotating.
S54	Toner Cylinder TE Sensor	Signals toner end (TE) when the toner supply cylinder is empty.
S55	Toner Hopper Sensor	Monitors the level of toner in the toner supply unit.
S56	Toner Pump Motor Sensor	Detects whether the toner supply pump motor is rotating.
S57	Upper Relay Sensor	Detects misfeeds.
S58	Upper Toner Bottle Inner Cap Sensor	Detects when the inner cap of the lower toner bottle is opened.
S59	Upper Toner Bottle Sensor	Detects when the upper toner bottle is set.
S60	Vertical Transport Sensor 1	Detects misfeeds in the vertical feed path.
S61	Vertical Transport Sensor 2	Detects misfeeds in the vertical feed path.
S62	Vertical Transport Sensor 3	Detects misfeeds in the vertical feed path.
S63	Toner Suction Bottle Rotation Sensor	Monitors the rotation of the toner suction bottle motor.

Number	Name	Description
<b>Solenoids</b>		
SOL1	1st Pick-up Solenoid	Controls the up-down movement of the pick-up roller in tray 1.
SOL2	1st Separation Roller Solenoid	Controls the up-down movement of the separation roller in tray 1.
SOL3	2nd Cleaning Blade Solenoid	Controls the operation of the 2nd cleaning blade.
SOL4	2nd Pick-up Solenoid	Controls the up-down movement of the pick-up roller in tray 2.
SOL5	2nd Separation Roller Solenoid	Controls the up-down movement of the separation roller in tray 2.
SOL6	3rd Pick-up Solenoid	Controls the up-down movement of the pick-up roller in tray 3.
SOL7	3rd Separation Roller Solenoid	Controls the up-down movement of the separation roller in tray 3.

Number	Name	Description
<b>Solenoids</b>		
SOL8	Duplex/Inverter Junction Gate Solenoid	In duplex mode, after the sheet is jogged and fed out of the inverter this solenoid energizes to open the duplex inverter gate to guide the paper to the duplex unit below. In invert mode, the solenoid remains closed and the paper goes face-down out to the output tray or the finisher.
SOL9	Front Side Fence Solenoid	Opens and closes the front side fence in the tandem tray.
SOL10	Guide Plate Solenoid	Opens the guide plate when a paper misfeed occurs around this area.
SOL11	LCT Guide Plate Solenoid	Opens and closes the LCT guide plate between the LCT and the bypass tray.
SOL12	Left Tandem Tray Lock Solenoid	Locks the left tandem tray while paper is being transported from left tray to right tray.
SOL13	Rear Side Fence Solenoid	Opens and closes the rear side fence in the tandem tray.
SOL14	Switchback Idle Roller Solenoid	Controls the contact of the switchback idle roller with the switchback roller.
SOL15	Switchback Junction Gate Solenoid	Operates the switchback junction gate. Raises the gate to allow paper to enter the inverter tray. Lowers the gate to prevent paper from re-entering the vertical path after the switchback roller reverses to send the paper out of inverter tray.
SOL16	Tandem Tray Connect Solenoid	Connects/disconnects the two halves of the tandem tray.
SOL17	Toner Recycling Shutter Solenoid	Controls the shutter mechanism in the toner recycling system.
SOL18	Transfer Belt Lift Solenoid	Controls the up-down movement of the transfer belt unit.

Number	Name	Description
<b>Switches</b>		
SW1	Circuit Breaker	Provides back-up high current protection for the electrical components.
SW2	Cleaning Unit Set SW	A push switch that detects when the cleaning unit is set correctly.
SW3	Fusing Unit Set Detection Pins	These are the pins that complete a circuit to tell whether the fusing unit is installed or set correctly.
SW4	Left Front Door Safety Switch	Cuts the +5 LD dc power to disable the LD unit when the front left door is open.
SW5	Left Front Door Safety Switch 2	Cuts the 24V power from the PSU-E to the IOB when the front left door is opened.
SW6	Main Power Switch	Provides power to the machine. If this is off, there is no power supplied to the machine.
SW7	Right Front Door Safety Switch	Cuts the 24V power from the PSU-E to the IOB when the front right door is opened.
SW8	Right Front Door Safety Switch 2	Cuts the 24V power from the PSU-E to the IOB when the front left door is opened.

Detailed Descriptions

Number	Name	Description
<b>Switches</b>		
SW9	Toner Suction Bottle Set Switch	Detects whether the toner suction bottle is installed or set correctly.
SW10	2nd Tray Paper Size Switches	Determines the size of paper in tray 2. Also detects when the tray has been placed in the machine.
SW11	3rd Tray Paper Size Switches	Determines the size of paper in tray 3. Also detects when the tray has been placed in the machine.
SW12	Toner Collection Bottle Set Switch	Detects when the toner collection bottle is set.
SW13	2nd Cleaning Blade Release Switch	Monitors the operation of the release mechanism of the 2nd cleaning blade.

Number	Name	Description
<b>TC</b>		
TC1	Total Counter	Counts the total number of copies.
<b>TH</b>		
TH1	Thermistor	Touches the hot roller and measures its temperature. These temperature readings are used to control operation of the fusing lamps.
<b>TS</b>		
TS1	Thermostat 1	One of a pair of wafer thermostats mounted directly above the center of the hot roller to monitor the temperature of the hot roller and signal the CPU to switch it off if it overheats.
TS2	Thermostat 2	A pair of wafer thermostats (198°C, 199°C) mounted directly above the center of the hot roller to monitor the temperature of the hot roller and signal the CPU to switch it off if it overheats.
<b>Other</b>		
HDD	HDD 1	Scanned image data is compressed and held here temporarily.
HDD	HDD 2	Scanned image data is compressed and held here temporarily.
NF1	Noise Filter	Filters noise from the ac power supply.

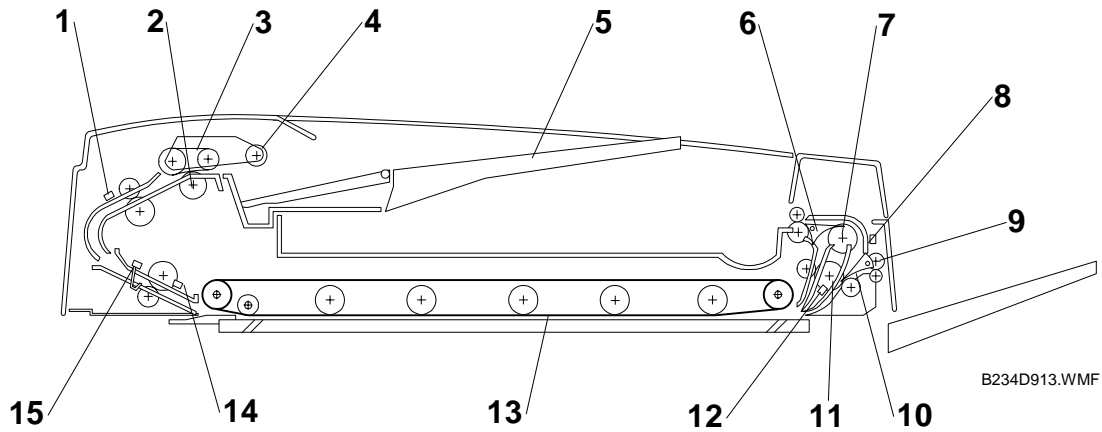
**6.5.2 ADF**

<b>Symbol</b>	<b>Name</b>	<b>Function</b>
<b>Motors</b>		
M1	Pick-up	Moves the pick-up roller up and down.
M2	Feed-in	Drives the feed belt, and the separation, pick-up, and transport rollers.
M3	Transport Belt	Drives the transport belt.
M4	Feed-out	Drives the exit and inverter rollers.
M5	Bottom Plate	Moves the bottom plate up and down.
<b>Sensors</b>		
S1	APS Start	Informs the CPU when the ADF is opened and closed (for platen mode) so that the original size sensors in the copier can check the original size.
S2	DF Position	Detects whether the ADF is lifted or not.
S3	Original Set	Detects whether an original is on the table.
S4	Bottom Plate HP	Detects whether the bottom plate is in the down position or not.
S5	Bottom Plate Position	Detects when the original is at the correct position for feeding.
S6	Pick-up Roller HP	Detects whether the pick-up roller is up or not.
S7	Entrance	Detects when to restart the pick-up motor to lift up the pick-up roller, detects when to change the feed motor direction, detects the trailing edge of the original to finish checking the original length, and checks for misfeeds.
S8	Registration	Detects the leading edge of the original to check the original length, detects when to stop the original on the exposure glass, and checks for misfeeds.
S9	Original Width 1	Detects the original width.
S10	Original Width 2	Detects the original width.
S11	Original Width 3	Detects the original width.
S12	Original Length	Detects the original length.
S13	Exit	Detects when to stop the transport belt motor and checks for misfeeds.
S14	Inverter	Detects when to turn the inverter gate and exit gate solenoids off and checks for misfeeds.
S15	Feed Cover	Detects whether the feed cover is open or not.
S16	Exit Cover	Detects whether the exit cover is open or not.
<b>Solenoids</b>		
SOL1	Exit Gate	Opens and closes the exit gate.
SOL2	Inverter Gate	Opens and closes the inverter gate.
<b>Magnetic Clutches</b>		
MC1	Feed-in	Drives the feed belt, separation roller, and pick-up roller.
<b>PCBs</b>		
PCB1	DF Main	Controls the ADF and communicates with the main copier boards.
PCB2	DF Indicator	Indicates whether an original has been placed in the feeder, and indicates whether SADF mode has been selected.

Detailed Descriptions

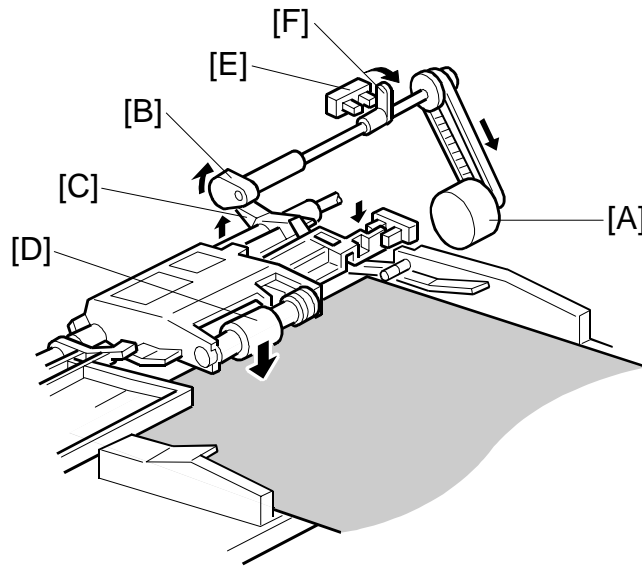
## 6.6 ADF

### 6.6.1 OVERVIEW



- |                           |                         |
|---------------------------|-------------------------|
| 1. Entrance Sensor        | 9. Feed-out Roller      |
| 2. Separation Roller      | 10. Exit Junction Gate  |
| 3. Feed Belt              | 11. Inverter Roller     |
| 4. Pick-up Roller         | 12. Exit Sensor         |
| 5. Original Tray          | 13. Transport Belt      |
| 6. Inverter Junction Gate | 14. Registration Sensor |
| 7. Inverter Guide Roller  | 15. Width Sensors (x3)  |
| 8. Inverter Sensor        |                         |

### 6.6.2 PICK-UP ROLLER RELEASE



B234D914.WMF

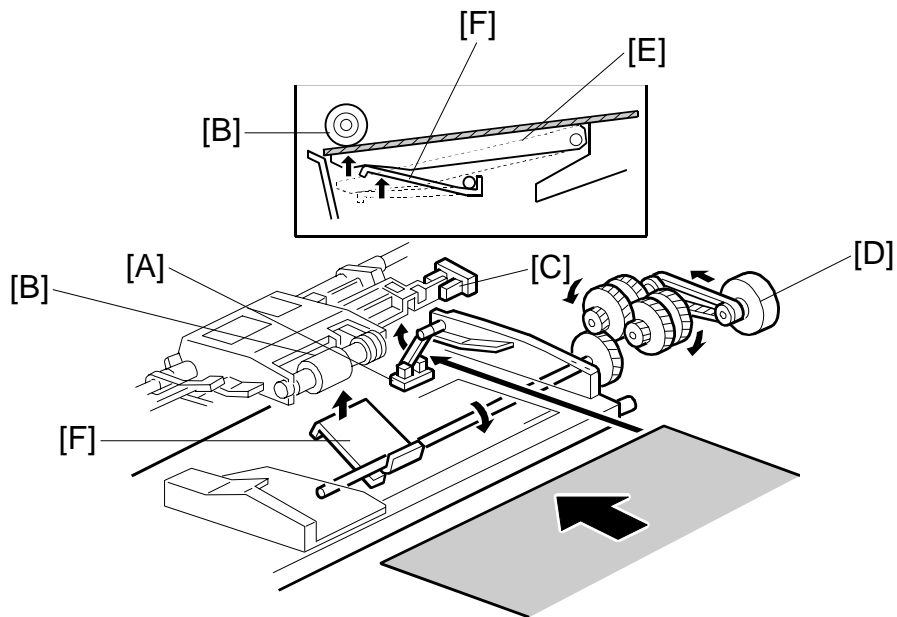
When the original set sensor is off (no original on the original tray), the pick-up roller stays in the up position.

When the original set sensor turns on (or when the trailing edge of a page passes the entrance sensor while pages remain on the original tray), the pick-up motor [A] turns on. The cam [B] rotates away from the pick-up roller release lever [C]. The lever then rises and the pick-up roller [D] drops onto the original.

When the original reaches the entrance sensor, the pick-up motor turns on again. The cam pushes the lever down, and the pick-up roller rises until the pick-up roller HP sensor [E] detects the actuator [F].

Detailed Descriptions

### 6.6.3 BOTTOM PLATE LIFT

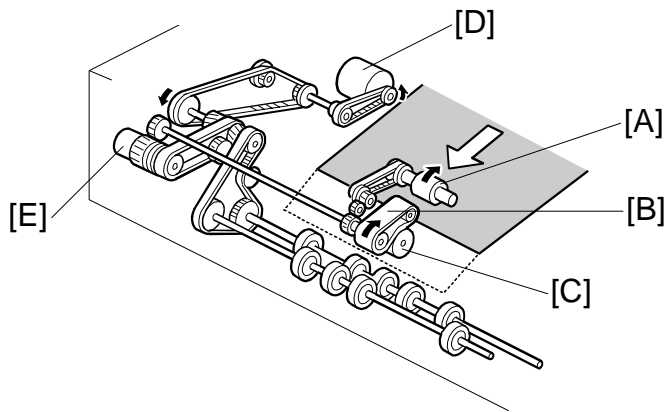


B234D915.WMF

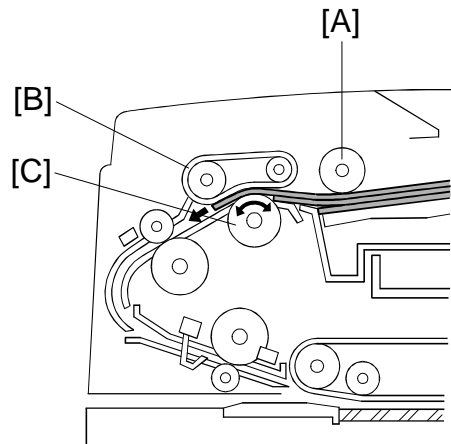
When an original is placed on the original tray, the original set sensor [A] turns on, the pick-up roller [B] drops on to the original, and the bottom plate position sensor [C] turns off. Then the bottom plate motor [D] turns on and lifts the bottom plate [E] by raising the lift lever [F] until the bottom plate position sensor turns on.

The level of the pick-up roller drops as the stack of originals becomes smaller, and eventually, the bottom plate position sensor [C] turns off. Then, the bottom plate motor turns on and lifts the bottom plate until the bottom plate position sensor turns on. This keeps the original at the correct height for feeding.

### 6.6.4 PICK-UP AND SEPARATION



B234D916.WMF



B234D917.WMF

The original separation system is a Feed and Reverse Roller (FRR) system. The pick-up roller [A], feed belt [B], and separation roller [C] are driven by the feed-in motor [D].

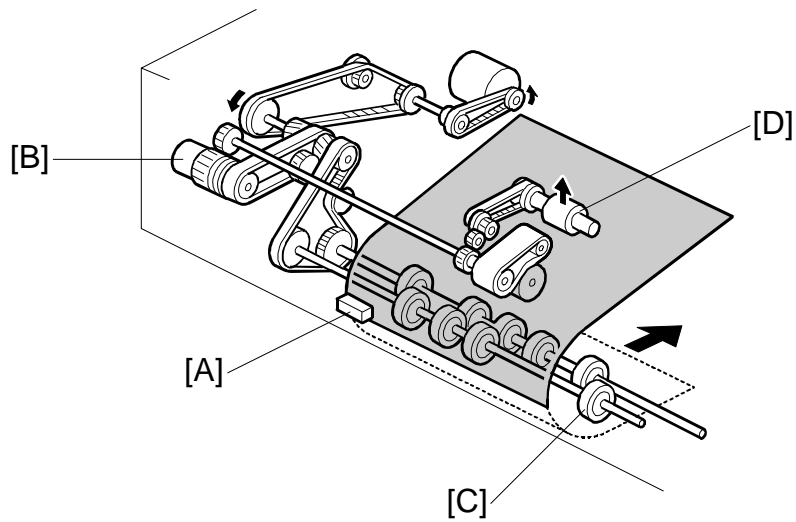
To drive this mechanism, the feed-in motor [D] and feed-in clutch [E] turn on.

**(CT)** Handling Paper> Handling Originals> Document Feed> **FRR with Feed Belt**

Detailed Descriptions



### 6.6.5 ORIGINAL FEED

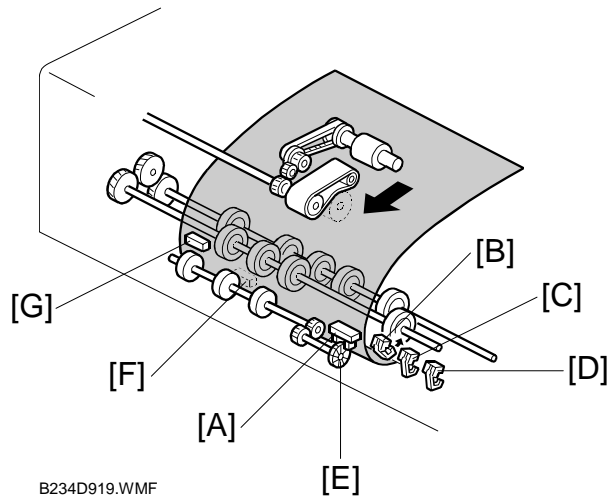


B234D918.WMF

When the leading edge of the original turns the entrance sensor [A] on, the feed-in clutch [B] turns off and the drive for the feed belt is released. The original is fed by the transport rollers [C].

At the same time, the pick-up motor starts again and the pick-up roller [D] is lifted up. When the pick-up roller HP sensor turns on, the pick-up motor stops (see ch6.6.2 Pick-up Roller Release).

### 6.6.6 ORIGINAL SIZE DETECTION



The ADF detects the original size by combining the readings of original length sensor [A], and original width sensors-1 [B], -2 [C], and -3 [D].

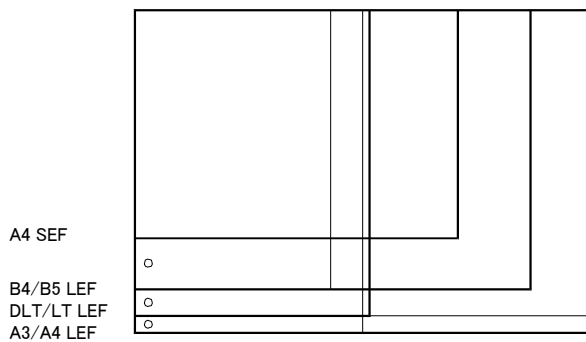
#### **Original Length**

The original length sensor and the disk [E] (connected to the transport roller) generate a pulse signal. The CPU counts pulses, starting when the leading edge of the original turns on the registration sensor [F], until the trailing edge of the original turns off the entrance sensor [G].

#### **Original Width**

The CPU detects original width using three original width sensors -1, -2, -3 as shown above. Three small circles on the diagram indicate the positions of the sensors.

#### **Original Width Sensor Location**

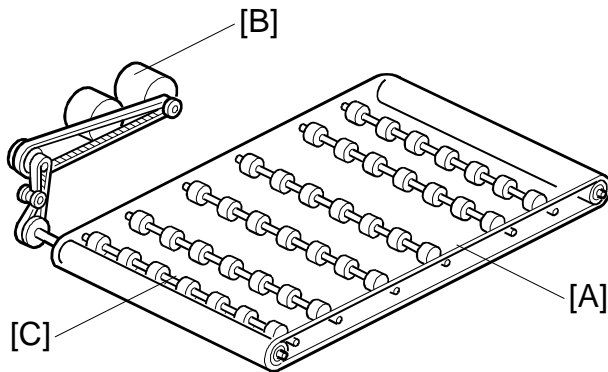


#### **Detectable Paper Sizes**

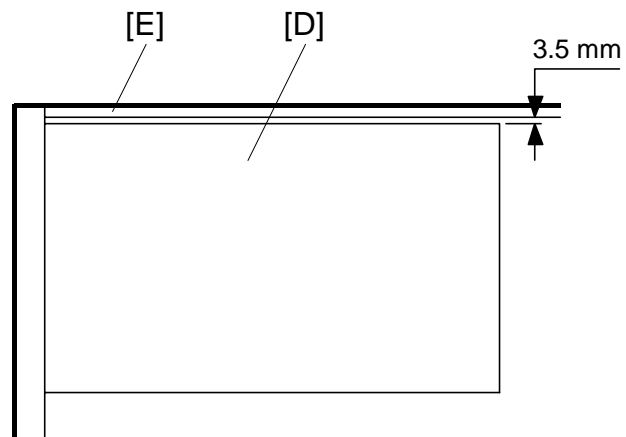
Please refer to the “1.2 ADF” table in “Specifications”.

Detailed Descriptions

## 6.6.7 ORIGINAL TRANSPORT



B234D922.WMF



B234D921.WMF

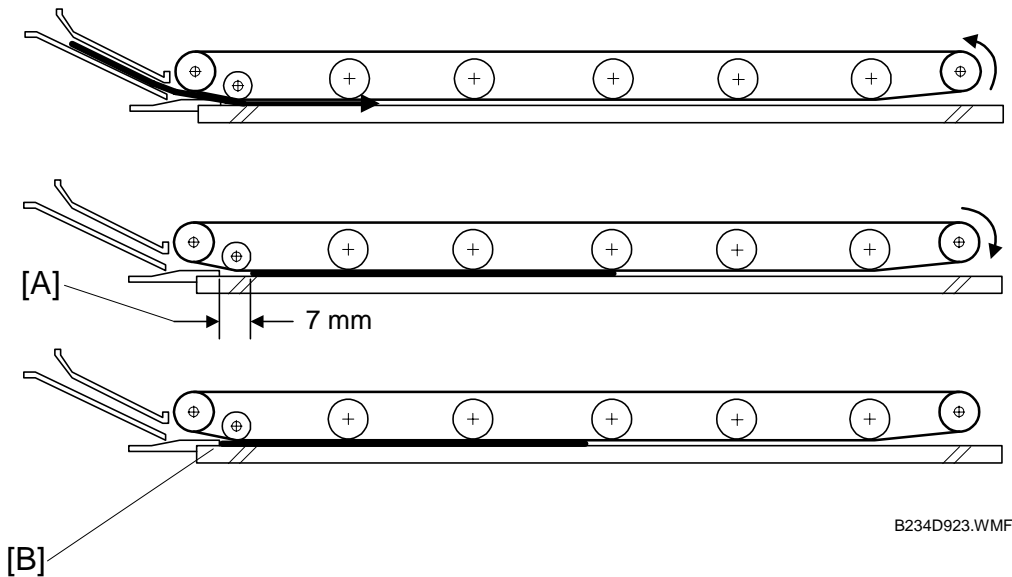
The transport belt [A] is driven by the transport belt motor [B]. The transport belt motor starts when the copier sends an original feed-in signal.

The pressure rollers inside the transport belt maintain the correct pressure between belt and original. The pressure roller [C] closest to the left original scale is made of rubber for the stronger pressure needed for thick originals. The other rollers are sponge rollers.

Normally, originals are manually placed at the left rear corner, so an original [D] fed from the ADF must also be at this position. But if the original touches the rear scale [E] as it feeds, original skew, jam, or wrinkling may occur.

To prevent such problems, the original transfer position is set to 3.5 mm away from the rear scale as shown. The 3.5 mm gap is compensated for by changing the starting position of the main scan for when the image is exposed on the drum.

### 6.6.8 ORIGINAL SKEW CORRECTION



The transport belt motor remains energized to carry the original to the right about 7 mm past the left scale [A]. Then the motor stops and reverses to feed the original 12 mm to the left against the left scale to correct skew. This forces the original to hit the left scale, which aligns the trailing edge to minimize original skew on the exposure glass.

If thin original mode is selected, the original is not forced back against the left scale. This is to prevent damage to the original.

After a two-sided original has been inverted to copy the 2nd side, it is fed in from the inverter against the left scale [B] without skew correction.

**NOTE:** The bottom drawing applies to duplex scanning; the top two drawings do not apply in this mode.

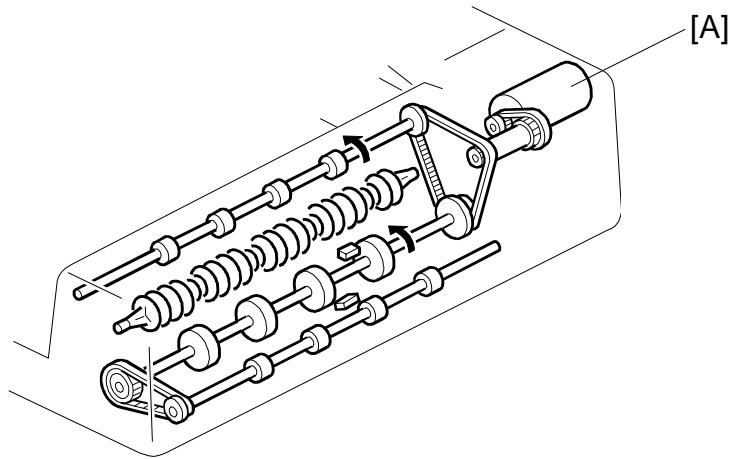
The amount of reverse feed against the left scale can be adjusted as follows:

- One-sided originals, and side 1 of two-sided originals: **SP6006-3** (DF Registration Adjustment – Leading Edge Duplex 1st)
- Side 2 of two-sided originals: **SP6006-4** (DF Registration Adjustment – Leading Edge Duplex 2nd).

Detailed Descriptions

## 6.6.9 ORIGINAL INVERSION AND FEED-OUT

### *General Operation*



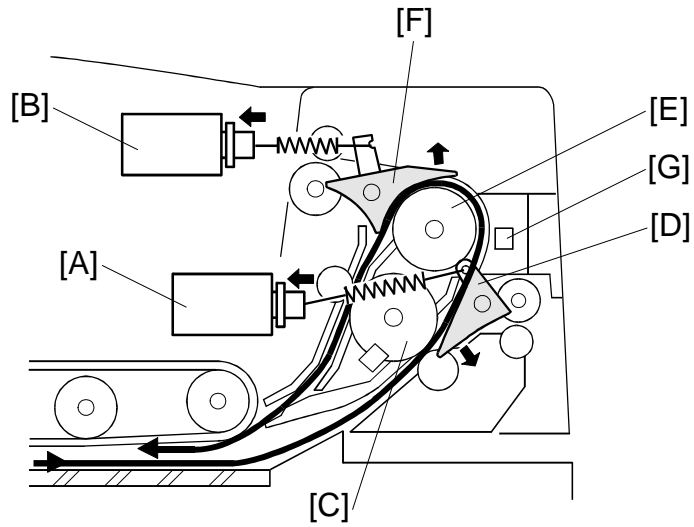
B234D924.WMF

When the scanner reaches the return position, the copier CPU sends the feed-out signal to the ADF. When the ADF received the feed-out signal, the transport belt motor and feed-out motor [A] turn on. The original is then fed out to the exit tray or fed back to the exposure glass after reversing in the inverter section.

This ADF has two exit trays. For single-sided original mode, the original is fed out straight out to the right exit tray, but for double-sided original mode, the original is fed out to the upper exit tray.

This causes the originals to be fed out in the correct order on the exit trays and allows the maximum one-to-one copy speed for each mode.

**Original Inversion**

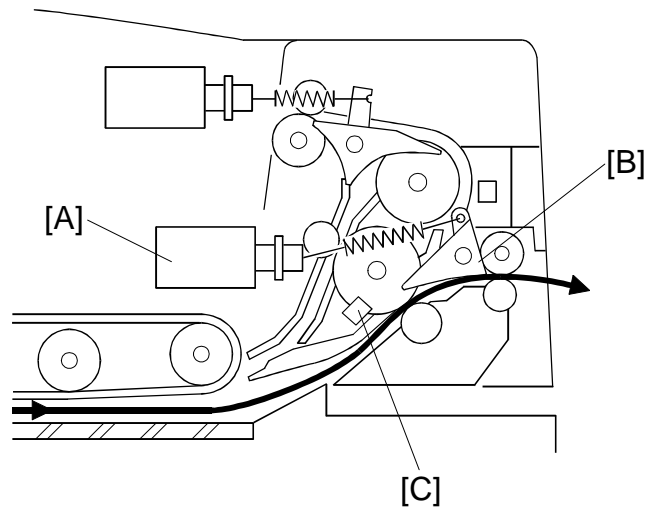


B234D925.WMF

When the ADF receives the original invert signal from the copier, the transport belt motor, feed-out motor, exit gate solenoid [A], and inverter gate solenoid [B] turn on and the original is fed back to the exposure glass through the inverter roller [C], exit gate [D], inverter guide roller [E], inverter gate [F], and inverter roller.

The transport belt motor reverses shortly after the leading edge of the original turns on the inverter sensor [G], and feeds the original to the left scale.

Detailed  
Descriptions

**Original Exit (Single-Sided Original Mode)**

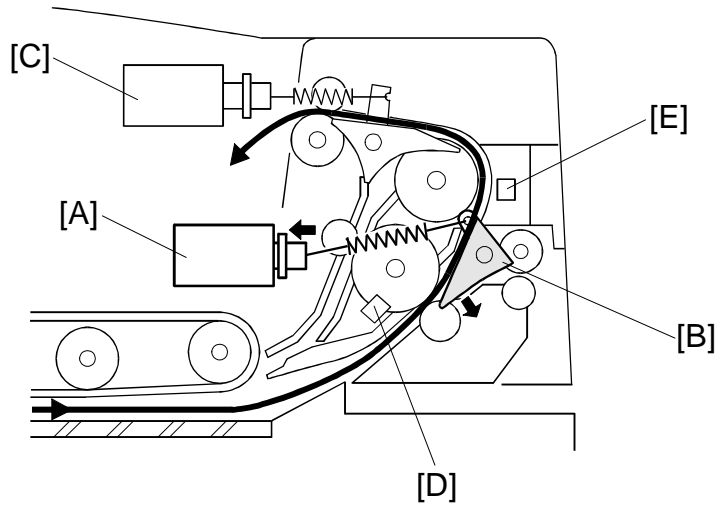
B234D926.WMF

The exit gate solenoid [A] remains off, the exit gate [B] remains closed, and the original is fed out to the right exit tray.

The speed of the motor is reduced about 30 mm from the trailing edge of the original to ensure the originals stack neatly on the exit tray. This timing is determined by the length of the original, and the time since the exit sensor [C] detected the leading edge.

The transport belt motor turns off after the exit sensor [C] turns off.

**Original Exit (Double-Sided Original Mode)**



B234D927.WMF

The exit gate solenoid [A] turns on and the exit gate [B] opens.

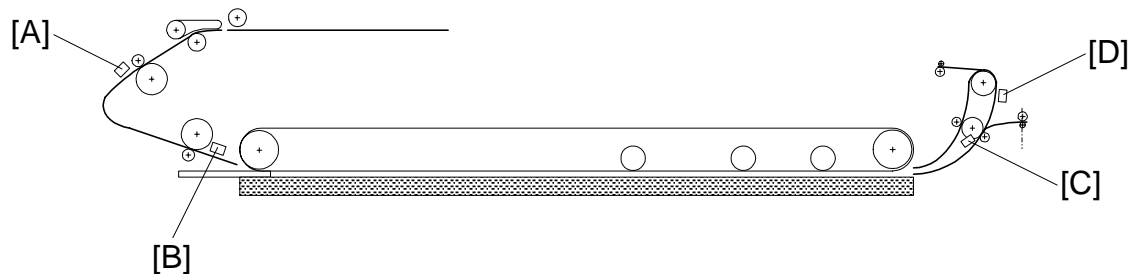
The inverter gate solenoid [C] remains off, and the original is fed out to the upper tray. The transport belt motor turns off when the trailing edge of the original passes the exit sensor [D].

To stack the originals neatly on the upper tray, the feed-out motor speed is reduced shortly after the trailing edge of the original turns off the inverter sensor [E].

Detailed  
Descriptions



### 6.6.10 ADF JAM CONDITIONS



B234D928.WMF

#### **Feed-in**

1. The entrance sensor [A] is still off 500 ms after the feed-in motor turned on.
2. The registration sensor [B] is still not off 300 ms after the feed-in motor speed increased.
3. The entrance sensor is still on when the feed-in and transport motors have fed the original 442 mm after the registration sensor turned on.

#### **Feed-out**

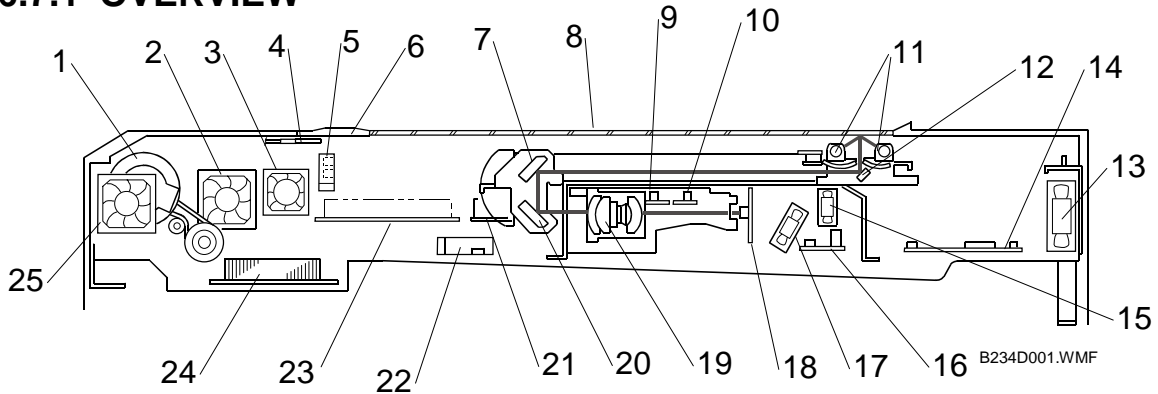
4. The registration sensor is still on when the feed-in and transport motors have fed the original 751 mm after the registration sensor turned on.
5. The exit sensor [C] is still off when the transport and feed-out motors have fed the original 129 mm after the feed-out motor turned on.
6. The exit sensor is still on when feed-out motor has fed the original X mm (X = original length x 1.3) after the exit sensor turned on.

#### **Inversion**

7. The exit sensor is still off when the transport and exit motors have fed the original 198 mm after the transport motor turned on to feed the original to the inverter section.
8. The exit sensor is still on when the feed-out motor has fed the original X mm (X = original length x 1.3) after the exit sensor turned on.
9. The inverter sensor [D] is still off when the transport and feed-out motors have fed the original 96 mm after the exit sensor turned on.
10. The inverter sensor is still off when the transport and feed-out motors have fed the original 96 mm to the exposure glass after the exit sensor turned off.

## 6.7 SCANNING

### 6.7.1 OVERVIEW



- |                                     |  |
|-------------------------------------|--|
| 1. Scanner Motor                    | 14. SIB (Scanner Interface Board)        |
| 2. Optics Exhaust Fan               | 15. Lamp Regulator Fan (Right)           |
| 3. Lamp Regulator Fan (Left)        | 16. Connector Board                      |
| 4. Thermistor                       | 17. SBU (CCD) Cooling Fan                |
| 5. Scanner HP Sensor                | 18. SBU (CCD)                            |
| 6. White Plate (on exposure glass)  | 19. Scanner Lens                         |
| 7. 2nd Mirror                       | 20. 3rd Mirror                           |
| 8. Exposure Glass                   | 21. Lamp Regulator (Right)               |
| 9. Original Length Sensors 1 (APS)  | 22. Original Width Sensors 1, 2, 3 (APS) |
| 10. Original Length Sensors 2 (APS) | 23. Lamp Regulator (Left)                |
| 11. Exposure Lamps (x2 Xenon)       | 24. MCU                                  |
| 12. 1st Mirror                      | 25. Scanner Motor Cooling Fan            |
| 13. Optics Intake Fan               |  |

Detailed Descriptions

Two xenon lamps (30W: 57,600 lux) as the exposure lamp illuminates the original. Two lamps reduce the occurrence of dirty background caused if there is a gap between the original and the exposure glass. The two lamps also improve color registration for color scanning.

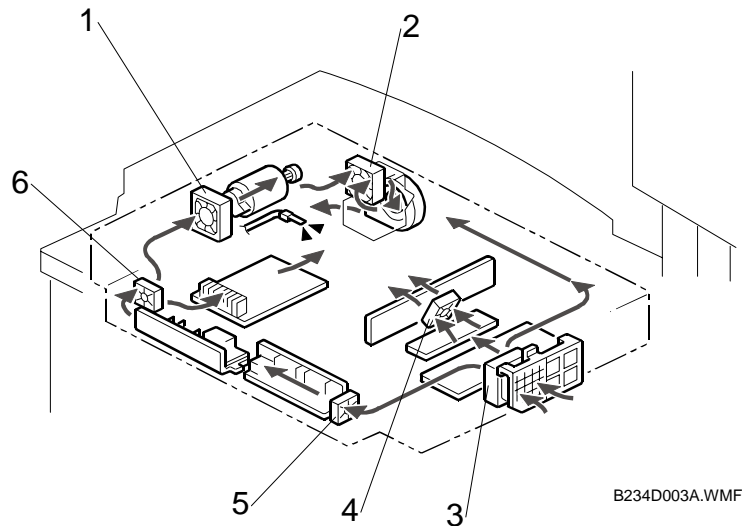
The image is reflected onto the CCD (600 dpi resolution) via the 1st, 2nd, and 3rd mirrors, and through the lens.

The CCD (10 µm 600 dpi, 4ch, 3-line) can scan in color as well as black and white. The scanned color documents can be used with Palm (Auto Document Link, Desk Top Editor for Production, Print Job Manager Professional) or with Scan-to-Email.

The lens, CCD, and SBU are in a single unit, the lens block. The optical axis, focus, and MTF are pre-adjusted, so this lens block requires no adjustment in the field. The 1st scanner consists of the exposure lamp [4], the lamp regulator and the 1st mirror.

	Exposure lamp		Scanner Motor		Low power mode
	On	Off (after 60 sec)	On	Off (after 60 sec)	
Scanner Motor Cooling Fan	-	-	Full	Off	Off
Optics Exhaust Fan	Full	Half	-	-	Off
Lamp Regulator Fan (Right)	Full	Off	-	-	Off
Lamp Regulator Fan (Left)	Full	Off	-	-	Off
Optics Intake Fan (Right)	Full	Half	-	-	Off
SBU (CCD) Cooling Fan	Full	Full	-	-	Off

**Full:** Full power, **Half:** Half power



1. Scanner Motor Cooling Fan
2. Optics Exhaust Fan
3. Optics Intake Fan
4. SBU Cooling Fan
5. Lamp Regulator Fan (Right)
6. Lamp Regulator Fan (Left)

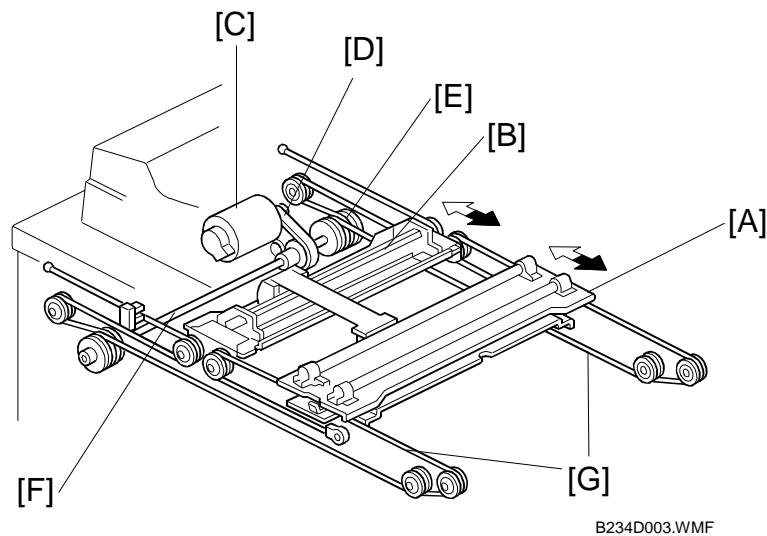
The optics fan intake [3] and the SBU cooling fan [4], draw cool air into the scanning unit.

The right lamp regulator fan (right) [5] draws cool air over the lamp regulators.

The left lamp regulator fan (left) [6], the scanner motor cooling fan [1], and the optics exhaust fan [2] expel warm air.

**NOTE:** The optional optics anti-condensation heater (not shown) turns on while the main switch is off to prevent moisture from forming on the optics.

## 6.7.2 SCANNER DRIVE



The scanner motor [C] is a DC servo motor. The 1st and 2nd scanners [A, B] are driven by the scanner motor [C] through the timing belt [D], scanner drive pulley [E], scanner drive shaft [F], and two scanner wires [G].

The MCU (Motor Control Unit) board controls the scanner motor.

Scanner speed (A4 / LT LEF, 100%)

Forward: 515 mm/sec

Return: 2500 mm/sec

### ***Magnification and Reduction***

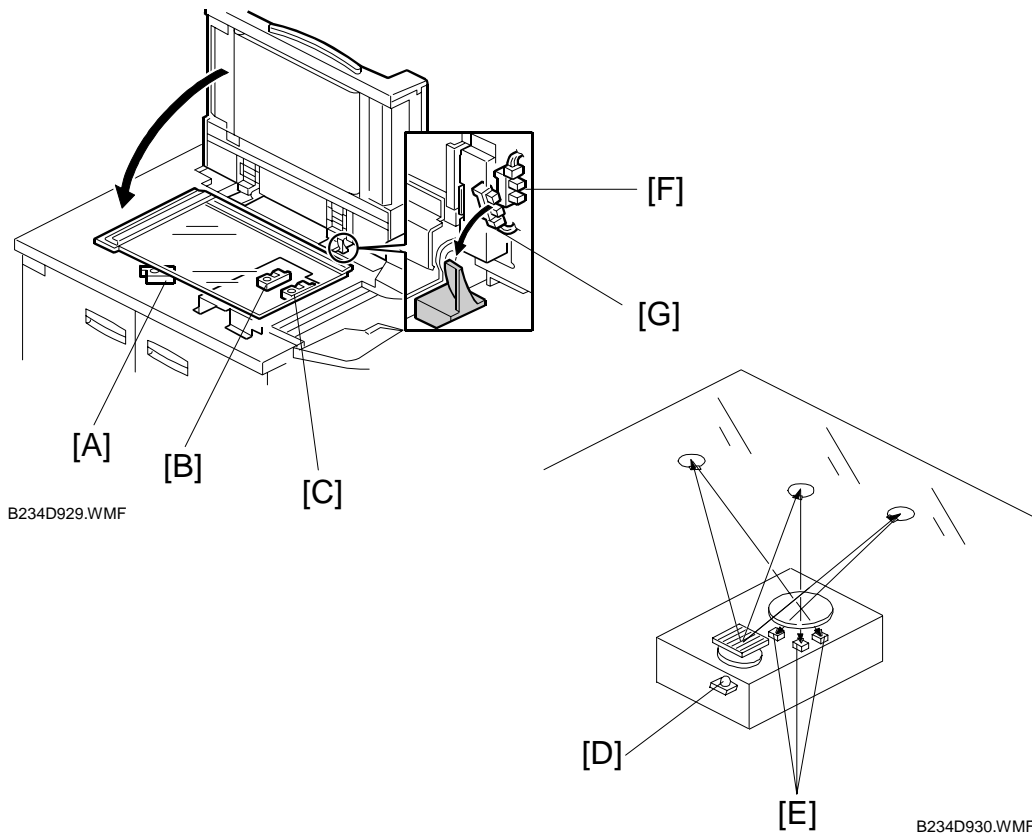
Magnification and reduction in the main scan direction are done in the IPU board.

Magnification and reduction in the sub scan direction are done by controlling the speed of the scanner motor in sync with the main scan processing done in the IPU.

- Magnification above 101% is done in the IPU. For example, at 200% magnification, the IPU doubles magnification while the scanner motor speed remains at 100%.
- Reduction in the range 51% to 100% is done by the scanner motor.
- Reduction in the range 25% to 50% is done by the scanner motor, assisted by IPU processing. For example, at 40% reduction, the scanner motor speed is 80% and the IPU reduces the image by 1/2.
- Reduction below 25% is done by the scanner motor, assisted by IPU processing. For example, at 24% reduction the scanner motor speed is 96% and the IPU reduces the image by 1/4.

**NOTE:** Magnification in the sub scan direction can be adjusted by changing the scanner motor speed with **SP4008** (Scanner Sub Scan Magnification).

### 6.7.3 ORIGINAL SIZE DETECTION



There are three reflective sensors at three locations in the optics cavity for original size detection.

The original width sensor [A] detects the original width, and the original length sensor 1 [B] and original length sensor 2 [C] detect the original length. These are the APS (Auto Paper Select) sensors.

Inside each APS sensor, there is an LED [D] and either three photoelectric devices [E] (for the width sensor) or one photoelectric device (for each length sensor). In the width sensor, the light generated by the LED is separated into three beams and each beam scans a different point of the exposure glass (in each length sensor, there is only one beam). If the original or ADF cover is present over the scanning point, the beam is reflected and each reflected beam exposes a photoelectric device and activates it.

While the main switch is on, these sensors are active and the original size data is always sent to the main CPU. However, the main CPU checks the data only when the ADF is being closed.

The ADF functions as the platen. The DF position sensor [F] (attached to the ADF) detects whether the ADF is open or closed.

The APS start sensor [G] triggers auto paper size detection.

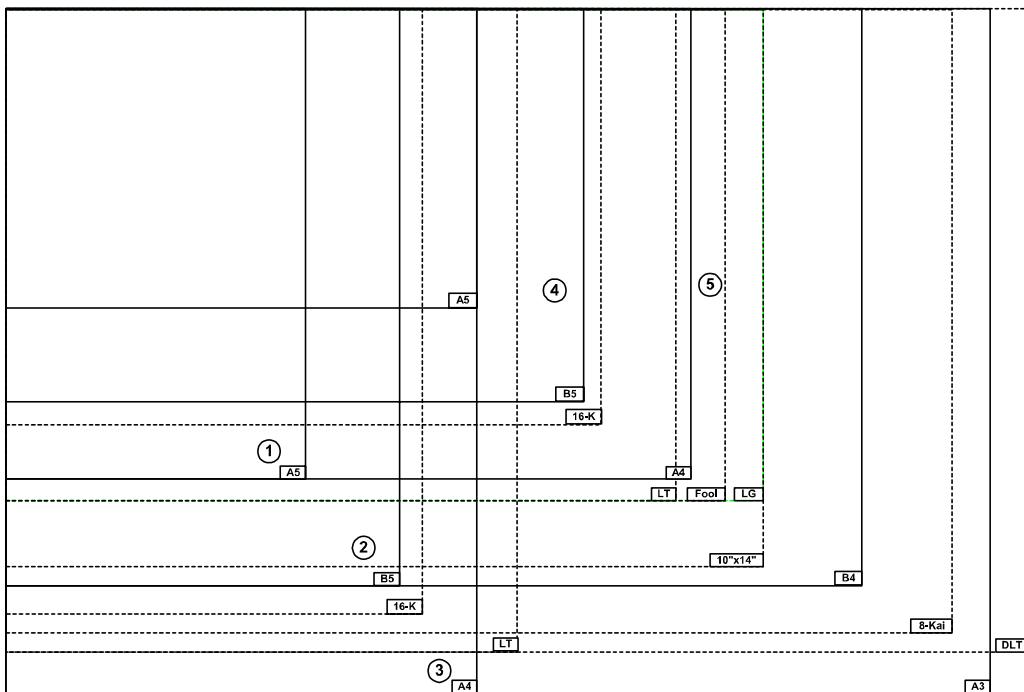
Detailed Descriptions

The original size data is taken by the main CPU when the APS start sensor is activated. This is when the ADF is positioned about 12 cm above the exposure glass. At this time, only the sensors underneath the original receive the reflected light and switch on. The other sensors are off. The main CPU recognizes the original size from the on/off signals from the five sensors.

If the copy is made with the ADF open (book mode), the main CPU decides the original size from the sensor outputs when the [Start] key is pressed.

This original size detection method eliminates the necessity for a pre-scan and increases the machine productivity.

The tables on the next pages show the outputs of the sensors for each original size.



B234D931.WMF

**North America**

Original		APS 1			APS 2	APS 3	SP4301 Display
Name	Size	W1	W2	W3	L1	L2	
DLT SEF	11 x 17 in.	Yes	Yes	Yes	Yes	Yes	0001 1111
LG SEF	8½ x 14 in.	Yes	—	—	Yes	Yes	0001 1100
LT SEF	8½ x 11 in.	Yes	—	—	Yes	—	0000 1100
LT LEF	11 x 8½ x in.	Yes	Yes	Yes	—	—	0000 0111
HLT SEF	5½ x 8½	—	—	—	—	—	●
HLT LEF	8½ x 5½	—	—	—	—	Yes	0001 0000

Yes: Detected

—: Not detected

●: Default: Size not detected. However, SP4303 can be set to recognize HLT SEF.

**Europe, Oceania, Asia**

Original		APS 1			APS 2	APS 3	SP4301 Display
Name	Size	W1	W2	W3	L1	L2	
A3 SEF	297 x 420 mm	Yes	Yes	Yes	Yes	Yes	0001 1111
B4 SEF	257 x 364 mm	Yes	Yes	—	Yes	Yes	0001 1110
A4 SEF	219 x 297 mm	Yes	—	—	Yes	—	0000 1100
A4 LEF	297 x 210 mm	Yes	Yes	Yes	—	—	0000 0111
B5 SEF	182 x 257 mm	—	—	—	Yes	—	0000 1000
B5 LEF	257 x 182 mm	Yes	Yes	—	—	—	0000 0110
A5 SEF	148 x 210 mm	—	—	—	—	—	●
Foolscap SEF	8½ x 13 in.	Yes	—	—	Yes	Yes	0001 1100* <sup>1</sup>
Folio SEF	8¼ x 13 in.	Yes	—	—	Yes	Yes	0001 1100* <sup>1</sup>
F SEF	8 x 13 in.	Yes	—	—	Yes	Yes	0001 1100* <sup>1</sup>

Yes: Detected

—: Not detected

●: Default: Size not detected. However, SP4303 can be set to recognize A5 SEF.

\*<sup>1</sup>: With SP 5126, you can select 1 from 3 paper sizes of very similar dimensions. The default is 8½ x" 13", and the other choices are 8¼" x 13", 8" x 13".

**Important**

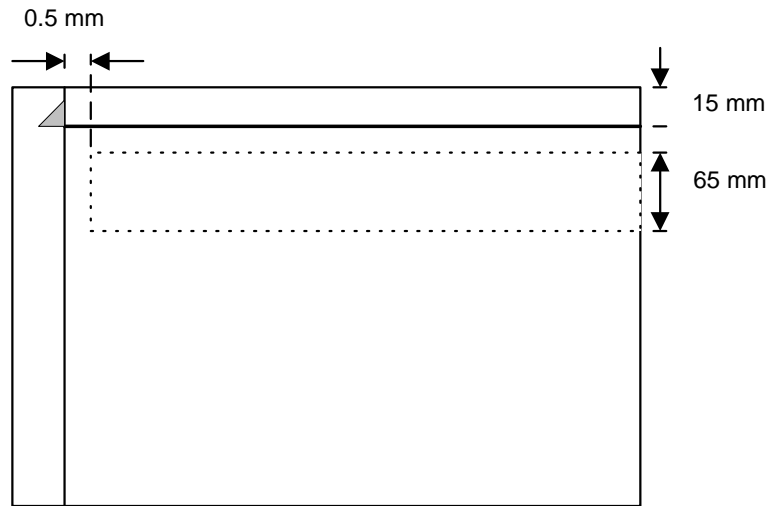
- Occasionally, the APS sensors cannot detect the original size accurately if there is a large amount of black coverage in the original.
- In such cases, the detection of the innermost APS width sensor is ignored and the detection of the outermost is used to detect the original size.
- When this occurs, the APS readings appear with double underlines when displayed on the operation panel display with **SP4301**.
- APS can detect the only the paper sizes in the table above.

Detailed Descriptions



### 6.7.4 AUTO IMAGE DENSITY (ADS)

The area that the CCD uses as a reference for ADS is shown in the following diagram.



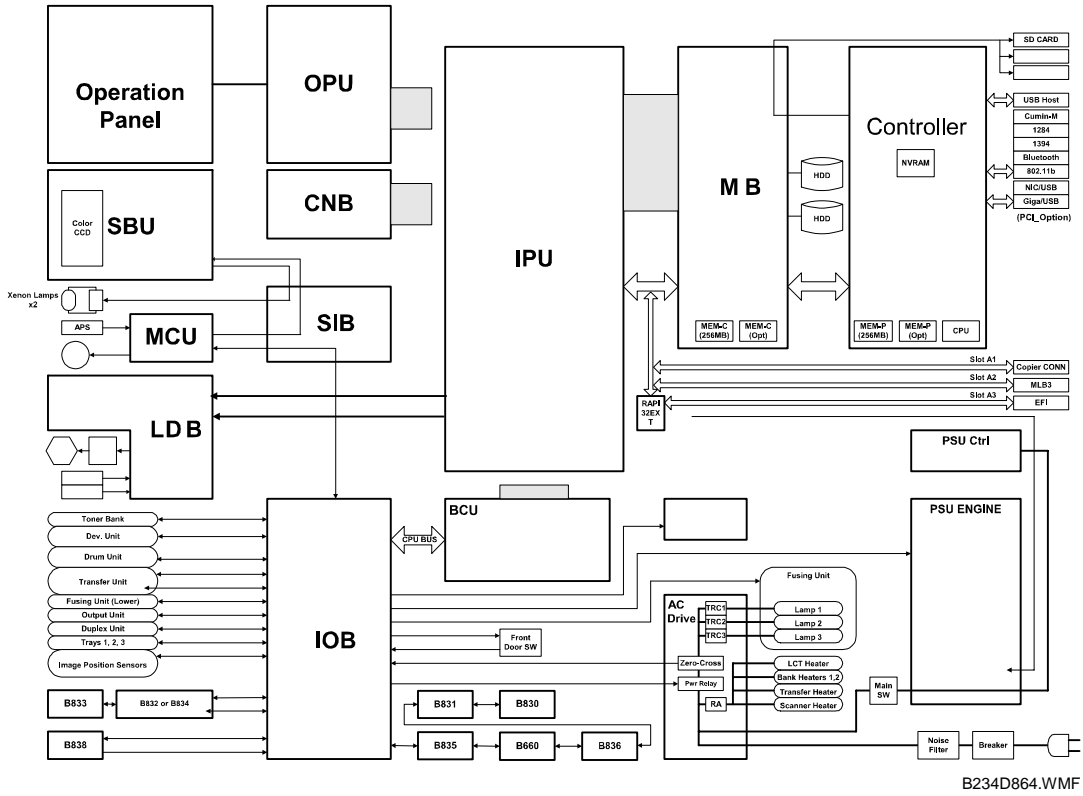
B234D954.WMF



- Digital Processes> Image Processing> Black and White CCD Systems> Analog Signal Processing> Automatic Image Density
- Digital Processes> Image Processing> Color Systems> Analog Signal Processing

# 6.8 BOARD STRUCTURE

## 6.8.1 BLOCK DIAGRAM



Detailed Descriptions

## 6.8.2 COMPONENT DESCRIPTIONS

This machine has a GW controller board.

### ***PCBs***

Here is a summary of the main parts of the board structure.

Important:

- This machine uses a system SD card (Slot **C1**). This SD card should never be removed from the machine.
  - The DIP switch settings and the board should not be changed. For details, please refer to “6.18.2”, the last section of this manual.
1. BCU (Base Engine Control Unit): This is the main control board that controls the engine sequence, timing for peripherals. The BCU also controls:
    - High voltage
    - Duplexing
    - Paper feed
    - Paper registration
    - Fusing
    - Peripheral interfaces
    - Drive
    - Toner supply
  2. Controller Board: The controller board controls all devices for memory DIMMs, HDD, copying, printing, and scanning. The controller board also provides all the connection points for easy installation of the options. The controller board also controls:
    - Printer/scanner
    - Document server
    - Image rotation
    - Conversion of all image formats
    - Image compression and decompression
  3. Mother Board: Interfaces the controller and the IPU, and installed options.
  4. IPU (Image Processing Unit): Contains large-scale integrated circuits that perform image processing on the digital data sent from the SBU, then sends the processed data to the controller and then to the LD unit. Also relays data transmissions between the controller and LCDC.
  5. SBU (Sensor Board Unit): The SBU receives analog signals from the CCD and converts them into the digital signals that are used for image processing. A/D conversion divides the range between black and white into 256 levels and digitizes the analog signal based on these levels. The 256 levels are called grayscales.

6. IOB (Input/Output Board): Performs three functions:
  - Converts sensor output from the paper bank, toner bank unit, and LCT then sends it to the BCU.
  - Converts serial data from the BCU to parallel data for control of the paper bank, toner bank unit, and LCT components (motors, solenoids, clutches).
  - Supplies the 24V power supply from the PSU to the BCU, LCT, and interlock system for the development motor, drum motor, and paper feed motor.
7. LCDC (LCD Control): The LCDC controls the operation panel and relays the internal signals of the optical system (SBU, MCU $\leftrightarrow$ IPU, BCU)
8. LDB (LD Board): The LDB controls the laser diodes. It also contains the laser diodes.
9. AC Drive Board: The AC drive board controls AC power for the fusing lamps and the anti-condensation heaters.
10. MCU (Motor Control Unit): Controls the scanner motor with the commands from the BCU. Also controls exposure lamp on/off timing, APS detection, the fan motors, generation of gate signals, and transmission of serial data.
11. Lamp Regulators: Control the exposure lamps in the flat bed scanner
12. Operation Panel: Controls the operation panel and LCD display panel.
13. Operation Switch Board: Switches main power to the machine ON/OFF.
14. Polygon Mirror Motor Control Board: Controls the polygon motor.
15. PSU-C (Power Supply Unit-Controller): Supplies DC power for the controller.
16. PSU-Ea, PSU-Eb (Power Supply Unit-Engine): Supplies DC power for the machine.

**Board LEDs**

**Normal Operation**

With the exception of the controller board, relay board, and the PCBs of the three CIS image position sensors, the LEDs of the other boards light GREEN while they are operating (supplied with power).

In the low power mode, the PSU shuts down boards that are not essential for running the machine in lower power mode, to conserve energy.

The shaded areas of the table below show the circuits that are shut down by the PSU in the low power mode.

	CTL	MB	HDD	IPU	BCU	IOB	AC	PP	MCU	LDB	OPU	SIB	SBU	ADF	FIN	LCT
5VE	○	○	○	○												
12VE		○	○													
5VL				○	○	○	○				○					
5VLINT						○	○			○						
5V				○		○				○						
24V						○			○	○	○	○	○	○	○	○
24VINT						○		○								
24VCNT						○										
38V									○					○		

In the low power mode, power is supplied to parts of the controller, BCU, IOB, AC boards, and the operation panel, so that the controller, operation panel and fusing temperature control can continue to operate. All other operations of the mainframe and finishers are shut down.

**Recovery From Low Power Mode**

Only two actions awaken the machine from low power mode: 1) pressing a key on the operation panel, and 2) setting an original on the ADF.

**HDD (Hard Disk Drive)**

The combined capacity of the HDD's is 320 GB (160 GB x2) for image storage. They can store up to approximately 3,000 copy images, based on the ITU-T No. 4 Chart.

The ASIC on the controller handles data by dividing each 32-bit word into 16-bit units and writes the high-end bits to one hard disk and the low-end bits to the other hard disk. This effectively reduces the write speed by 50% because each half of each 32-bit word is saved simultaneously. Because the data is divided between the two hard disks, replacing only one of the hard disks will cause errors. Therefore, both disks must always be replaced together.

Area	Power Off	Capacity (MB)	Control	Comment
Object	Store	256	256 files	GBD store, version up
Swap	Store	256		Debug
Local image storage	Delete	131250	15,000 Copies	Doc. server storage
Temporary images	Delete	2625	300 pages	Shared file
		26250	3000 pages	Copy
		2100	3000 pages	Printer
		2100	3000 pages	Printer (secure)
		1290	300 pages	NFA
		7500	3000 pages	Scanner
Image over lay	Store	930	100 pages	Image overlay
File system 1	Store	2000	10000 files	Print font download, Form registration
File system 2	Store	500	5000 files	Job spool area
File system 3	Store	2000	30000 files	Thumbnails (NCS)
File system 4	Store	1200	10000 files	SDK
File system 5	Store	300	256 files	Address storage area
File system 6	Store	200	16000	Email (send)
File system 7	Store	1000	26000	Email (Receive)
File system 8	Store	500	10100 files	Netfile
File system 9	Delete	500	1000 files	PDF, PCL, RTIFF

Detailed Descriptions

Note the following important points regarding HDD replacement:

- Both HDD's must always be replaced together as one set.
- Replacing the HDD loses all document server documents, and user stamps.
- When the HDD is replaced, the default user stamps must be re-installed, so use **SP5853** to copy these files from the controller firmware onto the hard disk.
- The "Scan to Email" addresses are also lost by HDD replacement. However, addresses can be backed up with Smart Net Monitor.
- Print fonts must also be re-entered after HDD replacement.

## 6.9 IMAGE PROCESSING

### 6.9.1 IMAGE PROCESSING STEPS AND RELATED SP MODES

The following tables describe the image processing path and the related SP modes used for each image processing mode.

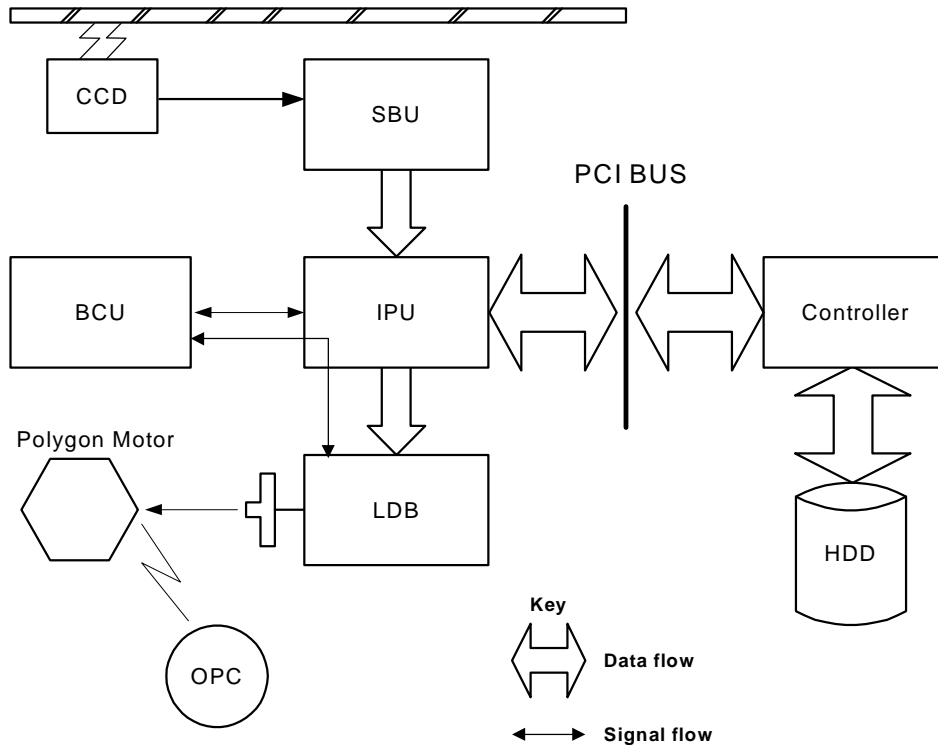
The user can adjust many of the image processing parameters with a UP mode (Copy/Document Server Features> General Features> Copy Quality), using fixed settings such as Sharp, Normal, and Soft. Each of these fixed settings have different parameters, but user changes do not affect the relevant SP mode settings.

If the user is not satisfied with any of the available settings for this UP mode, the technician can adjust the SP modes. However, the SP mode settings are not used unless the user selects 'Service Mode' with the UP Mode.

▶ Text	Soft	Normal	Sharp	Service Mode
▶ Text/Photo	Photo Priority	Normal	Text Priority	Service Mode
▶ Photo	Screened Printed	Normal	Glossy Phot	Service Mode
▶ Pale	Soft	Normal	Sharp	Service Mode
▶ Generation	Soft	Normal	Sharp	Service Mode

B234D932.WMF

### 6.9.2 IMAGE PROCESSING OVERVIEW



B234D933.WMF

- SBU:** Photoelectric conversion, Odd/even allocation, Amplification, A/D Conversion (analog to digital), Light intensity detection (scanning)
- BCU:** Engine control, Scanner control, SBU settings, IPU settings, LDB settings
- IPU:** Shading correction, Image Processing, Main/Sub scan magnification, Video path switching, Image Compression/Decompression. The GAVD on this board performs density conversion processing, FCI processing, and edge processing, and also generates the test patterns.
- Controller:** System control, software application control, image storage control, file compression/decompression
- LDB:** 8-beam laser exposure, binary-to-grayscale conversion, synchronization detection

Detailed Descriptions

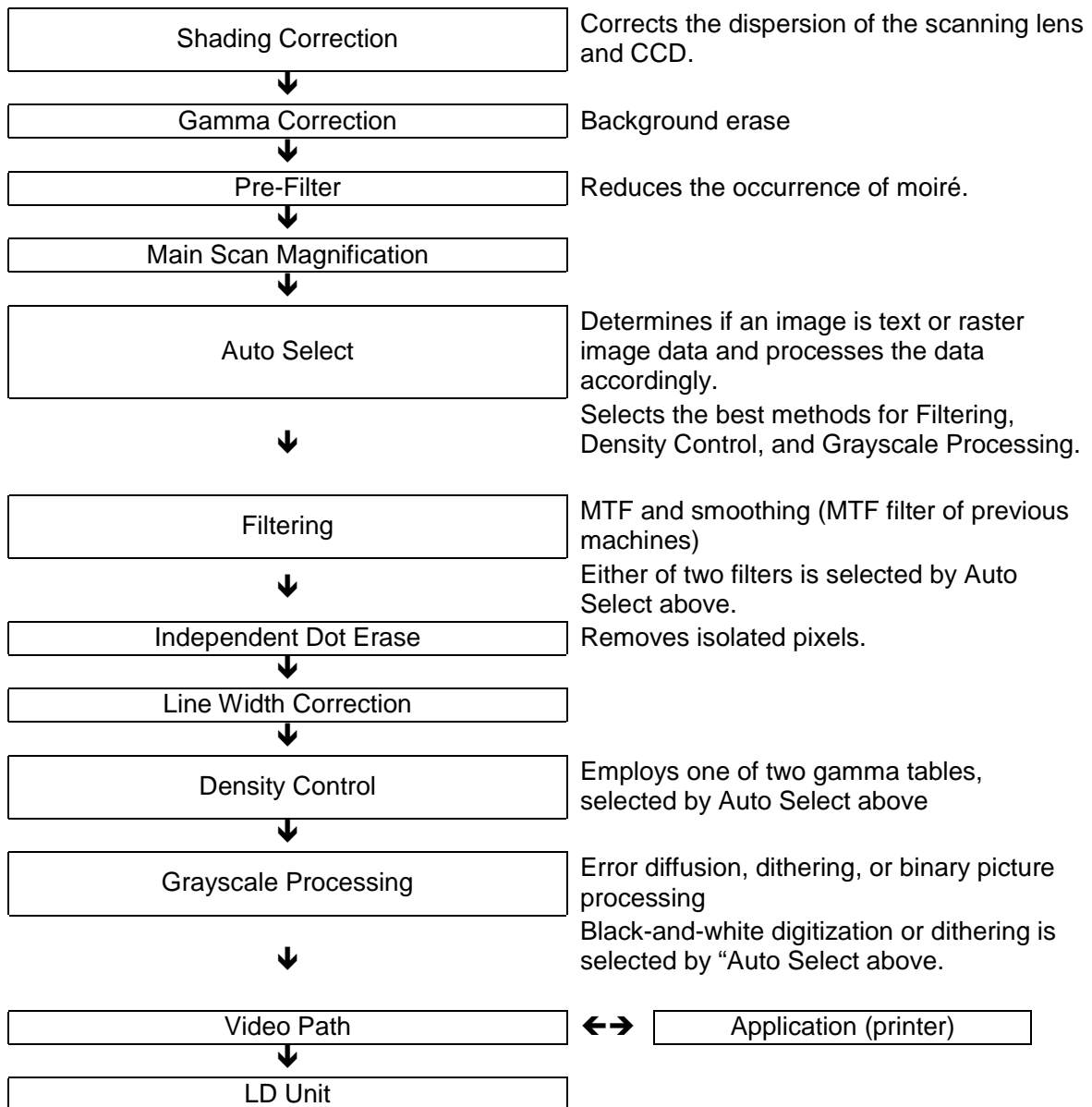


### 6.9.3 IMAGE PROCESSING FLOW

Image processing is done by the IPU (Image Processing Unit), following the steps shown below.

Overall image processing for this machine is designed to:

- Target edges with filters to improve the angles of text characters and reduce the occurrence of moiré filled areas.
- Improve the evenness of granular areas in images



### 6.9.4 IMAGE PROCESSING MODES

The user can select one of the following six modes. Each mode has four different settings (described below). Each mode has a Custom Setting that can be customized with SP modes to meet special requirements that cannot be covered by the standard settings.

To see these settings, press [User Tools] > [Copier/Document Server] > [General Features] > [Text, Text/Photo, Photo, Pale, or Generation] > [Copy Quality].

Mode	Setting	Function
Text	Soft	Rough texture background drops out.
	Normal	Used for black-and-white printed material and documents that contain mainly text. Easily reads lines as well as text.
	Sharp	Use for newspapers, time schedules, or any type of printed material with fine print. Emphasizes black over white.
	Custom Setting	Stores SP command settings.
Text/Photo	Photo Priority	Used for documents that contain text and color or black-and-white photos, such as catalogs, magazines, maps, etc. Provides more faithful reproduction than the Text mode.
	Normal	
	Text Priority	
	Custom Setting	Stores SP command settings.
Photo	Print Photo	Used for magazines, graphics, for smooth reproduction. Employs dithering.
	Normal	Better than Text/Photo mode for copying smooth photographs or graphics. Employs error diffusion for sharper reproduction.
	Glossy Photo	Used for best results in copying standalone smooth, glossy photographs. Employs dithering.
	Custom Settings	Stores SP command settings. Employs either error diffusion or dithering, depending on an SP setting.
Pale	Soft	Used for low density documents with text handwritten in black or color pencil (or carbon copies) such as receipts, invoices, etc.
	Normal	
	Sharp	
	Custom Setting	Stores SP command settings.
Generation Copy	Soft	Used to achieve an image smoother than Normal.
	Normal	Used to achieved best reproduction of "copies of copies" by smoothing the image.
	Sharp	Used to emphasize lines and text stronger than Normal for better image quality.
	Custom Setting	Stores SP command settings.
Dark Background	On	Drops out the background color of originals with dark background (for example, tab sheets). Auto image density mode is disabled but manual image density adjustment is possible.
	Off	Auto image density mode

Detailed Descriptions

To use Dark Background mode, you must change some user tool settings. See 'Selecting the Original Type Setting' in 'Operating Instructions - Copy/Document Server Reference'.

### 6.9.5 IMAGE QUALITY SP ADJUSTMENTS

Adjustments are easier with this machine, because the parameters have been grouped and no longer have to be adjusted one by one.

In this section, we will cover the custom settings for each of the 5 original modes: These custom settings are:

- Image Quality
- Line Width Correction

Settings adjustable for each original mode will also be covered (these do not just affect the custom settings; they also affect all sub original modes, such as sharp text).

- Independent Dot Erase
- Background Erase

#### *Custom Settings for Each Mode: Image Quality*

##### **Custom Setting: Text Mode Image Quality**

Item		Range	Default	SP No.
Text	25~55%	0~10	5 Normal	<b>SP4903 001</b>
	55.5~75%			<b>SP4903 002</b>
	75.5~160%			<b>SP4903 003</b>
	160.5~400%			<b>SP4903 004</b>

If the value is increased, the outlines of lines become sharper but this could cause moiré to appear in dot patterns. If the value is decreased, image patterns become smoother, the occurrence of moiré decreases, but the corners of characters and intersections of lines at acute angles may not be as sharp.

There are two sets of custom settings for photo mode. One is for dithering, and one is for error diffusion. The set of custom settings that will be used depends on the setting of **SP4904 002**. The possible settings are:

0	Dither (106 line)
1	Dither (141 line)
2	Dither (212 line)
3	Error Diffusion

**Custom Setting: Photo Mode (Dithering) Image Quality**

Item		Range	Default	SP No.
Photo	25~55%	0~6	2 Printed Photo	SP4903 005
	55.5~75%			SP4903 006
	75.5~160%			SP4903 007
	160.5~400%			SP4903 008

Used for coarse, dithered tone photographs such as newsprint.

If the value is increased, the photo becomes sharper, but blurring could occur in the sub scan direction. If the value is decreased, blurring in the sub scan direction is less obvious but outlines become fuzzy.

**Custom Setting: Photo Mode (Error Diffusion) Image Quality**

Item		Range	Default	SP No.
Photo	25~55%	0~6	3 Normal	SP4903 009
	55.5~75%			SP4903 010
	75.5~160%			SP4903 011
	160.5~400%			SP4903 012

Used for printed materials (magazines, etc.) with text and photographs on the same page. Uses error diffusion. The image becomes sharper if the value is increased, but blurring could occur in the sub scan direction. If the value is decreased, blurring in the sub scan direction is less obvious but outlines can become fuzzy.

**Custom Setting: Text/Photo Mode Image Quality**

Item		Range	Default	SP No.
Text/Photo	25~55%	0~10	5 Normal	SP4903 013
	55.5~75%			SP4903 014
	75.5~160%			SP4903 015
	160.5~400%			SP4903 016

If the value is increased, the outlines of lines become sharper but this could cause moiré to appear in dot patterns. If the value is decreased, image patterns become smoother, the occurrence of moiré decreases, but the corners of characters and intersections of lines at acute angles may not be as sharp.

Detailed  
Descriptions

**Custom Setting: Pale Mode Image Quality**

Item	Range	Default	SP No.	
Pale	25~55%	0~10	5 Normal	SP4903 017
	55.5~75%			SP4903 018
	75.5~160%			SP4903 019
	160.5~400%			SP4903 020

If the value is increased, low density areas become sharper, but the background could become dirtier. If the value is decreased, the background disappears but the density of low density areas becomes low.

**Custom Setting: Generation Mode Image Quality**

Item	Range	Default	SP No.	
Generation	25~55%	0~10	5 Normal	SP4903 021
	55.5~75%			SP4903 022
	75.5~160%			SP4903 023
	160.5~400%			SP4903 024

If the value is increased, low density areas become sharper, but the background could become dirtier. If the value is decreased, the background disappears but the density of low density areas becomes low.

**Custom Settings for Each Mode: Line Width Correction**

**Custom Setting: Text Mode Line Width Correction**

Selection		Range	Default	Content	SP No.
Item	Line Width Correction	0~8	2	0 (Thin) - 4 (Off) - 8 (Thick)	<b>SP4903 080</b>
	Main Scan	0~1	1	0:OFF 1:ON	<b>SP4903 081</b>
	Sub Scan	0~1	1	0:OFF 1:ON	<b>SP4903 082</b>

If the value is made smaller, the line width correction becomes thinner, and if the value is made larger, the line width correction becomes thicker. To switch this feature off, select "4".

If the above settings do not make the lines thin enough, use **SP4904 020** (Image Quality Exposure: Thin Line - Text Mode). Normally, **SP4904 020** is set to 0 (OFF). As the setting is increased (1~3), the line width correction effect becomes stronger, and lines become thinner. All settings of **SP4903 080** will be affected by the same amount.

**Custom Setting: Photo Mode Line Width Correction**

Selection		Range	Default	Content	SP No.
Item	Line Width Correction	0~8	4	0 (Thin) - 4 (Off) - 8 (Thick)	<b>SP4903 083</b>
	Main Scan	0~1	1	0:OFF 1:ON	<b>SP4903 084</b>
	Sub Scan	0~1	1	0:OFF 1:ON	<b>SP4903 085</b>

See the remarks for 'Custom Setting: Text Mode Line Width Correction' above.

If the above settings do not make the lines thin enough, use **SP4904 021** (Image Quality Exposure: Thin Line – Photo Mode). Normally, **SP4904 021** is set to 0 (OFF). As the setting is increased (1~3) the line width correction effect becomes stronger, and lines become thinner. All settings of **SP4903 083** will be affected by the same amount.

**Custom Setting: Text/Photo Mode Line Width Correction**

Selection		Range	Default	Content	SP No.
Item	Line Width Correction	0~8	4	0 (Thin) - 4 (Off) - 8 (Thick)	<b>SP4903 086</b>
	Main Scan	0~1	1	0:OFF 1:ON	<b>SP4903 087</b>
	Sub Scan	0~1	1	0:OFF 1:ON	<b>SP4903 088</b>

See the remarks for 'Custom Setting: Text Mode Line Width Correction' above.

If the above settings do not make the lines thin enough, use **SP4904 022** (Image Quality Exposure: Thin Line – Text/Photo Mode). Normally, **SP4904 022** is set to 0 (OFF). As the setting is increased (1~3) the line width correction effect becomes stronger, and lines become thinner. All settings of **SP4903 086** will be affected by the same amount.

Detailed Descriptions

**Custom Setting: Pale Mode Line Correction**

Selection		Range	Default	Content	SP No.
Item	Line Width Correction	0~8	4	0 (Thin) - 4 (Off) - 8 (Thick)	<b>SP4903 089</b>
	Main Scan	0~1	1	0:OFF 1:ON	<b>SP4903 090</b>
	Sub Scan	0~1	1	0:OFF 1:ON	<b>SP4903 091</b>

See the remarks for 'Custom Setting: Text Mode Line Width Correction' above.

If the above settings do not make the lines thin enough, use **SP4904 023** (Image Quality Exposure: Thin Line – Pale Mode). Normally, **SP4904 023** is set to 0 (OFF). As the setting is increased (1~3) the line width correction effect becomes stronger, and lines become thinner. All settings of **SP4903 089** will be affected by the same amount.

**Custom Setting: Generation Copy Line Width Correction**

Selection		Range	Default	Content	SP No.
Item	Line Width Correction	0~8	1	0 (Thin) - 4 (Off) - 8 (Thick)	<b>SP4903 092</b>
	Main Scan	0~1	1	0:OFF 1:ON	<b>SP4903 093</b>
	Sub Scan	0~1	1	0:OFF 1:ON	<b>SP4903 094</b>

See the remarks for 'Custom Setting: Text Mode Line Width Correction' above.

If the above settings do not make the lines thin enough, use **SP4904 024** (Image Quality Exposure: Thin Line – Generation Mode). Normally, **SP4904 024** is set to 0 (OFF). As the setting is increased (1~3) the line width correction effect becomes stronger, and lines become thinner. All settings of **SP4903 092** will be affected by the same amount.

**Settings Adjustable for Each Original Mode**

**Independent Dot Erase**

Item	Range	Default	SP No.
Text	0~14	8	<b>SP4903 060</b>
Photo		0	<b>SP4903 061</b>
Text/Photo		0	<b>SP4903 062</b>
Pale		0	<b>SP4903 063</b>
Generation Copy		8	<b>SP4903 064</b>

Independent dot erase removes isolated black pixels. As this setting is increased, the greater the number of eliminated isolated pixels. Setting to zero switches this function off.

**Background Erase**

Item	Range	Default	SP No.
Text	0~255	0 (Off)	<b>SP4903 070</b>
Photo			<b>SP4903 071</b>
Text/Photo			<b>SP4903 072</b>
Pale			<b>SP4903 073</b>
Generation Copy			<b>SP4903 074</b>

Background erase attempts to eliminate the heavy background texture from copies of newspaper print or documents printed on coarse paper. Pixels of density below the selected threshold level are eliminated. Setting this feature to zero switches it off. Increasing this setting increases the effect of background erase.



### 6.9.6 RELATION BETWEEN THE SP AND UP SETTINGS

The tables below illustrate the relationship between the UP and SP settings for each of the original modes. The scale across the top of the table is the range of settings for the SP modes.

The settings in the gray areas indicate the UP settings overlaid on the SP scale of the table. Words that are not shaded within the tables, such as 'softer', indicate how the image changes if you change the SP setting in a certain direction. The related UP mode is User Tools> Copier Features> General Features> Copy Quality.

#### Text Mode

Setting	0	1	2	3	4	5	6	7	8	9	10	SP No.
25% ~55%		Soft				Normal						SP4903 001
55.5 ~ 75%		Soft				Normal						SP4903 002
75.5 ~ 160%		Soft				Normal						SP4903 003
160.5 ~ 400%		Soft				Normal						SP4903 004

#### Photo Mode (Dithering)

Setting	0	1	2	3	4	5	6	SP No.
25% ~55%	Softer			Print Photo			Sharper	SP4903 005
55.5 ~ 75%				Print Photo				SP4903 006
75.5 ~ 160%				Print Photo				SP4903 007
160.5 ~ 400%				Print Photo				SP4903 008

#### Photo Mode (Error Diffusion)

Setting	0	1	2	3	4	5	6	SP No.
25% ~55%	Softer			Normal			Sharper	SP4903 009
55.5 ~ 75%				Normal				SP4903 010
75.5 ~ 160%				Normal				SP4903 011
160.5 ~ 400%				Normal				SP4903 012

**Text/Photo Mode**

Setting	0	1	2	3	4	5	6	7	8	9	10	SP No.	
25% ~55%		Photo Priority				Normal				Text Priority		SP4903 013	
55.5 ~ 75%													SP4903 014
75.5 ~ 160%													SP4903 015
160.5 ~ 400%													SP4903 016

**Pale Mode**

Setting	0	1	2	3	4	5	6	7	8	9	10	SP No.
25% ~55%		Soft				Normal				Sharp		SP4903 017
55.5 ~ 75%												SP4903 018
75.5 ~ 160%												SP4903 019
160.5 ~ 400%												SP4903 020

**Generation Copy**

Setting	0	1	2	3	4	5	6	7	8	9	10	SP No.
25% ~55%		Soft				Normal				Sharp		SP4903 021
55.5 ~ 75%												SP4903 022
75.5 ~ 160%												SP4903 023
160.5 ~ 400%												SP4903 024

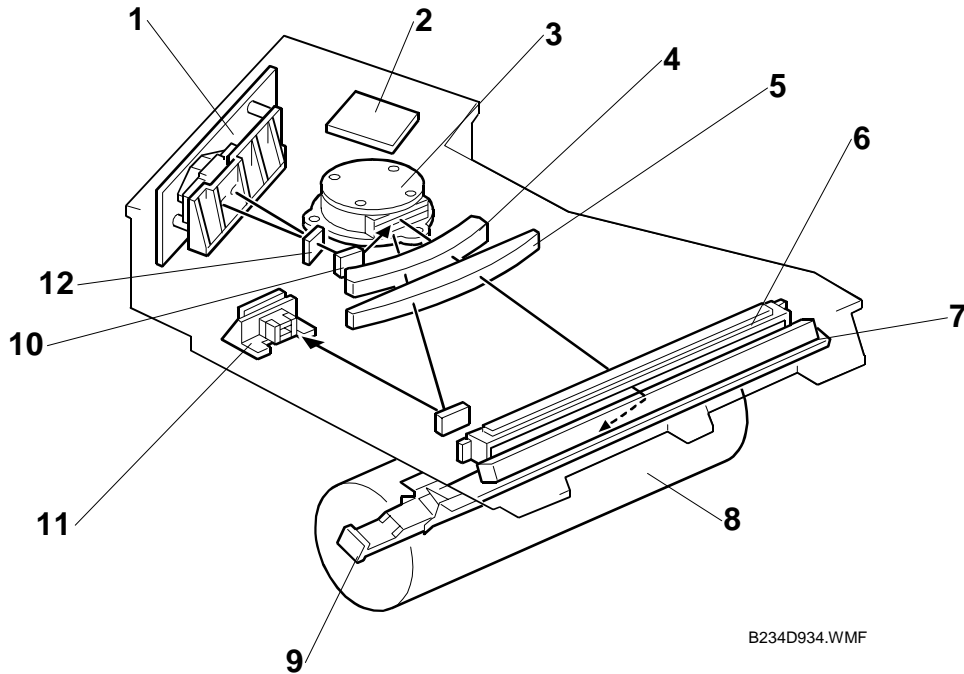
**Background Color Dropout**

SP NO.	MODE NAME	TARGETED COLOR	VALUES
4901 020	Background Dropout – Weak	Orange	165 ~ 255 (Default: 180)
4901 021	Background Dropout – Medium	Green	115 ~164 (Default: 155)
4901 022	Background Dropout - Strong	Blue	15 ~ 144 (Default: 105)

Detailed Descriptions

## 6.10 LASER EXPOSURE

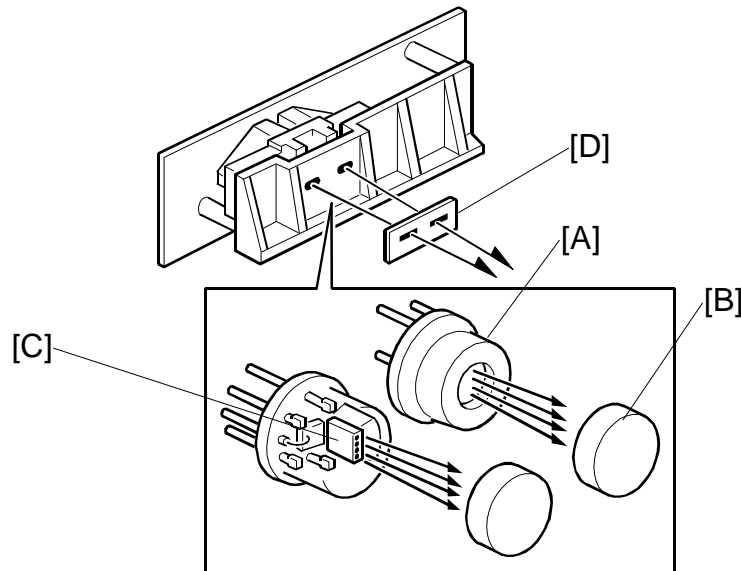
### 6.10.1 OVERVIEW



B234D934.WMF

- |                                       |                                    |
|---------------------------------------|------------------------------------|
| 1. LD Unit                            | 7. 2nd Mirror                      |
| 2. Polygon Mirror Motor Control Board | 8. Drum                            |
| 3. Polygon Mirror Motor               | 9. Toner Shield Glass              |
| 4. F-Theta Lens 1                     | 10. 1st Mirror                     |
| 5. F-Theta Lens 2                     | 11. Laser Synchronization Detector |
| 6. BTL Lens                           | 12. Cylindrical Lens               |

## 6.10.2 LASER EXPOSURE MECHANISM



B234D935.WMF

The LD unit consists of two 4-channel LDA's (Laser Diode Arrays) and two collimating lenses.

Each LDA produces 4 beams [A]. Each collimating lens [B] is a fixed lens, seated in a V-groove and held in place by a spring and a screw.

Four beams from each LDA [C] pass through the collimating lenses, through the apertures [D], then strike the polygon mirror. Due to this multi-beam writing, the polygon mirror motor speed can be reduced, thus the noise generated by the polygon mirror motor and the wear on the motor can be reduced.

### Auto Power Control (APC)

A built-in photo diode detects the light emitted from the LD unit. When the photo diode detects this light, it generates a signal and the feedback of this signal to the LD control board is used to adjust the strength and amount of light in the laser beams.

**NOTE:** The laser diode array is assembled and adjusted in the factory, and does not require position adjustment in the field.

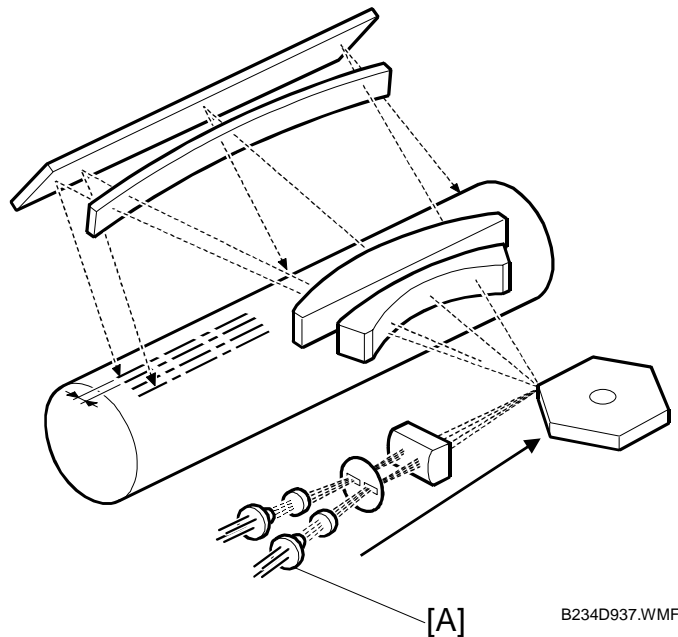
LD drivers control the power output from the laser diodes.

( Digital Processes > Printing > Laser Printing > **Laser Diode Power Control**)

**NOTE:** The reference levels are adjusted on the production line. Never touch the variable resistors on the LD unit.



### 6.10.4 MULTI-BEAM LINE EXPOSURE



The LD unit contains two laser diode arrays (LDA) [A], each with one 4-channel array, allowing the LD unit to produce a total of eight beams. This multi-beam exposure mechanism has the following advantages:

- Reduces the number of rotations required of the polygon mirror motor.
- Reduces the amount of noise generated by the polygon mirror motor because it is rotating at lower speed.
- Reduces the need for LD unit replacement.
- Allows production of a more precision beam on a stable platform.

The laser synchronization detector detects only Channel 0 and Channel 1, the uppermost beams of each parallel array.

The main scan pitch of Channels 2 to 7 is determined by setting **SP2115 001~006** (Main Scan Beam Pitch Adjustment) at the factory. For this reason, when the LD unit is replaced, these SP codes must be input for the new unit. The correct SP settings are printed on a label attached to the LD unit.

An SC code is issued for a laser synchronization detector error if the LD unit malfunctions and does not emit the laser beams.

### 6.10.5 POLYGON MIRROR MOTOR

The polygon mirror reflects the laser beam onto the OPC drum to expose the image line by line in the main scan direction. The polygon mirror motor rotates at a constant speed, even while the copier is in standby mode, but shuts off when the copier enters the energy conservation mode.

#### Polygon Mirror Motor Rotation Speed

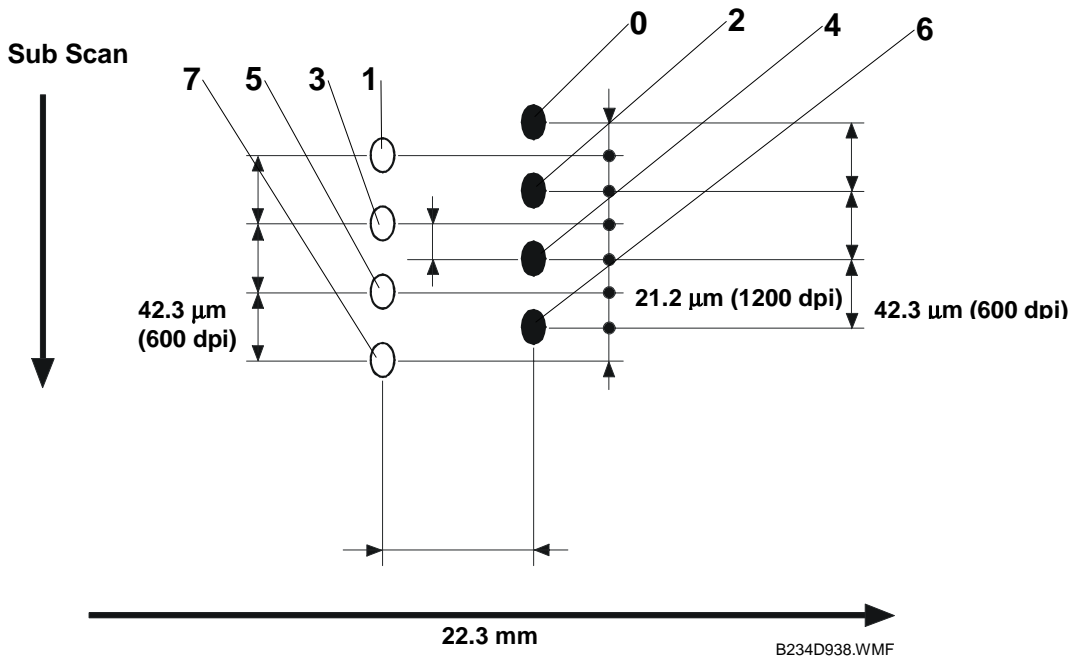
e-STUDIO901: 90 ppm	e-STUDIO1101: 110 ppm	e-STUDIO1351: 135 ppm
24,803 rpm	29,528 rpm	37,205 rpm

#### Important:

- The polygon mirror motor has no brake mechanism, so it requires about 3 minutes to stop rotating.
- Before moving the machine or before servicing the motor or the area around the polygon mirror motor, you should switch off the copier main power switch, disconnect the machine, and wait at least three minutes for the motor to stop rotating.

**NOTE:** The polygon mirror motor requires about 10 seconds to reach full speed after the machine awakes from the energy conservation mode, or after the machine is switched from the normal mode to low speed mode for printing on thick paper. The machine cannot print during this 10 second interval until it reaches full rotation speed.

### 6.10.6 1200-DPI RESOLUTION



**Main Scan**

- |            |            |
|------------|------------|
| 0: LDA 1-0 | 4: LDA 1-2 |
| 1: LDA 2-0 | 5: LDA 2-2 |
| 2: LDA 1-1 | 6: LDA 1-3 |
| 3: LDA 2-1 | 7: LDA 2-3 |

The original is scanned at 600 dpi, then the 600 dpi output is boosted to 1200 dpi 1-bit data during image processing in the IPU.

This machine can produce an image at 1200 dpi by writing each dot twice, possibly with two different values, depending on the results of image processing. This is achieved with the LD unit, which has two laser diode arrays, each with 4 channels which together produce 8 beams. As shown in the illustration above, the beams from each laser diode are emitted in two parallel lines.

For copying, 1200 dpi is used. For printing, the default is 600 dpi, but 1200 dpi can be selected.

The diagram shows how the two sets of four beams are interlaced to produce a sub scan resolution of 1200 dpi.

There are two parallel rows of four beams, separated by 22.3 mm in the main scan direction. In each of these rows, the beams are spaced at 42.3 micrometer intervals (this is the same as 600 dpi).

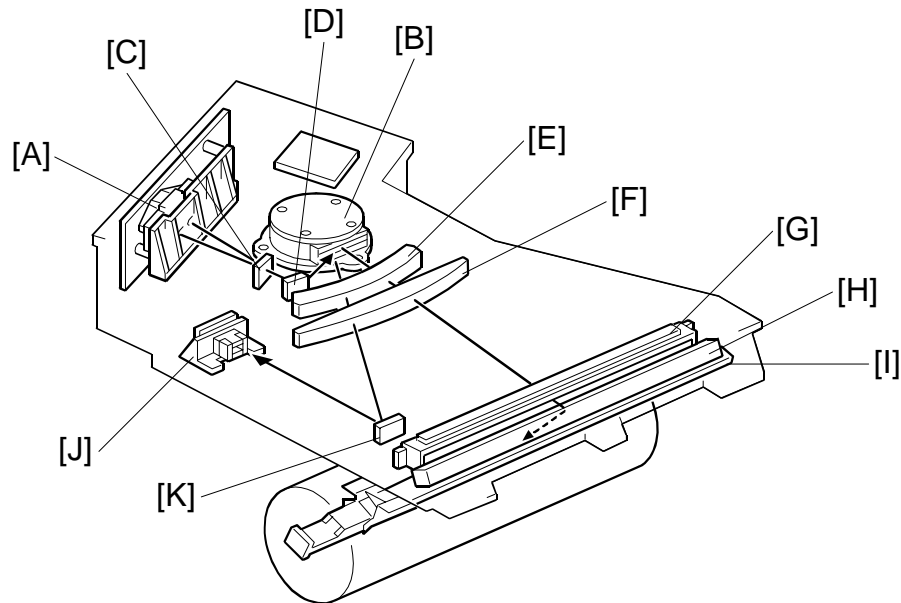
The rows are also offset in the sub scan direction by 21.2 micrometers.

The net result is that we have dots at 21.2 micrometer intervals, which is the same as 1200 dpi.

Detailed Descriptions



### 6.10.7 OPTICAL PATH



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The output path from the laser diode to the drum is shown above.

The LD unit [A] outputs eight laser beams to the polygon mirror [B] (six mirror surfaces) through the cylindrical lens [C] and the 1st mirror [D].

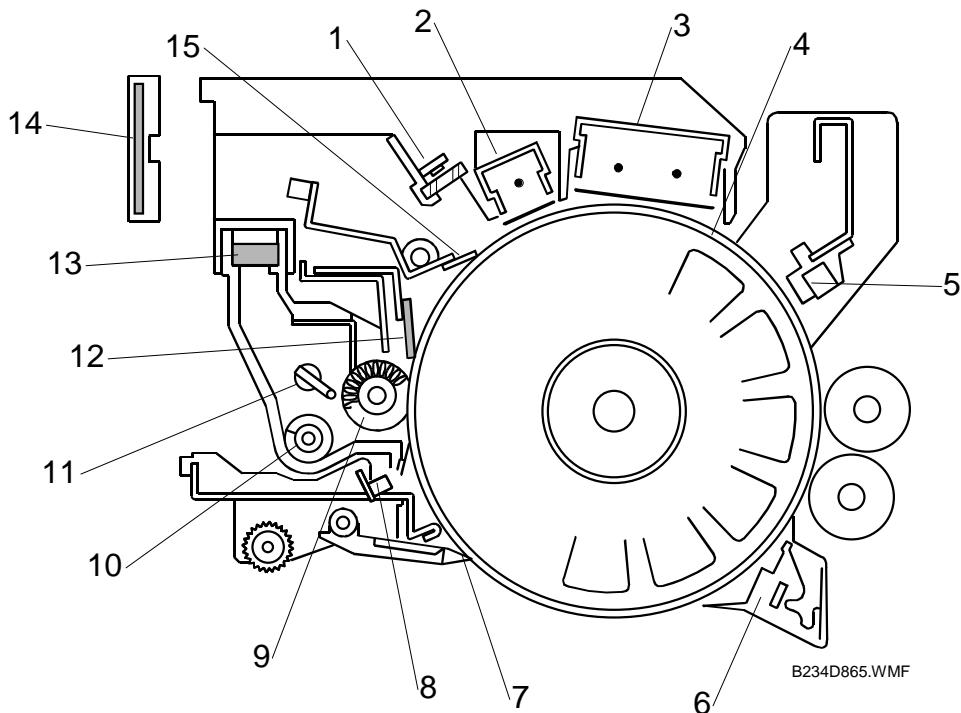
Each surface of the polygon mirror reflects eight full main scan lines. The laser beams go to the F-theta lens 1 [E], F-theta lens 2 [F], BTL lens (barrel toroidal lens) [G], and 2nd mirror [H]. Then these laser beams go to the drum through the toner shield glass [I].

The laser synchronization detector [J] determines the main scan starting position. This sensor sends a synchronization signal when the laser synchronization detector mirror [K] reflects the laser beam to the detector as the laser beam starts its sweep across the drum.

The laser synchronization detector detects only the beams emitted from Channels 1 and 0, the uppermost beams of each parallel array.

## 6.11 DRUM UNIT

### 6.11.1 OVERVIEW



The drum unit consists of the components shown. An organic photoconductor drum (diameter: 100 mm) is used for this model.

- |                            |                                 |
|----------------------------|---------------------------------|
| 1. Quenching Lamp          | 9. Cleaning Brush               |
| 2. Pre-Charge Unit         | 10. Toner Collection Coil       |
| 3. Charge Corona Unit      | 11. Drum Cleaning Unit Agitator |
| 4. OPC Drum                | 12. Main Cleaning Blade         |
| 5. Drum Potential Sensor   | 13. Cleaning Unit Filters       |
| 6. PTL (Pre-Transfer Lamp) | 14. Toner Filter                |
| 7. Pick-Off Pawls          | 15. 2nd Cleaning Blade          |
| 8. ID Sensor               |                                 |

Detailed  
Descriptions

**Pre-charge unit (2):**

Supplements the function of the charge unit. Because of the high speed of the drum, the main charge corona does not give the drum enough charge, especially for the first copy cycle. This is especially important for the e-STUDIO1351 due to its high speed.

**Cleaning brush (9):**

Rotates forward (CCW) with the drum (not against the direction of drum rotation). This reduces wear on the surface of the drum and extends the life of the drum.

**Ventilation duct:**

Between the cleaning unit and the fusing unit. Reduces the effects of heat from the fusing unit, which would cause toner clumping during toner transport and cleaning. This is especially important for the e-STUDIO1351 due to its high speed.

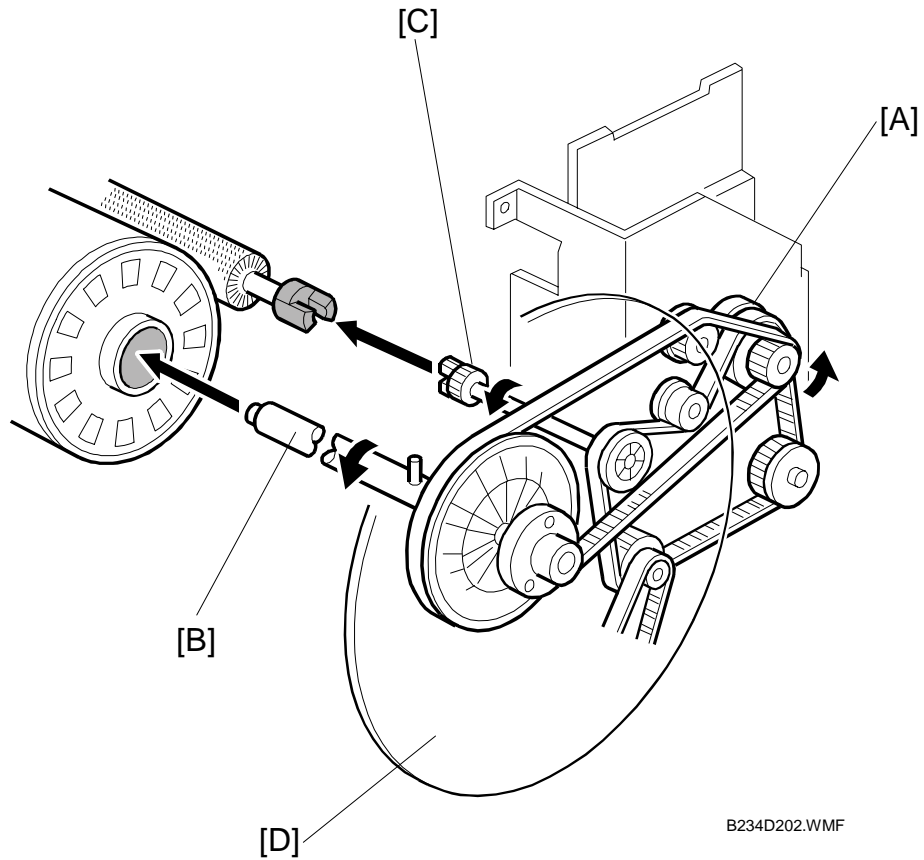
**2nd cleaning blade (15):**

Added specifically to reduce the white spot, (white tear-drop shapes that appear in the solid backgrounds of copies and prints).

**NOTE:**

- After training, super users (trained operators) can replace the following components around the drum:
  - 1) Pre-Charge Unit
  - 2) Charge Corona Unit
  - 3) Cleaning Unit
- Two sensors have been added: a cleaning unit sensor and drum unit sensor. When the machine is switched on or when the front door is closed, these sensors detect whether the cleaning unit and drum unit are set correctly. If either or both units are set incorrectly, a message appears on the operation panel. The machine cannot be used until the problem has been corrected.

**6.11.2 DRUM DRIVE**



B234D202.WMF

The drive from the drum motor [A] is transmitted to the drum and the cleaning unit through timing belts, gears, the drum drive shaft [B], and the cleaning unit coupling [C].

The drum motor has a drive controller, which outputs a motor lock signal when the rotation speed is out of the specified range.

**Drum Speed**

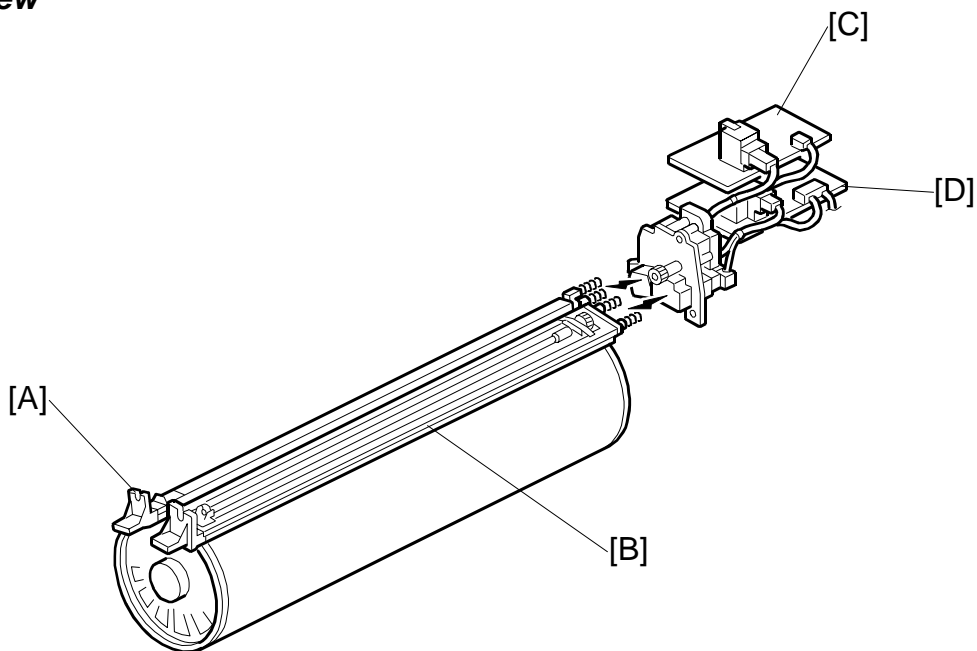
e-STUDIO901 (90 cpm)	420 mm/s
e-STUDIO1101 (110 cpm)	500 mm/s
e-STUDIO1351 (135 cpm)	630 mm/s

The flywheel [D] on the end of the drum drive shaft stabilizes the rotation speed.

Detailed Descriptions

### 6.11.3 DRUM CHARGE

#### Overview



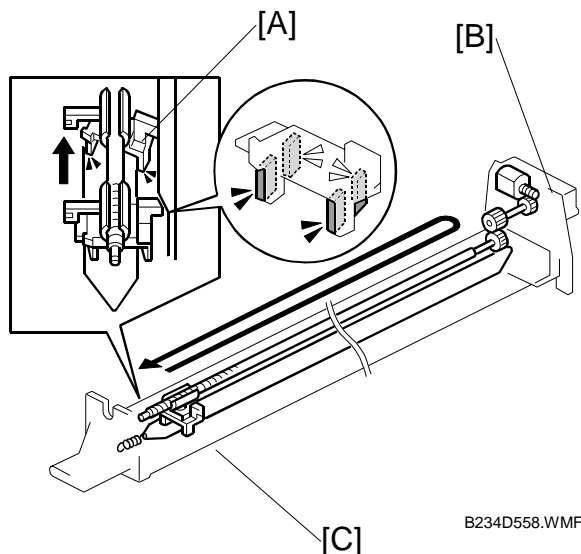
B234D203.WMF

This copier uses a corona wire Scorotron system to charge the drum.

	Unit	
	Pre-Charge Corona [A]	Charge Corona [B]
Corona Wire	Single	Double
Grid	Plate	Plate
Power pack	PPG Power pack [C]	CGB Power pack [D]
Charge current (Text, Text/Photo, Pale, Generation Copy)	Constant: 600 $\mu$ A	Constant: 1,550 $\mu$ A
Charge current (Photo mode)	Constant: 600 $\mu$ A	Constant: 1,600 $\mu$ A
Grid voltage	Not controlled	- 900 V
Corona wire cleaning	Manually	Automatic mechanism

This is a high-speed copier, so two corona wires are needed inside the charge corona unit [B] to give a sufficient, uniform negative charge to the drum surface. The stainless steel grid plate makes the corona charge uniform and controls the amount of negative charge on the drum surface by applying a negative voltage to the grid.

### **Cleaning the Corona Wires**



### **Charge Corona Unit**

Air flowing around the charge corona wire may deposit toner particles on the corona wires. These particles can interfere with charging and cause low density bands on copies.

The wire cleaner pads [A] automatically clean the wires to prevent such a problem.

The wire cleaner is driven by a DC motor [B]. Normally the wire cleaner [C] is at the front end (the home position). Just after the main switch is turned on, the wire cleaner motor turns on to bring the wire cleaner to the rear and then back to the home position. When the wire cleaner moves from the rear to the home position, the wire cleaner pads swivel, bringing the pads into contact with the wires, and clean the wires as it moves forward.

Cleaning is executed when:

- The machine is switched on and the fusing temperature is less than 100°C while auto process control executes.
- Every 24 hours.
- After every 5,000 copies. This can be adjusted with **SP2804 002** (Charge Corona Cleaner Setting – Corona Wire Cleaning Interval).

### **Pre-Charge Unit**

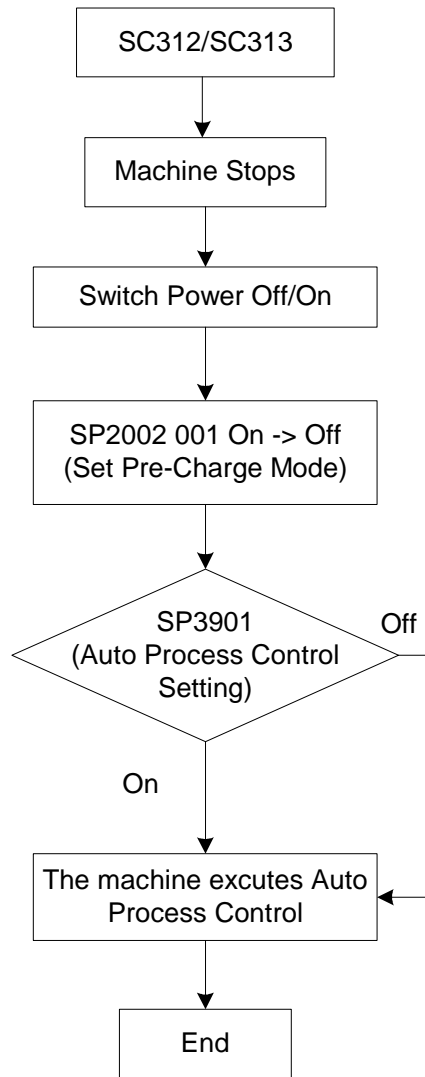
There is no mechanism to clean the pre-charge unit corona wire automatically.

However, the pre-charge unit corona wire can be cleaned manually. After the pre-charge unit has been removed, its cleaning pad can be pushed to the rear and front several times to clean the corona wire.

SC312 and SC313 signal a problem with the pre-charge unit. After either SC is issued, operation halts and the machine must be cycled off and on.

Detailed Descriptions

When this occurs, the setting of **SP2002 001** is automatically switched from "1" (On) or "2" (ON) to "0" (Off). The operator can use the machine, but the machine is allowed to operate with only the (main) charge unit operating. This will not seriously hinder operation of the machine. However, if **SP3901** (Auto Process Control Setting) is switched on, auto process control will execute to adjust the new conditions around drum because the pre-charge unit is not operating.



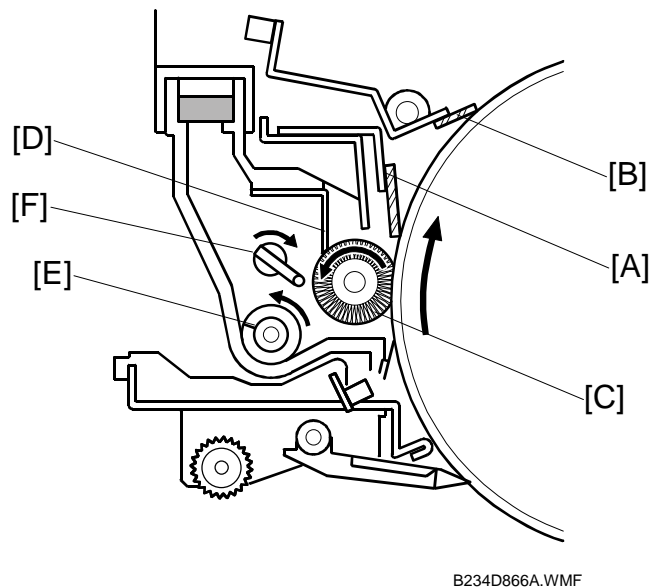
B234D559.WMF

**NOTE:**

- When auto process control is executed under these conditions, the ID sensor adjustment is not done.
- After you repair the pre-charge unit, to recover from **SC312** or **SC313**, you must change the setting of **SP2002 001** from "0" (Off) to "1" (On).

## 6.11.4 DRUM CLEANING

### Overview



This copier has two drum cleaning blades: a main cleaning blade [A] and a 2nd cleaning blade [B].

### Main Cleaning Blade

The main cleaning blade is a counter blade angled against the direction of drum rotation. The counter blade system has the following advantages:

- Less wearing of the cleaning blade edge
- High cleaning efficiency

The cleaning brush [C] removes toner from the drum surface. Any remaining toner is scraped off by the cleaning blade. The cleaning brush rotates counter-clockwise, not against the rotation direction of the drum. This reduces wear on the surface of the drum.

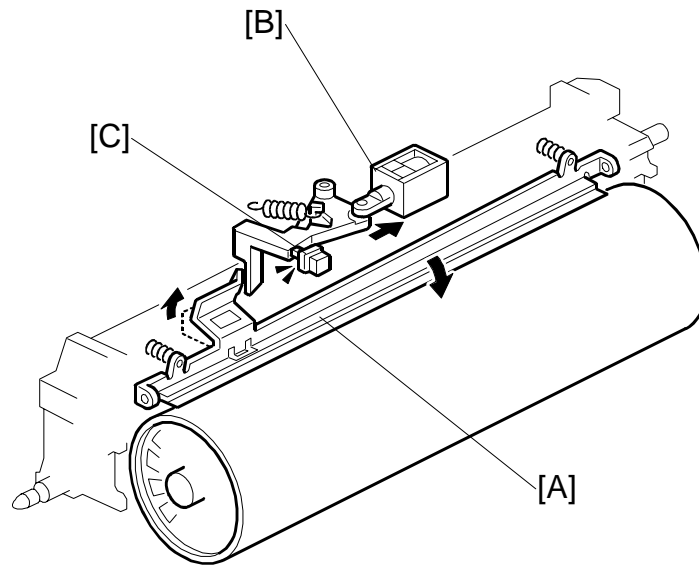
Toner on the cleaning brush is scraped off by the scraper [D] and falls onto the toner collection coil [E]. The coil transports the toner to back to the toner entrance tank in the toner bank unit for recycling.

The agitator [F] agitates the toner to prevent clumping in the toner returned to the toner entrance tank.

To remove any accumulated toner at the edge of the cleaning blade, the drum turns in reverse for about 40 ms at the end of every copy job. This is also done every 30 minutes during long copy jobs. If any accumulated toner is deposited on the drum, it is removed by the cleaning brush. For more, refer to **SP2506 002** (Cleaning Interval – Multiple Copy - Interval) in Section “5. Service Tables”.



## 2nd Cleaning Blade



B234D868A.WMF

The 2nd cleaning blade [A] removes paper dust and other particles from the surface of the drum, especially in work areas that are very humid.

The 2nd cleaning blade solenoid [B] operates the 2nd cleaning blade.

- During copying and when the machine is not being used, the 2nd cleaning blade does not touch the drum.
- At the end of the process control sequence, or at times prescribed with **SP2930**, the solenoid activates and locks the 2nd cleaning blade against the drum to clean the drum surface.

### Detecting the Status of the 2nd Cleaning Blade

The solenoid moves the 2nd cleaning blade release arm to the contact position and locks the blade against the drum. The release mechanism of the 2nd cleaning blade has a "push-switch" [C] which confirms whether the 2nd cleaning blade release arm is operating correctly. This push-switch is set so it is under pressure when the blade is against the drum.

If an abnormal condition is detected, the machine issues SC488.

**SP 2930 Adjustments**

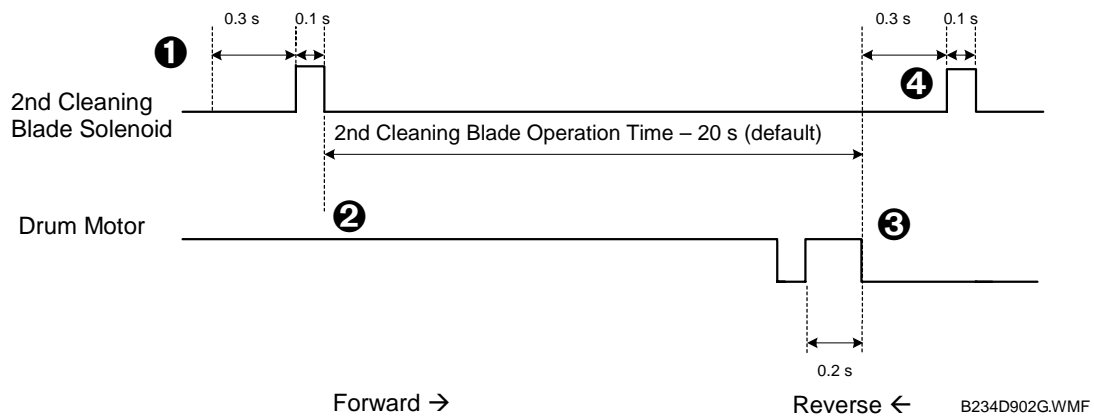
**SP2930** controls the operation of the 2nd cleaning blade. There are two modes of operation: 'normal humidity', and 'low humidity'. The threshold between these two humidity modes is set with **SP 2930 008**.

	<b>SP2930 008</b>		
Humidity Mode	Normal	Low	
			This SP sets the critical level of the absolute humidity that determines which SP codes above are used to control the operation of 2nd blade cleaning. [0~3 / 1 / 1] 0: No switching (calculated absolute humidity is ignored) 1: 0.0022 2: 0.0040 3: 0.0060
Condition	SP2902 001	SP2930 005	This SP setting determines when 2nd blade cleaning is done. [0~2 / 1 / 1] 0: Off. 2nd blade cleaning is never done. However, the 2nd blade cleaning can be done manually with <b>SP2930 004</b> . 1: After process control execution but only when <b>SP3901</b> is set to ON to enable process control and: <ul style="list-style-type: none"> <li>The temperature of the machine is less than 100°C when it is powered on.</li> <li><b>SP2966</b> is ON. This SP sets process control to execute if the machine remains on and idle for longer than 24 hours.</li> </ul> 2: After the prescribed number of pages has printed. The number of pages is prescribed by <b>SP2930 002 or 007</b> . If the count exceeds the number of pages during a job, process control does not execute until the job has finished.
Interval	SP2930 002	SP2930 006	This SP sets the number of pages to count before 2nd blade cleaning. 2nd blade cleaning is done when the count exceeds this value, but only if <b>SP2930 001 or 006</b> is set to "2". [1~100 / 10 / 1K]
Time	SP2930 003	SP2930 007	This SP sets the length of time the 2nd cleaning blade is held against the drum. At the end of this time, the 2nd cleaning blade is retracted and does not touch the drum until the next cleaning. [10~90 / 20 / 1 s]

Detailed Descriptions

- SP 2930 004 provides a command that allows you to manually clean the drum with the 2nd cleaning blade.

### Timing Sequence for Operation of the 2nd Cleaning Blade



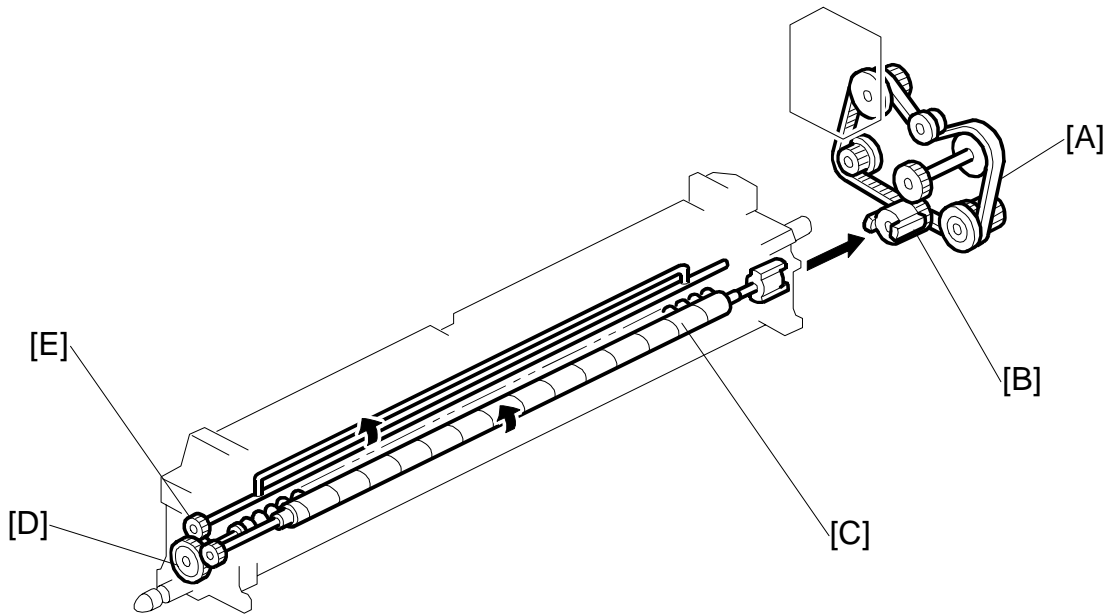
At the end of a job:

- ❶ 2nd cleaning blade solenoid (a magnetic latching solenoid) activates and pushes a lever that locks the 2nd cleaning blade against the drum.
- ❷ Drum motor rotates forward for 20 s and reverse for 0.2 s. The length of time that the blade is held against the drum can be adjusted with **SP2930 003**.
- ❸ Drum motor stops.
- ❹ 2nd cleaning blade solenoid pushes the lever that pulls the 2nd cleaning blade away from the drum surface and locks it in the release position.

At the following times, current is applied to the 2nd cleaning blade solenoid for 0.1 s to make sure that the solenoid is restored to its normal state (released and away from the drum):

- Immediately after the machine is turned on
- When either front door is closed
- At the beginning of every job

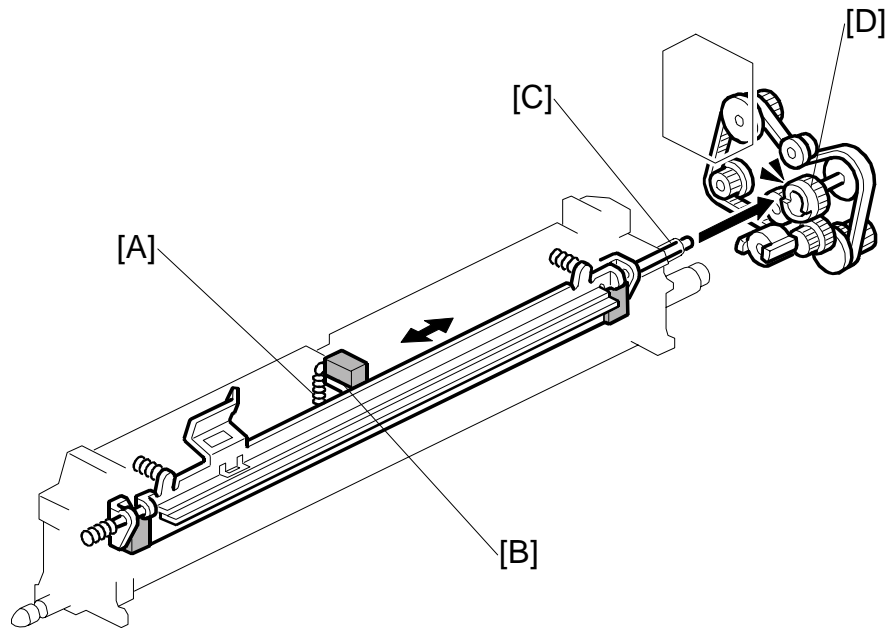
**Cleaning Unit Drive**



B234D206.WMF

Drive from the drum motor is transmitted to the cleaning unit drive gear via the timing belt [A] and the cleaning unit coupling [B]. This coupling drives the cleaning brush [C] directly. The cleaning brush then transmits the drive to the gear at the front, which drives the toner collection coil gear [D] and agitator gear [E].

Detailed  
Descriptions

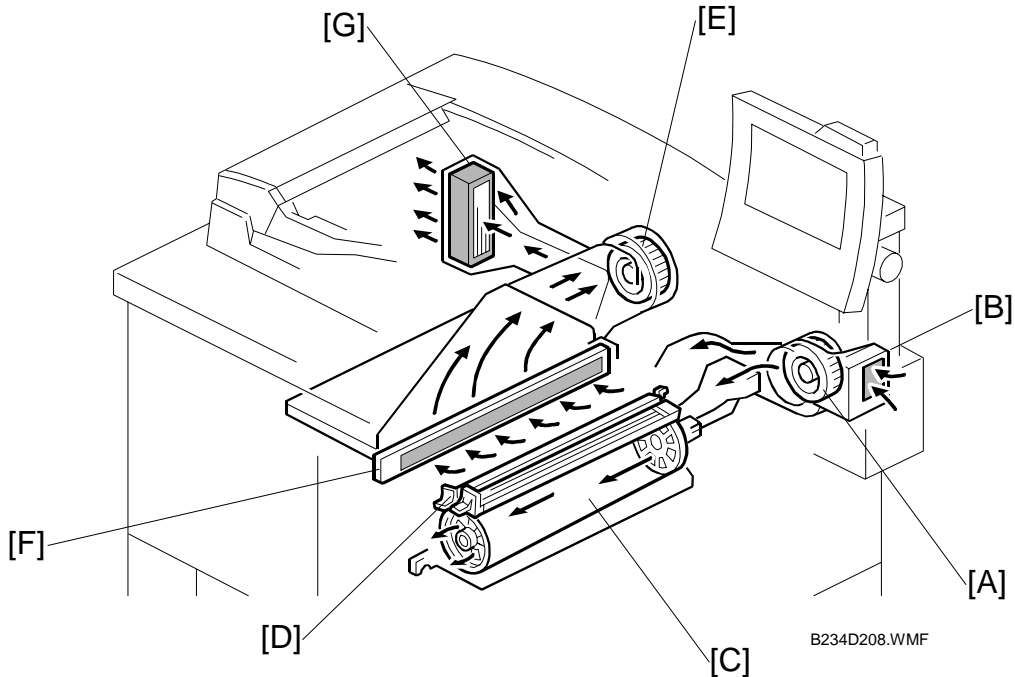
***Cleaning Blade Pressure and Side-to-Side Movement***

B234D868.WMF

The spring [A] always pushes the cleaning blade against the drum. The cleaning blade pressure can be manually released by pushing up the release lever [B].

The guide roller [C] at the rear end of the cleaning blade holder touches the cam gear [D] that moves the blade from side to side. This movement disperses accumulated toner and prevents uneven blade wear.

### 6.11.5 AIR FLOW AROUND THE DRUM



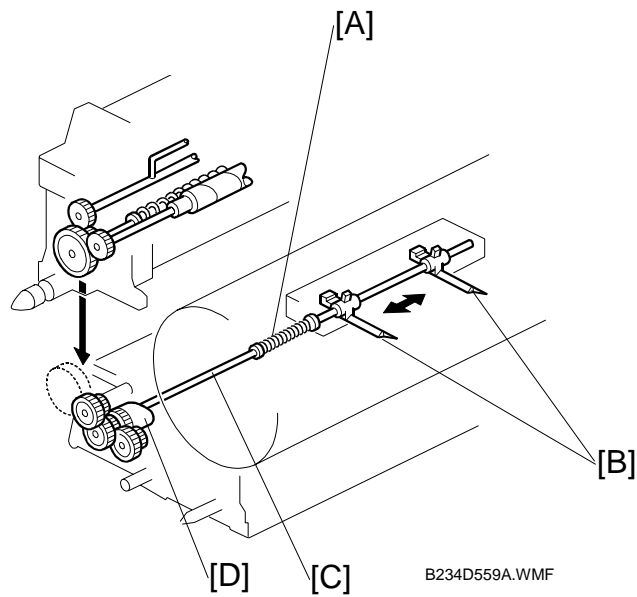
The drum cooling fan [A] draws cool air through the drum dust filter [B] and sends it to the center of the drum [C], then over the charge units [D] (charge corona unit and pre-charge unit).

Holes in the flanges on both ends of the drum allow air to pass through the drum to cool it. After the air has passed through the center of the drum, the drum exhaust fan [E] draws the air out of the interior of the machine, through the toner filter [F] to remove free floating toner, through the ozone filter [G] to remove ozone, then finally out of the machine.

To keep the temperature inside the machine constant, the drum cooling fan turns slowly during standby, but turns faster during copying.

Detailed  
Descriptions

### 6.11.6 DRUM PICK-OFF PAWLS

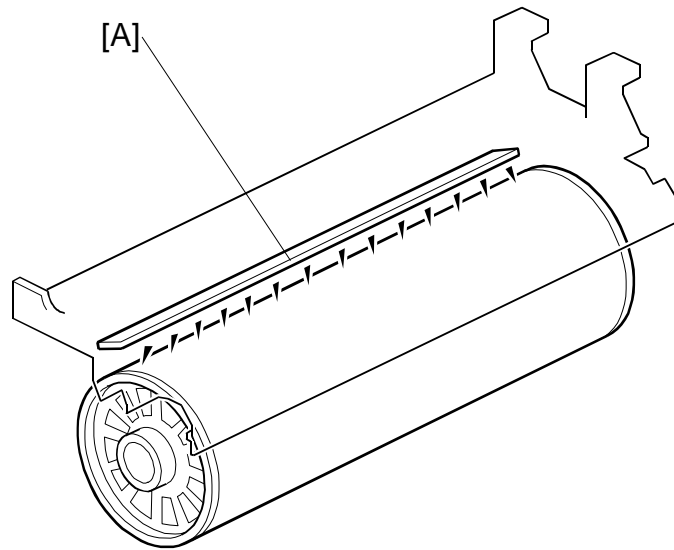


If the paper does not separate from the drum after image transfer, the drum pick-off pawls strip the paper from the drum.

Pressure from small springs [A] press the pick-off pawls [B] against the surface of the drum.

The shaft [C] and the cam [D] move the pick-off pawls from side to side to ensure that they never remain at the same location (this prevents wear on the drum).

### 6.11.7 DRUM QUENCHING



B234D209.WMF

In preparation for the next copy cycle, light from the quenching lamp [A] neutralizes any charge remaining on the drum.

The quenching lamp consists of an array of 28 red LEDs extending across the full width of the drum.



### 6.11.8 PROCESS CONTROL

Drum potential gradually changes for the following reasons:

- Dirty optics, exposure glass
- Dirty charge corona casing, grid plate
- Deterioration of drum sensitivity

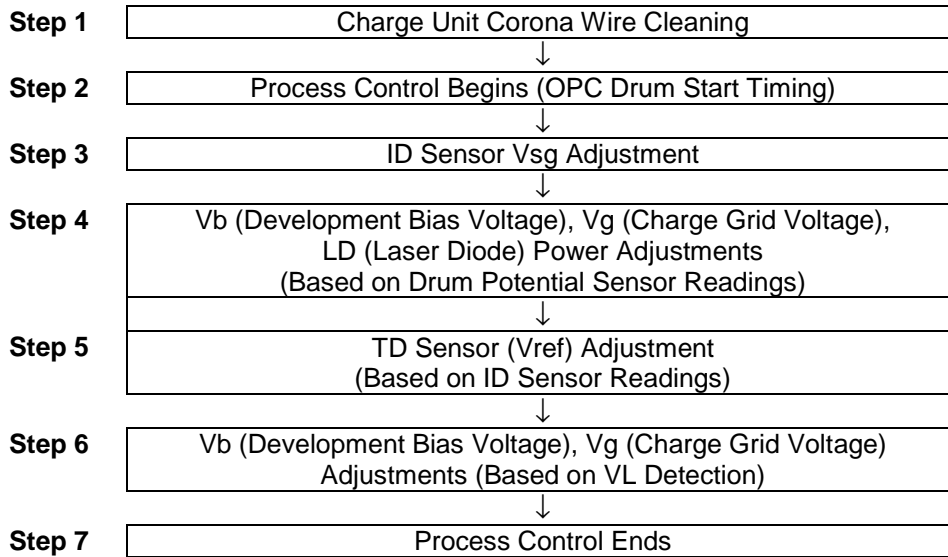
#### When Does Auto Process Control Execute?

Process control is executed under the following conditions:

- When the machine is turned on with the fusing temperature at less than 100°C and automatic process control is enabled (**SP3901 001** switched on).
- After the machine has remained on and idle for over 24 hours (**SP2966 001**) and automatic process control is enabled (**SP3901 001** switched on).
- When the service technician executes **SP2962** to force process control execution manually.
- After the power is turned OFF/ON to reset the machine after a pre-charge unit related SC code has occurred (**SC312, SC313**). (**SP2002 001** is set to "0" (Off) and the ID sensor is not adjusted.)
- When the speed of the rotation of the drum is changed (Normal → Low Speed, Low Speed → Normal Speed) after pressing the [Start] key. (The ID is not adjusted.)

However, if auto process control fails (**SP3902 001** displays a "0"), the auto process control will not execute even if the drum speed changes.

**Auto Process Control Flow**



- Vsg Reflectivity of the bare surface of the drum. This reading is used with Vsp (the reflectivity of the ID sensor pattern where it is covered with toner) to calculate Vref ( $V_{sp}/V_{sg}$ ).
- Vb Development bias. A charge applied to the drum to prevent dirty backgrounds on copies. Backgrounds emerge dirty if the residual potential ( $V_r$ ) remains high.
- Vg Voltage output of the charge corona unit. Vg is used to adjust Vd, the drum potential of the unexposed areas of the drum.
- Vh Standard drum potential for halftone.
- VL Light potential, the drum potential after maximum laser exposure. The drum potential sensor measures VL by reading the white patches of the potential sensor pattern. To change VL, the machine adjusts input current of the laser diode.
- Vd Detected by the drum potential sensor, this is the reading of the drum surface before it is exposed by the laser. This is the "dark potential".
- Vdref The target value of Vd, the dark potential of the drum before it is exposed by the laser.
- LD PM Laser Diode Pulse Modulation. This is strength (intensity, amount of light) of the laser beams.

Detailed Descriptions

**Step 1: Charge Unit Corona Wire Cleaning**

The machine executes charge corona wire cleaning at the beginning of every auto process control cycle if **SP2804 001** (Charge Corona Cleaner Setting) is set to "1".

**Step 2: Process Control Begins (OPC Drum Start Timing)**

Process control starts after the machine is turned on with the fusing temperature below 100°C (regardless of the number of lamps that are on).

**Step 3: ID Sensor Vsg Adjustment**

Vsg (reflectivity of the bare surface of the drum) is automatically set:

$$Vsg = 4.0 \pm 2V$$

After this is done, you can display and confirm the Vsg setting with **SP3103 002**. You can also display and confirm the PWM (Pulse Width Modulation) setting with **SP3001 001**.

**NOTE:** If process control executes in response to a change in the drum rotation speed (low to high speed, high to low speed mode), the Vsg adjustment is not done. Therefore, **SP3103 002**, **SP3001 001** will not reflect any changes.

**Step 4: Vb (Development Bias Voltage), Vg (Charge Grid Voltage), LD (Laser Diode) Power Adjustments (Based on Drum Potential Sensor Readings)**

**1. Determining ΔVL: ΔVL = (Target VL) –200**

The difference between the value of VL read by the drum potential sensor and the previous target VL value of –200V is obtained. ΔVL is then used to update VLref. If the following result of the calculation is less than ΔVL, the lower value between ΔVL1 and VL2 is used to update VLref.

- $Vb = Vb \text{ setting of } \mathbf{SP2201 001} + \Delta VL > 800$   
 $\Delta VL1 = 800 - (\text{Value of } \mathbf{SP2201 001})$
- $VDref = Vd \text{ setting of } \mathbf{SP2001 006} + \Delta VL > 950$   
 $\Delta VL2 = 950 - (Vd \text{ setting of } \mathbf{SP2001 006})$

The purpose of the calculations is to set Vb and VDref at the high limit of their ranges to prevent over compensation during adjustment.

At the beginning of the process control cycle, the following components remain turned on: drum motor, fusing motor, Quenching Lamp, charge unit, charge grid (using the previous voltage, or the voltage set with **SP2001 003** if the machine has just been powered on), and development motor.

The development motor switches off, the laser creates the VL pattern on the surface of the drum, and the drum potential sensor reads the VL pattern.

**VL Pattern**

Size	Width: 30 mm Length: 40 mm
Exposure Level	15
Laser PM	Same value as previous process control execution

**NOTE:**

- If  $\Delta VL < 0$ ,  $\Delta VL$  is set to 0.
- If VL detection is abnormal, **SC424** is issued and VLref is not updated.
- If the VL detection at this step is displayed by **SP3902 008**, and the  $\Delta VL_{ref}$  is displayed by **SP3902 009**.
- If process control is switched off (**SP3901** set to "0") then  $\Delta VL_{ref}$  is set to "0" and the drum potential sensor does not detect VL.

**2-1. Determining Vb:  $Vb = (\text{Value of SP2201}) + \Delta VL$**

The development bias value applied from **SP2201** depends on the line speed.

Line Speed	SP No.	SP Name
Normal Speed	SP2201 001	Image Area (Normal Speed)
Low Speed	SP2201 004	Image Area (Low Speed)

**NOTE:**

- Even if the result of the calculation is  $Vb > 800$ , the voltage applied by the power pack is 800V.
- The value of Vb is displayed by **SP3902 012**.

**2-2. Determining VdreM:  $VD_{ref} = (\text{Value of SP2001}) + \Delta VL_{ref} + Vd \text{ Calibration}$**

The value of Vd applied from **SP2001** depends on the line speed.

Line Speed	SP No.
Normal Speed	SP2201 001
Low Speed	SP2201 005

**NOTE:**

- Even if the result of the calculation is  $VD_{ref} > 950$ ,  $VD_{ref}$  is set to 950.
- When  $\Delta VL_{ref}$  is determined,  $VD_{ref}$  should be value of **SP2001** +  $\Delta VL \leq 950$ . So,  $VD_{ref} > 950$  only when Vd is corrected.
- Count "A" is cleared only when **SP2801** (TD Sensor Initial Setting) is executed:
  - a) If "A" < SP3903 (VD Correction Counter), there is no VD correction.
  - b) If "A" > SP3903, the value is corrected by +50.

Detailed Descriptions

**2-3. Determining VhreM:  $VH_{ref} = (\text{value of VH from SP3904}) + \Delta VL_{ref}$**

The value of VH applied from **SP3904** depends on the line speed.

Line Speed	SP No.
Normal Speed	SP3904 001
Low Speed	SP3904 002

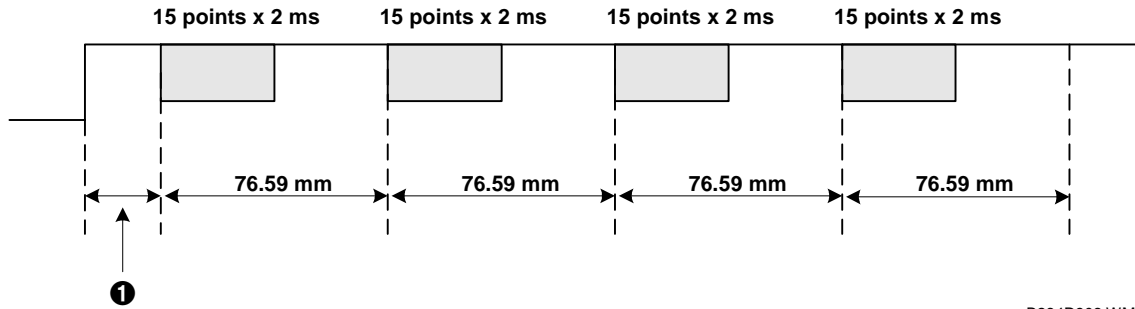
**NOTE:**

- If  $VB = 800$ , then  $VH_{ref} = VH \text{ of SP3904} + (800 - Vb \text{ of SP2201})$  for the value of development bias on image areas.

**3. Determining Vg with the detected Vd:  $VD = (-VDref) \pm 20$**

The development motor turns ON.

15 VD readings are taken at 2 ms intervals from each quarter section of the drum as it rotates. For each quarter section, the maximum and minimum values are discarded. The remaining 13 readings for each of the 4 sections are averaged. Next, the four averages (one from for each section of the drum) are once again averaged to determine VD.



VD detection begins at ① 50 ms from the time the power pack switches at a point 69.9 mm distant from the area between the pre-charge unit and the drum potential sensor.

**②  $VD = VDref \pm 20V?$**

If  $VD = VDref \pm 20V$  is not achieved, the grid voltage is adjusted ( $VD + VDref$ ) and the VD samplings are done again. This cycle is repeated 5 times. If a satisfactory result is not obtained ( $VD = VDref \pm 20V$ ), then **SC420** is issued.

**③  $VD = - VDref \pm 20V?$**

If  $VD = - VDref \pm 20V$  is achieved, VG is determined. The determined value of VG is displayed by **SP3902 004**. VD is displayed by **SP3902 002**.

4. LD PM is determined with the detected Vh: **VH = (-VHref) ± 20**

- ❶ The development motor turns off and the laser creates a VH pattern 30 mm wide and 80 mm long.

The laser power that creates the pattern is adjusted for the line speed.

Line Speed	SP No.	SP Name
Normal Speed	SP2104 003	VH Pattern (Normal Speed)
Low Speed	SP2104 004	VH Pattern (Low Speed)

**NOTE:** The laser power is set to different levels for creation of the VH pattern and ID sensor pattern.

- ❷ 15 VH readings are taken at 2 ms intervals. The maximum and minimum values are discarded. The remaining 13 readings are averaged to determine VH.
- ❸  $VH = VH_{ref} \pm 20V$ ?  
If  $VH = VH_{ref} \pm 20V$  is not achieved, the laser power is adjusted for creation of the pattern.
- ❹ If  $VH > VH_{ref}$  then laser power is raised 5 steps above the setting for **SP2103**.  
If  $VH < VH_{ref}$  then laser power is lowered 5 steps below the setting for **SP1203**.
- ❺ The VH pattern created with the adjusted laser power is sampled again. This cycle (❹ and ❺) is repeated until a satisfactory result is achieved. If a satisfactory result is not achieved after the 45th attempt, **SC428** is issued.
- ❻ The correct value for the level of the laser power (PM) is obtained. The result can be displayed with **SP3902 005**. VH can be displayed with **SP3902 003**.

**Step 5: TD Sensor Adjustment (Based on ID Sensor Readings)**

The laser projects the ID sensor pattern onto the drum.

The ID sensor reads the patterns and obtains a value for Vsp (covered area of the pattern) and a value for Vsg (bare surface of the drum in the pattern).

The machine takes these values and calculates a new value for Vref ( $V_{ref} = V_{sp}/V_{sg}$ ). The voltage that was used to make the sensor pattern can be displayed with **SP3902 006**.

**Step 6: Update Vb, Vg (Based on VL Detection)**

Vb (Development Bias Voltage) and Vg (Charge Grid Voltage) are finally updated.

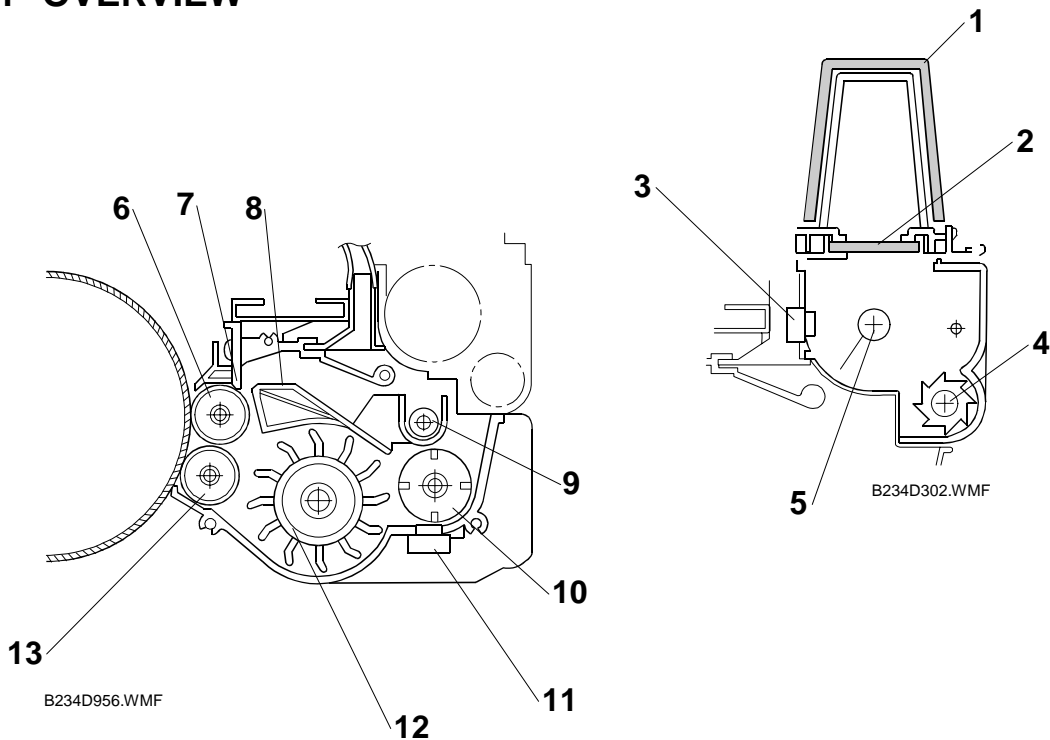
**Step 7: Process Control Ends**

All motors shut off in the same sequence as any job end.



## 6.12 DEVELOPMENT

### 6.12.1 OVERVIEW



- |                             |                              |
|-----------------------------|------------------------------|
| 1. Hopper Filter            | 8. Separator                 |
| 2. Hopper Center Filter     | 9. Toner Transport Coil      |
| 3. Toner Hopper Sensor      | 10. Cross-mixing Roller      |
| 4. Agitator                 | 11. TD Sensor                |
| 5. Toner Supply Roller      | 12. Paddle Roller            |
| 6. Upper Development Roller | 13. Lower Development Roller |
| 7. Doctor Blade             |                              |

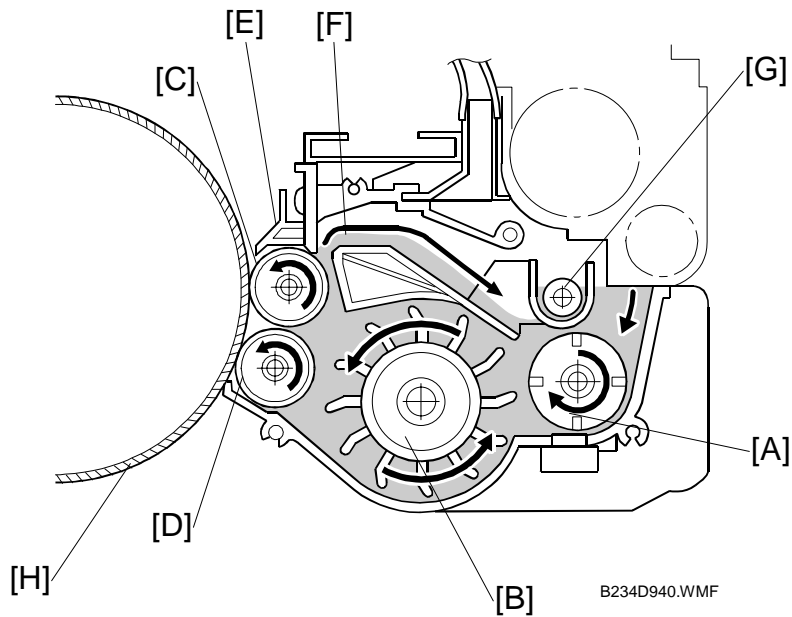
This copier uses a double roller development system and a dual component development process with toner particles  $6.8\ \mu\text{m}$  and developer particles  $50\ \mu\text{m}$ . To improve image quality, the width of the magnetic area on the lower development roller has been reduced.

This system differs from single roller development systems in that:

- It develops the image in a narrower area
- It develops the image twice
- The relative speed of each development roller against the drum is reduced.

This machine contains a toner recycling system. Toner collected from the drum by the drum cleaning unit is transported to the toner entrance tank, where it mixes with fresh toner from the toner bottle.

### 6.12.2 DEVELOPMENT MECHANISM



Toner and developer are mixed in the toner agitator by the cross-mixing roller [A]. The paddle roller [B] picks up the developer and sends it to the upper development roller [C]. Internal permanent magnets in the development rollers attract the developer to the development roller sleeve. Developer from the upper development roller sleeve is also attracted to the lower development roller [D].

The upper development roller carries the developer past the doctor blade [E] which trims the developer to the desired thickness. Excess developer spills over the separator [F] to the toner transport coil [G]. The coil transports the developer from back to front as far as the cross-mixing roller.

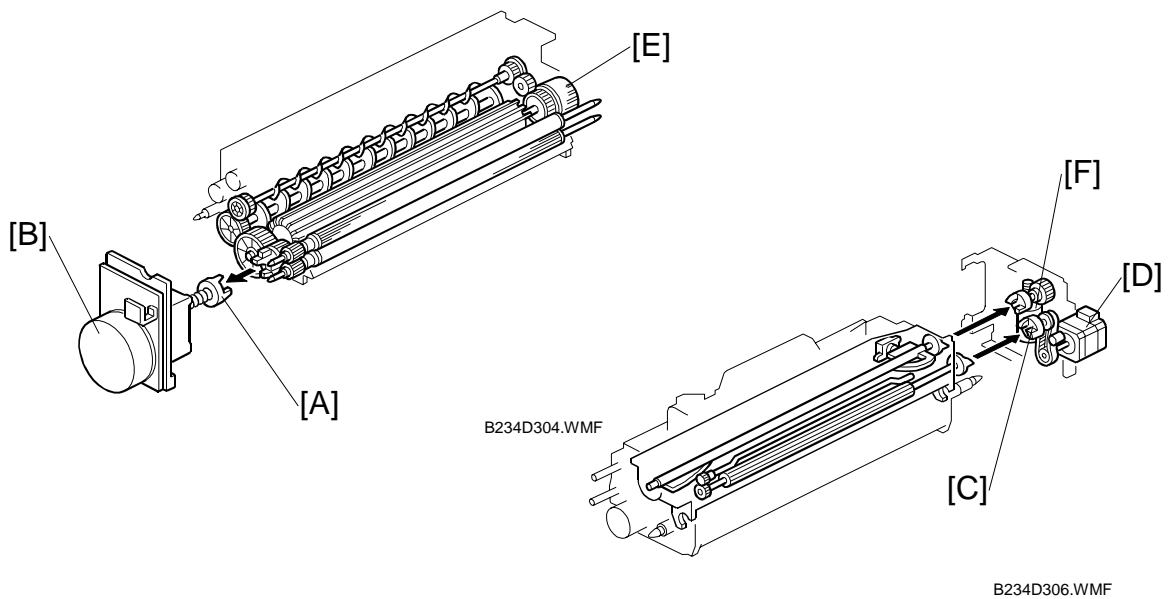
In this machine, black areas of the latent image are at a low negative charge (about  $-150\text{ V}$ ) and white areas are at a high negative charge (about  $-800\text{ V}$ ).

The development rollers continue to turn and carry the developer to the drum [H].

Detailed  
Descriptions



### 6.12.3 DRIVE



The gears in the development unit are driven by the development drive gear [A] when the development motor [B] (a DC servomotor) turns.

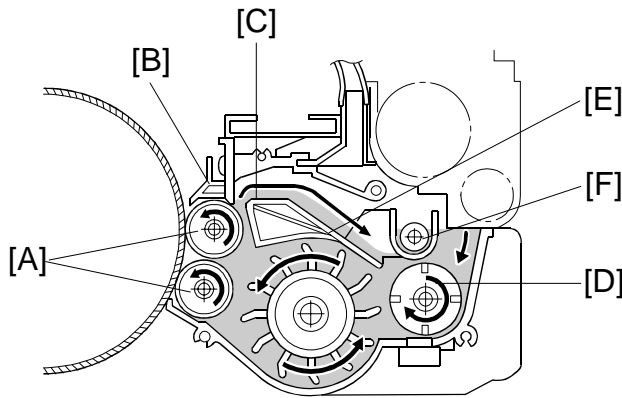
The gears in the toner hopper are driven by the toner supply roller drive gear [C], which is connected to the toner supply motor [D].

A one-way clutch on the paddle roller knob [E] prevents counter-clockwise rotation of the paddle roller.

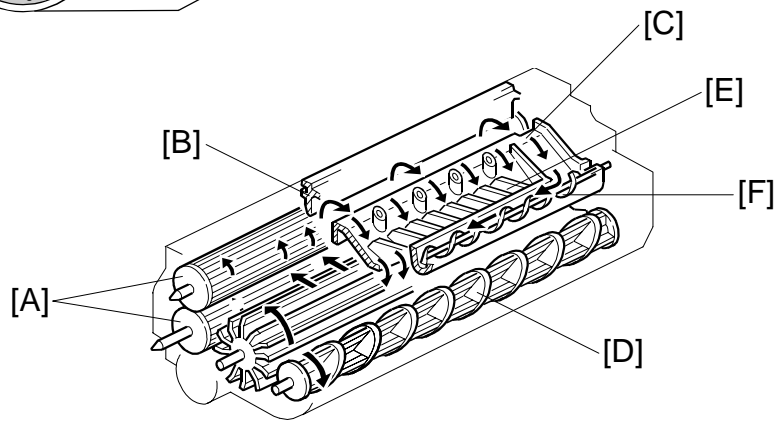
A dedicated dc motor [F] (hopper agitator motor) is provided for the agitator to:

- Reduce the amount of time for toner filling after development unit replacement
- Reduce the load on the drive components
- To better control toner transport by the toner supply pump in the toner hopper

### 6.12.4 CROSSMIXING



B234D941.WMF



B234D942.WMF

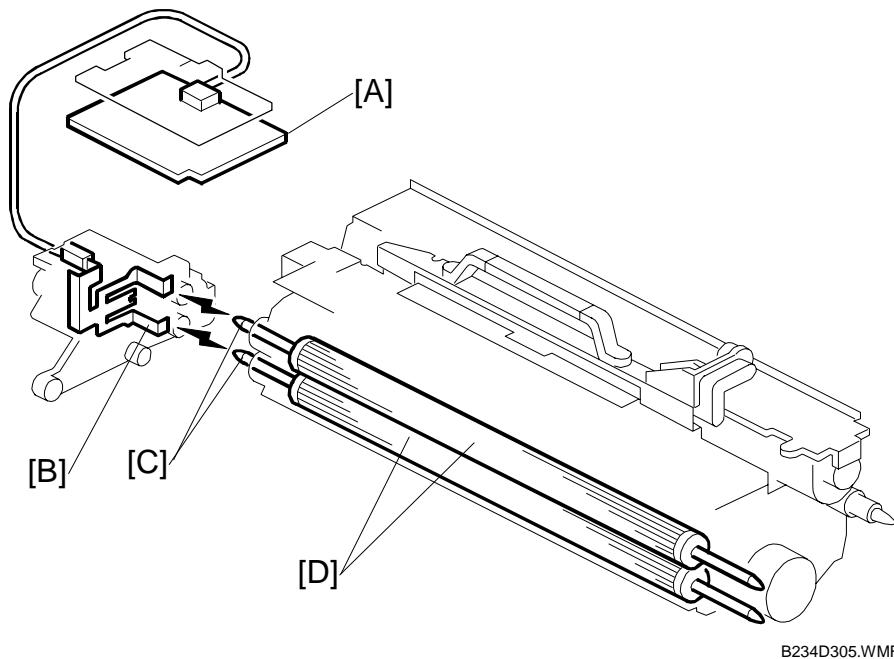
This copier uses a standard cross-mixing mechanism to keep the toner and developer evenly mixed. It also helps agitate the developer to prevent developer clumps from forming and helps create the triboelectric charge.

The developer on the turning development rollers [A] is split into two parts by the doctor blade [B]. The part that stays on the development rollers forms the magnetic brush and develops the latent image on the drum. The part that is trimmed off by the doctor blade goes to the back-spill plate [C].

As the developer slides down the back-spill plate to the agitator (cross-mixing roller) [D], the mixing vanes [E] move it slightly toward the rear of the unit. Part of the developer falls into the auger inlet and is transported to the front of the unit by the auger [F].

Detailed  
Descriptions

### 6.12.5 DEVELOPMENT BIAS



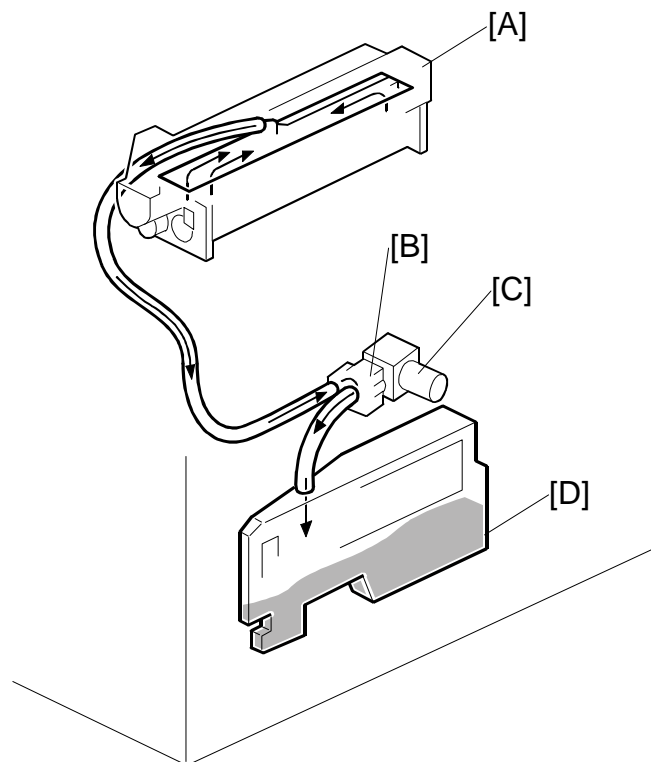
B234D305.WMF

The CGB (Charge Grid Bias) power pack [A] applies the negative development bias (-550V) to both the lower development roller and upper development roller through the receptacles [B] and the development roller shafts [C].

The development bias prevents toner from being attracted to the non-image areas on the drum where there is residual voltage. In addition, the development bias changes with the image density setting chosen for the copy job by the user.

The development rollers [D] employ fixed shafts that do not rotate. This eliminates friction on the shafts so they never require lubrication.

## 6.12.6 DEVELOPMENT UNIT TONER SUCTION



B234D943.WMF

To ensure that the fine-grained toner does not scatter and blacken the interior of the machine, a toner suction assembly reduces the pressure inside the development unit.

Below the development unit [A] the toner suction pump [B], driven by the toner suction motor [C], draws air out of the development unit along with any airborne toner. The toner is sent to the toner suction bottle [D] on the right side of the machine.

The toner suction motor switches on and off with the development motor.

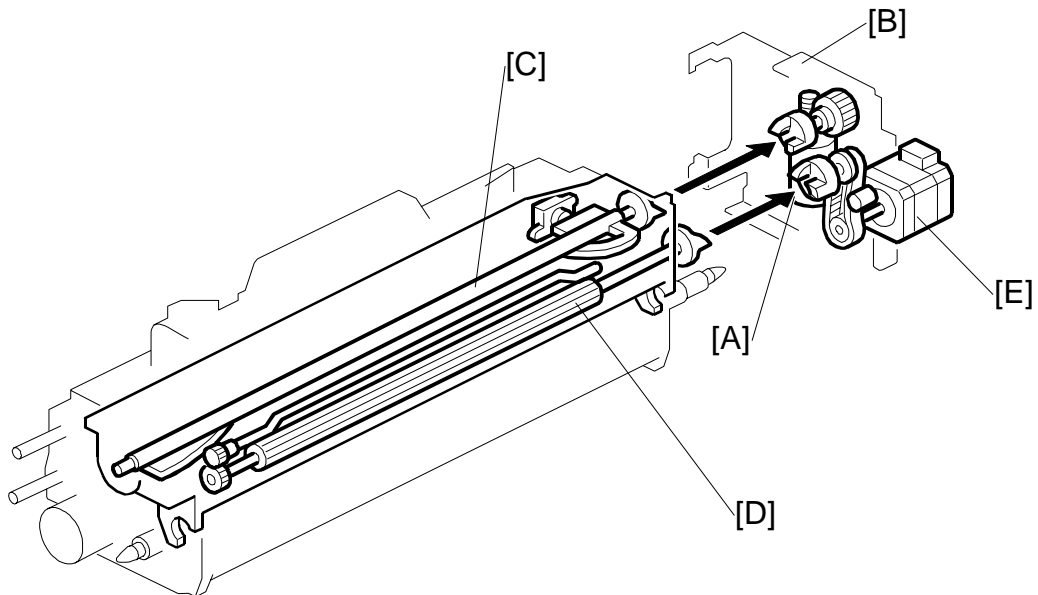
The service life of both the toner suction bottle and toner suction motor are limited.

- The service life of the bottle is set with **SP 2972** ('near-full' is at 680 hours, and 'full' is at 720 hours – 3000K: A4 6%).
- The service life of the motor is set with **SP 2973** ('near-end' is at 570 hours, and 'end' is at 600 hours).

When an end alert is issued for the toner suction motor, a message is displayed on the copier LCD panel.

## 6.12.7 TONER HOPPER

### *Toner Supply*



B234D306.WMF

The toner supply pump motor pumps toner from the toner supply cylinder into the hopper (➔ 6.13). This toner is new toner mixed with recycled toner.

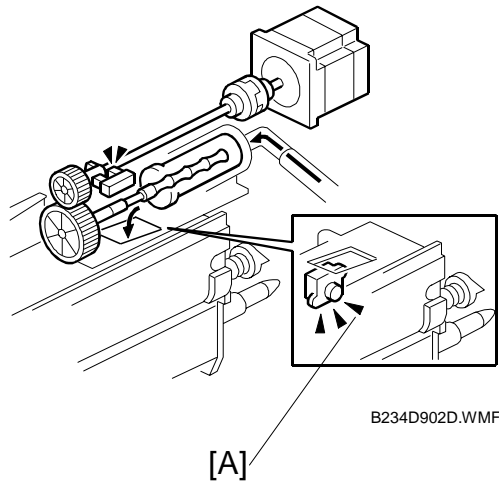
When the hopper agitator motor [A] (inside the development motor unit [B]) turns on, the agitator [C] mixes the toner. Then it moves the toner from rear to front and sends it to the toner supply roller.

Toner is caught in the grooves in the toner supply roller [D]. Then, as the grooves turn past the opening, the toner falls into the development unit.

The toner supply motor [E] drives the toner supply roller.

Toner supply is controlled by the ID sensor and the TD sensor. (➔6.12.8)

**Toner Hopper Empty Detection**



The toner hopper sensor [A] detects whether there is enough toner in the toner hopper.

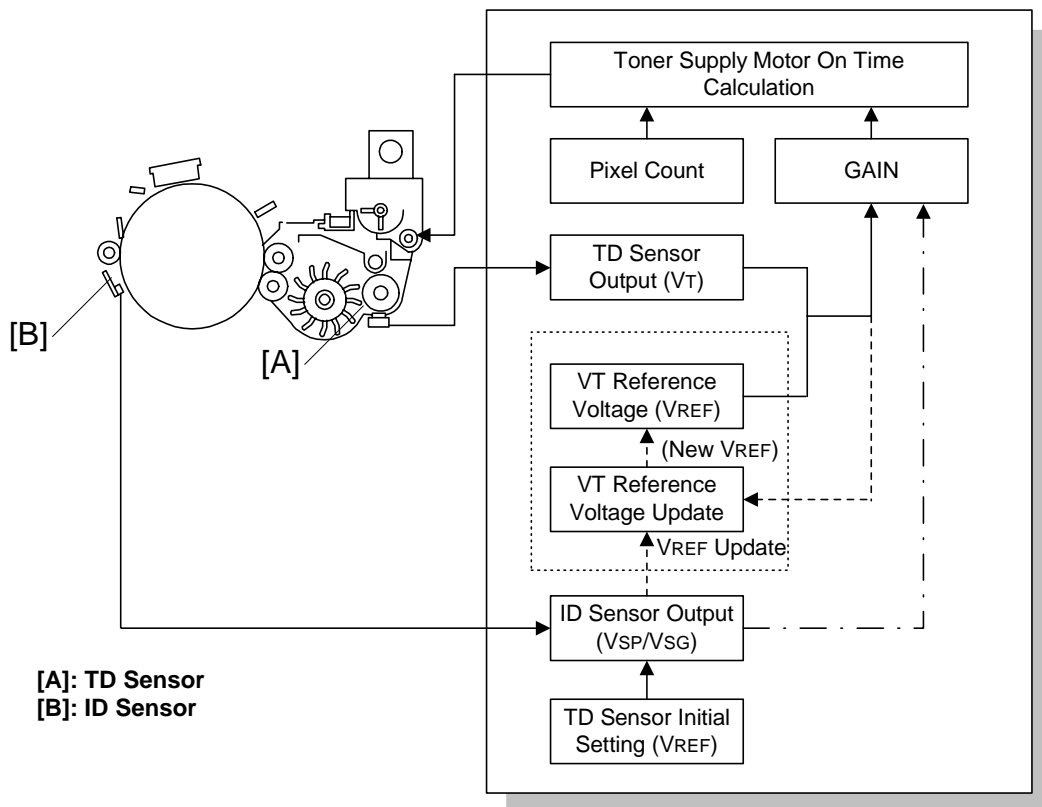
The toner hopper sensor checks for toner once when the toner supply roller clutch turns on. When there is only a small amount of toner inside the toner hopper and pressure on the toner hopper sensor becomes low, the toner hopper sensor outputs a pulse signal for each copy. Then the toner supply pump supplies more toner to the toner hopper.

Detailed Descriptions

## 6.12.8 TONER DENSITY CONTROL

### Overview

There are two modes for controlling toner supply: sensor control mode and image pixel count control mode. The mode can be selected with **SP2208**. The factory setting is sensor control mode. Image pixel count mode should only be used if the TD or ID sensor is defective and cannot be replaced immediately.



B234D9944.WMF

### Toner Supply Timing

After the trailing edge of the image leaves the development area, the machine calculates how long the toner supply motor should be switched on (based on the TD sensor reading). Then, the toner supply motor switches on for the time prescribed by the calculation. Until the toner supply motor switches off, the development motor, drum motor, charge, and development bias all remain on.

Regardless of whether the machine is in the sensor control or pixel count toner supply mode, toner is supplied based on the setting for the toner supply interval entered with **SP2974** (Toner Supply Interval); the default is every print.

- If the TD sensor malfunctions, then toner is supplied for each copy and the setting for **SP2974** is ignored.
- The **SP2974** setting has no effect on the ID sensor pattern interval; the ID sensor pattern interval is set with **SP2210** (ID Sensor Pattern Interval)

**Sensor Control Mode**

In sensor control mode, the machine varies toner supply for each copy to maintain the correct proportion of toner in the developer and to account for changes in drum reflectivity over time. The adjustment depends on two factors.

- Amount of toner needed to print the page (based on the black pixel amount for the page).
- Readings from the TD sensor and ID sensor.

Sensor control mode has two phases, called ‘ID sensor control’ and ‘TD sensor control’. In ID sensor control, VSP/VSG from the most recent ID sensor pattern check determines the GAIN factor in the toner supply calculation (see later in this section). In TD sensor control mode, GAIN depends on the current TD sensor output also ( $V_T - V_{REF}$  is used).

The phase that is used depends on the number of copies since the start of the job. See the table below for details.

Number of copies in the job	Copy no.	Control method
10 or fewer	1 to 10	ID Sensor Control
More than 10	From 11	TD Sensor Control

**Vref Decision**

When new developer is installed, TD sensor initial setting must be done using **SP2801**. This sets the sensor output to  $2.5 \pm 0.1V$ . This value is used as the TD sensor reference voltage ( $V_{REF}$ ). Thereafter, a new reference value for the TD sensor is calculated from the ID sensor output (every time the ID sensor pattern is read) and the current TD sensor reading ( $V_t$ ).

If the sensor output cannot be adjusted to within the standard, **SC368** or **SC372** is logged and the toner density control is set to the pixel count control.

Detailed Descriptions

**VSP and VSG Detection**

The ID sensor detects the following voltages.

- VSG: The ID sensor output when checking the drum surface
- VSP: The ID sensor output when checking the ID sensor pattern

In this way, the reflectivity of both the drum and the pattern on the drum are checked.

The ID sensor pattern is made on the drum with the charge corona and laser diode.



### ***VREF Update***

To update VREF (the TD sensor reference voltage), VSP/VSG is detected at the end of the copy job, if 10 or more copies have been made since the last VREF update. This compensates for any variations in the reflectivity of the pattern on the drum or the reflectivity of the drum surface. The 10-copy interval can be changed using **SP2210**.

VREF is also updated during process control initial setting.

If the reading of the ID sensor becomes abnormal while checking the ID sensor pattern, **SC400**, **SC401**, **SC402**, or **SC406** is logged and the toner density control is done using TD sensor only.

### ***Vt Detection***

The toner density in the developer is detected once every copy cycle, after the trailing edge of the image passes the development roller.

If the reading from the TD sensor, done for every page in the copy job, becomes abnormal ( $V_t \leq 0.5V$  or  $V_t \geq 4.0V$ ), then the machine holds the GAIN factor constant to allow toner supply to vary with only the pixel count for the rest of the copy job. Then at the end of the job, **SC360** (Vt Above Upper Limit) or **SC364** (Vt Below Lower Limit) is generated and the machine must be repaired.

If the TD sensor needs to be replaced and none is available, the toner supply mode can be set to image pixel count mode using **SP2208**.

### ***Image Pixel Count***

For each copy, the CPU adds up the value of each pixel and converts the sum to a value between 0 and 255. (The value would be 255 if the page was all black.)

***Gain Determination***

GAIN is another factor in the toner supply motor on time calculation. Its value can be 0, 1, 1.5, 2, 3, or 4. It is calculated either using VSP/VSG if ID sensor control is being used, or every copy using “VT – VREF” if TD sensor control is being used (see Sensor Control Mode – Overview for more on TD and ID sensor control).

ID Sensor Control	
VSP/VSG	GAIN
≤ 3/40	0
≤ 9/100	0
≤ 21/200	1
≤ 1/8	1
≤ 4/25	2
≤ 41/200	3
≤ 1/2	4
> 1/2	1

TD Sensor Control	
a = VT – VREF	GAIN
a < 0.00	0
0.00 ≤ a < 0.06	1
0.06 ≤ a < 0.10	2
0.10 ≤ a < 0.20	3
0.20 ≤ a	4

***Toner Supply Motor On Time Calculation***

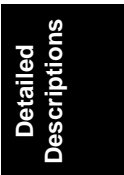
The toner supply motor on time for each copy is decided using the following formula: (GAIN x Image pixel count x 0.7mg/cm<sup>2</sup>/Toner Supply Rate) + 50 ms

When GAIN is “0”, the above 50 ms is set to “0”.

The toner supply rate can be changed using **SP2209**.

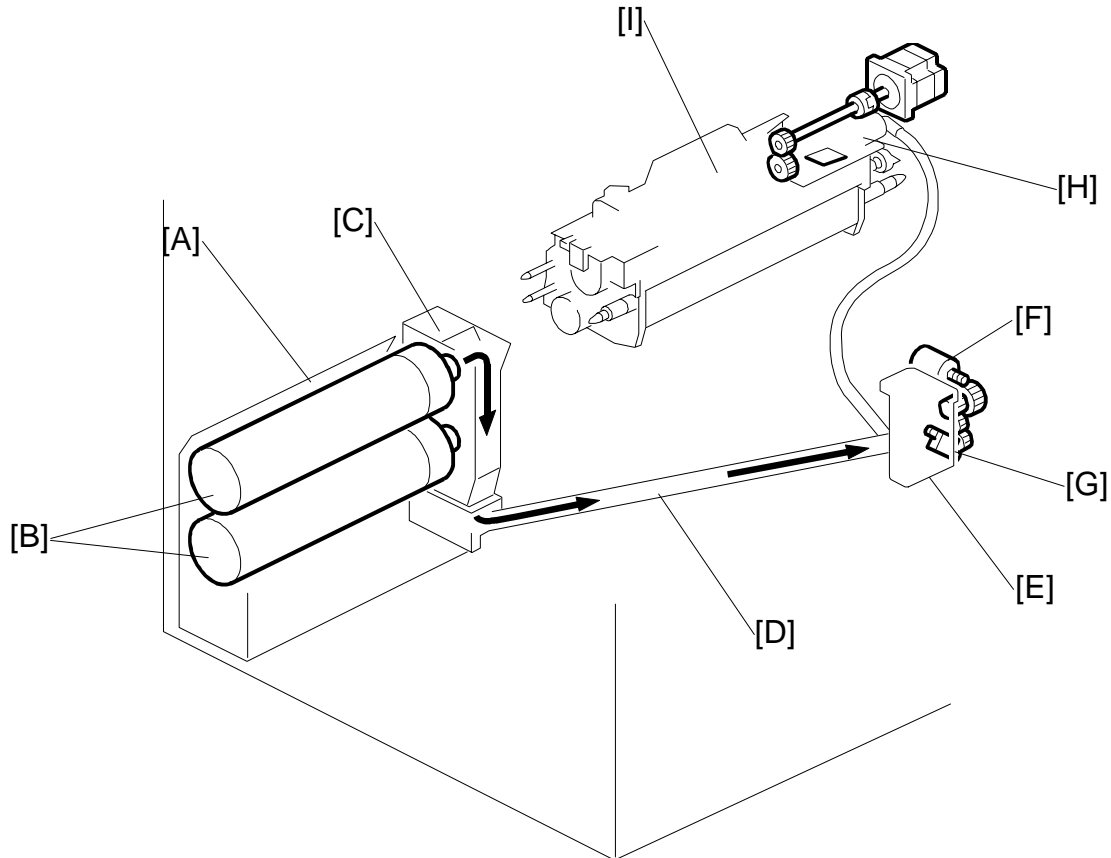
***Image Pixel Count Control***

This mode should only be use as a temporary countermeasure while waiting for replacement parts, such as a TD sensor. This mode controls the toner supply using the same formula for the toner supply motor on time. However, the GAIN value is fixed at 0.7.



## 6.13 TONER SUPPLY AND RECYCLING

### 6.13.1 OVERVIEW



B234D902E.WMF

Toner is supplied from a toner bank [A] on the left side of the machine. The toner bank holds two bottles. Only one bottle operates at a time.

A small toner bottle motor turns the bottle [B]. This spills toner into the toner entrance tank [C].

The toner transport coil in the toner transport tube [D] transports toner to the toner supply cylinder [E]. The toner supply cylinder contains a toner cylinder agitator motor [F] and toner end sensor [G]. The agitator prevents the toner from clumping. The sensor monitors the level of toner in the toner supply cylinder.

Due to the length of the toner supply path (400 mm), a toner supply pump [H] is needed to draw the toner into the toner hopper [I].

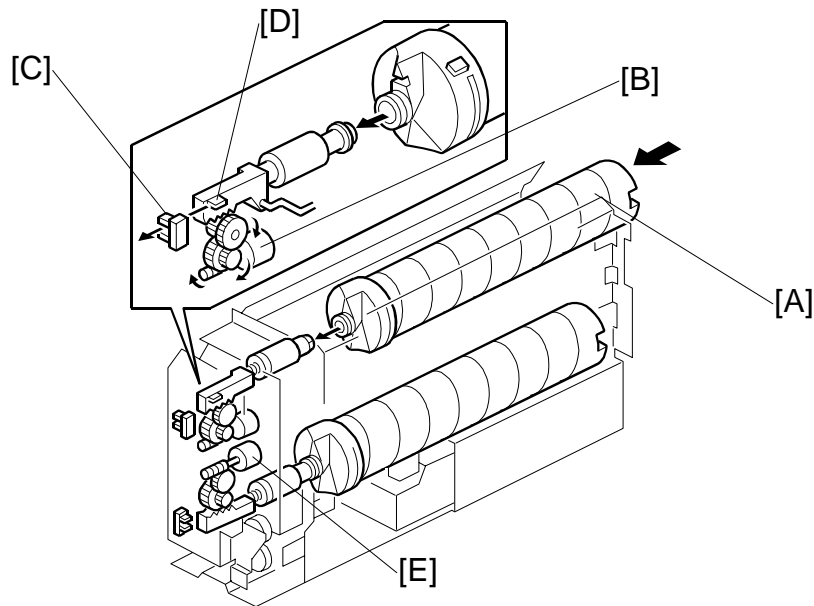
**Toner Bottle Capacity:** 1650 g A4 6%: About 60K prints

Here are some important points to remember about the toner bank:

- The toner bank contains the toner bottles, the toner collection bottle below the bottles. The toner entrance tank comprises the back side of the toner bank.
- The toner bank holds two toner bottles. This doubles the toner supply capacity for the machine and allows replacement of an empty toner bottle while the machine is operating.
- The machine works even if there is only one bottle installed.
- Toner can be supplied from either the upper or lower toner bottle, but not from both at the same time. When toner runs out in one bottle, toner supply from the other bottle starts automatically.
- After the toner near-end message is displayed for both toner bottles, the toner bottle still has enough toner for about **200** copies.
- The lower toner bottle is loaded first, then the upper toner bottle is loaded. If the upper toner bottle is loaded first, a message will be displayed on the operation panel to request loading the lower toner bottle.
- Toner bottles should always be handled carefully to avoid shaking them.

## 6.13.2 TONER BANK

### *Toner Bottle Switching Mechanism*



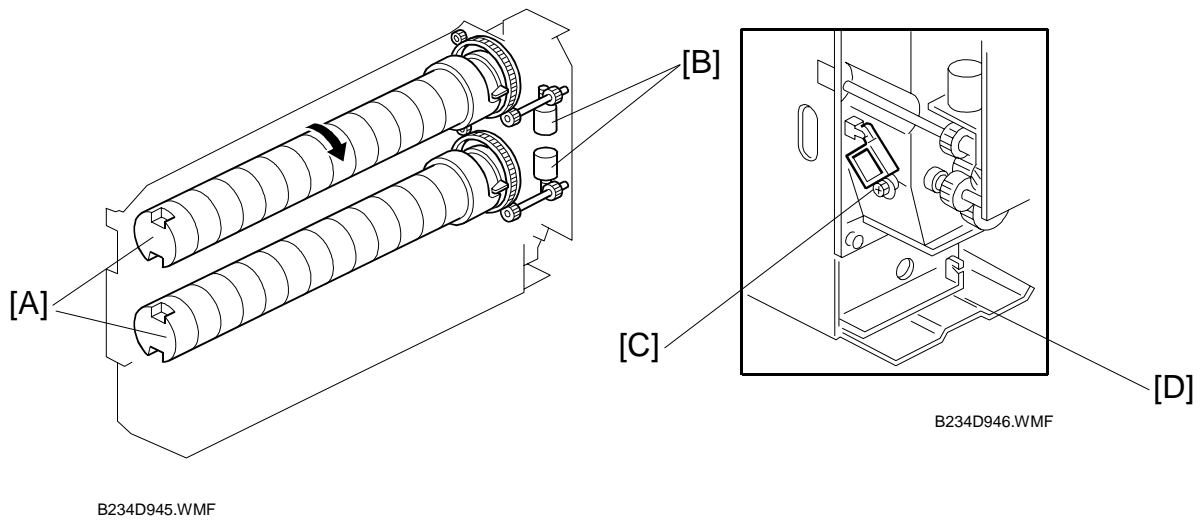
B234D944.WMF

When the upper toner bottle [A] is supplying toner, the upper bottle cap motor [B] pulls out the toner bottle cap. The upper bottle cap sensor [C] detects the actuator [D] of the toner bottle opening rod, then the motor shuts off.

Toner is supplied from the toner bottle to the toner entrance tank where a toner end sensor (see the next page) checks for the presence of toner in the toner entrance tank.

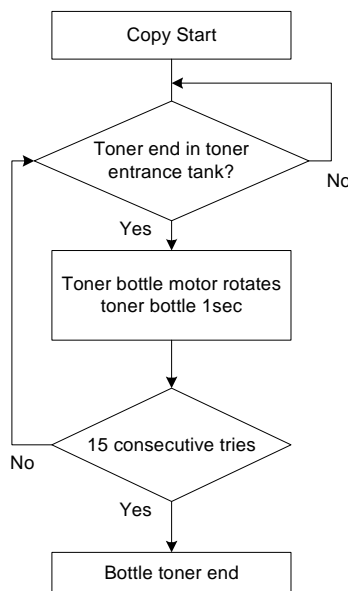
When the toner end sensor (not shown) can no longer detect any toner, it signals the machine that it is time to switch bottles. The upper bottle cap motor switches on and closes the cap of the top bottle, while the lower bottle cap motor [E] switches on and opens the cap of the lower bottle so it can start supplying toner.

**Toner Near-end, Toner End, Bottle Replacement**



Each toner bottle [A] has an independent toner bottle motor [B]. An empty toner bottle can be replaced during printing. The toner bottle end sensor [C] detects toner when it falls from the toner bottle into the toner entrance tank [D]. If the sensor detects that no toner has come out of the toner bottle, the toner bottle enters the toner end condition.

- The toner bottle motor rotates the toner bottle 1 sec to try to supply toner to the toner entrance tank.
- If the sensor detects toner end condition 15 consecutive times, the machine judges the bottle to be empty.



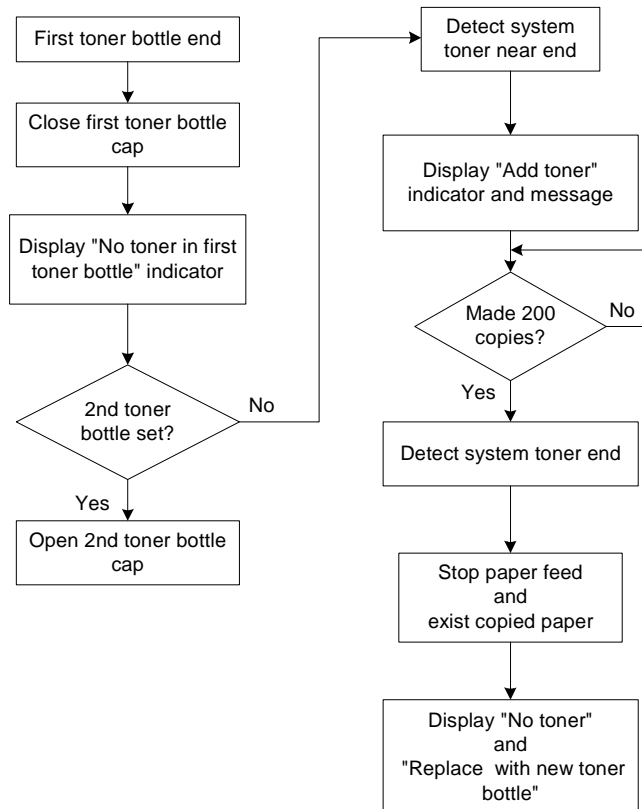
B234D909A.WMF

Detailed Descriptions

When the first toner bottle is empty, the machine switches to the second toner bottle.

The first toner bottle cap motor closes the bottle cap and the second toner bottle cap motor pulls out the second bottle cap. The motors operate until the first bottle inner cap sensor does not detect the actuator and the second bottle inner cap sensor does detect the actuator.

The second toner bottle is then rotated.



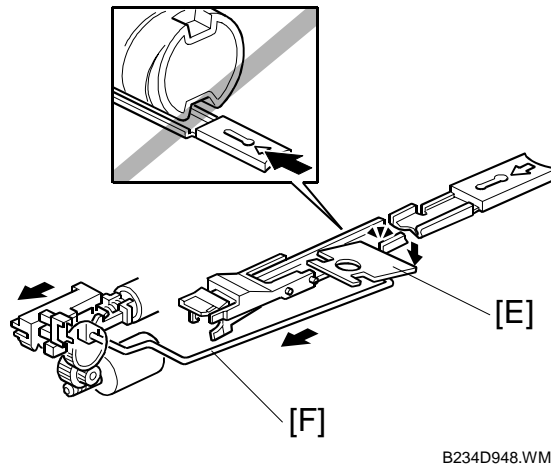
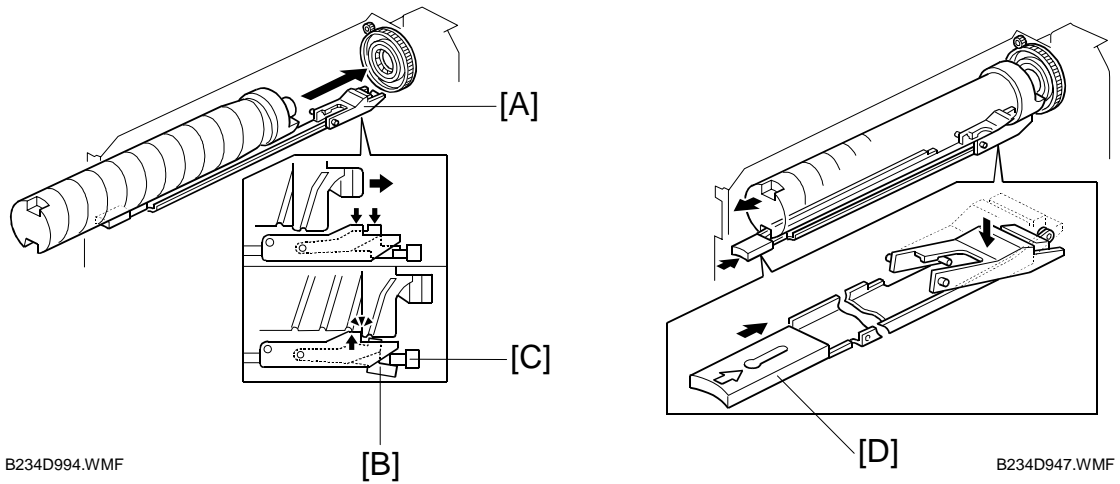
B234D909B.WMF

When the operator takes out the old bottle, and puts in a new one, this is detected by the toner bottle sensor. However, this bottle is not tested until the second bottle is empty. When the second bottle is empty, the machine switches back to the first bottle.

If an empty bottle is not replaced, and the other bottle becomes empty (toner end condition detected 15 consecutive times, as described above), **200** more copies can be made. Then the machine enters the system toner end condition (both bottles are empty), and this is indicated in the operation panel display.

The system toner end condition continues and printing is not possible.

**Toner Bottle Sensors**



When a toner bottle is placed in the toner bank, the toner bottle pushes the lock arm [A] down. Then the lock arm catches the toner bottle and also pushes down lever [B]. This causes toner bottle sensor [C] to detect that a bottle has been installed (the actuator leaves the toner bottle sensor while the bottle is being inserted in the holder).

When replacing a toner bottle, push the toner bottle release lever [D] to release the lock mechanism. While a toner bottle is supplying toner, the toner bottle opening rod is pulled to the rear and the lock plate [E] is lowered by the link [F] so that the toner bottle release lever cannot be pushed. Therefore, the toner bottle that is supplying toner is always locked in place, and the user cannot pull out the bottle until it is empty.

Detailed Descriptions

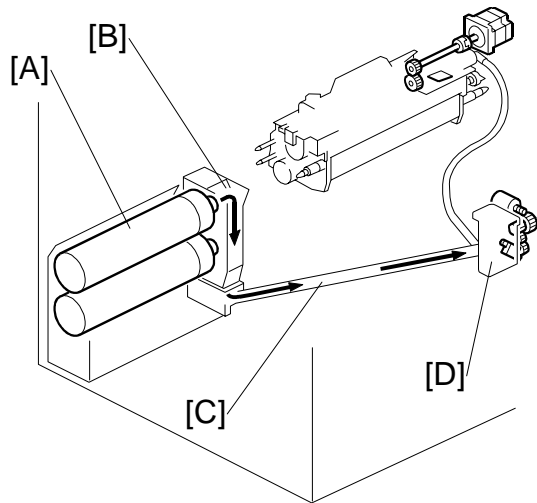


### 6.13.3 SUPPLYING TONER TO THE DEVELOPMENT UNIT

The toner bottle motor turns the toner bottle [A]. This spills toner into the toner entrance tank [B].

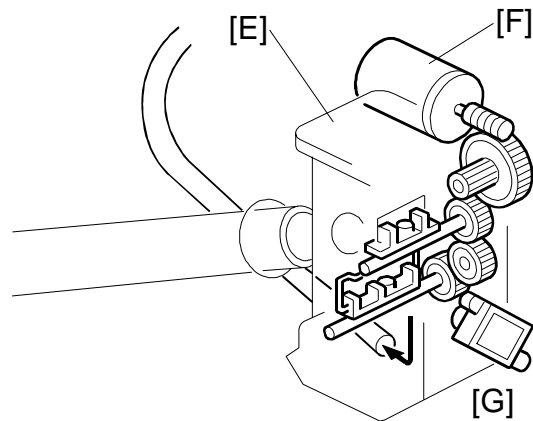
Toner collected from the drum cleaning unit is also sent to the toner entrance tank where it mixes with fresh toner (see page 6-105).

The toner bank motor drives the toner transport coil via the toner supply coil clutch (see page 6-106). The revolving coil [C] inside the transport tube transports the toner to the toner supply cylinder [D].



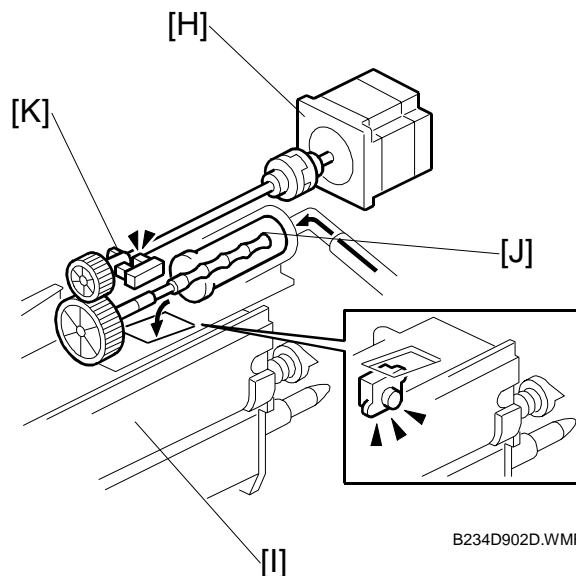
B234D902E.WMF

The toner supply cylinder [E] contains a toner cylinder agitator motor [F] and a toner end sensor [G]. The agitator prevents toner clumping in the cylinder. The sensor monitors the level of toner in the cylinder.



B234D902C.WMF

The toner supply pump motor [H] pumps toner from the toner supply cylinder to the toner hopper [I]. The toner supply pump [J] is a "dry" powder pump driven by an impeller. There is no problem with an increase in pressure inside the toner hopper. One filter is sufficient to vent pressure from the hopper. The toner pump motor sensor [K] checks that the motor is working.



B234D902D.WMF

When the machine enters the toner supply mode, the toner supply cylinder and toner hopper are checked for toner, by following the pattern described in the table below step by step.

In the table below, the levels are monitored by the toner cylinder toner-end sensor in the toner supply cylinder and by the toner hopper sensor in the toner hopper.

Pattern	TS Cylinder Toner?	Hopper Toner?	Step	Operation Panel Message
A	NO	NO	Step 1 → Step 2	Starting toner supply.
B	YES	NO	No Step 2	Starting toner supply.
C	NO	YES	No Step 1	Starting toner supply.
D	YES	YES	TS Mode End	Toner present, canceling...

**Step 1:** Toner transported from toner entrance bank → toner supply cylinder

**Step 2:** Toner transported from toner supply cylinder → toner hopper

### 1 Toner Bottle → Toner Entrance Bank

The toner bottle end sensor in the toner entrance bank controls the operation of two toner bottles motors. This sensor checks for the presence of toner:

- 2 sec. after the bottle chuck opens
- 500 ms after the toner bottle motor goes off
- Every 200 msec. while the toner supply clutch is on

If the sensor detects insufficient toner at any one of these checks, the sensor signals the machine to turn on the toner bottle motor.

### 2 Toner Entrance Bank → Toner Supply Cylinder

The toner bank motor and toner supply clutch drive the transport coil inside the diagonal transport tube that carries toner from the toner entrance bank to the toner supply cylinder.

The toner cylinder toner-end sensor monitors the level of toner in the toner cylinder every 100 msec. and signals the machine to turn on the toner bank motor for 2 sec. when toner runs low (toner end) in the toner cylinder. If the sensor detects insufficient toner for longer than 2 sec., it signals the machine to issue **SC494** because toner transport has stopped due to an obstruction or some other problem.

Detailed Descriptions

### 3 Toner Supply Cylinder Agitator, Toner End Sensor Cleaning

A small toner cylinder agitator motor drives the agitator inside the toner cylinder. This motor turns on when the toner hopper sensor signals insufficient toner and turns off as soon as the toner hopper sensor signals sufficient toner.

The toner cylinder TE (toner end) sensor checks the toner level 1 s after the agitator motor turns off and thereafter checks at 200 msec. intervals. It does not check the toner level while the agitator motor is on.

### 4 Toner Supply Cylinder → Toner Hopper

The toner hopper sensor controls the operation of the toner pump motor. The toner hopper sensor checks the level of the toner 1 sec. after the hopper agitator turns off, and 1 sec. after the toner pump motor turns off. If the sensor detects insufficient toner, it waits for 1 sec. then signals the pump motor to switch on for 2 sec.

If the sensor detects insufficient toner for more than 2 sec., it signals the machine to issue **SC495** because toner supply has stopped due to a blockage in the toner supply path below, a defective toner pump, or some other problem.

### 5 Toner Hopper → Development Unit

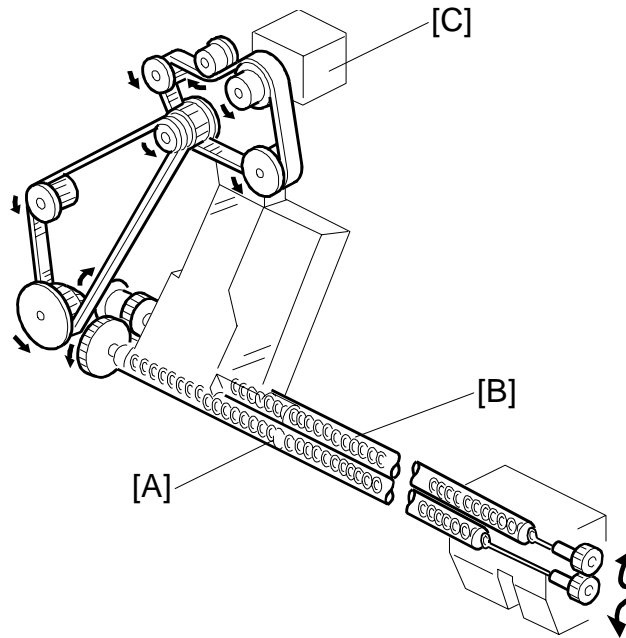
The toner hopper agitator motor turns on with the toner supply pump motor.

The machine maintains a running count for the time the hopper supply clutch remains on. For every 500 msec. the hopper supply clutch remains on, the agitator motor is turned on for 500 msec. The count is reset every time the hopper agitator motor turns on, or is reset as soon as the toner hopper sensor signals "toner present".

**SP2977** (Toner Supply/Transport Display) logs the total on time of key components in the toner supply system (toner bank motor, toner supply clutch, toner collection bottle agitator, toner supply cylinder agitator motor, and the toner pump motor). For more, please refer to Section "5. Service Tables".

## 6.13.4 TONER RECYCLING AND TONER COLLECTION

### Overview



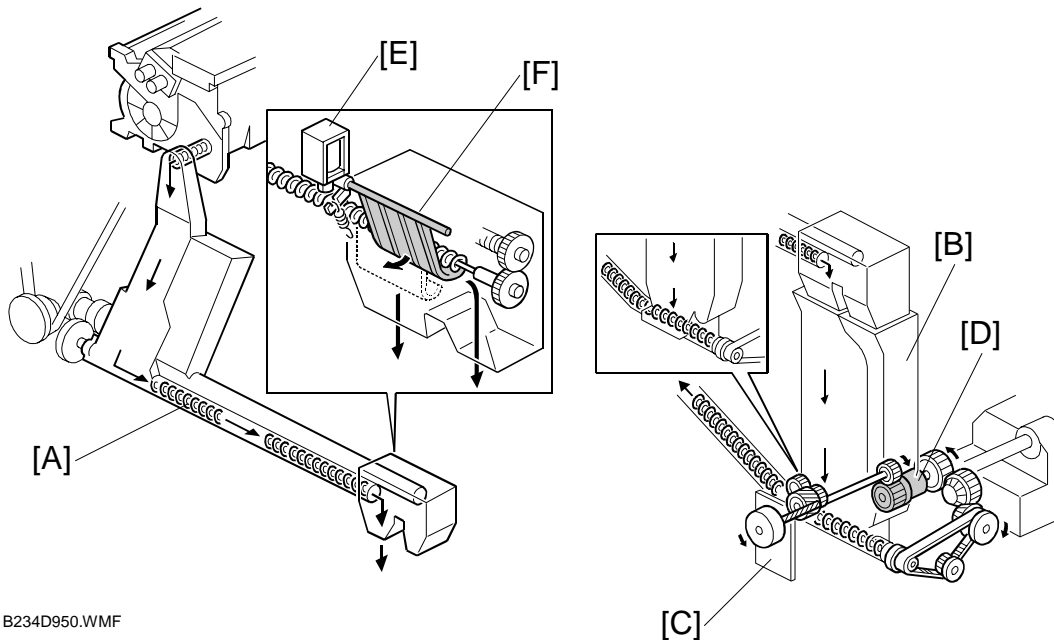
B234D949.WMF

To recycle used toner for re-use, the toner recycling coil in the tube [A] transports the toner collected by the drum cleaning to the toner entrance tank for recycling.

The toner collection coil in the tube [B] transports the toner collected from the transfer belt unit to the toner collection bottle. The toner cleaned from the transfer belt cannot be recycled.

The drum motor [C] drives the toner recycling coil [A] via timing belts and gears, whose rotation in return drives the toner collection coil [B] via gears.

## Toner Recycling



B234D950.WMF

B234D951.WMF

The toner recycling coil in the tube [A] transports the toner collected by the drum cleaning unit to the toner entrance tank [B] for recycling. This toner is dropped into the toner entrance tank and mixed with fresh toner from the toner bottle. The toner bank motor [C] drives the toner transport coil via the toner supply coil clutch [D].

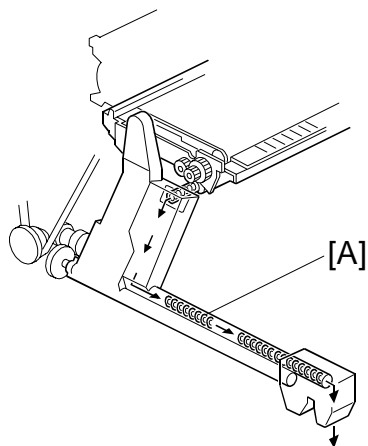
The new toner separation shutter mechanism (toner recycling shutter solenoid [E] and shutter [F]) reduces the amount of paper dust in the toner. During recycling, paper dust gradually collects in the toner, which can cause black dots to appear on copies. At the prescribed interval, the toner separation mechanism purges all toner from the toner supply system and replaces it with new toner, as described below.

Normally during toner recycling, the toner recycling shutter solenoid remains on and the shutter remains open, but when the number of copies exceeds 25K, the toner recycling shutter solenoid switches off and the shutter closes.

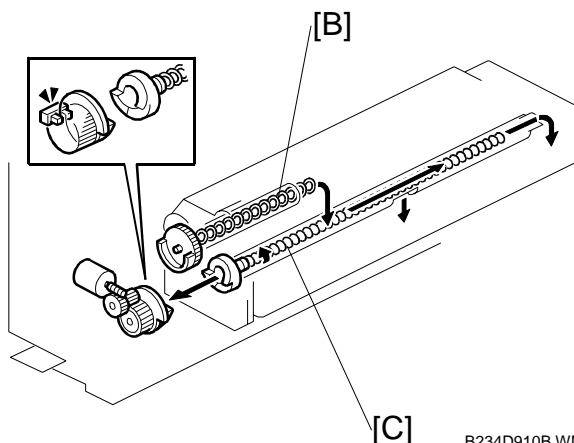
After the solenoid switches off, no toner recycling is done for the next 25K copies, and all used toner is sent to the toner collection bottle without recycling. Toner from the toner hopper takes about 20K copies to pass through the recycling path cleaning and collection tubes, so during the 25K copies after the solenoid switches off, all the toner in the toner supply path is purged from the system and replaced with fresh toner.

**NOTE:** The timing of this operation can be adjusted with **SP2975 001, 002** (Toner Recycle Cut Counter – ON Counter / OFF Counter). **SP2975 001** determines how often the toner is purged (default: 25K), and **SP2975 002** determines how long the purge is done for (default: 25k copies)

### Toner Collection Bottle



B234D952.WMF

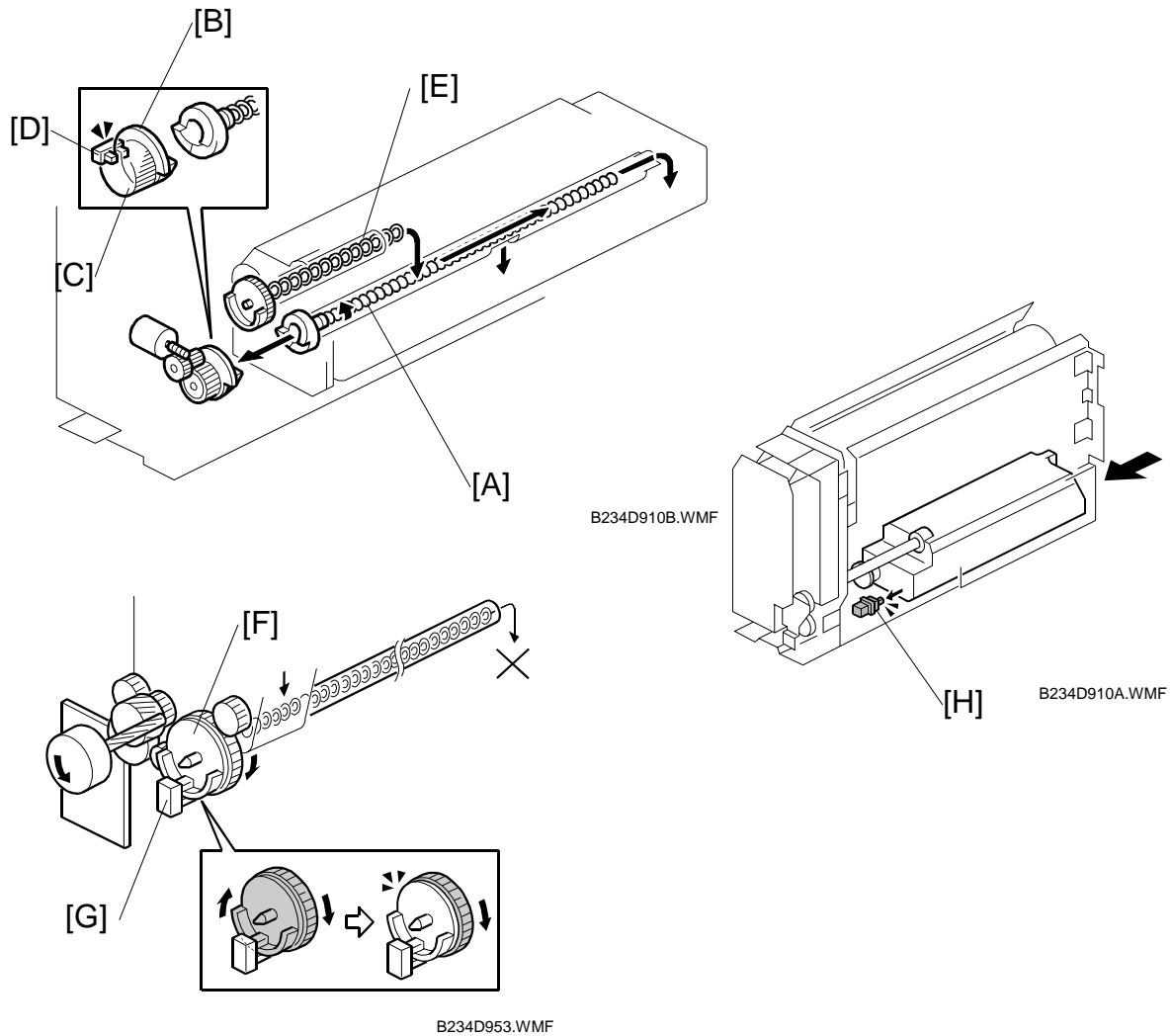


B234D910B.WMF

The toner collection coil in the tube [A] transports the toner collected by the transfer belt unit to the toner collection bottle. This toner contains paper dust and cannot be recycled.

The toner falls from the collection coil [B] onto the toner agitator coil [C]. The agitator coil distributes toner evenly across the length of the bottle. As a result, toner does not build up on one end and trigger the full alert before the bottle is actually full.

Detailed  
Descriptions



The capacity of the toner collection bottle is approximately 1,800 grams (A4 6%: 650K).

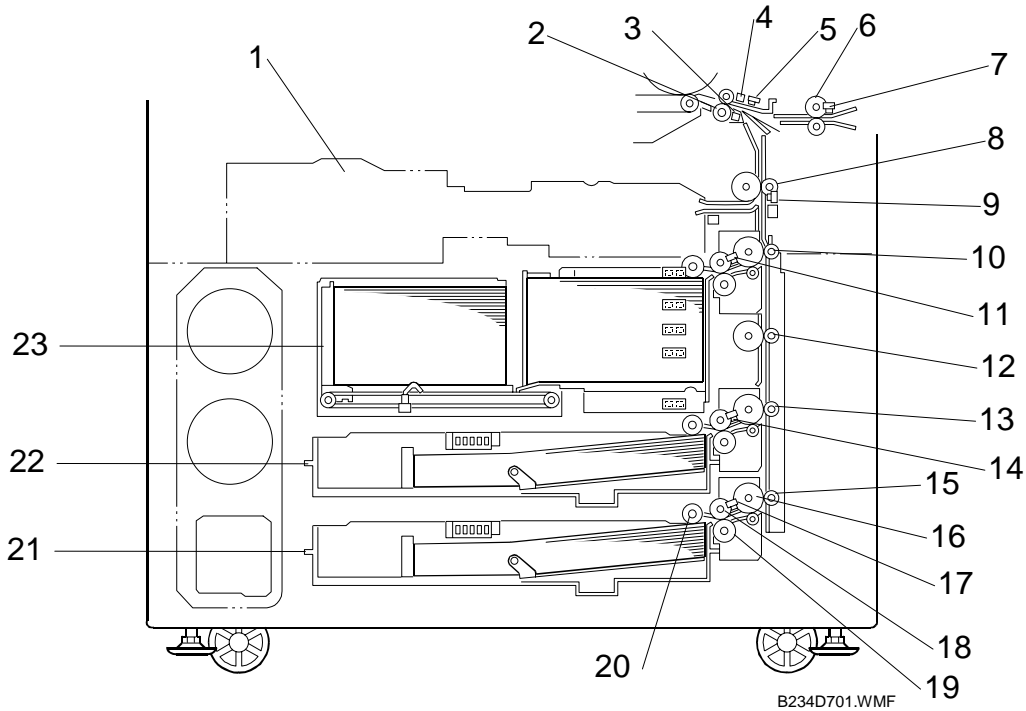
When the toner collection bottle starts to fill up, the toner agitator coil [A] becomes harder to turn. When this occurs, the actuator plate [B] does not rotate because the agitator coil drive gear [C] has a torque limiter, and the output of the toner collection bottle agitator sensor [D] becomes constant. At this time, the operation panel indicates that the toner collection bottle is nearly full. After this, about 200K sheets can be printed until the bottle becomes full.

When the toner collection bottle is full, the toner collection coil [E] becomes harder to turn. When this occurs, the actuator plate [F] does not rotate, and the output of the toner collection bottle overflow sensor [G] becomes constant. In this condition, the operation panel LCD indicates “Toner Full”, all copy paper in the paper feed path is fed out, and printing stops.

If the toner bottle is not properly installed inside the toner bank, the toner collection bottle set switch [H] detects this condition and the operation panel LCD displays error messages (used toner bottle is not set correctly).

### 6.14 PAPER FEED

#### 6.14.1 OVERVIEW



- |                              |                            |
|------------------------------|----------------------------|
| 1. Duplex Tray               | 13. 2nd Transport Roller   |
| 2. Registration Rollers      | 14. 2nd Paper Feed Sensor  |
| 3. Double-Feed Detection LED | 15. 3rd Transport Roller   |
| 4. Double-Feed Sensor        | 16. 3rd Grip Roller        |
| 5. Registration Sensor       | 17. 3rd Paper Feed Sensor  |
| 6. LCT Relay Rollers         | 18. 3rd Paper Feed Roller  |
| 7. LCT Relay Sensor          | 19. 3rd Separation Roller  |
| 8. Upper Relay Roller        | 20. 3rd Pick-up Roller     |
| 9. Upper Relay Sensor        | 21. 3rd Tray               |
| 10. 1st Transport Roller     | 22. 2nd Tray               |
| 11. 1st Paper Feed Sensor    | 23. 1st Tray (Tandem Tray) |
| 12. Vertical Relay Roller    |                            |

Detailed Descriptions



This model has three paper tray feed stations:

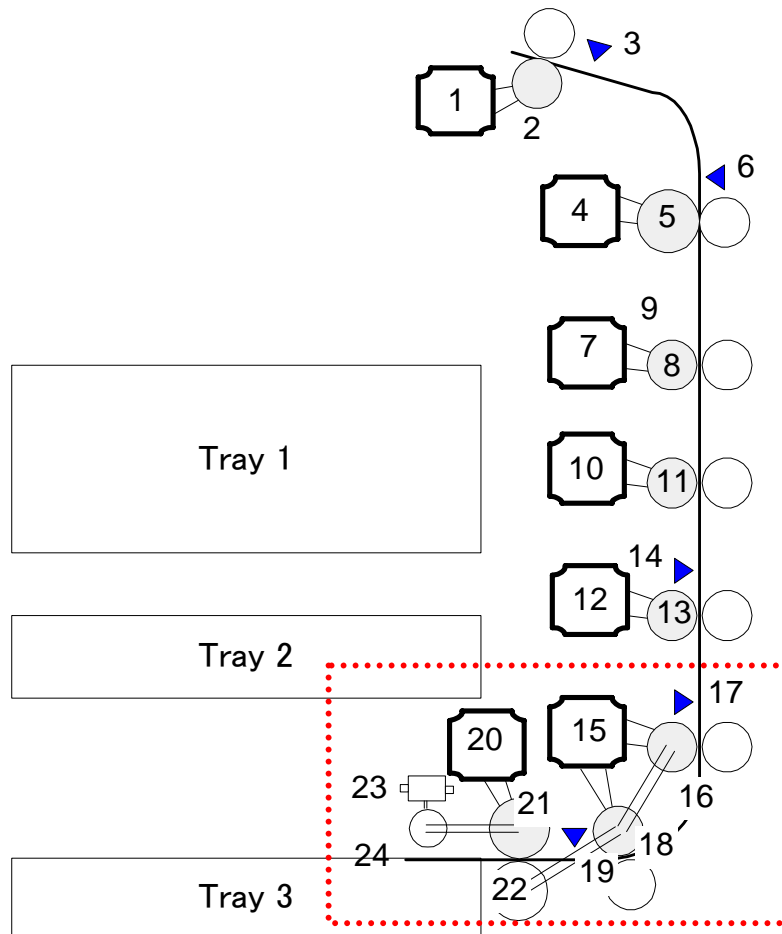
- 1st Tray (23). The tandem tray holds 2,000 sheets of paper (1,000 sheets x 2 stacks). The tandem tray also be can be converted to a 1,000-sheet tray for larger paper sizes with the optional A3/11"x17" Tray Unit Kit B331-11.
- 2nd Tray (22). This is a universal tray. It holds 500 sheets of paper. To allow easy removal, the paper cassette is not fastened to the tray with screws.
- 3rd Tray (21). Identical to the 2nd tray.

All feed stations use the FRR feed system, shown at (17)~(20) above for the 3rd tray.

The arrangement of the rollers is identical for each paper tray:

- Rotation of the pick-up roller (20) drives the top sheet of paper to the paper feed roller (18) and separation roller (19).
- The grip roller (17) feeds the sheet to the transport roller (15).
- The transport roller feeds the paper into the vertical paper path and to the transport and relay rollers above.

### 6.14.2 DRIVE



B234D905.WMF

- |                           |                           |
|---------------------------|---------------------------|
| 1. Registration Motor     | 13. 2nd Transport Roller  |
| 2. Registration Roller    | 14. 2nd Transport Sensor  |
| 3. Registration Sensor    | 15. 3rd Grip Motor        |
| 4. Upper Relay Motor      | 16. 3rd Transport Roller  |
| 5. Upper Relay Roller     | 17. 3rd Transport Sensor  |
| 6. Upper Relay Sensor     | 18. 3rd Grip Roller       |
| 7. 1st Grip Motor         | 19. 3rd Paper Feed Sensor |
| 8. 1st Transport Roller   | 20. 3rd Paper Feed Motor  |
| 9. 1st Transport Sensor   | 21. 3rd Paper Feed Roller |
| 10. Vertical Relay Motor  | 22. 3rd Separation Roller |
| 11. Vertical Relay Roller | 23. 3rd Pick-up Solenoid  |
| 12. 2nd Grip Motor        | 24. 3rd Pick-up Roller    |

**Note:**

- Items 18-24 are shown for Tray 3 only. These components are duplicated in Tray 1 and Tray 2 but do not appear in the illustration above.

Detailed Descriptions

***Tray Components (Example: 3rd Tray)***

The 3rd paper feed motor (20) drives both the 3rd paper feed roller (21) and 3rd pick-up roller (24).

The 3rd grip motor (15) drives the 3rd grip roller (18), the 3rd transport roller (16), and the 3rd separation roller.

The 3rd paper feed sensor times the paper feed and signals jams if they occur.

The pick-up roller picks the sheet off the top of the stack, the paper feed motor feeds the sheet to the grip roller. The grip roller pulls the sheet out of the cassette and sends to the transport roller. The transport roller feeds the sheet into the vertical feed path.

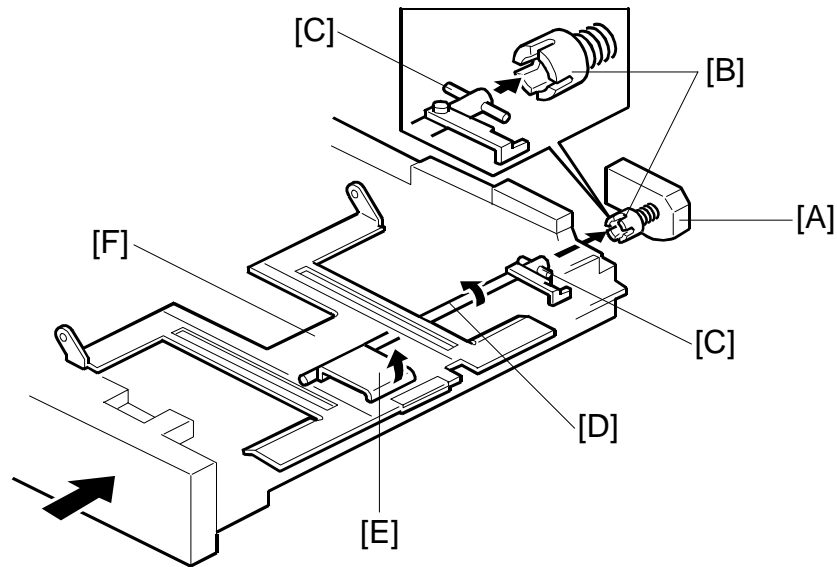
**NOTE:** This arrangement of motors and rollers is duplicated in tray 1 and tray 2.

***Vertical Paper Path***

After the sheet leaves the 3rd tray, it feeds to the 3rd transport roller (16) → 2nd Transport roller (13) → Vertical relay roller (10) → 1st transport roller (8) → Upper relay roller → Registration roller.

- Each paper tray has a transport roller paired with one transport sensor.
- The grip motors (one in each tray) drive the transport rollers, which feed the paper past the paper trays. Their sensors check the timing of each sheet when it passes, and signal jams if they occur.
- The vertical relay motor (10) is positioned between the 1st transport roller (7) and 2nd transport roller (12). This motor is necessary due to the greater distance between transport rollers, due to the greater height of the 1st tray.
- All the rollers are driven by stepper motors only.
- The stepper motors were added for the feed and transport rollers on separate drive shafts to improve the accuracy of control in the paper path.

### 6.14.3 PAPER LIFT – TRAYS 2 & 3

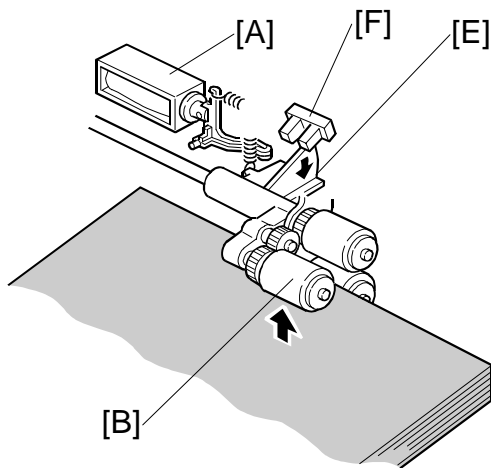


B234D955.WMF

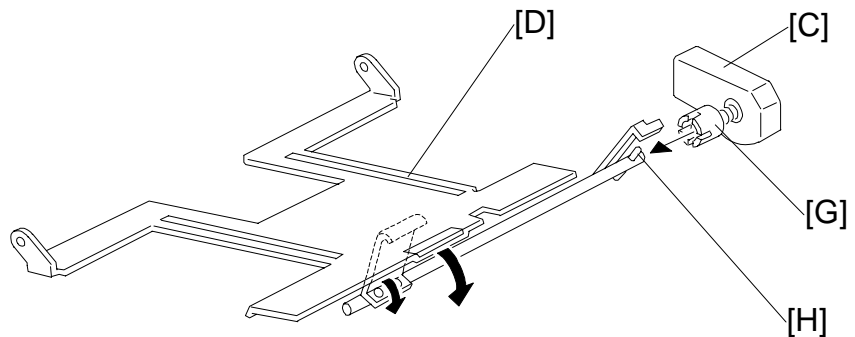
The machine detects when a tray has been placed in the machine by a signal from the paper size switch. When this is detected, the tray lift motor [A] turns on. The coupling gear [B] on the tray lift motor engages the pin [C] on the lift arm shaft [D], then it turns the tray lift arm [E] to lift the tray bottom plate [F].

For tray 1, an electrical signal from the tray connector automatically informs the cpu when the tray has been placed in the machine.

Detailed  
Descriptions



B234D957.WMF



B234D958.WMF

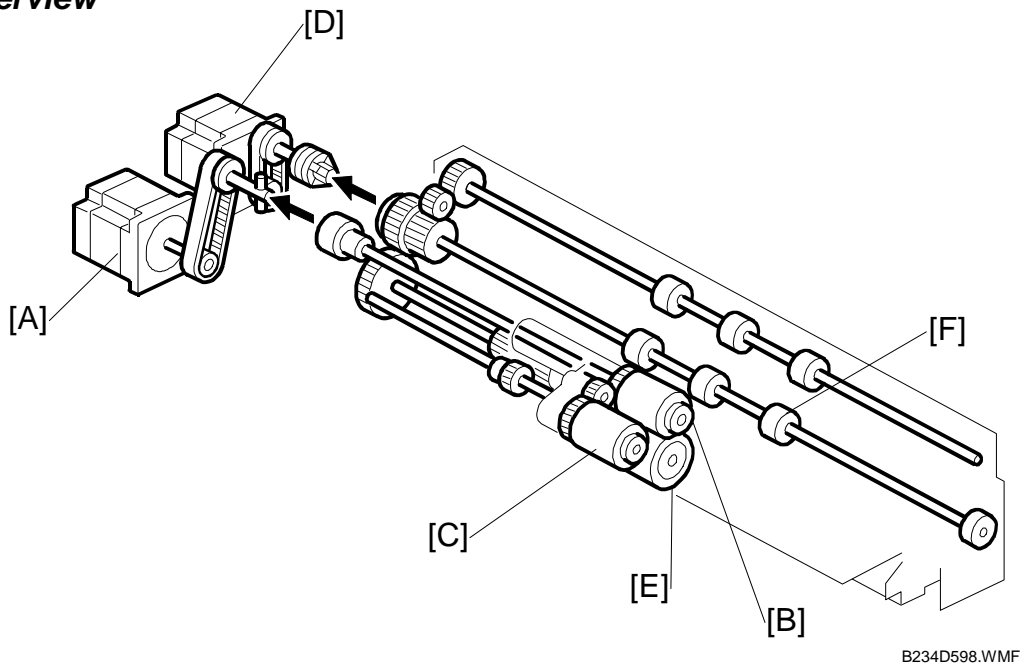
When a stack of paper is loaded in the tray, the paper end sensor below the stack (not shown) activates and switches on the pick-up solenoid [A] to lower the pick-up roller [B]. At the same time, the tray lift motor [C] switches on and lifts the bottom plate [D]. This plate pushes the top of the stack up against the pick-up roller until the actuator [E] descends and leaves the tray lift sensor [F] slot. This de-activates the tray lift sensor; the tray is now at the correct feed position so the machine switches off the tray lift motor.

The pick-up roller descends gradually with each sheet fed, so the tray lift sensor actuator ascends until it activates the tray lift sensor. This signals the machine to switch on the tray lift motor to raise the stack to the correct feed height. The tray lift sensor again deactivates to switch off the tray lift motor. This process is repeated to position the top of the stack at the correct feed height.

When the tray is drawn out of the feed unit, the lift motor coupling gear [G] disengages the pin [H] of the lift arm shaft, then the tray bottom plate drops under its own weight.

### 6.14.4 PICK-UP AND FEED – TRAYS 1, 2, 3

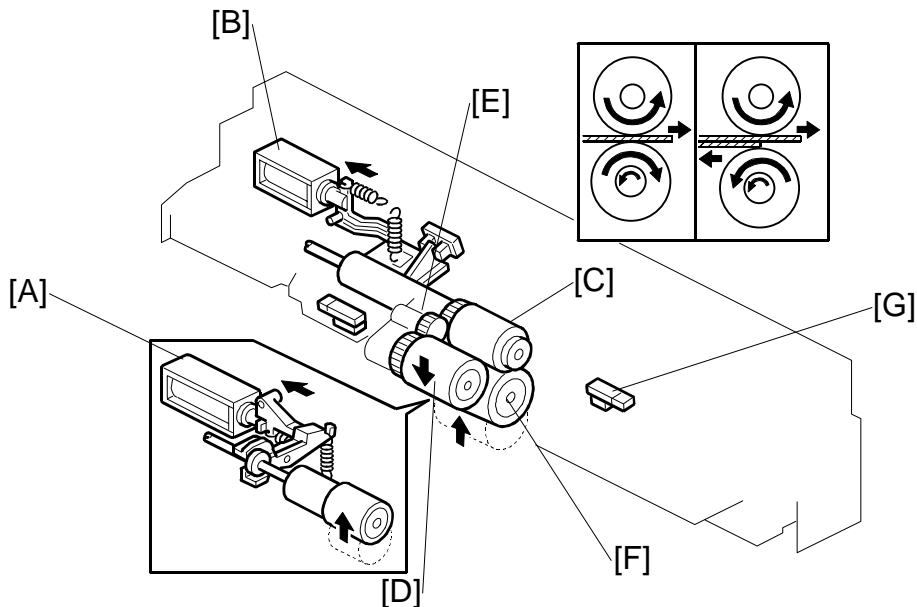
#### Overview



Drive from the paper feed motor [A] is transmitted to the paper feed roller [B] and pick-up roller [C].

The grip motor [D] drives the separation roller [E] and grip roller [F].

Detailed Descriptions

**Pick-up and Feed**

B234D600.WMF

If a paper feed station is not selected, its separation roller solenoid [A] de-activates.

When the paper feed station is selected and the start key is pressed, the paper feed motor, grip motor, separation roller solenoid, and the pick-up solenoid [B] all turn on.

**Paper feed motor:** This rotates the feed roller [C], and the pick-up roller [D] linked to the feed roller by an idle gear [E].

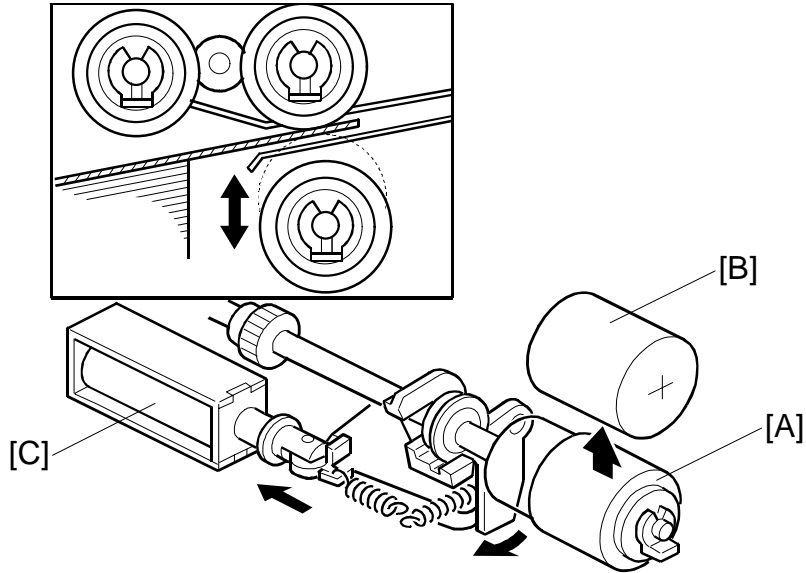
**Grip motor:** Rotates the grip roller and separation roller [F].

**Separation roller solenoid [A]:** When this solenoid turns on, the separation roller [F] contacts the paper feed roller [C].

**Pick-up solenoid [B]:** When this solenoid turns on, the pick-up roller [D] lowers to contact the top sheet of the paper stack and sends it to the nip of the paper feed and separation rollers.

When the paper feed sensor [G] detects the leading edge of the paper, the pick-up solenoid de-energizes to lift the pick-up roller. The grip motor turns on and the grip roller and the transport roller pull the paper out of the tray and feed it into the vertical feed path.

**Separation Roller Release**



B234D959.WMF

The separation roller [A] is normally away from the feed roller [B]. When the paper feed station is selected, the separation roller solenoid [C] pushes the separation roller up so it touches the paper feed roller.

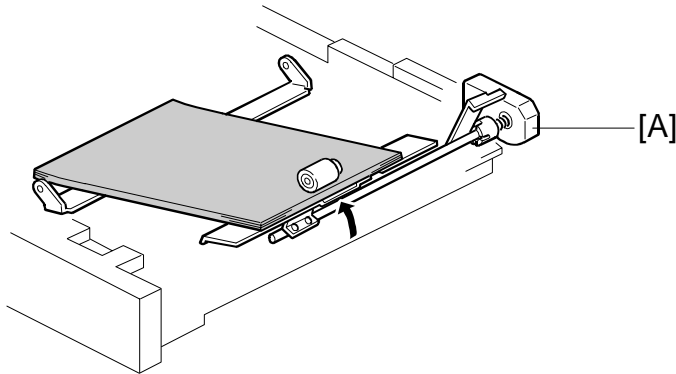
This contact/release mechanism has the following two advantages:

- After paper feed is completed, paper sometimes remains between the feed and separation rollers. If the feed tray is pulled out in this condition, this paper might be torn. When the separation roller is away from the feed roller, the remaining paper can be removed from between the rollers.
- When paper misfeeds occur around this area, the operator can easily pull out the jammed paper between the feed and the separation rollers if the separation roller is away from the feed roller.

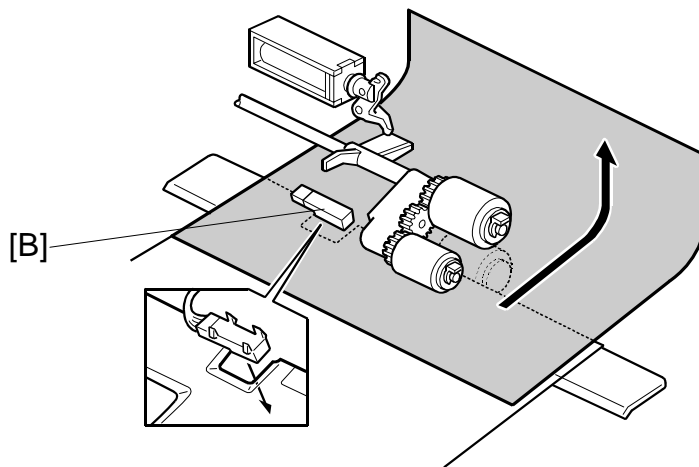
Detailed Descriptions



### 6.14.5 REMAINING PAPER/PAPER END DETECTION (TRAY 2, 3)



B234D996.WMF



B234D960.WMF

#### ***Remaining Paper Detection***

The tray lift motor [A] rotates when the tray is pushed in. The CPU detects the remaining paper by monitoring the lift motor rotation angle (4 levels).

#### ***End Detection***

The paper end sensor [B] is a photo-reflective sensor. While there is paper in the tray, light is reflected back to the sensor, but after the last sheet feeds, the sensor deactivates and signals paper out.

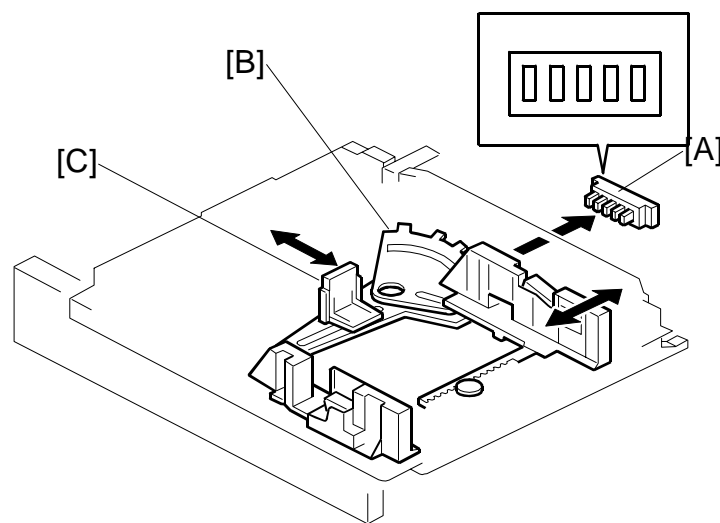
## 6.14.6 PAPER SIZE DETECTION

### *Tandem Tray (Tray 1)*

The tandem tray does not have paper size switches. Every time the paper size is changed by moving the front and back fences, you must enter the selected paper size with **SP5019-002**.

If you set SP 5019 002 to 'custom size', then you can input a custom size for the tandem tray with SP 5040 and 5041.

### *Universal Tray (Tray 2, 3)*



B234D961.WMF

The output from the switch depends on the position of the dial (see the table on the following page)

The paper size switch [A] detects the paper size with 5 microswitches. The actuator plate [B], attached to the rear of the paper tray, actuates the paper size switch, and the side fence [C] changes position.

**Paper Size Switch Output**

Paper	Size	Switch
12" x 18" SEF	12" x 18"	11111
A3 SEF	297 x 420 mm	11001
B4 SEF	257 x 394 mm	10011
A4 SEF	210 x 297 mm	01001
A4 LEF	210 x 297 mm	11000
B5 SEF	182 x 257 mm	10101
B5 LEF	182 x 257 mm	00011
A5 SEF	148 x 210 mm	11101
A5 LEF	148 x 210 mm	01101
DLT	11" x 17"	11100
LG SEF	8½" x 14"	10110
LT SEF	8½" x 11"	11010
LT LEF	8½" x 11"	01100
HLT SEF	5½" x 8½"	01110
HLT LEF	5½" x 8½"	11110
F4	8½" x 13"	11011
Folio	8¼" x 13"	01011
F	8" x 13"	01111
Executive LEF	7¼" x 10 ½"	10100
Executive SEF	7¼" x 10 ½"	00111
8-Kai	267 x 390 mm	00110
16-Kai LEF	267 x 195 mm	10010
16-Kai SEF	195 x 267 mm	10111

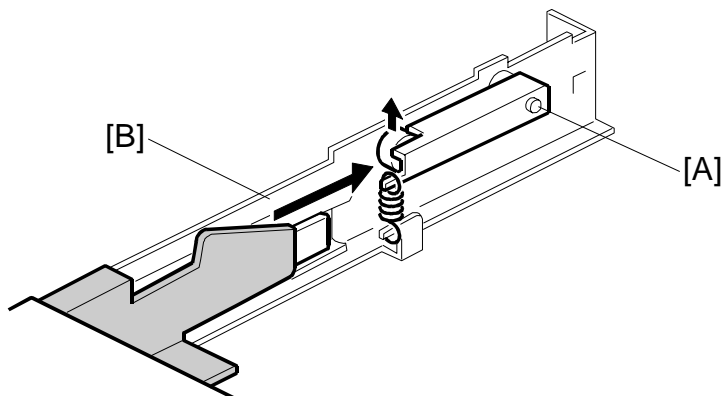
0: OFF (Sensor Output HIGH)

1: ON (Sensor Output LOW)

If the user does not put the fences at the correct position, a jam can occur.

To use a paper size that is not in this table, select the size with the Tray Paper Settings button. If the paper size is not the same as the setting, a jam can occur. Note that **SP5112** must be set to 'enabled' or non-standard sizes cannot be selected for trays 2 and 3.

### 6.14.7 TRAY LOCK – TRAY 2, 3



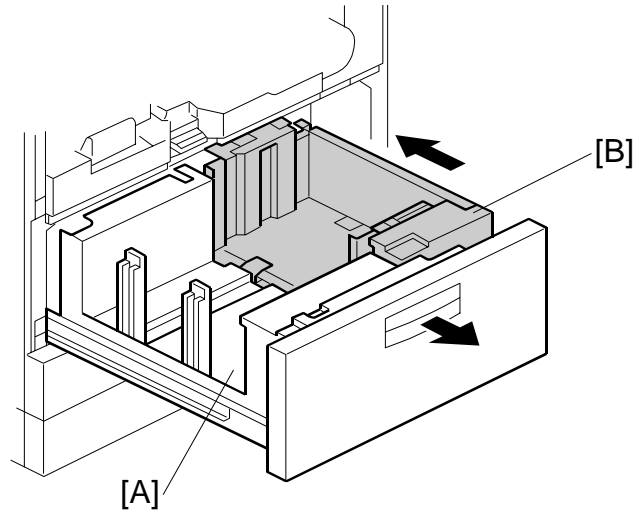
B234D962.WMF

When the tray is placed in the paper feed unit, the lock lever [A] drops behind the lock plate [B] on the support bracket to lock the tray in the proper position.

Detailed  
Descriptions

## 6.14.8 TANDEM FEED – TRAY 1

### Overview



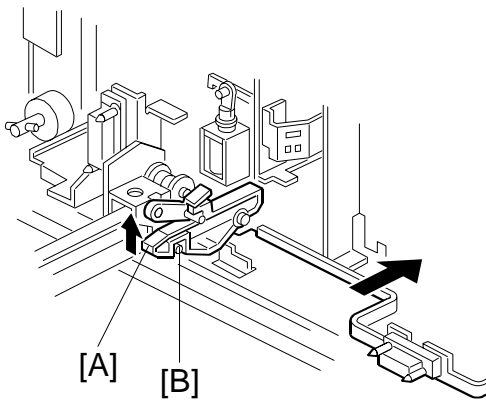
B234D963.WMF

1,000 sheets of paper can be set in the left tray [A] and right tray [B] of tray 1, the tandem paper tray. Paper is fed from the right tray. When the paper in the right tray runs out, the paper stack in the left tray automatically is pushed to the right tray. After the stack is moved from the left tray to the right tray, paper feeding resumes.

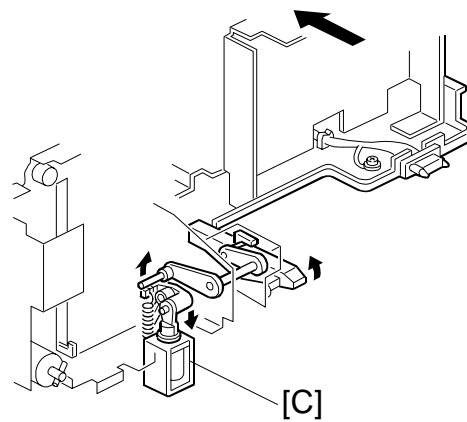
Normally both the right and the left trays are joined. However, during copying, if there is no paper in the left tray, the left tray can be pulled out to load paper while the right tray stays in the machine so paper feed can continue.

**NOTE:** After moving the adjustable side fences for a different paper size, be sure to execute **SP5019 002** (Tray Paper Size Selection – 1st Tray) to select the correct setting for the paper size loaded in the tandem tray. (The tandem tray cannot detect the paper size automatically.)

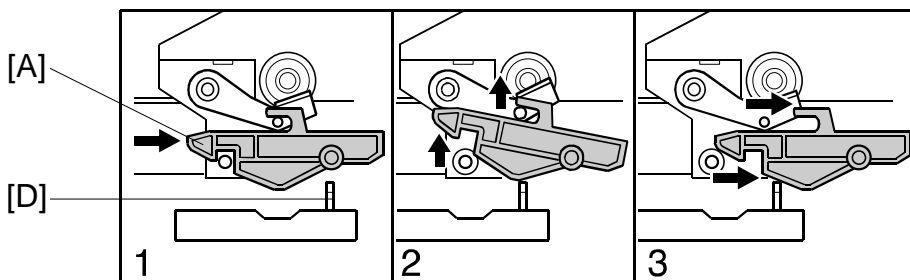
### Connecting the Left and Right Sides of the Tray



B234D964.WMF



B234D965.WMF



B234D966.WMF

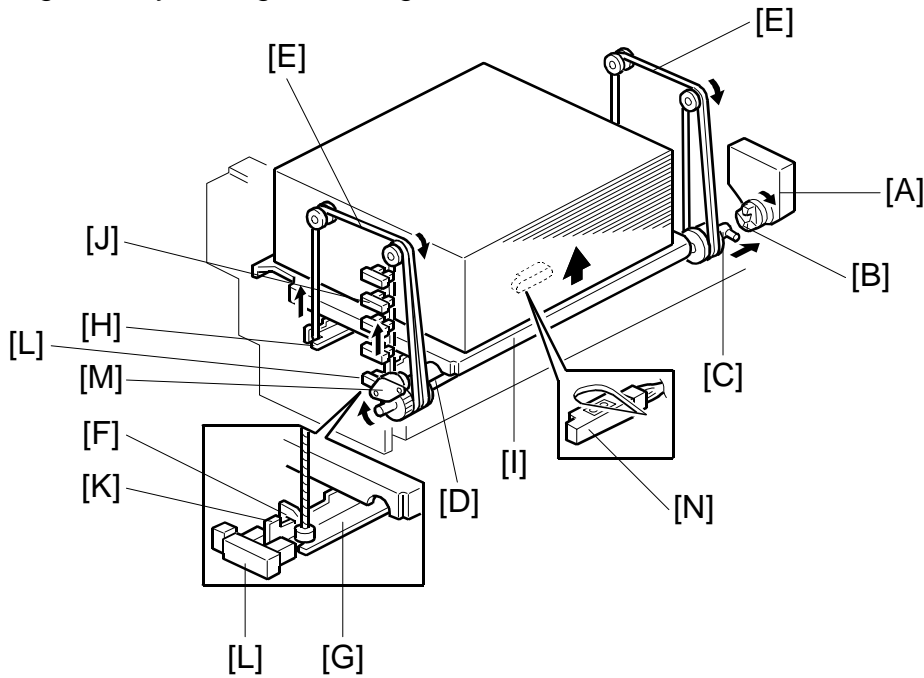
Normally the left tray lock lever [A] catches the pin [B] in the right tandem tray. During copying, if there is no paper in the left tray, the tandem tray connect solenoid [C] turns on to release the tray lock lever so the left tray separates from the right tray. Therefore, the left tray can be pulled out to load paper while paper is still being fed into the machine from the right tray.

When the tandem tray is drawn out fully, the projection [D] pushes up the left tray lock lever [A] so that both trays separate for easier paper loading.

Detailed  
Descriptions

**Paper Lift/Remaining Paper Detection: Tray 1**

The machine detects when the 1st tray has been placed in the machine by monitoring the tray set signal through the connector.



B234D967.WMF

When the machine detects the 1st paper tray, the right 1st tray paper sensor [N] (under the tray) checks whether there is paper in the right tandem tray. When paper is detected, the tray lift motor [A] rotates and the coupling gear [B] on the tray lift motor engages the pin [C] of the lift shaft [D].

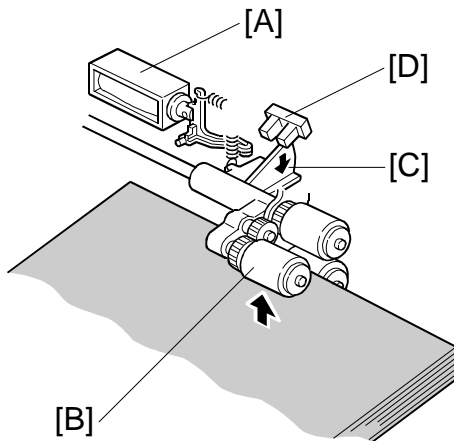
The tray wires [E] are fixed in the slots [F] at the ends of the tray support rods [G], [H]. When the tray lift motor rotates clockwise, the tray support rods and the tray bottom plate [I] rise. The tray rises until stack pushes up the pick-up roller until the tray lift sensor de-activates and switches off the tray lift motor.

As the actuator [K] on the right support rod [G] rises, it de-activates each of the 4 paper height sensors [J] to trigger 5 levels of paper remaining alerts on the operation panel.

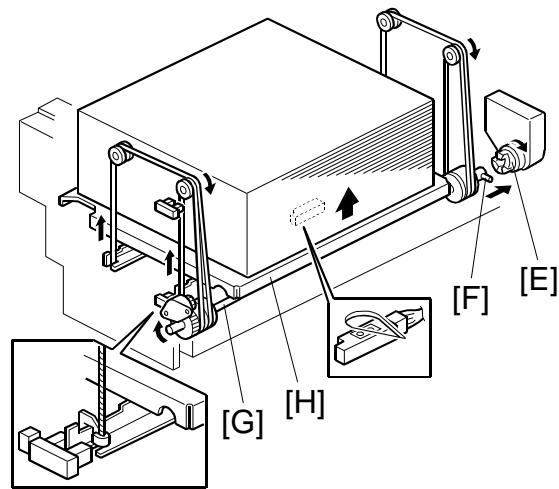
Paper Height Sensor	Remaining Paper	Comment
None	100%	Bottom position, no sensors de-activated.
1	75%	Each sensor de-activates as the actuator rises.
2	50%	
3	25%	
4	Near End	
	Paper Out	Detected by the paper sensor [N] below the stack when the last sheet feeds.

When the tray is removed, the coupling gear [B] separates from pin [C], so the tray bottom plate descends. The tray descends until the actuator activates the lower limit sensor [L]. The damper [M] provides resistance so the tray bottom plate descends slowly.

**Feed and Lift: Tray 1**



B234D970.WMF



B234D968.WMF

When the tray lift motor turns on, the pick-up solenoid [A] actuates and lowers the pick-up roller [B]. When the top of the stack reaches the correct height for paper feed, it pushes up the pick-up roller and lowers the actuator [C]. This actuator deactivates the tray lift sensor [D] when it leaves the sensor slot, and this stops the tray lift motor.

After several paper feeds, the pick-up roller descends and the actuator rises and enters the tray lift sensor and activates it. This switches on the tray lift motor again, which raises the stack once again to the correct paper height.

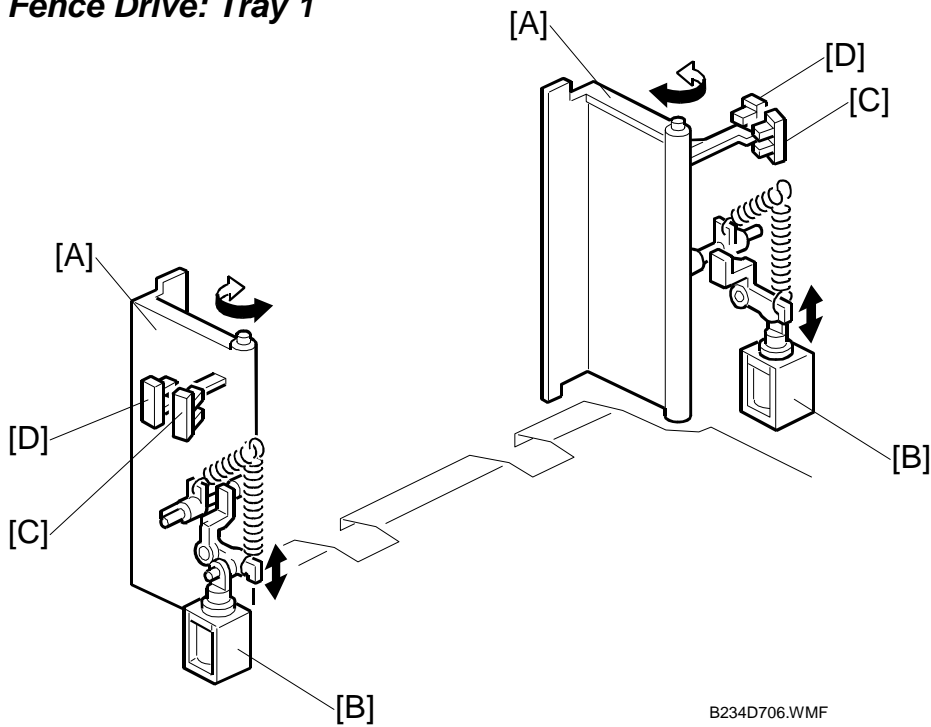
When the tray is pulled out of the feed unit, the lift motor coupling gear [E] disengages the pin [F] on the lift shaft [G], then the tray bottom plate [H] drops. The damper provides resistance so the tray descends slowly.

There is also a paper end sensor for the 1st tray, which works in the same way as the sensor in the 2nd and 3rd trays.

Detailed Descriptions



**Side Fence Drive: Tray 1**



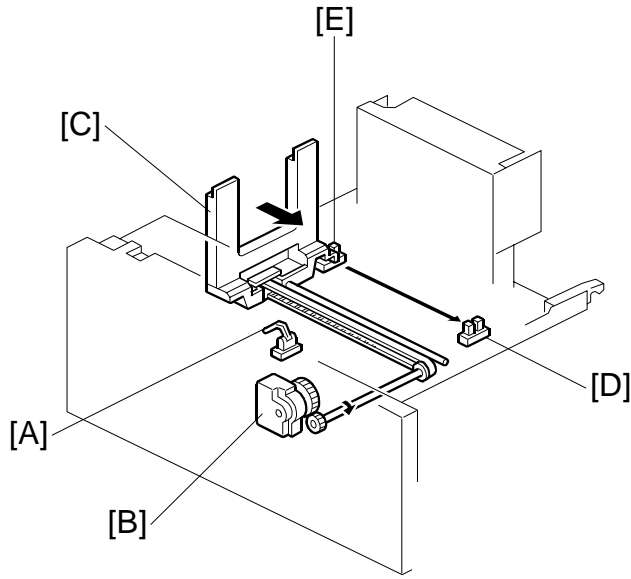
B234D706.WMF

The side fences [A] of the right tray are normally closed. They open only when paper in the left tray is moving to the right tray.

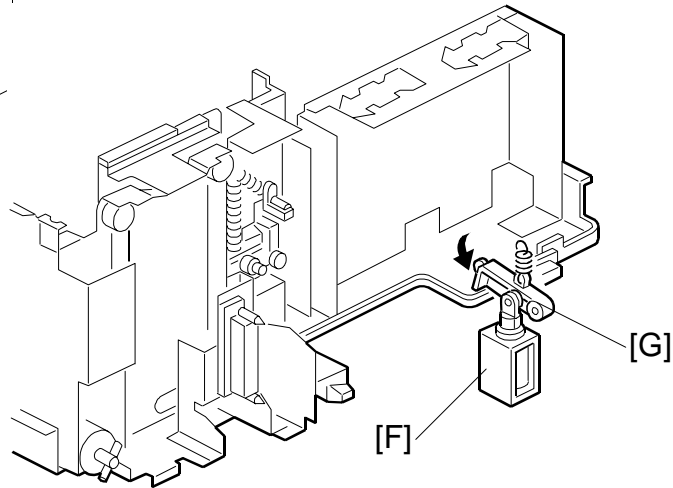
The side fence solenoids [B] drive the side fences. When the paper loaded in the left tray transfers to the right tray, the side fence solenoids turn on to open the side fences until the side fence open sensors [C] activate.

When the rear fence in the left tray has pushed the stack of paper into the right tray, the side fence solenoids turn off to close the side fences. Then, when the side fence closed sensors [D] activate, the LCD displays a message advising the user to load some paper into the left side of the tandem tray.

**Rear Fence Drive**



B234D969.WMF



B234D971.WMF

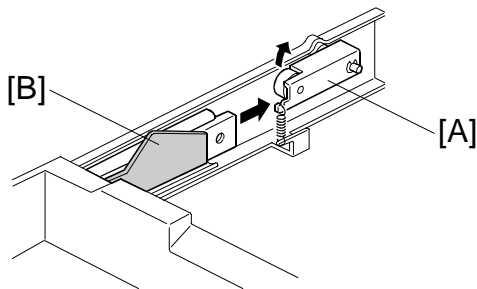
When the left 1st tray paper sensor [A] detects paper but the right 1st tray paper sensor does not, the rear fence drive motor [B] (a DC motor) in the left tray turns counter-clockwise causing the rear fence [C] to push the paper stack into the right tray.

When the actuator on the rear fence activates the rear fence return sensor [D], the rear fence drive motor turns clockwise until the actuator activates the rear fence HP sensor [E].

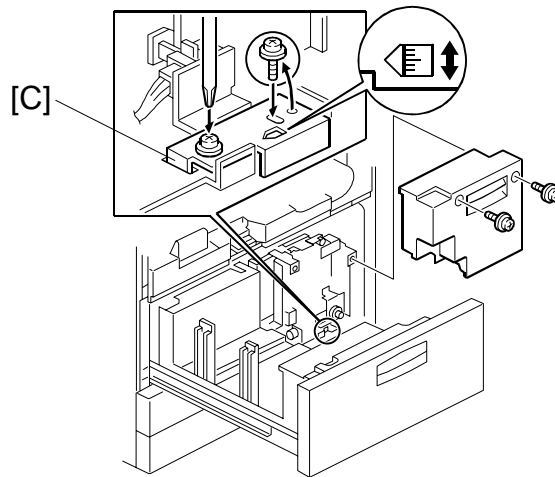
While the rear fence is moving, the left 1st tray lock solenoid [F] turns on and the lock lever [G] locks the left tray.

Detailed Descriptions

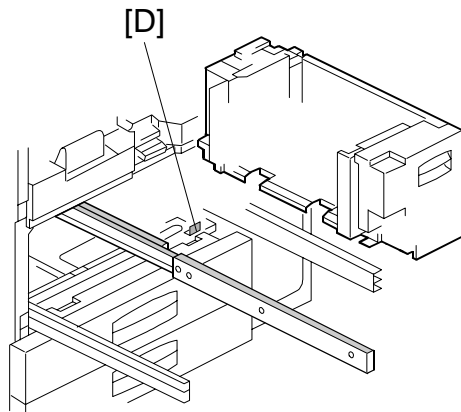
### Tray Positioning



B234D972.WMF



B234D974.WMF



B234D973.WMF

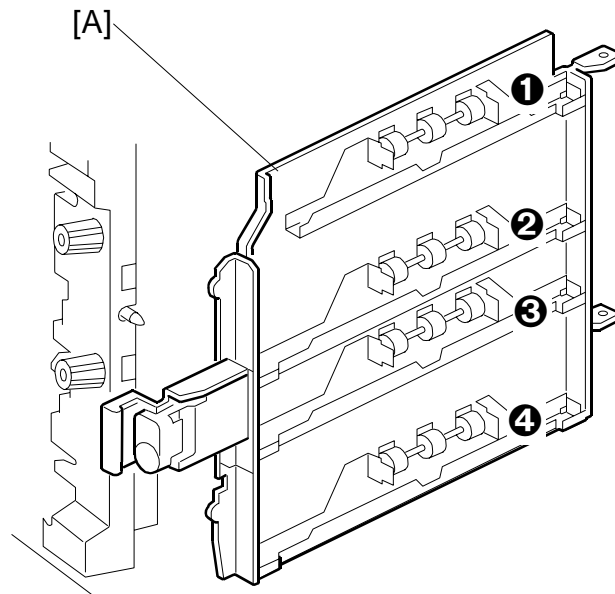
### Tray Lock

When the feed tray is set in the paper feed unit, the lock lever [A] drops behind the lock plate [B] on the Accuride support bracket to lock the tray in the proper position.

### Side-to-side Positioning

When the feed tray is set in the paper feed unit, the side-to-side positioning plate [C] presses the feed tray against the stopper [D]. By moving the positioning plate, the tray position can be changed to adjust the side-to-side registration.

### 6.14.9 VERTICAL TRANSPORT

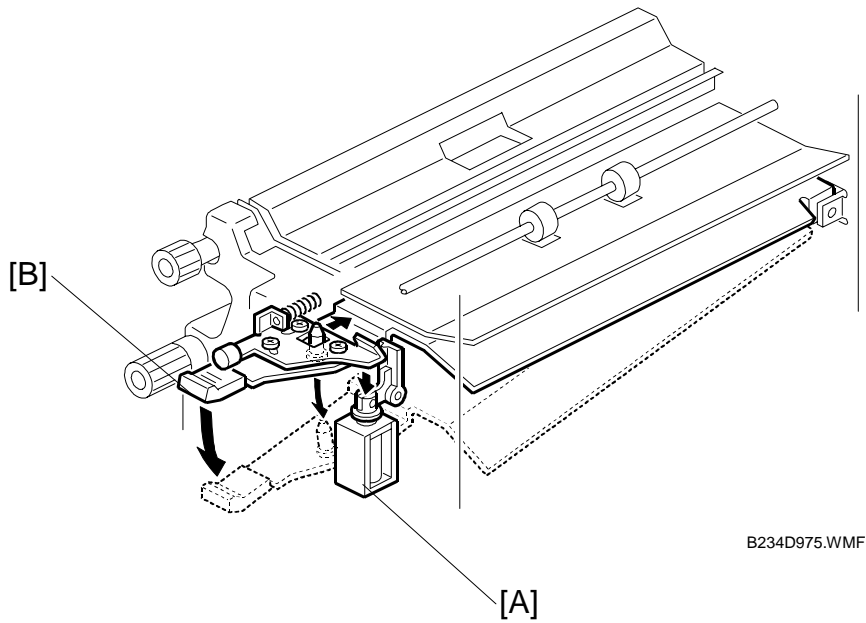


B234D617.WMF

The vertical transport rollers in each feed unit are each driven by a separate stepper motor. The vertical transport rollers and the vertical transport idle rollers ❶, ❷, ❸, ❹, on the inner and outer vertical guide plates, transport the paper up from each feed unit towards the relay and registration rollers.

The vertical transport guides [A] can be opened to remove jammed paper in the vertical transport area.

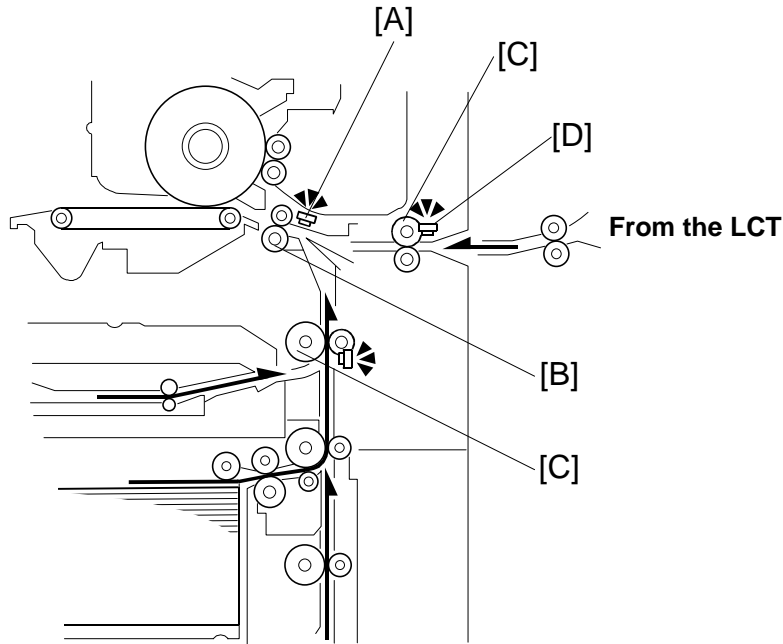
### 6.14.10 LCT GUIDE PLATE



When the machine detects a jam at the LCT exit, paper feed stops, and the LCT guide plate solenoid [A] releases the guide plate (labeled 'B5') [B] so that the user can easily remove the jammed paper. After removing the jam, the user must return the B5 lever to its normal position.

### 6.14.11 PAPER REGISTRATION

**Overview**



B234D976.WMF

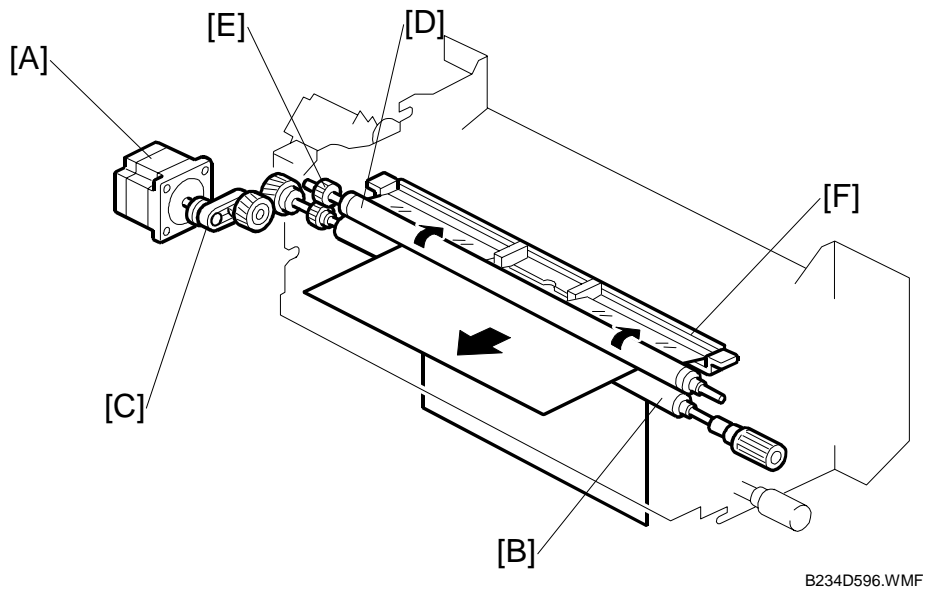
The registration sensor [A] is positioned just before the registration rollers [B].

When the paper leading edge activates the registration sensor, the registration motor is off and the registration rollers are not turning. However, the upper relay roller (or LCT relay roller for feed from the LCT) [C] stays on for a bit longer.

This delay allows time for the paper to press against the registration rollers and buckle slightly to correct skew. Next, the registration motor energizes and the upper relay motor re-energizes at the proper time to align the paper with the image on the drum. The registration and relay rollers feed the paper to the image transfer section.

The registration sensor is also used for paper misfeed detection, and the LCT relay sensor [D] detects jams at the LCT roller.

Detailed Descriptions

**Registration Drive**

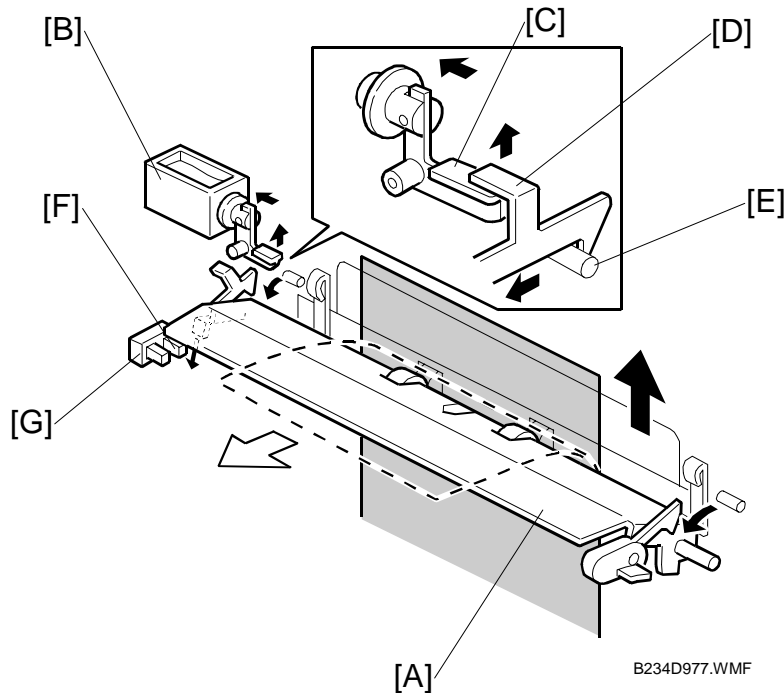
B234D596.WMF

The registration motor [A] drives the lower registration roller [B] through a timing belt [C] and some gears. Drive is transmitted to the upper registration roller [D] via two gears [E] at the front.

The paper dust remover [F] extends across the length of the paper registration roller [D], where most paper dust is generated.

**NOTE:** Clean the dust remover every PM visit.

**Jam Removal at Paper Registration**



If a sheet misfeeds between the vertical transport rollers and the registration rollers, the next sheet is already on its way up from the paper tray, and must be stopped, or there will be a pile-up of jammed paper.

To prevent this, when the registration sensor is not activated at a certain jam check timing, the lower paper guide plate [A] automatically opens.

Guide plate solenoid [B] turns on → Lever [C] raises → Lock lever [D] (on the guide plate) releases from pin [E] (on the rear side frame) → Guide plate [A] falls open → Paper coming along the feed path is diverted to the duplex tray.

Actuator [F] on the guide plate activates the guide plate position sensor [G] when the guide plate opens.

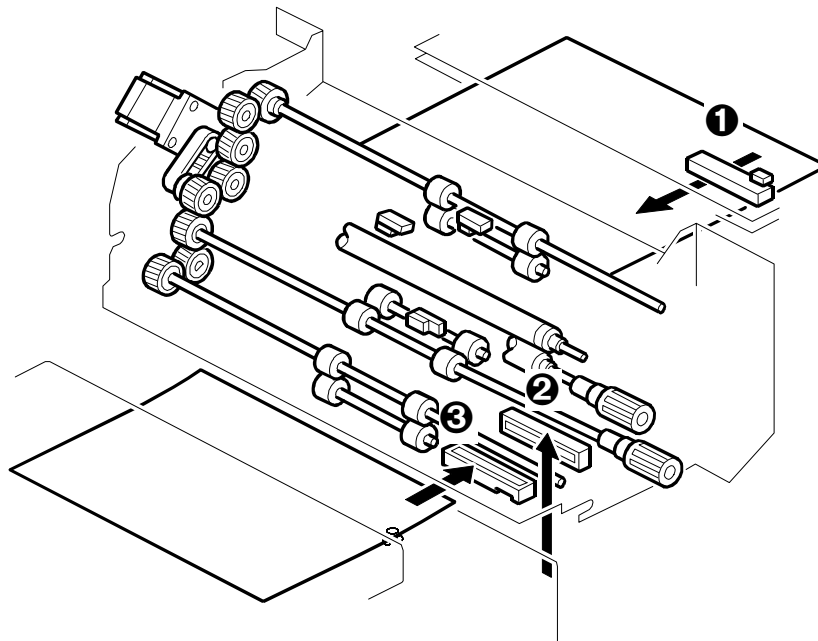
The user must remove jammed paper in the feed path, the sheet in the duplex tray, and manually close the guide plate.

To prevent the guide plate from being left open, if the guide plate position sensor is activated, copying is disabled and a caution is displayed on the LCD panel.

Detailed Descriptions



## 6.14.12 IMAGE POSITION CORRECTION



B234D904A.WMF

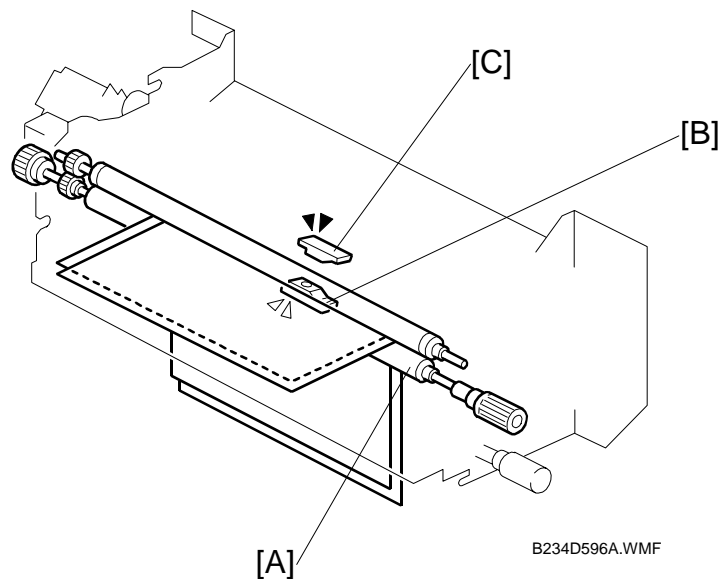
There are three image position sensors:

- ❶ One in the LCT paper path above the paper path and in front of the LCT exit rollers. (This sensor is mounted on its own control board.)
- ❷ One to the right of the vertical feed path in front of the last pair of transport rollers.
- ❸ One in the duplex unit of the copier in front of the duplex exit roller and below the last pair of duplex transport rollers.

Each sensor is a CIS (Contact Image Sensor). Each sensor checks the side edges of each sheet as it passes, and feeds this information back to the machine.

If the side-to-side registration of the paper is slightly out of alignment, the machine will correct the image position when the laser writes the image on the surface of the drum. This function does not correct the position of the paper.

### 6.14.13 DOUBLE-FEED DETECTION



[A]: Registration Rollers

[B]: Double-Feed Sensor 1 (LED)

[C]: Double-Feed Sensor 2 (Receptor)

After skew correction at the registration rollers [A], a sensor pair checks the translucence of each sheet.

After buckle adjustment, double-feed sensor 1 [B] (an LED) emits light that passes through the sheet above. The light is received by double-feed sensor 2 [C]. This function detects double-feeds.

If the machine detects a double-feed at the registration rollers, this page and the pages being fed are fed out of the machine (to the finisher's proof tray) or a jam alert is issued, depending how the User Tool feature is set:

User Tools > Adjustment Settings for Operators > **SP 1908 008**

Next, the machine stops the job and a copy jam error message appears.

The amount of light received by the double-feed sensor is referred to a lookup table that stores the values of the translucence of paper types.

**Double-feed check.** The translucence of the paper at the registration roller is compared to the reading of the previous sheet. If the translucence of the sheet at the registration rollers is less than that of the previous sheet (greater opacity), the CPU determines that a double-feed has occurred and stops the job.

### **UP Mode Settings**

The operator can select "Double-Feed Detection" in the Operator Tools (UP) mode for each paper feed station (default: ON).

[User Tools/Counter]> Adjustment Setting Operators> **SP 1908** Double-Feed

- **SP1908 001-007: Double feed detection.** Enables/disables double-feed detection for the paper feed sources (trays 1 to 3), the LCT (trays 4 to 6), and bypass tray (tray 7).
- **SP1908 008: After double-feed detection.** Auto continue or jam selection after double-feed detection

Double-feed detection does not operate when feeding paper shorter than 160 mm from the from the bypass tray.

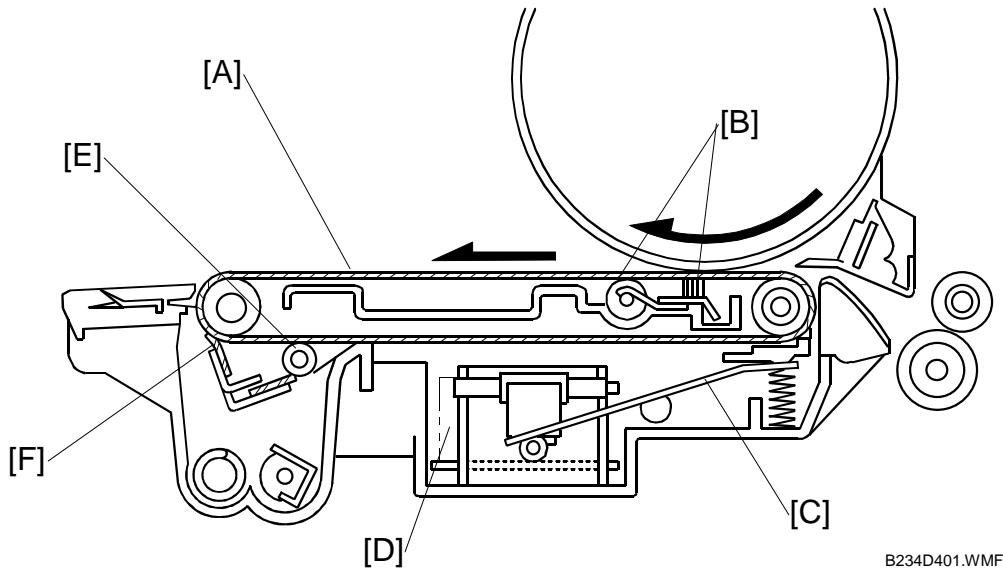
For slip sheet mode, the tray that contains the slip sheets must be set to 'OFF' with the user tools for "Double-Feed Detection".

The measurements from the double-feed sensor are reset when:

- The machine is switched off and on.
- The tray is set.
- Paper is set in the bypass tray.
- The front door is opened and closed
- The rear fence return sensor in the left tandem tray activates.
- The double feed sensor correction is done. (This is done automatically by the machine at a set interval.)

## 6.15 IMAGE TRANSFER AND PAPER SEPARATION

### 6.15.1 OVERVIEW

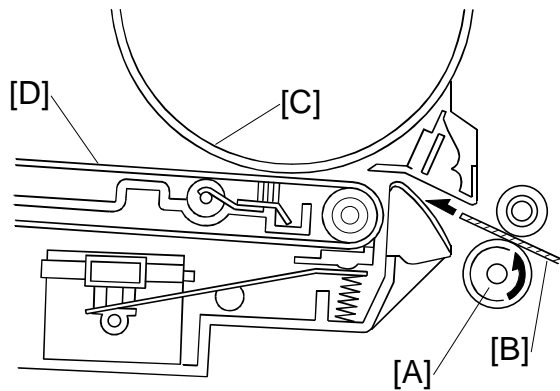


The transfer belt unit consists of the following parts:

- [A]: Transfer belt  
A belt (length: 321 mm) with high electrical resistance which holds a high positive electrical potential to attract toner from the drum to the paper. Also, the electrical potential attracts the paper itself and helps the paper to separate from the drum.
- [B]: Transfer bias roller and transfer belt bias brush  
Applies transfer voltage to the transfer belt.
- [C]: Transfer belt lift lever (driven by a magnetic latching solenoid)  
Lifts the transfer belt into contact with the drum.
- [D]: Transfer power pack  
Generates a constant transfer current.
- [E]: Cleaning bias roller and cleaning roller cleaning blade  
Removes toner remaining on the transfer belt to prevent the rear side of the paper from getting dirty.
- [F]: Transfer belt cleaning blade  
Removes toner from the transfer belt. Any toner that is not removed by this blade is removed by the cleaning roller [E].

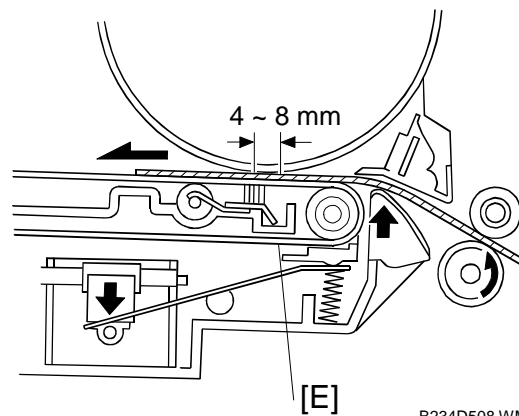
### 6.15.2 IMAGE TRANSFER AND PAPER SEPARATION

The registration rollers [A] feed the paper [B] to the gap between the drum [C] and the transfer belt [D].



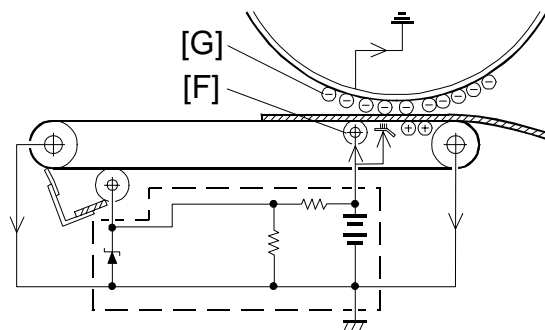
B234D507.WMF

As soon as the leading edge of the first sheet reaches the gap between the transfer belt and the drum, the transfer belt lift lever [E] raises the transfer belt into contact with the drum. The lift lever is driven by a solenoid.



B234D508.WMF

Then a positive charge is applied to the transfer bias roller [F] and transfer belt bias brush to attract the negatively charged toner [G] from the drum. It also attracts the paper and separates it from the drum.



B234D979.WMF

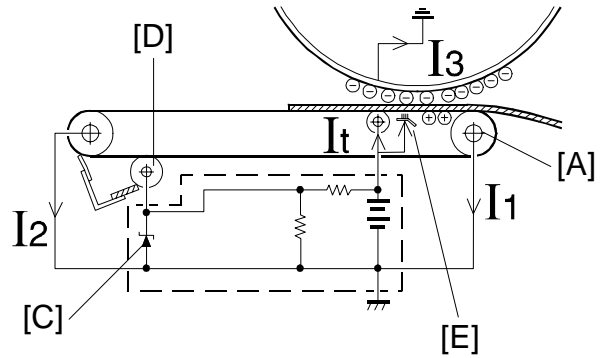
After the image transfer is completed, the charge on the transfer belt holds the paper to the transfer belt. After separating the paper from the transfer belt, the transfer belt is discharged by the transfer belt drive roller [A].

The transfer power pack [B] inside the transfer belt unit monitors the current ( $I_1$  and  $I_2$ ) fed back from the drive rollers at each end of the transfer belt to adjust the transfer current.

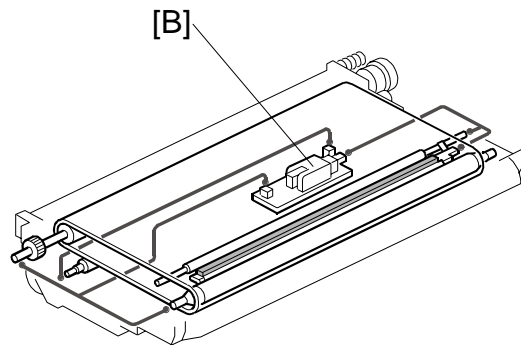
The power pack then adjusts " $I_t$ " to keep the current through the drum ( $I_3$ ) constant, even if the paper, environmental conditions, or transfer belt surface resistance change.

The varistor [C] keeps the voltage at the cleaning bias roller [D] constant.

To apply a higher current to the transfer belt without a higher voltage, the bias brush [E] has been incorporated near the nip between drum and belt. This ensures that enough transfer current is applied for this machine, which has a higher copy volume.



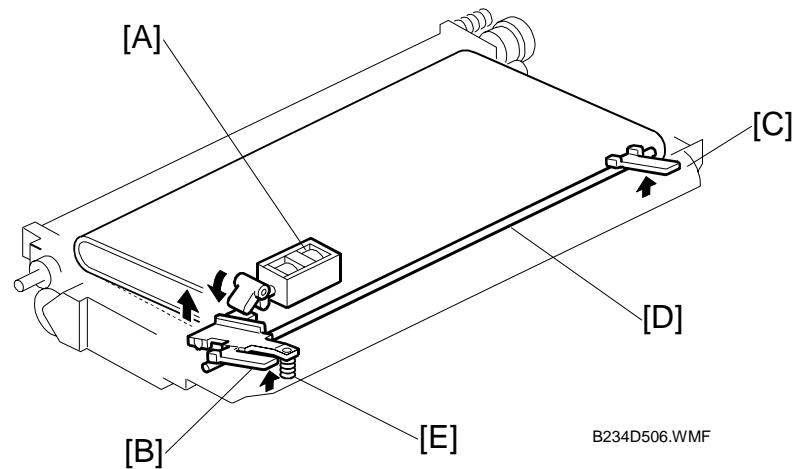
B234D980.WMF



B234D503.WMF

Detailed Descriptions

### 6.15.3 TRANSFER BELT UNIT LIFT



The transfer belt lift solenoid [A] (a magnetic latching solenoid inside the transfer belt unit) turns on to raise the transfer belt into contact with the drum.

The front lever [B] and the rear lever [C] are connected to the solenoid by links [D], and they push up the stays when the solenoid turns on.

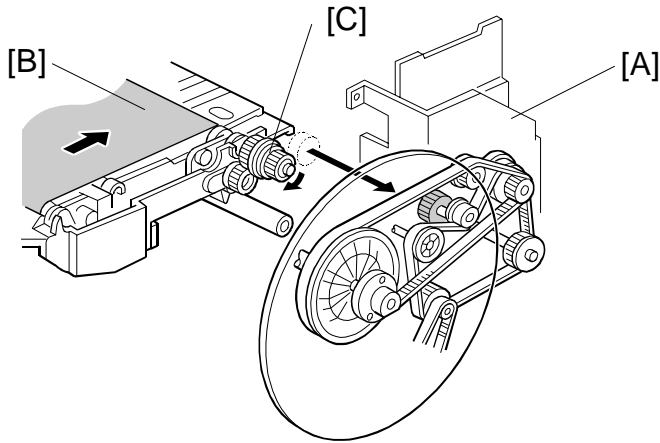
The support spring [E] helps the solenoid to raise the transfer belt.

The solenoid turns off after the copy job is finished.

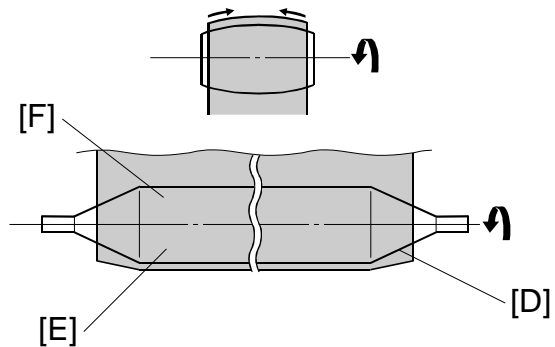
The transfer belt must be released from the drum for the following reasons:

1. To prevent the ID sensor pattern on the drum from being rubbed off by the transfer belt, because the transfer belt is located between the development unit and the ID sensor.
2. To decrease the load on the bias roller cleaning blade, it is better to prevent toner on non-image areas (for example VD, VH, ID sensor patterns developed during process control data initial setting) from being transferred onto the transfer belt.
3. To prevent drum characteristics from being changed by remaining in contact with the rubber belt.

### 6.15.4 PAPER TRANSPORTATION AND BELT DRIVE



B234D981.WMF



B234D982.WMF

The drum motor [A] drives the transfer belt through belts and gears. Since the transfer belt electrically attracts the paper [B], a transport fan is not required.

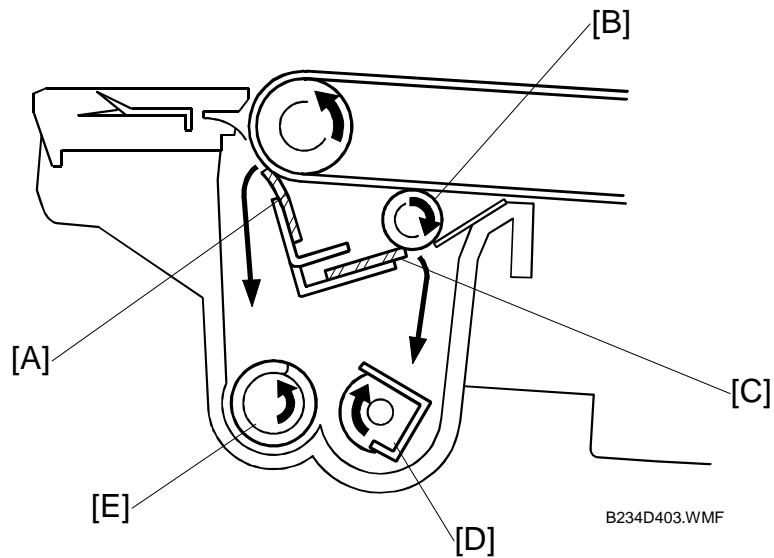
At the turn in the transfer belt, the transfer belt drive roller [C] discharges the belt to reduce paper attraction, and the paper separates from the belt as a result of its own stiffness.

The tapered parts [D] at both ends of the roller [E] help keep the transfer belt [F] in the center, so that it does not run off the rollers.

Detailed  
Descriptions



### 6.15.5 TRANSFER BELT CLEANING



Some toner may adhere to the transfer belt when paper jams occur. The adhered toner must be removed to prevent the rear side of the copy paper from getting dirty.

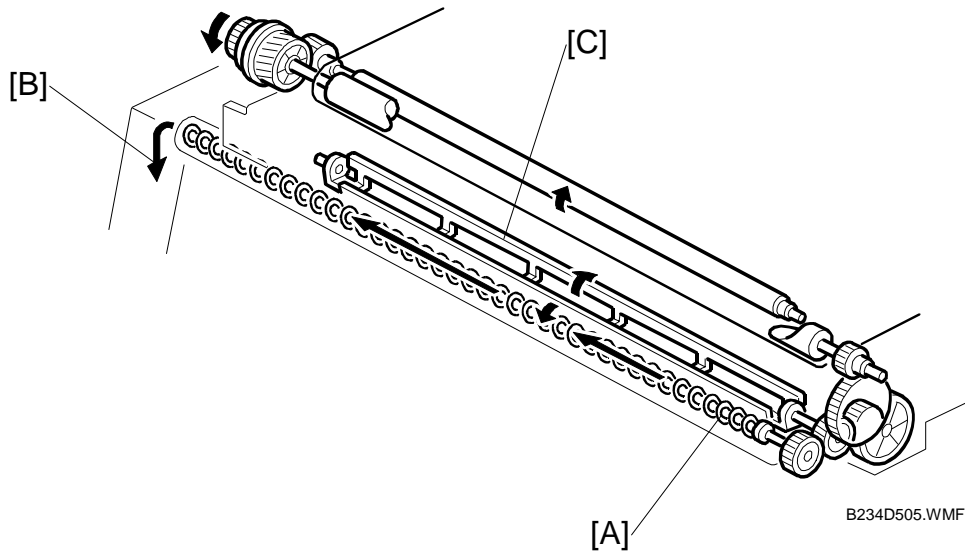
The cleaning blade [A] scrapes off any toner remaining on the transfer belt. This is a counter blade system.

Even if the toner is not completely removed due to paper dust stuck on the transfer belt cleaning blade [A], the positively charged cleaning bias roller [B] attracts the remaining toner. The bias roller cleaning blade [C] scrapes toner off the cleaning bias roller.

The surface of the transfer belt is coated to make it smooth and prevent the transfer belt from flipping the cleaning blade.

The toner collection coil [E] transports toner cleaned from the transfer belt to the used toner bottle. The agitator [D] moves the toner to the collection coil, and prevents the toner in the cleaning unit from forming clumps.

### 6.15.6 TONER COLLECTION

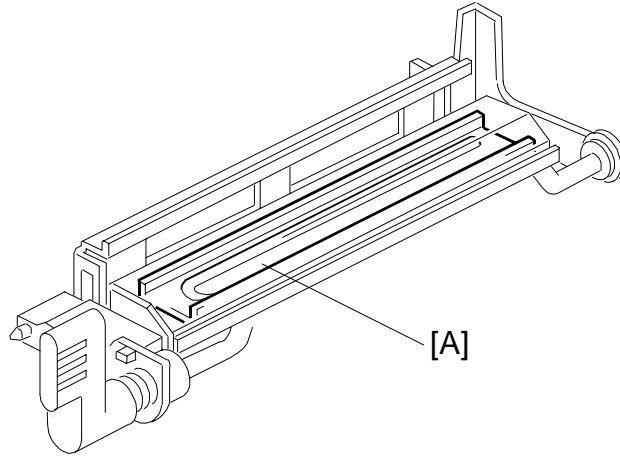


Transfer belt drive is transmitted to the toner collection coil [A] through idle gears. The toner collection coil transports the collected toner to the toner recycling unit [B] and from there it goes to the used toner bottle.

An agitator [C] in the transfer belt cleaning unit, below the cleaning blade and to the right of the toner transport coil, keeps the toner loose. This increases the speed of the toner collection mechanism.

See “6.13 Toner Supply and Recycling” for details.

### 6.15.7 DRUM ANTI-CONDENSATION HEATER



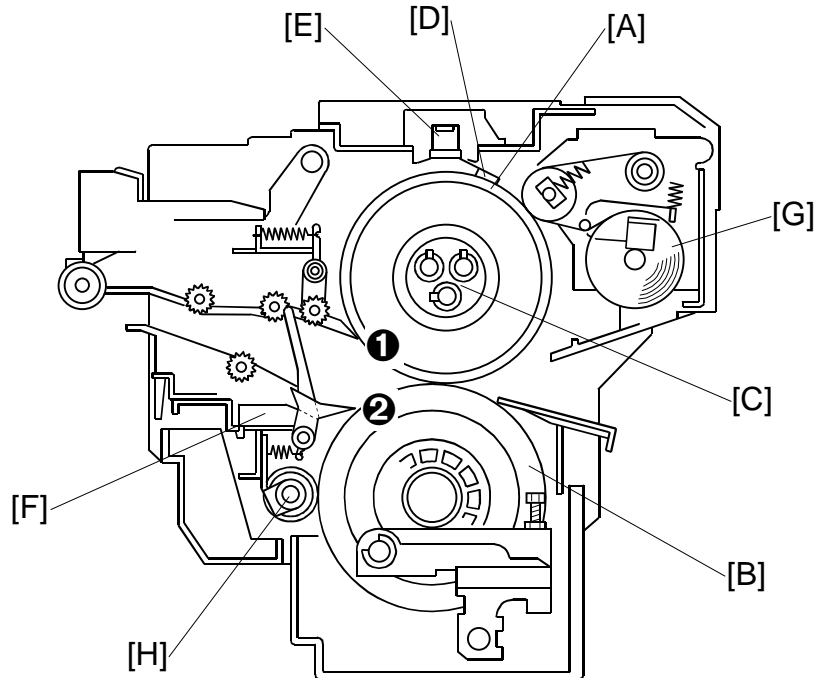
B234D983.WMF

The drum anti-condensation heater [A] is located under the transfer belt unit. It turns on when the main switch is off to prevent moisture from forming on the transfer belt.

The heater is included in the machine at the factory, but the connector is not connected.

## 6.16 FUSING

### 6.16.1 OVERVIEW



B234D501.WMF

After transferring the image, the copy paper enters the fusing unit. A heat and pressure process using a hot roller [A] and a pressure roller [B] fuses the image to the copy paper. There are three fusing lamps of different wattage [C] inside the hot roller. They are turned on and off to maintain the target fusing temperature. (6.16.4)

The CPU monitors the hot roller surface temperature through a thermistor [D], which is in contact with the hot roller surface. Four thermostats [E] protect the fusing unit from overheating.

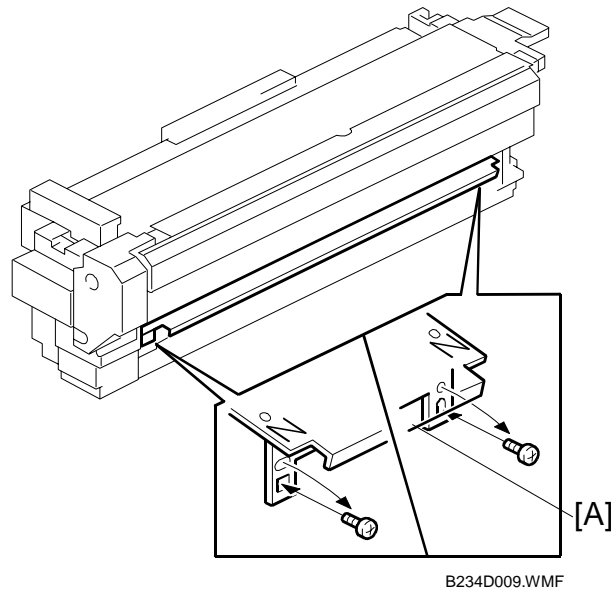
The fusing exit sensor [F] monitors the progress of the copy paper through the fusing unit and also detects paper jams while the exit rollers drive the copy paper to the inverter section.

The oil supply roller and cleaning fabric [G] applies a light coat of silicone oil to the hot roller. It also removes the paper dust and toner from the hot roller.

The hot roller and pressure roller have stripper pawls ①, ② to prevent wrap-around jams.

The pressure roller is cleaned by a steel cleaning roller [H]. Toner adheres to steel more readily than to silicone rubber.

### 6.16.2 FUSING ENTRANCE GUIDE



The entrance guide [A] for this machine is adjustable for thick or thin paper by changing the screw position from the upper to the lower.

With thin paper, set the entrance guide in the upper position. This slightly lengthens the paper path, which prevents the paper from creasing in the fusing unit.

With thick paper, set the entrance guide in the lower position. This is because thick paper does not bend as easily, and is therefore less prone to creasing. In addition, the lower setting allows more direct access to the gap between the hot and pressure rollers. This prevents thick paper from buckling against the hot roller, which can cause blurring at the leading edge of the copy.

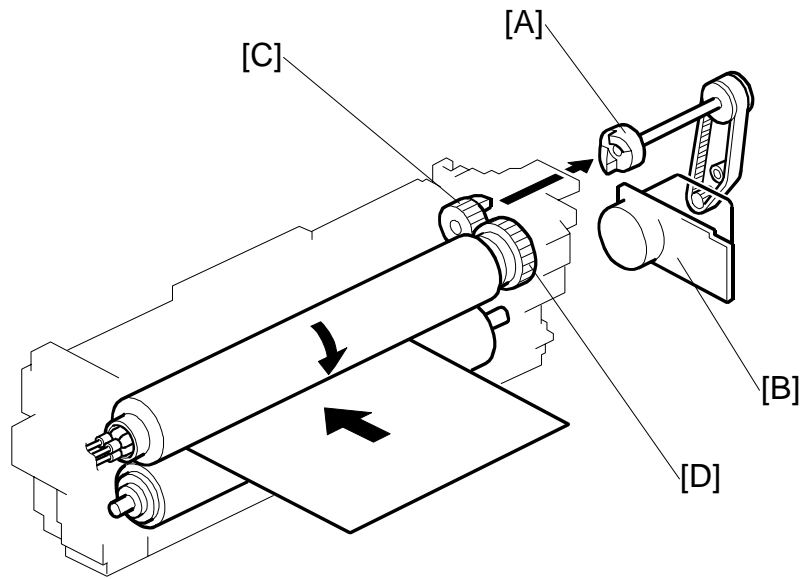
In this model, the transfer belt improves paper transport and stabilizes the paper path to the fusing entrance. This reduces the chance of paper creasing due to paper skews in the fusing unit.

Use the screws to adjust the guide plate position. Since there are very few reasons to change the guide plate position, there is no guide plate position adjustment lever for customer use.

The markings on the entrance guide are different for different regions. Each entrance guide is designed for the paper width that is normally used in each region, for optimum prevention of creasing.

NA (LT):	With 'N' mark (inch version)
EU/AA (A4):	No 'N' mark

### 6.16.3 FUSING UNIT DRIVE



B234D936.WMF

The fusing drive gear [A] transmits drive from the fusing motor [B] to the gear [C], which drives the hot roller gear [D]. The pressure roller is driven by the friction between the hot and pressure rollers.

Detailed  
Descriptions

### 6.16.4 FUSING LAMP AND FUSING TEMPERATURE CONTROL

**Overview**

A thermistor in permanent contact with the hot roller monitors the temperature of the hot roller as it rotates. These temperature readings are used to control the temperature of the hot roller by switching the fusing lamps on and off.

**NOTE:** The current temperature detected by the thermistor can be displayed with **SP1106**.

Four thermostats mounted very close to the surface of the hot roller also monitor the hot roller temperature. The thermostats trigger an SC code if the hot roller overheats and the fusing unit shuts down.

There are three types of fusing lamps. Each is classified by which portion of the hot roller it heats:

There are three fusing lamps inside the hot roller.

Fusing Lamps	e-STUDIO901/1101 Fusing Lamps	e-STUDIO1351 Fusing Lamps
1		
2		
3		

The wattages of the fusing lamps are as shown below.

NAME	VOLTAGE/WATTAGE	
	e-STUDIO901/1101	e-STUDIO1351
Fusing Lamp 1	900 W (F: Red, R: Red)* <sup>1</sup>	900 W (F: Red, R: Red)
Fusing Lamp 2	600 W (F/R: White)	600 W (F/R: Yellow)
Fusing Lamp 3	900 W (F: White, R: Blue)	900 W (F: White, R: Blue)

\*<sup>1</sup>: F=Front, R=Rear

**Normal, High, and Low Temp Modes**

The operator can use a User Tool to modify the operation of the fusing unit to respond to changes in the operating environment and improve fusing or reduce paper curl.

User Tools> Adjustment Setting for Operators> **SP1740**

**SP1740 Settings**

Normal Temp Mode	Default
Low Temp Mode	Raise temperature to improve fusing
High Temp Mode	Lower temperature to reduce curl

The table below shows which SP codes control the standby temperature, fusing temperature lower limit, and hot roller idling time depends on the selected temperature mode.

If the fusing unit temperature falls below the lower limit, then the machine stops printing until the fusing unit temperature recovers to the standby temperature.

The fusing idling time is the length of time that the fusing unit idles at start up (just after the main switch is turned on or after recovery from energy saver mode), if the fusing unit temperature is too low.

**Normal Temperature Mode (Default)**

Default Values	e-STUDIO901	e-STUDIO1101	e-STUDIO1351	SP No.	
Standby Temp.	153°C	165°C	178°C	<b>SP1105 001</b>	140 ~ 190°C
Fusing Lower Limit	133°C	145°C	158°C	<b>SP1105 004</b>	120 ~ 180°C
Fusing Unit Idling Time	40 sec	50 sec	60 sec	<b>SP1107 001</b>	0 ~ 120 sec

**Low Temperature Mode (Improves Fusing)**

Default Values	e-STUDIO901	e-STUDIO1101	e-STUDIO1351	SP No.	
Standby Temp.	163°C	175°C	188°C	<b>SP1105 002</b>	140 ~ 190°C
Fusing Lower Limit	143°C	155°C	168°C	<b>SP1105 005</b>	120 ~ 180°C
Fusing Unit Idling Time	60 sec	70 sec	90 sec	<b>SP1107 002</b>	0 ~ 120 sec

Detailed Descriptions

**High Temperature Mode (Reduces Paper Curl)**

Default Values	e-STUDIO901	e-STUDIO1101	e-STUDIO1351	SP No.	
Standby Temp.	148°C	160°C	173°C	<b>SP1105 003</b>	140 ~ 190°C
Fusing Lower Limit	123°C	140°C	153°C	<b>SP1105 006</b>	120 ~ 180°C
Fusing Unit Idling Time	40 sec	50 sec	70 sec	<b>SP1107 001</b>	0 ~ 120 sec



The SP settings and ranges below are the same for every temperature mode.

<b>Default Values</b>	<b>e- STUDIO901</b>	<b>e- STUDIO1101</b>	<b>e- STUDIO1351</b>	<b>SP No.</b>	
Correction for Small Paper Size (default: narrow than LT LEF/257 mm)	10°C	10°C	10°C	<b>SP1105 007</b>	0 to +20°C
Correction for Normal Paper Size (default: LT LEF/257 mm or wider)	5°C	5°C	5°C	<b>SP1105 008</b>	0 to +10°C
Correction for Tracing Paper	0°C	0°C	0°C	<b>SP1105 009</b>	-10 to +10°C
Fusing Idling Start Temperature	130°C	130°C	160°C	<b>SP1105 012</b>	100 to 160°C

**Fusing Temperature Control and Machine Status - Overview**

Fusing temperature control operates differently depending on the status of the machine:

- At power on (cold/warm starts)
- During standby
- During machine operation (low limit, paper sizes)
- Low power mode (during and immediately after)
- In Energy Saver mode

Fusing control in each operation mode is described below.

**NOTE:**

- In the descriptions below, the "1", "2", "3" notations refer to the fusing lamp number (6.16.4 - Overview).

**Fusing Temperature Control at Power On (Cold/Warm Starts)**

1. After the machine power is turned off/on  
If the fusing unit temperature is below the temperature set with **SP1105 010**, three fusing lamps switch on in this order: 3 → 2 → 1.

-or-

If the fusing temperature is above the temperature set with **SP1105 010**, two lamps (2 and 3) switch on in this order: 3 → 2

Default Values	e-STUDIO901	e-STUDIO1101	e-STUDIO1351	SP No.	
Fusing Lamp Switching for warm-up	99°C	99°C	95°C	<b>SP1105 010</b>	20 to 190°C

2. When the temperature rises to the temperature set with **SP1105 010**, fusing lamp 1 switches off.
3. When the temperature reaches the standby temperature, fusing lamps 3 and 2 switch off in this order: 3 → 2

Detailed Descriptions

**Fusing Temperature Control During Standby and in Energy Saver Mode**

In standby mode, the operation control of the fusing lamps is different for the e-STUDIO901/1101 and e-STUDIO1351.

Model	Lamps Used	Comment
e-STUDIO901/1101	Lamp 2	Only 1 lamp is used:
e-STUDIO1351	Lamp 2, 3	Two lamps keep the hot roller at the correct standby temperature: These lamps light on and off alternately so only one lamp is on at a time.

The fusing lamps heat the hot roller to keep the temperature as follows:

- The lamps are switched ON when the thermistor detects the temperature of the hot roller surface is lower than the standby temperature (**SP1105 001, 002, 003**)
- The lamps are switched OFF when the thermistor detects the temperature of the hot roller surface is higher than the standby temperature (**SP1105 001, 002, 003**) +2°C

***Fusing Temperature Control During Machine Operation***

***When the Fusing Temperature Falls below the Lower Limit***

During long jobs, some images may not fuse correctly, depending on variables such as paper and image type, and room temperature.

To prevent poor image fusing:

- If the fusing unit thermistor detects that the temperature of the hot roller has dropped lower than the lower limit (set **SP1105 004 – 006**), a message appears and the job halts temporarily.
- The machine restarts the job once the fusing temperature rises again to the target operating temperature.

**NOTE**

- The low limit temperature is different, depending on the temperature mode currently selected for operation: normal, low, and high temperature mode.

***Fusing Temperature Control for Normal Size Paper***

"Normal size paper" is defined as LT LEF or wider paper (297 mm or wider).

**NOTE:** The definition of "normal size paper" can be changed to 'B5 or wider (257 mm or wider)' with **SP1105 013**.

The fusing lamp control with normal paper sizes is different for the e-STUDIO901/1101 and e-STUDIO1351.

**Lamps Used**

Model	Lamps Used	ON Order	OFF Order
e-STUDIO901/1101	1, 3	1 → 3	3 → 1
e-STUDIO1351	1, 2, 3	1 → 3 → 2	2 → 3 → 1

**Lamps Operation Immediately Before/After Job Start**

Model	Status Before Job Start		Status After Job Start
e-STUDIO901/1101	1	2 On	After 2 Off, On 1 → 3
	2	1, 2, 3 Off	On 1 → 3
e-STUDIO1351	1	2 On	2 remains On, On 1 → 3
	2	3 On	3 remains On, On 1 → 2
	3	1, 2, 3 Off	On 1 → 3 → 2

'Status Before Job Start' column, there are two (e-STUDIO901/101) or three (e-STUDIO1351) possible statuses. Then, for each of these, the 'Status After Job Start' column shows what happens after the job starts.

During the job, the lamps are switched ON when the thermistor detects the temperature of the hot roller surface is lower than:

**SP1105 001 (002, 003) + SP1105 008**

During the job, the lamps are switched OFF when the thermistor detects the temperature of the hot roller surface is higher than:

**SP1105 001 (002, 003) + SP1105 008 +2°C**

***Fusing Temperature Control for Small Size Paper***

Small size paper is defined as:

- Paper less wide than (not including) LT LEF (less wide than 297 mm). This definition can be changed to 'less wide than B5 (less wide than 257 mm)' with **SP1105 013**.
- Any paper size less wide than B5 SEF

**Two Fusing Lamps: Lamps 1 and 2**

When fusing lamps 1 and 2 are used, the lamps light in order 1 → 2 and go off in order 2 → 1. In the table below e-STUDIO1351 (4) is the only time in the fusing lamp cycle that the 3 lamps come on. Thereafter, only 2 lamps (1 and 2) are used.

**Lamps Operation Immediately Before/After Job Start**

Model		Status Before Job Start	Status After Job Start
e-STUDIO901/1101	(1)	2 on	2 remains on → 1
	(2)	1, 2, 3 off	1 → 2
e-STUDIO1351	(3)	2 On	2 remains on → 1 on
	(4)	3 On	3 remains on, 2 → 1
	(5)	1, 2, 3 off	1 → 2

**Two Lamps: Lamps 1 and 3**

When fusing lamps 1 and 3 are used, the lamps light in order 1 → 3 and go off 3 → 1. In the table below e-STUDIO1351 (3) is the only time in the fusing lamp cycle that the 3 lamps come on. Thereafter, only 2 lamps (1 and 3) are used.

**Lamps Operation Immediately Before/After Job Start**

Model		Status Before Job Start	Status After Job Start
e-STUDIO901/1101	(1)	2 on	2 goes off → 1 → 3
	(2)	1, 2, 3 off	1 → 3
e-STUDIO1351	(3)	2 On	2 remains on → 1 → 3
	(4)	3 On	3 remains on → 1
	(5)	1, 2, 3 off	1 → 3

Detailed Descriptions

**One Fusing Lamp: Lamp 1 Only**

In the table below e-STUDIO1351 (3) is the only time in the fusing lamp cycle that the 2 lamps (1 and 2) come on. Thereafter, only 1 lamp (lamp 1) is used. Also, 2 lamps (1 and 3) come on at (4). Thereafter, only 1 lamp (lamp 1) is used.

**Lamps Operation Immediately Before/After Job Start**

Model	Status Before Job Start		Status After Job Start
e-STUDIO901/1101	(1)	2 on	2 off → 1
	(2)	1, 2, 3 off	1
e-STUDIO1351	(3)	2 on	2 remains on → 1
	(4)	3 on	3 remains on → 1
	(5)	1, 2, 3 off	1

During the job, the lamps are switched ON when the thermistor detects the temperature of the hot roller surface is lower than:

**SP1105 001 (002, 003) + SP1105 007**

During the job, the lamps are switched OFF when the thermistor detects the temperature of the hot roller surface is higher than:

**SP1105 001 (002, 003) + SP1105 007 +2°C**

***Tracing Paper***

When tracing paper is fed from a tray (if the user selects 'Translucent Paper'), the fusing lamps are not controlled based on the size of the paper. The control method, however, is nearly the same as that for normal paper.

During the job, the lamps are switched ON when the thermistor detects the temperature of the hot roller surface is lower than:

**SP1105 001 (002, 003) + SP1105 009**

During the job, the lamps are switched OFF when the thermistor detects the temperature of the hot roller surface is higher than:

**SP1105 001 (002, 003) + SP1105 009 +2°C**

***Fusing Temperature Control for Low Power Mode (During and Immediately After)***

***During Low Power Mode***

Only one fusing lamp is used while the machine is in the low power mode.

Model	Lamps On	Lamps Used
e-STUDIO901/1101	Lamp 3	Only 1 lamp is used:
e-STUDIO1351	Lamp 2, 3	Two lamps are used. The lamps turn on and off alternately so that only one lamp at a time is on.

The fusing lamps heat the hot roller to keep the temperature as follows:

- On: Fusing Temperature Adjustment in Low Power (**SP1105 011**)
- Off: Fusing Temperature Adjustment in Low Power (**SP1105 011**) +2°C

***Returning from Low Power Mode***

1. After returning the low power mode

If the fusing unit temperature is below the temperature set with **SP1105 001-003 + SP1105 014**, three fusing lamps switch on in this order: 3 → 2 → 1.

-or-

If the fusing temperature is above the temperature set with **SP1105 001-003 + SP1105 014**, two lamps (2 and 3) switch on in this order: 3 → 2

Default Values	e-STUDIO901	e-STUDIO1101	e-STUDIO1351	SP No.	
Fusing Lamp Switching after Low Power Mode	-10°C	-10°C	-20°C	SP1105 014	0 to -20°C

2. When the temperature rises to the temperature set with **SP1105 001-003**, fusing lamp 1 switches off.
3. When the temperature reaches the standby temperature, fusing lamps 3 and 2 switch off in this order: 3 → 2

Detailed Descriptions

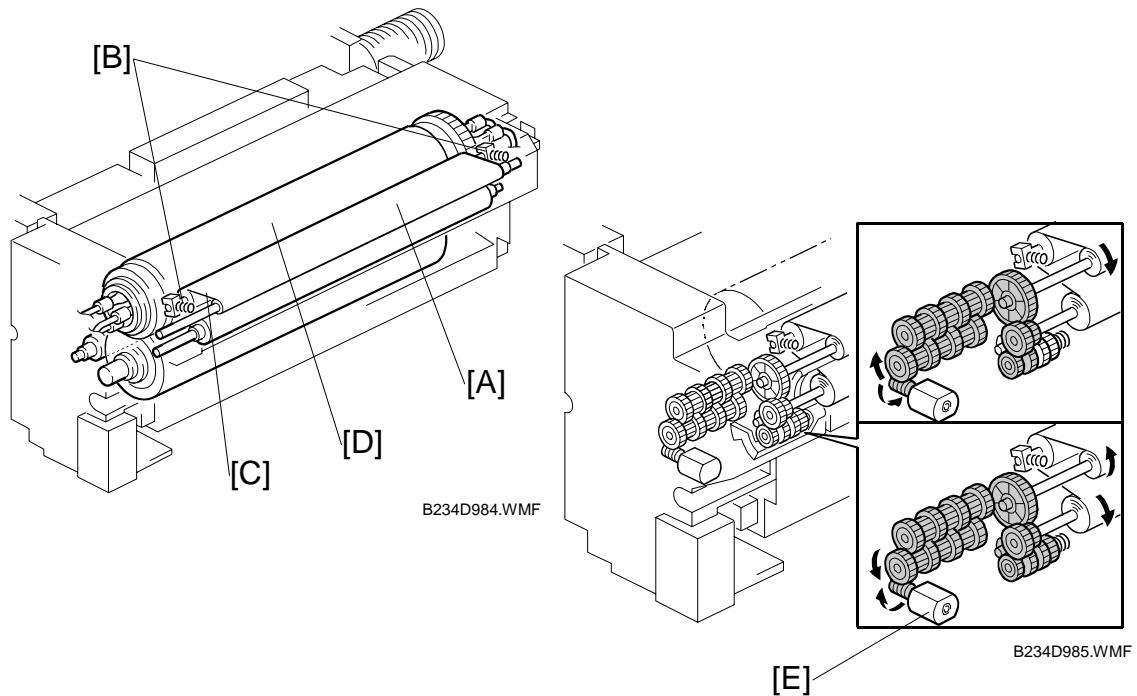
***Low Speed Mode (CPM Down)***

The User Tools has a selection (System Settings> General Features> Optimum for Thick Paper: Set to 'On') that allows the customer to improve the fusing of images and text on thick paper and tracing paper by reducing the cpm (this is done by reducing the drum speed).

The speed reductions are as follows:

- e-STUDIO901: No speed reduction (stays at 90 cpm)
- e-STUDIO1101: Reduced from 110 cpm to 90 cpm
- e-STUDIO1351: Reduced from 135 cpm to 110 cpm

### 6.16.5 FUSING CLEANING UNIT



The fusing cleaning unit [A] feeds the cleaning fabric. Springs [B] hold a roller under the fabric [C] against the hot roller [D].

This intermediate roller applies a light coat of silicone oil to the hot roller and removes paper dust and toner from the hot roller.

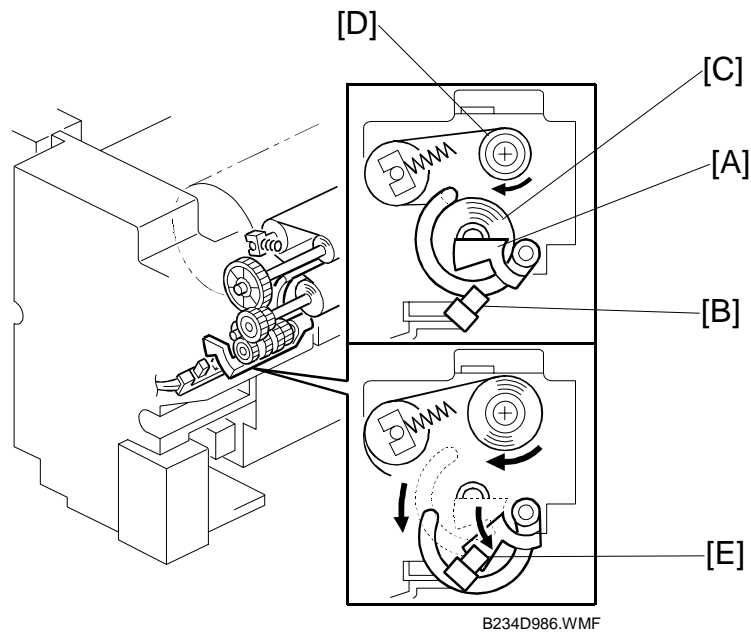
A spring clutch inside the mechanism pulls the fabric to take up the slack, to prevent it getting pulled in between the fusing rollers.

At prescribed intervals during printing, the fabric motor [E] switches on for a fixed period of time to move the cleaning fabric.

**SP1902 002** and **1902 003** can be used to adjust the motor rotation time and rotation interval. **SP1902 004** is used to adjust the near end timing for the web. The web is 24 m long and lasts for about 750K copies for NA, or 500K copies for EU/AA.

Detailed Descriptions





**SP1902 001** displays the cleaning fabric consumption. When the consumption exceeds the value set with **SP1902 004**, the machine indicates near-end on the operation display.

The machine still operates while the actuator [A] remains above the fabric end sensor [B] undetected. The actuator arm of the actuator remains in contact with the supply roller [C] and gradually lowers as the amount of fabric on the supply roller grows smaller as it is fed to the take-up roller [D] above.

When the fabric runs out, the actuator drops into the fabric end sensor at [E] and the sensor signals the machine to issue the fabric end message.

At fabric end, the fusing cleaning unit must be replaced by either the service technician or a trained 'super user'.

***Additional Notes about Fusing Cleaning Unit Operation***

- Opening either front door (or both doors) shuts down operation of the fusing fabric unit.
- When the fusing temperature reaches the temperature 10°C below the temperature where the hot roller starts to idle, the fabric take-up operation executes twice.
- When the fabric motor operates while the hot roller is idling. After the hot roller starts to idle, the fabric motor turns on at 10 sec. intervals up to a maximum of 10 times.
- The fusing fabric unit shuts down completely when the machine is turned off with the main power switch.
- When the operation power switch is pressed to turn on the machine, the fusing fabric unit starts to operate as soon as the hot roller starts to idle. The fabric motor rotates the take-up roller at 10 sec. intervals up to a maximum of 10 times.
- When the operation power switch is pressed to turn the machine off, the fabric take-up roller turns on/off twice. However, this does not occur if the fusing temperature when the machine is turned off is 10°C less than the temperature set for hot roller idling to start.
- When the machine enters auto off mode, the fabric take-up motor turns on/off twice. However, this does not occur if the fusing temperature when the machine is turned off is 10°C less than the temperature set for hot roller idling to start.

***Calculating Cleaning Fabric Service Life***

The fusing cleaning fabric is a roll of heat-resistant fabric 24 m long saturated with silicone oil. It is mounted on a supply roller and take-up roller. The part of the cleaning fabric that touches the hot roller both lubricates and removes paper dust and other particles from the surface of the hot roller.

At prescribed intervals, the fabric motor (a DC motor) switches on and rotates the take-up roller. This feeds a fresh portion of the fabric from the supply roller to clean and lubricate the surface of the hot roller.

The job time sensor (a photo-sensor) measures the length of time that it takes for all the sheets of each job to pass.

- The job time sensor is on when there is no paper present.
- It turns off when it detects the leading edge of the first sheet of a job, and at that time, the machine starts to measure the job time.
- At 2 sec. after the trailing edge of the last sheet of the job passes below the sensor, the machine stops measuring the job time.
- The length of the job is then added to the accumulated count for the cleaning fabric.
- When this calculated total equals the time prescribed for the service life of the cleaning fabric, the machine issues the fusing fabric near-end alert.

**NOTE**

- When a paper jam occurs, cleaning fabric operation stops, and the job time sensor stops measuring paper throughput. These functions resume after the jam has been removed and the job restarted.
- When a job stops temporarily because the fusing temperature has fallen below its lower limit, the machine waits until 2 sec. after the last sheet leaves the cooling pipe exit. Then the job time sensor switches on and the machine stops counting (fabric unit operation also stops).
- When the fusing temperature reaches the operating temperature, the job restarts, the first sheet feed switches off the fabric near-end sensor, and the job time sensor resumes its count.

**Fabric Near-End**

When the fabric near-end message appears, the message is displayed on the operation panel but the job does not stop. The operator should have a replacement fabric unit on hand or get one as soon as possible. The cleaning fabric is near the end of its service life and must be replaced soon.

**SP1902 004** (Fabric Near End) can be adjusted to change the near-end period.

The table below shows approximately how adjustment of **SP1902 002** affects the near-end and end displays of the e-STUDIO901 (90 ppm), e-STUDIO1101 (110 ppm) and e-STUDIO1351 (135 ppm).

SP1902 002 <sup>*1</sup>			SP1902 004 <sup>*2</sup>	Near-End Display (Sheets) <sup>*3</sup>	End Display (Sheets)	Comments
e-STUDIO901	e-STUDIO1101	e-STUDIO1351				
19.8 s	16.2 s	12.9 s	92%	750K	820K	NA Default
13.2 s	10.8 s	8.6 s	90%	500K	550K	EU/AA Default

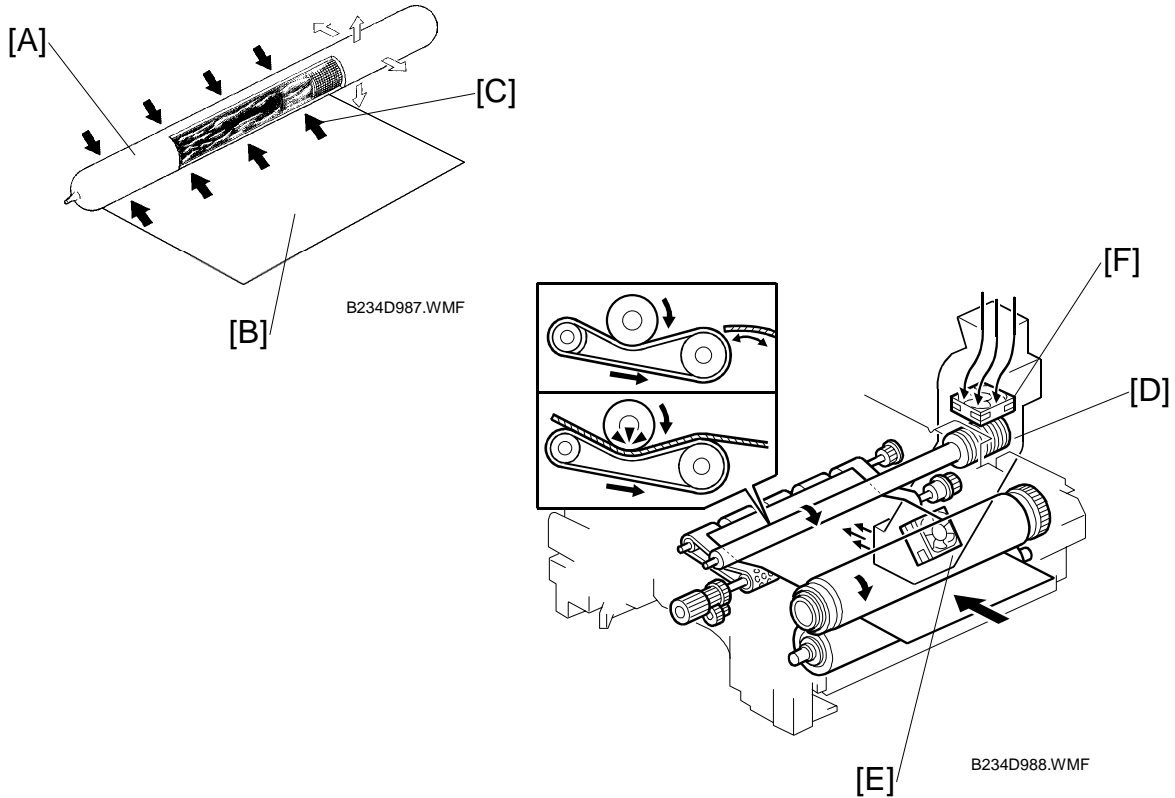
<sup>\*1</sup>: **SP1902 002** (Fabric Motor Control – Fabric Motor Drive Interval)

<sup>\*2</sup>: **SP1902 004** (Fabric Motor Control – Fabric Near End Setting)

<sup>\*3</sup>: Calculated based on A4 LEF at 100% magnification, and the default settings of **SP 1902 004**.

**NOTE:** **SP1902 003** (Fabric Motor Control – Fabric Motor Drive Time) not adjusted.

### 6.16.6 PAPER COOLING



The paper cooling pipe [A] cools the copy paper [B] after it has gone through the fusing unit. This prevents the temperature around the drum from increasing in duplex mode.

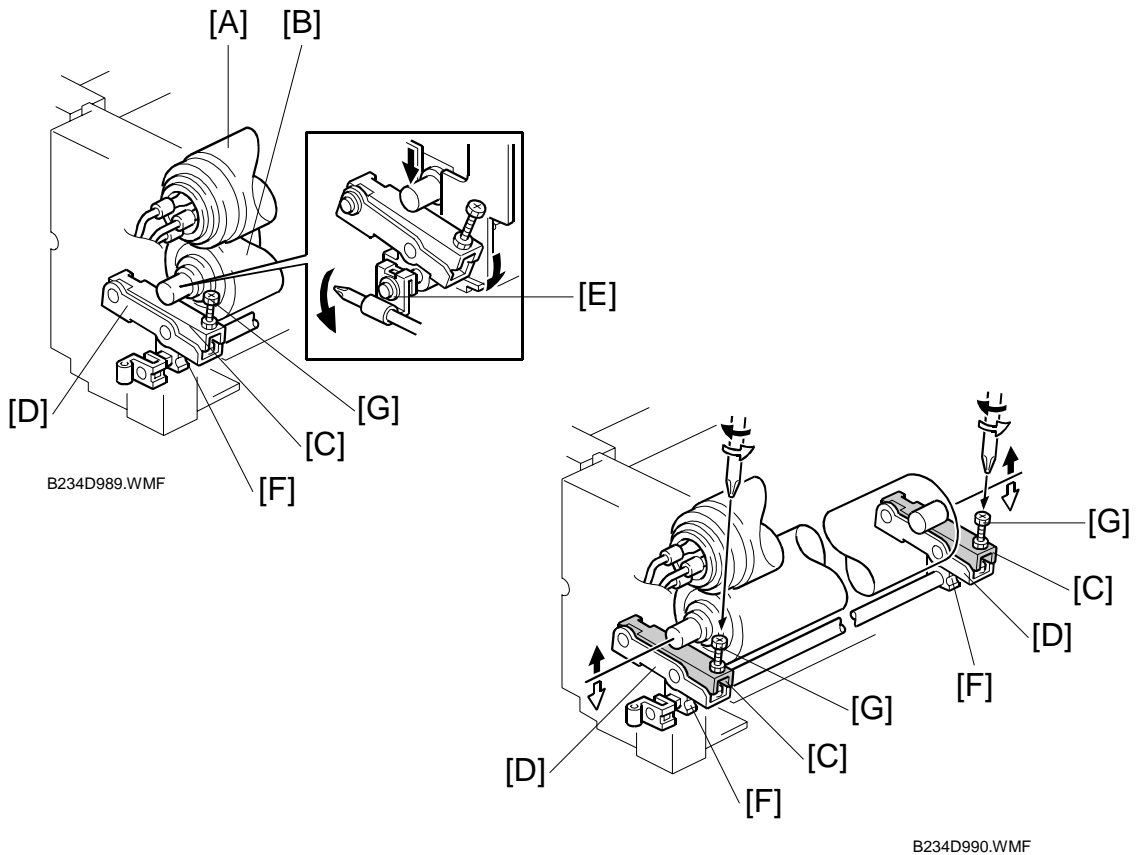
The paper cooling pipe has a hollow metal tube inside. Water capillary tubes run along the inside of the paper cooling pipe, and these transfer heat within the pipe.

The hot paper leaving the fusing unit heats the parts of the cooling pipe that it touches at [C] (black arrows), causing the water in the pipe to vaporize. This creates a high-speed flow of steam to the ends of the pipe, which are cooler, especially to the rear, which is well away from the paper feed path, and has the cooling fins [D] attached to it. When the steam reaches this area, it cools and condenses. Capillary action returns the condensation to the heated part of the pipe.

This heat transfer cycle (vaporization → steam transfer → condensation) repeats continuously. Paper cooling pipe fan 1 [E] in the duct at the machine rear side cools the fins and paper cooling fan 2 [F] pulls the air around the fins out of the fusing unit.

Detailed Descriptions

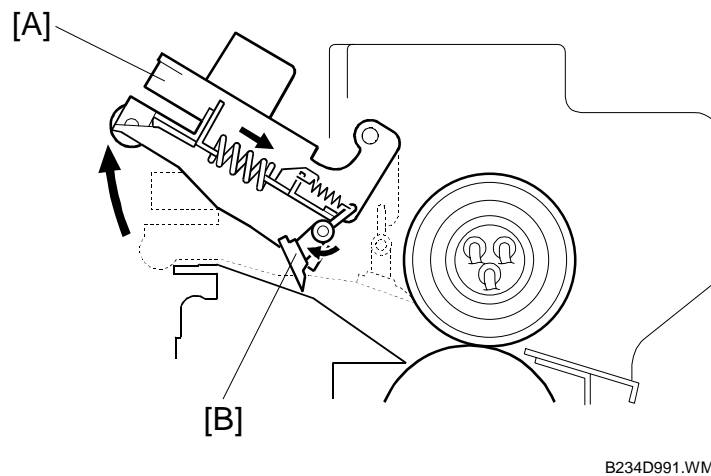
**6.16.7 FUSING PRESSURE**



Fusing pressure is constantly applied between the hot roller [A] and pressure roller [B] by the upper pressure lever [C] and lower pressure lever [D], which are lifted by the fusing unit release lever [E] via the pressure cam [F]. The pressure can be adjusted by using the pressure adjustment screw [G].

The fusing pressure is released by turning the fusing unit release lever counterclockwise.

### 6.16.8 HOT ROLLER STRIPPER RELEASE

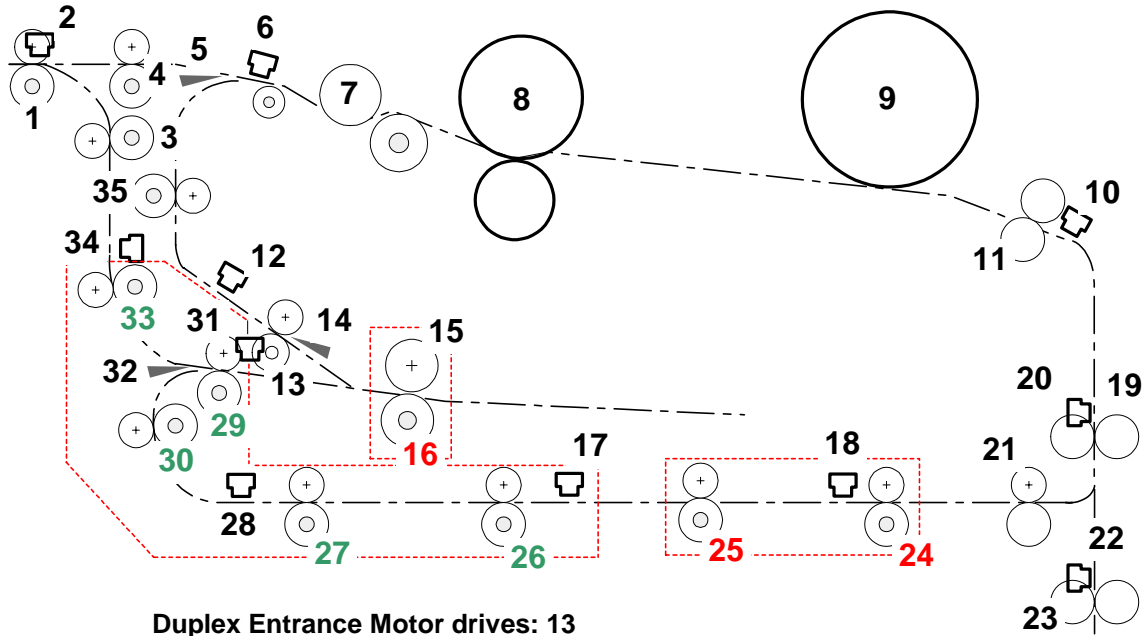


For easier jam removal, when the hot roller stripper unit [A] is opened, the stripper pawls [B] turn clockwise to expand the jam removal area.

## 6.17 PAPER EXIT/DUPLEX

### 6.17.1 OVERVIEW

#### *Inversion/Duplex Components*

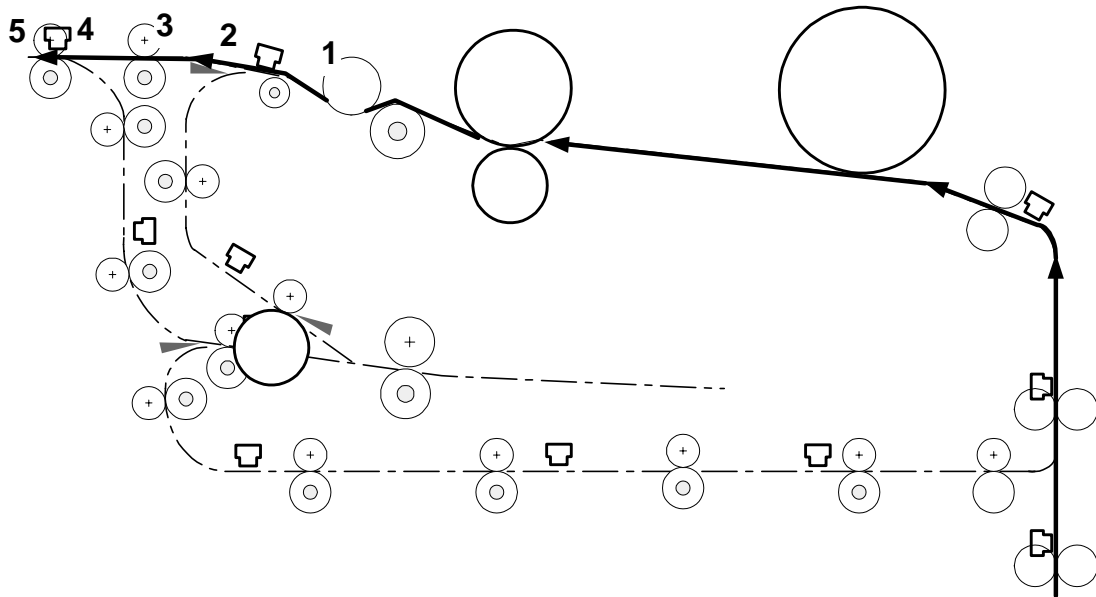


B234D906.WMF

**Duplex Entrance Motor drives:** 13  
**Duplex Switchback Motor drives:** 16  
**Duplex Inverter Motor drives:** 26, 27, 29, 30, 33  
**Duplex Transport Motor drives:** 24, 25  
**Upper Relay Motor drives:** 19, 21  
**Exit Motor drives:** 1, 3, 4, 7, 35

- |                               |                                    |
|-------------------------------|------------------------------------|
| 1. Exit Roller                | 19. Upper Relay Roller             |
| 2. Exit Sensor                | 20. Upper Relay Sensor             |
| 3. Vertical Relay Roller      | 21. Duplex Exit Roller             |
| 4. Horizontal Exit Roller     | 22. 1st Transport Sensor           |
| 5. Exit Junction Gate         | 23. 1st Transport Roller           |
| 6. Job Time Sensor            | 24. Duplex Transport Roller 4      |
| 7. Cooling Pipe               | 25. Duplex Transport Roller 3      |
| 8. Hot Roller/Pressure Roller | 26. Duplex Transport Roller 2      |
| 9. Drum                       | 27. Duplex Transport Roller 1      |
| 10. Registration Sensor       | 28. Duplex Transport Sensor 1      |
| 11. Registration Roller       | 29. Inverter Roller 1              |
| 12. Duplex Entrance Sensor    | 30. Inverter Roller 2              |
| 13. Duplex Entrance Roller    | 31. Duplex Inverter Sensor         |
| 14. Switchback Junction Gate  | 32. Duplex/Inverter Junction Gate  |
| 15. Switchback Idle Roller    | 33. Inverter Relay Roller          |
| 16. Switchback Roller         | 34. Inverter Relay Sensor          |
| 17. Duplex Transport Sensor 2 | 35. Vertical Relay Roller - Duplex |
| 18. Duplex Transport Sensor 3 |                                    |

***Straight-Through Path (No Inversion, No Duplexing)***



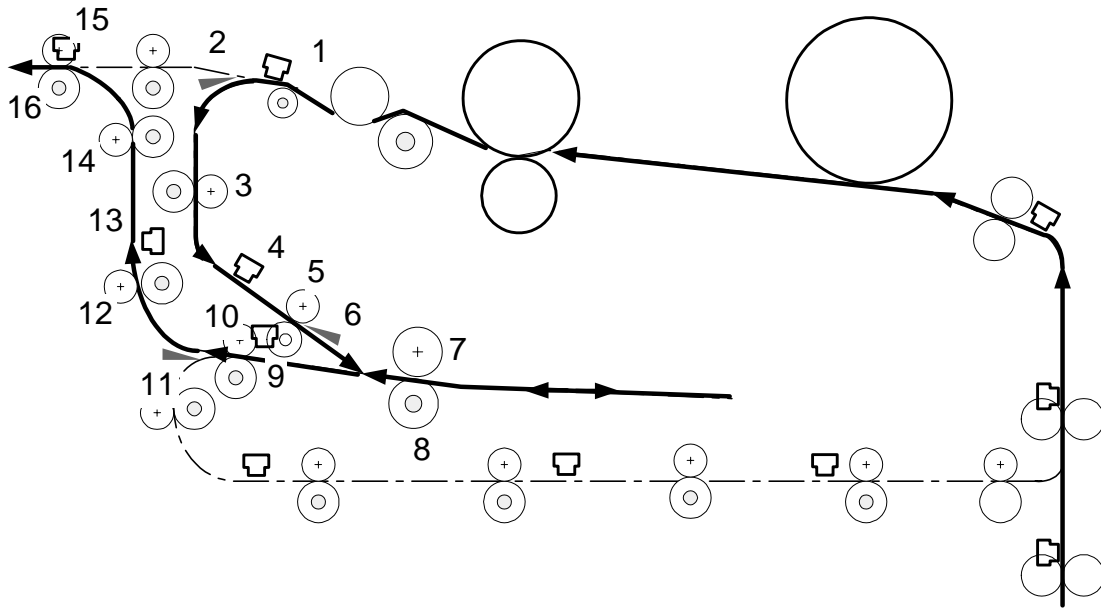
B234D907.WMF

During straight-through feed (with neither inverting nor duplexing selected) the paper goes:

- 1 From under the cooling pipe
- 2 Over the closed exit junction gate
- 3 Through the horizontal exit rollers
- 4 Under the exit sensor
- 5 Through the exit rollers and out of the machine

Detailed  
Descriptions



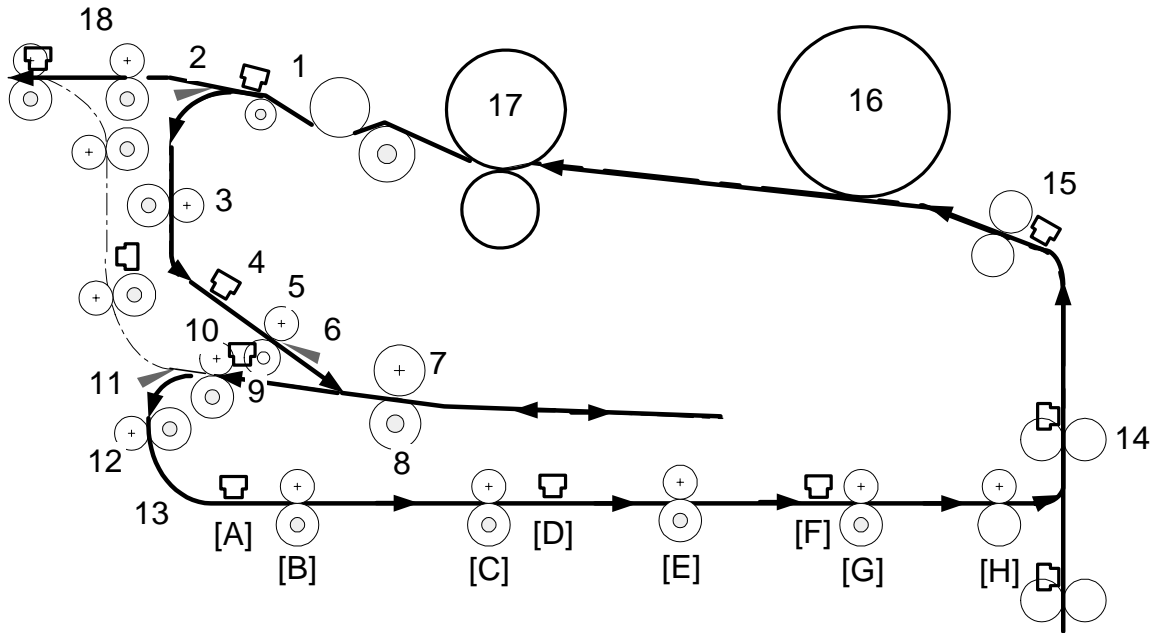
***Inversion Path (Face-down Output, No Duplexing)***

B234D908.WMF

When inversion has been selected for the job for face-down output, the paper goes:

- 1 Out from under the cooling pipe
- 2 Down into the inverter/duplexer path at the open exit junction gate
- 3 Through the nip of the vertical relay rollers
- 4 Under the duplex entrance sensor
- 5 Through the duplex entrance rollers
- 6 Through the open switchback junction gate
- 7 Through the switchback rollers
- 8 Between the switchback rollers again after the switchback junction gate closes and the switchback roller reverses
- 9 Under the duplex/inverter sensor
- 10 Through inverter rollers 1
- 11 Over the closed duplex/inverter junction gate
- 12 Through the inverter relay rollers
- 13 Under the inverter relay sensor
- 14 Through the vertical relay rollers
- 15 Under the exit sensor
- 16 Through the exit rollers and out of the machine

**Inverting/Duplexing Path**



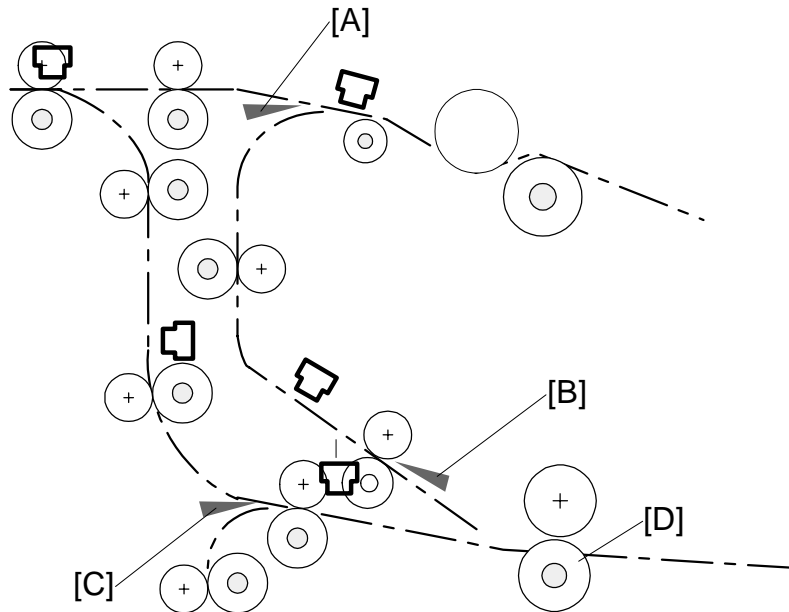
B234D909.WMF

When duplexing has been selected for the job, the paper goes:

- 1 Out from under the cooling pipe
- 2 Down into the inverter/duplexer path at the open exit junction gate
- 3 Through the nip of the vertical relay rollers
- 4 Under the duplex entrance sensor
- 5 Through the duplex entrance rollers
- 6 Through the open switchback junction gate
- 7 Through the switchback rollers
- 8 Between the switchback rollers again after the switchback junction gate closes and the switchback roller reverses
- 9 Under the duplex/inverter sensor
- 10 Through inverter rollers 1
- 11 Through the open inverter/duplex junction gate down into the duplex unit
- 12 Through inverter rollers 2
- 13 Through horizontal transport path: [A] Duplex transport sensor 1 → [B] Duplex transport roller 1 → [C] Duplex transport roller 2 → [D] Duplex transport sensor 2 → [E] Duplex transport roller 3 → [F] Duplex transport sensor 3 → [G] Duplex transport roller 4 → [H] Duplex exit rollers
- 14 Up past the upper relay rollers, upper relay sensor
- 15 Under the registration sensor, registration sensor
- 16 Under the drum where the image is transferred to the 2nd side
- 17 Through the nip of the hot roller/pressure roller where the image is fused
- 18 Out from under the cooling pipe, over the closed exit junction gate, through the exit rollers and out of the machine.

Detailed Descriptions

### 6.17.2 INVERTER/DUPLEXING JUNCTION GATES



B234D911.WMF

This inverter/duplexer unit has three junction gates:

[A]: Exit junction gate

[B]: Switchback junction gate

[C]: Invert/duplex junction gate

The exit junction gate [A]:

- Closes for straight-through feed (neither face-up nor duplexing selected) and the paper goes out of the machine face-up.
- Opens to feed paper down into the inversion tray for inversion/duplexing

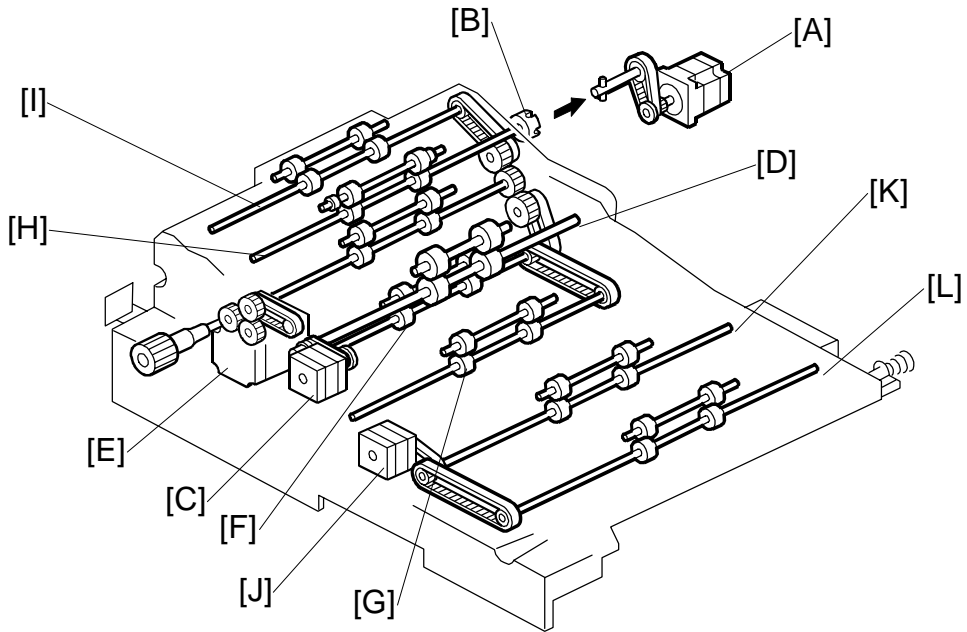
The switchback junction gate [B]:

- Opens before paper arrives so it can feed onto the inversion tray and into the switchback rollers [D]
- Closes to keep the paper down and horizontal so that it will feed out properly after the switchback roller reverses.

The invert/duplex junction gate [C]:

- Closes so that paper passes over it and into the vertical feed path for face-down output only (no duplexing).
- Opens to guide paper down into the duplex unit so that the paper can return to the main feed path for printing the 2nd side of the sheet.

### 6.17.3 DUPLEX DRIVE MECHANISM



B234D801.WMF

The duplex entrance motor [A] drives the duplex entrance roller [B].

The duplex switchback motor [C] drives the switchback roller [D].

The duplex inverter motor [E] drives the duplex transfer roller 1 [F], duplex transfer roller 2 [G], inverter roller 1 [H], and inverter roller 2 [I].

The duplex transport motor [J] drives the duplex transfer roller 3 [K] and duplex transfer roller 4 [L].

Detailed  
Descriptions

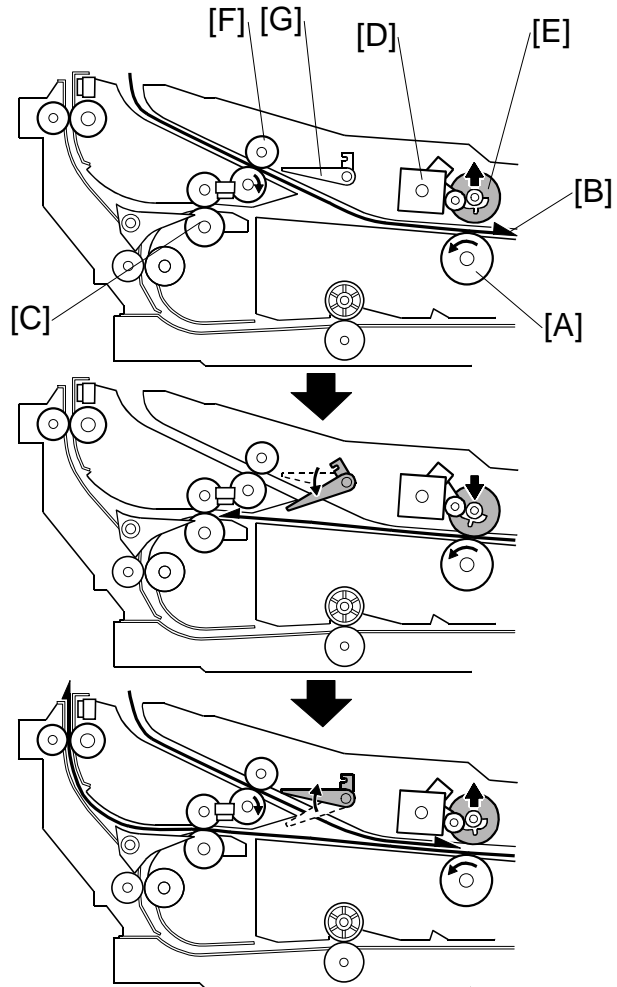
### 6.17.4 SWITCHBACK IDLE ROLLER OPERATION

For paper longer than A4/LT, the first sheet [B] feeds out of the inverter at the same time that the second sheet feeds in. (This only happens for a fraction of a second)

To let this happen, a solenoid lifts the switchback idle roller.

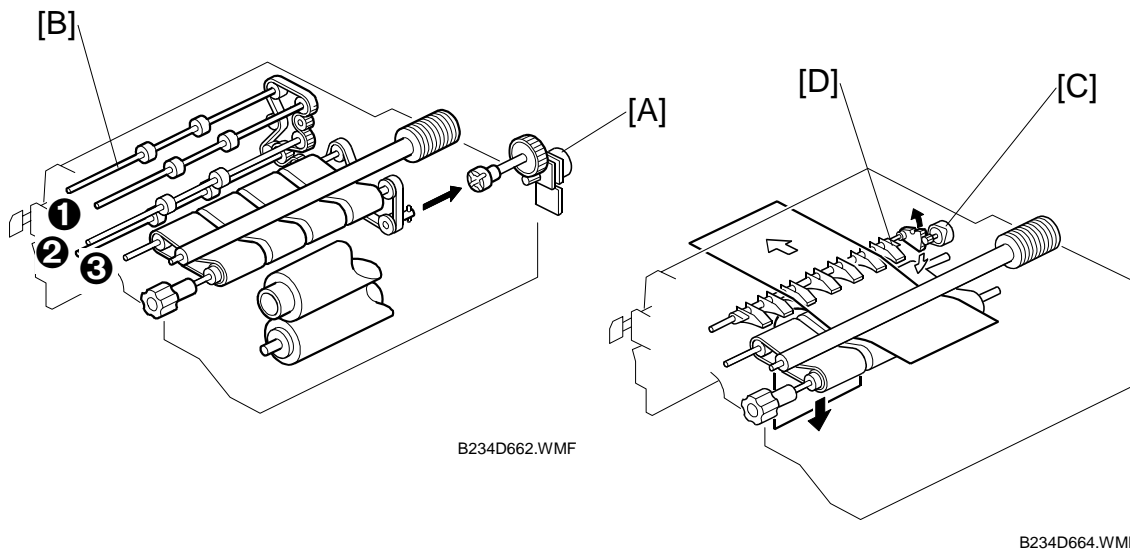
To feed the first sheet out of the inverter, the switchback roller [A] reverses and feeds the first sheet [B] to the inverter rollers 1 [C]. At about the same time, the switchback idle roller solenoid [D] energizes and raises the switchback idle roller [E].

The next sheet feeds into the inverter tray through the duplex entrance rollers [F] and under the open switchback junction gate [G].



B234D910C.WMF

### 6.17.5 PAPER EXIT MECHANISM



The exit motor [A] drives the paper exit roller [B] and transport rollers ①, ②, ③

To feed the printed page from the fusing unit straight through and out of the machine, the exit junction gate motor [C] stays off and the exit junction gate [D] remains closed.

To feed the page to the inverter and duplex unit below, the motor turns on to open the exit junction gate and guide the paper down.

Detailed Descriptions

### 6.17.6 BASIC DUPLEX FEED OPERATION

To improve the productivity of duplex copying, a non-stacking style duplex mechanism is adopted. This type of mechanism allows more than one page to be processed at once, in a process called 'interleaving'. Examples of this are given below.

For paper lengths up to A4/LT LEF, the top duplex speed is possible, with the duplex unit processing four sheets of copy paper at the same time.

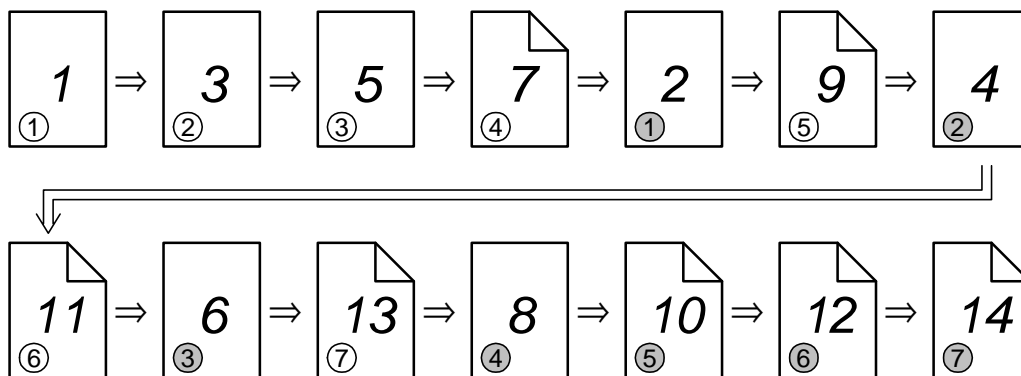
For paper longer than this, the duplex tray can process two sheets of copy paper at once.

For a single-set duplex copy job, the duplex unit stores only one sheet of copy paper. For a multi-set duplex job, the job is stored first, then the first set is made using interleaving.

#### **Length up to A4/LT LEF**

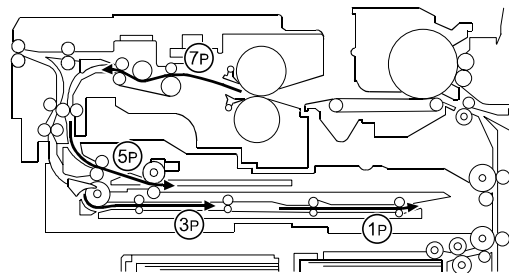
The duplex unit can process four sheets of copy paper

**Example:** A 14-page copy. The large numbers in the illustration show the order of pages. The small numbers in circles show the order of sheets of copy paper (if shaded, this indicates the second side).



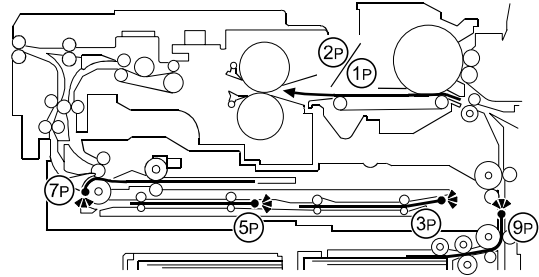
B234D992.WMF

1. The first 4 sheets are fed and printed.
  - 1) 1st sheet printed (1st page)
  - 2) 2nd sheet printed (3rd page)
  - 3) 3rd sheet printed (5th page)
  - 4) 4th sheet printed (7th page)



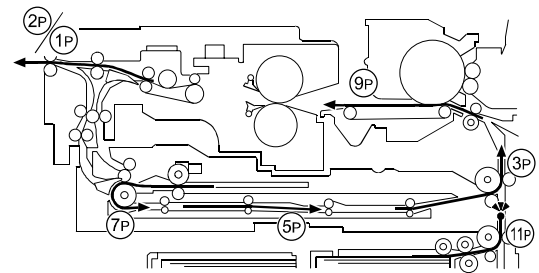
B234D993.WMF

2. The back of the 1st sheet is printed (2nd page).
3. The 2nd, 3rd, 4th sheets (3rd, 5th, and 7th pages) go into the duplex unit.
4. The 5th sheet (9th page) is fed in.



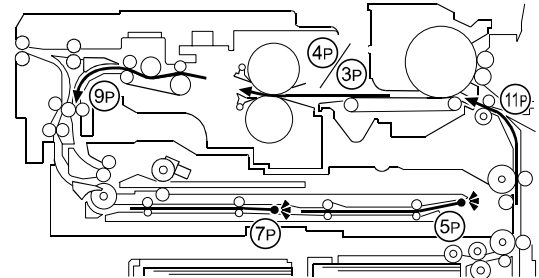
B234D995.WMF

5. The 5th sheet is printed (9th page).
6. The 1st sheet is fed out (1st and 2nd pages printed).



B234D997.WMF

7. The 5th sheet (9th page) is directed to the duplex unit.
8. The 6th sheet (11th page) is fed.
9. The back of the 2nd sheet is printed (4th page).

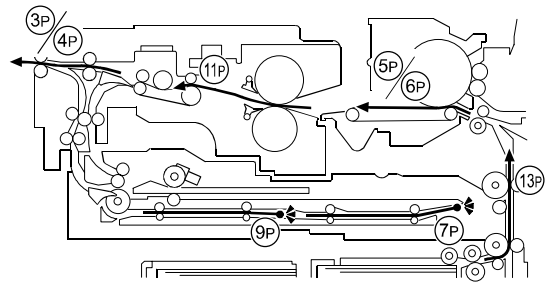


B234D998.WMF

Detailed Descriptions



10. The 2nd sheet is fed out (3rd and 4th pages printed).
11. The 6th sheet is printed (11th page) and directed to the duplex unit.
12. The back of the 3rd sheet (6th page) is printed.
13. The 7th sheet is fed and printed (13th page).
14. The back of the 4th sheet is printed (8th page) and fed out (7th and 8th page).
15. The back of the 5th sheet is printed (10th page) and fed out (9th and 10th pages).
16. The back of the 6th sheet is printed (12th page) and fed out (11th and 12th pages).
17. The back of the 7th sheet is printed and fed out (13th and 14th pages).

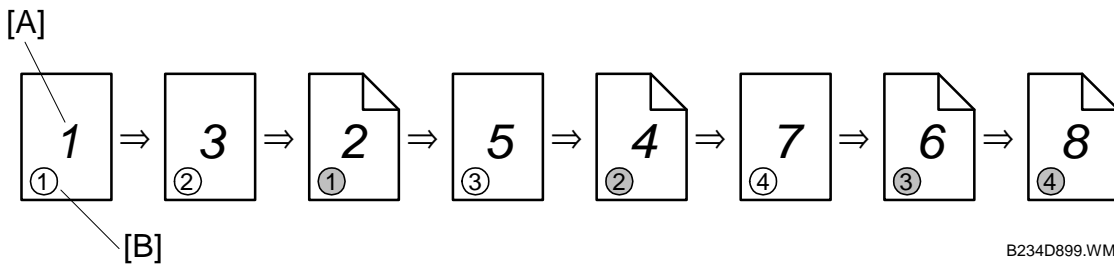


B234D900.WMF

**Longer than A4/Letter LEF**

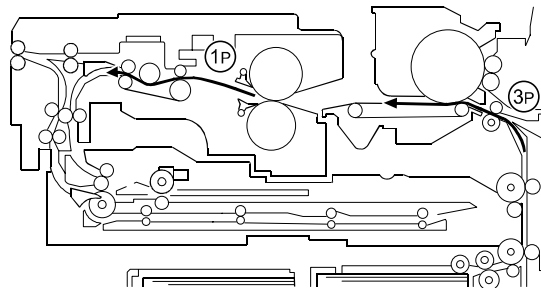
The duplex unit can process two sheets of copy paper

**Example:** 8 pages. The number [A] in the illustration shows the order of pages.  
The number [B] in the illustration shows the order of sheets of copy paper (if shaded, this indicates the second side).



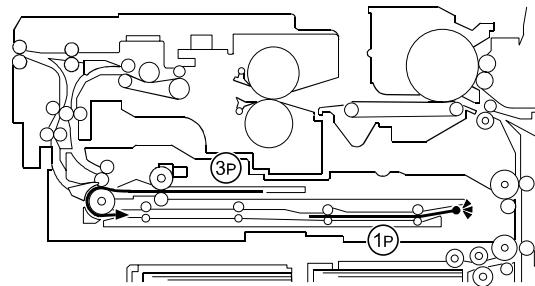
B234D899.WMF

1. The first 2 sheets are fed and printed.
  - 1) 1st sheet printed (1st page)
  - 2) 2nd sheet printed (3rd page)



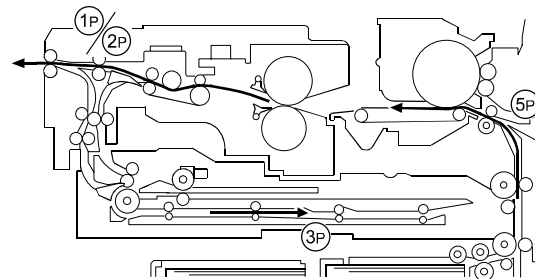
B234D898.WMF

2. The first 2 sheets go into the duplex unit.



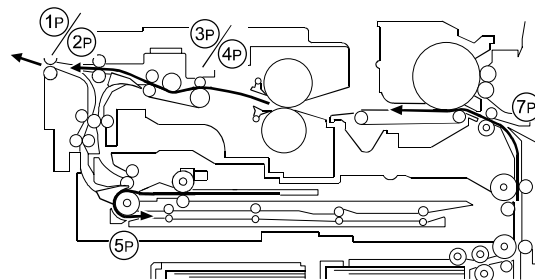
B234D897.WMF

3. The back of the 1st sheet (2nd page) is printed.
4. The 3rd sheet (5th page) is fed and printed.



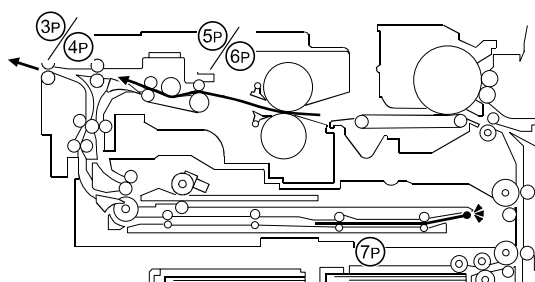
B234D896.WMF

5. The 1st sheet (1st and 2nd pages) is fed out.
6. The back of the 2nd sheet (4th page) is printed.
7. The 4th sheet (7th page) is fed and printed.



B234D895.WMF

8. The 2nd sheet (3rd and 4th pages) is fed out.
9. The back of the 3rd sheet (6th page) is printed.



B234D894.WMF

10. The 3rd sheet (5th and 6th pages printed) is fed out.
11. The back of the 4th sheet (8th page) is printed.
12. The 4th sheet (7th and 8th pages) is fed out.

Detailed Descriptions

## 6.18 BOARDS

### 6.18.1 LEDES

#### BCU

Number	Monitored Signal
LED101 (Green)	Monitors +5VL operating. <b>On:</b> Normal
LED102 (Orange)	Monitors firmware downloading <b>On:</b> Downloading <b>Off:</b> Normal
LED103 (Red)	Monitors firmware operating. <b>Blinks Slowly:</b> Normal <b>Blinks Rapidly:</b> Firmware error

#### MCU

Number	Monitored Signal
LED1 (Green)	DC24V monitoring <b>On:</b> Normal

#### IOB

Number	Monitored Signal
LED101 (Green)	+5VL monitoring <b>Blinks:</b> Normal
LED102 (Green)	+24V monitoring <b>On:</b> Normal

#### SIB

Number	Monitored Signal
LED1	DC24V monitoring <b>On:</b> Normal

#### OPU

Number	Monitored Signal
LED1 (Red)	Monitors firmware downloading <b>On:</b> Downloading <b>Off:</b> Normal, Completed downloading <b>Flashing (50ms On; 50ms Off):</b> Download error
LED2 (Green)	Monitors firmware downloading <b>Flashing (200ms On+200ms Off+200ms On+500ms Off):</b> Normal <b>Flashing (200ms On+200ms Off):</b> Downloading <b>Flashing: 1s On+1s Off:</b> Completed downloading <b>Off:</b> Download error

**IPU**

Number	Monitored Signal
LED 1 (Green)	Monitors Printer
LED 2 (Green)	Flashes: ICs operating normally for image processing. Off: Operation failure.
LED 3 (Red)	Monitors Scanner
LED 4 (Red)	Flashes: ICs operating normally for image processing.
LED 5 (Red)	Off: Operation failure.
LED 6 (Green)	DC5VL monitoring <b>On:</b> Normal
LED 7 (Red)	DC5VE monitoring <b>On:</b> Normal

**Controller Board**

LED	Color	Comments
10	Green	Power on.
9	Red	Flashing: Stand by On: Operating BIOS Off: Operating OS
8	Red	While upgrading the firmware from the SD card inserted in the controller slot, each LED lights red as the download progresses. All LEDs light and remain on after the download is completed.
7	Red	
6	Red	
5	Red	
4	Red	
3	Red	
2	Red	
1	Red	

**ADF Main Board LEDs**

○: ON ☆: Blinking

LED100	LED101	LED102	
○	—	—	Entrance Sensor Jam
—	○	—	Registration Sensor Jam
○	○	—	Exit Sensor Jam
—	—	○	Inverter Sensor Jam
○	—	○	Jammed paper not removed: Between entrance sensor + registration sensor
○	○	○	Jammed paper not removed: On the exposure glass
☆	—	—	Feed-in Motor Abnormal
—	☆	—	Transport Motor Abnormal
—	—	☆	Feed-out Motor Abnormal
☆	☆	—	Pick-up Motor Abnormal
—	☆	☆	Bottom Plate Motor Abnormal
☆	☆	☆	DF Position (Open)
☆	—	☆	APS Sensor ON
☆	—	—	Normal

Detailed Descriptions

**6.18.2 DIP SWITCHES****MCU****SW1**

NO.		COMMENTS
1	OFF	Do not change these settings.
2	OFF	
3	OFF	
4	OFF	

**IOB****SW101**

NO.	NA	EUR/ASIA	COMMENTS
1	ON	OFF	NA: Only SW1 set to ON, Others OFF. EUR/ASIA: Only SW2 set to ON, Others OFF
2	OFF	ON	
3	OFF	OFF	
4		OFF	Do not change these settings.
5		OFF	
6		OFF	
7		ON	
8		OFF	

**ADF Main Board**

DPS100				Description
4	3	2	1	
0	0	0	0	Normal operating mode
0	0	0	1	Motor Test: Transport motor – Forward
0	0	1	0	Motor Test: Transport motor – Reverse
0	0	1	1	Motor Speed Adjustment (Automatic)
0	1	0	0	Original stop position adjustment – Single-sided original mode (No original skew correction)
0	1	0	1	Original stop position adjustment – Double sided original mode
1	0	0	0	Free Run: Single-sided original mode with skew correction
1	0	1	0	Free Run: Single-sided original mode without skew correction
0	1	1	0	Free Run: Double-sided original mode
Others				Do not select

“SADF” LED turns on when one of DIP switch turns on.

**Controller Board**

**DIP SW1**

NO.		COMMENTS
1	OFF	Never change this setting.
2	OFF	Never change this setting.
3	OFF	Never change this setting.
4	OFF	Design Use Only
5	OFF	Design Use Only
6	OFF	Not used.
7	OFF	Not used.
8	OFF	Not used.

**DIP SW2**

NO.		COMMENTS
1	OFF	Boot Block Switching ON: Top Block    OFF: Recovery Block
2	OFF	Not used.
3	OFF	CMOS RAM Clear
4	OFF	Not used.

**DIP SW3**

NO.		COMMENTS
1	OFF	Not used.
2	OFF	Not used.
3	OFF	Not used.
4	ON	Watchdog Reset ON: Enable    OFF: Disable

Detailed Descriptions

**6.18.3 TEST POINTS**

**ADF Main Board**

Number	Label	Monitored Signal
TP100	TXD	TXD to the copier
TP101	RXD	RXD from the copier
TP102	GND	Ground
TP103	12 V	+12 V
TP104	5 V	+5 V

## 6.18.4 FUSES

### ADF Main Board

Number	Description
FU100	Protects the 38 V line
FU101	Protects the 24 V line

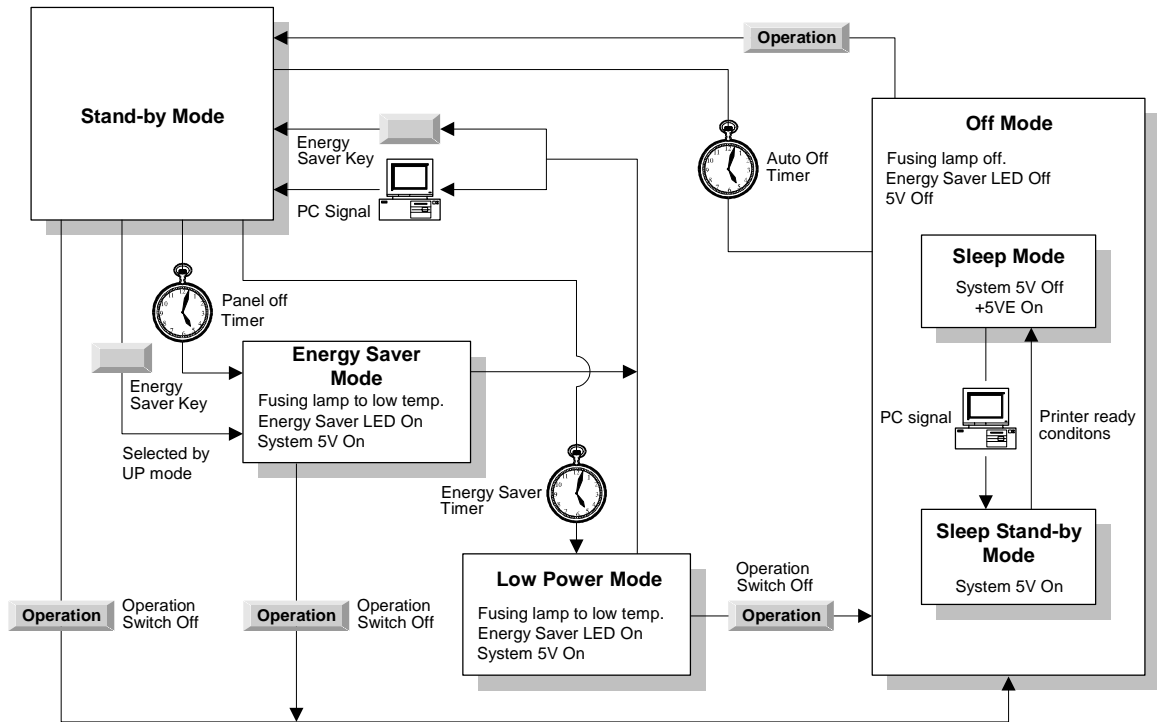
## 6.18.5 VARIABLE RESISTORS

### ADF Main Board

Number	Function
VR100	Adjusts the original stop position for the single-sided original at no skew correction mode.
VR101	Adjusts the original stop position for the double-sided original.

## 6.19 ENERGY CONSERVATION MODES

### 6.19.1 OVERVIEW



B234D893.WMF

When the machine is not used, the energy saver function reduces power consumption by lowering the fusing temperature.

This machine has four types of energy saver mode as follows.

- 1) Energy saver mode (called 'panel off mode' in the operation manual)
- 2) Low power mode (called 'energy saver mode' in the operation manual)
- 3) Off mode (copier configuration only)
- 4) Sleep mode (copier/printer/scanner configuration only)

These modes are controlled by the following User Tools:

- Panel off timer
- Energy saver timer
- Auto off timer
- Auto off disabling

The way that the machine operates depends on the combination of installed equipment (copier only, or whether a printer/scanner is installed).

Detailed Descriptions



## 6.19.2 ENERGY SAVER MODE

### *Entering the energy saver mode*

The machine enters energy saver mode when one of the following is done.

- The Energy Saver Key is held down for a second.
- The panel off timer runs out after the last job (User Tools - System Settings - Timer Setting - Panel Off Timer: default setting is 60 s).

### *What happens in energy saver mode*

When the machine enters energy saver mode, the operation panel indicators are turned off except for the Energy Saver LED and the Power LED.

If the CPU receives the image print out command from an application (e. g. to print data from a PC), the fusing temperature rises to print the data. However, the operation indicators stay off.

### *Return to stand-by mode*

If one of the following is done, the machine returns to stand-by mode:

- The Energy Saver Mode key is pressed
- An original is placed in the ADF
- The ADF is lifted
- An SC occurs
- A hard key on the operation panel, or a soft key on the display panel is touched
- Front door is opened

Operation Switch	Energy Saver LED	Fusing Temp.	Approx. Recovery Time	System +5V
On	On	e-STUDIO901/1101: Stays at the standby temperature <ul style="list-style-type: none"> <li>• e-STUDIO901: 153 °C</li> <li>• e-STUDIO1101: 165 °C</li> </ul> e-STUDIO1351: Stays at the standby temperature minus 5 °C (178 °C – 5 °C)	3 s	On

### 6.19.3 LOW POWER MODE

#### *Entering the low power mode*

The machine enters low power mode when:

The energy saver timer runs out after the last job.

(User Tools - System Settings - Timer Setting - Energy Saver Timer: default setting is 15 min)

#### *What happens in low power mode*

The fusing lamp drops to the prescribed temperature, as shown in the table below (the temperature drops more than that in energy saver mode). The other conditions are the same as for the energy saver mode.

#### *Return to stand-by mode*

The machine returns to standby mode in the same way as from the energy saver mode.

Operation Switch	Energy Saver LED	Fusing Temp.	Approx. Recovery Time	System +5V
On	On	Standby temperature - 10 °C (e-STUDIO901/1101) Standby temperature - 20 °C (e-STUDIO1351)	Depends on the model and the region: See 'Energy Star' in the Specifications.	On

### 6.19.4 OFF MODE

Off mode is used only if no optional printer/scanner unit is installed.

#### ***Entering the off mode***

The machine enters off mode when one of the following is done.

- The auto off timer runs out after the last job (User Tools – System Settings – Timer Setting – Auto Off Timer: default setting is 60 min)
- The operation switch is pressed to turn the power off

#### ***What happens in the off mode***

When the machine enters off mode, the fusing lamps and all dc supplies except +5VE/12VE (+5V/12V for energy saver mode) turn off.

#### ***Returning to stand-by mode***

The machine returns to stand-by mode when the main operation switch is pressed.

Operation Switch	Energy Saver LED	Fusing Temp.	Approx. Recovery Time	System +5V	Note
Off	Off	Room Temp. (Fusing lamp off)	Depends on the model and the region: See 'Energy Star' in the Specifications.	Off	Only +5VE and +12VE are supplied to the Controller, MB, HDD.

#### ***Disabling the off mode***

If the user wishes to disable the off mode, use the following user tool: User Tools – System Settings – Administrator Tools – AOF (change the setting to 'OFF').

### 6.19.5 SLEEP MODE

This is used instead of off mode when an optional scanner/printer unit is installed.

There are two types of sleep mode: Sleep Stand-by Mode and Sleep Mode. The difference between sleep stand-by mode and sleep mode is the machine's condition when the machine enters off mode.

#### ***Entering sleep stand-by and sleep modes***

The machine enters the sleep stand-by mode and sleep modes when one of the following is done.

- The operation switch is pressed to turn the power off
- The auto off timer runs out (the operation switch is then turned off, but the main power switch stays on)

If the machine is in one or more of the following conditions, the machine enters sleep stand-by mode. If not, the machine enters sleep mode.

- Error or SC condition
- Image data is stored in the memory
- An original is in the ADF
- The ADF is open
- Paper is left in the duplex unit or staple tray

#### ***What happens in sleep stand-by and sleep modes***

When the machine enters either of these modes, the fusing lamp and operation switch turn off, and only the main power LED is lit.

#### ***Sleep stand-by mode***

The system +5V and +24 V are supplied to all components.

#### ***Sleep mode***

The system +5V supply is also turned off. However, +5VE (+5V for energy saver mode) is still activated. When the machine detects a signal from the PC, the machine goes back to sleep stand-by mode and the system +5V and +24V supplies are activated. Then the machine receives the incoming message and prints it.

#### ***Returning to stand-by mode***

The machine returns to stand-by mode when the operation switch is pressed.

Mode	Operation Switch	Energy Saver LED	Fusing Temp.	System +5V	Note
Sleep stand-by mode	Off	Off	Room Temp. (Fusing lamp off)	On	
Sleep mode	Off	Off	Room Temp. (Fusing lamp off)	Off	Only +5VE/+12VE is supplied to the controller, MB, HDD.

Detailed Descriptions



# SPECIFICATIONS

## 1. GENERAL SPECIFICATIONS

### 1.1 COPIER ENGINE

Configuration: Console  
 Copy Process: Dry electrostatic transfer system  
 Originals: Sheet/Book/Object  
 Original Size: Max.: A3, 11" x 17"  
 Min.: A5, 5 1/2" x 8 1/2" (with ADF)  
 Original Alignment: Rear left corner (for platen mode, ADF mode)

Paper Weight:	Tray 1~3:	52 to 216 g/m <sup>2</sup>
	Tray 4~5(B832):	Bond: 16 to 40 lb.
	Tray 4,6 (B834)	Cover: 50 to 80 lb.
	Tray 7 (Bypass):	Index: 90 to 110 lb.
	Tray 6 (B832):	52 to 163 g/m <sup>2</sup> Bond: 16 to 40 lb. Cover: 50 to 60 lb. Index: 90 lb.
	Tray 5 (B834):	52 to 216 g/m <sup>2</sup> Bond: 16 to 40 lb. Cover: 50 to 60 lb. Index: 90 lb.
	Duplex Tray (Possible Weight):	52 to 216 g/m <sup>2</sup> Bond: 16 to 40 lb. Cover: 50 to 80 lb. Index: 90 to 110 lb.

Paper Size: Tray 1 (Tandem): 8 1/2" x 11" LEF, A4 LEF  
 Tray 2, Tray 3: 5 1/2" x 8 1/2" to 11" x 17", 12" x 18"  
 A5 to A3  
 Duplex Tray A5 to A3, 5 1/2" x 8 1/2" to 11" x 17",  
 (Possible Sizes): 12" x 18", 13" x 18"



Reproduction Ratios: 7 reduction and 5 enlargement

	Inch Version
Enlargement	400%
	200%
	155%
	129%
	121%
Full Size	100%
Reduction	93%
	85%
	78%
	73%
	65%
	50%
	25%

Zoom: 25 ~ 400% (allows manual adjustment in 1% steps vertically, horizontally)

Image Density: Automatic, Manual (9 notches)

Copy Speed:

e-STUDIO901	90 ppm	Copying with image stored in memory with A4/LT LEF feeding from the same tray.
e-STUDIO1101	110 ppm	
e-STUDIO1351	135 ppm	

**Note:** The speed in this mode is 80 ppm for all three models. When using ADF 1-to-1 with A4/LT LEF magnification feeding from the same tray.

Resolution Scanning 600 dpi

Printing 1200 dpi

Grayscale (per pixel): 256 Levels Scanning: 8-bit/pixel

Printing: 1-bit/pixel 32 values

Warm-up Time: Less than 360 s from Off mode at 23°C (73.4°F)

First Copy Time Copy Tray 1, A4, 8 1/2" x 11" LEF

	e-STUDIO901 (90 cpm)	e-STUDIO1101 (110 cpm)	e-STUDIO1351 (135 cpm)
Face-up	3.5 sec. or less	3.2 sec. or less	3.0 sec. or less
Face-down	5.0 sec. or less	4.5 sec. or less	4.0 sec or less

Multiple Copies: Up to 9,999

Copy Paper Capacity (Sheets):

Copier	3,000	Tray 1: (Tandem) 1000 x 2 Tray 2: 500 Tray 3: 500
LCT(B832)	4,550	Tray 4: 1,000, Tray 5: 1,000, Tray 6: 2,550
LCT(B834)	4,000	Tray 4: 1,000, Tray 5: 2,000, Tray 6: 1,000
Bypass	500	Tray 7, 500 (Optional Bypass Tray B833)

Memory Capacity: RAM; 256 MB (128 x 2) Standard  
512 MB (128x2,256x1) (Optional, Required for Scanner/Printer Option)  
HDD; 320 GB (160 GB x2), approximately 1,735 copies

Toner Replenishment:  
 Toner Yield: Cartridge exchange (1,650 g/cartridge)  
 60 K copies (A4 LEF, 6% chart,  
 e-STUDIO901 (90 cpm): 1 to 25 Repeat Copying /  
 e-STUDIO1101 (110 cpm): 1 to 50 Repeat Copying /  
 e-STUDIO1351 (135 cpm): 1 to 100 Repeat Copying)  
 Power Source: North America; 208 to 240 V, 60 Hz, 20 A

Dimensions (W x D x H)  
 Copier 870 x 858.5 x 1476 mm  
 32.3 x 33.8 x 58.1 inch  
 Full System (with B834) 3461 x 858.5 x 1476 mm  
 136.3 x 33.8 x 58 inch  
 Full System (with B832) 3151 x 858.5 x 1476 mm  
 124 x 33.8 x 58 inch  
 Weight: Less than 299 kg (659.18 lb.) including ADF, and no options

Space Requirements:  
 Copier (w x d) 1202 x 860 mm

Full System*1 (w x d)	Max.	3520 x 860 mm 138.6 x 33.9 in.	Finisher + Bypass with bypass tray extended for A3 SEF
	Min.	3420 x 860 mm 134.6 x 33.9 in."	Finisher + Bypass with bypass tray extended for A4 LEF.

\*1: Full System: Copier + LCT B834 (or B832) + Multi Bypass Tray B833 + Cover Interposer Tray B835 + Z-Folding Unit B660 + Booklet Finisher B836 + Finisher B830

**Power Consumption: North America Version (Unit: W)**

	Mainframe Only			Full System*1		
	e-STUDIO 901	e-STUDIO 1101	e-STUDIO 1351	e-STUDIO 901	e-STUDIO 1101	e-STUDIO 1351
Warm-up	2210	2190	2240	2290	2250	2310
Stand-by	367	403	431	420	457	479
Copying	1680	1890	2160	1830	2110	2340
Maximum	2940	2960	3730	3060	3080	3850

\*1: Full System: Copier + LCT B834 (or B832) + Multi Bypass Tray B833 + Cover Interposer Tray B835 + Z-Fold Unit B660 + Booklet Finisher B836 + Finisher B830





**Energy Star**

	North America					
	e-STUDIO901		e-STUDIO1101		e-STUDIO1351	
	Basic	MFP	Basic	MFP	Basic	MFP
<b>Low Power Mode</b>						
Power Consumption (W)	113.8	119.7	129.4	132.4	121.2	127.1
Default Interval (Min.)	15	15	15	15	15	15
Recovery Time (Sec.)	32	29	29	30	66	65.8
<b>Off Mode</b>						
Power Consumption (W)	4.2	---	4.2	---	4.2	---
Default Interval (Min.)	90	---	120	---	120	---
<b>Sleep Mode</b>						
Power Consumption (W)	---	35.5	---	35	---	35.9
Default Interval (Min.)	---	90	---	120	---	120

**Noise Emission**

e-STUDIO901		Sound Power Level dB (A)	Sound Pressure Level dB (A)
Mainframe	Stand-by	< 60	-
	Copying	< 74	-
	Operator position	-	< 68
	Passers-by	-	< 68
Full System	Stand-by	< 64	
	Copying	< 78	
e-STUDIO1101		Sound Power Level dB (A)	Sound Pressure Level dB (A)
Mainframe	Stand-by	< 66	-
	Copying	< 76	-
	Operator position	-	< 70
	Passers-by	-	< 70
Full System	Stand-by	< 70	-
	Copying	< 80	-
e-STUDIO1351		Sound Power Level dB (A)	Sound Pressure Level dB (A)
Mainframe	Stand-by	< 74	--
	Copying	< 79	--
	Operator position	-	< 73
	Passers-by	-	< 73
Full System	Stand-by	< 78	-
	Copying	< 83	-

**1.2 ADF**

Original Size:	Normal Original Mode:	A3 to B5, 11" x 17" to 5 1/2" x 8 1/2"
	Thin Original Mode	A3 to B5, 11" x 17" to 5 1/2" x 8 1/2"
	Duplex Original Mode:	A3 to B5, 11" x 17" to 5 1/2" x 8 1/2"
Original Weight:	Normal Original Mode:	52 to 128 g/m <sup>2</sup> ( <b>Note 1</b> )
	Thin Original Mode	40 to 128 g/m <sup>2</sup> ( <b>Note 1</b> )
	Duplex Original Mode:	52 to 105 g/m <sup>2</sup> ( <b>Note 2</b> )
Table Capacity:	100 sheets (80 g/m <sup>2</sup> , 20 lb)	
Original Feeding Speed:	80 cpm (A4/8 1/2" x 11" LEF, 1 to 1)	
Original Standard Position:	Rear left corner (Face-up)	
Separation:	FRR	
Original Transport:	One flat belt	
Original Feed Order:	From the top original	
Power Source:	DC24V±10%, DC38V±10%, DC5V±5% (from the copier)	
Power Consumption:	Less than 130 W	
Dimensions (W x D x H):	680 x 560 x 150 mm (26.8" x 22" x 5.9")	
Weight	Less than 17.5 kg (38.5 lb.)	

**Note 1:** 156 g/m<sup>2</sup> possible, but not guaranteed.

**Note 2:** 128 g/m<sup>2</sup> possible, but not guaranteed.

### 1.3 PAPER SIZES BY FEED STATION

The tables on the next 2 pages describe how paper size detection operates, depending on the geographical area (North America). Here are important notes and the key for reading these tables.

#### General Notes

Symbol	Meaning
1	Tandem Tray
1+	A3/11" x 17" Tray Unit (B331-11) Installed
2	Copier Universal Trays
3	
4	LCIT RT5000 (B832)
5	
6	
4	LCIT RT5010 (B834)
5	
6	
7	Multi Bypass Tray BY5000 (B833)
8	Cover Interposer Tray CI5000 (1st tray)
9	Cover Interposer Tray CI5000 (2nd tray)

Here is the symbol key for the tables on the following pages.

☉	Detects and feeds fixed paper sizes.
☐	Automatically detects and feeds standard paper sizes.
*	Paper size can be selected (registered) beforehand.
×	Paper size cannot be fed..
★	Custom size can be registered.

North America (1/2)

			1	1+	2	3	B832		
							4	5	6
A3	SEF	297 x 420 mm	X	⊙	☐	☐			
B4	SEF	257 x 364 mm	X	*	☐	☐			
A4	LEF	297 x 210 mm	⊙	*	☐	☐	☐	☐	*
A4	SEF	210 x 297 mm	X	*	☐	☐			
B5	LEF	257 x 182 mm	X	X	☐	☐	☐	☐	*
B5	SEF	182 x 257 mm	X	X	☐	☐			
A5	LEF	210 x 148 mm	X	X	☐	☐	☐	☐	*
A5	SEF	148 x 210 mm	X	X	☐	☐	☐	☐	*
B6	SEF	128 x 182 mm	X	X	X	X			
A6	SEF	105 x 148 mm	X	X	X	X			
DLT	SEF	11" x 17"	X	⊙	☐	☐			
LG	SEF	8 1/2" x 14"	X	*	☐	☐			
LT	LEF	11" x 8 1/2"	⊙	*	☐	☐	☐	☐	*
LT	SEF	8 1/2" x 11"	X	*	☐	☐			
HLT	SEF	8 1/2" x 5 1/2"	X	X	☐	☐	☐	☐	*
HLT	LEF	5 1/2" x 8 1/2"	X	X	☐	☐	☐	☐	*
Foolscap (F4)	SEF	8 1/2" x 13"	X	X	☐	☐			
Folio	SEF	8 1/4" x 13"	X	X	☐	☐			
F	SEF	8" x 13"	X	X	☐	☐			
Executive	LEF	10 1/2" x 7 1/4"	X	X	☐	☐			
Executive	SEF	7 1/4" x 10 1/2"	X	X	☐	☐			
	SEF	11" x 15"	X	X	*	*			
	SEF	11" x 14"	X	X	*	*			
	SEF	10" x 15"	X	X	*	*			
	SEF	10" x 14"	X	X	*	*			
	SEF	8 1/4" x 14"	X	X	*	*			
	SEF	8" x 10"	X	X	*	*			
8-K	SEF	390 x 267 mm	X	X	☐	☐			
16-K	SEF	267 x 195 mm	X	X	☐	☐			
16-K	LEF	195 x 267 mm	X	X	☐	☐			
Custom Size (mm)	Width	Min★	X	210.0★	139.7	139.7	210.0★	210.0★	210.0★
		Max★	X	305.0★	330.2	330.2	305.0★	305.0★	305.0★
	Length	Min★	X	210.0★	139.7	139.7	139.0★	139.0★	139.0★
		Max★	X	439.0★	458.0	458.0	230.0★	230.0★	230.0★
Custom Size (inch)	Width		X	★	5.50	5.50	★	★	★
			X	★	13.00	13.00	★	★	★
	Length		X	★	5.50	5.50	★	★	★
			X	★	18.03	18.03	★	★	★

Spec.

**North America (2/2)**

			B834			7	8	9
			4	5	6			
A3	SEF	297 x 420 mm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B4	SEF	257 x 364 mm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A4	LEF	297 x 210 mm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A4	SEF	210 x 297 mm	*	*	*	*	*	*
B5	LEF	257 x 182 mm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B5	SEF	182 x 257 mm	*	*	*	*	*	*
A5	LEF	210 x 148 mm	*	*	*	*	*	*
A5	SEF	148 x 210 mm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B6	SEF	128 x 182 mm	*	*	*	*	*	*
A6	SEF	105 x 148 mm	*	*	*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DLT	SEF	11" x 17"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
LG	SEF	8 1/2" x 14"	*	*	*	*	*	*
LT	LEF	11" x 8 1/2"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
LT	SEF	8 1/2" x 11"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
HLT	SEF	8 1/2" x 5 1/2"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
HLT	LEF	5 1/2" x 8 1/2"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Foolscap (F4)	SEF	8 1/2" x 13"	*	*	*	*	*	*
Folio	SEF	8 1/4" x 13"	*	*	*	*	*	*
F	SEF	8" x 13"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Executive	LEF	10 1/2" x 7 1/4"	*	*	*	*	*	*
Executive	SEF	7 1/4" x 10 1/2"	*	*	*	*	*	*
	SEF	11" x 15"	*	*	*	*	*	*
	SEF	11" x 14"	X	X	X	X	X	X
	SEF	10" x 15"	X	X	X	X	X	X
	SEF	10" x 14"	*	*	*	*	*	*
	SEF	8 1/4" x 14"	*	*	*	*	*	*
	SEF	8" x 10"	X	X	X	*	*	*
8-K	SEF	267 x 390	*	*	*	*	*	*
16-K	LEF	267 x 195	*	*	*	*	*	*
16-K	SEF	195 x 267	*	*	*	*	*	*
Custom Size (mm)	Width	Min	100	100	100	100	139.7	139.7
		Max	330.2	330.2	330.2	330.2	330.2	330.2
	Length	Min	139.7	139.7	139.7	139.7	139.7	139.7
		Max	458.0	458.0	458.0	458.0	458.0	458.0
Custom Size (inch)	Width	Min	3.94	3.94	3.94	3.94	5.50	5.50
		Max	13.00	13.00	13.00	13.00	13.00	13.00
	Length	Min	5.50	5.50	5.50	5.50	5.50	5.50
		Max	18.03	18.03	18.03	18.03	18.03	18.03

### 1.4 A3/11" X 17" TRAY UNIT B331-11

Paper Size	A3 SEF, B4 SEF, 11"x17" SEF, 8 1/2"x14" SEF, A4 SEF, A4 LEF, 8 1/2"x11" SEF, 11"x8 1/2" LEF, 305 mm x 439 mm
Paper Weight	52 ~ 163 g/m <sup>2</sup>
Tray Capacity	1,000 sheets
Remaining Paper Detection	5-Step: 100%, 75%, 50%, 25%, End

### 1.5 LCIT RT5000 (A4/LT LCT B832)

Compatible Machines	e-STUDIO901/1101/1351	
Speed	with 90 cpm model	420~555 mm/s
	with 110 cpm model	500~720 mm/s
	with 135 cpm model	630~985 mm/s
Paper Feed System:	FRR-CF (no air-knife separation)	
Tray Capacity:	Tray 1, 2	1,000 sheets (Paper thickness: 0.11 mm)
	Tray 3	2,550 sheets (Paper thickness: 0.11 mm)
Paper Weight	Tray 1, 2	52 to 216 g/m <sup>2</sup>
	Tray 3	52 to 163 g/m <sup>2</sup>
Paper Size	Tray 1,2,3	A5 LEF, A5 SEF, 5 1/2"x8 1/2" LEF, B5 LEF, 5 1/2"x8 1/2" SEF, A4 LEF, 8 1/2"x11" LEF
Paper Size Switching	Tray 1, 2	Fixed position side, end fences, adjusted for other paper sizes by the operator.
	Tray 3	Fixed position side, end fences, adjusted by service technician.
Anti-Condensation Heater	No	
Dimensions (w x d h)	540 x 730 x 980 mm (21.3 x 28.7 x 38.6 in.)	
Weight	Less than 88 kg (193.6 lb.)	
Power Source	DC 24 V ± 10 % (from copier)	
Power Consumption:	Less than 132 W	
I/F	Serial	
Tab Sheet:	Feed possible from Tray 4 or Tray 5. Requires installation of tab sheet fence. <b>Note:</b> Only A4 LEF, 8 1/2" x 11" LEF tab sheets can be fed.	
Remaining Paper Detection:	5-Step including Near-End for Trays 4, 5, 6	

**1.6 LCIT RT5010 (A3/DLT LCT B834)**

Compatible Machines	e-STUDIO901/1101/1351	
Speed	with 90 cpm model	420~555 mm/s
	with 110 cpm model	500~720 mm/s
	with 135 cpm model	630~985 mm/s
Expected Service Life	5 Years or 55,000K	
Paper Feed System:	Tray 1, 2, 3	FRR-CF
Tray Capacity:	Tray 1, 3	1,000 sheets (Paper thickness: 0.11 mm)
	Tray 2	2,000 sheets (Paper thickness: 0.11 mm)
Remaining Paper Detection (Accuracy: ±30 sheets)	5-Step including Near-End for Trays 4, 5, 6	
Paper Weight	Tray 1, 3	52 to 216 g/m <sup>2</sup>
	Tray 2	52 to 216 g/m <sup>2</sup>
Paper Size	Tray 1,2,3	A5 to A3
		5 1/2"x8 1/2" to 13" x 18"
Paper Size Switching	Side fence, end fence adjustment.	
Paper Size Detection	Automatic	
Anti-Condensation Heater	No	
Dimensions (w x d h)	880 x 730 x 980 mm (33.5 x 28.7 x 38.6 in.)	
Weight	Less than 165 kg (363 lb.)	
Power Source	DC 24 V ± 10 % (from copier)	
Power Consumption:	Less than 150 W	
I/F	Serial	
Tab Sheet:	Feed possible from all Tray. Requires installation of tab sheet fence. <b>Note:</b> Only A4 LEF, 8 1/2" x 11" LEF tab sheets can be fed.	

## 1.7 MULTI BYPASS TRAY BY5000 (B833)

**NOTE:** The Bypass Tray is attached to the top of either the A4/LT LCT B832 or A3/DLT LCT B834.

Compatible Machines	e-STUDIO901/1101/1351	
Speed	with 90 cpm model	420~555 mm/s
	with 110 cpm model	500~720 mm/s
	with 135 cpm model	630~985 mm/s
Paper Feed System	FRR-CF	
Tray Capacity	500 sheets (Paper thickness: 0.11 mm)	
Paper Weight	52~216 g/m <sup>2</sup>	
Paper Size	A5 LEF, A5 SEF to A3 SEF, HLT LEF HLT SEF to 13"x18" SEF	
Paper Size Switching	Operator adjustable side fences allow variety of paper sizes	
Paper Size Detection	Automatic (standard sizes only)	
Anti-Condensation Heater	No	
Remaining Paper Detection	4-Step: Including Near-End (Accuracy ±50)	
Weight	Less than 18 kg (39.6 lb).	
Power Source	24 VDC (from Copier), 5 VDC (from LCT)	
Power Consumption	Less than 50 W	
Dimensions (W x D x H)	710 x 560 x 210 mm (30 x 22 x 8.3 in.)	
Tab Sheets	A4 LEF, 8 1/2" x 11" LEF (requires attachment of tab fence)	



**1.8 FINISHER SR5000 (B830)**

<b>UPPER TRAY</b>				
Paper Capacity (80 g/m <sup>2</sup> )		500 sheets (A4, 8 1/2" x 11" and smaller)		
		250 sheets (B4, 8 1/2" x 14" and larger)		
Paper Size		A3 to A6 SEF, B6 SEF, 11" x 17" to 5 1/2" x 8 1/2", 12" x 18", 13" x 18"		
Paper Weight		52 to 216 g/m <sup>2</sup>		
Upper Tray Full Detection		Provided		
<b>SHIFT TRAY</b>				
Paper Capacity (80 g/m <sup>2</sup> )		3000 sheets (A4 LEF, B5 LEF, 8 1/2" x 11" LEF)		
		1500 sheets (A3, A4 SEF, B4 and B5 SEF, 11" x 17" SEF, 8 1/2" x 14", 8 1/2" x 11" SEF)		
		1000 sheets 12" x 18"		
		500 sheets (A5 LEF, 5 1/2" x 8 1/2" LEF)		
		100 sheets (A5 SEF, 5 1/2" x 8 1/2" SEF)		
Paper Size		A3 to A5, 11" x 17" to 5 1/2" x 8 1/2", 12" x 18" (including tab paper)		
Paper Weight		52 to 216 g/m <sup>2</sup>		
Shift Tray Full Detection		Provided		
<b>STAPLER</b>				
Stapling Stack Size		A4, B5, 8 1/2" x 11" (Max. 100 Sheets) A3, B4, 11" x 17", 8 1/2" x 14" (Max. 50 sheets)		
Stapling Paper Size		A3 to B5, 11" x 17" to 8 1/2" x 11"		
		Z fold paper	A3, B4, 11" x 17"	
Stapling Paper Weight		64 to 90 g/m <sup>2</sup>		
		Z fold paper	64 to 80 g/m <sup>2</sup>	
Staple Position		4 Modes		
		1 Staple: Front, Rear, Rear-Oblique		
		2 Staples: 2 locations		
Staple Capacity		5000 staples/cartridge		
Staple Supply		Cartridge or Staple Replacement		
Stapled Stack Size	No Folding	<b>Sheets</b>	<b>Sets</b>	<b>Sizes</b>
		10 to 100	200 to 30	A4 SEF, B5 SEF, 8 1/2" x 11" SEF
		2 ~ 9	150	A4 LEF, B5 LEF, 8 1/2" x 11" LEF
		10 to 50	150 to 30	A3, B4, 11" x 17", 8 1/2" x 14"
	2 to 9	150		
	Folding	<b>Sheets</b>	<b>Sets</b>	<b>Sizes</b>
		1 to 10	30 to 3	A3 Z fold + A4, B4 Z fold + B5 11" X 17" Z-Fold + 8 1/2" x 11"
		Trim Waste Staple Capacity		
15,000 or more				
Waste Staple Hopper Full Detection		Provided		
Power Consumption		Less than 120 W		
Power Source		DC 24 V (from copier)		
Size (W x D x H)		800 x 730 x 980 mm 31.5 x 28.7 x 38.6 in.		
Weight		Less than 75 kg (165 lb.)		
Compatible Machines		e-STUDIO901/1101/1351		

### 1.9 PUNCH UNIT PU5000 (B831)

The punch unit is installed in the Finisher SR5000 (B830).

Punch Hole Positions	2/3-hole (North America: NA)
Punch Paper Size	
2-Hole (NA)	A6 - A3 SEF, 11" x 17" - 5 1/2" x 8 1/2" SEF A5 - A4 LEF, 8 1/2" x 11" LEF, 5 1/2" x 8 1/2" LEF
3-Hole (NA)	A3 SEF, B4 SEF, 11" x 17" SEF A4 LEF, B5 LEF, 8 1/2" x 11" LEF
Paper Weight	
2-Hole (NA)	52 g/m <sup>2</sup> ~ 163 g/m <sup>2</sup>
3-Hole (NA)	52 g/m <sup>2</sup> ~ 163 g/m <sup>2</sup>
Punch Waste Hopper Capacity	
2-Hole (NA)	10K
3-Hole (NA)	10K
Operation Modes	
All (Shift, Proof, Staple)	

### 1.10 COVER INTERPOSER TRAY CI5000 (B835)

Compatible Machines	e-STUDIO901/1101/1351	
Speed	with 90 cpm model	432 mm/s
	with 110 cpm model	515 mm/s
	with 135 cpm model	649 mm/s
Paper Separation	FRR System with Feed Belt	
Paper Sizes	Width: A5 SEF / 5 1/2" x 8 1/2" SEF to 13" Length: A5 LEF / 5 1/2" x 8 1/2" LEF to 18"	
Paper Weight	64 to 216 g/m <sup>2</sup>	
Capacity	400 sheets (80 g/m <sup>2</sup> ) (2 trays 200-sheets each)	
Paper Size Detection	Yes	
Paper Size Switching	Operator adjustable side fences	
Side Registration	Yes	
Power Supply	24 V ± 5 % (from copier)	
Power Consumption	Less than 50 W	
Dimensions (w x d x h)	Less than 540 x 730 x 1200 mm 21.2" x 28.7" x 47.2"	
Weight	Less than 45 kg (99 lb.)	



## 1.11 BOOKLET FINISHER BK5000 (B836)

### General Specifications

Booklet Staple				
Paper Size	A4 SEF, A3 SEF, B5 SEF, B4 SEF DLT SEF, DLT SEF, LG, 12"x18"			
Paper Weight	64 g/m <sup>2</sup> - 90 g/m <sup>2</sup> , 17 lb. Bond - 24 lb. Bond			
Staple Position	Center (x2)			
Booklet staples	2,000 staples per cartridge			
Booklet Staple Capacity	All size	Sheets	Sets	
		2 to 5	30	
		6 to 10	15	
		11 to 15	10	
Dimension W x D x H	600 x 730 x 980 mm (23.6 x 30 x 38.6")			
Weight	Less than 70 kg (154.32 lb.)			
Power Consumption	Less than 100 W			
Configuration	Console type attached base-unit			
Power Supply	24 V (from copier)			

### Booklet Staple Paper Specifications

Paper Size	Plain Paper			Paper Type	
	Copier PPC	Used Paper	Recycled Paper	Colored Paper	Translucent Blueprint
A3 SEF	●	—	●	●	
B4 SEF	●		●	●	
A4 SEF	●		●	●	
A4 LEF	●		●	●	
B5 SEF	●		●	●	
B5 LEF	●		●	●	
A5 SEF		—	—	—	—
A5 LEF		—	—	—	—
B6 SEF		—	—	—	—
B6 LEF		—	—	—	—
12" x 18" SEF	●	—	●	●	—
11" x 17" SEF	●	—	●	●	
8½" x 14"	●	—	●	●	
8½" x 11" SEF	●	—	●	●	
8½" x 11" LEF	●	—	●	●	
5½" x 8½"		—	—		—
5½" x 8½"		—	—		—

- Booklet stapling/folding, Shift, YES
- Not available

**1.12 Z-FOLDING UNIT ZF4000 (B660)**

Paper Size		
No Folding (52 - 300 g/m <sup>2</sup> )	A3, A4, A5, A6 SEF, B4, B5, B6 SEF 11" x 17", 8 1/2"x14", 8 1/2"x11" SEF, 5 1/2"x8 1/2", 12" x 18"	
Folding (64 - 80 g/m <sup>2</sup> )	A3, B4, A4 SEF 11" x 17", 8 1/2"x14", 8 1/2"x11" SEF, 12" x 18"	
Dimensions (w x d x h)	177 x 620 x 960 mm 7 x 24.5 x 37.8 in.	
Weight	Less than 55 kg (121 lb.)	
Power Consumption	Max:100 W	
Power Supply	North America	120 V, 60 Hz, 1A

**1.13 CONNECTION KIT TYPE 3260 (B328)**

**Introduction**

The e-STUDIO901 (90 cpm), e-STUDIO1101 (110 cpm) and e-STUDIO1351 (135 cpm) machines can be connected with the Copier Connection Kit. When two machines are connected, the copy speed is doubled.

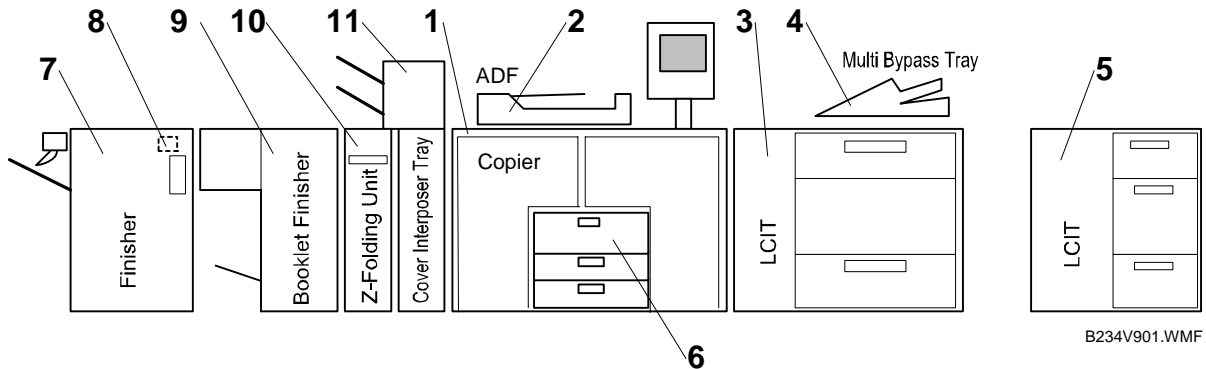
The copiers can be used for copy jobs only, not print jobs. However, documents stored on the document server beforehand can be printed with the connected copiers.

**Specifications**

Copy Speed		
e-STUDIO901 (90 cpm)	2 Connected	180 cpm
e-STUDIO1101 (110 cpm)	2 Connected	220 cpm
e-STUDIO1351 (135 cpm)	2 Connected	270 cpm
Operation		
Master Machine	Prints simultaneously while scanning, the same as a stand-alone machine.	
Slave Machine	Starts printing after the 2nd set is printed on the master machine. Note: Start time may be slower due to sizes of images.	
Document Server (Printing)		
Master Machine	Press the Start key to begin printing, the same as a stand-alone machine.	
Slave Machine	Starts printing after the 2nd set is printed on the master machine. Note: Start time may be slower due to sizes of images.	
Connection Cables		
Length (x1)	4.5 m	1 cable, no repeater hub
Length (x2)	9 m	2 cables, 1 repeater hub for connection
Length (x3)	13.5 m	3 cables, 2 repeater hubs for connection

Spec.

## 2. MACHINE CONFIGURATION



No.	Item	Machine Code	Comments
1	Copier (e-STUDIO901/1101/1351)		90 cpm / 110 cpm / 135 cpm
2	ADF		Document Feeder
3	LCIT RT5010	B834	B834 and B823 are not installed together.
4	Multi Bypass Tray BY5000	B833	Alternate paper feed source
5	LCIT RT5000	B832	B834 and B823 are not installed together.
6	A3/11"x17" Tray Unit TK500	B331-11	Replaces 1st Tray (tandem tray)
7	Finisher SR5000	B830	Corner stapling, edge stapling
8	Punch Unit PU5000	B831	Inside B830
9	Booklet Finisher BK5000	B836	Booklet stapling/folding
10	Z-Folding Unit	B660	Z-Folds large sheets
11	Cover Interposer Tray CI5000	B835	Inserts cover sheets (2 trays).
---	Copier Connector Type3260	B328	Not shown
---	Printer/Scanner Unit GM-2090	B840	Not shown
---	PostScript3 Unit Type1350	B613	Not shown
---	Data Overwrite Security Unit Type F	B735	Not shown
---	Gigabit Ethernet Type7300	G381	Not shown
---	EFI Printer Controller EB-135	G847	Not shown

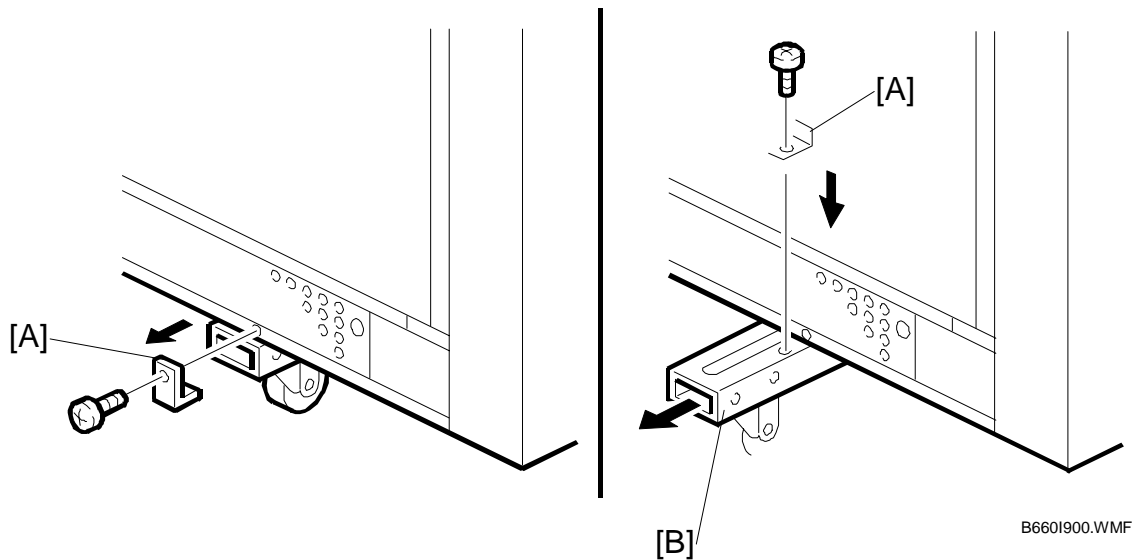
**Z-Folding Unit ZF4000**  
**(Machine Code: B660)**

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# 1. REPLACEMENT AND ADJUSTMENT

## 1.1 BEFORE YOU BEGIN



1. Disengage the Z-folding unit from the machine.
2. Disengage the Z-folding unit from the finisher (or cover sheet feeder).
3. At the bottom on the sides of the Z-folding unit:
  - Remove the lock bracket [A] (🔩 x 1).
  - Pull out the foot extension [B].
  - Re-attach the bracket [A] to lock the foot in the open position (🔩 x 1).

### Reinstallation

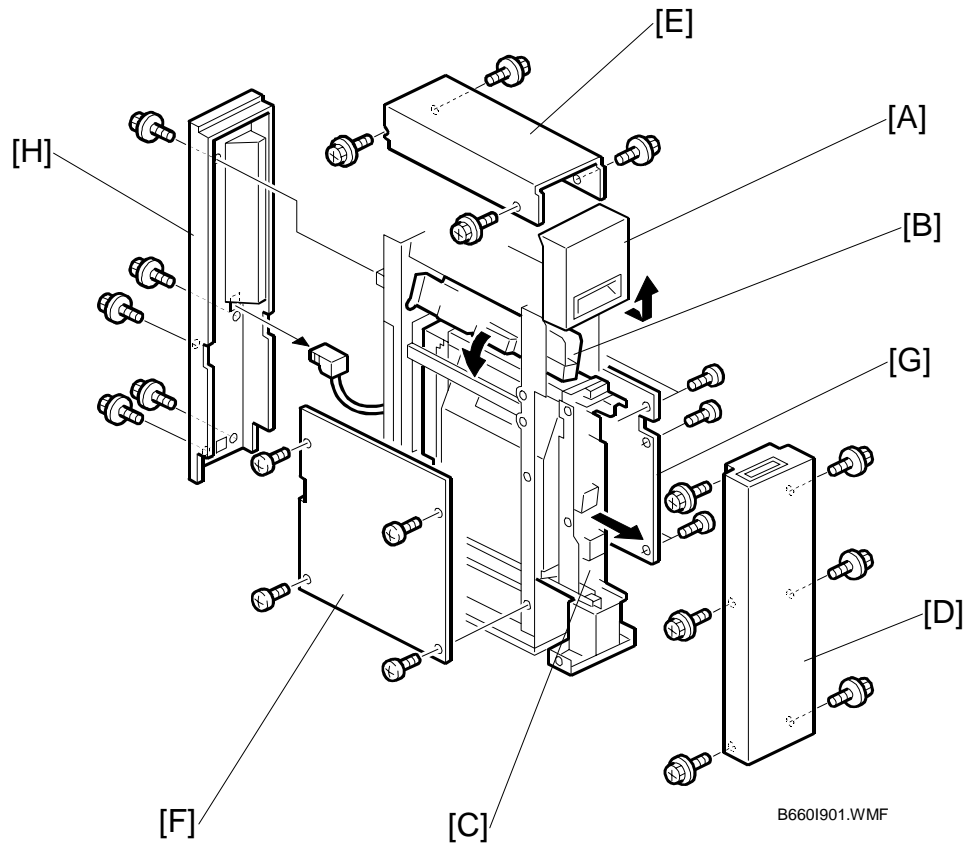
Do this procedure in the opposite sequence to retract and lock the extensions below the Z-folding unit.

#### **⚠ CAUTION**

**The Z-folding unit is not stable, with or without the feet extended. Do your work carefully; do not tilt the unit.**



## 1.2 COVERS



- Open the front door [A].
- Lift the horizontal transport plate [B] to the left until it locks on the left side.
- Pull out the Z-fold mechanism [C].

[D] Front cover (🔩 x 6)

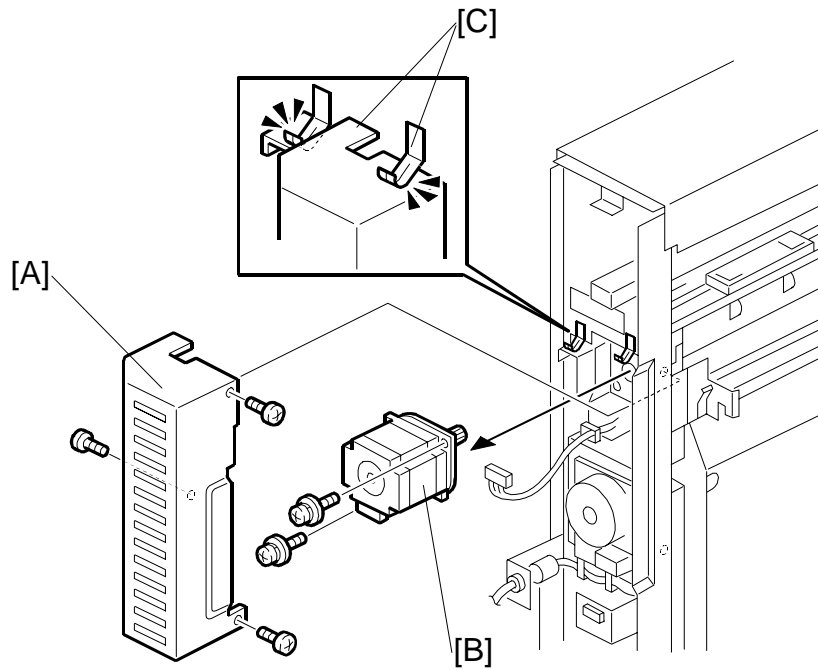
[E] Top cover (🔩 x 4)

[F] Left cover (🔩 x 4)

[G] Right cover (🔩 x 5)

[H] Rear cover (🔩 x 6)

## 1.3 FEED MOTOR



B660R102.WMF

1. Pull the Z-folding mechanism out of the unit, but not fully.
2. Remove: (☞1.2)
  - Left cover
  - Right cover
  - Rear cover

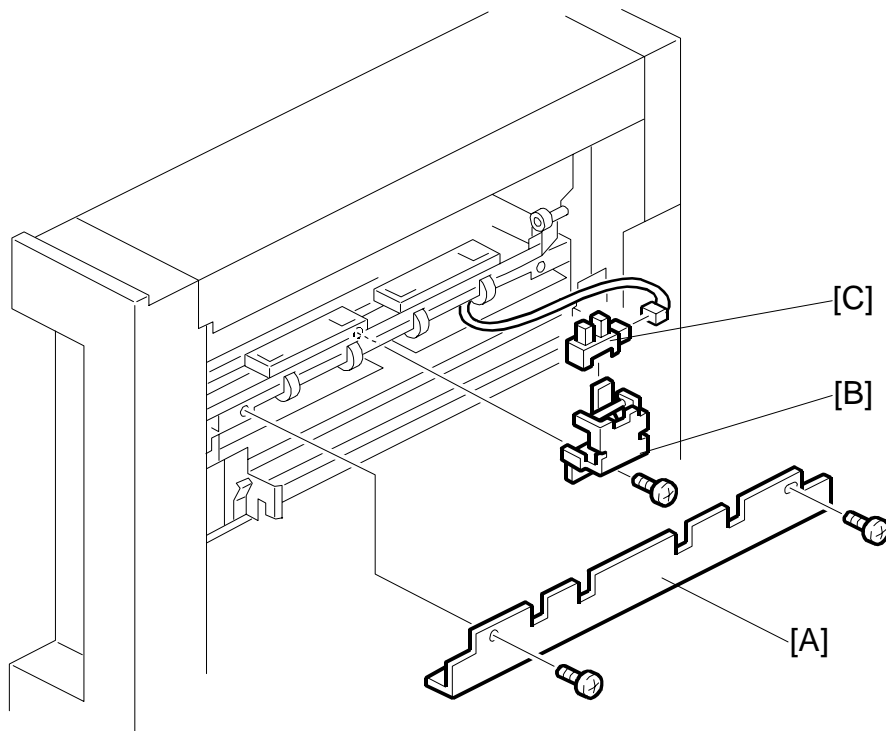
[A]: Motor cover (🔩 x 3)

[B]: Feed Motor (🔩 x 2, ⚙️ x 1, timing belt x 1)

### Reinstallation

- Confirm that the motor cover is below the leaf springs at [C].

## 1.4 UPPER EXIT SENSOR



B660R103.WMF

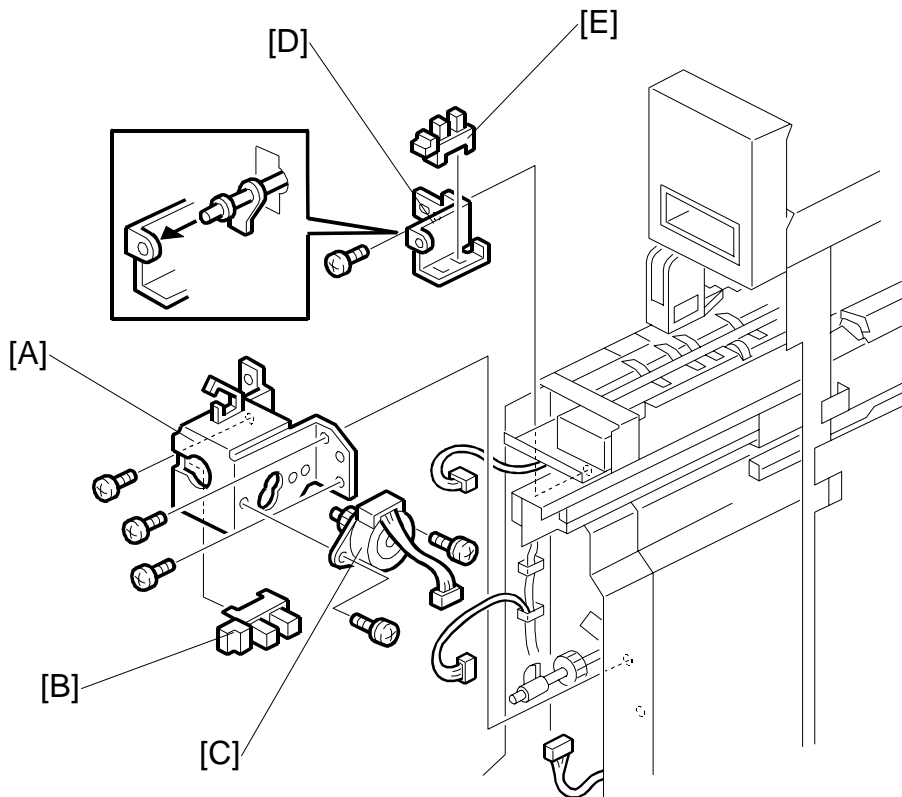
Left cover (☛1.2)

[A]: Bracket (🔩 x 2)

[B]: Upper exit sensor unit (🔩 x 1, ⏪ x 1, 📡 x 1)

[C]: Upper exit sensor

## 1.5 UPPER STOPPER MOTOR/HP SENSOR, FEED SENSOR



B660R104.WMF

Front cover (☛1.2)

[A]: Upper stopper motor unit (⚙️ x 3, ⏪ x 2, ⏩ x 2)

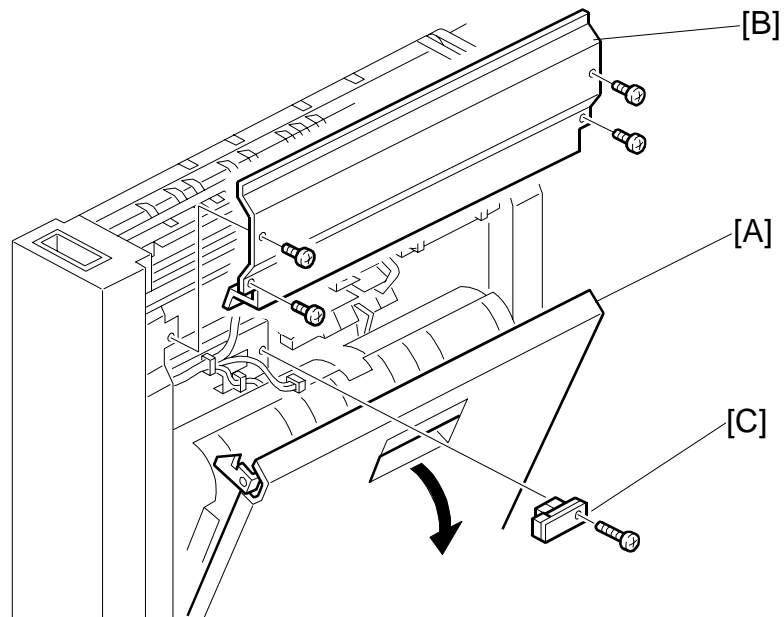
[B]: Upper stopper motor HP sensor

[C]: Upper stopper motor (⚙️ x 2)

[D]: Feed sensor unit (⚙️ x 1, ⏩ x 1)

[E]: Feed sensor

## 1.6 FOLD TIMING SENSOR



B660R105.WMF

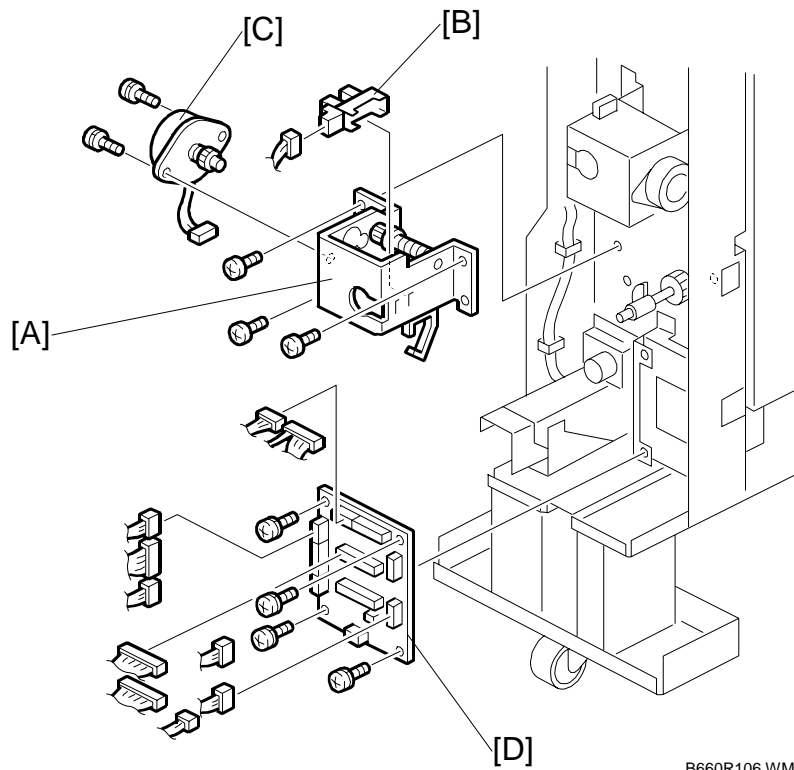
Pull the Z-fold mechanism out of the unit.

[A]: Open the right vertical transport unit cover.

[B]: Plate (🔩 x 4)

[C]: Fold timing sensor (🔩 x 1, 📏 x 1)

## 1.7 LOWER STOPPER MOTOR/HP SENSOR, RELAY BOARD



B660R106.WMF

Front cover (☛1.2)

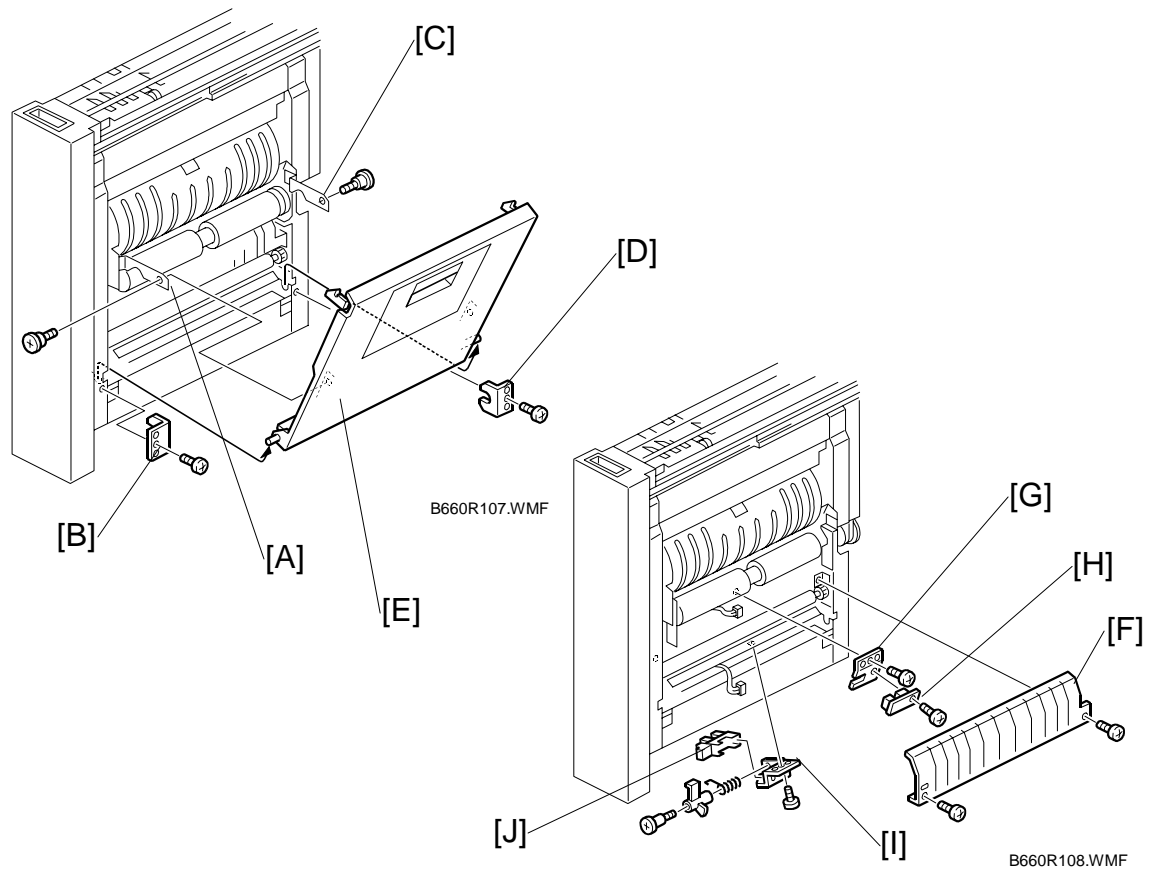
[A]: Lower stopper motor unit (☛ x 3, ☛ x 2, ☛ x 2),

[B]: Lower stopper HP sensor

[C]: Lower stopper motor (☛ x 2)

[D]: Relay board (☛ x 4, ☛ x 3, ☛ x 10)

## 1.8 LEADING EDGE SENSOR, LOWER EXIT SENSOR

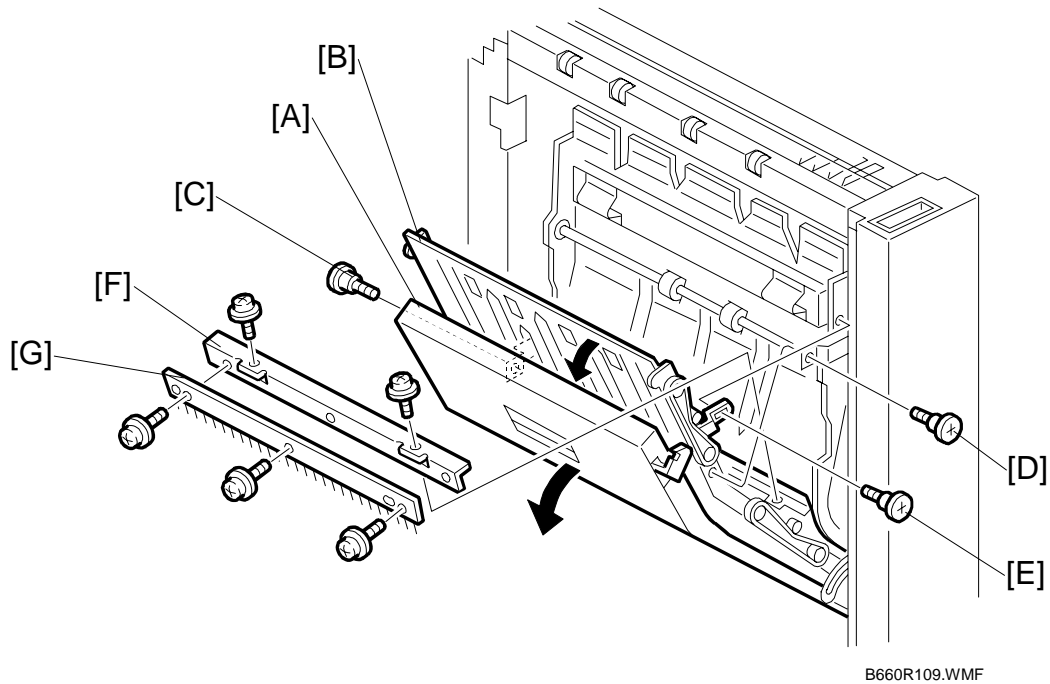


Pull out the Z-folding mechanism.

Open the right vertical transport cover [E].

- [A]: Left link arm (🔩 x 1)
- [B]: Left corner bracket (🔩 x 1)
- [C]: Right link arm (🔩 x 1)
- [D]: Right corner bracket (🔩 x 1)
- [E]: Vertical transport cover.
- [F]: Lower fold roller cover (🔩 x 2)
- [G]: Leading edge sensor unit (🔩 x 1, 📏 x 1)
- [H]: Leading edge sensor (🔩 x 1)
- [I]: Lower exit sensor unit (🔩 x 1, 📏 x 1)
- [J]: Lower exit sensor

## 1.9 ANTI-STATIC BRUSH



B660R109.WMF

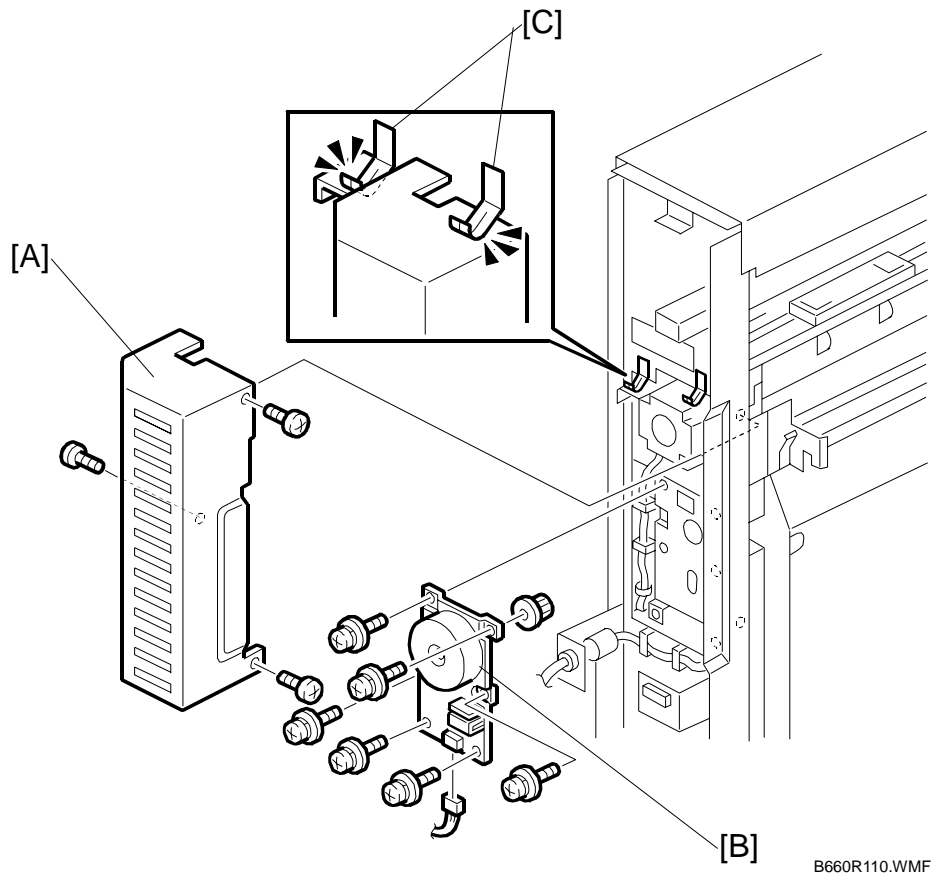
1. Pull out the Z-folding mechanism.
2. Open the left vertical transport cover [A].
3. Open the vertical transport assembly [B].

Remove:

- [C] Left link screw
- [D] Right link screw
- [E] Link screw [E]
- [F] Bracket
- [G] Anti-static brush



## 1.10 FOLD ROLLER MOTOR



B660R110.WMF

1. Pull the Z-folding mechanism out of the unit, but not fully.
2. Remove: (☛1.2)
  - Left cover
  - Right cover
  - Rear cover

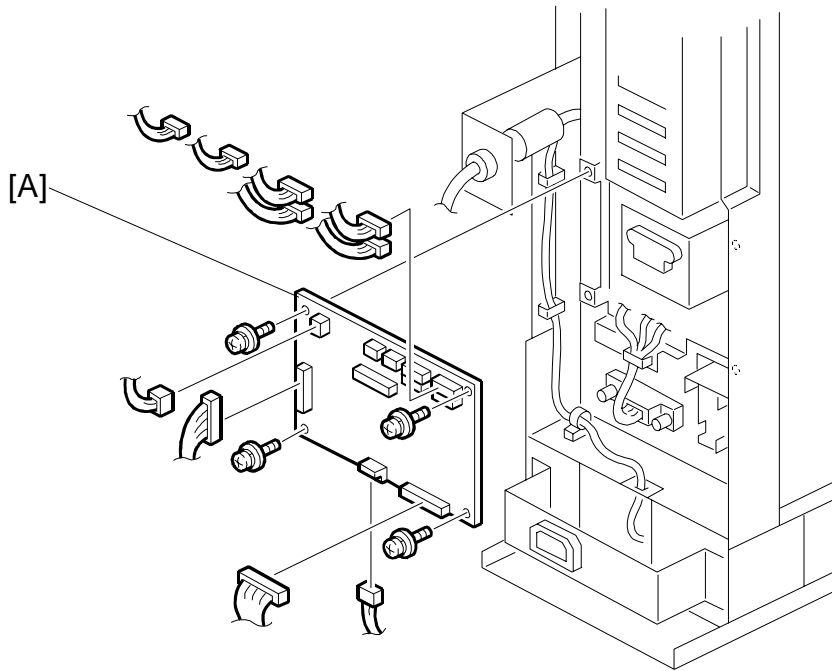
[A]: Motor cover (☛ x 3)

[B]: Fold roller motor (☛ x 6, ☛ x 1, timing belt x 1)

### Reinstallation

Make sure that the motor cover is below the leaf springs [C].

## 1.11 MAIN CONTROL BOARD



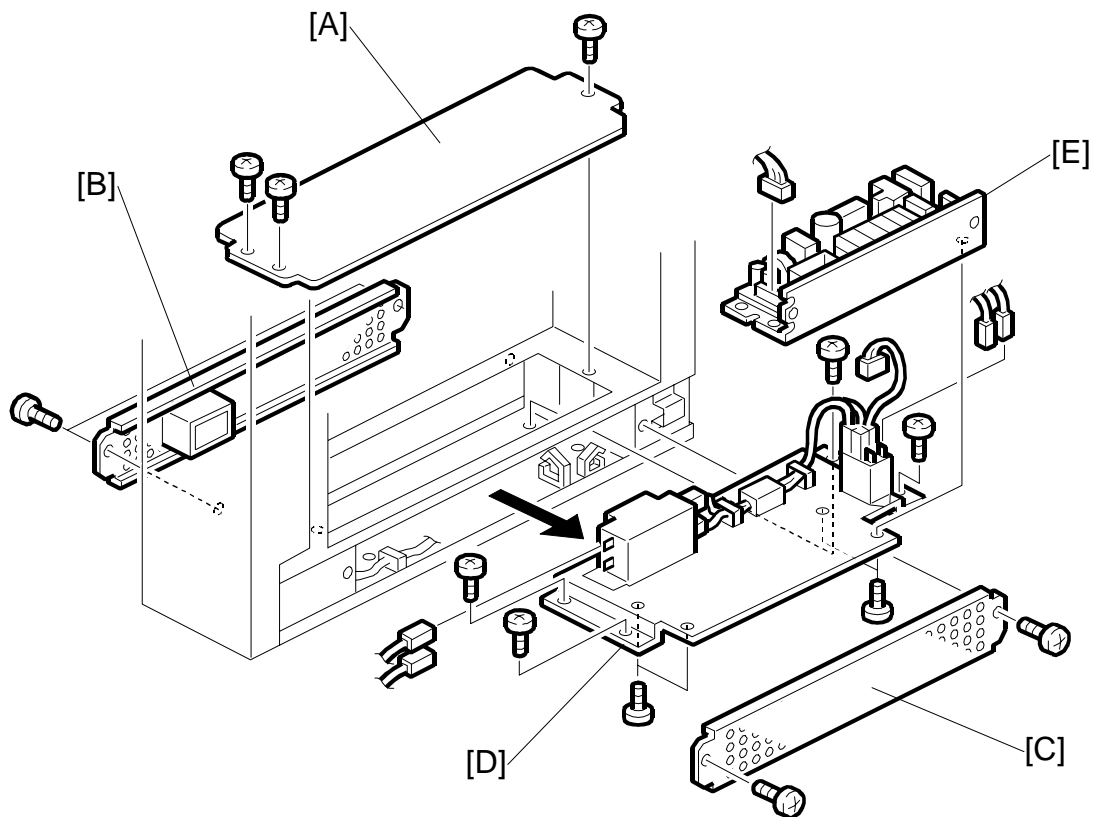
B660R111.WMF

Remove:

- Rear cover. (➡1.2)

[A] Main control board [A] (🔧 x 4, 🛠️ x 10)

## 1.12 PSU



B660R112.WMF

- Open the front door.
- Pull the Z-fold mechanism out of the unit.

Remove:

- Left cover and right cover. (☛1.2)

[A] Base top cover (☛ x 3).

[B] Base left cover (☛ x 2).

[C] Base right cover (☛ x 2).

- Make a mark at the positions of the connectors, then disconnect them.

**NOTE:** These connectors do not have different colors. To help you connect them again correctly, make marks on them.

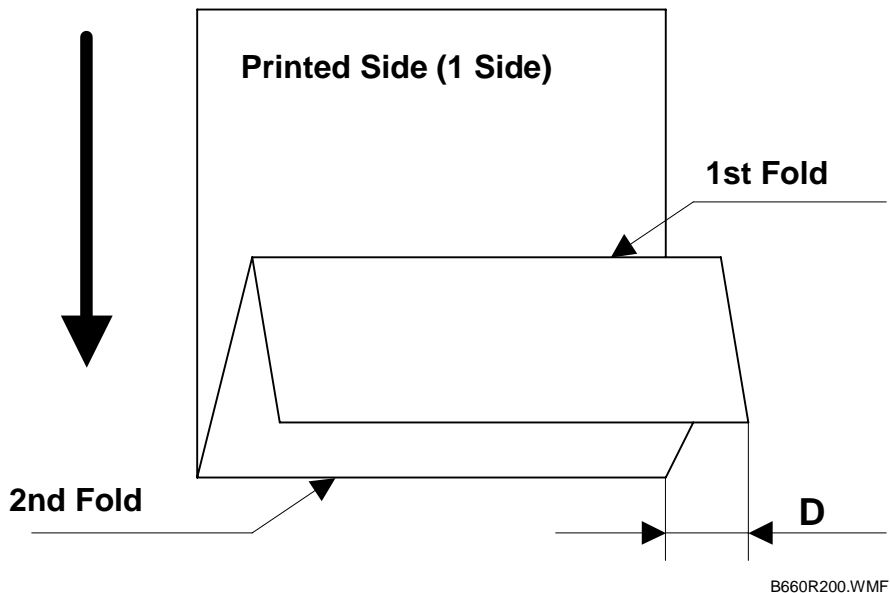
[D] Power supply unit (PSU) (☛ x 4, ☛ x 4).

- Pull the PSU out of the right side of the bottom.

[E] Power supply board (☛ x 4, ☛ x 1).

## 1.13 UNEVEN FOLDING ADJUSTMENT

### 1.13.1 OVERVIEW



This procedure describes how to correct uneven folding (D) in paper folded with the Z-Fold unit. Before doing this procedure, please note the names and positions of the 1st and 2nd Fold.

Section 3.2.2 provides a full description of how Z-folding is done.

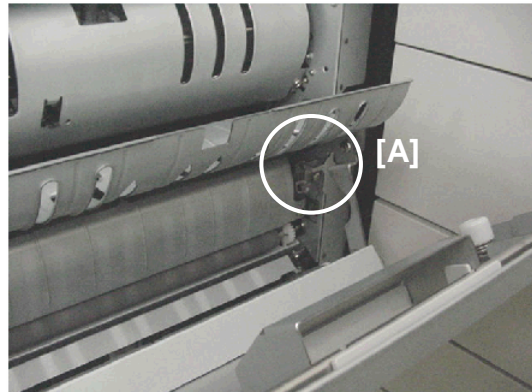
### 1.13.2 Z-FOLD ADJUSTMENT SCREWS

The adjustment of the 1st fold is done by turning an adjustment screw linked to the paper stopper.

Pull out the Z-fold mechanism.

Open the right cover to see the adjustment screw located at [A].

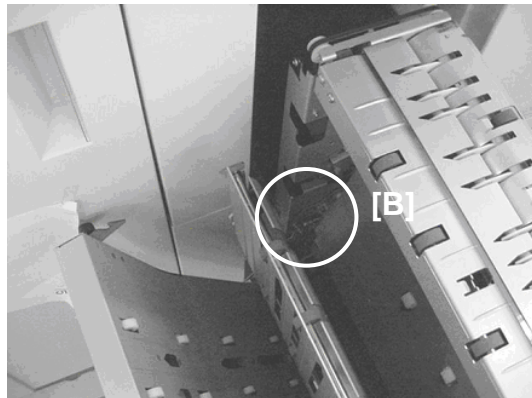
This is the screw used to adjust the 1st fold.



B660R206.BMP

Open the left cover to see the screw located at [B].

This is the screw used to adjust the 2nd fold.



B660R210.BMP

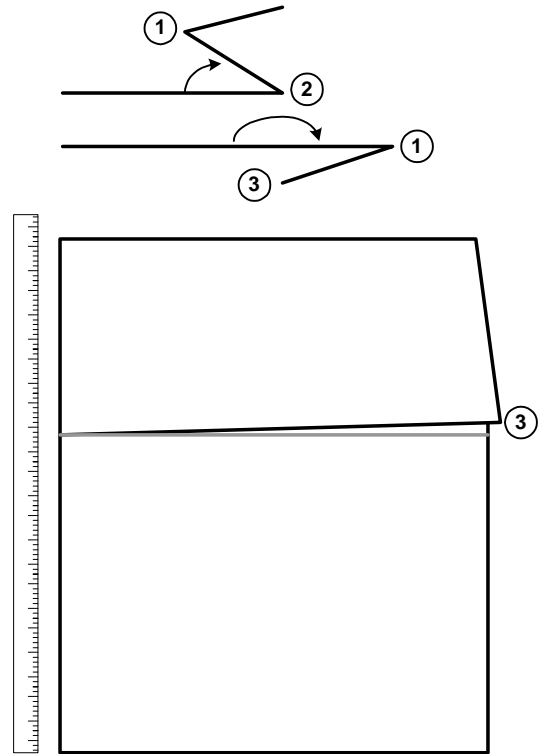
### 1.13.3 Z-FOLD ADJUSTMENT PROCEDURE

#### 1st Fold Adjustment

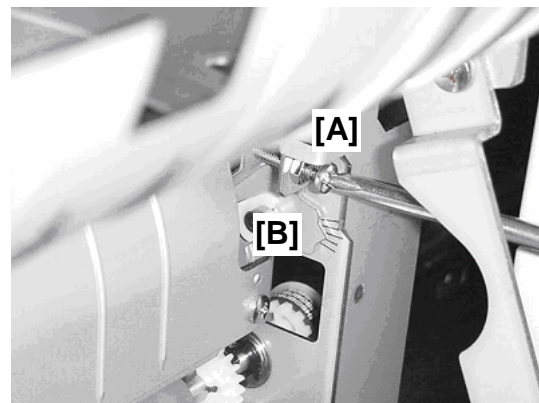
1. Print one A3 copy and send it through the Z-fold unit.
2. Open the 2nd fold ②.
3. Turn the paper over so the edge ③ is aligned with the crease of the 2nd fold.
4. Open the right door and locate the screw that adjusts the 1st fold (see previous page).
5. Use a plus screwdriver to turn the screw [A] to the left to loosen the nut.
  - If the corner is over the right edge, turn the screw to the right.
  - If the corner is over the left edge, turn the screw to the left.

#### NOTE:

- The illustration above shows the corner over the right edge.
  - You can see the pointer [B] change position on the notches of the adjustment scale as you turn the screw.
6. Close the Z-Fold unit.
  7. Do another test print.
  8. If the 1st fold is still misaligned, repeat this procedure until the alignment is correct.
  9. After the adjustment is completed, use a screw driver to hold the screw in position, then retighten the nut you loosened in Step 2. Do not turn the screw.



B660R215.WMF



B660R220.BMP

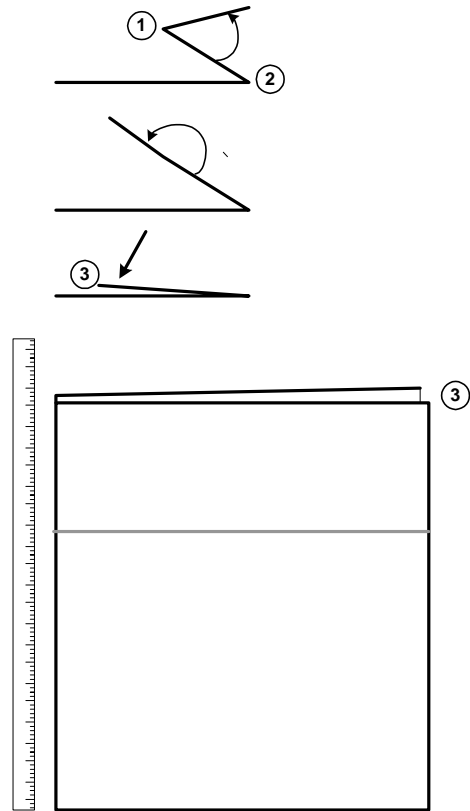
**2nd Fold Adjustment**

1. Print one A3 copy and send it through the Z-fold unit.
2. Open the folded sheet at the 1st fold ❶ then lay it down flat.
3. Stand the sheet on its end so the edge ❸ is up and the crease of the 1st fold is facing out.
4. Open the left door and locate the screw that adjusts the 2nd fold (see previous page).
5. Use a plus screwdriver to turn the screw [A] to the left to loosen the nut.
  - If the corner is over the right edge, turn the screw to the right.
  - If the corner is over the left edge, turn the screw to the left.

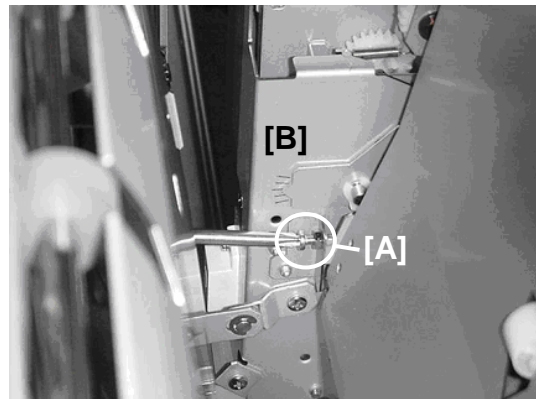
**NOTE:**

- The illustration shows the corner over the right edge.
- You can see the pointer [B] change position on the notches of the adjustment scale as you turn the screw.

6. Close the Z-Fold unit.
7. Do another test print.
8. If the 1st fold is still misaligned, repeat this procedure until the alignment is correct.
9. After the adjustment is completed, use a screw driver to hold the screw in position, then retighten the nut you loosened in Step 2. Do not turn the screw.



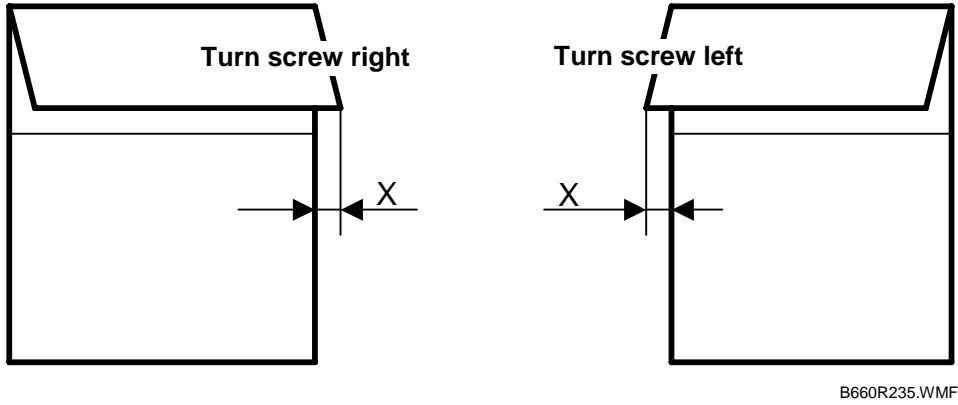
B660R225.WMF



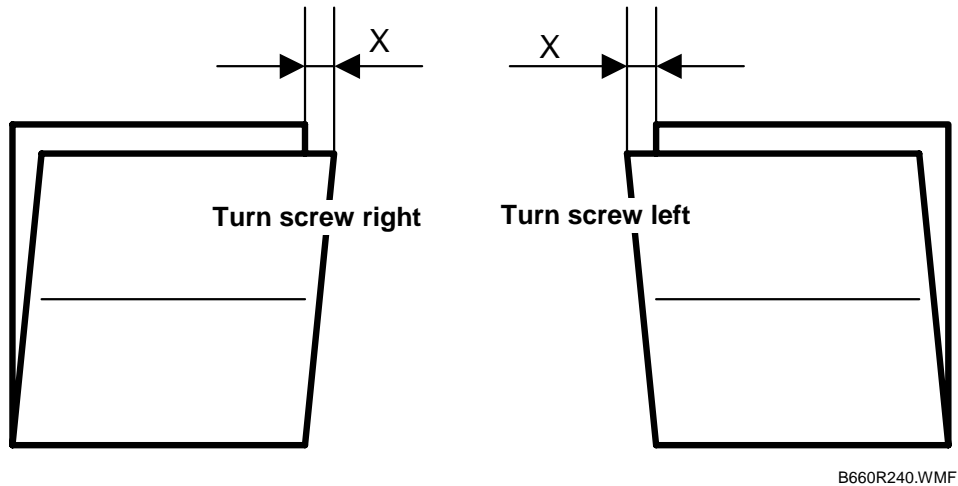
B660R230.BMP

### 1.13.4 Z-FOLD ADJUSTMENT REFERENCE TABLE

#### 1st Fold Adjustment



#### 2nd Fold Adjustment



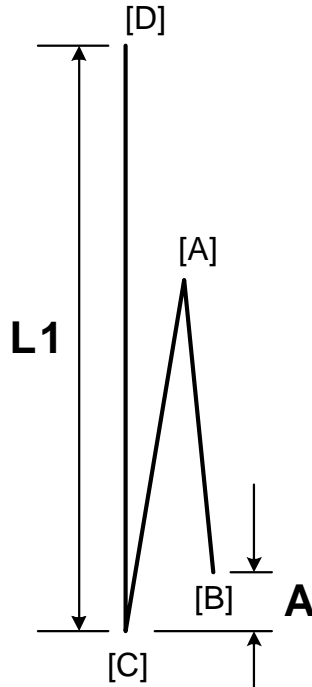
**NOTE:** A one-notch adjustment on the scale means the alignment is corrected by about 1 mm.





## 2. SERVICE TABLES

Two SP codes have been added for the Z-folding unit, to adjust the positions of the folds.



B660S901.WMF

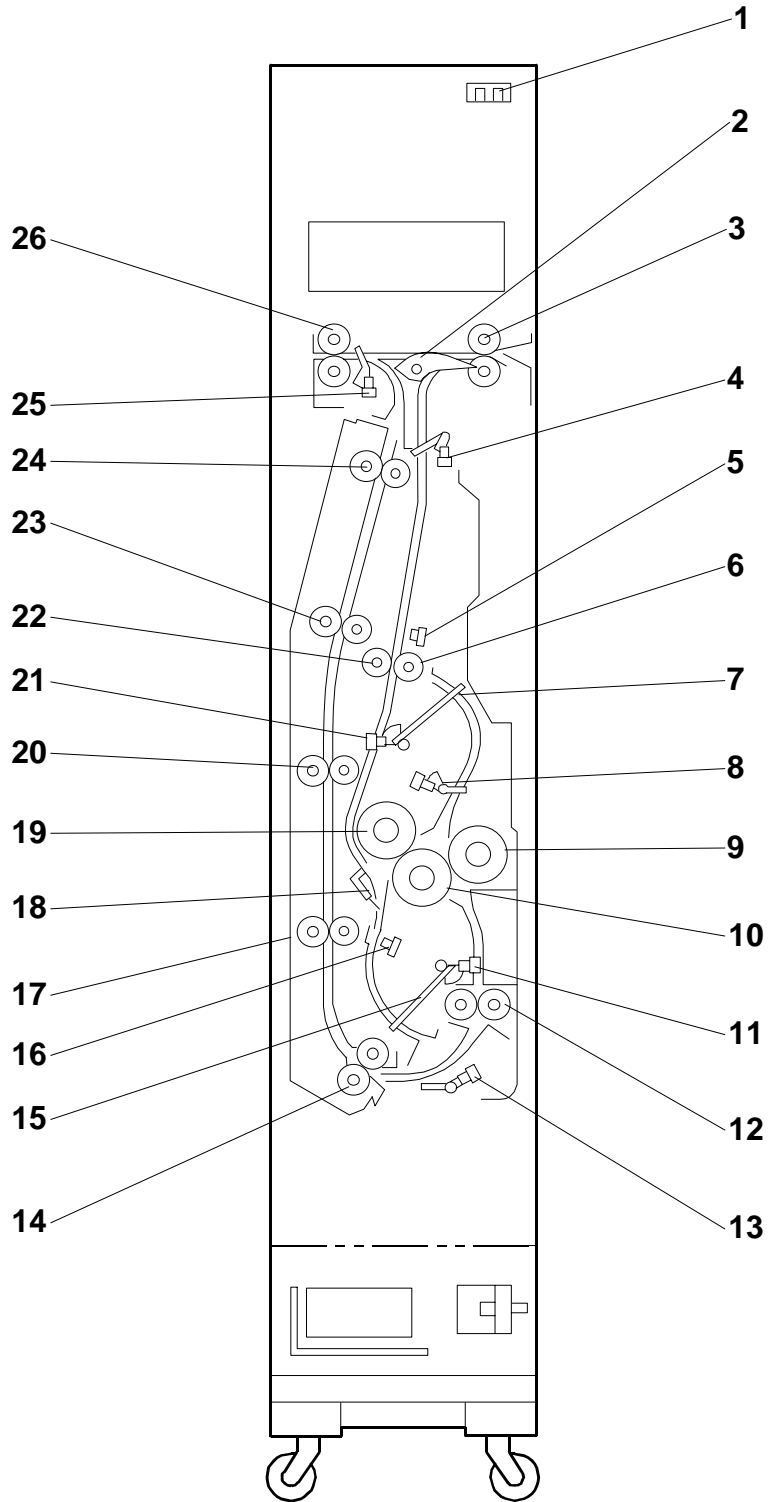
Use these SPs to adjust the locations of the first fold and the second fold.

The illustration shows the position of the sheet while it goes through the lower exit rollers after it has been folded.

<b>SP6301 001 to 008</b>	Fine Adjustment – 1st Fold Position [-4 ~ +4 / 0 / 0.2 mm] Adjusts the position of the first fold [A] to decrease or increase the distance ( <b>A</b> ) between the leading edge [B] and the crease of the 2nd fold [C].
<b>SP6301 009 to 016</b>	Fine Adjustment – 2nd Fold Position [-4 ~ +4 / 0 / 0.2 mm] Adjusts the position of the 2nd fold [C] to decrease or increase the length ( <b>L1</b> ) of the sheet between the trailing edge [D] and the 2nd fold.

### 3. DETAILS

#### 3.1 OVERVIEW



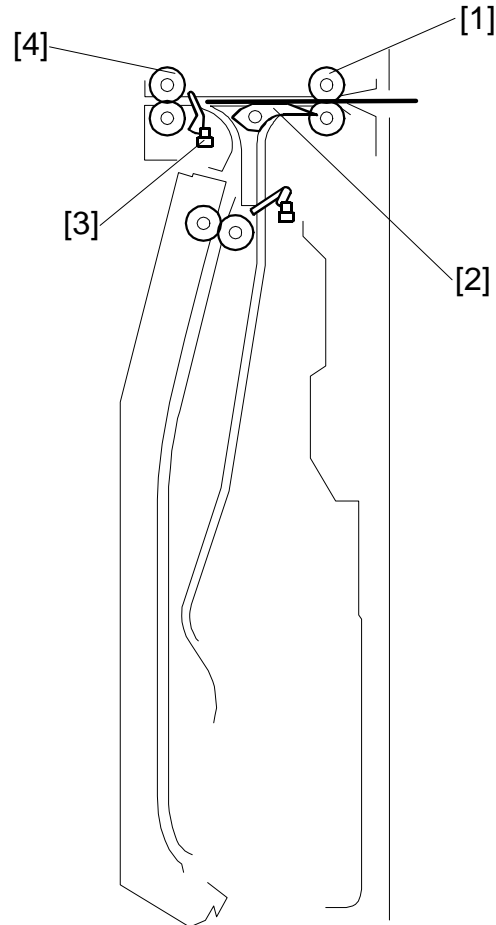
B660D102.WMF

Peripherals

1. Front Door Sensor
2. Junction Gate
3. Feed Rollers
4. Feed Sensor
5. Fold Timing Sensor
6. Pinch Idle Roller
7. Upper Stopper
8. Upper Stopper Path Sensor
9. 3rd Fold Roller
10. 2nd Fold Roller
11. Lower Stopper HP Sensor
12. Lower Exit Rollers
13. Lower Exit Sensor
14. Grip Rollers
15. Lower Stopper
16. Leading Edge Sensor
17. Vertical Feed Rollers – 1
18. Anti-Static Brush
19. 1st Fold Roller
20. Vertical Feed Rollers – 2
21. Upper Stopper HP Sensor
22. Pinch Feed Roller
23. Vertical Feed Rollers – 3
24. Vertical Feed Rollers – 4
25. Upper Exit Sensor
26. Upper Exit Rollers

## 3.2 Z-FOLDING UNIT PAPER PATH

### 3.2.1 PAPER PATH WITH NO FOLDING



B660D901.WMF

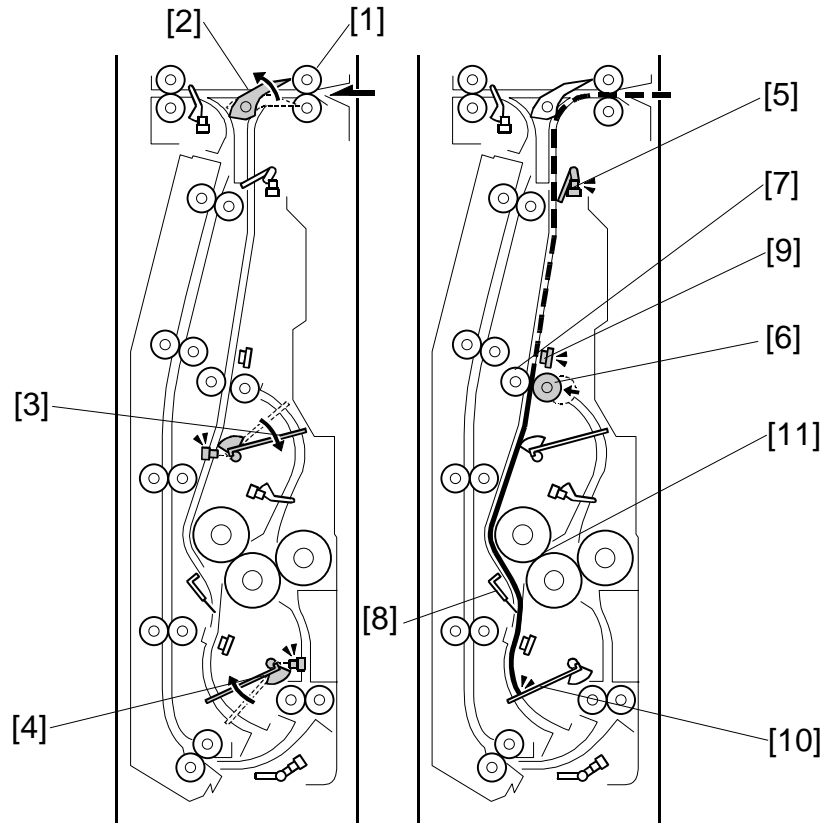
The feed rollers [1] feed the paper from the main machine into the Z-folding unit.

If Z-folding was not used for the job, the sheet feeds above the closed junction gate [2].

The upper exit sensor [3] detects the leading and trailing edge of the unfolded sheet.

The upper exit rollers [4] feed the unfolded sheet out of the Z-folding unit and into the finisher.

### 3.2.2 PAPER PATH WITH Z-FOLDING



B660D201.WMF

The feed rollers [1] feed the paper from the main machine into the Z-folding unit.

The junction gate solenoid energizes and opens the junction gate [2]. The junction gate sends the sheet down into the Z-folding paper path.

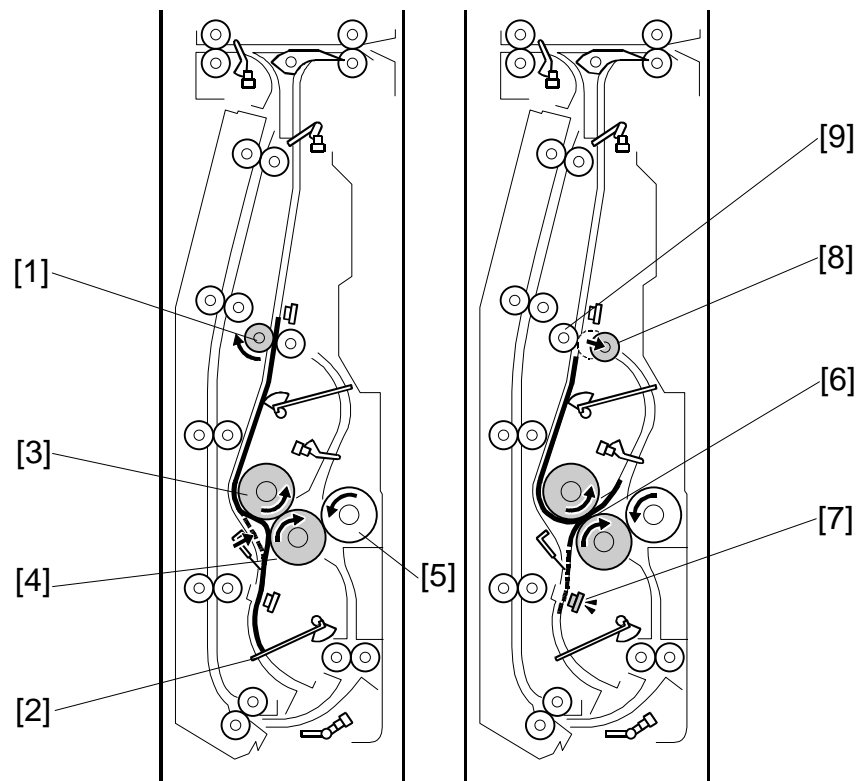
The upper and lower stopper motors move the upper stopper [3] and lower stopper [4] to the positions for the paper size that was used for the job.

The feed sensor [5] detects the leading edge and trailing edge of the sheet. The pinch idle roller solenoid (upper) pulls the pinch idle roller [6] away from the pinch feed roller [7] and the paper can fall between the pinch rollers.

The anti-static brush [8] removes static electricity from the sheet.

When the fold timing sensor [9] detects the trailing edge of the sheet, it energizes the pinch idle roller solenoid (lower). This pushes the pinch idle roller [6] against the opposite pinch feed roller [7].

The lower stopper [10] stops the sheet and buckles it slightly toward the nip [11] of the 1st and 2nd fold rollers.



B660D202.WMF

The pinch feed roller [1] turns and feeds the sheet down against the lower stopper [2]

At the correct time, the fold roller motor switches on and turns the:

- 1st fold roller [3]
- 2nd fold roller [4]
- 3rd fold roller [5]

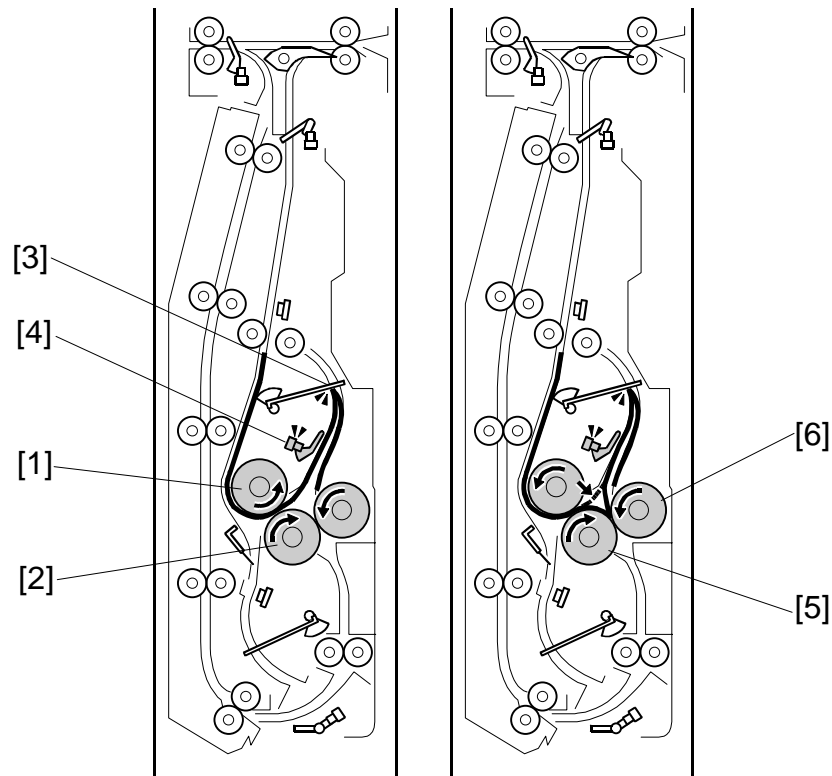
The sheet continues to buckle until it feeds into the nip [6] of the 1st and 2nd fold rollers. These two rollers fold the sheet.

The leading edge sensor [7] detects the leading edge of the sheet:

- When the leading edge goes by while the paper feeds down (to the lower stopper).
- When the leading edge goes by again while the paper feeds up into the nip of the 1st and 2nd fold rollers.

If the leading edge sensor does not detect the leading edge at the correct time, this sensor signals a jam.

At the correct time, the pinch idle roller [8] is pulled away from the pinch feed roller [9] by the pinch idle roller solenoid (upper).



B660D203.WMF

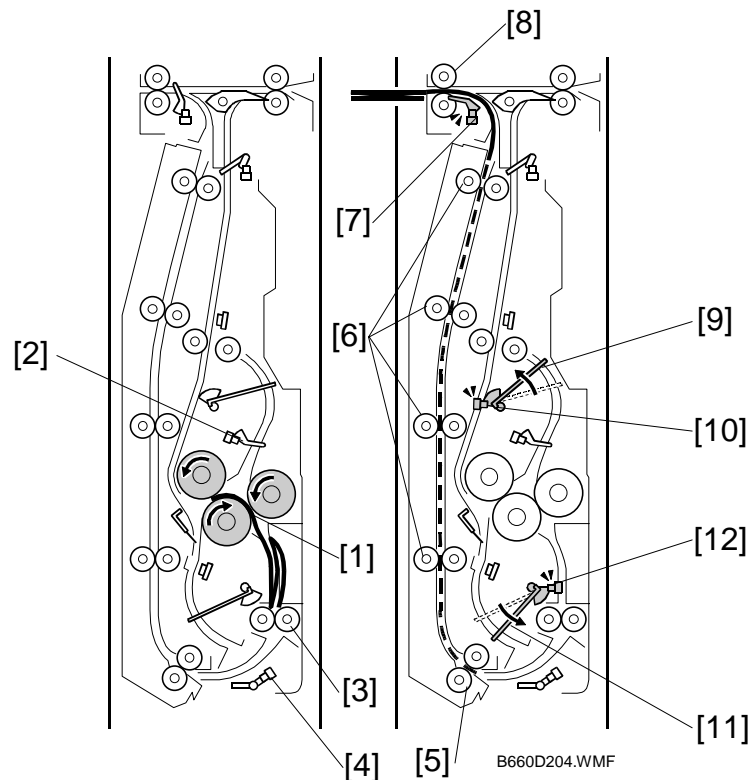
The 1st fold roller [1] and 2nd fold roller [2] continue to turn. This feeds the edge of the 1st fold up until it hits the upper stopper [3].

The sheet lifts the feeler of the upper stopper path sensor [4]. This sensor:

- Detects when the sheet comes to the upper stopper path.
- Detects when the sheet goes out of the upper stopper path.

The upper stopper sensor detects a jam if it does not detect that the sheet comes and goes at the correct times.

When the sheet feeds between the 1st and 2nd fold rollers, this pushes the first fold against the upper stopper. The sheet buckles down into the gap between the 2nd fold roller [5] and 3rd fold roller [6]. The second fold is made when the sheet feeds between the 2nd and 3rd feed rollers.



The 2nd and 3rd fold rollers [1] continue to turn and feed the sheet down.

The feeler of the upper stopper path sensor [2] falls and the sensor detects that the sheet is gone. The fold rollers feed the folded sheet to the lower exit rollers [3].

The lower exit sensor [4] detects the leading edge and trailing edge of the sheet. If the trailing edge is not detected during the correct time interval, the sensor detects a jam.

The grip rollers [5] feed the folded sheet to the four pairs of vertical feed rollers [6].

The upper exit sensor [7] detects the leading edge and trailing edge of each folded sheet. If the leading and trailing edge are not detected during the correct time interval, this sensor detects a jam.

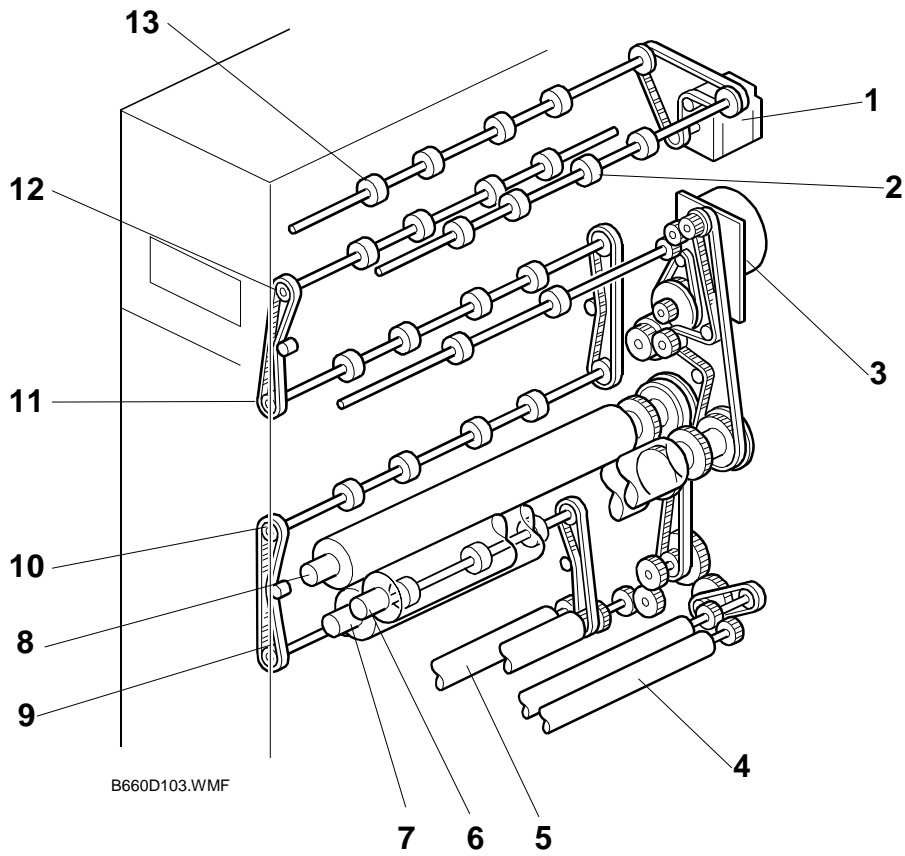
The upper exit rollers [8] feed the folded sheet into the finisher.

At the correct time:

- The upper stopper motor lifts the upper stopper [9] until the upper stopper sensor [10] detects that the upper stopper is at its home position. This stops the motor.
- The lower stopper motor lowers the lower stopper [11] until the lower stopper sensor [12] detects that the lower stopper is at its home position. This stops the motor.



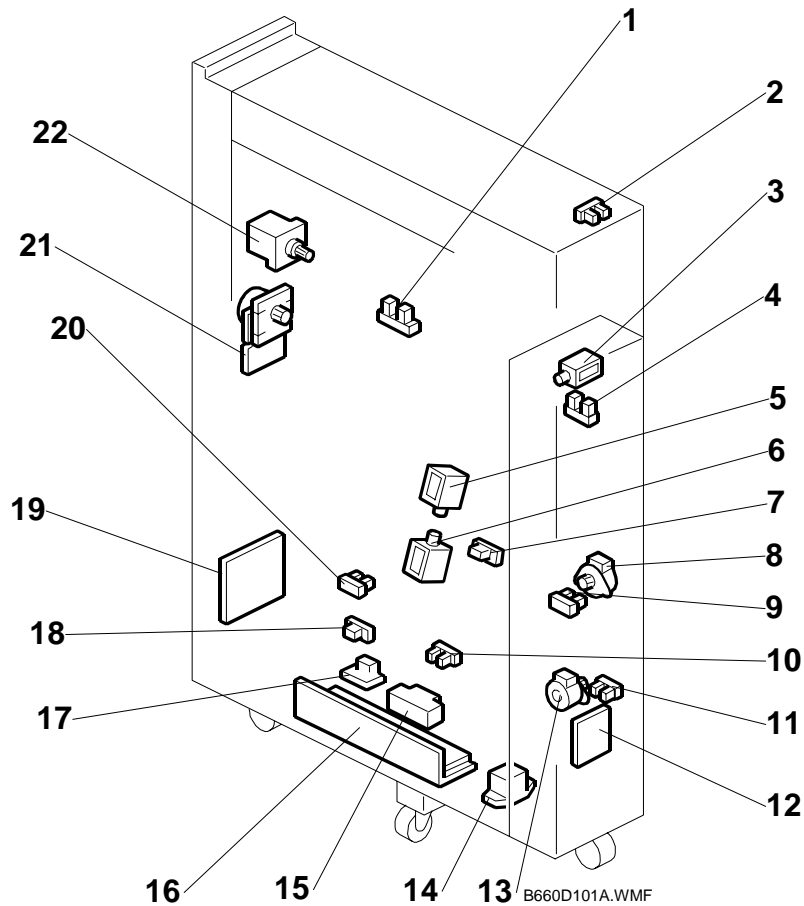
### 3.3 DRIVE LAYOUT



- |                       |                               |
|-----------------------|-------------------------------|
| 1. Feed Motor         | 8. 1st Fold Roller            |
| 2. Feed Rollers       | 9. Vertical Feed Rollers – 1  |
| 3. Fold Roller Motor  | 10. Vertical Feed Rollers – 2 |
| 4. Lower Exit Rollers | 11. Vertical Feed Rollers – 3 |
| 5. Grip Rollers       | 12. Vertical Feed Rollers – 4 |
| 6. 3rd Fold Roller    | 13. Upper Exit Rollers        |
| 7. 2nd Fold Roller    |                               |

### 3.4 ELECTRICAL COMPONENTS

#### 3.4.1 OVERVIEW



- |                                       |                               |
|---------------------------------------|-------------------------------|
| 1. Upper Exit Sensor                  | 12. DC Relay Board            |
| 2. Front Door Sensor                  | 13. Lower Stopper Motor       |
| 3. Junction Gate Solenoid             | 14. Relay                     |
| 4. Feed Sensor                        | 15. Breaker                   |
| 5. Pinch Idle Roller Solenoid – Upper | 16. Power Supply Unit         |
| 6. Pinch Idle Roller Solenoid – Lower | 17. Surge Protector Board     |
| 7. Fold Timing Sensor                 | 18. Leading Edge Sensor       |
| 8. Upper Stopper Motor                | 19. Main Control Board        |
| 9. Upper Stopper HP Sensor            | 20. Upper Stopper Path Sensor |
| 10. Lower Exit Sensor                 | 21. Fold Roller Motor         |
| 11. Lower Stopper HP Sensor           | 22. Feed Motor                |

Peripherals

### 3.4.2 ELECTRICAL COMPONENT SUMMARY

<b>Motors</b>		
<b>No.</b>	<b>Name</b>	<b>Description</b>
M1	Feed Motor	Drives the feed rollers and exit rollers of the Z-folding unit.
M2	Fold Roller Motor	Drives the 1st, 2nd, and 3rd fold rollers.
M3	Lower Stopper Motor	Raises and lowers the lower stopper. It 1) Raises the upper stopper to the proper position for the size of the paper selected for the job, and 2) Lowers the lower stopper until the lower stopper sensor detects that the lower stopper is at its home position where it remains until the start of the next job.
M4	Upper Stopper Motor	Lowers and raises the upper stopper. It 1) Lowers the upper stopper to the proper position for the size of the paper selected for the job, and 2) Raises the upper stopper until the upper stopper sensor detects that the upper stopper is at its home position where it remains until the start of the next job.

<b>PCBs</b>		
<b>No.</b>	<b>Name</b>	<b>Description</b>
PCB1	Main Control Board	Controls the operation of the Z-folding unit.
PCB2	PSU	Supplies the dc power for the Z-folding unit.
PCB3	Surge Protector Board	AC input and breaker relay board.
PCB4	DC Relay Board	PSU DC output and DC motors and sensor relay board.

<b>Sensors</b>		
<b>No.</b>	<b>Name</b>	<b>Description</b>
S1	Feed Sensor	Detects the leading edge and trailing edge of the sheet at the top of the paper path before Z-Folding. When the feed sensor detects the leading edge, it energizes the pinch idle roller solenoid. The solenoid pulls the pinch idle roller away from the pinch feed roller so the paper can fall below these opposing rollers.
S2	Fold Timing Sensor	(1) Detects the leading edge of the sheet and energizes the pinch idle roller solenoid (upper) to pull the pinch idle roller away from the pinch feed roller so the sheet falls through the gap between these rollers. (2) Detects the trailing edge of the sheet and energizes the pinch idle roller solenoid (lower) to push the pinch idle roller against the pinch feed roller.
S3	Front Door Sensor	Detects when the top cover of the Z-folding unit is closed and signals an alert that the cover is open. The unit cannot be used until this cover is closed.
S4	Leading Edge Sensor	Mounted above the lower stopper. The leading edge sensor 1) detects the leading edge of the sheet when drops onto the lower stopper, 2) detects the leading edge again when the paper is pulled up into the nip of the 1st and 2nd fold rollers. If the leading edge sensor does not detect the edge at the prescribed times, it will signal an error.
S5	Lower Exit Sensor	Mounted below the lower exit rollers. Detects the leading/trailing edges of the folded sheet as it passes below. If these edges do not pass at the times prescribed for the selected paper size, the sensor will signal a jam alert.
S6	Lower Stopper HP Sensor	Detects the lower stopper when it reaches its home position and turns off the lower stopper motor.
S7	Upper Exit Sensor	1) Detects the leading/trailing edges of each sheet unfolded sheet after it passes over the closed junction gate, 2) Detects the leading/trailing edge of each folded sheet as it leaves the vertical feed path below. If the edges do not go by for the time prescribed for the paper size, the sensor will send a jam alert.
S8	Upper Stopper HP Sensor	Detects the upper stopper when it reaches its home position and turns off the upper stopper motor.

<b>Sensors</b>		
<b>No.</b>	<b>Name</b>	<b>Description</b>
S9	Upper Stopper Path Sensor	Mounted below the upper stopper. 1) When the feeler of the upper stopper path sensor detects the paper when the crease of the first fold stops at the upper stopper, it delays long enough so the 1st/2nd feed rollers can continue to rotate and buckle the trailing edge of the paper below at the nip of the 2nd/3rd feed rollers, then the sensor switches off the 1st/2nd feed rollers and switches on the 2nd/3rd feed roller pair. The 2nd/3rd feed rollers pull the buckle into the nip and create the 2nd crease. 2) Detects the paper when it leaves the upper stopper path and signals an error if the paper does not leave at the prescribed time.

<b>Solenoids</b>		
<b>No.</b>	<b>Name</b>	<b>Description</b>
SOL1	Junction Gate Solenoid	Opens and closes the junction gate solenoid. When not energized, the junction gate remains closed and paper passes over the back of the closed junction gate and through the Z-folding unit. When energized it opens the junction gate which guides paper down and into the paper path of the Z-folding unit.
SOL2	Pinch Idle Roller Solenoid (Lower)	Attached to the pinch idle roller, this solenoid pushes the pinch idle roller and closes the gap between the pinch idle/pinch feed rollers when the fold timing sensor at the above the pinch idle roller detects the trailing edge of the sheet so the rollers can pinch and stop the paper in the paper path.
SOL3	Pinch Idle Roller Solenoid (Upper)	Attached to the pinch idle roller, this solenoid pulls the pinch idle roller away from the pinch feed roller when the feed sensor at the top of the Z-fold paper path detects the leading edge of the sheet so the paper can drop between these opposing rollers.

<b>Switches</b>		
<b>No.</b>	<b>Name</b>	<b>Description</b>
SW1	Breaker	Opens and breaks the power circuit if the Z-folding unit overheats.

<b>Relays</b>		
<b>No.</b>	<b>Name</b>	<b>Description</b>
RA1	Relay	Switch relay

Peripherals



**FINISHER SR5000**  
**(Machine Code: B830)**

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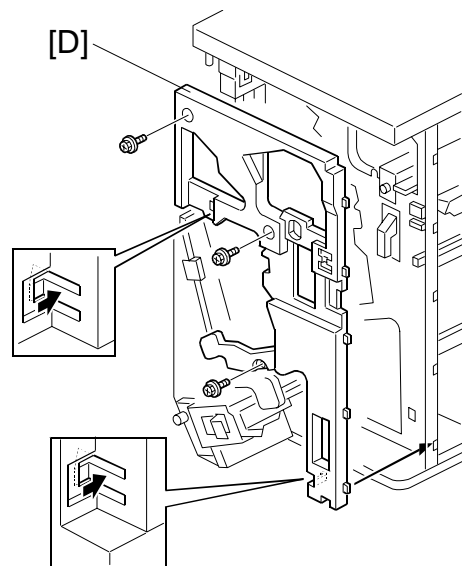
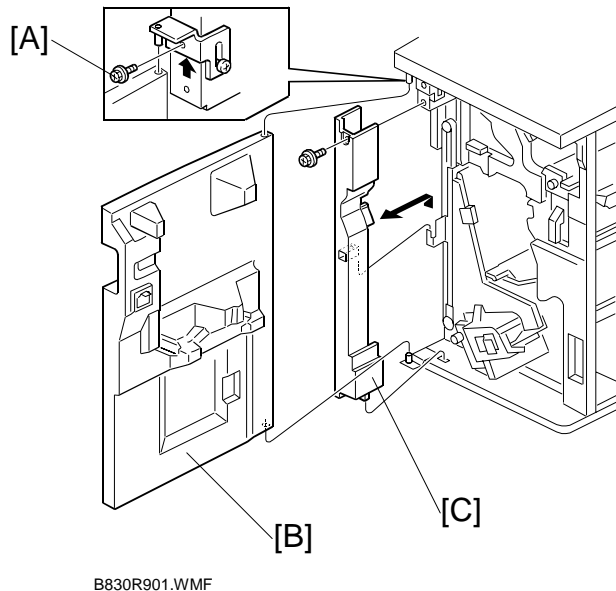
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# 1. REPLACEMENT AND ADJUSTMENT

## 1.1 COVERS



### 1.1.1 FRONT DOOR, INNER COVER

#### *Front Door*

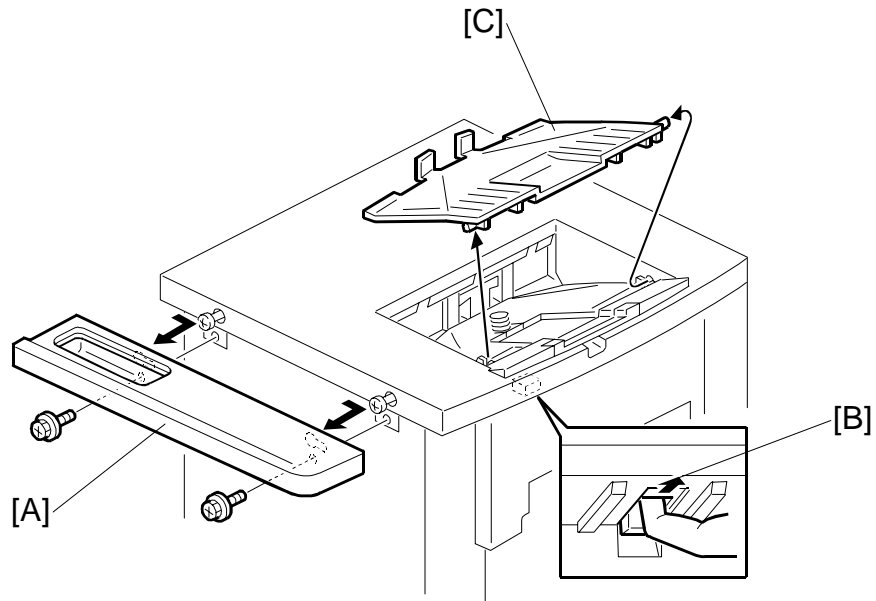
1. Remove the front door screw [A] (⌀ x 1).
2. Remove the front door [B].

#### *Left Inner Cover*

1. Remove the front door.
2. Remove the left inner cover [C] (⌀ x 1).

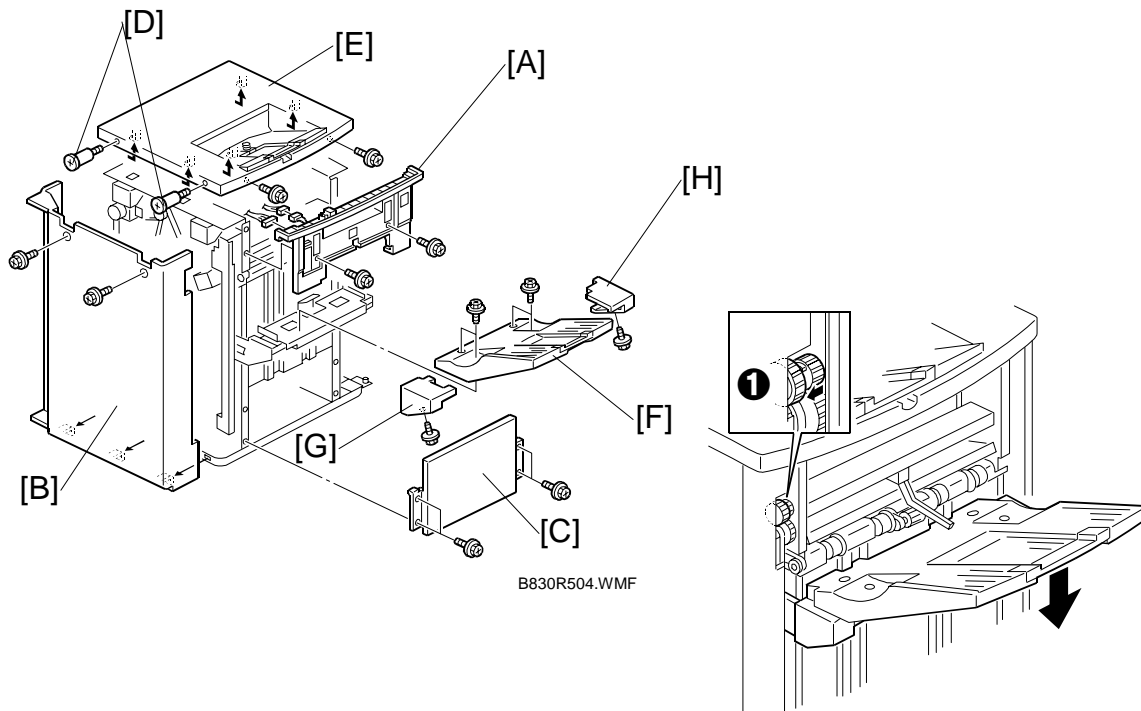
#### *Inner Cover*

1. Remove the inner cover [D] (⌀ x 3).

**1.1.2 SIDE TABLE AND UPPER TRAY**

B830R903.WMF

1. Remove the side table [A] (2 x 2). Slide to the right to remove it.
2. Click the release lever [B] and remove the upper tray [C].



B830R504.WMF

B830R904.WMF

### 1.1.3 LEFT COVERS, REAR COVER

Remove:

- Shift tray jogger unit (☛1.8.1)
- Remove the door and left inner cover. (☛1.1.1)

[A] Remove the left upper cover (🔩 x 2, 🛠 x 2).

[B] Remove the rear cover (🔩 x 2).

[C] Remove the left lower cover (🔩 x 4).

### 1.1.4 TOP COVER

Remove:

- Side table, upper tray (☛1.1.2)

[D] Step screws (🔩 x 2).

[E] Top cover (🔩 x 2). Slide to the right to remove.

### 1.1.5 SHIFT TRAY

- If you need to lower the shift tray, support the bottom of the tray with your hand, then pull the gear toward you ❶ to release the tray and lower it.

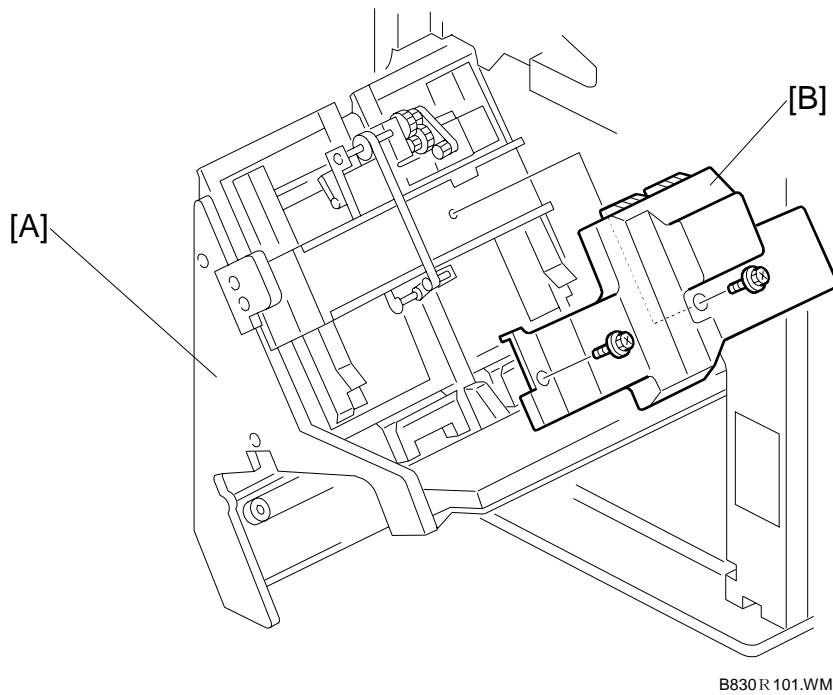
Remove:

[F] Remove the shift tray (🔩 x 4).

[G] Shift tray rear cover (🔩 x 1)

[H] Shift tray front cover [H] (🔩 x 1).

### 1.1.6 JOGGER UNIT COVER

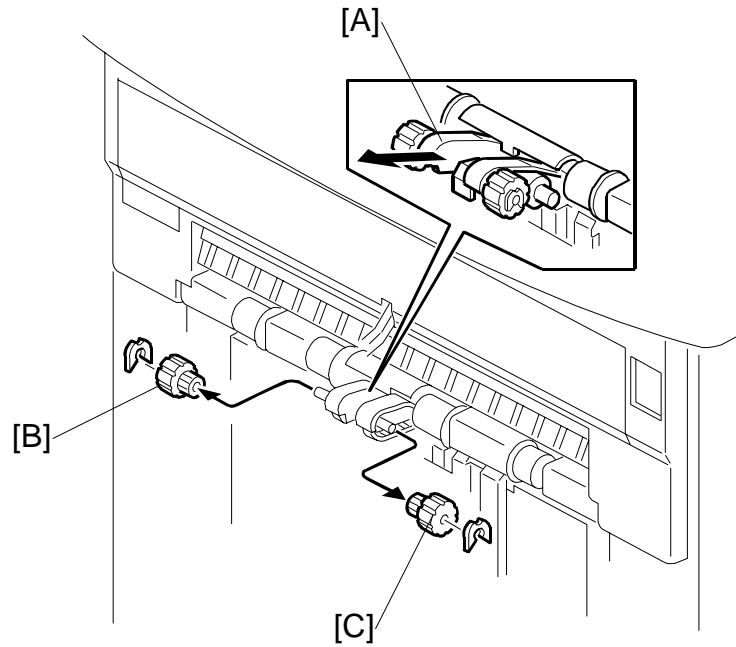


B830R101.WMF

1. Open the front door.
2. Pull out the stapler tray unit [A].
3. Remove the jogger unit cover [B] (⚙️ x2)

## 1.2 ROLLERS

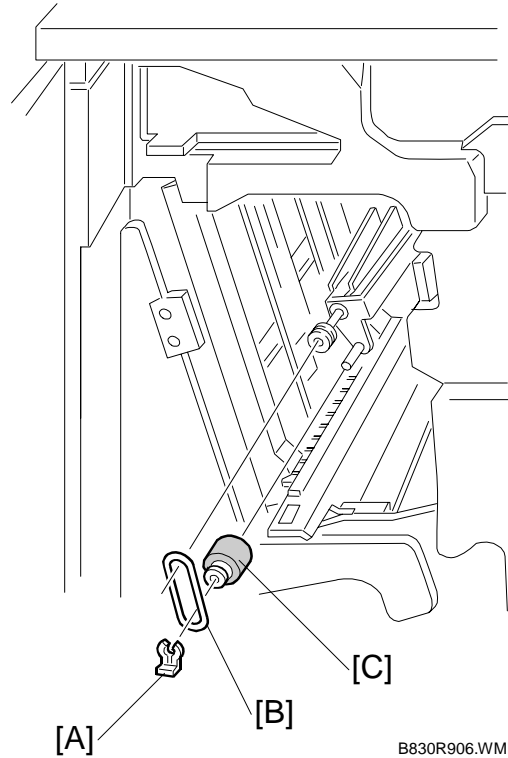
### 1.2.1 DRAG ROLLER



B830R905.WMF

1. Above the shift tray, pull the roller mount [A] out.
2. Remove the rollers [B] and [C] (⌀ x 1 each)

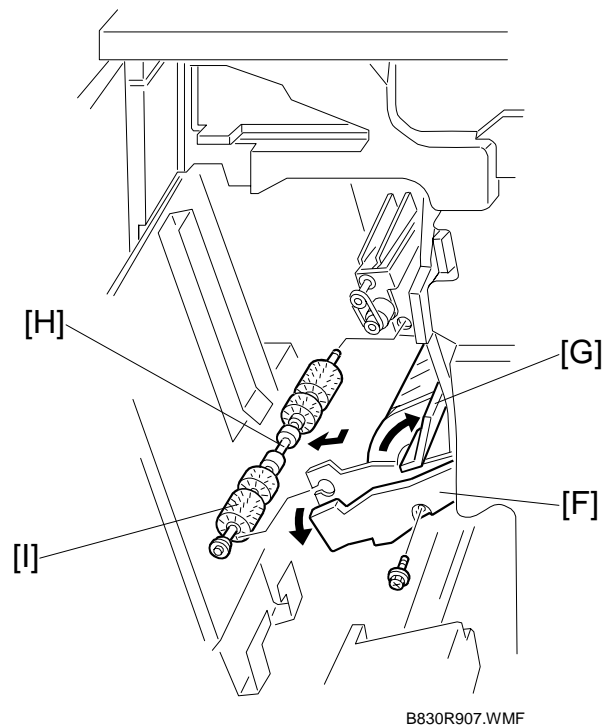
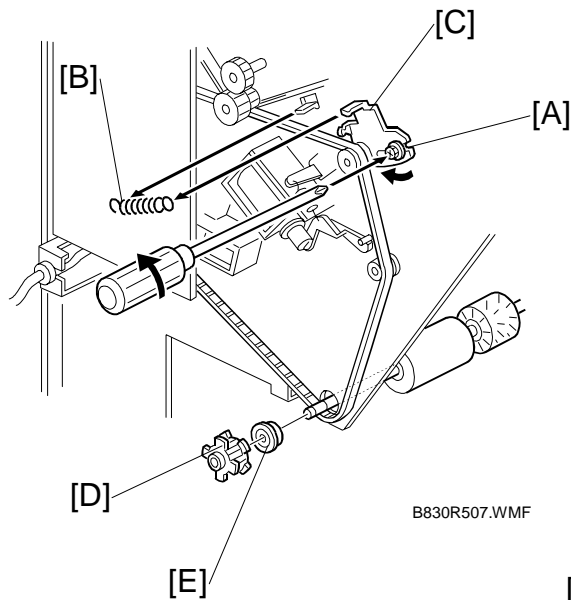
## 1.2.2 POSITIONING ROLLER



B830R906.WMF

1. Remove the jogger unit cover (☛1.1.6)
2. Remove the snap ring [A].
3. Release the rubber belt [B].
4. Replace the positioning roller [C].

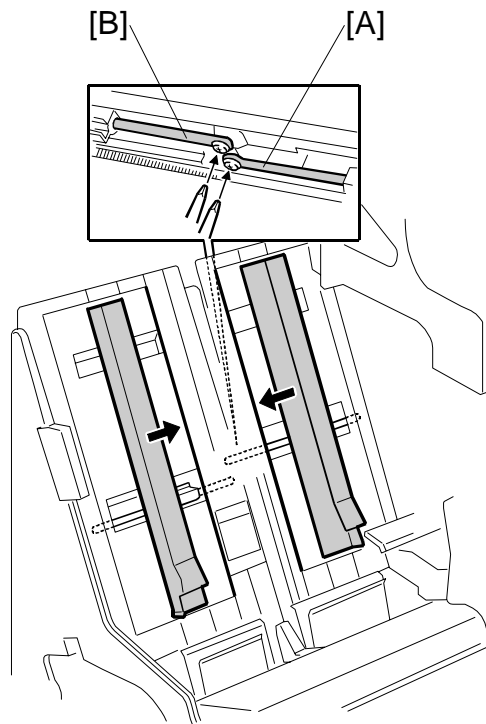
### 1.2.3 ALIGNMENT BRUSH ROLLER



1. Open the front door and pull out the staple unit.
2. Remove the rear cover.
3. Remove the main board bracket and all connectors (⚙ x 8). (☛1.4.6)
4. Remove the screw [A] and tension spring [B] for the tension bracket [C], and release the tension of the timing belt.
5. Remove the pulley [D] and bearing [E].
6. Remove the inner cover [F] (⚙ x 1).
7. Open the guide [G], then remove the alignment brush roller assembly [H].
8. Remove the alignment brush roller [I] (⚙ x2, Bearing x 1 front/back, Ⓢx1).



### 1.3 JOGGER FENCE



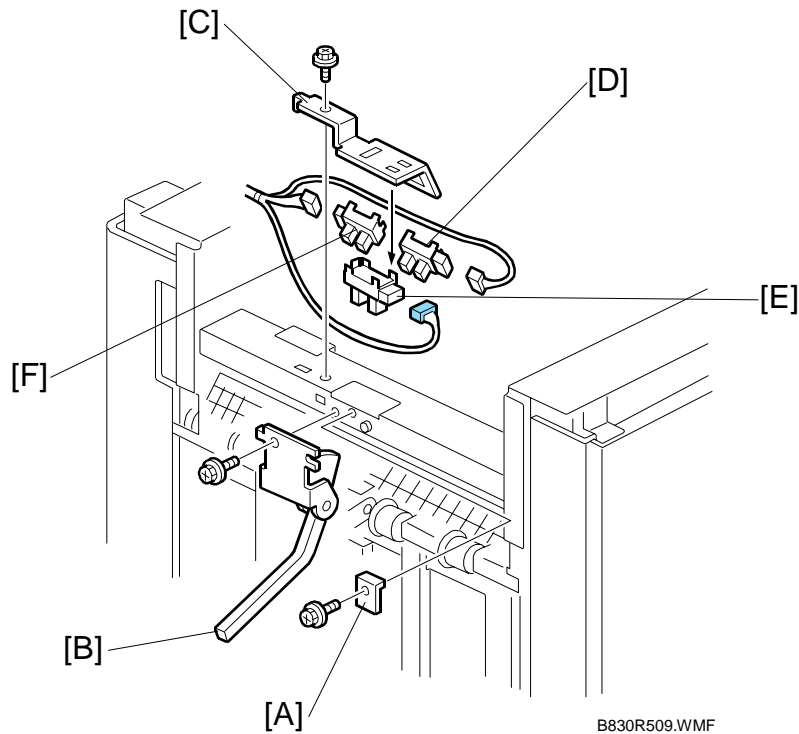
B830R909.WMF

1. Open the front door.
2. Pull out the jogger and stapler unit.
3. Push both fences to the center.
4. Remove the left jogger fence [A] (⚙ x 1)
5. Remove the right jogger fence [B] (⚙ x 1).

**NOTE:** If the screws are difficult to remove or re-attach, remove the jogger fence belt and spring plate.

## 1.4 SENSORS

### 1.4.1 PAPER HEIGHT SENSORS

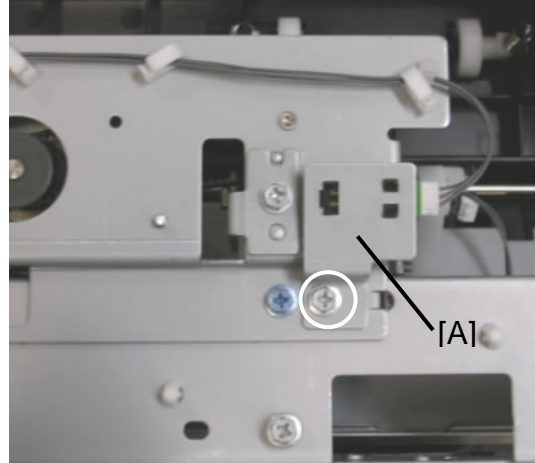


#### Remove:

- Top cover. (☛1.1.1)
- Left upper panel and left upper cover (🔧 x 2, 🛠 x 2) (☛1.1.3)
- [A] Protector plate (🔧 x 1).
- [B] Feeler (🔧 x 1).
- [C] Sensor bracket (🔧 x 1).
- [D] Paper height sensor – staple mode (🛠 x 1, Pawls x4)
- [E] Paper height sensor – standby mode (🛠 x 1, Pawls x4)
- [F] Paper height sensor – shift/Z-Fold (🛠 x 1, Pawls x4).

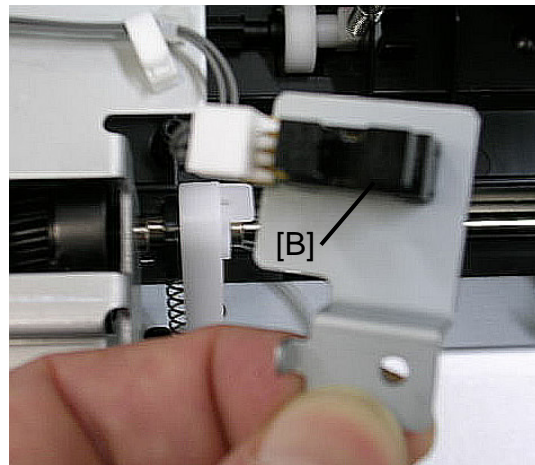
## 1.4.2 EXIT GUIDE HP SENSOR

1. Remove the top cover. (☛1.1.1)
2. Remove the left upper panel and left upper cover (🔩 x 2, 🏹 x 2).
3. Remove:  
[A] Sensor bracket [A] (🔩 x 1).



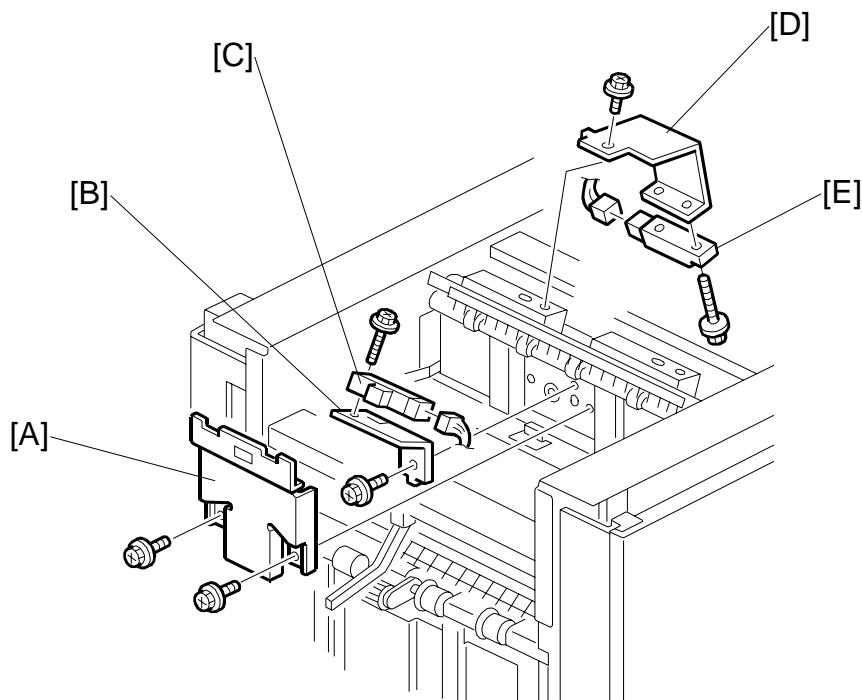
B830R980.BMP

- [B] Exit guide HP sensor (🏹 x 1, Pawls x3).



B830R981.BMP

### 1.4.3 UPPER TRAY FULL AND EXIT SENSORS



B830R510.WMF

#### ***Upper Tray Full Sensor***

1. Remove the top cover.
2. Remove the sensor cover [A] (🔩 x 2).
3. Remove the sensor bracket [B] (🔩 x 1).
4. Replace the upper tray full sensor [C] (🔩 x 1, 📏 x 1).

#### ***Upper Tray Exit Sensor***

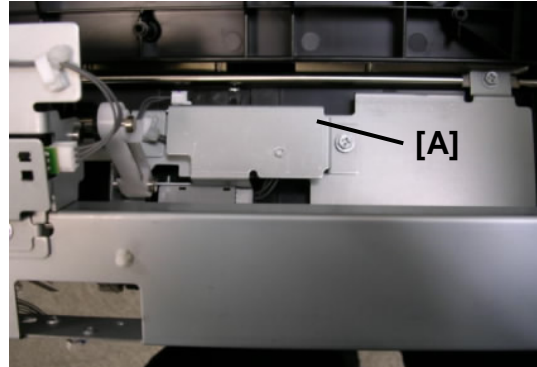
5. Remove the sensor bracket [D] (🔩 x 1).
6. Replace the upper tray exit sensor [E] (📏 x 1, 🔩 x 1).

### 1.4.4 SHIFT TRAY EXIT SENSOR

Remove the top cover (☛1.1.4)

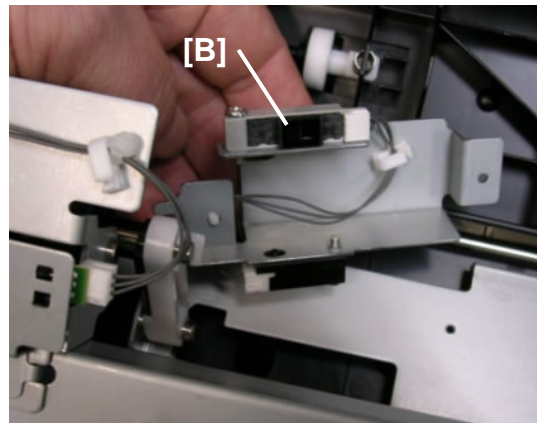
Remove:

[A] Sensor bracket (🔩 x1)



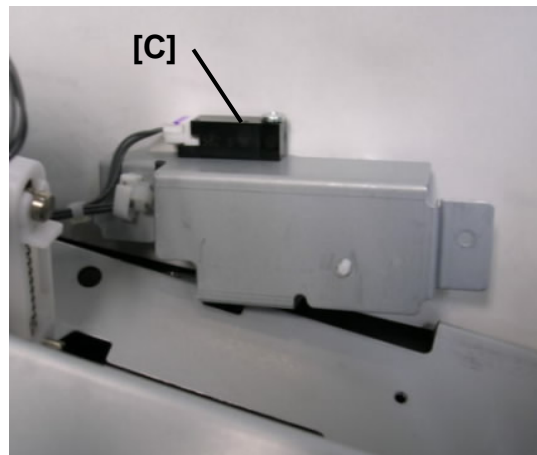
B830R982.BMP

[B] Shift tray exit sensor 1 (🔩 x1, 📡 x1)



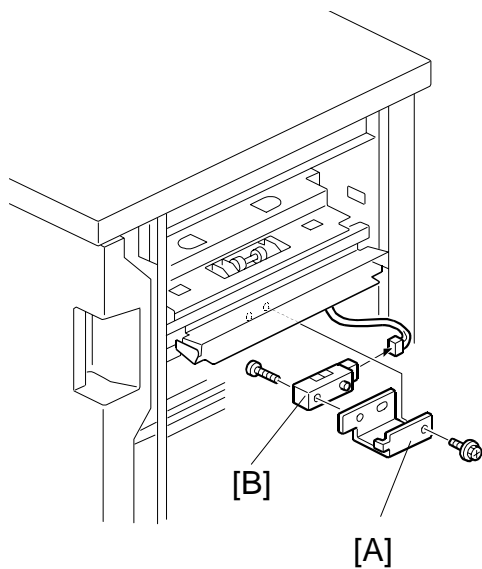
B830R983.BMP

[C] Shift tray exit sensor 2 (🔩 x1, 📡 x1)

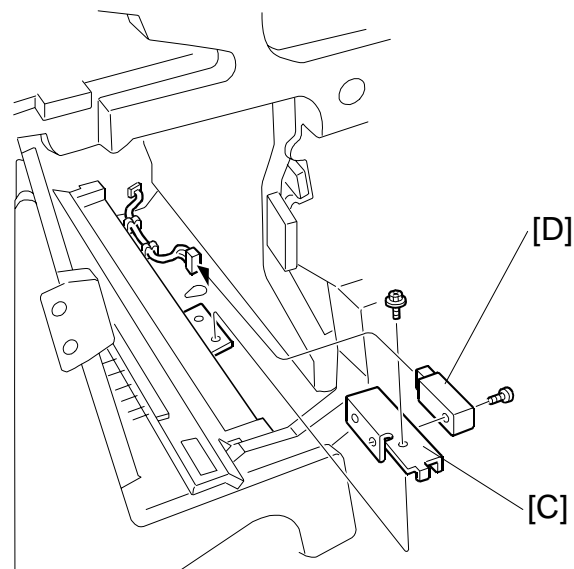


B830R984.BMP

## 1.4.5 ENTRANCE AND STAPLER TRAY ENTRANCE SENSORS



B830R985.WMF



B830R986.WMF

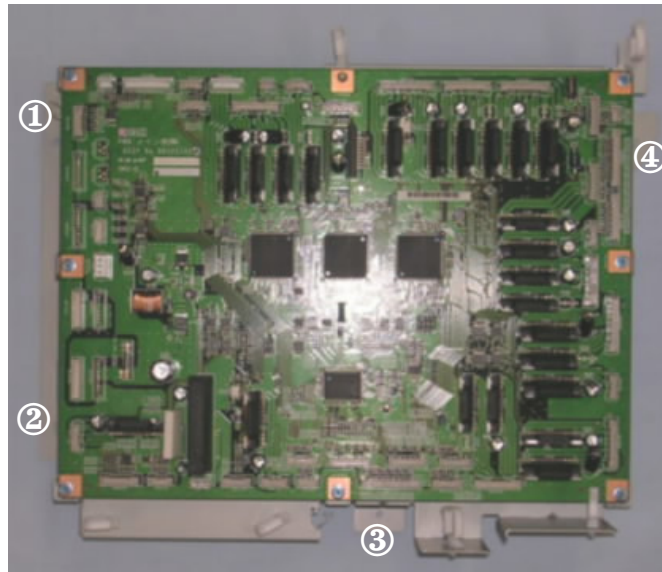
### ***Entrance Sensor***

1. Disconnect the finisher from the copier.
2. Remove the sensor bracket [A] (⚙️ x 1).
3. Replace the entrance sensor [B] (⚙️ x 1) (🔌 x 1).

### ***Stapler Tray Entrance Sensor***

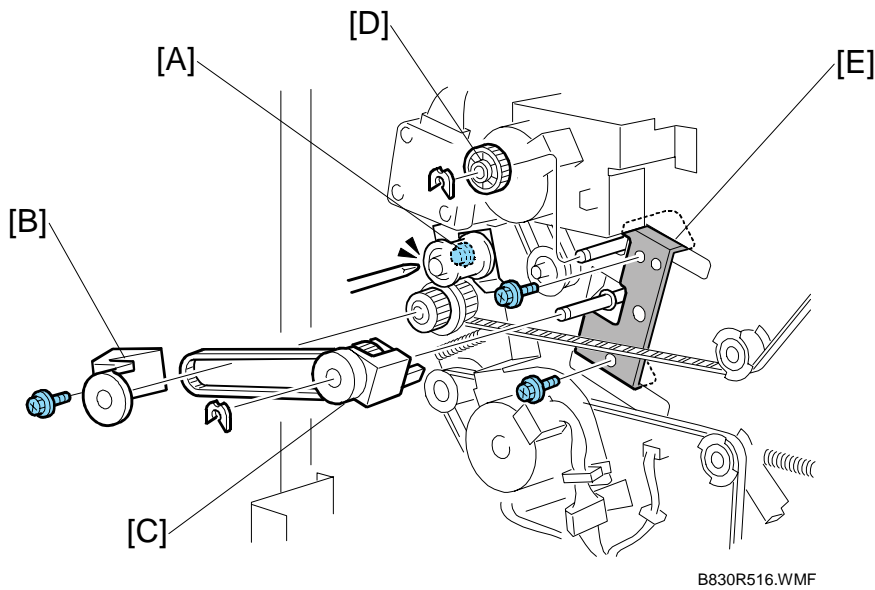
1. Open the front door.
2. Remove the sensor bracket [C] (⚙️ x 1).
3. Replace the stapler tray entrance sensor [D] (⚙️ x 1) (🔌 x 1).

### 1.4.6 MAIN BOARD, PRE-STACK PAPER SENSOR



B830R987.BMP

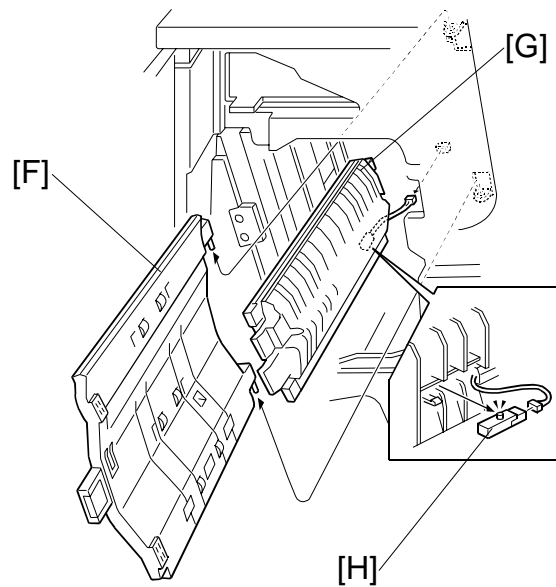
1. Remove the rear cover. (☛1.1.4)
2. Remove the main board bracket (🔧 x 4, ⬅x8, 📏 x All).
3. Open the front door.



Loosen the screw [A] (⚙️ x1)

Remove:

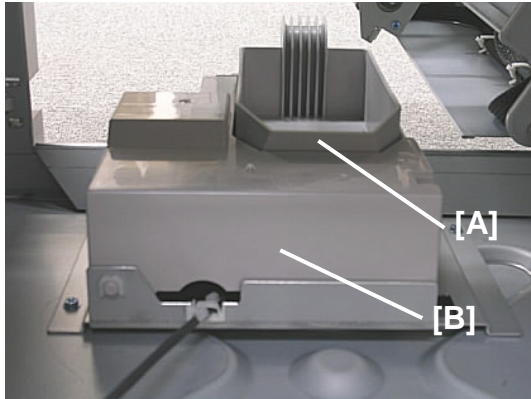
- [B] Gear cover (⚙️ x1)
- [C] Gear (⚙️ x1, Timing belt x1)
- [D] Gear (⚙️ x1)
- [E] Plate (⚙️ x2)
- [F] Left vertical transport guide
- [G] Middle vertical transport guide
- [H] Pre-stack paper sensor (📄 x1)



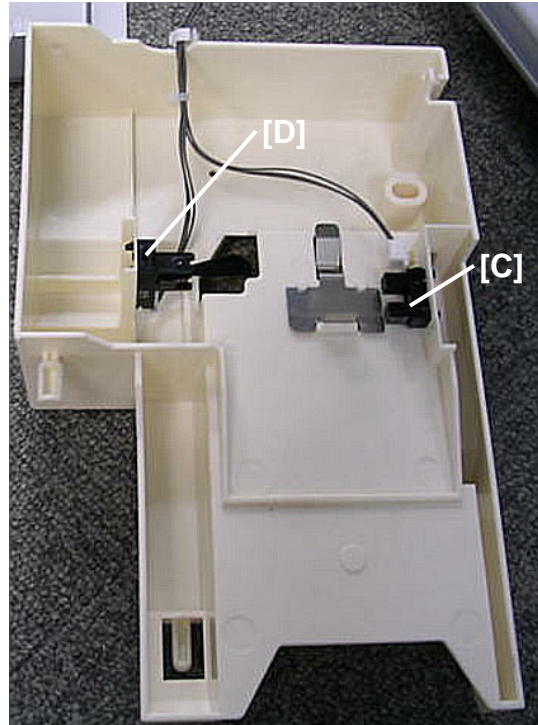
B830R516A.WMF



### 1.4.7 STAPLE TRIMMINGS HOPPER FULL SENSOR



B830R988.BMP



B830R989.BMP

- Open the front door
- Pull out the stapler unit
- Remove the rear cover (🔧 x 2).

Remove:

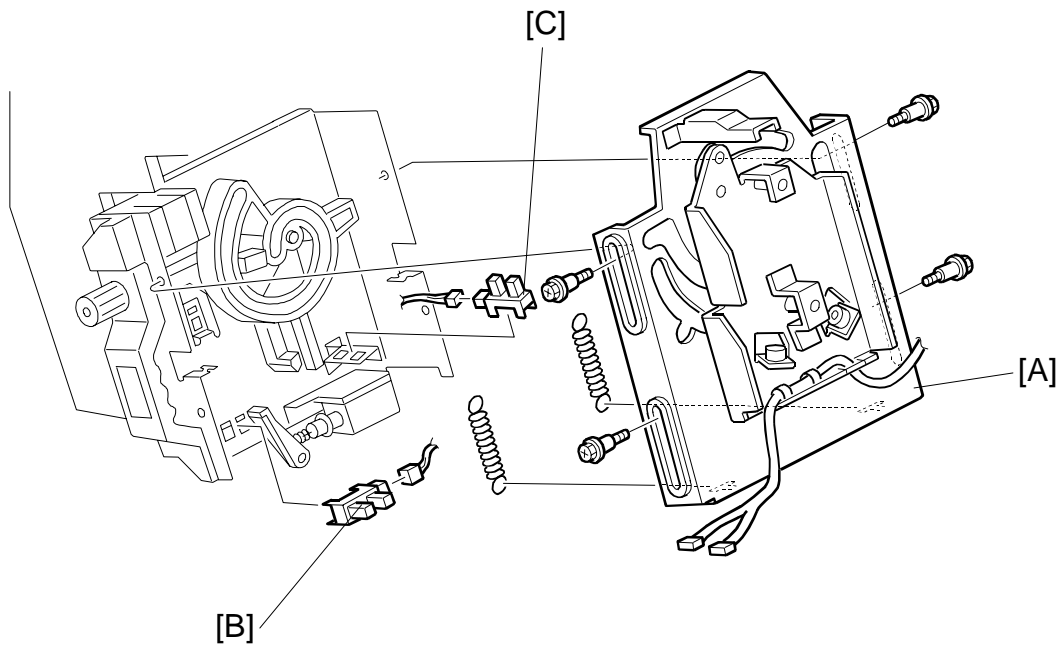
[A] Staple trimmings hopper

[B] Hopper holder (🔧x1, Hook x1, 🛠️ x1)

[C] Hopper full sensor (🔧 x 1)

[D] Hopper set sensor (🔧 x 1)

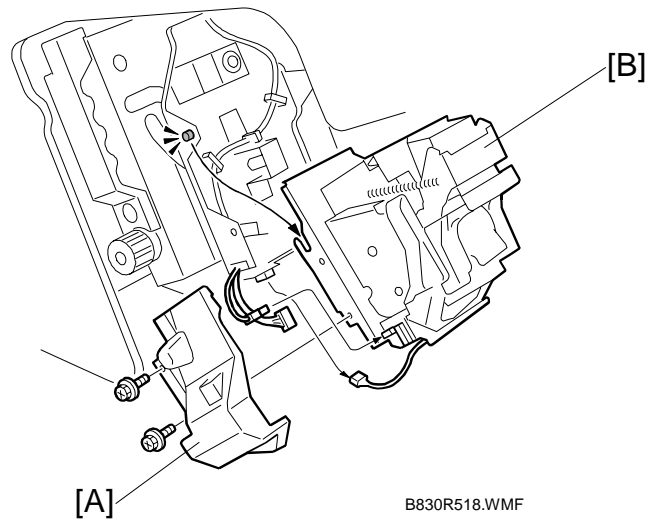
## 1.4.8 STAPLER ROTATION HP AND STAPLER RETURN SENSORS



B830R990.WMF

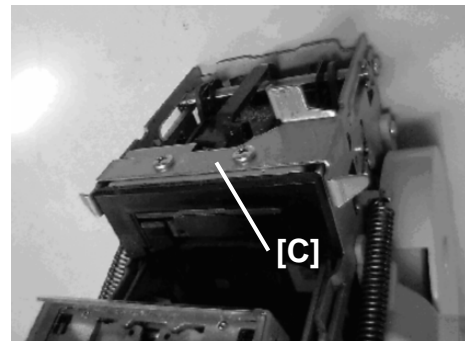
1. Remove the stapler unit. (See next page.)
2. Remove the stapler mount bracket [A] (⚙ x 4) (Springs x 2).
3. Replace the stapler rotation HP sensor [B] (⚙ x 1).
4. Replace the stapler return sensor [C] (⚙ x 1).

## 1.5 STAPLER



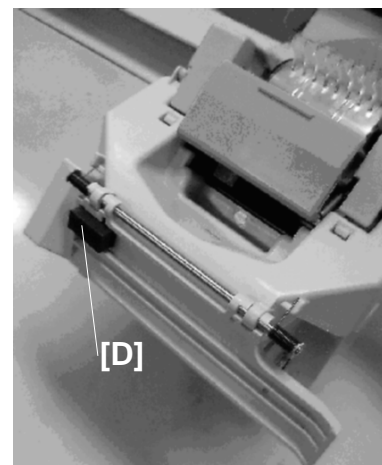
B830R518.WMF

1. Open the front door and pull out the staple tray.
2. Remove the stapler unit harness cover [A] (⚙ x 2).
3. Lift the stapler [B] off of its pegs (📌 x 2)
4. Remove plate [C] (⚙ x 2).
5. Attach this plate to the new stapler with the same screws (⚙ x 2)



B830R421.BMP

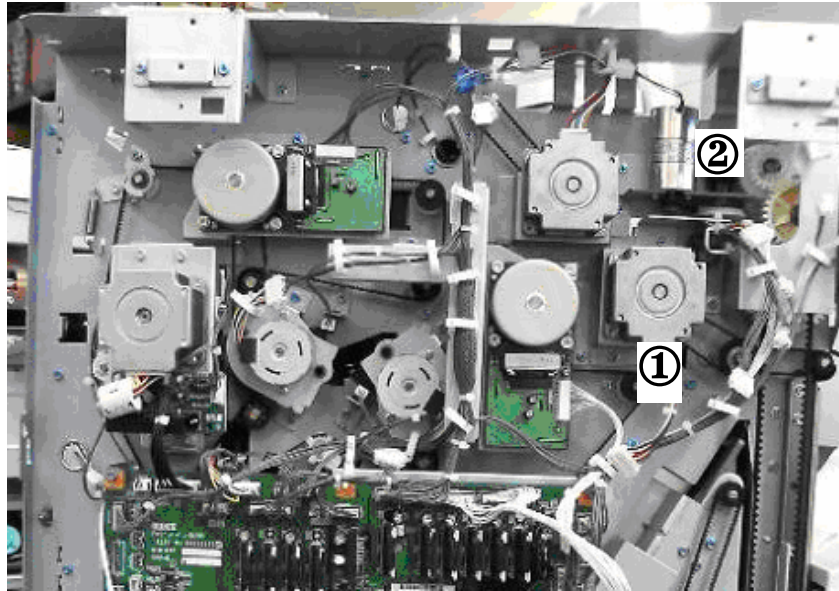
6. Replace the frame guard [D] with the one provided with the new stapler.



B830R422.BMP

## 1.6 SHIFT TRAY

### 1.6.1 SHIFT TRAY EXIT, SHIFT TRAY LIFT MOTOR

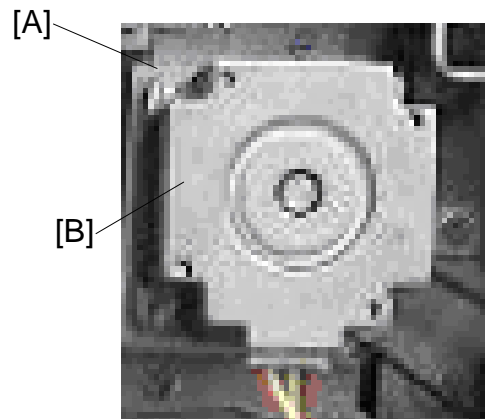


B830R901.BMP

- ① Shift Tray Exit Motor
- ② Shift Tray Lift Motor

#### **Shift Tray Exit Motor**

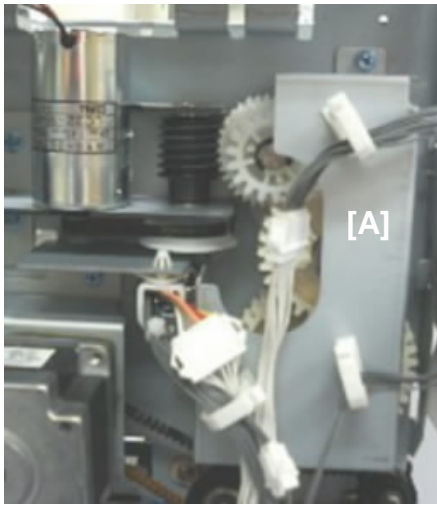
- Rear cover (☛1.1.4)
- [A] Shift tray exit motor bracket  
(🔩 x2, 📄 x1, ⏪X1, Timing belt x1)
- [B] Shift tray exit motor (🔩 x2)



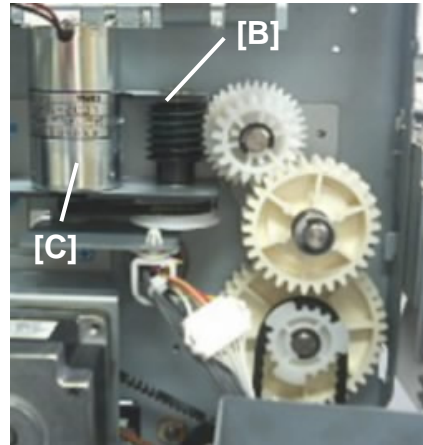
B830R940.BMP

Peripherals

**Shift Tray Lift Motor**



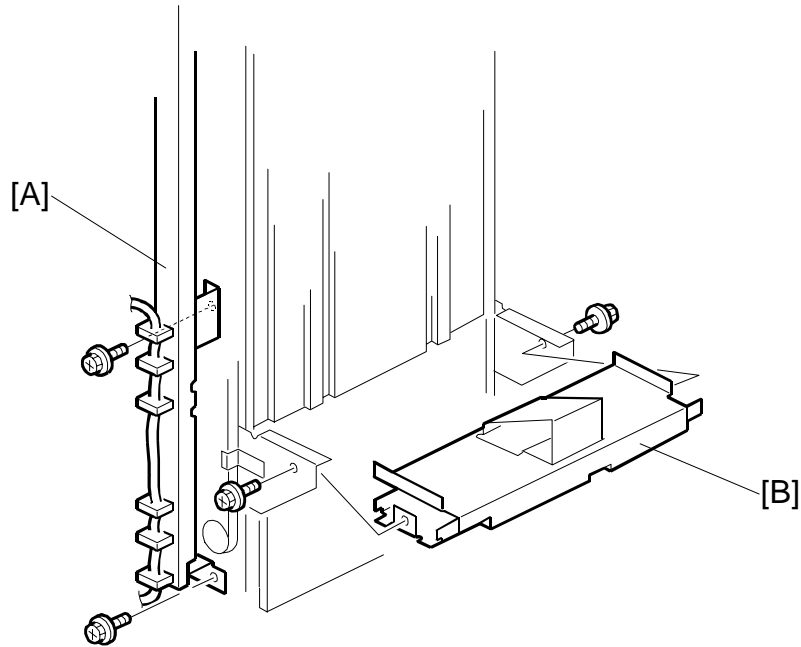
B830R946.BMP



B830R947.BMP

- Rear cover (🔩 1.1.4)
- [A] Gear cover (🔩 x2)
- [B] Shift tray lift motor bracket (🔩 x2)
- [C] Shift tray lift motor (🔩 x,2 📏 x1, Timing belt x1)

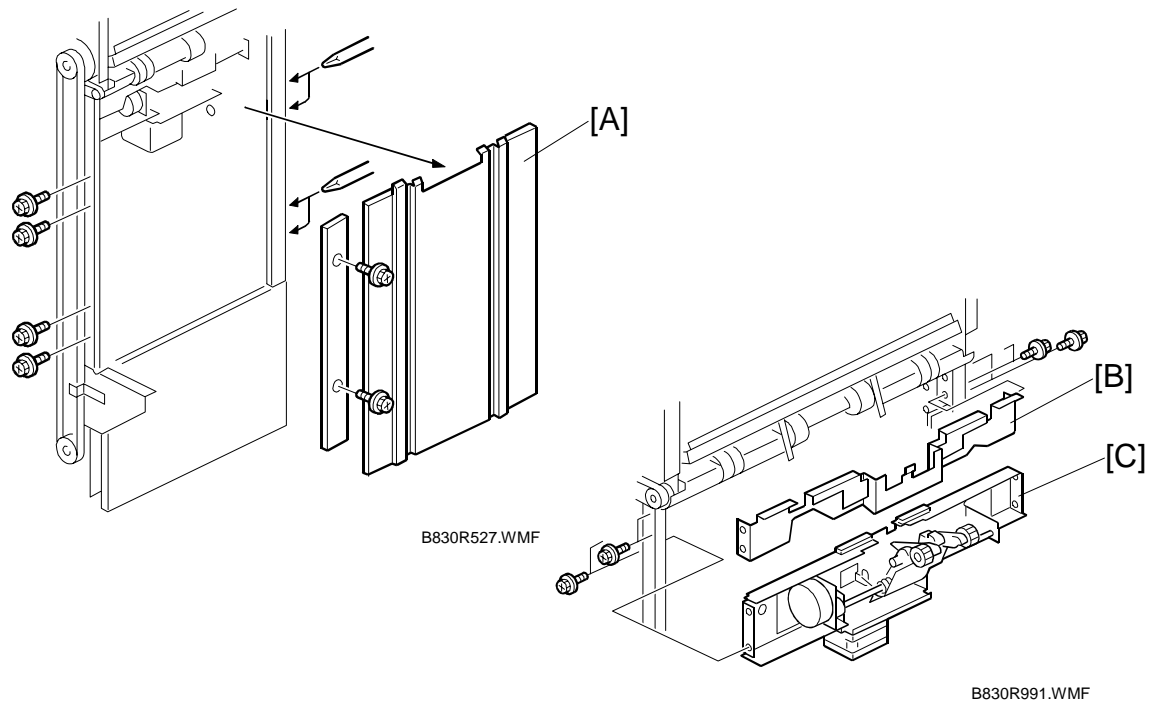
## 1.6.2 DRAG ROLLER/DRAG DRIVE MOTORS, DRAG DRIVE HP SENSOR



B830R526.WMF

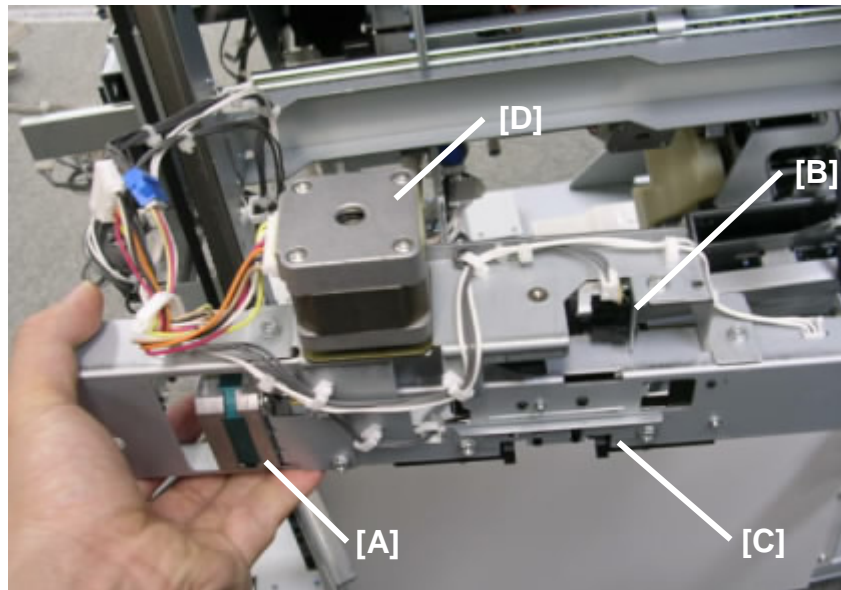
Remove:

- Front door and all covers, except the left lower cover, top cover (☛1.1)  
**NOTE:** Be sure to lower the shift tray by pulling the gear toward you. The shift tray must be down.
1. Remove the left stay [A] (☛ x 2)
  2. Remove the shift tray mounting plate [B] (☛ x 2).














3. Remove the end fence [A] and plate (⚙️ x8, ⚙️x6, ⚙️x2).
4. Remove cover [B] (⚙️ x 4).
5. Remove the motor stay [C] (⚙️ x4, ⚙️x7, ⚙️x4).

**NOTE:** Make sure the motor and sensor connectors are disconnected before removing.

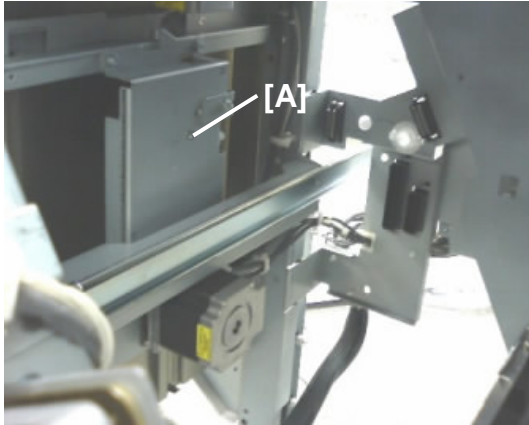


B830R992.BMP

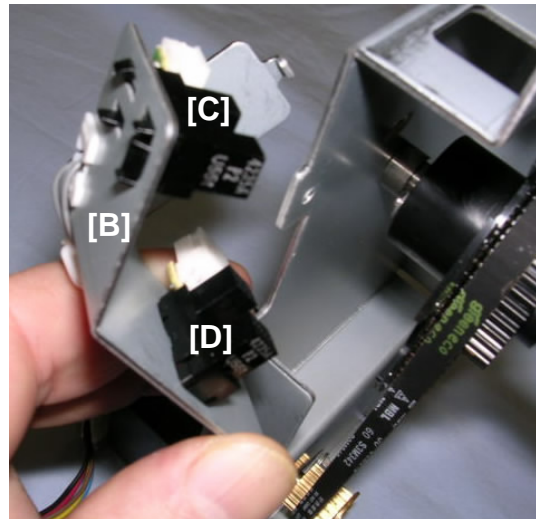
6. Remove the drag roller motor unit [A] (Bearing x1,  x2,  x1)
7. Remove the drag roller motor ( x2)
8. Remove the drag roller HP sensor unit [B] ( x1)
9. Remove the drag roller HP sensor ( x1, Pawls x3)
10. Remove the paper height sensor – shift / Z-fold unit [C] ( x2,  x2)
11. Remove the paper height sensor shift / Z-fold ( x1, Pawls x3)
12. Remove the drag drive motor unit ( x4,  x2)
13. Remove the drag drive motor ( x2)



### 1.6.3 SHIFT MOTOR AND SENSORS



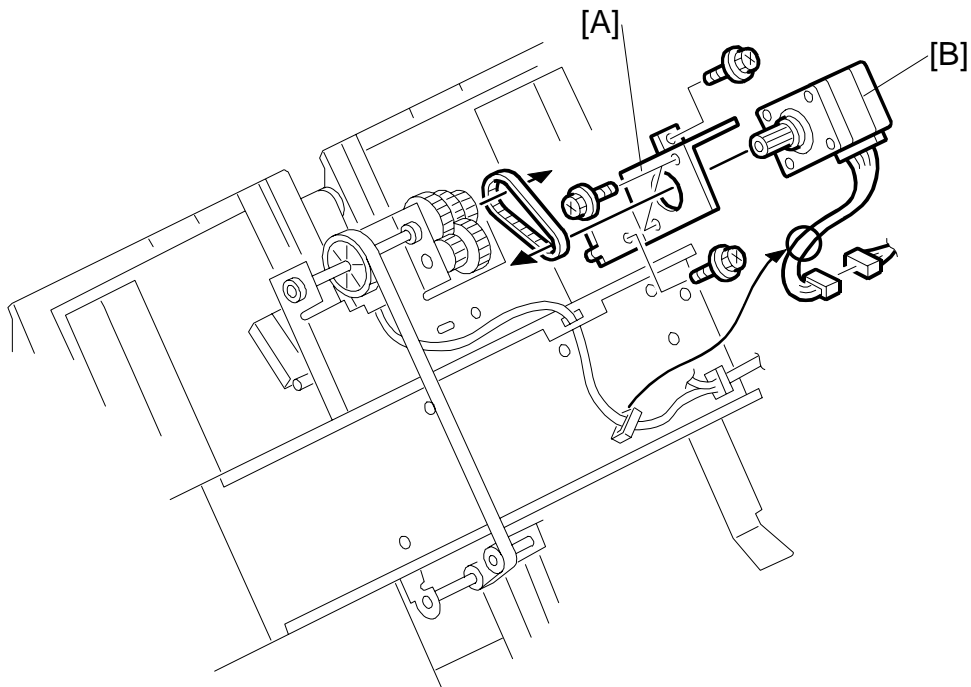
B830R950.BMP



B830R951.BMP

1. Remove the end fence (☛1.6.2)
2. Remove the shift motor bracket [A] (with motor) (🔧 x 4, ⏪x1, 🛠️x1)
3. Remove the shift motor (🔧 x4)
4. Remove the half-turn sensor bracket [B] (🔧 x 1)
5. Remove half-turn sensor 1 [C] (🛠️ x1, Pawls x3)
6. Remove half-turn sensor 2 [D] (🛠️ x1, Pawls x3)

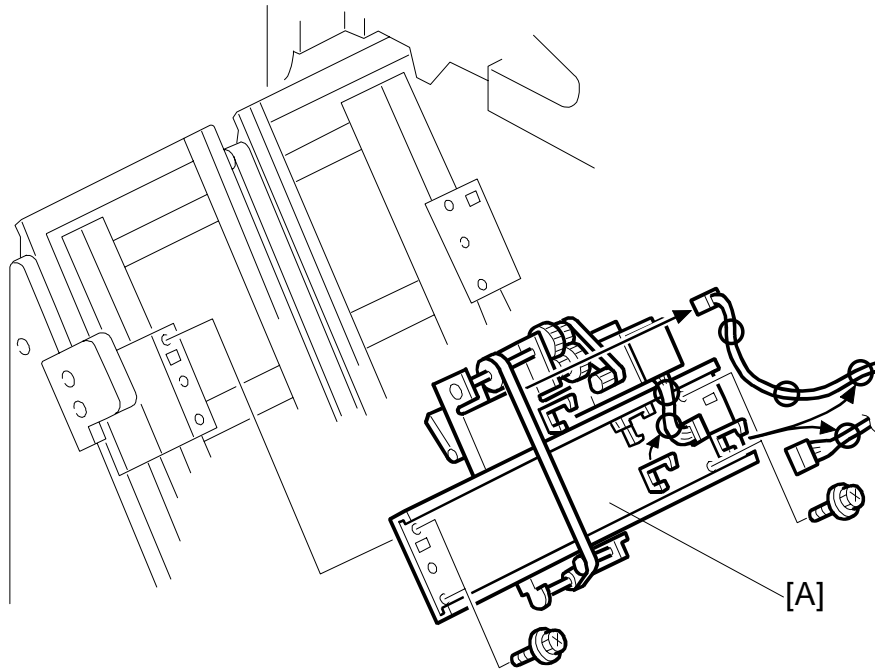
### 1.6.4 JOGGER TOP FENCE MOTOR



B830R102.WMF

1. Open the front door and pull out the stapler tray unit. (☛1.1.6)
2. Remove the jogger unit cover (🔩 x2)
3. Remove the motor bracket [A] (🔩 x2, timing belt x1)
4. Remove the jogger top fence motor [B] (🔩 x2 ☛x1 📡 x1)

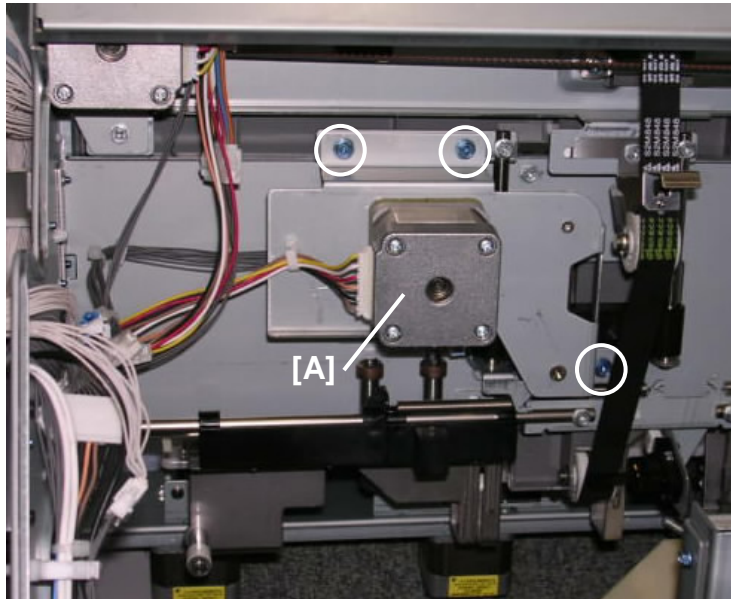
### 1.6.5 JOGGER UNIT



B830R 103.WMF

1. Open the front door and pull out the stapler tray unit.
2. Remove the jogger unit cover (🔩 x2)
3. Remove the jogger unit [A] (🔩 x4, ⚙️ x5, 🛠️ x5)

### 1.6.6 JOGGER BOTTOM FENCE MOTOR

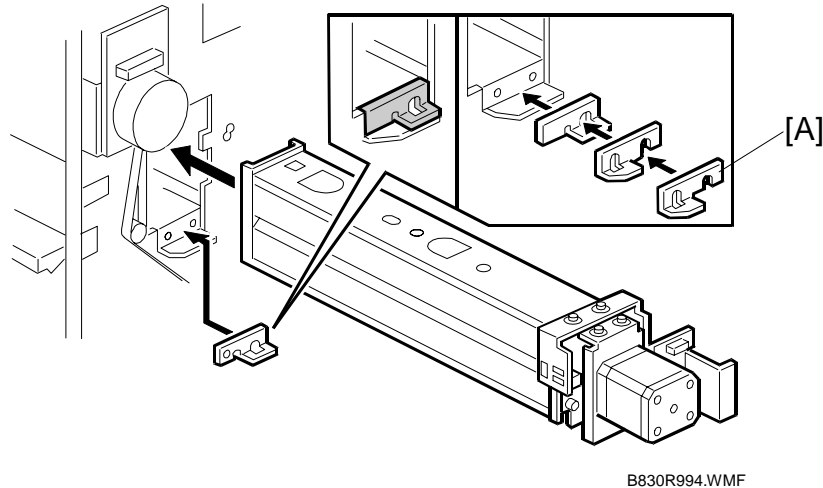


B830R993.BMP

1. Open the front door and pull out the stapler tray unit.
2. Remove the jogger bottom fence motor unit [A] (⚙️ x3, timing belt x1, ⏪x1, ⏩x1).

## 1.7 PUNCH UNIT

### 1.7.1 PUNCH POSITION ADJUSTMENT



The position of the punched holes can be adjusted in two ways.

#### ***Front to Rear Adjustment***


Three spacers [A] are provided with the punch unit for manual adjustment of the hole position in the main scan direction:

- 2 mm (x 1)
- 1 mm (x 2)

**NOTE:** One spacer was installed at installation and the remaining spacers were fastened with a screw to the rear frame of the finisher under the rear cover and slightly above the lock bar.

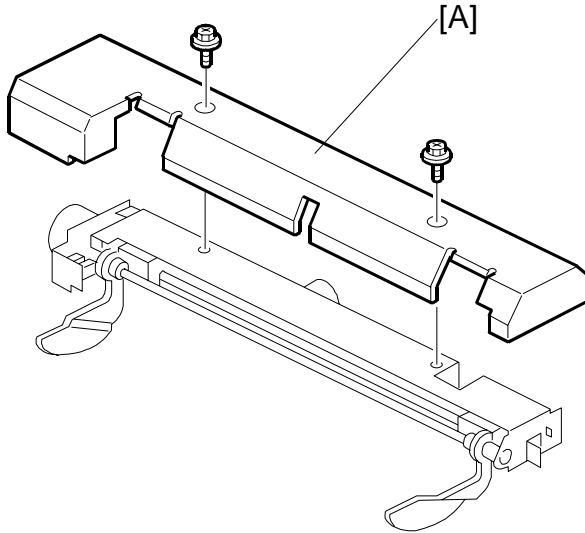
#### ***Right to Left Adjustment***

The position of the punched holes can be adjusted right to left in the sub scan direction with **SP6101** Punch Hole Position Adjustment. The position can be adjusted in the range  $\pm 7.5$  mm in 0.5 mm steps. The default setting is 0.

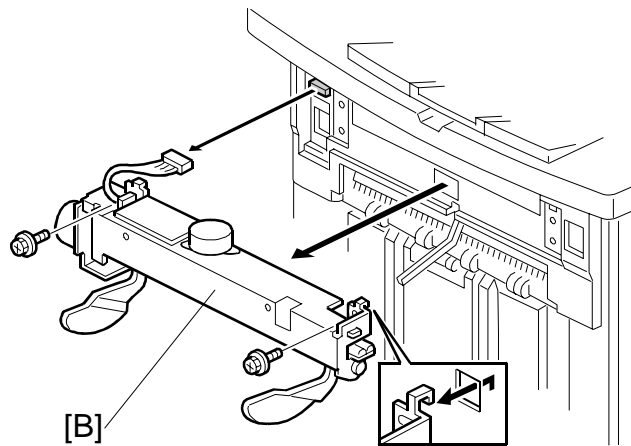
Press the  key to toggle the  $\pm$  selection. A +ve value shifts the punch holes left toward the edge of the paper, and a -ve value shifts the holes right away from the edge.

## 1.8 SHIFT TRAY JOGGER UNIT

### 1.8.1 SHIFT TRAY JOGGER UNIT

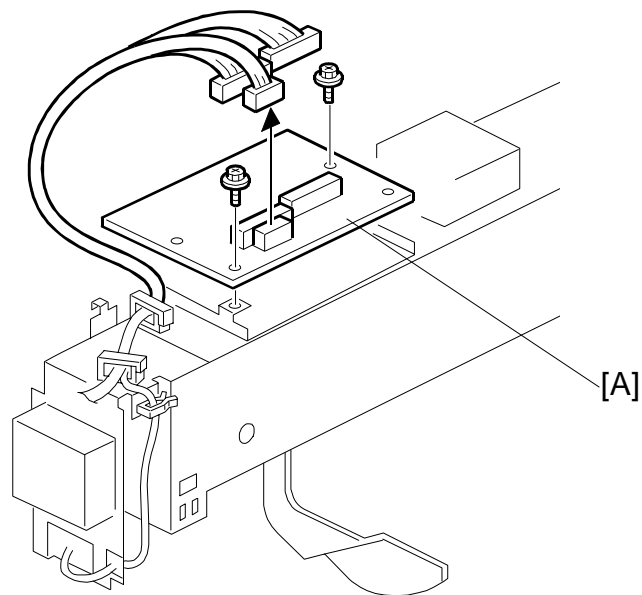


B830R995.WMF



B830R996.WMF

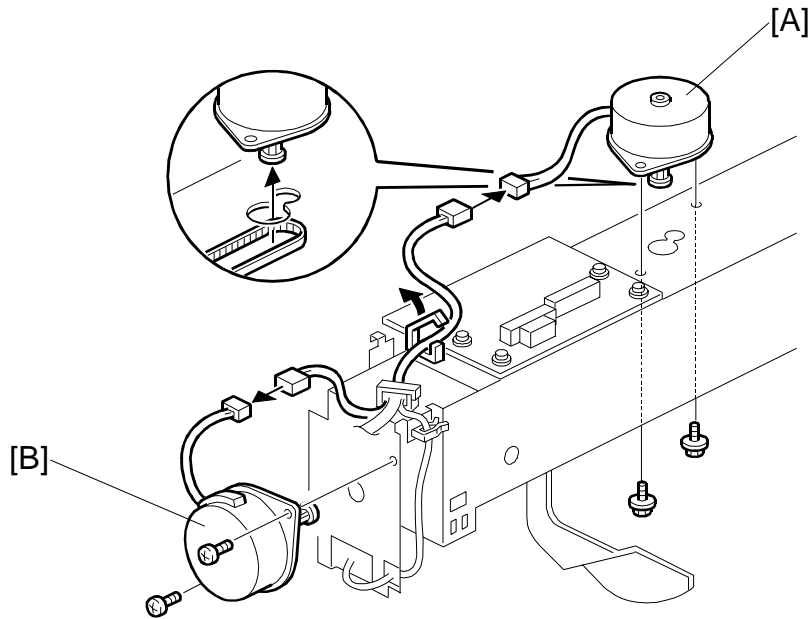
1. Remove the jogger unit cover [A] (⚙️ x 2).
2. Remove the jogger unit [B] (⚙️ x 2, 📏 x 1).

**1.8.2 SHIFT TRAY JOGGER UNIT PCB**

B830R001B.WMF

1. Remove the jogger unit from the finisher. (☛ 1.8.1)
2. Remove the jogger unit control PCB [A] (🔧 x 2, 🛠️ x 3)

### 1.8.3 SHIFT TRAY JOGGER UNIT MOTORS



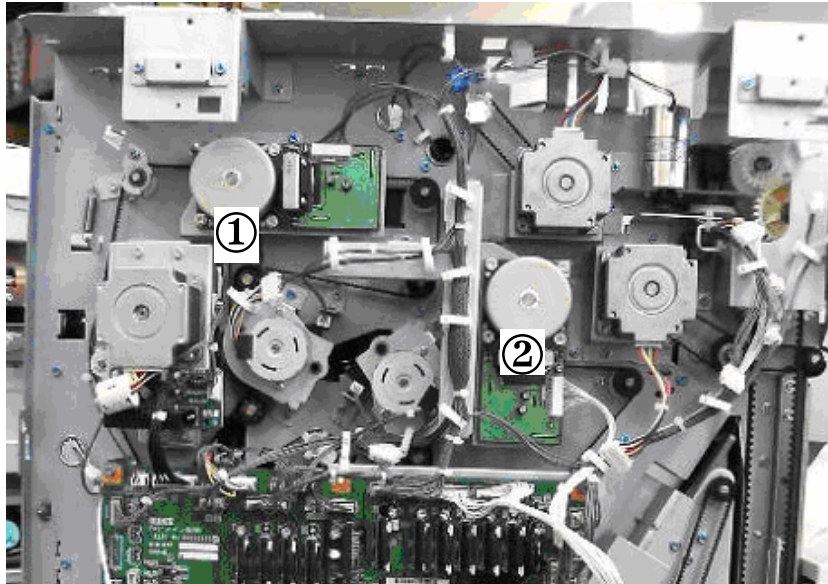
B830R997.WMF

1. Remove the jogger unit from the finisher. (➡ 1.8.1)
2. Remove the shift tray jogger motor [A] (🔧 x 2, 🛠️ x 1).
3. Remove the shift tray jogger retraction motor [B] (🔧 x 2, 🛠️ x 1).



## 1.9 MOTORS

### 1.9.1 TRANSPORT MOTORS, EXIT GUIDE MOTOR

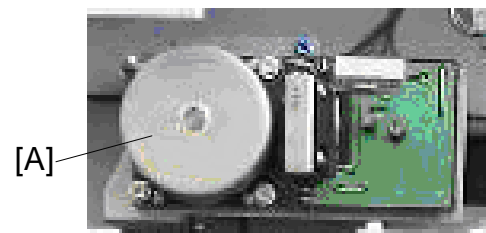


B830R901.BMP

①	Upper Transport Motor
②	Lower Transport Motor

#### ***Upper Tray Transport Motor***

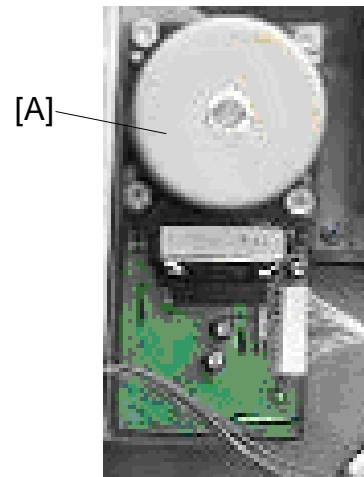
- Rear cover (☛ 1.1.4)
- [A] Upper transport motor (🔧 x4, 📦 x1)



B830R905.BMP

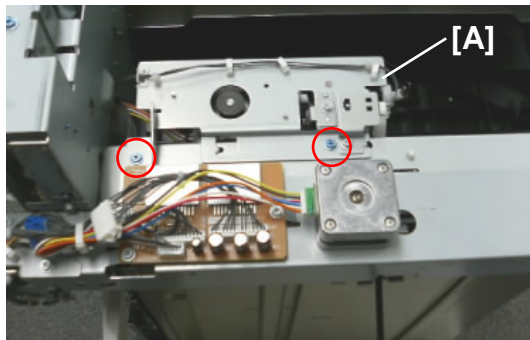
**Lower Transport Motor**

- Rear cover (☛1.1.4)
- [A] Lower transport motor (🔩 x4, 📏 x1)

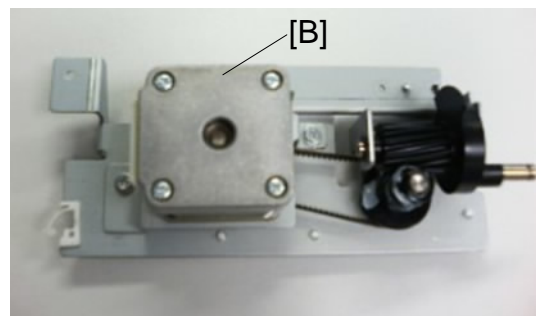


B830R906.BMP

**Exit Guide Motor**



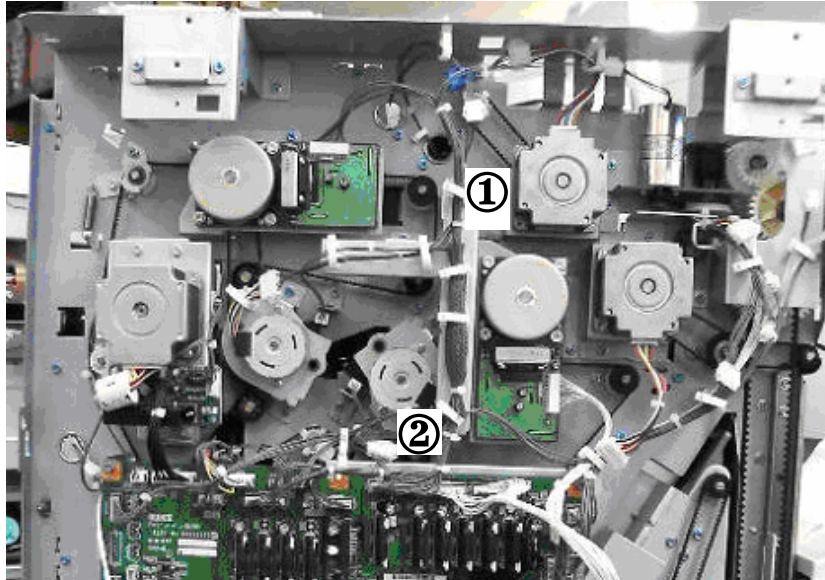
B830R955.BMP



B830R956.BMP

- Top cover (☛1.1.4)
- [A] Bracket (🔩 x2, 📏 x1)
- [B] Exit guide motor (🔩 x2, 📏 x1, Timing belt x1)

### 1.9.2 UPPER TRAY MOTORS

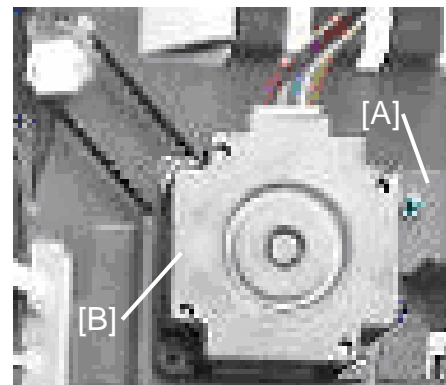


B830R901.BMP

①	Upper Tray Exit Motor
②	Upper Tray Junction Gate Motor

#### ***Upper Tray Exit Motor***

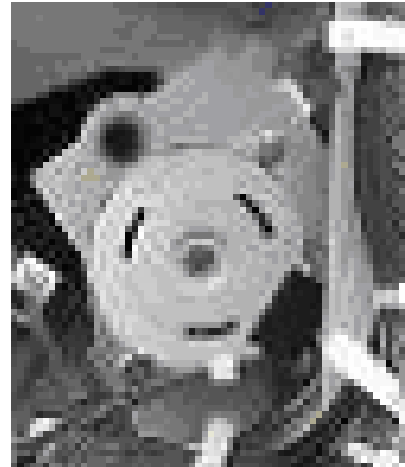
- Rear cover (☛1.1.4)
- [A] Motor bracket (🔩 x2, 📏 x1)
- [B] Upper tray exit motor (🔩 x2, Timing belt x1)



B830R910.BMP

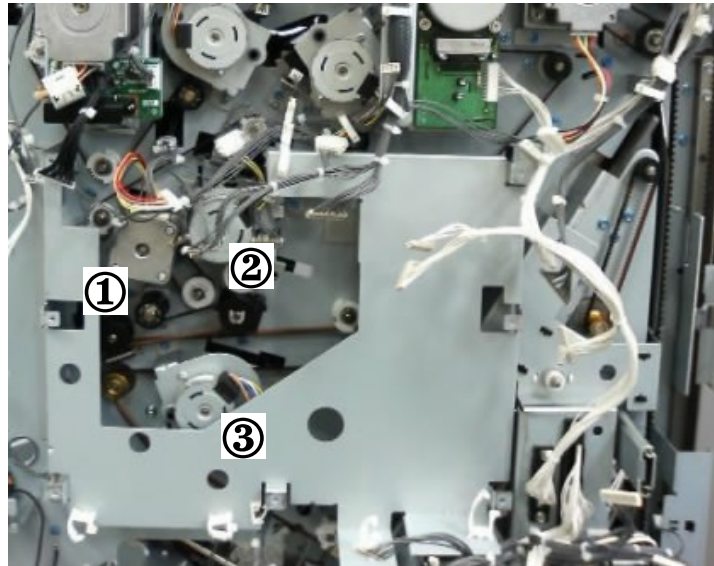
***Upper Tray Junction Gate Motor***

- Rear cover (☛1.1.4)
- [A] Upper tray junction gate motor(☛ x2, ☛x1)



B830R911.BMP

### 1.9.3 PRE-STACK MOTORS



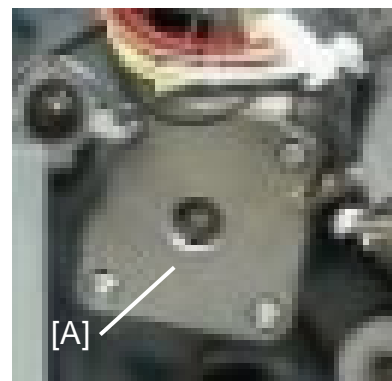
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The photograph above shows the main control board removed (🔧 x4, 🛠️ x All).

①	Pre-Stack Transport Motor
②	Pre-Stack Junction Gate Motor
③	Pre-Stack Stopper Motor

#### ***Pre-Stack Transport Motor***

- Rear cover (🔧 1.1.4)
  - Main control board bracket (🔧 x4, 🛠️ x All, 🛠️ x8)
  - Motor unit (🔧 x2, 🛠️ x1)
- [A] Pre-stack transport motor (🔧 x2)

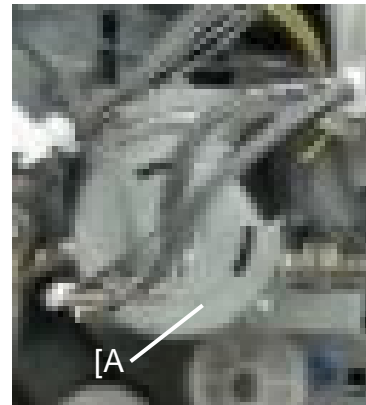


B830R920.BMP

**Pre-Stack Junction Gate Motor**

- Rear cover (☛1.1.4)
- Main control board bracket  
(🔩 x4, 📏 x All, 📏x8)

[A] Pre-stack junction gate motor (🔩 x2, 📏x1, 📏 x1)

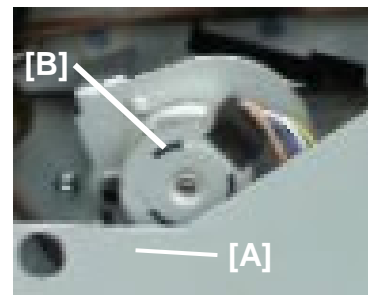


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**Pre-Stack Stopper Motor**

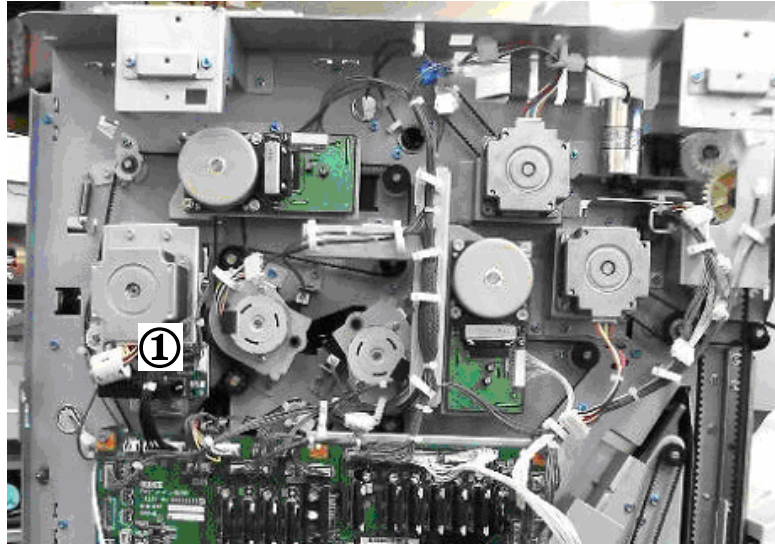
- Rear cover (☛1.1.4)
- Main control board bracket (🔩 x4, 📏 x All, 📏x8)

[A] Pre-stack stopper motor (🔩 x2, 📏x1, 📏 x1)



B830R922.BMP

### 1.9.4 PUNCH MOTOR

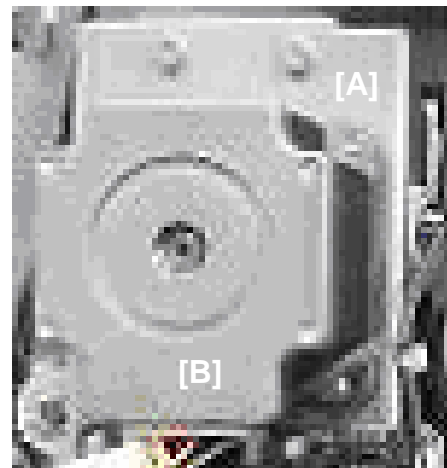


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①	Punch Motor
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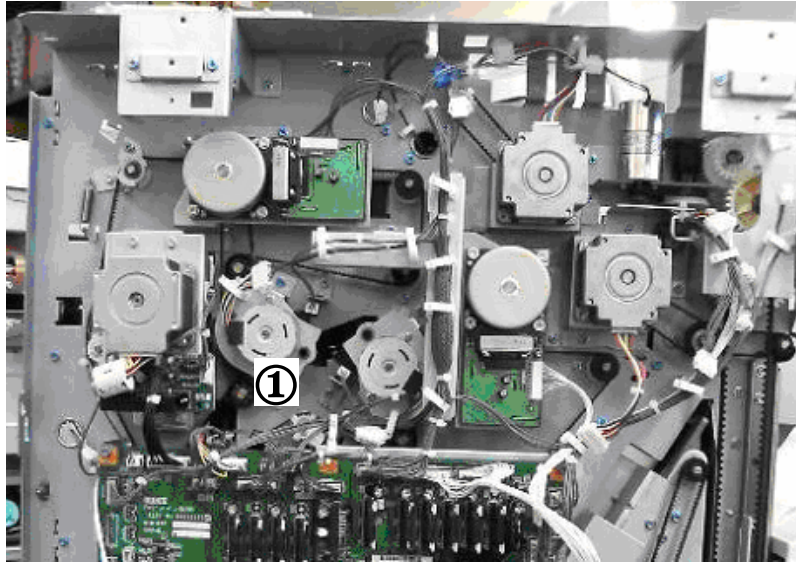
#### ***Punch Motor***

- Rear cover (☛1.1.4)
- [A] Punch motor bracket (🔧 x3, ⬅️x2, 📏 x1, Timing belt x1)
- [B] Punch motor (🔧 x2)



B830R925.BMP

### 1.9.5 STAPLE MOTORS

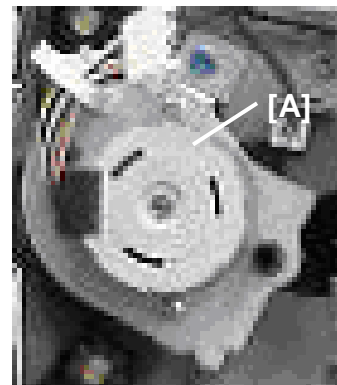


B830R901.BMP

①	Staple Junction Gate Motor
---	----------------------------

#### ***Staple Junction Gate Motor***

- Rear cover (☛1.1.4)
- [A] Staple junction gate motor (🔧 x2, ⏪x1, 📄x1)

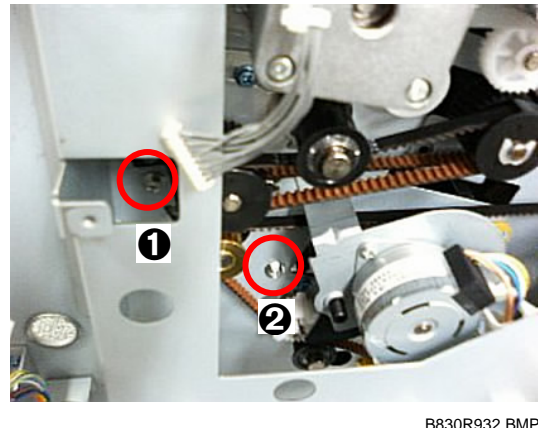


B830R930.BMP

Peripherals



**Stapler Exit Motor**



B830R931.BMP

B830R932.BMP

①	Stapler Exit Motor
---	--------------------

- Main control board bracket (🔧 x4, ⏪ x 8, 📏 x All)
- 1. Remove the stapler exit motor ① (🔧 x2 ①, ②, 📏 x2, Timing belt x1)

## 2. SERVICE TABLES

For details about 3000-Sheet Finisher B830 SP codes, please refer to “5. Service Tables” in the main machine service manual.

### 2.1 DIP SWITCHES

DIP SW100

This DIP SW100 settings are for designer and factory use only. Do not change them.

DIP SW 101: 1 to 4

DPS100				Description
1	2	3	4	
0	0	0	0	Default
1	0	0	0	Free run: 135 ppm (649 mm/s) A4 LEF, 5 sheets
0	1	0	0	Proof tray free run for durability testing: proof tray + punch + junction gate operation + proof tray output.:
0	0	1	0	Shift free run: Shift mode simulation 136 ppm (649 mm/s) A4 SEF, 5 sheets, continuous punching 110 ppm (515mm/s)
0	0	0	1	Sensor check before shipping, lowering the tray before shipping. <b>DFU</b> . Do not change.

### 2.2 TEST POINTS

100 to 110

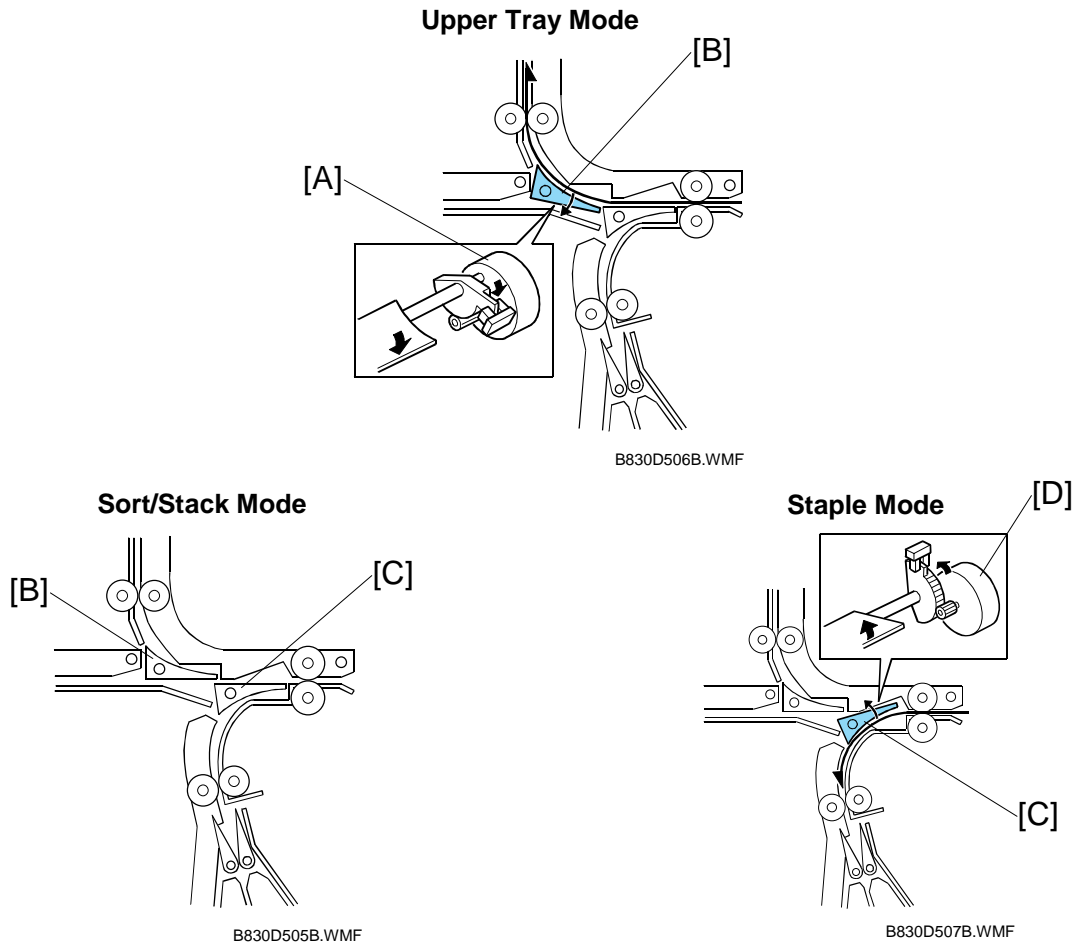
No.	Label	Monitored Signal	Comment
TP100	(5V)	+5 V	Used for sensor point testing, lowering the tray to shipping position. <b>DFU</b> .
TP101	(GND)	Ground	
TP102	(RXD)	RXD	
TP103	(TXD)	TXD	

### 2.3 FUSES

No.	Function
FU100	Protects 24 V.

### 3. DETAILS

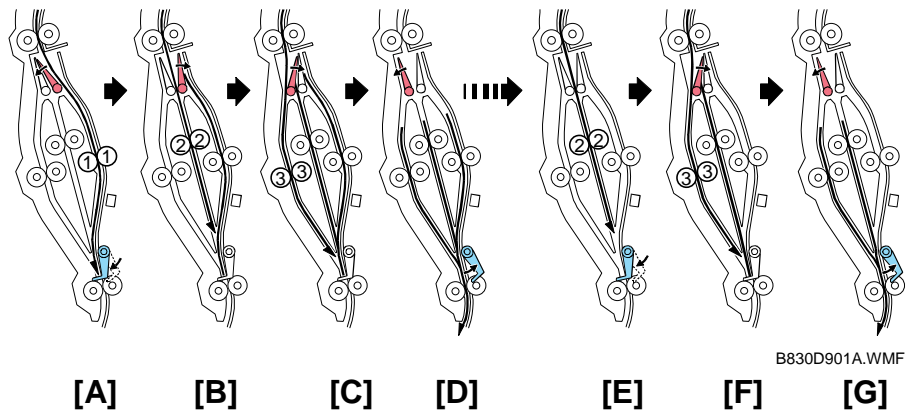
#### 3.1 UPPER TRAY AND STAPLER JUNCTION GATES



Depending on the finishing mode, the copies are directed up, straight through, or down by the combinations of open and closed junction gates.

Solenoid/Gate		Selected Operation Mode		
		Upper Tray	Sort/Stack	Staple
[A]	Upper tray junction gate motor	ON	Off	Off
[B]	Upper tray junction gate	OPEN	Closed	Closed
[C]	Stapler junction gate	Closed	Closed	OPEN
[D]	Stapler junction gate motor	Off	Off	ON

## 3.2 PAPER PRE-STACKING



### Sequence 1

The first three sheets of each job feed to trays ① → ② → ③ ([A], [B], [C]), then the first three sheets feed together to the staple tray [D].

### Sequence 2

Thereafter, the remaining sheets feed to trays ② → ③ ([E], [F]), then the two sheets feed together to the staple tray [G]. Sequence 2 continues until the end of the job.

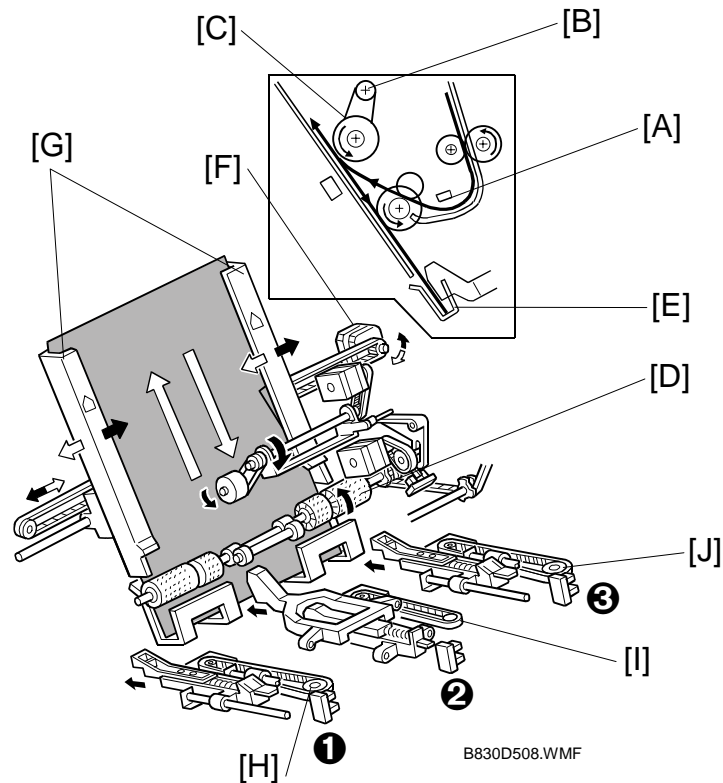
Junction gate mechanism:

- Three junction gates at the top of the pre-stack tray send the sheet of paper down path ①, ②, or ③.
- The pre-stack junction gate motor controls the junction gates.
- The pre-stack junction gate HP sensor detects when the junction gates are at home position.
- The pre stack paper sensor – left detects paper jams in path ③.
- The pre stack paper sensor – right detects paper jams in path ①.

Stopper mechanism:

- The pre-stack stopper releases the three sheets of paper from the pre-stack tray after the previous set is stapled.
- The pre-stack stopper motor controls the stopper at the bottom of the tray.
- The pre-stack stopper HP sensor detects when the stopper is at home position.

### 3.3 JOGGER UNIT PAPER POSITIONING



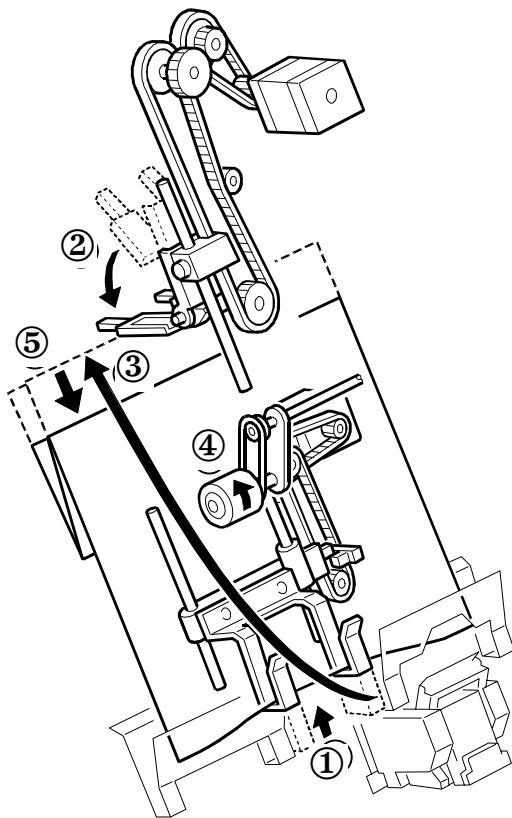
In the staple mode, as every sheet of paper arrives in the jogger unit, it is vertically and horizontally aligned, then the staple edge is pressed flat to ensure the edge of the stack is aligned correctly for stapling.

**Vertical Paper Alignment:** About 60 ms after the trailing edge of the copy passes the staple tray entrance sensor [A], the positioning roller motor [B] is energized to push the positioning roller [C] into contact with the paper. The positioning roller and alignment brush roller [D] rotate to push the paper back and align the trailing edge of the paper against the stack stopper [E].

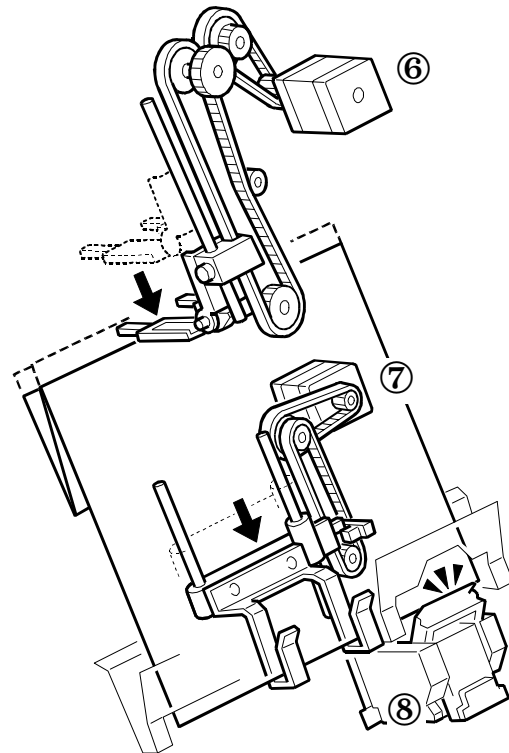
**Horizontal Paper Alignment:** When the print key is pressed, the jogger motor [F] turns on and the jogger fences [G] move to the wait position about 7.2 mm wider than the selected paper size on both sides. When the trailing edge of the paper passes the staple tray entrance sensor, the jogger motor moves the jogger fences 3.7 mm towards the paper. Next, the jogger motor turns on again for 3.5 mm for the horizontal paper alignment then goes back to the wait position.

**Paper Stack Correction:** After the paper is aligned in the stapler tray, the left [H], center [I], and right [J] stack plate motors switch on briefly and drive the front stack, center stack, and rear stack plates against the edge of the stack to flatten the edge completely against the staple tray for stapling. When the next copy paper turns on the stapler entrance sensor, the stack plate motors turn on and return to their home positions. The home positions are detected by stack plate HP sensors ①, ②, ③.

### 3.4 STAPLING



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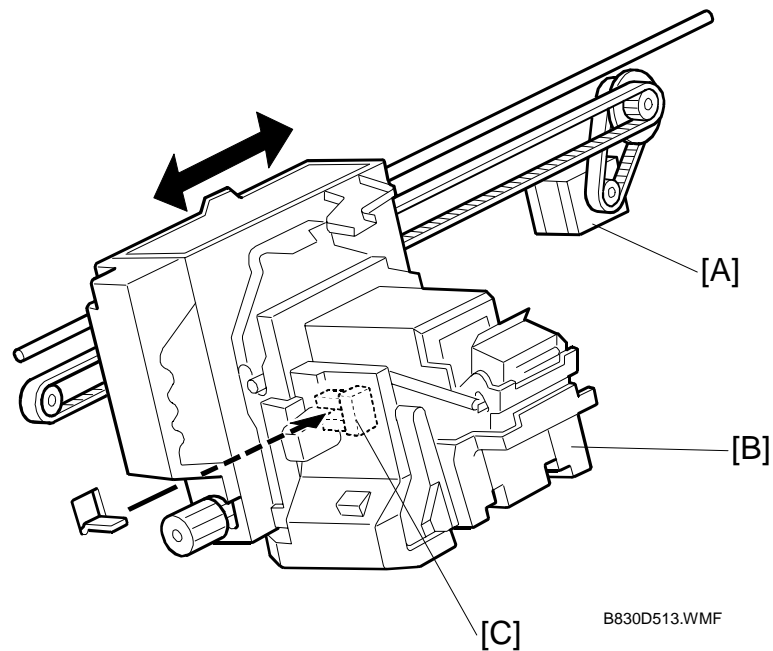


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Here is the operation sequence for jogging and stapling:

- ① The lower jogger fence lifts to receive the sheets.
- ② The top fence moves down, to the horizontal position.
- ③ A sheet of paper goes into the stapler tray.
- ④ The positioning roller turns when each sheet is fed to the stapler tray.
- ⑤ Each sheet is fed down against the lower jogger fence to align the bottom edge.
- ⑥ After the set number of sheets come in, the top fence motor switches on and lowers the top fence against the top of the stack. This aligns the stack for stapling.
- ⑦ The bottom fence motor lowers the aligned stack to the stapling position.
- ⑧ The stapler staples the stack.

### 3.5 STAPLER UNIT MOVEMENT



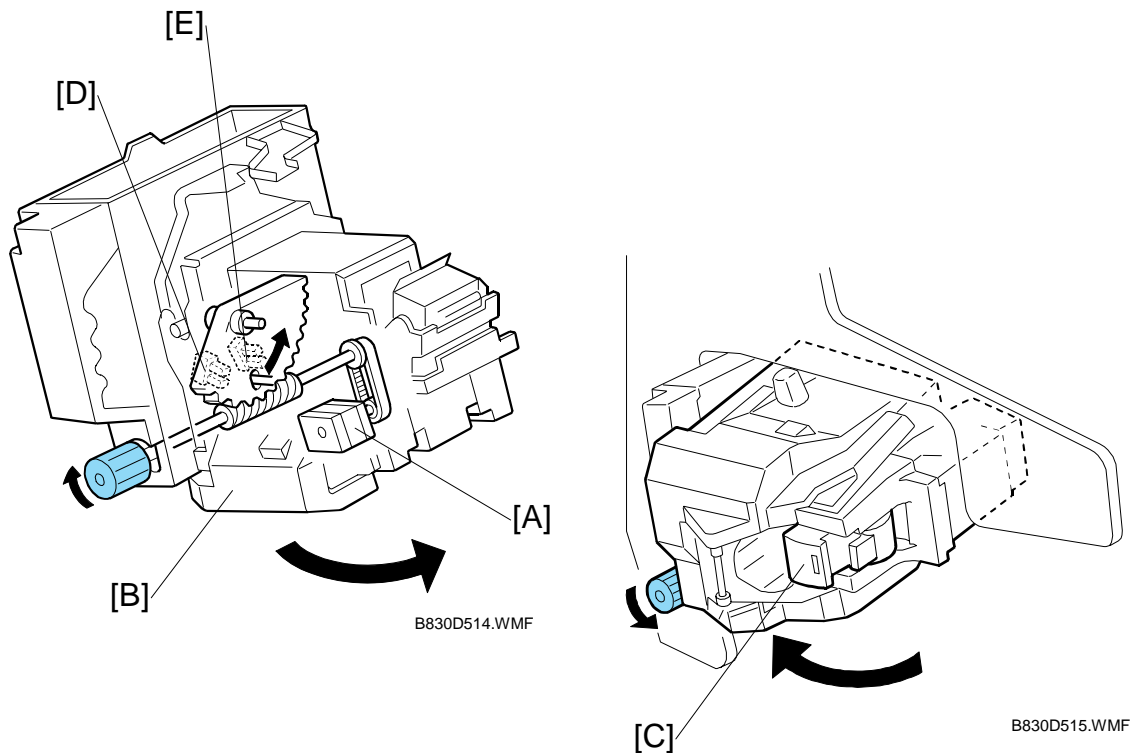
#### ***Side-to-Side***

The stapler motor [A] moves the stapler [B] from side to side. After the start key is pressed, the stapler moves from its home position to the stapling position.

If two-staple-position mode is selected, for the first stack the stapler moves to the rear stapling position first, staples, moves to the front position, staples and waits at the front. For the second stack, the stapler staples the front corner first, then moves to the rear corner and staples.

**NOTE:** For continuous stapling jobs, the corners are stapled rear then front for the odd number stacks and stapled front then rear for even number stacks.

After the job is completed, the stapler returns to its home position. This is detected by the stapler HP sensor [C].



### **Rotation (1)**

In the oblique staple position mode, the stapler rotation motor [A] rotates the stapler unit [B] 45° to counterclockwise after it moves to the stapling position.

### **Rotation (2)**

When the staple end condition arises, the stapler motor moves the stapler to the front and the stapler rotation motor rotates the stapler unit to clockwise to remove the staple cartridge [C]. This allows the user to add new staples.

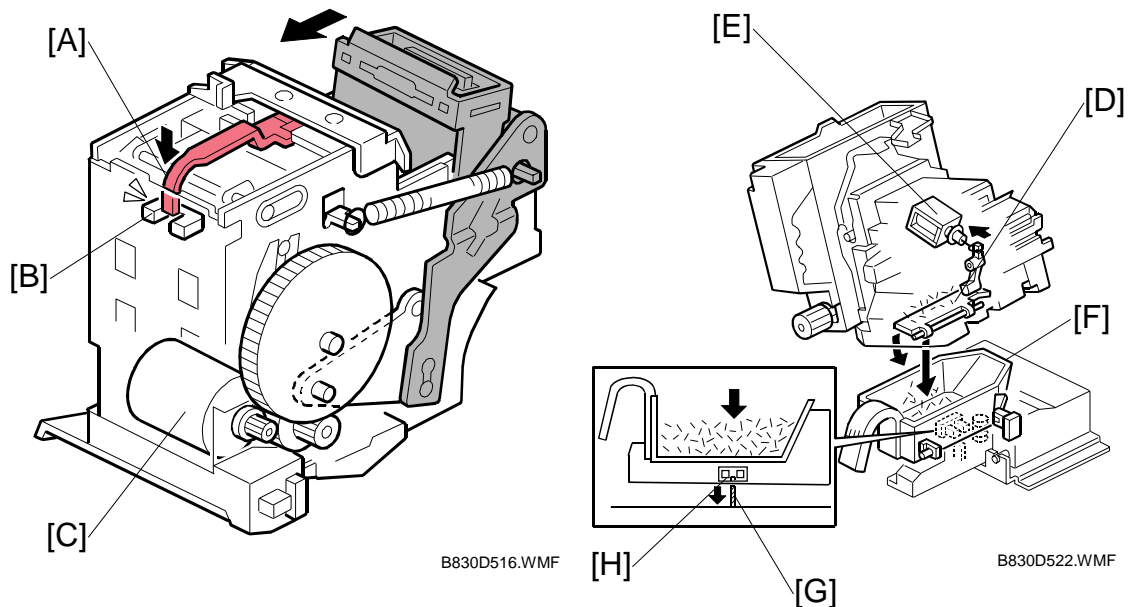
Once the staples have been installed, and the front door closed, the stapler unit returns to its home position.

### **Sensors**

Two sensors [D] and [E] detect the angle of the stapler. There are three positions: horizontal, 45 degrees, 75 degrees.



### 3.6 STAPLER



When the stapler cartridge is locked and in position, actuator [A] deactivates the cartridge set sensor [B] and the stapler is ready for operation.

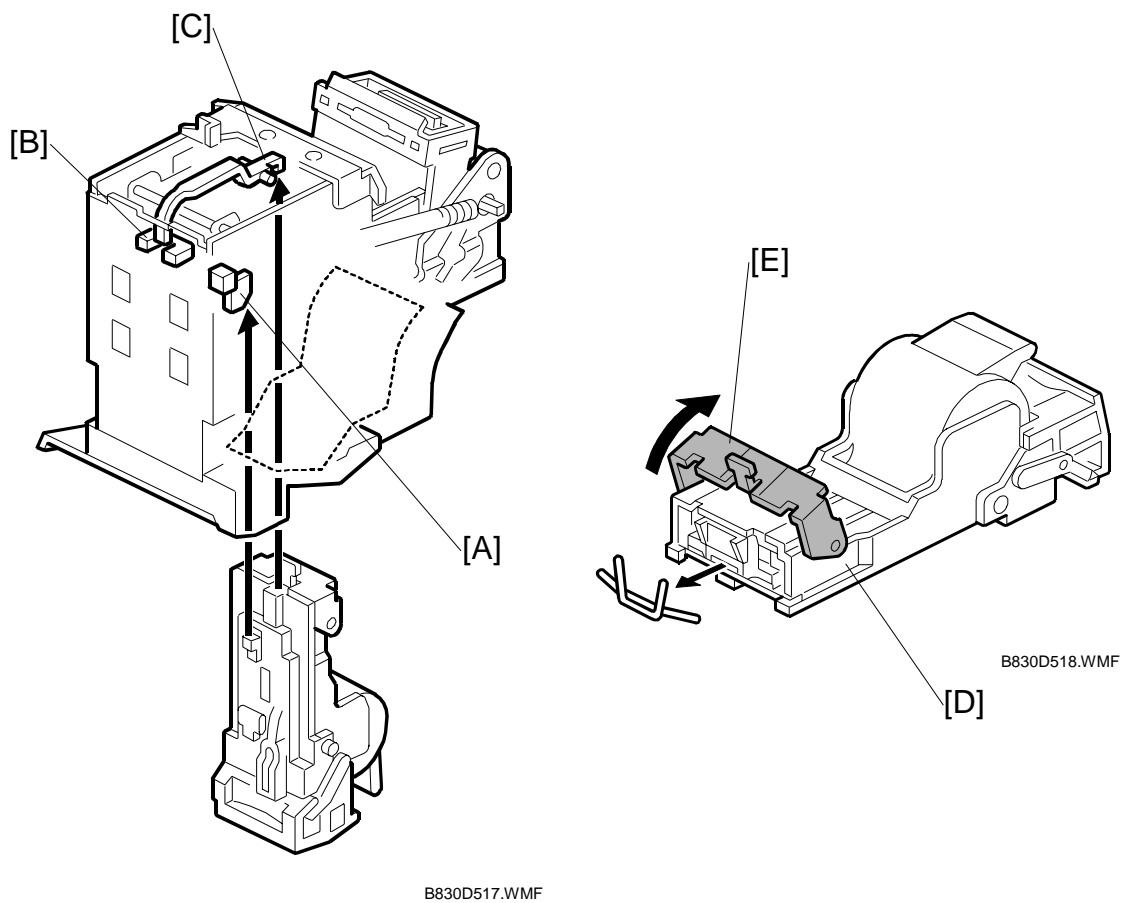
When aligned copies are brought to the stapling position by the positioning roller and jogger fences, the staple hammer motor [C] starts stapling.

During stapling, the stapler trims off the excess length of the staples. This length of the trimmings depends on the number of copies in the set. They will be very small for a stack containing 100 sheets.

The staple trimmings drop into the trap door [D] inside the stapler. When the stapler unit returns to its home position, solenoid [E] energizes opens the trap door.

The staple trimmings drop into the staple trimmings hopper [F].

The staple trimmings hopper descends as it fills, until actuator [G] activates the staple trimmings hopper full sensor [H]. A message asks the user to empty the staple trimmings.

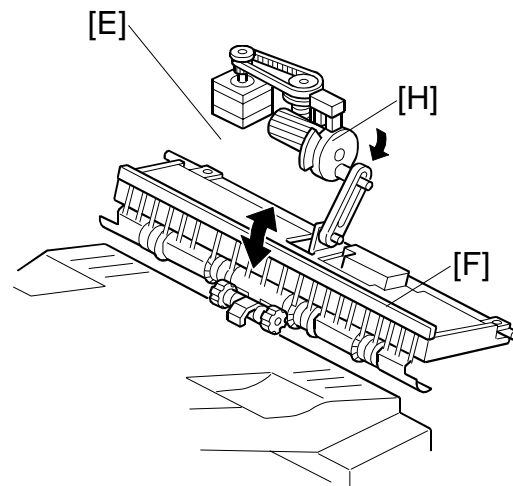
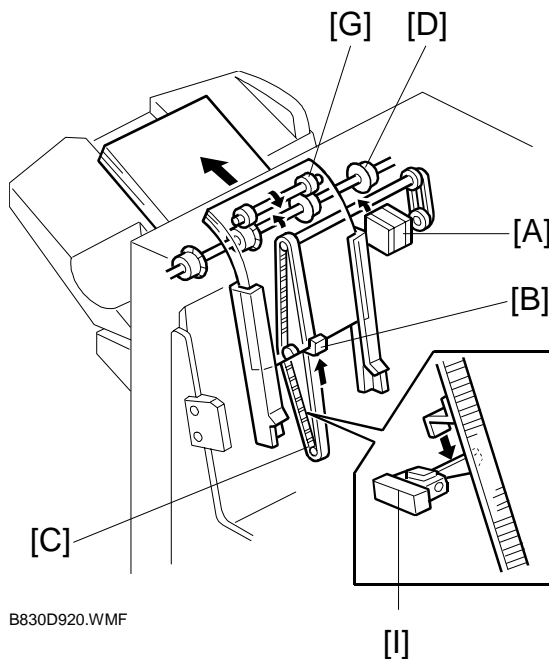


The stapler has a staple end sensor [A] and cartridge set sensor [B]. When the staple cartridge is inserted, it pushes the actuator [C] into the gap of the cartridge set sensor. This tells the machine the stapler is ready for operation.

When a staple end or no cartridge condition is detected, a message is displayed advising the operator to install a staple cartridge. If this condition is detected during a copy job, the indication will appear, and the copy job will stop.

The staple cartridge has a clinch area [D] where jammed staples collect. The operator can remove the jammed staples from the clinch area by raising and lowering bracket lever [E].

### 3.7 FEED-OUT



After the copies have been stapled, the stack feed-out motor [A] starts.

The pawl [B] on the stack feed-out belt [C] transports the set of stapled copies up and feeds it to the shift tray exit roller [D].

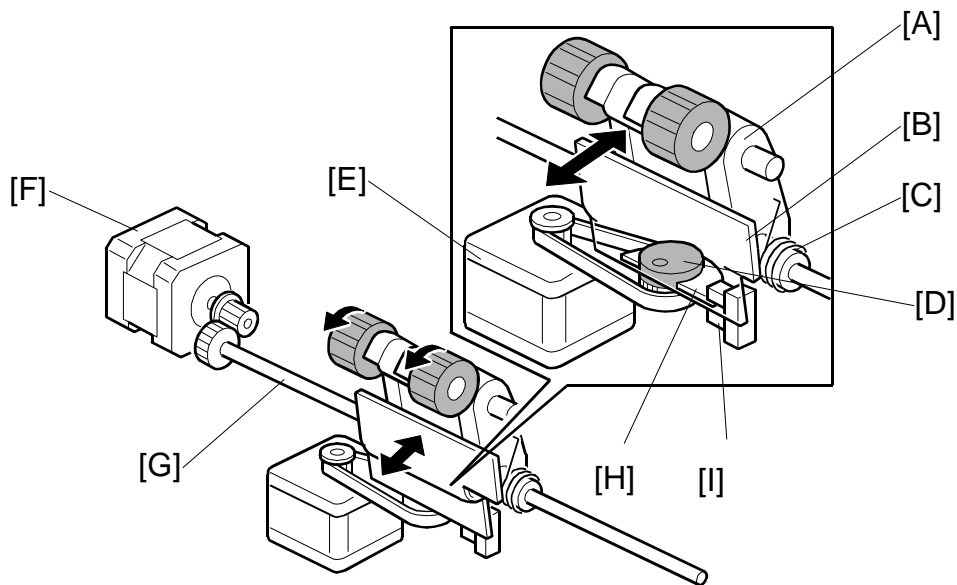
When stapling starts, the exit guide motor [E] opens the upper exit guide [F], which includes the upper shift tray exit roller [G], in order to feed out the leading edge of the copy set smoothly.

The exit guide motor turns on again at the prescribed time after stapling finishes, and the upper exit guide plate is lowered. Then the shift tray exit roller takes over the stack feed-out.

The on-off timing of the exit guide motor is detected by the exit guide open sensor [H].

The stack-feed-out motor turns off when the pawl actuates the stack feed-out belt home position sensor [I].

### 3.8 PAPER EXIT STACKING



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The drag roller assembly [A] is fastened to a plate [B] on a shaft by a spring [C]. The cam [D], in contact with the bottom of the plate, is connected to the drag drive motor [E] via a timing belt.

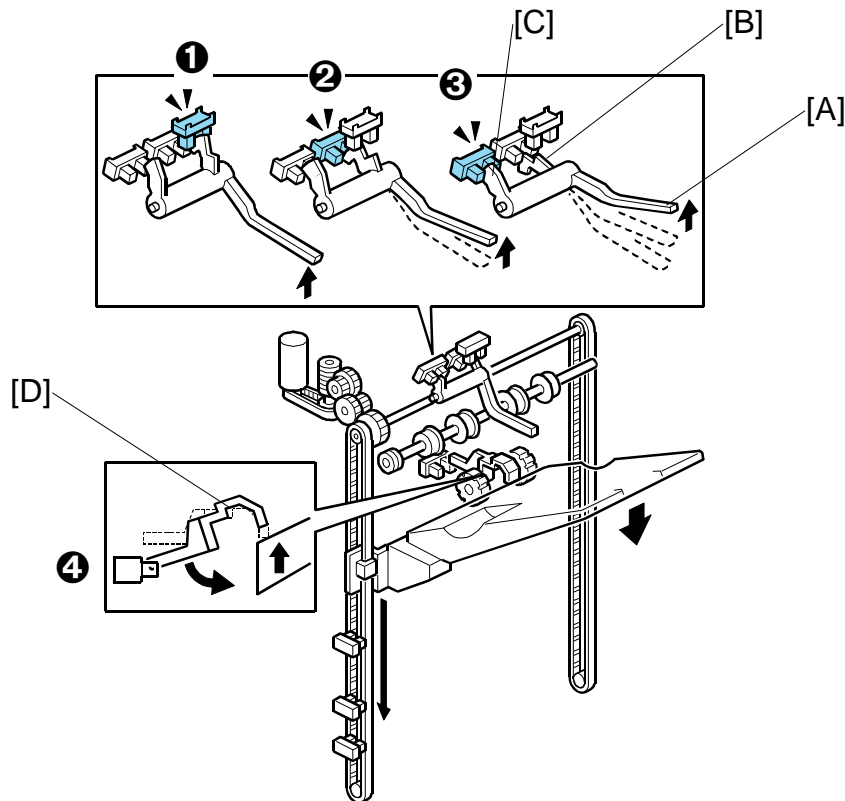
The drag drive motor and timing belt rotate the cam against the bottom of the plate to move the rollers forward and back with each sheet ejected onto the shift tray.

The drag roller motor [F] drives the shaft [G] that rotates the drag rollers counter-clockwise as the rollers move back. The simultaneous rotation and backward movement of the roller assembly pulls each sheet back toward the copier to align the edges of the stack on the shift tray.

The actuator [H] is mounted on the cam and rotating with both rotating clockwise) and detects the roller assembly home position when the actuator leaves the gap of the drag drive HP sensor [I] and signals the machine that the rollers are at the home position. The machine uses this information to control paper feed timing and confirm that the mechanism is operating correctly. The cam and actuator make one complete rotation for every sheet fed out of the machine onto the shift tray.

### 3.9 SHIFT TRAY OPERATION

#### 3.9.1 OVERVIEW



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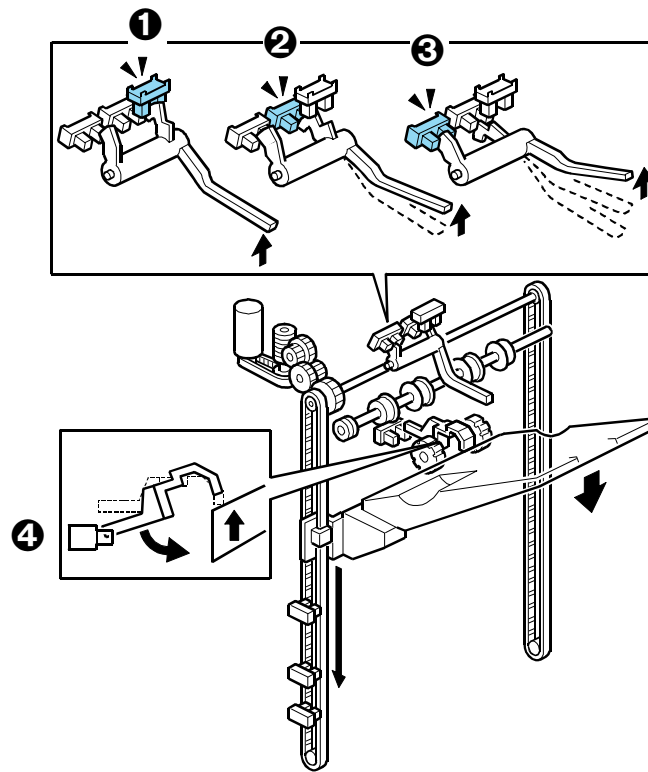
The movement of the shift tray is controlled by four sensors ❶, ❷, ❸, and ❹ and a feeler [A] with two actuators [B] and [C].

- The notched actuator [B] is used with sensors ❶ and ❷.
- The flat actuator [C] is used with sensor ❸.
- Sensor ❹ is provided with its own actuator [D].

The operation mode determines which parts are used to control the movement of the shift tray.

#### Sensor Names

No.	Name
❶	Paper Height Sensor – Staple Mode
❷	Paper Height Sensor – Standby Mode
❸	Paper Height Sensor – Z-Fold Full
❹	Paper Height Sensor – Shift/Z-Fold



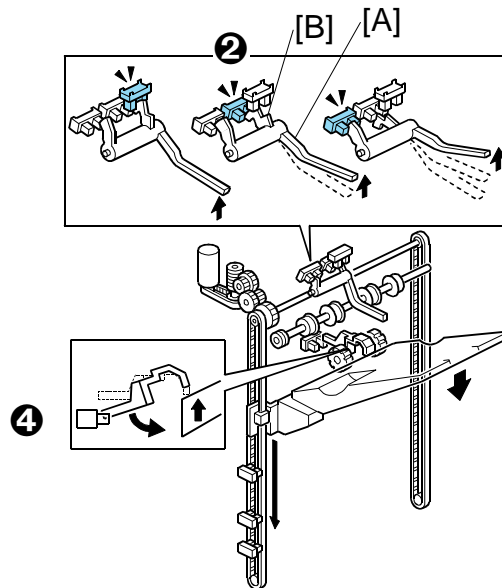
B830D010.WMF

### Sensors and Operation Modes

Mode	Function
Shift	Sensor 4 detects the amount of paper on the shift tray in shift mode to control operation of the tray lift motor.
Staple	Sensor 1 detects the amount of paper on the shift tray in staple mode to control the tray lift motor.
Standby	<ul style="list-style-type: none"> <li>When the machine is turned on, Sensor 2 is used to position the tray at the standby position and keep it there when the shift is not in use or when the upper tray (proof tray) is used.</li> <li>If the shift tray is not attached to the machine (if it has been removed for servicing, for example), if the machine is switched on the tray mount will push up the feeler and switch off Sensor 2 to switch off the tray lift motor. (Sensor 4 cannot operate if the tray has been removed.)</li> </ul>
Z-Fold, Z-Fold Staple	<ul style="list-style-type: none"> <li>Sensor 4 detects the height of the tray when the output includes Z-folded sheets with and without stapling.</li> <li>Sensor 3 detects when the tray is full when the output includes Z-folded sheets with and without stapling.</li> </ul>

These operations are described in more detail in the following sections.

### 3.9.2 SHIFT TRAY OPERATION: STAND-BY MODE



B830D010.WMF

#### Standby Mode

When the machine is switched on:

1. The shift tray lift motor switches on and lowers the tray.
2. The feeler [A] descends and raises the hooked actuator [B] out of the gap of Sensor ② and switches Sensor ② ON.
3. When Sensor ② switches ON this reverses the shift tray motor.
4. The shift tray motor raises the shift tray and pushes up the feeler, the actuator descends into the gap of Sensor ②, and switches Sensor ② OFF
5. When Sensor ② switches OFF, this stops the shift tray lift motor with the shift tray at the standby position.

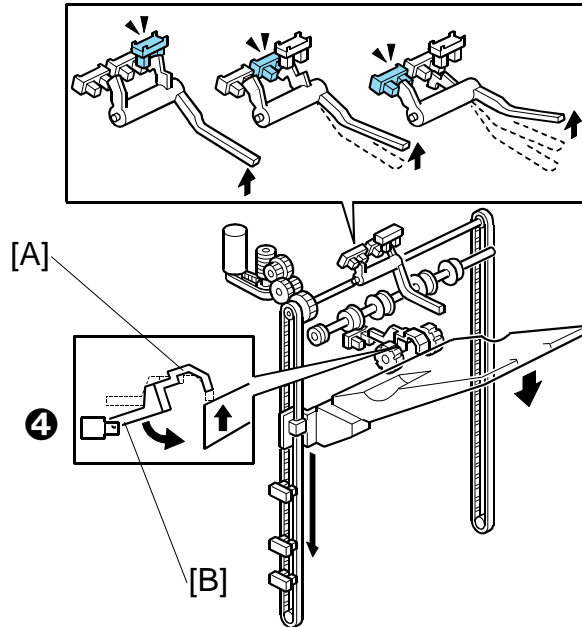
This sequence repeats every time the machine is powered on.

Sensor ② also switches off the shift tray lift motor when the machine is switched on with the shift tray removed for servicing. When the machine is switched on without the shift tray attached to the side of the finisher:

1. The shift tray mount will push the feeler [A] up until the actuator [B] enters the gap of Sensor ② and switches Sensor 2 ON.
2. When Sensor ② switches ON this switches the shift tray motor OFF and stops the tray.

**NOTE:** Sensor ② cannot operate with the shift tray removed so Sensor ② is used to switch off the shift tray motor and stop the shift tray mount.

### 3.9.3 SHIFT TRAY OPERATION: SHIFT MODE



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Sensor ④ and its feeler [A] and actuator [B] control the movement of the shift tray when paper is output in the sort/stack mode:

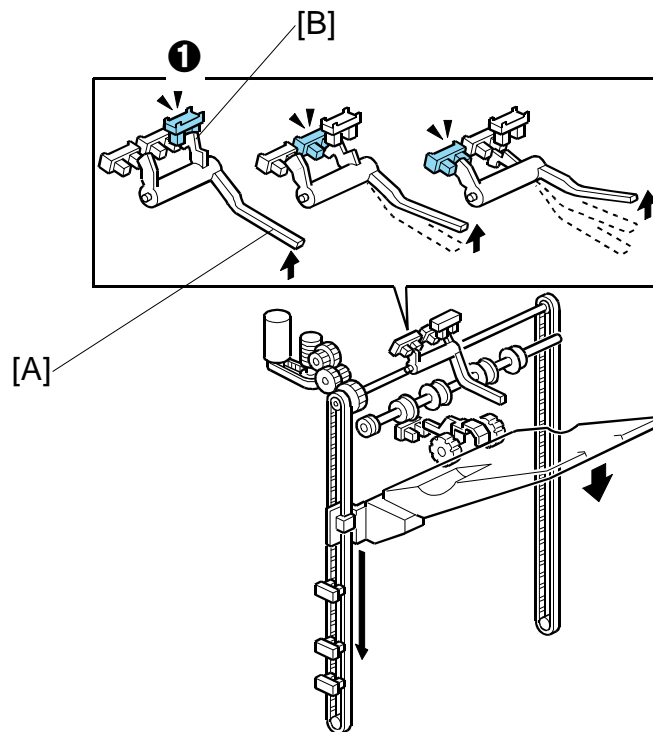
1. Paper is output to the tray.
2. As the height of the stack increases, this pushes up the feeler [A].
3. When the actuator [B] of the ascending feeler actuates Sensor ④, this switches the sensor OFF and switches the tray lift motor ON.
4. The tray lift motor lowers the tray until the feeler descends far enough to raise the actuator out of the gap of Sensor ④.
5. When the actuator leaves the gap of Sensor ④, this switches Sensor ④ ON, switches the motor OFF, and stops the tray.

The sequence repeats until the end of the job or until the tray becomes full.

(☛3.9.6)



### 3.9.4 SHIFT TRAY OPERATION: STAPLE MODE



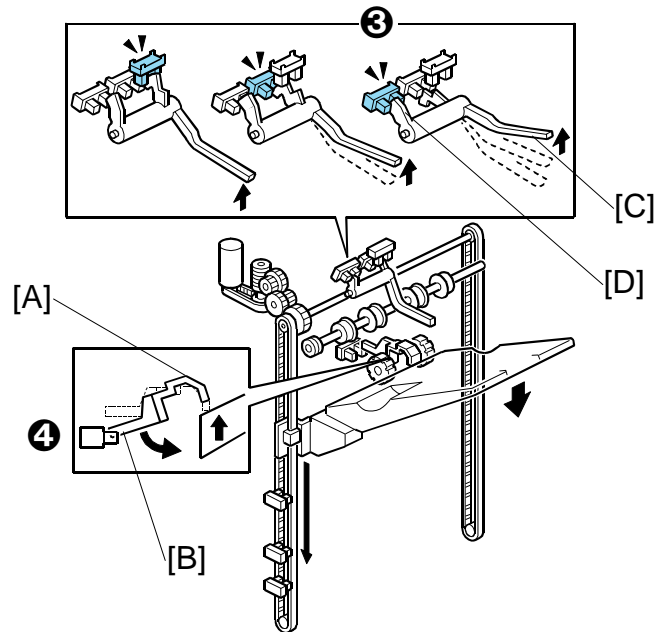
B830D010A.WMF

Sensor ❶, feeler [A] and its notched actuator [B] control the movement of the shift tray when paper is output to the shift tray in the staple mode:

1. A stapled stack is output to the tray.
2. The tray lift motor switches ON and lowers the tray the prescribed distance.
3. Next, the tray lift motor raises the tray and feeler [A] until actuator [B] leaves the gap of Sensor ❶.
4. When the actuator [b] leaves the gap of sensor ❶, this switches Sensor ❶ OFF and switches the tray lift motor OFF.

This sequence repeats every time a stack is output to the tray until the end of the job or until the tray becomes full. (☛3.9.6)

### 3.9.5 SHIFT TRAY OPERATION: Z-FOLDED PAPER

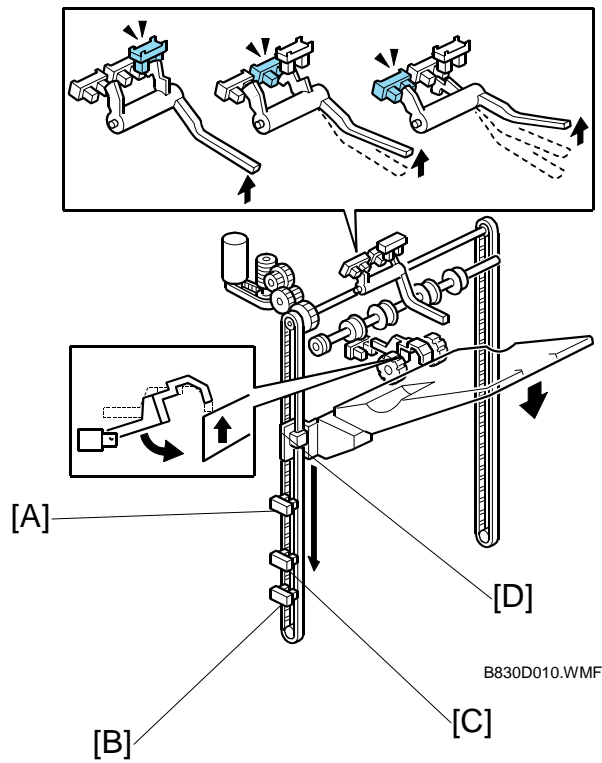


B830D010.WMF

Sensor ④ and its feeler [A] and actuator [B], and Sensor ③ with its feeler [C] and flat actuator [D] control the movement of the shift tray when Z-folded paper is output to the shift tray.

1. Z-folded paper is output to the tray.
2. As the height of the stack increases, this pushes up feeler [A] of Sensor ④.
3. When the actuator [B] of the ascending feeler enters the gap of Sensor ④, this switches the sensor OFF and switches the tray lift motor ON.
4. The tray lift motor lowers the tray until the feeler descends far enough to raise the actuator out of the gap of Sensor ④.
5. When the actuator leaves the gap of Sensor ④, this switches Sensor ④ ON, switches the motor OFF, and stops the tray.
6. Steps 1 to 5 repeat until the top of the paper stack pushes feeler [C] up and actuator [C] into the gap of Sensor ③.
7. When the actuator enters the gap of Sensor ③, this switches the sensor off and switches Sensor ③ OFF, signals that the tray is full and stops the job.

### 3.9.6 SHIFT TRAY FULL AND NEAR-FULL DETECTION



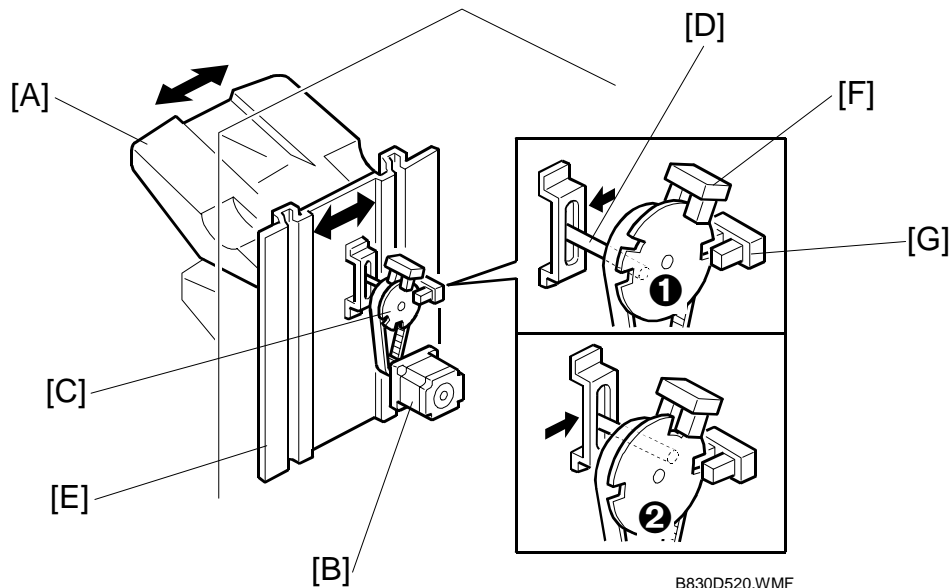
This machine has two shift tray full sensors: the shift tray full sensor (large paper) [A] for B4 and larger, and the shift tray full sensor [B] for small paper (smaller than B4).

**NOTE:** Sensor [C] (S20) is the near-full sensor.

When the actuator [D] enters sensor [A] while using large paper (about 1500 sheets are on the tray), a message will be displayed and copying will stop.

When the actuator [D] enters sensor [B] while using small paper (about 3,000 sheets are on the tray), a message will be displayed and copying will stop.

### 3.10 SHIFT TRAY SIDE-TO-SIDE MOVEMENT



In sort/stack mode, the shift tray [A] moves from side to side to separate the sets of copies.

The horizontal position of the shift tray is controlled by the shift motor [B] and shift gear disk [C]. After one set of copies is made and delivered to the shift tray, the shift motor turns on, driving the shift gear disk and the shaft [D]. The end fence [E] is positioned by the shaft, creating the side-to-side movement.

The next set of copies is then delivered. The motor turns on, repeating the same process and moving the tray back to the previous position.

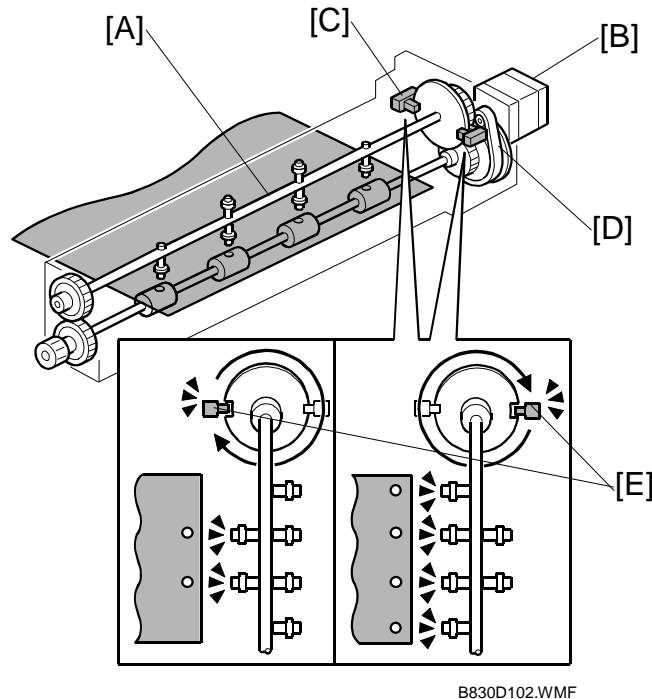
The disk is rotated alternately clockwise and counter-clockwise through an arc of 180 degrees.

The notches cut into the shift gear disk control the operation of the shift motor, using shift tray half-turn sensors [F] and [G].

If the job ends with the disk at ❶ with only one sensor deactivated, the motor rotates the disk to the ❷ position where both sensors are deactivated. This is the home position.

## 3.11 PUNCH UNIT

### 3.11.1 PUNCH UNIT DRIVE



B830D102.WMF

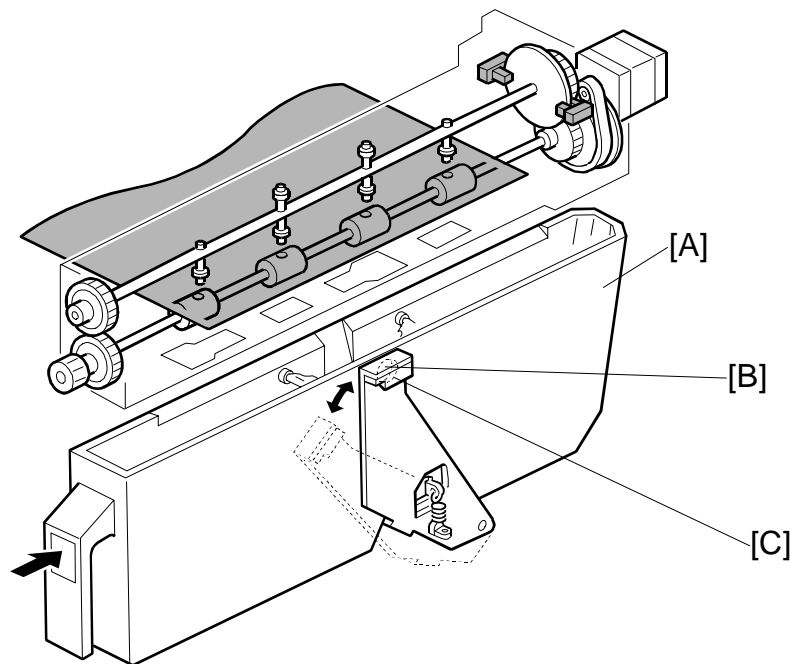
The punch unit makes 2 or 3 holes at the trailing edge of the paper. The number of holes depends on a selection made on the operation panel.

The cam [A] has 2 punches on one side and 3 punches on the other, and is turned by the punch motor [B]. The punch motor turns on immediately after the trailing edge of the paper passes the entrance sensor. The punches on the cam rotate downward and punch holes in the paper.

After punching a sheet of paper, the cam returns to home position and stops. Home position depends on whether 2 holes or 3 holes are being made, so there are two punch HP sensors. Punch HP sensor 1 [C] is used when 2-hole punching is selected, and punch HP sensor 2 [D] is used when 3-hole punching is selected. When the cut-out [E] enters the slot of the punch HP in use (sensor 1 or 2-hole punching) the motor stops.

The knob (not shown) on the front end of the punch unit can be turned in either direction to clear paper jammed in the punch unit.

### 3.11.2 PUNCH WASTE COLLECTION



B830D103.WMF

Punch waste is collected in the punch waste hopper [A] positioned under the punch unit.

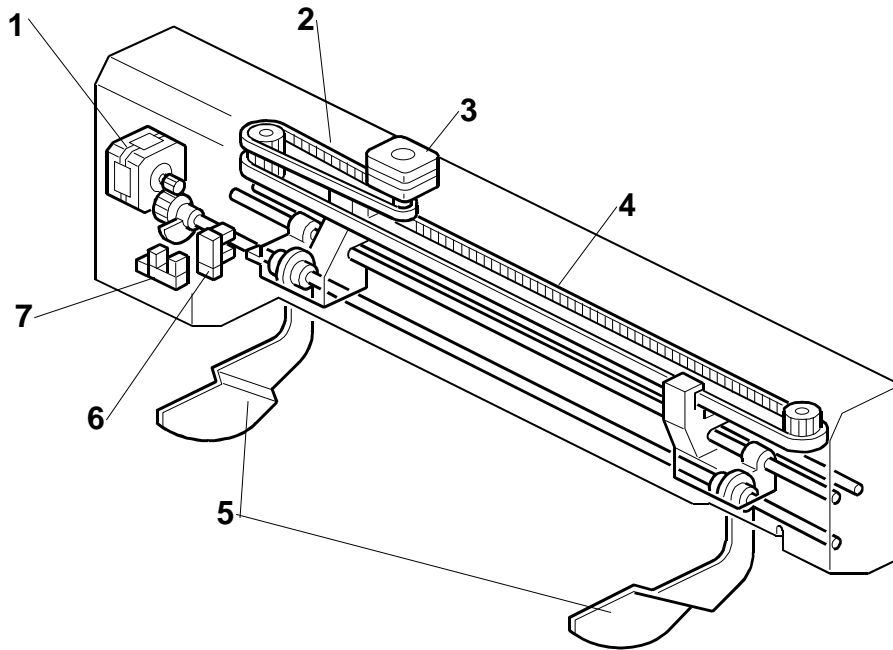
When the level of the punch waste in the hopper rises as far as the hole [B] in the hopper, the punch hopper full sensor [C] turns on, stops the job, and triggers a message on the operation to indicate that the hopper is full and must be removed and emptied.

The job resumes automatically after the hopper is emptied and returned to the finisher.

The punch hopper full sensor also functions as the hopper set sensor. When the hopper is not in the finisher, or if it is not inserted completely, the spring loaded sensor arm rotates up and to the right with the punch waste sensor away from the hole in the hopper holder and a message is displayed. The message in this case is the same as the hopper full message.

## 3.12 SHIFT TRAY JOGGER UNIT

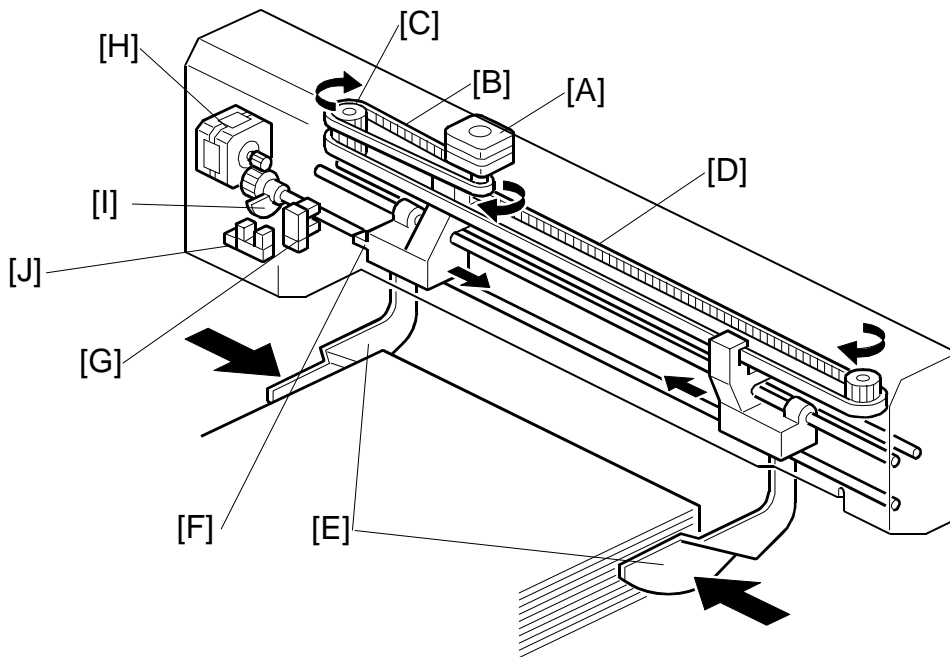
### 3.12.1 JOGGER UNIT MECHANICAL LAYOUT



B830D003.WMF

1. Shift Tray Jogger Retraction Motor
2. Shift Tray Jogger Motor Timing Belt
3. Shift Tray Jogger Motor
4. Shift Tray Jogger Fence Timing Belt
5. Shift Tray Jogger Fences
6. Shift Tray Jogger HP Sensor
7. Shift Tray Jogger Lift HP Sensor

### 3.12.2 JOGGER UNIT DRIVE



B830D002.WMF

After the first sheet exits, the shift tray jogger motor [A] switches on and rotates the jogger timing belt [B], gear [C] and jogger fence timing belt [D]. This closes the jogger fences [E] against the sides of the first sheet to align it and stops. Next, the motor reverses to open the fences for the next sheet. The jogger motor alternates its direction of rotation to open and close the jogger fences. The timing is prescribed by the width of the paper selected for the job.

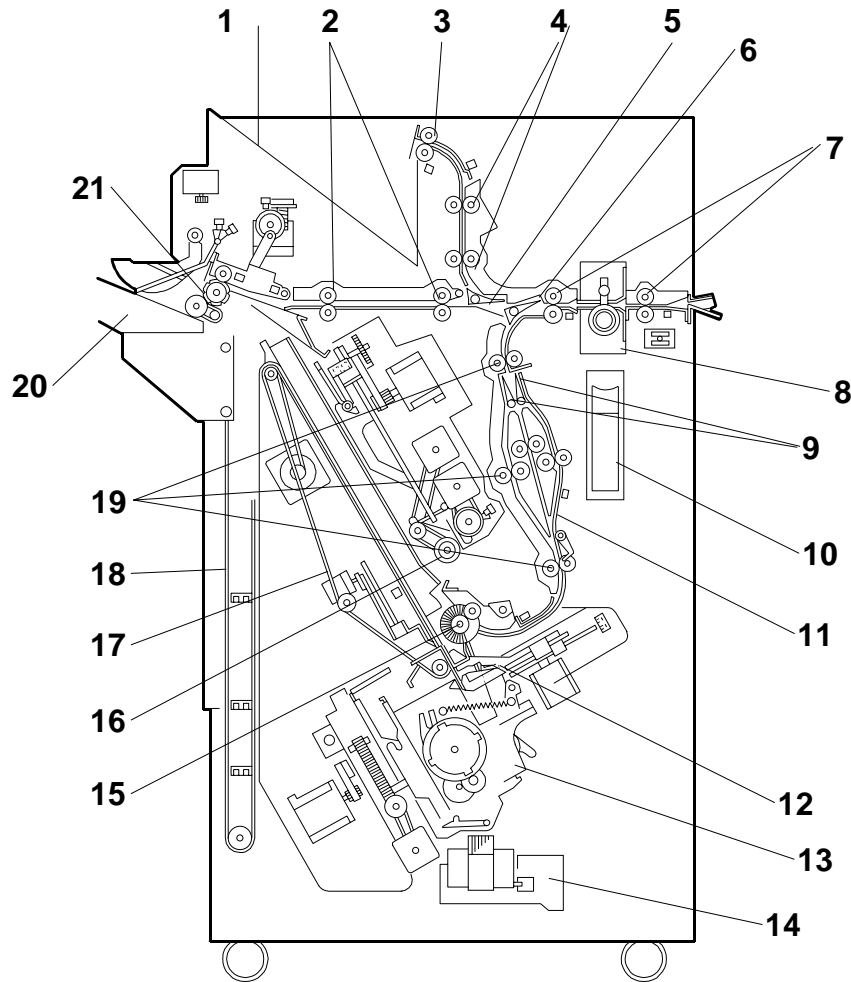
At the end of the job, the actuator [F] activates the shift tray jogger HP sensor [G] which shuts off the jogger motor and starts the jogger fence retraction motor [H].

The jogger fence retraction motor rotates the shaft which raises the jogger fences and lowers the actuator [I] into the slot of the jogger fence retraction HP sensor [J]. The activated sensor turns off the jogger fence retraction motor and the jogger fences remain at the raised position.



## 4. OVERALL MACHINE INFORMATION

### 4.1 MECHANICAL COMPONENT LAYOUT

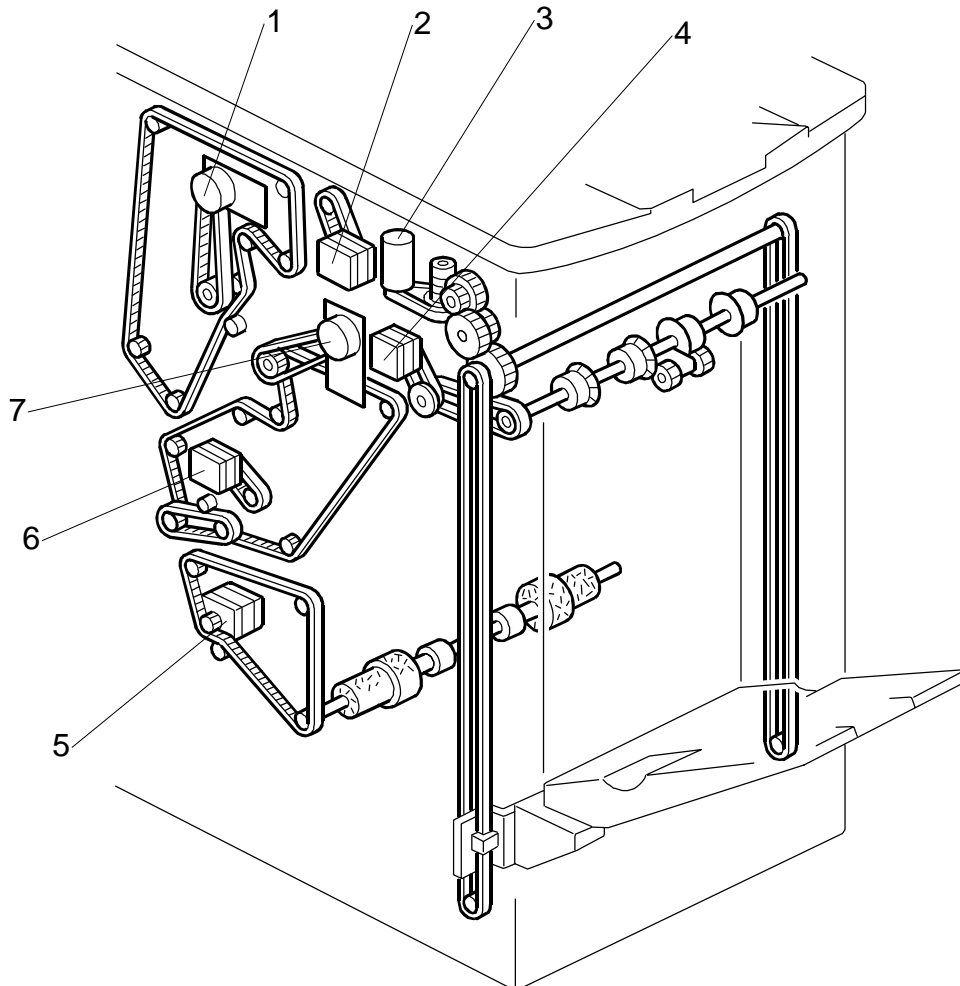


B830V500.WMF

- |                                  |                             |
|----------------------------------|-----------------------------|
| 1. Upper Tray                    | 12. Stack Plate             |
| 2. Middle Transport Rollers      | 13. Stapler                 |
| 3. Upper Tray Exit Roller        | 14. Staple Trimmings Hopper |
| 4. Upper Transport Rollers       | 15. Alignment Brush Roller  |
| 5. Upper Tray Junction Gate      | 16. Positioning Roller      |
| 6. Stapler Junction Gate         | 17. Stack Feed-out Belt     |
| 7. Entrance Rollers              | 18. Shift Tray Drive Belt   |
| 8. Punch Unit                    | 19. Lower Transport Rollers |
| 9. Pre-stack Junction Gates (x2) | 20. Shift Tray              |
| 10. Punch Waste Hopper           | 21. Shift Tray Exit Roller  |
| 11. Pre-stack Tray               |                             |

## 4.2 DRIVE LAYOUT

### 4.2.1 MAIN DRIVE

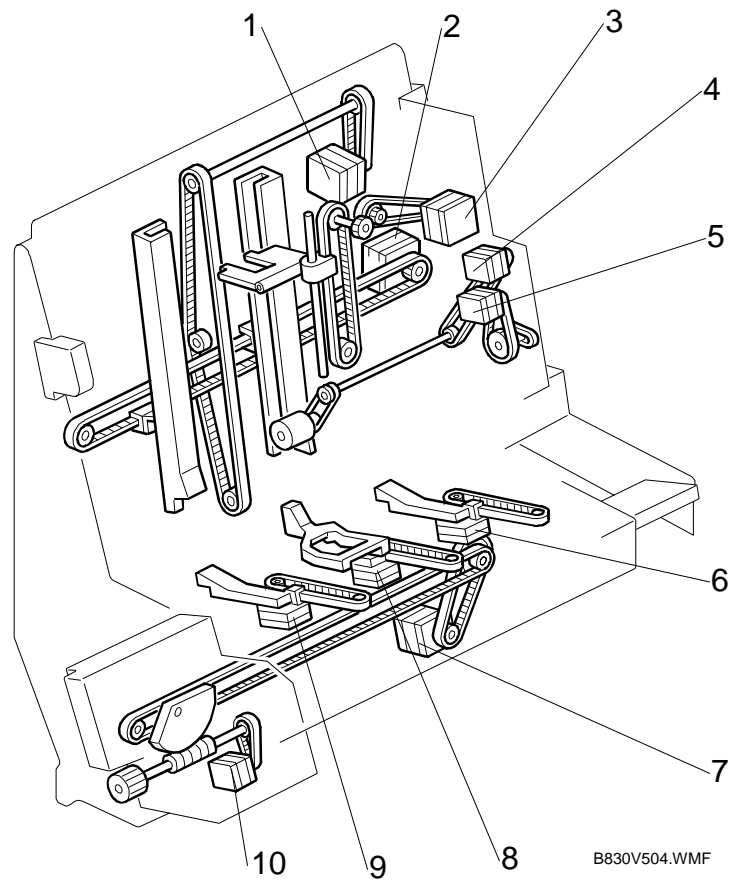


B830V503.WMF

1. Upper Transport Motor
2. Upper Tray Exit Motor
3. Shift Tray Lift Motor
4. Shift Tray Exit Motor
5. Stapler Exit Motor
6. Pre-Stack Transport Motor
7. Lower Transport Motor

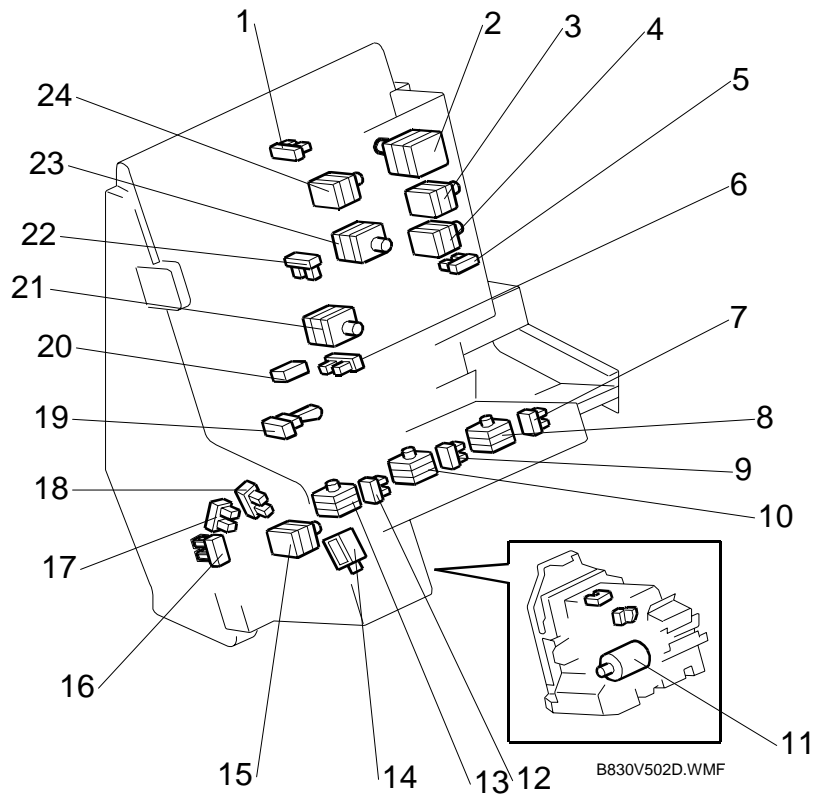
Peripherals

## 4.2.2 STAPLING TRAY DRIVE



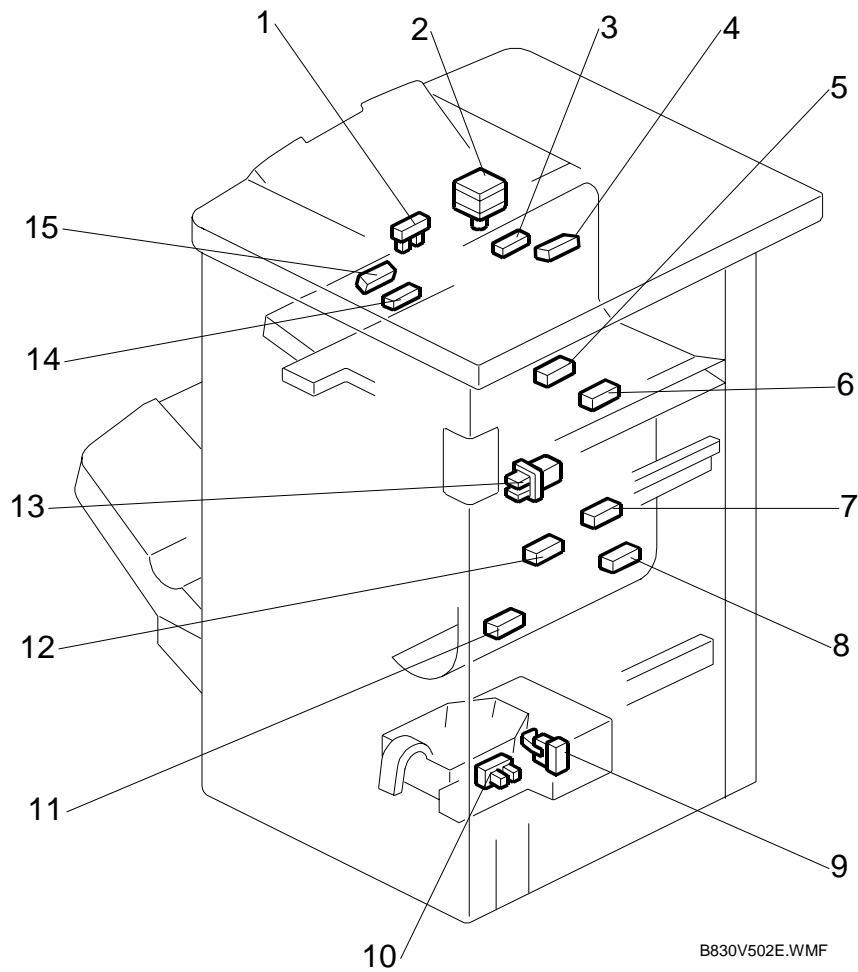
1. Stack Feed-Out Belt Motor
2. Jogger Motor
3. Top Fence Motor
4. Positioning Roller Drive Motor
5. Positioning Roller Motor
6. Stack Plate Motor (Rear)
7. Stapler Movement Motor
8. Stack Plate Motor (Center)
9. Stack Plate Motor (Front)
10. Stapler Rotation Motor

### 4.3 ELECTRICAL COMPONENTS



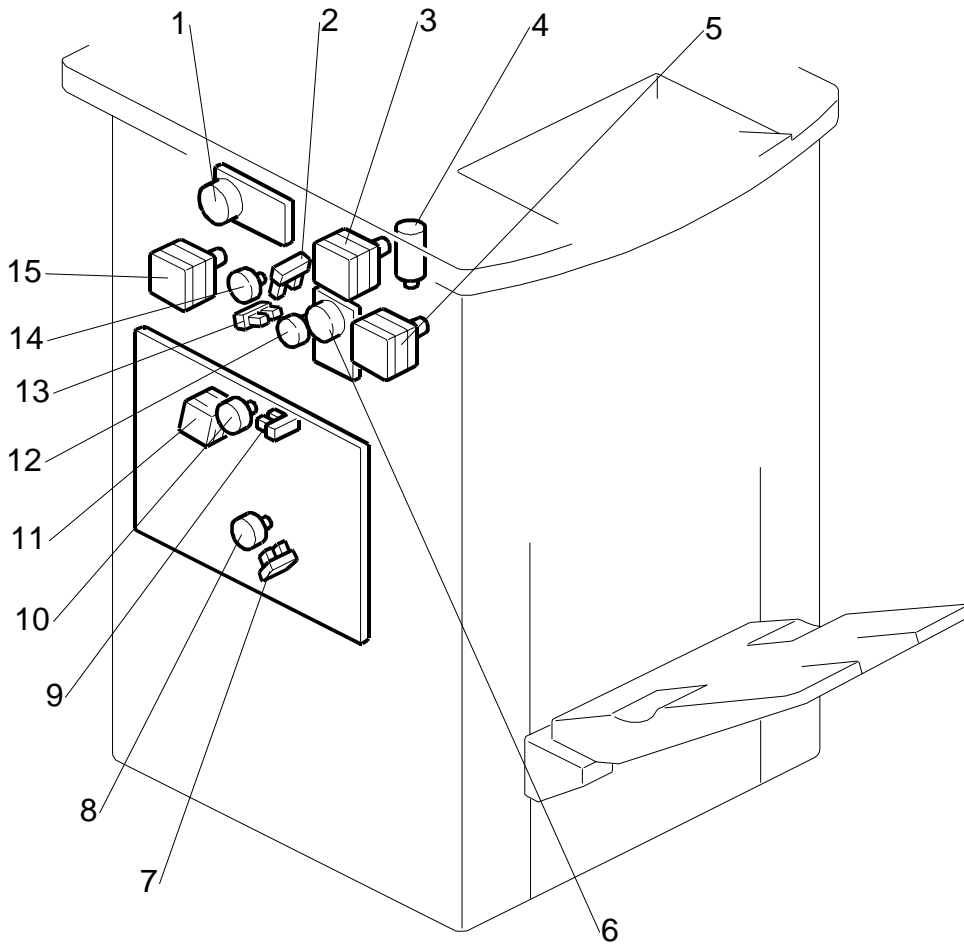
- |                                   |                                    |
|-----------------------------------|------------------------------------|
| 1. Top Fence HP Sensor            | 13. Stack Plate Motor (Front)      |
| 2. Top Fence Motor                | 14. Staple Trimming Chute Solenoid |
| 3. Positioning Roller Drive Motor | 15. Stapler Rotation Motor         |
| 4. Positioning Roller Motor )     | 16. Stapler HP Sensor (Front/Rear) |
| 5. Positioning Roller HP Sensor   | 17. Stapler Rotation Sensor 2      |
| 6. Bottom Fence HP Sensor         | 18. Stapler Rotation Sensor 1      |
| 7. Stack Plate HP Sensor (Rear)   | 19. Stack Feed-Out Belt HP Sensor  |
| 8. Stack Plate Motor (Rear)       | 20. Staple Tray Full Sensor        |
| 9. Stack Plate HP Sensor (Center) | 21. Bottom Fence Motor             |
| 10. Stack Plate Motor (Center)    | 22. Jogger HP Sensor               |
| 11. Staple Hammer Motor           | 23. Jogger Motor                   |
| 12. Stack Plate HP Sensor (Front) | 24. Stack Feed-Out Belt Motor      |

Peripherals



B830V502E.WMF

- |                                       |   |
|---------------------------------------|---|
| 1. Exit Guide HP Sensor               | 9. Staple Trimmings Hopper Set Sensor   |
| 2. Exit Guide Motor                   | 10. Staple Trimmings Hopper Full Sensor |
| 3. Upper Tray Full Sensor             | 11. Stapler Tray Exit Sensor            |
| 4. Upper Tray Exit Sensor             | 12. Pre-Stack Tray Paper Sensor (Right) |
| 5. Stapler Tray Entrance Sensor       | 13. Front Door Safety Switch            |
| 6. Entrance Sensor                    | 14. Shift Tray Exit Sensor 2            |
| 7. Punch-Out Hopper Full Sensor       | 15. Shift Tray Exit Sensor 1            |
| 8. Pre-Stack Tray Paper Sensor (Left) |   |



B830V502F.WMF

- |                                    |  |
|------------------------------------|--|
| 1. Upper Transport Motor           | 9. Pre-Stack Junction Gate HP Sensor   |
| 2. Stapler Junction Gate HP Sensor | 10. Pre-Stack Junction Gate Motor )    |
| 3. Upper Tray Exit Motor           | 11. Pre-Stack Transport Motor          |
| 4. Shift Tray Lift Motor           | 12. Upper Tray Junction Gate Motor     |
| 5. Shift Tray Exit Motor           | 13. Upper Tray Junction Gate HP Sensor |
| 6. Lower Transport Motor           | 14. Stapler Junction Gate Motor        |
| 7. Pre-Stack Stopper HP Sensor     | 15. Punch Motor                        |
| 8. Pre-Stack Stopper Motor         |  |

Peripherals

## 4.4 ELECTRICAL COMPONENT SUMMARY

<b>Motors</b>		
<b>No.</b>	<b>Name</b>	<b>Description</b>
M01	Shift Tray Exit Motor	Drives the exit roller for the shift tray.
M02	Shift Tray Lift Motor	Moves the shift tray up or down.
M03	Exit Guide Motor	Opens and closes the upper exit guide. When stapling starts, the exit guide motor opens the upper exit guide, which includes the upper shift tray exit roller, in order to feed out the leading edge of the copy set smoothly. The exit guide motor turns on again a certain time after stapling is complete, and the upper exit guide plate is lowered. Then the shift tray exit roller takes over the stack feed-out. The on-off timing of the exit guide motor is detected by the exit guide HP sensor.
M04	Stapler Exit Motor	Drives the rollers that feed stapled stacks out of the stapling unit.
M05	Upper Tray Exit Motor	Drives the rollers that output paper to the proof tray (top tray).
M06	Shift Motor	Moves the shift tray from side to side.
M07	Upper Tray Junction Gate Motor	Operates the upper tray junction gate.
M08	Stapler Junction Gate Motor	Operates the staple junction gate that directs paper into the stapling path.
M09	Pre-Stack Junction Gate Motor	Operates the pre-stack junction gates that direct paper into path 1, 2, or 3 of the pre-stack unit.
M10	Pre-Stack Transport Motor	Drives the rollers that feed paper into the pre-stack paper paths.
M11	Pre-Stack Stopper Motor	Controls the stopper that stops the sheets in the pre-stack unit and then releases them to the staple tray.
M12	Positioning Roller Motor	Moves the positioning roller into contact with the paper.
M13	Positioning Roller Drive Motor	Rotates the positioning roller.
M14	Drag Drive Motor	Extends the sponge roller that drags the stapled stack on the shift tray toward the finisher so that the edge of the stack is aligned against the back of the shift tray.
M15	Drag Roller Motor	Rotates the drag roller counter-clockwise to pull the ejected paper toward the machine so that the edge of the stack on the shift tray is aligned against the back of the shift tray.
M16	Jogger Motor	Moves the jogger fences of the stapling tray.
M17	Stack Feed-Out Belt Motor	Drives the stack feed-out belt which lifts the stapled stack and feeds it out of the finisher. The stack-feed-out motor turns off when the pawl actuates the stack feed-out belt home position sensor.
M18	Stack Plate Motor (Center)	Presses down the center of the edge for stapling.
M19	Stack Plate Motor (Front)	Presses down the front corner of the edge for stapling.
M20	Stack Plate Motor (Rear)	Presses down the rear corner of the edge for stapling.
M21	Stapler Movement Motor	Moves the staple unit side-to-side.
M22	Stapler Rotation Motor	Rotates the stapler 45 degrees for oblique stapling.
M23	Staple Hammer Motor	Drives the staple hammer.
M24	Top Fence Motor	After the specified number of sheets has been fed, this motor lowers the top fence against the leading edges of the sheets to align them for stapling and then raises the top fence to its home position after stapling.  Operates the top fence that jogs pre-stacked paper vertically (in the direction of paper feed).
M25	Bottom Fence Motor	After the specified number of sheets has been fed, this motor lowers the bottom fence to position the stack for stapling and then raises the bottom fence to its home position after stapling.
M27	Upper Transport Motor	Feeds paper in the upper transport area. Drives the rollers that transport paper toward the proof tray (top tray).

<b>Motors</b>		
<b>No.</b>	<b>Name</b>	<b>Description</b>
M28	Lower Transport Motor	Drives the rollers that transport paper in the shift and stapling paper path.
M29	Punch Motor	Drives the punch shaft and roller.
M30	Shift Tray Jogger Motor	Drives the shift tray jogger fences against the sides of the sheets to align the stack, then reverses to return them to the home position
M31	Shift Tray Jogger Retraction Motor	Raises the shift tray jogger fences after aligning the stack, then reverses and lowers them to them to the home position.

<b>PCBs</b>		
<b>No.</b>	<b>Name</b>	<b>Description</b>
PCB	Main Board (Output Jogger)	Controls operation of the shift and output jogger mechanisms.
PCB	Main Board	Controls the finisher and communicates with the copier.

<b>Sensors</b>		
<b>No.</b>	<b>Name</b>	<b>Description</b>
S01	Entrance Sensor	Detects the copy paper entering the finisher and checks for misfeeds.
S02	Upper Tray Exit Sensor	Checks for misfeeds at the upper tray.
S03	Upper Tray Full Sensor	Detects when the upper tray is full.
S04	Shift Tray Exit Sensor 1	Controls the output timing of stapled stacks and detects jams.
S05	Shift Tray Exit Sensor 2	Controls the timing of paper in the shift path and detects paper jams.
S06	Exit Guide HP Sensor	Detects whether the guide plate is opened or not.
S07	Paper Height Sensor – Standby Mode	Detects the height of the tray when the machine is turned on to position the tray at the standby position.
S08	Paper Height Sensor – Staple Mode	Detects the height of the paper output on the shift tray and adjusts the height of the tray in the staple mode.
S09	Paper Height Sensor – Z-Fold Full	Detects the height of the paper output on the shift tray and signals when the tray is full when Z-folded paper is output to the shift tray.
S10	Paper Height Sensor – Shift/Z-Fold	Detects the amount of paper on the shift tray 1) in shift mode to control operation of the tray lift motor, and 2) when Z-folded paper is output to the shift tray.
S11	Drag Drive HP Sensor	Controls the push and pull movement of the drag roller when it extends and drags paper back against the back of the shift tray to keep the edge of the stack aligned on the shift tray.
S12	Shift Tray Half-Turn Sensor 1	Detects whether the shift tray is at either the front or back position. Controls the side-to-side movement of the shift tray. (This pair of sensors is used to detect the positions of the leading and trailing edges of the sheets controls operation of the shift mechanism.)
S13	Shift Tray Half-Turn Sensor 2	Detects whether the shift tray is at either the front or back position. Controls the side-to-side movement of the shift tray.
S14	Upper Tray Junction Gate HP Sensor	Detects the upper tray junction gate at its home position.
S15	Stapler Junction Gate HP Sensor	Detects the staple junction gate at its home position.
S16	Pre-Stack Junction Gate HP Sensor	Detects the pre-stack junction gate mechanism at its home position.
S17	Pre-Stack Tray Paper Sensor (Right)	Detects paper feed in the right side of the pre-stack unit and detects jams.
S18	Shift Tray Full Sensor	Detects when the shift tray is full for paper smaller than B4. The tray is at its lower limit.
S19	Shift Tray Full Sensor (Large Paper)	Detects when the shift tray is full for large size paper (B4 or larger).
S20	Shift Tray Near-Full Sensor	Detects when the shift tray is nearly full.
S21	Stapler Tray Exit Sensor	Detects jams at the staple tray exit.
S22	Staple Trimmings Hopper Full Sensor	Detects when the staple trimmings hopper is full.



<b>Sensors</b>		
<b>No.</b>	<b>Name</b>	<b>Description</b>
S23	Staple Trimmings Hopper Set Sensor	Detects if the hopper that holds stapling trimmings is set correctly or incorrectly.
S24	Pre-Stack Stopper HP Sensor	Detects the pre-stack stopper mechanism at its home position.
S25	Pre-Stack Tray Paper Sensor (Left)	Detects paper feed in the right side of the pre-stack unit. Controls the release timing of the pre-stack stopper, and starts the pre-stack transport motor. Also detects paper jams.
S26	Stapler Tray Entrance Sensor	Detects a paper jam if there is paper at the entrance of the stapler unit junction gate when the machine is turned on or after the door is closed.
S27	Stack Feed-Out Belt HP Sensor	Detects the home position of the stack feed-out belt.
S28	Staple Tray Full Sensor	Detects paper in the stapler tray.
S29	Jogger HP Sensor	Detects the home position of the jogger fence in the stapler tray.
S30	Bottom Fence HP Sensor	Detects the bottom fence at its home position.
S31	Top Fence HP Sensor	Detects the top fence at its home position.
S32	Positioning Roller HP Sensor	Detects the home position of the positioning roller.
S33	Stack Plate HP Sensor (Center)	Detects the home position of the center stack plate.
S34	Stack Plate HP Sensor (Front)	Detects the home position of the front stack plate.
S35	Stack Plate HP Sensor (Rear)	Detects the home position of the rear stack plate.
S36	Stapler HP Sensor (Front/Rear)	Detects the home position of the staple unit for side-to-side movement.
S37	Stapler Rotation Sensor 1	Paired with Stapler Rotation Sensor 2. This sensor pair controls the positioning of the corner stapler for the horizontal, 45° angle, and 75° angle stapling positions.
S38	Stapler Rotation Sensor 2	Paired with Stapler Rotation Sensor 1. This sensor pair controls the positioning of the corner stapler for the horizontal, 45° angle, and 75° angle stapling positions.
S39	Punch-out Hopper Full Sensor	Detects when the punch-out hopper is full and detects when the punch tray is set.
S40	Punch HP Sensor 1	Detects the cam home position for the 2-hole punch. After punching a sheet of paper, the cam returns to home position and stops. Home position depends on whether 2 holes or 3 holes are being made, so there are two punch HP sensors. Punch HP sensor 1 is used when 2-hole punching is selected, and punch HP sensor 2 is used when 3-hole punching is selected. When the cut-out enters the slot of the punch HP in use (sensor 1 or 2-hole punching) the motor stops.
S41	Punch HP Sensor 2	Detects the cam home position for 3-hole punch. After punching a sheet of paper, the cam returns to home position and stops. Home position depends on whether 2 holes or 3 holes are being made, so there are two punch HP sensors. Punch HP sensor 1 is used when 2-hole punching is selected, and punch HP sensor 2 is used when 3-hole punching is selected. When the cut-out enters the slot of the punch HP in use (sensor 1 or 2-hole punching) the motor stops.
S42	Shift Tray Jogger HP Sensor	Detects the actuator on the rear shift tray jogger fence and switches off the shift tray jogger motor, and signals the machine to turn on the shift tray jogger retraction motor to raise the fences at the end of a job.
S43	Shift Tray Jogger Retraction HP Sensor	Detects the jogger fences of the shift tray jogger unit at their home positions.

<b>Solenoids</b>		
<b>No.</b>	<b>Name</b>	<b>Description</b>
SOL	Staple Trimming Chute Solenoid	Opens and closes the trap door that drops staple trimmings into the stapling trimmings hopper.

<b>Switches</b>		
<b>No.</b>	<b>Name</b>	<b>Description</b>
SW	Front Door Safety Switch	Detects when the front door is open. The finisher does not operate until the front door has been closed.
SW	Emergency Stop Switch	Switches the current job off and on to allow time for the operator to remove paper from the shift tray.
SW	Shift Tray Upper Limit Switch	Cuts the power to the shift tray lift motor when the shift tray position is at its upper limit.

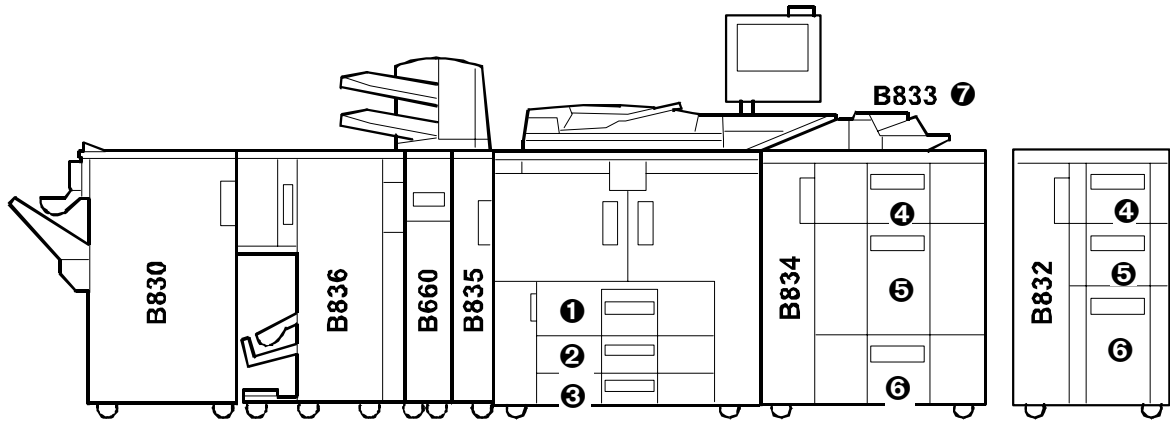


**LCIT RT5000**  
**(Machine Code: B832)**

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**Tray Naming**

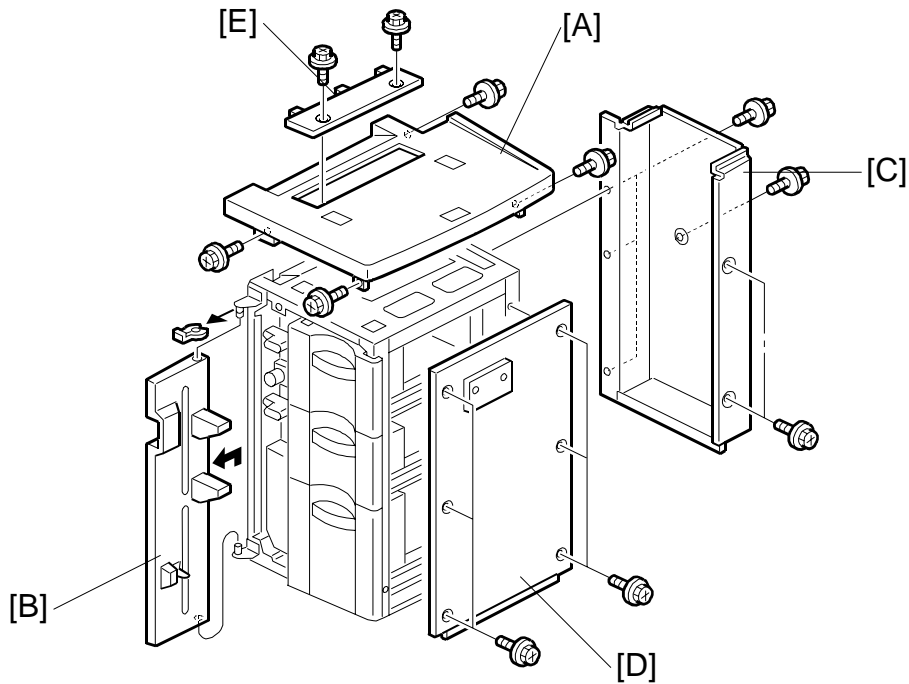


B832I900A.WMF

①	Copier	1st Tray
②	(e-STUDIO901/1101/1351)	2nd Tray
③		3rd Tray
④		LCT (B832 or B834)
⑤		5th Tray
⑥		6th Tray
⑦	Bypass Tray (B833)	7th Tray

# 1. REPLACEMENT AND ADJUSTMENT

## 1.1 FRONT DOOR AND COVERS



[A] Top cover (⚙️ x 4).

[B] Front door (🔒 x 1).

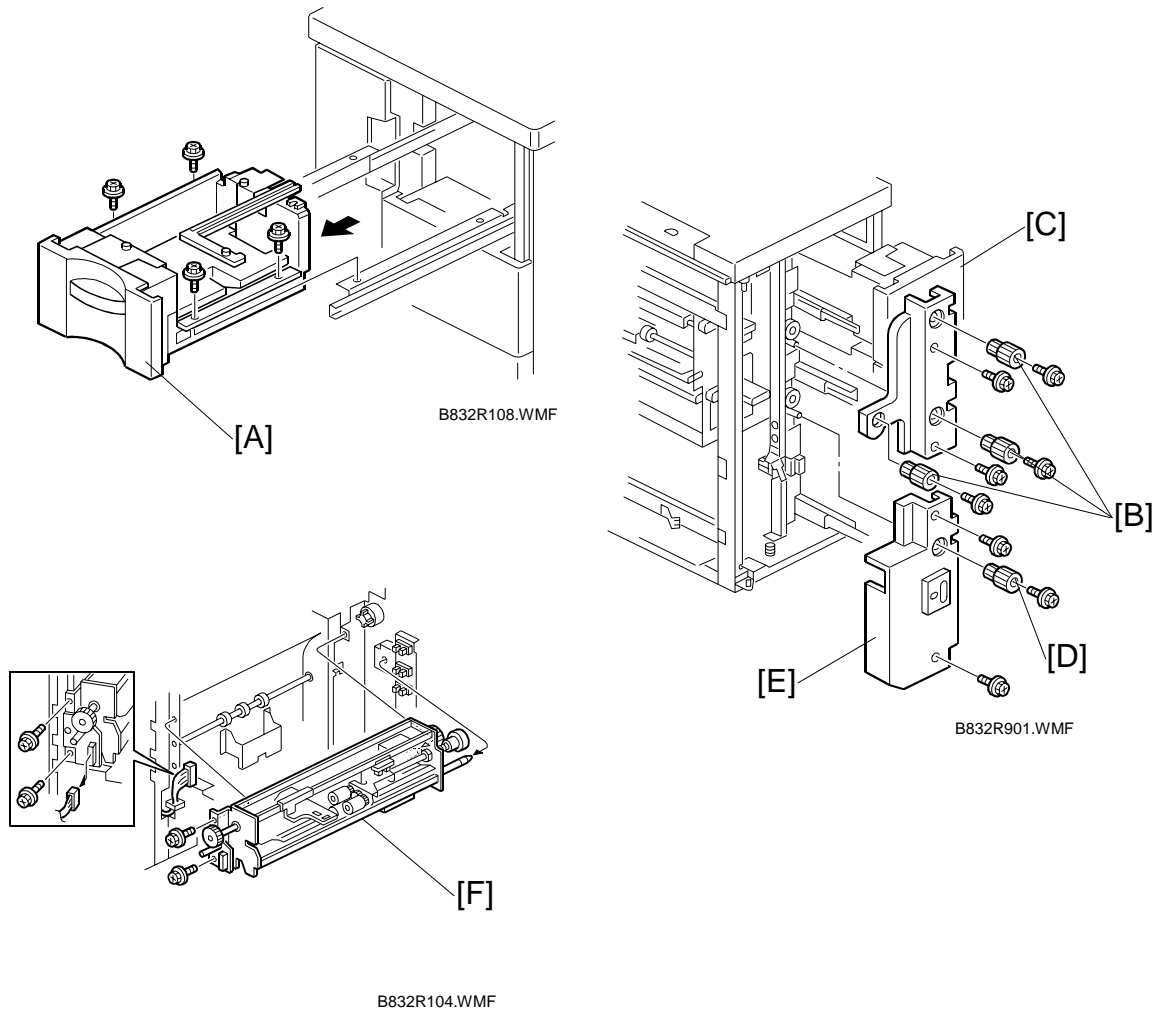
**NOTE:** While lifting the top cover, remove the snap ring and front door.

[C] Rear cover (⚙️ x 6).

[D] Right cover (⚙️ x 6).

[E] Paper slot cover (⚙️ x 2).

## 1.2 INNER COVER, PAPER FEED UNIT



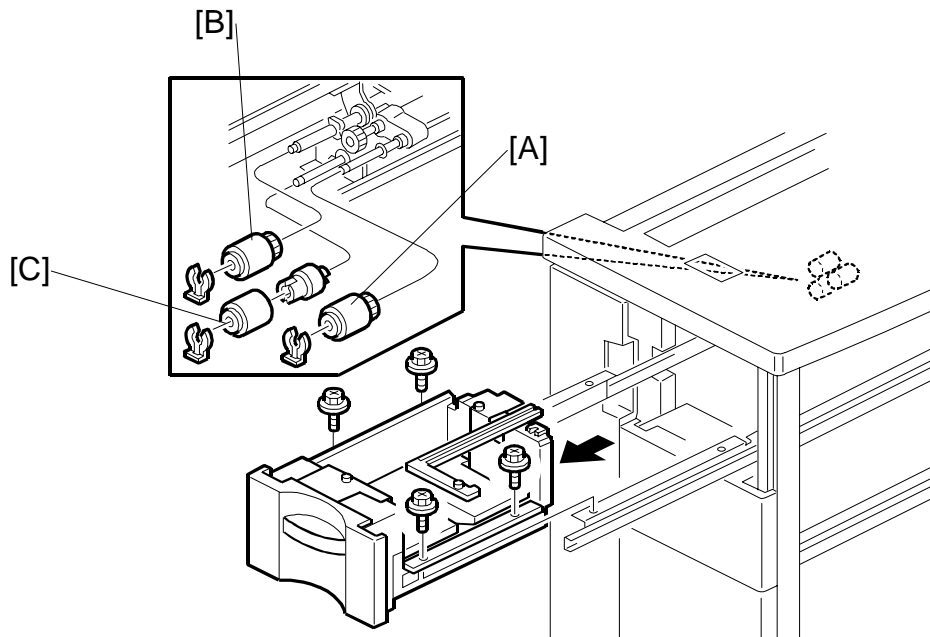
- Open the front door.
- Remove right cover (☛1.1)

Remove:

- [A] Pull out tray and remove it (☛x 4)
- [B] Knobs (x3) (☛x 1 each)
- [C] Upper inner cover (☛ x2)
- [D] Knob (☛ x1)
- [E] Lower inner cover (☛ x1)
- [F] Paper feed unit (☛ x1, ☛ x2)



## 1.3 PAPER FEED ROLLER



B832R103.WMF

Remove:

- Remove the right cover (➔1.1)
- Remove the paper trays. (➔1.2)

[A] Pick-up roller (☞ x 1).

[B] Feed roller (☞ x 1).

[C] Separation roller (☞ x 1).

**NOTE:** 1) The LCT pick-up and separation rollers are the same as pick-up and separation rollers of the main machine. These rollers are interchangeable.

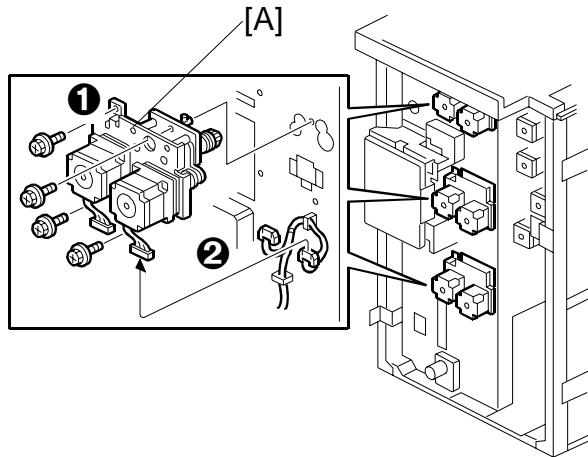
2) The feed rollers of the LCT and main machine are different because they are designed to rotate in opposite directions. The feed rollers of the LCT and main machine are not interchangeable.

3) Never touch the surface of the rollers with bare hands.

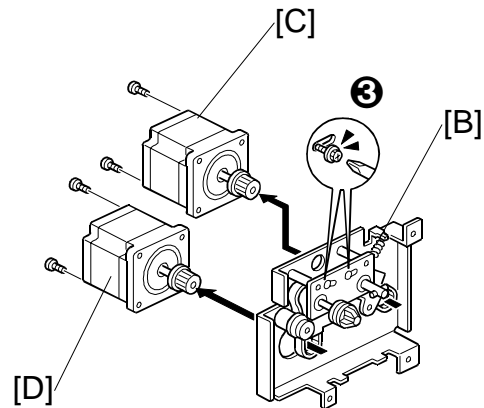
- Clear the PM counters for the new rollers (see Section "2. Preventive Maintenance).

## 1.4 LCT MOTORS

### 1.4.1 PAPER FEED, GRIP MOTORS



B832R109.WMF



B832R109A.WMF

Each paper feed unit has a paper feed motor ❶ and a grip motor ❷. The removal procedure is the same for each feed tray.

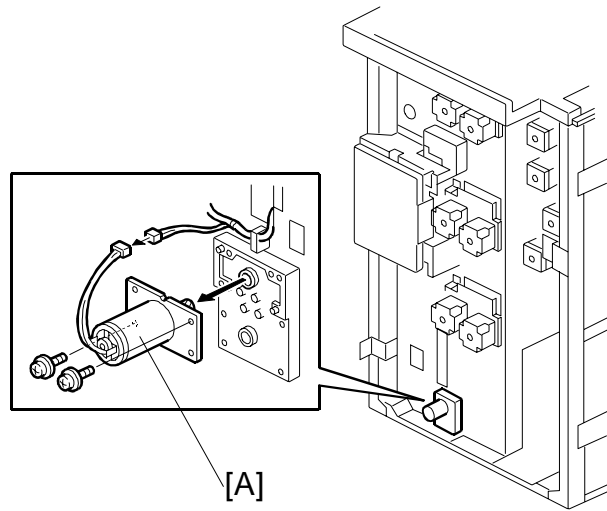
Remove:

- Rear cover (☛1.1)
- [A] Motor unit (🔩 x4, 🌀 x2)
- [B] Springs (x2). First, loosen the screws (x2) ❸
- [C] Paper feed motor (🔩 x2)
- [D] Grip motor (🔩 x2)

#### Reinstallation

- Attach the tension spring, then tighten the screws ❸ to tighten the belts.

## 1.4.2 6TH LIFT MOTOR



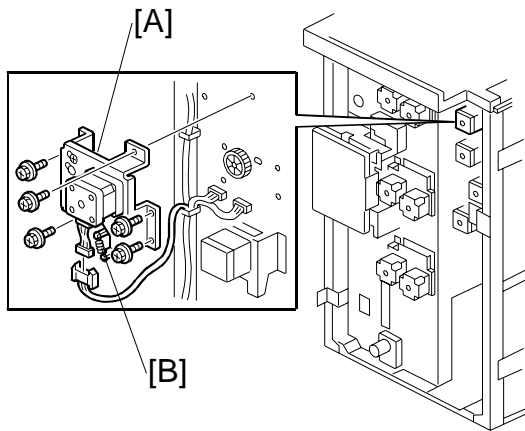
B832R109B.WMF

Remove:

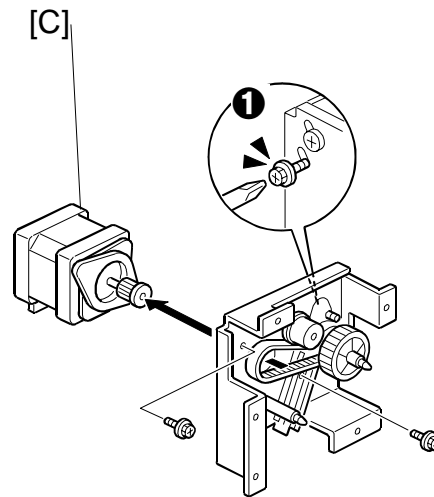
- Rear cover (🔩 1.1)

[A] 6th lift motor (🔩 x2, 📏 x1)

### 1.4.3 4TH TRANSPORT MOTOR



B832R109C.WMF



B832R109D.WMF

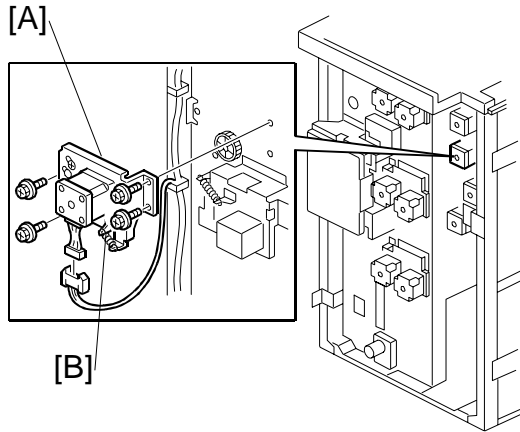
#### Remove:

- Rear cover. (☞1.1)
- [A] 4th Transport motor unit (⚙ x 5, 📏 x 1).
- [B] Spring (x1). First, loosen screw ❶ (⚙ x 1).
- [C] 4th transport motor (⚙ x 2, Timing belt x1)

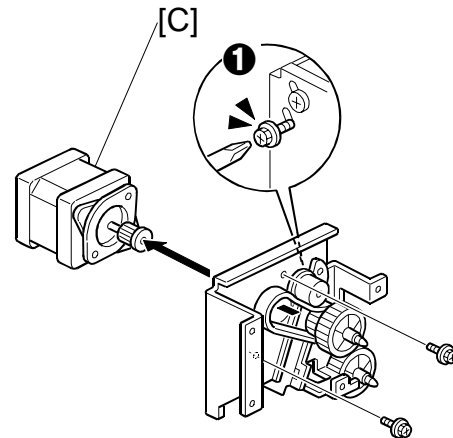
#### Reinstallation

- Be sure that the tension spring is connected, then tighten the screw ❶.

### 1.4.4 5TH TRANSPORT MOTOR



B832R109E.WMF



B832R109F.WMF

**Remove:**

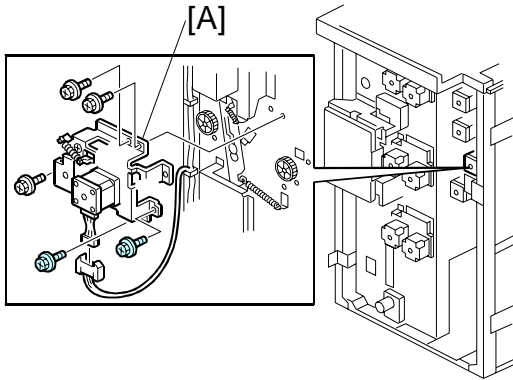
- Rear cover. (☛1.1)
- [A] Motor unit (☛ x4, ☛ x 1).
- [B] Spring (x1). First, loosen screw ❶ (☛ x 1).
- [C] 5th Transport motor (☛ x2, Timing belt x1)

**Reinstallation**

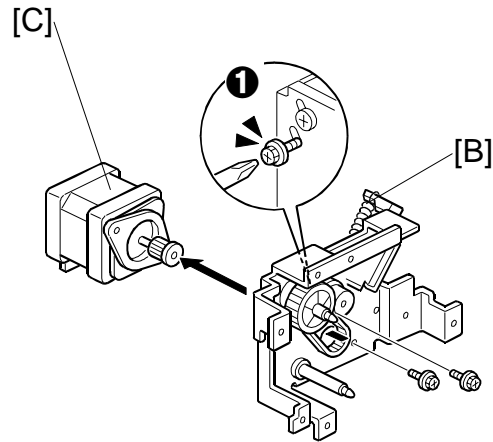
- Be sure that the tension spring is connected, then tighten the screw ❶.

Peripherals

### 1.4.5 LCT EXIT MOTOR



B832R109G.WMF



B832R109H.WMF

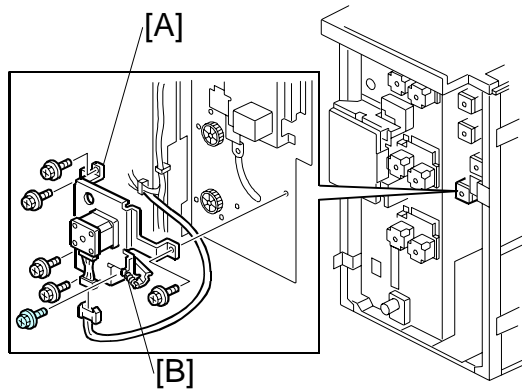
#### Remove:

- Remove the rear cover. (☛1.1)
- [A] Motor unit (⚙ x6, ⚙ x 1).
- [B] Spring (x1). First, loosen screw 1 (⚙ x 1).
- [C] LCT exit motor (⚙ x2, Timing belt x1)

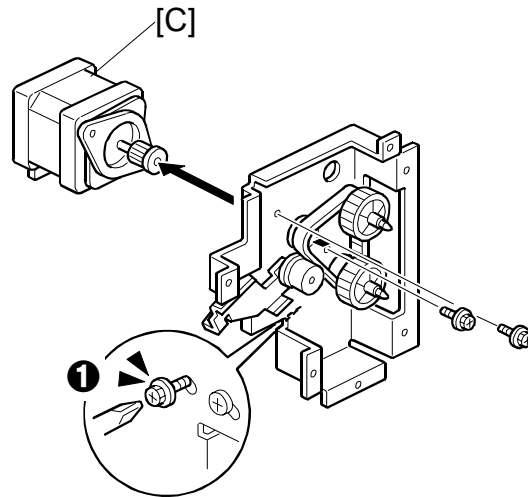
#### Reinstallation

- Be sure that the tension spring is connected, then tighten the screw 1.

### 1.4.6 6TH TRANSPORT MOTOR



B832R109I.WMF



B832R109J.WMF

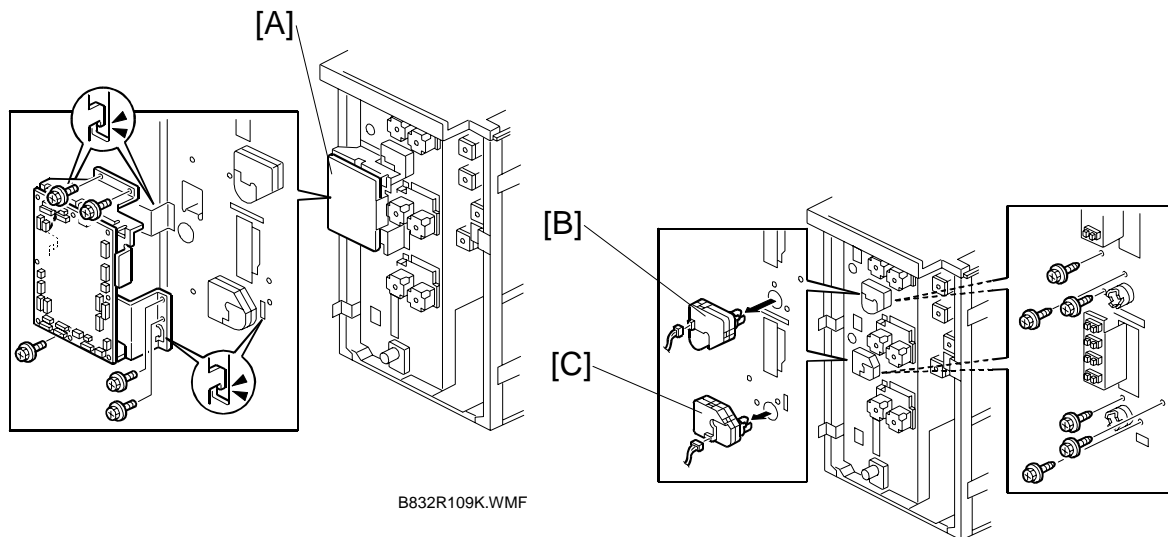
#### Remove:

- Rear cover. (☛1.1)
- [A] Motor unit (☛ x6, ☛ x 1).
- [B] Spring (x1). First, loosen screw ❶ (☛ x 1).
- [C] LCT exit motor (☛ x2, Timing belt x1)

#### Reinstallation

- Be sure that the tension spring is connected, then tighten the screw ❶.

## 1.4.7 4TH, 5TH LIFT MOTORS



B832R109K.WMF

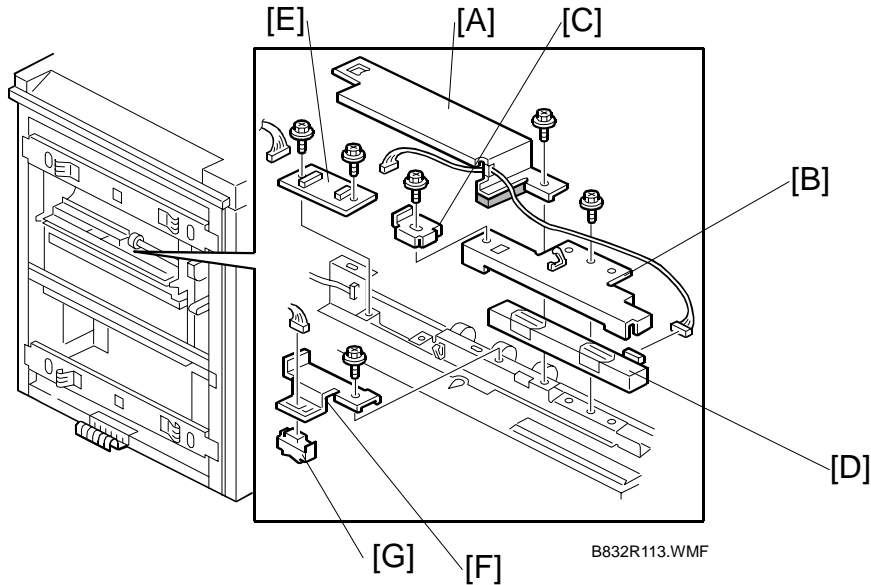
B832R109L.WMF

Remove:

- Rear cover. (☛1.1)
- [A] Main control board bracket (🔩 x5, 📏 x All)
- [B] 4th lift motor (🔩 x3, 📏 x 1)
- [C] 5th lift motor (🔩 x3, 📏 x 1)



## 1.5 IMAGE POSITION SENSOR BOARD, EXIT SENSOR



### Image Position Sensor

Disconnect the LCT from the copier.

[A] Harness cover (⚙️ x1, ⬅️x1)

[B] Image position sensor unit  
(⚙️ x1, ⬅️x1, 🛠️x1)

[C] Stopper (⚙️ x1)

[D] Image position sensor

- After replacing the image position sensor, do the procedure for image position sensor adjustment. (🔧1.9)

### Image Position Sensor Board

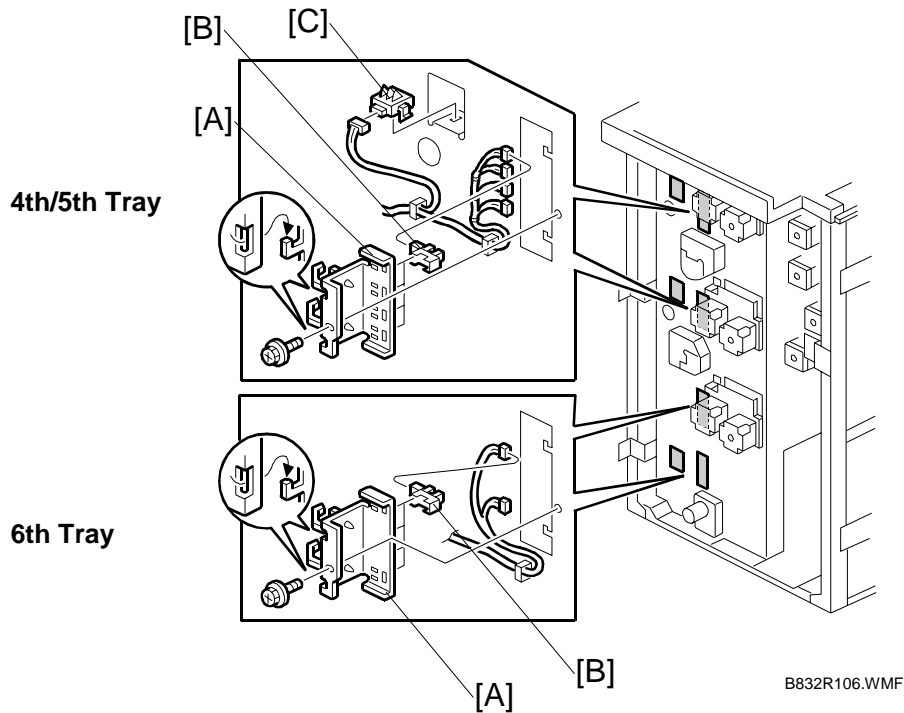
[E] Image position sensor board  
(⚙️ x2, ⬅️x1, 🛠️x2)

### Exit Sensor

[F] Exit sensor unit (⚙️ x1, 🛠️ x1, ⬅️x1)

[G] Exit sensor

## 1.6 PAPER HEIGHT SENSORS, PAPER SIZE SENSORS



Remove:

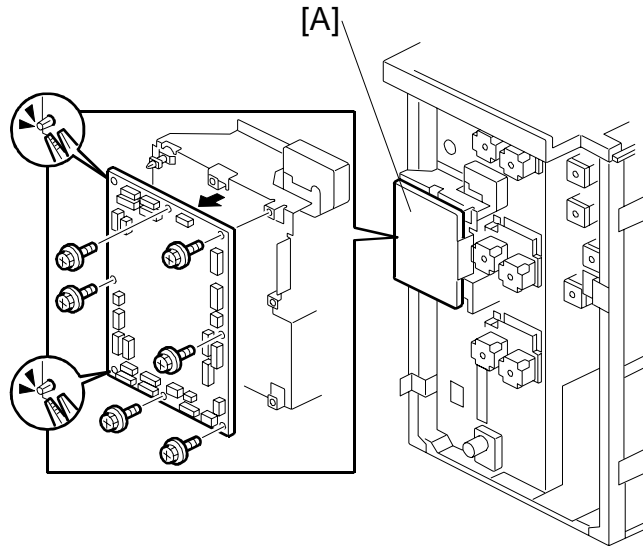
- Rear cover. (☞1.1)
- Right Tray. (☞1.1)

[A] Paper height sensor unit (☞x2, ☞ x 1, ☞ x 4).

[B] Paper height sensors (Hooks x 4 each)

[C] Paper size sensors (☞ x 1 each)

## 1.7 MAIN CONTROL BOARD



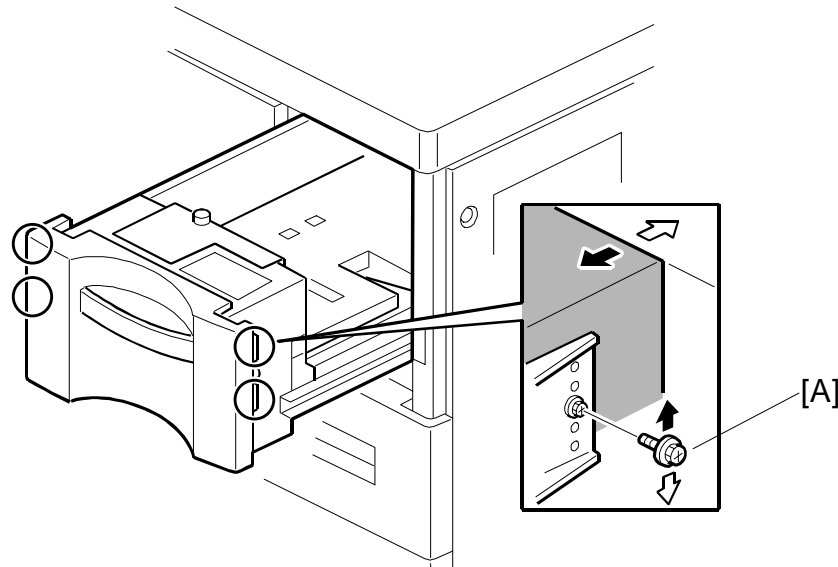
B832R106A.WMF

Remove:

- Rear cover. (⚙️1.1)

[A] Main control board (⚙️ x6, Standoffs x2, ⚙️ x All)

## 1.8 SIDE REGISTRATION ADJUSTMENT



B832R112.WMF

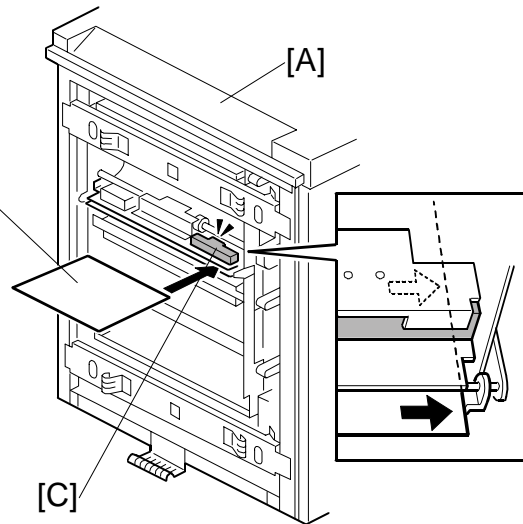
Normally the side registration of the image can be adjusted with **SP1002 004~006** (Side-to-Side Registration – Tray 4, 5, 6). When the punch hole positions are not aligned from a particular feed station, adjust the side registration by changing the tray cover position for the tray, as described below. Then adjust the side registration of the image with the **SP1002**.

1. Pull out the tray.
2. Change the screw positions [A] at both the right and left sides as shown.

**NOTE:** Adjustment range:  $0 \pm 2.0$  mm adjustment step: 1.0 mm/step

## 1.9 ADJUSTING IMAGE POSITION SENSOR STRENGTH AND SIDE-TO-SIDE REGISTRATION

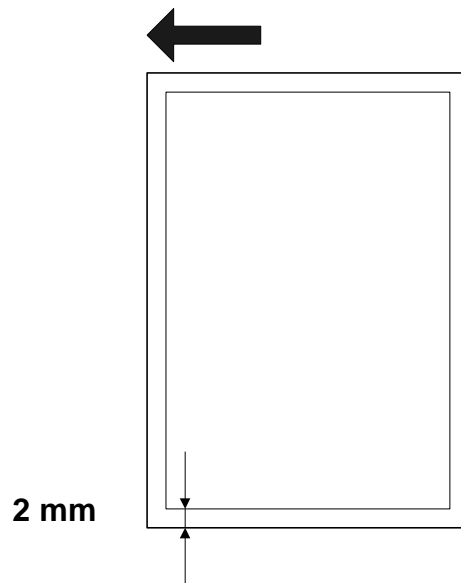
1. Turn off the main power switch.
2. Disconnect the LCT from the mainframe.
3. With the LCT [A] separated from the mainframe, reconnect the LCT cable to the mainframe.
4. Turn on the main power switch.
5. Insert one sheet of plain white paper [B] in the paper path.
6. Make sure that the paper covers the entire area below the image position sensor (CIS) [C].
7. Enter the SP mode and do **SP1910 002** (CIS Image Position Adjustment: LED Strength - LCT). This calibrates the amount of light to be emitted from the CIS.



B832R931.WMF

8. Do **SP1909 002** (CIS Image Position Adjustment: PWM After Adjustment - LCT).
  - If the displayed value is between 20 (14h) and 40 (28h), the CIS is calibrated successfully. (The display is in hexadecimal code.)
  - If the value is outside this range, do **SP 1910 002** and **1909 002** again. If the value does not come between 20 and 40, the CIS may be defective.
9. Exit the SP mode.
10. Reinstall the LCT to the side of the copier.
11. Push [User Tools]> [Adjust Settings for Operators].
12. Do **SP1911** for Trays 4, 5, 6, 7 and set the value for each tray to "0" (OFF).
13. Exit from SP 1911 and return to the SP mode menu.

14. Adjust the image positions in the main scan direction.
  - Do **SP2902 003**, select Pattern **27**, then print the trimming pattern.
  - Do **SP1002** and adjust the image position in the main scan direction for Trays 4, 5, 6, and 7.
  - Print the trimming pattern from each tray of the LCT and from the bypass tray (if installed).
  - To do this, touch "Copy Window" in the SP display, select a tray, then push [Start].
  - The distance of the test pattern line from the paper edge for each tray must be 2 mm. If it is not 2 mm, adjust with **SP1002 004** to **007**, depending on which tray is not within the specified 2 mm.
15. Do **SP1912 002** (CIS Image Position Adjustment: Normal Paper). This sets the CIS for operation with standard copy paper.
16. Exit the SP mode.
17. Push [User Tools]> [Adjust Settings for Operators].
18. Once again, do **SP1911** (CIS Image Position Adjustment: Feed Setting) and reset the values for Trays 4, 5, 6, and 7 to "1" (ON).



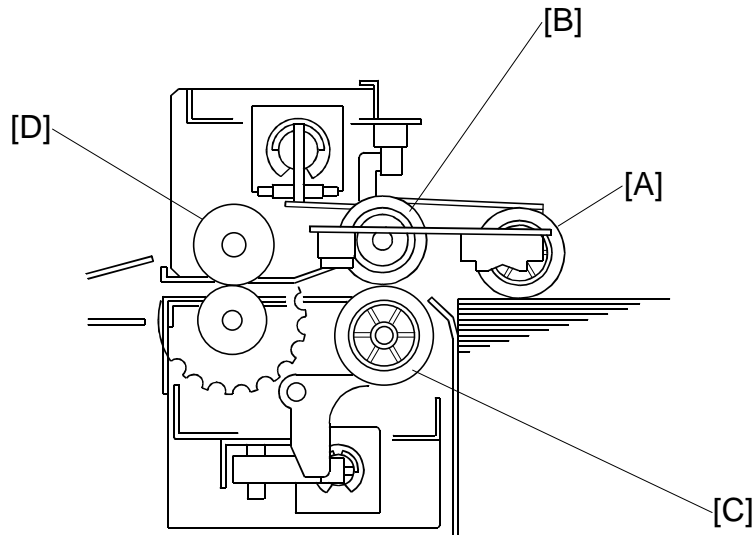
B832R932.WMF

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## 2. DETAILED DESCRIPTIONS

### 2.1 PAPER FEED

#### 2.1.1 PAPER FEED ROLLERS



B832D113.WMF

This LCT has three paper tray feed stations:

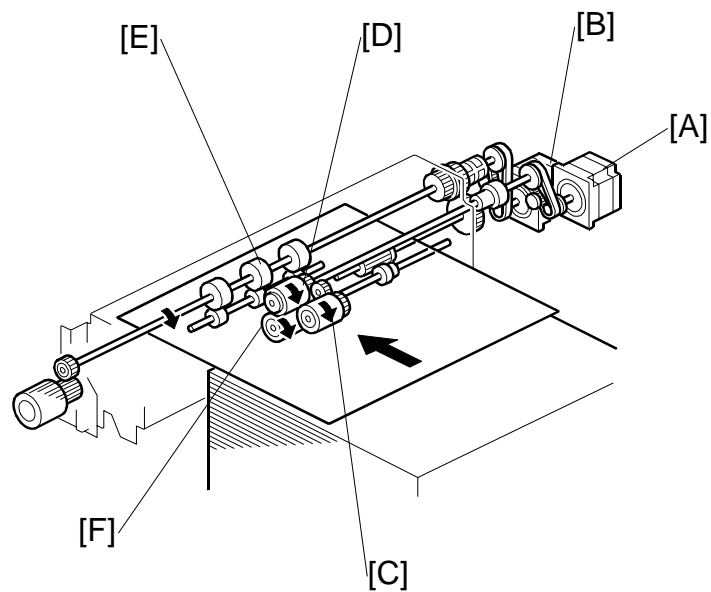
The 4th and 5th tray each hold 1,000 sheets of paper. The 6th tray holds 2,550 sheets of paper. Total: 4,550 sheets

Each tray contains four rollers:

- [A] Pick-up roller
- [B] Paper feed roller
- [C] Separation roller
- [D] Grip roller

**NOTE:** The pick-up roller, paper feed roller, and separation roller are a standard FRR paper feed system.

## 2.1.2 PAPER FEED MOTORS



B832D105A.WMF

Two stepper motors control the paper feed drive:

[A] Paper feed motor

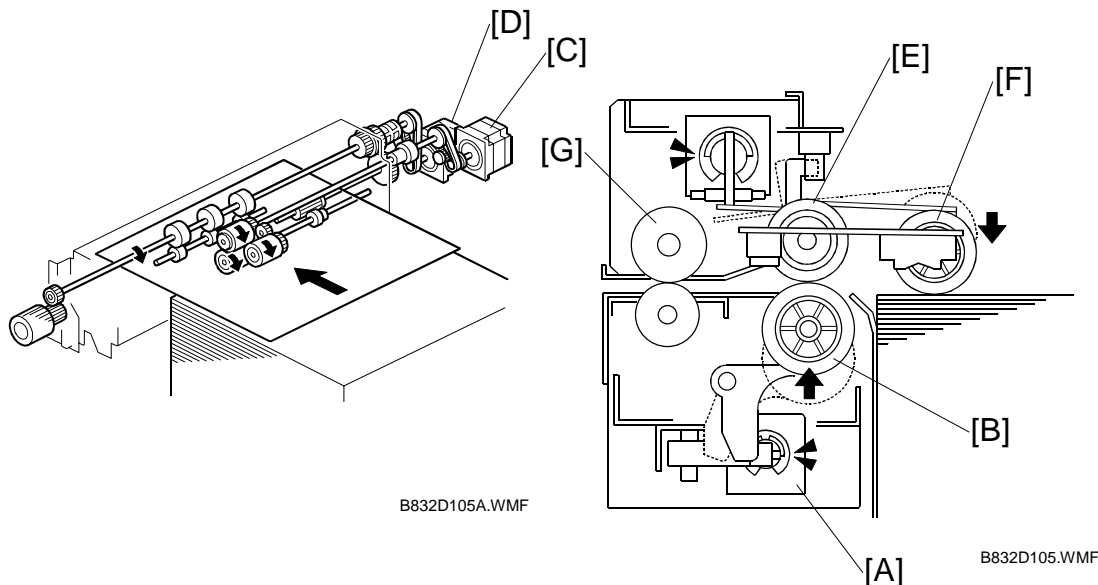
[B] Grip motor

The paper feed motor drives the pick-up roller [C] and the paper feed roller [D].

The grip motor drives the grip roller [E] that feeds the paper out of the tray, and the separation roller [F].



### 2.1.3 PICK-UP AND FEED



When a paper feed station is not selected:

- Separation roller solenoid [A] is de-activated
- Separation roller [B] turns freely.

When the paper feed station is selected for a job:

- Paper feed motor [C] and grip motor [D] turn on.

When the feed motor [C] turns on, it drives the feed roller [E]. It also drives the pick-up roller [F] because the pick-up roller is linked to the feed roller by an idle gear..

When the separation solenoid [A] turns on, the separation roller [B] contacts the paper feed roller [E] and turns with the feed roller, unless more than one sheet of paper is fed. The three trays of the LCT unit use the standard FRR mechanism.

When the paper feed motor turns on, the pick-up solenoid turns on and the pick-up roller [F] lowers until it contacts the top sheet of the paper stack and then sends it to the paper feed and separation rollers.

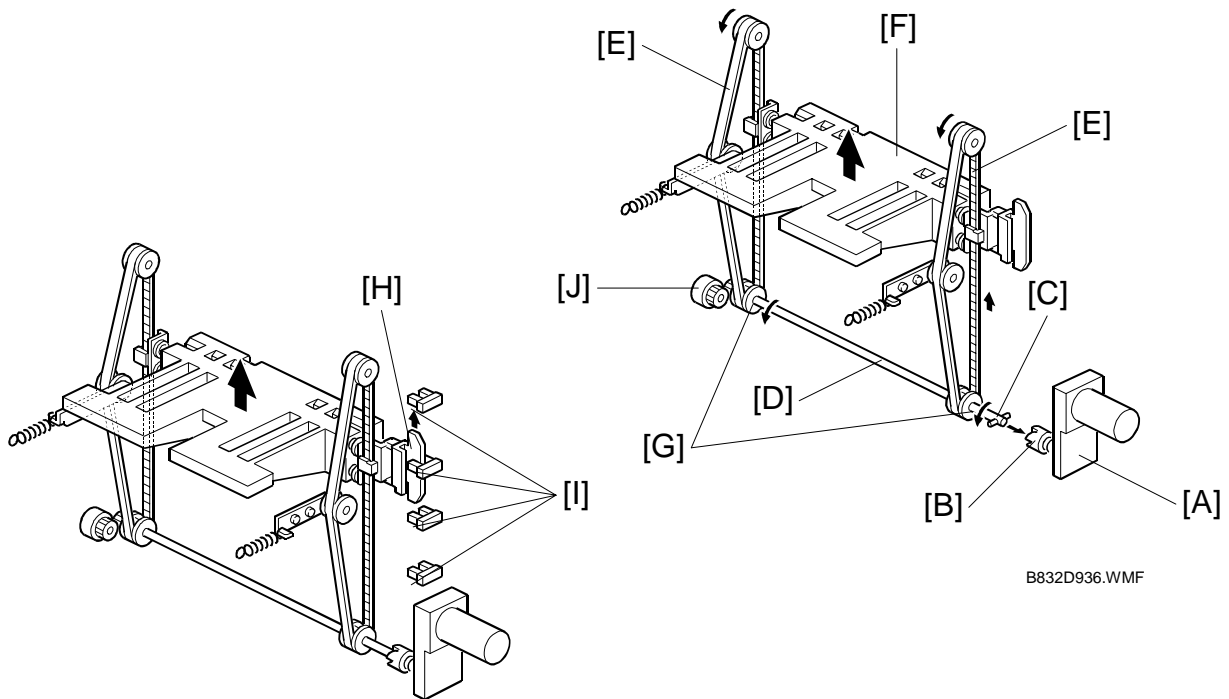
When the paper feed sensor detects the leading edge of the paper, the paper feed motor switches off, the pick-up roller lifts, and the grip rollers [G] feed the paper out of the tray.

## 2.2 PAPER LIFT

### 2.2.1 TRAY DETECTION

When a tray is set in the machine, the tray detection method used depends on the tray:

- The upper tray and middle tray are detected when any one of the paper size switch signals is low.
- The lower tray is detected when the switch 1 signal of the paper size switch is low.



B832D935.WMF

B832D936.WMF

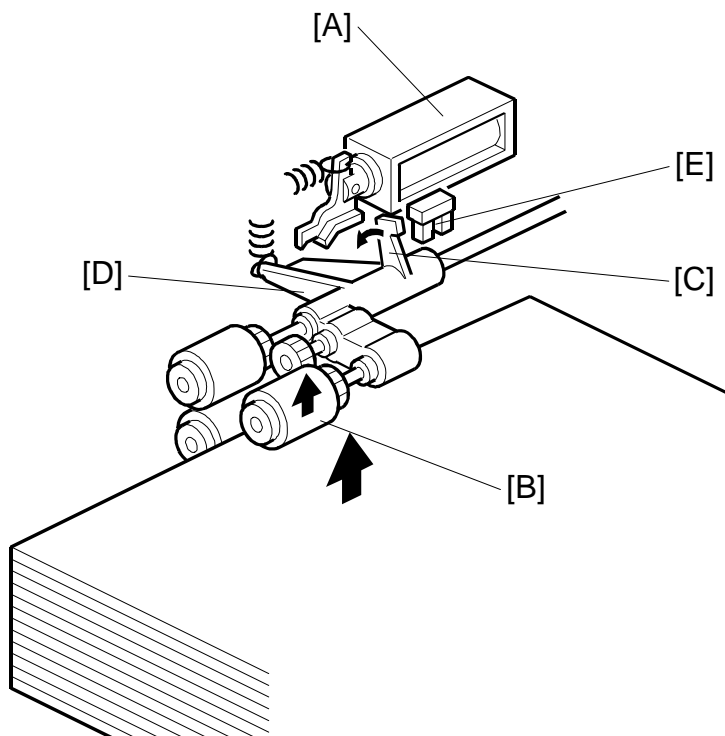
### 2.2.2 LIFT MECHANISM

When the machine detects that the paper tray is set in the machine, the tray lift motor [A] rotates and the coupling gear [B] on the tray lift motor engages the pin [C] of the lift drive shaft [D]. The tray drive belts [E] are connected to the tray bottom plate [F] and are driven by the tray lift motor via the lift drive shaft [D] and tray drive pulleys [G]. When the lift motor turns counterclockwise, the tray bottom plate [F] moves up. The tray goes up until the top of the paper stack pushes up the pick-up roller and the lift sensor in the feed unit is de-activated.

When the actuator [H] on the rear end of the bottom plate activates the paper height sensors [I], the remaining paper capacity is detected. (●2.4)

When pulling out the tray, the coupling gear [B] separates from the pin [C], so that the tray bottom plate moves downward. In the bottom tray, the damper [J] lets the tray bottom plate drop slowly.

### 2.2.3 LIFT SENSOR

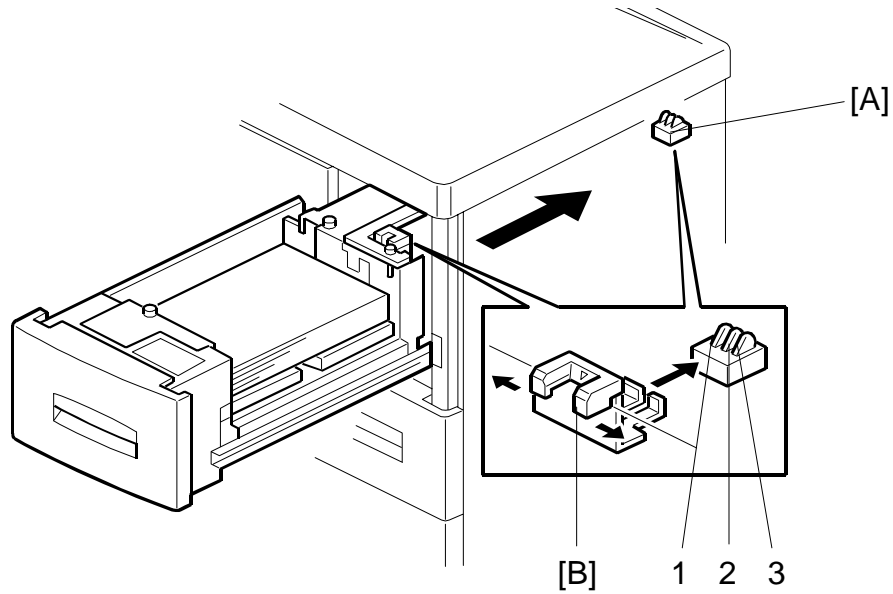


B832D930.WMF

When the lift motor turns on, the pick-up solenoid [A] activates to lower the pick-up roller [B]. When the top sheet of paper reaches the proper paper feed level, the paper pushes up the pick-up roller and the actuator [C] on the pick-up roller supporter [D] de-activates the lift sensor [E] to stop the lift motor.

After several paper feeds, the paper level gradually lowers, then the lift sensor is activated and the lift motor turns on again until the lift sensor is de-activated again.

## 2.3 PAPER SIZE DETECTION



B832D931.WMF

	A4-LEF	B5-LEF	A5-LEF	A5-SEF	LT-LEF	HLT-LEF	HTL-SEF
SW1	0	1	0	0	0	1	1
SW2	1	0	1	0	0	0	1
SW3	1	1	0	1	0	0	0

1: HI 0: LOW

### Top Tray (Tray 4) and Middle Tray (Tray 5)

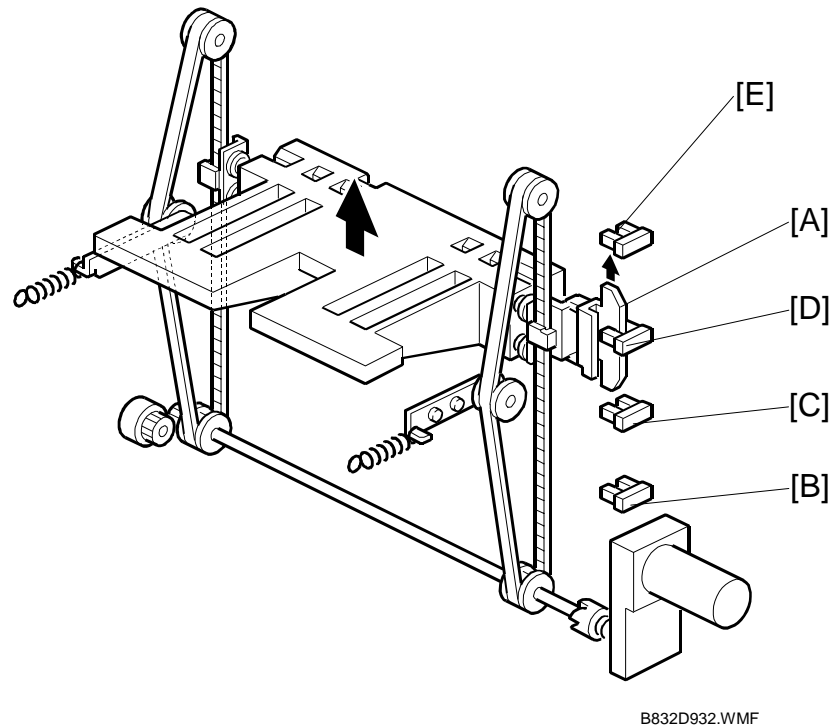
For the top and middle trays, the paper size switch [A] detects the paper size. The paper size switch contains three microswitches. The paper size switch is actuated by an actuator plate [B] at the rear of the tray. Each paper size has its own unique combination as shown in the table and the CPU determines the paper size by the combination.

### Bottom Tray (Tray 6)

The bottom tray has the same switch as the top and middle trays. However, it is only used for detecting when the tray is pushed in.

For the bottom tray, the paper size must be selected in the SP5019-007:

## 2.4 REMAINING PAPER DETECTION



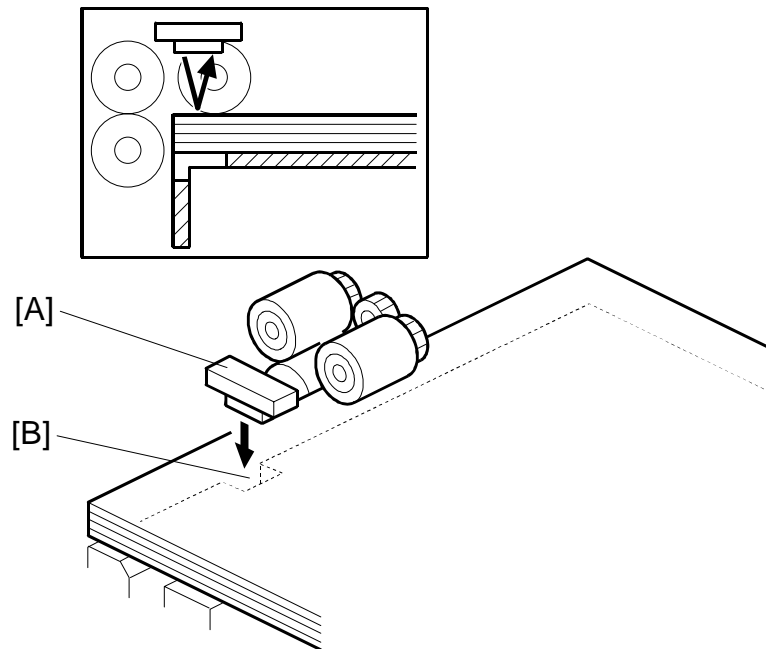
The amount of paper remaining in the tray is detected by the three paper height photo-interrupter sensors on the left rail as the bottom plate rises. Five states, determined by the position of the actuator are possible.

1. With the actuator [A] below paper height sensor 1 [B], no sensor is actuated and the display indicates 100%.
2. When the actuator passes paper height sensor 1 [B], the display indicates 75% of the paper supply remaining.
3. When the actuator passes paper height sensor 2 [C], the display indicates 50% of the paper supply remaining.
4. When the actuator passes paper height sensor 3 [D], the display indicates 25% of the paper supply remaining.

**NOTE:** When the actuator enters the gap of the near end sensor [E], the machine signals near end.

Finally, when the last sheet feeds, the paper end sensor signals that the tray is empty. (➡2.5)

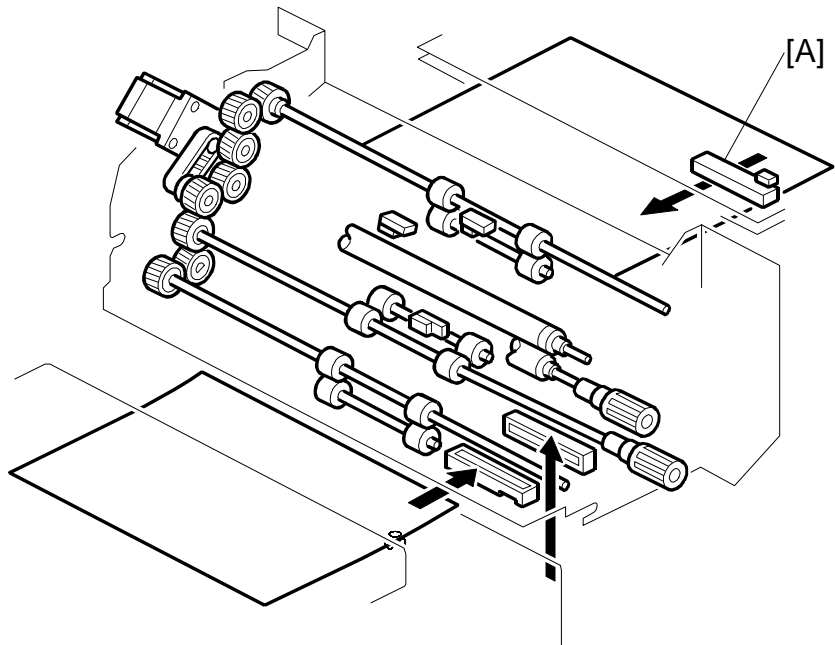
## 2.5 PAPER END DETECTION



B832D933.WMF

The paper end sensor [A] detects the top sheet of the paper in the tray by monitoring the reflected light. When the paper tray runs out of paper, the paper end sensor does not receive the reflected light due to the cutout [B]. Then, the tray lift motor rotates backwards 2 seconds to drop the tray bottom plate.

## 2.6 IMAGE POSITION CORRECTION



B832D934.WMF

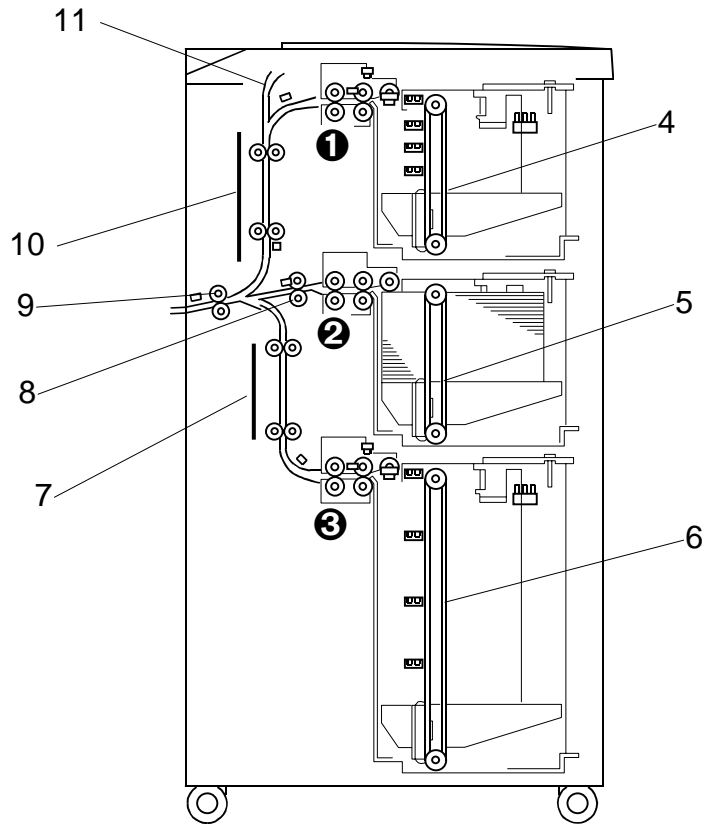
The image position sensor [A] is located in the LCT paper path above the paper path and in front of the LCT exit rollers. (This sensor is mounted on its own control board.)

The sensor is a CIS (Contact Image Sensor). It checks the side edges of each sheet as it passes, and feeds this information back to the machine.

If the side-to-side registration of the paper is slightly out of alignment, the machine will correct the image position when the laser writes the image on the surface of the drum. This function does not correct the position of the paper.

## 3. OVERALL MECHANICAL INFORMATION

### 3.1 MECHANICAL COMPONENT LAYOUT

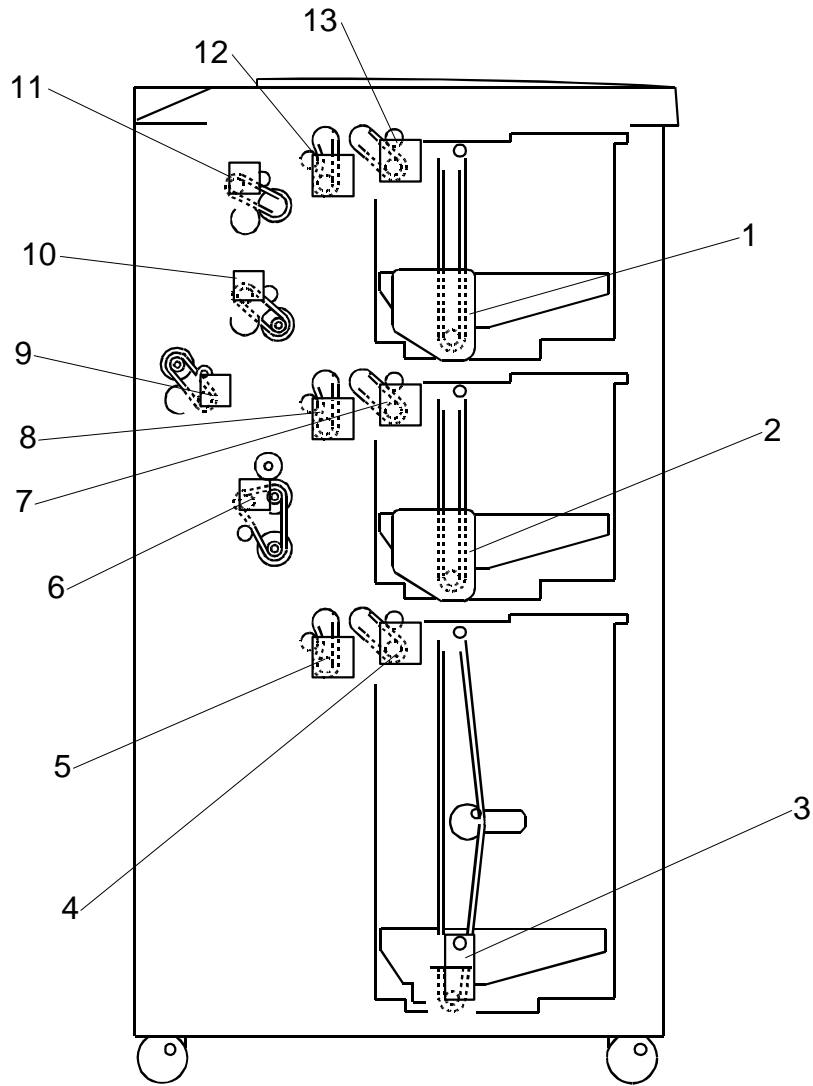


B832V101.WMF

- |                                      |                                  |
|--------------------------------------|----------------------------------|
| 1. 4th Paper Feed Unit* <sup>1</sup> | 7. Lower Transport Rollers       |
| 2. 5th Paper Feed Unit               | 8. Horizontal Transport Roller   |
| 3. 6th Paper Feed Unit               | 9. LCT Exit roller               |
| 4. 4th Tray Drive Belt               | 10. Upper Transport Rollers      |
| 5. 5th Tray Drive Belt               | 11. Feed Slot (from Bypass Tray) |
| 6. 6th Tray Drive Belt               |                                  |



### 3.2 DRIVE LAYOUT

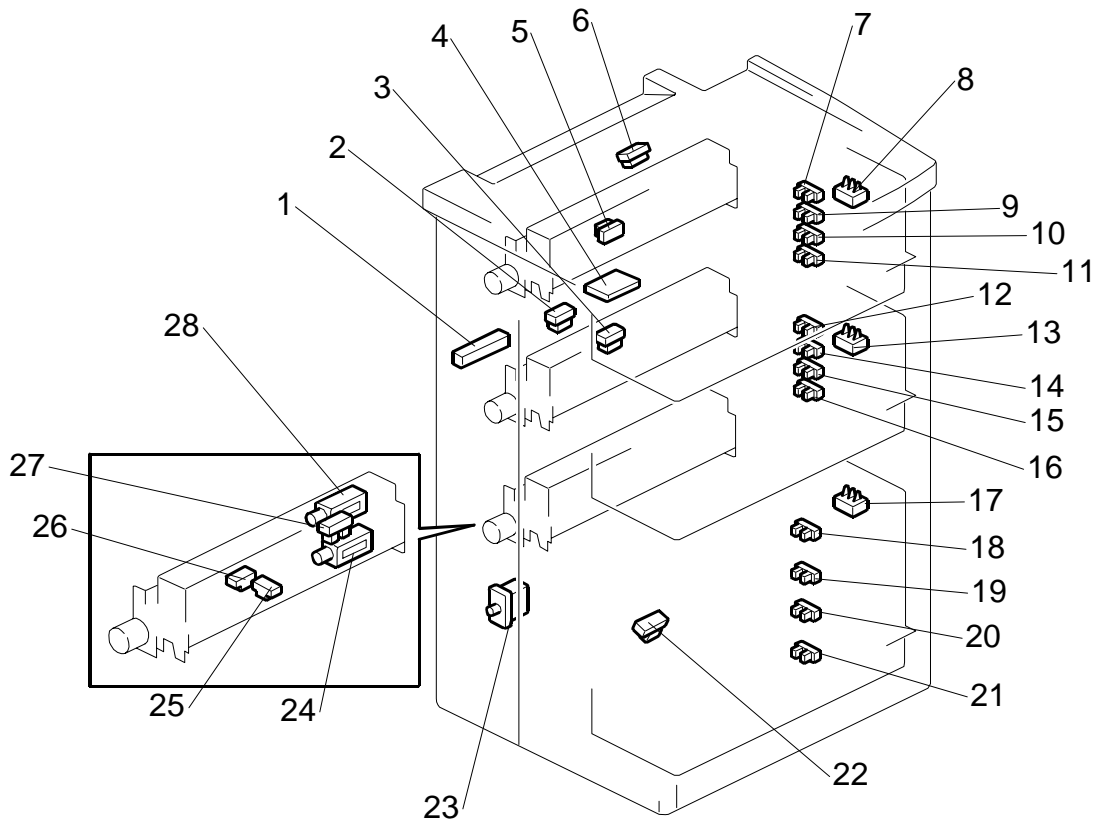


B832V102.WMF

- |                         |                          |
|-------------------------|--------------------------|
| 1. 4th Lift Motor       | 8. 5th Grip Motor        |
| 2. 5th Lift Motor       | 9. LCT Exit Motor        |
| 3. 6th Lift Motor       | 10. 5th Transport Motor  |
| 4. 6th Paper Feed Motor | 11. 4th Transport Motor  |
| 5. 6th Grip Motor       | 12. 4th Grip Motor       |
| 6. 6th Transport Motor  | 13. 4th Paper Feed Motor |
| 7. 5th Paper Feed Motor |                          |

Peripherals

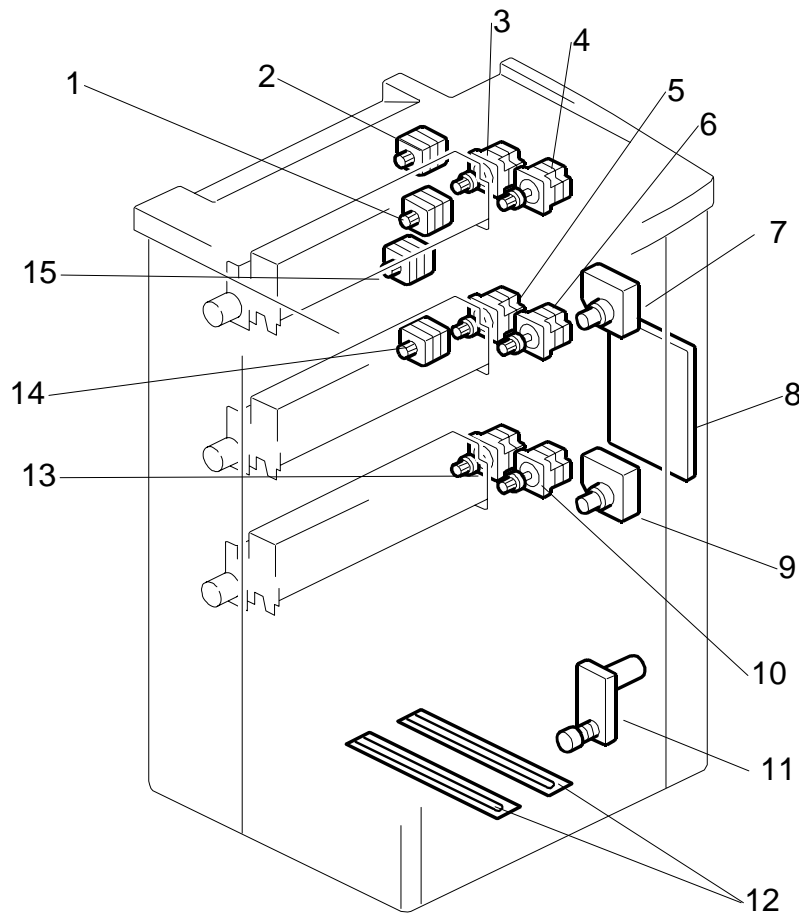
### 3.3 ELECTRICAL COMPONENTS



B832V102A.WMF

- |                                |                               |
|--------------------------------|-------------------------------|
| 1. LCT Image Position Sensor   | 15. 5th Paper Height Sensor 2 |
| 2. Exit Sensor                 | 16. 5th Paper Height Sensor 1 |
| 3. 5th Transport Sensor        | 17. 6th Paper Size Sensors    |
| 4. Image Position Sensor Board | 18. 6th Paper Height Sensor 4 |
| 5. 4th Relay Sensor            | 19. 6th Paper Height Sensor 3 |
| 6. 4th Transport Sensor        | 20. 6th Paper Height Sensor 2 |
| 7. 4th Paper Height Sensor 4   | 21. 6th Paper Height Sensor 1 |
| 8. 4th Paper Size Sensors      | 22. 6th Transport Sensor      |
| 9. 4th Paper Height Sensor 3   | 23. Door Safety Switch        |
| 10. 4th Paper Height Sensor 2  | 24. 6th Separation Solenoid   |
| 11. 4th Paper Height Sensor 1  | 25. 6th Paper End Sensor      |
| 12. 5th Paper Height Sensor 4  | 26. 6th Paper Feed Sensor     |
| 13. 5th Paper Size Sensors     | 27. 6th Lift Sensor           |
| 14. 5th Paper Height Sensor 3  | 28. 6th Pick-up Solenoid      |

**NOTE:** Items 24, 25, 26, 27 and 28 are duplicated in the 4th and 5th units.

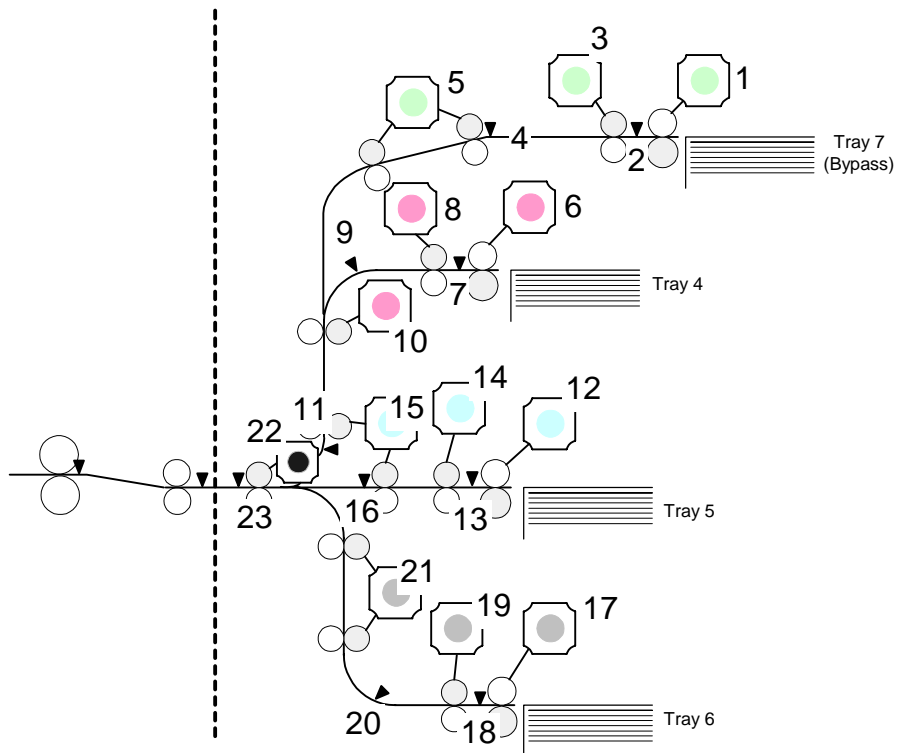


B832V102B.WMF

- |                         |   |
|-------------------------|---|
| 1. 5th Transport Motor  | 9. 5th Lift Motor                       |
| 2. 4th Transport Motor  | 10. 6th Paper Feed Motor                |
| 3. 4th Grip Motor       | 11. 6th Lift Motor                      |
| 4. 4th Paper Feed Motor | 12. Anti-Condensation Heaters (Options) |
| 5. 5th Grip Motor       | 13. 6th Grip Motor                      |
| 6. 5th Paper Feed Motor | 14. 6th Transport Motor                 |
| 7. 4th Lift Motor       | 15. LCT Exit Motor                      |
| 8. Main Control Board   |   |

Peripherals

### 3.4 A4/LT LCT B832 LAYOUT (WITH BYPASS)



B832V901.WMF

- |                              |                           |
|------------------------------|---------------------------|
| 1. Paper Feed Motor Bypass)  | 13. 5th Paper Feed Sensor |
| 2. Paper Feed Sensor Bypass) | 14. 5th Grip Motor        |
| 3. Grip Motor Bypass)        | 15. 5th Transport Motor   |
| 4. Transport Sensor Bypass)  | 16. 5th Transport Sensor  |
| 5. Transport Motor Bypass)   | 17. 6th Paper Feed Motor  |
| 6. 4th Paper Feed Motor      | 18. 6th Paper Feed Sensor |
| 7. 4th Paper Feed Sensor     | 19. 6th Grip Motor        |
| 8. 4th Grip Motor            | 20. 6th Transport Sensor  |
| 9. 4th Transport Sensor      | 21. 6th Transport Motor   |
| 10. 4th Transport Motor      | 22. LCT Exit Motor        |
| 11. 4th Relay Sensor         | 23. LCT Exit Sensor       |
| 12. 5th Paper Feed Motor     |                           |

### 3.5 ELECTRICAL COMPONENT SUMMARY

<b>Motors</b>		
<b>No.</b>	<b>Name</b>	<b>Description</b>
M1	4th Grip Motor	Drives the separation roller and the grip roller of the 4th tray.
M2	4th Lift Motor	Drives the bottom plate of the 4th tray up and down.
M3	4th Paper Feed Motor	Drives the pick-roller and feed roller that picks up each sheet and starts to feed it out of the 4th tray.
M4	4th Transport Motor	Drives the rollers in the vertical feed path that feed the paper from the 4th tray to the LCT exit motor.
M5	5th Grip Motor	Drives the separation roller and the grip roller of the 5th tray.
M6	5th Lift Motor	Drives the bottom plate of the 5th tray up and down.
M7	5th Paper Feed Motor	Drives the pick-roller and feed roller that picks up each sheet and starts to feed it out of the 5th tray.
M8	5th Transport Motor	Drives the transport rollers in the vertical feed path that feed the paper from the 4th tray and the 5th tray to the LCT exit motor.
M9	6th Grip Motor	Drives the separation roller and the grip roller of the 6th tray.
M10	6th Lift Motor	Drives the 5th tray up and down.
M11	6th Paper Feed Motor	Drives the pick-roller and feed roller that picks up each sheet and starts to feed it out of the 6th tray.
M12	6th Transport Motor	Drives the rollers in the vertical feed path that feed the paper from the 6th tray to the LCT exit motor.
M13	LCT Exit Motor	Feeds the paper out the LCT and into the entrance of the copier.

<b>PCBs</b>		
<b>No.</b>	<b>Name</b>	<b>Description</b>
PCB1	Main Control Board	Controls the operation of all motors and sensors in the LCT unit.
PCB2	Image Position Sensor Board	Operates the CIS sensor (performs waveform correction) the LCT. The CRB (CIS Relay Board) and CIS sensor perform side-to-side image correction. The CRB and CIS are a single unit. The CRB is not a separate board.

<b>Sensors</b>		
<b>No.</b>	<b>Name</b>	<b>Description</b>
S1	4th Lift Sensor	Detects when the paper in the 4th tray is at the correct height for paper feed and switches the 4th lift motor off.
S2	4th Paper End Sensor	Detects when the last sheet feeds from the 4th tray.
S3	4th Paper Feed Sensor	Detects the paper when it arrives at the 4th paper feed roller and checks for misfeeds.
S4	4th Paper Height Sensor 1	4th from the bottom of the 4th tray, detects stack height: 100%
S5	4th Paper Height Sensor 2	5th from the bottom of the 4th tray, detects stack height: 75%
S6	4th Paper Height Sensor 3	6th from the bottom of the 4th tray, detects stack height: 50%
S7	4th Paper Height Sensor 4	4th from the bottom of the 4th tray, detects stack height: 25% and signals near-end.
S8	4th Paper Length Sensor (B834)	Detects the length of the paper in the 4th tray (used in combination with the paper width sensors).
S9	4th Paper Width Sensor 1 (B834)	1 of a set of 3 sensors that detect the width of the paper in the 4th tray.
S10	4th Paper Width Sensor 2 (B834)	1 of a set of 3 sensors that detect the width of the paper in the 4th tray.
S11	4th Paper Width Sensor 3 (B834)	1 of a set of 3 sensors that detect the width of the paper in the 4th tray.

<b>Sensors</b>		
<b>No.</b>	<b>Name</b>	<b>Description</b>
S12	4th Paper Size Sensor 1 (B832)	1 of a set of 3 sensors that detect the width of the paper in the 4th tray.
S13	4th Paper Size Sensor 2 (B832)	1 of a set of 3 sensors that detect the width of the paper in the 4th tray.
S14	4th Paper Size Sensor 3 (B832)	1 of a set of 3 sensors that detect the width of the paper in the 4th tray.
S15	4th Relay Sensor	Detects the leading and trailing edges of the paper in the paper path near the bottom of the 4th tray. Checks the timing of the feed and signals a jam if the paper is late or lags at this location.
S16	4th Relay Sensor - Upper (B834)	Detects the leading and trailing edges of the paper in the paper path near the top of the 4th tray. Checks the timing of the feed and signals a jam if the paper is late or lags at this location.
S17	4th Transport Sensor	Detects jams in the paper path where the transport motor feeds the paper from the 4th tray.
S18	5th Lift Sensor	Detects when the paper in the 5th tray is at the correct height for paper feed and switches the 4th lift motor off.
S19	5th Paper End Sensor	Detects when the last sheet feeds from the 5th tray.
S20	5th Paper Feed Sensor	Detects the paper when it arrives at the 5th paper feed roller and checks for misfeeds.
S21	5th Paper Height Sensor 1	4th from the bottom of the 5th tray, detects stack height: 100%
S22	5th Paper Height Sensor 2	5th from the bottom of the 5th tray, detects stack height: 75%
S23	5th Paper Height Sensor 3	6th from the bottom of the 5th tray, detects stack height: 50%
S24	5th Paper Height Sensor 4	4th from the bottom of the 5th tray, detects stack height: 25% and signals near-end.
S25	5th Paper Length Sensor (B834)	Detects the length of the paper in the 5th tray (used in combination with the paper width sensors).
S26	5th Paper Width Sensor 1 (B834)	1 of a set of 3 sensors that detect the width of the paper in the 5th tray.
S27	5th Paper Width Sensor 2 (B834)	1 of a set of 3 sensors that detect the width of the paper in the 5th tray.
S28	5th Paper Width Sensor 3 (B834)	1 of a set of 3 sensors that detect the width of the paper in the 5th tray.
S29	5th Paper Size Sensor 1 (B832)	1 of a set of 3 sensors that detect the width of the paper in the 5th tray.
S30	5th Paper Size Sensor 2 (B832)	1 of a set of 3 sensors that detect the width of the paper in the 5th tray.
S31	5th Paper Size Sensor 3 (B832)	1 of a set of 3 sensors that detect the width of the paper in the 5th tray.
S32	5th Relay Sensor (B834)	Detects the leading and trailing edges of the paper in the paper path near the 5th tray. Checks the timing of the feed and signals a jam if the paper is late or lags at this location.
S33	5th Transport Sensor	Detects jams in the paper path where the transport motor feeds the paper from the 5th tray.
S34	6th Lift Sensor	Detects when the paper in the 6th tray is at the correct height for paper feed and switches the 4th lift motor off.
S35	6th Paper End Sensor	Detects when the last sheet feeds from the 6th tray.
S36	6th Paper Feed Sensor	Detects the paper when it arrives at the 6th paper feed roller and checks for misfeeds.
S37	6th Paper Height Sensor 1	4th from the bottom of the 6th tray, detects stack height: 100%
S38	6th Paper Height Sensor 2	5th from the bottom of the 6th tray, detects stack height: 75%
S39	6th Paper Height Sensor 3	6th from the bottom of the 6th tray, detects stack height: 50%
S40	6th Paper Height Sensor 4	4th from the bottom of the 6th tray, detects stack height: 25% and signals near-end.

<b>Sensors</b>		
<b>No.</b>	<b>Name</b>	<b>Description</b>
S41	6th Paper Length Sensor (B834)	Detects the length of the paper in the 6th tray (used in combination with the paper width sensors).
S42	6th Paper Width Sensor 1 (B834)	1 of a set of 3 sensors that detect the width of the paper in the 6th tray.
S43	6th Paper Width Sensor 2 (B834)	1 of a set of 3 sensors that detect the width of the paper in the 6th tray.
S44	6th Paper Width Sensor 3 (B834)	1 of a set of 3 sensors that detect the width of the paper in the 6th tray.
S45	6th Paper Size Sensor 1 (B832)	1 of a set of 3 sensors that detect the width of the paper in the 6th tray.
S46	6th Paper Size Sensor 2 (B832)	1 of a set of 3 sensors that detect the width of the paper in the 6th tray.
S47	6th Paper Size Sensor 3 (B832)	1 of a set of 3 sensors that detect the width of the paper in the 6th tray.
S48	6th Relay Sensor (B834)	Detects the leading and trailing edges of the paper in the paper path near the 6th tray. Checks the timing of the feed and signals a jam if the paper is late or lags at this location.
S49	6th Transport Sensor	Detects jams in the paper path where the transport motor feeds the paper from the 6th tray.
S50	LCT Exit Sensor	Detects jams at the exit of the LCT unit.
S51	LCT Image Position Sensor	Mounted on the CRB (CIS Relay Board), this contact image sensor detects the side-to-side edges of the paper in the paper path. The machine uses this information to correct the position of the image when the lasers fire.

<b>Solenoids</b>		
<b>No.</b>	<b>Name</b>	<b>Description</b>
SOL1	4th Pick-up Solenoid	Engages/disengages rotation of the pick-up roller in the 4th tray.
SOL2	4th Separation Solenoid	Controls up-down movement of the separation roller in the 4th tray.
SOL3	5th Pick-up Solenoid	Engages/disengages rotation of the pick-up roller in the 5th tray.
SOL4	5th Separation SOL	Controls up-down movement of the separation roller in the 5th tray.
SOL5	6th Pick-up Solenoid	Engages/disengages rotation of the pick-up roller in the 6th tray.
SOL6	6th Separation Solenoid	Controls up-down movement of the separation roller in the 6th tray.

<b>Switches</b>		
<b>No.</b>	<b>Name</b>	<b>Description</b>
SW1	Door Safety Switch	An interlock safety switch that detects when the front door is opened and closed.

<b>Other</b>		
<b>No.</b>	<b>Name</b>	<b>Description</b>
H1, H2	Anti-Condensation Heaters	Evaporates moisture around the trays in the LCT (230V 18W). This is an option

Peripherals





**Multi Bypass Tray BY5000**  
**(Machine Code: B833)**

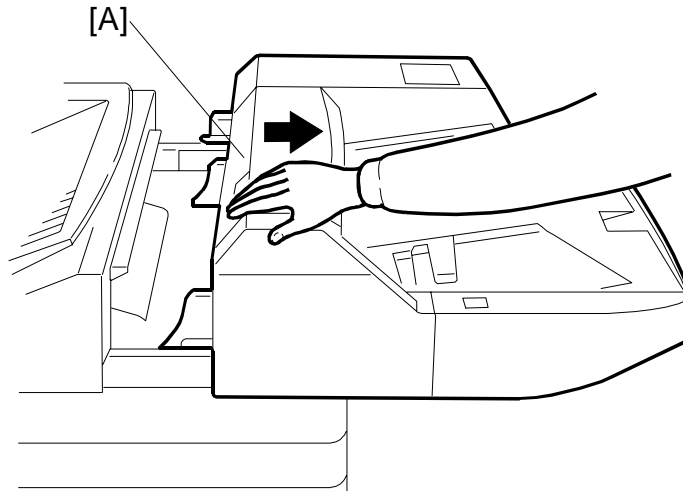
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# 1. REPLACEMENT AND ADJUSTMENT

## 1.1 OPENING THE BYPASS TRAY



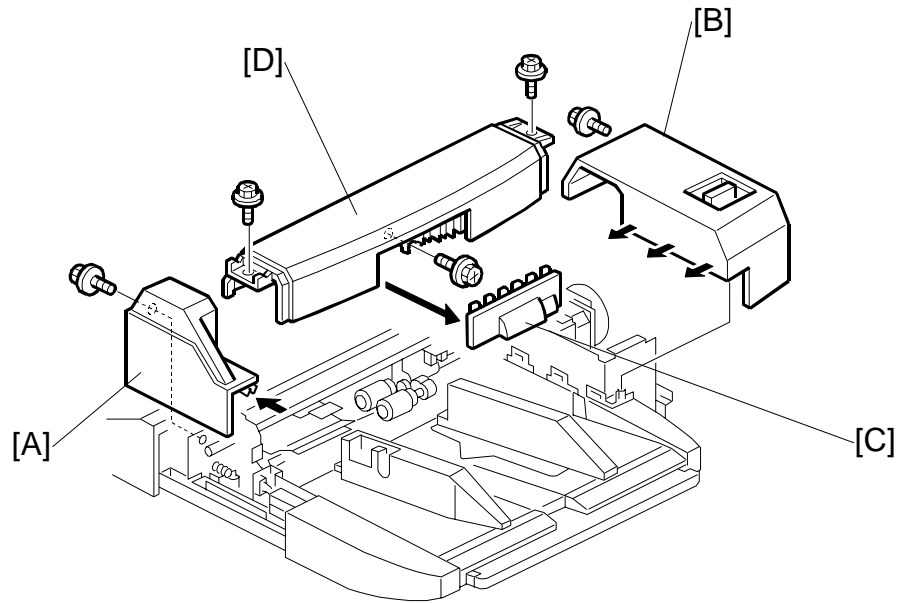
B833R901.WMF

1. Pull in the direction indicated by the arrow at the front left cover [A].

**⚠ CAUTION**

When moving the LCT with the bypass unit attached, grip and push the body of the LCT unit. To avoid damaging the bypass tray, never attempt to push or rotate the assembled units by pulling or pushing on the bypass tray.

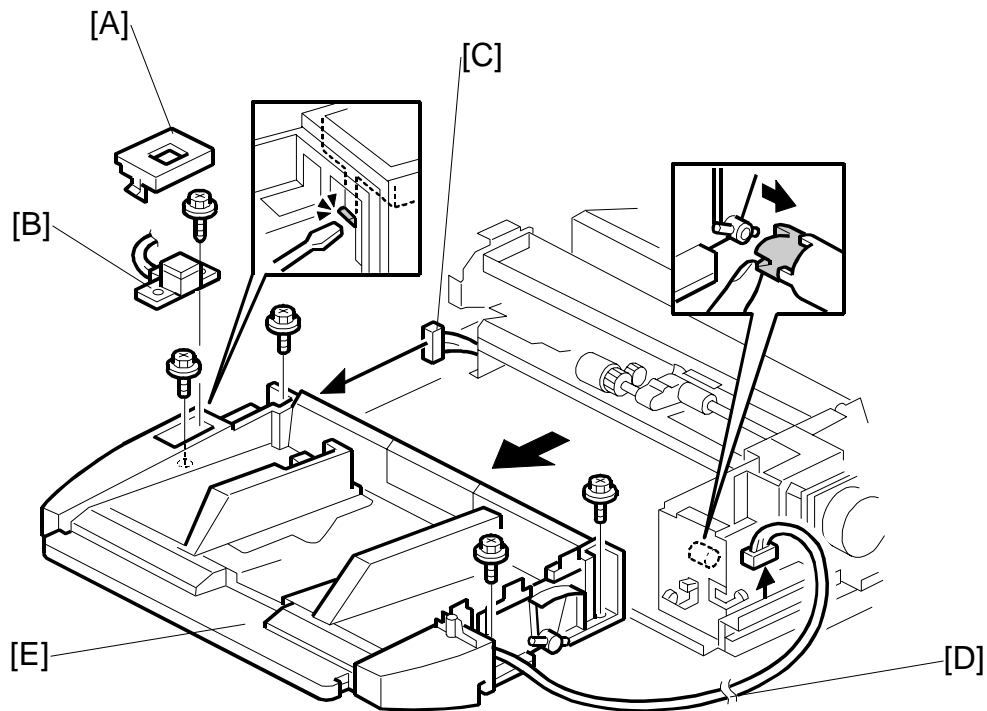
## 1.2 BYPASS TRAY COVERS



B833R004.WMF

1. Open the bypass tray. (☛1.1)
2. Front cover [A] (☛ x 1).
3. Rear cover [B] (☛ x 1).
4. Pull off the pick-up roller cover [C].
5. Top cover [D] (☛ x 2).

### 1.3 TRAY LIFT SWITCH, FEED TRAY

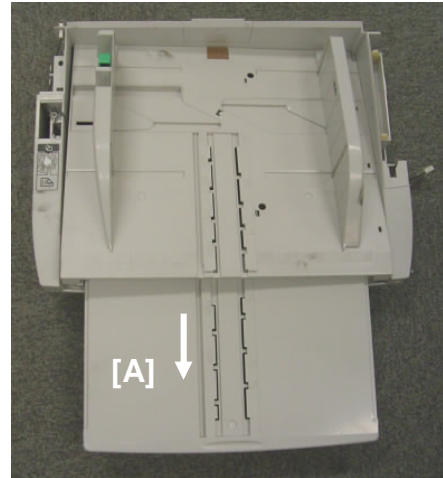


B833R902.WMF

1. Open the bypass tray. (☛1.1)
2. Remove the covers. (☛1.2)
3. Use the tip of a screwdriver to remove the tray lift switch cover [A].
4. Remove the tray lift switch [B] (⚙ x 1, hook x 1, standoff x 1, 📏 x 1).
5. Disconnect the tray lift switch connector [C].
6. Disconnect the paper width switch [D] (📏 x 2, harness clamp x 1).
7. Remove the feed tray [E] (⚙ x 4).

8. Pull out the extension tray [A].

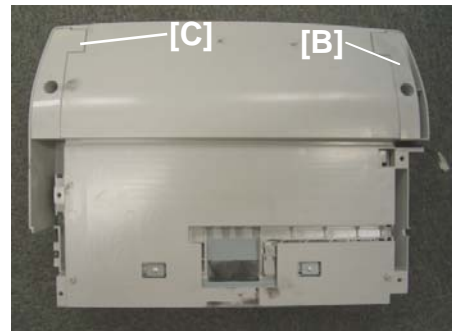
**NOTE:** The extension tray must be removed to separate the top and bottom of the bypass feed tray.



B833R903.BMP

9. Remove the bottom plate rear right cover [B]  
(⚙️ x1)

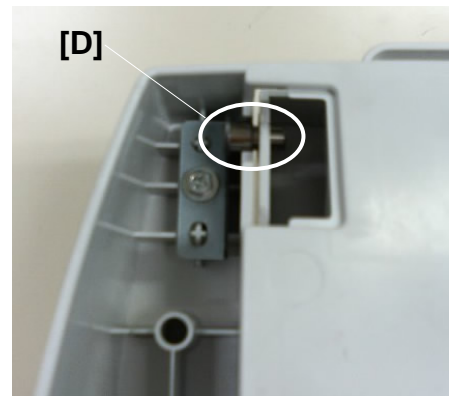
10. Remove the bottom plate rear left cover [C]



B833R904.BMP

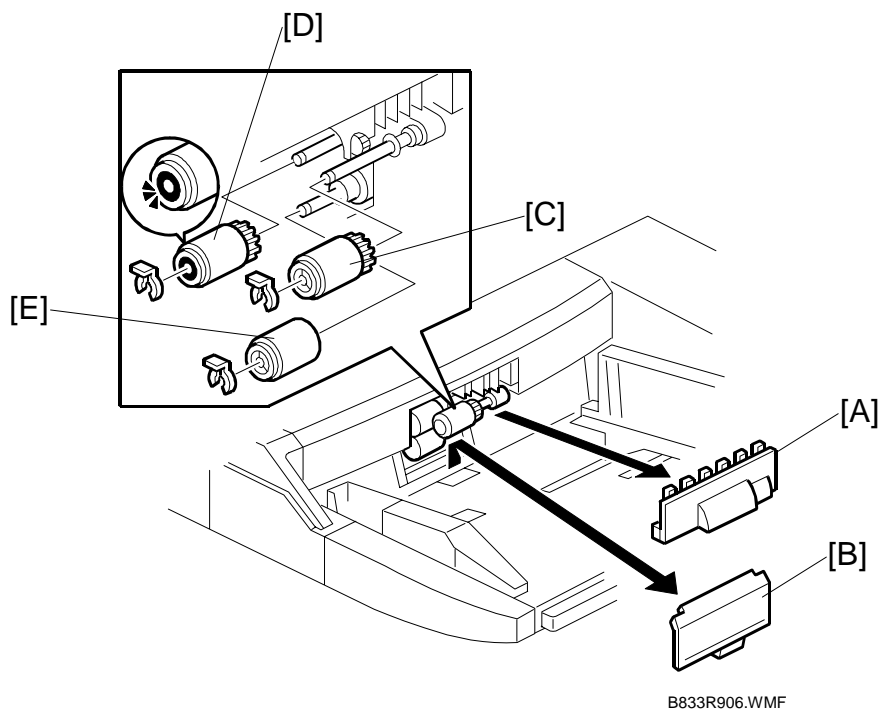
11. Remove the plate [D] and shaft (⚙️ x1, ⚙️ x1).

12. Separate the top and bottom of the feed tray  
(⚙️ x2, ⚙️ x1).



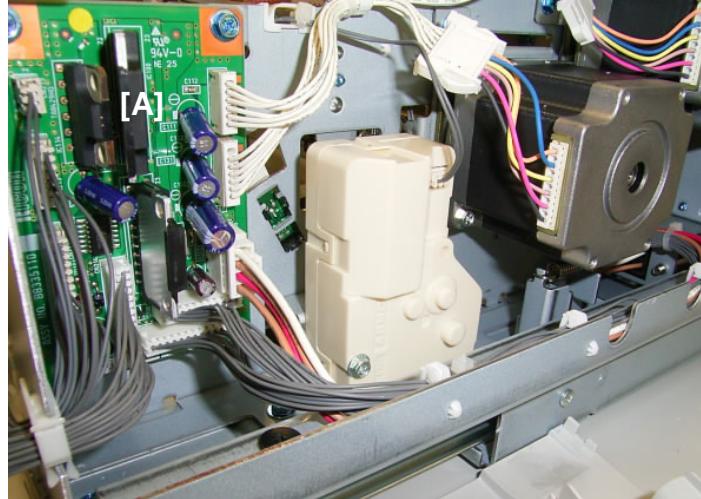
B833R905.BMP

## 1.4 FEED ROLLERS



1. Pull off the pick-up roller cover [A].
2. Pull off the separation roller cover [B].
3. Remove the pick-up roller [C] (⌚ x 1).
4. Remove the feed roller [D] (⌚ x 1).
5. Remove the separation roller [E] (⌚ x 1).  
**NOTE:** After re-installing the feed roller, make sure that it rotates clockwise.
6. Reset the PM count to zero for the new rollers.

## 1.5 BYPASS TRAY PCB



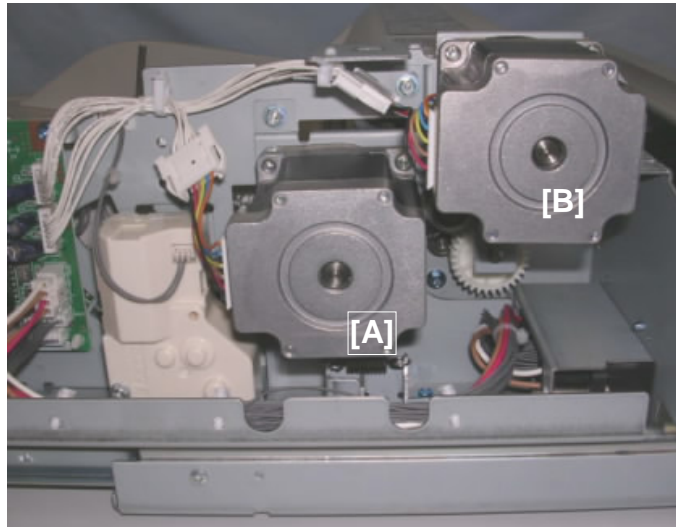
B833R907.BMP

1. Remove the rear cover. (☞1.2)
2. Remove the bypass tray PCB [A] (☞ x 9, ☞ x 2, standoffs x 2).

**NOTE:** Before disconnecting CN210 and CN211, mark either connector with a marker to make sure that you re-connect them correctly. The shapes of these connectors are the same and the wires are the same color.



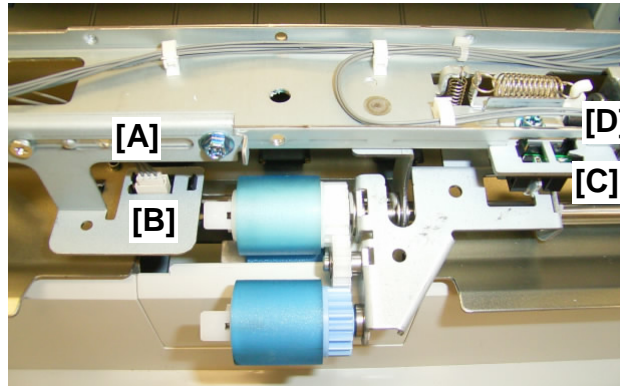
## 1.6 PAPER FEED MOTOR, TRANSPORT MOTOR



DSCN1932.BMP

1. Remove the rear cover. (☛1.2)
2. Remove the paper feed motor [A] (⚙️ x3, Spring x1, Timing belt x1, 📏 x1)
3. Remove the transport motor [B] (⚙️ x3, Spring x1, Timing belt x1, 📏 x1)

## 1.7 PAPER FEED AND LIFT SENSORS

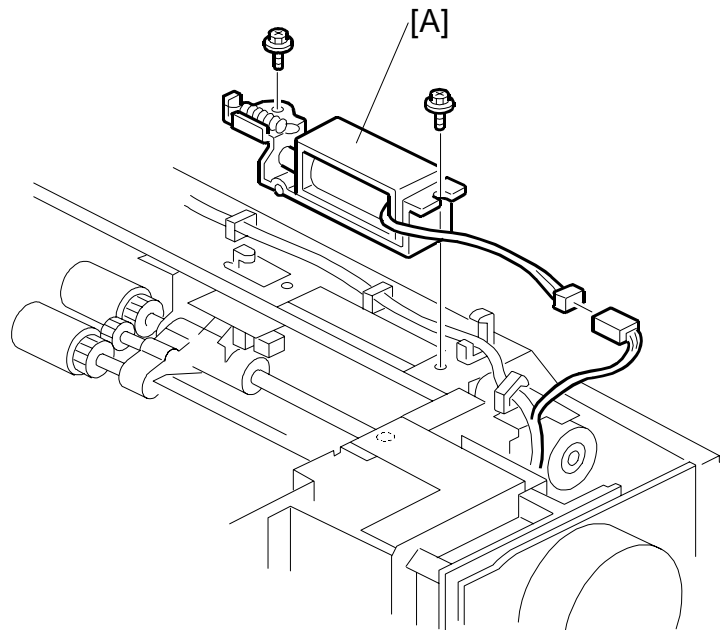


B833R920.BMP

### ***Sensor Removal***

1. Remove the rear, front, and top covers. (☛1.2)
2. Remove the paper feed bracket [A] (Step ☛ x 1, ☛ x 1).
3. Remove the paper feed sensor [B] (Hooks x 3, ☛ x 1)
4. Remove the lift sensor bracket [C] (☛ x 1).
5. Remove the lift sensor [D] (Hooks x 3, ☛ x 1).

## 1.8 PICK-UP SOLENOID

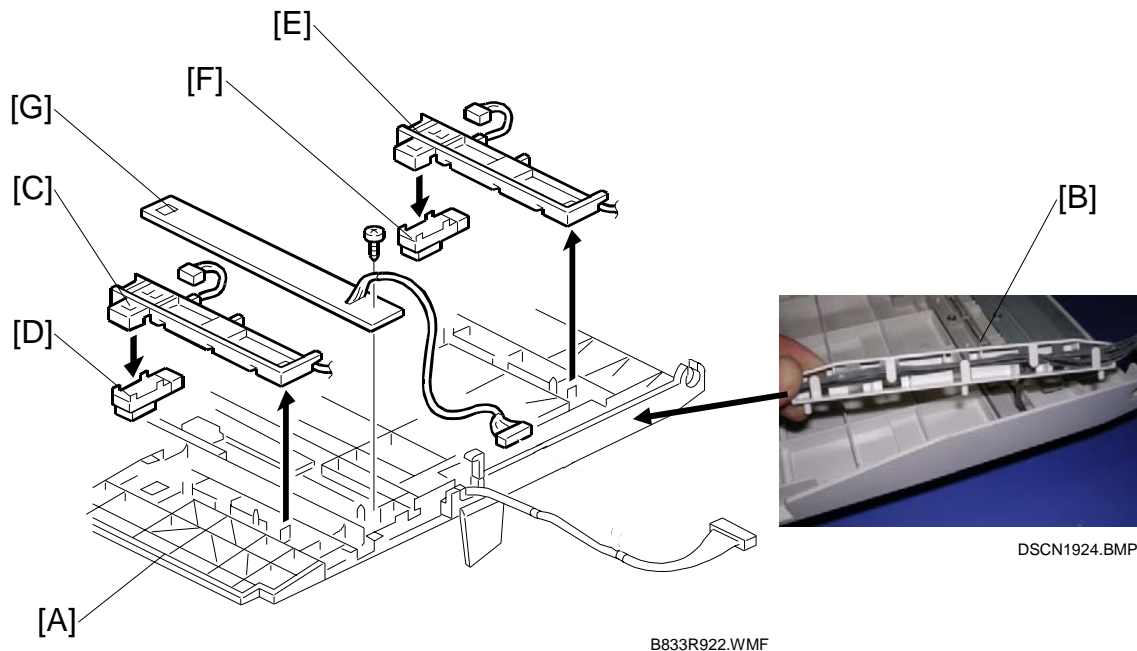


B833R921.WMF

1. Remove the rear, front, and top covers. (☛1.2)
2. Remove the pick-up solenoid [A] (🔩 x 2, 🛠 x 1, 📌 x 1)

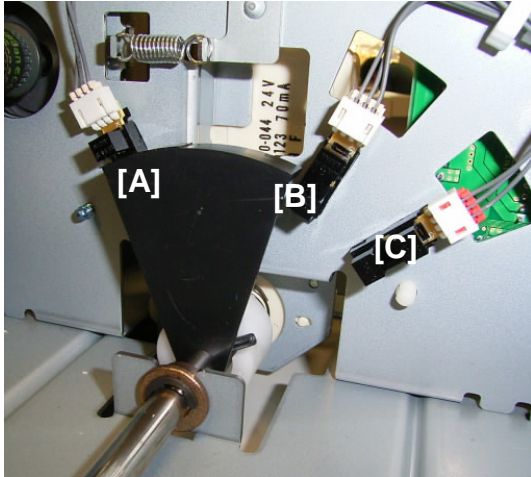
**NOTE:** When re-installing the solenoid, make sure that the arm of the solenoid is positioned above and in contact with the plate of the pick-up roller shaft below. To confirm correct installation, manually move the solenoid to the left and right. When the solenoid plunger is moved, the pick-up roller should move up and down smoothly.

## 1.9 PAPER WIDTH SWITCH, PAPER END AND PAPER LENGTH SENSORS

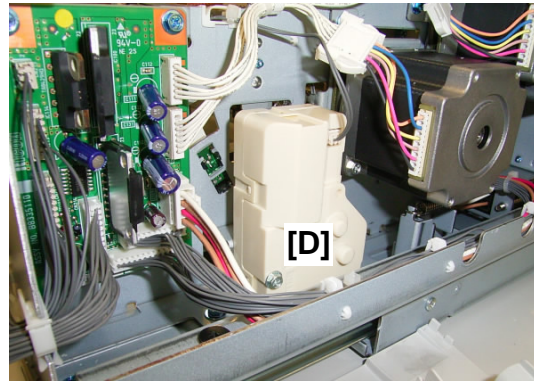


1. Remove the feed tray and separate the top and bottom. (☛1.3)
2. Turn over the top half of the feed tray [A] then lay it on a flat surface.
3. Remove the cable cover [B] (Hooks x2)
4. Paper end sensor bracket [C] (Hook x1).
5. Paper end sensor [D] (Hooks x 2, ☛ x 1).
6. Paper length sensor bracket [E] (Hook x 1, ☛ x 1).
7. Paper length sensor [F] (Hooks x 2, ☛ x 1).
8. Paper width switch [G] (☛ x 1, Harness clamp x 1, ☛ x 1).

## 1.10 PAPER HEIGHT SENSORS, LIFT MOTOR



B833R933.BMP



B833R924.BMP

1. Open the bypass tray. (🔧1.1)
2. Remove the bypass tray covers. (🔧1.2)
3. Remove the feed tray. (🔧1.3)

### Paper Height Sensors

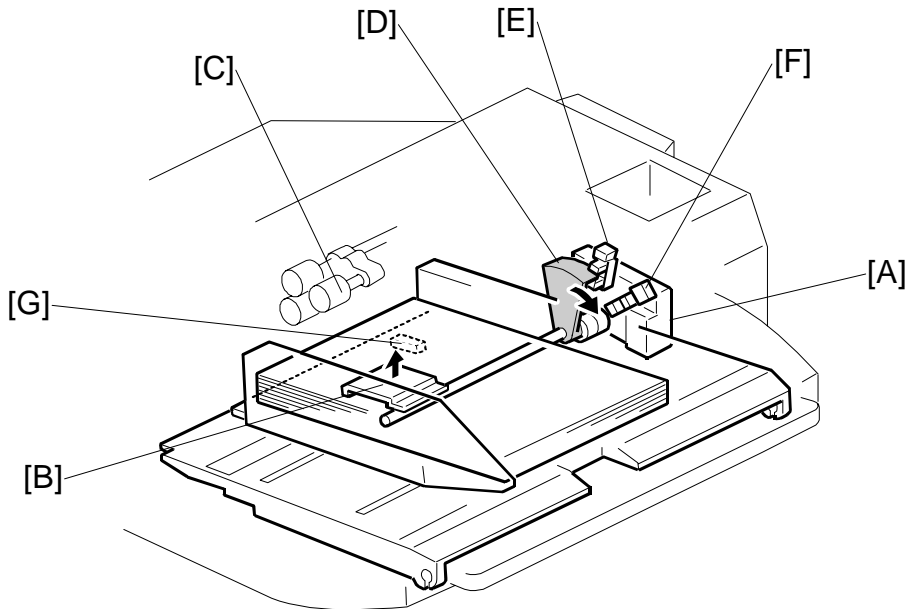
1. Paper Height Sensor 1 [A] (Hooks x 3, 📏 x 1)
2. Paper Height Sensor 2 [B] (Hooks x 3, 📏 x 1)
3. Paper Height Sensor 3 [C] (Hooks x 3, 📏 x 1)

### Lift Motor

1. Remove screws (🔧 x6) then push lift motor [D] to loosen its frame.
2. Raise the loosened frame slightly to remove the lift motor (🔧 x2, 📏 x1)

## 2. DETAILS

### 2.1 TRAY LIFT



B833D901.WMF

When the tray lift switch is pressed, the lift motor [A] switches on and pushes the lift plate [B] against the bottom of the feed tray until the top of the stack is at the correct feed position.

**NOTE:** If there is paper in the bypass tray when the main machine has just been switched on, the lift motor will turn on and lift the stack to the feed position.

As paper is fed, the pick-up roller [C] lowers until it activates the lift sensor which switches on the lift motor again to raise the stack to the feed level again. (●0)

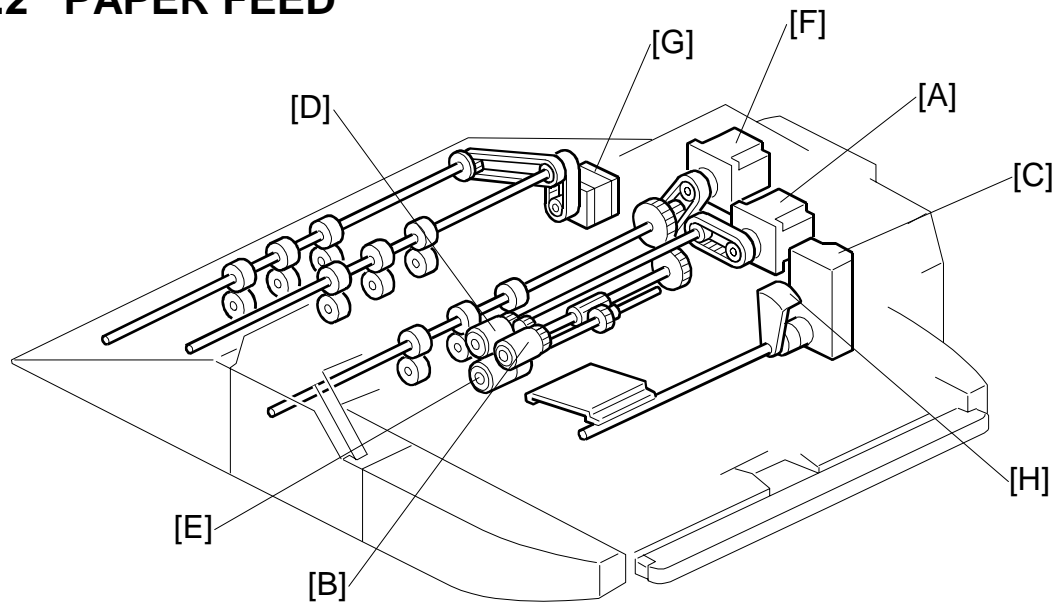
As the bottom plate shaft rotates and raises the bottom plate, the actuator [D] lowers and activates paper height sensor 1 [E] and then paper height sensor 2 [F] as the bottom plate continues to rise. With the tray full, the actuator remains upright and deactivates neither paper height sensor. During continuous feed, the actuator rotates downward through three positions, deactivating the first sensor, then both sensors, then only the second sensor. These states are used to report the amount of paper on the operation panel.

SN1	SN2	Paper Remaining Status
OFF	OFF	100% (Full)
ON	OFF	90%
ON	ON	50%
OFF	ON	25%

After the last sheet feeds, the paper end sensor [G] below the feed tray detects that the tray is empty.

**NOTE:** When you re-load the tray with paper, be sure to press the tray lift button to raise the bottom of the tray so the stack is at the correct feed position.

## 2.2 PAPER FEED



B833D003.WMF

### Feed

The bypass tray can hold 500 sheets of standard weight paper.

The bypass tray uses the standard FRR (Feed and Reverse Roller) feed system.

☛ **CT** Handling Paper > Paper Feed Methods > **Forward and Reverse Roller (FRR)**

When the job starts, the feed motor [A] switches on and rotates the pick-up roller [B]. At the same time, the pick-up solenoid [not shown] switches on and lowers the pick-up roller. The lift motor [C] switches on to raise the stack until the top of the stack reaches the correct feed level. At that time, the paper pushes the pick-up roller down. When the actuator [not shown] goes out of the lift sensor [not shown], the lift motor stops.

The pick-up roller picks up and feeds the first sheet to the feed roller [D] and separation roller [E]. When the feed sensor [not shown] detects the leading edge of the sheet, the pick-up solenoid raises the pick-up roller and the feed roller feeds the sheet.

**NOTE:** Unlike the separation rollers in the LCT, the separation roller always remains in contact with the feed roller above.

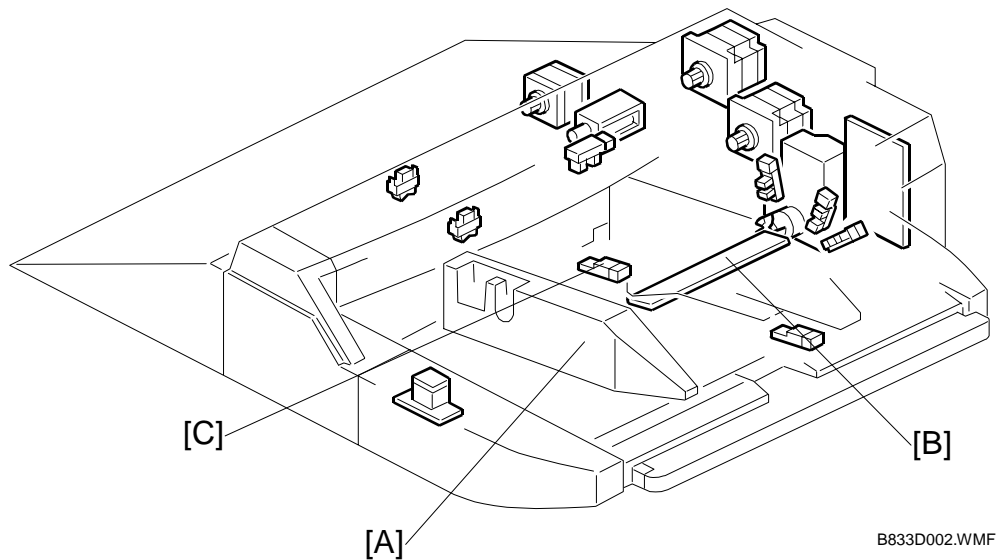
The transport motor [F] then feeds the paper into the bypass tray, and the relay motor [G] feeds the paper out of the bypass tray, and into the machine through the LCT.

### Tray Lift

When the pick-up roller [B] lowers far enough to go into the lift sensor, the lift motor switches on to raise the bottom plate until the actuator goes out of the lift sensor again and switches off the lift motor. This movement is repeated to maintain the correct height of the stack for paper feed.

Actuator [H] is used by the height sensors, to detect the amount of remaining paper.

## 2.3 PAPER SIZE DETECTION



The side fences [A] can be adjusted to standard and non-standard paper sizes.

Paper size is measured with the paper width switch [B] and the paper length sensor [C].

When the side fences are moved to match the paper width, four feelers inside the paper width switch [B] slide along the wiring patterns on the paper width switch terminal plate. The status of each feeler is read to determine whether it is High (in contact with a pattern wire) or Low (not in contact with a wire).

The paper length sensor reading (ON or OFF) is used with the paper width reading to determine the paper size. For more details about how the paper size is determined, see the paper size detection table on the next page.

The paper end sensor [C] de-activates when the last sheet is fed, reports that the paper tray is empty, and halts the job.



**Paper Size Detection Table**

Paper Size			Paper Width SW					Length Sensor	Area	
			1	2	3	4	5		NA	EU
Large		12" x 18"							●	●
		13" x 19"	H	H	H	H	L	L	○	○
		320 x 340 mm							○	○
A3	SEF	297 x 420 mm	H	H	H	L	L	L	●	●
A4	LEF	297 x 210 mm						H	●	●
DLT	SEF	11" x 17"	H	H	H	L	H	L	●	●
LT	LEF	11" x 8 1/2"						H	●	●
B4	SEF	257 x 364 mm	H	H	L	L	H	L	●	●
B5	LEF	257 x 182 mm						H	●	●
A4	SEF	210 x 297 mm						L	○	●
LT	SEF	8 1/2" x 11"	H	H	L	H	H	L	●	○
A5	LEF	210 x 148 mm						H	○	●
HLT	LEF	8 1/2" x 5 1/2"						H	●	○
B5	SEF	182 x 257 mm	H	L	L	H	H	L	○	○
F	SEF	8" x 13"						L	●	●
A5	SEF	148 x 210 mm	H	L	H	H	H	H	●	●
HLT	SEF	5 1/2" x 8 1/2"	L	L	H	H	H	H	●	●
B6	SEF	128 x 182 mm							○	○
A6	SEF	105 x 148 mm							●	●
Post-card		100 x 148 mm	L	H	H	H	H	H	○	○

**Table Key**

1, 2, 3, 4 and 5	The paper size switch consists of 5 feelers that slide along the wiring patterns of the paper width switch terminal plate when the side fences are manually adjusted to fit the size of the paper loaded in the tray. The H, L status of each feeler is determined by whether the feeler is in contact with the wire of a pattern.
H	High (5 V) (Inactive)
L	Low (0 V) (Active)
●	The machine determines the paper size automatically by reading the output of the paper size switches and the paper length sensor.
○	The machine cannot detect the paper size automatically. The user must select the paper size manually before starting the job. See below.

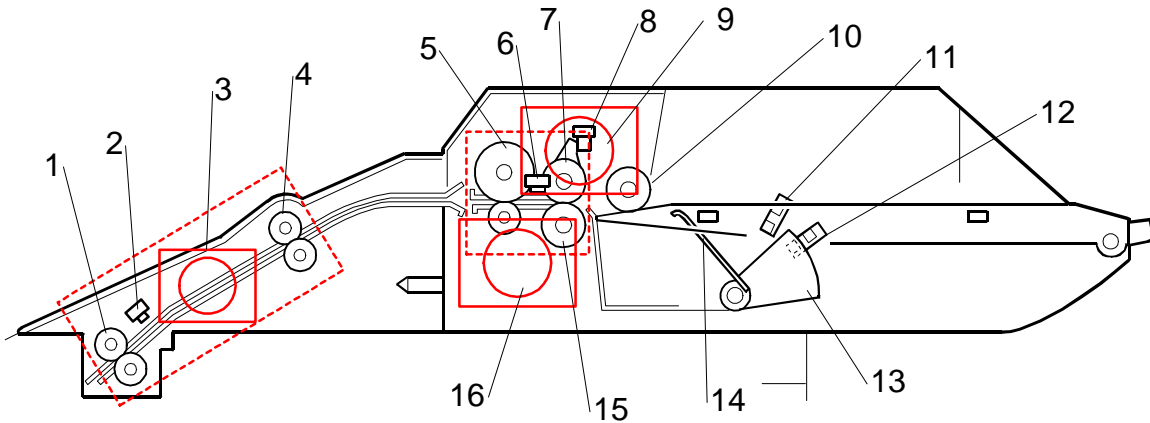
**Selecting the Paper Size for Undetectable Sizes**

Press the [Tray Paper Settings] key on the operation panel to select paper sizes that are not detected automatically by the combination of paper size and paper length sensor readings (marked "○" in the table above and any other paper size not listed that requires pulling out the paper tray extension).

**NOTE:** Mixed paper sizes cannot be loaded into the bypass tray. Loading paper of different sizes will cause a paper jam.

### 3. OVERALL MACHINE INFORMATION

#### 3.1 MECHANICAL COMPONENT LAYOUT

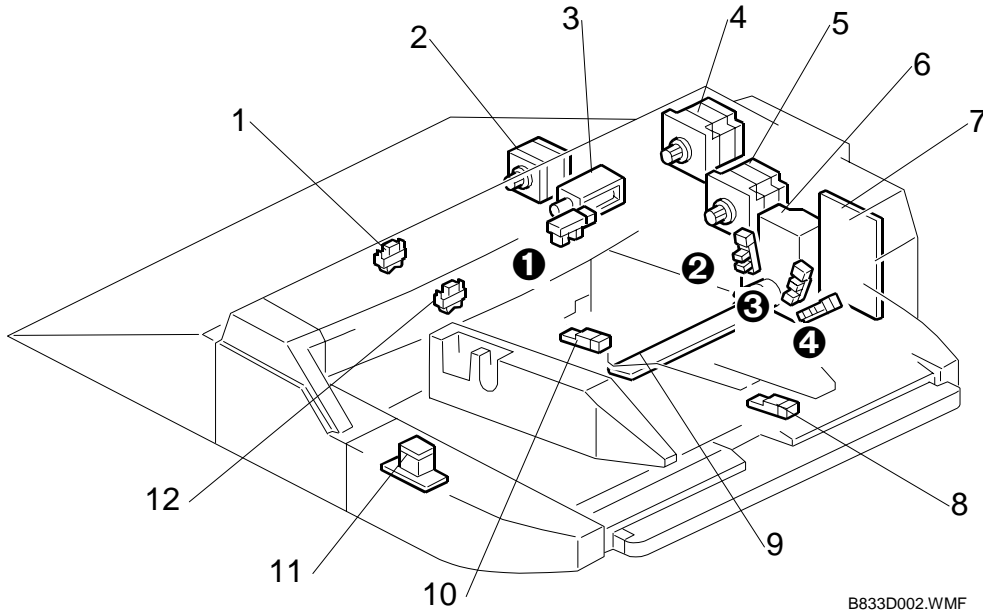


B833D951.WMF

- |                       |                           |
|-----------------------|---------------------------|
| 1. Transport Roller 3 | 9. Transport motor        |
| 2. Relay Sensor       | 10. Pick-up Roller        |
| 3. Relay Motor        | 11. Paper Height Sensor 1 |
| 4. Transport Roller 2 | 12. Paper Height Sensor 2 |
| 5. Transport Roller 1 | 13. Lift Plate Actuator   |
| 6. Paper Feed Sensor  | 14. Lift Plate            |
| 7. Paper Feed Roller  | 15. Separation Roller     |
| 8. Lift Sensor        | 16. Paper Feed Motor      |

## 3.2 ELECTRICAL COMPONENTS

### 3.2.1 LAYOUT



1. Relay Sensor
2. Relay Motor
3. Pick-up Solenoid
4. Transport Motor
5. Feed Motor
6. Lift Motor
7. Bypass Unit Control Board
8. Paper Length Sensor
9. Paper Width Switch
10. Paper End Sensor
11. Tray Lift Switch
12. Paper Feed Sensor
- ① Lift Sensor
- ② Tray Lower Limit Sensor
- ③ Paper Near End Sensor
- ④ Paper End Sensor

### 3.2.2 ELECTRICAL COMPONENT SUMMARY

<b>Motors</b>		
<b>No.</b>	<b>Name</b>	<b>Description</b>
M1	Feed Motor	Drives the paper feed roller in the feed mechanism.
M2	Lift Motor	Raises and lowers the bottom plate below the paper stack.
M3	Relay Motor	Drives the relay rollers that feed the paper from the bypass tray into the feed path of the LCT below.
M4	Transport Motor	Drives the transport roller of the bypass tray that pulls the paper out of the tray and sends it to the relay roller.

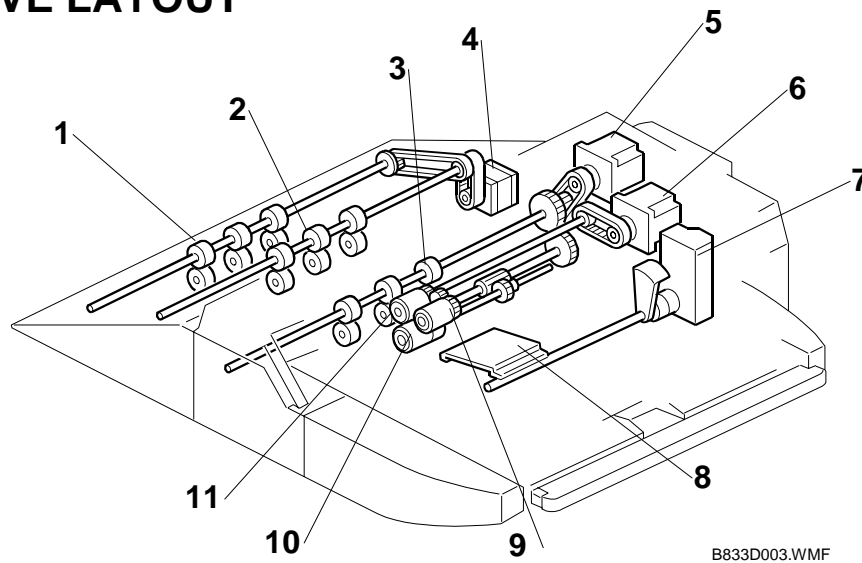
<b>PCB</b>		
<b>No.</b>	<b>Name</b>	<b>Description</b>
PCB1	Bypass Unit Control Board	Controls operation of all bypass unit electrical components.

<b>Sensors</b>		
<b>No.</b>	<b>Name</b>	<b>Description</b>
S1	Lift Sensor	Detects when the paper in the bypass tray is at the proper height for paper feed.
S2	Tray Lower Limit Sensor	Detects when the tray is at its lowest possible position.
S3	Paper End Sensor	Informs the copier when the paper in the bypass tray has run out.
S4	Paper Feed Sensor	Detects the copy paper coming to the 4th paper feed roller and checks for misfeeds.
S5	Paper Height Sensor 1	Paper end sensor. The paper height sensor pair (1 and 2) work together to monitor the height of the paper stack in the bypass tray.
S6	Paper Height Sensor 2	Paper near end sensor. The paper height sensor pair (1 and 2) work together to monitor the height of the paper stack in the bypass tray.
S7	Paper Length Sensor	Used with the paper width switch to determine paper size. This sensor is activated when paper is set for short edge feed. For example, when the paper width switch detects A4 width and this sensor is off, the machine determines A4 is set for long edge feed. When A4 width is detected and the paper length sensor is on, then the machine determines that A3 is loaded for short edge feed.
S8	Relay Sensor	Detects jams in the paper path after paper is fed from the feed roller.

<b>Solenoids</b>		
<b>No.</b>	<b>Name</b>	<b>Description</b>
SOL1	Pick-up Solenoid	Controls up-down movement of the pick-up roller in the bypass tray.

<b>Switches</b>		
<b>No.</b>	<b>Name</b>	<b>Description</b>
SW1	Tray Lift Switch	Switches the tray lift motor on and off to raise and lower the bottom plate of the tray to the feed position. This switch must be pressed to start paper feed.
SW2	Paper Width Switches	A slide switch connected to the side fences. When the side fences are moved to match the paper width, four feelers inside the paper size switch slide along wiring patterns of a terminal plate. The wire pattern detected determines the paper width.

### 3.3 DRIVE LAYOUT



B833D003.WMF

1. Transport Roller 2
2. Transport Roller 1
3. Grip Roller
4. Relay Motor
5. Transport Motor
6. Feed Motor
7. Lift Motor
8. Lift Plate
9. Pick-up Roller
10. Separation Roller
11. Feed Roller



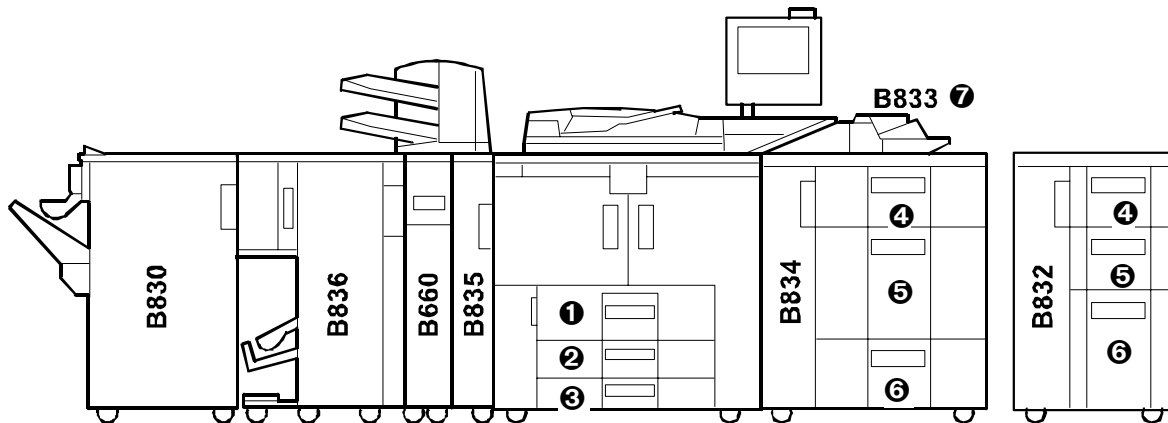
**LCIT RT5010**  
**(Machine Code: B834)**

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## Tray Naming



B834R901.WMF

❶	Copier (e-STUDIO901/1101/1351)	1st Tray
❷		2nd Tray
❸		3rd Tray
❹	LCT (B832 or B834)	4th Tray
❺		5th Tray
❻		6th Tray
❼	Bypass Tray (B833)	7th Tray



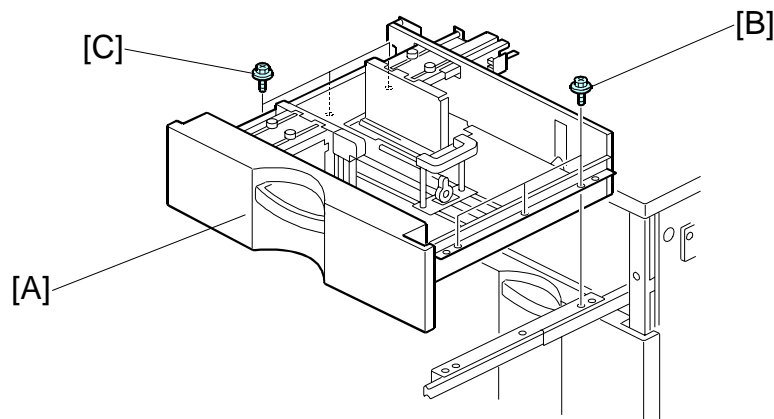
# 1. REPLACEMENT AND ADJUSTMENT

## 1.1 REMOVING TRAYS

### ⚠ CAUTION

- Tray 5 weighs 27 kg (60 lb.) empty. Trays 4 and 6 weigh 20 kg (44 lb.) each empty.
- To prevent damage to the tray and personal injury, never attempt to lift a tray alone or without attaching the carrying handles, especially if a tray is loaded with paper.
- Two people on each side of the tray should lift the carrying handles together to lift and move the tray.
- Never remove the tray if the LCT has not been docked to the copier. Removing the tray while the LCT is standing alone can unbalance the LCT and cause it to fall over.

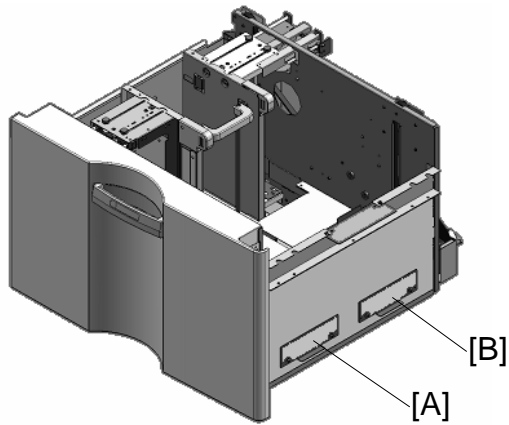
**Important:** Only one set of carrying handles is attached to the side of Tray 5. Follow the procedure below to attach and use these handles to move Tray 4, 5 or 6.



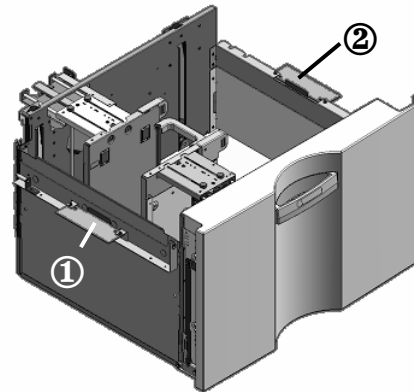
B834R108.WMF

1. Pull the tray [A] out of the LCT until it stops.
2. Remove the screws from the right rail [B] (⚙ x3)
3. Remove the screws from the left rail [C] (⚙ x3)

**NOTE:** You do not need to remove screw for the stopper pin bracket at the back of the left rail.



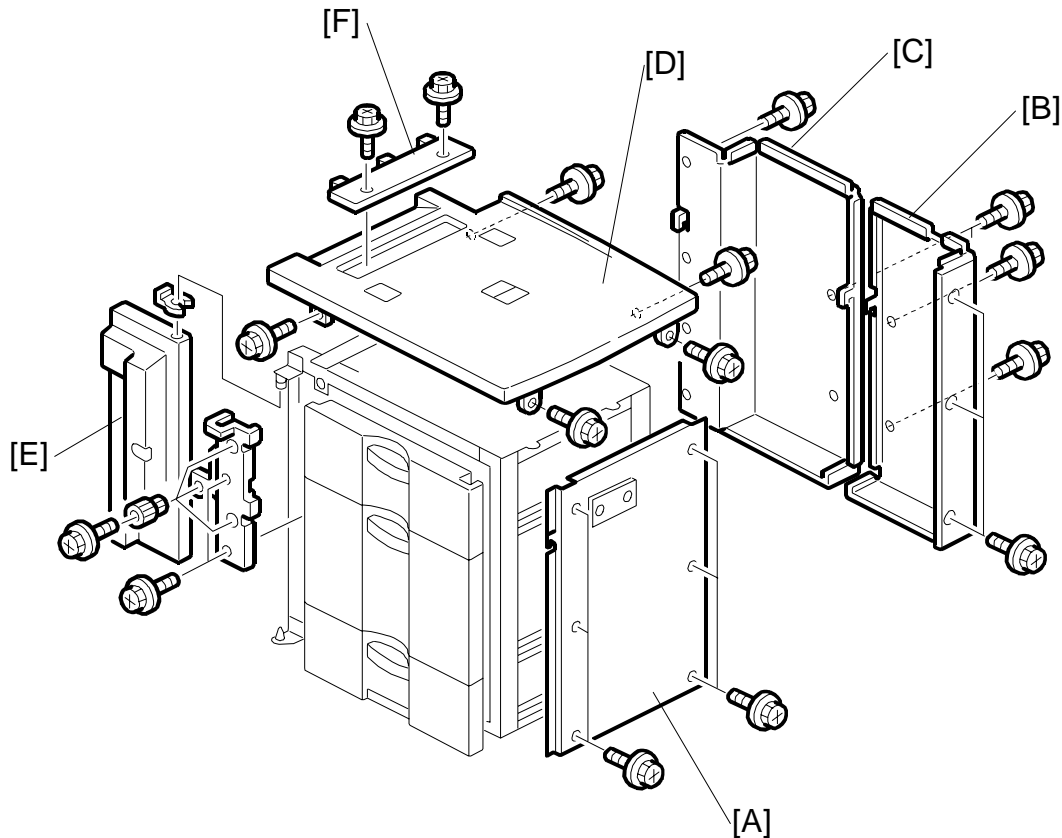
B834R201.BMP



B834R202.BMP

4. Remove carrying handles [A] and [B] from the right side of the tray (⚙ x 2 ea.)
5. Use the same screws to attach the carrying handles at ❶ and ❷.
6. With one person on each side of the tray, lift it carefully and remove it from the rails.

## 1.2 FRONT DOOR AND COVERS



B834R101.WMF

### Important:

- The frame is held together by 8 blue screws.
- To avoid weakening or warping the shape of the frame, never remove these blue screws.

**NOTE:** The upper inner cover must be removed before the top cover.

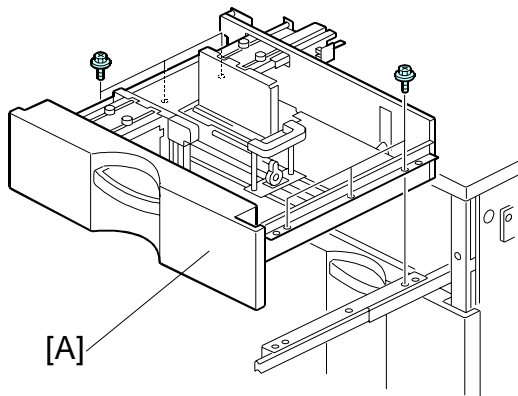
### • Remove:

- [A]: Right cover (🔩 x 6).
- [B]: Right rear cover (🔩 x 6).
- [C]: Left rear cover (🔩 x 6)
- [D]: Top cover (🔩 x 5).
- [E]: Front door (🔩 x 1).

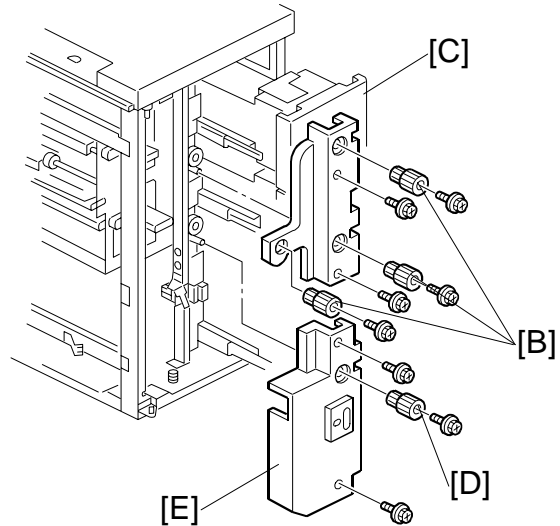
**NOTE:** While lifting the top cover, remove the snap ring and front door.

- [F]: Paper slot cover (🔩 x 2).

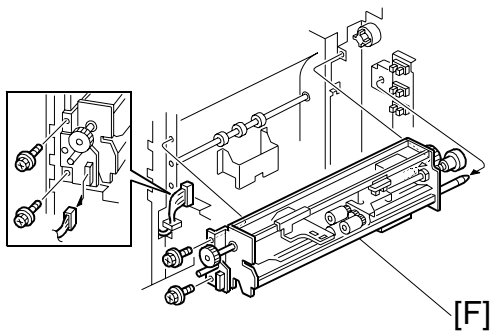
### 1.3 INNER COVER, PAPER FEED UNIT



B834R108.WMF



B834R902.WMF



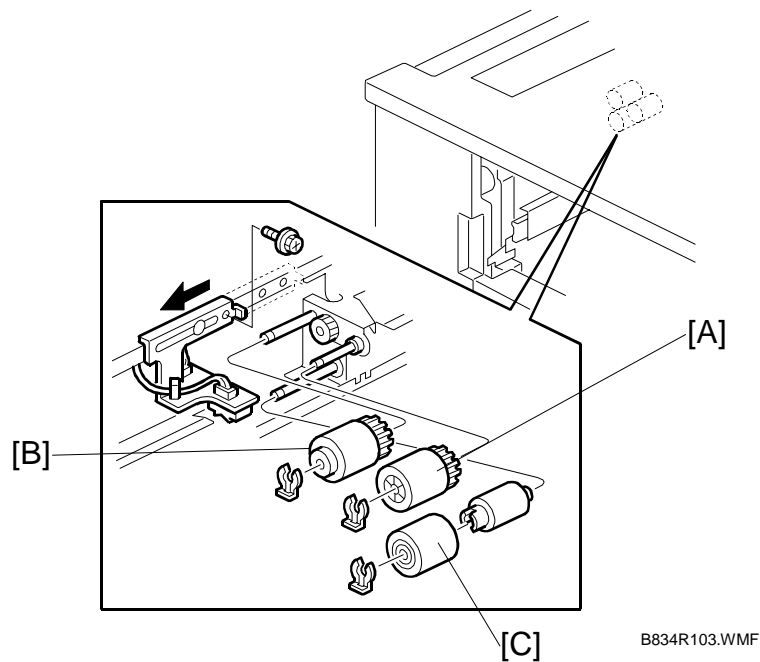
B834R903.WMF

- Open the front door.
- Remove right cover (☛1.2)
- Pull out tray [A]

Remove:

- [A] Tray (☛1.1)
- [B] Knobs (x3) (☛x 1ea.)
- [C] Upper inner cover (☛ x2)
- [D] Knob (☛ x1)
- [E] Lower inner cover (☛ x1)
- [F] Paper feed unit (☛ x1, ☛ x2)

## 1.4 PAPER FEED ROLLER



Remove:

- Remove the right cover (☛1.2)
- Remove the paper trays. (☛1.1)

[A] Pick-up roller (☛ x 1).

[B] Feed roller (☛ x 1).

[C] Separation roller (☛ x 1).

**NOTE:** 1) The LCT pick-up and separation rollers are the same as pick-up and separation rollers of the main machine. These rollers are interchangeable.

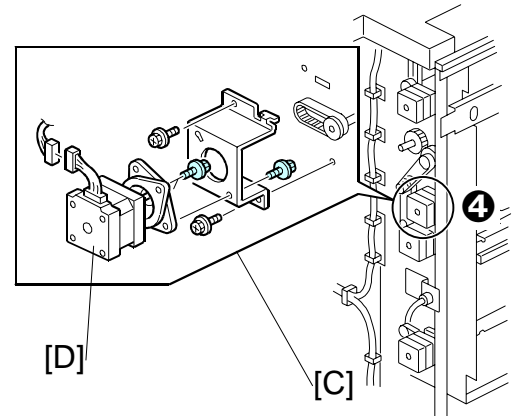
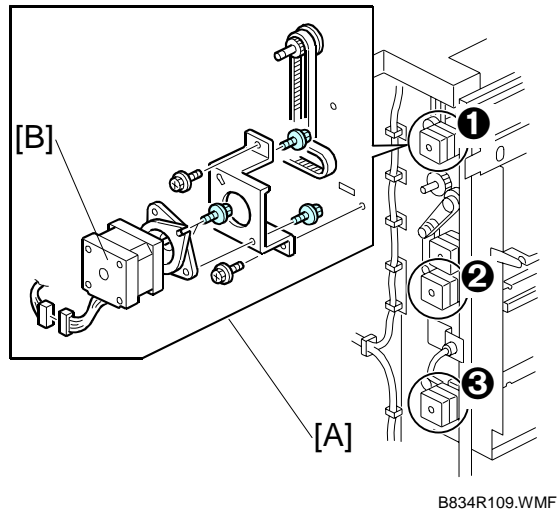
2) The feed rollers of the LCT and main machine are different because they are designed to rotate in opposite directions. The feed rollers of the LCT and main machine are not interchangeable.

3) Never touch the surface of the rollers with bare hands.

- Clear the PM counters for the new rollers (see Section "2. Preventive Maintenance).

## 1.5 LCT MOTORS

### 1.5.1 TRANSPORT MOTORS, LCT EXIT MOTOR



#### **4th, 5th, and 6th Transport Motors ①, ②, ③**

Remove:

- Left rear cover (➡1.2)
- [A] Motor unit (⚙️ x1, Timing belt x1, 🔩 x2)
- [B] Motor (🔩 x2)

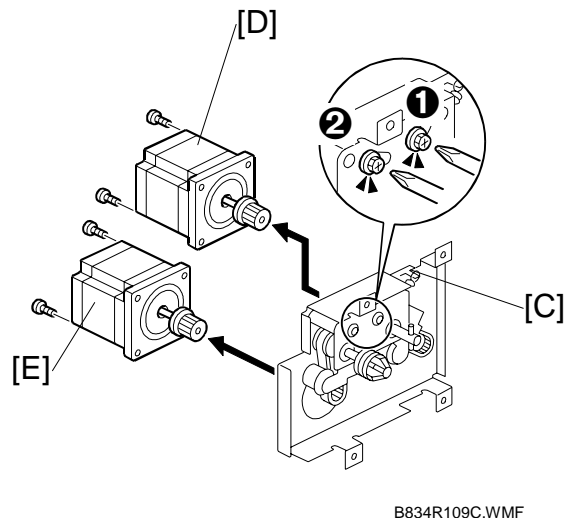
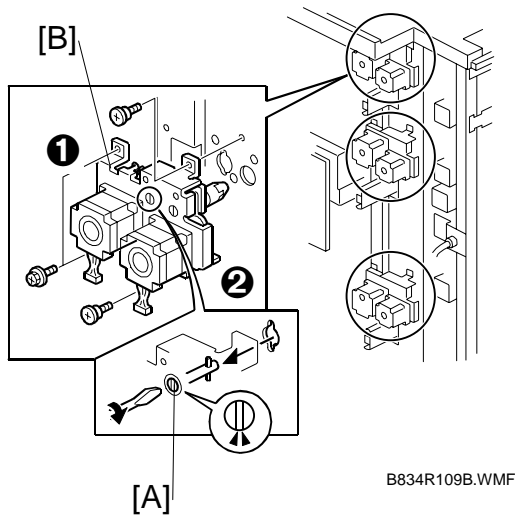
#### **LCT Exit Motor ④**

Remove:

- Left rear cover (➡1.2)
- [C] Motor unit (⚙️ x1, Timing belt x1, 🔩 x3)
- [D] Motor (🔩 x2)



## 1.5.2 FEED MOTORS / GRIP MOTORS



Each paper feed unit has a pick-up feed motor ❶ and a grip motor ❷. The removal procedure is the same for each feed tray.

1. Remove the left rear cover (➡1.2)
2. Use a small screwdriver to turn the shaft [A] so the pin can slip out of the keyhole.

Remove:

[B] Motor unit (⚙️ x4, ⚙️ x2, ⚙️ x2)

[C] Springs (x2). First, loosen the screws (x2) ❶, ❷.

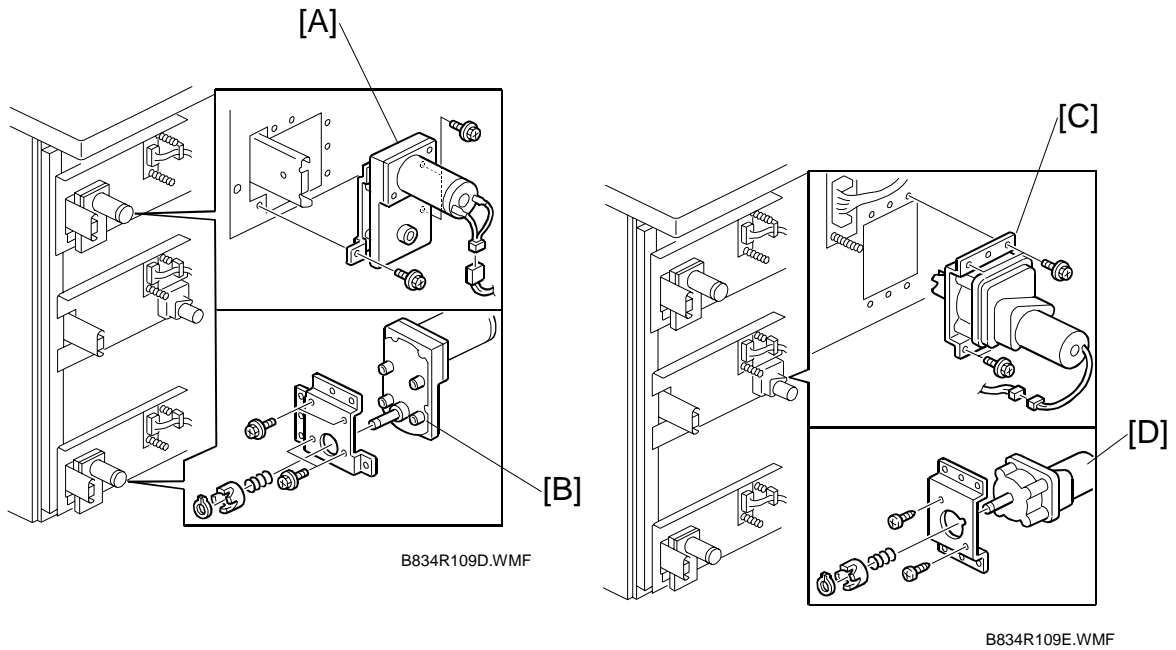
[D] Paper feed motor (⚙️ x2, Timing belt x1)

[E] Grip motor (⚙️ x2, Timing belt x1)

### Reinstallation

- Attach the tension spring, then tighten the screws ❸ to tighten the belts.

### 1.5.3 LIFT MOTORS



#### **4th, 6th Lift Motors**

The procedure for removing the 4th and 6th lift motors is the same.

Remove:

- Rear cover. (☛1.2)

[A]: Motor unit (⚙️ x2, 📏 x1).

[B]: 4th (or 6th) lift motor (⚙️ x4, Clip x1, Coupling x1, Spring x1)

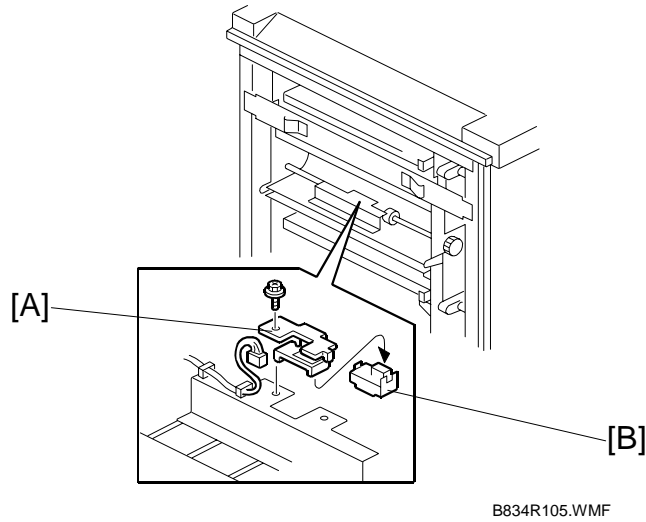
#### **5th Lift Motor**

- Rear cover. (☛1.2)



[C]: Motor unit (⚙️ x4, 📏 x1)

[D]: 5th lift motor (⚙️ x2, Clip x1, Coupling x1, Spring x1)

## 1.6 LCT EXIT SENSOR



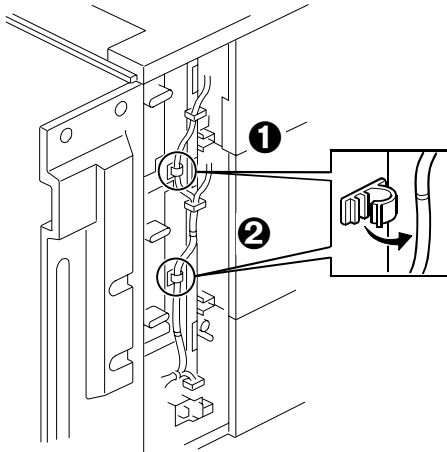
- Disconnect the LCT from the copier.

[A] Exit sensor unit (  x 1,  x 1).

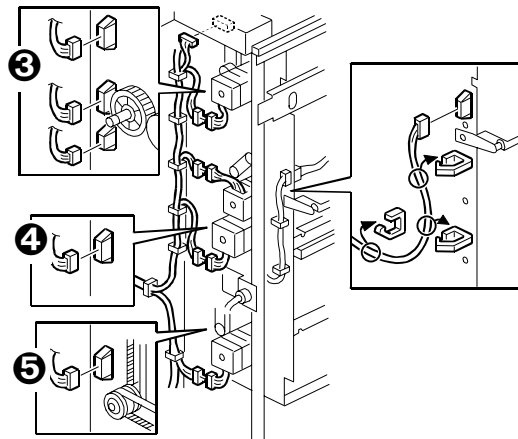
[B] Exit sensor

## 1.7 PAPER PATH SENSORS

### 1.7.1 REMOVING THE VERTICAL FEED UNIT

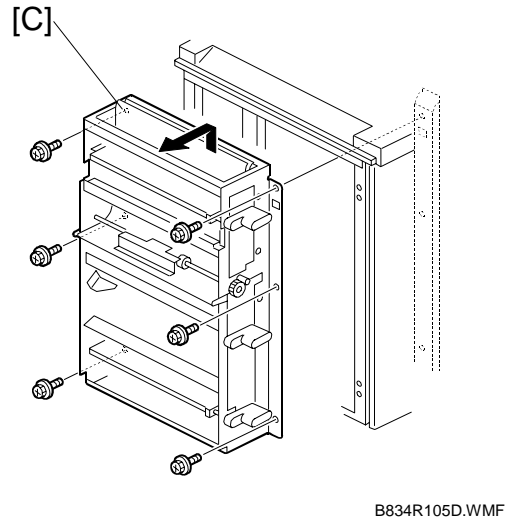
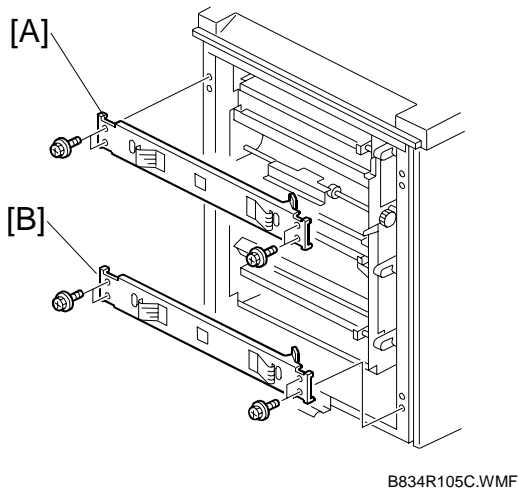


B834R105A.WMF



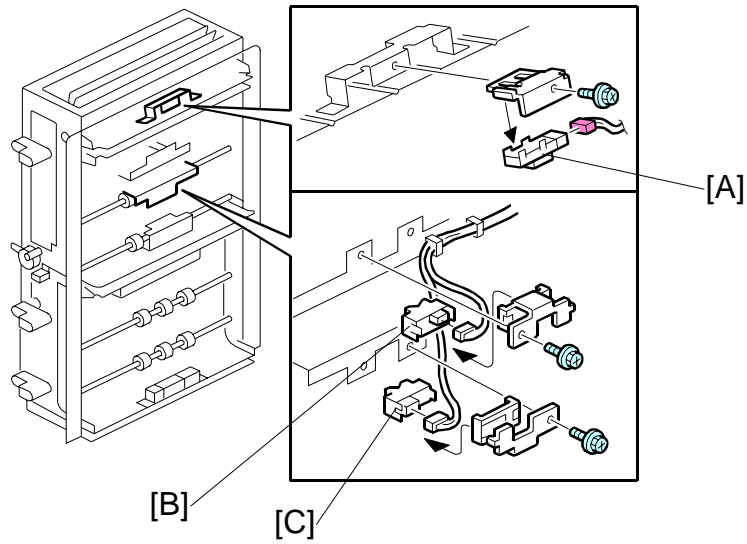
B834R105B.WMF

- Open the front door.
  - Remove:
    - Upper inner cover (☛1.3)
    - Lower inner cover (☛1.3)
    - Left rear cover (☛1.2)
1. Disconnect the harness clamps 1 and 2 (☛x2).
  2. Disconnect the motor harnesses 3, 4, 5 (☛x3, ☛x11).



3. Remove:
- [A]: Upper stay (🔩 x2)
  - [B]: Lower stay (🔩 x2)
  - [C]: Vertical feed unit (🔩 x6)

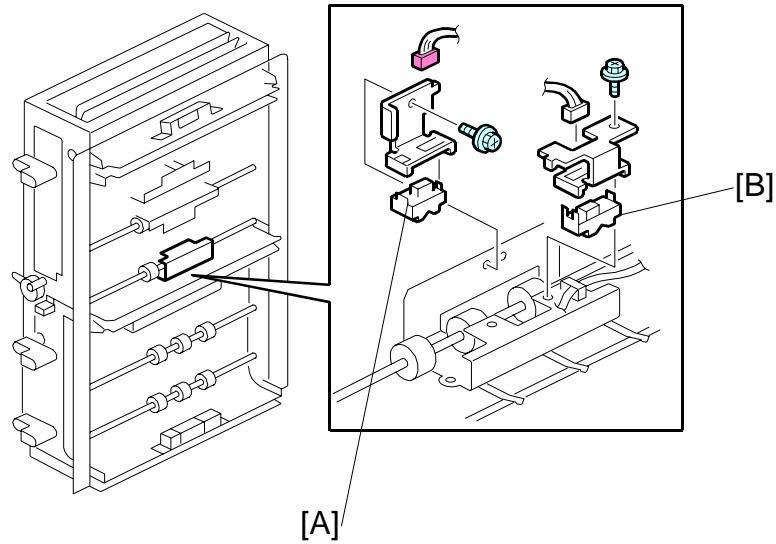
### 1.7.2 4TH TRANSPORT, 4TH RELAY UPPER, LOWER SENSORS



B834R105E.WMF

1. Remove the vertical feed unit. (☛1.7.1)
2. Remove:
  - [A]: 4th Transport sensor (🔧 x1, 🛠️ x1)
  - [B]: 4th Relay sensor – upper (🔧 x1, 🛠️ x1)
  - [C]: 4th Relay sensor – lower (🔧 x1, 🛠️ x1)

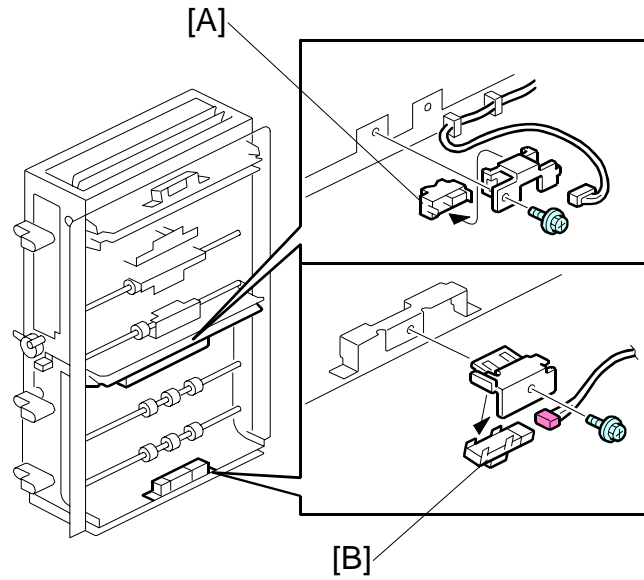
### 1.7.3 5TH RELAY SENSOR, 5TH TRANSPORT SENSOR



B834R105F.WMF

1. Remove the vertical feed unit. (☛1.7.1)
2. Remove:
  - [A] 5th Relay sensor (🔧 x1, 📏 x1)
  - [B] 5th Transport sensor (🔧 x1, 📏 x1)

### 1.7.4 6TH RELAY SENSOR, 6TH TRANSPORT SENSOR

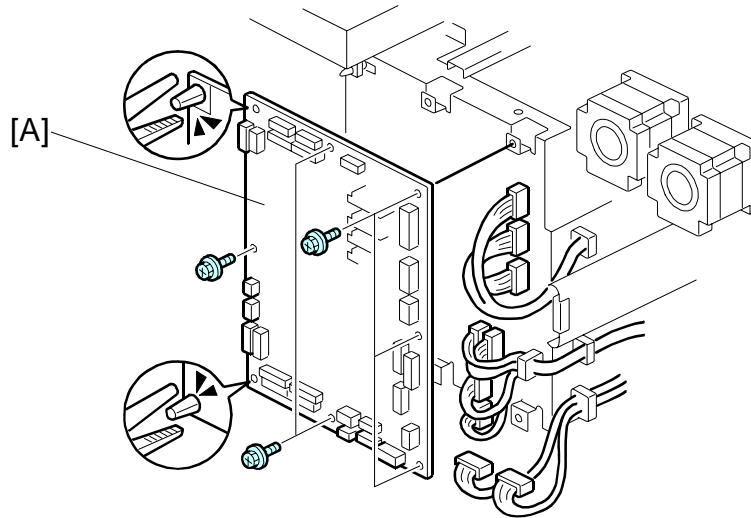


B834R105G.WMF

- Remove the vertical feed unit. (☛1.7.1)
  - [A] 6th Relay sensor (☛ x1, ☛ x1)
  - [B] 6th Transport sensor (☛ x1, ☛ x1)



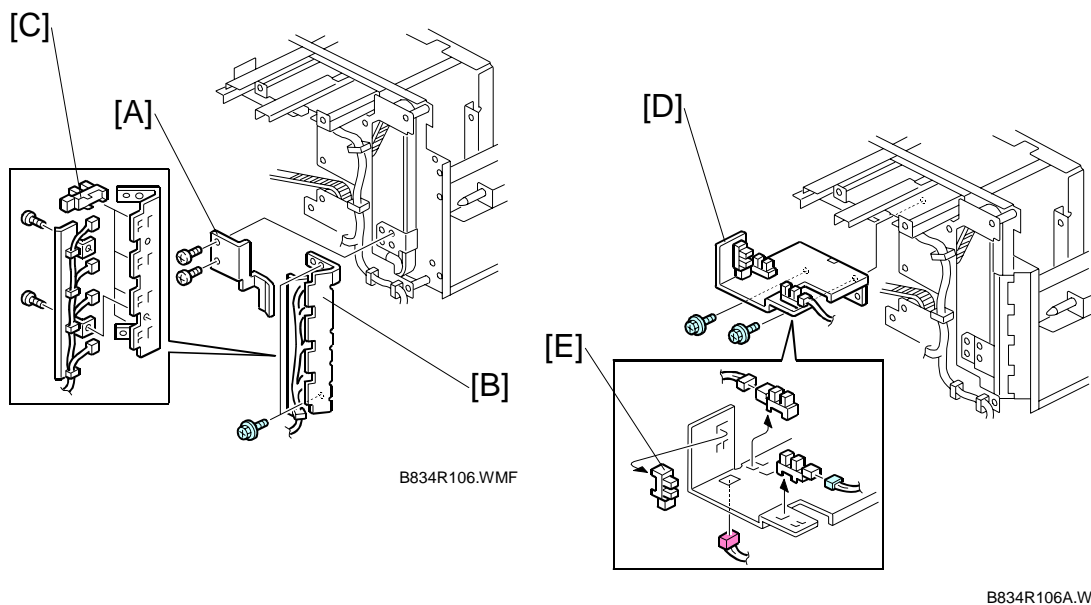
## 1.8 MAIN CONTROL BOARD



B834R105H.WMF

- Remove the rear covers. (➡1.2)
- [A] Main control board (🔩 x6, Standoffs x2, 📏 x All).

## 1.9 PAPER HEIGHT, PAPER WIDTH SENSORS



### Paper Height Sensors

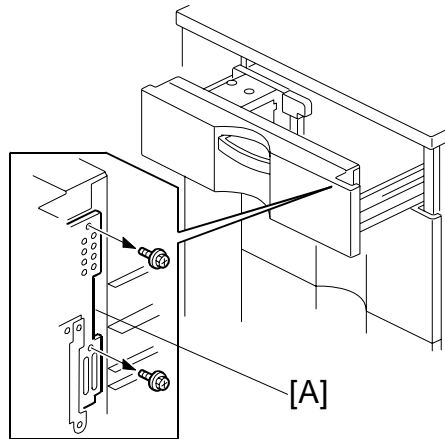
Remove:

- Rear left cover. (☛1.2)
- [A] Paper height sensor unit (☛ x 2, ☛☛ x 4).
- [B] Clamp bracket (☛ x 2)
- [C] Paper height sensors (x4) (Hooks x 2 each)

### Paper Width Sensors

- Rear left cover. (☛1.2)
- [D] Paper width sensor unit (☛ x2, ☛☛ x3)
- [E] Paper width sensors (x3) (Hooks x2 each)

## 1.10 SIDE REGISTRATION ADJUSTMENT



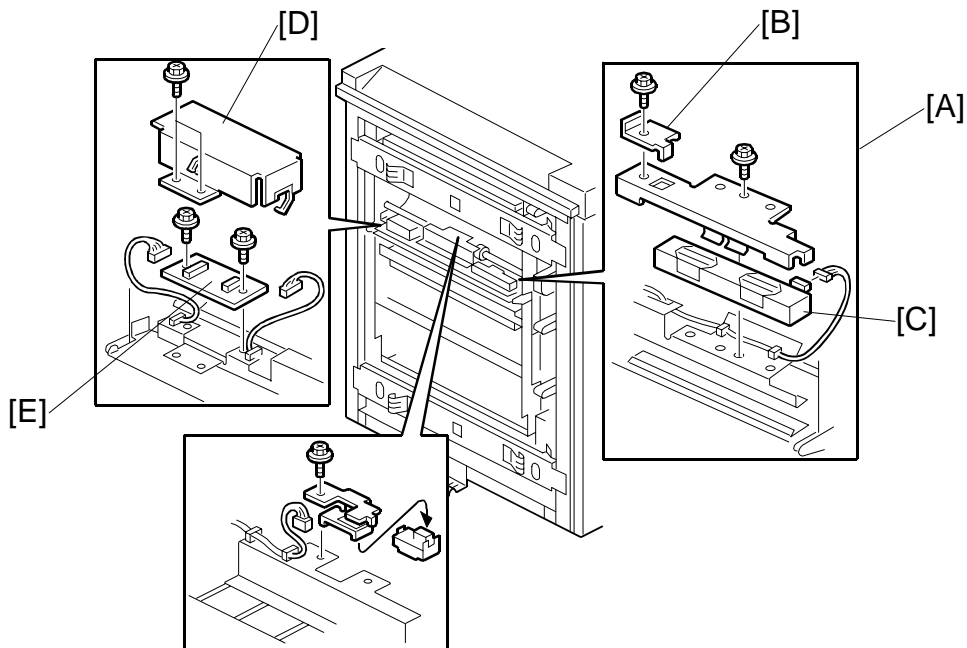
B834R112.WMF

Normally the side registration of the image can be adjusted with **SP1002 004~006** (Side-to-Side Registration – Tray 4, 5, 6). When the punch hole positions are not aligned from a particular feed station, adjust the side registration by changing the tray cover position for the tray, as described below. Then adjust the side registration of the image with the SP1002.

1. Pull out the tray.
2. Change the screw positions [A] at both the right and left sides as shown.

**NOTE:** Adjustment range:  $0 \pm 2.0$  mm adjustment step: 1.0 mm/step

## 1.11 IMAGE POSITION BOARD AND SENSOR



B834R113.WMF

### Image Position Sensor

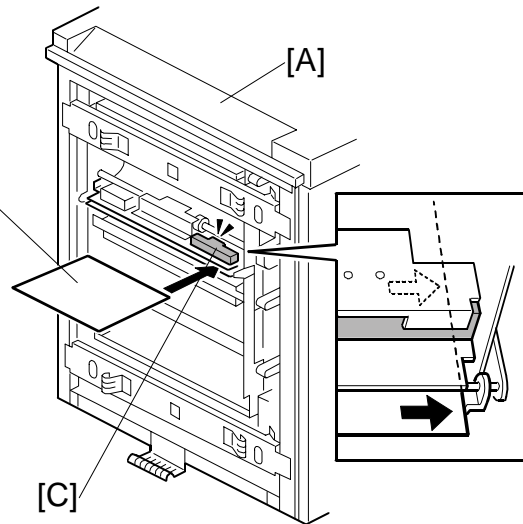
- Disconnect the LCT from the copier.
- [A] Image position sensor unit (⚙ x2, 📡 x1)
- [B] Stopper (⚙ x1)
- [C] Image position sensor
- After replacing the image position sensor do the procedure for image position sensor adjustment. (➡1.12)

### Image Position Sensor Board

- Disconnect the LCT from the copier.
- [D] Cover (⚙ x2, 📡x2)
- [E] Image position sensor board (⚙ x2, 📡 x2, 📡x2)

## 1.12 ADJUSTING IMAGE POSITION SENSOR STRENGTH AND SIDE-TO-SIDE REGISTRATION

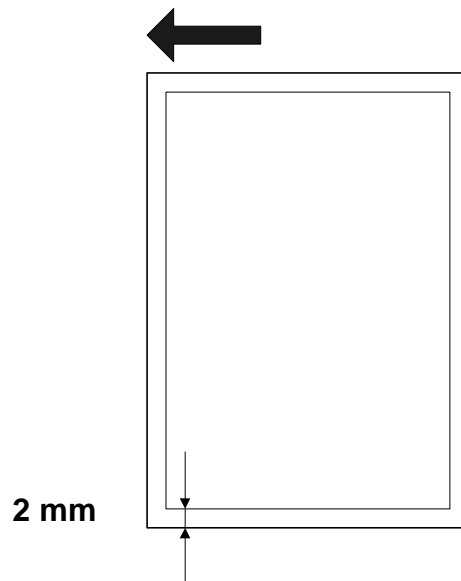
1. Turn off the main power switch.
2. Disconnect the LCT from the mainframe.
3. With the LCT [A] separated from the mainframe, reconnect the LCT cable to the mainframe.
4. Turn on the main power switch.
5. Insert one sheet of plain white paper [B] in the paper path.
6. Make sure that the paper covers the entire area below the image position sensor (CIS) [C].
7. Enter the SP mode and do **SP1910 002** (CIS Image Position Adjustment: LED Strength - LCT). This calibrates the amount of light to be emitted from the CIS.



B834R904.WMF

8. Do **SP1909 002** (CIS Image Position Adjustment: PWM After Adjustment - LCT).
  - If the displayed value is between 20 (14h) and 40 (28h), the CIS is calibrated successfully. (The display is in hexadecimal code.)
  - If the value is outside this range, do **SP 1910 002** and **1909 002** again. If the value does not come between 20 and 40, the CIS may be defective.
9. Exit the SP mode.
10. Reinstall the LCT to the side of the copier.
11. Push [User Tools]> [Adjust Settings for Operators].
12. Do **SP1911** for Trays 4, 5, 6, 7 and set the value for each tray to "0" (OFF).
13. Exit from SP 1911 and return to the SP mode menu.

14. Adjust the image positions in the main scan direction.
  - Do **SP2902 003**, select Pattern **27**, then print the trimming pattern.
  - Do **SP1002** and adjust the image position in the main scan direction for Trays 4, 5, 6, and 7.
  - Print the trimming pattern from each tray of the LCT and from the bypass tray (if installed).
  - To do this, touch "Copy Window" in the SP display, select a tray, then push [Start].
  - The distance of the test pattern line from the paper edge for each tray must be 2 mm. If it is not 2 mm, adjust with **SP1002 004** to **007**, depending on which tray is not within the specified 2 mm.
15. Do **SP1912 002** (CIS Image Position Adjustment: Normal Paper). This sets the CIS for operation with standard copy paper.
16. Exit the SP mode.
17. Push [User Tools]> [Adjust Settings for Operators].
18. Once again, do **SP1911** (CIS Image Position Adjustment: Feed Setting) and reset the values for Trays 4, 5, 6, and 7 to "1" (ON).



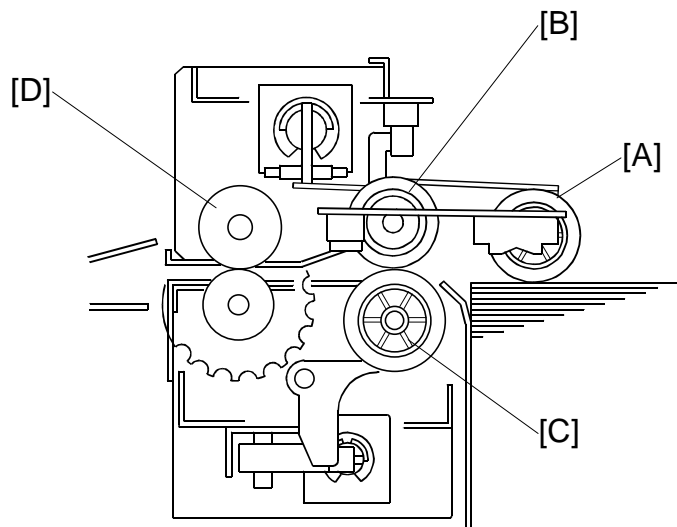
B834R905.WMF

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## 2. DETAILED DESCRIPTIONS

### 2.1 PAPER FEED

#### 2.1.1 PAPER FEED ROLLERS



B834D930.WMF

This LCT has three paper tray feed stations:

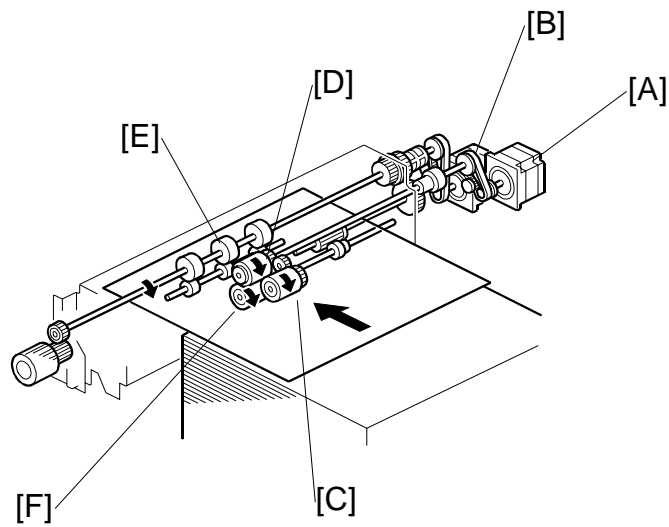
The 4th and 6th tray each hold 1,000 sheets of paper. The 5th tray holds 2,000 sheets of paper. Total: 4,000 sheets

Each tray contains four rollers:

- [A] Pick-up roller
- [B] Paper feed roller
- [C] Separation roller
- [D] Grip roller

**NOTE:** The pick-up roller, paper feed roller, and separation roller are a standard FRR paper feed system.

## 2.1.2 PAPER FEED MOTORS



B834D931.WMF

Two stepper motors control the paper feed drive:

[A] Paper feed motor

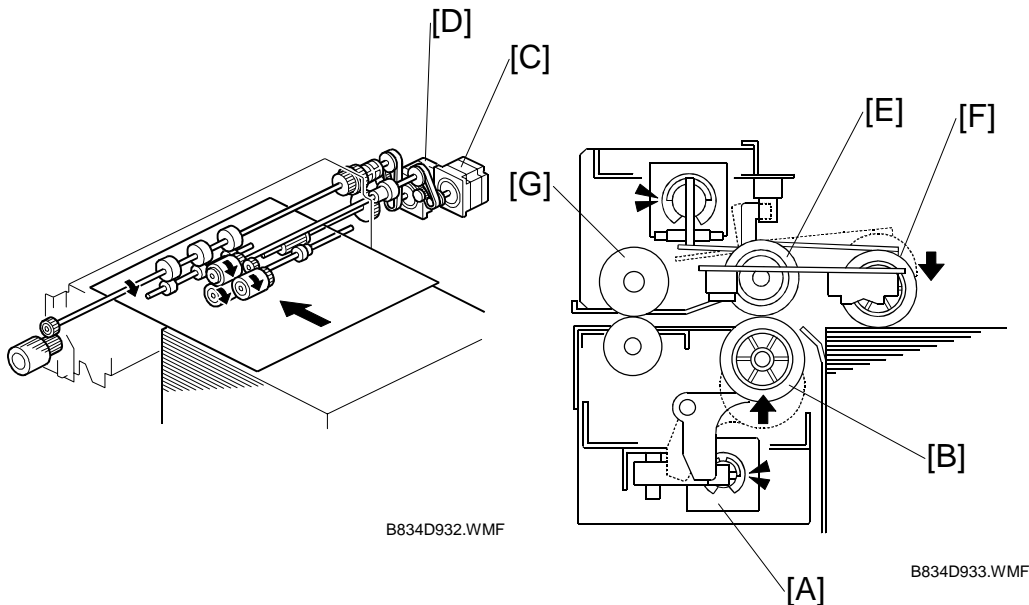
[B] Grip motor

The paper feed motor drives the pick-up roller [C] and the paper feed roller [D].

The grip motor drives the grip roller [E] that feeds the paper out of the tray, and the separation roller [F].



### 2.1.3 PAPER SEPARATION



When a paper feed station is not selected:

- Separation roller solenoid [A] is de-activated
- Separation roller [B] turns freely.

When the paper feed station is selected for a job:

- Paper feed motor [C] and grip motor [D] turn on.

When the feed motor [C] turns on, it drives the feed roller [E]. It also drives the pick-up roller [F] because the pick-up roller is linked to the feed roller by an idle gear.

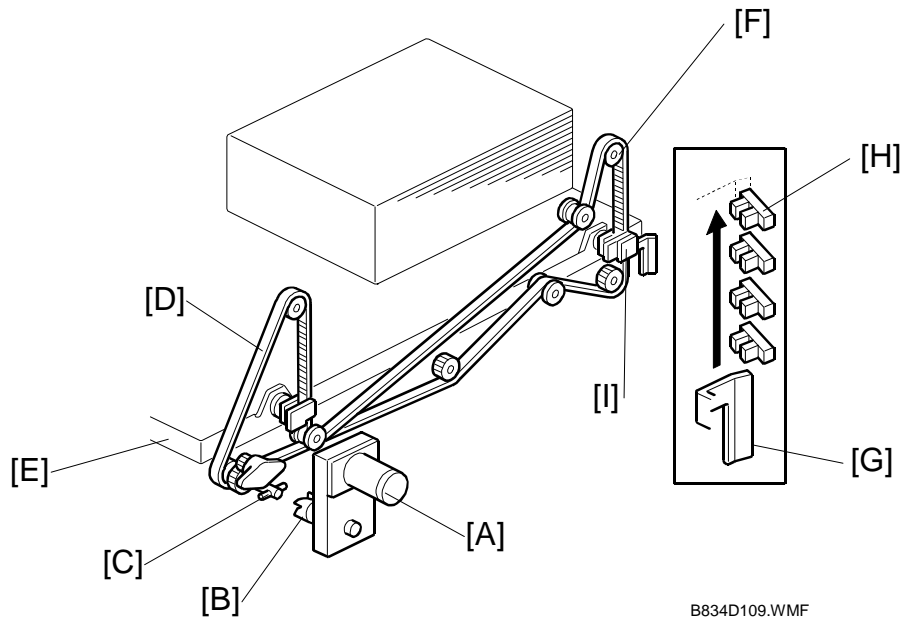
When the separation solenoid [A] turns on, the separation roller [B] contacts the paper feed roller [E] and turns with the feed roller, unless more than one sheet of paper is fed. The three trays of the LCT unit use the standard FRR mechanism.

When the paper feed motor turns on, the pick-up solenoid turns on and the pick-up roller [F] lowers until it contacts the top sheet of the paper stack and then sends it to the paper feed and separation rollers.

When the paper feed sensor detects the leading edge of the paper, the paper feed motor switches off, the pick-up roller lifts, and the grip rollers [G] feed the paper out of the tray.

## 2.2 PAPER DETECTION / LIFT

### 2.2.1 MECHANISM



#### Detection

When the tray set in the machine, the tray is detected by the drawer connector on the back side of the tray.

#### Lift

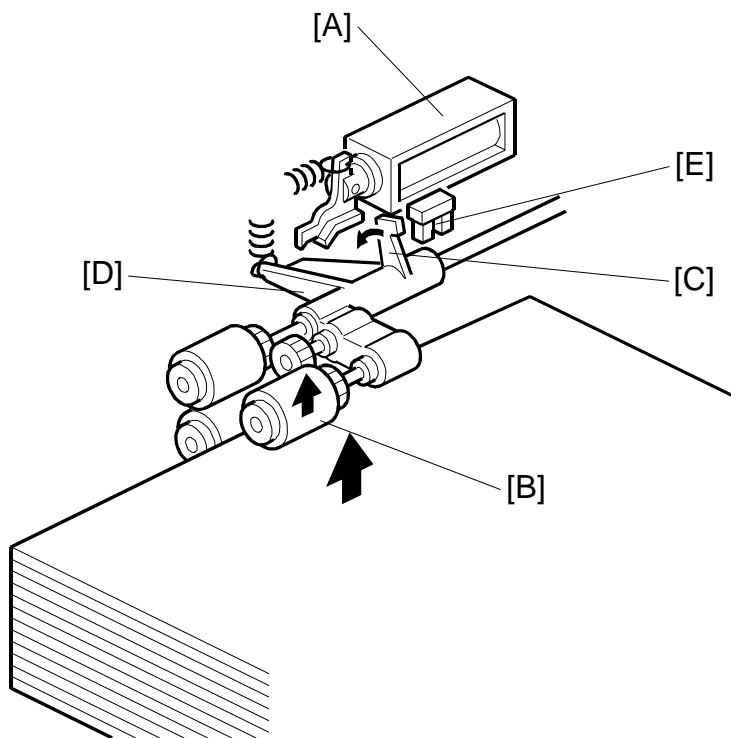
When the machine detects that the paper tray is set in the machine:

- The tray lift motor [A] rotates forward
- Coupling gear [B] on the tray lift motor engages pin [C] of the lift drive shaft.
- The tray drive belts [D], connected to the tray bottom plate [E], are driven by the tray lift motor via the lift drive shaft and tray lift pulleys [F].
- When the lift motor rotates forward, the tray bottom plate [E] rises. The tray rises until the top of the paper stack pushes up the pick-up roller and the lift sensor in the feed unit is de-activated.
- When the actuator [G] on the rear end of the bottom plate activates the paper height sensors [H], the remaining paper capacity is detected.

When the tray is pulled out:

- Coupling gear [B] separates from pin [C] and the tray bottom plate goes down.
- A damper [I] slows the descent of the bottom plate. For the B834, all three trays have this damper.

## 2.2.2 LIFT SENSOR

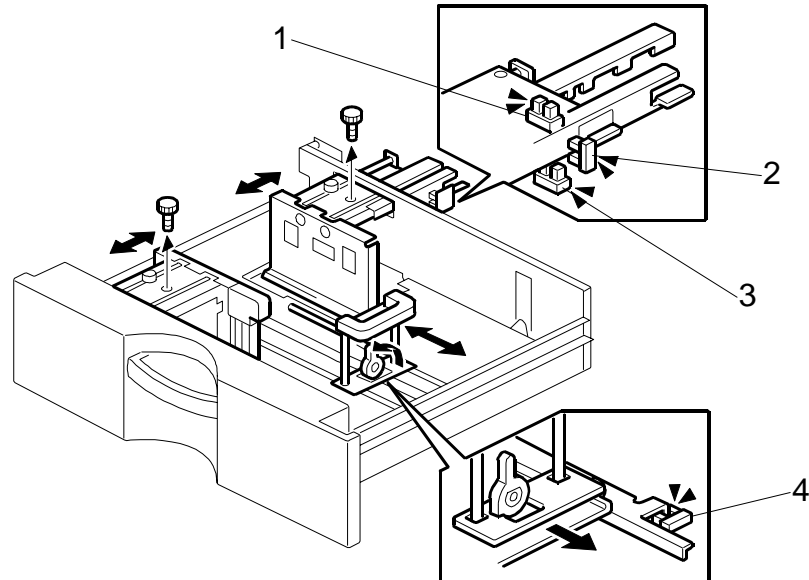


B834D934.WMF

When the lift motor turns on, the pick-up solenoid [A] activates to lower the pick-up roller [B]. When the top sheet of paper reaches the proper paper feed level, the paper pushes up the pick-up roller and the actuator [C] on the pick-up roller supporter [D] de-activates the lift sensor [E] to stop the lift motor.

After several paper feeds, the paper level gradually lowers, then the lift sensor is activated and the lift motor turns on again until the lift sensor is de-activated again.

## 2.3 PAPER SIZE DETECTION



B834D111.WMF

1. 4th Paper Width Sensor 3
2. 4th Paper Width Sensor 2
3. 4th Paper Width Sensor 1
4. 4th Paper Length Sensor

The 4th, 5th, and 6th trays have three paper width sensors and one paper length sensor. The illustration above shows how these sensors are arranged in the 4th tray.

This table describes how the three width sensors and one length sensor are used to determine the paper size in the 4th, 5th, and 6th paper trays.

Paper Size		Width Sensors			Length Sensor	Area	
		W1	W2	W3	L1	NA	EU
Large Size	12" × 18"	L	L	L	H	YES	YES
	13" × 19"					NO	NO
	320 × 450 mm					NO	NO
A3 SEF	297 × 420 mm	L	L	H	H	YES	YES
A4 LEF	297 × 210 mm	L	L	H	L	YES	YES
DLT SEF	11" × 17"	L	H	L	H	YES	YES
LT LEF	11" × 8½"	L	H	L	L	YES	YES
B4 SEF	257 × 364 mm	L	H	H	H	YES	YES
B5 LEF	257 × 182 mm	L	H	H	L	YES	YES
A4 SEF	210 × 297 mm	H	L	L	H	NO	YES
LT SEF	8½" × 11"	H	L	L	H	YES	NO
A5 LEF	210 × 148 mm	H	L	L	L	NO	YES
HLT LEF	8½" × 5½"	H	L	L	L	YES	NO
B5 SEF	182 × 257 mm	H	L	H	H	NO	NO
F SEF	8" × 13"	H	L	H	H	YES	YES
A5 SEF	148 × 210 mm	H	H	L	L	YES	YES
HLT SEF	5½" × 8½"	H	H	H	L	YES	YES

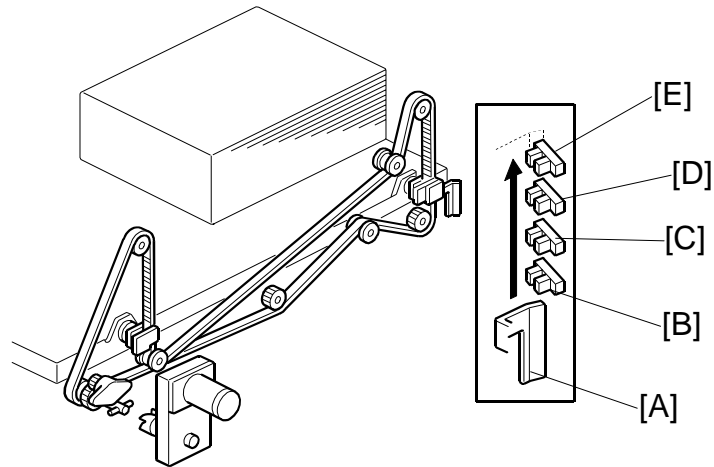
YES: Detected automatically

NO: Not detected automatically. Requires size setting change with the "Tray Paper Setting" key on the copier operation panel to detect the desired paper size.

H: Sensor OFF

L: Sensor ON

## 2.4 REMAINING PAPER DETECTION



B834D109.WMF

- [A] Paper Height Sensor Actuator
- [B] 4th Paper Height Sensor 4
- [C] 4th Paper Height Sensor 3
- [D] 4th Paper Height Sensor 2
- [E] 4th Paper Height Sensor 1 (Near End)

Each tray has four paper height sensors. The illustration above shows the paper height sensors in the 4th tray. This arrangement is duplicated in the 5th and 6th trays.

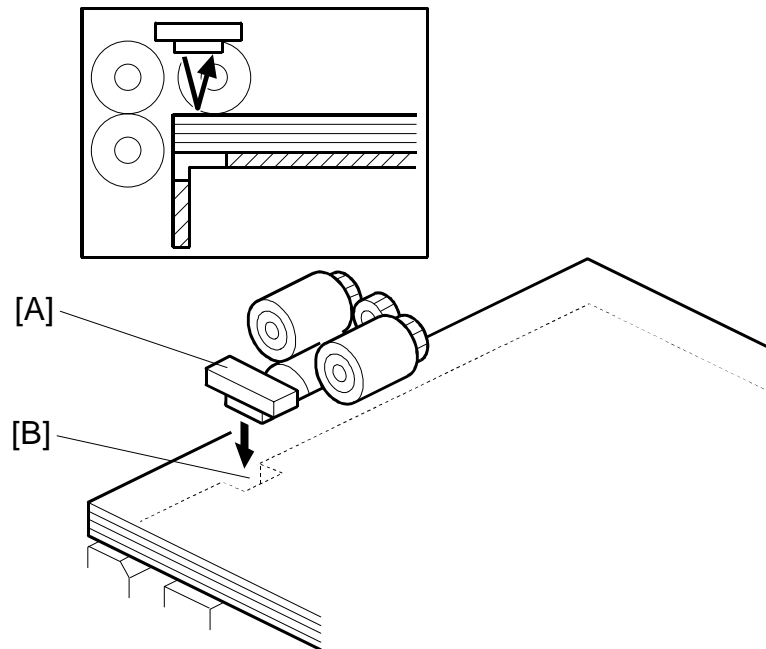
The amount of paper remaining in the tray is detected by the three paper height photo-interrupter sensors on the left rail as the bottom plate rises. Five states, determined by the position of the actuator [A] are possible.

1. With the actuator [A] below paper height sensor 4 [B], no sensor is actuated and the display indicates 100%.
2. When the actuator passes paper height sensor 4 [B], the display indicates 70% of the paper supply remaining.
3. When the actuator passes paper height sensor 3 [C], the display indicates 30% of the paper supply remaining.
4. When the actuator passes paper height sensor 2 [D], the display indicates 10% of the paper supply remaining.

**NOTE:** When the actuator enters the gap of the near end sensor [E], the machine signals near end.

Finally, when the last sheet feeds, the paper end sensor signals that the tray is empty.

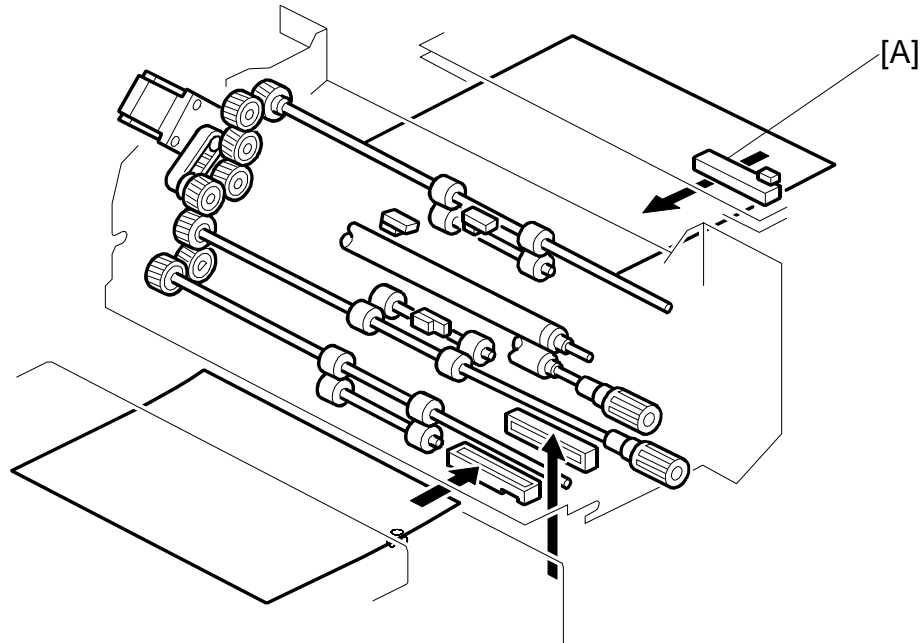
## 2.5 PAPER END DETECTION



B834D935.WMF

The paper end sensor [A] detects the top sheet of the paper in the tray by monitoring the reflected light. When the paper tray runs out of paper, the paper end sensor does not receive the reflected light due to the cutout [B]. Then, the tray lift motor rotates backwards 2 seconds to drop the tray bottom plate.

## 2.6 IMAGE POSITION CORRECTION



B834D936.WMF

The image position sensor [A] is located in the LCT paper path above the paper path and in front of the LCT exit rollers. (This sensor is mounted on its own control board.)

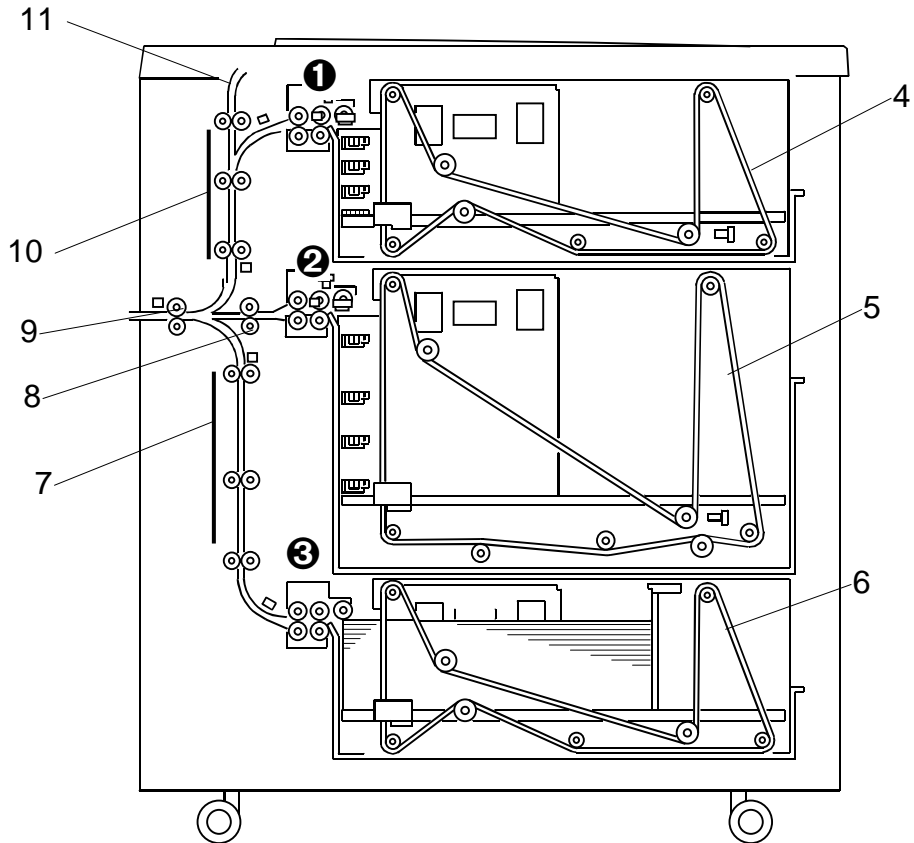
The sensor is a CIS (Contact Image Sensor). It checks the side edges of each sheet as it passes, and feeds this information back to the machine.

If the side-to-side registration of the paper is slightly out of alignment, the machine will correct the image position when the laser writes the image on the surface of the drum. This function does not correct the position of the paper.



### 3. OVERALL MECHANICAL INFORMATION

#### 3.1 MECHANICAL COMPONENT LAYOUT

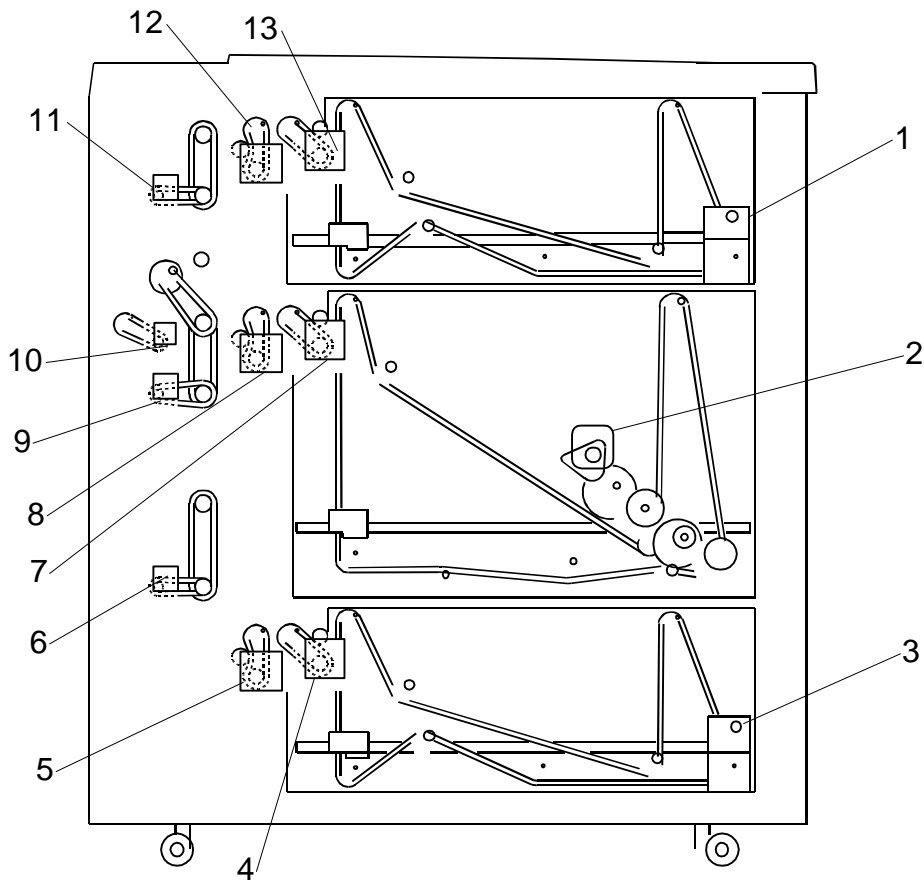


B834V101.WMF

- |                                      |                                  |
|--------------------------------------|----------------------------------|
| 1. 4th Paper Feed Unit* <sup>1</sup> | 7. Lower Transport Rollers       |
| 2. 5th Paper Feed Unit               | 8. Horizontal Transport Roller   |
| 3. 6th Paper Feed Unit               | 9. LCT Exit roller               |
| 4. 4th Tray Drive Belt               | 10. Upper Transport Rollers      |
| 5. 5th Tray Drive Belt               | 11. Feed Slot (from Bypass Tray) |
| 6. 6th Tray Drive Belt               |                                  |

\*<sup>1</sup> Each feed unit has 1 paper feed motor that drives the pick-up roller and paper feed roller, and 1 grip motor that drives the separation roller and grip roller.

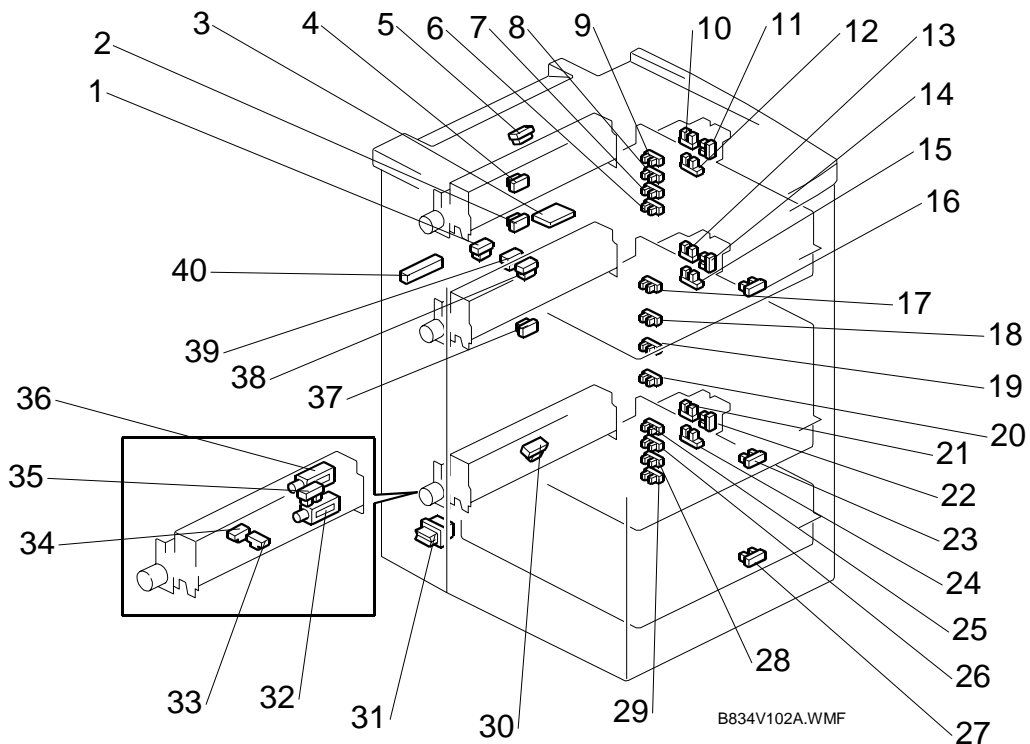
### 3.2 DRIVE LAYOUT



B834V102.WMF

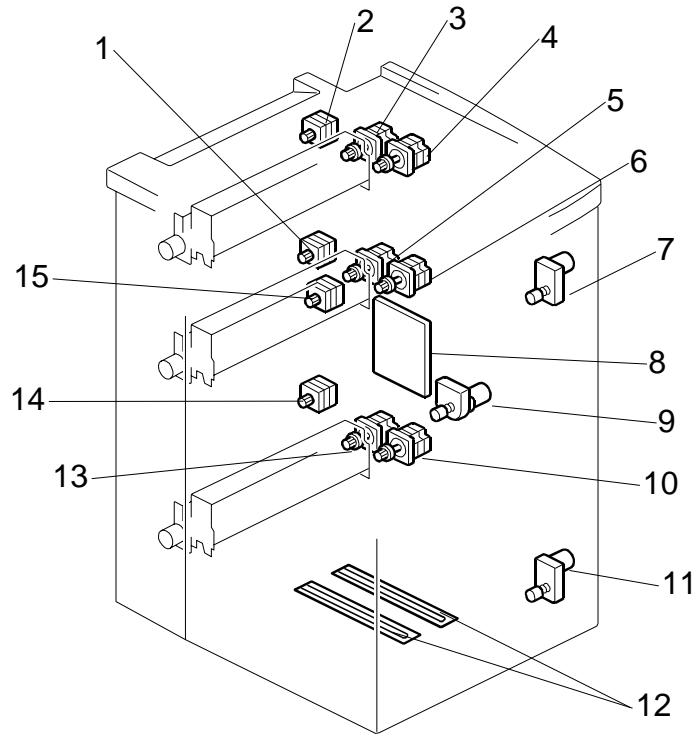
- |                         |                          |
|-------------------------|--------------------------|
| 1. 4th Lift Motor       | 8. 5th Grip Motor        |
| 2. 5th Lift Motor       | 9. 5th Transport Motor   |
| 3. 6th Lift Motor       | 10. LCT Exit Motor       |
| 4. 6th Paper Feed Motor | 11. 4th Transport Motor  |
| 5. 6th Grip Motor       | 12. 4th Grip Motor       |
| 6. 6th Transport Motor  | 13. 4th Paper Feed Motor |
| 7. 5th Paper Feed Motor |                          |

### 3.3 ELECTRICAL COMPONENTS



- |                                |                               |
|--------------------------------|-------------------------------|
| 1. LCT Exit Sensor             | 21. 6th Paper Width Sensor 3  |
| 2. 4th Relay Sensor            | 22. 6th Paper Width Sensor 2  |
| 3. Image Position Sensor Board | 23. 5th Paper Length Sensor   |
| 4. 4th Relay Sensor - Upper    | 24. 6th Paper Width Sensor 1  |
| 5. 4th Transport Sensor        | 25. 6th Paper Height Sensor 4 |
| 6. 4th Paper Height Sensor 4   | 26. 6th Paper Height Sensor 3 |
| 7. 4th Paper Height Sensor 3   | 27. 6th Paper Length Sensor   |
| 8. 4th Paper Height Sensor 2   | 28. 6th Paper Height Sensor 2 |
| 9. 4th Paper Height Sensor 1   | 29. 6th Paper Height Sensor 1 |
| 10. 4th Paper Width Sensor 3   | 30. 6th Transport Sensor      |
| 11. 4th Paper Width Sensor 2   | 31. Door Safety Switch        |
| 12. 4th Paper Width Sensor 1   | 32. 6th Separation Solenoid   |
| 13. 5th Paper Width Sensor 3   | 33. 6th Paper End Sensor      |
| 14. 5th Paper Width Sensor 2   | 34. 6th Paper Feed Sensor     |
| 15. 5th Paper Width Sensor 1   | 35. 6th Lift Sensor           |
| 16. 4th Paper Length Sensor    | 36. 6th Pick-up Solenoid      |
| 17. 5th Paper Height Sensor 4  | 37. 6th Relay Sensor          |
| 18. 5th Paper Height Sensor 3  | 38. 5th Transport Sensor      |
| 19. 5th Paper Height Sensor 2  | 39. 5th Relay Sensor          |
| 20. 5th Paper Height Sensor 1  | 40. LCT Image Position Sensor |

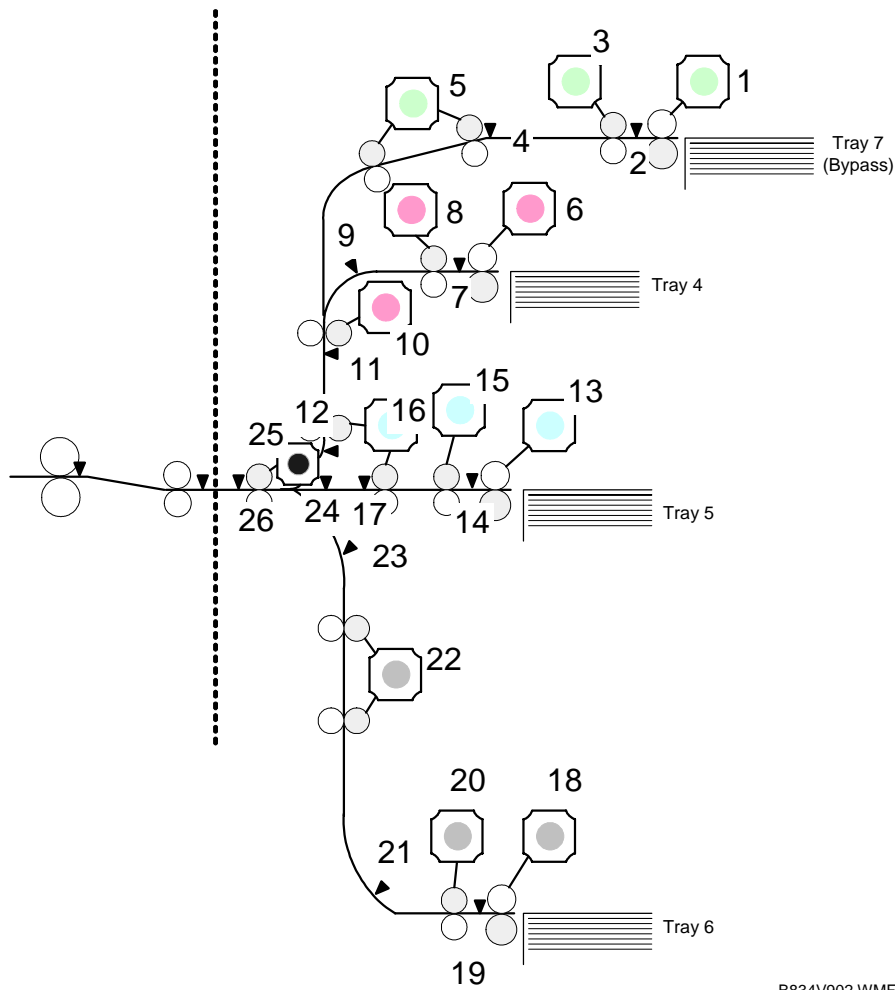
Peripherals



B834V102B.WMF

- |                         |   |
|-------------------------|---|
| 1. 5th Transport Motor  | 9. 5th Lift Motor                       |
| 2. 4th Transport Motor  | 10. 6th Paper Feed Motor                |
| 3. 4th Grip Motor       | 11. 6th Lift Motor                      |
| 4. 4th Paper Feed Motor | 12. Anti-Condensation Heaters (Options) |
| 5. 5th Grip Motor       | 13. 6th Grip Motor                      |
| 6. 5th Paper Feed Motor | 14. 6th Transport Motor                 |
| 7. 4th Lift Motor       | 15. LCT Exit Motor                      |
| 8. Main Control Board   |   |

### 3.4 A3/DLT LCT B834 LAYOUT (WITH BYPASS)



B834V902.WMF

- |                              |                           |
|------------------------------|---------------------------|
| 1. Paper Feed Motor Bypass)  | 14. 5th Paper Feed Sensor |
| 2. Paper Feed Sensor Bypass) | 15. 5th Grip Motor        |
| 3. Grip Motor Bypass)        | 16. 5th Transport Motor   |
| 4. Transport Sensor Bypass)  | 17. 5th Transport Sensor  |
| 5. Transport Motor Bypass)   | 18. 6th Paper feed Motor  |
| 6. 4th Paper Feed Motor      | 19. 6th Paper Feed Sensor |
| 7. 4th Paper Feed Sensor     | 20. 6th Grip Motor        |
| 8. 4th Grip Motor            | 21. 6th Transport Sensor  |
| 9. 4th Transport Sensor      | 22. 6th Transport Motor   |
| 10. 4th Transport Motor      | 23. 6th Relay Sensor      |
| 11. 4th Relay Sensor – Upper | 24. 5th Relay Sensor      |
| 12. 4th Relay Sensor – Lower | 25. LCT Exit Motor        |
| 13. 5th Paper feed Motor     | 26. LCT Exit Sensor       |

Peripherals

### 3.5 ELECTRICAL COMPONENT SUMMARY

<b>Motors</b>		
<b>No.</b>	<b>Name</b>	<b>Description</b>
M1	4th Grip Motor	Drives the separation roller and the grip roller of the 4th tray.
M2	4th Lift Motor	Drives the bottom plate of the 4th tray up and down.
M3	4th Paper Feed Motor	Drives the pick-roller and feed roller that picks up each sheet and starts to feed it out of the 4th tray.
M4	4th Transport Motor	Drives the rollers in the vertical feed path that feed the paper from the 4th tray to the LCT exit motor.
M5	5th Grip Motor	Drives the separation roller and the grip roller of the 5th tray.
M6	5th Lift Motor	Drives the bottom plate of the 5th tray up and down.
M7	5th Paper Feed Motor	Drives the pick-roller and feed roller that picks up each sheet and starts to feed it out of the 5th tray.
M8	5th Transport Motor	Drives the transport rollers in the vertical feed path that feed the paper from the 4th tray and the 5th tray to the LCT exit motor.
M9	6th Grip Motor	Drives the separation roller and the grip roller of the 6th tray.
M10	6th Lift Motor	Drives the 5th tray up and down.
M11	6th Paper Feed Motor	Drives the pick-roller and feed roller that picks up each sheet and starts to feed it out of the 6th tray.
M12	6th Transport Motor	Drives the rollers in the vertical feed path that feed the paper from the 6th tray to the LCT exit motor.
M13	LCT Exit Motor	Feeds the paper out the LCT and into the entrance of the copier.

<b>PCBs</b>		
<b>No.</b>	<b>Name</b>	<b>Description</b>
PCB1	Main Control Board	Controls the operation of all motors and sensors in the LCT unit.
PCB2	Image Position Sensor Board	Operates the CIS sensor (performs waveform correction) the LCT. The CRB (CIS Relay Board) and CIS sensor perform side-to-side image correction. The CRB and CIS are a single unit. The CRB is not a separate board.

<b>Sensors</b>		
<b>No.</b>	<b>Name</b>	<b>Description</b>
S1	4th Lift Sensor	Detects when the paper in the 4th tray is at the correct height for paper feed and switches the 4th lift motor off.
S2	4th Paper End Sensor	Detects when the last sheet feeds from the 4th tray.
S3	4th Paper Feed Sensor	Detects the paper when it arrives at the 4th paper feed roller and checks for misfeeds.
S4	4th Paper Height Sensor 1	4th from the bottom of the 4th tray, detects stack height: 100%
S5	4th Paper Height Sensor 2	5th from the bottom of the 4th tray, detects stack height: 75%
S6	4th Paper Height Sensor 3	6th from the bottom of the 4th tray, detects stack height: 50%
S7	4th Paper Height Sensor 4	4th from the bottom of the 4th tray, detects stack height: 25% and signals near-end.
S8	4th Paper Length Sensor (B834)	Detects the length of the paper in the 4th tray (used in combination with the paper width sensors).
S9	4th Paper Width Sensor 1 (B834)	1 of a set of 3 sensors that detect the width of the paper in the 4th tray.
S10	4th Paper Width Sensor 2 (B834)	1 of a set of 3 sensors that detect the width of the paper in the 4th tray.
S11	4th Paper Width Sensor 3 (B834)	1 of a set of 3 sensors that detect the width of the paper in the 4th tray.

<b>Sensors</b>		
<b>No.</b>	<b>Name</b>	<b>Description</b>
S12	4th Paper Size Sensor 1 (B832)	1 of a set of 3 sensors that detect the width of the paper in the 4th tray.
S13	4th Paper Size Sensor 2 (B832)	1 of a set of 3 sensors that detect the width of the paper in the 4th tray.
S14	4th Paper Size Sensor 3 (B832)	1 of a set of 3 sensors that detect the width of the paper in the 4th tray.
S15	4th Relay Sensor	Detects the leading and trailing edges of the paper in the paper path near the bottom of the 4th tray. Checks the timing of the feed and signals a jam if the paper is late or lags at this location.
S16	4th Relay Sensor - Upper (B834)	Detects the leading and trailing edges of the paper in the paper path near the top of the 4th tray. Checks the timing of the feed and signals a jam if the paper is late or lags at this location.
S17	4th Transport Sensor	Detects jams in the paper path where the transport motor feeds the paper from the 4th tray.
S18	5th Lift Sensor	Detects when the paper in the 5th tray is at the correct height for paper feed and switches the 4th lift motor off.
S19	5th Paper End Sensor	Detects when the last sheet feeds from the 5th tray.
S20	5th Paper Feed Sensor	Detects the paper when it arrives at the 5th paper feed roller and checks for misfeeds.
S21	5th Paper Height Sensor 1	4th from the bottom of the 5th tray, detects stack height: 100%
S22	5th Paper Height Sensor 2	5th from the bottom of the 5th tray, detects stack height: 75%
S23	5th Paper Height Sensor 3	6th from the bottom of the 5th tray, detects stack height: 50%
S24	5th Paper Height Sensor 4	4th from the bottom of the 5th tray, detects stack height: 25% and signals near-end.
S25	5th Paper Length Sensor (B834)	Detects the length of the paper in the 5th tray (used in combination with the paper width sensors).
S26	5th Paper Width Sensor 1 (B834)	1 of a set of 3 sensors that detect the width of the paper in the 5th tray.
S27	5th Paper Width Sensor 2 (B834)	1 of a set of 3 sensors that detect the width of the paper in the 5th tray.
S28	5th Paper Width Sensor 3 (B834)	1 of a set of 3 sensors that detect the width of the paper in the 5th tray.
S29	5th Paper Size Sensor 1 (B832)	1 of a set of 3 sensors that detect the width of the paper in the 5th tray.
S30	5th Paper Size Sensor 2 (B832)	1 of a set of 3 sensors that detect the width of the paper in the 5th tray.
S31	5th Paper Size Sensor 3 (B832)	1 of a set of 3 sensors that detect the width of the paper in the 5th tray.
S32	5th Relay Sensor (B834)	Detects the leading and trailing edges of the paper in the paper path near the 5th tray. Checks the timing of the feed and signals a jam if the paper is late or lags at this location.
S33	5th Transport Sensor	Detects jams in the paper path where the transport motor feeds the paper from the 5th tray.
S34	6th Lift Sensor	Detects when the paper in the 6th tray is at the correct height for paper feed and switches the 4th lift motor off.
S35	6th Paper End Sensor	Detects when the last sheet feeds from the 6th tray.
S36	6th Paper Feed Sensor	Detects the paper when it arrives at the 6th paper feed roller and checks for misfeeds.
S37	6th Paper Height Sensor 1	4th from the bottom of the 6th tray, detects stack height: 100%
S38	6th Paper Height Sensor 2	5th from the bottom of the 6th tray, detects stack height: 75%
S39	6th Paper Height Sensor 3	6th from the bottom of the 6th tray, detects stack height: 50%
S40	6th Paper Height Sensor 4	4th from the bottom of the 6th tray, detects stack height: 25% and signals near-end.

<b>Sensors</b>		
<b>No.</b>	<b>Name</b>	<b>Description</b>
S41	6th Paper Length Sensor (B834)	Detects the length of the paper in the 6th tray (used in combination with the paper width sensors).
S42	6th Paper Width Sensor 1 (B834)	1 of a set of 3 sensors that detect the width of the paper in the 6th tray.
S43	6th Paper Width Sensor 2 (B834)	1 of a set of 3 sensors that detect the width of the paper in the 6th tray.
S44	6th Paper Width Sensor 3 (B834)	1 of a set of 3 sensors that detect the width of the paper in the 6th tray.
S45	6th Paper Size Sensor 1 (B832)	1 of a set of 3 sensors that detect the width of the paper in the 6th tray.
S46	6th Paper Size Sensor 2 (B832)	1 of a set of 3 sensors that detect the width of the paper in the 6th tray.
S47	6th Paper Size Sensor 3 (B832)	1 of a set of 3 sensors that detect the width of the paper in the 6th tray.
S48	6th Relay Sensor (B834)	Detects the leading and trailing edges of the paper in the paper path near the 6th tray. Checks the timing of the feed and signals a jam if the paper is late or lags at this location.
S49	6th Transport Sensor	Detects jams in the paper path where the transport motor feeds the paper from the 6th tray.
S50	LCT Exit Sensor	Detects jams at the exit of the LCT unit.
S51	LCT Image Position Sensor	Mounted on the CRB (CIS Relay Board), this contact image sensor detects the side-to-side edges of the paper in the paper path. The machine uses this information to correct the position of the image when the lasers fire.

<b>Solenoids</b>		
<b>No.</b>	<b>Name</b>	<b>Description</b>
SOL1	4th Pick-up Solenoid	Engages/disengages rotation of the pick-up roller in the 4th tray.
SOL2	4th Separation Solenoid	Controls up-down movement of the separation roller in the 4th tray.
SOL3	5th Pick-up Solenoid	Engages/disengages rotation of the pick-up roller in the 5th tray.
SOL4	5th Separation SOL	Controls up-down movement of the separation roller in the 5th tray.
SOL5	6th Pick-up Solenoid	Engages/disengages rotation of the pick-up roller in the 6th tray.
SOL6	6th Separation Solenoid	Controls up-down movement of the separation roller in the 6th tray.

<b>Switches</b>		
<b>No.</b>	<b>Name</b>	<b>Description</b>
SW1	Door Safety Switch	An interlock safety switch that detects when the front door is opened and closed.

<b>Other</b>		
<b>No.</b>	<b>Name</b>	<b>Description</b>
H1, H2	Anti-Condensation Heaters	Evaporates moisture around the trays in the LCT (230V 18W). This is an option



**COVER INTERPOSER TRAY CI5000**  
**(Machine Code: B835)**

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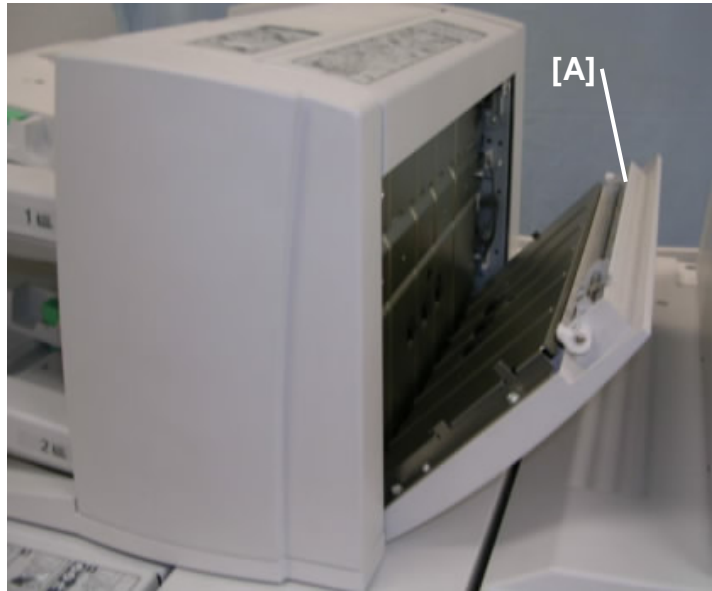
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1.2 1ST, 2ND TRAYS .....	B835-4
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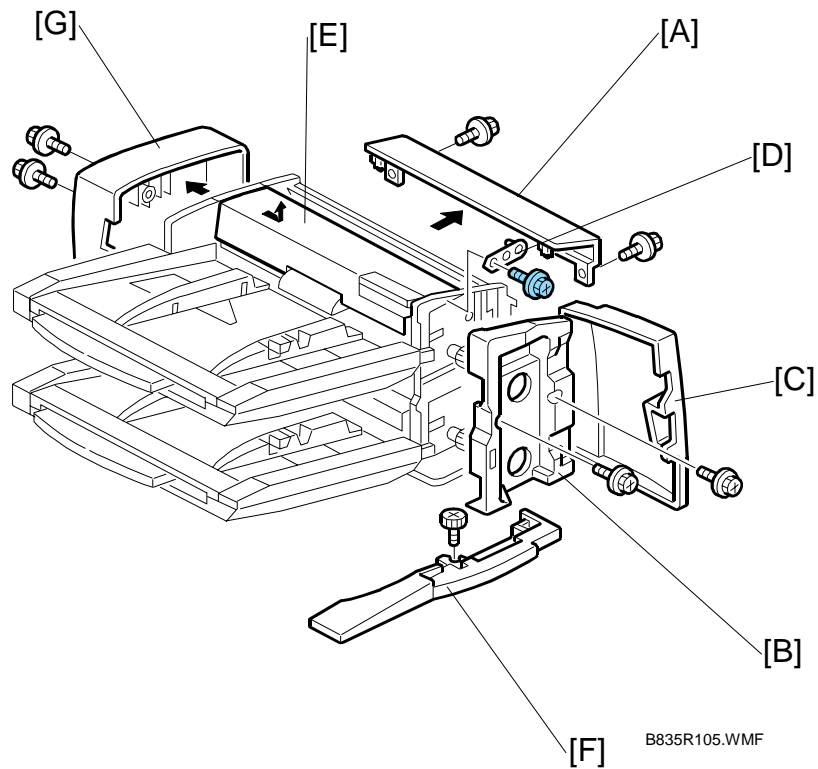
# 1. REPLACEMENT AND ADJUSTMENT

## 1.1 COVERS



B835R901.BMP

1. Open the vertical feed cover [A].



2. Remove:

[A] Top cover (⚙️ x2)

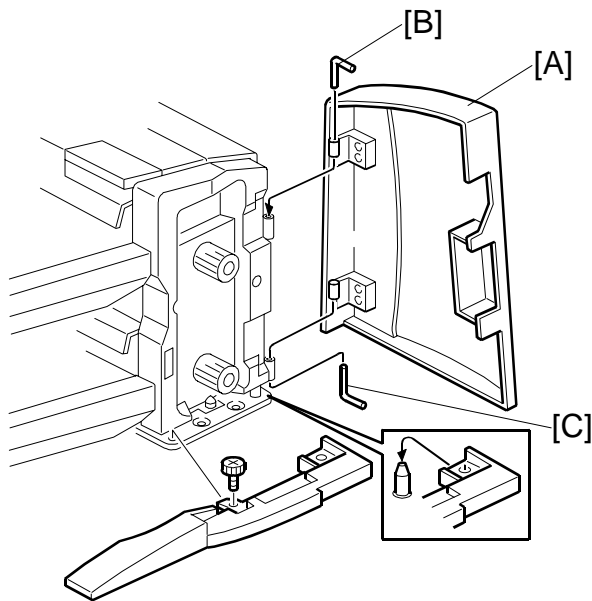
[B] Inner cover with front door [C] (⚙️ x2)

[D] 1st tray cover holder (⚙️ x1)

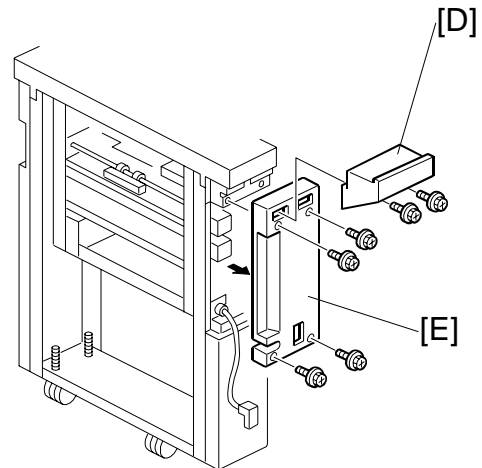
[E] 1st tray cover. Slide the cover toward you to remove it from the inside pins.

[F] Base cover (Knob ⚙️ x1)

[G] Tray unit rear cover (⚙️ x2)



B8351113.WMF



B835R124.WMF

3. Remove:

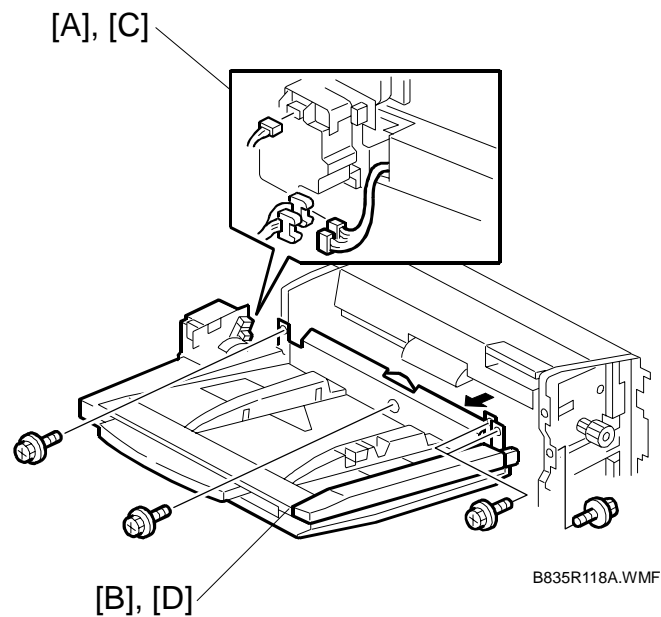
[A] Front door (L-pins x2)

- Swing the upper L-pin [B] out of its groove and pull it up.
- Swing the lower L-pin [C] out of its groove and pull it down.

[D] Rear top cover of the feed unit (⚙️ x2)

[E] Feed unit rear upper cover (⚙️ x4)

## 1.2 1ST, 2ND TRAYS



Remove:

- Inner cover with tray unit front door (☛1.1)
- Tray unit rear cover (☛1.1)

### 1st Tray

[A] Disconnect:

- 1st lift motor (☛1x, ☛x1)
- White connectors (☛x2)

[B] 1st tray (☛ x5)

### 2nd Tray

Remove:

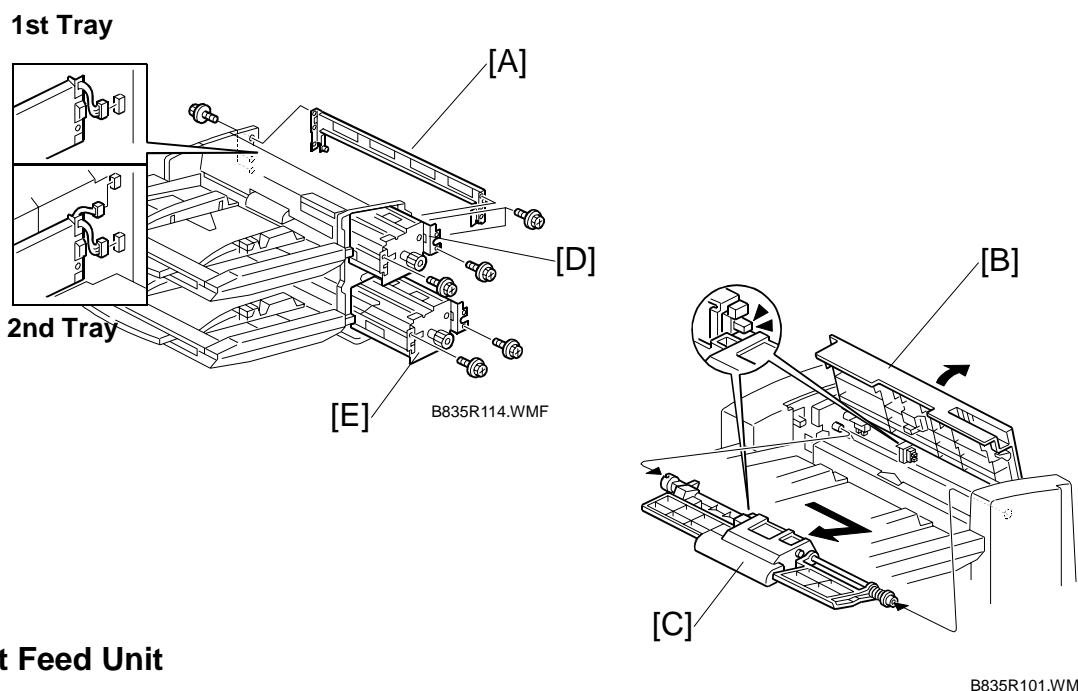
- Inner cover with tray unit front door (☛1.1)
- Tray unit rear cover (☛1.1)

[C] Disconnect:

- 2nd lift motor (☛1x, ☛x1)
- Red, blue connectors (☛x2)

[D] 2nd tray (☛ x5)

## 1.3 FEED UNITS



### 1st Feed Unit

Remove:

- Top cover (☛1.1)
- Inner cover with front door (☛1.1)
- Tray unit rear cover (☛1.1)

[A] Stay (🔩 x5)

[B] Open the 1st tray cover and hold it open

[C] 1st feed belt unit

[D] 1st feed unit (🔩 x, 📏 x)

### 2nd Feed Unit

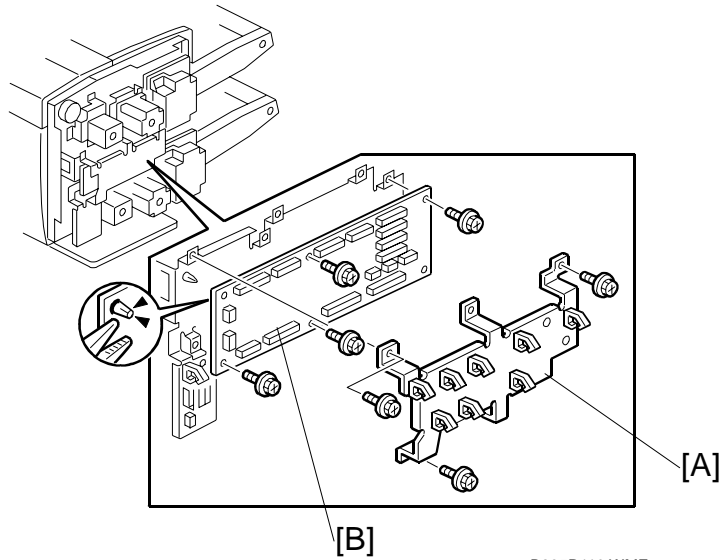
- Open the vertical feed cover (☛1.1)
- Remove inner cover with tray unit front door (☛1.1)
- 2nd feed belt unit (same as [C])

[E] 2nd feed unit (🔩 x2, 📏 x2)



## 1.4 BOARDS

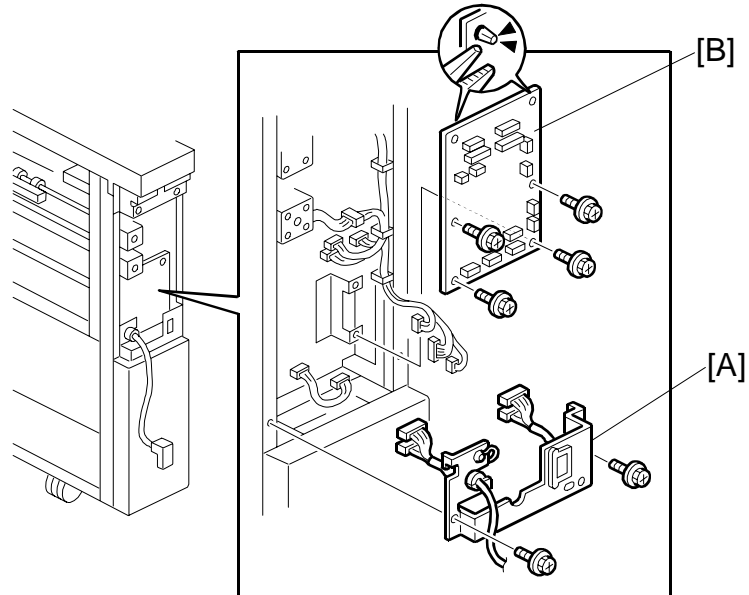
### 1.4.1 TRAY UNIT CONTROL BOARD



Remove:

- Tray unit rear cover (🔩 x2) (🔩1.1)  
[A] Board cover (🔩 x3, 📏x8)  
[B] Tray unit control board (📏 x 17, 🔩 x5, Standoff x1)

## 1.4.2 MAIN CONTROL BOARD



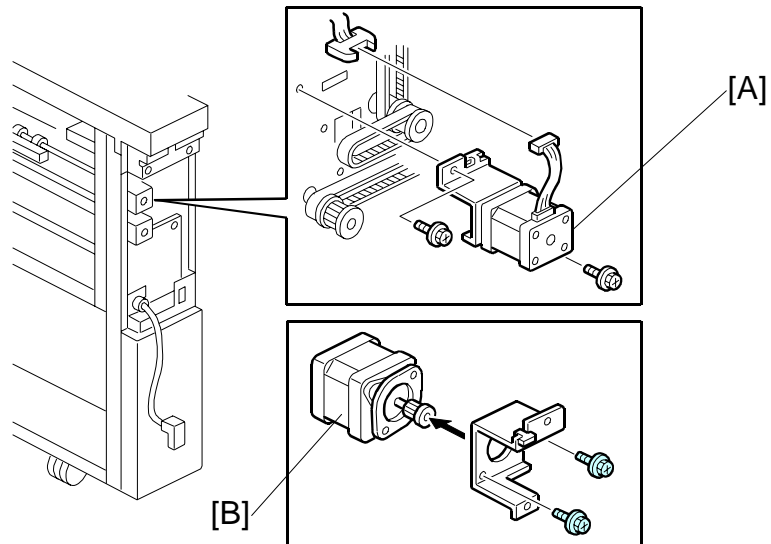
B835R127.WMF

Remove:

- Transport unit rear upper cover (☛1.1)
  - [A] Connector bracket (☛ x2)
  - [B] Main control board (☛ x4, ☛ x2, ☛ x14, Standoff x2)

## 1.5 MOTORS

### 1.5.1 VERTICAL TRANSPORT MOTOR

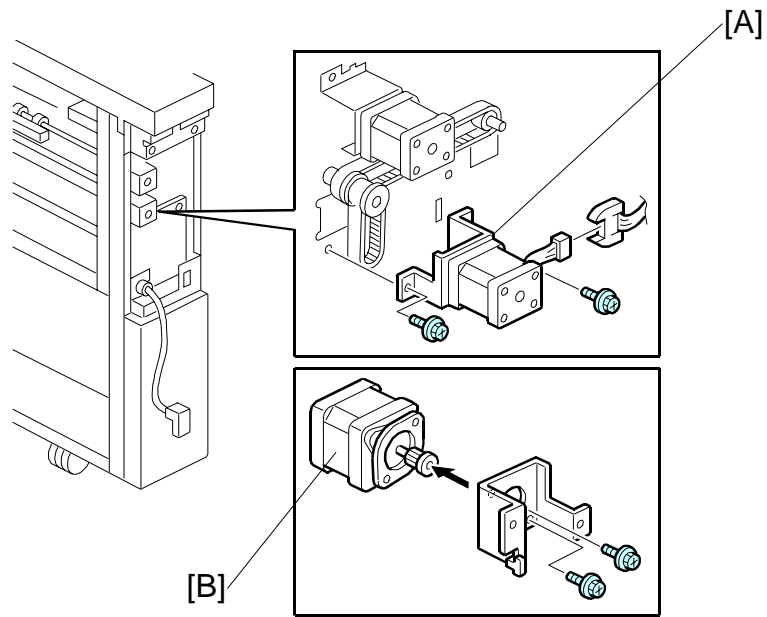


B835R125.WMF

Remove:

- Transport unit rear cover (1.1)
- [A] Motor unit (screw x2, timing belt x1)
- [B] Vertical transport motor (screw x2)

## 1.5.2 HORIZONTAL TRANSPORT MOTOR

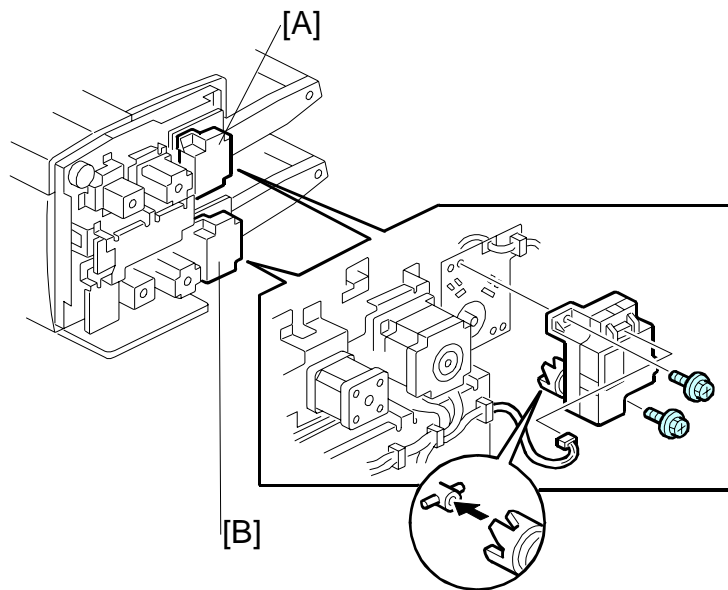


B835R126.WMF

Remove:

- Transport unit rear cover (➡ 1.1)
- [A] Motor unit (⚙️ x2, 📏 x1, Timing belt x1)
- [B] Horizontal transport motor (⚙️ x2)

### 1.5.3 1ST, 2ND LIFT MOTORS

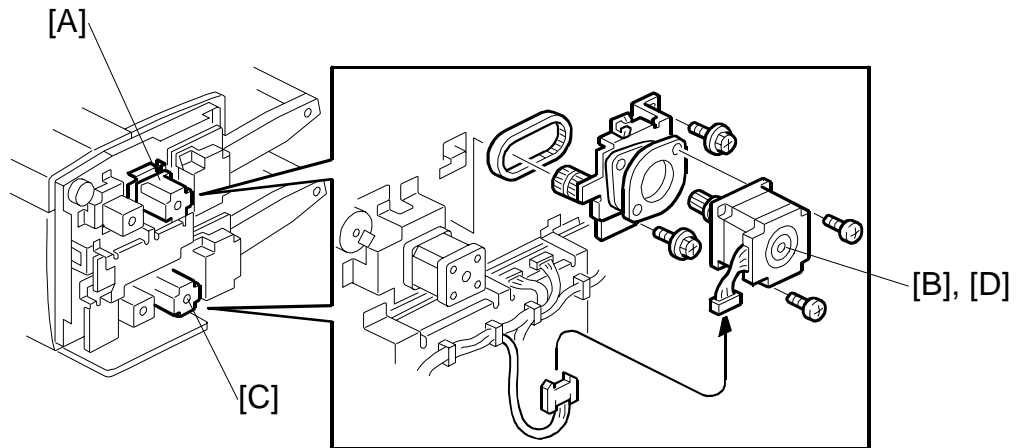


B835R109.WMF

Remove:

- Tray unit rear cover (1.1)
- [A] 1st lift motor (x2, x1)
- [B] 2nd lift motor (x2, x1)

### 1.5.4 1ST, 2ND FEED MOTORS

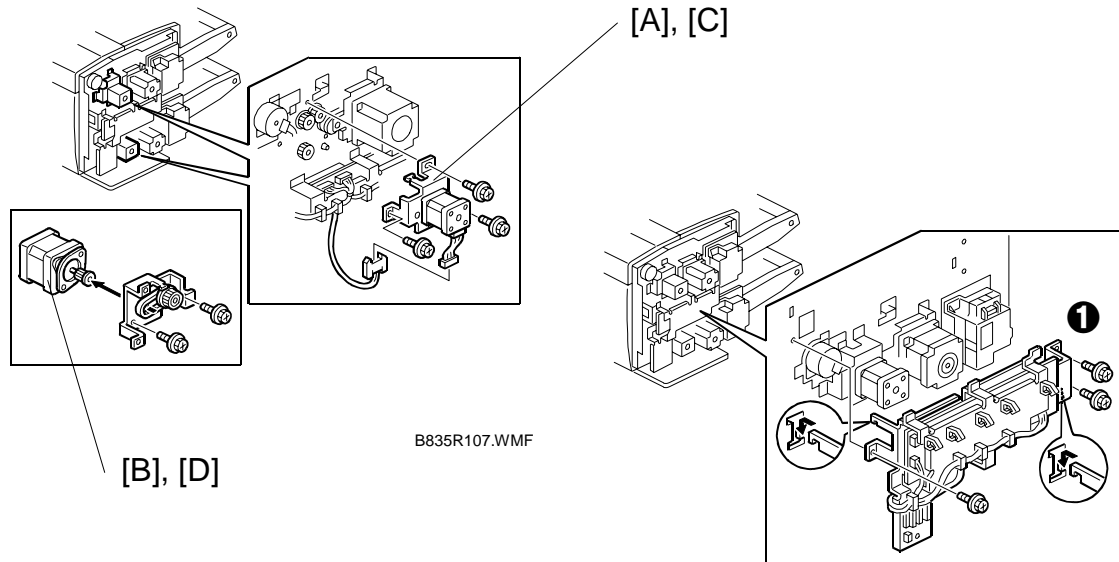


B835R108.WMF

Remove:

- Tray unit rear cover (🔧1.1)
- [A] 1st feed motor unit (🔧 x3, ⚙️ x2, 📏 x1)
- [B] 1st feed motor (🔧 x2, Timing belt x1)
- [C] 2nd feed motor unit (🔧 x3, 📏 x1)
- [D] 2nd feed motor (🔧 x2, Timing belt x1)

### 1.5.5 1ST, 2ND TRANSPORT MOTORS



- Tray unit rear cover (☛1.1)

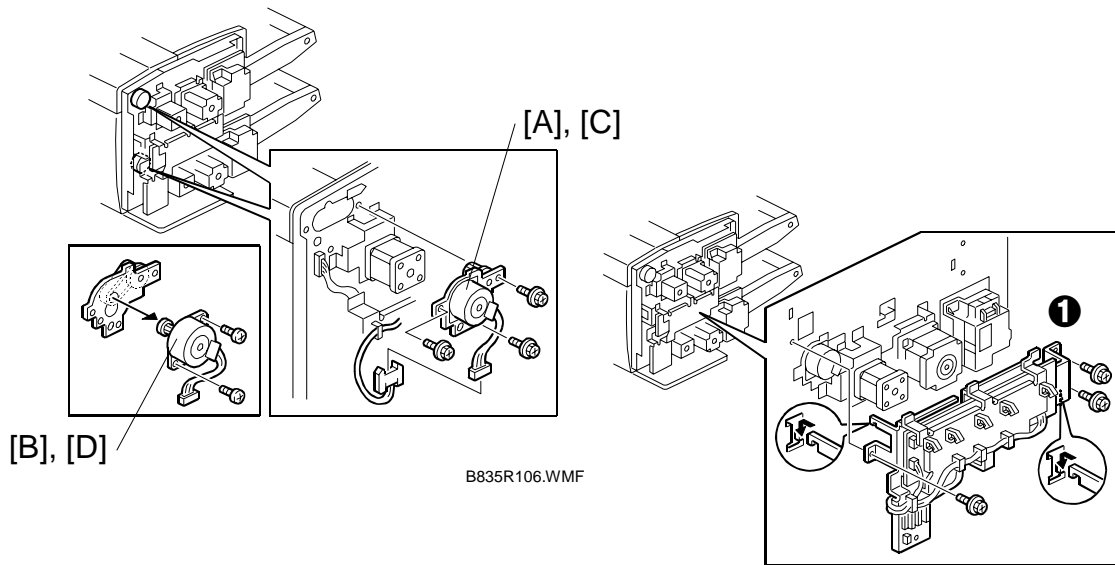
#### 1st Transport Motor

- [A] 1st transport motor unit (☛ x3, ☛☛ x1)
- [B] 1st transport motor (☛ x2, Timing belt x1)

#### 2nd Transport Motor

- 1 Tray unit control board unit (Hooks, ☛ x3, ☛☛ x9 (Motor x8, CN216))
- [C] 2nd transport motor unit (☛ x3)
- [D] 2nd transport motor (☛ x2, Timing belt x1)

### 1.5.6 1ST, 2ND PICK-UP MOTORS



B835R106.WMF

B835R111.WMF

Remove:

- Tray unit rear cover (☛1.1)

#### 1st Pick-up Motor

- [A] 1st pick-up motor unit (☛ x1, ⚙ x3)
- [B] 1st pick-up motor (⚙ x2, Timing belt x1)

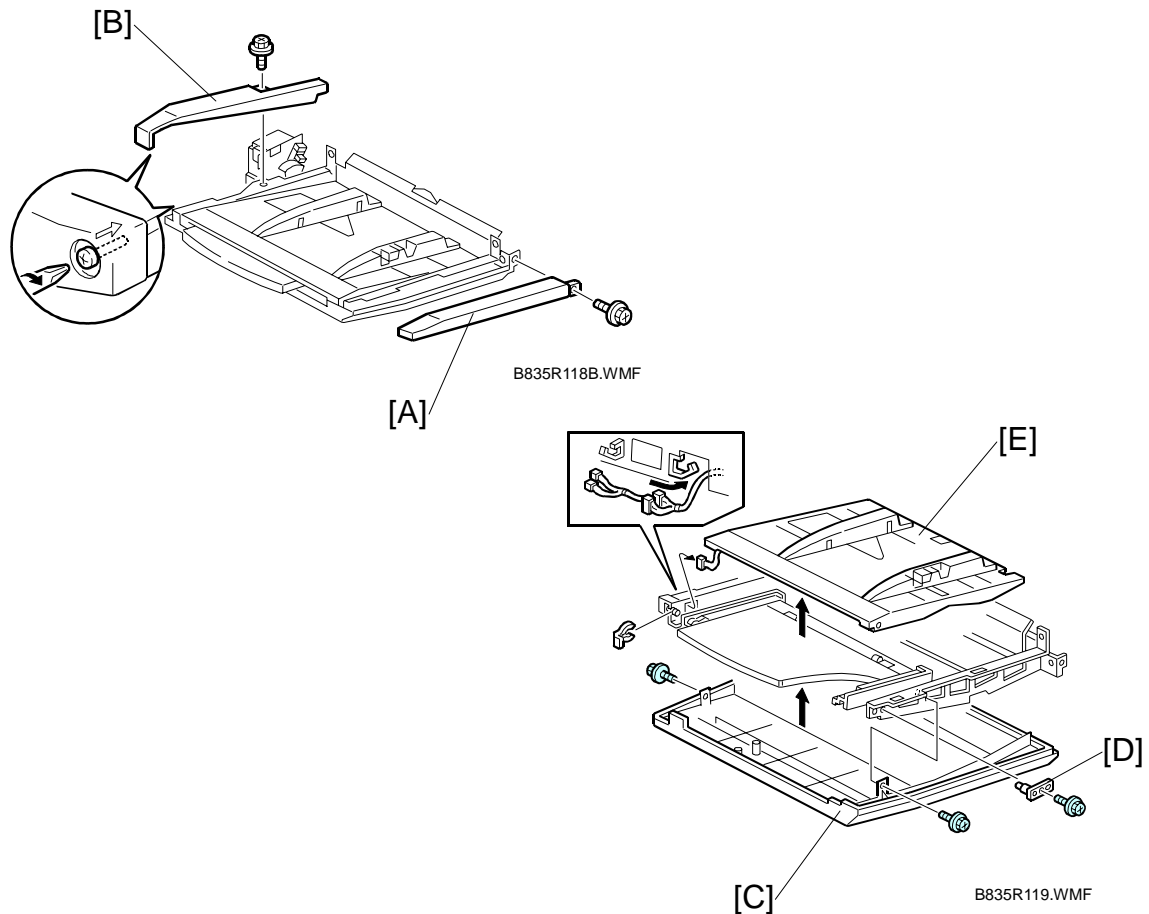
#### 2nd Pick-up Motor

- 1 Tray unit control board unit (Hooks, ⚙ x3, ☛ x9 (Motor x8, CN216))
- [C] 2nd pick-up motor unit (☛ x1, ⚙ x3)
- [D] 2nd pick-up motor (⚙ x2, Timing belt x1)



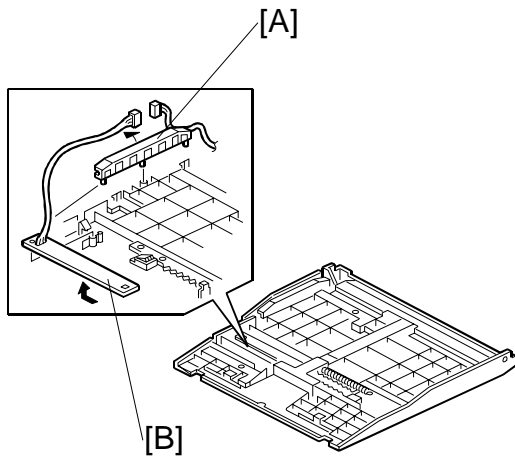
## 1.6 SENSORS

### 1.6.1 PAPER WIDTH SWITCH, SET SENSORS, LENGTH SENSOR

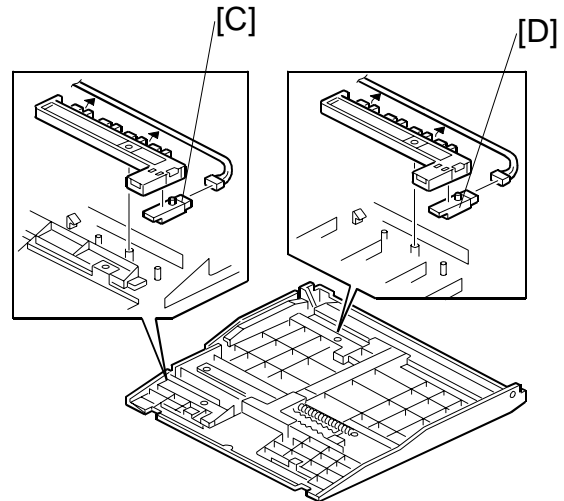


Remove:

- 1st or 2nd paper tray (☛1.2)
  - [A] Front cover (🔩 x1)
  - [B] Rear cover (🔩 x1)
  - [C] Bottom cover (🔩 x2)
  - [D] Holder pin (🔩x1, Spring x1)
  - [E] Bottom plate (🔩 x1)
- Turn over the bottom plate so it is facing up.



B835R121.WMF

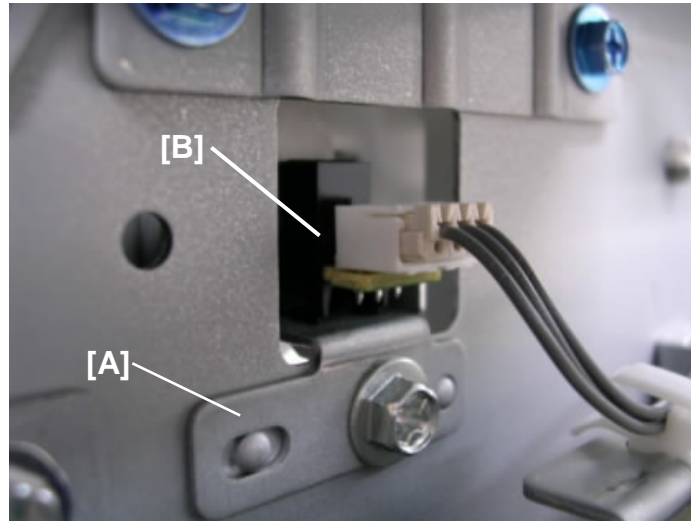


B835R120.WMF

Remove:

- [A] Harness cover (Hooks x2)
- [B] Paper width switch (Hooks x2, ◀x4, ≡ x1)
- [C] Paper set sensor (Hook x1, ≡ x1)
- [D] Paper length sensor (Hooks x1, ≡ x1)

## 1.6.2 TRAY COVER SENSORS



B835R902.BMP

### 1st Tray Cover Sensor

- Remove the tray unit rear cover (☛1.1)
- Open the 1st tray cover

Remove:

[A] Sensor unit (🔧 x1, 📦 x1)

[B] Tray cover sensor (Pawls x2)

### 2nd Tray Cover Sensor

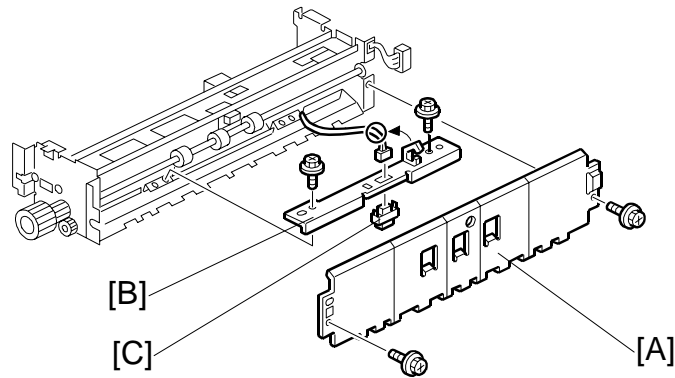
Remove the tray unit control board unit (☛1.5.5)

Remove:

[A] Sensor unit (🔧 x1, 📦 x1). Remove with the 2nd tray cover open.

[B] Tray cover sensor (Pawls x2)

### 1.6.3 1ST TRANSPORT SENSOR



B835R117.WMF

Remove:

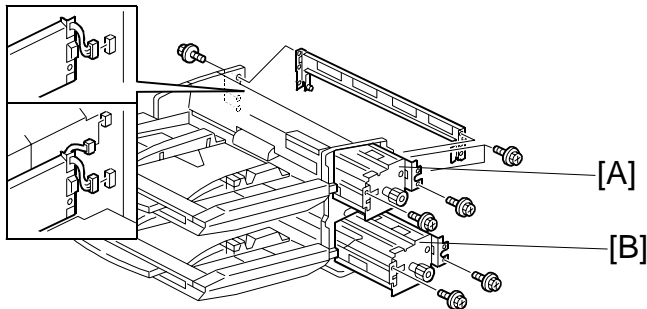
- Top cover
- Vertical feed cover
- Stay (☛1.5)

[A] Upper paper guide (☛ x2)

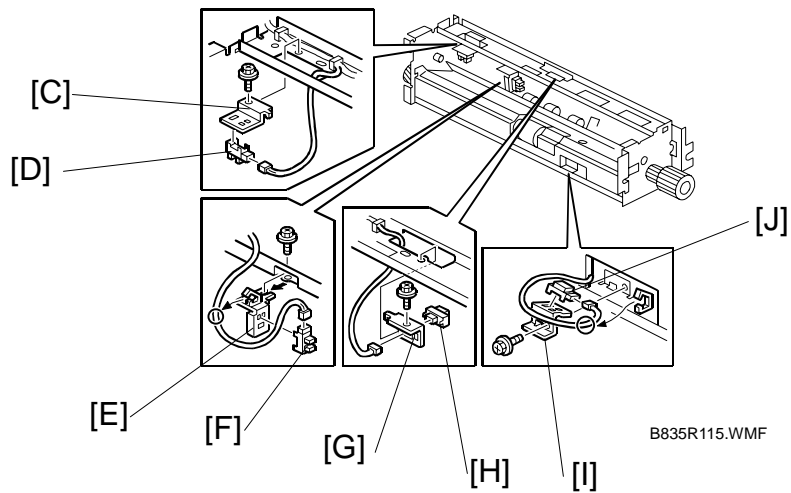
[B] Sensor unit (☛ x2, ☛ x1, ☛ x1)

[C] 1st transport sensor (Pawls x2)

### 1.6.4 FEED UNIT SENSORS



B835R114.WMF

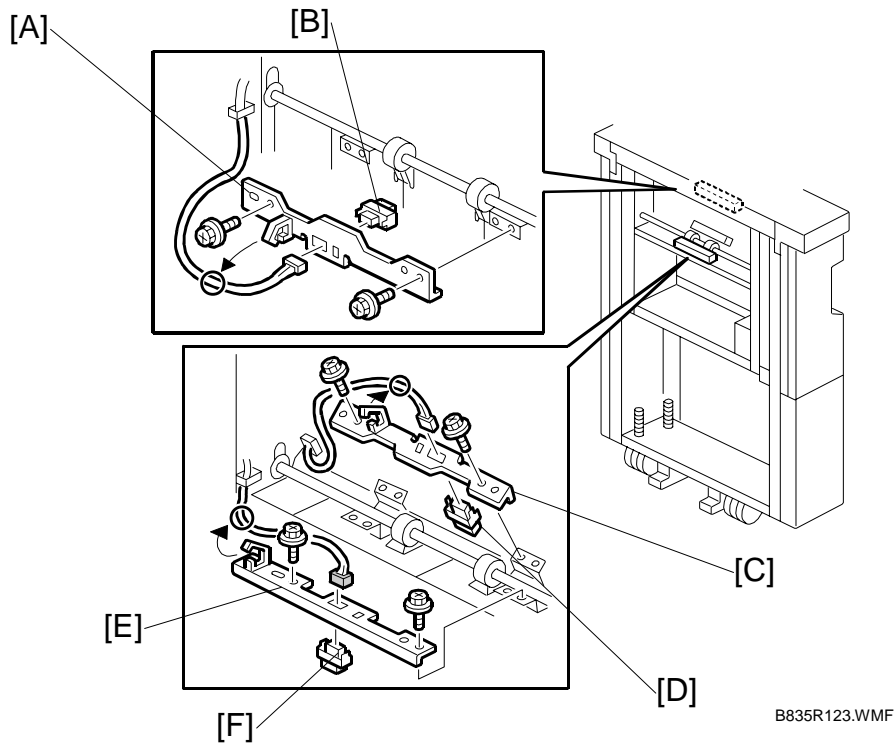


B835R115.WMF

Remove:

- [A] 1st feed unit (☛1.3)
- [B] 2nd feed unit (☛1.3)
- [C] Sensor bracket (⚙️ x1, 🛠️ x1)
- [D] Pick-up roller HP sensor (Pawls x2)
- [E] Sensor bracket (⚙️ x1, 🛠️ x1, ☛1x)
- [F] Bottom plate position sensor (Pawls x2)
- [G] Sensor bracket (⚙️ x1, 🛠️ x1) (2nd feed unit only)
- [H] 1st Vertical transport sensor (Pawls x2) (2nd feed unit only)
- [I] Sensor bracket (⚙️ x1, 🛠️ x1, ☛x1)
- [J] Paper Feed sensor (Pawls x2)

### 1.6.5 2ND VERTICAL TRANSPORT, EXIT SENSORS

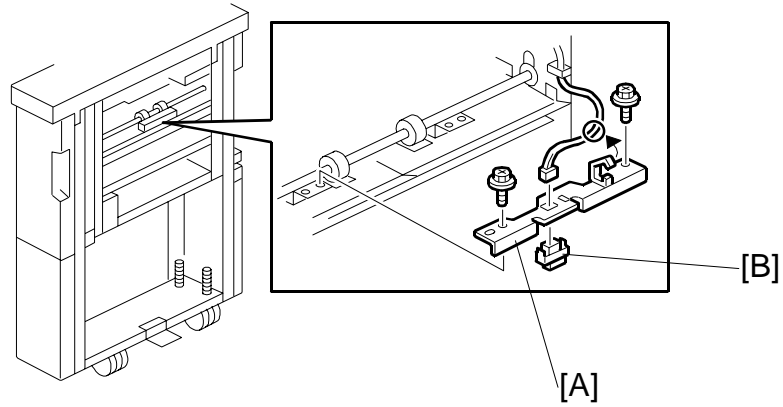


B835R123.WMF




Remove:

- [A] Sensor unit (⚙️ x1, 📡 x1, 🔌 x1)
- [B] 2nd vertical transport sensor (Pawls x2)
- [C] Sensor unit (⚙️ x2, 📡 x1, 🔌 x1)
- [D] Vertical exit sensor (Pawls x2)
- [E] Sensor unit (⚙️ x2, 📡 x1, 🔌 x1)
- [F] Exit sensor (Pawls x2)

### 1.6.6 ENTRANCE SENSOR



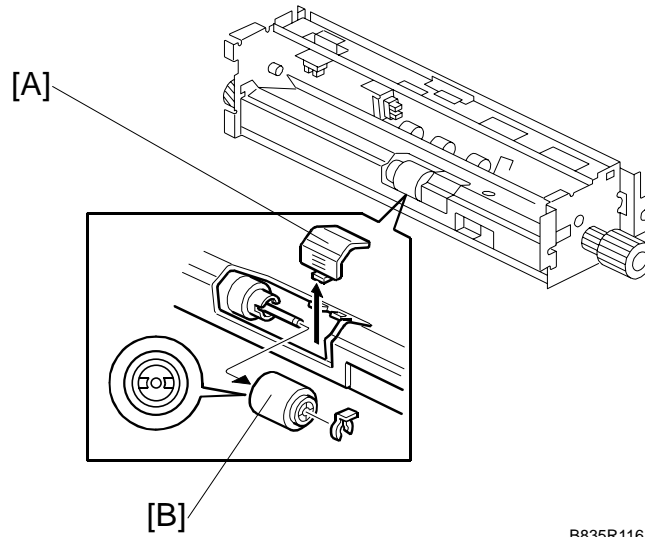
B835R122.WMF

[A] Sensor unit (  x2,  x1,  x1)

[B] Entrance sensor (Pawls x2)

## 1.7 ROLLERS

### 1.7.1 SEPARATION ROLLER

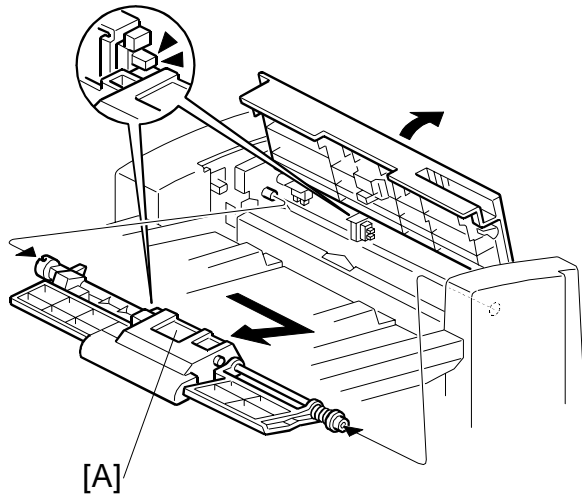


B835R116.WMF

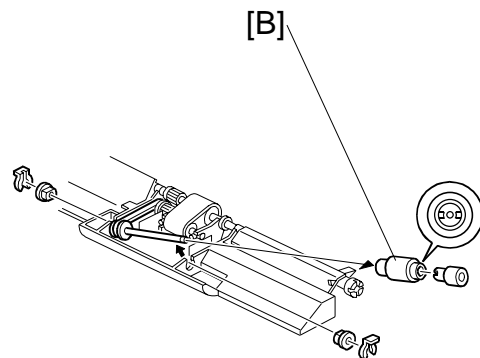
- 1st (or 2nd) feed unit (●1.3)
- [A] Cover
- [B] Separation Roller (⌀ x1)



### 1.7.2 FEED BELT UNIT AND PICK-UP ROLLER



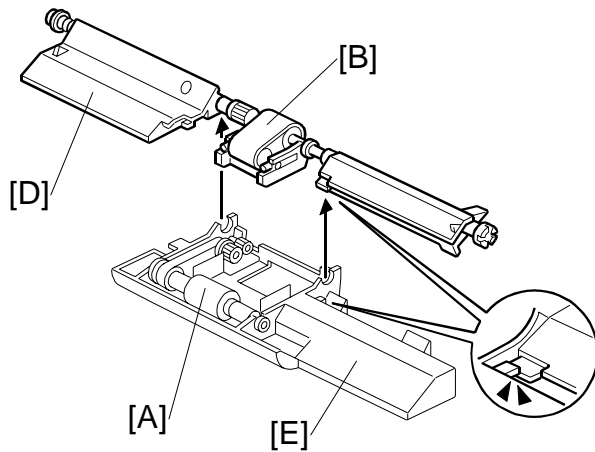
B835R101.WMF



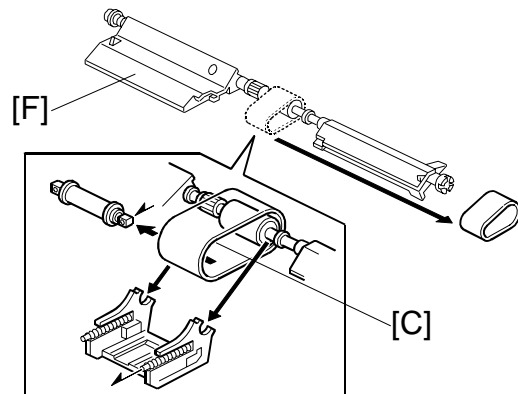
B835R102.WMF

- Open the 1st tray cover.
- [A]: Feed belt unit
  - The unit is spring loaded. Push it to the right to release it, then lift it out.
- [B]: Pick-up roller (⌀ x 2, bushings x 2)

### 1.7.3 FEED BELT



B835R103.WMF



B835R104.WMF

#### Remove:

- Feed belt unit (☛1.7.2)

[A]: Pick-up roller unit.

- Pull the unit away from the bushings in the direction of the arrow.

[B]: Feed belt holder

- Hold the feed belt holder by the sides, then lift up to separate from the holder.
- Pull slowly to avoid losing the springs.

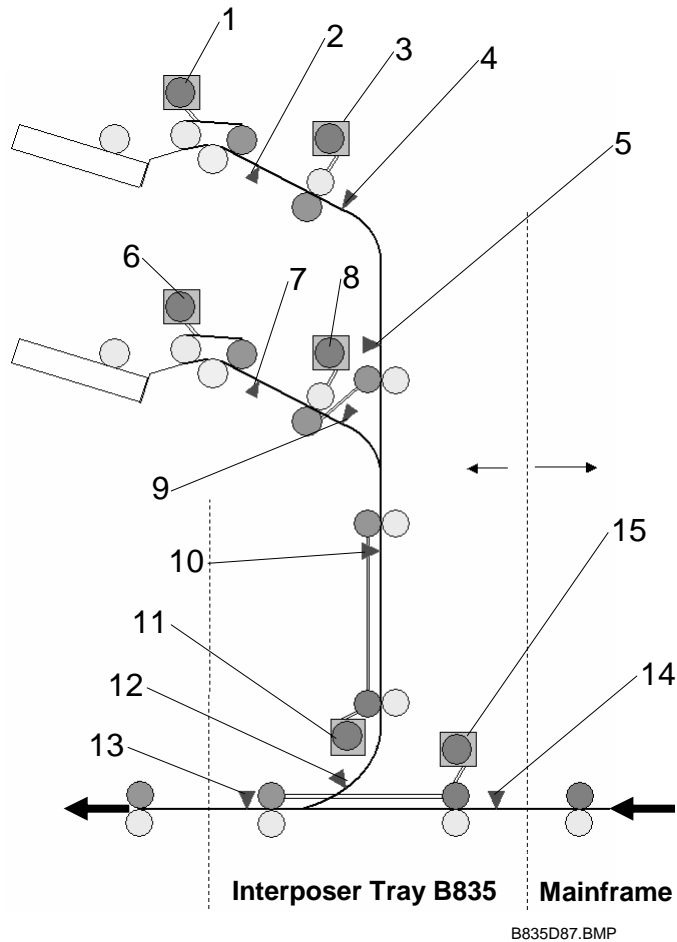
[C]: Feed belt.

#### Re-assembly

1. Position the pick-up roller unit [A] and feed belt holder [B] as shown above.
2. On the rear side, slide out the bushing, and rotate guide plate [D] until its stepped side attaches at [E] as shown above, then snap the guide plate on.
3. On the front side, rotate guide plate [F] until its flat side is parallel with [D], then snap it on. Viewed from the bottom, the plates must be aligned.

## 2. DETAILS

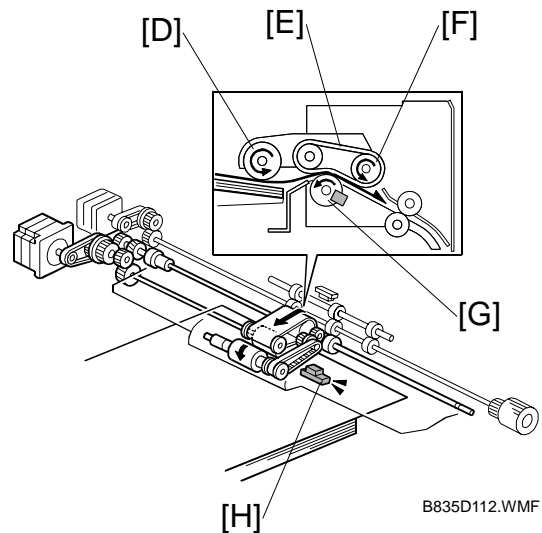
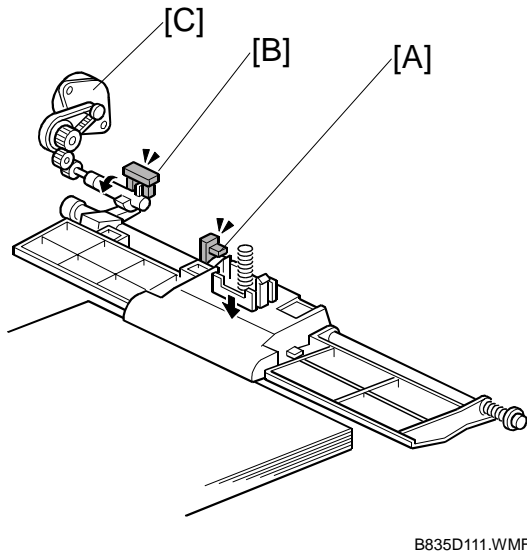
### 2.1 PAPER PATH



- |                                  |                                   |
|----------------------------------|-----------------------------------|
| 1. 1st Paper Feed Motor          | 9. 2nd Transport Sensor           |
| 2. 1st Paper Feed Sensor         | 10. 2nd Vertical Transport Sensor |
| 3. 1st Transport Motor           | 11. Vertical Transport Motor      |
| 4. 1st Transport Sensor          | 12. Vertical Exit Sensor          |
| 5. 1st Vertical Transport Sensor | 13. Interposer Exit Sensor        |
| 6. 2nd Paper Feed Motor          | 14. Interposer Entrance Sensor    |
| 7. 2nd Paper Feed Sensor         | 15. Horizontal Transport Motor    |
| 8. 2nd Transport Motor           |                                   |

## 2.2 PAPER FEED

### 2.2.1 FEED MECHANISM



When paper is placed on the tray, the 1st paper set sensor in the tray actuates and switches on the 1st tray lift motor. The pick-up roller unit drops and the top of the stack in the tray pushes up the pick-up roller unit until its actuator actuates the 1st bottom plate position sensor [A] and switches the motor 1st tray lift motor off.

The 1st pick-up roller HP sensor [B] controls the operation of the 1st pick-up motor [C]. The 1st pick-up motor is off when the actuator is up and there is no paper in the tray. This is the pick-up roller home position. When the actuator de-actuates the sensor after the tray lifts, this switches on the 1st pick-up roller motor. At the end of the job, the actuator descends with the bottom plate and switches the motor off.

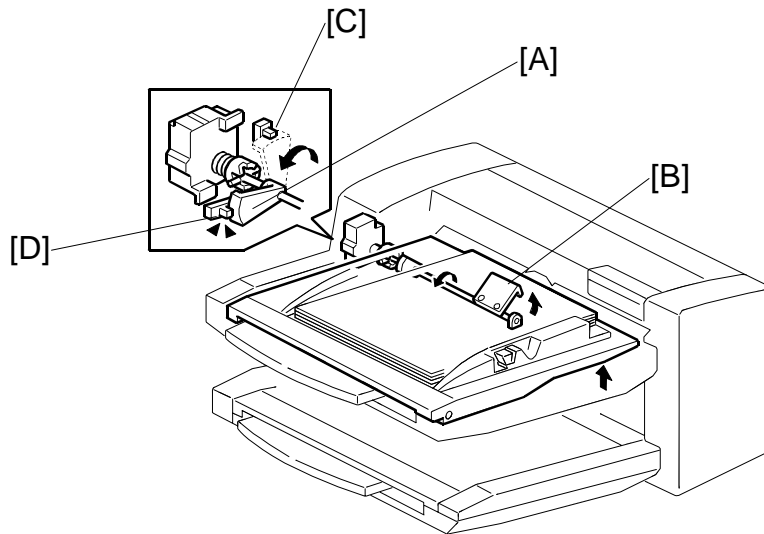
The pick-up roller [D] picks up the sheet, and the feed belt [E] feeds the sheet to the paper feed roller [F]. The separation roller [G] reverses if more than one sheet is fed. This is a standard FFR device.

The paper feed sensor [H] detects the timing of the feed and signals a jam if the paper does not arrive or if the paper stops.

As sheets feed from the top of the stack:

- The pick-up roller unit descends until the actuator on the pick-up roller unit drops out of the 1st bottom plate position sensor [A]. This activates the 1st tray lift motor.
- The 1st tray lift motor switches on to raise the stack until the actuator enters the pick-up roller unit position sensor again and switches the lift motor off.
- This cycle repeats until the end of the job or until paper runs out.

## 2.2.2 PAPER NEAR END / PAPER END



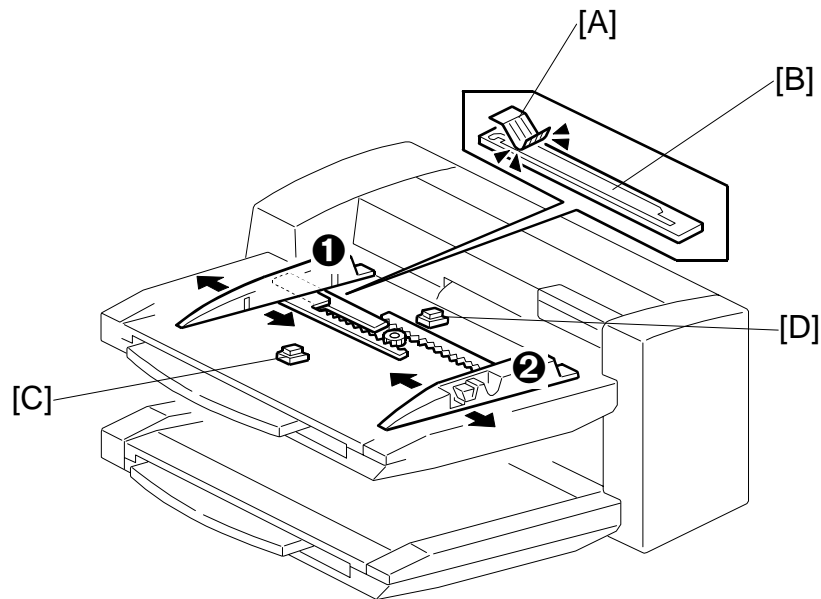
B835D106.WMF

When feed starts with a full tray, the actuator [A] on the rotating shaft of the bottom plate lift arm [B] is at the 1st tray lower limit sensor [C].

As paper feeds and the stack grows smaller, the lift arm rises and the actuator descends until the actuator reaches the 1st tray upper limit sensor [D]. At this time the operation panel signals near-end for the 1st tray.

When the last sheet feeds, the paper feed sensor, a photosensor (not shown) signals that paper has run out.

### 2.2.3 PAPER SIZE DETECTION



B835D105.WMF

The side fences ① and ② can be adjusted to standard and non-standard paper sizes.

When the side fences are moved to match the paper width, a feeler [A] slides along the wiring patterns on the paper width switch terminal plate [B].

The combination of the following two factors determines the paper size:

- The position where the feeler activates the terminal
- The status of the paper length sensor [C] (ON or OFF).

The paper end sensor [D] de-activates when the last sheet is fed and reports that the paper tray is empty.

The paper size is detected by six sensors whose combined readings are used to detect the following paper sizes.

		Paper Size Detection Bits						Area	
Paper Size		W1	W2	W3	W4	W5	L1	NA	EU
Large Size	12×18 in.	H	H	H	H	L	L	YES	YES
Large Size	13×19 in.	H	H	H	H	L	L	*	*
Large Size	320×450 mm	H	H	H	H	L	L	*	*
A3 SEF	297×420 mm	H	H	H	L	L	L	YES	YES
A4 LEF	297×210 mm	H	H	H	L	L	H	YES	YES
DLT SEF	11×17 in.	H	H	H	L	H	L	YES	YES
LT LEF	11×8½ in.	H	H	H	L	H	H	YES	YES
B4 SEF	257×364 mm	H	H	L	L	H	L	YES	YES
B5 LEF	257×182 mm	H	H	L	L	H	H	YES	YES
A4 SEF	210×297 mm	H	H	L	H	H	L	YES	YES
LT SEF	8½×11 in.	H	H	L	H	H	L	YES	*
A5 LEF	210×148 mm	H	H	L	H	H	H	*	YES
HLT LEF	8½×5½ in.	H	H	L	H	H	H	YES	*
B5 SEF	182×257 mm	H	L	L	H	H	L	*	*
F SEF	8×13 in.	H	L	L	H	H	L	YES	YES
A5 SEF	148×210 mm	H	L	H	H	H	H	YES	YES
HLT SEF	5½×8½ in.	L	L	H	H	H	H	YES	YES

Yes: Width and length sensors can detect paper sizes automatically.

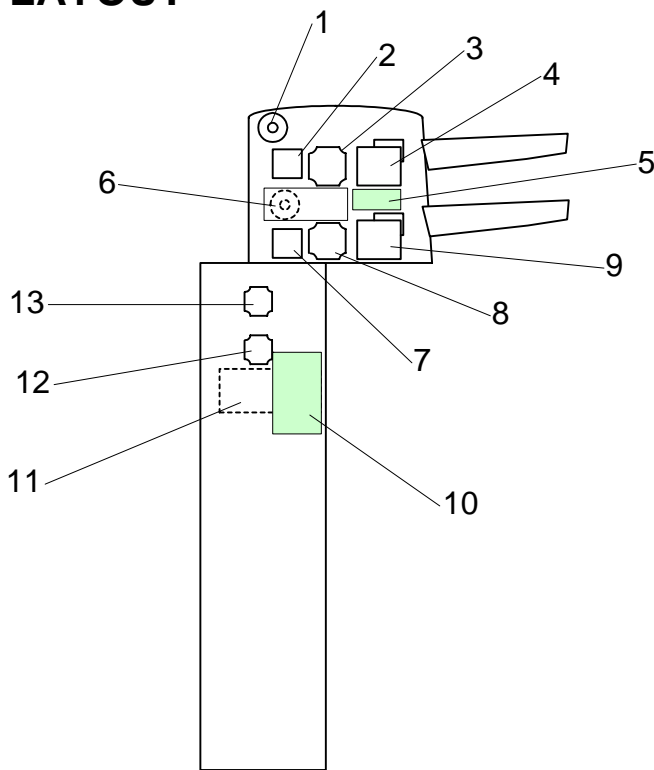
\*: Accurate paper size detection requires setting with the "Tray Paper Setting" key on the operation panel.

H: 5V

L: 0V

### 3. OVERALL MACHINE INFORMATION

#### 3.1 MAIN LAYOUT



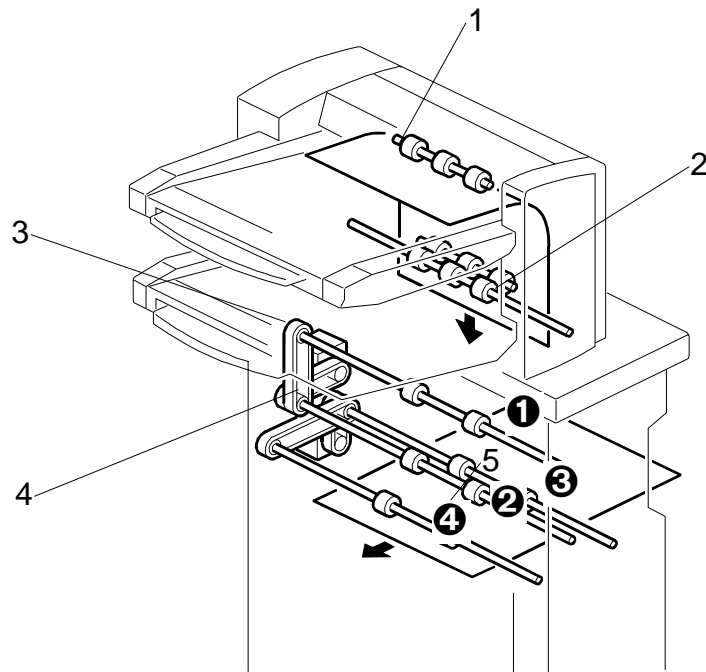
B835V901.WMF

- |                         |                                  |
|-------------------------|----------------------------------|
| 1. 1st Pick-up Motor    | 8. 2nd Paper Feed Motor          |
| 2. 1st Transport Motor  | 9. 2nd Lift Motor                |
| 3. 1st Paper Feed Motor | 10. Control Board                |
| 4. 1st Lift Motor       | 11. Door Open Switch (Interlock) |
| 5. Driver Board         | 12. Horizontal Transport Motor   |
| 6. 2nd Pick-up Motor    | 13. Vertical Transport Motor     |
| 7. 2nd Transport Motor  |                                  |

Peripherals



### 3.2 DRIVE LAYOUT



B835V902.WMF

1. 1st Transport roller
2. 2nd Transport roller
3. Vertical Transport Motor
4. Horizontal Transport Motor

The 1st transport roller [1] (driven by the 1st transport motor) pulls the paper from the 1st tray and feeds it into the vertical paper path.

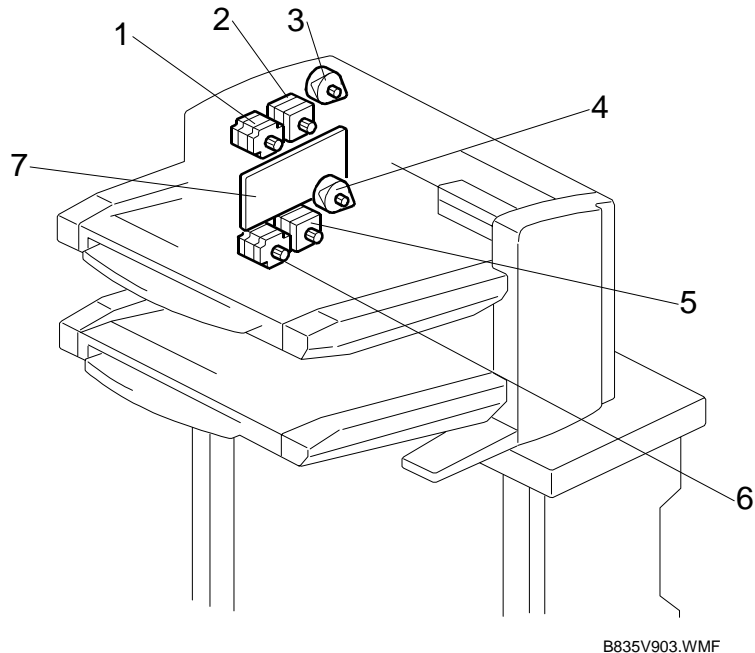
The 2nd transport roller [2] (driven by the 2nd transport motor) pulls the paper from the 2nd tray and feeds it into the vertical path.

The vertical transport motor [3] drives the vertical transport rollers ① and ② that feed the sheets into the horizontal feed path.

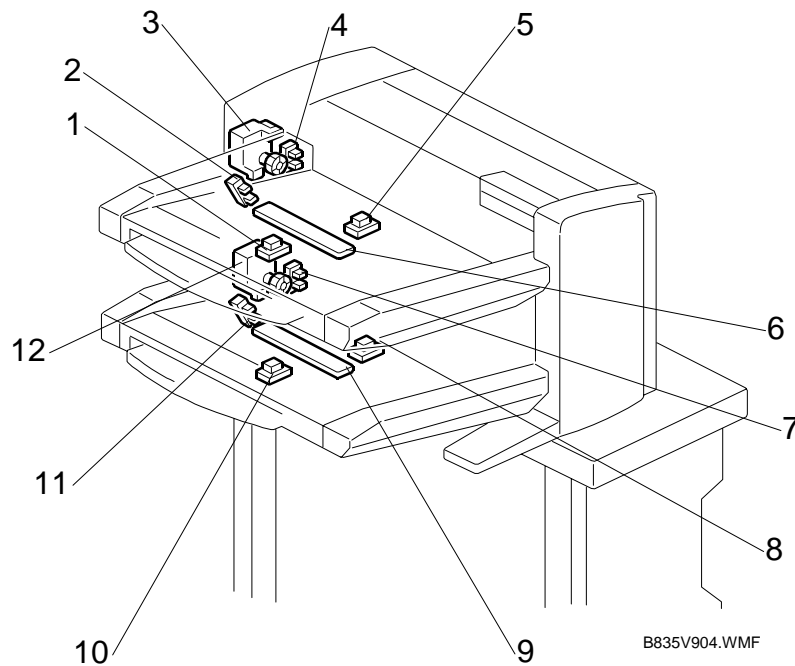
The horizontal transport motor [4] drives the horizontal transport rollers ③ and ④ that feed the covers (and paper passing straight through) out of the cover interposer tray.

### 3.3 ELECTRICAL COMPONENTS

#### 3.3.1 FEED MOTORS, PCB

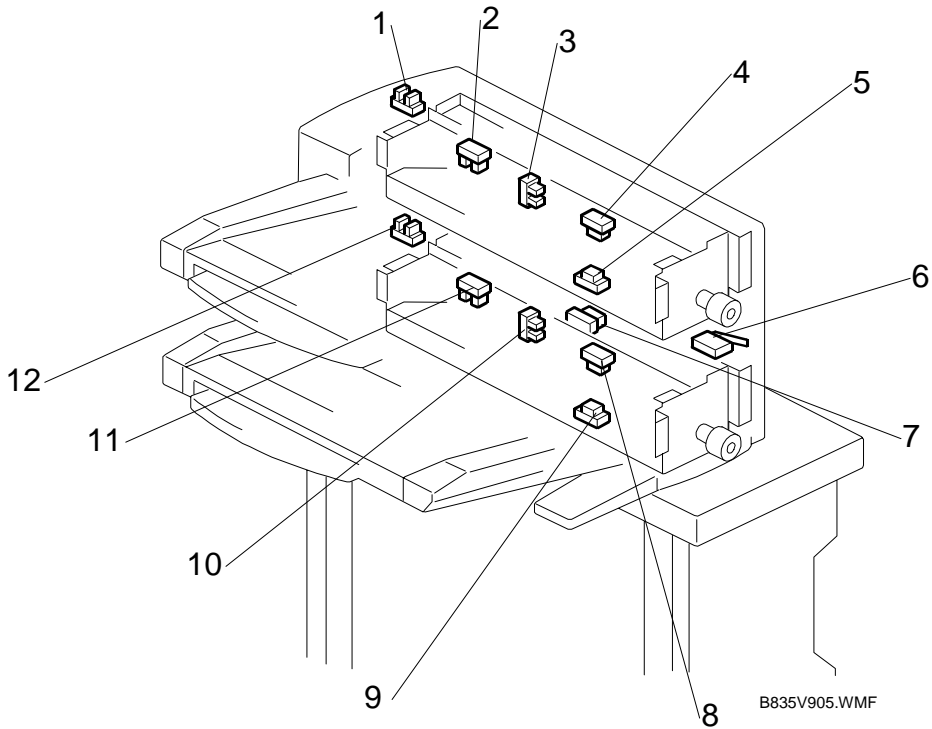


1. 1st Paper Feed Motor
2. 1st Transport motor
3. 1st Pick-Up Motor
4. 2nd Pick-Up Motor
5. 2nd Transport motor
6. 2nd Paper Feed Motor
7. Tray Unit Control Board

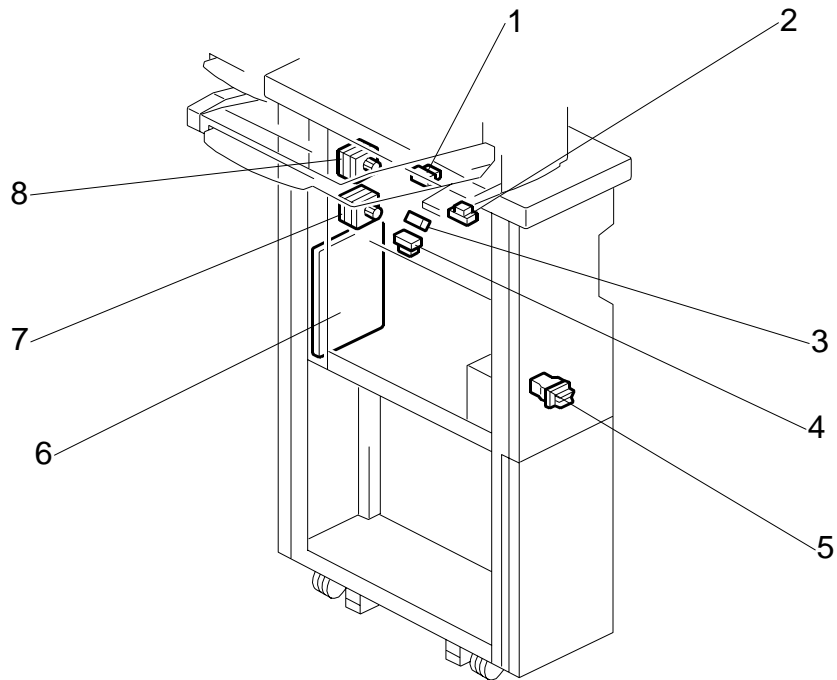
**3.3.2 LIFT MOTORS, TRAY SENSORS**

- |                                 |                                  |
|---------------------------------|----------------------------------|
| 1. 1st Paper Length Sensor      | 7. 2nd Lower Limit Sensor        |
| 2. 1st paper upper limit sensor | 8. 2nd paper set sensor          |
| 3. 1st Lift Motor               | 9. 2nd Paper Width Sensor        |
| 4. 1st Lower Limit Sensor       | 10. 2nd Paper Length Sensor      |
| 5. 1st paper set sensor         | 11. 2nd paper upper limit sensor |
| 6. 1st Paper Width Sensor       | 12. 2nd Lift Motor               |

### 3.3.3 PAPER PATH SENSORS 1



- |                                     |                                      |
|-------------------------------------|--------------------------------------|
| 1. 1st Tray Cover Sensor            | 7. 1st Vertical Transport Sensor     |
| 2. 1st Pick-Up Roller HP Sensor     | 8. 2nd Transport Sensor              |
| 3. 1st bottom plate position sensor | 9. 2nd Paper Feed Sensor             |
| 4. 1st Transport Sensor             | 10. 2nd bottom plate position sensor |
| 5. 1st Paper Feed Sensor            | 11. 2nd Pick-Up Roller HP Sensor     |
| 6. Vertical Feed Cover Switch       | 12. 2nd Tray Cover Sensor            |

**3.3.4 PAPER PATH SENSORS 2, PCB**

B835V906.WMF

1. 2nd Vertical Transport Sensor
2. Entrance Sensor
3. Vertical Exit Sensor
4. Exit Sensor
5. Feed Unit Front Door Safety Switch
6. Main Control Board
7. Horizontal Transport Motor
8. Vertical Transport Motor

### 3.3.5 ELECTRICAL COMPONENT SUMMARY

<b>Motors</b>		
<b>No.</b>	<b>Name</b>	<b>Description</b>
M1	1st Lift Motor	Drives the bottom plate of the 1st tray up and down.
M2	1st Paper Feed Motor	Rotates the feed rollers that feed paper from the 1st tray.
M3	1st Pick-up Motor	Moves the 1st pick-up roller up and down.
M4	1st Transport Motor	Drives the 1st Transport roller that takes the paper fed from the 1st feed roller and feeds it to the vertical path.
M5	2nd Feed Motor	Rotates the feed rollers that feed paper from the 2nd tray.
M6	2nd Lift Motor	Drives the bottom plate of the 2nd tray up and down.
M7	2nd Pick-up Motor	Moves the 2nd pick-up roller up and down.
M8	2nd Transport Motor	Drives the 2nd Transport roller that takes the paper fed from the 1st feed roller and feeds it to the vertical path.
M9	Horizontal Transport Motor	Drives the rollers in the horizontal path that feed paper from the copier and covers from the vertical path out of the cover interposer tray.
M10	Vertical Transport Motor	Drives the rollers in the vertical path that feed the covers down to the horizontal path.

<b>PCBs</b>		
<b>No.</b>	<b>Name</b>	<b>Description</b>
PCB1	Driver Board	Controls operation of the unit. (All DIP SWs should be set to OFF.)
PCB2	Main Control Board	

<b>Sensors</b>		
<b>No.</b>	<b>Name</b>	<b>Description</b>
S1	1st Tray Cover Sensor	Detects when the 1st tray cover is open/closed.
S2	1st Lower Limit Sensor	Detects 1) whether the 1st tray is down or not when the tray is not operating, and 2) detects when the tray is full when the 1st tray is operating.
S3	1st paper set sensor	Detects paper end after the last sheet feeds from the 1st tray.
S4	1st Paper Feed Sensor	Detects paper placed on the tray and starts the 1st lift motor to raise the bottom plate. This sensor also detects a jam if the paper stops and does not leave the 1st tray
S5	1st Paper Length Sensors	Used in combination with 1st tray width sensors to determine the size of paper in the 1st tray.
S6	1st paper upper limit sensor	When an actuator falls into the gap of this sensor, this signals paper near end in the 1st tray.
S7	1st Pick-up Roller HP Sensor	Detects whether the 1st pick-up roller is up or not.
S8	1st Transport Sensor	Detects jams at the point where the 1st Transport roller pulls paper from the 1st tray.
S9	1st Transport Sensor	Detects jams in the path of the 1st tray.
S10	1st bottom plate position sensor	Detects the top of the paper stack in the 1st tray when it is at the proper height for feeding and stops the 1st lift motor.
S11	2nd Lower Limit Sensor	Detects 1) whether the 2nd tray is down or not when the tray is not operating, and 2) detects when the tray is full when the 2nd tray is operating.
S12	2nd tray cover sensor	Detects when the 2nd tray cover is open/closed.

<b>Sensors</b>		
<b>No.</b>	<b>Name</b>	<b>Description</b>
S13	2nd paper set sensor	Detects paper placed on the tray and starts the 2nd lift motor to raise the bottom plate. This sensor also detects a jam if the paper stops and does not leave the 2nd tray.
S14	2nd Paper Feed Sensor	Detects jams when the feed roller feeds paper from the 2nd tray.
S15	2nd Paper Length Sensor	Used in combination with 1st tray width sensors to determine the size of paper in the 1st tray.
S16	2nd paper upper limit sensor	When an actuator falls into the gap of this sensor, this signals paper near end in the 2nd tray.
S17	2nd Pick-up Roller HP Sensor	Detects whether the 2nd pick-up roller is up or not.
S18	2nd Transport Sensor	Detects jams at the point where the 2nd Transport roller pulls paper from the 1st tray.
S19	2nd bottom plate position sensor	Detects the top of the paper stack in the 2nd tray when it is at the proper height for feeding and stops the 2nd lift motor.
S20	2nd Vertical Transport Sensor	Detects jams in the vertical path after a sheet is fed from the 2nd tray.
S21	Entrance Sensor	Detects paper jams where paper from the copier enters the unit in the horizontal feed path.
S22	Exit Sensor	Detects jams where through-paper and covers exit the unit.
S23	Vertical Exit Sensor	Detects jams where through-paper and covers exit the vertical feed path.

<b>Switches</b>		
<b>No.</b>	<b>Name</b>	<b>Description</b>
SW1	Front Door Switch	Detects whether the front door is properly closed. The unit will not operate when the front door is open.
SW2	Transport Cover Switch	This is the cover on the right side of the tray unit. Detects whether the cover is opened or closed.
SW3	1st Paper Width Switch	Used in combination with the length sensors to determine the size of paper in the 1st tray.
SW4	2nd Paper Width Switch	Used in combination with the length sensors to determine the size of paper in the 2nd tray.

**Booklet Finisher BK5000**  
**(Machine Code: B836)**



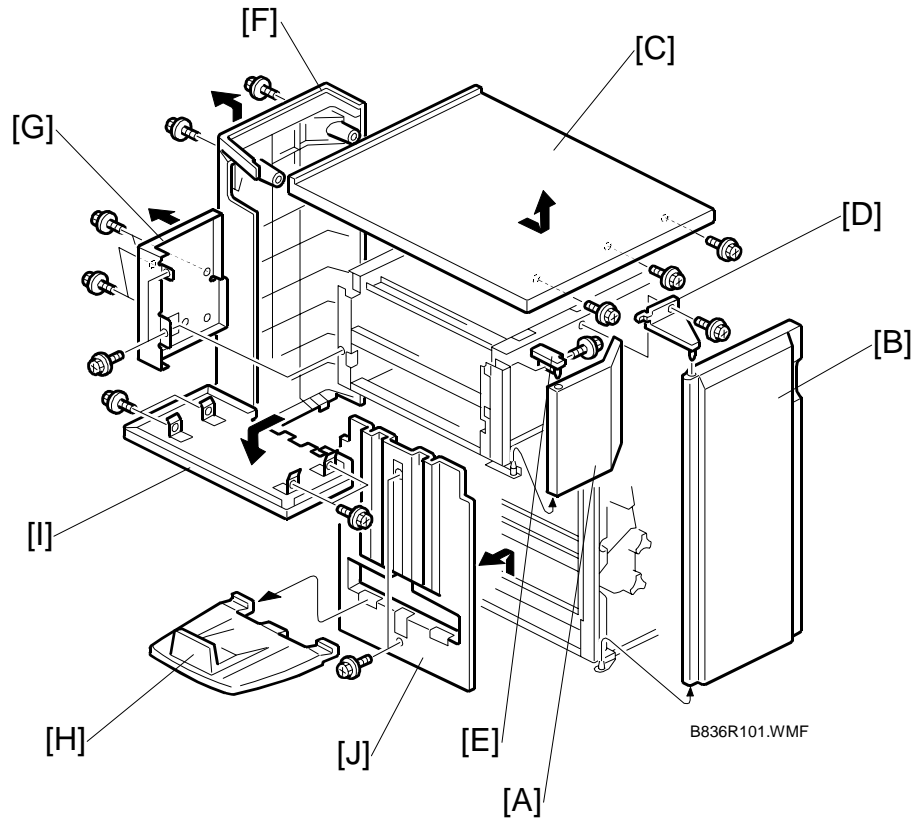
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# 1. REPLACEMENT AND ADJUSTMENT

## 1.1 DOORS, COVERS, OUTPUT TRAY

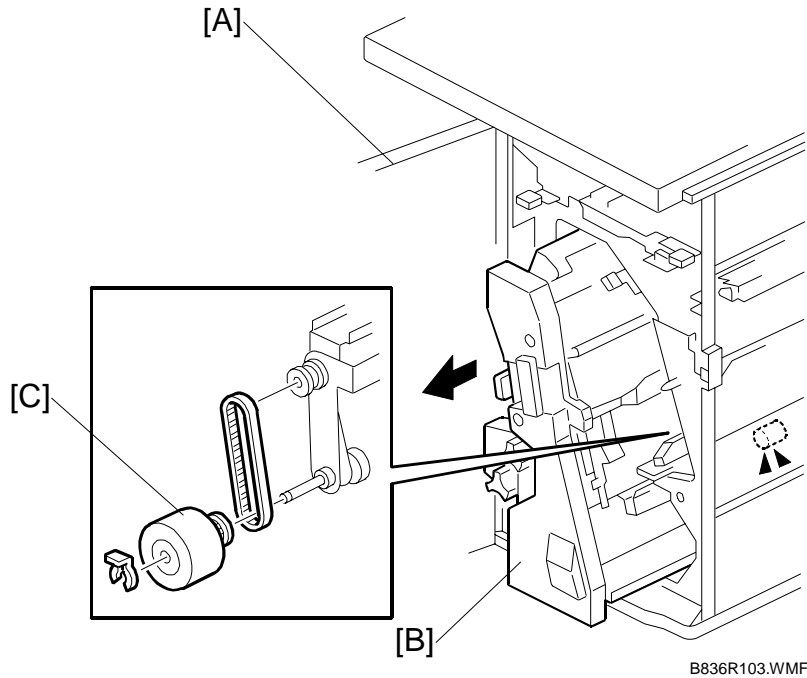


1. Open the left front door [A].
2. Open the right front door [B].


Remove:

- [C] Top cover (⚙️ x3)
  - Slide the top cover toward the front of the finisher and lift it off.
- [D] Front right door bracket (⚙️ x1) and remove the door.
- [E] Front left door bracket (⚙️ x1) and remove the door.
- [F] Rear left cover (⚙️ x2)
- [G] Rear right cover (⚙️ x6)
- [H] Output tray
- [I] Bottom cover (⚙️ x4)
- [J] Left cover (⚙️ x2)

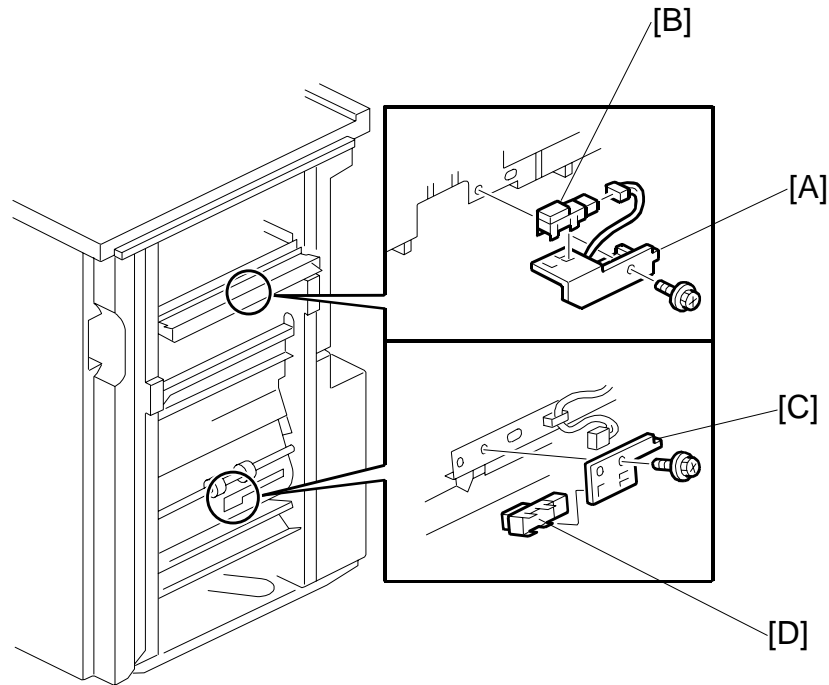
## 1.2 POSITIONING ROLLER



B836R103.WMF

- [A]: Open the front door.
- [B]: Pull out the stapling unit.
- [C]: Positioning roller (  x1, timing belt x1)

### 1.3 ENTRANCE SENSOR, STACK TRAY EXIT SENSOR



B836R133.WMF

- Disconnect the finisher if it is connected to the copier.

#### Finisher Entrance Sensor

[A]: Sensor bracket (🔩 x1)

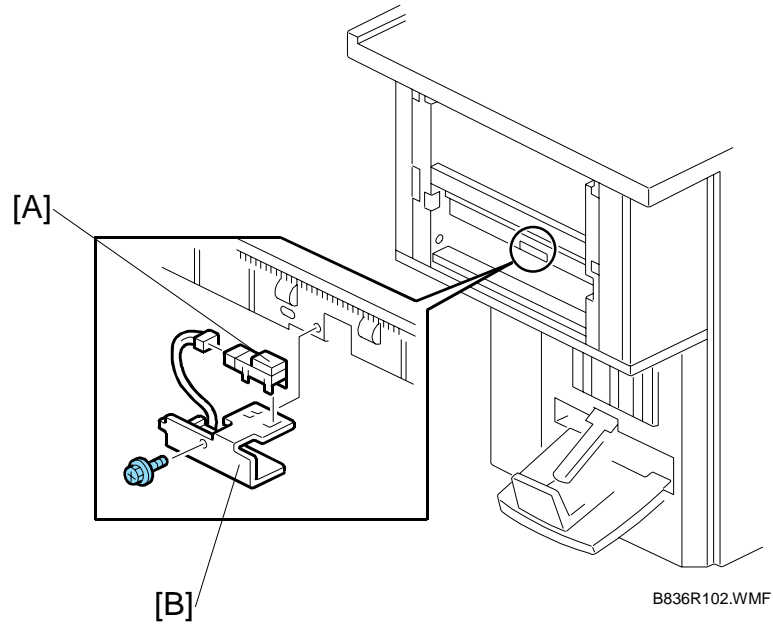
[B]: Finisher entrance sensor (🔌 x1)

#### Stack Tray Exit Sensor

[C]: Sensor bracket (🔩 x1, 🔌 x1)

[D]: Finisher entrance sensor

## 1.4 FINISHER EXIT SENSOR



Remove:

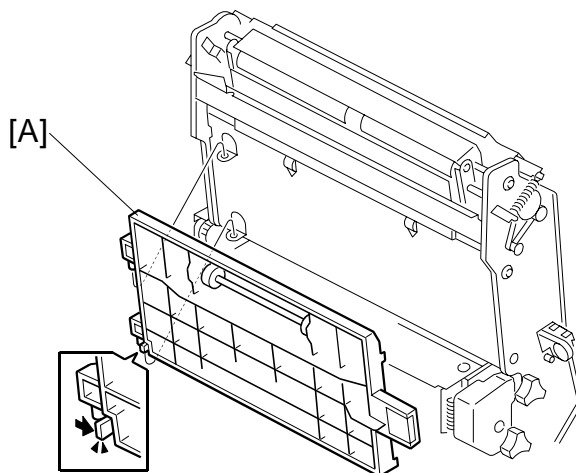
[A]: Sensor bracket (🔩 x1)

[B]: Finisher exit sensor (🔌 x1)


## 1.5 FOLD UNIT EXIT SENSOR

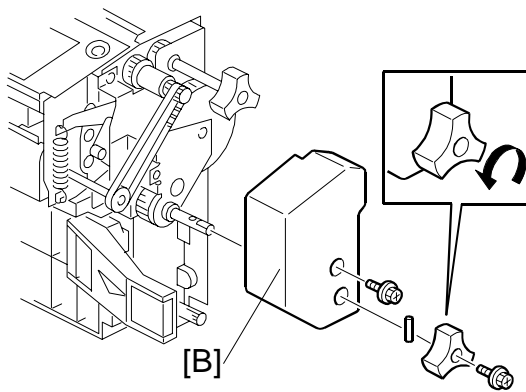
- Open the front door.
- Pull out the stapling tray.

[A]: Fold unit vertical guide plate







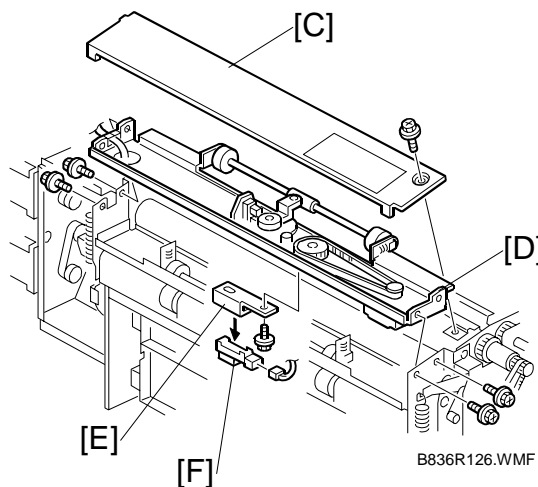
B836R121.WMF

[B]: Fold unit inner cover  
( x2, Pin x1)



B836R125.WMF

- [C]: Fold unit upper cover ( x1)  
 [D]: Paper clamp unit ( x4)  
 [E]: Fold unit exit sensor bracket  
 ( x1,  x1)  
 [F]: Fold unit exit sensor

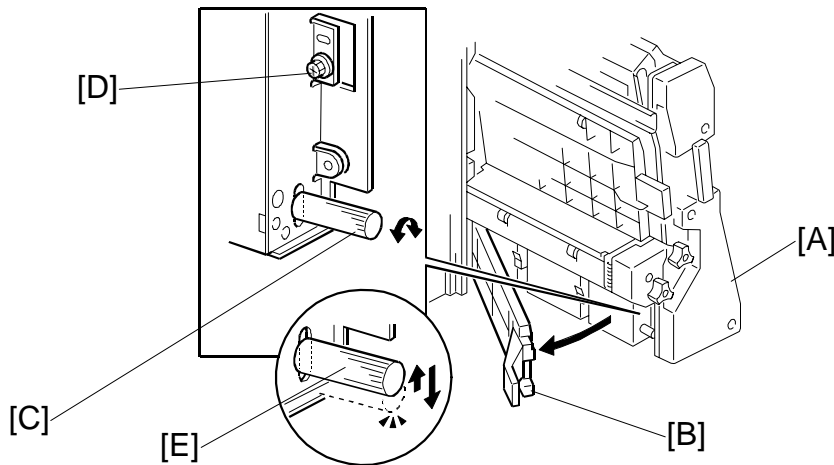


B836R126.WMF

Peripherals

## 1.6 FOLD ADJUSTMENTS

### 1.6.1 FOLDING HORIZONTAL SKEW ADJUSTMENT

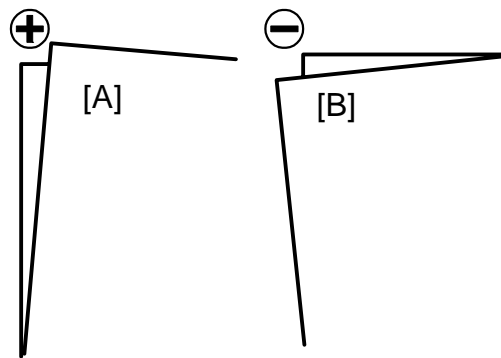


B836R802.WMF

#### Important

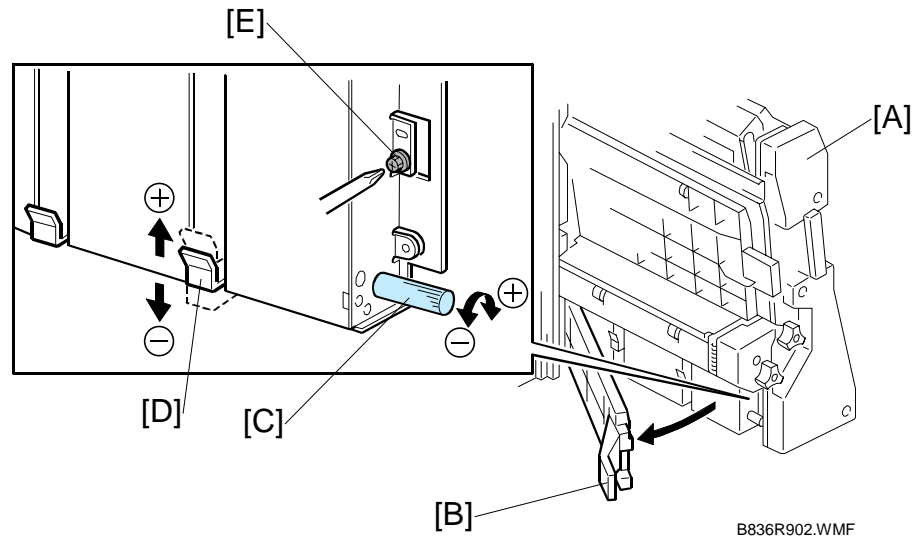
- The fold unit is adjusted for optimum performance before the finisher is shipped from the factory. Do this adjustment only if the edges of folded booklets are not even.
1. Switch the copier on and enter the SP mode.
  2. Europe/Asia: Use **SP 6201 001** (this is for A3 paper).  
North America: Use **SP 6201 006** (this is for DLT paper).  
**NOTE:** If the original setting of **SP6201 001** or **006** is not 0, then you must do the vertical skew adjustment (➔1.6.2) after you finish this horizontal skew procedure.
  3. Use the 10-key pad to input "-2" (mm) for the SP value.  
**NOTE:** (Press [·/\*] to enter the minus sign.)
  4. Press [#] then exit the SP mode.
  5. Open the front door and pull the stapling unit [A] out of the finisher.
  6. Open the guide plate [B].
  7. Loosen the adjustment screw [C] and then tighten until it stops. (Do not over tighten.)
  8. Remove the lock screw [D].
  9. Raise the tip [E] of the adjustment screw very slightly and allow it to descend under its own weight.





B836R901.WMF

10. Push the stapling unit into the finisher and close the front door.
11. Do a folding test.
  - Switch the copier on.
  - Put one page of A3 or DLT paper in the ADF.
  - On the copier operation panel, select booklet stapling.
  - Press [Start]. One sheet is folded.
12. Remove the sheet from the booklet output tray.
13. Hold the folded sheet with the creased side pointing down and face-up (the same way that it came out of the finisher).
14. Referring to the diagram, determine if the skew is + [A] or - [B].



15. Open the front door of the finisher and pull the stapling unit [A] out.
16. Open the guide plate [B].
17. Turn the adjustment screw [C] to correct the amount of skew you measured from the test sheet.
  - For + skew ([A] on the previous page), turn the adjustment screw (clockwise).
  - For – skew ([B] on the previous page), turn the adjustment screw to the left (counter-clockwise).
  - Every click in the +/- direction adjusts the fold position by 0.1 mm by moving the bottom fence [D]
18. Raise the tip of the adjustment screw [C] and allow it to lower under its own weight.
19. Attach and tighten the lock screw [E].
20. Push the stapling unit into the machine, close the front door, then turn the copier on.
21. Europe, Asia: Do **SP 6201 001** (this is for A3 paper).  
North America: Do **SP 6201 006** (this is for DLT paper).
22. Reset it to "0".
23. Do the test again.
24. If the result is satisfactory, this completes the adjustment.
  - or-
  - If some skew remains, repeat this adjustment.

**NOTE:** After doing this adjustment, adjust for vertical skew, if necessary. (☛1.6.2).

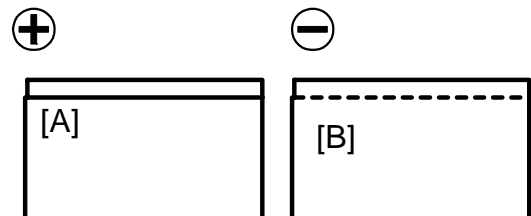
## 1.6.2 FOLD VERTICAL SKEW ADJUSTMENT

### Important

- The fold unit is adjusted for optimum performance before the finisher is shipped from the factory. Do this adjustment only if the edges of folded booklets are not even.

- Switch the copier on.
- Do a folding test.
  - Switch the copier on.
  - Put one page of A3 or DLT paper in the ADF.
  - On the copier operation panel, select booklet stapling.
  - Press [Start]. One sheet is folded.

- Hold the folded sheet with the creased side pointing down, and face-up (the same way that it came out of the finisher).



B836R903.WMF

- Referring to the diagram, determine if the skew is positive [A] or negative [B].

- Measure the amount of skew.

- Enter the SP mode

- Europe, Asia: Use **SP 6201 001** (this is for A3 paper).
- North America: Use **SP 6201 006** (this is for DLT paper).

- Enter one-half the measured amount of skew.

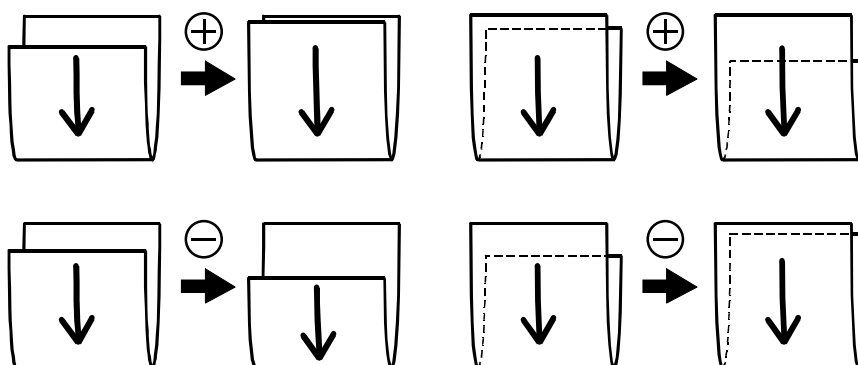
Example: If the measure amount of skew is -1.2 mm, enter -0.6 mm

**NOTE:** The range for measurement is -3.0 mm to +3.0 mm in 0.2 mm steps for every notch adjustment.

- Exit the SP mode and do the test again (steps 2 to 5).

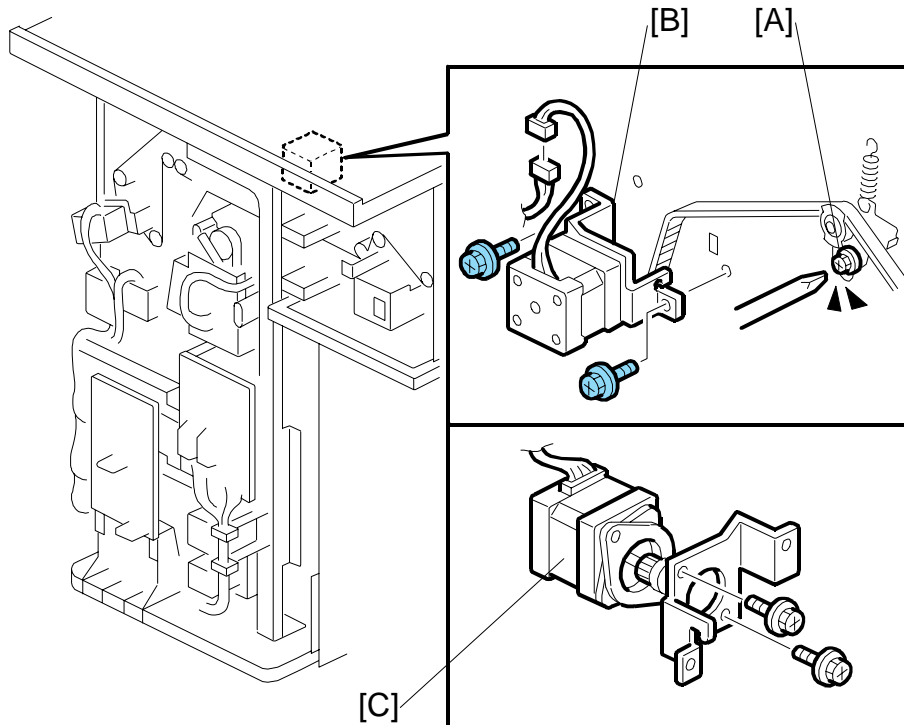
- Repeat this procedure until the skew is corrected.

The illustration below shows the effects of +/- adjustment with **SP6201**. (The vertical arrows show the direction of paper feed.)



B836R904.WMF

## 1.7 ENTRANCE MOTOR

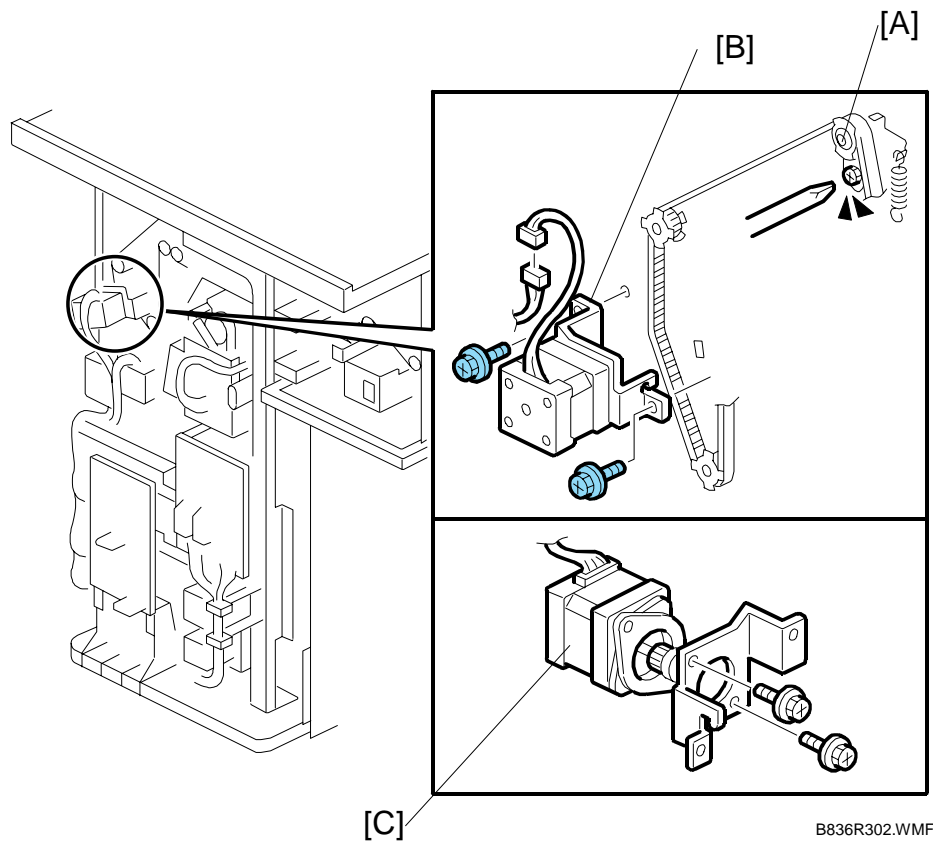


B836R301.WMF

Remove:

- Rear left cover (🔧1.1)
  - Rear right cover (🔧1.1)
- [A] Loosen the screw to release the belt tension.  
[B] Motor bracket (🔧 x2, 📏 x1, Timing belt x1)  
[C] Entrance motor (🔧 x2)

## 1.8 UPPER TRANSPORT MOTOR



B836R302.WMF

Remove:

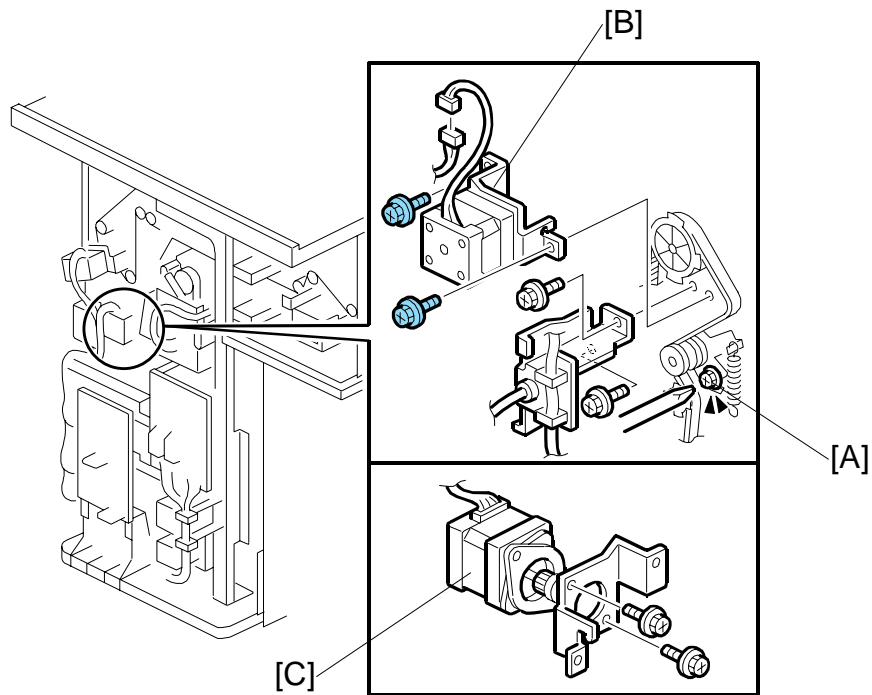
- Rear left cover (🔧1.1)
- Rear right cover (🔧1.1)

[A] Loosen the screw to release the belt tension.

[B] Motor bracket (🔧 x2, 📏 x1, Timing belt x1)

[C] Upper transport motor (🔧 x2)

## 1.9 LOWER TRANSPORT MOTOR

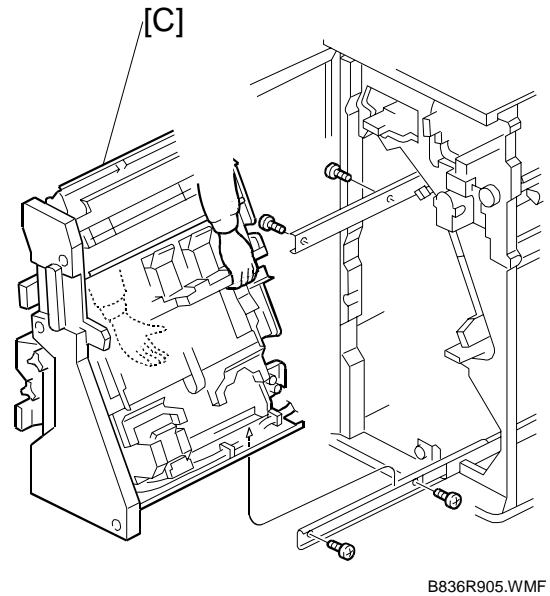
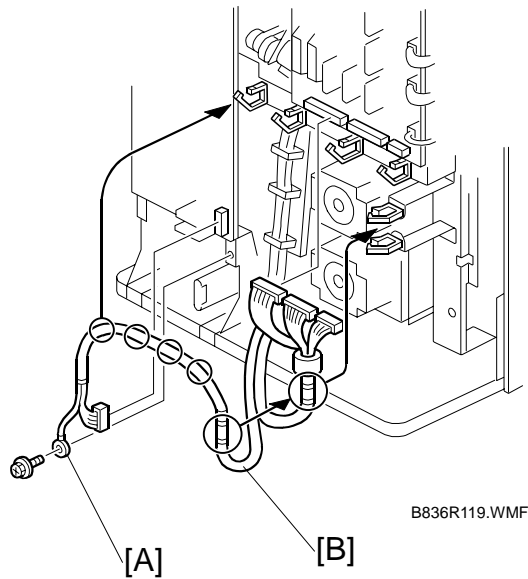


B836R303.WMF

Remove:

- Rear left cover (🔧1.1)
  - Rear right cover (🔧1.1)
- [A] Loosen the screw to release the belt tension.  
 [B] Motor bracket (🔧 x2, 📏 x1, Timing belt x1)  
 [C] Lower transport motor (🔧 x2)

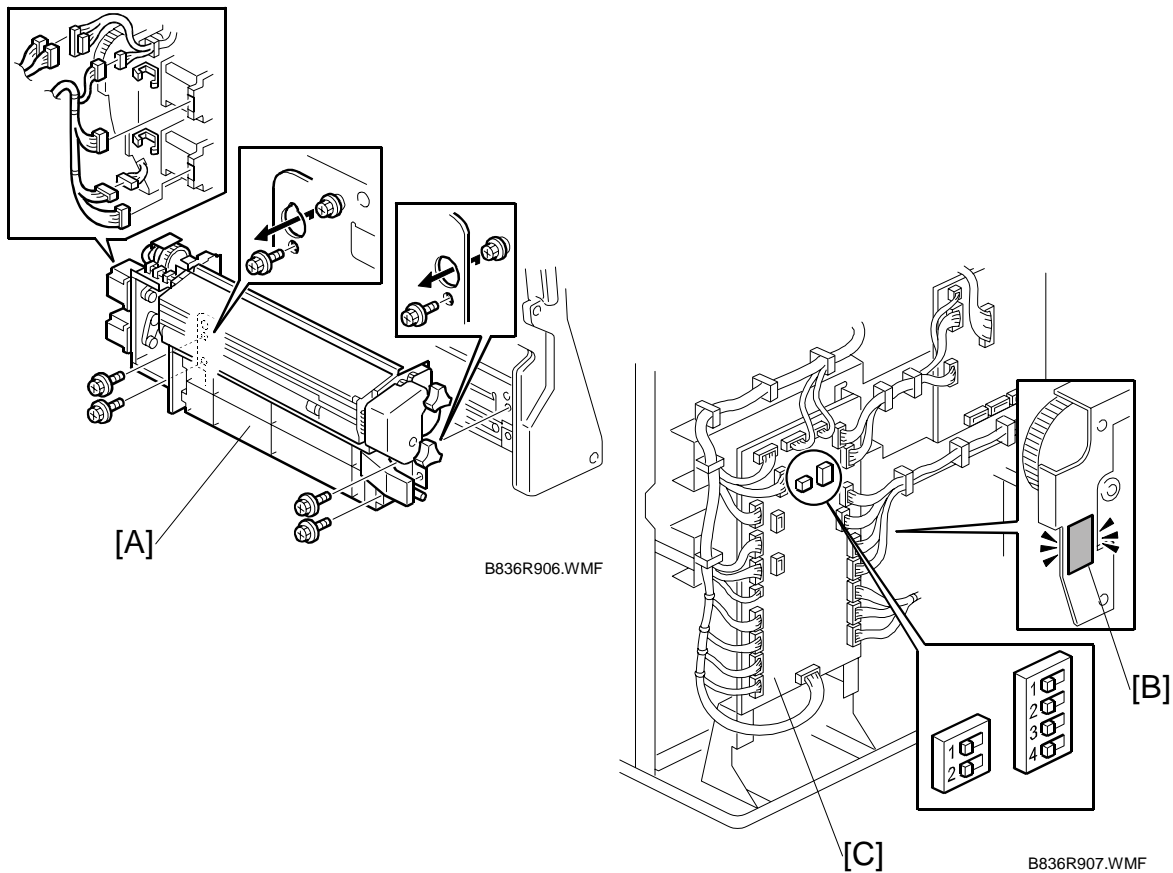
## 1.10 FOLD UNIT



- Remove the back cover (☛1.1)
- Open the front door.

**CAUTION:** The stapling unit is heavy.

- [A]: Ground screw (☛ x1)  
 [B]: Harness (☛ x6, ☛ x6)  
 [C]: Stapling unit (☛ x4)



**Important:** Support the fold unit with your hand to prevent it from falling.

**CAUTION:** The fold unit is heavy.

[A]: Folding unit (⚙️ x4, ⏪ x2, ⏩ x6)

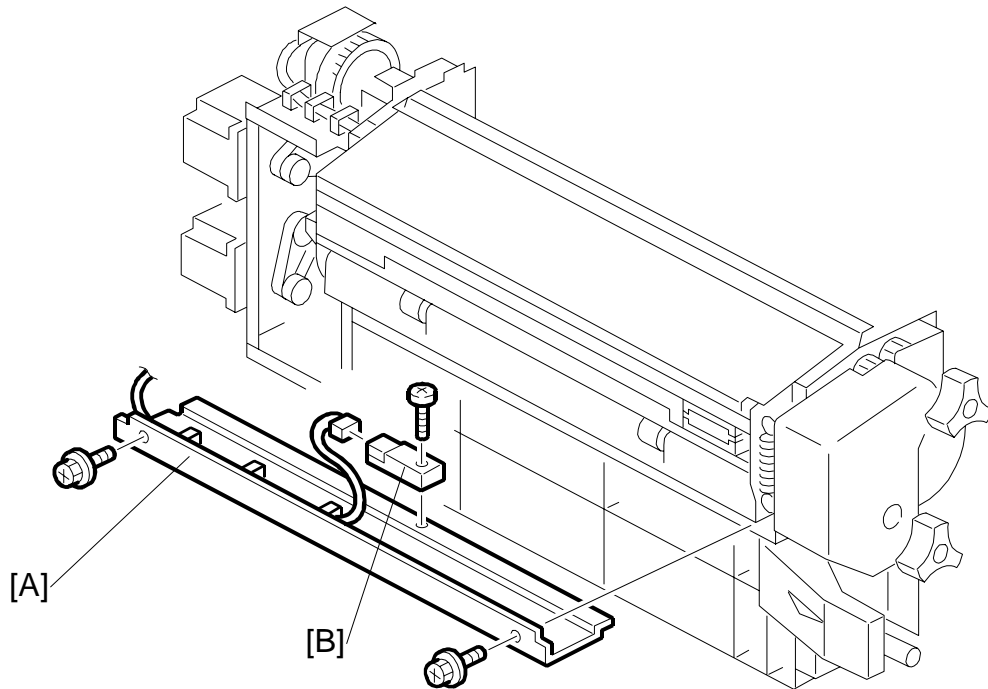
If you have replaced the folding unit:

1. Read the DIP switch settings on the decal [B] attached to the back of the new folding unit.
2. Check the DIP switch settings on the main board [C] of the finisher.
3. If these settings are different, change these settings to match settings printed on the seal attached to the folding unit.

**NOTE:** Set DIP switches 1 to 4 (the switch set on the right). Do not touch the other DIP switches.



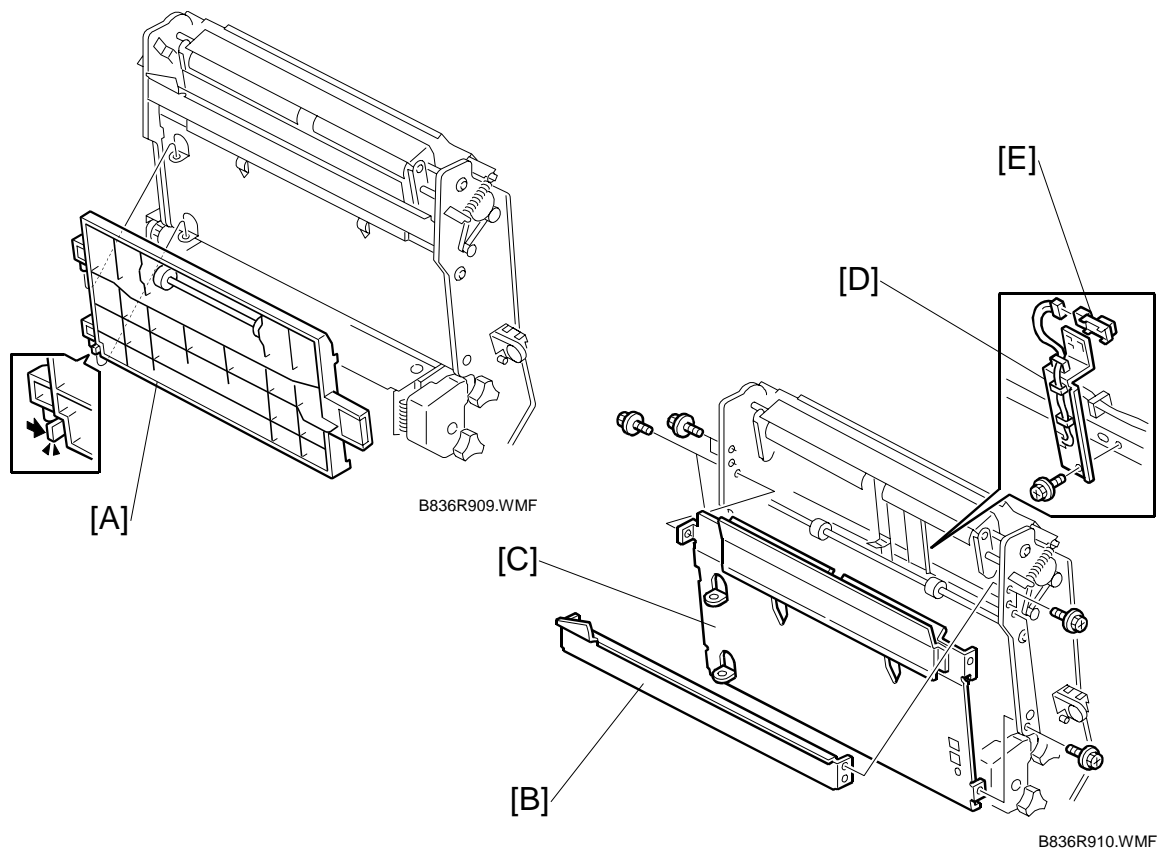
## 1.11 FOLD UNIT ENTRANCE SENSOR



B836R908.WMF

- Pull out the stapling unit.
- [A]: Fold unit entrance sensor bracket (🔩 x2)  
[B]: Fold unit entrance sensor (🔩 x1, 📏 x1)

## 1.12 STACK PRESENT SENSOR



**Important:** If you intend to correct the horizontal and vertical skew for the fold unit at the same time, do those adjustments first, then replace the sensor. (☛1.6.1, 1.6.2)

- Remove the stapling unit (☛1.10)

[A]: Guide plate.

[B]: Stay (🔩 x4)

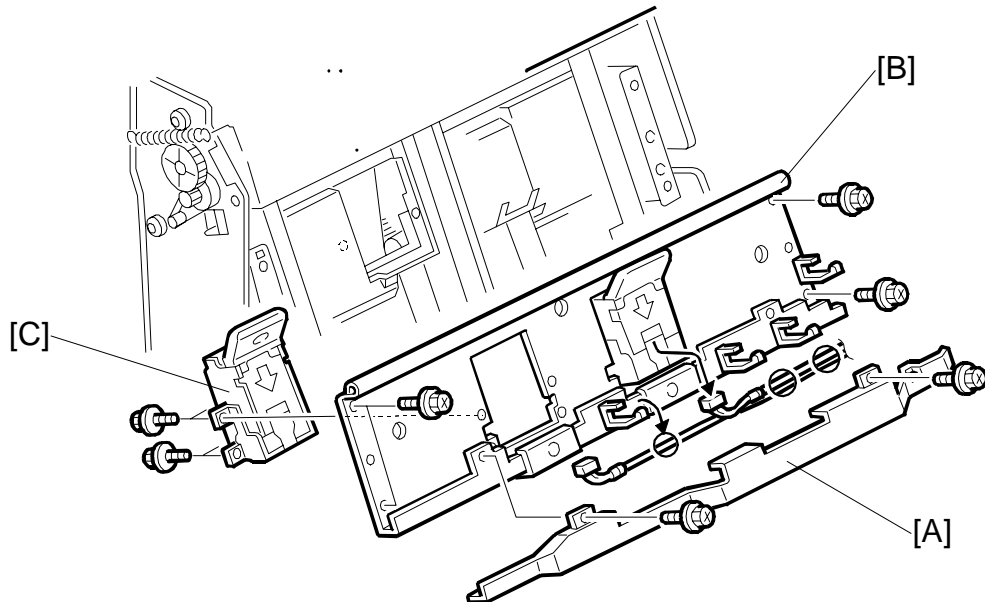
[C]: Left plate (🔩 x4)

[D]: Sensor bracket (🔩 x1)

[E]: Stack present sensor (🔩 x1)

## 1.13 BOOKLET STAPLER, BOOKLET STAPLER MOTOR

### 1.13.1 BOOKLET STAPLER



B836R911.WMF

- Open the front door.
- Pull out the stapling unit.

[A]: Harness cover (🔩 x2)

[B]: Booklet stapler support stay (🔩 x4, 📏 x2, 📏 x4)

[C]: Stapler (🔩 x4)

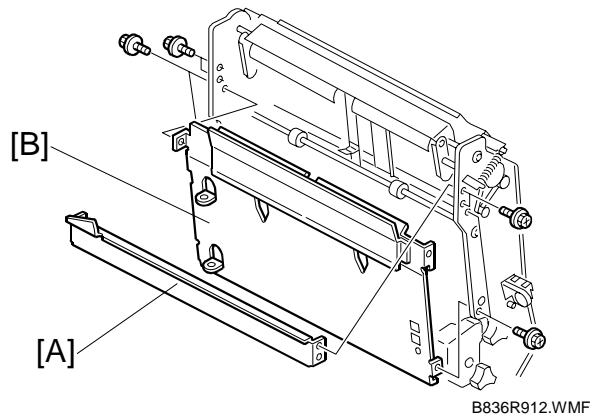
### 1.13.2 BOOKLET STAPLER MOTOR

- Open the front door.
- Remove the stapling unit. (➔1.10)

1. Remove:

[A]: Stay (🔩 x4).

[B]: Left plate (🔩 x4).



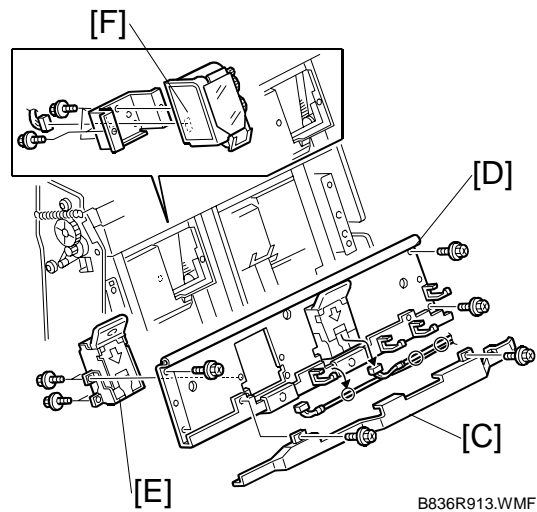
2. Remove:

[C]: Harness cover (🔩 x2)

[D]: Booklet stapler support stay  
(🔩 x4, 📏 x2, ⬅️ x4)

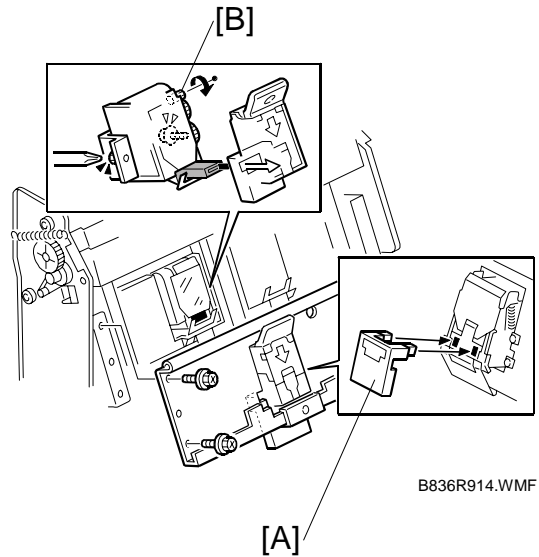
[E]: Booklet stapler (🔩 x4)

[F]: Booklet stapler motor (🔩 x2, 📏 x1)



**To Reattach the Booklet Stapler Motor**

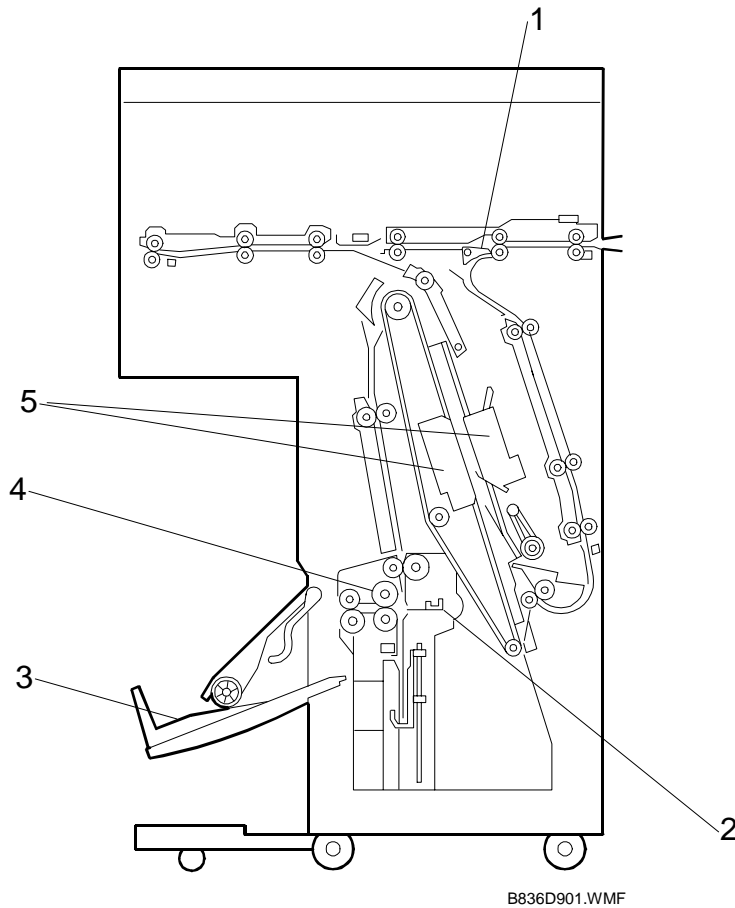
1. Reattach the booklet stapler motor.  
**Important:** Do not tighten the screws.
2. Attach the special tool [A] and reattach the booklet stapler stay.  
**NOTE:** This tool is included with the stapler spare part.
3. Turn the gear [B] with your finger until it stops.
4. Tighten the screws to attach to the booklet stapler motor.
5. Remove the stay again and remove the special tool.
6. Reattach the booklet stapler stay.
7. Push the stapling unit into the machine.



---

## 2. DETAILS

### 2.1 GENERAL LAYOUT



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- |                                |                    |
|--------------------------------|--------------------|
| 1. Stapling Tray Junction Gate | 4. Folder Rollers  |
| 2. Folder Plate                | 5. Booklet Stapler |
| 3. Booklet Output Tray         |                    |

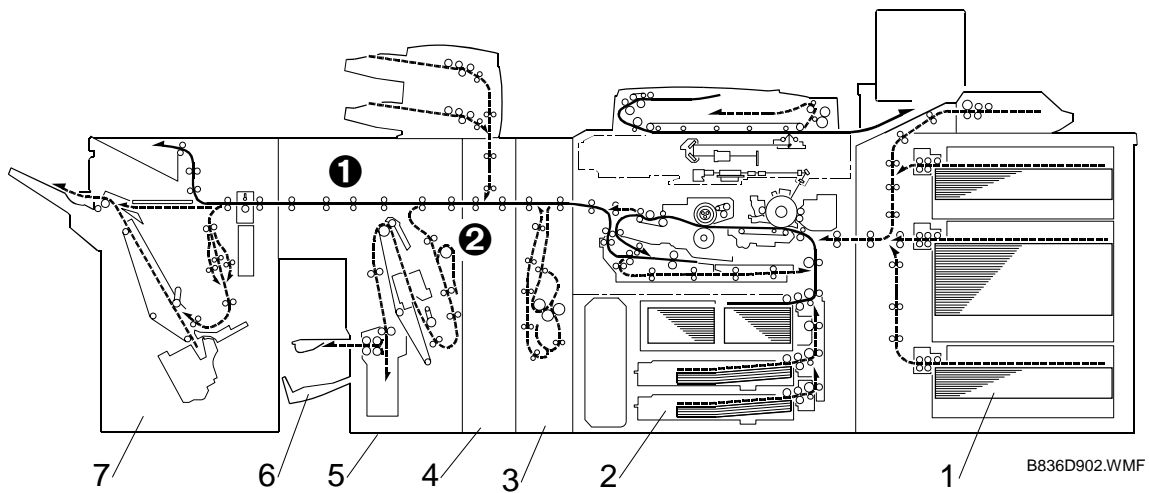
**Paper direction**

The operation of the stapling tray junction gate [1] (previous page) directs the paper once it enters the finisher:

Junction Gate	Paper Feeds
<b>Closed</b>	Paper feeds straight through ❶ (see below)
<b>Open</b>	Paper feeds to the staple tray ❷ (see below)

**Booklet output tray**

The booklet output tray [6] receives copies that have been center folded and stapled (booklet stapling).

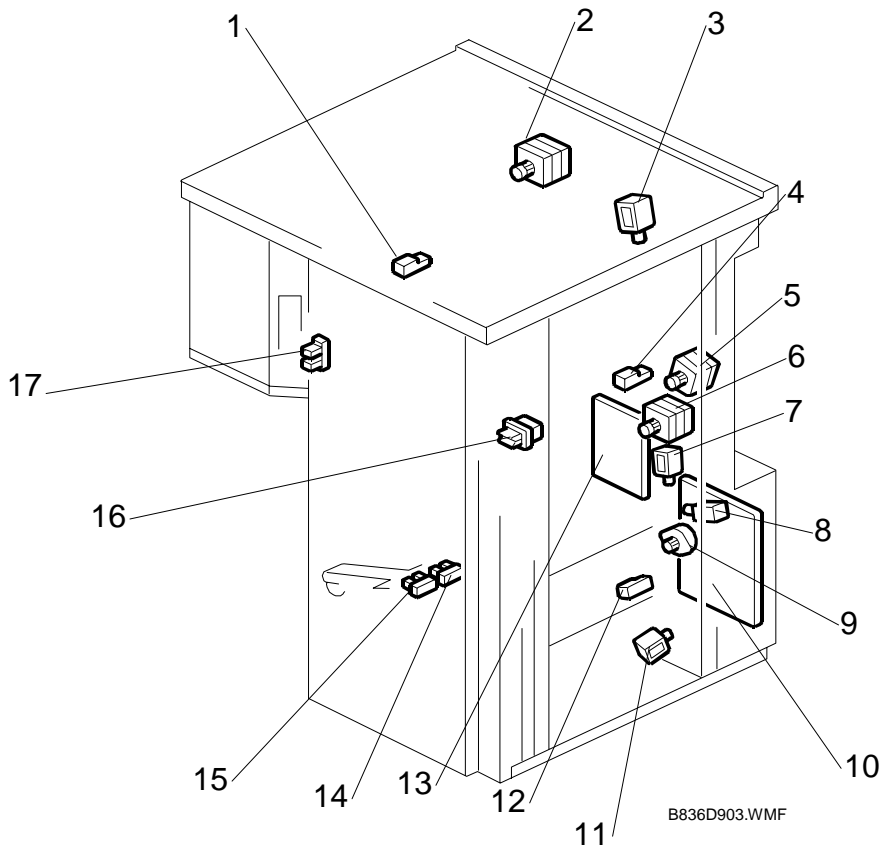


- 1. Optional LCT (B832 or B834)
- 2. Copier (e-STUDIO901/1101/1351)
- 3. Z-Folder (B660)
- 4. Cover Interposer Tray (B835)
- 5. Booklet Finisher (B836)
- 6. Booklet Finisher Output Tray
- 7. Finisher (B830)



## 2.2 ELECTRICAL COMPONENTS

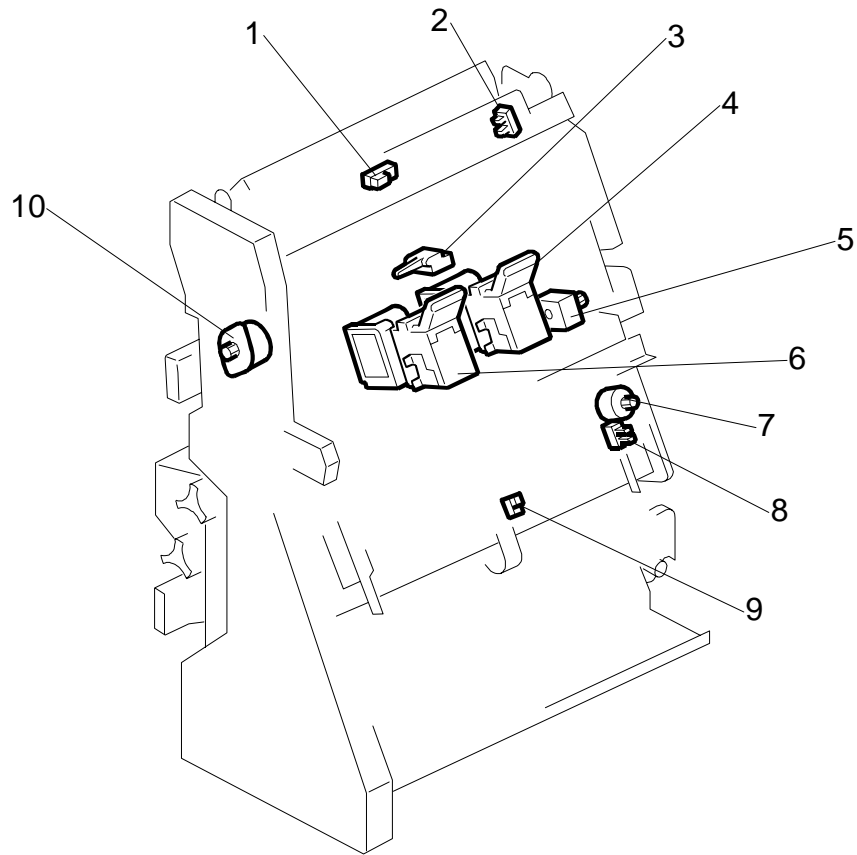
### 2.2.1 FEED PATH, PCBS



- |   |   |
|---|---|
| 1. Horizontal Transport Sensor          | 10. Positioning Roller Motor                |
| 2. Upper Transport Motor                | 11. Edge Pressure Plate Solenoid            |
| 3. Stapling Tray Junction Gate Solenoid | 12. Stack Tray Exit Sensor                  |
| 4. Finisher Entrance Sensor             | 13. Booklet Stapler Board                   |
| 5. Entrance Motor                       | 14. Booklet Output Tray Full Sensor - Rear  |
| 6. Lower Transport Motor                | 15. Booklet Output Tray Full Sensor - Front |
| 7. Booklet Pressure Roller Solenoid     | 16. Front Door Safety Switch                |
| 8. Positioning Roller Solenoid          | 17. Small Front Door Open Sensor            |
| 9. Main Board (PCB)                     |   |

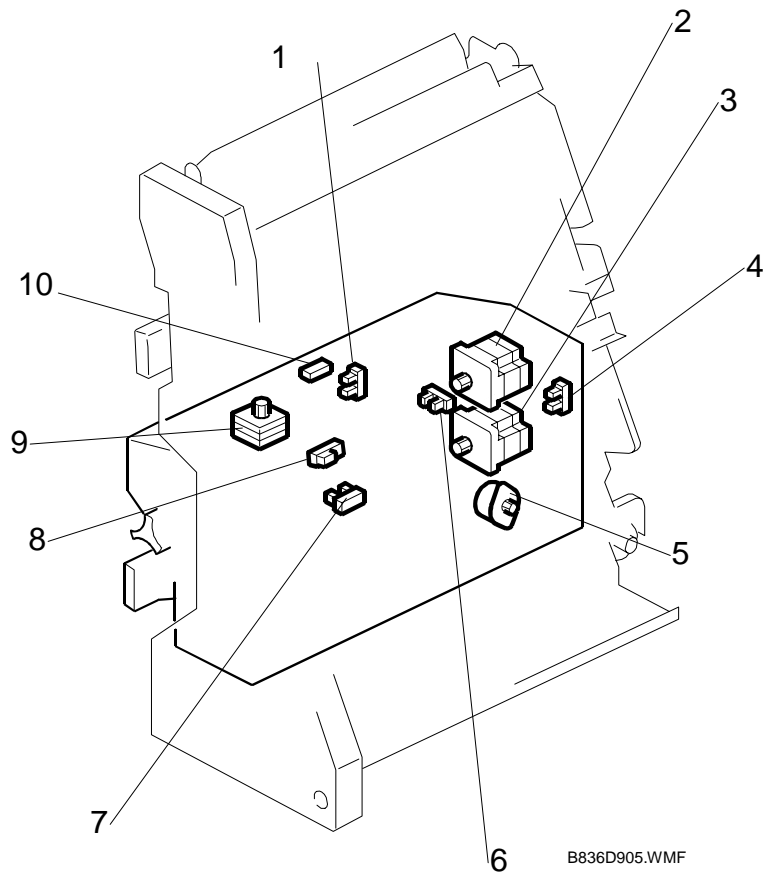


## 2.2.2 STACKER/STAPLER



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- |                                  |                               |
|----------------------------------|-------------------------------|
| 1. Stack Present Sensor          | 6. Booklet Stapler – Front    |
| 2. Stack Junction Gate HP Sensor | 7. Jogger Fence Motor         |
| 3. Stack Feed Out Belt HP Sensor | 8. Jogger Fence HP Sensor     |
| 4. Booklet Stapler – Rear        | 9. Stapling Tray Paper Sensor |
| 5. Feed Out Belt Motor           | 10. Stack Junction Gate Motor |

**2.2.3 FOLD UNIT**

- |                                      |                                  |
|--------------------------------------|----------------------------------|
| 1. Clamp Roller HP Sensor            | 6. Fold Plate Cam HP Sensor      |
| 2. Fold Roller Motor                 | 7. Fold Bottom Fence HP Sensor   |
| 3. Fold Plate Motor                  | 8. Fold Unit Entrance Sensor     |
| 4. Fold Plate HP Sensor              | 9. Clamp Roller Retraction Motor |
| 5. Fold Unit Bottom Fence Lift Motor | 10. Fold Unit Exit Sensor        |

## 2.2.4 ELECTRICAL COMPONENT SUMMARY

Here is a general summary of all the electrical components.

<b>Motors</b>		
<b>No.</b>	<b>Name</b>	<b>Description</b>
M1	Entrance Motor	Controls the rollers that feed paper into the booklet finisher.
M2	Upper Transport Motor	Controls the rollers that feed paper out of the booklet finisher.
M3	Clamp Roller Retraction Motor	Drives a large cam that alternately clamps and unclamps the clamp retraction roller, the idle roller of the clamp roller pair. When these rollers are clamped, they are part of the paper feed path and feed the stack toward the bottom fence of the fold unit. When the idle roller is retracted, the stacks falls a very short distance (3 mm) onto the fold unit bottom fence below. These rollers remain unclamped while the bottom fence positions the stack for folding and while the stack is folded by the fold rollers.
M4	Feed Out Belt Motor	Drives the feed out belt that moves the stapled stacks out of the stapling tray after stapling.
M5	Fold Plate Motor	Drives the fold plate that pushes the center of the stack into the nip of the fold rollers to start the fold.
M6	Fold Roller Motor	Rotates forward and drives the fold rollers that fold the stack and feed it out of the fold unit, reverses to feed the fold once more into the fold unit, and then rotates forward again to feed the fold out of the fold unit.
M7	Fold Unit Bottom Fence Lift Motor	Raises the bottom fence and stops when the center of the vertical stack is opposite the edge of the horizontal fold blade. The distance for raising the blade is prescribed as one-half the size of the paper selected for the job. For large paper, (A3, B4) the bottom fence first lowers the stack 10 mm below the fold position, and then raises it to the fold position.
M8	Jogger Fence Motor	Drives the jogger fences in the stapling tray to jog both sides of the stack before stapling.
M9	Lower Transport Motor	Drives paper feed rollers forward and reverse in the stack tray for the switchback, and drives the other rollers in the lower transport area.
M10	Positioning Roller Motor	Drives the positioning roller in the stapling tray.
M11	Stack Junction Gate Motor	Controls the junction gate at the entrance of the booklet finisher

<b>PCBs</b>		
<b>No.</b>	<b>Name</b>	<b>Description</b>
PCB1	Booklet Stapler Board	A separate board that controls booklet finishing.
PCB2	Main Board	The main board that controls the finisher

<b>Sensors</b>		
<b>No.</b>	<b>Name</b>	<b>Description</b>
S1	Booklet Output Tray Full Sensor – Front	This front sensor is the higher sensor of the booklet tray full sensor pair. Two actuators are attached to the actuator arm that touches the top of stapled and folded booklets as they feed out. The on/off combinations of the two sensors are used to detect when the tray is full and stop the job. (The booklet tray is stationary. At tray full, the job halts until booklets are removed from the booklet tray.)
S2	Booklet Output Tray Full Sensor – Rear	This rear sensor is the lower sensor of the booklet tray full sensor pair. Two actuators are attached to the actuator arm that touches the top of stapled and folded booklets as they feed out. The on/off combinations of the two sensors are used to detect when the tray is full and stop the job. (The booklet tray is stationary. At tray full, the job halts until booklets are removed from the booklet tray.)
S3	Clamp Roller HP Sensor	Controls the movement of the clamp retraction roller (the idle roller of the clamp roller pair).
S4	Finisher Entrance Sensor	Provides two functions: (1) Detects paper entering the finisher from the copier, and (2) Signals a jam if it detects paper at the entrance when the copier is switched on.
S5	Fold Bottom Fence HP Sensor	Controls the movement of the bottom fence in the folding unit using pulse counts based on the size of the paper selected for the job to position the stack correctly for feeding.
S6	Fold Plate Cam HP Sensor	Along with the fold plate HP sensor (S29), this sensor controls the movement of the fold plate. The actuator mounted on the end of the roller that drives the folder plate forward and back makes three full rotations, i.e. the actuator passes the sensor gap twice and stops on the 3rd rotation and reverses. This accounts for the left and right movement of fold plate.
S7	Fold Plate HP Sensor	Along with the fold plate cam HP sensor (S30) this sensor controls the movement of the fold plate. The fold plate has arrived at the home position when the edge of the plate enters the gap of this sensor.
S8	Fold Unit Entrance Sensor	Detects 1) the leading edge of the stack during booklet stapling, and 2) also used to signal an alarm if a paper is detected at the entrance of the fold unit when the copier is turned on.
S9	Fold Unit Exit Sensor	1) Detects the folded edge of the stack as it feeds out from the nip of the fold rollers, stops the rollers, and reverses them so the fold feeds back into the nip, 2) when the folded booklet finally emerges from the nip of the fold rollers, detects the leading and trailing edge of the booklet to make sure that it feeds out correctly.
S10	Jogger Fence HP Sensor	Detects the home position of the jogger fences. When the actuator on the jogger fence interrupts this sensor, the jogger fence is in its home position and the jogger fence motor (M15) stops.
S11	Stack Tray Exit Sensor	Detects 1) paper fed from the stack tray to the stapling tray, and detects 2) paper in the stack when the copier is switched on. (This sensor performs no timing function. The entire flow of paper through the stacking mechanism is controlled by motor pulse counts.)
S12	Stack Feed-Out Belt HP Sensor	Controls the position of the stack feed-out pawl on the stack feed-out belt. Once the actuator on the feed belt nudges the feeler of this sensor near the top of the stapling unit, the feed out belt motor (M5) remains on for the time prescribed to position the pawl at the home position to catch the next stack.
S13	Stack Junction Gate HP Sensor	Controls the opening and closing of the stack junction gate. Switches on when the stack junction gate is open and at the home position.
S14	Stack Present Sensor	This sensor determines whether there is paper at the turn junction gate when the machine is turned on. If a stack is present, this triggers a jam alert. (This sensor performs no dynamic function such as pulse counting, etc. It only detects whether paper is at the top of the folding unit when power is turned on.)

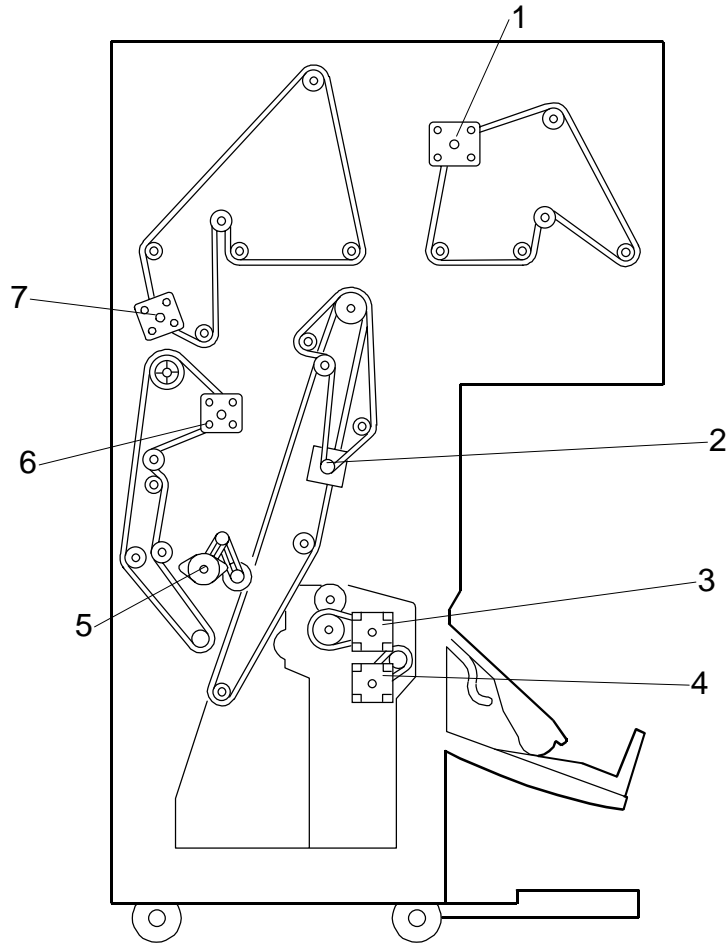
<b>Sensors</b>		
<b>No.</b>	<b>Name</b>	<b>Description</b>
S15	Stapling Tray Paper Sensor	A photo sensor that detects whether paper is in the stapling tray. When this sensor detects paper, the bottom fence motor raises or lowers the bottom fence to position the selected paper size for booklet stapling.
S16	Horizontal Transport Sensor	Monitors paper feed through the finisher
S17	Small Front Door Open Sensor	Detects when the small front door at the front left is open.

<b>Solenoids</b>		
<b>No.</b>	<b>Name</b>	<b>Description</b>
SOL1	Booklet Pressure Roller Solenoid	When the paper stack in the stapling tray feeds to the folding unit, this solenoid turns on and operates the roller that pushes on the surface of the stack to flatten it.
SOL2	Positioning Roller Solenoid	Engages the stapler transport motor and the positioning roller of the stapling tray. The positioning roller pushes each sheet down against the bottom fence to align the bottom the stack for stapling. (The jogger fences align the sides.)
SOL3	Edge Pressure Plate Solenoid	Operates the pressure plate of the stapling unit. The pressure plate presses down the edge of stack in the stapling tray so it is tight for stapling.
SOL4	Stapling Tray Junction Gate Solenoid	Directs paper to the stapling tray. When this solenoid is on, paper feeds straight through. When this solenoid is off, paper feeds to the stapling tray below.

<b>Switches</b>		
<b>No.</b>	<b>Name</b>	<b>Description</b>
SW1	Front Door Safety Switch	The safety switch that cuts the dc power when the front door is opened.

<b>Other</b>		
<b>No.</b>	<b>Name</b>	<b>Description</b>
ST1	Booklet Stapler - Front	Booklet stapler. Staples paper stacks in the center before they are folded.
ST2	Booklet Stapler - Rear	Booklet stapler. Staples paper stacks in the center before they are folded.

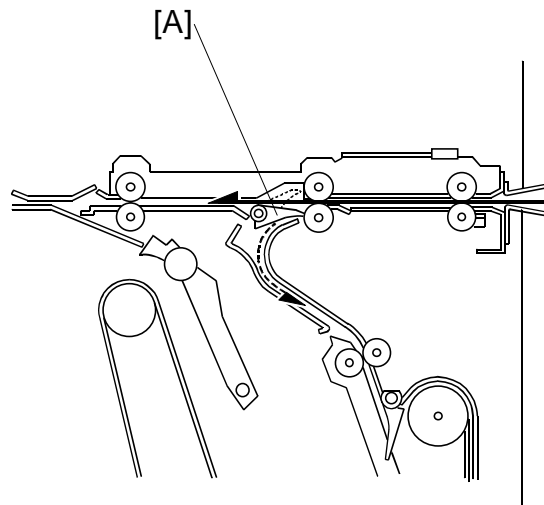
## 2.3 DRIVE LAYOUT



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1. Upper Transport Motor
2. Feed Out Belt Motor
3. Fold Roller Motor
4. Folder Plate Motor
5. Positioning Roller Motor
6. Lower Transport Motor
7. Entrance Motor

## 2.4 JUNCTION GATE



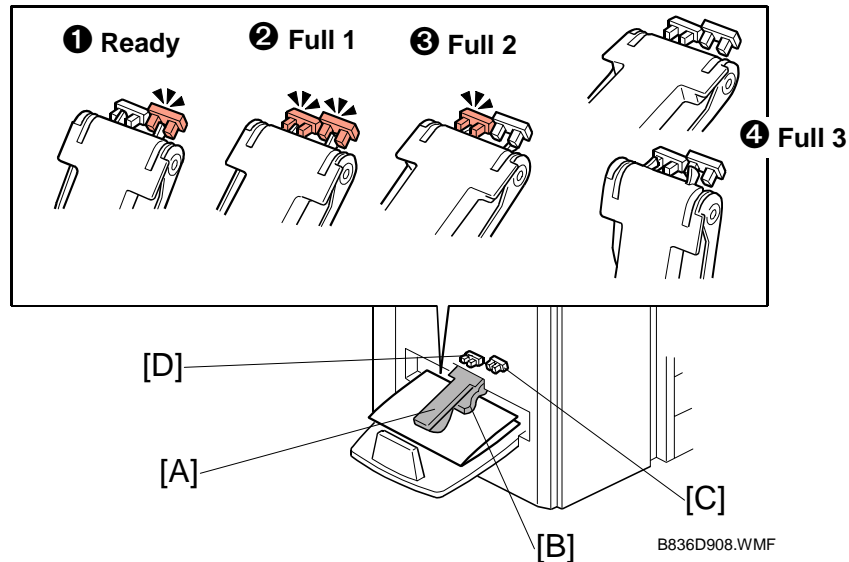
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The position of the junction gate [A] determines the direction of paper feed after paper enters the finisher.

The junction gate remains closed when booklet stapling is not selected for the job. The paper passes over the junction gate and straight through the finisher.

The junction gate opens and guides the paper down to the staple tray when booklet stapling is selected for the job.

## 2.5 BOOKLET OUTPUT TRAY



The booklet output tray sensor actuator arm [A] rests on the top of the stack of stapled booklets as they are output to the booklet output tray. A flap depressor [B] keeps the open ends of the booklets down.

The front booklet output tray full sensor [C] and rear booklet output tray full sensor [D] detect when the booklet output tray is full of booklets.

### Important

- The front booklet output tray full sensor is mounted higher than the rear booklet output tray full sensor.
- The booklet output tray is stationary. When it becomes full, the stapling and folding job stops until booklets are removed from the tray.
- If the booklet output tray is not installed (this is detected if the front and rear sensors remain OFF), the machine will not operate in the booklet staple and fold mode. When booklet mode is selected, the tray full message appears on the operation panel.

The combinations of the two actuators and two sensors as the actuator arm rises determines the number of booklets that the booklet output tray can hold before the job stops.



The tray full detection depends on the size of the paper and the number of sheets in one stapled and folded booklet.

In the table below, the conditions (❶ Ready ❷ Full 1, ❸ Full 2 ❹ Full 3: See the illustration on the previous page) refer to the states of the sensors described on the previous page.

Condition	Front Sensor	Rear Sensor
Ready	ON	OFF
Full 1	ON	ON
Full 2	OFF	ON
Full 3 (or booklet output tray not installed)	OFF	OFF

In the tables below:

- "Sht" denotes "sheets in a stack".
- "Cnt" denotes "Count" (see below for an explanation).

After a booklet is feed out, the fold roller motor stops the exit roller. The machine then monitors the tray full sensors every 100 ms. The machine checks for a certain condition, based on the size of the paper and the number of sheets in the booklet.

An example is shown below. Tell the operators that the number of sheets that the booklet output tray can hold will vary greatly.

### Booklet Output Tray Full Condition Table

#### A3 (DLT)

	1 Sht	2 Sht	3 Sht	4 Sht	5 Sht	6 Sht	7 Sth	8 Sht	9 Sht	...
<b>Full 1</b>	3 Cnt	—	—	—	—	—	—	—	—	...
<b>Full 2</b>	—	5 Cnt	15 Cnt	—	—	—	—	—	—	...
<b>Full 3</b>	—	—	—	7 Cnt	13 Cnt	4 Cnt	2 Cnt	2 Cnt	2 Cnt	...

#### A4 (LT)

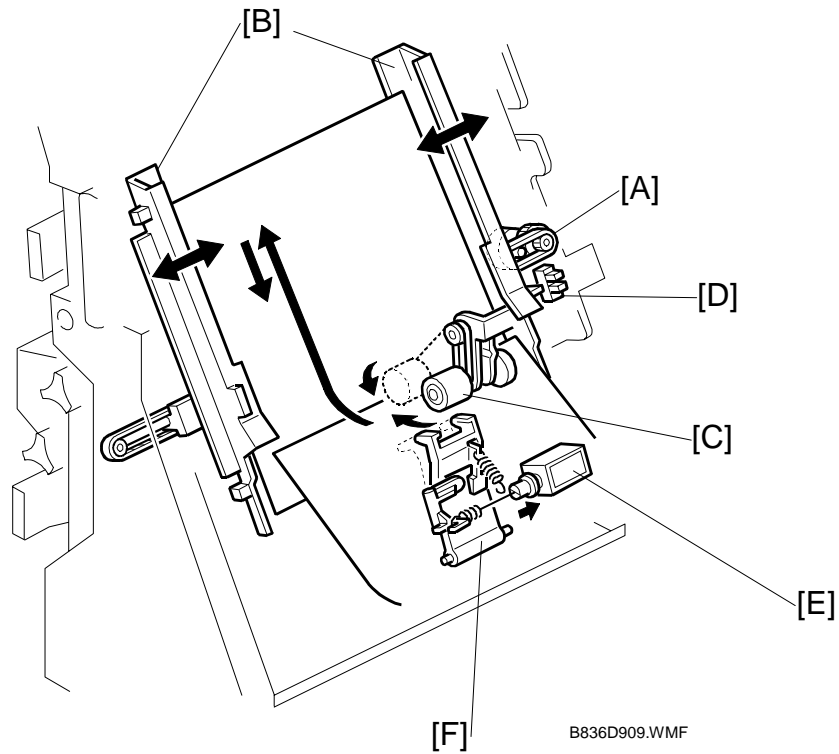
	1 Sht	2 Sht	3 Sht	4 Sht	5 Sht	6 Sht	7 Sth	8 Sht	9 Sht	...
<b>Full1</b>	16 Cnt	—	—	—	—	—	—	—	—	...
<b>Full 2</b>	—	10 Cnt	10 Cnt	15 Cnt	20 Cnt	15 Cnt	10 Cnt	8 Cnt	8 Cnt	...
<b>Full 3</b>	—	—	—							...

### Examples

After the copier makes a booklet with 1 sheet of A3/DLT paper, the machine checks every 100 ms for the 'Full 1' condition. If the Full 1 condition occurs 3 times (shaded block in the table above), the machine detects that the tray is full.

After the copier makes a booklet with 5 sheets of A4/LT paper, the machine checks every 100 ms for the 'Full 2' condition. If the Full 2 condition occurs 20 times (shaded block in the table above), the machine detects that the tray is full.

## 2.6 STACKING AND JOGGING



- [A]: Jogger Fence Motor
- [B]: Jogger Fences
- [C]: Positioning Roller
- [D]: Jogger Fence HP Sensor
- [E]: Edge Pressure Plate Solenoid
- [F]: Pressure Plate

At the beginning of the job, the jogger fence motor [A] switches on and moves the jogger fences [B] to the standby position (7.5 mm from the sides of the selected paper size).

When each sheet enters the stapling tray:

- The jogger fence motor switches on and moves the jogger fences to within 5.5 mm of the sides of the selected paper size.
- The positioning roller solenoid switches on for the time prescribed for the paper size. This pushes the positioning roller [C] onto the sheet and pushes it down onto bottom fence. This aligns the edge of the stack.

Next, the jogger fence motor:

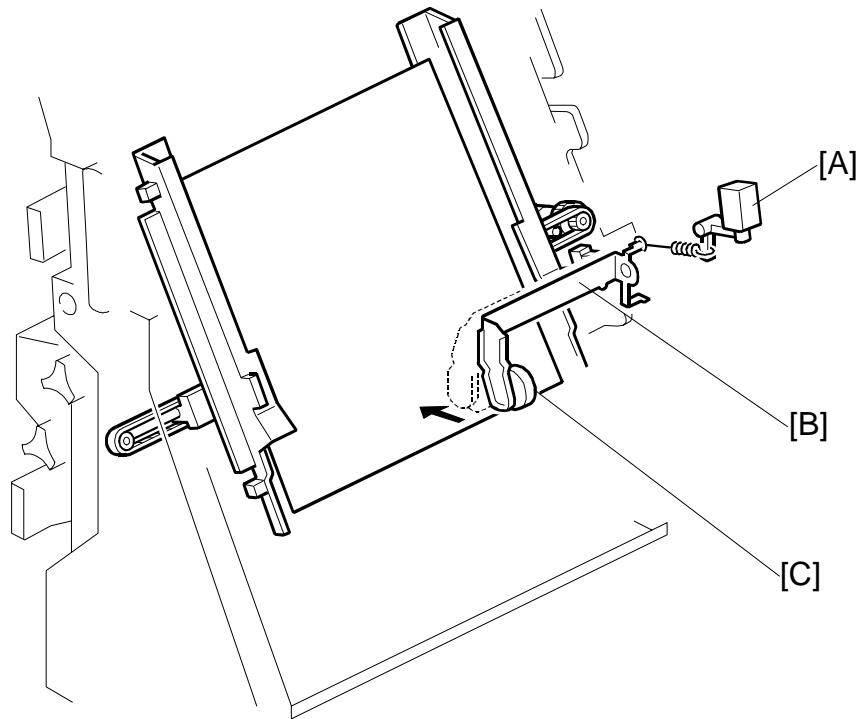
- Switches on again and moves the jogger fences to within 2.6 mm of the sides of the stack to align the sides of the stack.
- Reverses and moves the fences to the standby position (7.5 mm away for the sides) and waits for the next sheet.
- The jogger fence HP sensor [D] switches off the jogger motor at the end of the job.

After the last sheet feeds:

- The edge pressure plate solenoid [E] switches on and pushes the pressure plate [F] onto the stack to press down the edge for stapling.

## 2.7 BOOKLET STAPLING

### 2.7.1 BOOKLET PRESSURE MECHANISM



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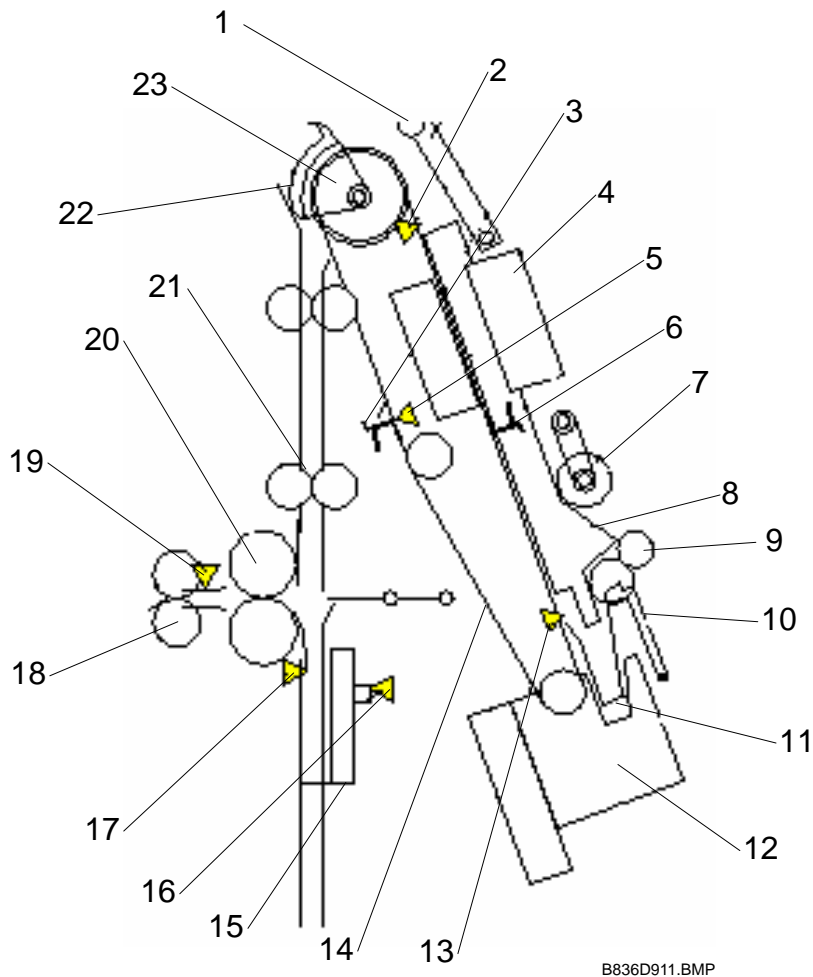
- [A]: Booklet Pressure Roller Solenoid
- [B]: Booklet Pressure Roller Arm
- [C]: Booklet Pressure Roller

As soon as the edges are aligned by the positioning roller and the jogger fences, the stack feed out belt moves.

In booklet mode, immediately after the edges are aligned by the positioning roller and jogger fences, the booklet pressure solenoid switches on and the booklet pressure roller presses down on the stack until booklet stapling is finished. This prevents the stack from shifting during stapling.

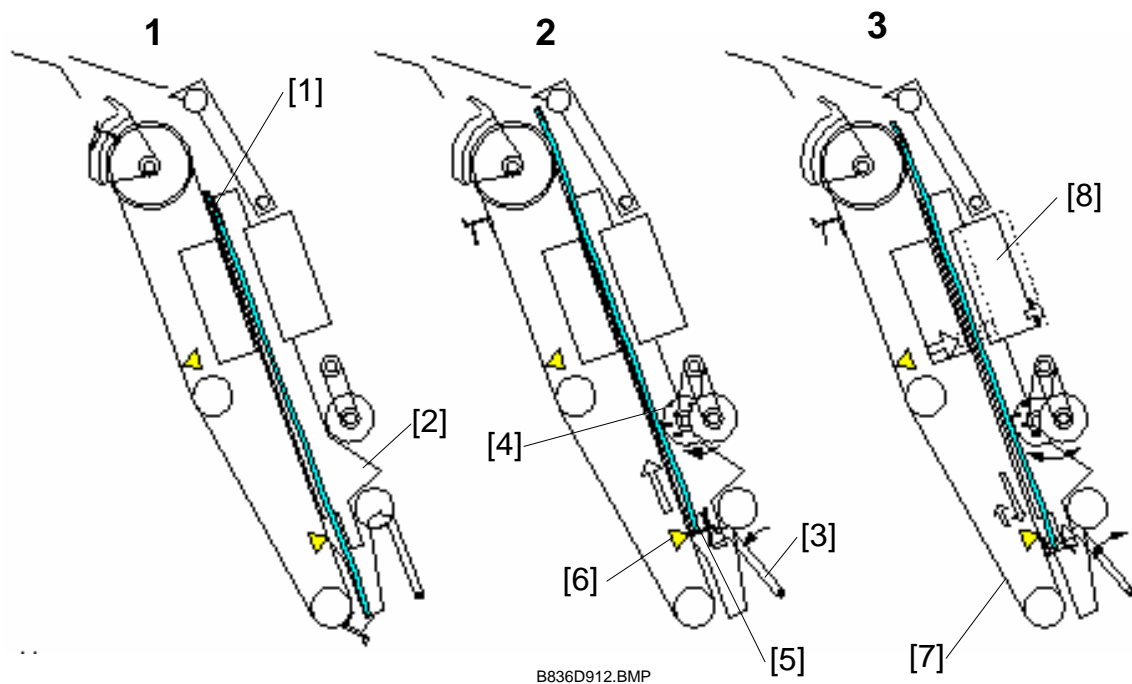
## 2.7.2 BOOKLET STAPLING AND FOLDING

### Overview



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- |                                  |                                 |
|----------------------------------|---------------------------------|
| 1. Leading Edge Pressure Roller  | 12. Corner Stapler              |
| 2. Stack Present Sensor          | 13. Stapling Tray Paper Sensor  |
| 3. Feed Out Belt Pawl 1          | 14. Feed Out Belt               |
| 4. Booklet Staplers x2           | 15. Fold Unit Bottom Fence      |
| 5. Stack Feed Out Belt HP Sensor | 16. Fold Bottom Fence HP Sensor |
| 6. Feed Out Belt Pawl 2          | 17. Fold Unit Entrance Sensor   |
| 7. Positioning Roller            | 18. Fold Unit Exit Rollers x2   |
| 8. Jogger Fences x2              | 19. Fold Unit Exit Sensor       |
| 9. Stack Exit Roller             | 20. Fold Rollers x2             |
| 10. Pressure Plate               | 21. Clamp Rollers x2            |
| 11. Stapling Tray Bottom Fence   | 22. Stack Junction Gate         |
|                                  | 23. Stack Transport Roller      |



### 1

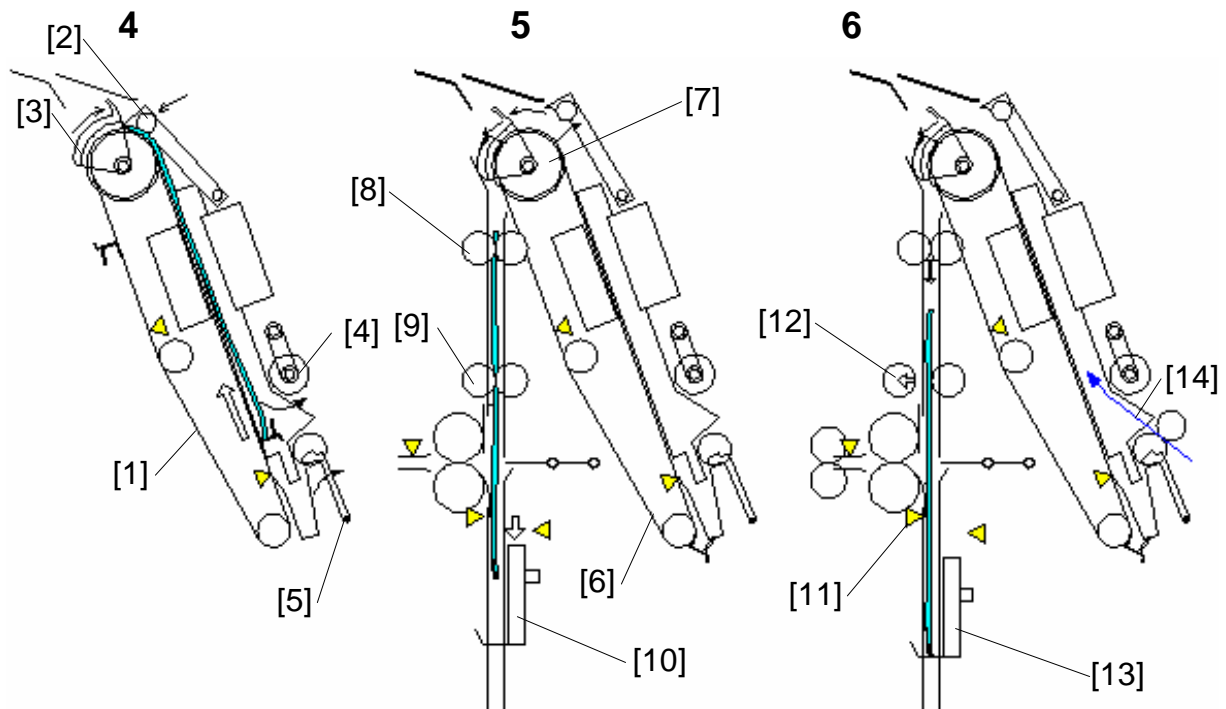
The last sheet of the stack [1] enters the stapling tray. The jogger fences [2] jog the last sheet into position (based on the width of the selected paper size) and then retract and stop 1 mm away from the sides of the stack.

### 2

The pressure plate [3] and booklet pressure roller [4] press down on the sheet. The stack feed out belt switches on and the pawl [5] on the feed out belt catches the bottom of the stack and raises it. The stapling tray sensor [6] detects the trailing edge of the paper stack.

### 3

The feed out belt [7] raises the stack to the prescribed stapling position and stops. The jogger fences move to the sides of the stack and the booklet staplers [8] staple the stack.



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#### 4

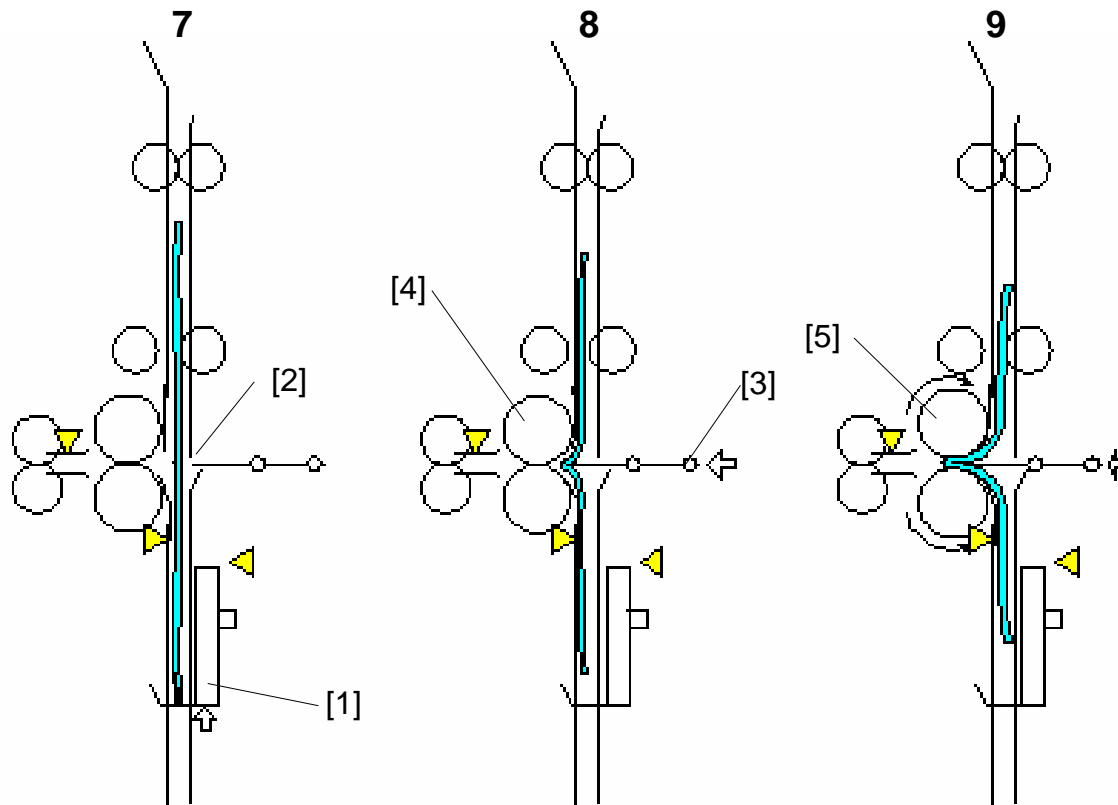
The jogger fences remain 1 mm away from the sides of the stack. The feed out belt [1] raises the stack until the top of the stack is 10 mm past the leading edge pressure roller [2] and stops. The leading edge pressure roller descends and applies pressure to the top of the stack. The stack junction gate [3] (normally open) closes. The pressure roller [4] and pressure plate [5] retract.

#### 5

The feed out belt [6], transport rollers [7], [8], and clamp rollers [9] rotate and feed the stack past the closed stack junction, over the top and down toward the bottom fence [10]. At the same time, the fold unit bottom fence descends from its home position and stops 10 mm below the fold position.

#### 6

The rollers feed the leading edge of the stack to within 3 mm of the stack stopper of the bottom fence [13]. The fold unit entrance sensor [11] detects the stack and opens the clamp rollers [12]. The stack drops 3 mm onto the fold unit bottom fence [13]. At this time, the first sheet [14] of the next stack feeds to the stapling tray.



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**7**

The bottom fence [1] raises the stack to the prescribed fold position [2].

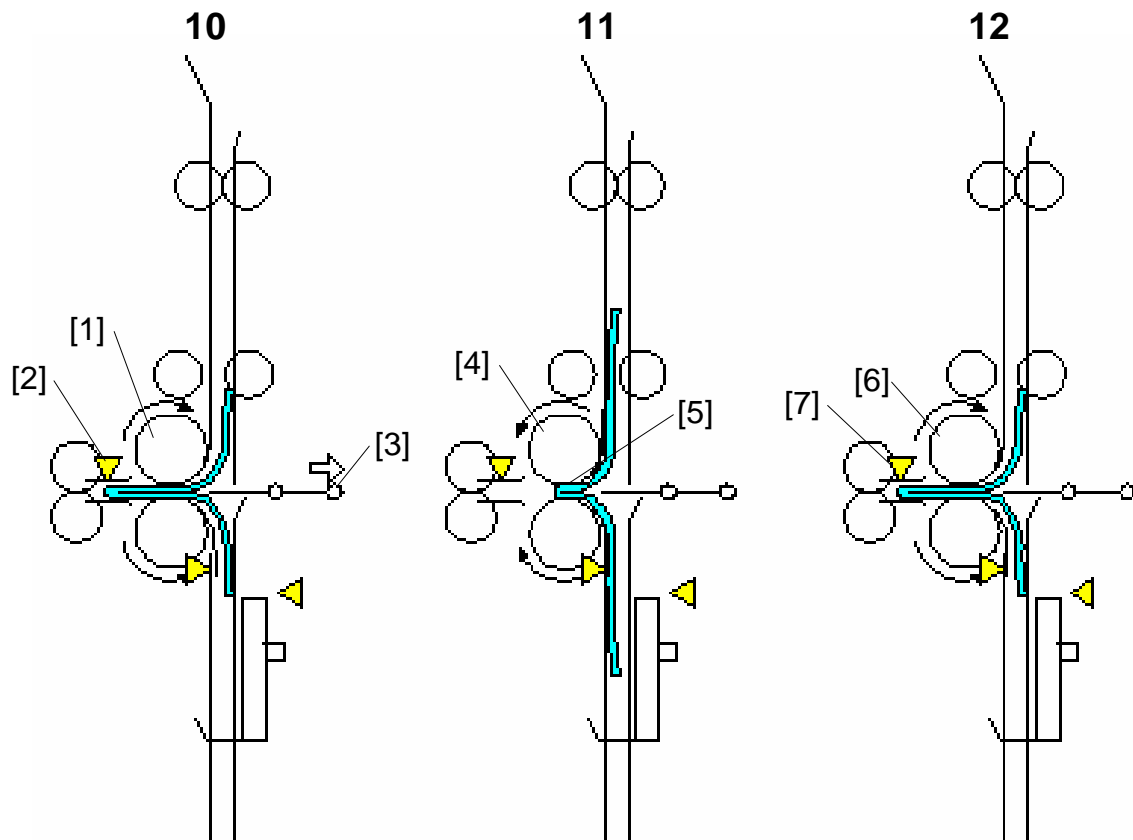
**8**

The fold plate [3] moves to the left and advances 1/3 its maximum horizontal stroke and exerts 20 kg (44 lb.) of pressure at the fold rollers [4].

**9**

With the fold plate pushing the stack into nip of the fold rollers [5], the fold rollers begin to rotate and fold the stack as it feeds out.





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## 10

When the fold rollers [1] feed the stack 10 mm past the nip, the fold plate retracts until it no longer touches the stack. The fold unit exit sensor [2] detects the folded edge of the stack and stops the fold rollers.

## 11

The rotation of the fold rollers [4] reverses and feeds the folded edge back until only 3 mm [5] remains at the nip.

## 12

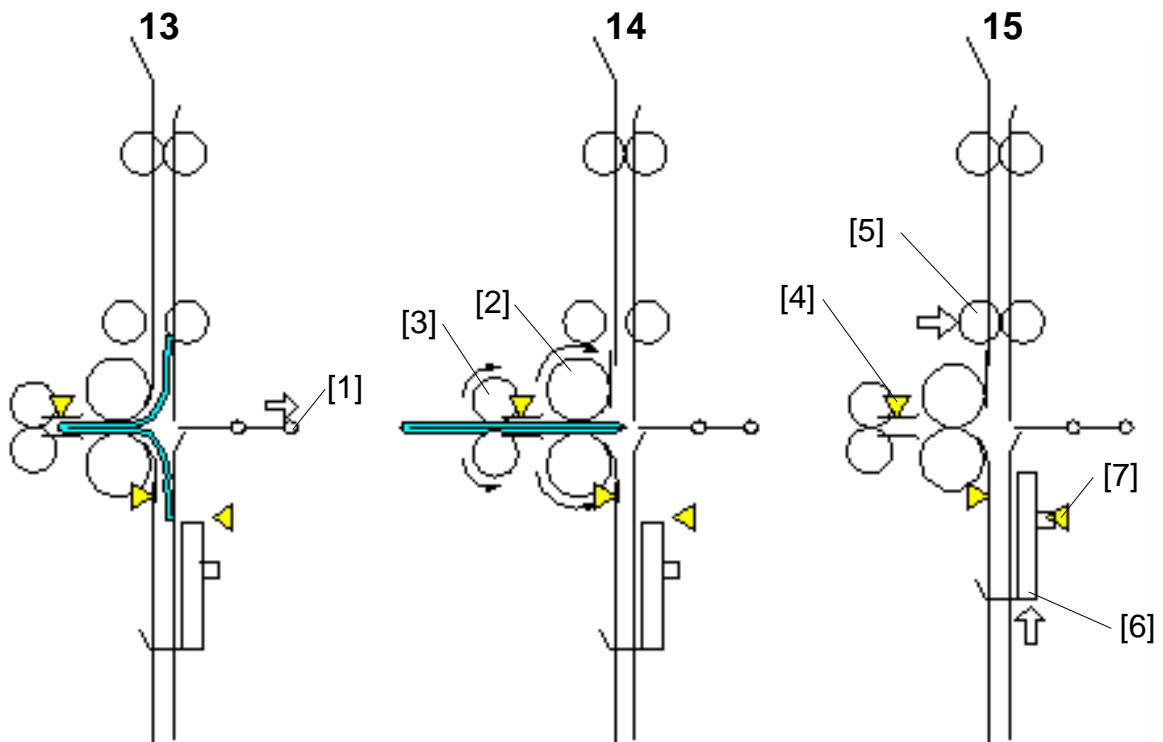
The fold rollers [6] rotate forward once again feed out. The fold unit exit sensor [7] once again detects the edge of the fold.

**NOTE:** You can do **SP6203 001** to increase the sharpness of the fold. The number of forward and reverse feeds of the fold rollers can be set in the range of -1 to +28. The machine repeats Steps 11 and 12. For more, please refer to Section "5 Service Tables\*."

0 (default, as explained above): The rollers rotate forward and in reverse one time, then forward to feed out the booklet.

1: The rollers rotate forward and in reverse two times (default plus 1)

-1: The rollers rotate forward but not in reverse



B836D916.BMP

**13**

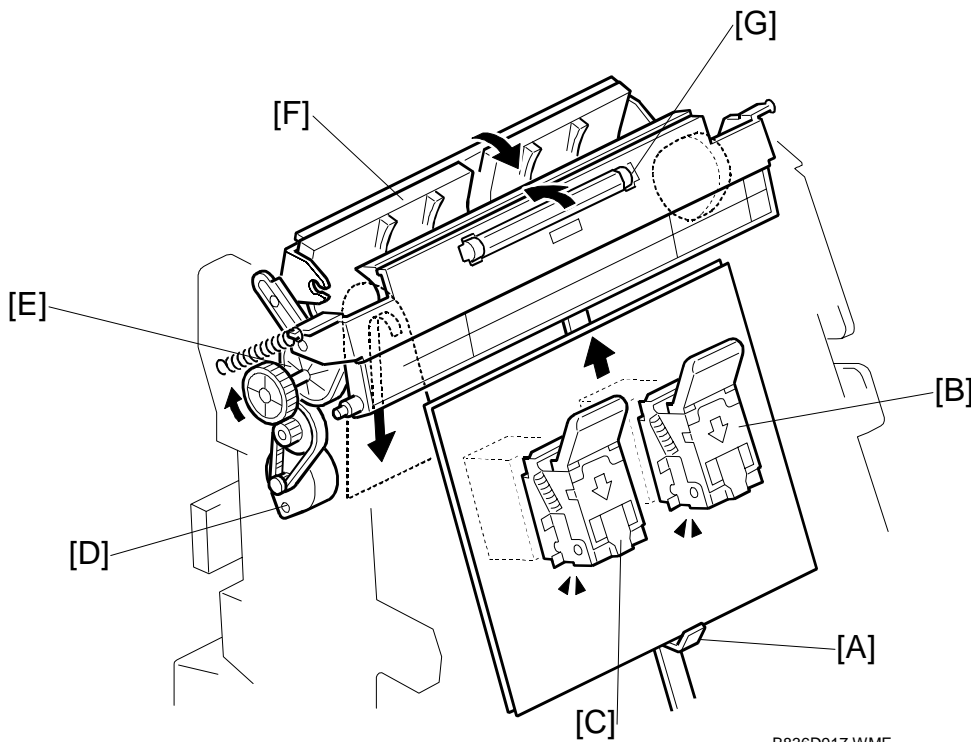
With the feed of the stack halted, the fold plate [1] retracts. The fold plate HP sensor (not shown) detects the fold plate and stops it at its home position.

**14**

The fold rollers [2] and fold unit exit rollers [3] begin to rotate together and feed out the folded booklet to the booklet output tray.

**15**

Once the trailing edge of the stack passes the fold unit exit sensor [4], the clamp rollers [5] close to be ready to feed the next stack. The fold unit bottom fence [6] descends. The bottom fence HP sensor [7] stops the bottom fence when it detects the actuator on the bottom fence.

**Booklet Stapling and Folding Mechanisms**

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**Booklet Stapler**

[A]: Feed Out Belt Pawl. Raises the stack to stapling position.

[B]: Booklet Stapler – Rear

[C]: Booklet Stapler – Front

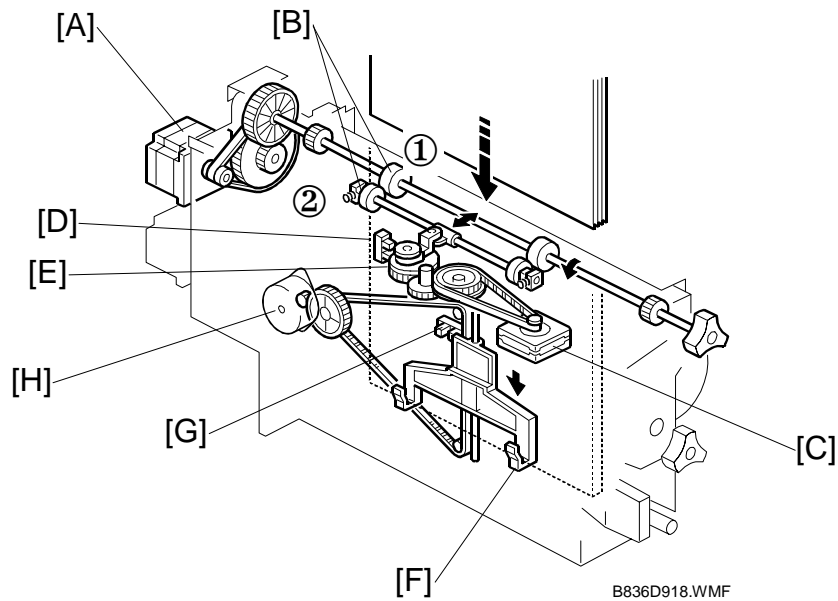
**Stack Junction Gate**

[D]: Stack Junction Gate Motor. Drives a timing belt and stack junction gate cam.

[E]: Stack Junction Gate Cam. Opens and closes the stack junction gate.

[F]: Stack Junction Gate. The stack junction gate motor and stack junction gate cam close the stack junction gate. The feed out belt pawl raises the stapled stack and sends it over the top and down to the fold unit.

[G]: Leading Edge Pressure Roller. Presses down on the leading edge of the stack after booklet stapling.



### Clamp Roller

[A]: Fold Roller Motor. Drives the stationary clamp drive roller ① as well as the fold rollers (see next page).

[B]: Clamp Rollers.

① Clamp Roller – Drive. Rotated by the fold roller motor, this stationary roller feeds the stack down with the retracting roller closed.

② Clamp Roller – Retracting. Opened and closed by the retraction motor [C].

[C]: Clamp Roller Retraction Motor. Operates the clamp roller cam that retracts the retracting clamp roller. The clamp rollers feed the stack to within 3 mm of the bottom fence when closed and then open to drop the stack onto the bottom fence.

[D]: Clamp Roller HP Sensor. Controls the rotation of the clamp roller retraction motor and cam that open and close the retracting clamp roller.

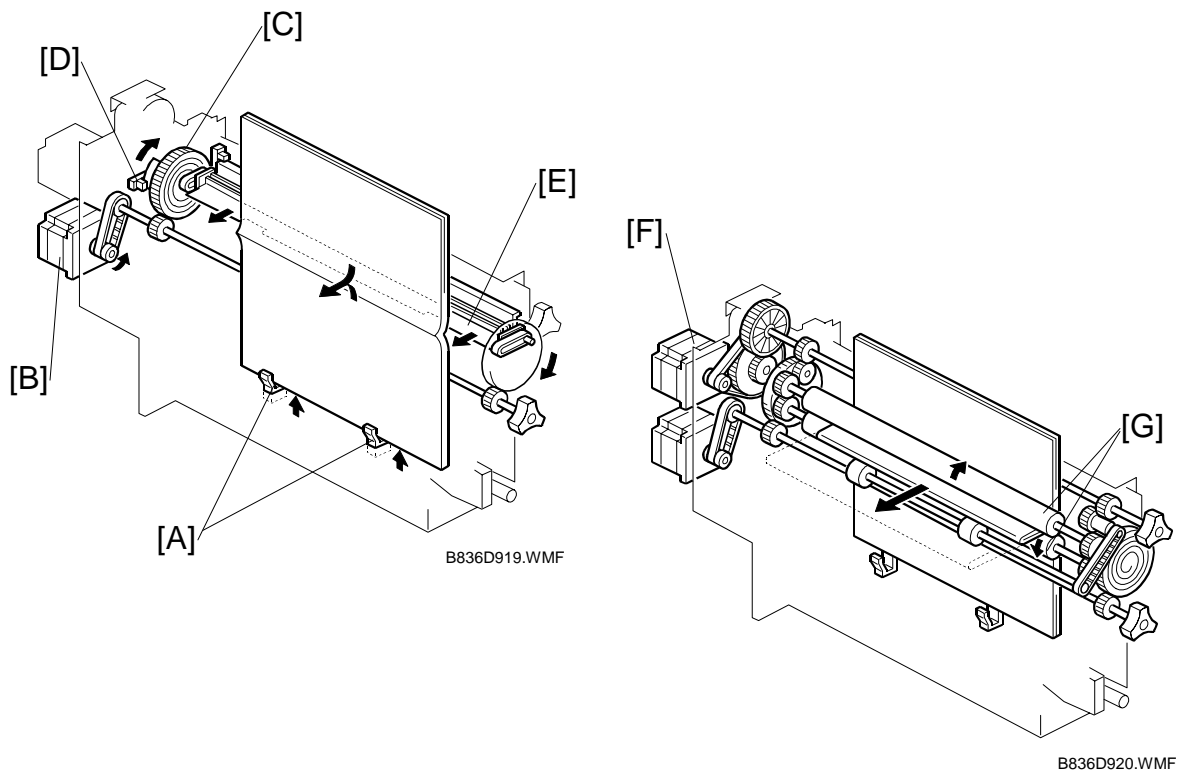
[E]: Clamp Roller Cam. Forces open the spring loaded retracting clamp roller.

### Bottom Fence

[F]: Bottom Fence. Raises the booklet stapled stack to the fold position.

[G]: Bottom Fence HP Sensor. Detects the actuator on the bottom fence and stops it at the home position after folding.

[H]: Bottom Fence Lift Motor. Raises the bottom fence and stapled stack to the fold position prescribed for the paper size.



### Fold Plate

- [A]: Bottom Fence Stack Stoppers. Catches the stack after it is released by the clamp rollers.
- [B]: Fold Plate Motor. Drives the timing belt and gears that move the fold plate.
- [C]: Fold Plate Cam. Controls the movement of the fold plate to the left (into the nip of the fold rollers) and right (toward the fold plate home position).
- [D]: Fold Plate HP Sensor. Controls operation of the fold plate motor.
- [E]: Fold Plate. Moves left and pushes the stack into the nip of the fold rollers and then moves right to retract.

### Fold Rollers

- [F]: Fold Roller Motor. Drives forward to feed out the stack at the fold and then reverses to feed the fold in to sharpen the crease, and then drives forward again to feed out the folded stack. This reverse/forward cycle is done once.

**NOTE:** This cycle can be repeated by changing the setting of **SP6203**.

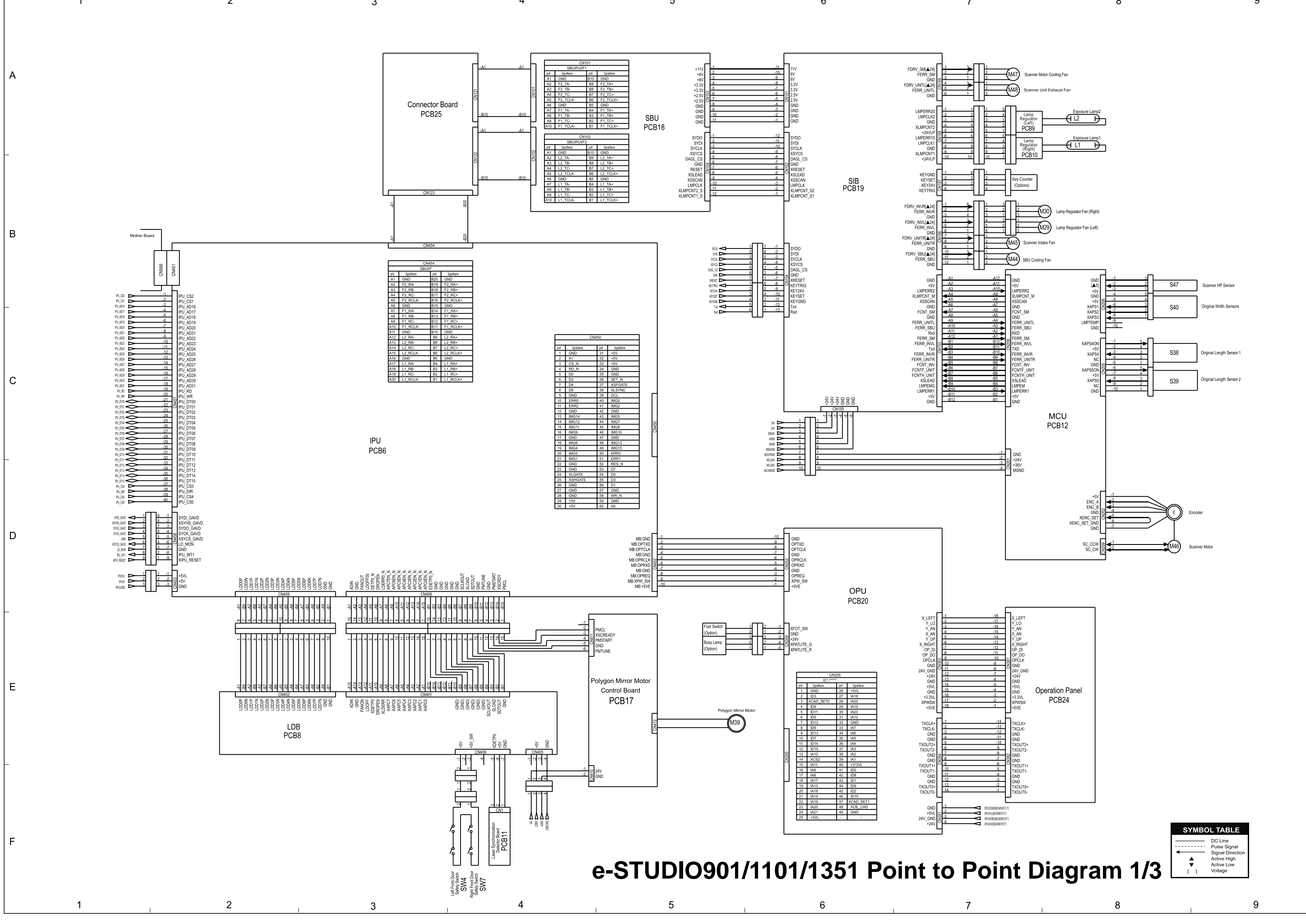
- [G]: Fold Rollers. Driven by the fold roller motor, this roller pair feeds out the stack at its fold, reverses to feed in the stack to, and then feeds forward again (assisted by the fold unit exit rollers – not shown) to feed out the stack to the booklet output tray.



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## APPENDIX

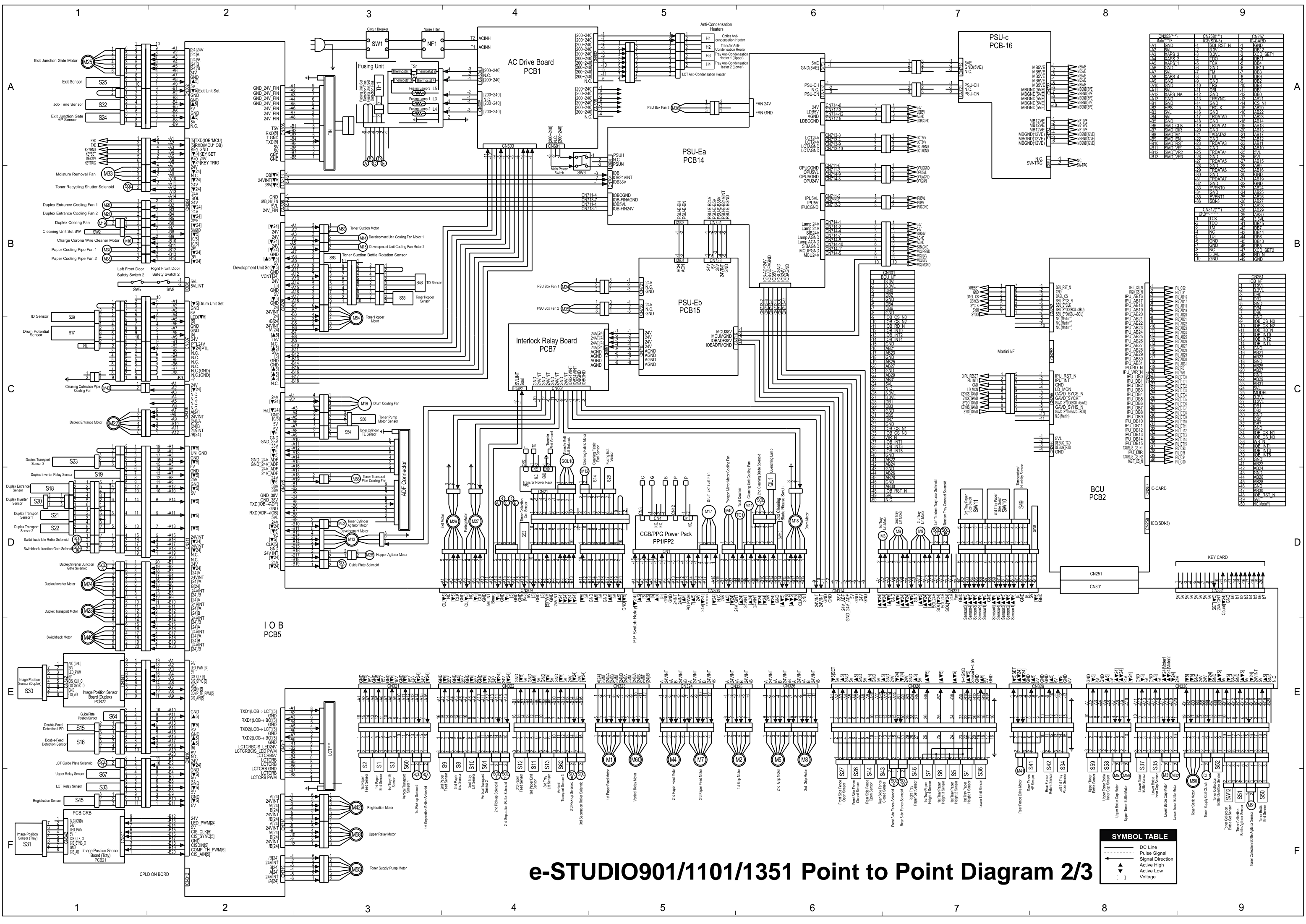
- e-STUDIO901/1101/1351 Point to Point Diagram (1/3)
- e-STUDIO901/1101/1351 Point to Point Diagram (2/3)
- e-STUDIO901/1101/1351 Point to Point Diagram (3/3)
- e-STUDIO901/1101/1351 ERECTRICAL COMPONENT LAYOUT (1/3)
- e-STUDIO901/1101/1351 ERECTRICAL COMPONENT LAYOUT (2/3)
- e-STUDIO901/1101/1351 ERECTRICAL COMPONENT LAYOUT (3/3)
- ADF Point to Point Diagram
- ADF ELECTRICAL COMPONENT LAYOUT
- B830 Point to Point Diagram (1/4)
- B830 Point to Point Diagram (2/4)
- B830 Point to Point Diagram (3/4)
- B830 Point to Point Diagram (4/4)
- B830 ELECTRICAL COMPONENT LAYOUT
- B832/B834 Point to Point Diagram
- B832 ELECTRICAL COMPONENT LAYOUT
- B834 ELECTRICAL COMPONENT LAYOUT
- B833 Point to Point Diagram
- B833 ELECTRICAL COMPONENT LAYOUT
- B835 Point to Point Diagram
- B835 ELECTRICAL COMPONENT LAYOUT
- B836 Point to Point Diagram (1/2)
- B836 Point to Point Diagram (2/2)
- B836 ELECTRICAL COMPONENT LAYOUT



# e-STUDIO901/1101/1351 Point to Point Diagram 1/3

SYMBOL TABLE	
	DC Line
	Pulse Signal
	Signal Direction
	Active High
	Active Low
	Voltage



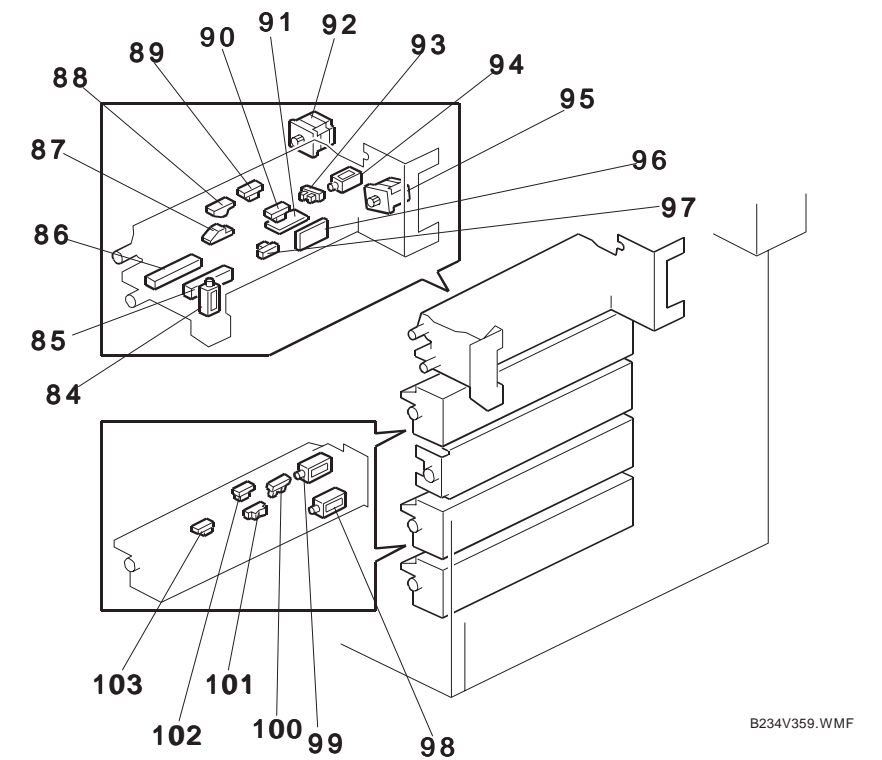
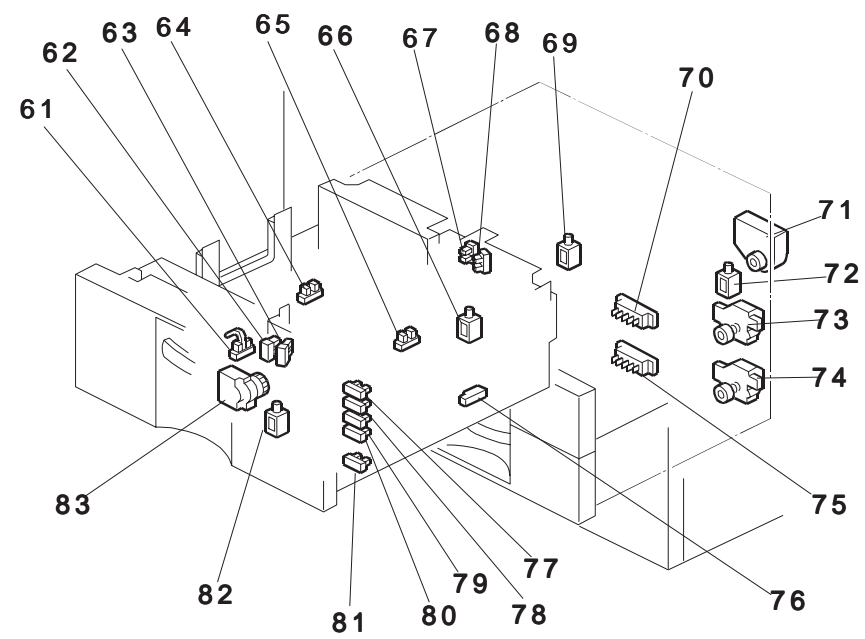
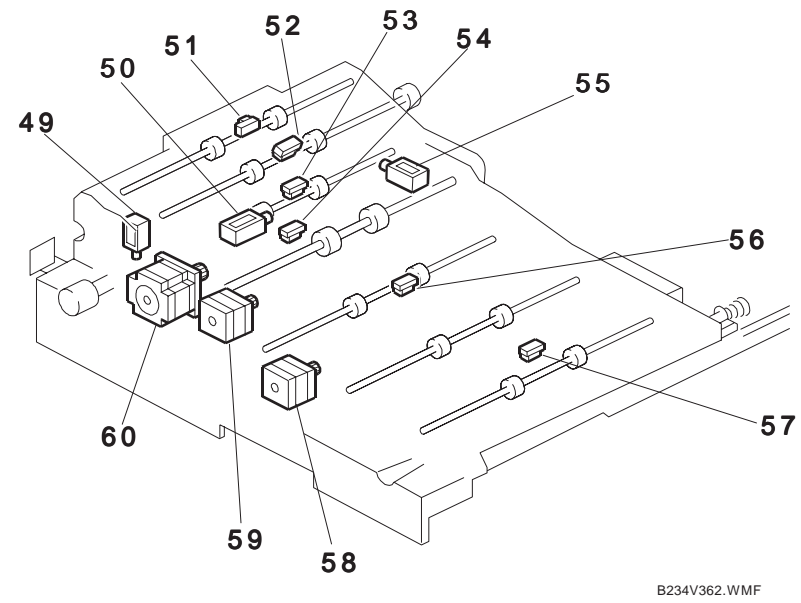
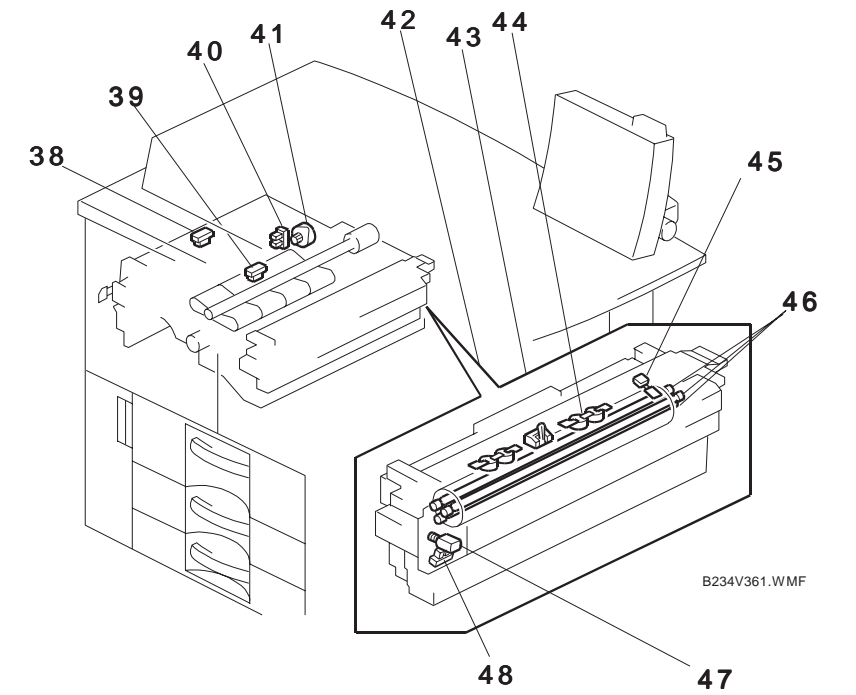
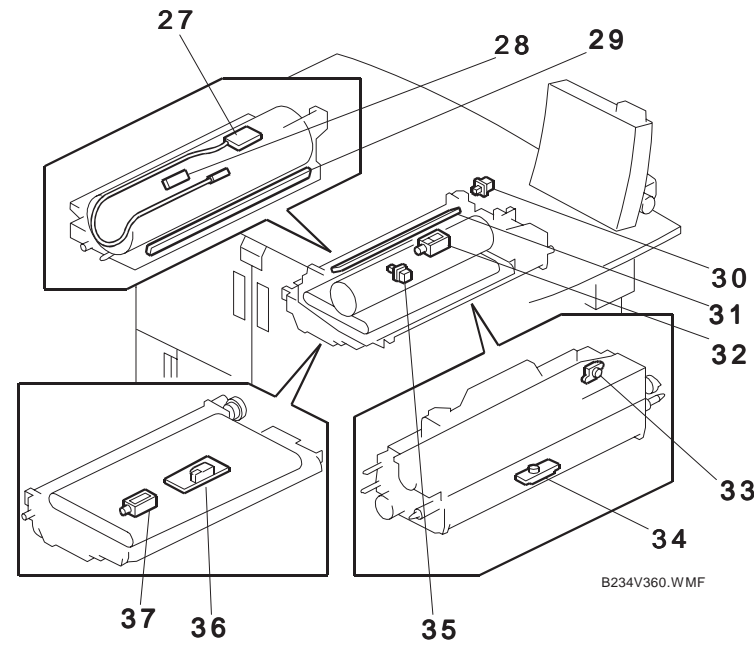
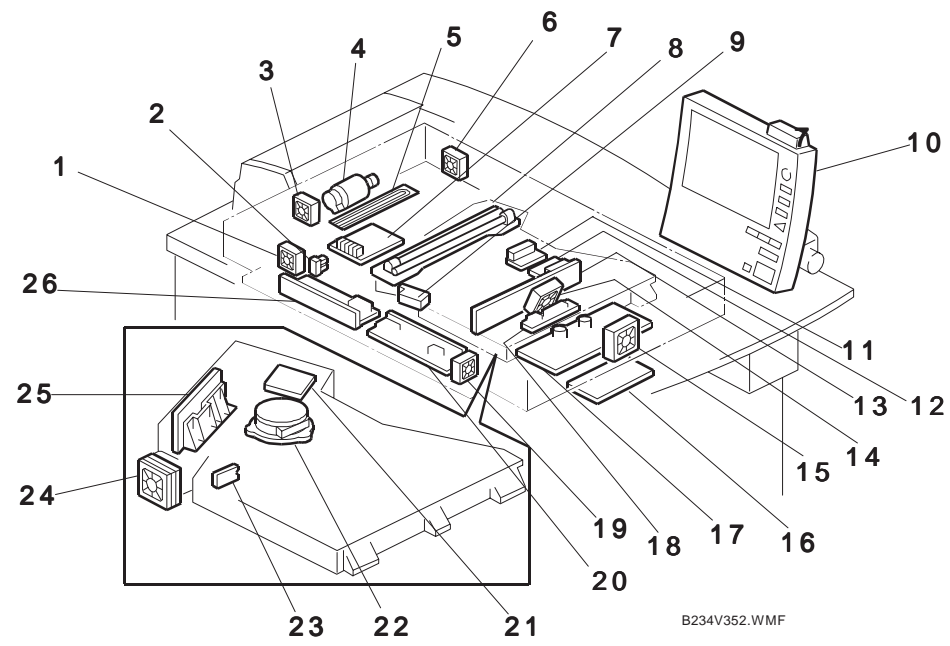


# e-STUDIO901/1101/1351 Point to Point Diagram 2/3

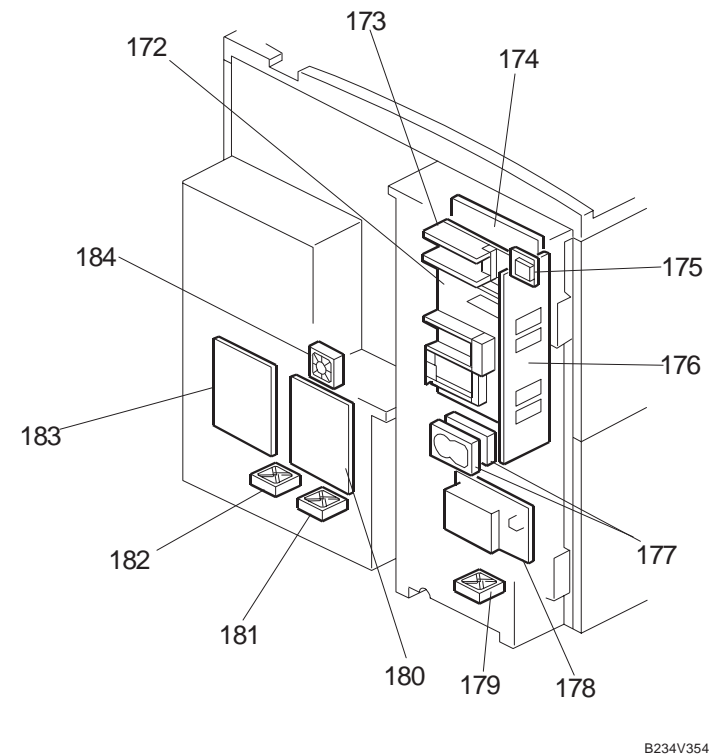
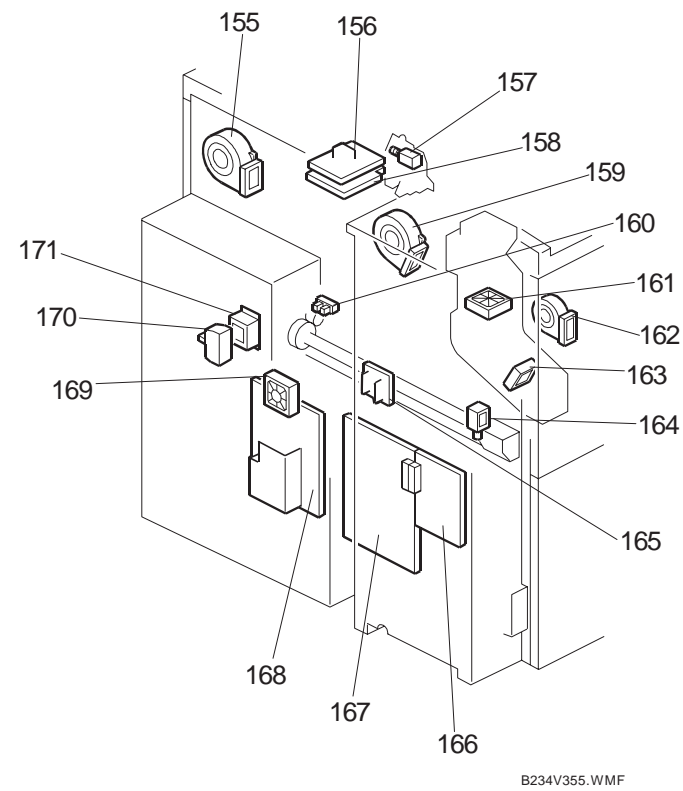
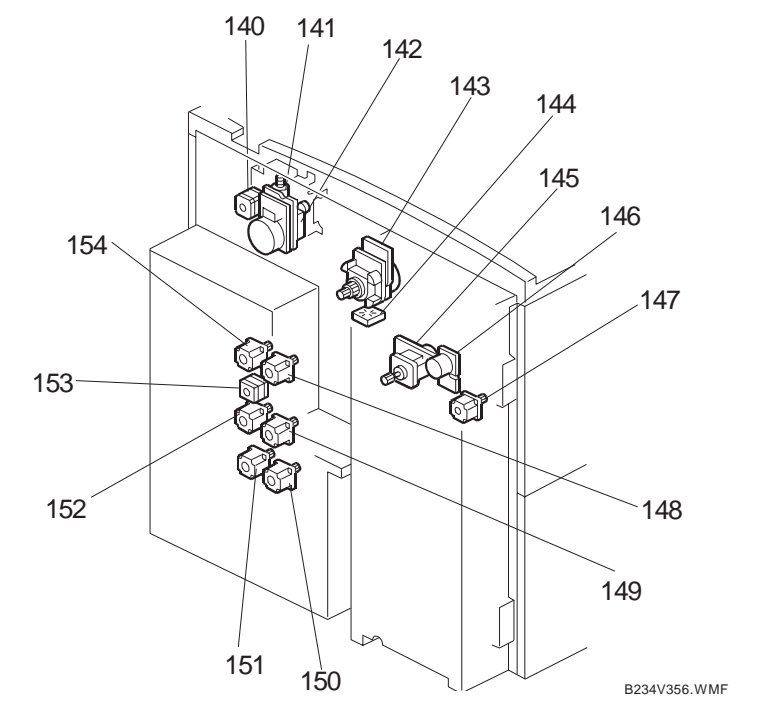
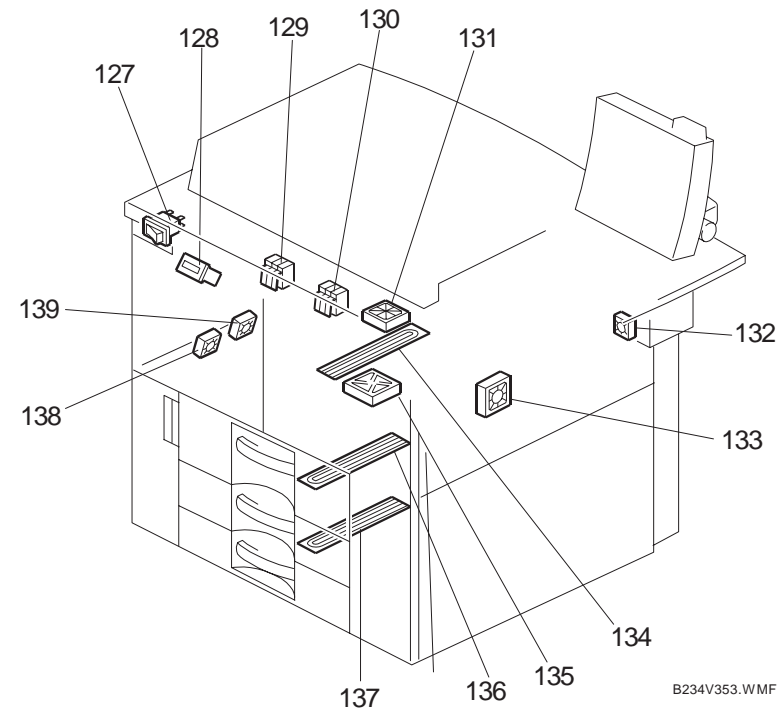
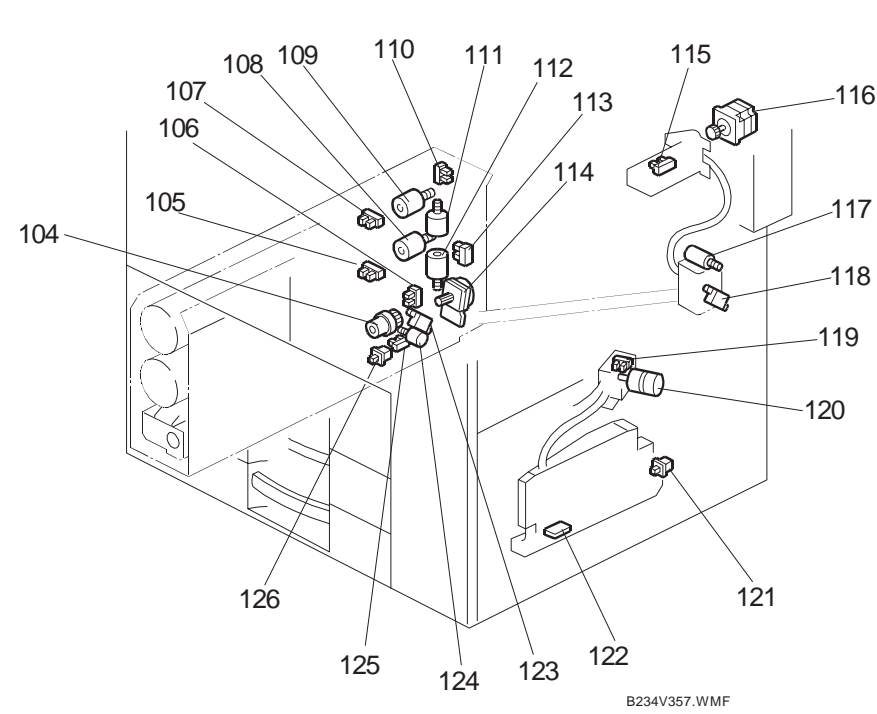




# e-STUDIO901/1101/1351 ELECTRICAL COMPONENT LAYOUT (1/3)



# e-STUDIO901/1101/1351 ELECTRICAL COMPONENT LAYOUT (2/3)



# e-STUDIO901/1101/1351 ELECTRICAL COMPONENT LAYOUT (3/3)

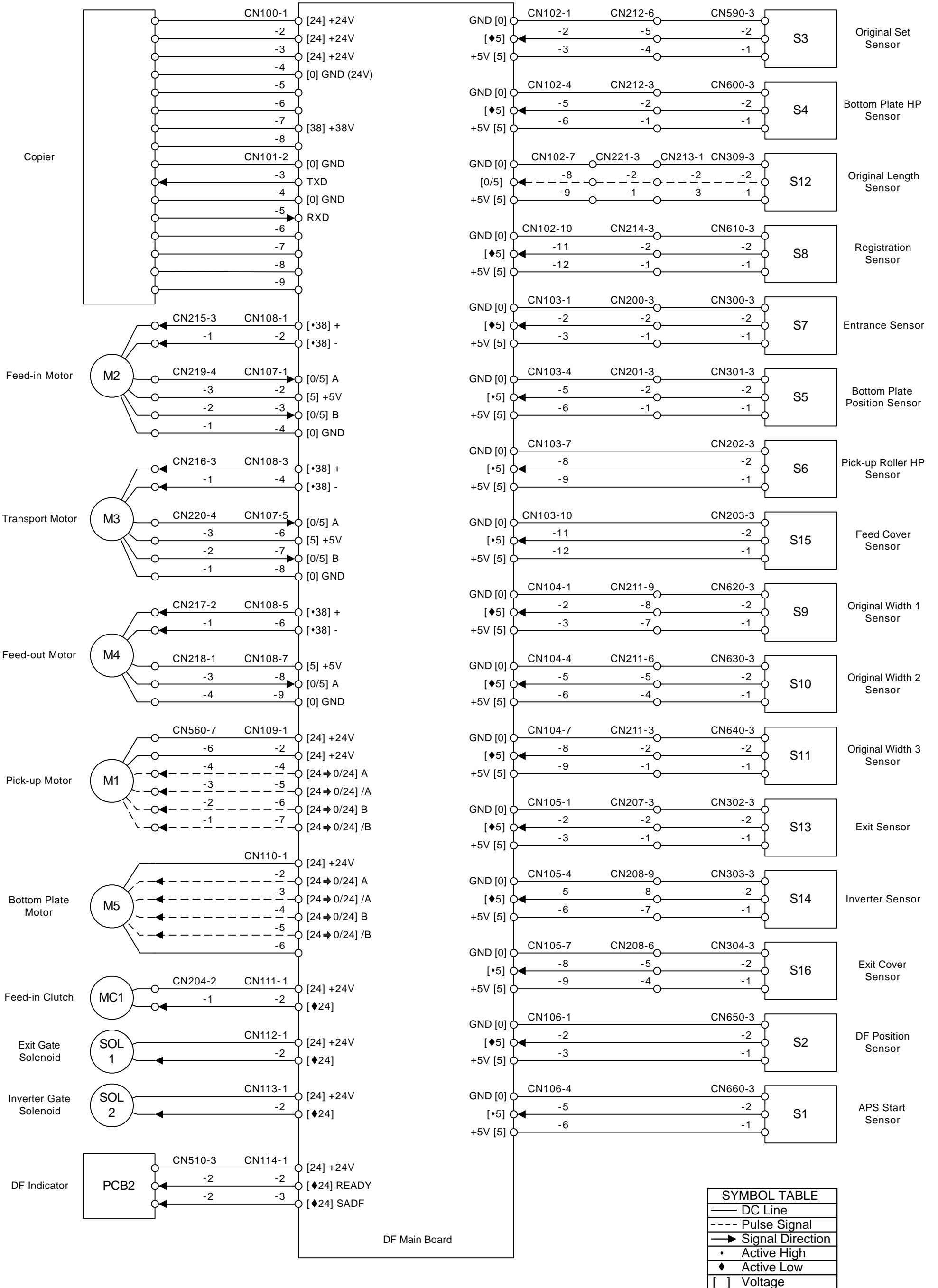
Symbol	Index No.	Name	P to P
<b>Clutches</b>			
CL1	104	Toner Supply Coil Clutch	2-F9
<b>Heaters</b>			
H1	5	Optics Anti-condensation Heater	2-A5
H2	134	Transfer Anti-Condensation eater	2-A5
H3	136	Tray Anti-Condensation Heater 1 (Upper)	2-A5
H4	137	Tray Anti-Condensation Heater 2 (Lower)	2-A5
<b>Lamps</b>			
L1	8	Exposure Lamp 1	1-A8
L2	8	Exposure Lamp 2	1-A8
L3	46	Fusing Lamp 1	2-A3
L4	46	Fusing Lamp 2	2-A3
L5	46	Fusing Lamp 3	2-A3
L6	29	PTL	2-C1
QL1	31	Quenching Lamp	2-D6
<b>Motors</b>			
M1	148	1st Paper Feed Motor	2-E5
M2	154	1st Grip Motor	2-E6
M3	71	1st Tray Lift Motor	2-D7
M4	149	2nd Paper Feed Motor	2-E5
M5	152	2nd Grip Motor	2-E6
M6	73	2nd Tray Lift Motor	2-D7
M7	150	3rd Paper Feed Motor	2-E5
M8	151	3rd Grip Motor	2-E6
M9	74	3rd Tray Lift Motor	2-D7
M10	157	Charge Corona Wire Cleaner Motor	2-B1
M11	131	Cleaning Unit Cooling Fan	2-D6
M12	47	Cleaning Fabric Motor	2-D4
M13	142	Development Motor	2-D3
M14	132	Development Unit Cooling Fan Motor 1	2-B3
M15	133	Development Unit Cooling Fan Motor 2	2-B3
M16	155	Drum Cooling Fan	2-C3
M17	159	Drum Exhaust Fan	2-D5
M18	143	Drum Motor	2-D6
M19	135	Duplex Cooling Fan	2-B1
M20	138	Duplex Entrance Cooling Fan 1	2-B1
M21	139	Duplex Entrance Cooling Fan 2	2-B1
M22	147	Duplex Entrance Motor	2-C1
M23	58	Duplex Transport Motor	2-D1
M24	60	Duplex Inverter Motor	2-D1
M25	41	Exit Junction Gate Motor	2-A1
M26	146	Exit Motor	2-D4
M27	145	Fusing Motor	2-D4
M28	141	Hopper Agitator Motor	2-D3
M29	1	Lamp Regulator Fan (Left)	1-B8
M30	19	Lamp Regulator Fan (Right)	1-B8
M31	108	Lower Bottle Cap Motor	2-F8
M32	112	Lower Toner Bottle Motor	2-F8
M33	162	Moisture Removal Fan	2-B1
M34	182	PSU Box Fan 1	2-B4
M35	181	PSU Box Fan 2	2-B4
M36	184	PSU Box Fan 3	2-A5
M37	161	Paper Cooling Pipe Fan 1	2-B1
M38	163	Paper Cooling Pipe Fan 2	2-B1

Symbol	Index No.	Name	P to P
M39	22	Polygon Mirror Motor	1-E5
M40	24	Polygon Mirror Motor Cooling Fan	2-D5
M41	83	Rear Fence Drive Motor	2-F7
M42	92	Registration Motor	2-F3
M43	144	Cleaning Collection Pipe Cooling Fan	2-C1
M44	14	SBU Cooling Fan	1-B7
M45	15	Scanner Intake Fan	1-B7
M46	4	Scanner Motor	1-D8
M47	3	Scanner Motor Cooling Fan	1-A7
M48	6	Scanner Unit Exhaust Fan	1-A7
M49	59	Switchback Motor	2-E1
M50	114	Toner Bank Motor	2-F9
M51	124	Toner Collection Bottle Agitator Motor	2-F9
M52	117	Toner Cylinder Agitator Motor	2-D3
M53	120	Toner Suction Motor	2-B3
M54	140	Toner Supply Motor	2-C3
M55	116	Toner Supply Pump Motor	2-F3
M56	169	Toner Transport Pipe Cooling Fan	2-D3
M57	109	Upper Bottle Cap Motor	2-F8
M58	95	Upper Relay Motor	2-F3
M59	111	Upper Toner Bottle Motor	2-F8
M60	153	Vertical Relay Motor	2-E5
M61	179	Controller Box Cooling Fan	3-E6
<b>PCBs</b>			
PCB1	168	AC Drive Board	2-A4
PCB2	166	BCU	2-D8
PCB3	173	Interface Board	3-C7
PCB4	172	Controller Board	3-C4
PCB5	167	IOB	2-E2
PCB6	174	IPU	1-C3
PCB7	165	Interlock Relay Board	2-C4
PCB8	25	LDB	1-E2
PCB9	26	Lamp Regulator (Left)	1-A7
PCB10	20	Lamp Regulator (Right)	1-A7
PCB11	23	Laser Synchronization Detector Board	1-F4
PCB12	7	MCU	1-C8
PCB13	176	Mother Board	3-D5
PCB14	183	PSU-Ea	2-B5
PCB15	180	PSU-Eb	2-C5
PCB16	178	PSU-c	2-A7
PCB17	21	Polygon Mirror Motor Control Board	1-E5
PCB18	13	SBU	1-A5
PCB19	17	SIB	1-B6
PCB20	16	OPU	1-D6
PCB21	96	Image Position Sensor Board (Tray)	2-F1
PCB22	91	Image Position Sensor Board (Duplex)	2-E1
PCB23	175	SD Slot Board (Service)	3-D7
PCB24	10	Operation Panel	1-E8
PCB25	18	Connector Board	1-A3
PCB26		Not in the machine.	
<b>Power Packs</b>			
PP1	158	CGB Power Pack	2-D5
PP2	156	PPG Power Pack	2-D5
PP3	36	Transfer Power Pack	2-D4

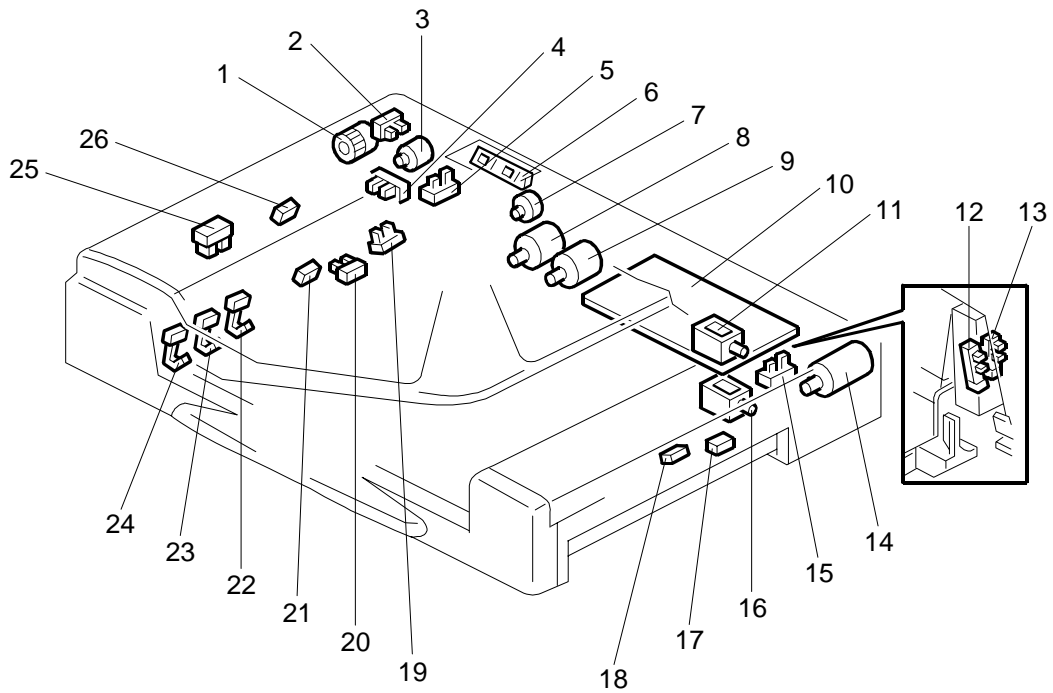
Symbol	Index No.	Name	P to P
<b>Sensors</b>			
S1	102	1st Paper End Sensor	2-E3
S2	103	1st Paper Feed Sensor	2-E3
S3	100	1st Tray Lift Sensor	2-E3
S4	77	1st Tray Paper Height 1 Sensor	2-F7
S5	78	1st Tray Paper Height 2 Sensor	2-F7
S6	79	1st Tray Paper Height 3 Sensor	2-F7
S7	80	1st Tray Paper Height 4 Sensor	2-F7
S8	102	2nd Paper End Sensor	2-E4
S9	103	2nd Paper Feed Sensor	2-E4
S10	100	2nd Tray Lift Sensor	2-E4
S11	102	3rd Paper End Sensor	2-E4
S12	103	3rd Paper Feed Sensor	2-E4
S13	100	3rd Tray Lift Sensor	2-E4
S14	48	Cleaning Fabric End Sensor	2-D5
S15	87	Double-Feed Detection LED	2-E1
S16	88	Double-Feed Detection Sensor	2-E1
S17	27	Drum Potential Sensor	2-C1
S18	52	Duplex Entrance Sensor	2-D1
S19	51	Duplex Inverter Relay Sensor	2-D1
S20	53	Duplex Inverter Sensor	2-D1
S21	54	Duplex Transport Sensor 1	2-D1
S22	56	Duplex Transport Sensor 2	2-D1
S23	57	Duplex Transport Sensor 3	2-C1
S24	40	Exit Junction Gate HP Sensor	2-A1
S25	38	Exit Sensor	2-A1
S26	62	Front Side Fence Closed Sensor	2-F6
S27	63	Front Side Fence Open Sensor	2-F6
S28	43	Fusing Exit Sensor	2-D5
S29	28	ID Sensor	2-C1
S30	86	Image Position Sensor (Duplex)	2-E1
S31	85	Image Position Sensor (Tray)	2-F1
S32	39	Job Time Sensor	2-A1
S33	90	LCT Relay Sensor	2-F1
S34	61	Left 1st Tray Paper Sensor	2-E8
S35	113	Lower Bottle Inner Cap Sensor	2-E8
S36	81	Lower Limit Sensor	2-F7
S37	105	Lower Toner Bottle Sensor	2-E8
S38	11	Original Length Sensor 1	1-C8
S39	12	Original Length Sensor 2	1-C8
S40	9	Original Width Sensors	1-C8
S41	64	Rear Fence HP Sensor	2-E8
S42	65	Rear Fence Return Sensor	2-E8
S43	67	Rear Side Fence Closed Sensor	2-F6
S44	68	Rear Side Fence Open Sensor	2-F6
S45	89	Registration Sensor	2-F1
S46	76	Right Tray Paper Set Sensor	2-F7
S47	2	Scanner HP Sensor	1-B8
S48	34	TD Sensor	2-B3
S49	122	Temperature/Humidity Sensor	2-D7
S50	123	Toner Bottle End Sensor	2-F9
S51	125	Toner Collection Bottle Agitator Sensor	2-F9
S52	106	Toner Collection Bottle Overflow Sensor	2-E9
S53	160	Toner Collection Coil Sensor	2-D4

Symbol	Index No.	Name	P to P
S54	118	Toner Cylinder TE Sensor	2-C3
S55	33	Toner Hopper Sensor	2-B3
S56	115	Toner Pump Motor Sensor	2-C3
S57	97	Upper Relay Sensor	2-F1
S58	110	Upper Toner Bottle Inner Cap Sensor	2-E8
S59	107	Upper Toner Bottle Sensor	2-E8
S60	101	Vertical Transport Sensor 1	2-E3
S61	101	Vertical Transport Sensor 2	2-E4
S62	101	Vertical Transport Sensor 3	2-E4
S63	119	Toner Suction Bottle Rotation Sensor	2-B3
S64	93	Guide Plate Position Sensor	2-E1
<b>Solenoids</b>			
SOL1	99	1st Pick-up Solenoid	2-E3
SOL2	98	1st Separation Roller Solenoid	2-E3
SOL3	32	2nd Cleaning Blade Solenoid	2-D6
SOL4	99	2nd Pick-up Solenoid	2-E4
SOL5	98	2nd Separation Roller Solenoid	2-E4
SOL6	99	3rd Pick-up Solenoid	2-E4
SOL7	98	3rd Separation Roller Solenoid	2-E4
SOL8	49	Duplex/Inverter Junction Gate Solenoid	2-D1
SOL9	82	Front Side Fence Solenoid	2-F7
SOL10	94	Guide Plate Solenoid	2-D3
SOL11	84	LCT Guide Plate Solenoid	2-E1
SOL12	69	Left Tandem Tray Lock Solenoid	2-D7
SOL13	66	Rear Side Fence Solenoid	2-F7
SOL14	50	Switchback Idle Roller Solenoid	2-D1
SOL15	55	Switchback Junction Gate Solenoid	2-D1
SOL16	72	Tandem Tray Connect Solenoid	2-D7
SOL17	164	Toner Recycling Shutter Solenoid	2-B1
SOL18	37	Transfer Belt Lift Solenoid	2-C4
<b>Switches</b>			
SW1	170	Circuit Breaker	2-A3
SW2	30	Cleaning Unit Set SW	2-B1
SW3		Not in the machine.	2-A3
SW4	129	Left Front Door Safety Switch	1-F4
SW5	129	Left Front Door Safety Switch 2	2-B1
SW6	127	Main Power Switch	2-A4
SW7	130	Right Front Door Safety Switch	1-F4
SW8	130	Right Front Door Safety Switch 2	2-B2
SW9	121	Toner Suction Bottle Set Switch	2-D8
SW10	70	2nd Tray Paper Size Switches	2-D7
SW11	75	3rd Tray Paper Size Switches	2-D7
SW12	126	Toner Collection Bottle Set Switch	2-F9
SW13	35	2nd Cleaning Blade Release Switch	2-D6
<b>TC</b>			
TC1	128	Total Counter	2-D6
<b>TH</b>			
TH1	45	Thermistor	2-A3
<b>TS</b>			
TS1	42	Thermostat 1	2-A3
TS2	44	Thermostat 2	2-A3
<b>Other</b>			
HDD	177	HDD 1	3-E5
HDD	177	HDD 2	3-E6
NF1	171	Noise Filter	2-A3

# ADF Point to Point Diagram



# ADF ELECTRICAL COMPONENT LAYOUT

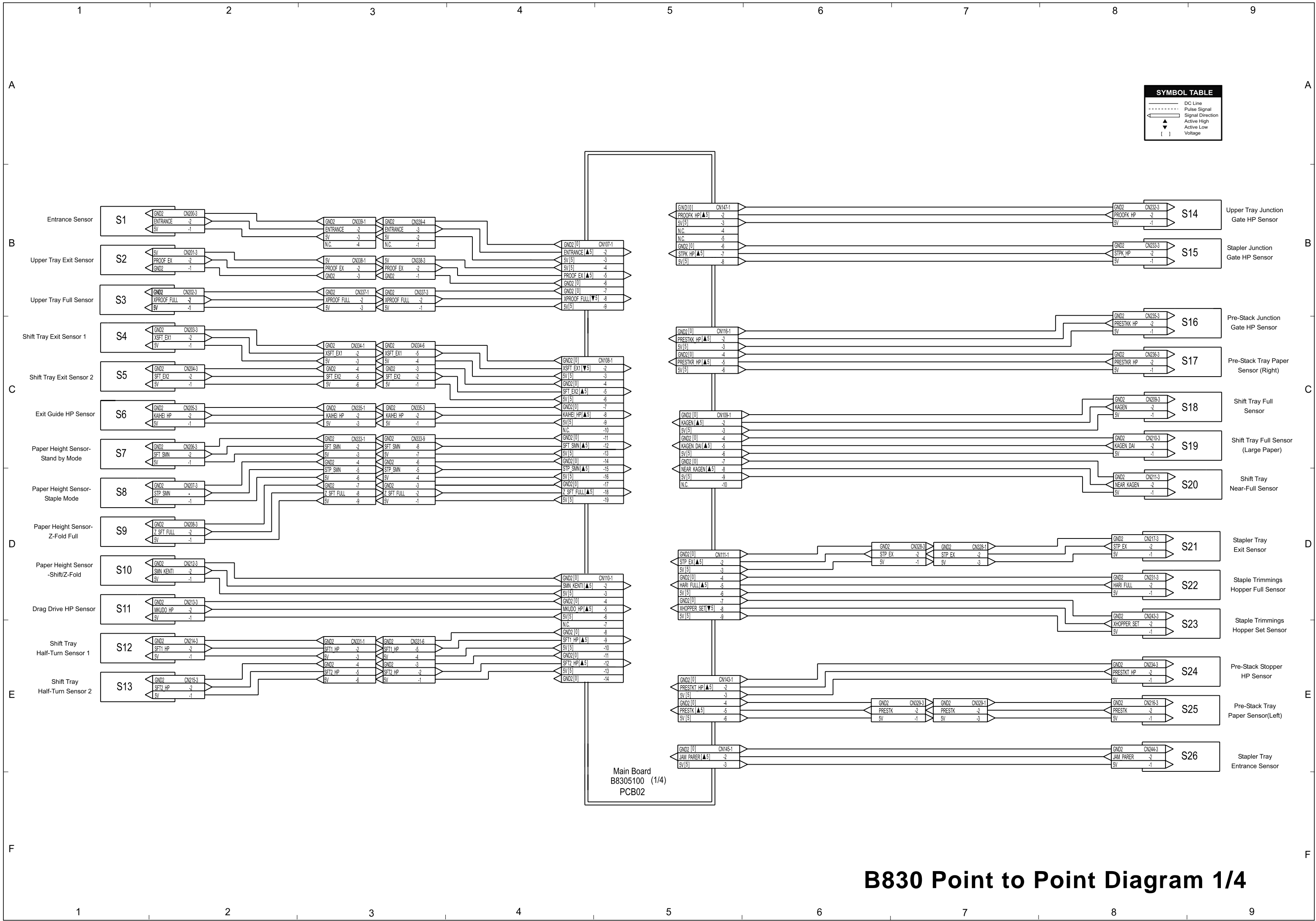


B301S108.WMF

Symbol	Index No.	Description	P to P
<b>Motors</b>			
M1	3	Pick-up	F1
M2	8	Feed-in	D1
M3	9	Transport	E1
M4	14	Feed-out	F1
M5	7	Bottom plate	G1
<b>Sensors</b>			
S1	12	APS Start	I6
S2	13	DF Position	H6
S3	19	Original Set	A6
S4	20	Bottom Plate HP	B6
S5	4	Bottom Plate Position	D6
S6	2	Pick-up Roller HP	D6
S7	26	Entrance	C7
S8	21	Registration	C6
S9	22	Original Width 1	E6
S10	23	Original Width 2	F6
S11	24	Original Width 3	F6
S12	25	Original Length	B6
S13	18	Exit	G6
S14	17	Inverter	G6
S15	5	Feed Cover	E6
S16	15	Exit Cover	H6
<b>Solenoids</b>			
SOL1	16	Exit Gate	H1
SOL2	11	Inverter Gate	I1

Symbol	Index No.	Description	P to P
<b>Magnetic Clutches</b>			
MC1	1	Feed-in	H1
<b>PCBs</b>			
PCB1	10	DF Main	J4
PCB2	6	DF Indicator	I1





**SYMBOL TABLE**

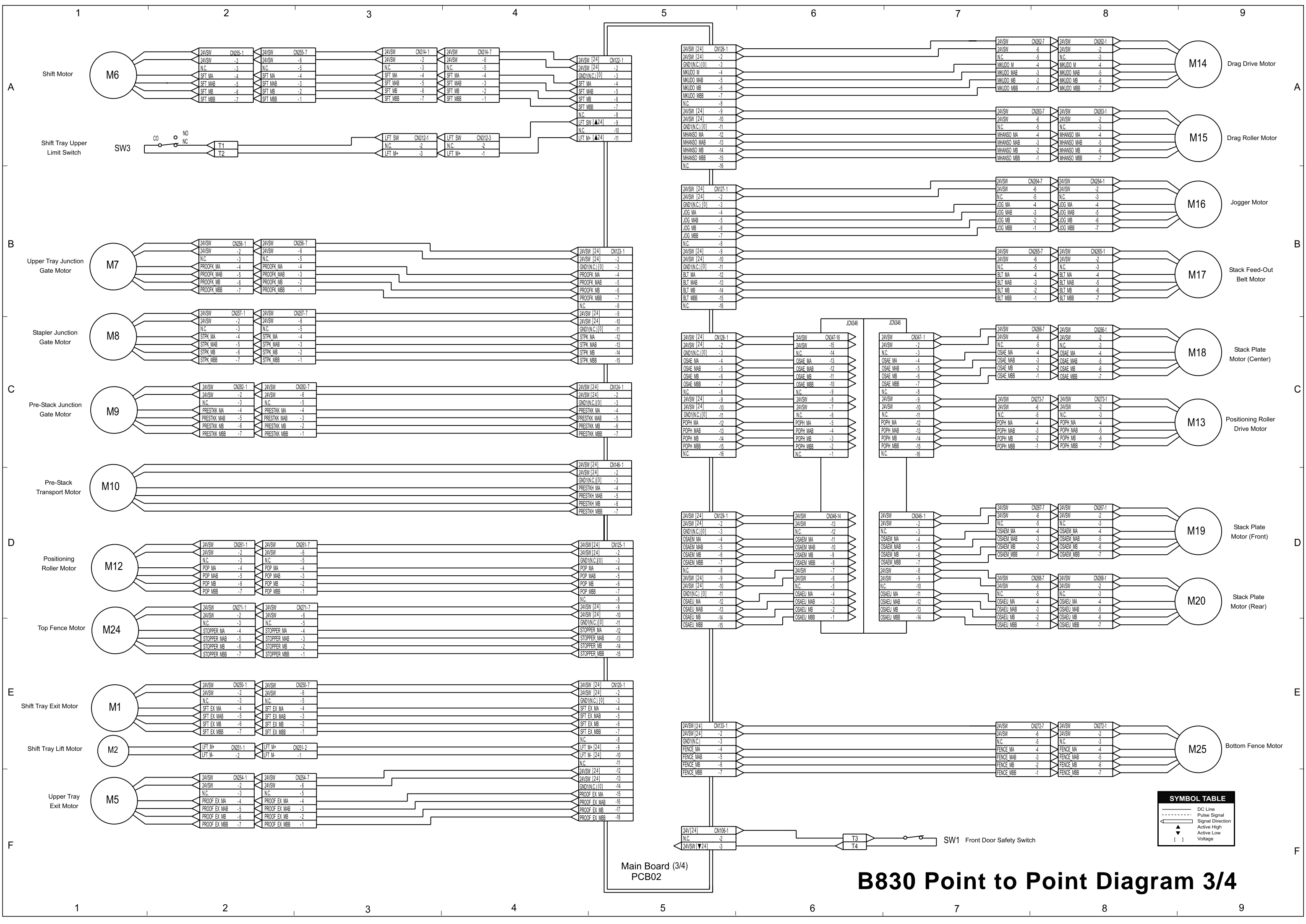
- DC Line
- Pulse Signal
- Signal Direction
- ▲ Active High
- ▼ Active Low
- [ ] Voltage

Main Board  
B8305100 (1/4)  
PCB02

# B830 Point to Point Diagram 1/4







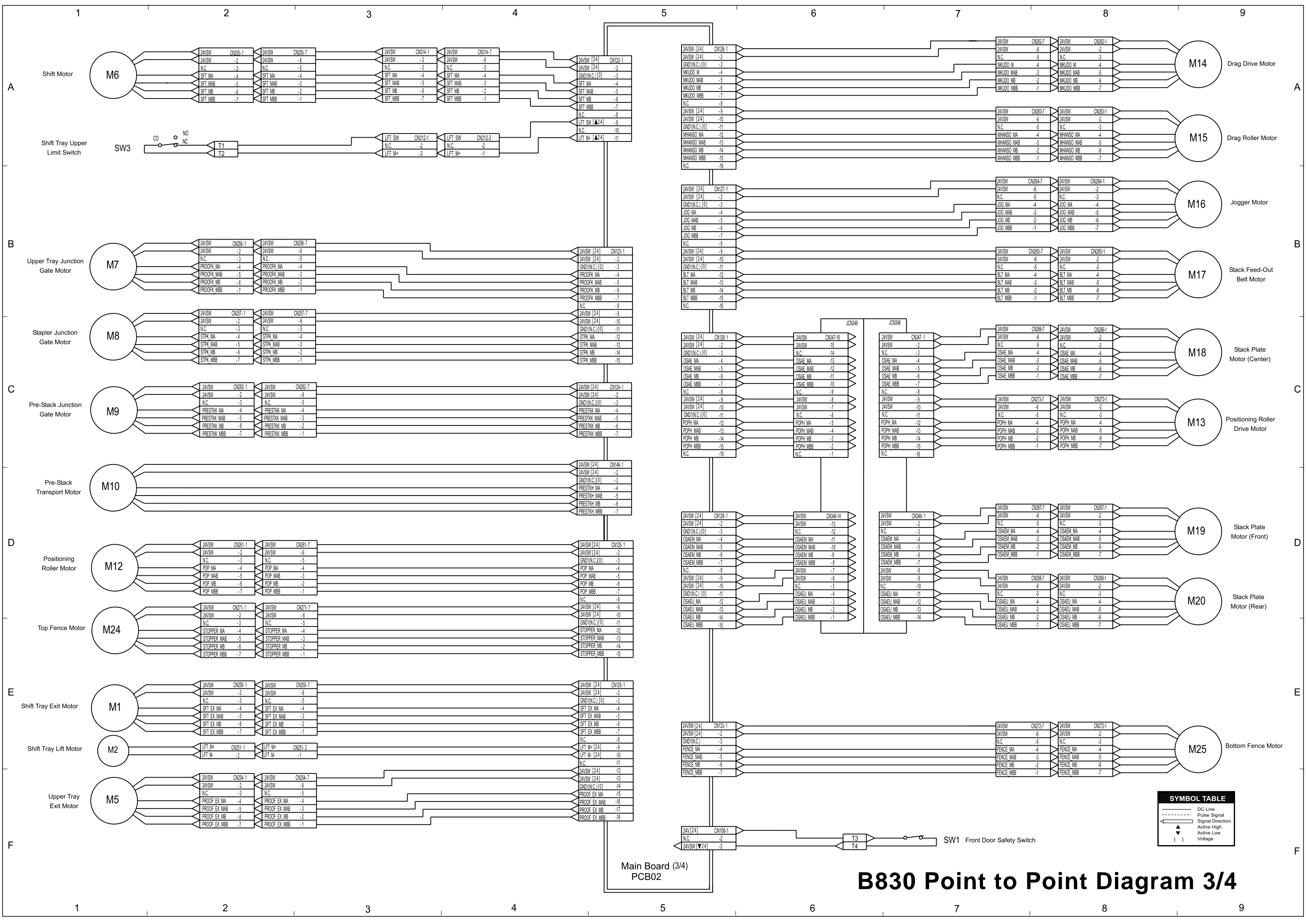
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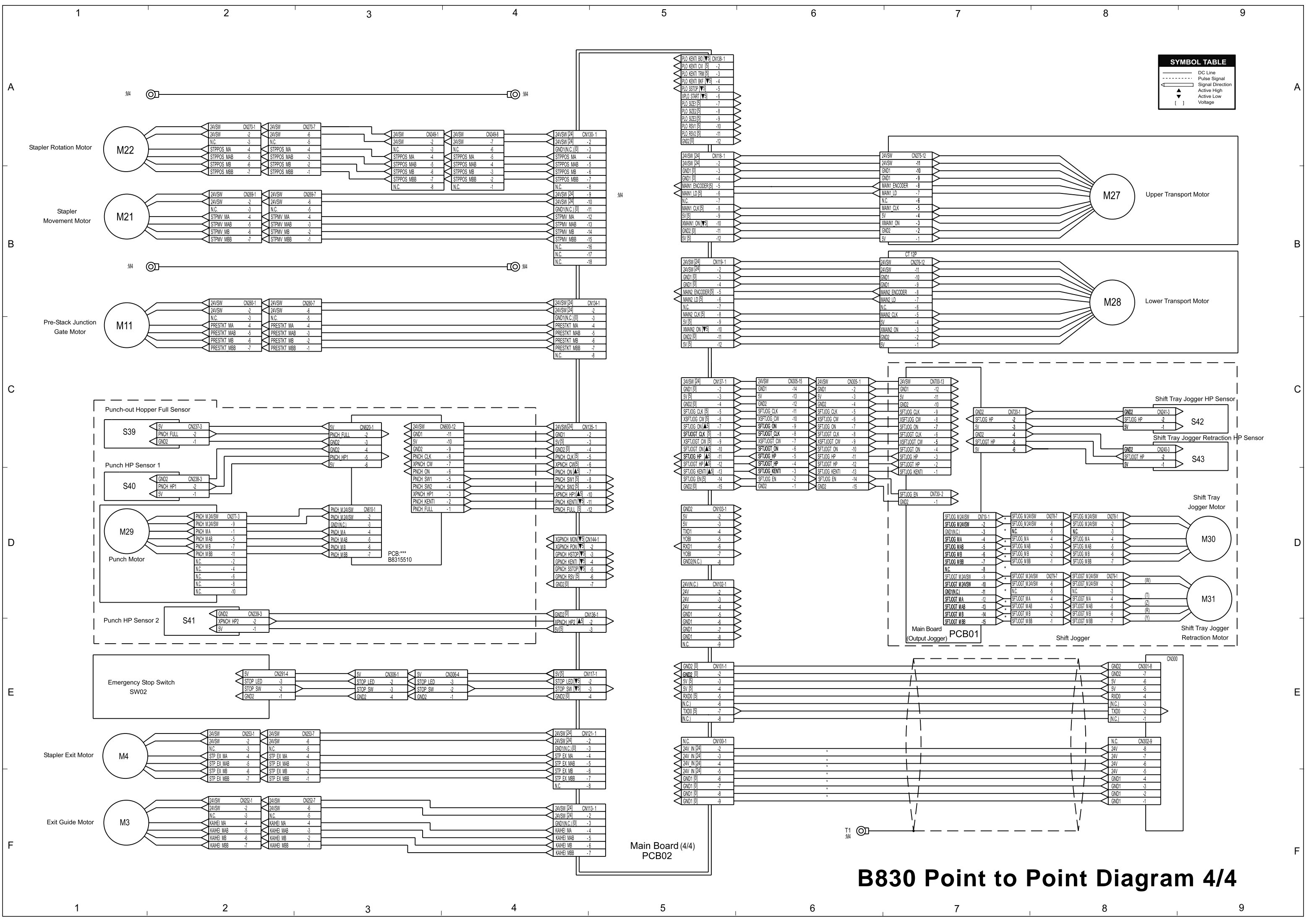
**SYMBOL TABLE**

- DC Line
- - - Pulse Signal
- Signal Direction
- ▲ Active High
- ▼ Active Low
- [ ] Voltage

Main Board (3/4)  
PCB02

SW1 Front Door Safety Switch



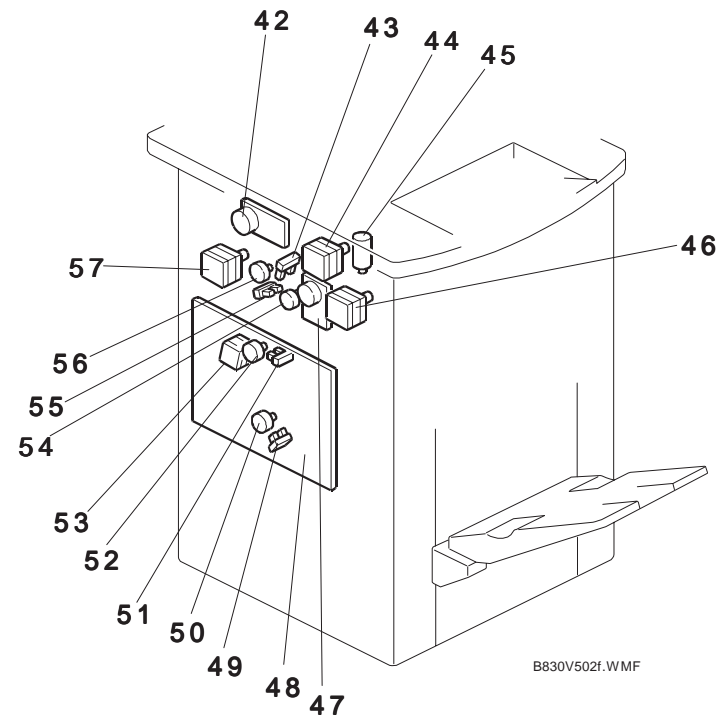
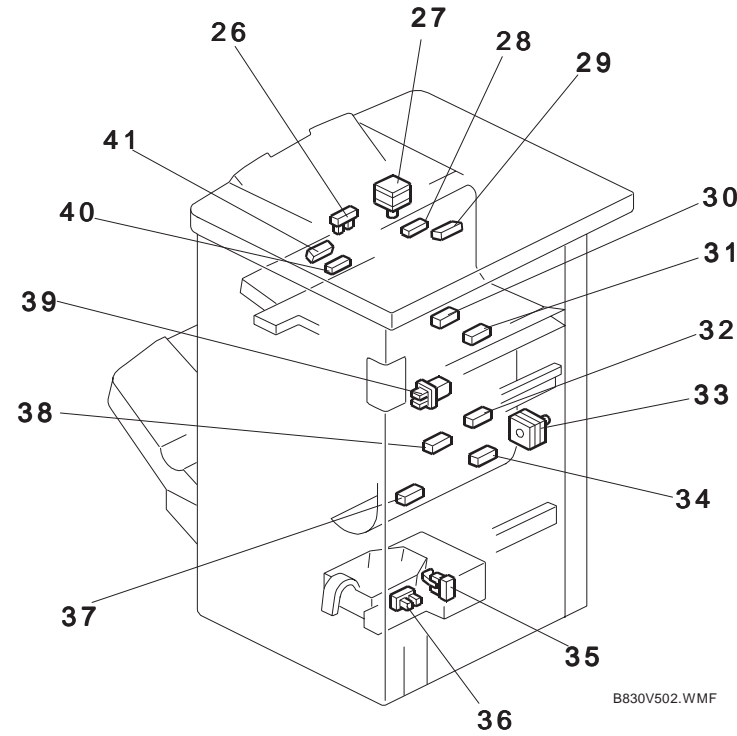
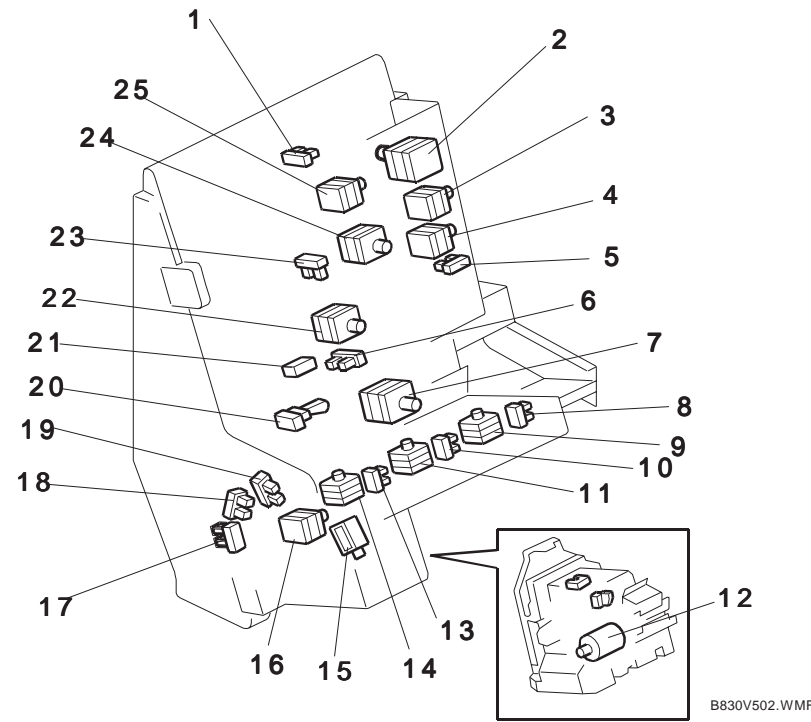


**SYMBOL TABLE**

- DC Line
- - - Pulse Signal
- Signal Direction
- ▲ Active High
- ▼ Active Low
- Voltage

# B830 Point to Point Diagram 4/4

# B830 ELECTRICAL COMPONENT LAYOUT

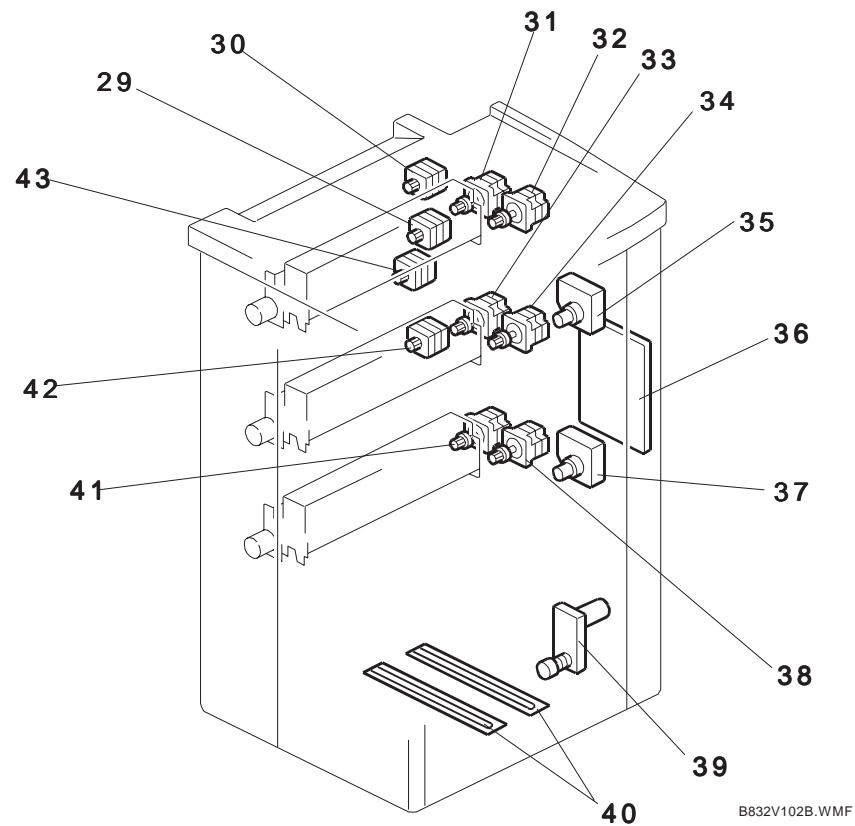
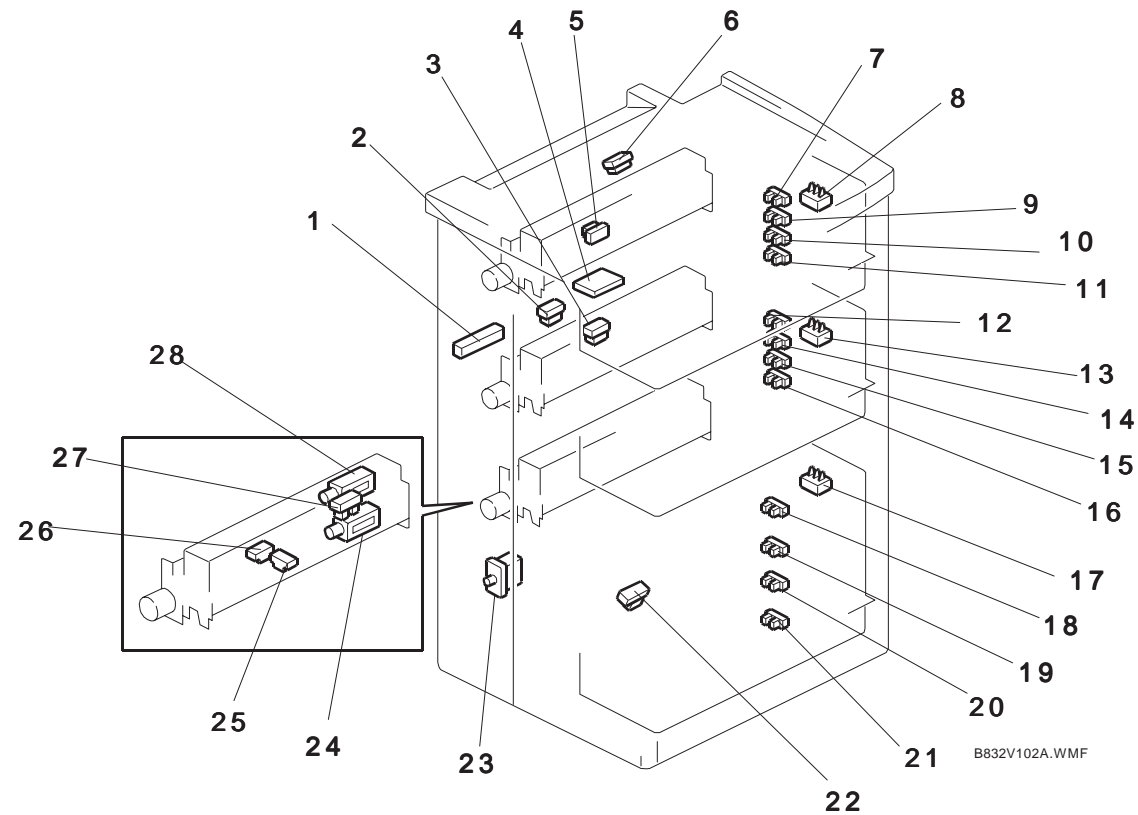


Symbol	Index No.	Description	P to P
<b>Motors</b>			
M1	46	Shift Tray Exit Motor	3-E1
M2	45	Shift Tray Lift Motor	3-E1
M3	27	Exit Guide Motor	4-F1
M4	33	Stapler Exit Motor	4-E1
M5	44	Upper Tray Exit Motor	3-F1
M6	67	Shift Motor	3-A1
M7	54	Upper Tray Junction Gate Motor	3-B1
M8	56	Stapler Junction Gate Motor	3-C1
M9	52	Pre-Stack Junction Gate Motor	3-C1
M10	53	Pre-Stack Transport Motor	3-D1
M11	50	Pre-Stack Stopper Motor	4-C1
M12	4	Positioning Roller Motor	3-D1
M13	3	Positioning Roller Drive Motor	3-C9
M14	71	Drag Drive Motor	3-A9
M15	72	Drag Roller Motor	3-A9
M16	24	Jogger Motor	3-B9
M17	25	Stack Feed-Out Belt Motor	3-B9
M18	11	Stack Plate Motor (Center)	3-C9
M19	14	Stack Plate Motor (Front)	3-D9
M20	9	Stack Plate Motor (Rear)	3-D9
M21	7	Stapler Movement Motor	4-B1
M22	16	Stapler Rotation Motor	4-A1
M23	12	Staple Hammer Motor	2-F1
M24	2	Top Fence Motor	3-E1
M25	22	Bottom Fence Motor	3-E9
M26	42	Upper Transport Motor	4-B8
M28	47	Lower Transport Motor	4-B8
M29	57	Punch Motor	4-D1
M30	58	Shift Tray Jogger Motor	4-D9
M31	74	Shift Tray Jogger Retraction Motor	4-D9
<b>PCB</b>			
PCB1	77	Main Board (Output Jogger)	4-E7
PCB2	48	Main Board	1-E5
<b>Sensors</b>			
S1	31	Entrance Sensor	1-B1
S2	29	Upper Tray Exit Sensor	1-B1
S3	28	Upper Tray Full Sensor	1-B1
S4	41	Shift Tray Exit Sensor 1	1-C1
S5	40	Shift Tray Exit Sensor 2	1-C1
S6	26	Exit Guide HP Sensor	1-C1
S7	60	Paper Height Sensor – Standby Mode	1-C1
S8	61	Paper Height Sensor – Staple Mode	1-D1
S9	62	Paper Height Sensor – Z-Fold Full	1-D1
S10	76	Paper Height Sensor – Shift/Z-Fold	1-D1
S11	64	Drag Drive HP Sensor	1-D1
S12	65	Shift Tray Half-Turn Sensor 1	1-E1
S13	66	Shift Tray Half-Turn Sensor 2	1-E1
S14	55	Upper Tray Junction Gate HP Sensor	1-B9
S15	43	Stapler Junction Gate HP Sensor	1-B9
S16	51	Pre-Stack Junction Gate HP Sensor	1-C9
S17	38	Pre-Stack Tray Paper Sensor (Right)	1-C9
S18	68	Shift Tray Full Sensor	1-C9
S19	70	Shift Tray Full Sensor (Large Paper)	1-C9
S20	69	Shift Tray Near-Full Sensor	1-D9
S21	37	Stapler Tray Exit Sensor	1-D9
S22	36	Staple Trimmings Hopper Full Sensor	1-D9
S23	35	Staple Trimmings Hopper Set Sensor	1-E9
S24	49	Pre-Stack Stopper HP Sensor	1-E9
S25	34	Pre-Stack Tray Paper Sensor (Left)	1-E9
S26	30	Stapler Tray Entrance Sensor	1-E9
S27	20	Stack Feed-Out Belt HP Sensor	2-A1
S28	21	Staple Tray Full Sensor	2-A1
S29	23	Jogger HP Sensor	2-B1
S30	6	Bottom Fence HP Sensor	2-B1
S31	1	Top Fence HP Sensor	2-B1
S32	5	Positioning Roller HP Sensor	2-B1
S33	10	Stack Plate HP Sensor (Center)	2-C1
S34	13	Stack Plate HP Sensor (Front)	2-C1
S35	8	Stack Plate HP Sensor (Rear)	2-C1
S36	17	Stapler HP Sensor (Front/Rear)	2-C1
S37	19	Stapler Rotation Sensor 1	2-D1
S38	18	Stapler Rotation Sensor 2	2-D1





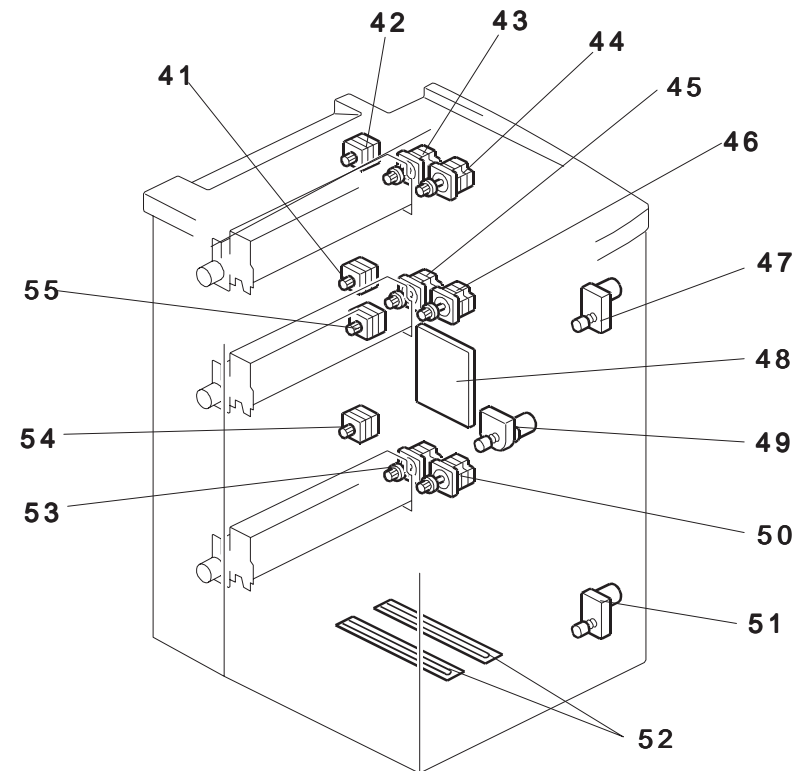
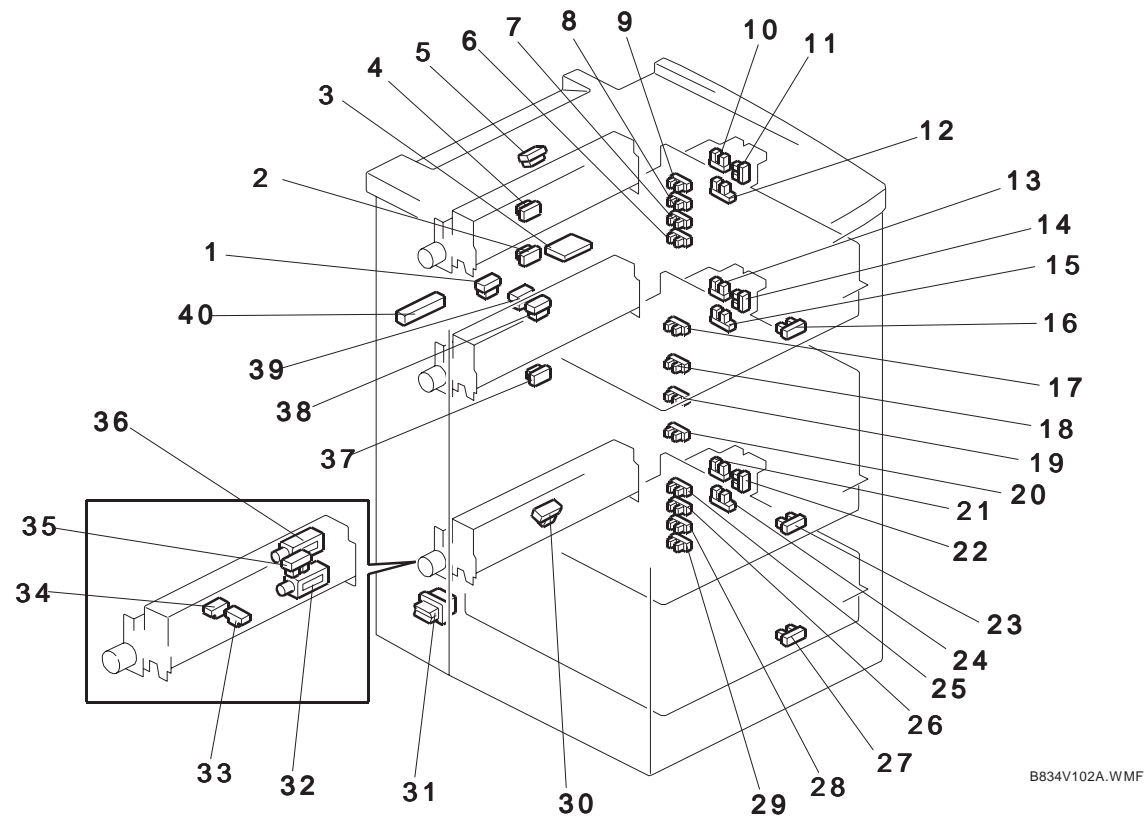
# B832 ELECTRICAL COMPONENT LAYOUT



Symbol	Index No.	Description	P to P
<b>Motors</b>			
M1	31	4th Grip Motor	F1
M2	35	4th Lift Motor	F6
M3	32	4th Paper Feed Motor	F2
M4	30	4th Transport Motor	F1
M5	33	5th Grip Motor	F3
M6	37	5th Lift Motor	F6
M7	34	5th Paper Feed Motor	F2
M8	29	5th Transport Motor	F3
M9	41	6th Grip Motor	E7
M10	39	6th Lift Motor	F6
M11	38	6th Paper Feed Motor	F3
M12	42	6th Transport Motor	E7
M13	43	LCT Exit Motor	F4
<b>PCBs</b>			
PCB1	36	Main Control Board	D2
PCB2	4	Image Position Sensor Board	C2
<b>Sensors</b>			
S1	27	4th Lift Sensor	F3
S2	25	4th Paper End Sensor	F2
S3	26	4th Paper Feed Sensor	F2
S4	11	4th Paper Height Sensor 1	C5
S5	10	4th Paper Height Sensor 2	C5
S6	9	4th Paper Height Sensor 3	C5
S7	7	4th Paper Height Sensor 4	C5
S8	—	4th Paper Length Sensor (B834)	—
S9	—	4th Paper Width Sensor 1 (B834)	—
S10	—	4th Paper Width Sensor 2 (B834)	—
S11	—	4th Paper Width Sensor 3 (B834)	—
S12	8	4th Paper Size Sensor 1 (B832)	F9
S13	8	4th Paper Size Sensor 2 (B832)	F9
S14	8	4th Paper Size Sensor 3 (B832)	F9
S15	5	4th Relay Sensor	F8
S16	—	4th Relay Sensor - Upper (B834)	—
S17	6	4th Transport Sensor	C3
S18	27	5th Lift Sensor	F5
S19	25	5th Paper End Sensor	F4
S20	26	5th Paper Feed Sensor	F4
S21	16	5th Paper Height Sensor 1	C7
S22	15	5th Paper Height Sensor 2	C7
S23	14	5th Paper Height Sensor 3	C7
S24	12	5th Paper Height Sensor 4	C7
S25	—	5th Paper Length Sensor (B834)	—
S26	—	5th Paper Width Sensor 1 (B834)	—
S27	—	5th Paper Width Sensor 2 (B834)	—
S28	—	5th Paper Width Sensor 3 (B834)	—
S29	13	5th Paper Size Sensor 1 (B832)	F10
S30	13	5th Paper Size Sensor 2 (B832)	F10

Symbol	Index No.	Description	P to P
S31	13	5th Paper Size Sensor 3 (B832)	F10
S32	—	5th Relay Sensor (B834)	—
S33	3	5th Transport Sensor	C3
S34	27	6th Lift Sensor	C3
S35	25	6th Paper End Sensor	C3
S36	26	6th Paper Feed Sensor	C3
S37	21	6th Paper Height Sensor 1	C9
S38	20	6th Paper Height Sensor 2	C9
S39	19	6th Paper Height Sensor 3	C9
S40	18	6th Paper Height Sensor 4	C9
S41	—	6th Paper Length Sensor (B834)	—
S42	—	6th Paper Width Sensor 1 (B834)	—
S43	—	6th Paper Width Sensor 2 (B834)	—
S44	—	6th Paper Width Sensor 3 (B834)	—
S45	17	6th Paper Size Sensor 1 (B832)	C10
S46	17	6th Paper Size Sensor 2 (B832)	C10
S47	17	6th Paper Size Sensor 3 (B832)	C10
S48	—	6th Relay Sensor (B834)	—
S49	22	6th Transport Sensor	C3
S50	2	LCT Exit Sensor	F5
S51	1	LCT Image Position Sensor	B2
<b>Solenoids</b>			
SOL1	28	4th Pick-up Solenoid	F2
SOL2	24	4th Separation Solenoid	F2
SOL3	28	5th Pick-up Solenoid	F4
SOL4	24	5th Separation SOL	F4
SOL5	28	6th Pick-up Solenoid	C2
SOL6	24	6th Separation Solenoid	C2
<b>Switches</b>			
SW1	23	Door Safety Switch	F6
<b>Other</b>			
H1, H2	40	Anti-Condensation Heaters	B3

# B834 ELECTRICAL COMPONENT LAYOUT

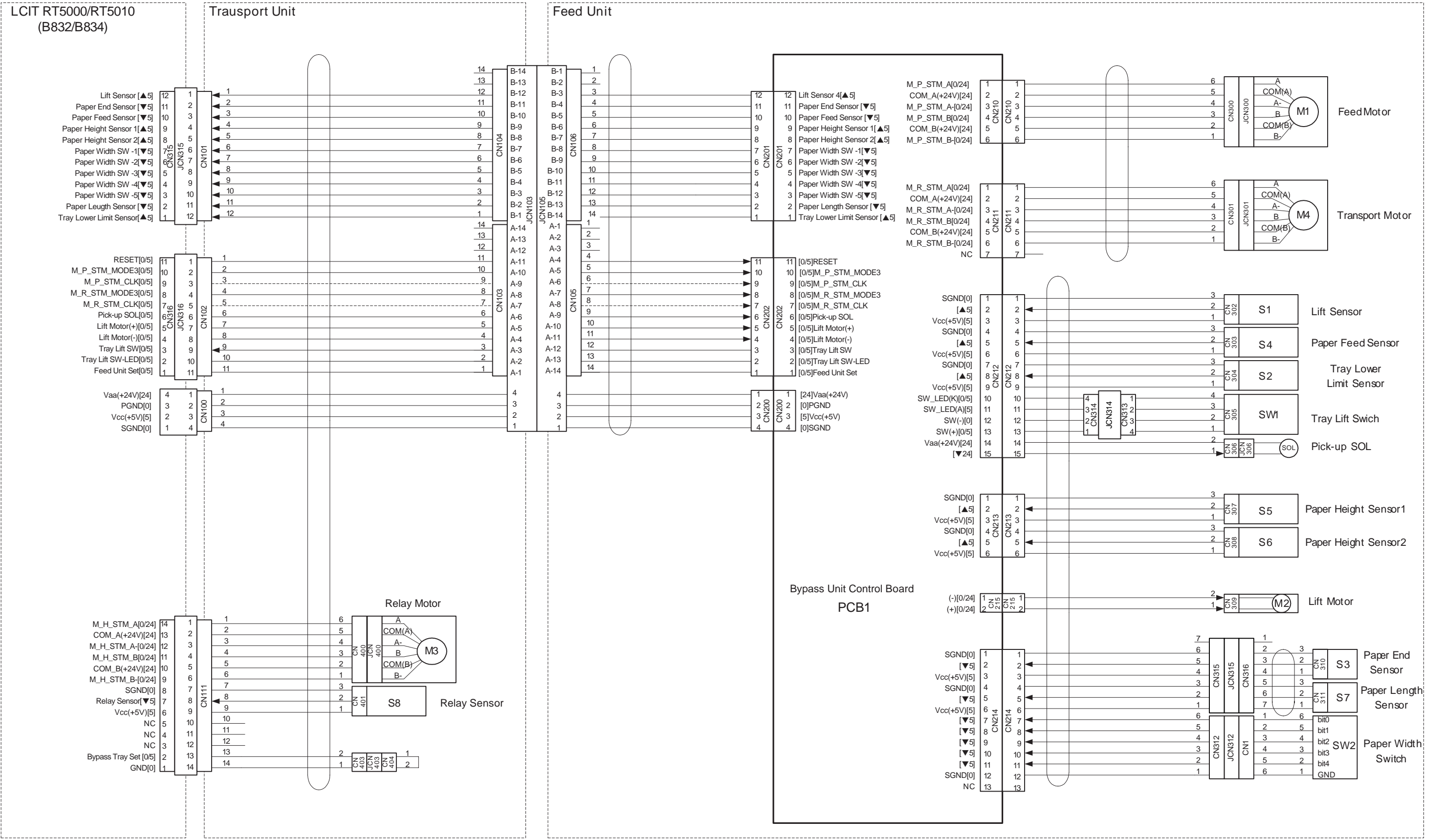


Symbol	Index No.	Description	P to P
<b>Motors</b>			
M1	43	4th Grip Motor	F1
M2	47	4th Lift Motor	F6
M3	44	4th Paper Feed Motor	F2
M4	42	4th Transport Motor	F1
M5	45	5th Grip Motor	F3
M6	49	5th Lift Motor	F6
M7	46	5th Paper Feed Motor	F2
M8	41	5th Transport Motor	F3
M9	53	6th Grip Motor	E7
M10	51	6th Lift Motor	F6
M11	50	6th Paper Feed Motor	F3
M12	54	6th Transport Motor	E7
M13	55	LCT Exit Motor	F4
<b>PCBs</b>			
PCB1	48	Main Control Board	D2
PCB2	3	Image Position Sensor Board	C2
<b>Sensors</b>			
S1	35	4th Lift Sensor	F3
S2	33	4th Paper End Sensor	F2
S3	34	4th Paper Feed Sensor	F2
S4	9	4th Paper Height Sensor 1	C5
S5	8	4th Paper Height Sensor 2	C5
S6	7	4th Paper Height Sensor 3	C5
S7	6	4th Paper Height Sensor 4	C5
S8	16	4th Paper Length Sensor (B834)	C4
S9	12	4th Paper Width Sensor 1 (B834)	C4
S10	11	4th Paper Width Sensor 2 (B834)	C4
S11	10	4th Paper Width Sensor 3 (B834)	C4
S12	—	4th Paper Size Sensor 1 (B832)	—
S13	—	4th Paper Size Sensor 2 (B832)	—
S14	—	4th Paper Size Sensor 3 (B832)	—
S15	2	4th Relay Sensor	F8
S16	4	4th Relay Sensor - Upper (B834)	F8
S17	5	4th Transport Sensor	C3
S18	35	5th Lift Sensor	F5
S19	33	5th Paper End Sensor	F4
S20	34	5th Paper Feed Sensor	F4
S21	20	5th Paper Height Sensor 1	C7
S22	19	5th Paper Height Sensor 2	C7
S23	18	5th Paper Height Sensor 3	C7
S24	17	5th Paper Height Sensor 4	C7
S25	23	5th Paper Length Sensor (B834)	C7
S26	15	5th Paper Width Sensor 1 (B834)	C6
S27	14	5th Paper Width Sensor 2 (B834)	C6
S28	13	5th Paper Width Sensor 3 (B834)	C6
S29	—	5th Paper Size Sensor 1 (B832)	—
S30	—	5th Paper Size Sensor 2 (B832)	—

Symbol	Index No.	Description	P to P
S31	—	5th Paper Size Sensor 3 (B832)	—
S32	39	5th Relay Sensor (B834)	F6
S33	38	5th Transport Sensor	C3
S34	35	6th Lift Sensor	C3
S35	33	6th Paper End Sensor	C3
S36	34	6th Paper Feed Sensor	C3
S37	29	6th Paper Height Sensor 1	C9
S38	28	6th Paper Height Sensor 2	C9
S39	26	6th Paper Height Sensor 3	C9
S40	25	6th Paper Height Sensor 4	C9
S41	27	6th Paper Length Sensor (B834)	C8
S42	24	6th Paper Width Sensor 1 (B834)	C8
S43	22	6th Paper Width Sensor 2 (B834)	C8
S44	21	6th Paper Width Sensor 3 (B834)	C8
S45	—	6th Paper Size Sensor 1 (B832)	—
S46	—	6th Paper Size Sensor 2 (B832)	—
S47	—	6th Paper Size Sensor 3 (B832)	—
S48	37	6th Relay Sensor (B834)	F8
S49	30	6th Transport Sensor	C3
S50	1	LCT Exit Sensor	F5
S51	40	LCT Image Position Sensor	B2
<b>Solenoids</b>			
SOL1	36	4th Pick-up Solenoid	F2
SOL2	32	4th Separation Solenoid	F2
SOL3	36	5th Pick-up Solenoid	F4
SOL4	32	5th Separation SOL	F4
SOL5	36	6th Pick-up Solenoid	C2
SOL6	32	6th Separation Solenoid	C2
<b>Switches</b>			
SW1	31	Door Safety Switch	F6
<b>Other</b>			
H1, H2	52	Anti-Condensation Heaters	B3

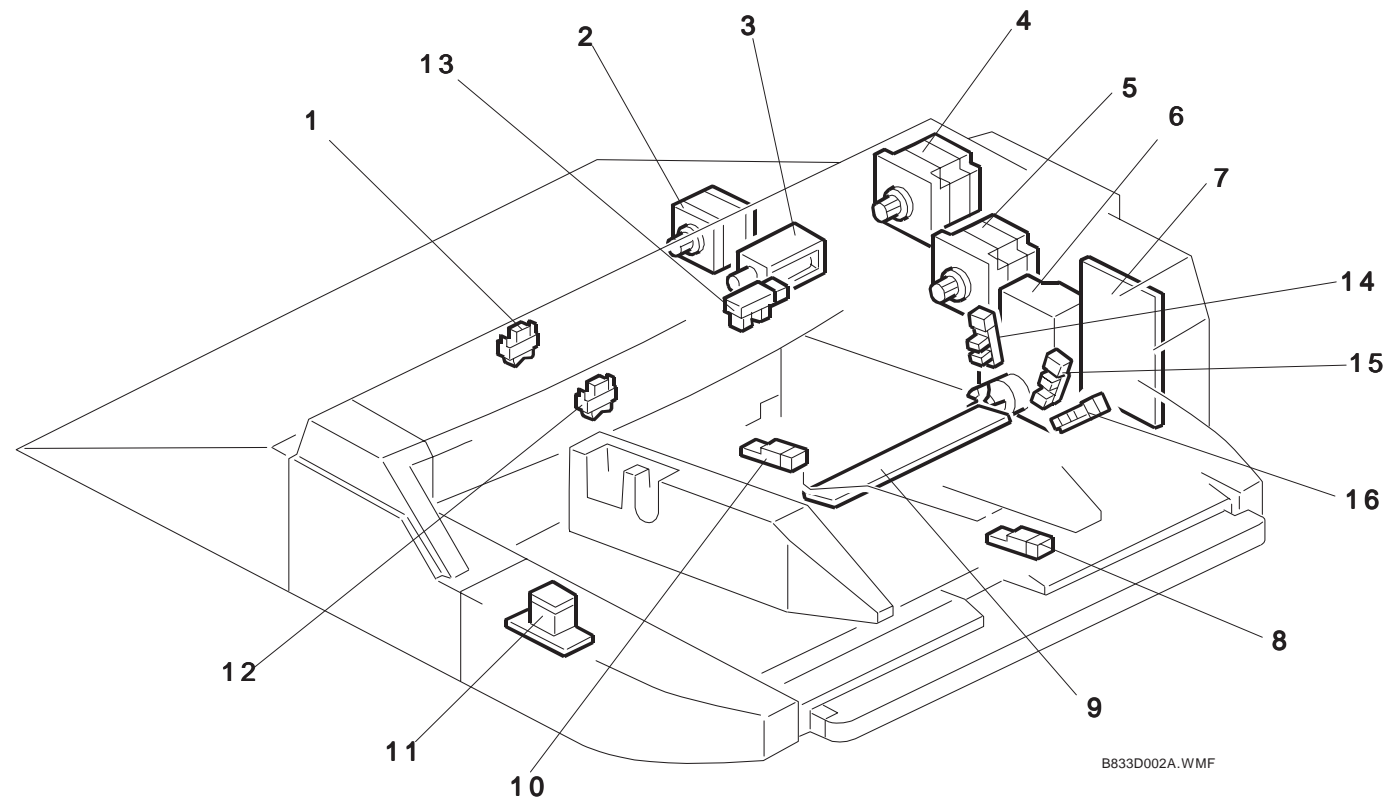
# B833 Point to Point Diagram

SYMBOL TABLE	
—	DC Line
- - - -	Pulse Signal
→	Signal Direction
▲	Active High
▼	Active Low
[ ]	Voltage

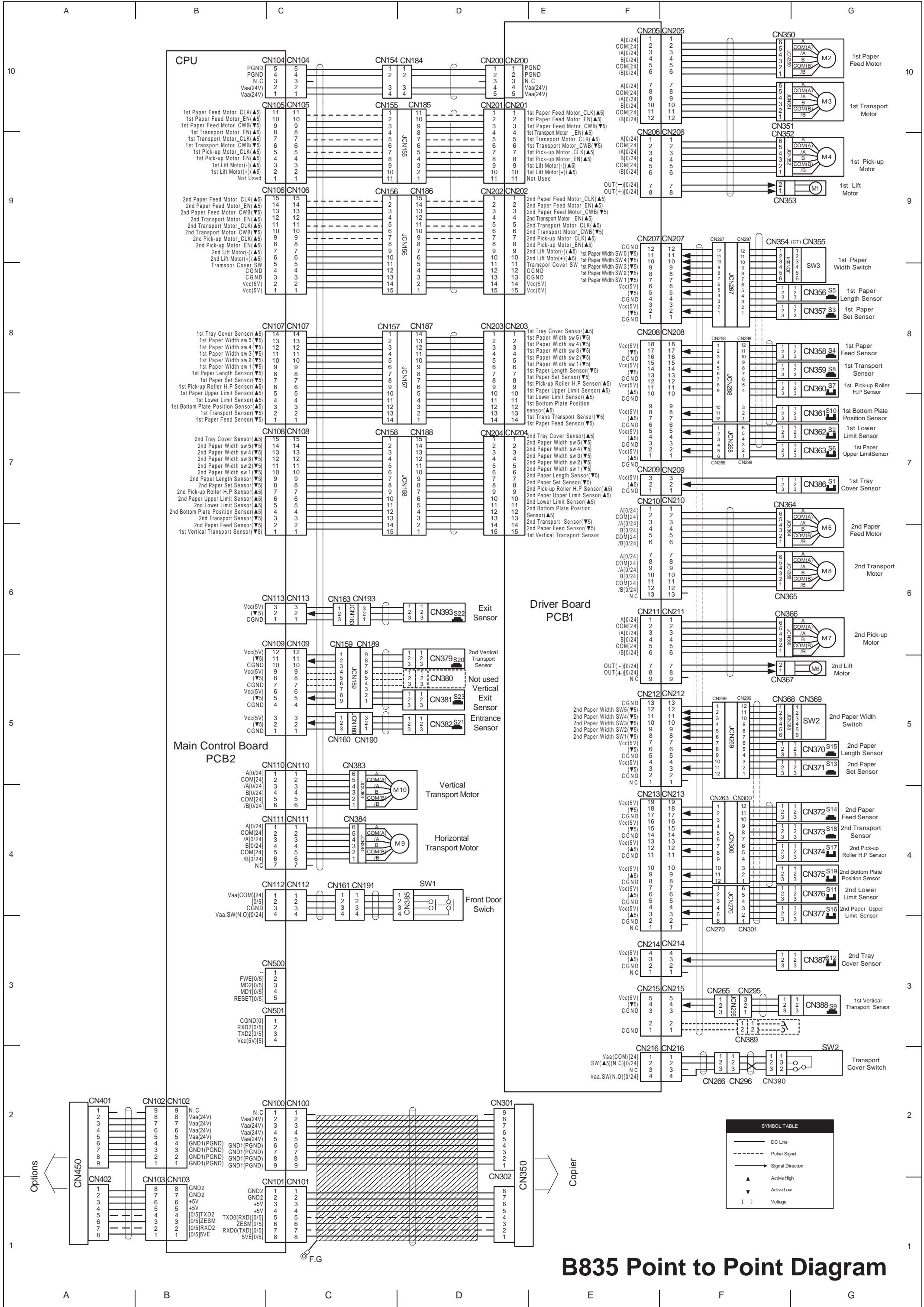




# B833 ELECTRICAL COMPONENT LAYOUT



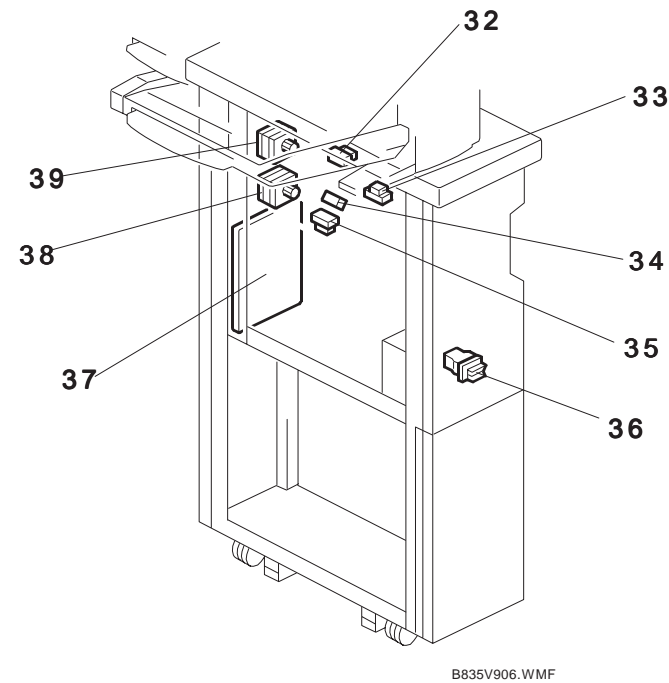
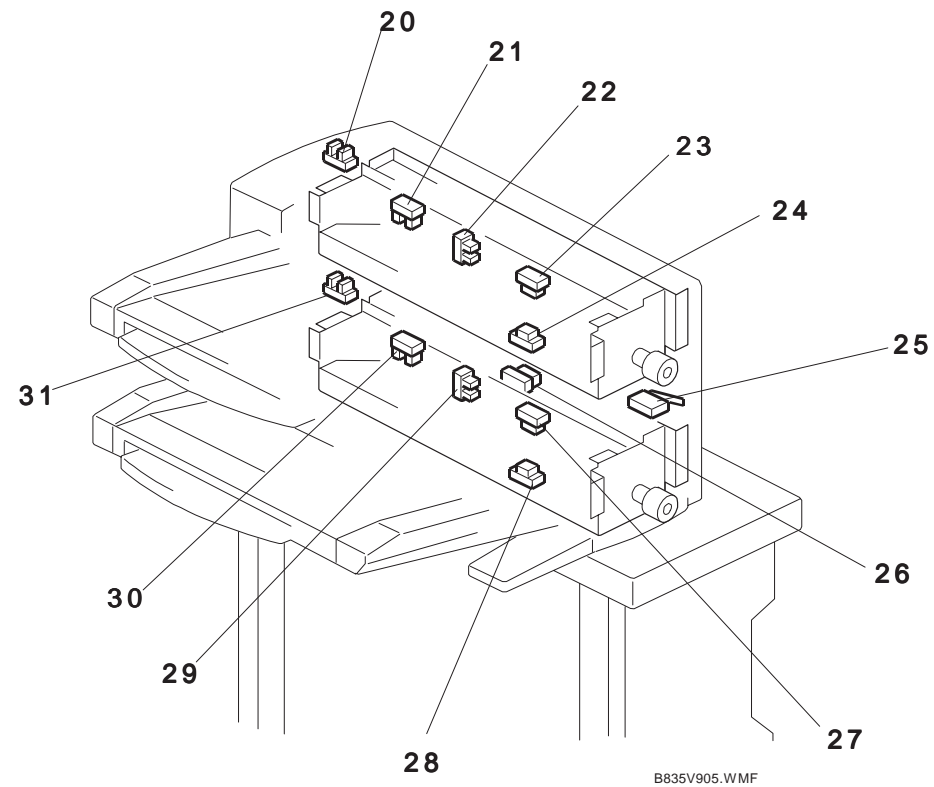
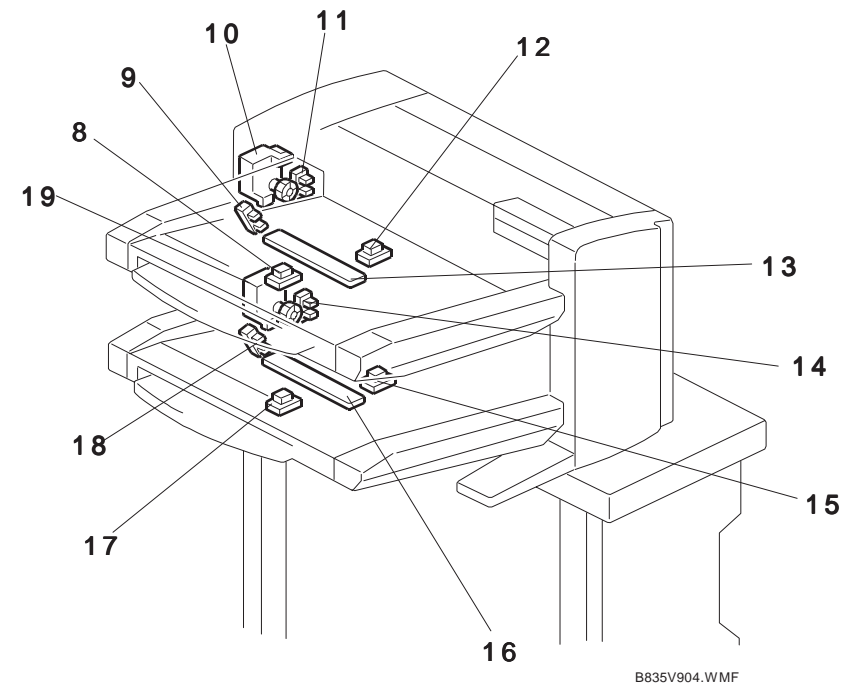
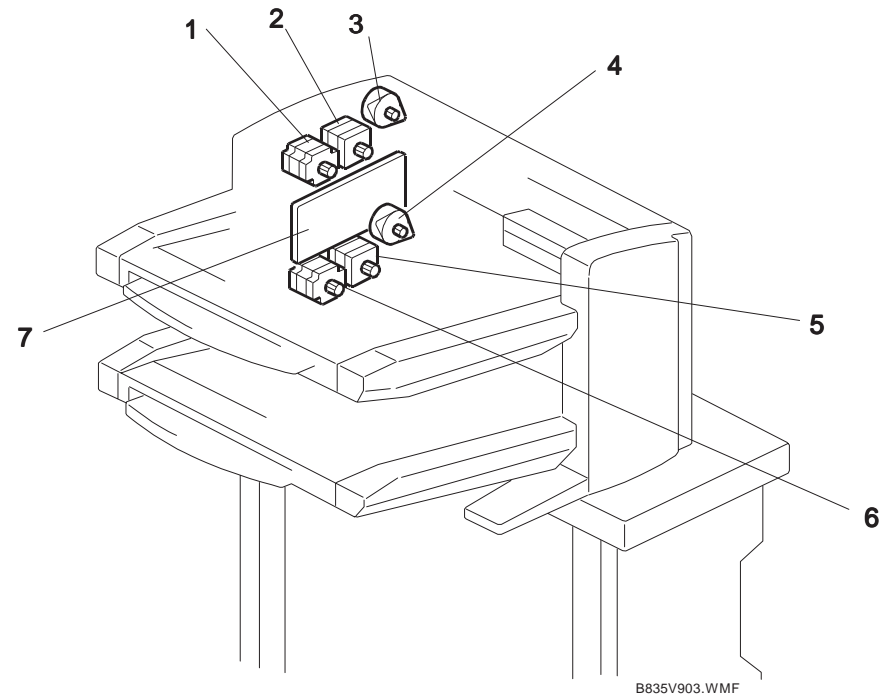
Symbol	Index No.	Description	P to P
<b>Motors</b>			
M1	5	Feed Motor	B9
M2	6	Lift Motor	F9
M3	2	Relay Motor	F3
M4	4	Transport Motor	C9
<b>PCBs</b>			
PCB1	7	Bypass Unit Control Board	F6
<b>Sensors</b>			
S1	13	Lift Sensor	D9
S2	14	Tray Lower Limit Sensor	D9
S3	10	Paper End Sensor	F10
S4	12	Paper Feed Sensor	D9
S5	16	Paper Height Sensor 1	E9
S6	15	Paper Height Sensor 2	E9
S7	8	Paper Length Sensor	E10
S8	1	Relay Sensor	F3
<b>Solenoids</b>			
SOL1	3	Pick-up Solenoid	E9
<b>Switches</b>			
SW1	11	Tray Lift Switch	D9
SW2	9	Paper Width Switches	G10



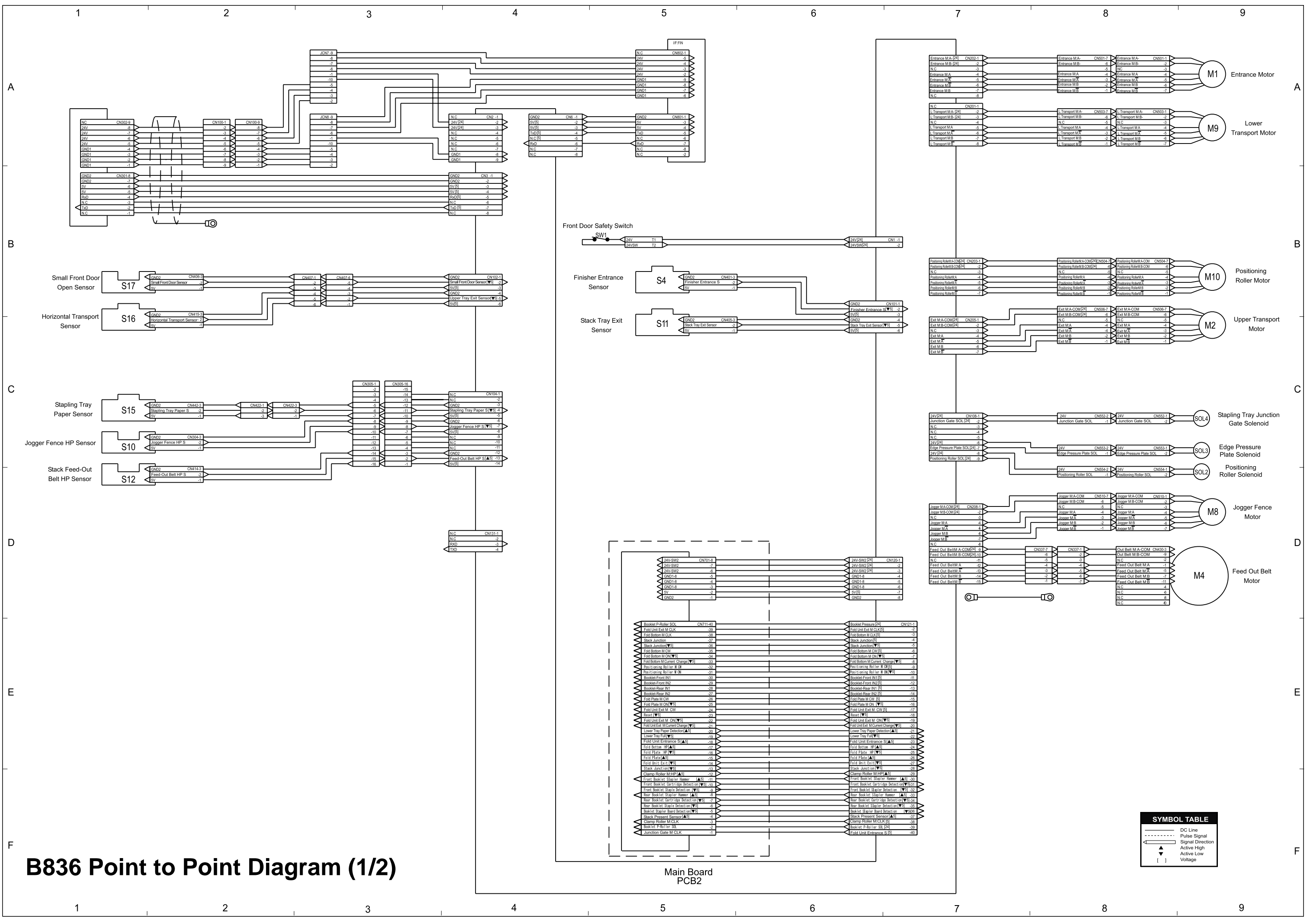
**B835 Point to Point Diagram**

SYMBOL TABLE	
—	DC Line
- - - -	Pulse Signal
→	Signal Direction
▲	Active High
▼	Active Low
[ ]	Voltage

# B835 ELECTRICAL COMPONENT LAYOUT



Symbol	Index No.	Description	P to P
<b>Motors</b>			
M1	10	1st Lift Motor	G9
M2	1	1st Paper Feed Motor	G10
M3	3	1st Pick-up Motor	G10
M4	2	1st Transport Motor	G9
M5	6	2nd Feed Motor	G6
M6	19	2nd Lift Motor	G5
M7	4	2nd Pick-up Motor	G6
M8	5	2nd Transport Motor	G6
M9	38	Horizontal Transport Motor	C4
M10	39	Vertical Transport Motor	C4
<b>PCBs</b>			
PCB1	7	Driver Board	E6
PCB2	37	Main Control Board	E5
<b>Sensors</b>			
S1	20	1st Tray Cover Sensor	G7
S2	11	1st Lower Limit Sensor	G7
S3	12	1st paper set sensor	G8
S4	24	1st Paper Feed Sensor	G8
S5	8	1st Paper Length Sensors	G8
S6	9	1st paper upper limit sensor	G7
S7	21	1st Pick-up Roller HP Sensor	G8
S8	23	1st Transport Sensor	G8
S9	26	1st Vertical Transport Sensor	G3
S10	22	1st bottom plate position sensor	G7
S11	14	2nd Lower Limit Sensor	G4
S12	31	2nd tray cover sensor	G3
S13	15	2nd paper set sensor	G5
S14	28	2nd Paper Feed Sensor	G4
S15	17	2nd Paper Length Sensor	G5
S16	18	2nd paper upper limit sensor	G4
S17	30	2nd Pick-up Roller HP Sensor	G4
S18	27	2nd Transport Sensor	G4
S19	29	2nd bottom plate position sensor	G4
S20	32	2nd Vertical Transport Sensor	D5
S21	33	Entrance Sensor	D5
S22	35	Exit Sensor	D6
S23	34	Vertical Exit Sensor	D5
<b>Switches</b>			
SW1	36	Front Door Switch	D4
SW2	25	Transport Cover Switch	G2
SW3	13	1st Paper Width Switch	G8
SW4	16	2nd Paper Width Switch	G5

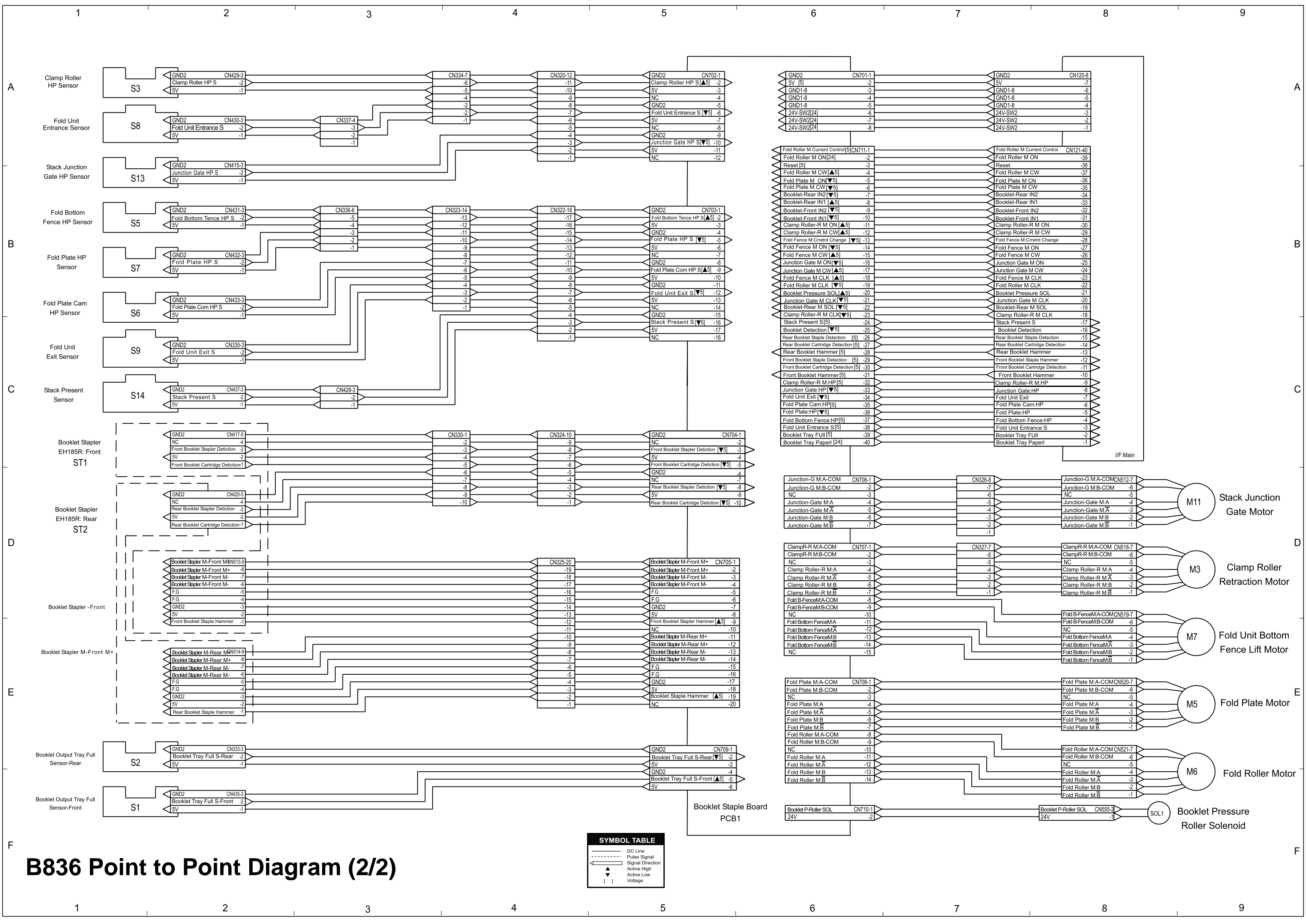


# B836 Point to Point Diagram (1/2)

SYMBOL TABLE	
—	DC Line
---	Pulse Signal
→	Signal Direction
▲	Active High
▼	Active Low
[ ]	Voltage

Main Board PCB2

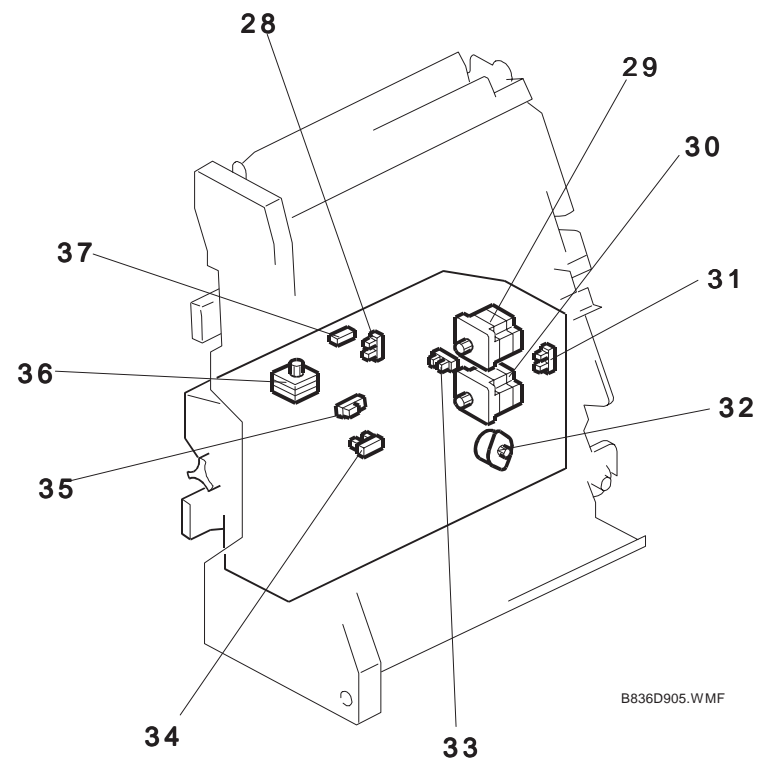
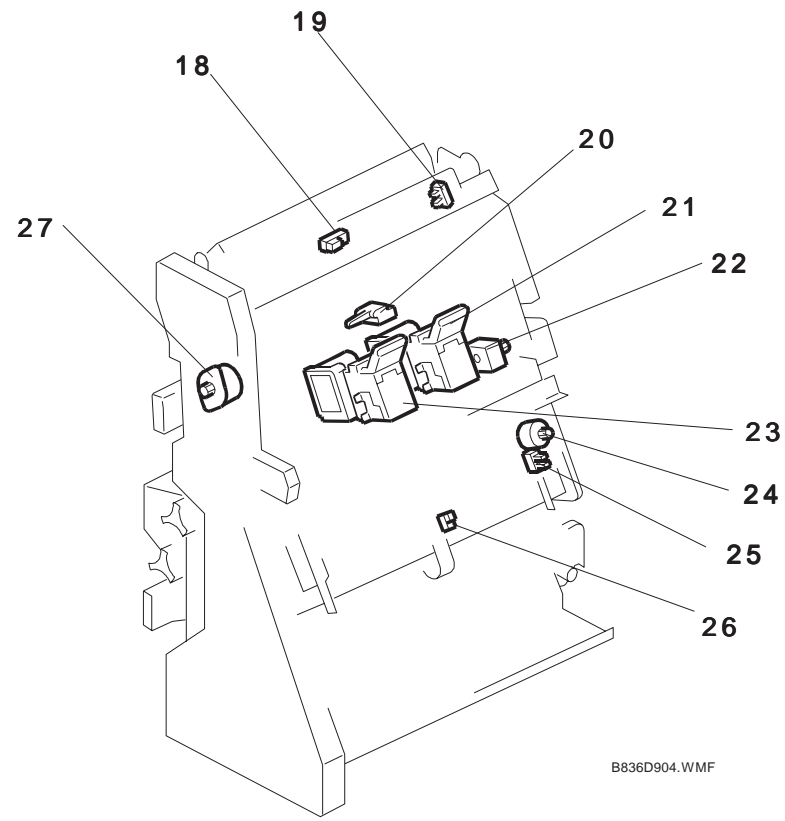
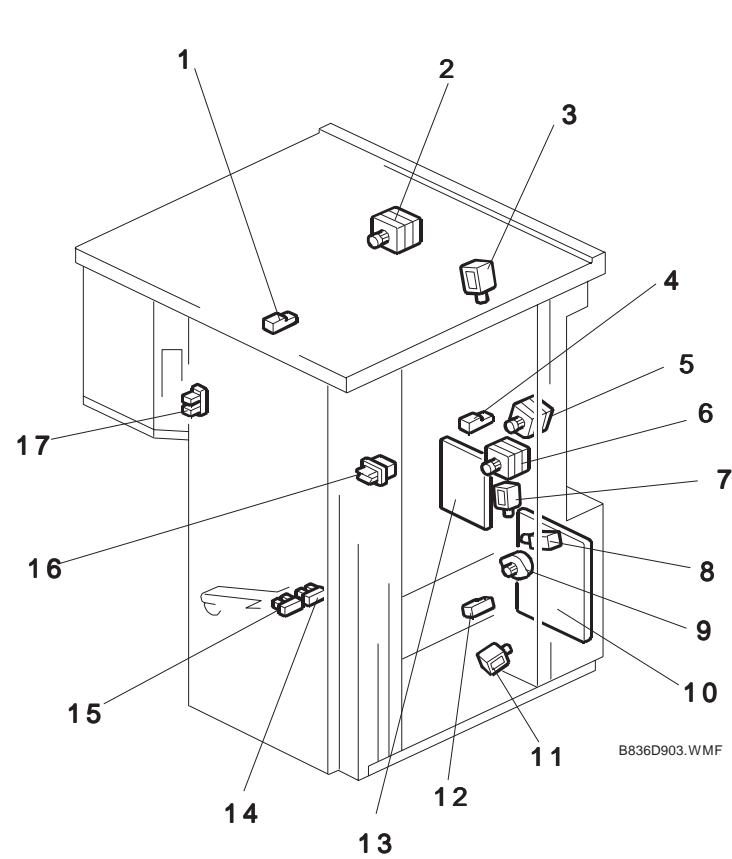




# B836 Point to Point Diagram (2/2)

SYMBOL TABLE	
—	DC Line
- - - -	Pulse Signal
→	Signal Direction
▲	Active High
▼	Active Low
[ ]	Voltage

# B836 ELECTRICAL COMPONENT LAYOUT



Symbol	Index No.	Description	P to P
<b>Motors</b>			
M1	5	Entrance Motor	1-A9
M2	2	Upper Transport Motor	1-C9
M3	36	Clamp Roller Retraction Motor	2-D9
M4	22	Feed Out Belt Motor	1-D9
M5	30	Fold Plate Motor	2-E9
M6	29	Fold Roller Motor	2-F9
M7	32	Fold Unit Bottom Fence Lift Motor	2-E9
M8	24	Jogger Fence Motor	1-D9
M9	6	Lower Transport Motor	1-A9
M10	10	Positioning Roller Motor	1-B9
M11	27	Stack Junction Gate Motor	2-D9
<b>PCBs</b>			
PCB1	13	Booklet Stapler Board	2-F5
PCB2	9	Main Board	1-F5
<b>Sensors</b>			
S1	15	Booklet Output Tray Full Sensor – Front	2-F1
S2	14	Booklet Output Tray Full Sensor – Rear	2-E1
S3	28	Clamp Roller HP Sensor	2-A1
S4	4	Finisher Entrance Sensor	1-B5
S5	34	Fold Bottom Fence HP Sensor	2-B1
S6	33	Fold Plate Cam HP Sensor	2-B1
S7	31	Fold Plate HP Sensor	2-B1
S8	35	Fold Unit Entrance Sensor	2-A1
S9	37	Fold Unit Exit Sensor	2-C1
S10	25	Jogger Fence HP Sensor	1-C1
S11	12	Stack Tray Exit Sensor	1-C5
S12	20	Stack Feed-Out Belt HP Sensor	1-D1
S13	19	Stack Junction Gate HP Sensor	2-B1
S14	18	Stack Present Sensor	2-C1
S15	26	Stapling Tray Paper Sensor	1-C1
S16	1	Horizontal Transport Sensor	1-C1
S17	17	Small Front Door Open Sensor	1-D1
<b>Solenoids</b>			
SOL1	7	Booklet Pressure Roller Solenoid	2-F8
SOL2	8	Positioning Roller Solenoid	1-D9
SOL3	11	Edge Pressure Plate Solenoid	1-C9
SOL4	3	Stapling Tray Junction Gate Solenoid	1-C9
<b>Switches</b>			
SW1	16	Front Door Safety Switch	1-B5
<b>Others</b>			
ST1	23	Booklet Stapler - Front	2-C2
ST2	21	Booklet Stapler - Rear	2-D2



**TOSHIBA**

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