Model MT-P2

(Machine Code G148)

SERVICE MANUAL

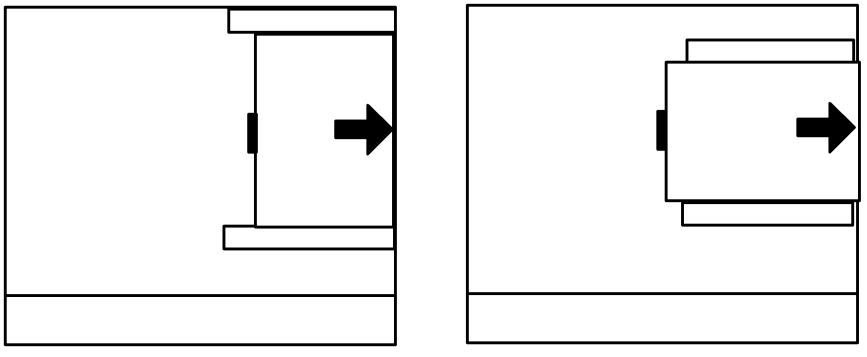
23 June 2006

Subject to change

Conventions Used in This Manual

This manual uses several symbols.

Symbol	What It Means
	Screw
	Connector
	E-ring
	Clip ring
	Clamp
	Pawls (sensors)
	Spring



_pseflef

Throughout this service manual, "SEF" denotes "Short Edge Feed" and "LEF" denotes "Long Edge Feed".

Warnings, Cautions, Notes

In this manual, the following important symbols and notations are used.

⚠WARNING

- A Warning indicates a potentially hazardous situation. Failure to obey a Warning could result in death or serious injury.

⚠CAUTION

- A Caution indicates a potentially hazardous situation. Failure to obey a Caution could result in minor or moderate injury or damage to the machine or other property.

Important

- **Obey these guidelines to avoid problems such as misfeeds, damage to originals, loss of valuable data and to prevent damage to the machine**

Note

- This information provides tips and advice about how to best service the machine.

Trademarks

- Microsoft®, Windows®, and MS-DOS® are registered trademarks of Microsoft Corporation in the United States and /or other countries.
- PostScript® is a registered trademark of Adobe Systems, Incorporated.
- PCL® is a registered trademark of Hewlett-Packard Company.
- Ethernet® is a registered trademark of Xerox Corporation.
- PowerPC® is a registered trademark of International Business Machines Corporation.
- Other product names used herein are for identification purposes only and may be trademarks of their respective companies. We disclaim any and all rights involved with those marks.

Safety Instructions

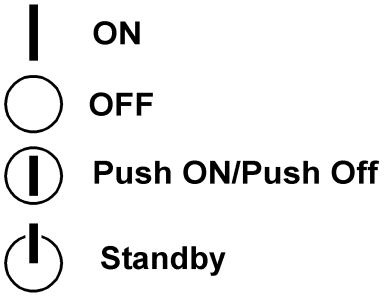
For your safety, please read this manual carefully before you service machine. Always keep this manual handy for future reference.

Safety Information

Always obey the these safety precautions when using this product.

Switches and Symbols

Where symbols are used on or near switches on machines for Europe and other areas, the meaning of each symbol conforms with IEC60417.



_onoff

Responsibilities of the Service Technician

Maintenance

Maintenance shall be done only by trained customer engineers who have completed service training for the machine and all optional devices designed for use with the machine.

Installation

The main machine and options can be installed by either the customer or customer engineer. The customer or customer engineer must follow the installation instructions described in the operating instructions.

Reference Material for Maintenance

Maintenance shall be done with the special tools and the procedures prescribed for maintenance of the machine described in the reference materials (service manuals, technical bulletins, operating instructions, and safety guidelines for customer engineers).

Important

- **Use only consumable supplies and replacement parts designed for use with the machine.**

Before Installation, Maintenance

Shipping and Moving the Machine

⚠CAUTION

- Work carefully when lifting or moving the machine. If the machine is heavy, two or more customer engineers may be required to prevent injuries (muscle strains, spinal injuries, etc.) or damage to the machine if it is dropped or tipped over.
- Personnel moving or working around the machine should always wear proper clothing and footwear. Never wear loose fitting clothing or accessories (neckties, loose sweaters, bracelets, etc.) or casual footwear (slippers, sandals, etc.) when lifting or moving the machine.
- Always unplug the power cord from the power source before you move the machine. Before you move the machine, arrange the power cord so it will not fall under the machine.

Power

⚠WARNING

- Always turn the machine off and disconnect the power plug before doing any maintenance procedure. After turning the machine off, power is still supplied to the main machine and other devices. To prevent electrical shock, switch the machine off, wait for a few seconds, then unplug the machine from the power source.
- Before you do any checks or adjustments after turning the machine off, work carefully to avoid injury. After removing covers or opening the machine to do checks or adjustments, avoid touching electrical components or moving parts (gears, timing belts, etc.).
- After turning the machine on with any cover removed, keep your hands away from electrical components and moving parts. Never touch the cover of the fusing unit, gears, timing belts, etc.

Installation, Disassembly, and Adjustments

⚠CAUTION

- After installation, maintenance, or adjustment, always check the operation of the machine to make sure that it is operating normally. This ensures that all shipping materials, protective materials, wires and tags, metal brackets, etc., (attached to protect the machine during shipping), have been removed and that no tools remain inside the machine.
- Never use your fingers to check moving parts that are causing spurious noise. Never use your fingers to lubricate moving parts while the machine is operating.

Special Tools

⚠CAUTION

- Use only standard tools approved for machine maintenance.

- For special adjustments, use only the special tools and lubricants described in the service manual. Using tools incorrectly, or using tools that could damage parts, could damage the machine or cause injuries.

During Maintenance

General

⚠CAUTION

- Before you begin a maintenance procedure always switch the machine off.
- Disconnect the power plug from the power source.
- Allow the machine to cool for at least 10 minutes.
- Avoid touching the components inside the machine that are labeled as hot surfaces.

Safety Devices

⚠WARNING

- Never remove any safety device (a fuse, thermistor, etc.) unless it requires replacement. Always replace a safety device immediately.
- Never do any procedure that defeats the function of any safety device. Modification or removal of a safety device (fuse, thermistor, etc.) could cause a fire and personal injury. After removal and replacement of any safety device, always test the operation of the machine to ensure that it is operating normally and safely.
- For replacement parts use only the correct fuses, thermistors, circuit breakers, etc. rated for use with the machine. Using replacement devices not designed for use with the machine could cause a fire and personal injuries.

Organic Cleaners

⚠CAUTION

- During preventive maintenance, never use any organic cleaners (alcohol, etc.) other than those described in the service manual. (Refer the "2. Preventive Maintenance" in the Service Manual.)
- Make sure the room is well ventilated before using any organic cleaner. Always use organic solvents in small amounts to avoid breathing the fumes and becoming nauseous.
- Switch the machine off, unplug it, and allow it to cool before doing preventive maintenance. To avoid fire or explosion, never use an organic cleaner near any component that generates heat.
- Wash your hands thoroughly after cleaning parts with an organic cleaner to avoid contamination of food, drinks, etc. which could cause illness.

Lithium Batteries

⚠WARNING

- Always replace a lithium battery on a PCB with the same type of battery prescribed for use on that board. Replacing a lithium battery with any type other than the one prescribed for use on the board could lead to an explosion or damage to the PCB.
- Never discard used batteries by mixing them with other trash. Remove them from the work site and dispose of them in accordance with local laws and regulations regarding the disposal of such items.

Ozone Filters

⚠CAUTION

- Always replace ozone filters as soon as their service life expires (as described in the service manual). An excessive amount of ozone can build up around machines that use ozone filters if they are not replaced at the prescribed time.
- The room where the machine is located must be well ventilated. Excessive ozone could cause personnel working around the machine to feel unwell.

Power Plug and Power Cord

⚠WARNING

- Before serving the machine (especially when responding to a service call), always make sure that the power plug has been inserted completely into the power source. A partially inserted plug could lead to heat generation (due to a power surge caused by high resistance) and cause a fire or other problems.
- Always check the power plug and make sure that it is free of dust and lint. Clean it if necessary. A dirty plug can generate heat which could cause a fire.
- Inspect the length of the power cord for cuts or other damage. Replace the power cord if necessary. A frayed or otherwise damaged power cord can cause a short circuit which could lead to a fire or personal injury from electrical shock.
- Check the length of the power cord between the machine and power supply. Make sure the power cord is not coiled or wrapped around any object such as a table leg. Coiling the power cord can cause excessive heat to build up and could cause a fire.
- The machine must be located near its power source. The area around must be free of obstacles so the power cord can be disconnected quickly in case of an emergency.
- Make sure that the power cord is grounded (earthed) at the power source with the ground wire on the plug.
- Connect the power cord directly into the power source. Never use an extension cord.
- When you disconnect the power plug from the power source, always pull on the plug, not the cable.

After Installation

Disposal of Used Items

⚠WARNING

- Ink is flammable. Never attempt to incinerate empty ink cartridges.

⚠CAUTION

- Always dispose of used items in accordance with the local laws and regulations regarding the disposal of such items.
- To protect the environment, never dispose of this product or any kind of waste from consumables at a household waste collection point. Dispose of these items at one of our dealers or at an authorized collection site.

Points to Confirm with Operators

At the end of installation or a service call, instruct the user about use of the machine. Emphasize the following points.

- Show operators how to remove jammed paper and troubleshoot other minor problems by following the procedures described in the operating instructions.
- Point out the parts inside the machine that they should never touch or attempt to remove.
- Confirm that operators know how to store and dispose of consumables such as ink cartridges, ammonia water, paper, etc.
- Make sure that all operators have access to an operating instruction manual for the machine.
- Confirm that operators have read and understand all the safety instructions described in the operating instructions.
- Demonstrate how to turn off the power and disconnect the power plug (by pulling the plug, not the cord) if any of the following events occur:
  1. Something has spilled into the product.
  2. Service or repair of the product is necessary.
  3. The product cover has been damaged.
- Caution operators about removing paper fasteners around the machine. They should never allow paper clips, staples, or any other small metallic objects to fall into the product.

  Important

  - **The operator must lift the output tray to release the paper cassette before loading paper.**
  - **Paper is loaded in the standard paper cassette without removing it from the printer.**
  - **The operator should never attempt to remove the paper cassette from the printer.**

Safety Instructions for Toner and Ink

This section describes information for users in regard to the use of toner and ink.

Accidental Physical Exposure

PPC Toner Exposure

⚠CAUTION

- Work carefully when removing paper jams or replacing toner bottles or cartridges to avoid spilling toner on clothing or the hands.
- If toner is inhaled, immediately gargle with large amounts of cold water and move to a well ventilated location. If there are signs of irritation or other problems, seek medical attention.
- If toner gets on the skin, wash immediately with soap and cold running water.
- If toner gets into the eyes, flush the eyes with cold running water or eye wash. If there are signs of irritation or other problems, seek medical attention.
- If toner is swallowed, drink a large amount of cold water to dilute the ingested toner. If there are signs of any problem, seek medical attention.
- If toner spills on clothing, wash the affected area immediately with soap and cold water. Never use hot water! Hot water can cause toner to set and permanently stain fabric.

Ink Exposure

⚠CAUTION

- If ink gets on the skin, wash the affected area immediately with soap and cold running water.
- If ink gets into the eyes, immediately flush the eyes with cold running water. If there are signs of irritation or other problems, seek medical attention.
- If ink is swallowed, drink a strong solution of cold water and table salt to induce vomiting. Seek medical attention.
- Ink is difficult to remove from fabric. Work carefully to avoid staining clothing when performing routine maintenance replacing ink packs or ink cartridges.

Handling and Storing Toner and Ink

Handling and Storing PPC Toner

⚠WARNING

- Toner, used toner, and developer are extremely flammable. Never store toner, developer, toner cartridges, or toner bottles (including empty toner bottles or cartridges) in a location where they will be exposed to high temperature or an open flame.

⚠CAUTION

- Always store toner and developer supplies such as toner and developer packages, cartridges, and bottles (including used toner and empty bottles and cartridges) out of the reach of children.
- Always store fresh toner supplies or empty bottles or cartridges in a cool, dry location that is not exposed to direct sunlight.

Handling and Storing Ink

⚠WARNING

- Ink is flammable. Never store ink packs in a location where they will be exposed to high temperature or an open flame.

⚠CAUTION

- Always store ink packs out of the reach of children.
- Always store ink packs in a cool, dry location that is not exposed to direct sunlight.

Ink (Ink Jet)

⚠WARNING

- Ink is flammable. Never store ink cartridges in a location where they will be exposed to high temperature or an open flame.

⚠CAUTION

- Always store ink cartridges out of the reach of children.
- Always store ink cartridges in a cool, dry location that is not exposed to direct sunlight.

Toner and Ink Disposal

PPC Toner Disposal

⚠WARNING

- Never attempt to incinerate toner, used toner, or empty toner containers (bottles or cartridges). Burning toner can explode and scatter, causing serious burns.
- Always wrap used toner and empty toner bottles and cartridges in plastic bags to avoid spillage. Follow the local laws and regulations regarding the disposal of such items.
- Dispose of used toner and toner cartridges at one of our dealers or at an authorized collection site. Always dispose of used toner cartridges and toner bottles in accordance with the local laws and regulations regarding the disposal of such items.

Ink Disposal

⚠CAUTION

- Attach the caps to empty ink containers for temporary storage to avoid accidental spillage. Return empty ink packs and cartridges to a local dealer who can accept such items for collection and recycling. If the customer decides to dispose of these items, make sure that are disposed of in accordance to local laws and regulations.

Safety Precautions for This Machine

PREVENTION OF PHYSICAL INJURY

1. Before disassembling or assembling parts of the machine and peripherals, make sure that the machine power cord is unplugged.
2. The wall outlet should be near the machine and easily accessible.
3. Note that some components of the machine and the paper tray unit are supplied with electrical voltage even if the main power switch is turned off.
4. 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.
5. The inside and the metal parts of the fusing unit become extremely hot while the machine is operating. Be careful to avoid touching those components with your bare hands.

HEALTH SAFETY CONDITIONS

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

OBSERVANCE OF ELECTRICAL SAFETY STANDARDS

1. The machine and its peripherals must be installed and maintained by a customer service representative who has completed the training course on those models.
2. The NVRAM on the system control board has a lithium battery which can explode if replaced incorrectly. Replace the NVRAM only with an identical one. The manufacturer recommends replacing the entire NVRAM. Do not recharge or burn this battery. Used NVRAM must be handled in accordance with local regulations.
3. 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 manufacturers' instructions.

SAFETY AND ECOLOGICAL NOTES FOR DISPOSAL

1. Do not incinerate toner bottles or used toner. Toner dust may ignite suddenly when exposed to an open flame.
2. Dispose of used toner, 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.

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

Caution Labels

Caution labels are provided on the machine that warn service personnel and operators about how to avoid exposure to levels of laser and collateral radiation known to be hazardous.

_safelabel

Lithium Batteries (Memory Back-up)

⚠CAUTION

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

TABLE OF CONTENTS

2. Preventive Maintenance

3. Replacement and Adjustment

4. Troubleshooting

5. Service Tables

6. Details

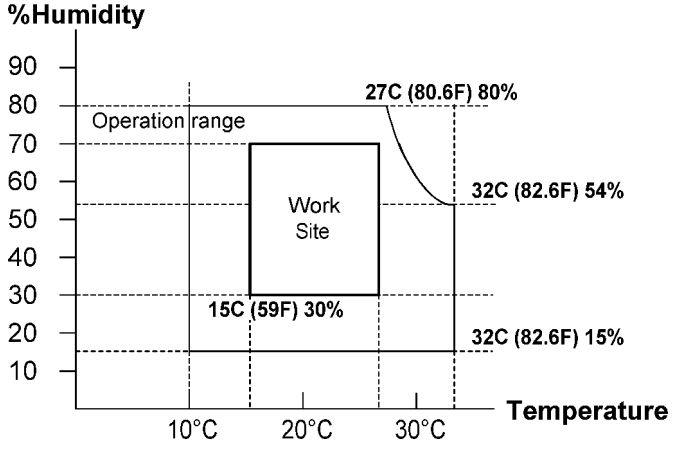
7. Specifications

1. Installation

Installation Requirements

Operating Environment

Temperature Range:	Range: 10°C to 32°C (50°F to 90°F) Recommended: 15°C to 25°C (59°F to 77°F)
Humidity Range:	Range: 15% to 80% Recommended: 30% to 70%
Ambient Illumination:	Less than 1,500 lux (do not expose to direct sunlight or strong light.)
Ventilation:	Room air should turn over at least 3 times per hour
Ambient Dust:	Less than 0.10 mg/m^3



G148i603A

1. If the place of installation is air-conditioned or heated, do not place the machine where it will be:
   - Subjected to sudden temperature changes
   - Directly exposed to cool air from an air-conditioner
   - Directly exposed to heat from a heater
2. Do not place the machine where it will be exposed to corrosive gases.
3. Do not install the machine at any location over 2,000 m (6,500 feet) above sea level.

4. Do not place the machine where it may be subjected to strong vibrations.
5. Do not connect the machine to a power source shared with another electrical appliance.
6. The machine can generate a an electromagnetic field which could interfere with radio or television reception.
7. To avoid the possible accumulation of ozone, place the machine in an area that is well ventilated. (The rate of air replacement should be more than 30 m^3/hr/person.

Machine Level

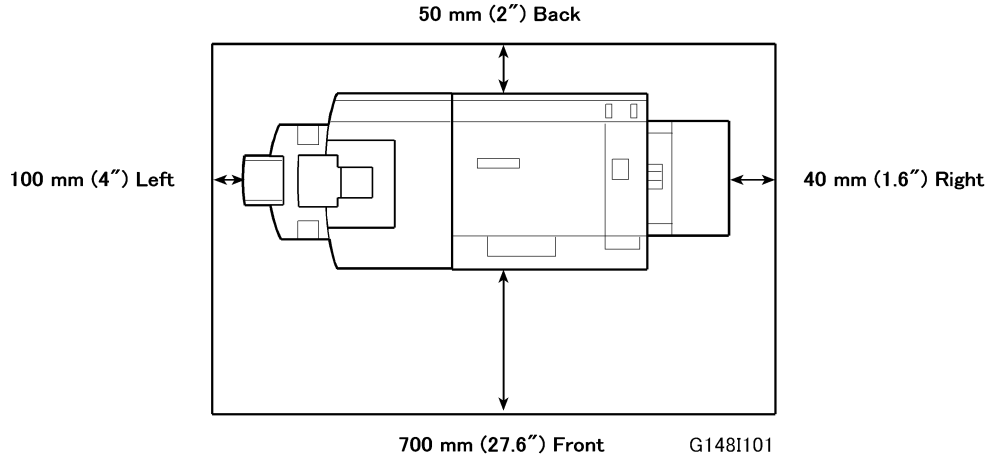
Place the machine on a strong and level base. Level the machine to less than 5 mm (0.2") front to back.

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

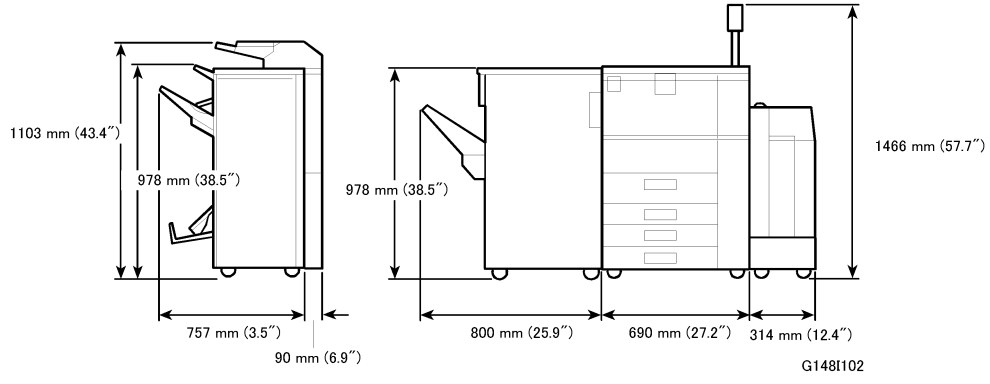
The machine legs can be screwed up or down in order to level the machine.

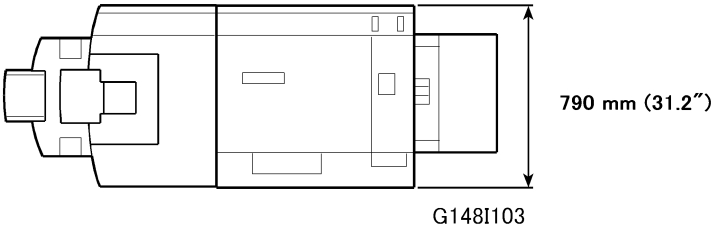
Minimum Space Requirements

Place the machine near the power source with minimum clearance as shown below. The same amount of clearance is necessary when optional peripheral devices are installed.



Dimensions





Peripheral/Option Summary Table

The table below summarizes all the peripheral devices and controller options that can be installed with this machine.

No.	Name	Class	Comment
B475	A3/11"x17" Tray Unit Type 1075	1	Conversion kit for printer tandem tray.
B499	Tab Sheet Holder Type 3260	1	Installed by operator.
B473	LCT RT43	1	
B756	Copy Tray Type 2075	1	Attached to printer if no peripherals installed downstream.
G845	LCT Connection Unit Type A	2	Raises height of LCT. Required for installation of LCT with this printer.
B474	8½" x 14" Paper Size Tray Type 1075	2	Conversion kit for LCT.
B704	Cover Interposer Type 3260	2	Installed on either B706 or B700

No.	Name	Class	Comment
B706	3000-Sheet Finisher SR842	1	
B531	Punch Unit Type 1075 NA 3/2, EU 2/4	2	For B706. 3 types (NA 3/2, EU 2/4)
A812	Punch Unit Type 850 SC	2	For B706. For Scandinavia.
B513	Output Jogger Unit Type 1075	2	For B706.
B700	2000-Sheet Finisher SR4000	1	
B702	Punch Unit Type 3260 NA 2/3	2	For B700.
B702	Punch Unit Type 3260 EU 2/4	2	
B702	Punch Unit Type 3260 SC	2	
B703	Output Jogger Unit Type 3260	2	For B700.
G819	USB Host Interface Unit Type 7300	3	Installed on controller board.
G813	IEEE 802.11b Interface Unit Type H	3	Boards. Installed on controller board.
B874	Gigabit Ethernet Board Type A	3	
B679	IEEE1284 Interface Board Type A	3	
G874	Data Overwrite Security Unit Type G	3	SD card installed on controller board

Note:

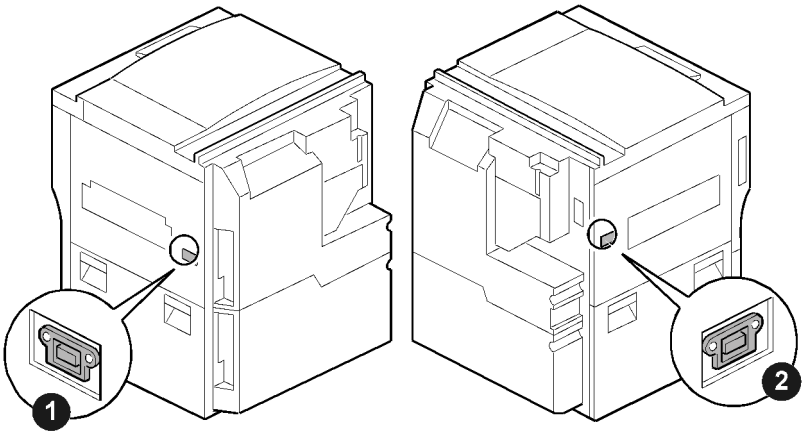
- Class 1: Peripheral units connected directly to the mainframe
- Class 2: Components installed on or in peripheral units (punches, etc.)
- Class 3: MFP controller options (SD cards, boards)

Power Requirements

⚠CAUTION

- Make sure that the wall outlet is near the main machine and is easily accessible.
- Make sure the plug is firmly inserted in the outlet.
- Avoid multi-wiring.
- Confirm that the machine is grounded.
- Never set anything on the power cord.

Power Sources



G148I115

Main Machine	Input voltage level	North America 120 V, 60 Hz: 20 A or more
		Europe/Asia 220 V ~ 240 V, 50 Hz/60 Hz: 10 A or more
	Permissible voltage fluctuation	±10%
LCT ❶	Rating voltage of Output Connector: Max. DC 24V (from main machine)	
Finisher ❷	Rating voltage of Output Connector: Max. DC 24V (from main machine)	

⚠CAUTION

- Never turn off the power switch when the power LED is lit or flashing. To avoid damaging the hard disk or memory, wait for the power LED to go off, and then switch the power switch off.

The Power LED lights or flashes:

- While the main machine is communicating with the network server
- While the machine is accessing the hard disk or memory when reading or writing data.

Main Machine (G148)

1

Accessory Check

Check the accessories and their quantities against this list:

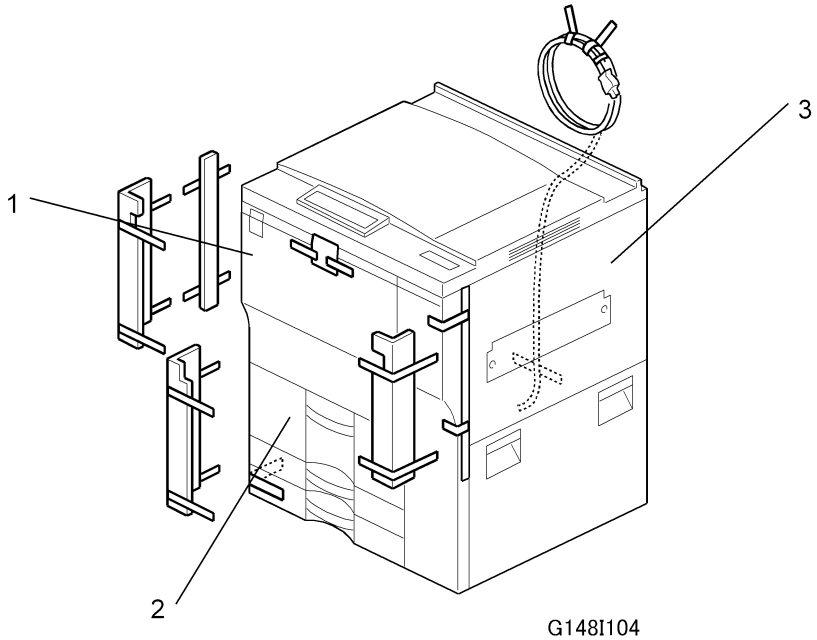
	Description	Qty		
		-17	-27	-22
1.	Model Name Decal	1	None	None
2.	Operation Instructions	2	None	None
3.	Decal – Paper Size 1	1	1	1
4.	Decal: Caution Chart: Paper Set: Direction 1	3	3	3
5.	Stand Holder 1	2	2	2
6.	Operating Instructions Holder 2	1	1	1
7.	Decal – Toner Supply – Multiple 1	5	5	5
8.	Decal – D1/E1 Multiple 1	None	1	1
9.	Panel Logo B1321531E	1	1	1
10.	Leveling Stoppers	2	2	2

Installation Procedure

Removing Tapes and Retainers

⚠CAUTION

- To avoid serious injury, do not connect the power plug to the machine until you are instructed to do so.

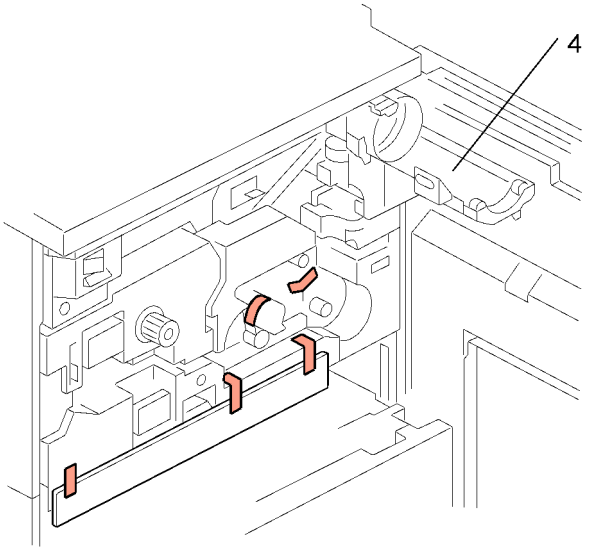


G148I104

1. **Unpack the machine and remove all the wrapping.**
2. **Remove all filament tape from the front [1] of the machine.**
3. **Open the lower tray [2] and remove the operating instructions holder and foot risers.**
4. **Remove the tape from the back [3] of the machine.**

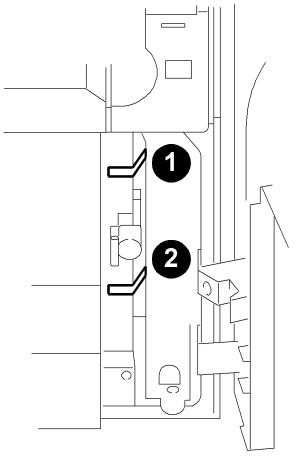
Note

- Keep the filament tape and shipping retainers to prepare the machine for shipping in the future.



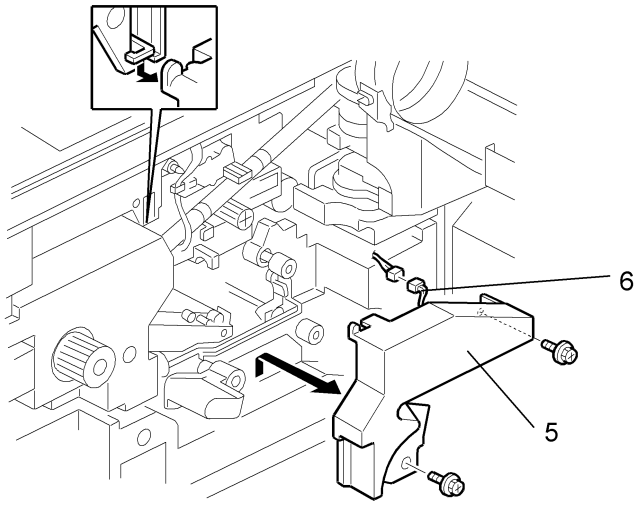
G148I106

5. **Open the front door, open the toner bottle holder [4], then remove all tape and shipping retainers.**



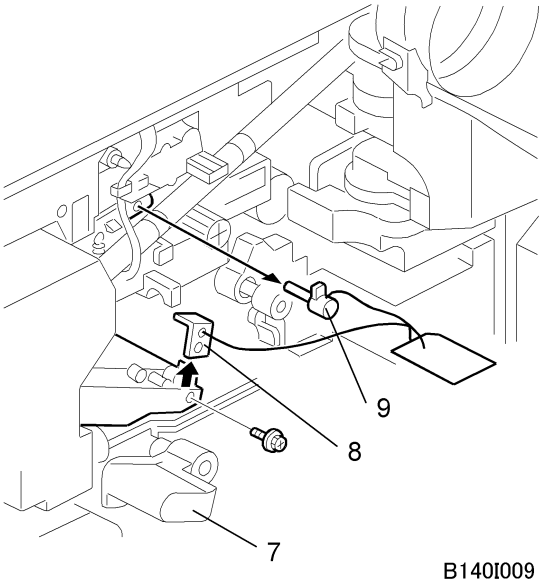
G148I104A

6. **Open the right door and remove the tapes from the vertical transport plate.**



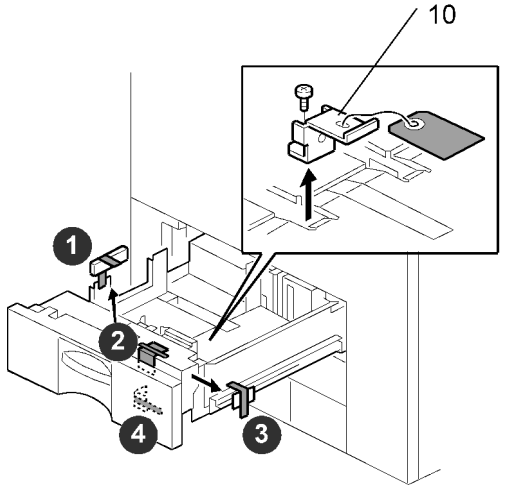
B064I008

7. Remove the PCU inner cover [5] (x 2) and disconnect the fan motor [6] (x 1).



B140I009

8. Lower the transfer unit by turning its knob [7].
9. Remove the bracket [8], and the red tag from the transfer belt (x 1).
10. Remove the pin [9], and the red tag from the cleaning blade.



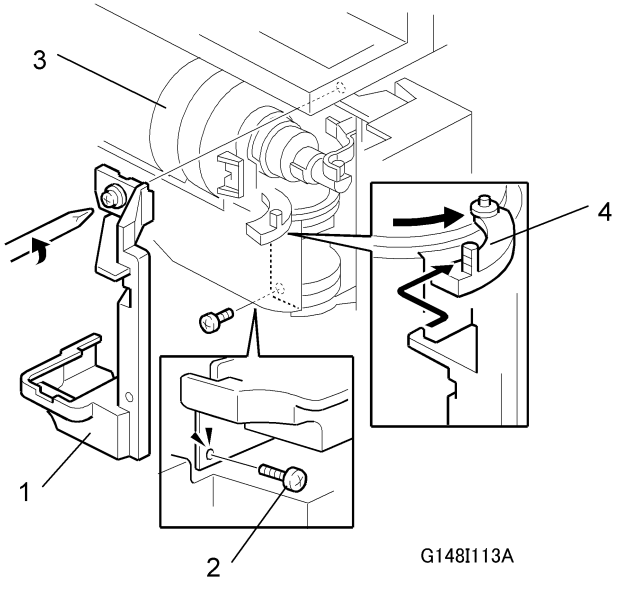
G148I104B

11. Open the tandem tray (top paper tray). Remove the metal retainer bracket [10] (x 1) and wire, then the red tags (x2) and all tape.

Removing and Filling the Development Unit

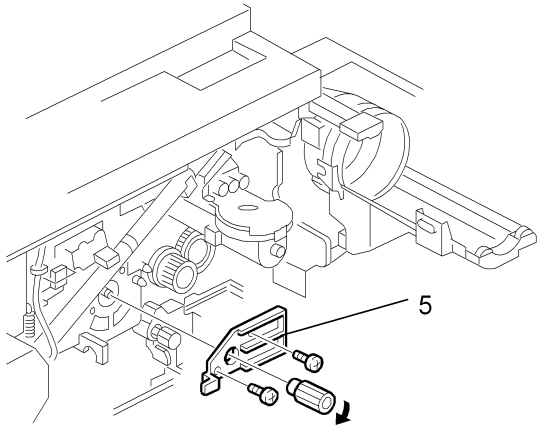
Important

- Before you begin, remove the toner bottle if it is installed.
- The toner bottle holder can be damaged if it is in the machine when you do the procedure below.



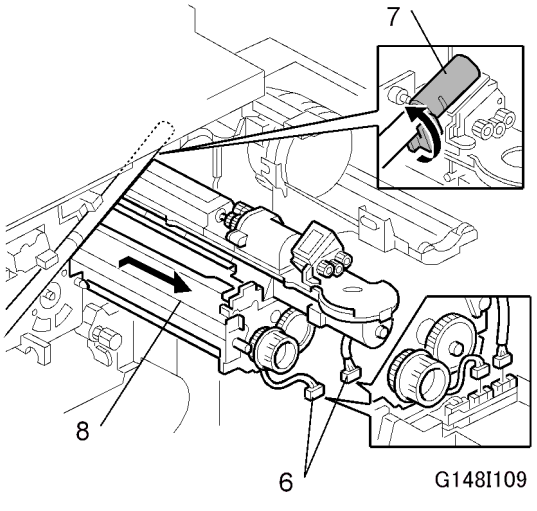
G148I113A

1. Open the front door.
2. Remove the shutter cover [1] (x 1).
3. Remove the lock screw [2].
4. Remove any remaining shipping tape from inside the machine [3].
5. Pull the toner bottle holder [4] and swing it to the right.



G148I108

6. Remove the face plate [5] of the development unit (knob x 1, x 2).



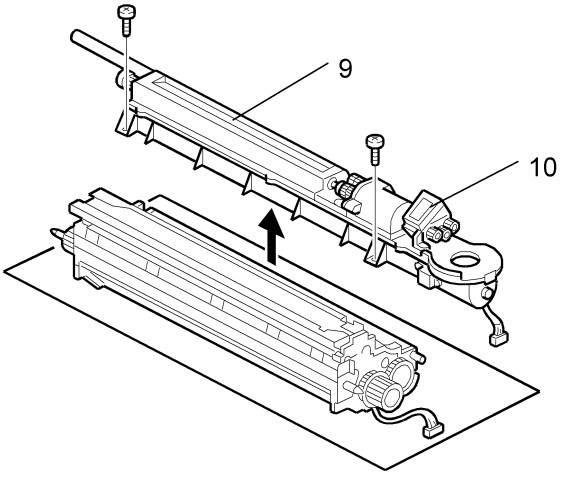
G148I109

7. Disconnect the development unit [6] (x 2).

Note

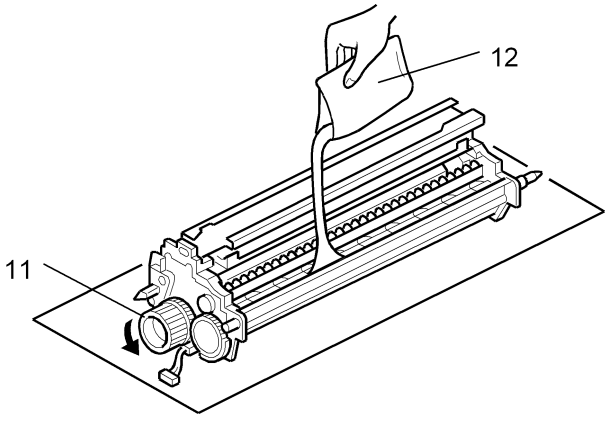
- If the LCT is installed, disconnect it. This lets the front door open far enough for development unit removal.

8. Close the supply pipe shutter [7].
9. While allowing the development unit [8] to slip to the right, slowly pull it out of the machine.



B064I304

10. Remove the toner hopper [9] (x 2).
11. Rotate the toner hopper [10] slightly 10° to 20° as you slide it up to remove it.



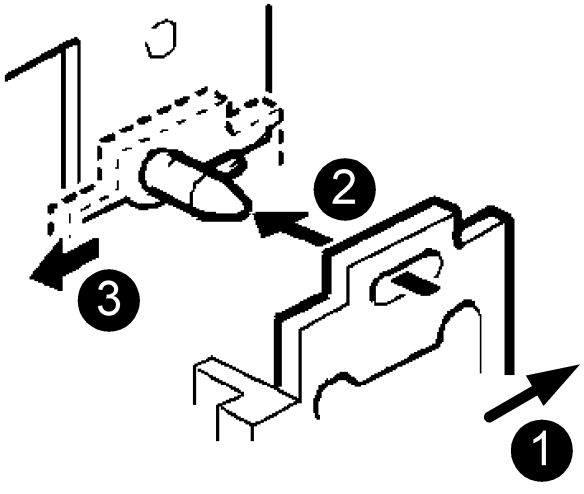
B064I305

12. While turning the knob [11] slowly, pour in one pack of developer [12] from one end of the development unit to the other.
13. Make sure that the developer is evenly distributed.
14. Assemble the development unit, then re-install it in the machine.
15. Follow the instructions printed on the inside of the front door to install the toner bottle.

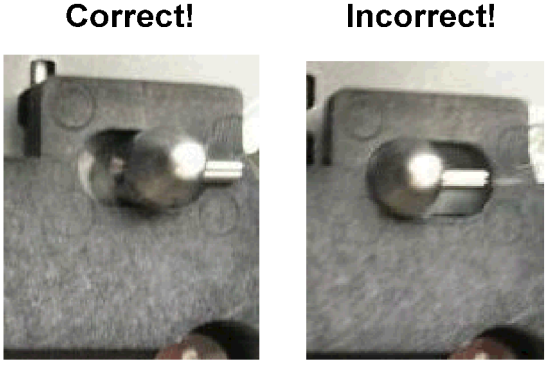
Note

- If the door does not close, make sure that the pipe line shutter is rotated down. (See Step 7 above.)

Re-installing the Development Unit



1. Push the development unit to the right. ❶
2. While continuing to hold the unit to the right, push it into the machine.
3. Confirm that the pin [A] goes into the left side of the oval hole [B] in the development unit plate.
4. Push the development unit in completely ❷ until it stops, then push it to the left. ❸
5. Make sure you can see the horizontal pin in front of the plate as shown below.



B246I999a

Important

- **If you cannot move the development unit plate behind the horizontal pin, turn the front gear of the unit to the left and try again.**
- **Make sure the pipeline shutter is rotated down to the open position.**

6. **Reattach all removed parts.**

Initializing the Drum Settings

You must do SP2963 (Installation Mode) to 1) Initialize the developer and do a forced toner supply to the development unit, and 2) Initialize the auto process control settings.

- You must open the front door before you switch the machine on. If you do this, the machine does not do the short automatic process control procedure, which is usually done after the machine power is turned on.
- SP2963 must be done before you do sample copying or test printing.
- If you do not press [#Enter]"in Step 6, the auto process control items (potential sensor calibration, Vsg, Vref, etc.) will not initialize correctly.

1. **Open the front door.**
2. **Connect the power cord.**
3. **Turn the power switch on.**
4. **Go into the SP mode.**
5. **Close the front door.**
6. **Do SP2963.**
   - After you push [#Enter], you will see "Processing" in the display.
   - Initializing toner supply and the auto process control settings takes about 4 minutes.
   - The process is finished when you see "OK" on the display.
7. **Leave the SP mode.**
8. **Attach the applicable decals (supplied with the machine) to the paper trays.**
9. **Check the copy quality and machine operation.**

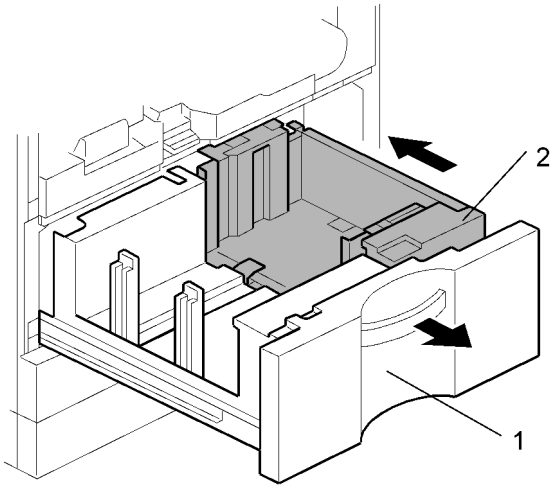
Important

- **After you replace developer in a machine that has been already installed, do not use SP2963; use SP2801 (TD Sensor Initial Setting) instead to initialize the TD sensor.**

Tandem Tray

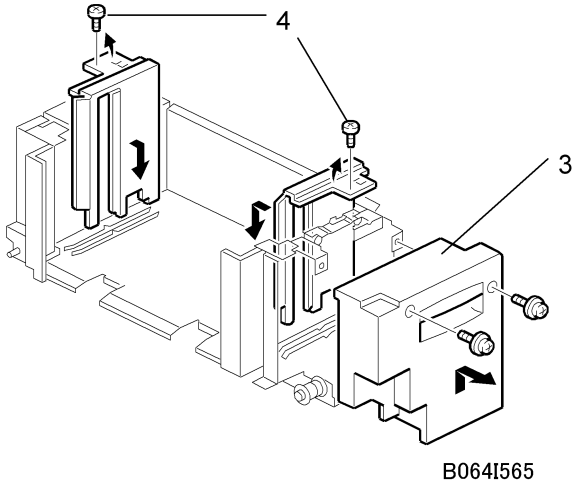
Before shipping the machine, the tandem tray is set for A4 or LT LEF and must be adjusted if the customer wants to use the tandem tray for another paper size.

Feed Station	Allowed Size
Tandem Tray (Tray 1)	A4 LEF, LT LEF



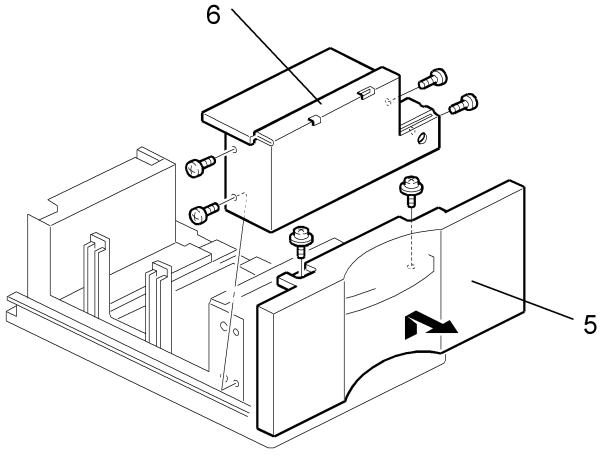
G148i111

1. **Open the front cover.**
2. **Completely pull out the tandem feed tray [1] so that the right tandem tray [2] separates from the left tandem tray.**



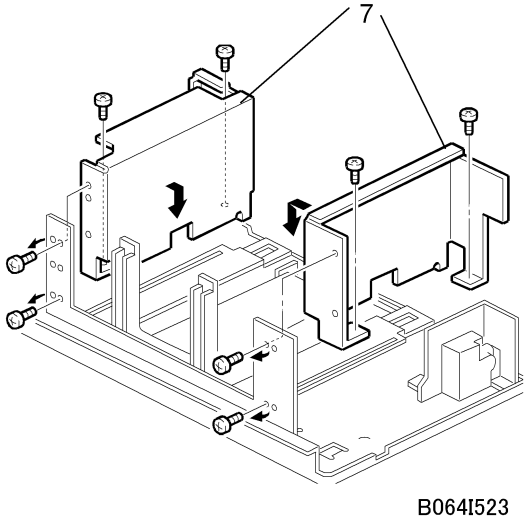
B064I565

3. **Remove the right tandem inner cover [3].**
4. **Re-position the side fences [4] (x 2). The outer slot position is used when loading A4 size paper.**
5. **Re-install the right tandem inner cover [3].**



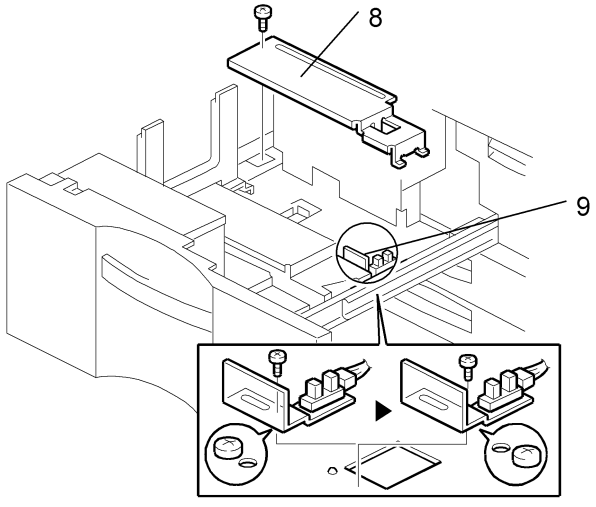
G148i112

6. **Remove the tray cover [5] (x 2).**
7. **Remove the motor cover [6] (x 4).**



B064I523

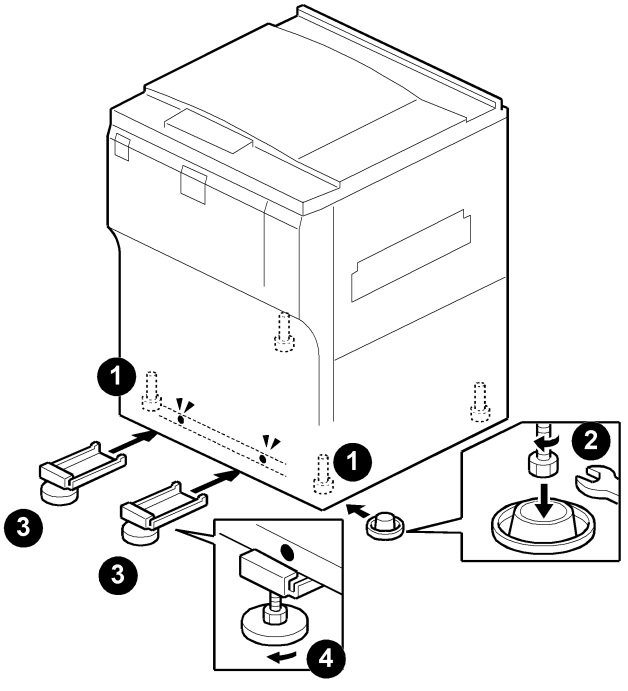
8. **Re-position the side fences [7] (x 8). The outer slot position is used when loading A4 size paper.**
9. **Re-install the motor cover and the tray cover.**



G148i113

10. Remove the rear bottom plate [8] (x 1).
11. Re-position the return position sensor bracket [9] (x 1). To use the paper tray for A4 size, put the screw in the left hole as shown. (For LT size, the screw should be placed on the right.)
12. Re-install the rear bottom plate.
13. Change the paper size using SP5959-001 (Paper Size – Tray 1). For details, see SP5959 in section "5. Service Tables".

Machine Level



G148i114

1. Set a stand ❶ at each corner of the machine.
2. Place a level on top of the machine (front to back). Use a wrench to turn each nut ❷ to level the machine to less than 5 mm.
3. Check the machine operation. With the customer, determine the best place to attach the cleaning reminder decal.
4. Place 2 leveling stoppers ❸ under the paper bank frame. Place one under the 8 mm hole and the other under the 8 x 10 mm hole.
5. While pressing the level stopper flat against the paper bank frame, use a wrench to turn each nut ❹ to raise the machine.
6. Repeat Step 5 until the long part of the leveling stopper is tight against the underside of the paper bank frame.
7. After adjustment is completed, turn nuts ❹ to raise them slightly as far as the bottom tray frame to lock the stoppers in place.
8. Confirm that the machine does not move when you push it left and right.

Important

- If the machine moves, repeat the leveling procedure.

Date and Time Setting

1. **Push [Menu] then select "Maintenance"> "Date/Time".**

Maintenance: Date Setting

2. **Push [#Enter].**

Maintenance: 04/30/2006

3. **To set the current date:**
   - Push △ or ▽ to select the number for the month, then push [#Enter]. The cursor moves to the next position to the right.
   - Push △ or ▽ to select the number for the day, then push [#Enter]. The cursor moves to the next position to the right.
   - Push △ or ▽ to select the number for the year, then push [#Enter].

Maintenance: Date Setting

4. **Push ▽ to select "Time Setting".**

Maintenance: Time Setting

5. **Push [#Enter].**

Time Setting: 11:14:14 PM

6. **To set the time:**
   - Push △ or ▽ to select the correct number for the hour and "AM"/"PM" display, then press [#Enter]. The cursor moves to the next position to the right
   - Push △ or ▽ to select the number for minutes, then push [#Enter]. The cursor moves to the next position to the right.
   - Push △ or ▽ to select the number for seconds, then push [#Enter].

Maintenance: Time Setting

7. **Press [Escape] until the display returns to standby mode.**

SP Code Settings

Do the following SP code settings.

To enter the SP mode:

1. With the machine in standby mode, press and hold down △ and ▽ together for 5 sec. and release.
2. Push [#Enter].
3. Push ▽ to display "2. Engine", then press [#Enter].

```
<Engine>
1. Feed
```

SP Codes

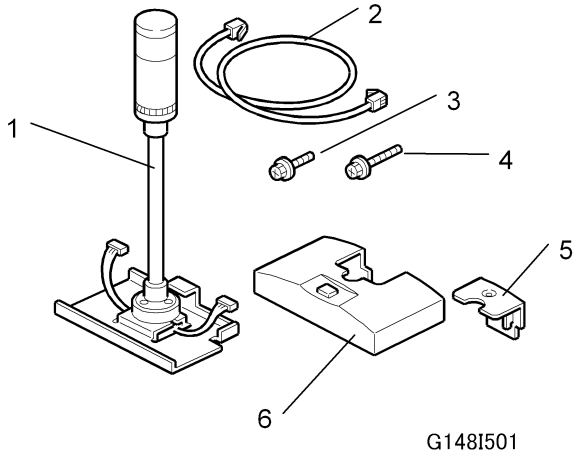
SP5812-001~002	Service Telephone Number Settings	Do this SP and enter the service contact numbers (telephone and fax).

Call Light Installation

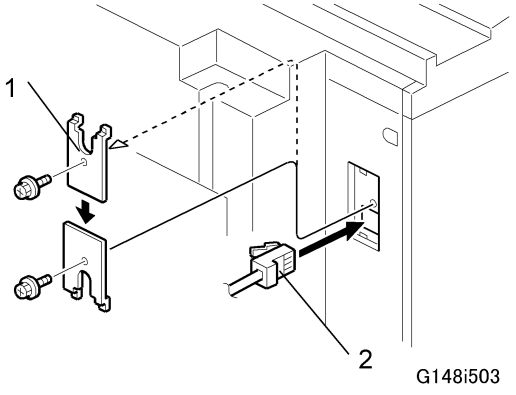
Accessory Check

Check the accessories and their quantities against this list:

Description	Qty
1. LED Stand	1
2. Harness Cable	1
3. Screws M4 x 8	1
4. Screws M4 x 14	4
5. LED Stand Rear Cover	1
6. LED Stand Front Cover	1

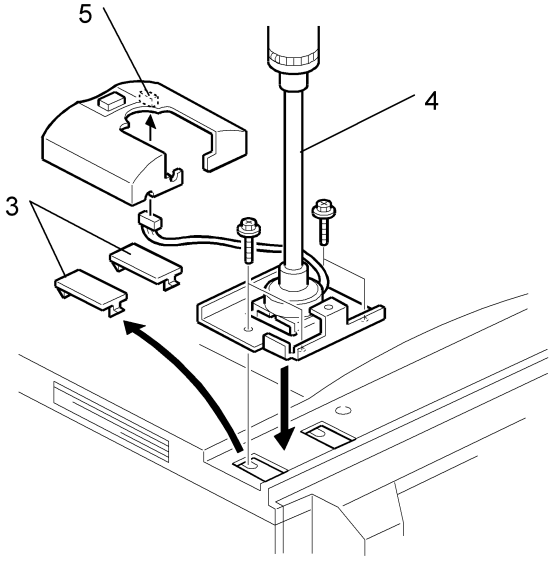


Call Light Installation Procedure



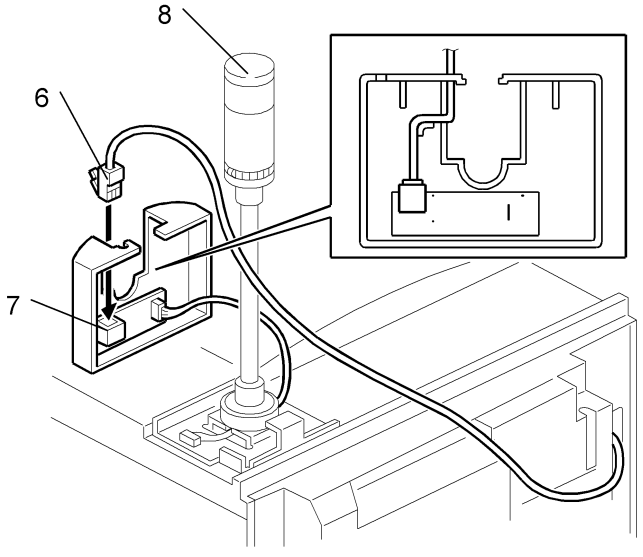
G148i503

1. Remove the rear upper right cover [1] (x1).
2. Connect one end of the harness cable to the machine port [2].
3. Reattach the upper right cover [1] so that the cut-out is facing down as shown.



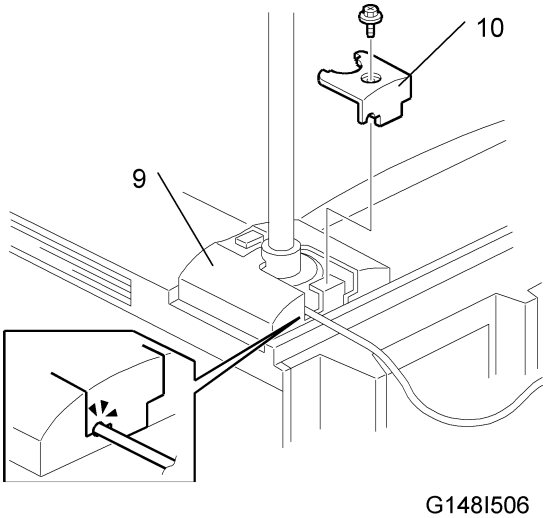
G148i504

4. Remove the caps [3].
5. Attach the LED stand [4] (x4).
6. Connect the harness of the call light to the LED stand cover [5] connector CN592.



G148i505

7. Connect the other end of the harness cable [6] to CN591 [7] on the cover.
8. Lead the cable [8] around the ribs of the cover.



G148I506

9. Attach the LED stand front cover [9] to the base of the LED stand.
10. Fasten the LED stand rear cover [10] (x1).

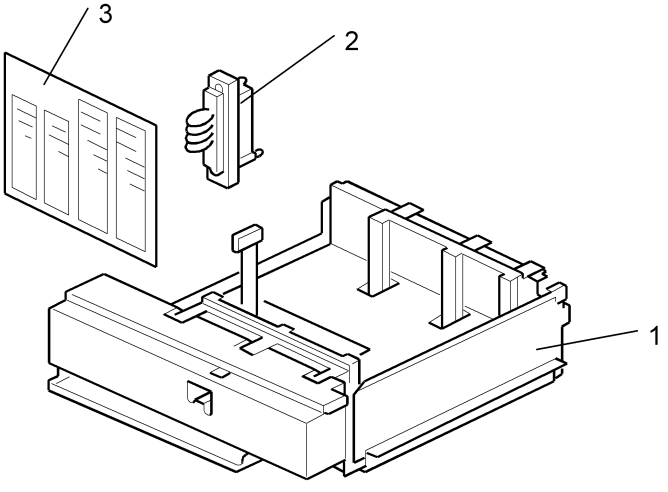
A3/DLT Feeder Kit (B475)

1

Accessory Check

Check the accessories and their quantities against this list:

Description	Qty
1. A3/DLT Tray	1
2. Short connector	1
3. Page size decals	1

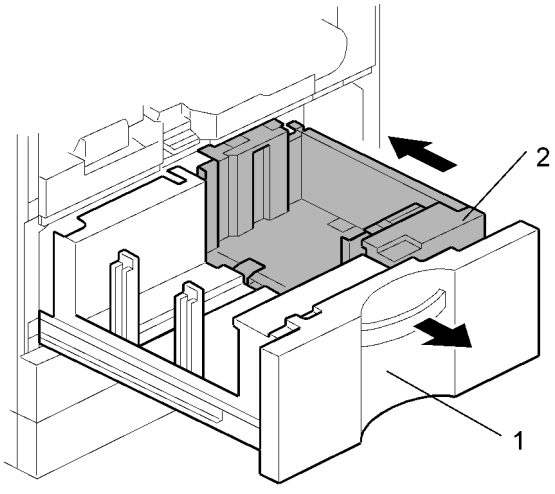


B475I001

Installation Procedure

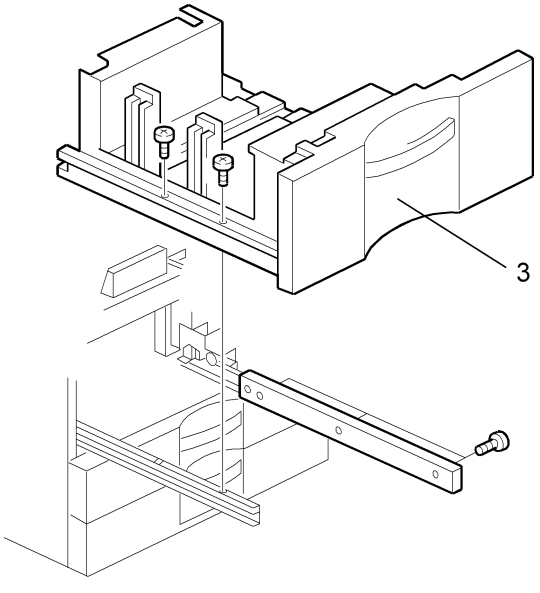
⚠CAUTION

- Switch the machine off and unplug it before starting the following procedure.



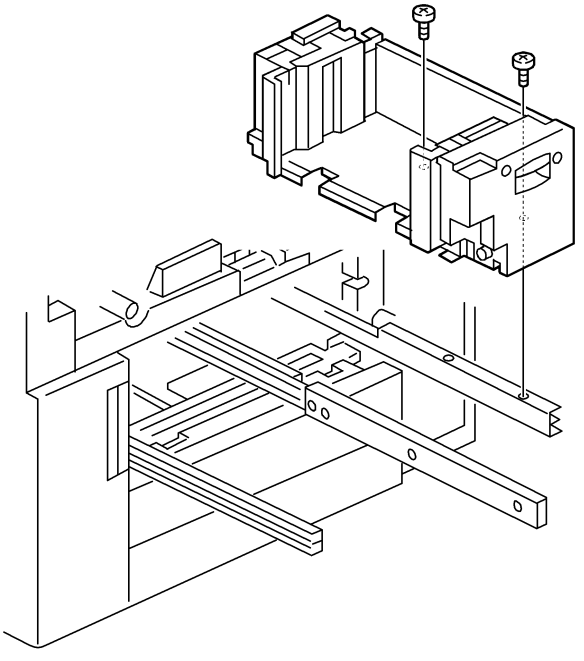
G148i111

1. **Draw out the tandem tray completely to separate the left and right sides of the tray, then remove the front cover [1] (x 2).**
2. **Push in the right tandem tray [2].**



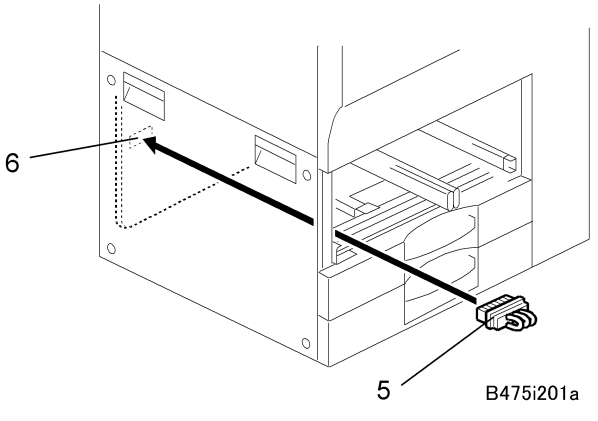
B475i708a

3. **Remove the left tandem tray [3] (x 5). Keep these screws.**



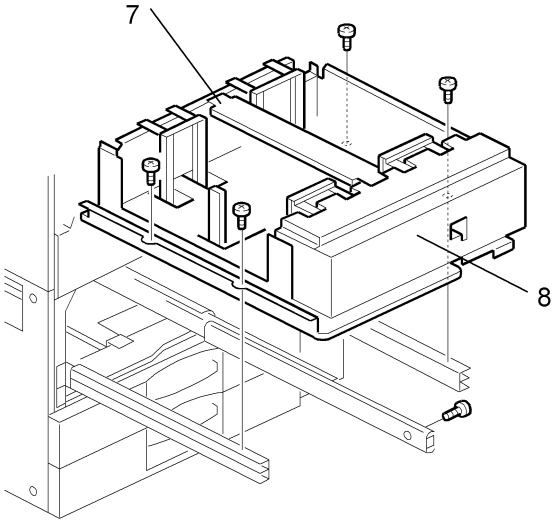
B475i709

4. **Remove the right tandem tray [4] (x 2). Keep these screws.**



B475i201a

5. **Connect the short connector [5] to the left tandem tray terminal [6].**



B475i202a

6. Remove the stay [7] (x 2) and re-install it.
7. Attach the A3/DLT tray [8], using the screws removed earlier.
8. Re-install the front cover.
9. Switch the machine on, enter the SP mode and select the paper size for Tray 1 with SP5959-001 (Paper Size – Tray 1) For details, see SP5959 in section "5. Service Tables".
10. Attach the appropriate decal for the selected paper size.

LCT (B473)

1

LCT (B473) Accessory Check

Check the accessories and their quantities against this list:

Description	Qty
1. Flat-head shoulder screw - M4 x 6	1
2. Upper docking pins (grooved)	2
3. Lower docking pin (not grooved)	1
4. Installation Instructions	1
5. Paper Set Decal	1

Important

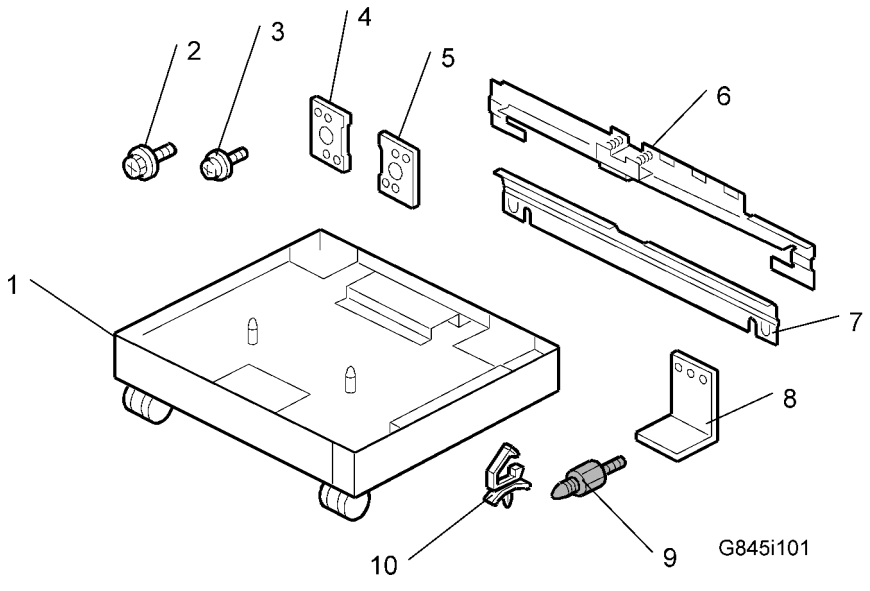
- **Due to the height of the main machine, the LCT Connection Unit Type A (G845) must be installed, to adjust the height of the LCT from the floor.**

LCT Connection Unit (G845) Accessory Check

Check the accessories and their quantities against this list:

Description	Qty
1. LCT Stand	1
2. Screws M3 x 8	4
3. Screws M4 x 8	4
4. Rear Space Adjuster	1
5. Front Space Adjuster	1
6. Upper Guide Bracket	1
7. Lower Guide Bracket	1
8. Ground Base Plate	1
9. Docking Pins	2

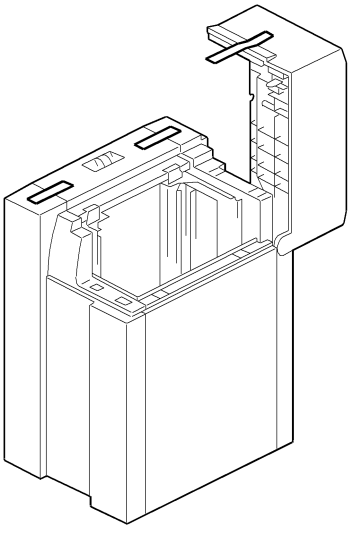
10. Clamp 1



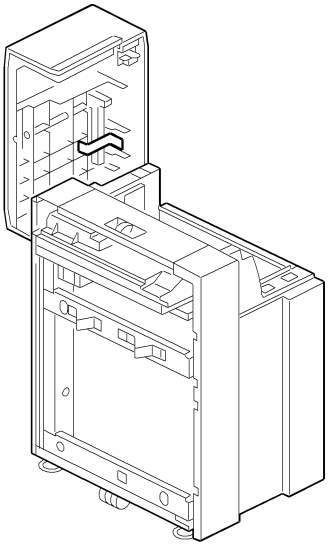
Installation Procedure

1

Removing Tape



B473I001



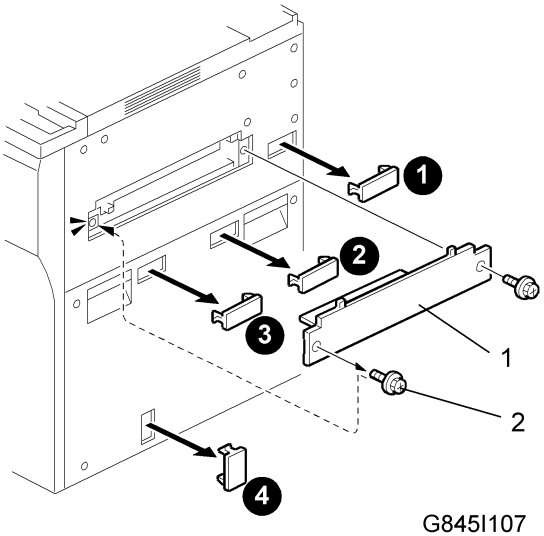
B473I002

1. Remove the filament tape from the body and top cover of the LCT.
2. Remove the tape under the lid of the LCT.

Preparing the Main Machine

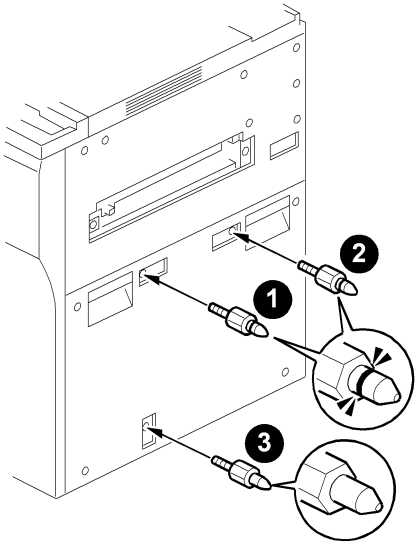
Important

- Switch the machine off and unplug the machine before starting the following procedure.



G845I107

1. Remove the LCT installation cover [1] from the right side of the machine. (🔩 x 2).
2. Keep the screw on the left [2]. You will need it to install the LCT.
3. Remove the LCT connector cover ❶¶.
4. Remove the docking pin hole covers ❷, ❸, ❹.



G845I108

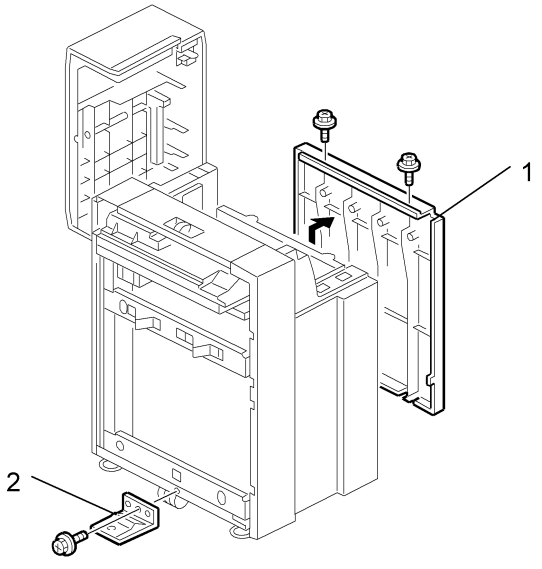
5. Insert the two upper docking pins (grooved) ❶, ❷ into the upper slots.

Important

- For docking pins ❶, ❷ use the black pins that are provided with the G845 kit. Do not use the pins provided with the LCT.

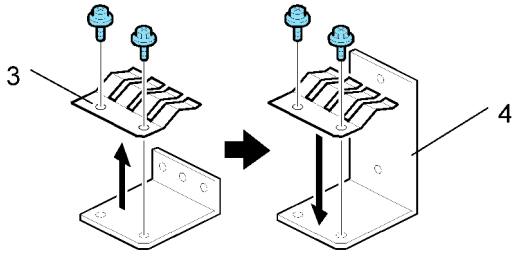
6. Insert the lower docking pin ❸ into the lower slot.

Installing the LCT Connection Unit



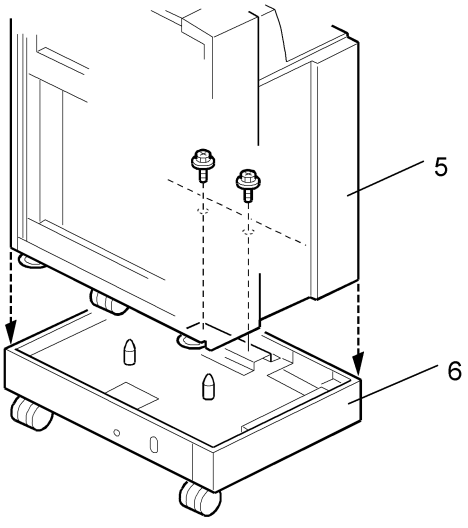
G845I102

1. Remove the right cover [1] of the LCT (x2).
2. Remove the ground plate [2] attached to the LCT (x1).



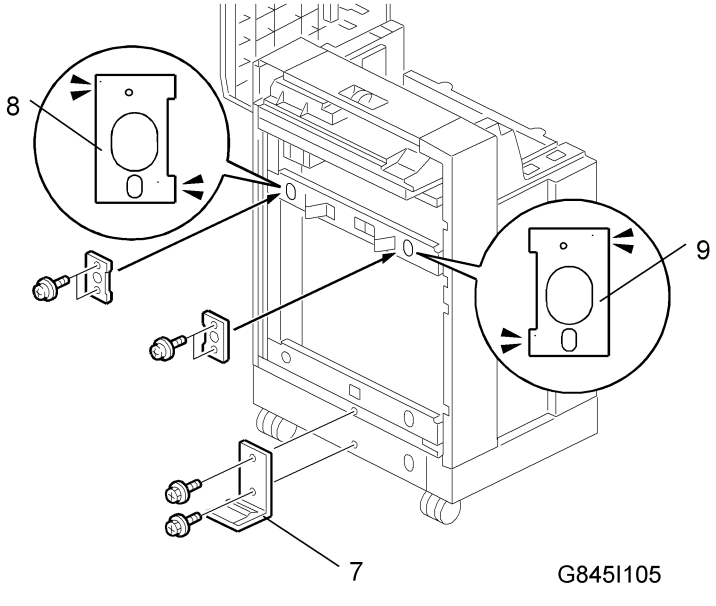
G845I103

3. From the ground plate you have just removed from the LCT, remove the ground plate contacts [3] (x2).
4. Attach the ground plate contacts to the larger plate [4] that is provided with the connection unit (x2).



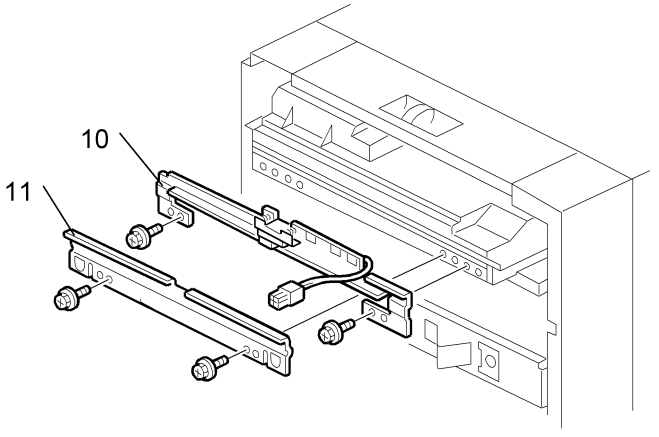
G845I104

5. **Set the LCT [5] on the connection unit base [6].**
6. **Attach the LCT to the connection kit base (x2).**



G845I105

7. **Attach the ground plate [7] to the LCT (x2).**
8. **Attach the rear space adjuster [8] and front space adjuster [9] as shown (x2).**
   - Align each space adjuster on the bosses with the square cut-out on the inside edge, and with the oval hole pointing down as shown.



G845I106

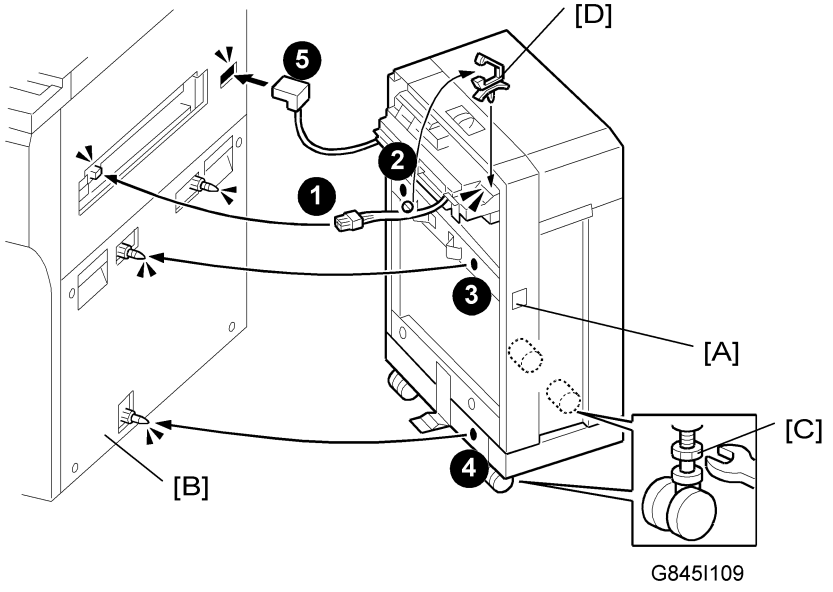
9. **Attach the upper guide [10] (x2).**
10. **Attach the lower guide [11] (x2).**

Note

- The upper guide must be attached before the lower guide. Make sure the guides are positioned correctly so that they do not interfere with paper feed and mark the sheets with creases.

11. **Replace the right cover of the LCT (x2).**

Installing the LCT



G845I109

1. Push the LCT on its stand against the side of the machine.
2. Connect the harness❶.
3. Align the holes ❷, ❸, ❹ on the side of the LCT with the docking pins on the side of the machine [B].

   Important

   - Confirm that the guide pins are inserted correctly into the holes. If the pins do not align with their holes properly, use a wrench to adjust the positions of the casters [C].
4. Slowly push the LCT onto the pins.

   Important

   - Confirm that the harness ❶ is not pinched between the machine and the LCT.
   - The release button [A] is used to unlock the LCT so it can be disconnected from the machine.
5. Connect the plug ❺ of the LCT power cord to the side of the machine.
6. Attach the clamp [D] and close it around the cable of the harness ❶.
7. Switch the machine on and [#Enter] SP5959 005 (Paper Size – Tray 4 (LCT)) to select the paper size. For details, see SP5959 in section "5. Service Tables."

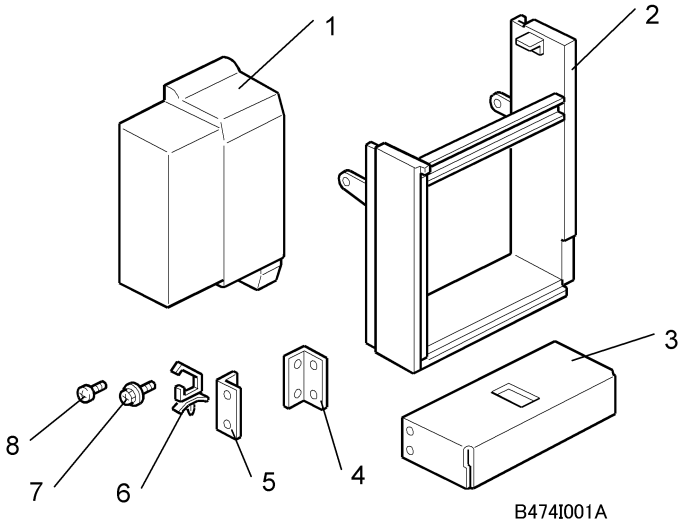
8½" x 14" Paper Size Tray (B474)

1

Accessory Check (B474)

Check the accessories and their quantities against this list:

Description	Qty
1. Cover	1
2. B4/LG frame	1
3. Bottom plate extension	1
4. Rear bracket	1
5. Front bracket	1
6. Harness clamp	1
7. Tapping hex screws - M4 x 8	6
8. Tapping screws - M4 x 8	4

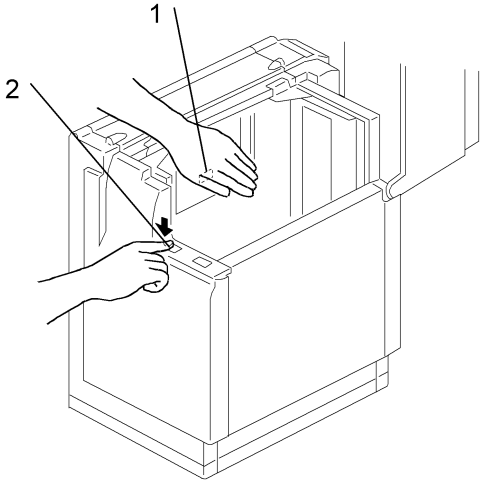


Installation Procedure

⚠CAUTION

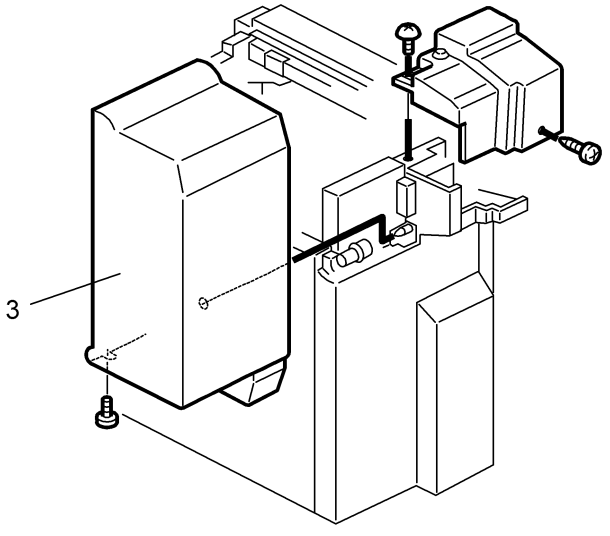
- Switch the machine off and unplug the machine before starting the following procedure.

If the LCT is connected to the machine

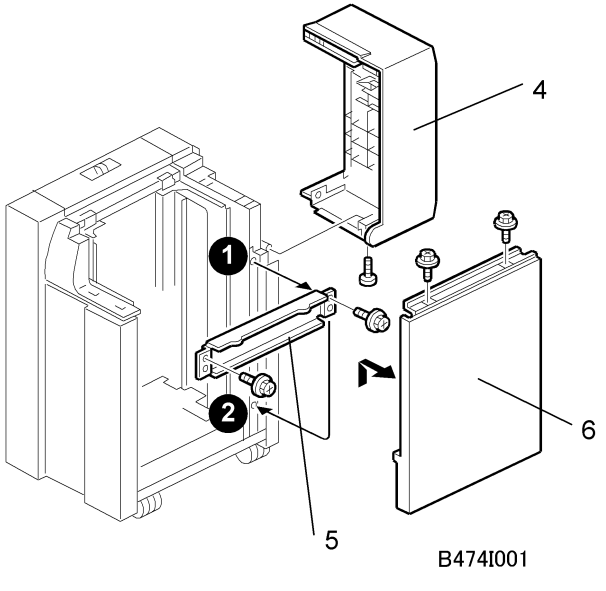


B474I507

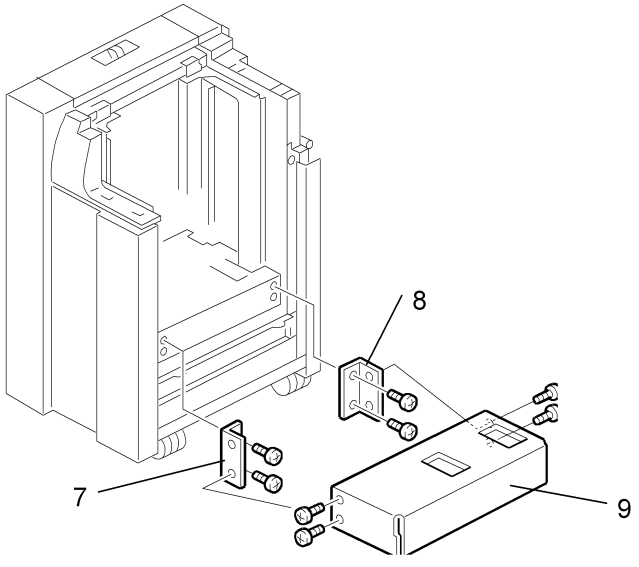
1. **Open the cover and remove the paper.**
2. **Lower the LCT tray. Cover the near end sensor [1], then press the tray down button [2] to lower the tray bottom plate.**



3. **Disconnect the LCT from the machine.**
4. **Remove the LCT upper cover [3].**



5. **Remove the LCT cover [4] (x 1).**
6. **Remove the right stay [5] at ❶ and re-attach it below at ❷ (x 2).**
7. **Remove the right cover [6] (x 2).**



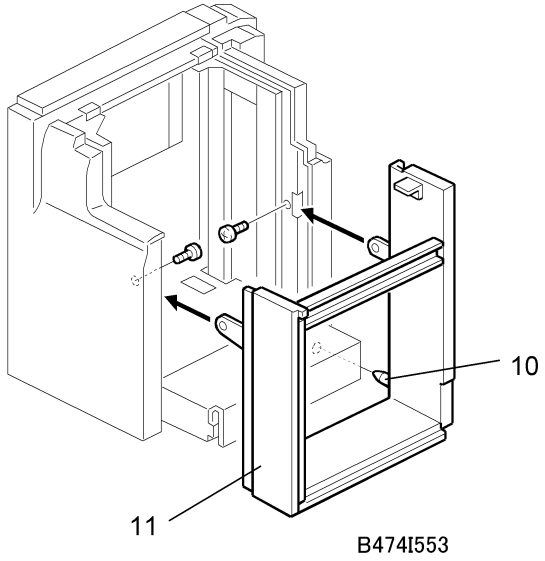
B474I502

8. **Attach the front bracket [7] with the beveled corner down (☞ x 2).**

Note

- If the brackets are difficult to install, raise the bottom plate with your hand.

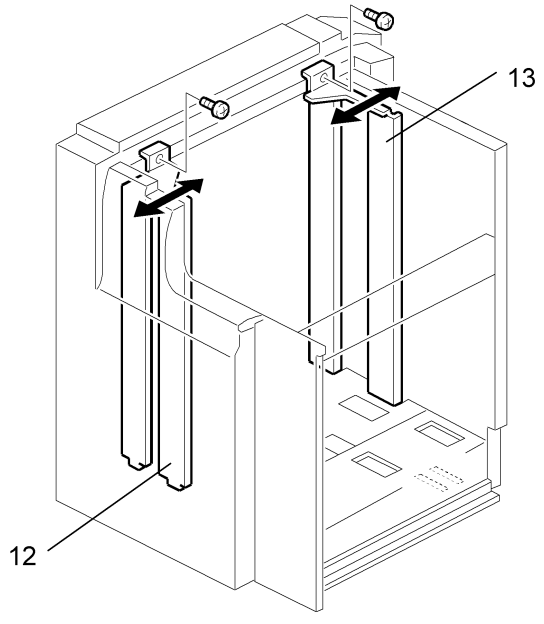
9. **Attach the rear bracket [8] with the beveled corner down (☞ x 2).**
10. **Attach the bottom plate extension [9] with the hex nuts (☞ x 4).**



B474I553

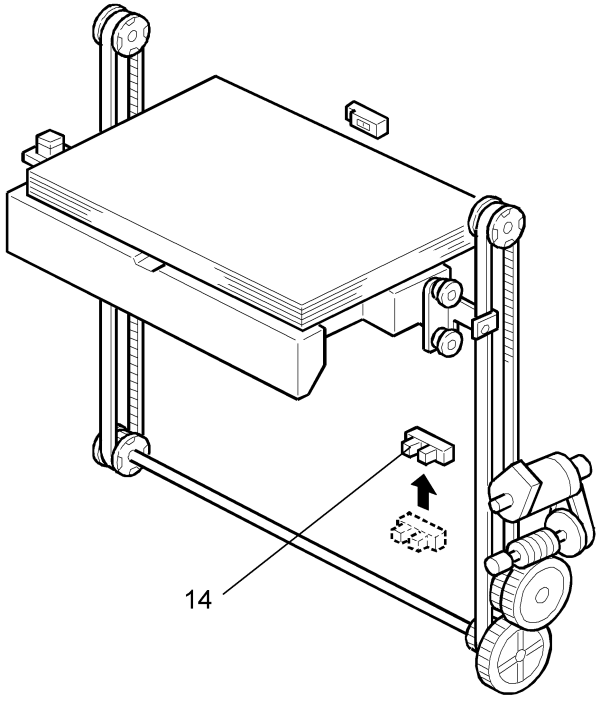
11. **Align the positioning pin [10].**
12. **Attach the B4/LG frame [11] with the hex nuts (☞ x 2).**

The kit is set for B4. If you need to change the paper size to LG, do the following steps.



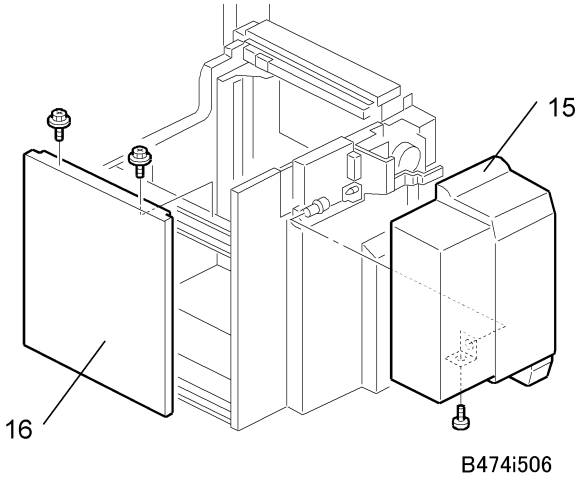
B474I555

1. **Move the front side fence [12] to the LG position and fasten (x 1).**
2. **Move the rear side fence [13] to the LG position and fasten (x 1).**



B474I508

3. Change the position of the lower limit sensor [14] (x 1).
4. Attach the harness (not shown) to the back of the plate and secure the sensor connector wire.



B474i506

5. Attach the LCT cover [15] provided with the kit (x 1).
6. Re-attach the right cover [16] (x 2).
7. Connect the LCT to the machine.

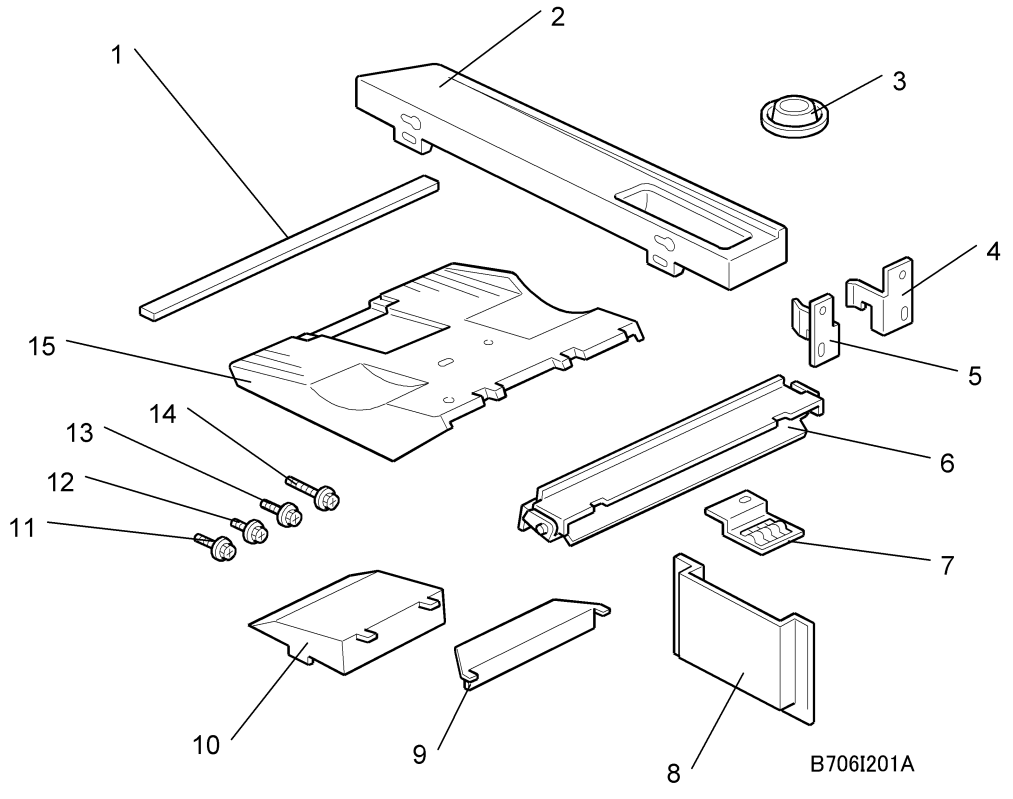
8. Switch the machine on, enter the SP mode, then use SP5959 005 (Paper Size – Tray 4 (LCT) to select the new paper size. For details, see SP5959 in section "5. Service Tables".

3000-Sheet Finisher SR842 (B706)

Accessory Check

Check the accessories and their quantities against this list:

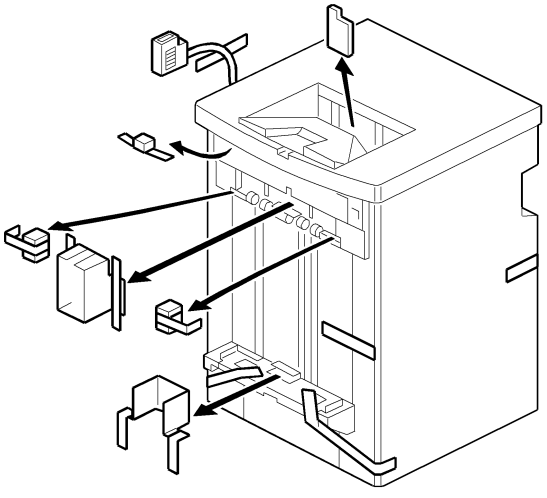
	Description	Qty
1.	Cushion	1
2.	Table Extension	1
3.	Leveling Shoes	4
4.	Rear Joint Bracket	1
5.	Front Joint Bracket	1
6.	Entrance Guide Plate	1
7.	Grounding Plate	1
8.	Auxiliary Tray Holder	2
9.	Auxiliary Tray - Proof	2
10.	Auxiliary Tray - Shift	2
11.	Tapping Screws - M4 x 8	2
12.	Tapping Screws - M4 x 8	4
13.	Tapping Screws - M3 x 8	4
14.	Phillips Screws w/washer - M4 x 14	4
15.	Shift Tray	4
16.	Installation Procedure	



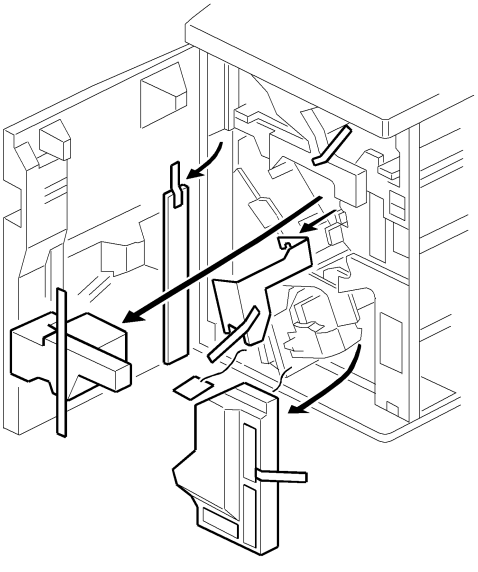
Installation

⚠CAUTION

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

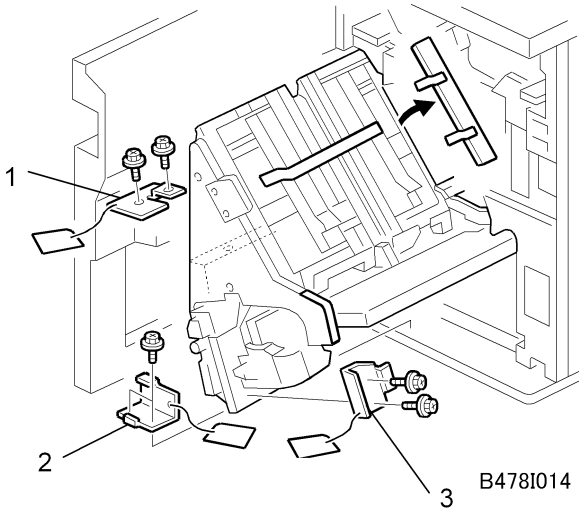


B478I002

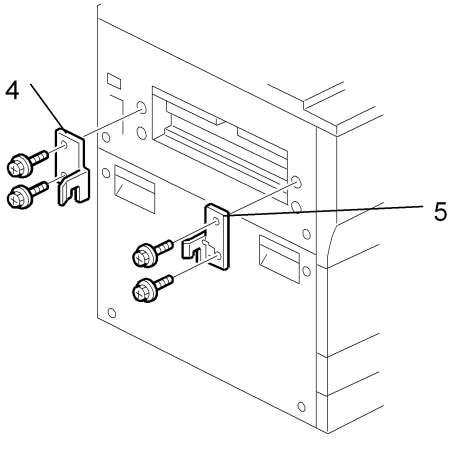


B478I003

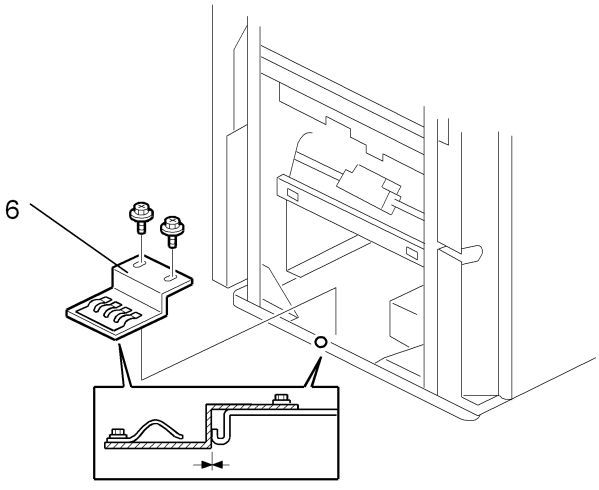
1. **Unpack the finisher and remove all tapes and shipping retainers.**



2. **Open the front door and remove the shipping retainers. Remove brackets [1], [2], and [3] (x 2 each).**



3. **Install the rear joint bracket [4] and front joint bracket [5] (x 2 each) (M4 x 14) on the left side of the machine.**

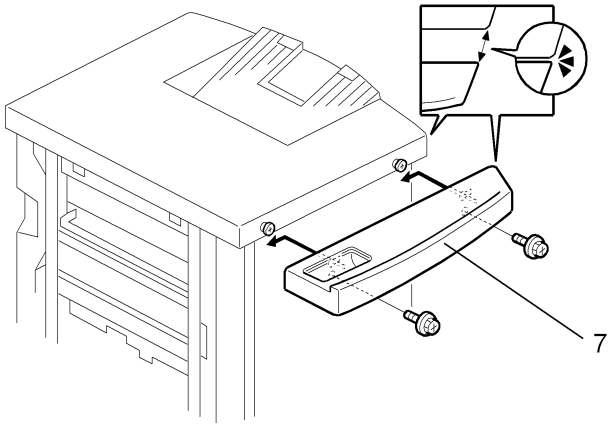


B478I004

4. Install the grounding plate [6] (x 2) (M3 x 6).

Important

- Set the grounding plate so that there is no gap between the grounding plate and the bottom frame of the finisher (as shown).

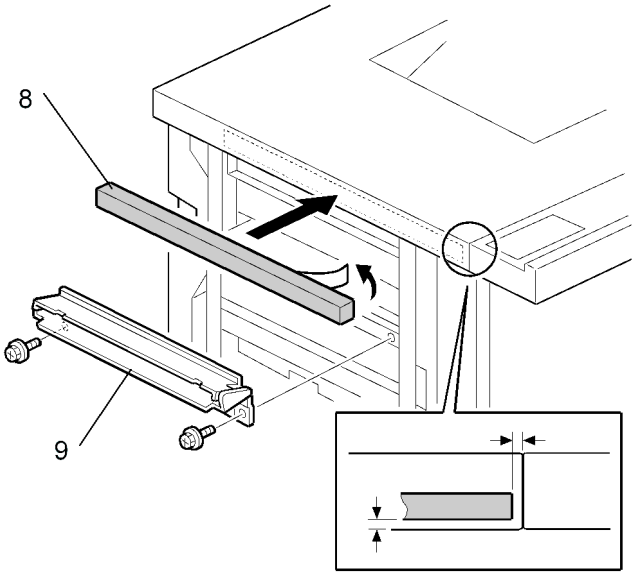


B478I005

5. Install the table extension [7] as shown (x 2) (M4 x 8).

Important

- The edge of the table extension should be aligned with the edge of the finisher (as shown).



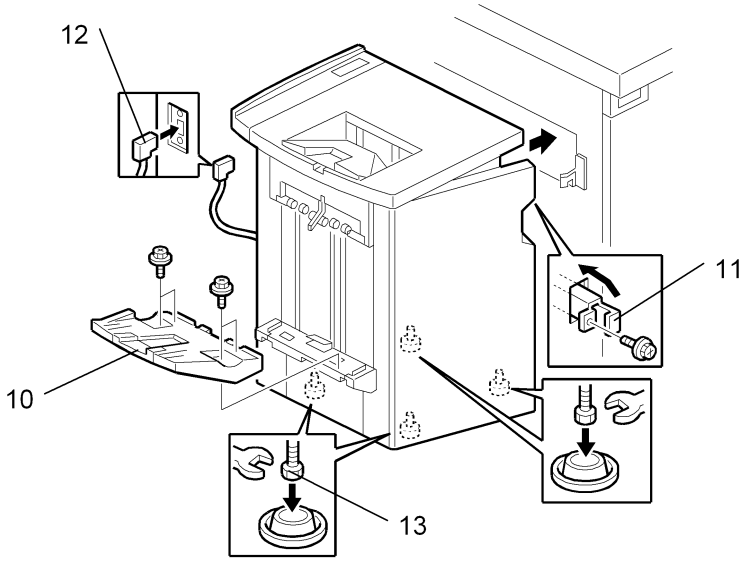
B478I107

6. Attach the cushion [8] to the right side of the upper cover.

Important

- If you are installing the cover interposer tray, do not attach the cushion here. Attach it to the cover interposer tray.
- The cover interposer tray must be installed before you dock the finisher and tray with the main machine.
- For details, see the Cover Interposer Tray B470 installation instructions.

7. Install the entrance guide plate [9] (x 2) (M3 x 6).



B478I006

8. Attach the shift tray [10] (x 4) (M3 x 8).
9. Open the front door of the finisher, and remove the screw from the locking lever, then pull out the locking lever [11].
10. Align the finisher on the joint brackets, and lock it in place by pushing in the locking lever [11].

   Important

   - Before securing the locking lever, make sure that the top edges of the finisher and the machine are parallel from front to rear.

11. Secure the locking lever [11] (x 1) and close the front door.
12. Connect the finisher cable [12] to the machine.
13. Set the leveling shoes [13] (x 4) under the feet and level the machine.

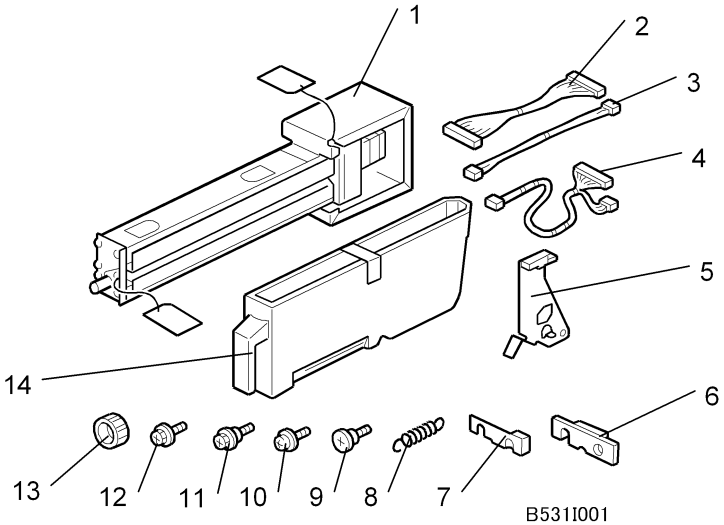
Punch Unit (B531/A812)

1

Accessory Check

Check the accessories and their quantities against this list:

	Description	Qty
1.	Punch unit	1
2.	Harness Connector Cable - PCB	1
3.	Harness Connector Cable - HP Sensor 2	1
4.	Harness Connector Cable - HP Sensor 1, Hopper Full	1
5.	Sensor Arm and Sensor	1
6.	Spacer (2 mm)	1
7.	Spacer (1 mm)	2
8.	Spring	1
9.	Step Screw (large) (M4 x 11)	1
10.	Tapping Screw (M4 x 10)	2
11.	Step Screw (small) (M3 x 4)	1
12.	Machine Screw, Washer (M4 x 6)	1
13.	Knob	1
14.	Punch Waste Hopper	1



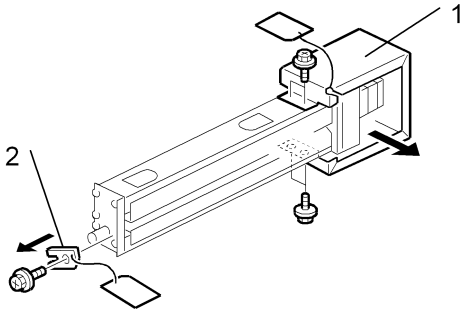
Installation

The Punch Unit B531/A812 is installed in the 3000-Sheet Finisher B706.

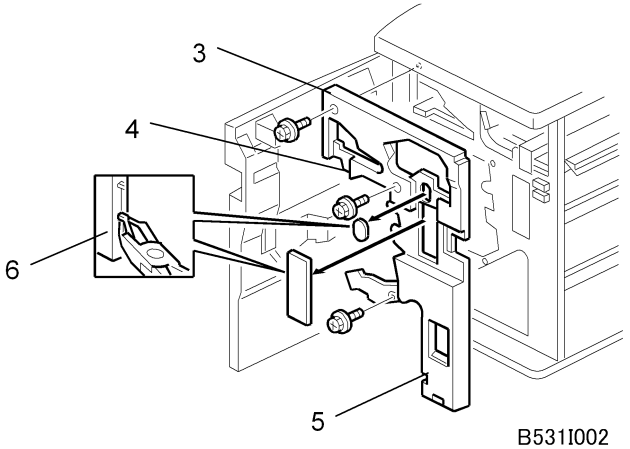
⚠CAUTION

- Switch the machine off and unplug the machine 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).**

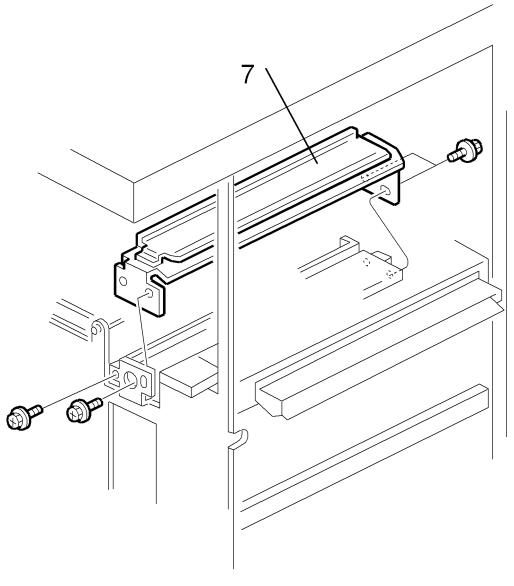


3. **Unpack the punch unit and remove the motor protector plate [1] (🔩 x 4) and the cam lock plate [2] (🔩 x 1).**



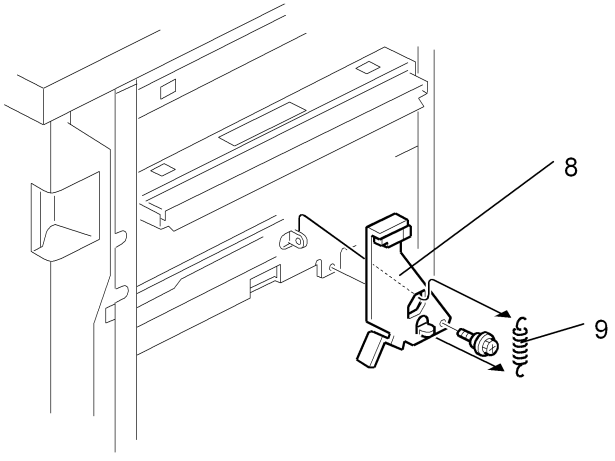
B531I002

4. **Remove the inner cover [3] (x 3).**
5. **Behind the inner cover at [4] and [5], press the lock tab to the right to release the inner cover from the frame.**
6. **Remove the plastic knockouts [6].**



B531I003

7. **Remove the paper guide [7] (x 4).**



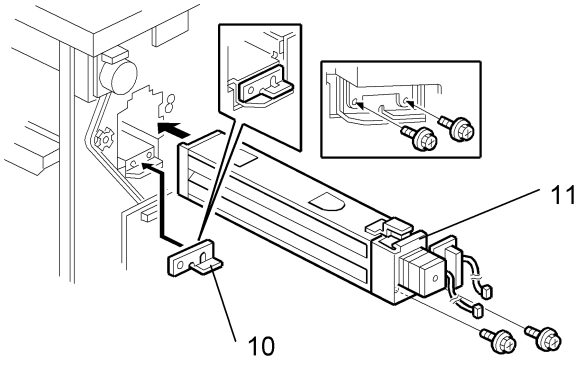
B531I004

8. **Install the sensor arm [8] (x 1, small step screw (M3 x 4).**

Note

- Make sure that the sensor arm swings freely on the step screw.

9. **Attach the spring [9].**

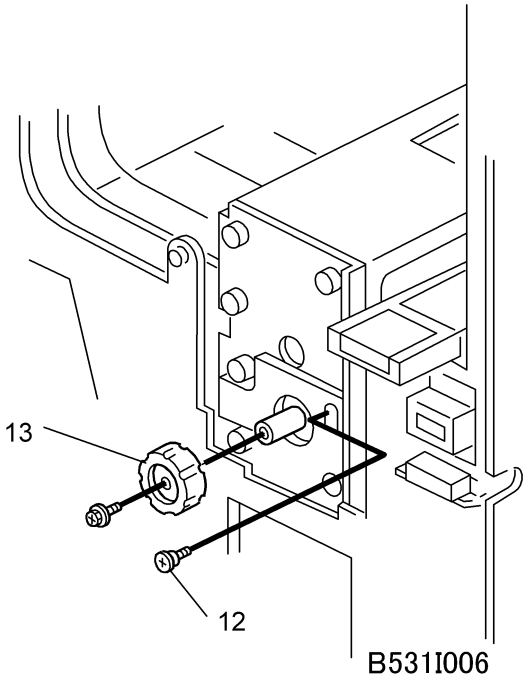


B531005

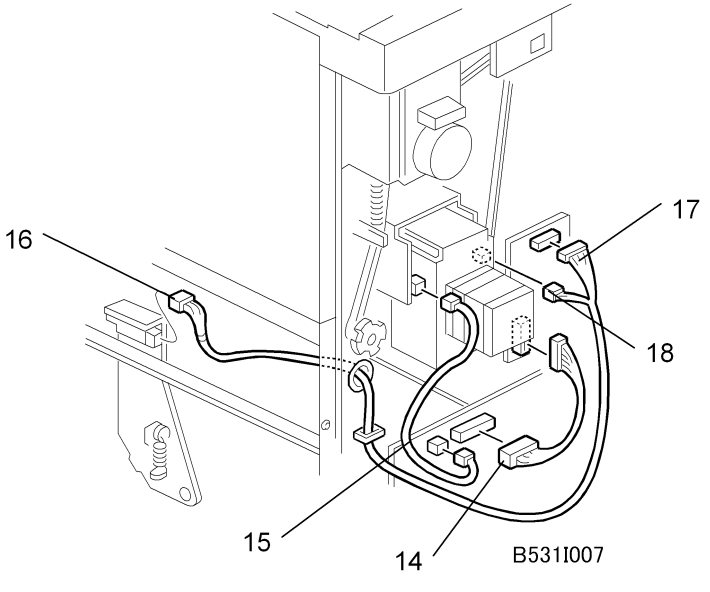
10. **At the rear, position the 2 mm spacer [10] and attach the punch unit [11] (x 2, M4 x 10).**

Important

- At the hole just above the lock lever, use one of the screws from the paper guide removed above to fasten the remaining two spacers to the frame. These extra spacers are used to adjust the horizontal position of the punch holes.



11. At the front, secure the punch unit [12] with the large step screw (x 1, M4 x 10).
12. Fasten the punch unit knob [13] (x 1).

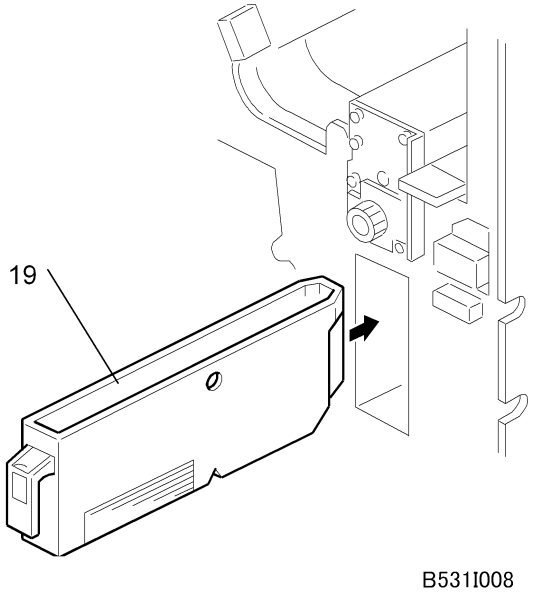


13. Connect the PCB harness connector [14] to CN129 of the finisher PCB and to CN600 of the punch unit PCB.

14. **Connect the HP Sensor 2 harness connector [15] to CN130 of the finisher PCB and to HP Sensor 2.**
15. **Connect the single end of the hopper full sensor connector cable [16] to the hopper full sensor on the arm (☞ x 1, clamp x 1), then connect the other two connectors to HP Sensor 1 [17] and CN620 [18] of the punch PCB.**

Note

- No special DIP switch settings are required for this punch unit. The punch unit sends an identification signal to the machine, so it knows what type of punch unit has been installed.



B531I008

16. **Slide the hopper [19] into the finisher.**
17. **Re-attach the inner cover and rear cover.**
18. **Close the front door and re-connect the finisher to the machine.**

Output Jogger Unit (B513)

The Jogger Unit B531 can be installed only on the 3000-Sheet Finisher B706.

1

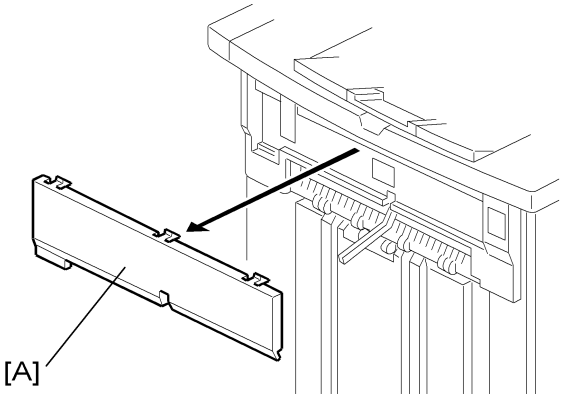
Accessory Check

Check the accessories and their quantities against this list:

Description	Qty
1. Jogger Unit B513	1
2. Tapping Screws - M3 x 6	2
3. Installation Procedure	1

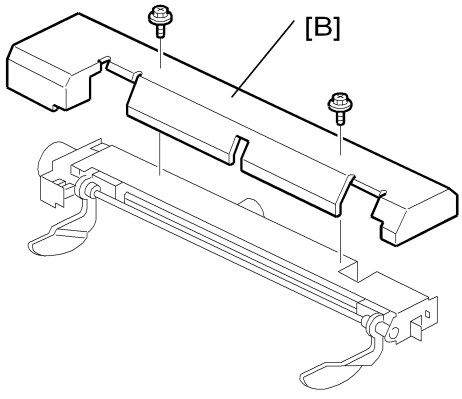
Installation

1. **Turn the main machine switch off and disconnect the finisher from the main frame.**



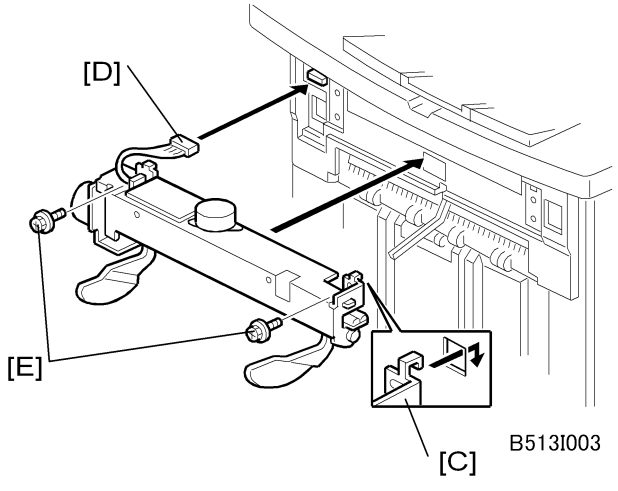
B513I001

2. **Use the flat head of a screwdriver to remove the left upper cover [A] from the finisher and discard it.**



B513I002

3. Remove the cover plate [B] from the jogger unit (x 2). Keep the screws.



B513I003

4. With the jogger unit connector on the left side, hook the frame of the jogger unit [C] into the holes on the left and right side of the finisher frame.
5. On the left side, fasten the connector [D] to the socket (x 1).
6. On the left and right side, attach the jogger unit frame to the side of the finisher with the screws [E] provided (x 2).
7. Re-attach the jogger unit cover to its frame with the screws removed in Step 2 (x 2).

2000-Sheet Finisher (B700)

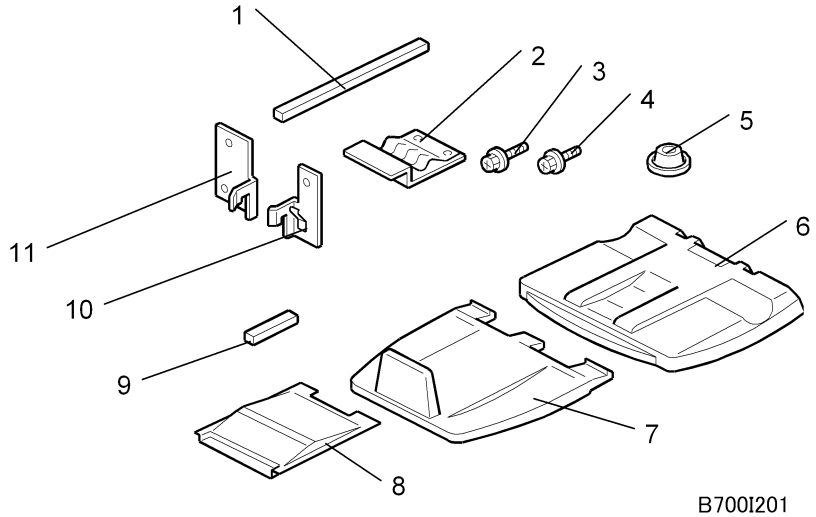
1

Accessory Check

Check the accessories and their quantities against this list:

	Description	Qty
1.	Cushion (with double-sided tape)	1
2.	Ground (earth) plate	1
3.	Tapping screws - M4 x14	4
4.	Tapping screw - M3 x 8	1
5.	Leveling Shoes	3
6.	Upper output tray	1
7.	Lower output tray (Used for B700 Only)	1
8.	Auxiliary Tray	1
9.	Gasket	1
10.	Front joint bracket	1
11.	Rear joint bracket	1
	Auxiliary Tray for Shift Tray (B700 Only – Not Shown)	1
	Auxiliary Tray for Proof Tray (B700 Only – Not Shown)	1
	Auxiliary Tray Storage Pocket (B700 Only – Not Shown)	1

*1 3 screws M3x6 are provided for the B700.



B700I201

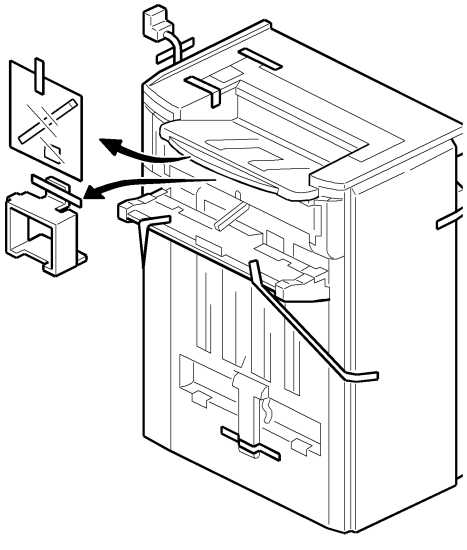
Installation

The B700 Booklet Finisher does punching, shifting, corner stapling, and booklet (saddle-stitch) stapling.

Removing Tapes and Retainers

⚠WARNING

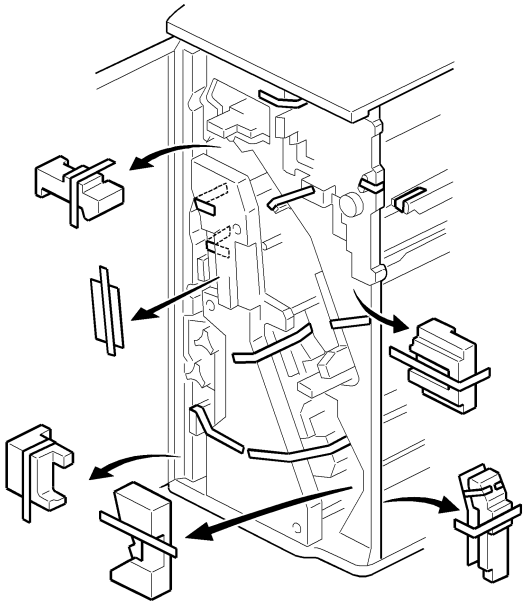
- Always turn the machine off and unplug it before doing any of the following procedures.



B700I102

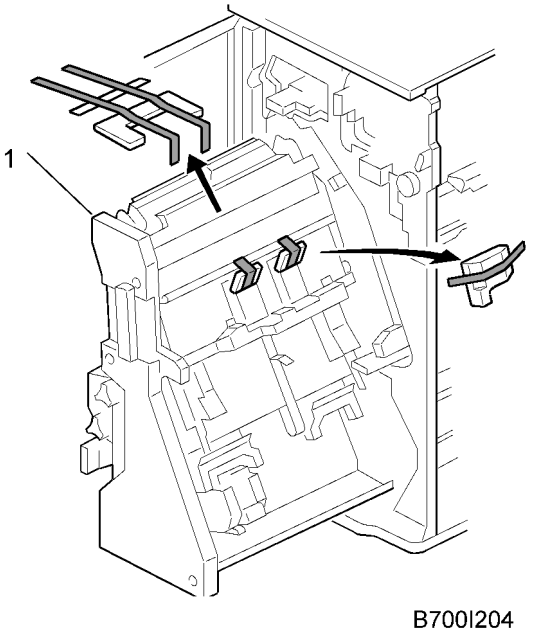
1

1. Unpack the machine and remove all the wrapping.
2. Remove all filament tape and shipping retainers from the finisher.



B700I202

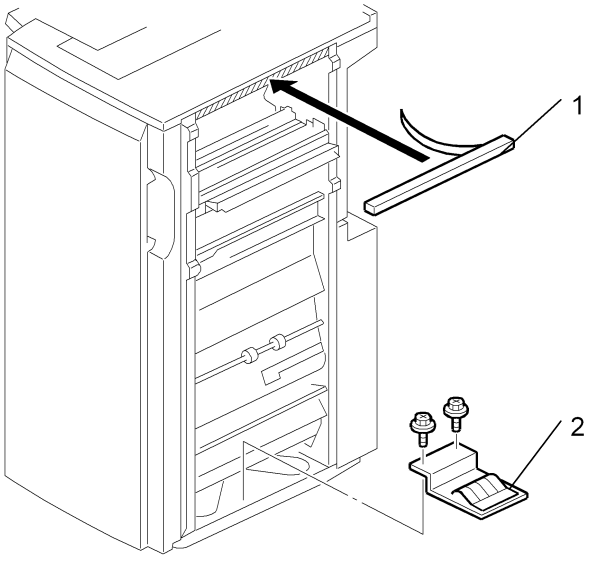
3. Open the front door.
4. Remove all tapes and shipping retainers inside the finisher.



B700I204

5. **Pull out the jogger unit [1].**
6. **Remove the tapes and retainers.**

Docking the Finisher

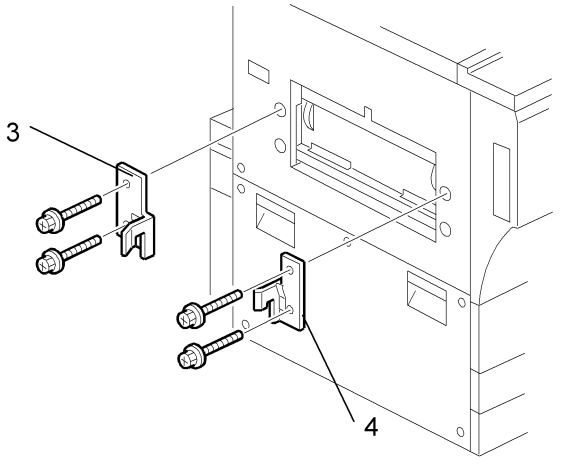


B700I106

1. **If you are not installing the Cover Interposer B704, peel the strip from the sponge cushion [1] and attach it to the finisher then go to the next step.**

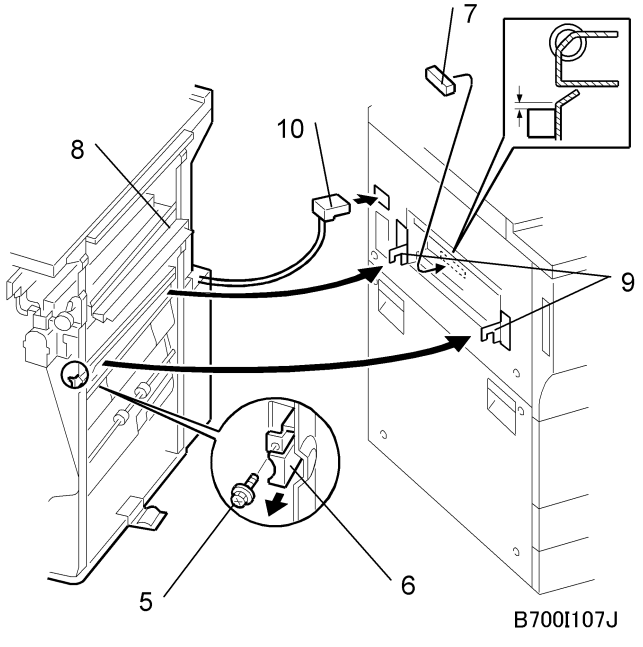
   If you are installing the Cover Interposer B704:

   - Do not attach the sponge cushion to the finisher. It must be attached to the cover interposer.
   - Do not attach the grounding plate [2] to the finisher. It must be attached to the cover interposer.
   - Install the interposer now. The cover interposer must be installed before you dock the finisher to the machine.
2. **Use a short screwdriver to attach the grounding plate [2] (x 2, M3 x 6).**



B700I551

3. Attach the rear bracket [3] (x 2, M4 x 14).
4. Attach the front bracket [4] (x 2, M4 x 14).

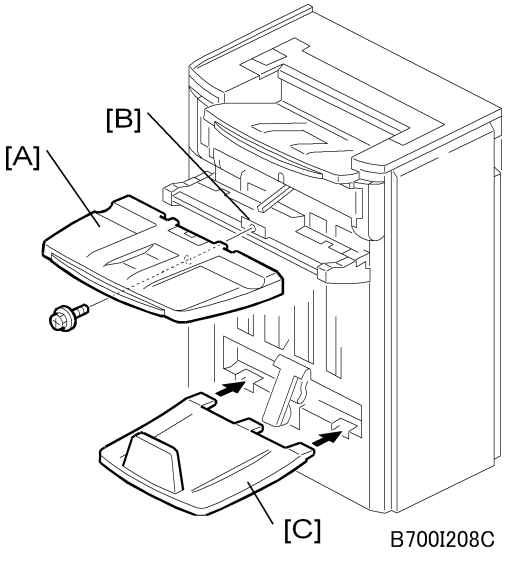


B700I107J

5. Remove the screw [5] to release the lock lever [6] (x 1).
6. Attach the gasket seal [7] as shown.
7. To avoid bending and damaging the paper entrance guide plates [8], slowly push the finisher against the side of the machine until the brackets [9] enter their slots.
8. Attach and tighten the screw removed in Step 5.

9. Connect connector [10] to the main frame.

Attaching the Trays



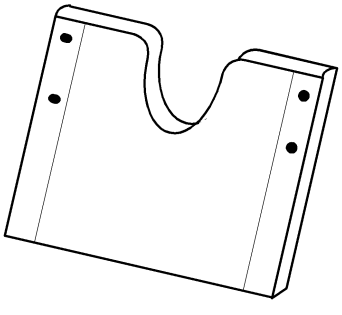
B700I208C

1. Attach the upper output tray [A] (x 1, M3 x 8).

Note

- Make sure the metal plate [B] overlaps the tray.

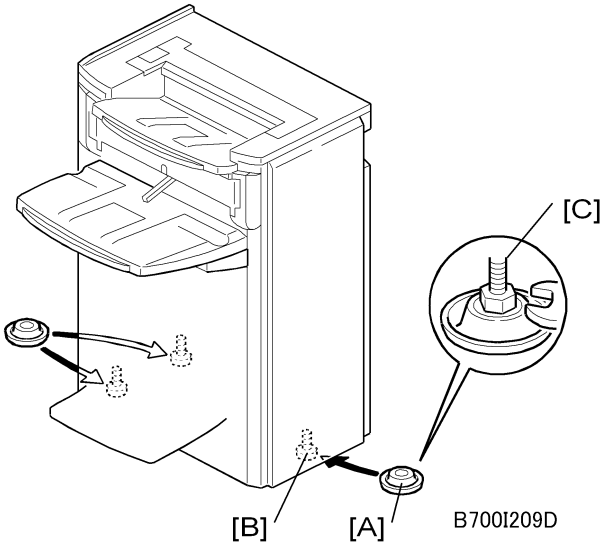
2. Attach the lower output tray [C].



B246I901

3. Use the round-head rivet (provided accessory) to fasten the auxiliary tray storage pocket to rear cover of the finisher.
4. Place the auxiliary trays for the shift tray and proof tray in the pocket.

Leveling the Finisher



1. **Set the leveling shoes [A] (x 3) under the feet [B].**
2. **Use a wrench to adjust the height of the screws [C] to level the machine.**

Auxiliary Trays

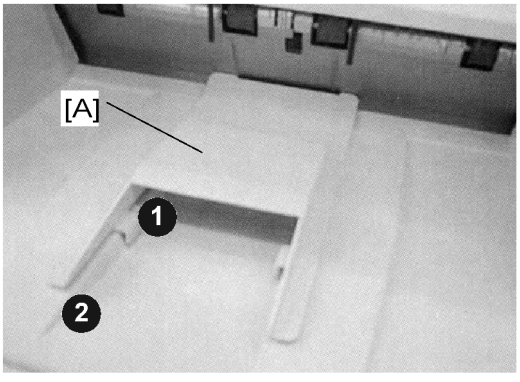
The auxiliary trays are stored in the auxiliary tray storage pocket mounted on the back cover of the finisher. Make sure that the customer understands the following points about these auxiliary trays:

- The trailing edges of excessively curled paper can activate the tray full sensors before the tray is actually full.
- Once the "Exit Tray Full" message displays, the job cannot continue until some sheets are removed from the tray which is only partially full. The trays are designed to prevent this problem.
- The auxiliary tray for the proof tray should be installed only when excessively curled paper is triggering early "Exit Tray Full" alerts.
- Normally, both auxiliary trays should be placed in the pocket mounted on the back of the finisher.

Proof Exit Auxiliary Tray

Follow the procedures below to install the auxiliary tray for the proof tray.

1. **First, remove the paper form the paper feed tray, turn it upside down, and continue printing. This may solve the problem.**
2. **If the "Exit Tray Full" alerts continue, set the proof auxiliary tray [A] on the proof tray on the top of the finisher.**

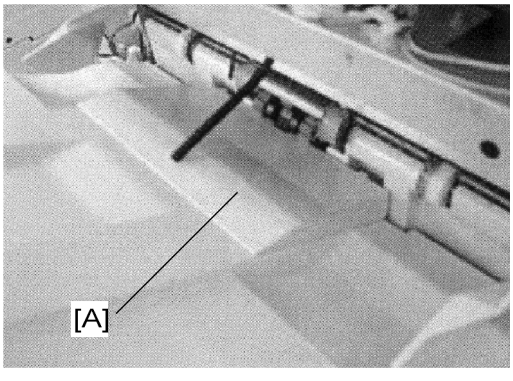


B246I903

3. Make sure that the arms ❶ of the auxiliary tray fit tightly over the ridges ❷ of the proof tray below.

Shift Auxiliary Tray

1. Open and close the front door of the finisher.
2. This initializes the finisher and moves the shift tray to the standby position.
3. Open the front door again and leave it open.



B246I902

4. Set the shift auxiliary tray [A] on the shift tray as shown.
5. Close the front door.
6. This initializes the finisher again and moves the shift tray to the new standby position with the auxiliary tray installed.
7. After the job is finished, remove the tray and store it in the auxiliary tray storage pocket on the back of the finisher.

8. Open and close the front door to re-initialize the finisher and reset the standby position of the shift tray.

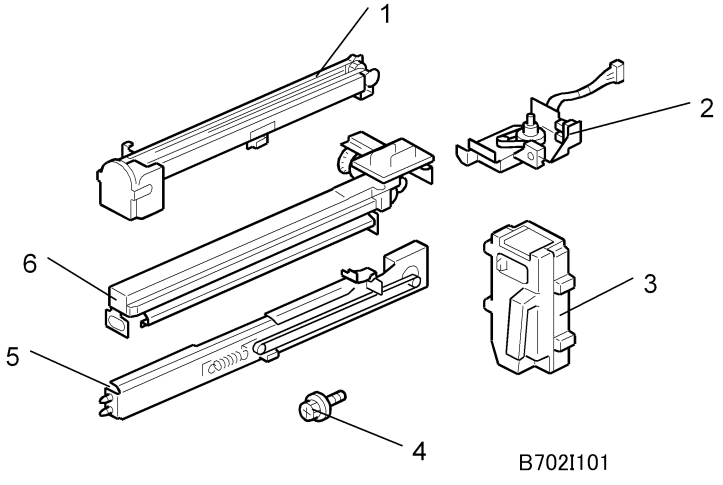
Punch Unit (B702)

The Punch Unit B702 can be installed only in the 2000-sheet Finisher (B700).

Accessory Check

Check the accessories and their quantities against this list:

Description	Qty
1. Punchout Waste Unit	1
2. Slide Drive Unit	1
3. Punch Waste Hopper	1
4. Screws (M3 x 6)	5
5. Side-to-Side Detection Unit	1
6. Punching Unit	1

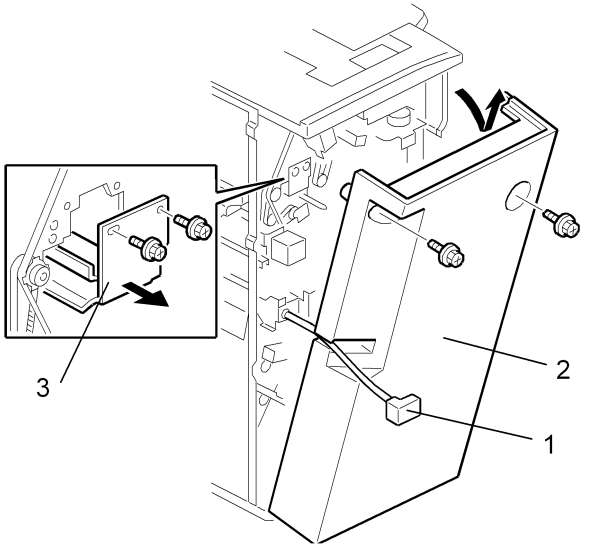


B702I101

⚠WARNING

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

Installation



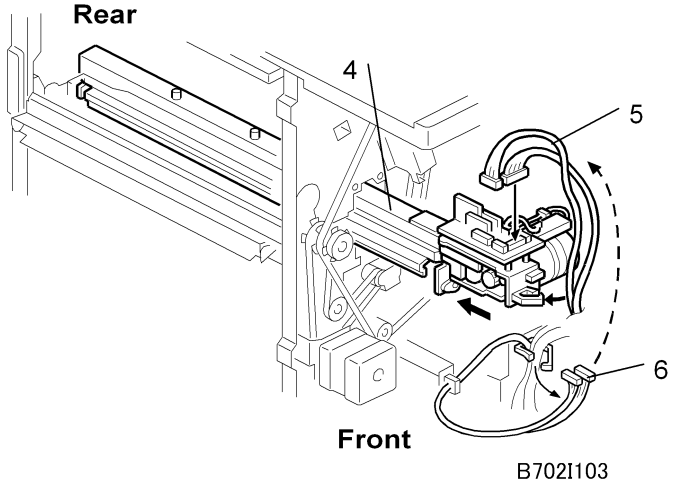
B702I102

1. **If the finisher is connected to the machine, disconnect the power connector [1] and separate the finisher from the machine.**
2. **Remove the rear cover [2] (x 2) and open the front door.**

Note

- At the base of the back cover, be sure to disconnect the tabs that fasten the cover to the frame.

3. **Remove the guide plate [3] (x 2).**

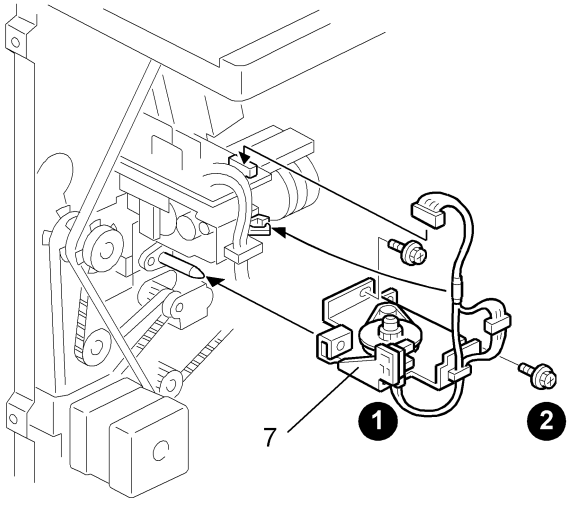


B702I103

4. Slide the punch unit [4] along its rails into the finisher. Make sure that pin engages correctly at the front and rear.
5. Connect and fasten the punch unit [5] (x 2, x 1).

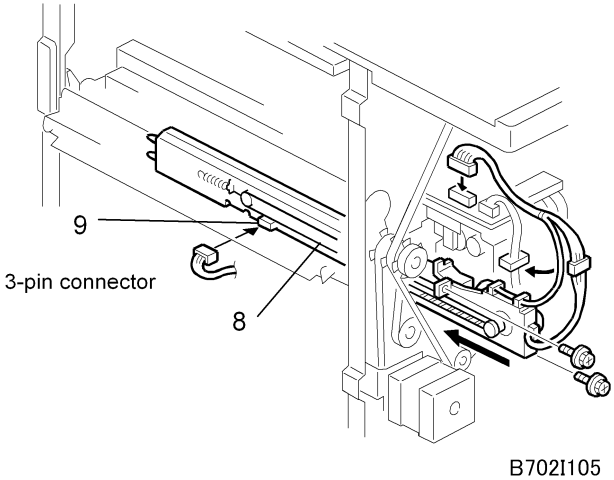
Note

- The connectors [6] are coiled and tied above the PCB on the right.



B702I104

6. Fasten the slide drive unit [7] to finisher and connect it to the punch unit (x 2, x 1). Press in on the slide drive unit at ❶ when you attach screw ❷.



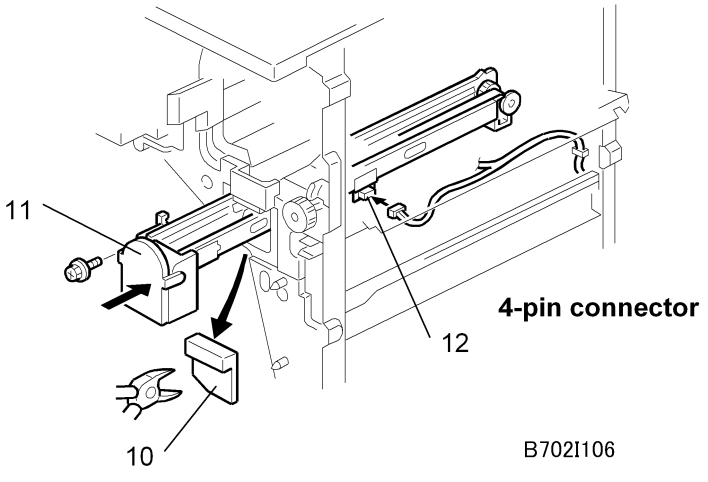
B702I105

7. Make sure that the punch unit moves freely and is not blocked by the screws.
8. Insert the side-to-side detection unit [8]. Make sure that the two pins are engaged correctly at the front.

9. **Confirm that the side-to-side detection slides smoothly on its rails. If it does not, make sure that the rails are aligned with their grooves.**
10. **Fasten the side-to-side detection unit and connect it at the rear (x 2, x 1, x 1).**
11. **Pull the short connector out of the connector [9] then connect it (x 1).**

Note

- This is the 3-pin connector.



12. **At the front, use a pair of nippers to remove the knockout [10]**
13. **Insert the punch waste transport unit [11] into the finisher.**

Note

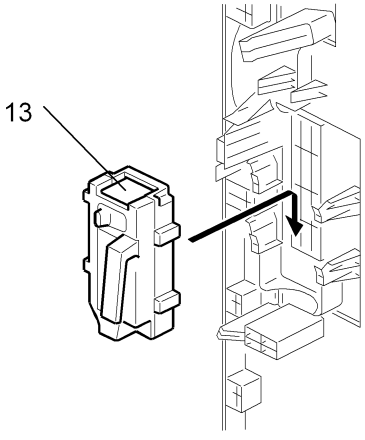
- Make sure that the punch waste transport unit slides smoothly on its rails. If it does not, make sure that the rails are aligned with the grooves.

14. **Remove the short connector from the connector [12].**

Note

- This is the 4-pin connector.

15. **Connect the connector and attach the punch waste transport unit (x 1, x 1, x 1).**



B702I107

16. Set the hopper [13] in its holder.

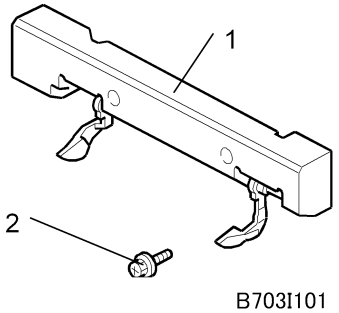
Output Jogger Unit (B703)

1

Accessory Check

Check the accessories and their quantities against this list:

Description	Qty
1. Jogger Unit	1
2. Tapping Screws - M3 x 6	2



B703I101

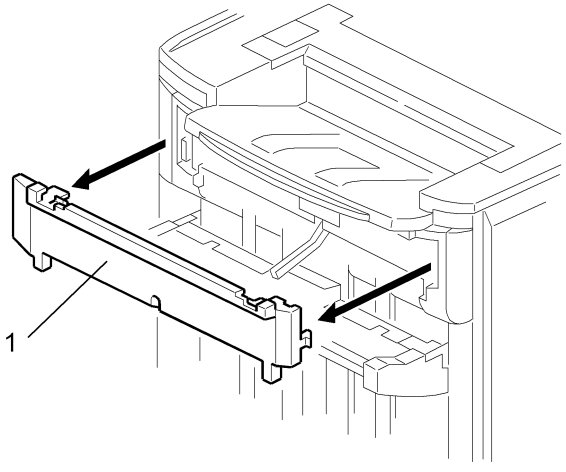
Installation

The Output Jogger Unit B703 can be installed only on the 2000-sheet Finisher B700.

⚠WARNING

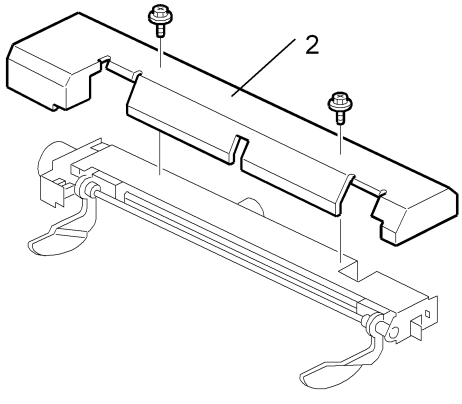
- Always switch the machine off and unplug the machine before doing any of the following procedures

1. **Turn the main machine switch off.**
2. **Disconnect the finisher from the main frame.**



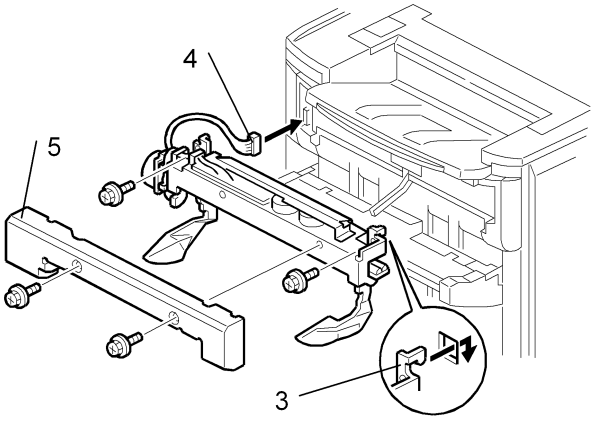
B703I103

3. **Use the flat head of a screwdriver to remove the left upper cover [1].**



B703I102

4. **Remove the cover plate [2] (x 2). Keep the screws.**



B703I104

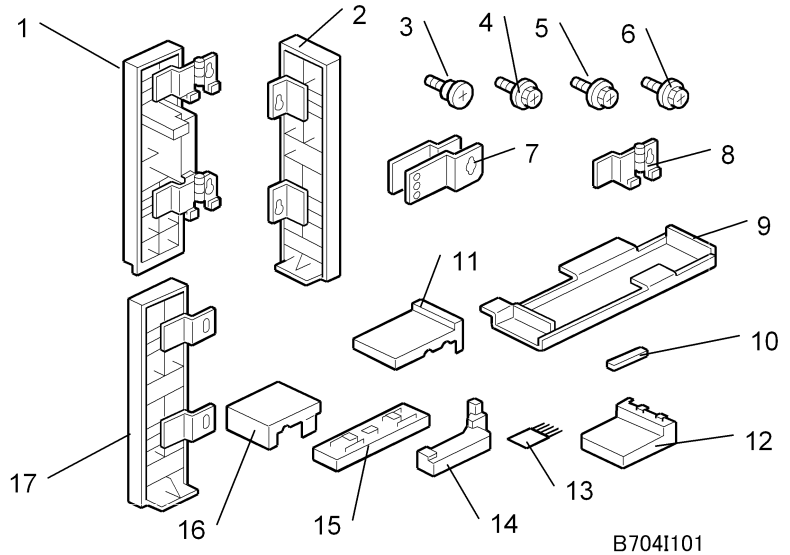
1. While you hold the jogger unit with the connector on the left, put the hooks of the frame of the jogger unit [3] into the holes in the left and right side of the finisher frame.
2. Fasten connector [4] to the socket (x 1).
3. Attach the jogger unit to the finisher (x 2).
4. Reattach the jogger unit cover [5] to the jogger unit (x 2).
5. Set SP 6118 to 1.

Cover Interposer Tray (B704)

Accessory Check

Check the accessories and their quantities against this list:

	Description	Qty
1.	Front door extension (top)	1
2.	Rear cover extension (bottom)	1
3.	Shoulder screws	3
4.	Tapping screws – M4 x 8	9
5.	Tapping screws – M3 x 8	2
6.	Tapping screws – M3 x 6	5
7.	Adjuster plates	1
8.	Hinge Bracket	1
9.	Plate Extension (bottom)	1
10.	Gasket Seals	2
11.	Right Rear Cover Plate (B706 only)	1
12.	Spacer	1
13.	Anti-Static Brush	1
14.	Spacer (B706 only)	1
15.	Spacer (Not used)	1
16.	Right front corner plate (for B706 only)	2
17.	Front door extension (bottom)	1



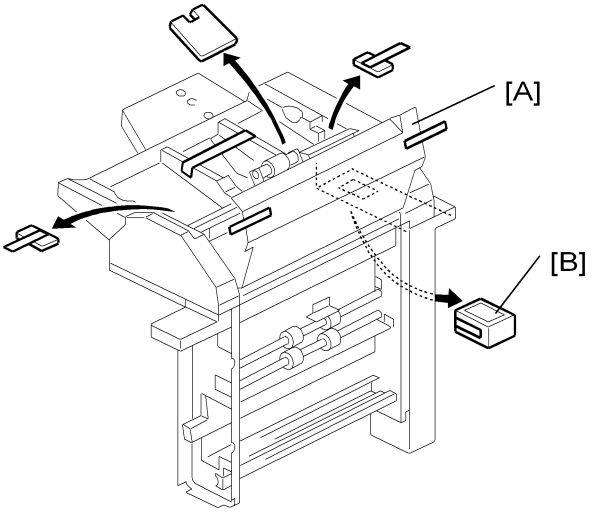
B704I101

Installation

The Cover Interposer Tray B704 can be installed on the following finishers:

- 2000-sheet Booklet Finisher B700
- 3000-sheet Finisher B706

Removing Tapes and Retainers



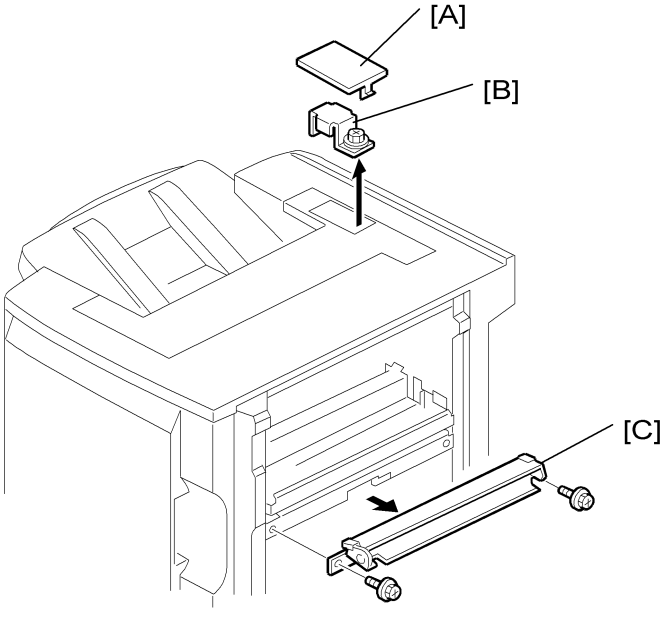
B704I102

⚠WARNING

- Make sure that the finisher is disconnected from the main machine and that the machine is switched off and unplugged before starting the following procedure.

1. **If the finisher is connected to the machine, disconnect it.**
2. **Remove all tape and retainers from the cover interposer tray [A].**
3. **Remove the tape and cardboard [B] from the ground connector.**

Preparing the Finisher (B700/B706)



B704I103

1. **Remove the cover [A] of the relay connector.**
2. **Loosen the screw of the bracket [B] (x 1) then remove the bracket.**
3. **Remove the guide plate [C]. (This guide plate will be attached to the cover interposer; do not discard it.)**

Important

- Important: If you are installing the cover interposer tray with a previously installed finisher B700/B706, remove the sponge strip from the finisher and keep it for re-attachment to the interposer tray.

4. **If you are installing the B700, attach the extensions to the finisher without modification. See "Attaching the Extensions for the B700".**

-or-

If you are installing the B706, modify the extensions and attach them to the finisher. Go to "".

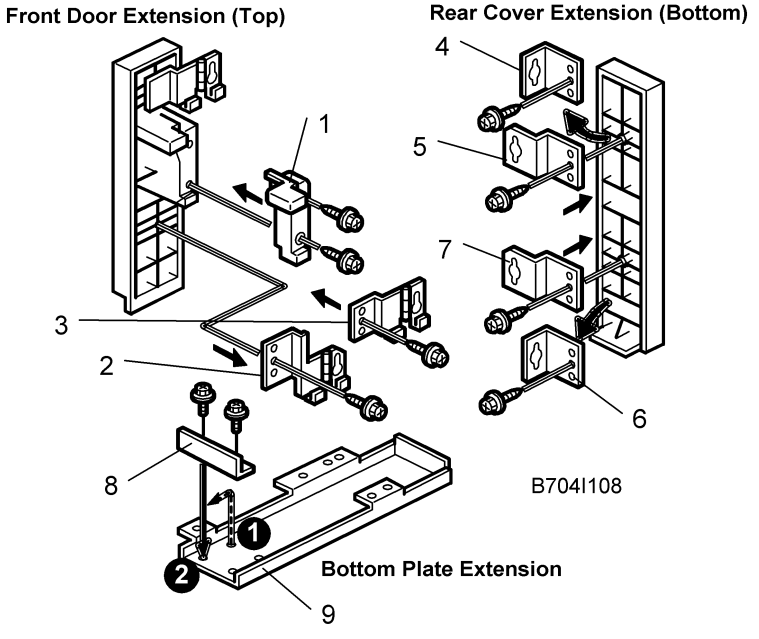
1

Attaching the Extensions for the B706

Important

- The procedures in this section are for installation of the cover interposer with the B706 only.
- If you are installing the cover interposer with the B700, go to the next section.

Modify the Attachments for the B706



Front Door Extension:

1. Attach spacer [1] to the front door extension (top) (x 2).
2. Remove the lower hinge [2] and replace it with [3] (x 2).

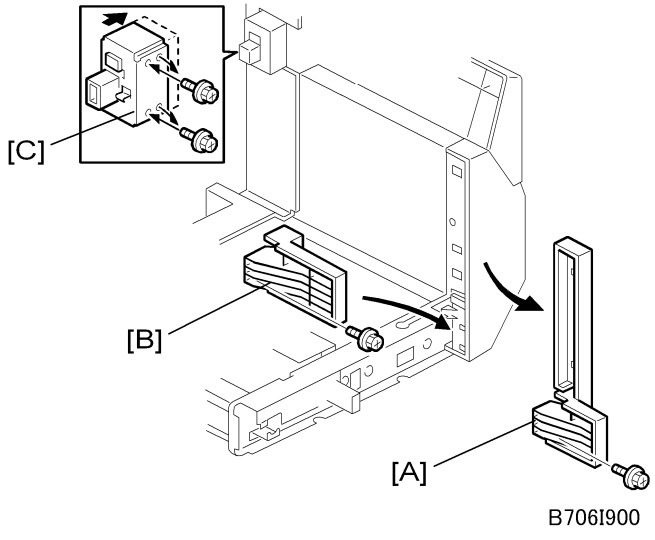
Rear Cover Extension (Bottom):

1. Remove [4] and replace it with [5] (x 1).
2. Remove [6] and replace it with [7] (x 1).

Plate Extension (Bottom):

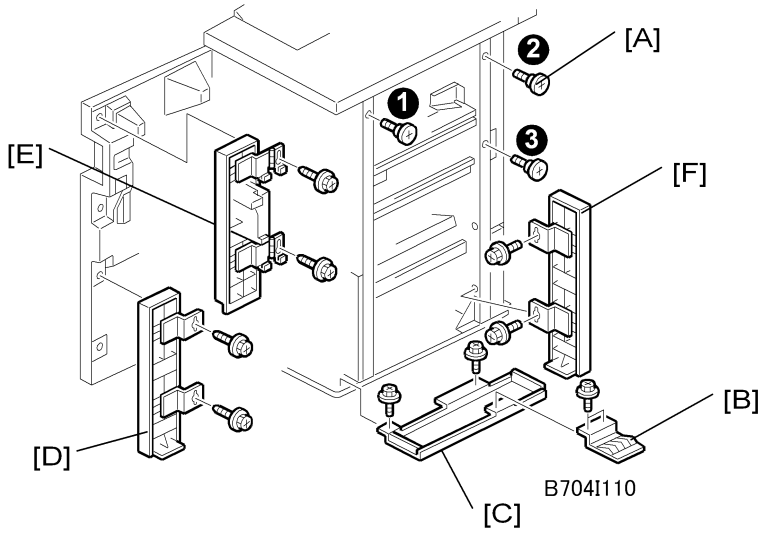
1. Remove bracket [8] from ❶ and attach it to ❷ on the end of the bottom plate extension [9] (x 2).

Preparing the Cover Interposer for the B706



1. Remove spacer [A] (x1).
2. Attach spacer [B] (x1).
3. Remove the screws from the connector case [C] (x2).
4. Push the connector case in the direction of the arrow until the second set of holes are aligned with the holes below, then attach the screws.

Attaching the Extensions to the B706



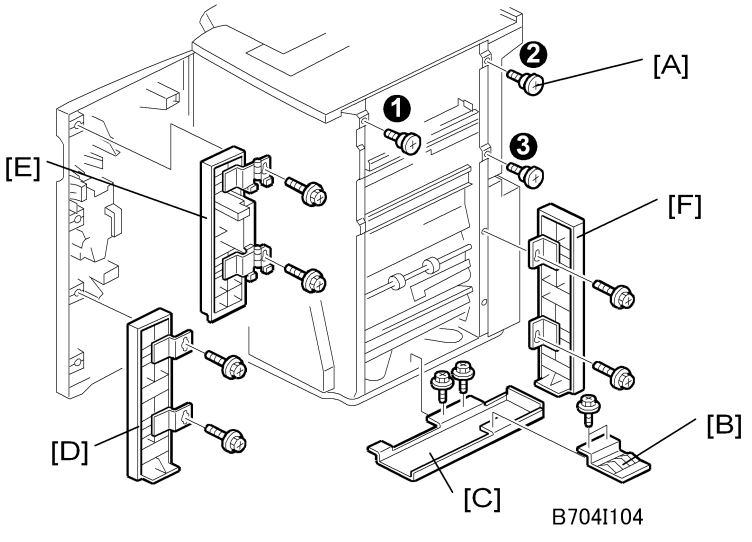
1

1. Attach the three shoulder screws [A] ❶, ❷, ❸ (🔩 x 3).
2. If the finisher has been previously installed, remove the ground plate [B] from the finisher and keep the screws.
3. Attach the bottom plate [C] (🔩 x 2, M3 x 6).
4. Attach the ground plate to the bottom plate (🔩 x 2).
5. Attach the bottom front cover extension [D] (🔩 x 2, M4 x 8).

   Note

   - Attach this cover first.
6. Attach the top front cover extension [E] (🔩 x 2, M4 x 8).
7. Set two screws into the holes provided for the rear cover extension [F] (🔩 x 2, M3 x 6).
8. Set the keyholes of the rear cover extension over of the heads of the screws.
9. Press up on the bottom of the rear cover extension to close the gap at the top of the cover, then tighten the screws.

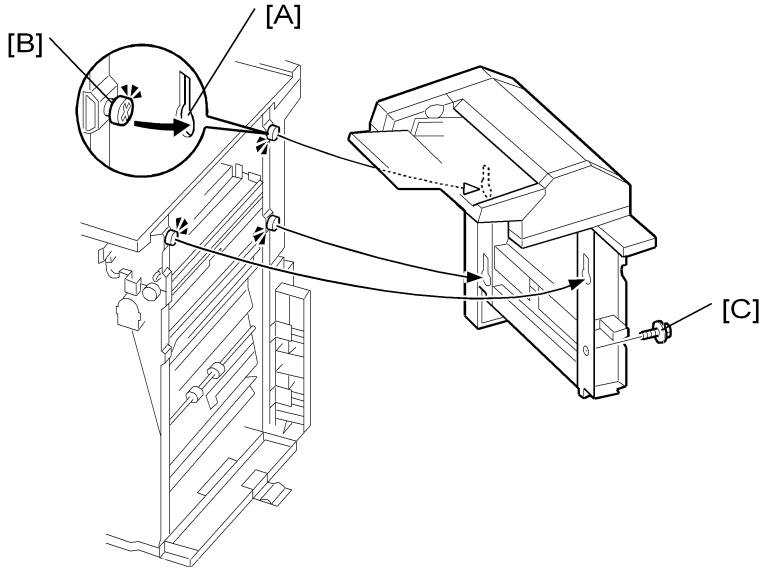
Attaching the Extensions for the B700



1. Attach the three shoulder screws [A] ❶, ❷, ❸(🔩 x 3).
2. If the finisher has been previously installed, remove the ground plate [B] from the finisher and keep the screws
3. Attach the bottom plate [C] (🔩 x 2, M3 x 6) then attach the ground plate to the bottom plate (🔩 x 2).
4. Attach the bottom front cover extension [D] (🔩 x 2, M4 x 8).

5. Attach the top front cover extension [E] (x 2, M4 x 8).
6. Attach the rear cover extension [F] (x 2, M3 x 6).

Attaching the Interposer Tray (B700/B706)



B704I105

1. Pick up the cover interposer tray, align the keyholes [A] with the shoulder screws [B], then slide the cover interposer down onto the screws.
2. Secure the cover interposer with the screw [C] (x 1, M3 x 6).
3. Do one of the following:
   - If you are installing the cover interposer tray on the B700, skip the next section and see "".
   - If you are installing the cover interposer tray on the B706, go to the next section, install the corner plates on the B706, then see "".

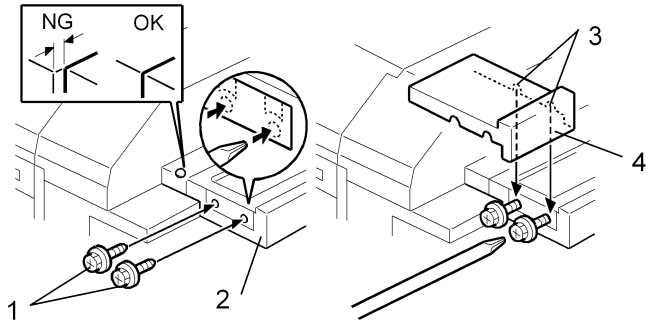
Attaching the Corner Plates for the B706

Important

- ImportantI: The corner plates are installed on the B706 only.

1

Right Rear Corner Plate (B706 only)



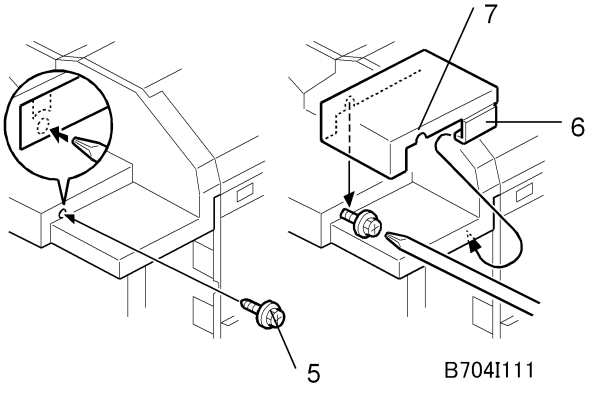
B704I112

1. **Temporarily attach the screws [1] (with about two turns) to the right end of the finisher extension table [2] (x 2, tapping M4 x 8)**

Note

- The holes are not visible because they are covered with tape. Just punch the screws through the holes.

2. **Align the cutouts [3] of the right rear corner plate [4] with the screws and attach the plate.**
3. **With a long screw driver inserted through the cutouts in the right rear corner plate [4], tighten the screws to fasten the right rear corner plate to the table extension [2].**



B704I111

4. **Temporarily attach the screw [5] (M4 x 8) with about two turns to fasten to the panel at the right front corner.**

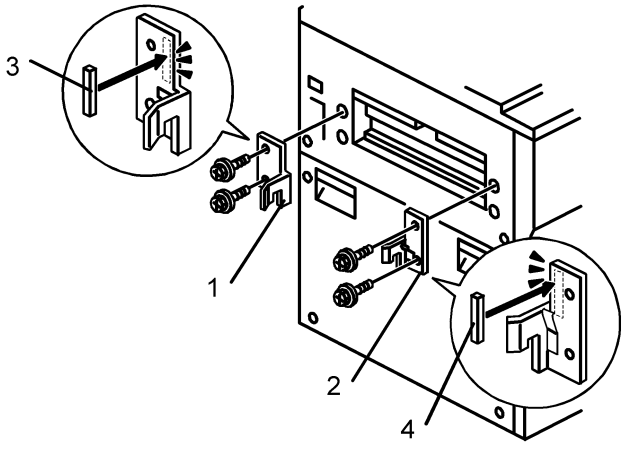
Note

- The hole is not visible because it is covered with tape. Just punch the screw through the hole.

5. **With the clamp [6] under the edge of the corner, align the cutout [7] in the right front corner plate with the screw, then snap it into position.**

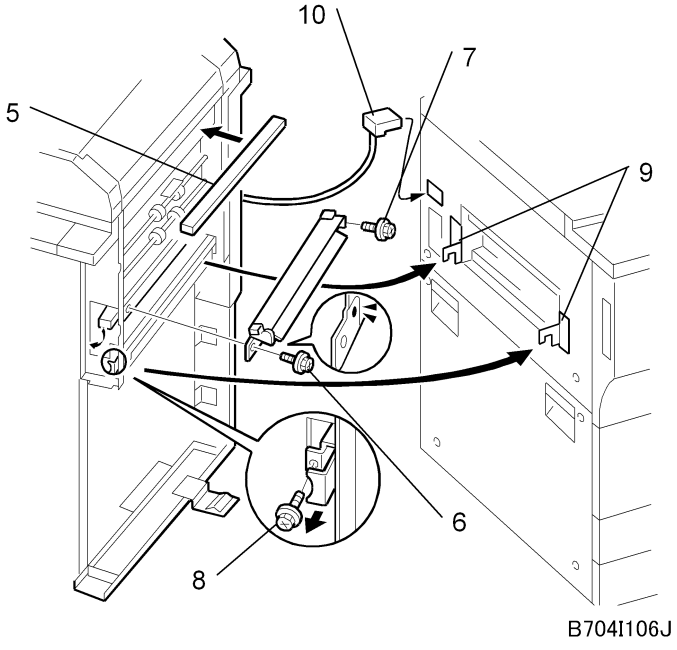
6. With a long screwdriver inserted into the plate cutout [7], tighten the screw to fasten the right front corner plate.

Docking the Finisher and Interposer to the Machine (B700/B706)



B704I121J

1. Attach the rear bracket [1] (x 2, M4 x14).
2. Attach the front bracket [2] (x 2, M4 x14).
3. Attach the gasket seals [3] and [4].



B704I106J

4. **Attach the sponge strip [5] that is supplied with the finisher.**
5. **Attach the guide plate (removed from the finisher) to the cover interposer.**
   - Attach the front end [6] of the plate (x 1).
   - Attach the rear end of the plate with the anti-static brush [7] (x 1).

   Important
   - **Use the two small tapping screws that are supplied, and not the machine screws removed from the finisher guide plate.**
6. **Release the lock lever [8] (x 1).**
7. **Slowly push the finisher against the side of the machine until the brackets [9] go into the slots.**

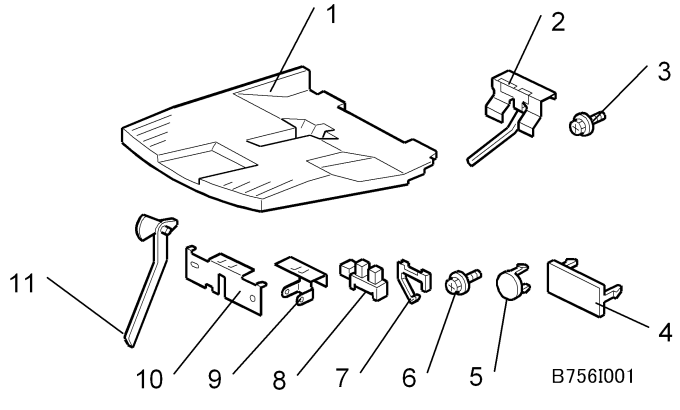
   WARNING
   - **Move the finisher carefully, or you will bend the entrance guide plates.**
8. **Attach the lock lever [8] (x 1).**
9. **Connect the connector [10] to the machine.**

Copy Tray (B756)

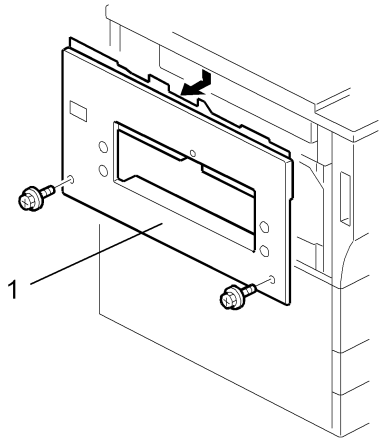
Accessory Check

Check the accessories and their quantities against this list:

	Description	Qty
1.	Copy Tray	1
2.	Actuator Arm and Bracket (not used)	1
3.	Tapping Screw (not used)	2
4.	Large Cap	1
5.	Small Cap	4
6.	Tapping Screw (M4 x 8)	1
7.	Harness Clamp	1
8.	Paper Height Sensor	1
9.	Actuator Arm Bracket	1
10.	Sensor Bracket	1
11.	Actuator Arm	1

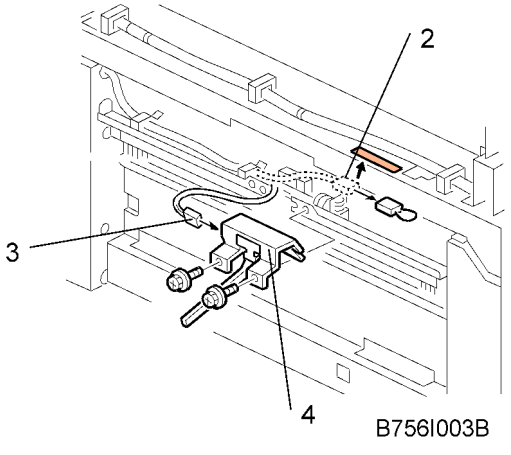


Installation



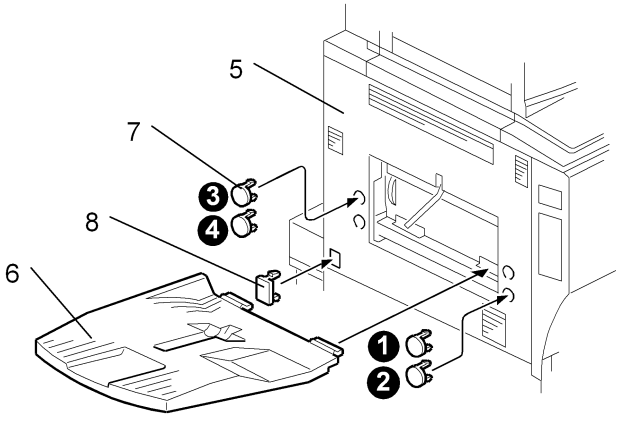
B756i101b

1. **Remove the left upper cover [1] (🔩 x 2).**



B756I003B

2. **Disconnect the connector [2] from the machine and remove the cap.**
3. **Connect the sensor harness [3] to the sensor.**
4. **Attach the sensor bracket and actuator arm bracket [4] to the machine (🔩 x 2).**



B756I002

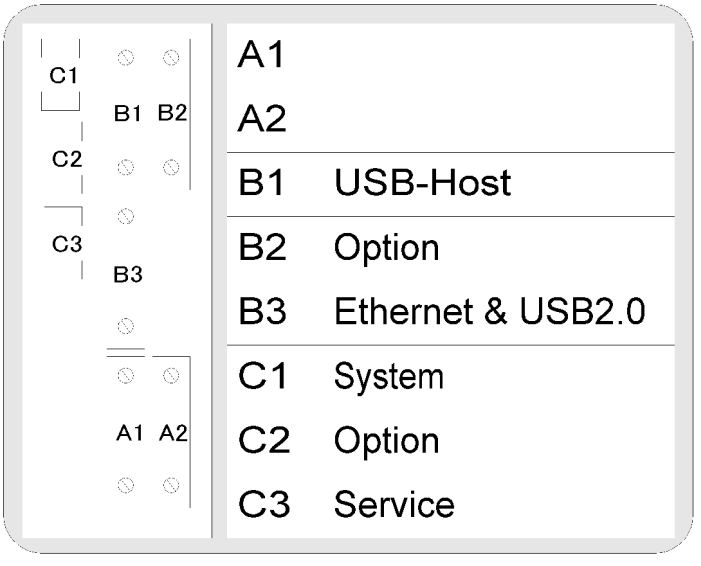
5. Reattach the left upper cover [5] (x 2).
6. Attach the tray [6].
7. Attach the small caps [7] to the holes ❶, ❷, ❸, ❹.
8. Attach the large cap [8] to cover the finisher power connection point.

MFP Options

1

Overview

To make it easy to install MFP options, there are 5 slots for boards (B1, B2, B3, A1, A2) and 3 slots (C1, C2, C3) for SD cards on the controller box. Each board or SD card must be inserted in its assigned slot. The correct slots for each option are shown on the decal attached to the controller box cover (shown in the diagram).



G148I998

Here is a list of the controller options that can be installed on the machine.

Slot	No.	Name
C1	System	System Slot (Holds the system software. Never remove this SD card!)
C2 [2]	B874	Data Overwrite Security Type G
C3	Service	SD card for machine firmware update by the customer engineer.
B1	B819	USB Host Interface Unit Type A
B2 [1]	G813, G874	IEEE 802.11b
B2 [1]	B679	IEEE1284 B679

B3	G874	Gigabit Ethernet

[1]Only one of these boards can be inserted at a time.

[2]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.

Common Procedures

Removing the SD Card Slot Cover

Important

- **To remove the SD card slot, remove the single screw (x1).**
- **Never remove the system SD card from C1 (top slot).**
- **The machine will not operate if the SD card is removed from C1.**
- **The SD card slot cover should remain attached to the machine at all times to prevent accidental removal of the system SD card from slot C1.**

Inserting SD Cards

Insert SD cards with the notched corner down.

The insertion point for the SD cards are offset slightly to the left. Make sure the SD card is inserted correctly before you push it into the slot.

Pushing in the SD Card also 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.

Merge/Undo Procedures

The machine has three SD card slots:

- SD card Slot 1 is used for the system card. Never remove the system SD card from Slot 1.
- SD card Slot 2 is used for application programs.
- SD card Slot 3 is used for firmware updates.

If the customer wants to use more than one application on SD cards, the applications must be merged on the same SD card.

Important

- **The data necessary for authentication is transferred with the application program to the target SD card.**

1

- 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 technician may occasionally need to check the SD card and its data to solve problems. For these reasons SD cards must be stored with the machine.
- A licensing agreement prohibits copying of the PostScript SD card. However, you can copy any application from another SD card to the PS3 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 1.
- 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 onto One SD Card

1. Turn off the machine.
2. Remove the SD card slot cover (x2).
3. Insert the Source SD card into the SD card Slot C3.

   Note

   - The PS SD card cannot be copied, but other applications can be copied onto the PS SD card.
4. Check the target SD card and confirm that its write-protect switch is OFF.
5. Insert the Target SD card into SD card Slot C2
6. Turn the machine on.
7. Do SP5873 001.
8. Obey the prompts to complete the procedure.
9. Turn the machine off.
10. Remove the Source SD card from C3. Leave the target SD card in C2.
11. Reattach the SD card slot cover.
12. Turn the machine on.
13. Do SP5990-005 (Diagnostic Report) and make sure the program runs correctly.
14. Return copied SD cards to the customer for safekeeping, or tape the copied SD cards to the inside of the front door.

    Important

    - Do not remove copied SD cards from the machine site.
    - After an SD card has been copied, it can no longer 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 below)

Undo Exec: Restoring Applications to the Original SD Cards

1. Turn the machine OFF.
2. Put the SD cards into the SD card slots:

SD Card	Slot
Source (with copied application.)	C2
Target (original SD card)	C3

3. Turn the machine ON.
4. Do SP5873-002 (Undo Exec).
5. Obey the prompts on the operation panel to complete the procedure.
6. Turn the machine OFF.
7. Remove the SD card from C2.
8. Remove the restored SD card from C3.
9. Insert the restored SD card into C2.
10. Turn the machine ON.
11. Do SP5990-005 (Diagnostic Report) and make sure the program runs correctly.

Wireless LAN G813 (802.11b)

Accessory Check

Check the accessories and their quantities against this list:

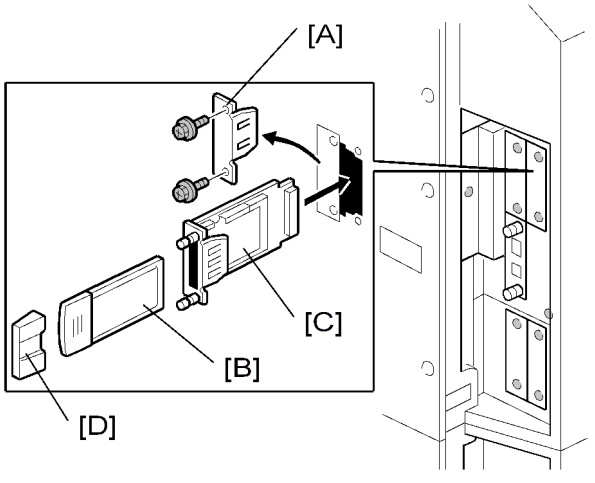
Description	Qty
1. IEEE 801.11b Board	1
2. PCI Card	1
3. Cover Cap	1

Installation

Important

- If another card is installed in B2, you must remove it before installing this card.

1. Switch the machine off.



G813I101

2. Remove the cover [A] of Slot B2 (x 2).
3. Insert the PCI card [B] into the wireless LAN board [C].
4. Insert the wireless LAN board [C] into Slot B2 and fasten it with the screws.
5. Attach the cap [D].
6. Switch the machine on and print a configuration page to confirm that the machine recognizes the installed board:

   Push [Menu] then select > List/Test Print> Config Page

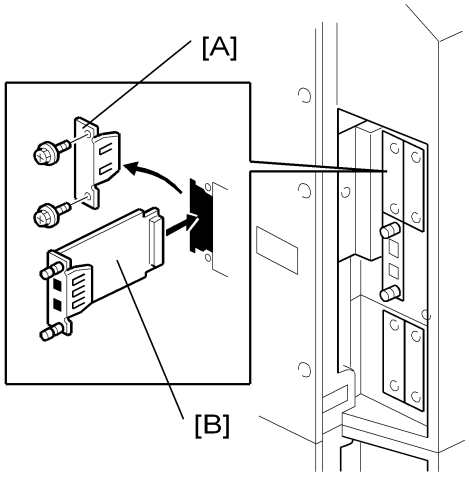
USB Host Interface Unit Type A (B819)

Accessory Check

Check the accessories and their quantities against this list:

Description	Qty
1. USB Host Interface Type A	1

Installation



1. **Remove the cover [A] of board Slot B1 (x2).**
2. **Install the USB host interface board [B] in Slot B1 (x2).**

IEEE1284 B679

Accessory Check

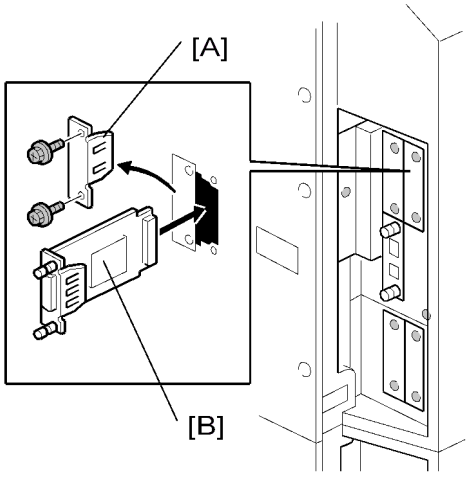
Check the accessories and their quantities against this list:

Description	Qty
1. IEEE 1284 Centronics Board	1

Important

- **If another card is installed in B2, you must remove it before installing this card.**

Installation



B679I101

1. **Switch the machine off.**
2. **Remove the cover [A] of Slot B2 (x 2).**
3. **Insert the 1284 Centronics board [B] into Slot B2 and fasten it with the screws.**

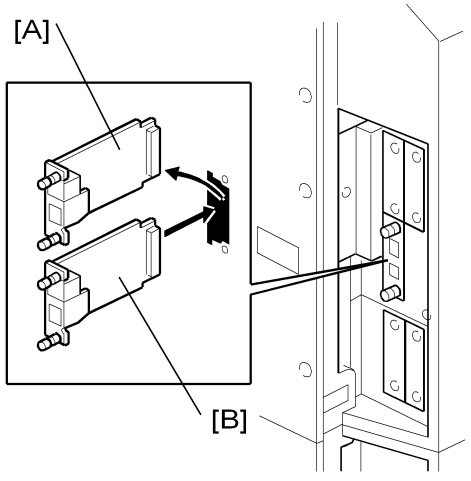
Gigabit Ethernet G874

Accessory Check

Check the accessories and their quantities against this list:

Description	Qty
1. Gigabit Ethernet G874	1
2. Ferrite Core	1

Installation



G381i101

1. **Switch the machine off.**
2. **If the Ethernet & USB 2.0 card is installed in B3, remove it (x 2).**
3. **Remove the cover [A] of Slot B3 (x 2).**
4. **Insert the Gigabit Ethernet Board [B] into Slot B3 and fasten it with the screws.**
5. **Print a configuration page to confirm that the machine recognizes the board:**

   Push [Menu] then select > List/Test Print> Config Page

DOS Overwrite Security Unit (G874)

1

Before You Begin

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

   Important

   - **If the NVRAM is replaced then the data overwrite security feature must be replaced with the new data overwrite security option.**

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

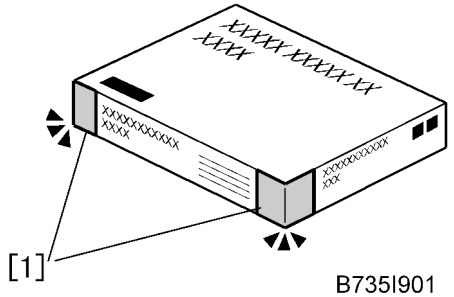
Important

- **These settings must be set up by the customer before the Data Overwrite Security unit can be installed. For details, contact the on-site system administrator.**

Seal Check and Removal

⚠CAUTION

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

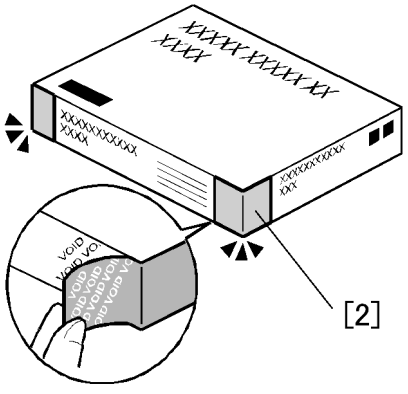


1. **Check the box seals [1] on each corner of the box.**
   - Make sure that a tape is attached to each corner.
   - The surfaces of the tapes must be blank. If you see “VOID” on the tapes, do not install the components in the box.

2. If the surfaces of the tapes do not show "VOID", remove them from the corners of the box.

Important

- If you see "VOID" on the tapes, do not install the components in the box. Stop the procedure and contact your Sales Division.



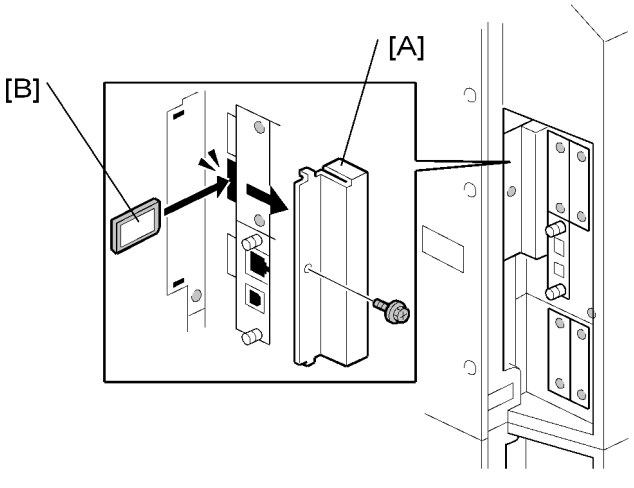
B735I903

3. When you remove each seal, the "VOID" marks [2] can be seen. In this condition, they cannot be attached to the box again.

DOS Unit Installation

Important

- The DOS SD card must be inserted in SD card slot C2. Make sure that the Data Overwrite Security Option G874 is "Type G".



B861I101

1

1. If the machine is on, turn off the power switch.
2. Disconnect the network cable.
3. Turn the power switch on.
4. Turn the power switch off.
5. Remove the SD card slot cover [A] (x1).
6. With the printed side of the SD card [B] facing the rear of the machine, install the SD card in SD card slot C2.
7. Reconnect the network cable, if the network is connected.
8. Turn the power switch on.
9. Do SP5878 and push [#Enter].
10. Go out of the SP mode and turn the power switch off.
11. Turn the machine power on with the SD card in SD card slot C2.

Checking the Installation

Do this procedure to confirm that the data overwrite security feature is enabled and operating.

1. Enter the SP mode and do SP5990 005 (Diagnostic Report) to print the Diagnostic Report.
2. Check the Diagnostic Report.
   - Under "[ROM No. / Firmware Version]", you should see "B7355050/0.03" displayed for HDD Format Option.
   - Under "[Loading Program]" you should see "GW1a_zoffy: B7355050/0.03".

     Important

     - The Data Overwrite Security SD card must remain in SD card slot C2.
     - If the SD card is removed from C2 while the machine is operating, this will cause SC867 (SD Card Removed). Insert the SD card again and cycle the machine off/on.
     - Detailed instructions for the operation of the Data Overwrite Security Unit are provided on the CD-ROM provided with the SD card.

2. Preventive Maintenance

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: **C**: Clean, **R**: Replace, **L**: Lubricate, **I**: Inspect, **EM**: Emergency Maintenance

⚠WARNING

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

Main Machine

	300K	450K	600K	Exp. K	Note
AROUND THE DRUM					
Charge Corona Grid	R		R	450	Blower brush.
Charge Corona Wire	R	C	R	450	Alcohol, or clean damp cloth.
Charge Wire Cleaning Pad	R		R	450	
Cleaning Blade	R		R	500	
Cleaning Brush	R		R	500	
Charge Corona Casing	C		C		Alcohol, or clean damp cloth.
Internal Dust Filter	C	C	C		Blower brush.
ID Sensor	C	C	C		Blower brush. Do SP 3001 002 after cleaning.
Pick-off Pawls	I		I		Replace if necessary.
Potential Sensor	C	C	C		Blower brush.
OPC Drum				1,200	Replace at
Quenching Lamp	C	C	C		
Transfer Entrance Stay	C	C	C		Dry cloth.

	300K	450K	600K	Exp. K	Note
Ozone Filter (Rear)	R		R		
Ozone Filter (Front)	R		R		
Cleaning Filter	R		R		
Cleaning Side Seal	C	C	C		Dry cloth.
Cleaning Entrance Seal	C	C	C		Dry cloth.

	300K	450K	600K	Exp. K	Note
DEVELOPMENT UNIT					
Developer	R		R		PM cycle is 350K.
Development Filter	R	I	R		Blower brush.
Development Roller	C		C		
Side Seals	C	C	C		Blower brush, dry cloth.
Entrance Seal	C	C	C		Blower brush, dry cloth.
Toner Hopper	C	C	C		Dry cloth.
Toner Bottle Holder	C	C	C		Dry cloth.
Toner Trap	C	C	C		Dry cloth.
Drive Gears	C	C	C		Blower brush.
Development Roller Drive Shaft	C		C		Clean with blower brush and dry cloth every time the developer is replaced.
Development Sleeve Surface	C	C	C		Dry cloth.
Paddle Roller Shaft	C	C	C		Blower brush, dry cloth.
Used Toner Separation Unit	I		R		

	300K	450K	600K	1000 K	Exp. K	Note
PAPER FEED						

	300K	450K	600K	1000 K	Exp. K	Note
Registration Rollers	C		C			Alcohol
Relay Rollers	C		C			Alcohol
Paper Dust Mylar	C	C	C			Dry cloth
Registration Sensor	C		C			Blower brush
Relay Sensor	C		C			Blower brush
Grip Rollers	C		C			Dry cloth, blower brush
Vertical Guide Plate	C		C			Dry cloth
Paper Feed Guide Plate	C		C			Dry cloth
Vertical Transport Rollers	C	C	C			Alcohol
Paper Feed Sensors	C	C	C			Blower brush
Paper End Sensors	C	C	C			Blower brush
Feed Rollers				R	1000K	See **Notes** below this table.
Pick-up Rollers				R	1000K	
Separation Rollers				R	1000K	

Notes:

- Always replace pick-up, feed and separation rollers as a set.
- The target service life of the feed, pick-up, and separation rollers is 1000 K. However, they should be replaced sooner if the machine begins to jam or double-feed.

	300K	450K	600K	Exp. K	Note
TRANSFER BELT UNIT					
Transfer Belt	C	R	C	750	Use dry cloth to clean transfer belt. Always replace transfer belt and transfer roller cleaning blade together.
Transfer Roller Cleaning Blade		R		750	
Transfer Entrance Guide Plate	C		C		Dry cloth
Transfer Drive Roller	C		C		Dry cloth

	300K	450K	600K	Exp. K	Note
Transfer Idle Roller	C		C		Dry cloth
Transfer Bias Roller	C		C		Dry cloth
Transfer Exit Guide Plate	C		C		Dry cloth
Discharge Plate	R		R		

	300K	500K	600K	Exp. K	Note
FUSING UNIT AND PAPER EXIT					
Fusing Entrance Guide Plate	C		C		Dry cloth.
Fusing Exit Guide Plate	C		C		Dry cloth.
Fusing Lamps	I	I	I		
Hot Roller	R	R		600	
Hot Roller Bearings	R	R		1000	
Pressure Roller	R	R		600	
Pressure Roller Bearings	R	R		600	
Pressure Cleaning Roller	R		R		Replace as a set.
Pressure Cleaning Roller Bearings	R	I	R		
Pressure Cleaning Roller Spring Plate	I		I		
Hot Roller Strippers	R		R	600	
Thermistors x2	R	I			
Cleaning Web	R		R		
Cleaning Web Pressure Roller			R		Replace roller and bushings together.
Cleaning Web Pressure Roller Bearings			R		
De-Curler Rollers	C		C		Alcohol
Exit Static Discharge Brush	I		I		
Exit Rollers (Top, Bottom)	C		C		Alcohol

	300K	500K	600K	Exp. K	Note
Transport Rollers	C		C		Alcohol

	300K	450K	600K	Exp. K	Note
DUPLEX					
Entrance Sensor	C	C	C		Blower brush
Inverter Exit Rollers	C		C		Alcohol
Reverse Trigger Rollers	C		C		Dry cloth
Transport Rollers	C		C		Dry cloth
Inverter Entrance Roller	C		C		Dry cloth
Entrance Anti-Static Brush	C		C		Blower brush
Reverse Junction Gate	C	C	C		Dry cloth

Optional Peripheral Devices

LCT (Large Capacity Tray) B473

ROLLERS					
	300 K	450 K	1000 K	Expected K	Note
Pick-up Roller			R	1000	Always replace these rollers as a set. The target service life of the feed, pick-up, and separation rollers is 1000 K. However, they should be replaced sooner if the machine begins to jam or double-feed
Feed Roller			R	1000	
Separation Roller			R	1000	

Cover Interposer Tray B704

The cover interposer tray can be used with the 2000-Sheet Finisher B700 or 3000-Sheet Finisher B706. The interposer tray is installed between the main machine and the finisher.

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

	60K	120K	180K	Note
Feed Belt	R	R	R	Replace as a set.
Pick-up Roller	R	R	R	
Separation Roller	R	R	R	
Driver Rollers	C	C	C	Damp clean cloth.
Idle Rollers	C	C	C	
Discharge Brush	C	C	C	
Sensors	C	C	C	Blower brush.

3000-Sheet Finisher B706

	350K	700K	1050 K	Note
Drive rollers	I	I	I	Alcohol
Idle rollers	I	I	I	
Discharge brush	I	I	I	
Bushings	I	I	I	Lubricate with silicone oil if noisy.
Sensors	I	I	I	Blow brush.
Jogger fences	I	I	I	Make sure screws are tight.
Staple waste hopper	C	C	C	Empty staple waste.

2000-Sheet Booklet Finisher B700

	300K	2400K	3000K	4000K	EM	Note
Covers					I,C	Alcohol or water, dry cloth
Drive Rollers					C	Damp cloth, dry cloth
Idle Rollers					C	Damp cloth, dry cloth

Anti-Static Brush					C	Dry cloth
Sensors					C	Blower brush
Corner Stapler				R		Print an SMC report with SP5990. Replace the unit if the staple count is 500K.
Booklet Stapler				R		Print an SMC report with SP5990. Replace the unit if the staple count is 200K.

Punch B702

	300K	2400K	3000K	4000K	EM	
Punch Waste Hopper	I	I	I	I	I	Remove and empty
Punch Unit						Replace after 1000k punches.

Related SP Codes

This is a list of the PM related SP codes. For details, refer to Section "5 Service Tables".

SP7803	PM Counter Display	Displays the PM count since the last PM.
SP7804	PM Counter Reset	Resets the PM count.

3. Replacement and Adjustment

General Cautions

⚠CAUTION

- Never turn off the power switch while the machine is operating.
- If the machine is switched off during operation, the transfer belt, drum, or development unit could be damaged when it is removed or reinstalled in the machine.

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 as 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 machine. Doing so 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 (Adjustment of Drum Conditions).

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.

Transfer Belt Unit

1. Never touch the transfer belt surface with bare hands.
2. Take care not to scratch the transfer belt, as 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.

Laser Unit

1. Do not loosen the screws that secure the LD drive board to the laser diode casing. Doing so would throw the LD unit out of adjustment.
2. Do not adjust the variable resistors on the LD unit, as 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.

Charge Corona

1. Clean the corona wires with a dry cloth. Do not 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.

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 machine.
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 machine. 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 toner density sensor with static electricity.
9. When replacing the TD sensor, replace the developer, then execute SP2801 (TD Sensor Initialization) and SP2962 (Adjustment of Drum Conditions).

Cleaning

1. When servicing the cleaning section, be careful not to damage the edge of the 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.

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.

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.

Used Toner

1. We recommend checking the amount of used toner at every EM.
2. Dispose of used toner in accordance with local regulations. Never throw toner into an open flame, for toner dust may ignite.

Special Tools And Lubricants

Special Tools

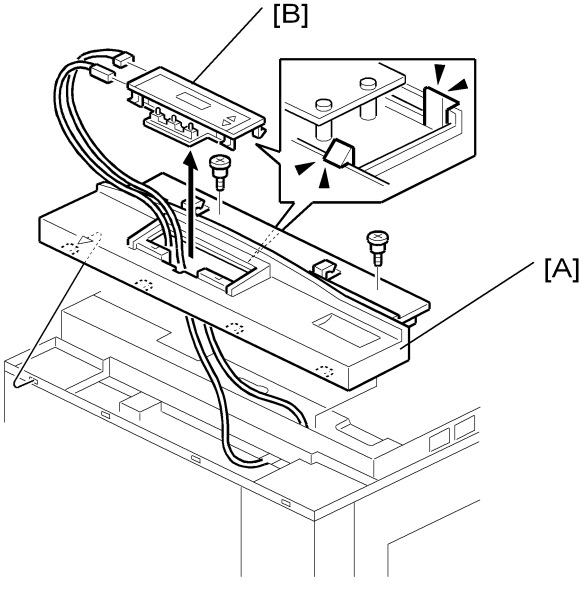
Part No.	Description
B6455010	SD (Secure Digital) Card – 64 MB

Lubricants

Part No.	Description
A2579300	Grease Barrierta – JFE 5 5/2
52039502	Silicon Grease G-501
54429101	Setting Powder

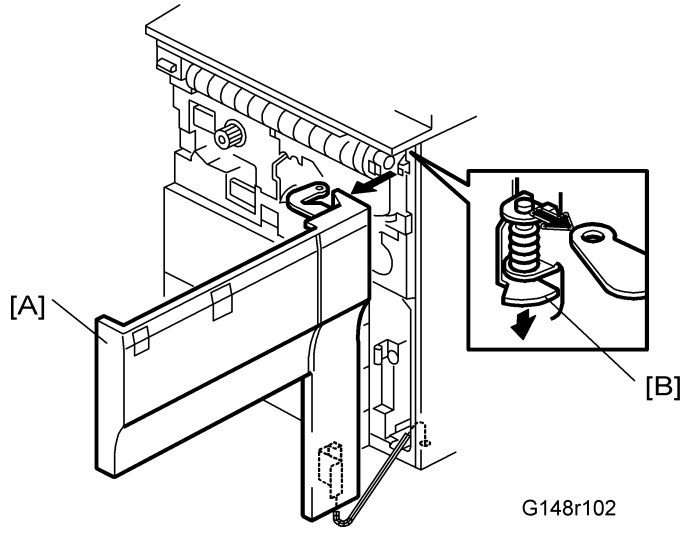
Operation Panel and External Covers

Operation Panel



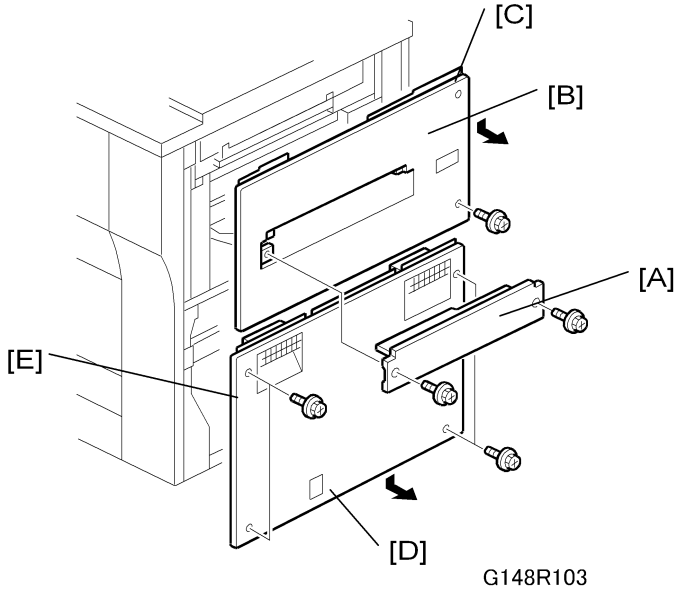
1. Operation panel [A] (x 2)
2. Operation panel control board [B] (x 2)

Front Door



While supporting the front door [A] with one hand, press down on the hinge bracket [B] then raise the door slightly to remove it.

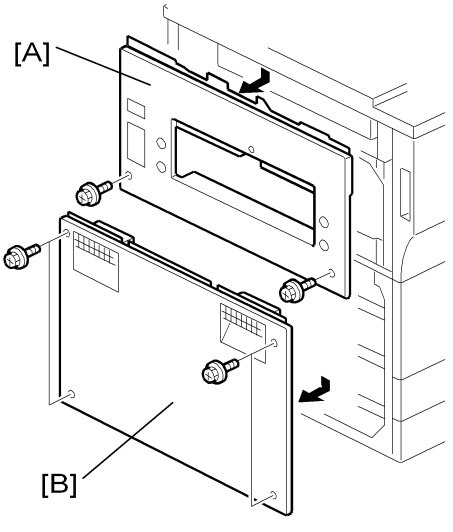
Right Covers



1. **LCT entrance guide cover [A] (x 2)**

2. **Right upper cover [B] (x 2)**
    - Before tightening the screws when re-attaching, make sure that 1) the tabs [C] on the cover are engaged with the grooves on the machine, and 2) the catches on the cover are engaged with the shoulder screws.
3. **Lower right cover [D] (x 2)**
    - After removing the screws, slide the cover down to remove it.
    - When re-attaching, before tightening the screws make sure that the tabs [E] on the cover are engaged with the grooves on the machine.

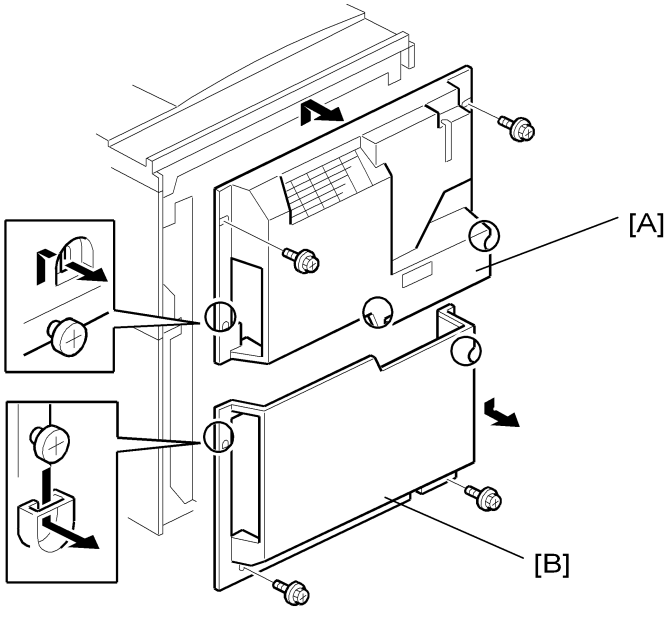
Left Covers



G148R104

1. **Left upper cover [A] (x 2)**
    - Slide down to remove.
    - When re-attaching, before tightening the screws make sure that 1) the tabs on the cover are engaged with the grooves on the machine, and 2) the catches on the cover are engaged with the shoulder screws.
2. **Left lower cover [B] (x 2)**
    - Slide down to remove.
    - When re-attaching, before tightening the screws make sure that the tabs on the cover are engaged with the grooves on the machine.

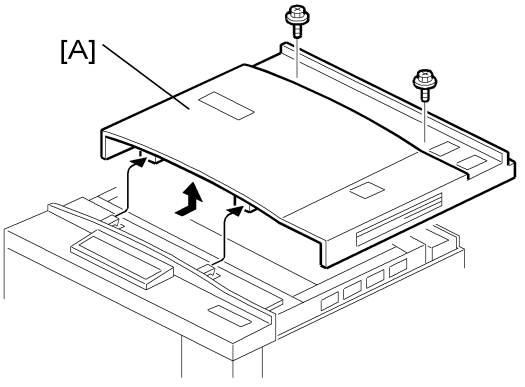
Rear Covers



G148R152

1. **Rear upper cover [A] (x 2)**
   - Slide down to remove.
   - When re-attaching, before tightening the screws make sure that the tabs on the cover are engaged with the shoulder screws.
2. **Rear lower cover [B] (x 2)**
   - When re-attaching, before tightening the screws make sure that the tabs on the cover are engaged with the shoulder screws.

Top Cover



G148R105

1. Remove the screws of the top cover [A] (☞ x 2).
2. Slide the cover to the rear and lift.

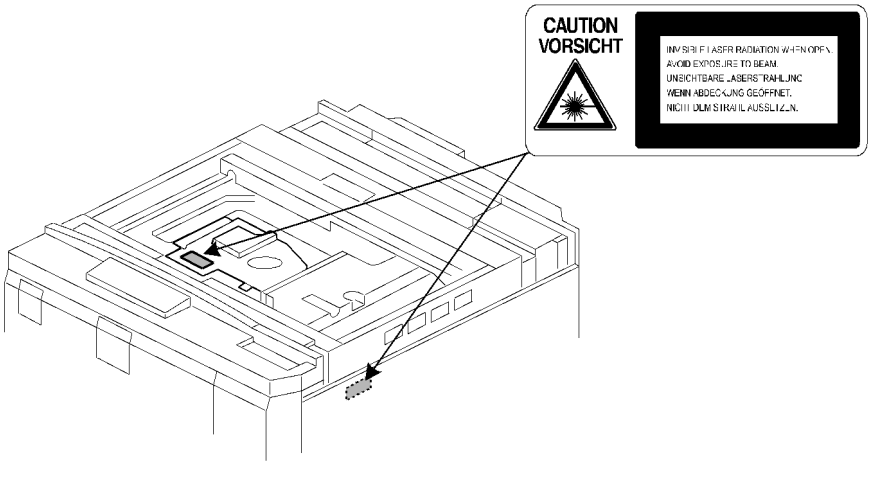
Laser Unit

⚠WARNING

- Turn off the machine and unplug its power cord before performing any procedure in this section. Laser beams can seriously damage the eyes.
- This laser unit uses four laser beams produced by a Class III LDA with a wavelength of 788 nm and intensity of 13.2 mW. Direct exposure to the eyes could cause permanent blindness.
- Before performing any replacement or adjustment of the laser unit, push the machine power switch to switch the machine off. Then unplug the machine from the power source.
- Do not touch the machine for 10 minutes. This allows enough time for the fusing unit to cool and for the polygon motor to stop rotating.
- Never power on the machine with any of these components removed: 1) LD unit, 2) polygon motor cover, 3) synchronization detector.

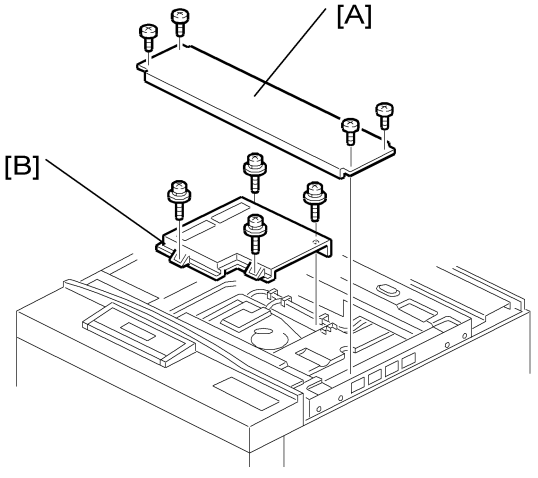
Caution Decals

Two caution decals are provided for the laser section.



G148R153

LD Unit and Polygon Motor



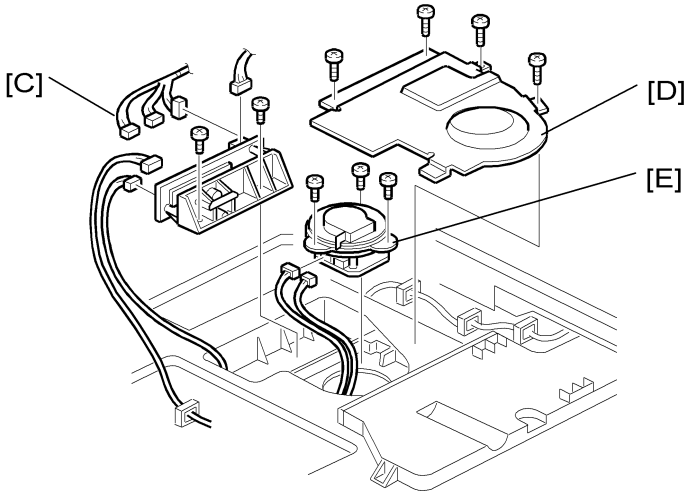
G148R106

Remove the top cover.

1. **LD unit cover [A] (x 4)**
2. **Shield cover [B] (x 4)**

⚠CAUTION

- An accidental static discharge could damage the LDB (Laser Diode Board). Touch a metal surface to discharge any static electricity from your hands.
- The polygon motor rotates at extremely high speed and continues to rotate after switching the machine off. To avoid damaging the motor, never remove the polygon motor within three minutes of switching off the machine and disconnecting its power plug.



G148R107

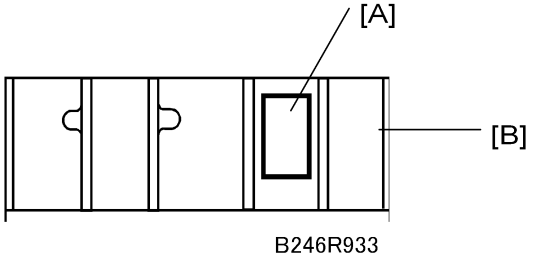
1. **LDB unit [C] (x 2, x 6)**
2. **Polygon motor cover [D] (x 4)**
3. **Polygon motor [E] (x 3, x 2)**

CAUTION

- Before fastening the polygon motor in place (x 3, x 2), make sure that the glass panel of the laser port is facing to the right (toward the mirrors in the optical path).

SP Adjustments

1. **Execute SP2962 (Automatic Adjustment of Drum Conditions) after replacing the LD unit, but only if SP3901 – Auto Process Control – is on.**
2. **Read the label [A] attached to the LD unit [B]. Execute SP2115 (Main Scan Beam Pitch Adjustment) and enter the numbers printed on the label.**



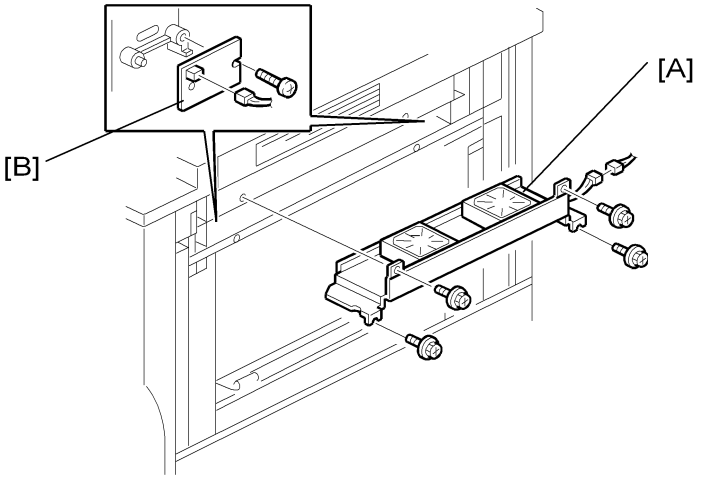
B246R933

- The first line on the label is the machine number.
- The second line on the label includes three numbers separated by slashes. Reading from left to right, these are the correct settings for SP2115 (Main Scan Beam Pitch Adjustment) 001, 002, and 003.

- Do not remove this label and make sure it is flat against the side of the LD unit.

3. **Perform the printer adjustments. See "Print Image Adjustment"**

Laser Synchronization Detector Replacement



G148R108

Remove the right side cover (x 2)

1. **If the optional LCT is installed, disconnect it (x 1).**
2. **Development unit fans [A] (x 4, x 1)**
3. **Synchronization detector [B] (x 1, x 1)**
4. **After replacement, set SP1002-001~007 (Side-to-Side Registration) to the defaults.**

Laser Unit Alignment

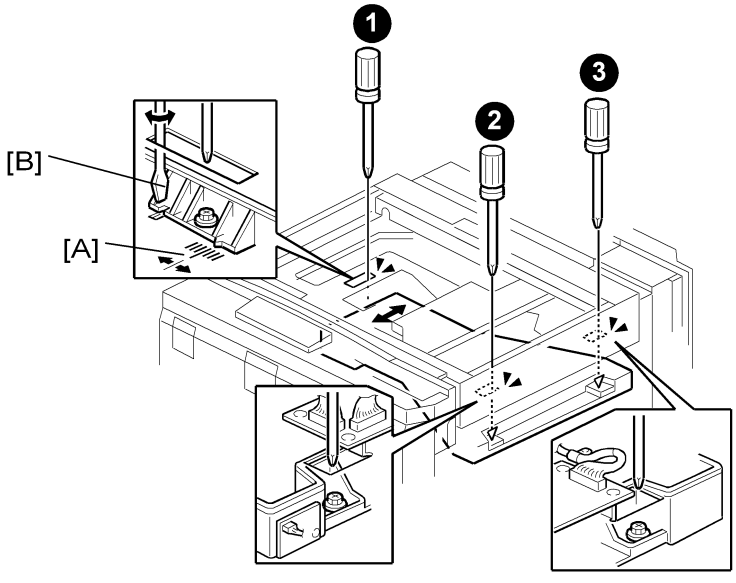
⚠WARNING

- If you have just disassembled the LD unit, to avoid serious damage to the eyes from accidental exposure to laser beams you must confirm that the machine has been re-assembled completely before operation.

This adjustment corrects the parallelogram pattern to the desired rectangular pattern for printing.

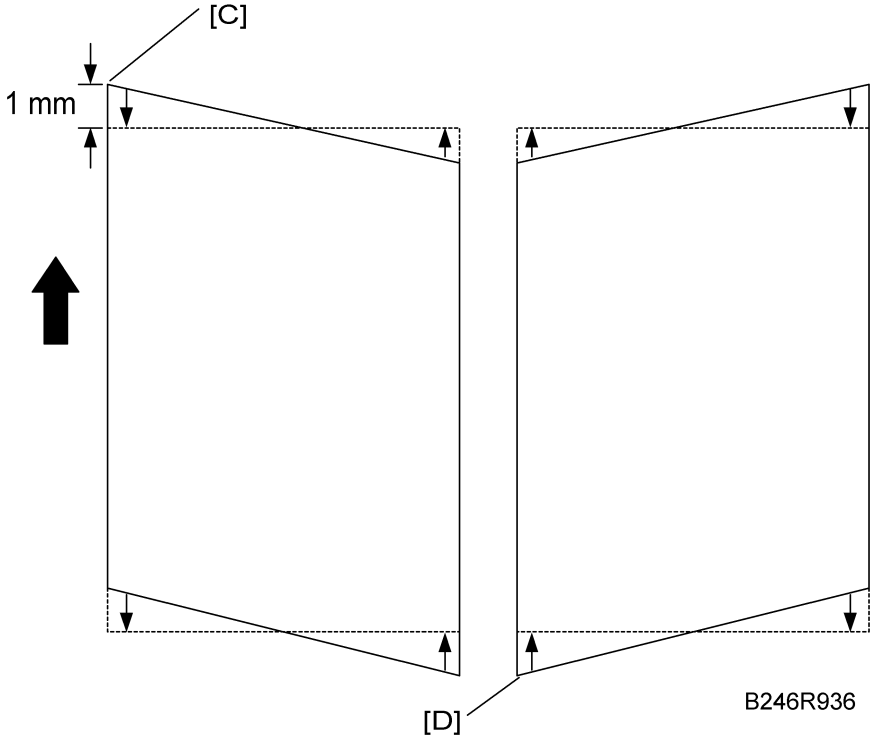
1. **Execute SP2902-003 (Test Pattern – Printing Test Pattern) 018 to print the A4 LEF pattern. Check the printed patterns and estimate the angle of adjustment required.**
2. **Remove the top cover. See "Top Cover"**

3. Remove the LD unit cover and polygon motor cover. See "LD Unit and Polygon Motor".
4. Remove the right cover



G148R154

5. Loosen the screws of the laser exposure unit ❶, ❷, ❸ (x 3).
6. While watching the scale [A], use a flathead screwdriver [B] to move the laser exposure unit left or right to adjust the position of the unit.

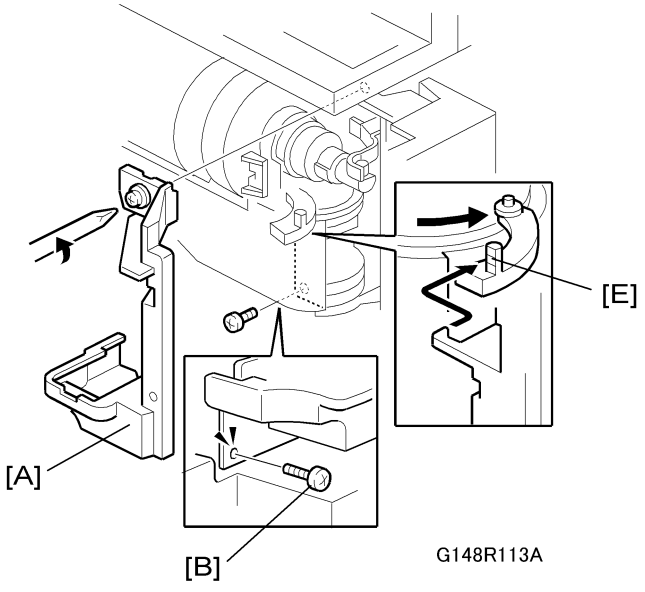


7. **Adjust the position of the laser exposure unit.**
    - If the pattern is skewed at the corner of the leading edge [C], move the unit so it moves the pointer on the scale toward the back.
    - If the pattern is skewed at the lower left corner of the trailing edge [D], move the unit so it moves the pointer on the scale toward the front.
    - The scale is set for increments of 1 mm.
8. **After adjustment, tighten the screws on the laser exposure unit, re-assemble the machine and print the pattern again with SP2902-003 No.18.**
9. **Check the pattern. Repeat the procedure if more adjustment is required.**

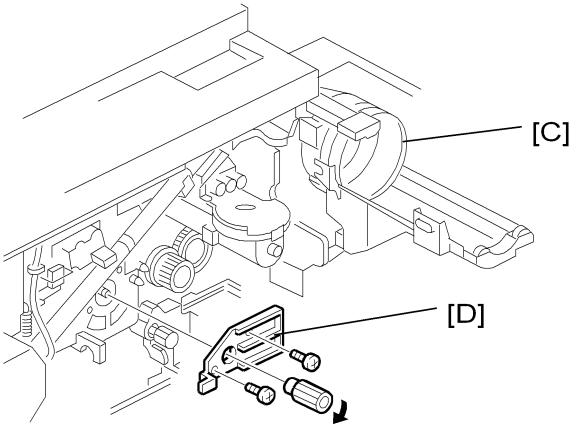
Drum Unit

Development Unit Removal

Drum Removal



1. Open the front door.
2. Shutter cover [A] (x 1).
3. Lock screw [B]

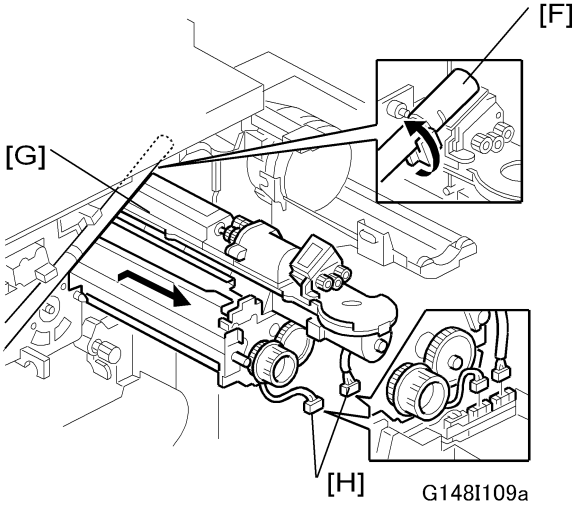


G148I108a

4. **Toner bottle [C]. Pull the toner bottle holder out and swing the toner bottle holder to the right.**
5. **Face plate (knob x 1, x 2) [D]**

Important

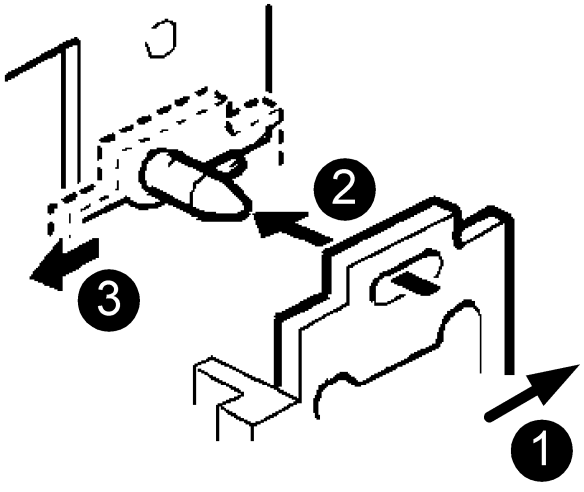
- **After re-installation, the tab [E] in the first illustration should be behind the stay and its pin below should be in the open track below.**



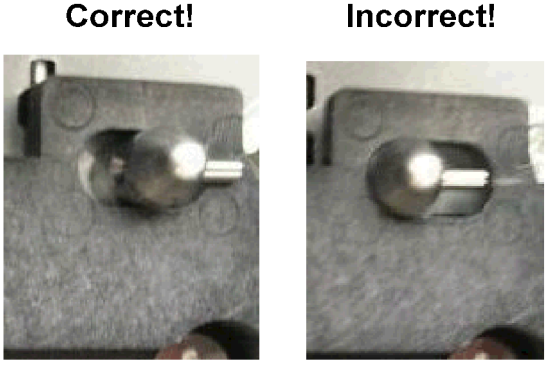
G148I109a

6. **Close the supply pipe shutter [F]**
7. **Development unit [G] (x 2 [H])**
   - Allow the unit to slip to the right, then slowly pull it out of the machine.
   - If the LCT is installed, you may need to disconnect it so the front door can open far enough to allow removal of the development unit.

Drum Re-installation



1. Push the development unit to the right ❶.
2. While continuing to hold the unit to the right, push it into the machine.
3. Confirm that the pin [A] goes into the left side of the oval hole [B] in the development unit plate.
4. Push the development unit in completely ❷ until it stops, then push it to the left ❸.
5. Make sure you can see the horizontal pin in front of the plate as shown below.



B246I999a

Important

- If you cannot move the development unit plate behind the horizontal pin, turn the front gear of the unit to the left and try again.
- Make sure the pipeline shutter is rotated down to the open position.

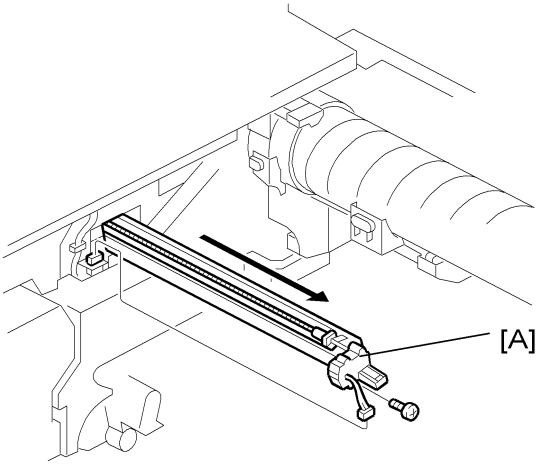
6. Reattach all removed parts.

Replacement with a Used Development Unit

When using a development unit from another machine for test purposes, execute the following procedure.

1. **Check the value of SP2220 (Vref Manual Setting) in both the machine containing the test unit and the machine that you are going to move it to.**
2. **Install the test development unit, then input the VREF for this unit into SP2220.**
3. **After the test, reinstall the old development unit, and change SP2220 back to the original value.**

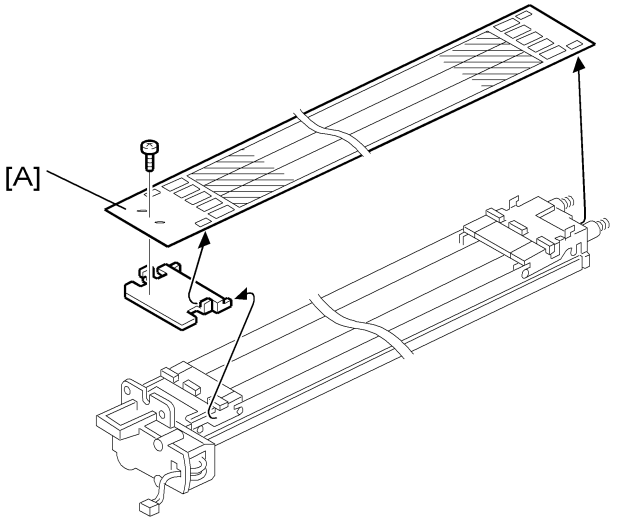
Charge Corona Unit



- Remove development unit. See "Development Unit"

1. **Charge corona unit [A] (x 1, x 1)**

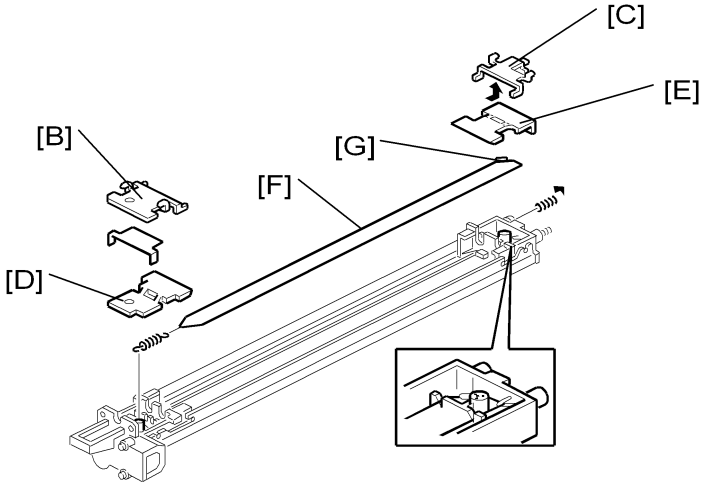
Charge Corona Wire and Grid



B246R942

- Remove the charge corona unit. See "Charge Corona Unit"

1. **Grid [A] (x 1)**



B246R943

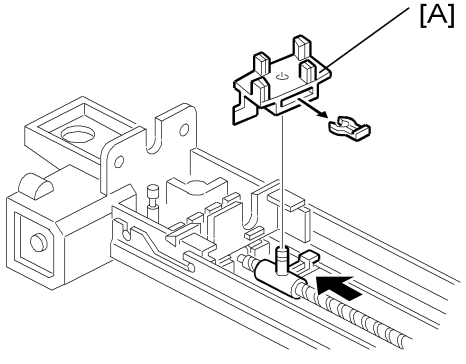
2. **Front bracket [B]**
3. **Rear bracket [C]**
4. **Front block cover [D]**
5. **Rear block cover [E]**

6. **Corona wire [F]**
7. **Disconnect the wire behind the grid bracket.**

Important

- Never touch the charge corona wire with bare hands. Always protect it from dust, oil, etc.
- Never bend or knot the wire. Charge will not distribute evenly on a bent wire.
- Make sure that the wire seam [G] is as close as possible to the wire hook at the rear.
- At the front and back, make sure that the wire is threaded correctly into the grooves in the end blocks.
- After replacing the charge corona wire, make sure that the wire cleaner pads are engaged correctly with the wires.
- After replacing the wire, set SP2001-001 (Charge Roller Bias Adjustment – Applied Voltage for Image Processing) to the default.

Charge Corona Wire Cleaning Pads

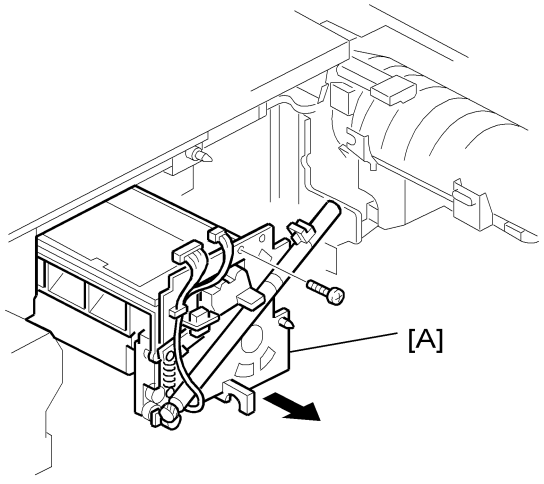


Remove:

- Charge corona unit.
- Charge corona wire and grid

1. **Cleaning pad [A] (x 1)**

OPC Drum Removal

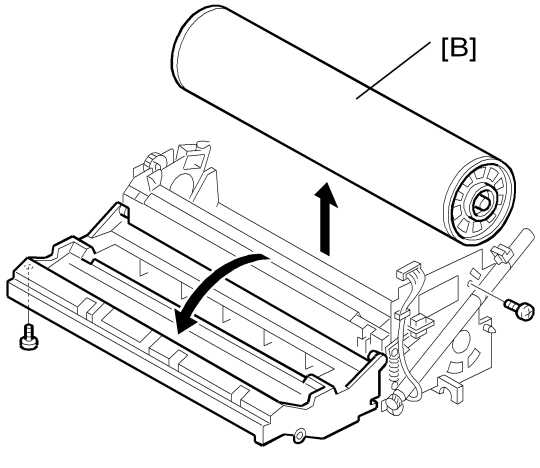


G148R110

Remove

- Development unit
- Charge corona unit

1. **Drum unit [A] (x 1, x 2)**
    - Grasp the drum unit by the knob to remove it from the machine.



B246R946

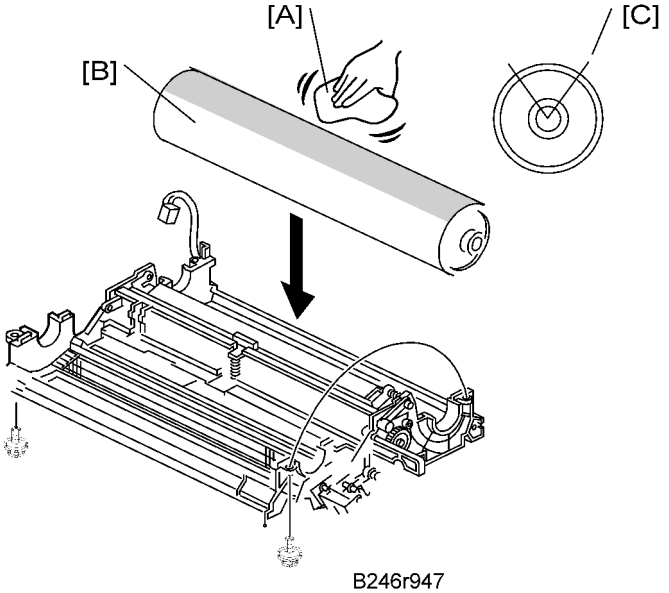
2. **OPC drum [B]**
3. **After replacing the drum, do the following SPs:**

- Set SP2001-001 (Charge Roller Bias Adjustment – Applied Voltage for Image Processing) to the default setting.
- SP2962 (Adjustment of Drum Conditions), only if SP3901 (Auto Process Control) is on.

Important

- To avoid fingerprints on the surface of the OPC drum, never touch the surface of the drum with bare fingers.
- Never use alcohol to clean the surface of the OPC drum. Blow dry the OPC drum, then wipe clean with a clean, slightly damp cloth.

Dusting the Drum Surface



B246r947

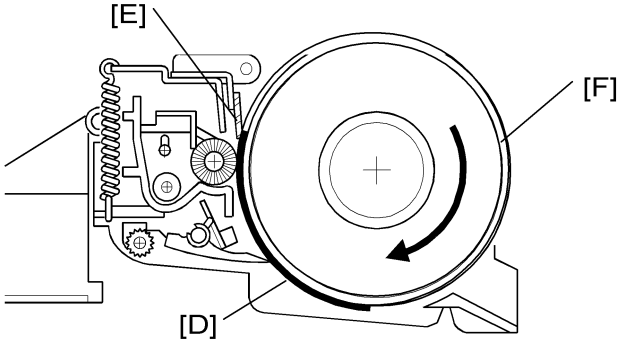
Important

- The surface of a new drum is less smooth, so you must apply Drum Setting Powder (P/N: 54429101) to the drum surface before installation.
- Failure to apply the drum powder before installation could damage the drum cleaning blade or scour the drum surface.

1. Apply the setting powder by tapping the powder bag [A] across the surface of the drum [B].
2. Cover the entire length of the drum over a 45-90 degree portion [C] (about 1/4 of the total drum surface). Apply enough powder so the area turns white.

Note

- If setting powder is not available, use waste toner instead of drum setting powder. However, this could cause dirty backgrounds on the first copies.



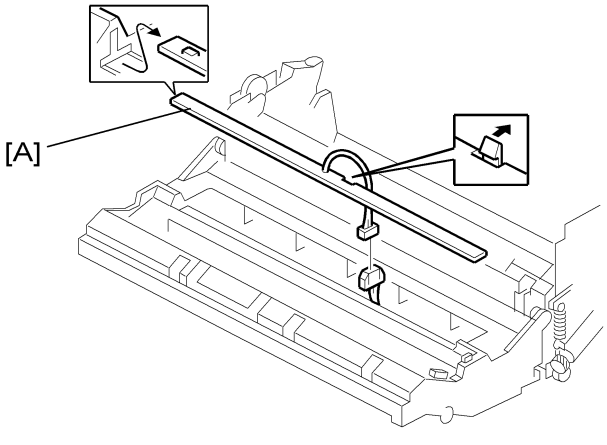
B246R948

3. Install the new drum in the OPC unit so that the powdered surface [D] faces the cleaning blade [E].
4. Rotate the drum once clockwise [F] until it stops again at the same position.

Important

- Never rotate the drum anti-clockwise.

Quenching Lamp



B246R950

Remove:

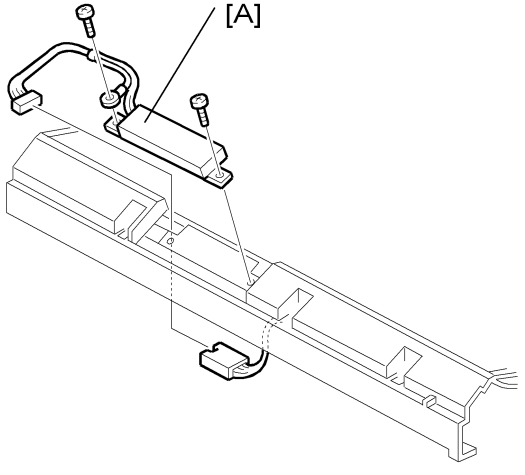
- OPC drum. See "OPC Drum Removal"

1. **Quenching lamp [A] (x 1)**
   - At the center, push back the hook to release the quenching lamp.

Note

- Use only a blower brush to clean the quenching lamp.

Drum Potential Sensor



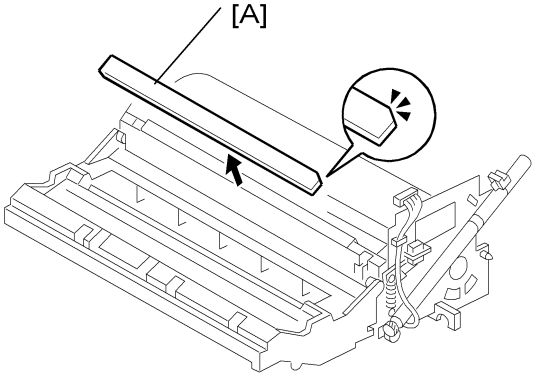
B246R951

Remove:

- OPC drum. See "OPC Drum Removal"

1. **Drum potential sensor [A] (x 2, x 1)**
2. **After replacing the drum potential sensor, do SP2962 (Adjustment of Drum Conditions), only if SP3901 (Auto Process Control) is on).**

Cleaning Filter



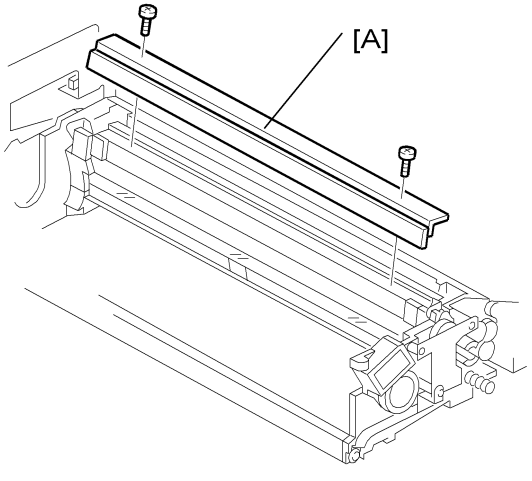
B246R952

Remove:

- OPC drum. See "OPC Drum Removal"

1. **Cleaning filter [A]**

Cleaning Blade



B246R953

Remove:

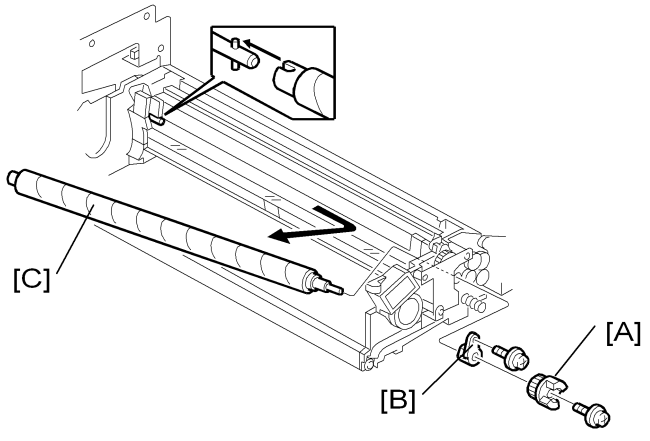
- OPC drum. See "OPC Drum Removal"

1. **Drum cleaning blade [A] (x 2)**

Important

- Clean the blade edge carefully with only a soft, clean cloth.
- Handle the blade carefully to avoid nicking its edge.
- New blades are treated with special setting powder, so avoid touching the edge of a new cleaning blade. If the edge of a new blade is accidentally wiped clean, dust it lightly with some toner before installing it.
- Before installing a new blade, make sure that the blade side seals are not pinched by the blade.

Cleaning Brush



B246R954

Remove:

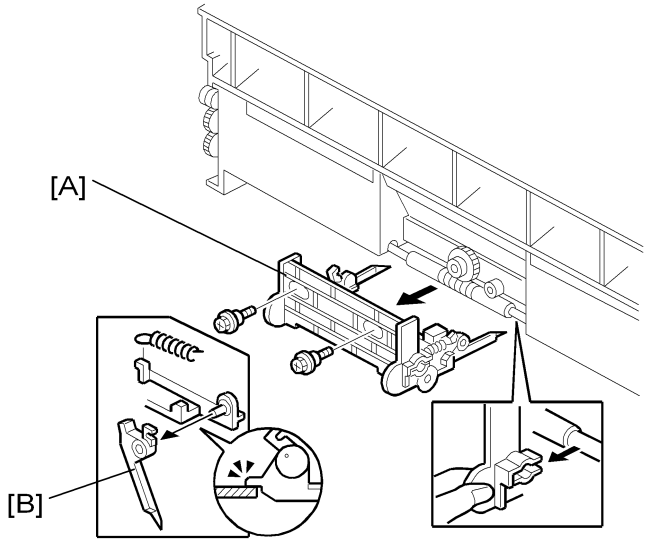
- OPC drum. See "OPC Drum Removal"
- Drum cleaning blade . See "Cleaning Blade"

1. **Coupling [A] (x 1)**
2. **Inner bushing [B] (x 1)**
3. **Cleaning brush [C]**

Important

- Pull the shaft toward the rear to disengage the front of the shaft, then pull out.
- After replacing the cleaning brush, clean the ID sensor to make sure that it is clean and free of toner.
- Avoid touching the cleaning brush with bare hands.
- Check the entrance seals and confirm that they are not bent.

Pick-off Pawls

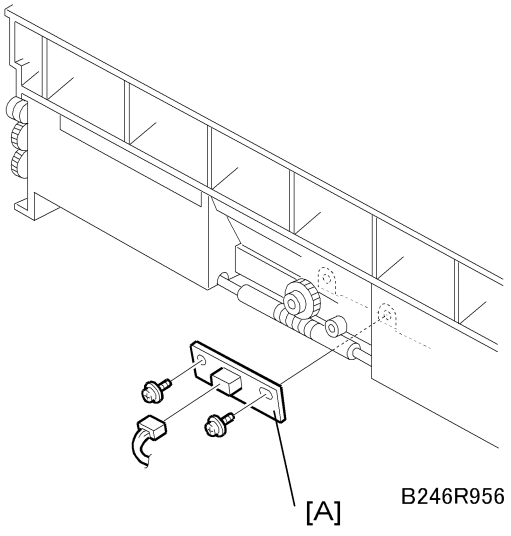


Remove:

- OPC drum. See "OPC Drum Removal"

1. **Pick-off pawl bracket [A] (☞ x 2)**
2. **Pick-off pawl [B] (spring x 1)**

ID Sensor

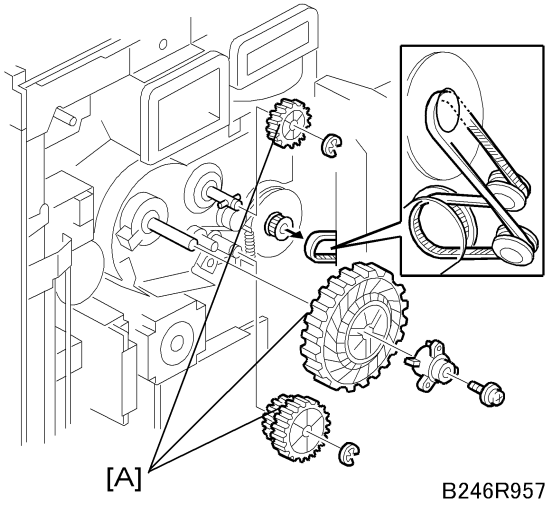


Remove:

- OPC drum. See "OPC Drum Removal"
- Pick-off pawls. See "Pick-off Pawls"

1. **ID sensor [A] (x 2, x 1)**
2. **After replacing the sensor, do the following SPs:**
    - SP2962 (Adjustment of Drum Conditions), only if SP3901 (Auto Process Control) is on).
    - SP3001-002 (ID Sensor Initialization Setting).

Drum Motor

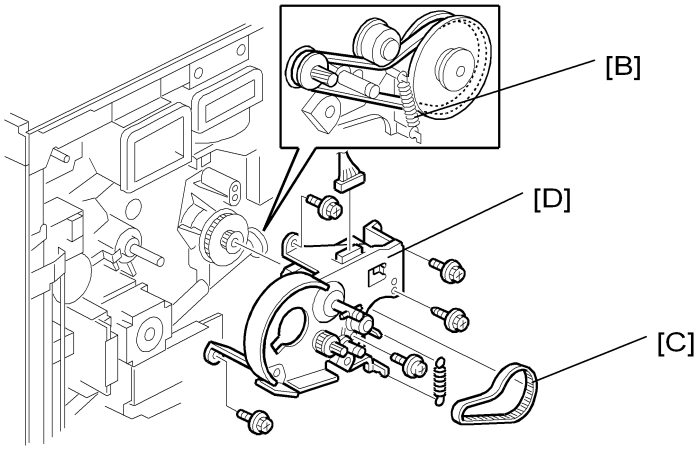


B246R957

Remove:

- Rear covers
- Controller/IPU panel (x 2) (not shown). The panel swings open like a door. You do not need to remove it.
- Flywheel (x 3) (not shown)

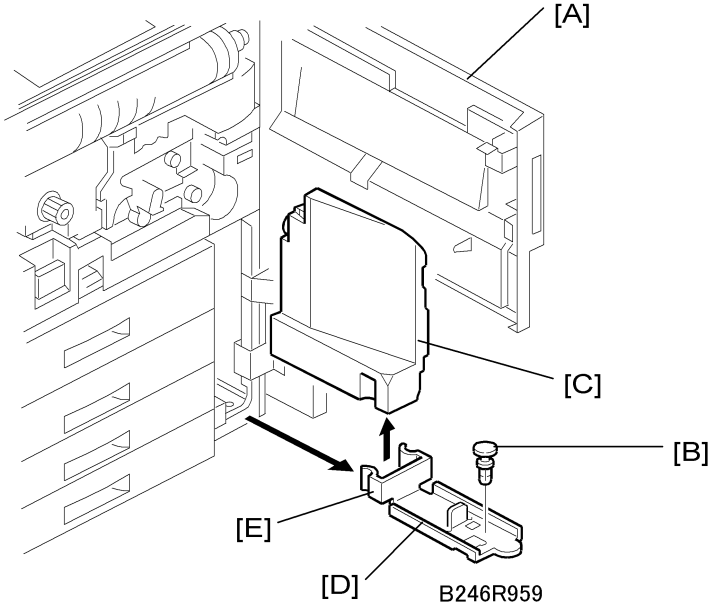
1. **Three gears [A] (x 1, x 2, Timing belt x 1)**



B246R958

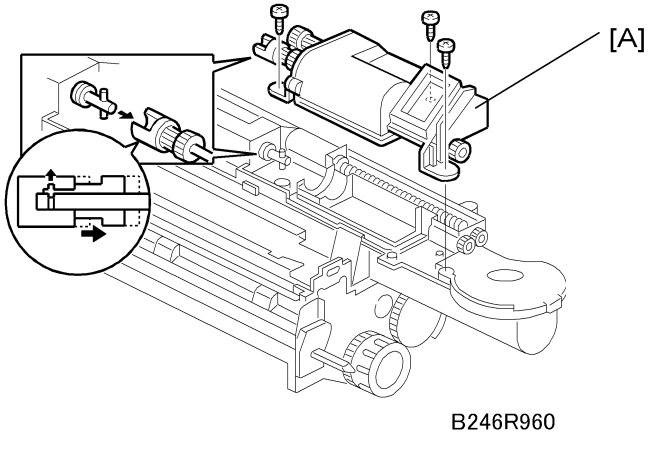
2. **Spring [B]**
3. **Timing belt [C]**
4. **Drum motor [D] (x 1, x 5)**

Toner Collection Bottle



1. Open the front door [A].
2. Remove the lock pin [B], then pull out the toner collection bottle [C] and its base [D].
3. Detach the bottle from the base clamp [E] and replace it.

Toner Separation Unit

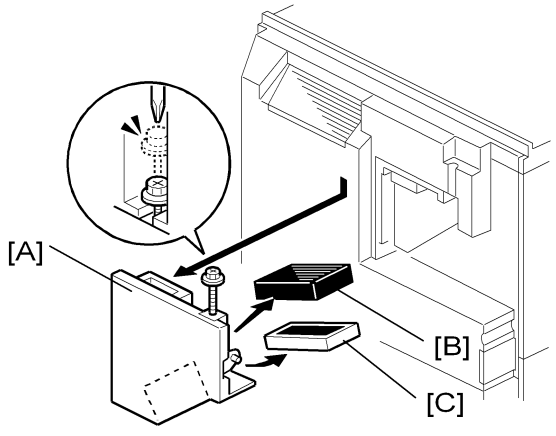


Remove:

- Development unit. See "Development Unit Removal"

1. **Toner separation unit [A] (x 3)**

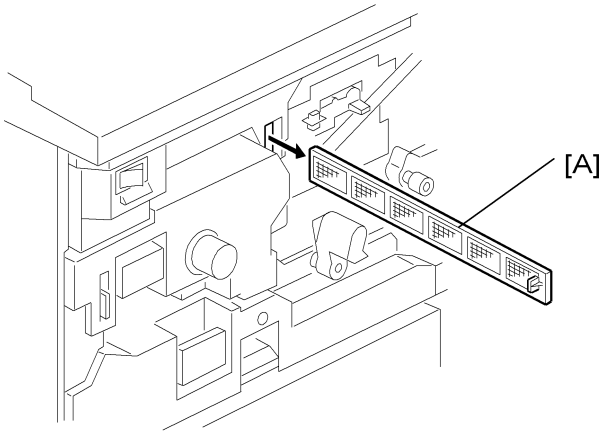
Ozone Filters



G148R151

1. **Filter cover [A] (x 1). (The filter cover is on the back of the machine.)**
2. **Ozone filter (top) [B]**
3. **Ozone filter (bottom) [C]**

Internal Dust Filter



G148R111

1. Open the front door.
2. Pull out the internal dust filter [A].

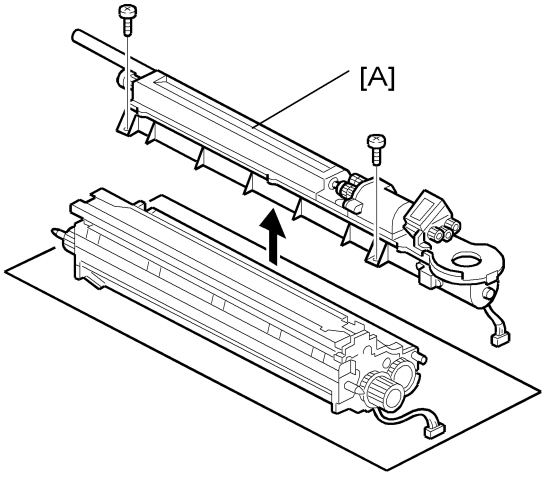
Development Unit

Developer Replacement

Remove:

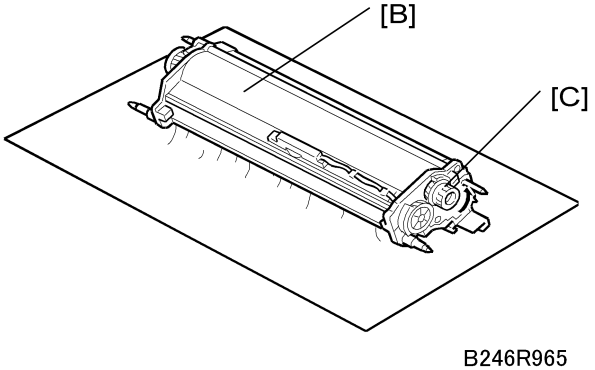
- Development unit. See "Development Unit Removal"

1. **Remove the toner hopper [A] (x 2)**



B246R964

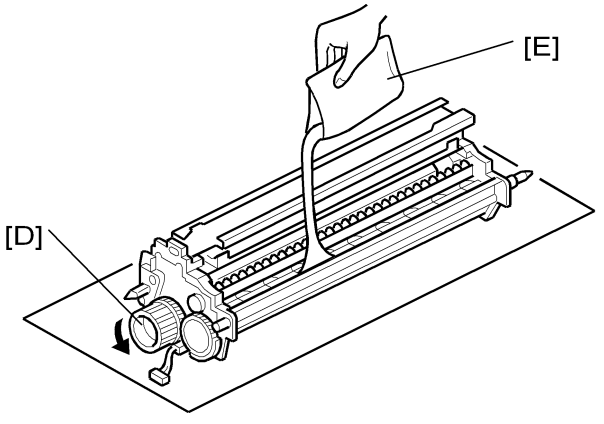
2. **Rotate the toner hopper very slightly (10° ~ 20°) as you slide it up to remove it. To avoid toner spill, hold the hopper level as you remove it**



B246R965

3. **Hold the development [B] unit over a large sheet of paper, then slowly turn it upside down to empty the developer.**

4. Turn the knob [C] through several complete rotations to empty all the developer in the development unit.
5. Clean the development sleeve and its side seals.
6. Turn the unit over and set it on another sheet of clean paper.
7. Clean the development roller shaft with a clean cloth and blower brush.



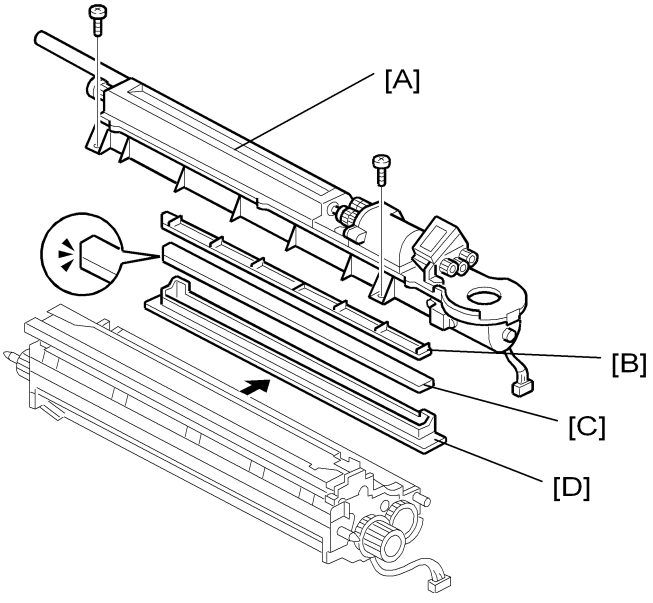
B246R966

8. While turning the knob [D] slowly, pour in one pack of developer [E] from one end of the development unit to the other.
9. Make sure that the developer is evenly distributed.
10. Continue to turn the knob several times to prevent clumping in the developer.

Reinstallation

1. Hold the hopper perfectly level when re-attaching it, to prevent toner from entering the rails of the development filter.
2. Open the front door.
3. Turn the power switch on.
4. Go into the SP mode, then close the front door.
5. Do SP2801 (TD Sensor Initial Setting) to initialize the TD sensor.

Development Filter

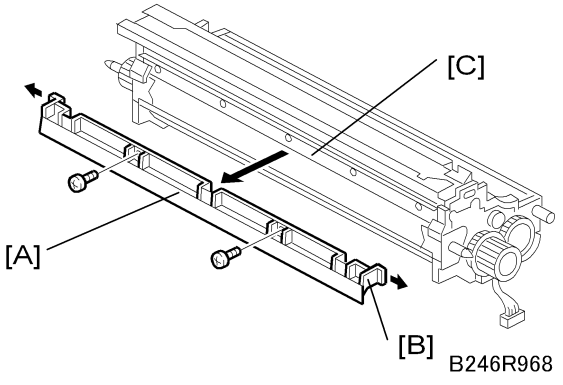


Remove:

- Development unit. See "Development Unit Removal"

1. **Toner hopper [A]**
2. **Filter bracket top [B]**
3. **Filter bracket [C]**
4. **Development filter [D]**
    - Make sure that the rails where the development filter bracket [C] connects to the development unit are clean and free of toner. If there is any toner in the rails, wipe them clean.
    - When installing a new filter, set the filter inside the filter case then place the case on top of the filter bracket [C]. The filter case closes any gaps at the edges of the filter to prevent toner scatter.

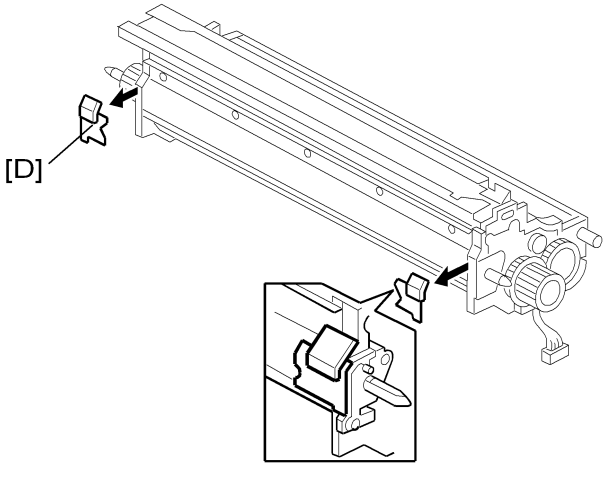
Entrance Seal and Side Seals



Remove:

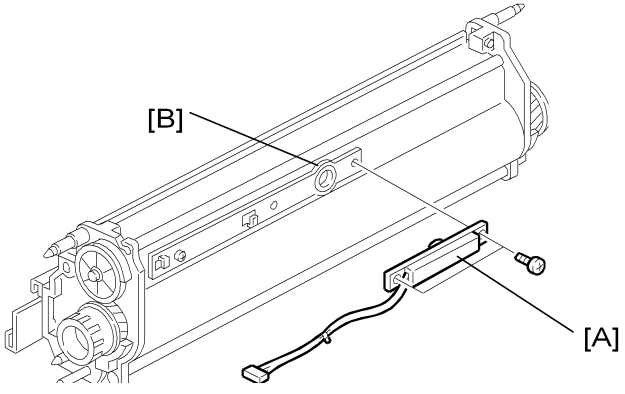
- Development unit. See "Development Unit Removal"

1. **Entrance seal bracket [A] (x 2)**
2. **After removing the screws, press in the catches on either end [B] to release the entrance seal bracket, then remove it.**
    - Clean the entrance seal bracket before re-installing it.
    - When re-installing, make sure the tabs [C] and notches are engaged at four locations.



3. **Side seals [D]**
    - Remove the side seals from both ends, clean the area, and replace with new seals.

TD Sensor



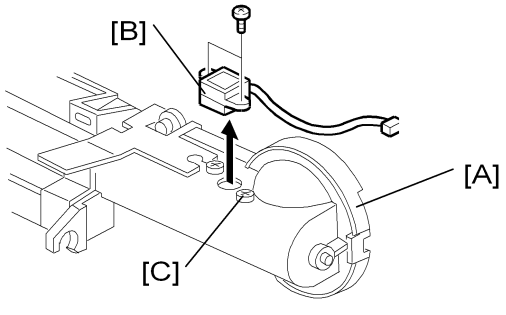
B246R970

Remove:

- Development unit. See "Development Unit Removal"

1. **TD sensor (x 1) [A]**
2. **Before installing a new TD sensor, clean the TD sensor port [B].**
3. **After replacing the TD sensor, do SP2801 TD Sensor Initial Setting and SP2962 Auto Process Control (only if SP3901 – Auto Process Control – is on).**

Toner End Sensor



B246R971

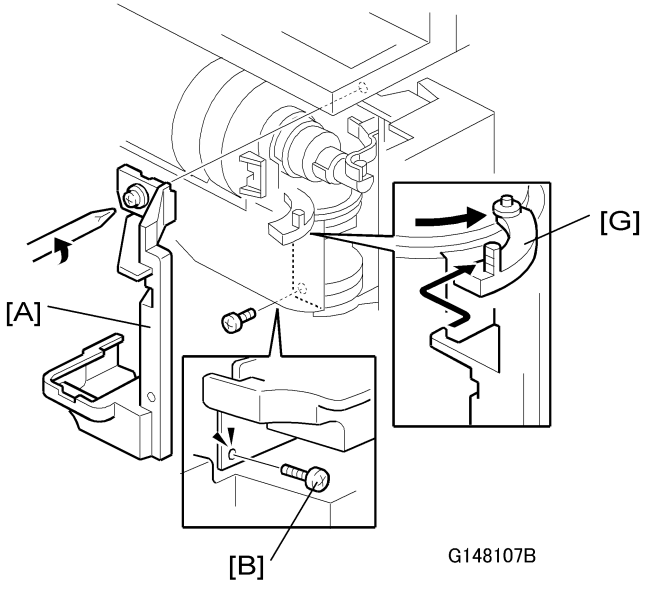
Remove:

- Development unit. See "Development Unit Removal"

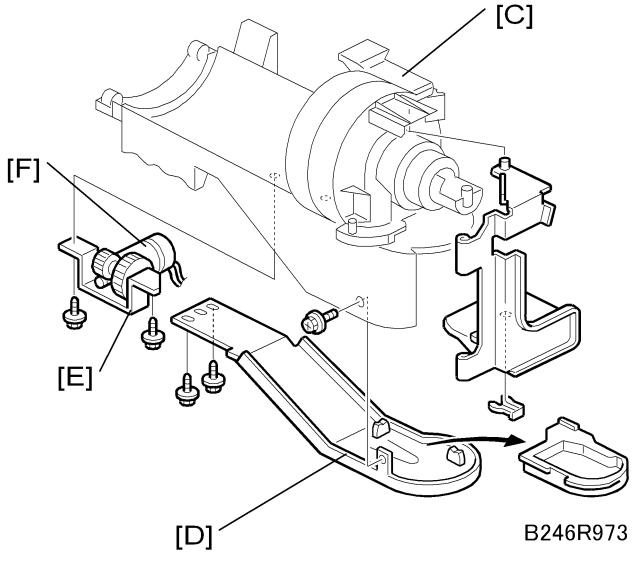
1. **Toner hopper [A] (x 2)**
2. **Toner end sensor [B] (x 2)**
    - Remove the screws carefully to avoid stripping the holes.

- Before installing a new toner end sensor, clean the toner end sensor port [C].

Toner Supply Motor

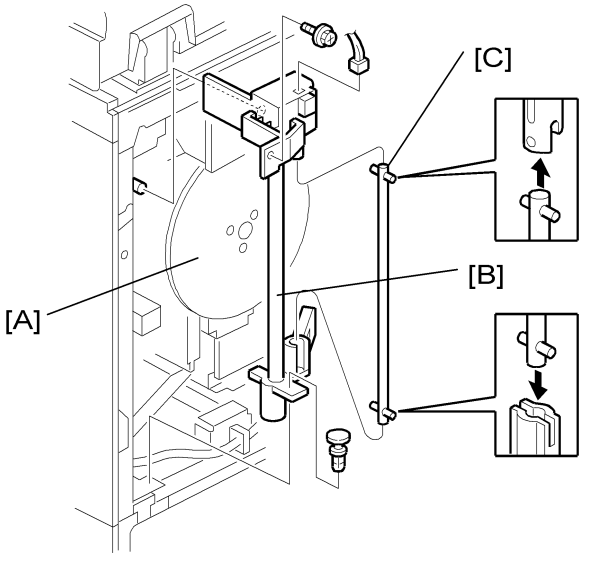


1. **Open the front door.**
2. **Swing the toner unit out of the machine and remove the toner bottle.**
3. **Bracket [A] (x 1)**
4. **Lock plate [B] (x 1)**



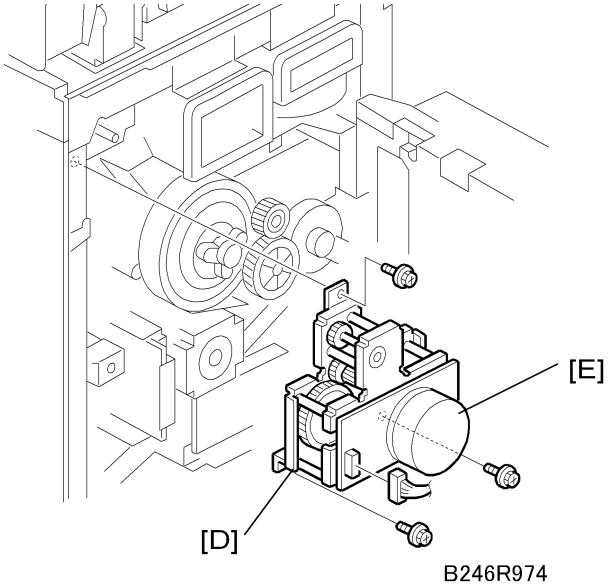
5. **Toner bottle unit [C] (x 1, harness x 1, x 1)**
   - The c-clamp is under the toner unit.
   - Lift the toner bottle unit off the pegs and lay it on a piece of newspaper to avoid toner spill.
6. **Bottom plate [D] (x 3, harnesses x 2)**
   - 2 screws on the bottom, 1 screw on the side.
7. **Toner supply motor bracket [E] (x 2)**
8. **Toner supply motor [F] (x 2)**

Development Motor



B246R975

1. **Flywheel [A] (x 3)**
2. **Waste toner pump tube [B] (x 1, x 1)**
3. **Drive rod [C]**
    - Lift the toner pump tube to disengage the drive rod, pull out the rod, and push the rubber tube aside.

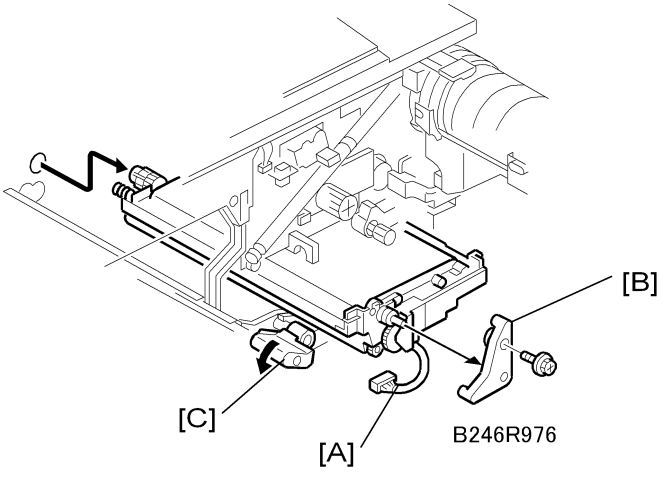


B246R974

4. **Development motor bracket [D] (x 3, x 1)**
5. **Development motor [E] (x 4)**

Transfer Belt Unit

Transfer Belt Unit Removal



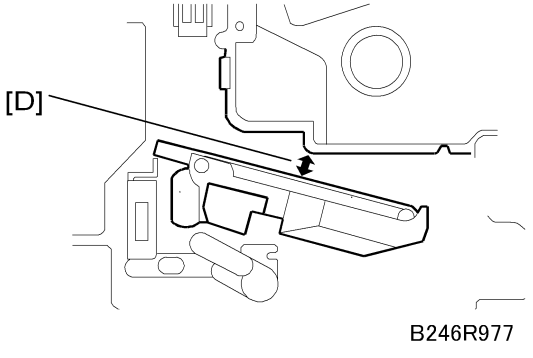
Note

- Before you begin, spread a mat or some clean paper on the floor where you intend to set the transfer belt unit.

Remove:

- OPC drum unit. See "OPC Drum Removal"

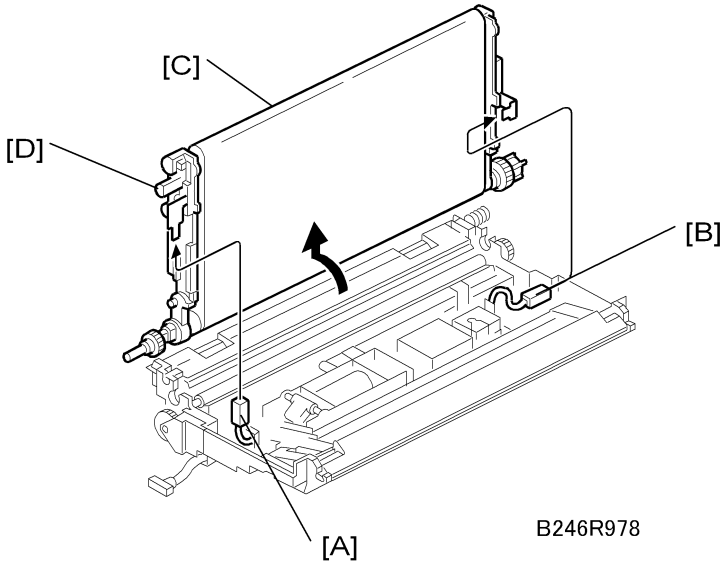
1. **Disconnect the transfer belt unit [A] (x 1).**
2. **Remove the transfer belt unit stay [B] (x 1).**
3. **While supporting the transfer belt unit with your hand, turn the release lever [C] counter-clockwise to release it, then pull the transfer belt unit out of the machine.**



Important

- The transfer belt unit can be removed without removing the OPC drum unit.
- However, the transfer belt unit must be removed carefully to avoid scratching the surface of the transfer belt on the OPC drum unit [D].
- Avoid touching the belt with bare hands.

Transfer Belt Removal



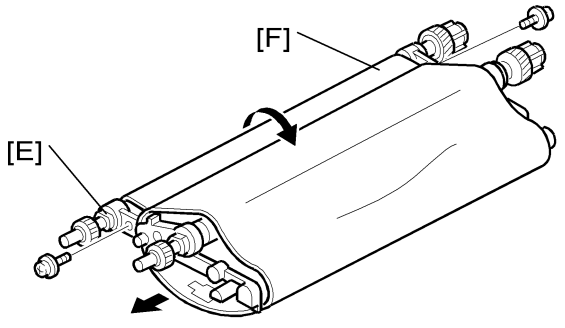
Remove:

- Transfer belt unit. See "Transfer Belt Unit Removal"

1. **Disconnect the earth terminal [A] and transfer current terminal [B] (x 2). While doing this, hold the transfer belt unit [C] by its knobs [D].**
2. **Raise and stand the belt perpendicular to the unit and remove it.**

Note

- To avoid scratching the belt on the guide, never rotate the belt unit farther than 90 degrees.

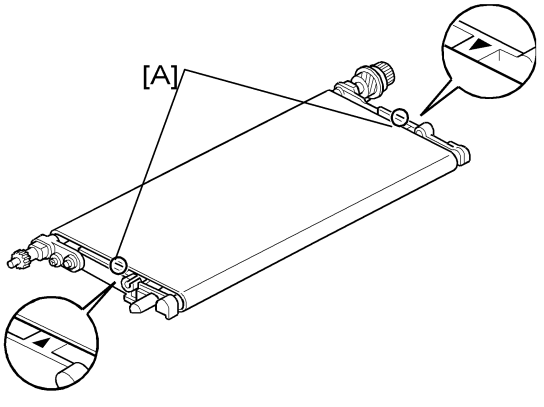


B246R979

3. **Release the drive roller [E] (x 2).**
4. **Press in on the drive roller to collapse the unit into a "U" shape [F].**
5. **Remove the belt and replace it.**

Re-installation

- Before re-assembling the transfer belt unit, use a clean cloth and alcohol to clean the contact points of the drive roller, idle roller, and transfer roller. Make sure these areas are clean and free from toner, paper dust, etc.
- Never touch the surface of the belt with bare hands and never apply alcohol to the surface of the belt. Clean it with a blower brush. Check the underside of the transfer belt and clean with the blower brush.

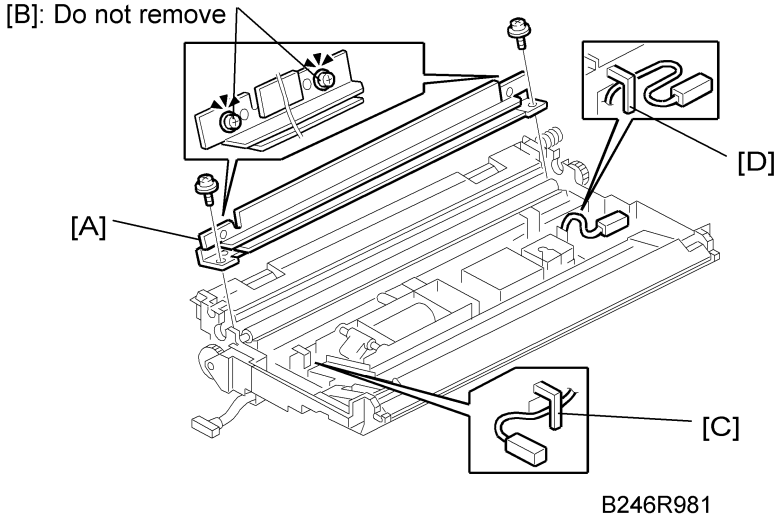


B246R980

- When re-assembling the transfer belt unit, make sure that the transfer belt is centered between the triangular marks [A] on either side of the unit.
- After re-assembly, make sure that the transfer belt is inside the transfer current terminal. The belt could be cut if it is not positioned correctly.
- Confirm that both the ground and transfer current terminal are connected and that the harnesses are not touching the release lever.

- After re-installing the transfer belt unit, turn the belt and confirm that the toner collection coil turns.
- The transfer belt and transfer roller cleaning blade must always be replaced together.

Transfer Roller Cleaning Blade



Remove:

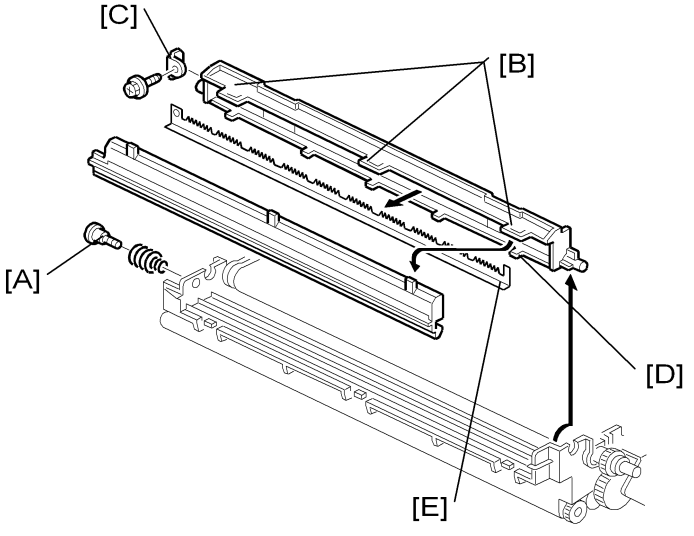
- Transfer belt unit. See "Transfer Belt Unit Removal"
- Disassemble the transfer belt unit. See "Transfer Belt Unit Removal"

1. **Transfer roller cleaning blade [A] (x 2, x 2)**

Important

- **Never remove the inner lock screws [B] of the transfer roller cleaning blade.**
- **When re-assembling, make sure that the clamps [C] and [D] are arranged as shown above to avoid contact with the release lever.**
- **The transfer roller cleaning blade should always be replaced when the transfer belt is replaced.**
- **Never touch the edge of a new transfer roller cleaning blade. The edge of the blade is dusted with setting powder. If the setting powder is removed accidentally, dust the edge of the blade with toner. This is especially important when only the transfer roller cleaning blade must be replaced without replacing the transfer roller.**
- **Work carefully around the transfer power pack located inside the transfer belt unit, especially when cleaning with an vacuum cleaner, to avoid damaging the power pack with static electricity.**

Discharge Plate

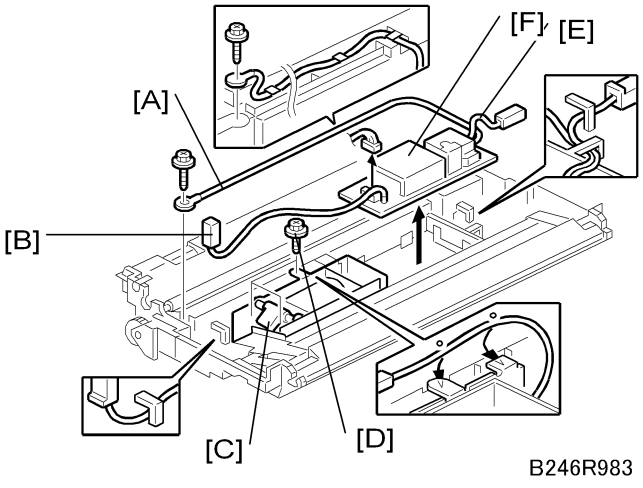


1. Remove the transfer belt unit. See "Transfer Belt Unit Removal"
2. Remove the shoulder screw and spring [A].
3. Rotate the discharge unit up, then lift it straight up to remove it.
4. Disconnect the three large tabs [B].
5. Remove the bracket [C] (x 1).
6. Disconnect the 6 small seal case tabs [D].
7. Remove the discharge plate [E].

Reinstallation

1. Set the discharge plate and make sure that it is perfectly flat before re-connecting the tabs.
2. Before re-attaching the bracket [C], make sure that all the tabs are connected.

Transfer Power Pack



Remove:

- Transfer belt unit . See "Transfer Belt Unit Removal"

1. **Wire (x 1) [A] (all wire guides)**
2. **Ground terminal wire [B] (wire guide x 1)**
    - This terminal wire does not disconnect from the power pack.
    - Loosen the two left screws of the transfer belt lift solenoid [C], and remove the top screw [D] to free the ground terminal wire.
3. **Transfer current terminal wire [E] (wire guides x 2)**
4. **Transfer power pack [F] (x 1)**
    - Disconnect the two standoffs on the right edge of the power pack and remove.

Re-installation

- Confirm that the left edge of the power pack is below the tabs on the left.
- Confirm that the transfer current terminal wire is below the wire guides on the right.
- Pass the ground terminal wire under the top connector of the solenoid bracket and tighten all the screws of the solenoid bracket.
- Make sure the wire is below all the wire guides at the top.

Fusing Unit

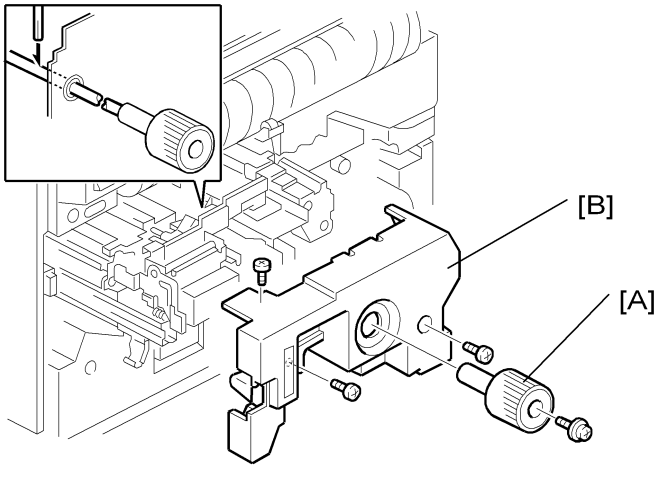
⚠CAUTION

- Switch off the machine, remove the plug from the power source, then allow sufficient time for the fusing unit to cool before you remove it from the machine.

Fusing Unit Removal

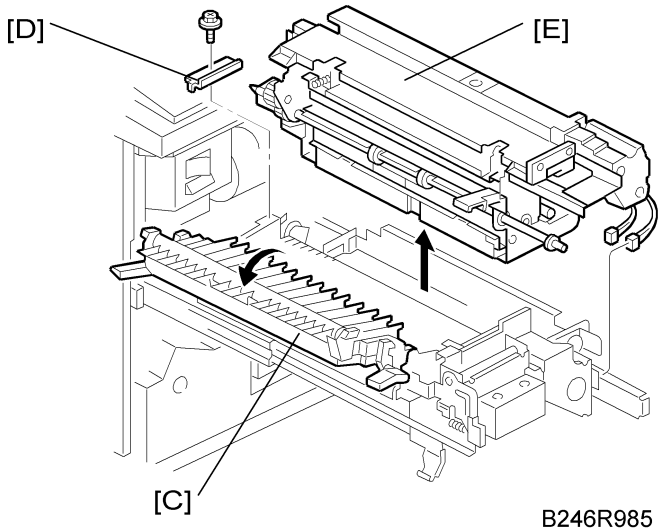
Note

- Before you begin, spread a mat or some clean paper on the floor where you intend to set the fusing unit.



B246R984

1. **Open the front door.**
2. **Pull out the transfer unit.**
3. **Knob [A] (🔩 x 1)**
    - Open D3 and D4 until you can see the hole in the shaft.
    - Insert the tip of a screwdriver into the hole of the shaft to hold it in position as the knob is turned to remove or install it.
4. **Inner cover [B] (🔩 x 3)**
    - Pull the fusing unit release lever, then pull the unit out on the rail supports.
    - At reassembly, make sure that the harness of the web drive motor is not pinched by the inner cover.

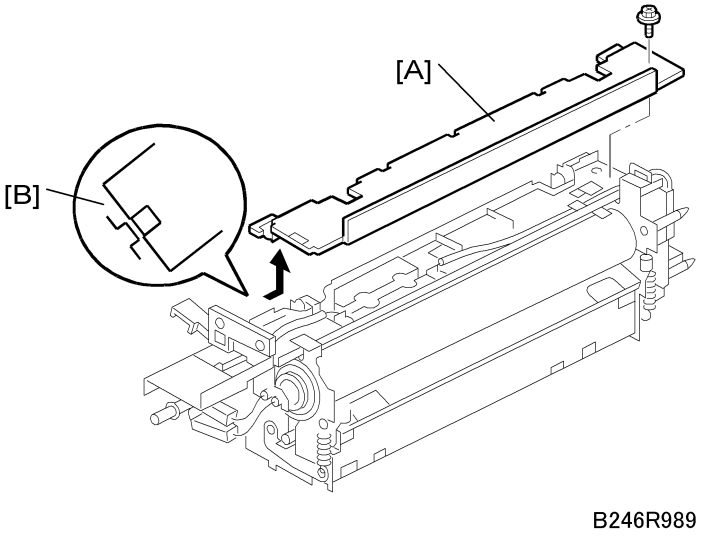


5. Open the exit separation pawl assembly [C].
6. Stopper bracket [D] (x 1)
7. Fusing unit [E] (x 2)

Important

- Support the bottom of the fusing unit with your hand as you remove it.

Fusing Unit Thermistors and Thermostats



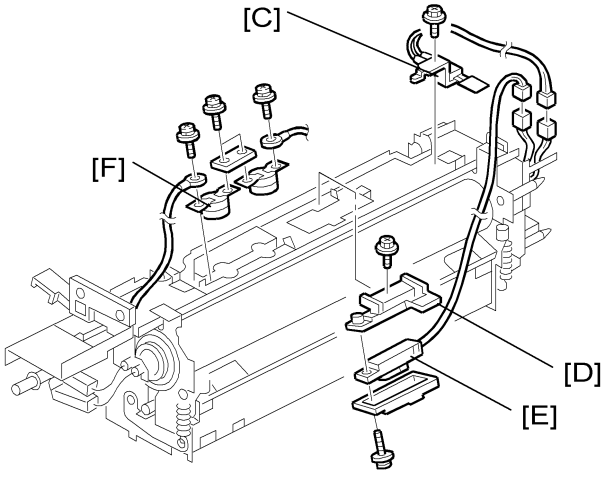
Remove:

- Fusing unit. See "Fusing Unit Removal"

1. **Upper cover [A] (x 1)**
2. **Press in on the internal pawls [B] to release them then remove them.**

Important

- **Make sure that the pawls [B] engage correctly when you reinstall the unit.**



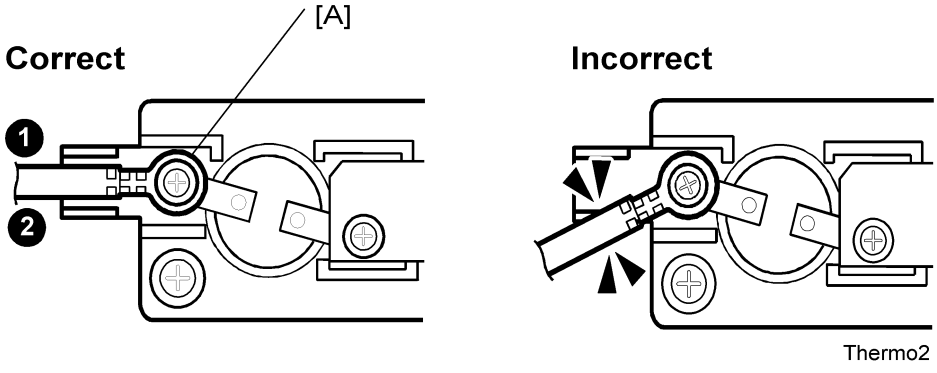
1. **End thermistor [C] (x 1, x 1)**
2. **Bracket [D] (x 1)**
3. **Center thermistor [E] (x 1)**
4. **Two thermostats [F] (x 4)**

Reinstallation

- To prevent damage to a thermostat, never touch its detection surface.
- Place the end of the thermostat harness that has the round lead [A] in between the two ribs ❶, ❷ in the bracket.
- Tighten the screw for the round lead [A] as tight as possible without damaging the screw or screw hole.

Important

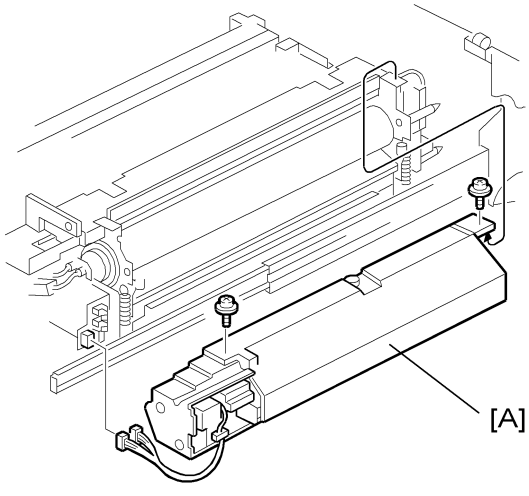
- **If the harness is not positioned between the between the bracket ribs ❶, ❷ (as shown under "Incorrect" below), this could cause an error (SC542 or SC545).**



Thermo2

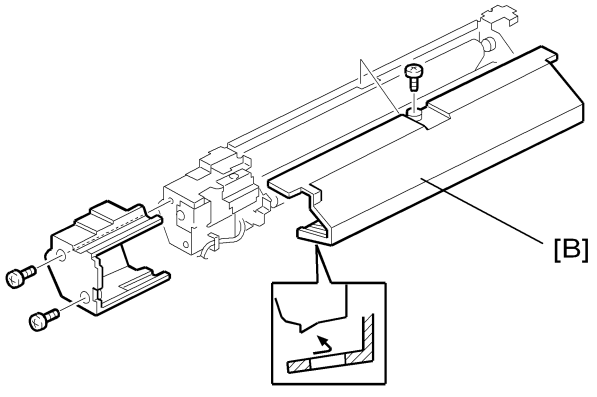
Web Cleaning Roller

Web Unit Disassembly



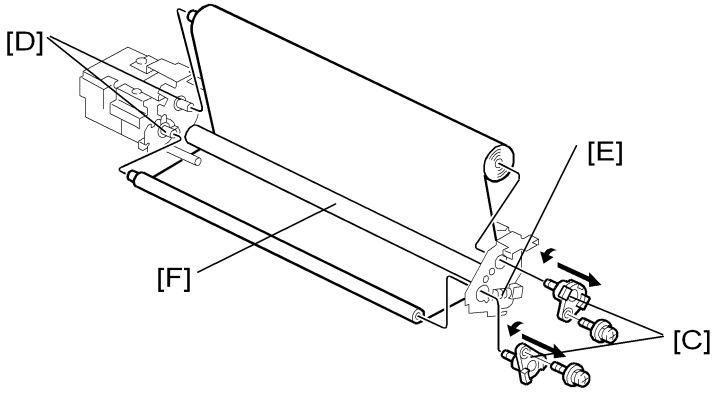
B246R993

1. **Open the front door and pull out the fusing unit on its support rails.**
2. **Web unit [A] (x 2, x 2)**
    - The web unit can be removed without removing the fusing unit from the machine.



B246R992

3. **Upper cover [B] (x 1)**
    - Rotate the cover down slightly to remove.



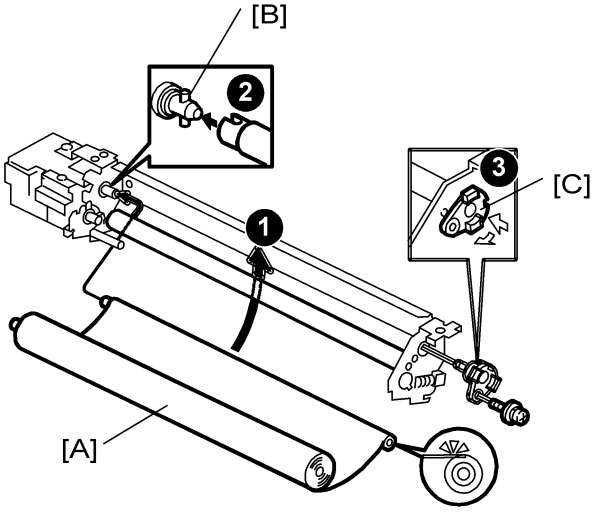
B246R994

4. **Web shafts [C] (x 2)**
5. **Remove the web cleaning rollers from the shaft driver pins [D].**
6. **Web bushing [E] (spring x 1)**
7. **Cleaning roller [F]**

Reinstallation

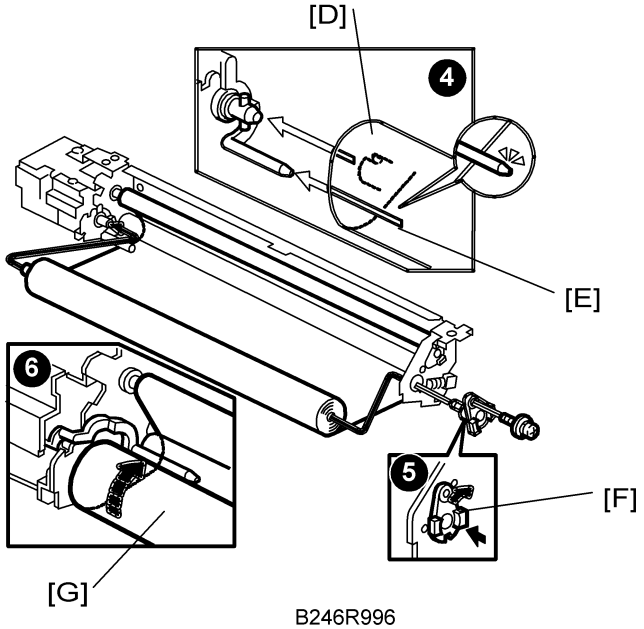
- After replacing the web with a new one, you must execute SP1902-001 (Fusing Web Used Area Display/Setting) to reset the web consumption count to zero. This SP code must be executed to release SC550.
- Be sure to print an SMC report before executing Memory All Clear (SP5801). After executing SP5801, be sure to re-enter the value recorded for SP1902-001 in the SMC report.

Web Unit Re-assembly



B246R995

1. **Attach the cleaning roller [A]**
   - Insert the end of the web into the slot ❶.
2. **Insert the drive pins [B] into the web shaft ❷.**
3. **After installing bushing [C], rotate the shaft right to lock it, then attach the lock screw ❸.**



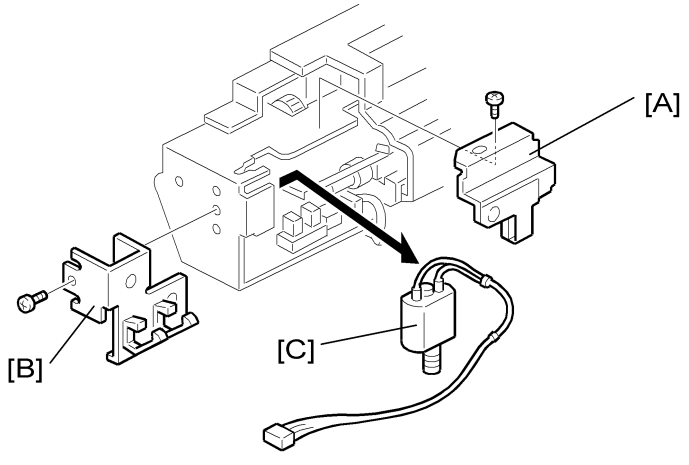
B246R996

4. Set the web [D] under the feeler [E] of the web end sensor ❹.
5. Attach bushing 2 [F] ❺.
6. Attach the new web roll [G] and wind it tight so no slack remains ❻.

   Important

   - Before reassembling the machine, confirm that 1) there is no slack in the web roll, 2) the web is below the feeler of the web end sensor.
7. Attach the upper cover.
8. After installing a new web roll, reset SP1902-001 to zero.

Web Motor and Web End Sensor

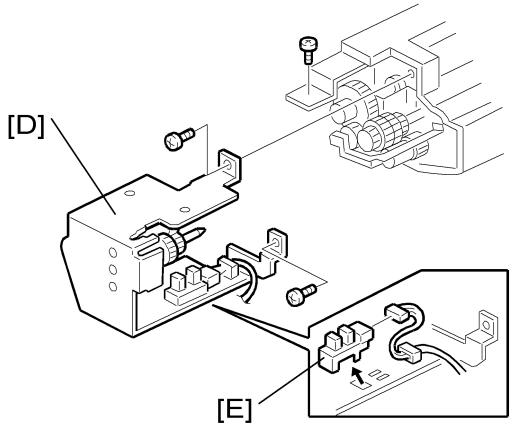


B246R997

Remove:

- Web unit and end cover. See "Web Unit Disassembly"

1. Bracket [A] (x 1)
2. Web motor positioning bracket [B] (x 1)
3. Web motor [C]



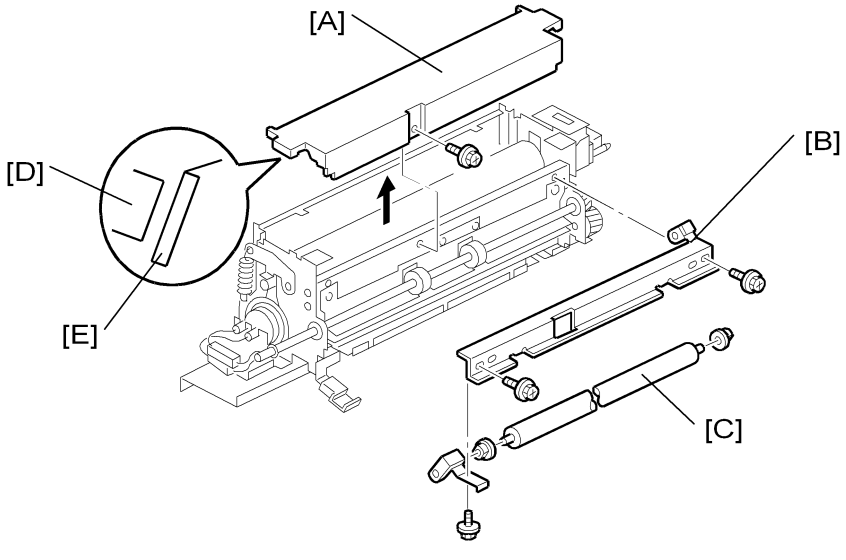
B246R999

4. **Web motor/sensor mount [D] (x 3)**
5. **Web end sensor [E] (x 1, harness x 1)**

Reinstallation

- Make sure that the harness of the web driver motor is not pinched by the fusing inner cover

Pressure Roller Cleaning Unit



B246R1000

Remove:

- Fusing unit. See "Fusing Unit Removal"

1. **Lower cover [A] (x 1)**
2. **Cleaning roller bracket [B] (x 2)**
3. **Cleaning roller [C] (x 1)**

Reinstallation

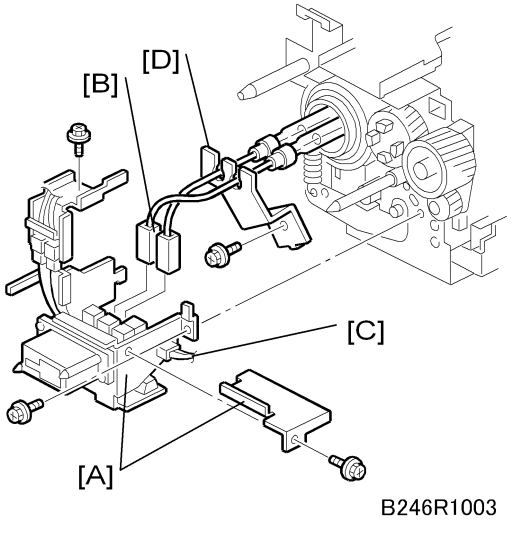
- When attaching the lower cover of the pressure roller cleaning roller, make sure that the tab [D] engages with the groove [E].
- If the bushings are noisy after replacement, lubricate them on both ends and the holes where the bushings are attached with Barietta Grease L553R.

Fusing Lamps, Hot Roller, and Pressure Roller

Note

- If you wish to remove the pressure roller only, without removing the hot roller and fusing lamps, please do not use this procedure. Use the procedure in the next section.

Fusing Lamps

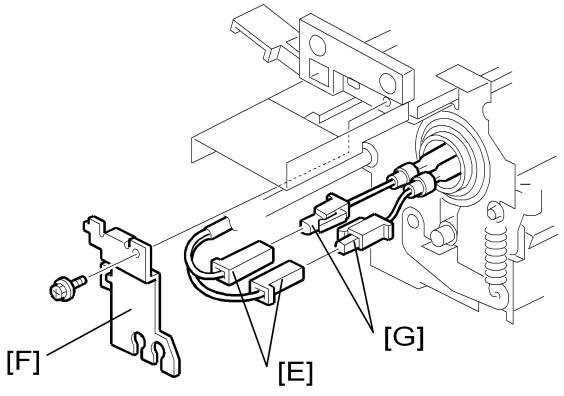


Remove:

- Fusing unit. See "Fusing Unit Removal"

1. **Rear terminal brackets [A] (x 3)**
2. **Upper connectors [B] (x 2)**
3. **Lower connector [C] (x 1)**

4. Rear fusing lamp holder [D] (x 1)



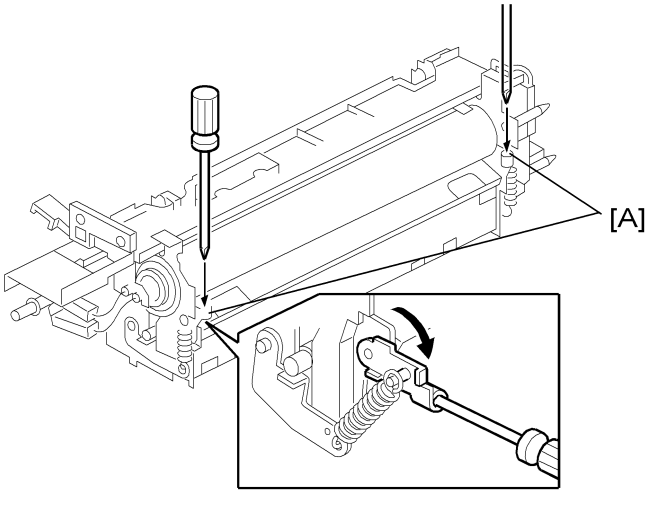
B246R1004

5. Fusing lamp connectors [E] (x 2)
6. Front fusing lamp holder [F] (x 3)
7. Fusing lamps [G]

Important

- Handle the fusing lamps carefully to prevent breaking them; avoid touching them with bare hands.

Hot Roller With Pressure Roller

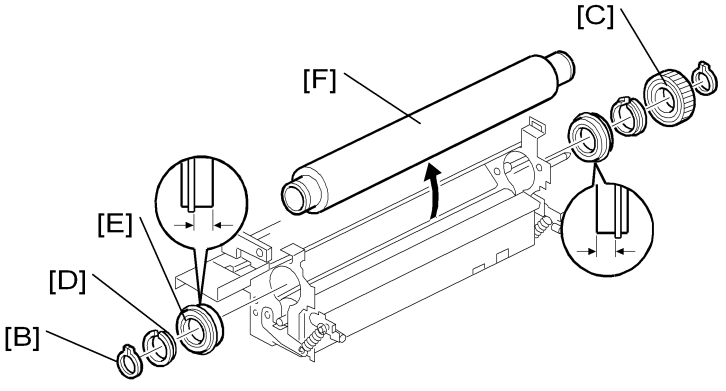


B246R1008

Remove:

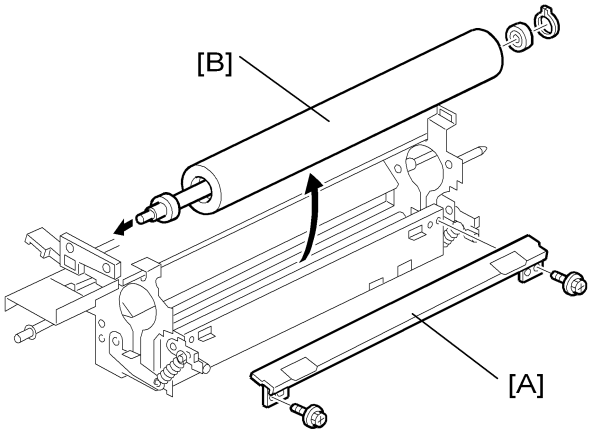
- Web unit. See "Web Unit Disassembly"

1. **Pressure arm [A]**
    - Insert the tips of two screwdrivers and press down to release.



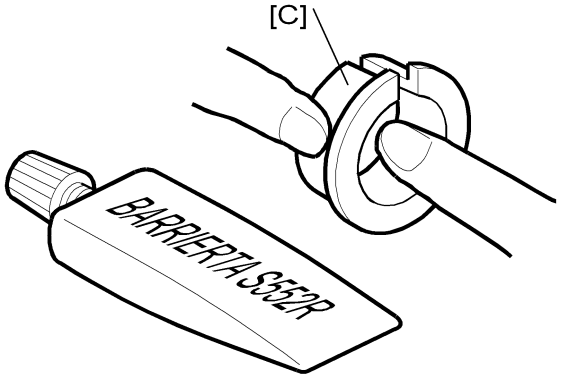
B246R1009

2. **C-clamps [B] (both ends)**
3. **Drive gear [C]**
4. **Bushings (both ends) [D]**
5. **Bearings [E]**
6. **Hot roller [F]**



B246R1010

7. **Entrance guide plate [A] (x 2)**
8. **Pressure roller [B] (x 2)**
    - The pressure roller and pressure roller bearing should always be replaced together.



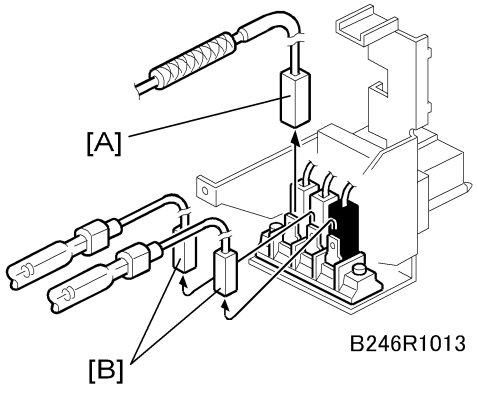
B246R1011

9. **Lubricate the inner and outer surfaces of the bushings [C] with Barrierta S552R grease.**
    - If the bushings are warm, allow them to cool before applying the Barrierta grease. Applying the grease while the bushings are hot could generate gas.

Important Notes about Fusing Unit Re-assembly

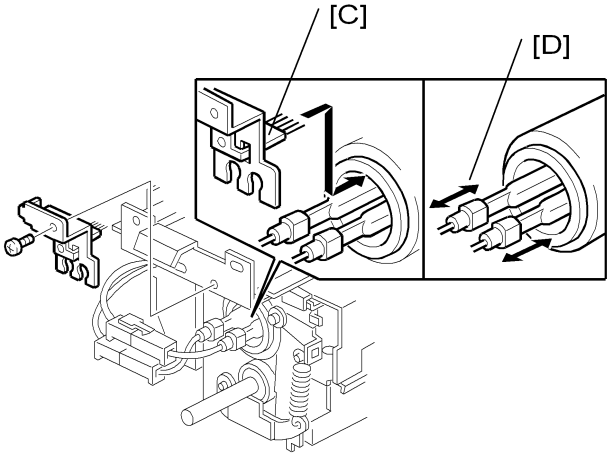
Follow these important guidelines when re-assembling the fusing unit:

- Use the external holes to fasten the screws when you fasten the lower guide plate. The inner screws are adjusted to correct wrinkling.
- Handle the fusing lamps carefully to prevent breaking them; avoid touching them with bare hands.



B246R1013

- Match colors of the bayonet connectors with the colors of the terminals when reconnecting them to the bracket at [A] and [B]. If either connection is incorrect, the machine cannot control the temperature of the hot roller and an SC is logged as soon as the machine is powered on.

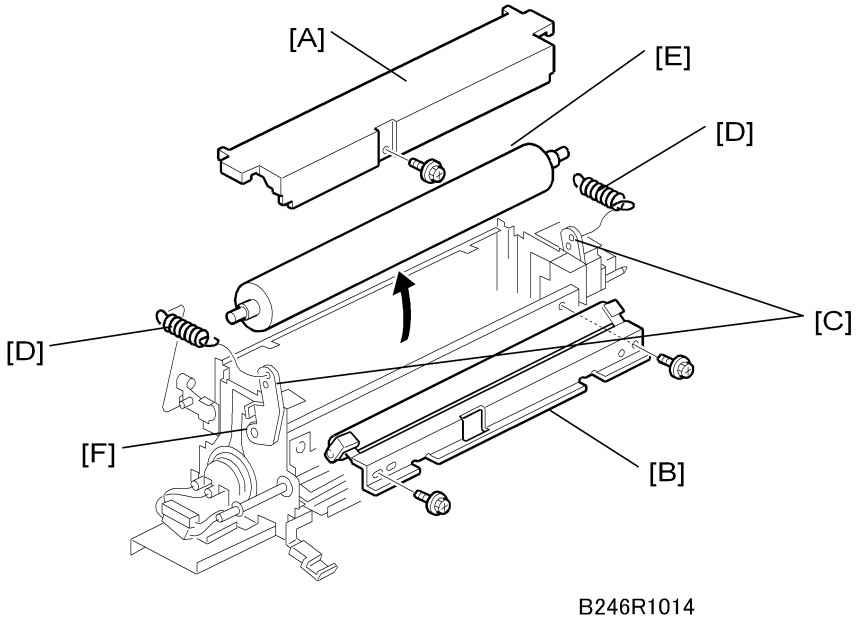


B246R1012

- The discharge brush [C] on the fusing terminal bracket should contact the inner surface of the hot roller.
- Confirm that there is some play [D] (in the direction indicated by the arrows) in the positioning of the fusing lamps.

Pressure Roller

Use this procedure if you need to remove only the pressure roller.



B246R1014

Remove:

- Fusing unit. See "Fusing Unit Removal"

1. **Turn the fusing unit upside down.**
2. **Lower cover [A] (x 1)**
3. **Pressure roller cleaning unit [B] (x 2)**
4. **Release the pressure arms [C]**
5. **Use screw driver to lower the pressure arms on both ends of the pressure roller and remove the springs [D] (x 2) on both sides.**
6. **Pressure roller springs [D]**
7. **Pressure roller [E]**

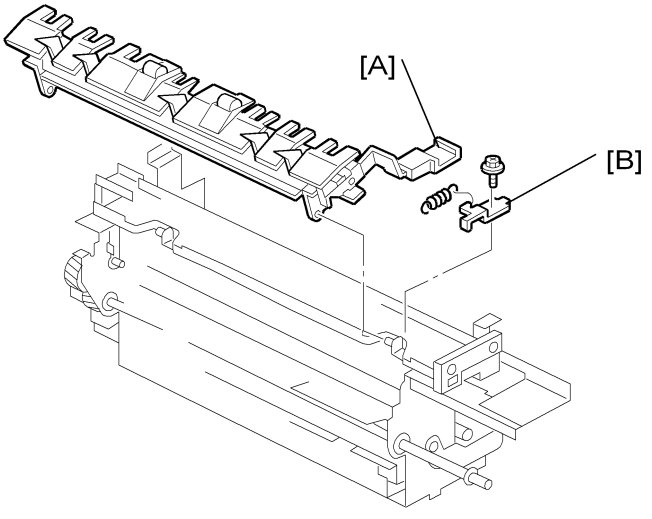
Important

- The fusing lamps are fragile. Work carefully to avoid breaking them.
- During assembly, handle the roller carefully to avoid scratching it on the bracket.
- Make sure the tabs and grooves of the lower cover are engaged correctly before tightening the screw.

Spring Adjustment

- Two holes [F] are provided on each pressure arm for the springs.
- Normally the springs should be attached to the lower holes.
- Attaching the springs to the upper holes exerts less pressure on the hot roller. Attach the springs to the upper holes only for especially thin paper.

Stripper Pawls

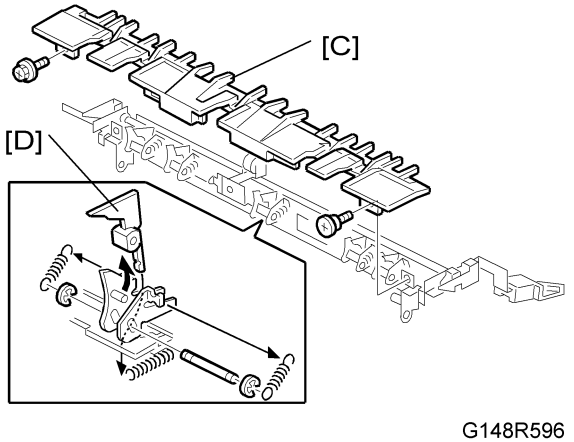


B246R1016

Remove:

- Fusing unit. See "Fusing Unit Removal"

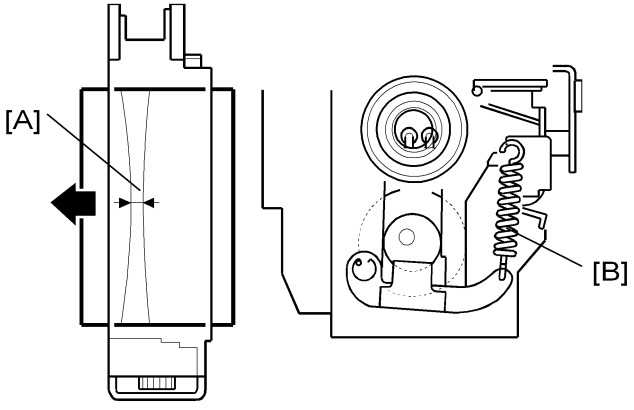
1. **Top cover [A]**
2. **Bracket [B] (x 1, spring x 1)**



G148R596

3. **Inner cover [C] (x 2)**
4. **Stripper pawl [D] (x 2, spring x 3)**

Nip Band Width Adjustment



B246R1030

1. **After the machine is powered on with the main switch, make an A4/LT LEF copy, then stop the machine while the paper is still in the fusing unit by switching it off.**

   Note

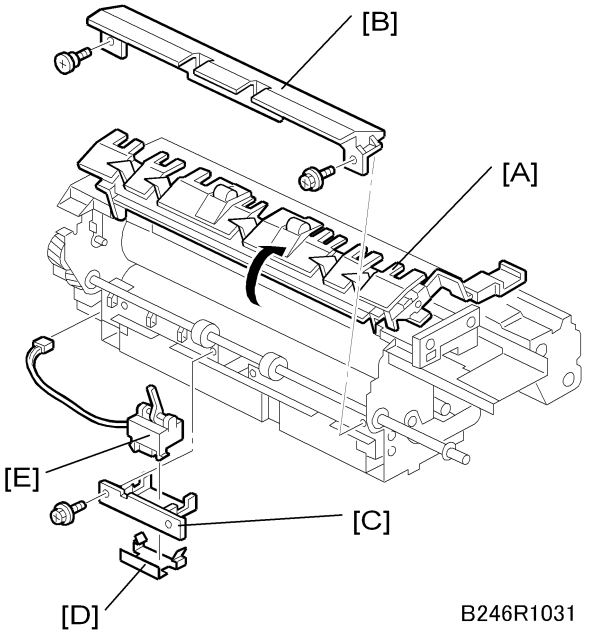
   - This is easier with an OHP sheet. Use an OHP sheet if you have one available.

2. **Open the front door, then turn the fusing knob to feed out the copy.**
3. **Measure the width of the band on the part of the image where it is particularly black. The band, called the nip band [A], should be 9.0±0.7 mm at the center.**

   Note

   - When the fusing is incorrect (wrinkles, offset, curl), measure the nip band width.
   - The nip band width can be adjusted by changing the position of the springs [B] on either end of the pressure roller.
   - The fusing temperature can also be adjusted with SP1105 (Fusing Temperature Adjustment) for Normal, OHP, and Thick Paper.

Fusing Unit Exit Sensor

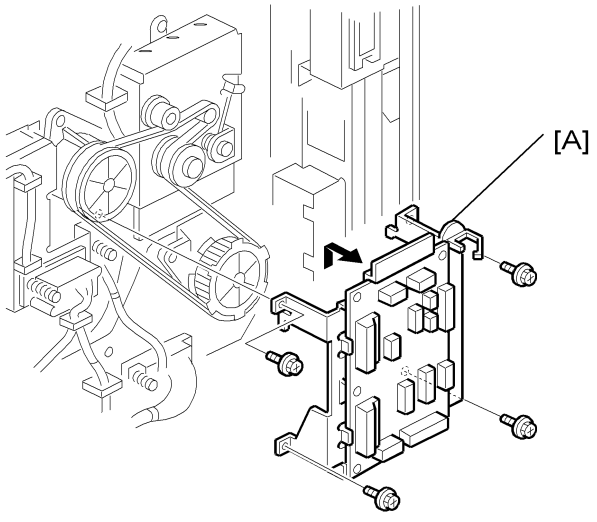


Remove:

- Fusing unit. See "Fusing Unit Removal"

1. **Open the hot roller stripper pawl unit [A]**
2. **Exit guide plate [B] (x 2)**
3. **Fusing exit sensor holder [C] (x 2)**
4. **Plate spring [D]**
5. **Fusing exit sensor [E] (x 1)**

Fusing/Exit Motor

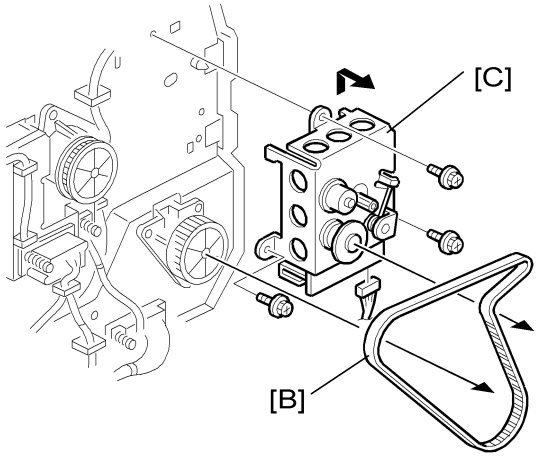


B246R1032

Remove:

- Rear upper cover

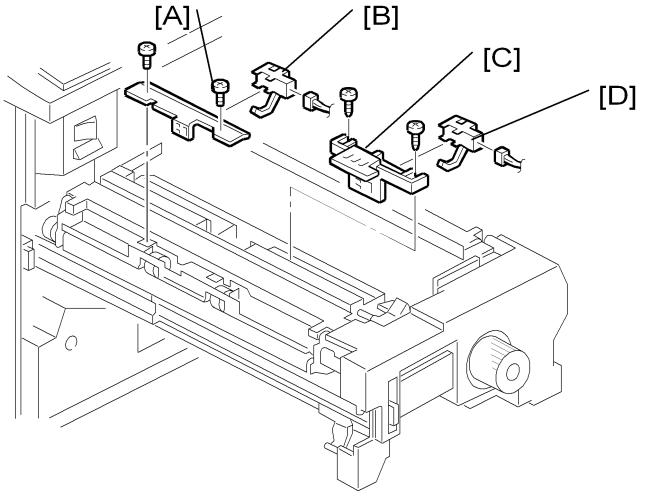
1. **Open the I/O board (x 2)**
2. **CNB bracket [A] (x 4, x all)**



B246R1034

3. **Timing belt [B]**
4. **Fusing/exit motor bracket [C] (x 1)**
5. **Fusing/exit motor (x 2) inside the bracket (not shown)**

Fusing Exit Sensor and Exit Unit Entrance Sensors

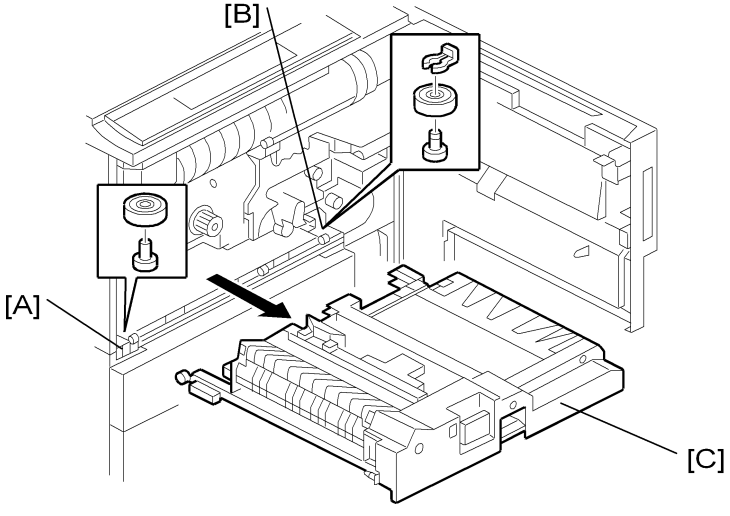


B246R1035

1. Open the front door and pull out the exit/inverter unit.
2. Fusing exit sensor bracket [A] (x 2)
3. Fusing exit sensor [B] (x 1)
4. Exit unit entrance sensor bracket [C] (x 2)
5. Exit unit entrance sensor [D] (x 1)

Duplex Unit

Duplex Unit Removal



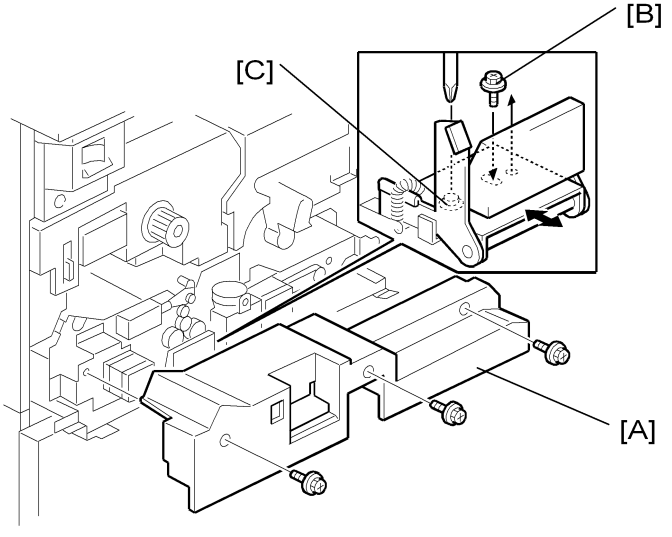
B246R1036

1. **Open the front door and pull out the duplex unit.**
2. **Remove the slide rail roller on the left [A] and on the right [B] (x 1).**
3. **Lift out the duplex unit [C].**

Reinstallation

- To re-install the duplex unit, insert the duplex unit partially, only until it enters the black guide rail, then re-attach each slide rail roller.
- Next, push the duplex unit into the machine completely. This method prevents interference from the guide plate during installation.

Duplex Unit Side-to-Side Adjustment



B246R1037

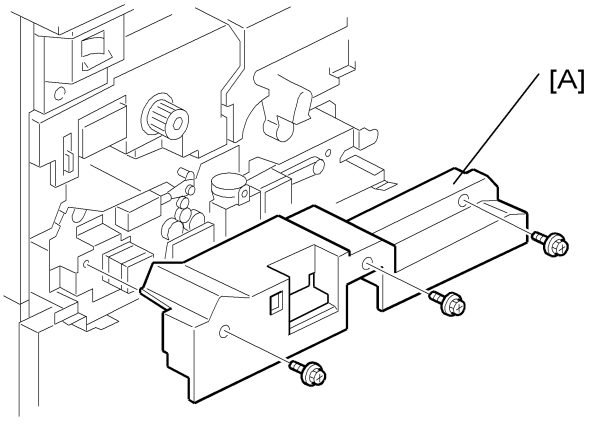
1. **Remove the inner cover [A] (x 3)**
2. **Move the handle lock screw [B] from the right to the center.**
3. **Loosen the left lock screw [C], then adjust the position of the duplex unit.**

Jogger Fence Adjustment

SP1008	Duplex Fence Adjustment	Execute this SP to adjust the distance between the jogger fences, if required. A smaller value shortens the distance. If the fences are too far apart, skewing may occur in the duplex tray. If the fences are too close, the paper may be creased in the duplex unit. For details, see "5. Service Tables".

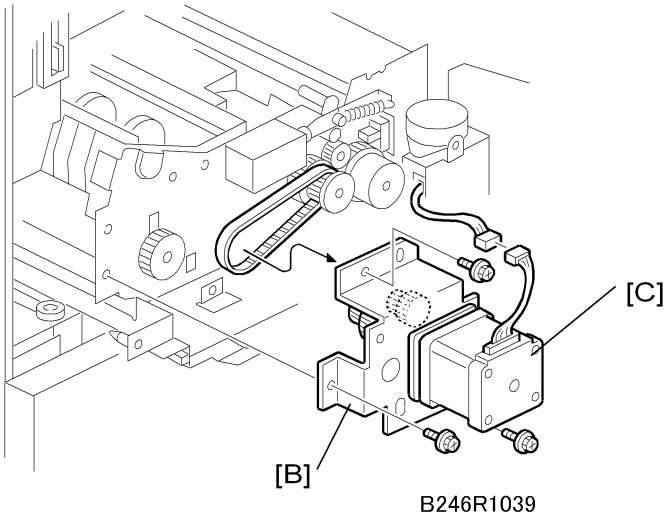
Duplex Motors

Duplex Inverter Motor



B246R1038

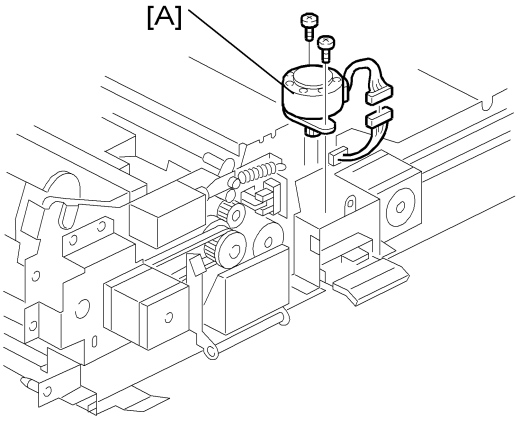
1. Remove the cover [A] (x 3)



B246R1039

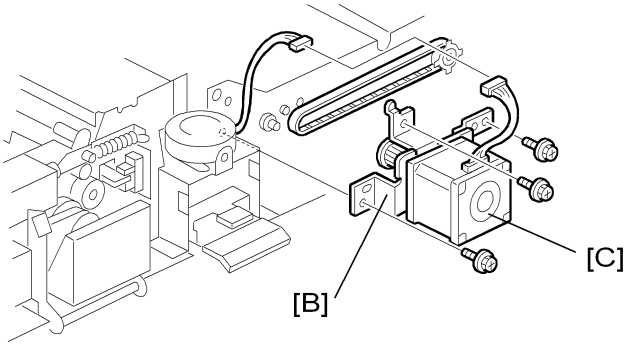
2. Inverter motor bracket [B] (x 3)
3. Inverter motor [C] (harness x 1, x 1, x 2, timing belt x 1)

Duplex Jogger and Transport Motors



B246R1040

1. **Jogger motor [A] (x 1, x 2)**

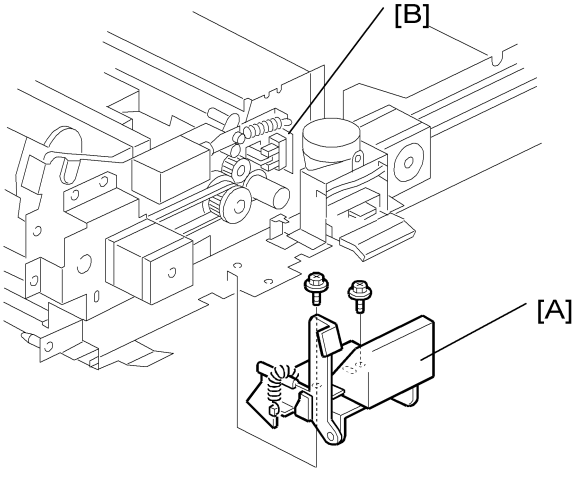


B246R1041

2. **Transport motor bracket [B] (harness x 1, x 1, x 3, timing belt x 1)**
3. **Transport motor [C] (x 2)**

Duplex Sensors

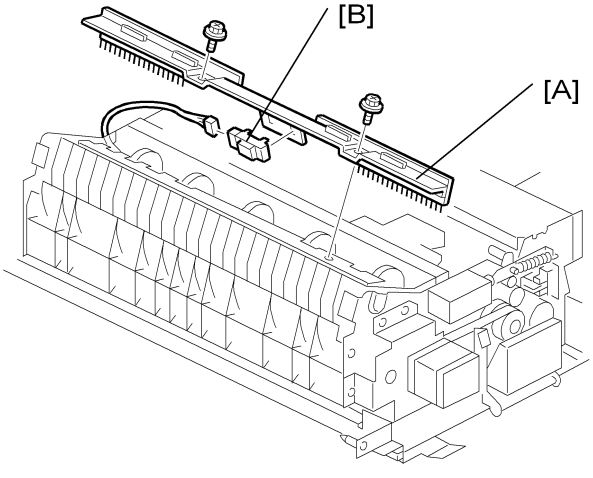
Jogger HP Sensor



G148R591

1. Duplex unit release lever [A] (x 2)
2. Jogger HP sensor [B] (spring x 1, x 2, x 1)

Duplex Entrance Sensor

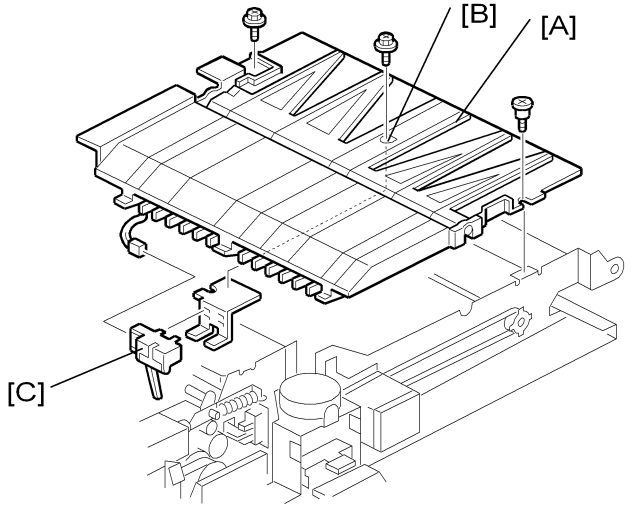


B246R1043

1. Bracket [A] (x 2)

2. **Duplex entrance sensor [B] (x 1)**

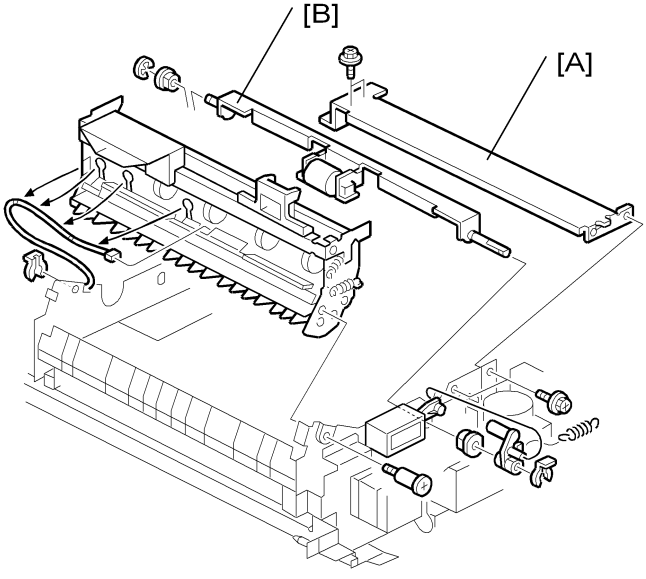
Duplex Transport Sensor 3



B246R1045

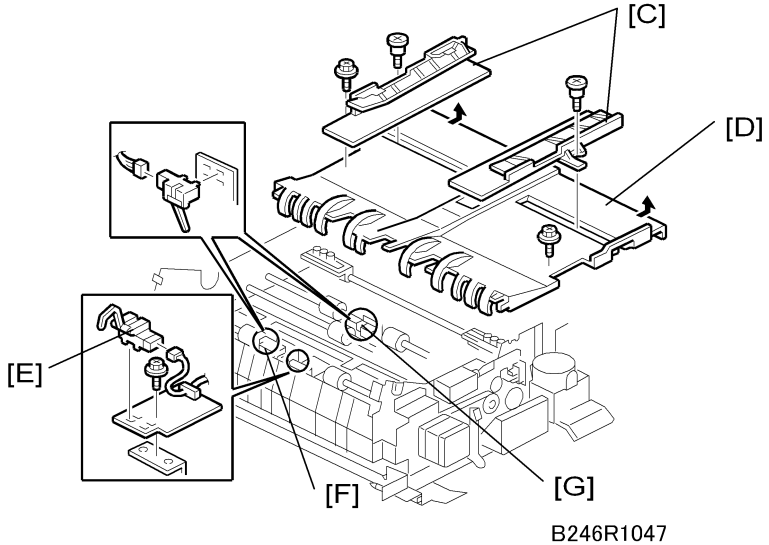
1. **Right half of table [A] (x 2, x 1)**
   - The front screw is a shoulder screw. Insert the screws in the correct holes when re-attaching.
2. **Remove the screw [B] to release the sensor bracket below.**
3. **Transport sensor 3 [C] (x 1)**

Inverter Exit Sensor, Transport Sensors 1 & 2



B246R1046

1. **Cross-stay [A] (☞ x 4)**
2. **Reverse trigger roller shaft [B]**



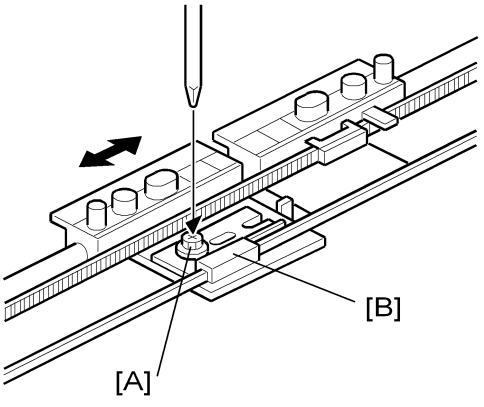
B246R1047

3. **Jogger fences [C] (☞ x 1 each)**
4. **Left half of table [D] (☞ x 2)**
   - The front screw is a shoulder screw. Insert the screws in the correct holes when re-attaching.

- To avoid breaking the tabs under the left edge of the table, pull the table to the right to disengage the tabs and then remove.

5. **Inverter exit sensor [E] (x 1, harness x 1, x 1)**
6. **Transport sensor 1 [F] (harness x 1, x 1)**
7. **Transport sensor 2 [G] (harness x 1, x 1)**

Duplex Jogger Belt Adjustment



B246R1049

Remove:

- Cross stay. See "Inverter Exit Sensor, Transport Sensors 1 & 2"
- Reverse trigger roller shaft. See "Inverter Exit Sensor, Transport Sensors 1 & 2"
- Left half of the table
- Jogger motor bracket

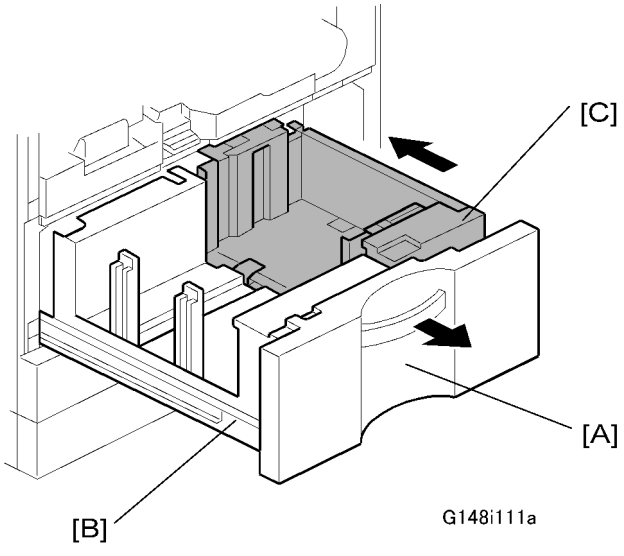
Note

- Slip the one end of the belt around the gear below the jogger motor.
- Slip the other end of the belt around the gear at the other side of the duplex unit.

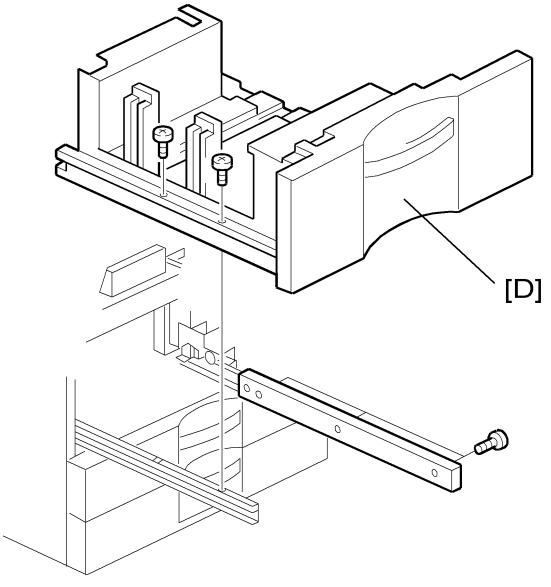
1. **If you are replacing the belt, set both jogger fence brackets at the center of the belt and tighten the screw [A].**
2. **If you are adjusting the belt, loosen the screw and slide the plastic piece [B] on the belt to the left or right to adjust the position of the front fence, then tighten the screw.**

Paper Feed

Paper Tray Removal

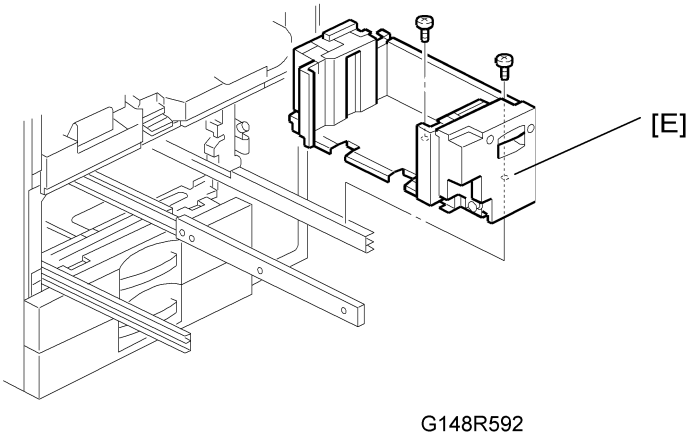


1. Open the front door.
2. Pull out the tandem tray drawer [A] completely to separate the left [B] and right [C] sides of the tandem tray.



B475i708b

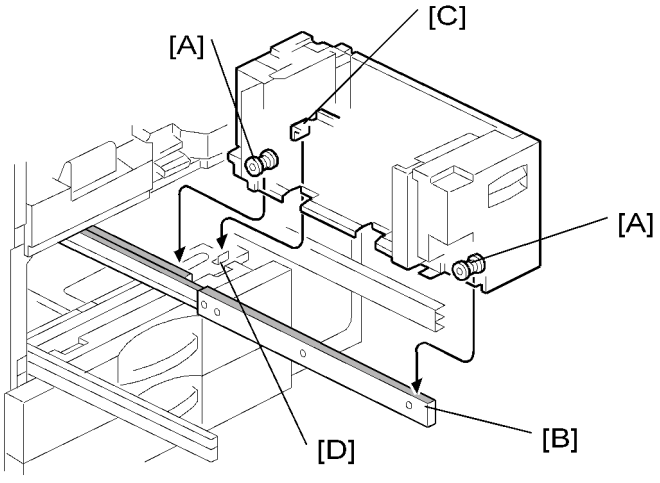
3. **Remove the left tandem tray [D] (x 5).**



G148R592

4. **Right tandem tray [E] (x 2).**

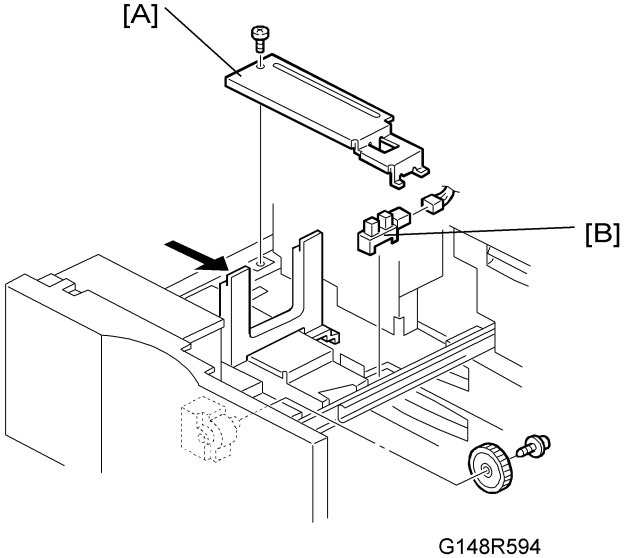
Reinstallation



G148R593

- When re-installing the right tandem tray, make sure that the wheels [A] ride on the slide rail [B].
- When re-installing the right tandem tray, make sure that the tandem tray stopper [C] is set behind the stopper [D] on the frame.

Rear Fence Return Sensor Replacement

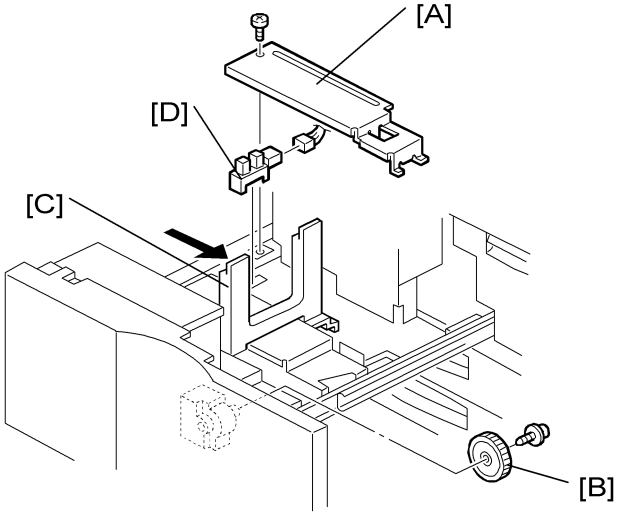


G148R594

1. **Turn off the machine.**

2. Pull out the tandem feed tray.
3. Rear bottom plate [A] (x 1)
4. Return sensor [B] (x 1).

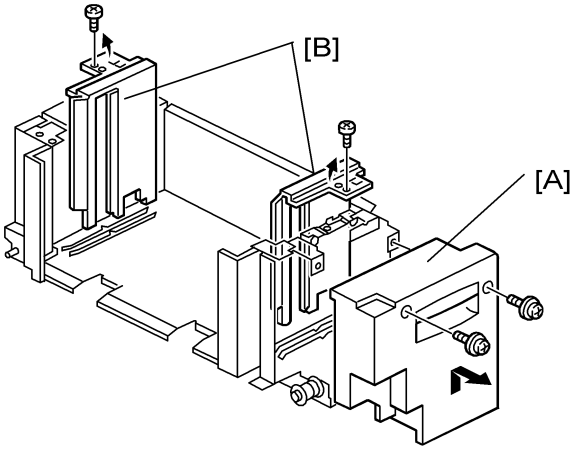
Rear Fence HP Sensor Replacement



G148R595

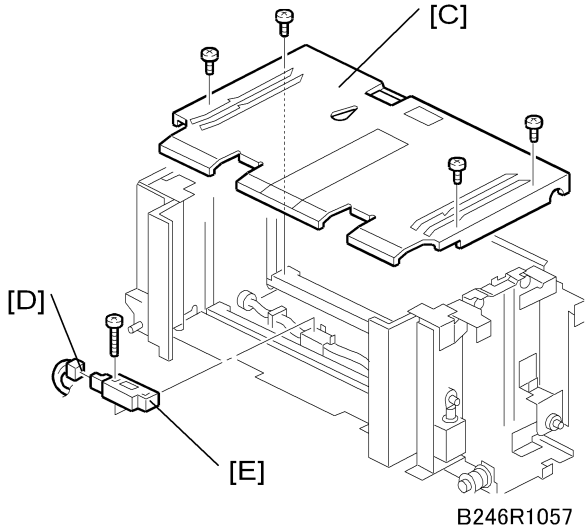
1. Turn off the machine.
2. Pull out the tandem feed tray.
3. Rear bottom plate [A] (x 1).
4. Back fence transport gear [B] (x 1)
5. Move the back fence [C] to the right.
6. Rear HP sensor [D] (x 1)

Tandem Right Tray Paper Sensor Replacement



B246R1056

1. Turn off the machine.
2. Remove the right tandem tray. See "Paper Feed"> "Paper Tray Removal"
3. Inner cover [A] (x 2)
4. Side fences [B] (x 1 each)

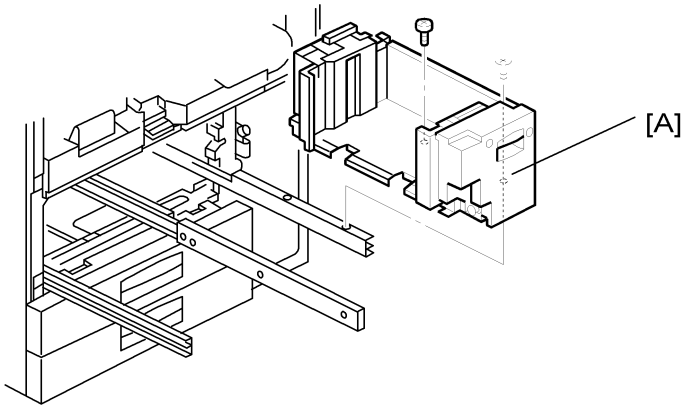


B246R1057

5. Bottom plate [C] (x 4)
6. Connector [D] (x 1)
7. Sensor [E] (x 1)

Bottom Plate Lift Wire Replacement

Before replacing the rear bottom plate lift wire, remove the front bottom plate lift wire. The shaft must be removed to replace the lift wire of the bottom plate.

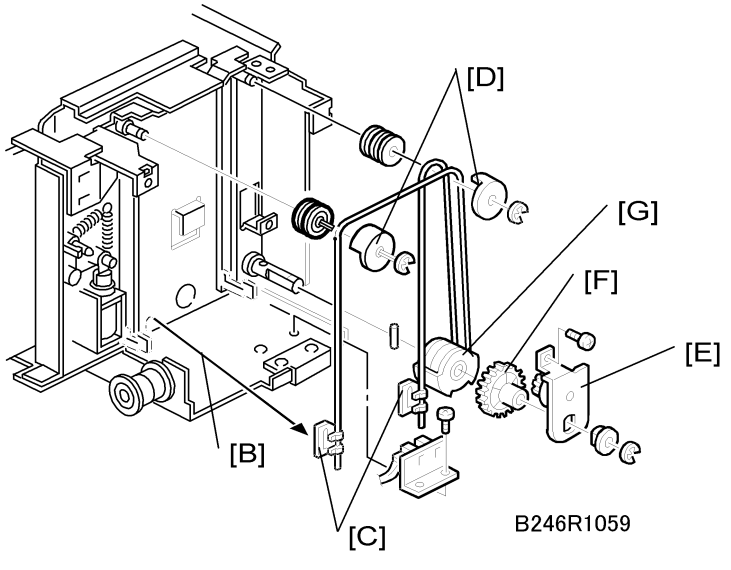


B246R1058

Remove:

- Right tandem tray. See "Paper Feed"> "Paper Tray Removal"

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

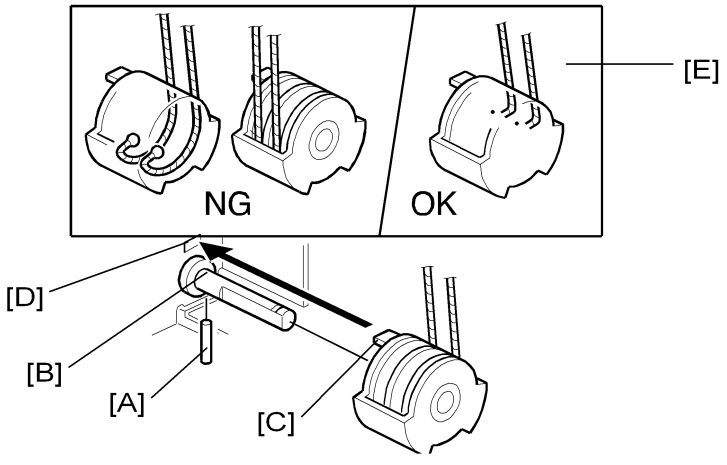


B246R1059

2. **Remove the left stay [B].**
3. **Wire stoppers [C]**
    - Slightly lift the front bottom plate and unhook.

4. **Wire covers [D] (ℂ x 1 each)**
5. **Bracket [E] (x 1, ℂ x 1, bushing x 1)**
6. **Gear [F]**
7. **Bottom plate lift wire [G]**

Reinstallation

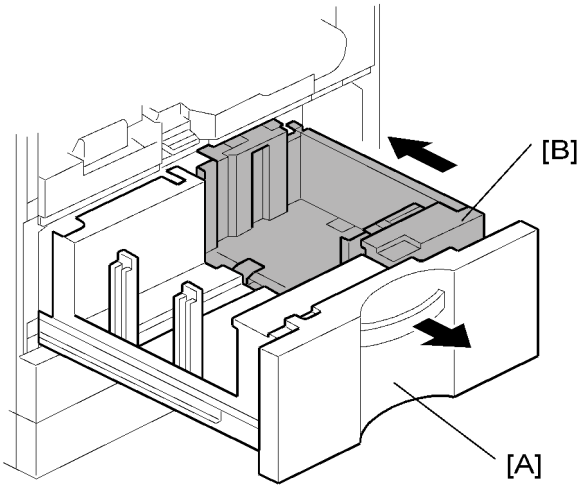


B246R1060

- Set the positioning pin [A] in the hole [B], and set the projection [C] in the hole [D].
- Position the wire as shown [E].
- Do not cross the wires.

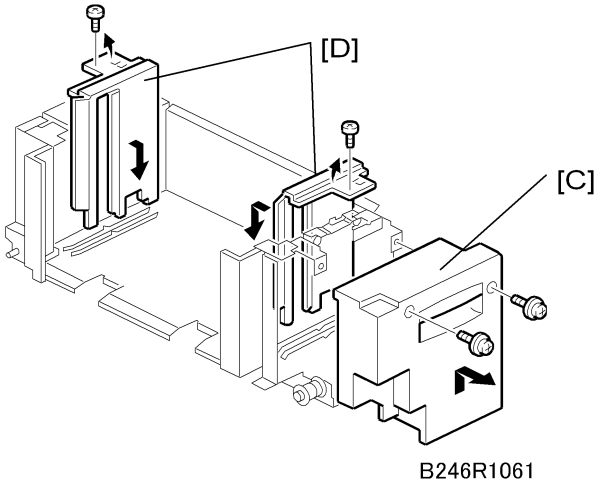
Tandem Tray Paper Size Change

At the factory, this tray is set up for A4 or LT LEF. Only A4 or LT LEF paper can be used for tandem feed.



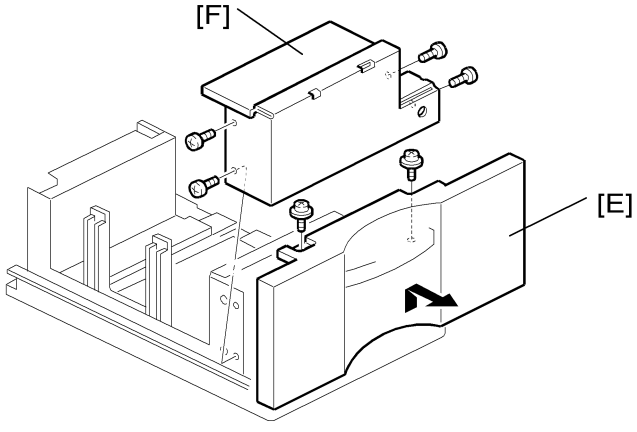
G148i111c

1. **Open the front cover.**
2. **Completely pull out the tandem feed tray [A] to separate the right tandem tray [B] from the left tandem tray.**



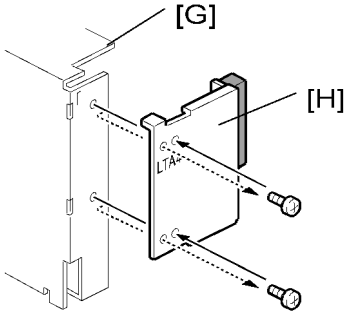
B246R1061

3. **Remove the right tandem inner cover [C] (x 2).**
4. **Re-position the side fences [D] (x 1 each).**
   - A4: Outer slot position
   - LT: Inner slot position
5. **Re-install the right tandem inner cover.**



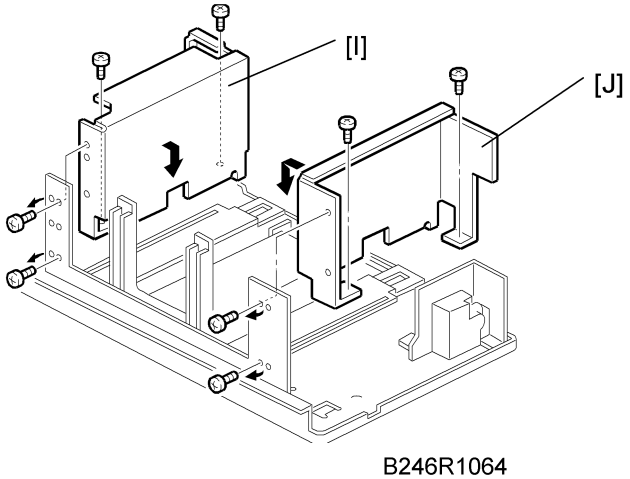
G148i112a

6. **Remove the tray cover [E] (x 2).**
7. **Remove the DC motor cover [F] (x 4).**



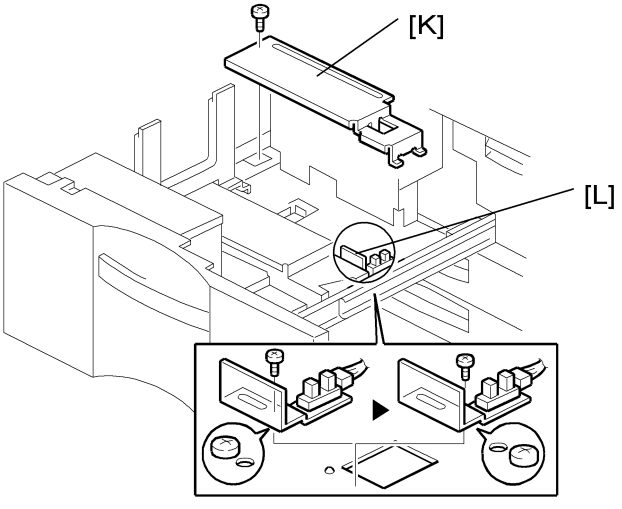
B246R1065

8. **Remove the rear side fence [G] (x 4) and re-position the rear cover [H] (x 2).**



B246R1064

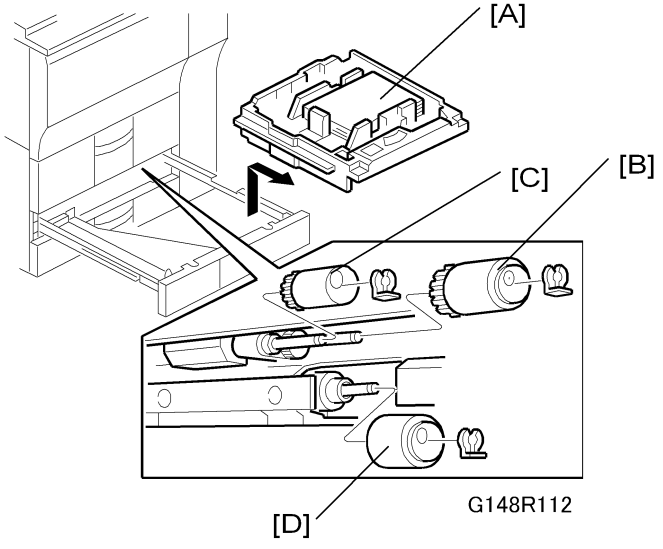
9. **Re-position the side fences [I] [J] (x 4).**
   - A4: Outer slot position
   - LT: Inner slot position
10. **Re-install the DC motor cover and the tray cover.**



G148i113c

11. **Remove the rear bottom plate [K] (x 1).**
12. **Re-position the return position sensor bracket [L] (x 1).**
    To use the paper tray for A4 size, set the screw in the left hole as shown. (For LT size, the screw should be placed on the right.)
13. **Reinstall the rear bottom plate.**
14. **Input the new paper size into SP5959-001 (Paper Size – Tray 1). For details, see SP5959 in section "4. Service Tables".**
15. **Do the printer adjustments. See "Print Image Adjustment" at the end of this section.**

Pick-up, Feed, Separation Roller Replacement

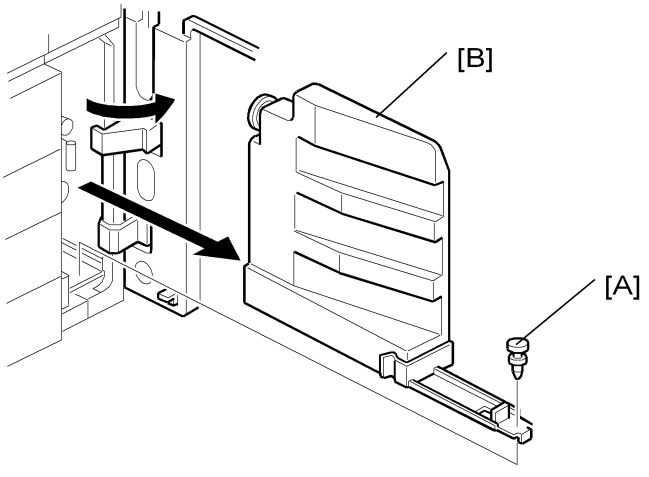


1. **Remove the tray [A]**
2. **Feed roller [B] (x 1)**
3. **Pick-up roller [C] (x 1)**
4. **Separation roller [D] (x 1)**

Note

- The operation of the FRR mechanisms for the tandem tray (Tray 1) and universal trays (Tray 2, Tray 3), are similar. These rollers are interchangeable.
- Do not touch the surface of new rollers during replacement.

Feed Unit

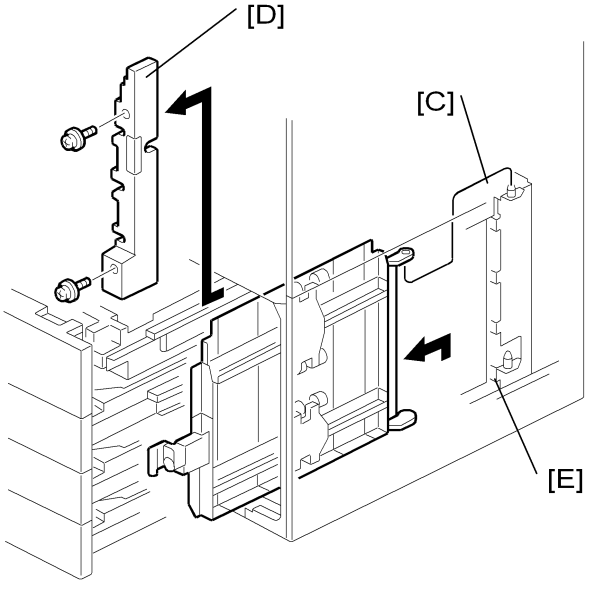


B246R1069

Remove:

- Front door
- LCT entrance guide cover and right lower cover. See "Relay Sensor"
- If the LCT is connected, disconnect it and pull it away from the machine.
- Pull out all three trays (do not remove).

1. **Nylon peg [A]**
2. **Toner collection bottle [B]**

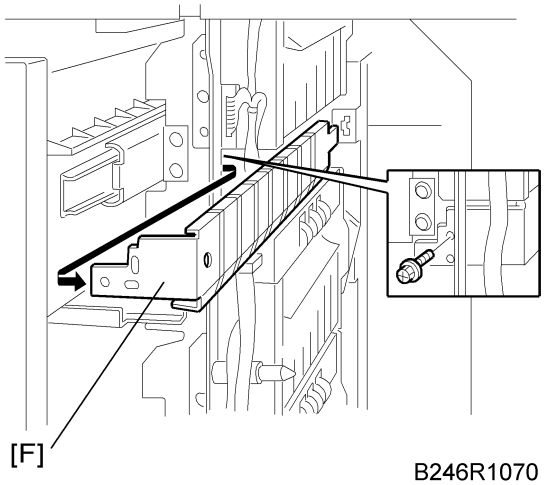


B246R1068

3. **Vertical transport guide [C]**
4. **Inner cover [D] (x 2)**

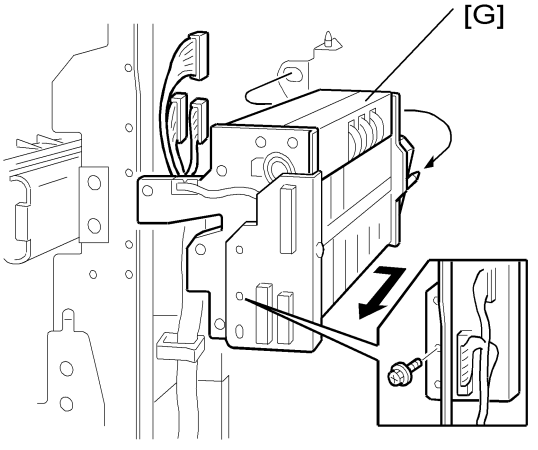
Reinstallation

- When re-installing the vertical transport guide, remove the lower right cover then insert from [E].



B246R1070

5. **Guide plate [F] (x 1) (1st feed unit only)**



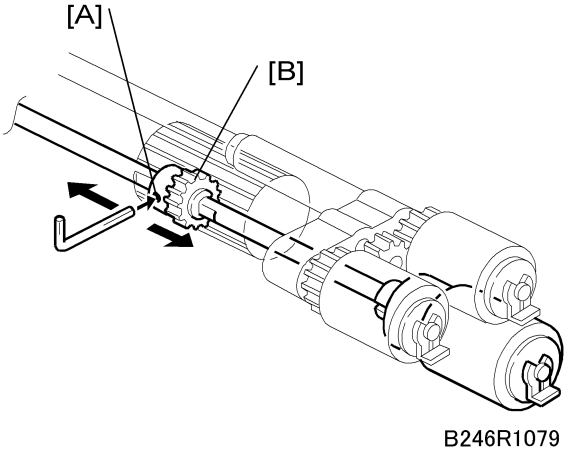
B246R1078

6. **Feed unit [G] (x 1, x 3)**
    - Insert your hand from the right and pull the feed unit forward.
    - To avoid hitting the unit on the sides of the machine, remove it carefully and slowly.

Separation Roller Pressure Adjustment

The position of the drive gear for the separation roller can be changed in order to change the amount of pressure exerted by the separation roller. This adjustment can be done:

- When feeding special paper, especially thick paper
- When the customer is experiencing feed problems



B246R1079

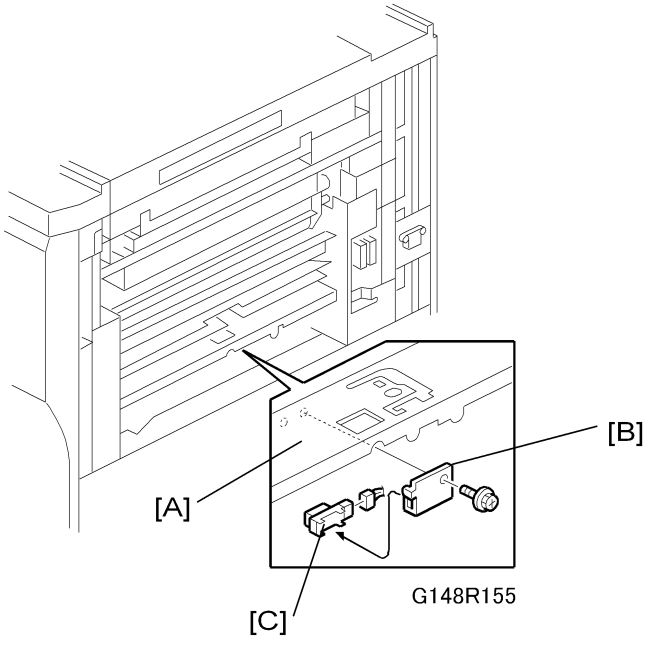
Remove:

- Feed unit. See "Feed Unit"

Loosen the hex screw [A].

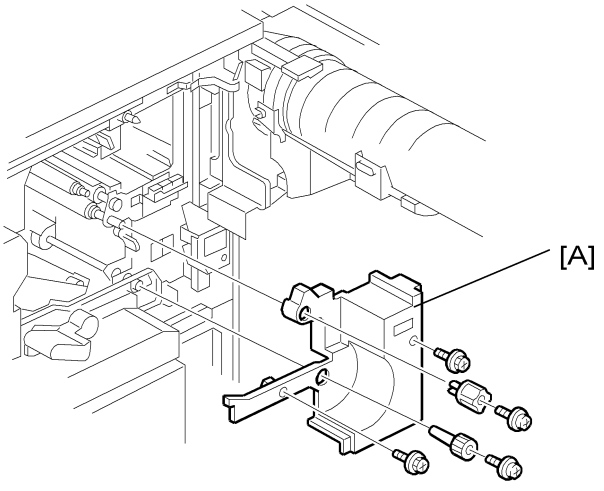
1. **The separation roller gear [B] is positioned at the groove before shipping.**
2. **Do one of the following:**
    - To adjust for thick paper, move the separation roller gear [B] to the left to decrease the pressure.
    - To correct misfeeds, move the separation roller gear to the right to increase the pressure.

Relay Sensor

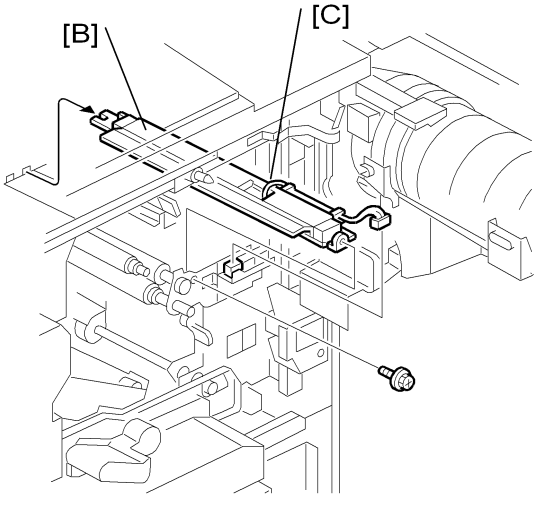


1. **Remove the LCT entrance guide cover [A].**
2. **Relay sensor bracket [B] (x 1)**
3. **Relay sensor [C] (x 1)**

Registration Sensor



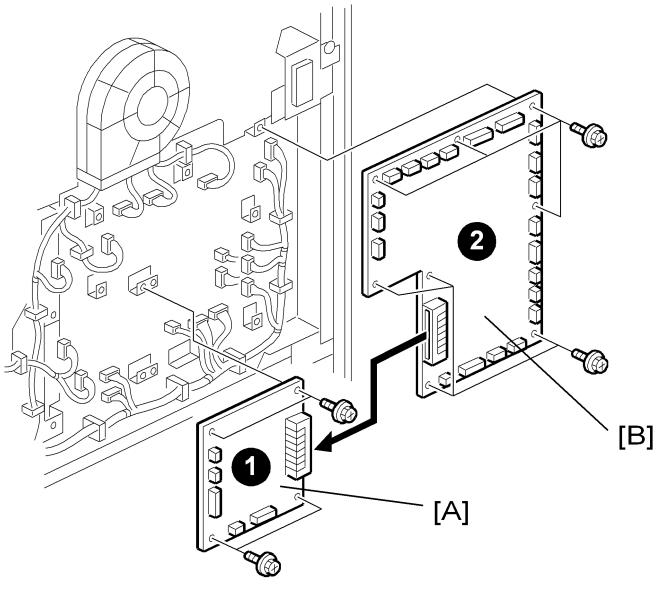
1. **Inner cover [A] (x 4)**
2. **Remove:**
   - Development unit. See "Development Unit Removal"
   - Charge corona unit. See "Charge Corona Unit"
   - OPC drum unit. See "OPC Drum Removal"



3. **Paper dust removal unit [B] (x 1, x 1)**
4. **Registration sensor [C]**

PCBs and HDD

BCU Board (Base Engine Control Unit)



B246R109A

Remove:

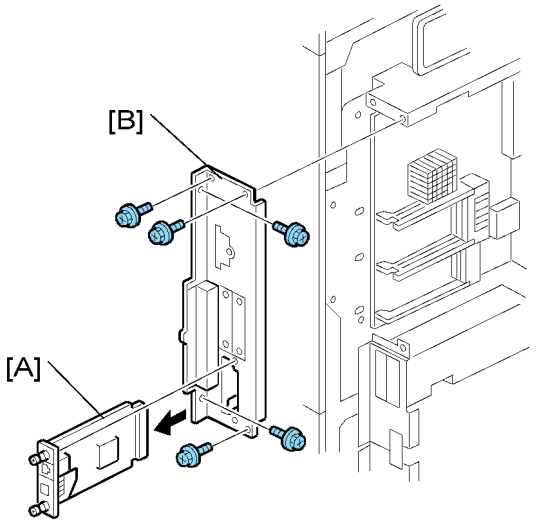
- Rear upper cover (x2)
- Rear lower cover (x2)

1. **BCU screws, connectors [A] (x1, x4, x4)**
2. **IOB screws, connectors [B] (x6, x16, x8)**
3. **Separate the BCU ❶, IOB ❷ at the edge connector**

Controller Board

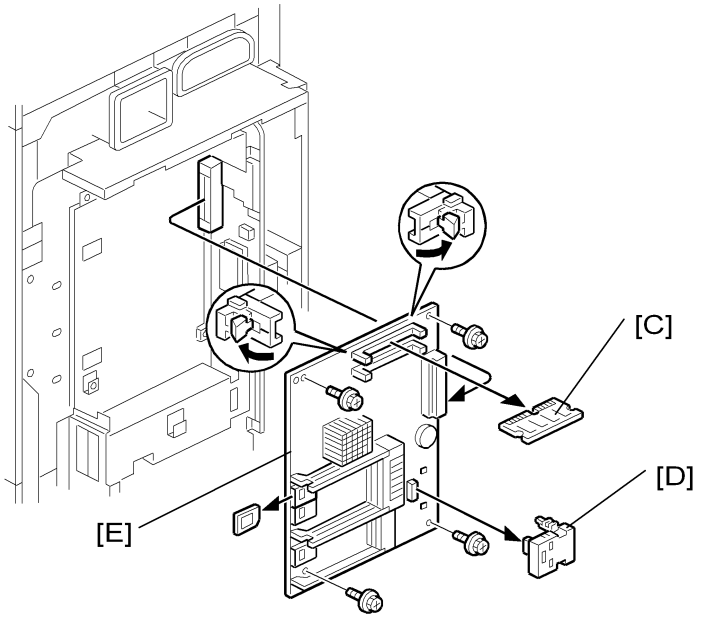
Remove:

- Rear upper cover (x2)
- Rear lower cover (x2)
- Controller box cover (x13)
- All SD cards and SD card slot cover (x1)



B246R103A

1. Network interface board [A] and all other installed boards (Knob x2 each)
2. Controller box faceplate [B] (x5)



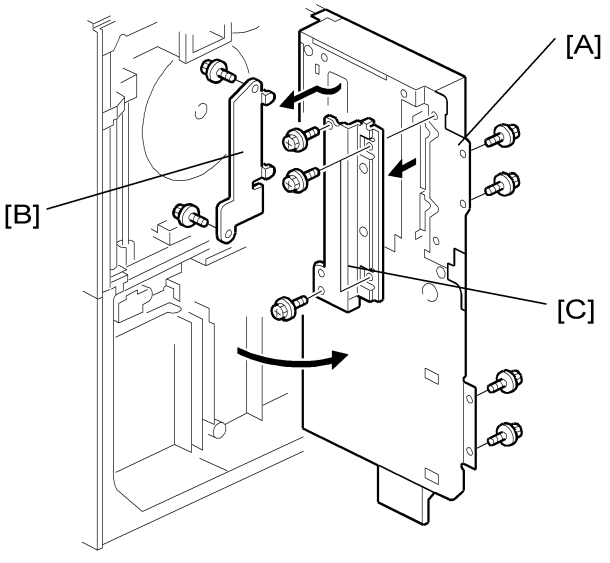
B246R104A

3. Memory DIMM [C]
4. NVRAM [D]
5. Controller board [E] (x4)

Reinstallation

- Make sure the system SD card is reinstalled in SD card slot C1 (top slot)
- The machine will not operate if the system SD card is missing from SD card slot C1.
- Reinstall all the option boards in their proper slots if any were removed.
- Remove the NVRAM from the old controller and install it on the new controller.

IPU Board

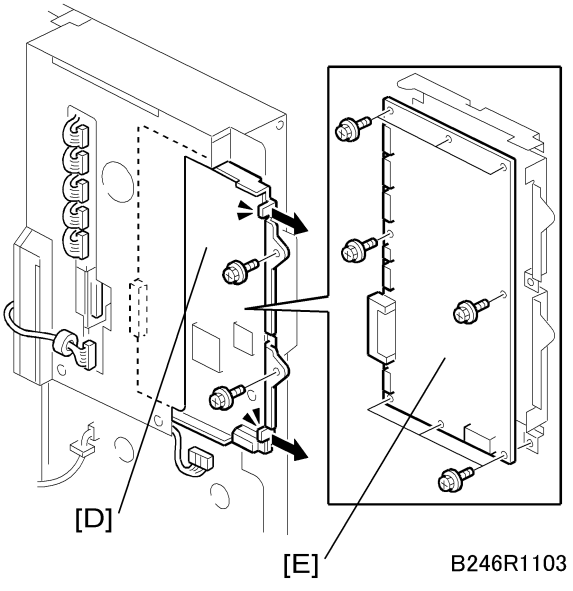


B246R1102

Remove:

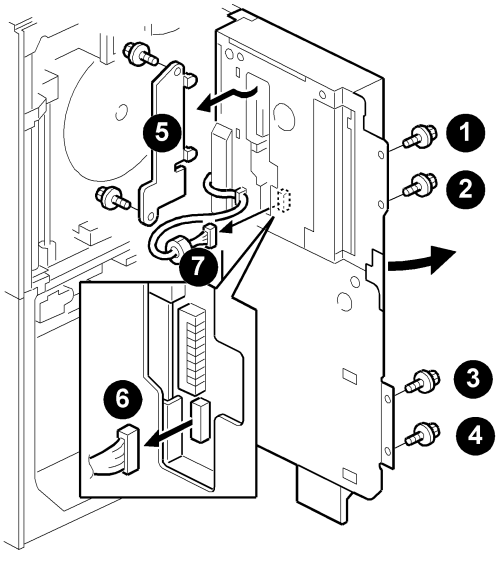
- Rear upper cover (x2)
- Rear lower cover (x2)

1. **Open the controller box [A] (x4).**
2. **Left connector shield [B] (x2)**
3. **Right connector shield [C] (x4)**



4. **IPU board unit [D] (x7, x2)**
    - Slowly slide the IPU board and bracket out of the controller box.
5. **IPU [E] (x8)**

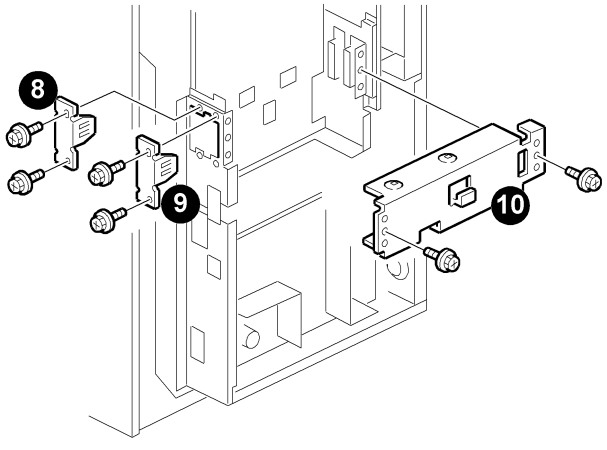
Motherboard



Remove:

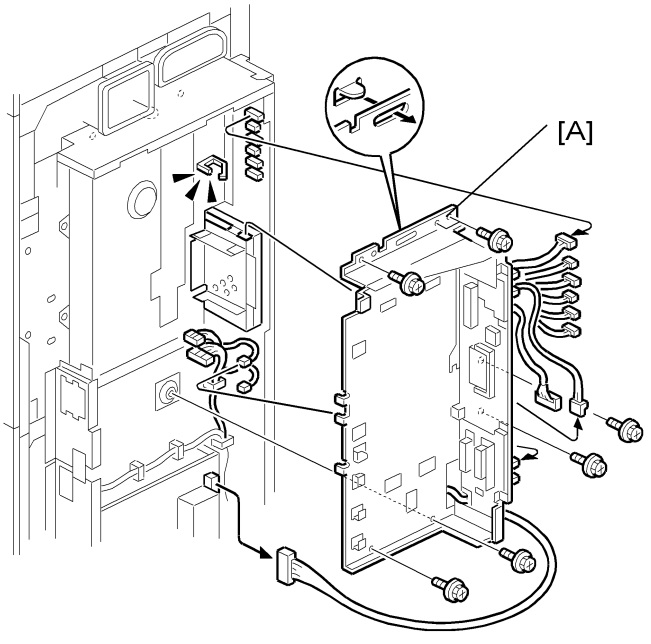
- Rear upper cover (x2)
- Rear lower cover (x2)
- Controller box cover (x13)
- Controller board. See "Controller Board"

1. **Remove screws ❶ to ❹ and swing open the controller box (x4).**
2. **Remove the left IPU connector shield ❺ (x2).**
3. **Disconnect connectors ❻ and ❼ (x2).**



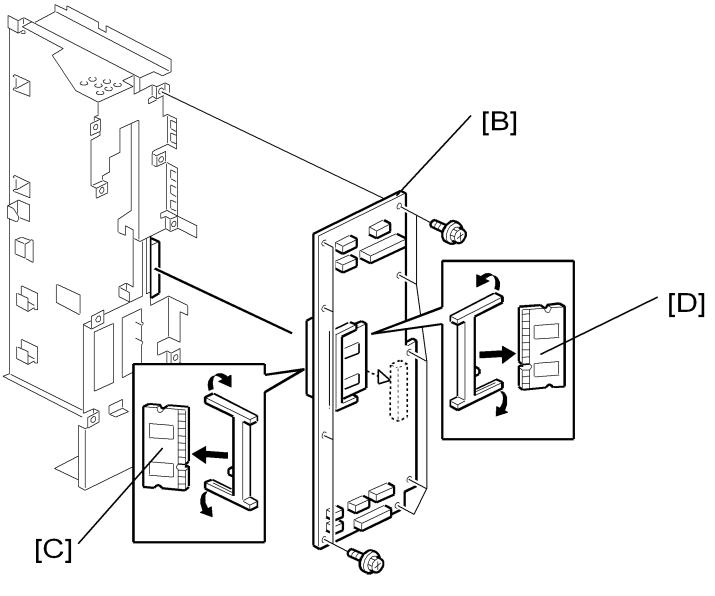
B246R106A

4. **Remove brackets ❽, ❾, ❿ (x2 each).**



B246R107A

5. **Remove the controller board mounting bracket [A] (x13, x6)**



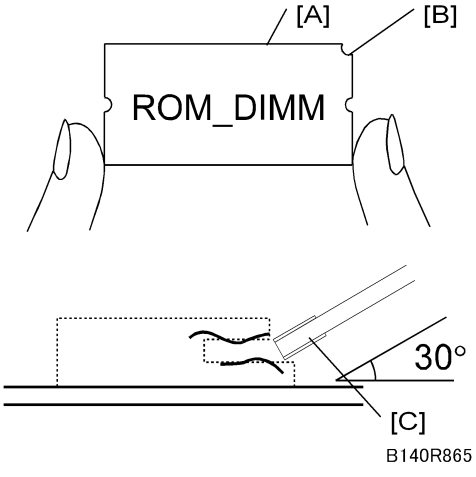
B246R108a

6. **Remove the controller board [B] from the side of the mounting bracket (x9)**
7. **Remove DIMMs [C] and [D].**

DIMMs

Important

- Follow the procedure below to connect the DIMMs to the controller board. Incorrect insertion can damage the controller board or cause a bad connection between the DIMM and controller contacts.
- If the upper contact is pressed in and bent, the resulting poor connection could cause the entire system to not operate.

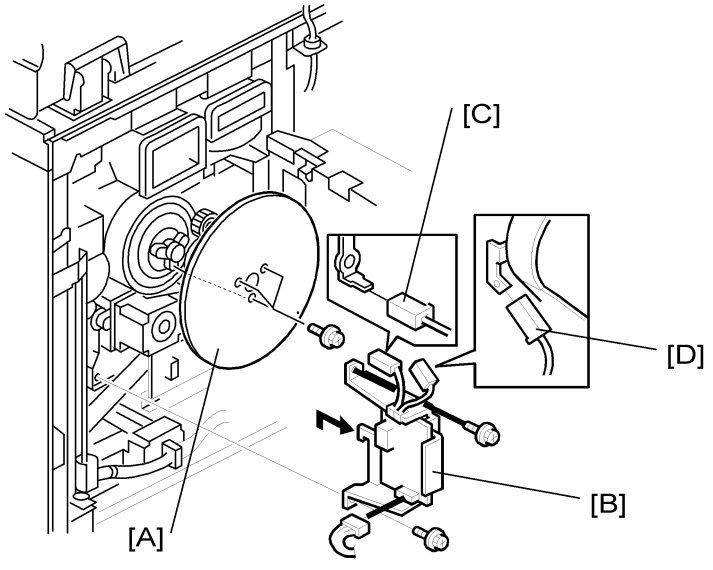


1. Hold the ROM DIMM with the edge connector [A] pointing toward the slot and the notch [B] on the DIMM in the upper right corner.
2. Insert the edge connector [C] into the slot at a 30-degree angle from the surface of the board.

   Note

   - If the angle is too low, the upper contact could bend.
3. Move the outside edge of the ROM DIMM up and down slightly until it works into the connector, then gently press it down level with the controller board.

Development Power Pack



B246R861

Remove:

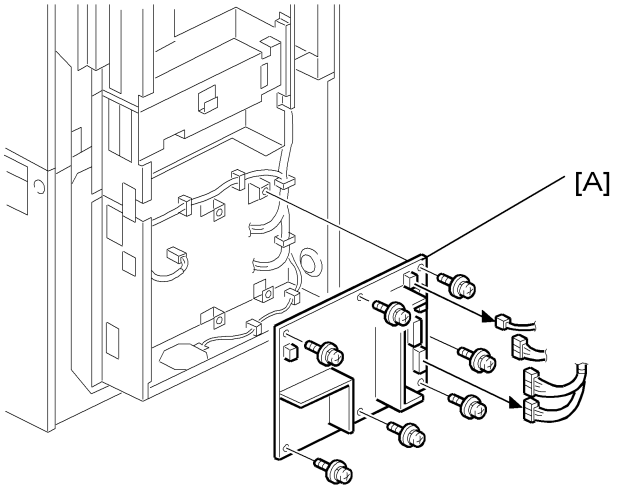
- Rear upper cover

1. Flywheel [A] (x 3)
2. Development power pack [B] (x 2, x 3)

Important

- Mark the bayonet connectors [C], [D] with a felt pen to ensure that they are not connected incorrectly when the power pack is re-connected.

PSU Board



B246R101a

Remove:

- Rear upper cover (x2)
- Rear lower cover (x2)
- Controller box cover (x13)

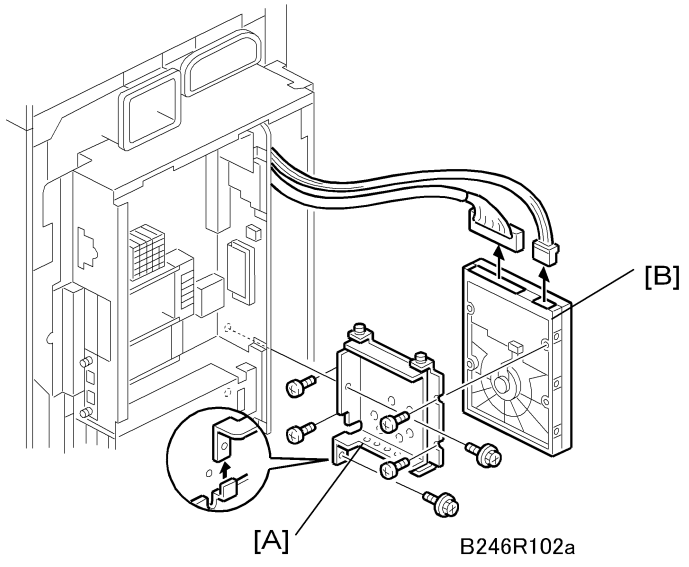
1. **Remove the PSU [A] (x4, x7)**

HDD

Replacing the NVRAM or the HDD erases documents stored in the document server. Before replacing either of these items, consult with the customer to determine the best time to perform the replacement.

Remove:

- Rear upper cover (x2)
- Rear lower cover (x2)
- Controller box cover (x13)



1. **HDD unit [A] (x2, x2)**
2. **HDD [B] (x4)**
3. **Format the HDD with SP5832 001.**

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 data stored in temporary files created automatically during 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

If the customer is using the Data Overwrite Security feature, the DOS function must be set up again.

NVRAM

This machine has an electronic counting device that uses software to monitor the number of copies. In addition to the electronic counter of the NVRAM on the controller board, the machine is also equipped with a mechanical counter.

Before Removing the NVRAM

1. Enter the SP mode and print the SMC report.
2. Execute SP5990-001 (All SP Groups) to print an SMC report.
3. Insert the SD card in Slot C3.
4. Execute SP5824 (NVRAM Data Upload) to upload the data to the SD card.
5. Switch the machine off and disconnect the power cord.

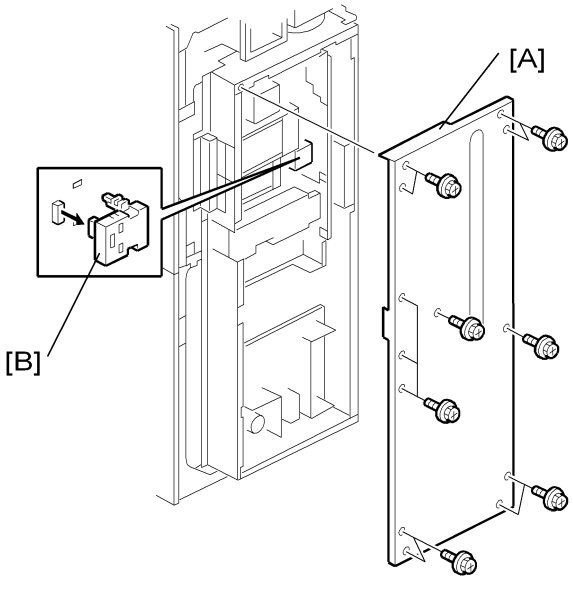
Removing the NVRAM

Important

- Touch a metal surface to discharge any static build up on your hands or tools before you touch the controller board.
- Work carefully when removing the NVRAM to avoid damaging other components on the controller board or short circuiting the pins of other chips.
- If the NVRAM is replaced on a machine where the Data Overwrite Security (DOS) option is installed, the DOS option must also be re-installed.

Remove:

- Rear upper cover (x2)
- Rear lower cover (x2)
- Controller box cover



B246R110A

1. Remove the controller box cover [A] (x13)
2. Remove the NVRAM [B]

- Push in the sides of the NVRAM unit to release the tabs and pull straight out.

3. Install the new NVRAM

After Installing the New NVRAM

1. Connect the power cord and switch the machine on.
2. Enter the SP mode and execute SP5801 (Memory All Clear)
3. Execute SP5825 (NVRAM Download) to download the data uploaded onto the SD card in SD card slot C3.
4. Switch the machine off and on.
5. Execute SP5990 to print another SMC report. Confirm that all the SP settings have been initialized.
6. Execute SP3001-002 (ID Sensor Initialization) to initialize the ID sensor.
7. Execute SP5907 (Plug & Play) and enter the brand and model name of the machine for Windows Plug & Play capability.
8. Set SP 1902 001 (amount of fusing unit web used so far) to the most recent setting (see the SMC list).
9. For details about SP initial settings, see "Section 5 Service Tables".

Important

- When you change the NVRAM, you lose all machine settings, and all data on the hard disk.
- If you have a back-up of the NVRAM settings on an SD card from a previous time, then you lose a) the jobs that were stored on the hard disk after you made the backup, and b) changes to settings that were made after you made the backup.
- In this condition, customers who are very worried about security must use the Data Overwrite Security unit to clean the hard disk (use the Erase All Memory function). This is because the files on the hard disk that you lost are still there.

Print Image Adjustment

These adjustments must be performed after:

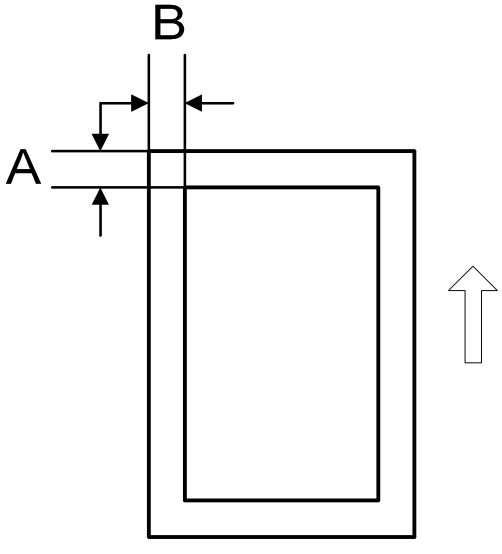
- Polygon motor replacement
- Tandem tray side fences adjustment
- Memory All Clear execution

Preparation

1. **Make sure paper is installed correctly in each paper tray before you start these adjustments.**
2. **Use the Trimming Area Pattern (SP2-902-3, No. 18 to print the test pattern for the following procedures.**
3. **After completing these printing adjustments, be sure to set SP 2-902-3 to 0 again.**

Registration - Leading Edge/Side-to-Side

1. **Check the leading edge registration, and adjust it using SP1-001.**
   Specification: 3 ± 2mm.
2. **Check side-to-side registration for each paper feed station, and adjust with the following SP modes.**



B140r887

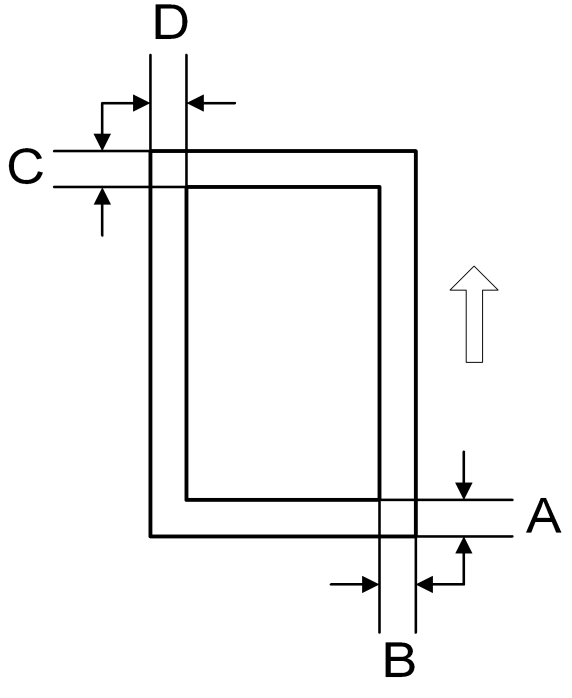
	SP mode	Specification
Tray 1 (Tandem Tray)	SP1002-001	0±1.5
Tray 2 (Universal Tray)	SP1002-002	

Tray 3 (Universal Tray)	SP1002-003	
Tray 4	SP1002-004	Japan Only
LCT	SP1002-006	0±1.5
Duplex Tray	SP1002-007	0±1.5

Blank Margin

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

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



B140R888

Letter	What It Means
A	Trailing edge blank margin
B	Right edge blank margin
C	Leading edge blank margin

Letter	What It Means
D	Left edge blank margin

SP2101 Print Erase Margin

	SP mode	Specification
Leading Edge	SP2101-001	2.5±2 mm
Trailing Edge	SP2101-002	
Left edge	SP2101-003	2±1.5 mm
Right edge	SP2101-004	

Registration Buckle Adjustment

When the customer is using special paper, buckle adjustment may be required if paper feed problems arise.

- If the buckle is too large, this can cause wrinkling, creasing, or jams caused by sheets overtaking the sheets ahead of them in the paper path.
- If the buckle is too small, this can cause jams at the registration roller or skew during paper feed.

1. **Enter the SP mode.**
2. **Open SP1003.**
   - To prevent wrinkling, creasing, or jams, set a smaller value.
   - To prevent jams at the registration roller or to eliminate skew, set a larger value.

SP1003-001	Registration Buckle Adjustment – Tray, LCT
SP1003-002	Registration Buckle Adjustment – Duplex Tray
SP1003-003	Registration Buckle Adjustment – LCT
Adjustment range	-9 mm ~ +9 mm (small ~ large buckle)
Initial value	0 mm (Buckle = 10 mm)

4. Troubleshooting

Overview

Important SP Codes

SP5802	Free Run Mode	Execute this SP to force base engine to run in the free run mode for testing.
SP5803	Input Check	Displays the signals received from sensors and switches. Refer to the detailed tables in Section "5. Service Tables".
SP5804	Output Check	Switches electrical components one by one for testing. Refer to the detailed tables in Section "5. Service Tables".
SP5990	SMC Printout	Prints the SMC Report. Some SC codes (logged SPs) are shown only in the SMC Report and do not show on the operation panel display.
SP7801	ROM Version Display.	Displays the version number of the main machine and connected peripherals.
SP7832	Self-Diagnostic Result Display	Execute this SP to display a list of error codes. No errors have occurred if nothing is displayed.
SP7801	Firmware Version	Displays the current numbers of all versions of the firmware in the system.
SP7403	Status of Issued SC	Execute to display the following information about the most recently issued SC: 1) Source file name, 2) SC number, 3) Result

Note

- For more information about these and other SP codes, see "4. Service Tables".

Program Download

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, a progress bar ("***____") is displayed until the download completes successfully.
- If the download is interrupted while the asterisks are 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 become corrupted. If this occurs, it may not be possible to restart the downloading program.
- If the GW controller software cannot be downloaded, software on other SD cards cannot be downloaded as well.
- If such problems occur, it may be possible to restart the program without replacing the controller board by setting controller DIP SW 1 to ON and then re-starting.

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.

Download Error Codes

	Display	Details	Recovery
01	Reboot after card insert E01 Module ID Card No. xx/xx	Controller ROM update error 1	• Use the correct card
		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.	• Turn the machine off/on to rewrite
		Error occurs during ROM update program initialization.	

	Display	Details	Recovery
03	Download Error E03 Power off/on	Controller ROM update error 3 The ROM for the write operation does not exist.	• Turn the machine off/on • Install the missing ROM DIMM
04	Download Error E04 Power off/on	Controller ROM update error 4 GZIP data confirmation fails. (CRC value check)	• Turn the machine off/on • Set DIP SW 1 to ON and retry • Replace RAM DIMM • Replace controller board
05	Download Error E05 Power off/on	Controller ROM update error 5 Error occurs when writing to the device.	• Turn the machine off/on • Set DIP SW 1 to ON and retry • Replace RAM DIMM • Replace controller board
06	Download Error E06 Power off/on	Controller ROM update error 6 CPU clock error.	• Turn the machine power off/on. • Set controller DIPSW-1 to ON to force the machine to write to ROM. • If you cannot force the machine to write, replace the controller board.
19	Download Error E19 Power off/on	Controller ROM update error 7 Schedule data is unclear.	• Software defective
20	Down Error E20 Power Off/On	System error 1 (+SC991) The physical address cannot be mapped. Software/hardware is defective	• Turn the machine off/on and re-try • Replace controller board

	Display	Details	Recovery
21	Download Error E21 Power Off/On	System error 2 (+SC991) There is not sufficient memory to download.	• Turn the machine off/on and re-try. • Replace RAM • Replace the controller board
22	Download Error E22 Module ID Card No xx/xx	System error 3 (+SC991) Data fails to decompress. Card defective.	• Turn the machine off/on and re-try. • Replace card • Replace controller board
	SC991	System error 4 "Selfupdate" does not execute. Software defective.	• Turn the machine off/on and re-try • Set DIP SW 1 to ON and re-try • Replace the controller board
23	Download Error E24 Power Off/On	System error 5 Card read/write error. Software or card defective.	• Turn the machine off/on and re-try • Replace the card • Replace the controller board
30	No Valid Data E30	Download dysfunction 1 Print download is not possible. Cannot download to HDD because HDD not installed or defective.	• HDD defective • HDD harness disconnected, defective
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.	• Set the correct cards in the correct order
32	Reboot After Card Insert E32 Module ID Card No. xx/xx	Download dysfunction 3	• Use the correct card • If power failure caused the failure, re-

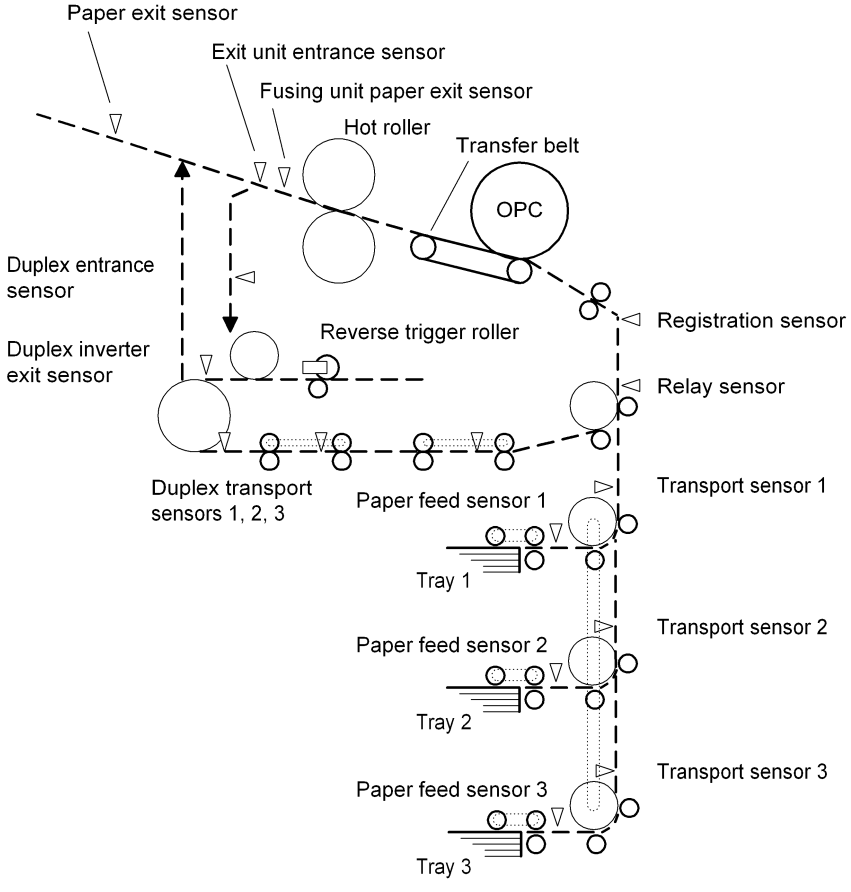
	Display	Details	Recovery
		Download interrupted because card is not correct, or power failure interrupted download.	move the card and insert another.
33	No Valid Data E33	Download dysfunction 4	• Use the correct card
		Card version error. Attempted to download program using a card with the wrong version number.	
34	No Valid Data E34	Download dysfunction 5	• Use the correct card
		Specification error. DOM card set in EXP machine, or vice versa.	
35	No Valid Data E35	Download dysfunction 6	• Use the correct card
		Wrong model. The inserted card is for another model.	
36	No Valid Data E36	Download dysfunction 7	• Use the correct card, inserted correctly • Install a ROM DIMM if none is installed
		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.	
37	No Valid Data E37	Download dysfunction 8	• Use an unused card
		Edit option card error. You attempted to employ a used card.	
40	Download Error E40 Module ID Card No. xx/xx	Download result failure 1	• Turn the machine off/on and re-try
		Engine download failure.	
41	Download Error E41 Module ID Card No. xx/xx	Download result failure 2	• Turn the machine off/on and re-try
		Fax download failure.	
42	Download Error E42 Module ID Card No. xx/xx	Download result failure 3	• Turn the machine off/on and re-try

	Display	Details	Recovery
		Operation panel or language download failed. For this error, sometimes the message may not be displayed.	
43	Download Error E43 Module ID Card No. xx/xx	Download result failure 4 Print download failed.	• Turn the machine off/on and re-try
44	Download Error E44 Module ID Card No.	Download result failure 5 The data targeted for the write operation could not be accessed.	• Turn the machine power off/on. • Set controller DIPSW-1 to ON to force the machine to write • If you cannot force the machine to write, replace the controller board.
50	No Valid Data E50	Download invalid The source data for the update could not be authenticated.	• Use the correct SD card.
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.	• Turn the machine power off/on and try again.
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.	• Try again with the correct data.
53	(no display)	Download result failure 6 The previous download in progress was cancelled.	• Do the download procedure again.

Jam Detection

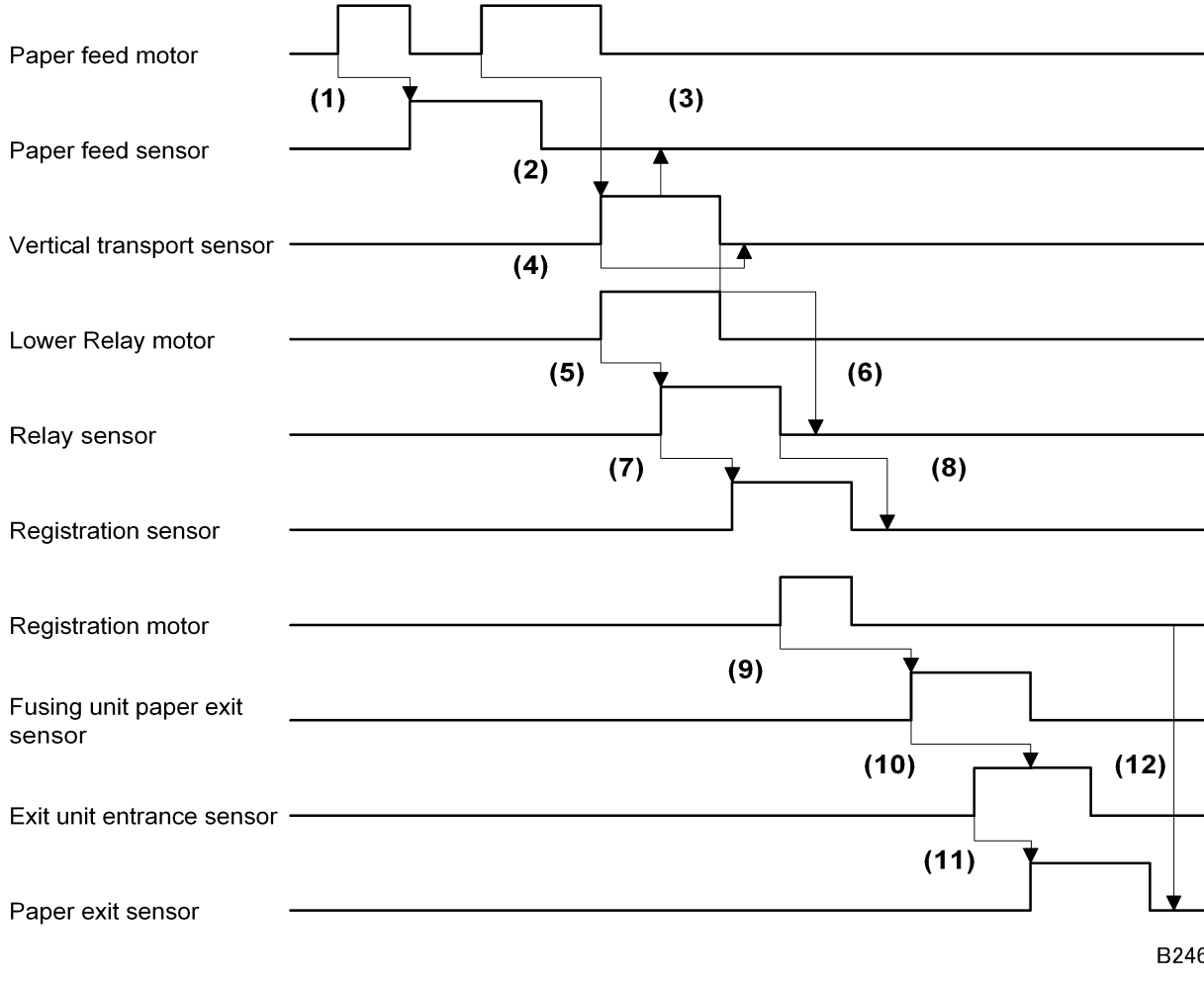
Sensor Locations

The illustration below shows the locations of the jam sensors.



Timing Charts

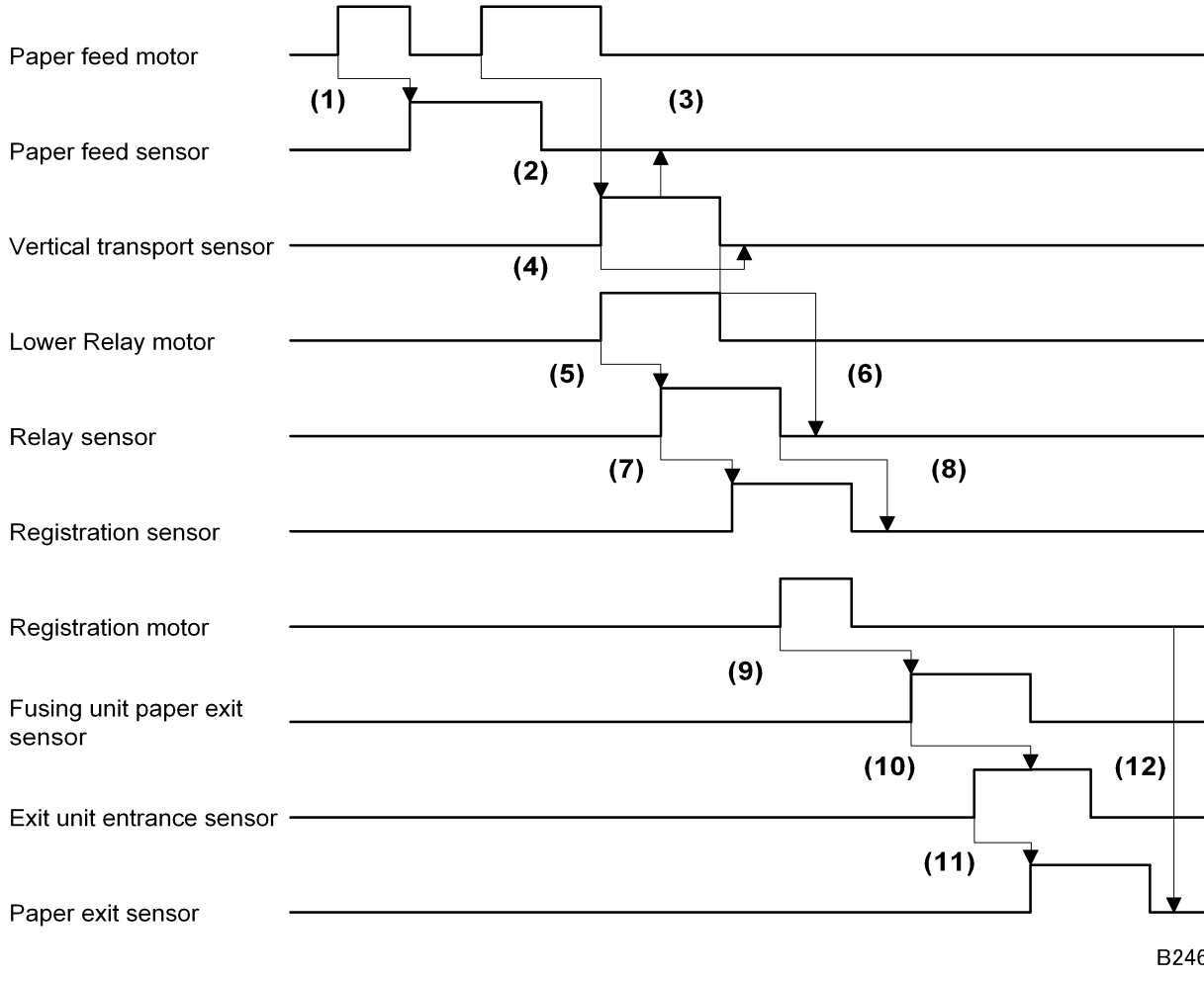
Feed, Transport, Feed Out: Face-up



(1):	Paper feed motor ON > Paper feed sensor does not switch ON at the correct time.
(2):	Paper feed motor ON > Vertical transport sensor does not switch ON at the correct time.
(3):	Vertical transport sensor ON> Paper feed sensor does not switch OFF at the correct time.
(4):	Vertical transport sensor ON > Vertical transport sensor does not switch OFF at the correct time.
(5):	Lower relay motor ON> Relay sensor does not switch ON at the correct time.

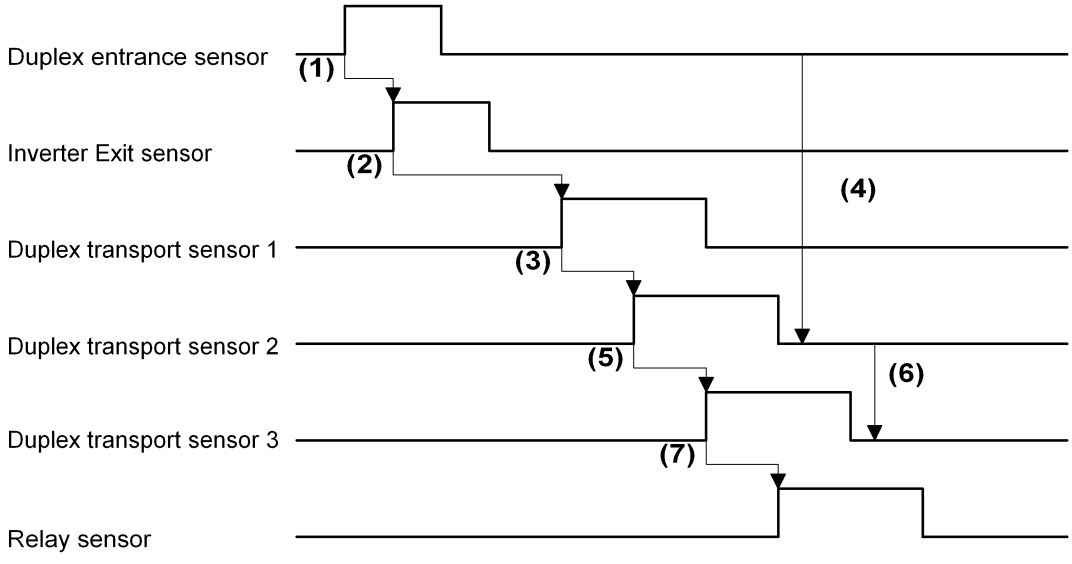
(6):	Vertical transport sensor OFF > Relay sensor does not switch OFF at the correct time.
(7):	Relay sensor ON > Registration sensor does not switch ON at the correct time.
(8):	Relay sensor OFF> Registration sensor does not switch OFF at the correct time.
(9):	Registration motor ON > Fusing unit paper exit sensor does not switch ON at the correct time.
(10):	Fusing unit paper exit sensor ON > Exit unit entrance sensor does not switch ON at the correct time.
(11):	Exit unit entrance sensor ON> Paper exit sensor does not switch ON at the correct time.
(12):	Registration motor OFF > Paper exit sensor does not switch OFF at the correct time.

Transport, Inverter, Feed Out: Face-down



(1):	From the registration sensor to the fusing unit exit, jam detection is the same as face-up feed out.
(2):	Exit unit entrance sensor ON > Duplex entrance sensor does not switch OFF at the correct time.
(3):	Registration sensor OFF > Duplex entrance sensor does not switch OFF at the correct time.
(4):	Duplex entrance sensor ON > Inverter exit sensor does not switch OFF at the correct time.
(5):	Inverter exit sensor ON > Paper exit sensor does not switch ON at the correct time.
(6):	Duplex entrance sensor OFF > Paper exit sensor does not switch OFF at the correct time. (Paper remains at the duplex unit exit.)

Duplex Transport



B246T904

(1):	Duplex entrance sensor ON > Inverter exit sensor does not switch ON at the correct time.
(2):	Inverter exit sensor ON > Duplex transport sensor 1 does not switch on at the correct time.
(3):	Duplex transport sensor 1 ON> Duplex transport sensor 2 does not switch on at the correct time.
(4):	Duplex entrance sensor ON > Duplex transport sensor 2 does not switch OFF at the correct time.
(5):	Duplex transport sensor 2 ON > Duplex transport sensor 3 does not switch ON at the correct time.
(6):	Duplex transport sensor 2 OFF > Duplex transport sensor 3 does not switch OFF at the correct time.
(7):	Duplex transport sensor 3 ON > Relay sensor does not switch on at the correct time.

Service Mode

Service Call Conditions

There are 4 levels of service call conditions.

Level	Definition	Reset Procedure
A	Fusing unit SCs displayed on the operation panel. The machine is disabled. The user cannot reset the sc.	Enter SP mode, do SP5810, then turn the power switch off/on.
B	SCs that disable only the features that use the defective item. Although these SCs are not shown to the user under normal conditions, they are displayed on the operation panel only when the defective feature is selected.	Turn the power switch off/on.
C	SCs that are not shown on the operation panel. They are internally logged.	Logging only
D	Cycling the power switch off/on resets SCs Displayed on the operation panel. These are re-displayed if the error occurs again.	Turn the power switch off/on.

SC Code Descriptions

Important

- **If a problem concerns electrical circuit boards, always disconnect then reconnect the connectors before replacing the PCBs.**
- **If a motor lock error occurs, first check the mechanical load before replacing motors or sensors.**
- **When a Level "A" or "B" SC occurs while in an SP mode, the display does not display the SC number. If this occurs, check the SC number after leaving the SP mode.**

SC300: Image Development System (1)

300	D	Charge corona output error	
		The feedback voltage from the charge corona unit is detected too high 9 times.	• Charge corona power pack defective • Charge corona harness disconnected • Poor charge corona unit connection

303	C	Charge corona grid leak	
		When the high voltage is output to the corona grid, feedback voltage exceeds the prescribed value 9 times.	• Charge corona power pack defective • Charge corona harness disconnected • Poor charge corona unit connection

304	D	Charge grid circuit open	
		When high voltage goes to the corona grid, feedback voltage is more than the set value 9 times. This feedback voltage is used to update PWM for output control.	• Charge corona unit defective or disconnected • Charge corona harness defective • Charge corona power pack is defective.

305	D	Charge corona wire cleaner error 1	
		The charge cleaner pad does not arrive at the home position: Motor locked within 4 s after switching on, or does not lock within 30 s. Motor locked within 10 s after reversing, or does not lock within 30 s.	• Charge corona wire cleaner motor defective • Motor driver defective

306	C	Charge corona wire cleaner error 2	
		Charge coronal motor is disconnected. (The current at the charge corona motor is detected less than 83 mA.)	• Charge corona wire cleaner motor connector is defective, connected.

Note

- When SC310~SC317 are logged, the machine halts without displaying the SC number. These SC codes log an abnormal condition at the potential sensor only when SP3901 (Auto Process Control) is set to on.

310	D	Potential sensor calibration error 1	
		During drum potential sensor calibration, the drum potential sensor output voltage does not meet specification when test vol-	• Potential sensor defective • Potential sensor harness disconnected • Potential sensor connector defective or disconnected

		tages (–100V, –800V) are applied to the drum.	• IOB defective • OPC connector defective • Development power pack defective

311	C	Potential sensor calibration error 2	
		During drum potential sensor calibration, the drum potential sensor output voltage does not meet specification when test voltages (–100V, –800V) are applied to the drum.	• Potential sensor defective • Potential sensor harness disconnected • Potential sensor connector defective or disconnected • IOB defective • OPC connector defective • Development power pack defective

312	C	Potential sensor calibration error 3	
		During drum potential sensor calibration when adjusting the drum potential (VD), the drum potential sensor detects VD higher than VG (grid voltage). -or- When adjusting VD (drum surface potential of black areas after exposure), even after 5 adjustments of VG (charge corona grid potential), VD could not be set in the target range (–800±10 + VL + 130V)	• Potential sensor defective • Potential sensor harness disconnected • Potential sensor connector defective or disconnected • IOB defective • OPC connector defective • Development power pack defective • Charge corona unit worn out, dirty

314	C	Potential sensor calibration error 4	
		During drum potential sensor calibration when adjusting the drum potential (VH) for LD power adjustment, the first time the VH pattern is made, the drum potential sensor detects that VH is more than 500V: VH > |–500 + VL + 130| V	Potential sensor defective Potential sensor harness disconnected Potential sensor connector defective or disconnected IOB defective OPC connector defective LD defective

315	C	Potential sensor calibration error 5	
		During drum potential sensor calibration, when –100V is applied to the drum, the output value is out of the prescribed range.	• Potential sensor defective • Potential sensor harness disconnected • Potential sensor connector defective or disconnected • IOB defective • OPC connector defective • Development power pack defective

316	C	Potential sensor calibration error 6	
		During drum potential sensor calibration, when –800V is applied to the drum, the output value is out of the prescribed range.	• Potential sensor defective • Potential sensor harness disconnected • Potential sensor connector defective or disconnected • IOB defective • OPC connector defective • Development power pack defective

317	C	Potential sensor calibration error 7	
		During drum potential sensor calibration, when VL is adjusted, the pattern surface potential VL pattern is not within range 0V ~ –400V. (VL is the potential after exposing a white pattern.)	• Potential sensor defective • Potential sensor harness disconnected • Potential sensor connector defective or disconnected • IOB defective • OPC connector defective • Charge corona power pack defective • Development power pack defective

340	C	TD sensor output error	
		TD sensor output voltage (Vt), measured during each copy cycle, is detected 10 times at one of the following levels: Vt = 0.5 volts or lower	• TD sensor defective • TD sensor harness disconnected • TD sensor connector disconnected or defective

		Vt = 4.0 volts or higher	• IOB defective • Toner bottle motor defective • Note: When the TD sensor is defective, the toner supply is controlled using pixel count and the ID sensor.

341	D	TD sensor adjustment error 1	
		During the TD sensor auto adjustment, the TD sensor output voltage (Vt) is 2.5 volts or higher even though the control voltage is set to the minimum value (PWM = 0). When this error occurs, SP2-906-1 reads 0.00V. Note: This SC is released only after correct adjustment of the TD sensor has been achieved. Switching the machine off and on will cancel the SC display, but does not release ID sensor toner supply.	• TD sensor defective • TD sensor harness disconnected • TD sensor connector disconnected or defective • IOB defective • Toner bottle motor defective • Note: When the TD sensor is defective, the toner supply is controlled using pixel count and the ID sensor.

342	D	TD sensor adjustment error 2	
		During the TD sensor auto adjustment, the TD sensor output voltage (Vt) does not enter the target range (3.0 ± 0.1V) within 20 s. When this error occurs, the display of SP2-906-1 reads 0.00V. Note: This SC is released only after correct adjustment of the TD sensor has been achieved. Switching the machine off and on will cancel the SC display, but does not release ID sensor toner supply.	• TD sensor defective • TD sensor harness disconnected • TD sensor connector disconnected or defective • IOB defective

345	D	Development output abnormal	
		The high voltage applied to the development unit is detected 10 times higher than the upper limit (45%) of PWM.	• Development power pack defective • Development bias leak due to poor connection, defective connector

350	C	ID sensor error 1

		One of the following ID sensor output voltages was detected twice consecutively when checking the ID sensor pattern. Vsp greater than or equals 2.5V Vsg less than 2.5 Vsp = 0V Vsg = 0	• ID sensor defective • ID sensor harness disconnected • ID sensor connector defective • IOB defective • ID sensor pattern not written correctly • Incorrect image density • Charge power pack defective • ID sensor dirty

351	C	ID sensor error 2	
		The ID sensor output voltage is 5.0V and the PWM signal input to the ID sensor is 0 when checking the ID sensor pattern.	• ID sensor defective • ID sensor harness disconnected • ID sensor connector defective • IOB defective • ID sensor pattern not written correctly • Incorrect image density • Charge power pack defective • ID sensor dirty

352	C	ID sensor error 3	
		For 2 s during the ID sensor pattern check, the ID sensor pattern edge voltage is not 2.5V or the pattern edge is not detected within 800 ms.	• ID sensor defective • ID sensor harness disconnected • ID sensor connector defective • IOB defective • ID sensor pattern not written correctly • Incorrect image density • Charge power pack defective • ID sensor dirty

353	C	ID sensor error 4	
		One of the following ID sensor output voltages is detected at ID sensor initialization.	• ID sensor defective • ID sensor harness disconnected

		Vsg less than 4.0V when the maximum PWM input (255) is applied to the ID sensor. Vsg greater than or equal to 4.0V when the minimum PWM input (0) is applied to the ID sensor.	• ID sensor connector defective • IOB defective • ID sensor pattern not written correctly • Incorrect image density • Charge power pack defective • ID sensor dirty

354	C	ID sensor error 5	
		Vsg falls out of the adjustment target (4.0 ±0.2V) during Vsg checking.	• ID sensor defective • ID sensor harness disconnected • ID sensor connector defective • IOB defective • ID sensor pattern not written correctly • Incorrect image density • Charge power pack defective • ID sensor dirty

355	C	ID sensor error 6	
		The Vp value, which measures the reflectivity of the ID sensor pattern, was not in the range of -70V to -400V.	• Potential sensor defective • Potential sensor harness defective • Potential sensor disconnected • IOB defective • OPC unit connector defective • Charge corona power pack defective • Charge corona wire dirty, broken

SC400: Image Development (2)

401	D	Transfer output abnormal	
		When the transfer is output, the feedback voltage remains higher than 4V for 60 ms.	• Transfer power pack defective • Transfer current terminal, transfer power pack disconnected, damaged connector

402	D	Transfer output abnormal release detection	
		When the transfer is output, there is hardly any feedback voltage within 60 ms even with application of 24% PWM.	• Transfer power pack defective • Transfer unit harness disconnected • Transfer connector loose, defective

430	C	Quenching lamp error	
		At the completion of auto process control initialization, the potential of the drum surface detected by the potential sensor is more than -400V, the prescribed value.	• Quenching lamp defective • Quenching lamp harness disconnected • Quenching lamp connector loose, defective

440	D	Main motor lock	
		The main motor lock signal remains low for 2 seconds while the main motor is on.	• Drive mechanism overloaded • Motor driver board defective

441	D	Development motor lock	
		The development motor lock signal remains high for 2 seconds while the development motor is on.	• Drive mechanism overloaded due to toner clumping in the wasted toner path • Motor driver board defective
		If this SC is returned on a machine in the field, inspect the toner supply unit coil. If the gear is not damaged replace the coil. If the gear is damaged, the gear shaft is probably deformed, so replace the entire unit.	

490	D	Main fan error	
		The main fan motor lock signal goes high for 5 s while the fan is on.	• Fan motor overloaded due to obstruction • Fan connector disconnected

495	D	Toner recycling unit error	
		Encoder pulse does not change for 3 s after the main motor switches on.	• Waste toner transport has stopped due to motor overload • Toner end sensor detective, disconnected

496	D	Toner collection bottle error	
		The toner collection bottle set switch remains off when the front door is closed.	• No toner collection bottle set • Poor connection of the switch connector

497	D	Toner collection motor error	
		The toner collection motor connector set signal remains off for 1 s.	• Toner pump motor defective • Motor connector loose, disconnected

SC500: Feed, Transport, Duplexing, and Fusing Systems

501	B	Tray 1 lift malfunction	
		The lift sensor is not activated within 10 seconds after the tray lift motor starts lifting the bottom plate. When the tray lowers, the tray lift sensor does not go off within 1.5 sec. Tray overload detected when the tray is set. The lower limit sensor of the LCT does not detect the lower limit within 10 sec.	• Tray lift motor defective, disconnected • Paper or other obstacle trapped between tray and motor • Pick-up solenoid disconnected, blocked by an obstacle • Too much paper loaded in tray **Note** • At first, the machine displays a message asking the operator to reset the tray. • This SC will not display until the operator has pulled the tray out and pushed it in 3 times. • If the operator turns the machine off/on before the 3rd opening and closing of the tray, the 3-count is reset.

502	B	Tray 2 lift malfunction	
		The lift sensor is not activated within 10 seconds after the tray lift motor starts lifting the bottom plate. When the tray lowers, the tray lift sensor does not go off within 1.5 sec.	• Tray lift motor defective or disconnected • Paper or other obstacle trapped between tray and motor • Pick-up solenoid disconnected or blocked by an obstacle

		Tray overload detected when the tray is set.	• Too much paper loaded in tray **Note** • At first, the machine displays a message asking the operator to reset the tray. • This SC will not display until the operator has pulled the tray out and pushed it in 3 times. • If the operator turns the machine off/on before the 3rd opening and closing of the tray, the 3-count is reset.

503	B	Tray 3 lift malfunction	
		The lift sensor is not activated within 10 seconds after the tray lift motor starts lifting the bottom plate. When the tray lowers, the tray lift sensor does not go off within 1.5 sec. Tray overload detected when the tray is set.	• Tray lift motor defective or disconnected • Paper or other obstacle trapped between tray and motor • Pick-up solenoid disconnected or blocked by an obstacle • Too much paper loaded in tray **Note** • At first, the machine displays a message asking the operator to reset the tray. • This SC will not display until the operator has pulled the tray out and pushed it in 3 times. • If the operator turns the machine off/on before the 3rd opening and closing of the tray, the 3-count is reset.

504	B	Tray 4 lift malfunction	
		The lift sensor is not activated within 10 seconds after the tray lift motor starts lifting the bottom plate. When the tray lowers, the tray lift sensor does not go off within 1.5 sec. Tray overload detected when the tray is set.	• Tray lift motor defective or disconnected • Paper or other obstacle trapped between tray and motor • Pick-up solenoid disconnected or blocked by an obstacle • Too much paper loaded in tray **Note**

			• At first, the machine displays a message asking the operator to reset the tray. • This SC will not display until the operator has pulled the tray out and pushed it in 3 times. • If the operator turns the machine off/on before the 3rd opening and closing of the tray, the 3-count is reset.

507	B	LCT feed motor malfunction	
		One of the following conditions is detected: The LD signal from the feed motor is detected abnormal for 50 ms after the motor switches on. At power on, the motor is detected loose or disconnected.	• Feed motor defective • Feed motor connector disconnected • Obstacle interfering with mechanical movement of motor.

510	B	LCT tray malfunction	
		One of the following conditions is detected: When the bottom plate is lifted, the upper limit sensor does not come on for 18 s. When the bottom plate is lowered, the lower limit sensor does not come on for 18 s. After lift begins, the upper limit sensor does not switch on before the pick-up solenoid switches on. The paper end sensor switches on during lift and the upper limit sensor does not switch on for 2.5 s, and a message prompts user to reset paper.	• Tray lift motor defective or connector disconnected • Lift sensor defective or disconnected • Pick-up solenoid defective or disconnected • Paper end sensor defective

515	B	Tandem rear fence motor error

		One of the conditions is detected: The return sensor does not switch on within 10 sec. after the rear fence motor switches on. The HP sensor does not switch on 10 sec. after the rear fence motor switches on. The HP sensor and return sensor switch on at the same time.	• Rear fence motor defective or poor connection • Paper or other obstacle interfering with operation of the sensors • Paper or other obstacle trapped between tray and motor • Motor mechanical overload due to obstruction • Return sensor or HP sensor defective or dirty **Note** • This problem will not issue the SC code on the operation panel. • The machine will prompt the operator to reset tray by opening and closing it. • If the problem persists, the machine will display again and the tray cannot be used.

520	C	Duplex jogger motor error 1	
		When the jogger fence moves to the home position, the jogger HP sensor does not turn on even if the jogger fence motor has moved the jogger fence 153.5 mm.	• Paper or other obstacle has jammed mechanism • Sensor connector disconnected or defective • Sensor defective

521	C	Duplex jogger motor error 2	
		When the jogger fence moves from the home position, the jogger fence HP sensor does not turn off even if the jogger motor has moved the jogger fence 153.5 mm.	• Paper or other obstacle has jammed mechanism • Sensor connector disconnected or defective • Sensor defective

531	D	Fusing exit motor error	
		The PLL lock signal was low for 2 seconds during motor operation.	• Motor lock caused by physical overload • Motor drive PCB defective

541	A	Fusing thermistor open	
		The fusing temperature detected by the center thermistor was below 0°C for 7 sec.	• Thermistor open • Thermistor connector defective • Thermistor damaged, or out of position • Fusing temperature –15% less than the standard input voltage

542	A	Fusing temperature warm-up error	
		One of the following occurred: After power on, or after closing the front door, the hot roller does not reach the 100°C control temperature within 25 s. 5 sec. after temperature rise started, temperature remained below 21°C after 5 samplings. Fusing unit did not attain reload temperature within 48 sec. of the start of fusing temperature control.	• Fusing lamp disconnected • Thermistor warped, out of position • Thermostat not operating

543	A	Fusing lamp overheat error 1 (software)	
		Central thermistor detected a temperature of 240°C at the center of the hot roller. Fusing temperature control software error	• PSU defective • IOB defective • BICU defective

544	A	Fusing lamp overheat error 1 (hardware)	
		The center thermistor or an end thermistor detected a temperature of 250°C on the hot roller.	• PSU defective • IOB defective • BICU defective

545	A	Fusing lamp overheat error 2	
		After hot roller reaches warmup temperature, the fusing lamps remained on	• Thermistor damaged, or out of position • Fusing lamp disconnected

		at full capacity for 11 samplings (1.8 sec. duration) while the hot roller was not rotating.	

547	D	Zero cross signal malfunction	
		One of the following conditions is detected 10 times: When the main switch is on, the frequency measured by the number of zero cross signals for 500 ms is larger than 66Hz or smaller than 45 Hz. The interval between one zero cross signal and the next is 7.5 ms or shorter 3 times consecutively for 500 ms.	• Noise on the ac power line

550	A	Fusing Web End	
		Web end detected 5 times within 500 ms and web motor continues to rotate 40 s. If web end is detected for another 500 ms, then the SC is logged.	• Web end (requires replacement) • Web end sensor defective • Note: After replacing the web with a new one, reset SP1902 001 to "0" to release SC550.

551	A	Fusing thermistor error 1	
		The end thermistor (contact type) was less than 0C (32F) for more than 7 seconds.	• Thermistor disconnected • Thermistor connector defective

552	A	Fusing thermistor error 2	
		The end thermistor (contact type) could not detect: 100°C 25 seconds after the start of the warmup cycle. A change in temperature more than than 16 degrees for 5 seconds.	• Fusing lamp disconnected • Thermistor bent, damaged • Thermistor position incorrect

		The reload temperature with 56 seconds after the start of the fusing temperature control cycle.	

553	A	Fusing thermistor error 3	
		The end thermistor (contact type) was at 240°C (464°F) for more than 1 second. The temperature is read 10 times every sec. (at 0.1 sec. intervals).	• PSU defective • IOB control board defective • BICU control board defective

555	A	Fusing lamp error	
		After the start of the warmup cycle, a fusing lamp was at full power for 1.8 seconds but the hot roller did not turn.	• Thermistor bent, out of position • Fusing lamp disconnected • Circuit breaker opened

557		Zero cross signal error	
		High frequency noise was detected on the power line.	• No action required. The SC code is logged and the operation of the machine is not affected.

559	A	Fusing jam: 3 counts	
		At the fusing exit sensor the paper was detected late for three pulse counts (lag error), and SP1159 was on.	• If this SC occurs, the machine cannot be used until the service technician cancels the SC code. • This SC does occurs only if SP1159 has been set to "1" (On). (Default: 0 (Off)).

569	D	Fusing pressure release motor error	
		During copying, the HP sensor could not detect the actuator, tried again 3 times and could not detect.	• Motor lock because of too much load • Motor driver defective • HP sensor defective, disconnected, connector defective, harness damaged

590	D	Toner collection motor error

		The toner collection motor sensor output does not change for 3 seconds while the toner collection motor is on.	• Motor lock due to obstruction • Motor driver board defective • Motor connection loose, defective • Toner collection motor sensor disconnected, sensor defective • Rotational transmission shaft (ϕ6 x 30) missing

599	D	1-bin Exit Motor Error (Japan Only)	
		The transport lock sensor output does not change within 300 ms after the motor switches on.	• Motor overload • Motor driver defective

SC600: Data Communication

621	D	BICU/Finisher communication/break error	
		During communication with the finisher MBX, the BICU received a break (Low) signal from the finisher.	• Serial line connection unstable • External noise on the line

623	D	BICU/Tray 1~4 communication/timeout error	
		After 1 data frame is sent to the trays, an ACK signal is not received within 100 ms, and is not received after 3 retries.	• Serial line connection unstable • External noise on the line

624	D	BICU/Tray 1~4 communication/break reception error	
		During communication with the finisher trays, the BICU received a break (Low) signal.	• Serial line connection unstable • External noise on the line

626	D	BICU/LCT communication/timeout error

		After 1 data frame is sent to the LCT, an ACK signal is not received within 100 ms, and is not received after 3 retries.	• Serial line connection unstable • External noise on the line

627	D	BICU/LCT communication/break reception error	
		During communication with the LCT, the BICU received a break (Low) signal.	• Serial line connection unstable • External noise on the line

SC650		NRS Modem Communication Error	
		One of the following factors could be the cause of this error: • Modem has been disconnected. • Modem board disconnected.	Check the following for a machine that is using Cumin (NRS modem): • An error was returned during the dialup connection • A network was detected at startup • At startup the machine detected that the NIB was disabled, or did not detect a modem board

Note

- For more details about this SC code, 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:

Error	Problem	Solution
1	Failure to certify dial-up	Check the dial-up user and dial-up password settings
4	Illegal modem setting	Check the setting of SP5816 160 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 SP5985 1 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.

651		Illegal Remote Service Dial-up	
		An expected error occurred when Cumin-M dialed up the NRS Center.	• Software bug • No action is required because only the count is logged

670	D	Engine startup error	
		The machine engine, controlled by the BICU (Base Image Control Unit), was operating incorrectly when the machine was switched on or returned to normal operation from the energy save mode.	• Check the connections between BICU and controller • BICU defective • Controller board defective • PSU defective

672	B	Controller startup error	
		After power on, the line between the controller and the operation panel did not open for normal operation. After normal startup, communication with the controller stopped.	• Controller stalled • Controller installed incorrectly • Controller board defective • Operation panel harness disconnected or defective

SC700: Peripherals

720	D	Finisher transport motor error	
		The encoder pulse of the finisher transport motor does not change state (high/low) within 600 ms and does not change after 2 retries.	• Finisher transport motor defective • Transport motor harness disconnected, or defective • Finisher main board defective

721	B	Finisher jogger motor error

		The finisher jogger HP sensor remains de-activated for more 1,000 pulses when returning to home position. The finisher jogger HP sensor remains activated for more than 1,000 pulses when moving away from home position.	• Jogger HP sensor defective • Jogger mechanism overload • Jogger motor defective (not rotating) • Finisher main board defective • Harness disconnected or defective

725	B	Exit guide motor	
		The status of the exit guide sensor did not change at the prescribed time during operation of the exit guide.	Exit guide open sensor loose, broken, defective. Exit guide motor defective Finisher main board defective

726	B	Front shift jogger motor error (B703)	
		The sides fences do not retract within the prescribed time after the shift jogger motor switches on. The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.	• Shift jogger motor disconnected, defective • Shift jogger motor overloaded due to obstruction • Shift jogger HP sensor disconnected, defective

727	B	Rear shift jogger motor (B703)	
		The side fences do not retract within the prescribed time after the shift jogger motor switches on. The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.	Motor harness disconnected, loose, defective Motor defective Motor overload HP defective

728	B	Shift jogger retraction motor error (B703)	
		The side fences do not retract within the prescribed time after the retraction motor switches on. The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.	• Motor harness disconnected, loose, defective • Motor defective • Motor overload • HP defective

730	B	Finisher Tray 1 shift motor error	
		The shift roller HP sensor of the upper tray does not activate within the prescribed time after the shift tray starts to move toward or away from the home position. The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.	• Shift tray HP sensor of the upper tray disconnected, defective • Shift tray motor of the upper tray is disconnected, defective • Shift tray motor of the upper tray overloaded due to obstruction

732	B	Finisher shift roller motor error	
		The shift roller HP sensor does not activate within the prescribed time after the shift roller motor turns on. After 2 counts, the SC is logged as a jam.	• Shift roller HP sensor defective • Sensor harness disconnected, defective • Shift roller motor defective • Finisher main board defective • Shift roller motor overload

733	D	Finisher lower tray lift motor error	
		After the lift motor switches on to lift the tray, paper height sensor 2 does not detect the top of the paper stack, or after the motor reverses to lower the stack the top of the stack remains detected (the status of paper height sensor 1 does not change). After 2 counts, the SC is logged as a jam.	• Paper height sensor 1 or 2 defective • Sensor harness disconnected, defective • Tray lift motor defective • Finisher main board defective • Tray lift motor overload

735	B	Finisher pre-stack motor error	
		The pre-stack motor starts but does not return to the home position within 400 pulses. After 2 counts, the SC is logged as a jam. Motor does not return to the home position within 280 pulses immediately before or after pre-stacking. After 2 counts, the SC is logged as a jam.	• Jogger HP sensor defective • Sensor harnesses disconnected, defective • Pre-stack motor defective • Finisher main board defective • Pre-stack motor overload

736	B	Finisher paper exit guide plate motor error	
		The paper exit guide plate motor starts but the paper exit guide plate HP sensor does not activate within 750 ms. After 2 counts, the SC is logged as a jam.	• Guide plate HP sensor defective • Sensor harness disconnected, defective • Paper exit guide plate motor defective • Finisher main board defective • Guide plate motor overload.

737	B	Trimmed staple waste hopper full	
		The hopper that holds the waste from staple trimming is full.	• Staple waste hopper full • Staple waste sensor defective

738	B	Finisher pressure plate motor error	
		The pressure plate motor switches on but does not return to the home position within the prescribed time after 2 counts.	• HP sensor defective • Harness disconnected, defective • Motor defective • Finisher main board defective • Motor overload

739	B	Finisher folder plate motor error	
		The folder plate motor turns on but the plate does not return to the home position within the prescribed time for 2 counts.	• Plate HP sensor defective • Harness disconnected, defective • Folder plate motor defective • Finisher main board defective • Folder plate motor overload

740	B	Finisher corner stapler motor error	
		The stapler motor does not switch off within the prescribed time after operating. The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.	• Staple jam • Number of sheets in the stack exceeds the limit for stapling • Stapler motor disconnected, defective

741	B	Finisher corner stapler rotation motor error	
		The stapler does not return to its home position within the specified time after stapling. The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.	• Stapler rotation motor disconnected, defective • Stapler rotation motor overloaded due to obstruction • Stapler rotation HP sensor disconnected, defective

742	B	Finisher stapler movement motor error	
		The stapler HP sensor is not activated within the specified time after the stapler motor turned on. The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.	• Stapler movement motor disconnected, defective • Stapler movement motor overloaded due to obstruction • Stapler HP sensor disconnected, defective

743	B	Booklet stapler motor error 1	
		The front stapler unit saddle-stitch motor does not start operation within the specified time. The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.	• Front motor disconnected, defective • Front motor overloaded due to obstruction

744	B	Booklet stapler motor error 2	
		The rear stapler unit saddle-stitch motor does not start operation within the specified time. The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.	• Rear motor disconnected, defective • Rear motor overloaded due to obstruction

750	B	Finisher tray 1 (upper tray lift) motor error	
		The upper tray paper height sensor does not change its status with the specified time after the tray raises or lowers. The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.	• Tray lift motor disconnected, defective • Upper tray paper height sensor disconnected, defective • Finisher main board connection to motor loose

			• Finisher main board defective

753	B	Return roller motor error	
		Occurs during the operation of the lower tray pressure motor.	• Motor harness disconnected, loose, defective • Motor overloaded • Home position sensor harness disconnected, loose, defective • Home position defective

760	D	Finisher punch motor error	
		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.	• Punch HP sensor disconnected, defective • Punch motor disconnected, defective • Punch motor overload due to obstruction

761	B	Finisher folder plate motor error	
		The folder plate moves but is not detected at the home position within the specified time. The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.	• Folder plate HP sensor disconnected, defective • Folder plate motor disconnected, defective • Folder plate motor overloaded due to obstruction.

762	B	Finisher pressure plate motor error	
		Pressure plate motor operating but the plate is not detected at the home position within the specified time. The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.	• Pressure plate HP sensor disconnected, defective • Pressure plate motor disconnected, defective • Pressure plate motor overloaded due to obstruction

763	D	Punch movement motor error

		Occurs during operation of the punch unit. The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.	• Motor harness disconnected, loose, defective • Motor defective

764	D	Paper position sensor slide motor error	
		Occurs during operation of the punch unit. The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.	• Motor harness disconnected, loose, defective • Motor defective

765	B	Folding unit bottom fence lift motor	
		The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.	• Motor harness disconnected, loose, defective • Motor defective

766	B	Clamp roller retraction motor error	
		The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.	• Motor harness disconnected, loose, defective • Motor defective

767	B	Stack junction gate motor error	
		Occurs during operation of the punch unit. The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.	• Motor harness disconnected, loose, defective • Motor overload • Motor defective

770	B	Cover interposer tray bottom plate motor error	
		After the motor starts to raise the bottom plate, the bottom plate position sensor does not detect the plate at the specified time (3 s). After the motor starts to lower the bottom plate, the bottom plate HP sensor does not detect the bottom plate.	• Bottom plate position sensor, disconnected, defective • Bottom plate HP sensor disconnected, defective

790	B	Finisher staple trimming hopper full	
		The staple waste hopper is full of cut staples.	• If the hopper is full, empty the hopper • If the hopper is not full, the hopper full sensor is disconnected, defective

SC800: Overall System

817	B	Monitor Error	
		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.	• OS Flash ROM data defective; change the controller firmware • SD card data defective; use another SD card

Error Codes

Code	Meaning
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.

817	D	Monitor Error	
		The system failed to successfully detect (successfully complete the electronic handshake with) one or more of the following files in the OS flash ROM or on the system SD card: • Self-diagnostic module • Kernel • Root file system. The files are either corrupted or missing.	• System SD card in SD card slot C1 is removed or corrupted • Replace the system SD card • Update the controller firmware

818	D	Watchdog error	
		While the system program is running, a bus hold or interrupt program goes into an endless loop, preventing any other programs from executing.	• System program defective; switch off/on, or change the controller firmware if the problem cannot be solved • Controller board defective • Controller option malfunction

819	D	Fatal kernel error		
		Due to a control error, a RAM overflow occurred during system processing. One of the following messages was displayed on the operation panel.		• System program defective • Controller board defective • Optional board defective • Replace controller firmware
		0x696e	init died	
		0x766d	vm_pageout: VM is full	
		4361	Cache Error	
		Other		

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.

821	D	Self-diagnostic error: ASIC

		The Write & Verify check of the ASIC returned an error. **Note**: The main ASIC module on the controller board controls the bus of the ROM device.	• Replace the controller board

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.

822	B	Self-diagnostic error: HDD		
		3003	Check performed when HDD is installed: • HDD device busy for over 31 s. • After a diagnostic command is set for Sthe HDD, but the device remains busy for over 6 s. A diagnostic command is issued to the HDD device but the result is an error	• HDD defective • HDD harness disconnected, defective • Controller board defective
		3004	No response to the self-diagnostic command from the ASIC to the HDDs	• HDD defective
		3013	Mandolin does not respond, the HDD device remains BUSY for more than 31 s, or the BUSY signal does not drop within 6 s after the diagnostic command is issued to the HDDs.	• HDD defective • HDD connector loose or defective • Controller defective
		3014	Error returned from HDD in response to the self-diagnostic command, Mandolin could not be located due to a read/write error at the HDD register.	• HDD defective

824	D	Self-diagnostic error 4: NVRAM	
		One or more of the following conditions exist: • NVRAM not present. • NVRAM damaged • NVRAM socket damaged	• NVRAM defective • Controller board defective • NVRAM backup battery exhausted • NVRAM socket damaged **Note**: In every case, the controller board must be replaced.

826	D	Self-diagnostic error 6: NVRAM (option NVRAM)		
		1501	The difference between the 1 s measured for RTC in the NVRAM and the 1 s timeout of the CPU is out of range, or the NVRAM is not detected.	• NVRAM defective • NVRAM installed incorrectly
		15FE	Backup battery error. Battery is exhausted or not within rated specification.	• The battery is attached permanently to the controller board. Replace the controller board.

828	D	Self-diagnostic error 7: ROM	
		Measuring the CRC for the boot monitor and operating system program results in an error. A check of the CRC value for ROMFS of the entire ROM area results in an error.	• Software defective • Controller board defective • ROM defective

829	B	Self-diagnostic Error: Optional RAM	• Replace the optional memory board • Controller board defective
		The optional RAM returned an error during the self-diagnostic test.	

Note

- For more details about SC 833, SC834 and other errors, execute SP5990 to print an SMC report so you can read the error code. The error code is not displayed on the operation panel. The additional error codes (0F30, 0F31, etc. are listed in the SMC report.

833	D	Self-diagnostic error 8: Engine I/F ASIC

0F30 0F31		ASIC (Mandolin) for system control could not be detected. After the PCI configuration, the device ID for the ASIC could not be checked.	• ASCI (Mandolin) for system control is defective • Interface between North Bridge and AGPI is defective • Replace the mother board
0F41		The read/write check done for resident RAM on the mother board could not be done correctly.	• Memory device defective • Replace the mother board
50B1		Could not initialize or read the bus connection.	• Bus connection defective, loose • SSCG defective • Replace the mother board
50B2		Value of the SSCG register is incorrect.	• Bus connection loose, defective • SSCG defective • Replace the mother board

834	D	Self-diagnostic error 9: Optional Memory RAM DIMM	
5101		The write/verify check for the optional RAM chip on the engine mother board gave an error.	• Controller defective • Mother board defective

838	D	Self-diagnostic Error: Clock Generator A verify error occurred when setting data was read from the clock generator via the I2C bus.	• Replace the controller board

839	D	Serial Flash A read/write operation on the Software Status Register failed.	• Replace the controller board

850	B	Net I/F error	
		Duplicate IP addresses. Illegal IP address.	• IP address setting incorrect • NIB (PHY) board defective • Controller board defective

		Driver unstable and cannot be used on the network.	

857	B	USB I/F Error	
		The USB driver is not stable and caused an error.	• Bad USB card connection • Replace the controller board

860	B	HDD startup error at power on	
		HDD is connected but a driver error is detected. The driver does not respond with the status of the HDD within 30 s.	• HDD is not initialized • Level data is corrupted • HDD is defective

861	D	HDD re-try failure	
		At power on with the HDD detected, power supply to the HDD is interrupted, after the HDD is awakened from the sleep mode, the HDD is not ready within 30 s.	• Harness between HDD and board disconnected, defective • HDD power connector disconnected • HDD defective • Controller board defective

863	D	HDD data read failure	
		The data written to the HDD cannot be read normally, due to bad sectors generated during operation.	• HDD defective **Note**: If the bad sectors are generated at the image partition, the bad sector information is written to NVRAM, and the next time the HDD is accessed, these bad sectors will not be accessed for read/write operation.

864	D	HDD data CRC error	
		During HDD operation, the HDD cannot respond to an CRC error query. Data transfer did not execute normally while data was being written to the HDD.	• HDD defective

865	D	HDD access error	
		HDD responded to an error during operation for a condition other than those for SC863, 864.	• HDD defective.

866	B	SC card error 1: Confirmation	
		The machine detects an electronic license error in the application on the SD card in the controller slot immediately after the machine is turned on. The program 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 shows that the license data in the program on the SD card is incorrect, then the checked program cannot execute and this SC code is displayed.	• Program missing from the SD card • Download the correct program for the machine to the SD card

867	D	SD card error 2: SD card removed	
		The SD card in the boot slot when the machine was turned on was removed while the machine was on.	• Insert the SD card, then turn the machine off and on.

868	D	SD card error 3: SC card access	
		An error occurred while an SD card was used.	• SD card not inserted correctly • SD card defective • Controller board defective **Note**: If you want to try to reformat the SC card, use SD Formatter Ver 1.1.

870	B	Address book data error	
		Address book data on the hard disk was detected as abnormal when it was accessed from either the opera-	• Software defective. Turn the machine off/on. If this is not the solution for the problem, then replace the controller firmware.

		tion panel or the network. 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.	• HDD defective.
		More Details • Do SP5846 050 (UCS Settings – Initialize all Directory Info.) to reset all address book data. • Reset the user information with SP5832 006 (HDD Formatting– User Information). • Replace the HDDs. • Boot the machine from the SD card.	

872	B	HDD mail receive data error	
		The machine detected that the HDD was not operating correctly at power on. The machine detected that the HDD was not operating correctly (could neither read nor write) while processing incoming email	• HDD defective • The machine was turned off while the HDD was being accessed. • Do SP5832 007 to format the mail RX data on the HDD.

873	B	HDD mail send data error	
		An error was detected on the HDD immediately after the machine was turned on, or power was turned off while the machine used the HDD.	• Do SP5832-007 (Format HDD – Mail TX Data) to initialize the HDD. • Replace the HDD

874	D	Delete All error 1: HDD	
		A data error was detected for the HDD/NVRAM after the Delete All option was used. **Note**: The source of this error is the Data Overwrite Security running from an SD card.	• Turn the main switch off/on and try the operation again. • Install the Data Overwrite Security Unit again. For more, see section "1. Installation". • HDD defective

875	D	Delete All error 2: Data area

		An error occurred while the machine deleted data from the HDD. **Note**: The source of this error is the Data Overwrite Security Unit running from an SD card.	• Turn the main switch off/on and try the operation again.

	D	Log data abnormal	• Software error. Update the firmware • NVRAM defective • HDD defective
		An error was detected in the handling of the log data at power on or during machine operation. This can be caused by switching the machine off while it is operating.	

880	D	File Format Converter (MLB) error	
		A request to get access to the MLB was not answered within the specified time.	• MLB defective, replace the MLB

SC900: Miscellaneous

901	D	Mechanical total counter error	
		The mechanical counter is not connected.	• Mechanical total counter defective • Mechanical total counter connector not connected
910	D	External Controller Error 1	
911	D	External Controller Error 2	
912	D	External Controller Error 3	
913	D	External Controller Error 4	
914	D	External Controller Error 5	
		The external controller alerted the machine about an error.	• Please refer to the instructions for the external controller.
919	B	External Controller Error 6	
		While EAC (External Application Converter), the conversion module, was	• Power outage at the EFI controller • EFI controller was rebooted

		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.	• Connection to EFI controller loose

925	B	NetFile Function Error	
		• The NetFile file management on the HDD cannot be used, or a NetFile management file is corrupted and operation cannot continue. • 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.)	• HDD defective • Power supply to machine cut occurred while writing data to HDD • Software error • Please refer to the detailed descriptions below for recovery procedures.

4

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 ~ 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 ~ SC865), turn 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 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).
6. Execute SP5832 011 then turn the machine off and on.

Recovery Procedure 3

If "Procedure 2" does not solve the problem, execute SP5832 001 (HDD Formatting – All), then turn 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.

954	D	Printer image setting error	
		The settings required for image processing using the printer controller are not sent from the IPU.	• Software defective

955	D	Memory setting error	
		The settings that are required for image processing using the memory are not sent from the IPU.	• Software defective

964	D	Printer ready error	
		The print ready signal is not generated for more than 17 seconds after the IPU received the print start signal.	• Software defective

984	D	Print image data transfer error	
		After a data transfer begins from the controller to the engine via the PCI bus, the transfer does not end within 15 s.	• Controller (SIMAC) board defective • BICU defective • BICU/controller disconnected

985	D	Scanned image data transmission error	
		After a data transfer begins from the engine to the controller via the PCI bus, the transfer does not end within 3 s.	• Controller (SIMAC) board defective • BICU defective • BICU/controller disconnected

986	D	Software error 1	
		The write parameter received by the write module at the beginning of the setting table is NULL.	• Controller (SIMAC) board defective • BICU defective • BICU Controller disconnected

*1:In order to get more details about SC990 and 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 SC990 or SC991, including the software file name, line number, and so on. 1) is the recommended method, because another SC could write over the information for the previous SC.

SC994	C	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	• No action required because this SC does not interfere with operation of the machine.

		too many application screens open on the operation panel.	

Jam Codes

Here are lists of SC codes that are printed in the SMC report; they do not appear on the operation panel display.

Main Unit: Paper Jam Errors

No.	Check-In Failure (Paper Does Not Arrive)	No.	Check-Out Failure (Paper Remains)
1	Initial Jam (Power On)		
3	Tray 1 feed sensor	53	Tray 1 feed sensor
4	Tray 2 feed sensor	54	Tray 2 feed sensor
5	Tray 3 feed sensor	55	Tray 3 feed sensor
6	Tray 4 feed sensor (Japan Only)	56	Tray 4 feed sensor (Japan Only)
7	LCT feed sensor	57	LCT feed sensor
8	Transport sensor 1	58	Transport sensor 1
9	Transport sensor 2	59	Transport sensor 2
10	Transport sensor 3	60	Transport sensor 3
11	Transport sensor 4 (Japan Only)	61	Transport sensor 4 (Japan Only)
12	Relay sensor	62	Relay sensor
13	Registration sensor	63	Registration sensor
14	Fusing exit sensor		
15	Exit unit entrance sensor		
16	Exit unit	66	Exit unit
19	Exit unit entrance sensor	69	Exit unit entrance sensor
20	Duplex transport sensor 1		

21	Duplex transport sensor 2	71	Duplex transport sensor 2
22	Duplex transport sensor 3	72	Duplex transport sensor 3
23	Duplex inverter sensor	73	Duplex inverter sensor
24	1-Bin tray (**Japan Only**)	74	1-Bin tray (**Japan Only**)

Finisher B706 Jam Codes

No.	Location	Related SC Code
141	Entrance Sensor	
142	Proof Tray Exit Sensor	
143	Exit Sensor	
144	Staple Entrance Sensor	
145	Exit Sensor after jogging	
148	Upper Transport Motor	
149	Shift Motor	SC733, SC726
150	Jogger Fence Motor	SC722
151	Shift Roller or Guide Plate Motor	SC732, SC736
153	Stapler Unit	SC724, SC738, SC740, SC741
155	Feed Out Belt Motor	SC725
156	Punch Hole Motor	SC729

Additional SC Codes Printed in SMC Report

These codes are also used in the SMC report. Codes that have the same number in this series are identified by an additional 4-digit hexadecimal number.

820	0001	TLB conversion (store) exception error	• Unexpected error in CPU device: • Controller board defective
820	0002	TLB miss (load) exception error	
820	0003	TLB miss (store) exception error	

820	0004	Read address exception error	• Boot monitor or self-diagnostic program corrupted
820	0005	Write address exception error	
820	0006	Command bus exception error	
820	0007	Data bus exception error	
820	0008	System call exception error	
820	0009	Break exception error	
820	000A	Illegal command exception error	
820	000B	Potential sensor exception error	
820	000C	Overflow exception error	
820	000D	UTLB miss exception error	
820	0010	Allocation 0 error	
820	0011	Allocation 1 error	
820	0012	Allocation 2 error	
820	0013	Allocation 3 error	
820	0014	Allocation 4 error	
820	0015	Allocation 5 error	
820	00FF	Non-initialization allocation error	• CPU defective • Local bus defective • Controller board defective
820	0601	Read address exception error	• CPU device error • Controller board defective
820	0602	Write address exception error	
820	0605	System call exception error	
820	0606	Break point exception error	
820	0607	Illegal command exception error	
820	060A	Allocation 0 mask exception error	• CPU device error • ASIC device error
820	060B	Allocation 1 mask exception error	

820	060C	Allocation 2 mask exception error	• Controller board defective
820	060D	Allocation 3 mask exception error	
820	060E	Allocation 4 mask exception error	
820	0610	CPU timer 2 allocation set error	• CPU device error • Controller board defective
820	0612	ASIC allocation error	• ASIC device error • Controller board defective • Peripheral device defective
820	06FF	CPU master clock error	• CPU device error • Error in CPU initialization data (ASIC error) • Controller board defective
820	0702	Command cache error	• CPU cache defective • Controller board defective • Memory error (insufficient speed)
820	0709	Data cache error	• CPU device error • Boot mode setting for CPU error • Controller defective • Insufficient memory
820	070A	Data cache clear error	
820	0801	TLB virtual address error	• CPU device defective (controller board defective)
820	0804	TLB global error	
820	0807	UTLB miss error	
820	0808	TLB read miss error	
820	0809	TLB write miss error	
820	080A	TLB mode file error	
820	4002	Single-precision calculation error	• CPU error (controller board defective)
820	4003	Double-precision calculation error	
820	4004	Exception error	

820	4005	Exception mask error	
822	3003	HDD timeout	• HDD defective • HDD connector disconnected, defective • ASIC device error (controller board defective)
822	3004	Self-diagnostic command error	• HDD defective
823	6101	MAC address SUM error	• NIB (PHY) board defective • Controller board defective
823	6104	PHY chip ID illegal	
823	6105	PHY loopback error	
824	1401	NVRAM verify error	• NVRAM defective
826	1501	Clock error	• Optional NVRAM defective
826	15FF	RTC non-detection error	• Incompatible NVRAM installed • NVRAM battery defective
826	0201	Resident memory verify error	• Memory on controller board defective • RAM DIMM defective
828	0101	Boost trap code (CODE) error	• Software storage error (re-install software) • Controller board defective
828	0104	ROM FS error	• ROM device error
828	0105	Forgery prevention error	• Forgery prevention chip defective • Forgery prevention chip error • Replace the controller, ROM, or RAM DIMM
829	0301	Option memory 0 verify error	• Controller board internal memory error • RAM DIMM defective
829	0302	Option memory 0 configuration information error	

870	B	Address book data error	
		The address book in the hard disk is accessed. An error is detected in the address book data; address book data is not read; or data is not written into the address book. NOTE: To recover from the error, do any of the following countermeasures: Format the address book by using SP5-832-008 (all data in the address book–including the user codes and counters–is initialized) Initialize the user data by using SP5-832-006 and -007 (the user codes and counters are recovered when the main switch is turned on). Replace the hard disk (the user codes and counters are recovered when the main switch is turned on).	• Data corruption • Defective hard disk • Defective software

920	D	Printer error	
		The printer program cannot be continued.	• Defective hardware • Data corruption • Defective software

925	D	Net file error	
		The management file for net files is corrupted; net files are not normally read. Netfiles: Jobs to be printed from the document server using a PC and the DeskTopBinder software	• Defective hardware • Data corruption • Defective software

992	C	Other system SCs	
		The controller received an unknown SC code from the engine.	• Contact your product specialist.

993	D	Network error	
		The ASIC program of GW controller cannot be continued.	• Defective ASIC • Defective GW controller

Other Problems

Blown Fuse Conditions

Fuse	Rating		Symptom at Power On
	115 V	210~230V	
FU1	2A/125V	6.3A/250V	Anti-condensation heater does not operate.
FU101	12A/125V	6.3A/250V	No response.
FU103	6.3A/125V	6.3A/250V	SC510 is displayed.
FU104	6.3A/125V	6.3A/250V	Nothing displayed on LCD.
FU105	6.3A/125V	6.3A/250V	"Door Open" is displayed.
FU107	6.3A/125V	6.3A/250V	SC121 is displayed.
FU108	6.3A/125V	6.3A/250V	Finisher does not work.
FU109	6.3A/125V	6.3A/250V	"Door Open" is displayed.
FU110	6.3A/125V	6.3A/250V	SC510 is displayed.
FU111	6.3A/125V	6.3A/250V	Nothing is displayed on LCD.

Common Problems

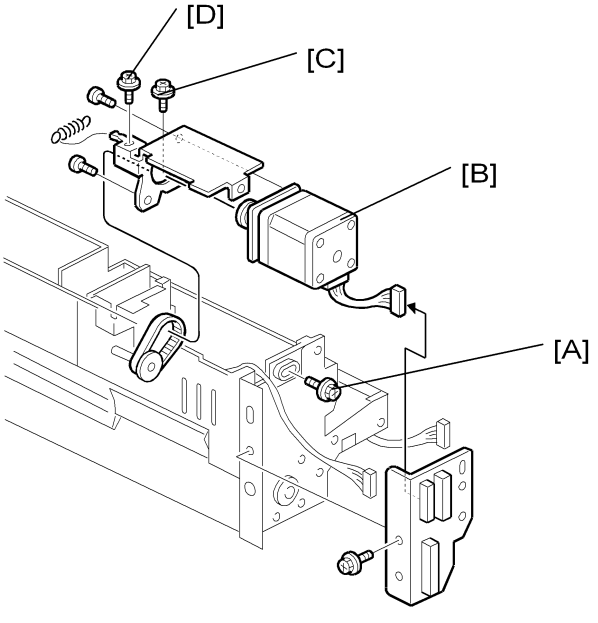
Problem	Check	Inspect, Clean, Replace
Dirty Copies	Fusing Unit	Pressure roller
Jam – Fusing Unit	Fusing Unit	Hot roller
Jam – Fusing Unit	Fusing Unit	Hot roller strippers
Lines (black or white)	Around the Drum	Cleaning blade, cleaning brush
Misfeed – Fusing Unit	Fusing Unit	Hot roller
Offset	Fusing Unit	Hot roller
Poor separation	Transfer Belt Unit	Transfer belt, transfer belt cleaning blade

SC300 ~ SC306	Around the Drum	Charge corona wire, charge corona grid, charge corona wire cleaner.
Toner on transfer belt	Transfer Belt Unit	Transfer belt, transfer belt cleaning blade
Wrinkling	Fusing Unit	Pressure roller

Frequent Paper Jams

If there are frequent paper jams, check SP7504 in section "5. Service Tables". If these locations have frequent jams, do the procedures described below.

Symptom 1: Jams with noise from the paper feed unit



B246T905

1. **Remove the paper feed unit.**
2. **Loosen screw [A].**
3. **Push the motor [B] toward the tray side, then tighten the screw [A].**
4. **Loosen screws [C] and [D], let the spring move the unit to the correct position, then tighten the screws.**

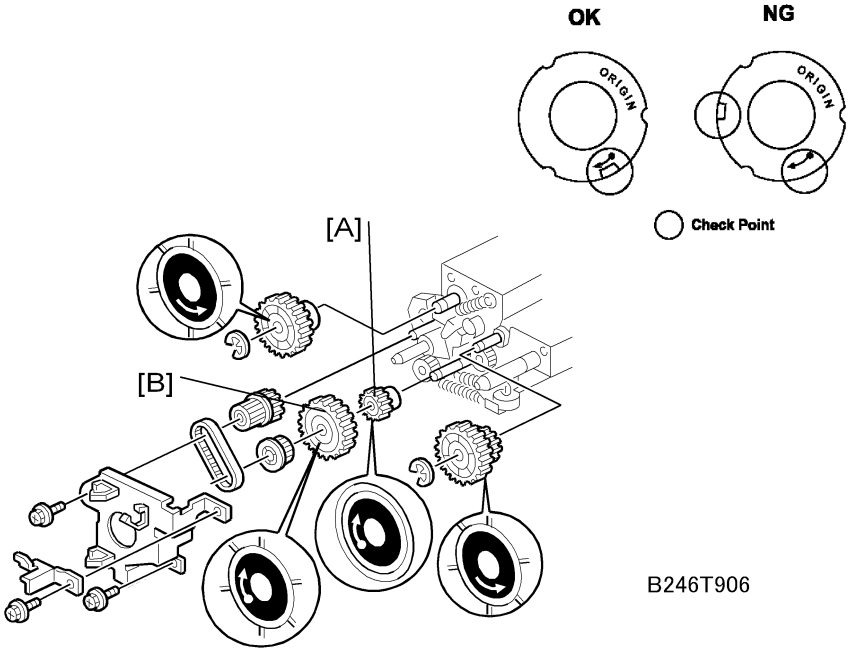
Symptom 2: Other

1. **Use SP7504 to check the jam counts and find which SPs have high counts.**

2. **From the table and illustration below, find which gears must be replaced.**
   Example: For tray 1, if SP7504-012 is high, replace gear A, or if SP7504-008 is high, replace gear B.

Tray	SP7504 12	SP7504 8	SP7504 9	SP7504 10	SP7504 11
Tray 1	Gear [A]	Gear [B]			
Tray 2		Gear [A]	Gear [B]		
Tray 3			Gear [A]	Gear [B]	
Tray 4				Gear [A]	Gear [B]

3. **Clean the shafts and replace the necessary gears.**
4. **Replace a gear if its cutout and arrow are not in the same position.**



5. **When you replace Gear [A] or Gear [B], be sure to put the metal face on the outer side, and the arrow must be in view.**
6. **If a replacement gear is not available, do this as a temporary procedure:**
   - Remove the paper feed unit.
   - Remove the gear.
   - Clean the gear shaft and inside the gear.
   - Attach the gear.

- Install the paper feed unit.

5. Service Tables

Service Program Mode

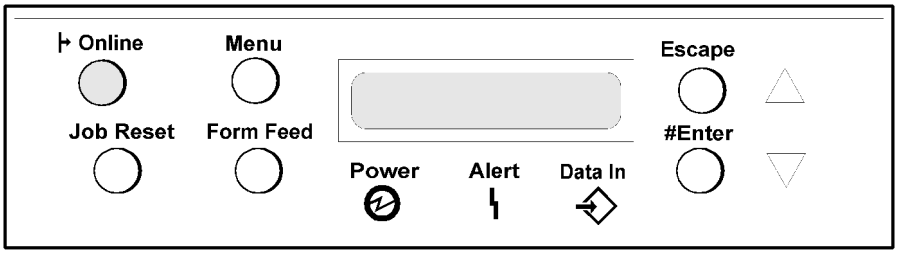
General Notes

The service program (SP) mode is used to check electrical data, change modes, and adjust values.

⚠CAUTION

- Never turn off the power switch when the power LED is lit or flashing. To avoid damaging the hard disk or memory, always check the operation panel LED to confirm that the power LED is not flashing before your turn off the machine.

Entering and Leaving the Service Program Mode



G148S901

1. **To set the printer in the service mode:**

   If the printer is off, press and hold down [Online] and [Escape] then switch the printer on. Release the buttons when you see "1. Service" in the LCD.

   -or-

   If the printer is on, press and hold down △ and ▽ for over 5 seconds and release.

   Press[#Enter]. You will see "1. Service" in the LCD. The printer is in the service mode.

2. **Press △ or ▽ to display the menu titles.**

1.Service	Controller service settings.
2.Engine	Engine service settings.
3.End	Leave the SP mode and return to normal operation.

1. **When the item that you want to open is displayed in the LCD, press[#Enter].**

2. **Press △ or ▽ to display all the menus on the same level, then press [#Enter] to open the submenus.**
3. **Push [Escape] to the highest level, or push △ or ▽ to display "3.End" then press [#Enter].**

Printer Controller Service Mode

Controller Service Mode Menus

The controller service mode menu (1.Service) is the first item on the menu.

Item	What It Does
Bit Switch	Adjusts the bit switch settings.
Clear Setting	Initializes the settings for the "System" menu of the user mode.
Print Summary	Prints a summary of all the controller settings.
Display Version	Displays the current version number of the controller firmware.

Bit Switch Programming

1. **Enter the SP mode, select "1.Service", and press [#Enter] twice**

```
SP1001-001
Bit Switch 1
```

2. **Press △ or ▽ to select the bit switch setting to change.**

```
SP1001-002
Bit Switch 2 Set
```

3. **Press [#Enter].**

```
Sw#2 00000000
bit0 _
```

4. **Select "0" or "1" for each position. The leftmost digit is 7 and the rightmost is 0.**
   - Press △ or ▽ to move the cursor to the right or left to position it at the digit that you want to change.
   - Press [#Enter] then press △ or ▽ to toggle the digit between "1" and "0".

- With the digit for entry displayed on the second line, press [#Enter]. The selected digit is entered into the position above.
- Repeat this procedure to set all the digits.

5. **When you are finished, press [Escape] to return to the previous level. The new settings for the bit switch are now stored.**

Printer Controller Bit Switch Settings

Position:	7	6	5	4	3	2	1	0
Display:	0	0	0	0	0	0	0	0

Bit Switch 1	Default	
0	All "0"	Do not change these settings.
1		
2		
3		
4		
5		
6		
7		
8		

Printer Engine Service Mode

The Printer Engine Service mode is used to check electrical data, change modes, and adjust values.

Here is a quick summary of how to enter and use the Printer Engine Service mode to change the settings listed in the Service Program Mode Tables.

1. **Press △ and ▽ together, hold down for over 5 seconds, release and then press [#Enter].**
2. **Press △ or ▽ to display "2.Engine".**
3. **Press [#Enter].**
4. **Press △ or ▽ to display the SP code groups.**

1. Feed	SP1000
2. Drum	SP2000
3. Process	SP3000
5. Mode	SP5000
6. Periphs	SP6000
7. Data Log	SP7000
8. Data Log2	SP8000
9. Etc.	SP9000

1. **Press △ or ▽ to select the group, and then press [#Enter].**

Note

- The 2-line display is rotational. If you press △ with "1.Feed" displayed, the display will jump to "9. Etc.", the last selection. Similarly, if you press △ with "9.Etc" displayed, the display will jump to "1.Feed", the first selection.

2. **While referring to the Service Program Mode Tables, press △ or ▽ to select the SP that you want to change, and then press [#Enter].**

Note

- If you see > or >> to the right of a selection name, this means a menu sublevel exists.

3. **Follow one of the procedures below to change a setting.**

To change a single-digit number setting:

- Press [#Enter]. A number replaces the value at the cursor.
- Press △ or ▽ to increase or decrease the number.
- Press [#Enter]. The number selected on the 2nd line replaces the number above.
- Press [Escape] to return to the previous level.

To change a multiple-digit number setting

- Press △ or ▽ to move the cursor to the digit that you want to change.
- Press [#Enter]. A number replaces the value at the cursor.
- Press △ or ▽ to increase or decrease the number.
- Press [#Enter]. The number selected on the 2nd line replaces the number above.
- Repeat the procedure to enter numbers for the other digits.
- Press #(Escape) to return to the previous level.

To select an item from a list

- The current selection is marked with a large asterisk.
- Press △ or ▽ to display on the 2nd line the item to select.
- When the item that you want to select is displayed on the second line, press [#Enter]. The selected item is marked with an asterisk.
- Press [Escape] to return to the previous level.

Leaving the SP Mode

1. **When you are finished with SP selection, press [Escape] until you see "2.Engine".**
2. **Press ▽ to display "3.End".**
3. **Press [#Enter] to display "Offline".**
4. **Press [Online] to set the printer online.**

Note

- Turning the printer power off and on leaves the SP mode, and returns the printer online in normal operation mode.

SP Mode Print (SMC Print)

1. **To enter the SP mode, push and hold down △▽ for 5 sec. then push [#Enter].**

```
<Engine>
1.Feed
```

2. **Press △ or ▽ until you see "5.Mode".**

```
<Engine>
5.Mode
```

3. **Press [#Enter].**

```
SP5024
mm/inch Display
```

4. **Press △ to select SP5990.**

```
SP5990 >>
SP Print Mode
```

5. **Press [#Enter].**

SP5990-001 All (Data List)

6. **Press △ or ▽ to select the report that you want to print.**

SP	Title	What It Prints	Approx. Length
001	All (Data List)	Prints all reports	14 pp.
002	SP (Mode Data List)	Prints all SP codes settings for SP Groups 1 to 5 with default and current settings.	3 pp.
004	Logging Data	Prints all SP Code settings for SP7000, SP800 only.	4 pp.
005	Diagnostic Report	Prints the Self-Diagnosis report (lists all firmware modules by name and version number).	1 pp.
006	Non-Default	Prints a list of commonly adjusted SP codes.	1 pp.
007	NIB Summary	Prints current summary of all network settings.	5 pp.

7. **For example, to print the SP Mode Data List, press △ or ▽ to display "SP5990-002" and push [#Enter].**

<SP Mode Data L execute?

8. **Press [#Enter].**

<SP Mode Data L Processing

The report prints.

9. **Repeat from Step 6 to select and print any other report.**

Memory Clear: SP5801

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

SP5811-1:	Machine serial number
SP5907:	Plug & Play Brand Name and Production Name Setting

Important

- This procedure restores all SP code settings to their factory default settings.
- Before clearing all settings in memory with SP5801, print an SMC report with SP5990. You may need this for reference to restore previously adjusted settings.

1. Push △ and ▽ together, hold down for over 5 seconds, release and then press [#Enter].
2. Press △ or ▽ to display "2.Engine".
3. Press [#Enter].
4. Press △ or ▽ to display "5.Mode" then press [#Enter].
5. Press △ or ▽ to display "SP5801/Memory Clear" then press [#Enter].
6. When "Clear All" is displayed, press [#Enter], press [#Enter] again to execute.

```
<All>
result=OK
```

Here is a summary of all the settings.

No.	Item	What It Initializes
001	All	All items in this table
002	Engine Clear	All settings set for engine and processing
003	SCS	System Control Service (ROM update information)
004	IMH	Image Memory Handler
005	MCS	Initializes the automatic delete time setting for stored documents. (MCS: Memory Control Service)
008	PRT	Printer defaults
010	WebService	Netfile (NFA) management files, thumbnails, the Job login ID.
011	NCS	Network Control Service. IP addresses, SmartNetMonitor for Admin., Web Status Monitor settings, TELNET settings
014	DCS Setting	DCS (Delivery Control Service) settings
015	Clean UCS Settings	User Information Control Service) settings
016	MIRS Settings	Machine Information Report Service settings
017	CCS	Certification and Charge-control Service settings.

No.	Item	What It Initializes
018	SRM	System Resource Management settings
019	LCS Setting	Log Count Service settings

1. **After clearing all settings, make sure that you perform the following settings:**
   - Do the laser beam pitch adjustment (SP2109). See Section 3 "Laser Beam Pitch Adjustment".
   - Referring to the SMC Report, re-enter any values which had been changed from their factory settings.
   - Execute SP3001-2 (ID Sensor Initial Setting).
   - Set SP 1902 001 (amount of fusing unit web used so far) to the most recent setting (see the SMC list).

Test Pattern Printing

Test pattern printing is a two-step operation. First, you must do SP2902 to select the pattern that you want to print. When you select any pattern other than "0:None" under SP2902, this sets the printer in the Test Pattern Print mode. Second, you must do SP5990 005 to print the pattern.

- You can select any selection under SP5990 to print the selected pattern. However, SP5990 005 (Diagnostic Report) is recommended because it prints only one page. If you select "001", for example, several copies of the same pattern may print.
- The printer will remain in the Test Pattern Print mode until you leave the SP mode or the printer is cycled off and on. (If you leave and re-enter SP mode and turn the printer power off/on, this automatically reselects "0:None" for SP2902.)
- The normal SMC report lists that are done with SP5990 will not print until the printer has been released from the Test Pattern Print mode.

Selecting the Test Pattern

Do SP2902 to select the test pattern that you want to print.

1. **To enter the SP mode, press △▽ together (5s), release, then press [#Enter].**

   System Ver.1.00
   1. Service

2. **Press ▽.**

   System Ver. 1.00
   2. Engine

3. **Press [#Enter].**

<Engine>
1. Feed

4. **Press ▽.**

<Engine>
2. Drum

5. **Press [#Enter].**

SP2001>>
Charge Roll Bi

6. **Press ▽ to display "Test T Pattern"**

SP2902
Print T Pattern

7. **Press [#Enter].**

<Print Pattern>
*0:None

Note

- The asterisk (*) denotes the current selection.

8. **Press ▽ to display the name of the pattern that you want to print.**

<Print Pattern>
5:Grid Patttern

9. **Press [#Enter] to mark the selection with an asterisk.**

<Print Pattern>
*5:Grid Pattern

10. **Press [Escape] twice.**

<Engine>
2. Drum

The printer is now in the Test Pattern Print mode. To print the pattern, you must do SP5990.

Printing the Test Pattern

Do SP5990 to print the test pattern.

1. **After selecting the test pattern as described above, press △▽ to display "5. Mode".**

   <Engine>
   5. Mode

2. **Push [#Enter].**

   SP5024
   mm/inch Display

3. **Push △ once.**

   SP5990>>
   Print Mode

4. **Push [#Enter].**

   SP5990-001
   All Data List

5. **Push △▽ to select "Diagnostic Report".**

   SP5990-005
   Diagnostic Repo

6. **Push [#Enter].**

   Diagnostic Repo
   execute?

7. **Push [#Enter] to print the pattern.**

   Diagnostic Repor
   Processing...

8. **You can repeat this procedure for as many test prints as you need.**

Note

- After you enter a Print Test Pattern number, the test pattern prints, not the SMC Report. The machine will remain in this mode until you leave the Service Mode, or switch the printer off and on.
- After leaving the re-entering the Service Mode, or after turning the machine power off and on, the SMC Report feature is restored to normal operation.

These patterns can be selected for SP2902-003

No.	Test Pattern	
0	[*None]	None
1	[1 Dot Patter]	Alternating Dot Pattern (1-dot)
2	[2 Dot Patter]	Alternating Dot Pattern (2-dot)
3	[4 Dot Patter]	Alternating Dot Pattern (4-dot)
4	[1024 Dot Patter]	Alternating Dot Pattern (1024-dot)
5	[1 Dot Grid 0]	Grid Pattern (1-dot): 0ch
6	[1 Dot Grid 1]	Grid Pattern (1-dot): 1ch
7	[1 Dot Grid 2]	Grid Pattern (1-dot): 2ch
8	[1 Dot Grid 3]	Grid Pattern (1-dot): 3ch
9	[1 Dot Patter 0]	Grid Pattern (1-dot pair)
10	[Checker Flag]	Checkered Flag Pattern
11	[2 Dot H Line]	Horizontal Line (2-dot)
12	[2 Dot V Line]	Vertical Line (2-dot)
13	[1 Dot H Line]	Horizontal Line (1-dot)
14	[1 Dot V Line]	Vertical Line (1-dot)
15	[Cros Stitch]	Cross Stitch (Horizontal)
16	[Cross Stitch]	Cross Stitch (Vertical)
17	[Argyle]	Argyle Pattern
18	[Trim Area]	Trimming Area
19	[Full Dot]	Full Dot Pattern
20	[Black Band V]	Black Band (Vertical)
21	[Black Band H]	Black Band (Horizontal)
22	[Stair]	Staircase Pattern
23	[Blank Image]	Blank Image
24	[1 Dot Grid 0]	Grid Pattern (1-dot): 0ch (with external data)

No.	Test Pattern	
25	[Trim Area Out]	Trimming Area (with external data)
26	[Argyle Outs]	Argyle Pattern (with external data)
27	[Outside Data]	Outside Data

Updating the Firmware

SD cards are used to update the software and to back up important data. Here is a list of the firmware modules that can be updated or restored from an SD card:

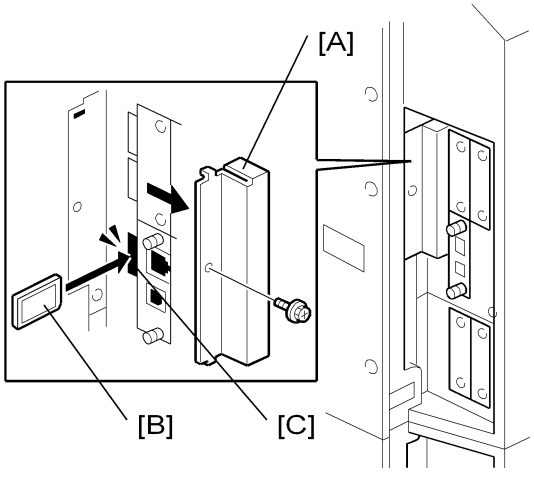
- GW controller software
- BCU software
- LCDC (operation panel) software
- Network Sys NIC (DESS/EU) software
- Web Sys (Web Image Monitor)
- NFA (Net File) software
- Printer application software

Here are some important points to remember when you use SD cards.

- Never connect or remove an SD card with the machine power turned on.
- Never turn the power off while the machine is downloading data from an SD card.
- SD cards are precision items. Store, handle, and use them carefully.
- Never store SD cards in a location where they are exposed to high temperature, high humidity, or direct sunlight.
- Never bend an SD card, scratch it, or expose it to strong vibration.
- Before uploading data to an SD card, always confirm that its write-protect switch is off.

Doing the Software Update Procedure

1. **An SD card with the software is necessary for this procedure.**
2. **Turn the main switch off.**



B246S902

3. **Remove the SD card slot cover [A].**
4. **Hold the SD card [B] (the surface with printing must be away from the front of the machine), and install the SD card in Slot C3 [C].**
5. **Turn on the machine.**

RICOH Aficio SP 9100DN

Wait about 60 sec. for the Power and Alert LEDs to light and for the first module selection to appear.

Engine

Reviewing the Module Statuses

When the machine is in the firmware update mode, follow this procedure to review the status of the firmware modules.

Engine

1. **Push [Menu] to display the name of the first module.**

ROM : G1485127 NEW: G1485127

- "ROM" is the name of the module in the machine.
- "NEW" is the name of the module on the SD card.

2. **Push [Menu] again to display the version numbers of the modules.**

```
ROM : 0.18.16
NEW : 0.18.6
```

- "ROM" is the version number of the module in the machine.
- "NEW" is the version number of the module on the SD card.
- If the "NEW" version number is higher than the "ROM" version number, the module requires updating.

3. **Push [Menu] to return to the previous level.**

```
Engine
```

4. **Push ▽ to display the name of the next module, then push the [Menu] key again to review the module name and version number.**
5. **Repeat this procedure to review the version numbers of the modules.**

Note

- If all the modules are current and do not require updating, press ▽ until you see "Exit", then press [#Enter]. The machine returns to standby mode. Remove the SD card from Slot 3. You do not need to turn the machine power off/on.

How to Update a Module

Follow this procedure to update a module.

Important

- More than one module can be selected for update.

1. **Set the machine in the firmware update mode. (See "Setting the Machine in the Firmware Update Mode" above.)**

```
Engine
```

2. **Push △ or ▽ to select the module that you want to update.**

```
Engine
```

3. **Push [#Enter]. An asterisk displays below the name of the module to indicate that it is selected for update.**

```
Engine
*
```

Important

- Pushing [#Enter] and [Escape] alternately toggles the asterisk on and off.

4. **After selecting the modules for updating, push ▽ to display "Update Data".**

```
Update Data
*
```

5. **Push [#Enter] to start the update of the selected modules.**

```
Update Data
_ _ _ _ _ _ _ _ _ _ _ _
```

Asterisks replace the underscores in the progress line as the data updates.

```
Update Data
* * * _ _ _ _ _ _ _ _ _
```

Important

- **The "Update Data" display may repeat several times. Do not switch the machine off until the message prompts you to turn the machine off. Updating all modules requires about 7 minutes.**

When the update is completed, you will see:

```
Updated
Power Off On
```

6. **Switch the machine off.**
7. **If you are finished, remove the SD card from the slot and turn the machine on.**

Printing the Self-Diagnosis Report

The Self-Diagnosis Report, printed with SP5990 (SP Print Mode) lists the current names and version numbers of the update modules.

1. **To enter the SP mode, push and hold down △▽ for 5 sec. then push [#Enter].**
2. **Push ▽ to display "2. Engine" then push [#Enter].**
3. **Push ▽ to display "5. Mode" then push [#Enter].**

```
SP5024
mm/inch Display
```

4. **Push △ once to select SP5990 then push [#Enter].**

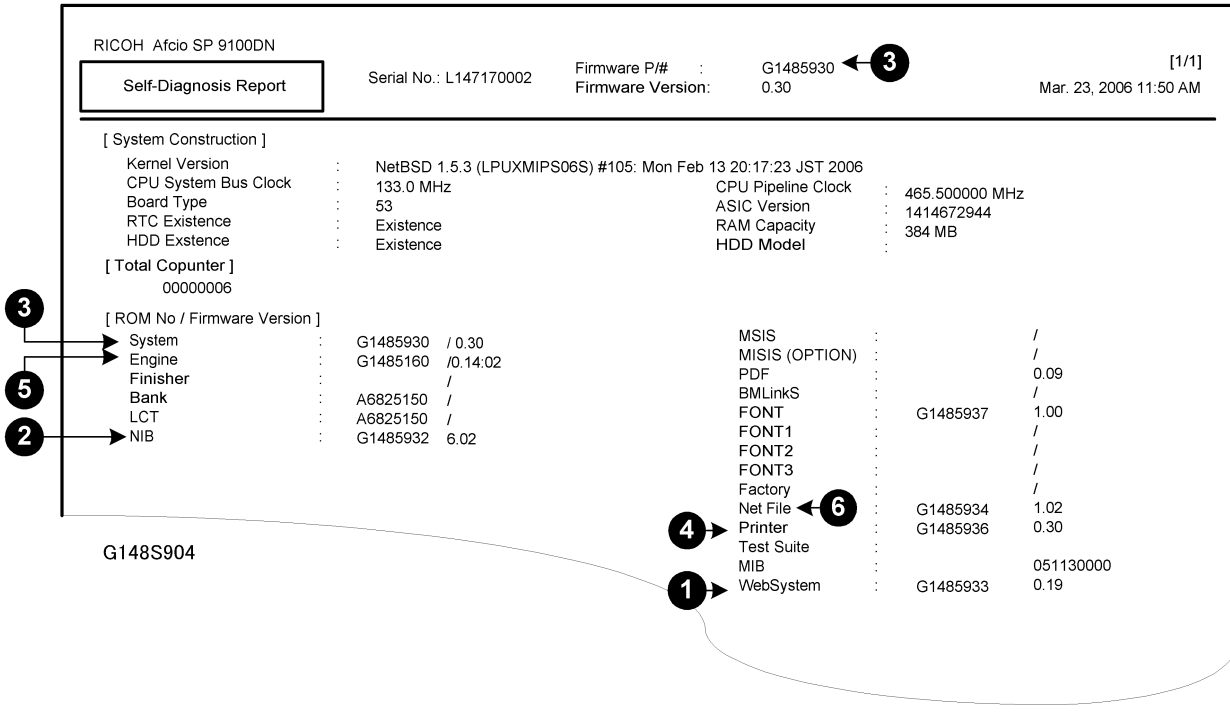
```
SP5990-001
All (Data List)
```

5. **Push ▽ three times to select SP5990-005 then push [#Enter].**

<Diagnostic Repo
execute?

6. **Push [#Enter] to print the report.**

The firmware module names and version numbers are listed in the report.



Important

- **The actual numbers that appear in your printout will be different from those in the sample above.**

If an error occurs during a download, an error message will appear. The error code consists of the letter "E" and a number ("E20", for example).

Error Message Table

No.	meaning	Solution
20	Cannot map logical address	Make sure the SD card is installed correctly, or use a different SD card.
21	Cannot access memory	HDD connection not correct, or replace hard disk.
22	Cannot decompress compressed data	The ROM data on the SD card is not correct, or data is damaged.

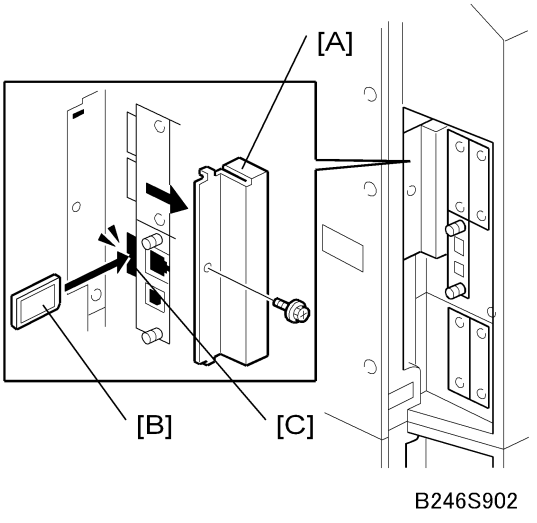
23	Error occurred when ROM update program started	Controller program defective. If the second attempt fails, replace the controller board.
24	SD card access error	Make sure the SD card is installed correctly, or use a different SD card.
30	No HDD available for stamp data download	HDD connection not correct or replace hard disks.
31	Data incorrect for continuous download	Install the SD card with the remaining data necessary for the download, then re-start the procedure.
32	Data incorrect after download interrupted	Do the recovery procedure for the module, then repeat the installation procedure.
33	Incorrect SD card version	The ROM data on the SD card is not correct, or data is damaged.
34	Module mismatch - Correct module is not on the SD card	The data on the SD is not correct. Get 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 not correct. The data on the SD card is for a different machine. Get the correct data then install again.
36	Cannot write module – Cause other than E34, E35	SD update data is not correct. The data on the SD card is for a different machine. Get the correct data then install again.
40	Engine module download failed	Replace the data for the module on the SD card and try again, or replace the BCU board.
42	Operation panel module download failed	Replace the data for the module on the SD card and try again, or replace the LCDC.
43	Stamp data module download failed	Replace the data for the module on the SD card and try again, or replace the hard disk.
44	Controller module download failed	Replace the data for the module on the SD card and tray again, or replace the controller board.
50	Electronic confirmation check failed	SD update data is not correct. The data on the SD card is for a different machine. Get the correct data then install again.

Uploading/Downloading NVRAM Data

The content of the NVRAM can be uploaded to and downloaded from an SD card.

Uploading NVRAM Data

1. **Turn off the power switch.**



B246S902

2. **Remove the SD card cover [A].**
3. **Insert the SD card [B] into SD card slot C3.**
4. **Turn on the machine.**
5. **To enter the SP mode, press △▽ together (5s), release, then press [#Enter].**
6. **Select SP5824.**

```
SP5824
NVRAMUpload
```

7. **Push [#Enter].**
8. **When the message prompts you to execute, push [#Enter].**

```
<NVRAMUpload>
Processing
```

```
<NVRAMUpload>
result = OK
```

9. **Remove the SD card.**
10. **Switch the machine off and on.**

Downloading NVRAM Data

The following data are not downloaded from the SD card:

- C/O, P/O Counter (SP7-006-** C/O, P/O Count Display)
- Duplex, A3/DLT/Over 420 mm.

1. **Turn off the machine.**
2. **Remove the SD card cover [A].**
3. **Plug the SD card [B] into SD card slot C3.**
4. **Turn on the machine.**
5. **To enter the SP mode, press △▽ together (5s), release, then press [#Enter].**
6. **Select SP5824.**

   SP5825
   NVRAMDownload

7. **Push [#Enter].**
8. **When the message prompts you to execute, push [#Enter].**

   <NVRAMDownload>
   Processing

   <NVRAMDownload>
   result = OK

9. **Remove the SD card.**
10. **Switch the machine off and on.**

Note

- If the SD card is not installed properly, a message will tell you that downloading cannot proceed.
- If the correct SD card for the NVRAM data is not inserted in the SD card slot, after you press [#Enter], a message will tell you that downloading cannot proceed.

Service Program Mode Tables

Service Table Key

Notation	What it means
[range/step]	Example: [–9~+9/0.1 mm] The default setting can be adjusted in 0.1mm steps in the range ±9.
Italics	Comments added for reference.
DFU	Denotes “Design or Factory Use”. Do not change this value.
Japan Only	The feature or item is for Japan only. Do not change this value.
SEF	Short Edge Feed
LEF	Long Edge Feed
NIA	No Information Available (May 2006)

Important

- **In the first line of each table in this section, you will see the name of the SP code as it appears on the screen (enclosed by square brackets) followed by the long title. For example "[Side-to-Side Reg] Side-to-Side Registsration".**
- **If you see any refererences to "Bypass" or "Bypass Tray" in these SP tables or on the machine display, please ignore them. This machine does not have a bypass tray.**

Service Tables

SP1xxx Feed

1001	[Leading Edge Reg] Leading Edge Registration
	Adjusts the printing leading edge registration using the trimming area pattern (SP2902-003, No.18). [–9~+9/0.1mm] Specification: 3±2mm

1002	[Side-to-Side Reg] Side-to-Side Registration	
	Adjusts printing side-to-side registration for each feed station, using test pattern (SP2902-003, No.18). These SP's should be adjusted after replacing the laser synchronization detector or the laser optical unit.	
001	Tray-1	[–9~+9/0.1 mm]
002	Tray-2	
003	Tray-3	
004	Tray-4 (Japan Only)	
005	By-pass Tray (**Not Used**)	
006	LCT	
007	Duplex Tray	

1003	[Regis Buc] Registration Buckle Adjustment
	Adjusts the registration motor timing. This timing determines the amount of paper buckle at registration. (A higher setting causes more buckling.) [–9~+9/1 mm]
001	Tray
002	Duplex Tray
003	LCT

1008	[Duplex Fence Adj] Duplex Fence Adjustment
	Adjusts the distance between front and rear fences. A smaller value shortens the distance. If the fences are too far apart, skewing may occur in the duplex tray. If the fences are too close, the paper may be creased in the duplex unit. [–5~+5/0.1 mm]

1103	[Idling Time] Hot Roller Idling Time
	This setting controls the length of time that the hot roller turns freely with no paper in the fusing unit. This increases the temperature of the hot roller.

	Adjusts the fusing idling time: [0~900/1 s] Increase this value when fusing on the 1st and 2nd copies is not completed due to low room temperature.

1104	[Fusing Temperatu] Fusing Temperature Control
	Selects the fusing temperature control mode. [0~1/1] 0: On/Off control 1: Phase control If power supply to the machine is unstable, select Phase Control. The machine must be switched off and on after this setting is changed for the new setting to take effect. Phase control could interfere with radio or TV reception.

1105	[Fusing Tem Adju] Fusing Temperature Adjustment	
	Adjusts the fusing temperature of the hot roller for plain paper, OHP or thick paper.	
001	Normal Time (Center Thermistor)	Fusing temperature during the ready condition and during printing. [150~230/1 degree C]
002	Normal Time (End Thermistors)	Fusing temperature during the ready condition [180~205/1 degree C]
003	OHP (Center Thermistor)	Fusing temperature during printing: [150~230/1 degree C]
004	OHP (End Thermistor)	Fusing temperature during printing: [180~205/1 degree C]
005	Thick Paper (Center Thermistor)	Fusing temperature during printing: [180~205/1 degree C]
006	Thick Paper (End Thermistors)	Fusing temperature during printing: [180~205/1 degree C]

1106	[Fusing Temp Disp] Fusing Temperature Display

001	Center Temperature	Shows the temperature of the hot roller detected by the thermistor at the center of the hot roller.
002	End Temperature	Shows the temperature of the hot roller detected by the thermistors at the ends of the hot roller.

1107	Start Fusing Temperature Adjustment	
	This SP allows you to set when to start the fusing temperature adjustment for the center and end heating lamps.	
001	Center Lamp Temperature	[180~205/205/1 deg C]
002	End Lamp Temperature	
003	Center Lamp Actual Time	[0~120/60/1 sec.]
004	End Lamp Actual Time	
005	Center Lamp Temp (Small Size Paper)	[190~205/205/1 deg C]
006	End Lamp Actual Time (Small Size Paper)	[0~120/60/1 sec.]
007	Center Lamp Temp (Thick Paper)	[190~205/205/1 deg C]
008	End Lamp Actual Time (Thick Paper)	[0~120/60/1 sec.]

1112	[Process Control] Hot Roller Temperature for Process Control
	Sets the temperature of the hot roller for auto process control to start. [70°~150°/1°C] DFU

1159	[Fusing Jam SC Set]
	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.

1901	[CPM Down Setting] CPM Down for Special Paper
	Selects the speed (copies per minute) for copying on thick paper or tab sheets. A slower speed makes fusing better. This setting has no effect on fusing temperature.

001	Thick Paper	[0~4/1 step] 0: 25 cpm 1: 35 cpm 2: 40 cpm 3: 45 cpm
002	Thick Paper (Tab Sheet)	[0~4/1 step] 0: 25 cpm 1: 35 cpm 2: 40 cpm 3: 45 cpm

1902	[Fusing Web Motor] Fusing Web Motor Control
001	Fusing Web Used Area Display/Setting
	Displays the percentage of the web consumption in 1% steps (0% ~ 100%). This setting must be reset to zero after the web is replaced. [0~120/1 %]
002	Fusing Web Motor Operation Interval
	Adjusts the interval of copy operation time (seconds) after which the web motor is driven. [5~50/1 s]
003	Fusing Web Motor Operation Time
	Adjusts the length of time that the web motor is driven. [1~40/0.1 s]
004	Web Near End Value
	Adjusts the timing of the web near end alert by changing the amount of web that has been used before the alert is triggered. [0~100/1 %]
005	Web Roll Coefficient
	Determines the coefficient of the web take-up time from cleaning toner from the roller while taking into consideration the take-up time for web buckle. DFU [10~20/1]

1903	Web Job End
001	Yes/No
	This determines whether the web motor is driven at the end of a job. [0~1/1] 0: Off 1: On Enable when too much paper dust is causing copies to blacken.
002	Job End Condition (Continuous PPC Time)
	At the end of a job, the web motor is driven if the job lasted longer than the value of this SP mode. Only valid if SP1903-001 is set to 'On'. [1~99/1s]
003	Job End Frequency
	If the web motor is driven at the end of a job, this SP determines how many times the web motor operation is executed. [1~5/1]

1906	[Temperature Humidity Se] Temperature/Humidity Sensor **DFU**
001	Temperature Sensor
002	Humidity Sensor

1907	Pre-Fusing Idling On/Off	
	Pre-fusing idling: The hot roller turns freely to increase its temperature before thick paper or OHP goes through the fusing unit. [0~1/1/1] 0: Pre-fusing idling is not done. 1: The fusing motor turns the hot roller with no paper in the fusing unit. This ensures that the hot roller reaches the correct temperature. It is only done for thick paper or OHP. In this mode, the paper stops at the registration roller, then roller resumes its rotation after the hot roller reaches the correct temperature.	
001	Thick Mode (1:ON/0:OFF)	Thick Paper Normal Size
002	Thick Mode: Small Paper Size	Thick Paper Small Size

003	Normal Mode (1:ON/0:OFF)	Normal Paper Normal Size
004	Normal Mode: Small Paper Size	Normal Paper Small Size

1908	[Low Temp Idling] **DFU**
1909	[Idling Low Power **DFU**
1910	[Idling Small Paper] **DFU**

SP2xxx Drum

2001	[Charge Roll Bi] Charge Roller Bias Adjustment
001	Applied Voltage for Image Processing
	Adjusts the voltage applied to the grid plate during copying when auto process control is off. [–600~–1300/ 10 V] After replacing the charge corona wire or the drum, reset to the factory default setting.
002	ID Sensor Pattern: Adjustment of Applied Voltage
	Adjusts the voltage applied to the grid plate when the ID sensor pattern is created. [–600~–1300/10 V]
003	Setting for Total Bias Current
	Adjusts the total current applied to the charge corona wire. DFU [–900~–1500/10 µA]
004	Setting for Total Bias Current of Grid
	Adjusts the voltage applied to the grid plate during copying when auto process control is on. [–600~–1300/10 µA] This voltage changes every time auto process control starts up (every time the machine is switched on).
005	Total Bias Grid Current: OHP Total
	Adjusts the voltage applied to the grid plate when OHP mode is selected. [–600~–1300/10 V] Use this if there is a copy quality problem when making OHP's.

006	Total Bias Grid: Photo Mode Total (**Not Used**)
	Adjusts the voltage applied to the grid plate when Photo mode is selected. **DFU** [–1400~ –2800/10 µA]

2101	[Printing Erase M] Printing Erase Margin	
	These settings adjust the erase margin for the leading, trailing, left, and right edges.	
001	Leading Edge	[0.0~9.0/0.1 mm], Specification: 3±2 mm
002	Trailing Edge	[0.0~9.0/0.1 mm], Specification: 3±2 mm
003	Left Edge	[0.0~9.0/0.1 mm], Specification: 2±1.5 mm
004	Right Edge	

2104	[Small Banding Re] Small Pitch Banding Reduction **DFU**
001	Reduction 1200 dpi
	Switches on/off the setting that corrects uneven images generated during 1200 dpi printing. [0~1/1] 1: On 0: Off Unevenness may appear in dot patterns or narrowly spaced horizontal lines, i.e. some areas may appear lighter or darker than others.
002	Reduction LD Ad
	Adjusts the amount of correction for uneven images generated during 1200 dpi printing. [–20~+10/1]
003	Reduction 1200 dpi
	Switches on/off the setting that corrects uneven images generated during 1200 dpi copying. [0~1/1] 1: On 0: Off
004	Reduction LD Ad
	Adjusts the amount of correction of uneven image generated during 1200 dpi copying.

	[–20~+10/1]

2110	[Test Mode dpi]
	Adjusts the pixel density. Required for design check, beam pitch adjustment for the test pattern, etc. DFU. [0~10/1]

2111	[FCI Shade Detect] 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 outputs in printer mode.	
001	Matrix Size (>600 dpi)	[0~128/1]
002	Threshold Value (>600 dpi)	[0~128/1]
003	Matrix Size (<400 dpi)	[0~128/1]
004	Threshold Value (<400 dpi)	[0~128/1]

2114	[Binary Edge Para] Binary Edge Processing Parameter	
	Allows setting a parameter for binary edge processing for the printer application with FCI switched off. The value for this SP is enabled only when the printer is initialized. In all other cases, the data registered in the software are enabled. This SP allows adjustment of image quality if the desired effect cannot be achieved with the default settings for edge processing. However, some settings could cause defective images on white paper.	
001	Leading Edge Pixel Level (1200 dpi)	[0~15/1]
002	Trailing Edge Pixel Level (1200 dpi)	[0~15/1]
003	Continuous Pixel Level (1200 dpi)	[0~15/1]
004	Independent Dot Pixel Level (1200 dpi)	[0~15/1]
005	Leading Edge Pixel Level (600 dpi)	[0~15/1]
006	Trailing Edge Pixel Level (600 dpi)	[0~15/1]
007	Continuous Pixel Level (600 dpi)	
008	Independent Dot Pixel Level (600 dpi)	

2115	[Beam Pitch Adjus] Main Scan Beam Pitch Adjustment	
	A label attached to the LD unit service part lists the correct settings. Refer to these settings when adjusting the beam pitch for LD0 to LD3.	
001	Pitch Adjustment Between LD0 and LD1	[0~999/1]
002	Pitch Adjustment Between LD0 and LD2	[0~999/1]
003	Pitch Adjustment Between LD0 and LD3	[0~999/1]

2201	[Dev. Bias Adjustm] Development Bias Adjustment
001	Dev. Bias (Image)
	Adjusts the development bias for copying when process control is off [-900 to –100/10 V] Adjust as a temporary measure to compensate for an aging drum until the old drum can be replaced.
002	ID Sensor Pattern
	Adjusts the development bias used to create the ID sensor pattern. DFU [[-900 to –100/10 V] This SP and SP2201-004 must be changed together by the same amount.
003	OHP
	Adjusts the development bias for copying with OHP sheets. [-900 to –100/10 V]
004	ID Sensor Pattern Dev. Potential
	Adjusts the development potential to create the ID sensor pattern. DFU [-380 to -140/10 V] This SP and SP2201-002 must be changed together by the same amount.
005	Vb Scale Voltage Setting
	Sets the Vb target development bias voltage (Vb). DFU [-900 to -100/10 V]

2207	[Forced Toner Sup] Forced Toner Supply

	Rotates the toner bottle to supply toner to the toner supply unit. Press Execute to force toner supply. 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.

2208	[Toner Supply Mod] Toner Supply Mode
	Selects the toner supply mode: Sensor Control or Image Pixel Count. [0~1/1] 0: Sensor Control 1: Pixel Count 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.

2209	[Toner Supply Rat] Toner Supply Rate
	Adjusts the toner supply rate. [50~995/5 mg per sec] Increasing this value reduces the time the toner supply clutch remains on. Use a lower value if the user tends to make many copies that have large areas of black.

2210	[ID Sensor Patter] ID Sensor Pattern Interval
	Adjusts the time interval between making ID sensor patterns onto the drum for Vsp/Vsg detection. [-~200/1] Reduce the interval for copies that contain a high proportion of black.

	[Vref Manual Sett] Vref Manual Setting
2220	Adjusts the TD sensor reference voltage (Vref) manually. [1.00~4.00/0.11 V] 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, do the following: • Check the value of SP2220 in both the machine containing the test unit and the machine that you are going to move it to.

	• Install the test development unit, then input the VREF for this unit into SP2220. • After the test, put back the old development unit, and change SP2220 back to the original value.

2223	[Vt Display]
	Displays the current TD sensor output voltage. [0~5.0 V]

2301	[Trans. Curr. Adj] Transfer Current Adjustment	
	Adjusts the current applied to the transfer belt during copying. Note: If this SP is too high, toner on the paper can go back to the drum.	
001	Main: Image: Front	[10~200/1 µA]
002	Main: Image: Back	[10~200/1 µA]
003	By-pass Image: Front	[10~200/1 µA]
004	Postcard (Japan Only)	[10~200/1 µA]
005	Paper Interval	[10~200/1 µA]
006	Tab Paper	[10~200/1 µA]
007	Thick Paper: Front	[10~200/1 µA]
008	OHP: Front Side	[10~200/1 µA]
009	Tracing Paper: Front	[10~200/1 µA]
010	Leading Edge **DFU**	[10~200/1 µA]
011	Trailing Edge **DFU**	[10~200/1 µA]

2310	[LCT Trans. Curr.] LCT Transfer Current Adjustment **DFU**	
	Adjusts the current applied to the transfer belt during copying and paper feed from the LCT.	
001	Leading Edge: Front	[10~200/1 µA]
002	Trailing Edge: Back	
003	Leading Edge: Back	

004	Trailing Edge: Back	
005	Leading Edge: Thick Paper	[10~200/1 µA]
006	Trailing Edge: Thick Paper	

2311	[Tray 1 Trans. Cu] Tray 1 Transfer Current Adjustment **DFU**	
	Adjusts the current applied to the transfer belt during copying and paper feed from Tray 1.	
001	Leading Edge: Front	[10~200/1 µA]
002	Trailing Edge: Front	
003	Leading Edge: Back	
004	Trailing Edge: Back	
005	Leading Edge: Thick Paper	[10~200/1 µA]
006	Trailing Edge: Thick Paper	

2312	[Tray 2 Trans. Cu] Tray 2 Transfer Current Adjustment **DFU**	
	Adjusts the current applied to the transfer belt during copying and paper feed from Tray 2.	
001	Leading Edge: Front	[10~200/1 µA]
002	Trailing Edge: Front	
003	Leading Edge: Back	
004	Trailing Edge: Back	
005	Leading Edge: Thick Paper	[10~200/1 µA]
006	Trailing Edge: Thick Paper	

2313	[Tray 3 Trans. Cu] Tray 3 Transfer Current Adjustment **DFU**	
	Adjusts the current applied to the transfer belt during copying and paper feed from Tray 3.	
001	Leading Edge - Front	[10~200/1 µA]
002	Trailing Edge –Front	
003	Leading Edge – Back	

004	Trailing Edge – Back	
005	Leading Edge – Thick Paper	[10~200/1 µA]
006	Trailing Edge – Thick Paper	

2314	[Tray 4 Trans. Cu] Tray 4 Transnfer Current Adjustment **Japan Only**	
	Adjusts the current applied to the transfer belt during [copying and paper feed from Tray 4.	
001	Leading Edge: Front	[10~200/1 µA]
002	Trailing Edge: Front	
003	Leading Edge: Back	
004	Trailing Edge: Back	
005	Leading Edge: Thick Paper	[10~200/1 µA]
006	Trailing Edge: Thick Paper	

2506	[Cont. Op. Time C] Continuous Operation Time Cleaning Setting
001	Operation Setting
	Determines whether multiple copy jobs are stopped at regular intervals for: 0) Stopping and reversing the drum motor to clean the cleaning blade edge, and 1) creating an ID sensor pattern to correct toner density control. [0~1/1] 0: No 1: Yes The interval is set with SP2506-002. Use if the drum gets dirty or images get too pale or too dark during a long job.
002	Time Setting
	Selects the interval at which multi-copy jobs are stopped. [1~100/1 min.]

2507	[ID Sen. Patt. Du] ID Sensor Patterning During Job
001	Operation Setting

	Determines whether an ID sensor pattern is created during copy jobs. [0~1/1] 0: Off 1: On
002	No. of Copies
	Selects the interval (number of copies) between ID sensor patterns when 1 is selected for SP2507-001 [0~10,000/1]

2602	[PTL Setting (1st] PTL Setting (1st /2nd Copy Side)	
	Turns the PTL off and on. The PTL (Pre-Transfer Lamp) decreases the charge on the drum to make better separation of the paper from the drum, and prevents stripper pawl marks on the leading edges of copies. **Note**: • The PTL operates only when copying with plain paper or translucent paper. It does not operate when copying with OHP, index sheets, or thick paper. • If blurring occurs in images at the leading edges of copies, switch SP2602-001 off (set to "0").	
001	ON/OFF Setting (1st Side)	Turns the PTL lamp on/off during transfer to the front side of the paper at normal speed. This setting is always off when thick paper or OHPs are fed. [0~1/1] 0: Off 1: On The timing can be adjusted with SP2602-002.
002	OFF Timing (1st Side)	Adjusts the length of the space from the leading edge where PTL quenching is applied to the front side at normal speed. For example, if you select +3, then quenching will be done 3 mm from the leading edge on the front side. [-5~10/0.1]
003	ON/OFF Setting (2nd Side)	Turns the PTL lamp on/off during transfer to the front side of the paper at normal speed. [0~1/1] 0: Off

		1: On
004	OFF Timing (2nd Side)	Adjusts the length of the space from the leading edge where PTL quenching is applied to the back side at normal speed. For example, if you select +3, then quenching will be done 3 mm from the leading edge on the back side. [-5~10/0.1]

2801	[TD Sensor Initia] TD Sensor Initial Setting
	Press the Execute button to do the TD sensor initial setting. This SP mode controls the voltage applied to the TD sensor to make the TD sensor output about 3.0 V. When SP2967 is on, the TD sensor output is set to about 2.5 V. **Note**: Execute this SP only after replacing the TD sensor or developer.

2803	[Charge Cleaner S] Charge Cleaner Start Time
	Press Start to clean the charge corona wire manually. When copy density across the paper is uneven, clean the wire with this mode.

2804	[Charge Cleaner] Charge Cleaner Operation Setting
001	Operation Mode
	Determines whether the charge corona wire is cleaned at regular intervals. [0~1/1] 0: No 1: Yes The time interval between cleaning is set with SP2804-002.
002	Number of Sheets
	Sets the interval (number of sheets printed) between charge corona wire cleanings. [100~10,000/100]

2813	[Exposure Gamma T] Exposure Gamma Table **DFU**
	Is the gamma table is used when the printing test pattern is done with SP2902 003. [0~1/1] 0: Gamma table used in the printing test pattern.

	1: Forces test pattern output with SP2902. The write exposure gamma table is not applied. Current image mode selection or other settings are ignored.

2902	[Test Pattern] Select Test Pattern to Print
	Allows you to select which test pattern to print. [0~27/1] For more, see "Test Pattern Printing" in this section.

2906	[TD Sensor Contro] TD Sensor Control Voltage and Check
001	TD Sensor Control Voltage
	Adjustment mode for production. DFU [4.0~12.0/0.1]
002	Auto Adjust Set
	Displays the TD sensor data stored when SP2801 (TD Sensor Initial Settings) is executed.

2909	[Main Scan Magnif] Main Scan Magnification
001	Copy
	Adjusts magnification in the main scan direction for copying. [–2.0~+2.0/0.1%]
002	Printer
	Adjusts magnification in the main scan direction for printing from a computer. [–2.0~+2.0/0.1%]

2910	[LD Sub Scan Magn] Sub Scan Magnification
	Adjusts magnification in the main scan direction for copying. [–1.0~+1.0/0.1%]

2912	[Drum Reverse Rot] Drum Reverse Rotation
001	Rotation Amount
	Sets the length of time the drum is reversed to clean the drum cleaning blade. [1~3/1]

	To calculate the actual time of reverse rotation, multiply the selected value by the 15 ms.
002	Rotation Interval
	Determines the frequency of drum reverse rotation for blade cleaning. [0~6/1 min.]

2913	[Temperature & Hu] Temperature & Humidity Display	
001	Temperature	Shows the internal temperature of the machine.
002	Humidity	Shows the internal humidity of the machine.

2920	LD Off Check
	Checks if the LD turns off or on when the front door is opened. DFU [0~1/1] 0: On 1: Off

2930	[Transfer Idle Cl] Transfer Idle Cleaning
	When resolution changes from 400 to 600 dpi, the LD writes a pattern on the drum. Toner is applied, and this must be cleaned off the belt. This SP mode determines whether bias is applied to the transfer belt cleaning bias roller at this time. DFU [0~1/1] 0: Off 1: On Switching this function on adds 3 s to the job time.

2931	[Transfer Current Ti] Transfer Current On/Off Timing (LCT)	
001	La1	Adjusts on transfer current ON timing for front side copying. [–30~+30/1 mm]
002	La1f	Adjusts the area where the transfer is applied for the leading edge during front side copying. [0~+20/1 mm]

003	Lc1r	Adjusts the area where the transfer current is applied for the trailing edge during front side copying. [0~+20/1 mm]
004	Lc1	Adjusts the transfer current OFF timing for front side copying. [–30~+30/1 mm]
005	La2	Adjusts on transfer current ON timing for back side copying. [–30~+30/1 mm]
006	La2f	Adjusts the area where the transfer current is applied for the leading edge during back side copying. **DFU** [0~+20/1 mm]
007	Lc2r	Adjusts the area where the transfer current is applied for the trailing edge during back side copying. [0~+20/1 mm]
008	Lc2	Adjusts the transfer current OFF timing for back side copying. [–30~+30/1 mm]
009	La3	Adjusts the transfer current ON timing for copying thick paper from the LCT. [–30~+30/1 mm]
010	La3f	Adjusts the transfer current OFF timing for copying thick paper from the LCT. [–30~+30/1 mm]
011	Lc3r	Adjusts the transfer current ON timing for copying with thick paper from the LCT [–30~+20/1 mm]
012	Lc3	Adjusts the transfer current OFF timing for copying with thick paper from the LCT. [–30~+30/1 mm]

2932	[Transfer Current Ti] Transfer Current On/Off Timing (Tray 1)	
001	La1	Adjusts on transfer current ON timing for front side copying. [–30~+30/1 mm]
002	La1f	Adjusts the area where transfer current is applied for the leading edge during front side copying. [0~+20/1 mm]

003	Lc1r	Adjusts the area where transfer current is applied for the trailing edge during front side copying. [0~+20/1 mm]
004	Lc1	Adjusts the transfer current OFF timing for front side copying. [–30~+30/1 mm]
005	La2	Adjusts on transfer current ON timing for back side copying. [–30~+30/1 mm]
006	La2f	Adjusts the transfer current for the leading edge during rear side copying. DFU [0~+20/1 mm]
007	Lc2r	Adjusts the transfer current for the trailing edge during back side copying. [0~+20/1 mm]
008	Lc2	Adjusts the transfer current OFF timing for back side copying. [–30~+30/1 mm]
009	La3	Adjusts the transfer current ON timing for copying thick paper from Tray 1. [–30~+30/1 mm]
010	La3f	Adjusts the transfer current OFF timing for the leading edge length when with copying thick paper from the bypass tray. [–30~+20/1 mm]
011	Lc3r	Adjusts the transfer current ON timing for the trailing edge length when copying with thick paper from Tray 1. [0~+20/1 mm]
012	Lc3	Adjusts the transfer current OFF timing for copying with thick paper from Tray 1. [–30~+30/1 mm]

2933	[Transfer Current Ti] Transfer Current On/Off Timing (Tray 2)	
001	La1	Adjusts on transfer current ON timing for front side copying. [–30~+30/1 mm]
002	La1f	Adjusts the area where transfer current is applied for the leading edge during front side copying. [0~+20/1 mm]

003	Lc1r	Adjusts the area where transfer current is applied for the trailing edge during front side copying. [0~+20/1 mm]
004	Lc1	Adjusts the transfer current OFF timing for front side copying. [–30~+30/1 mm]
005	La2	Adjusts on transfer current ON timing for back side copying. [–30~+30/1 mm]
006	La2f	Adjusts the area where transfer current is applied for the leading edge during rear side copying. **DFU** [0~+20/1 mm]
007	Lc2r	Adjusts the area where the transfer current is applied for the trailing edge during back side copying. [0~+20/1 mm]
008	Lc2	Adjusts the transfer current OFF timing for back side copying. [–30~+30/1 mm]
009	La3	Adjusts the transfer current ON timing for copying thick paper from Tray 2. [–30~+30/1 mm]
010	La3f	Adjusts the transfer current OFF timing for the leading edge length when copying thick paper from Tray 2. [0~20/1 mm]
011	Lc3r	Adjusts the transfer current ON timing for the trailing edge length when copying with thick paper from Tray 2. [0~20/1 mm]
012	Lc3	Adjusts the transfer current OFF timing for copying with thick paper from Tray 2. [–30~+30/1 mm]

2934	[Transfer Current Ti]	Transfer Current On/Off Timing (Tray 3)
001	La1	Adjusts on transfer current ON timing for front side copying. [–30~+30/1 mm]
002	La1f	Adjusts the area where transfer current is applied for the leading edge during front side copying.

		[0~+20/1 mm]
003	Lc1r	Adjusts the area where transfer current is applied for the trailing edge during front side copying. [0~+20/1 mm]
004	Lc1	Adjusts the transfer current OFF timing for front side copying. [–30~+30/1 mm]
005	La2	Adjusts on transfer current ON timing for back side copying. [–30~+30/1 mm]
006	La2f	Adjusts the area where transfer current is applied for the leading edge during rear side copying. DFU [0~+20/1 mm]
007	Lc2r	Adjusts the area where transfer current is applied for the trailing edge during back side copying. [0~+20/1 mm]
008	Lc2	Adjusts the transfer current OFF timing for back side copying. [–30~+30/1 mm]
009	La3	Adjusts the transfer current ON timing for copying thick paper from Tray 3. [–30~+30/1 mm]
010	La3f	Adjusts the transfer current OFF timing for the leading edge length when copying thick paper from Tray 3. [0~20/1 mm]
011	Lc3r	Adjusts the transfer current ON timing for the trailing edge length when copying with thick paper from Tray 3. [0~20/1 mm]
012	Lc3	Adjusts the transfer current OFF timing for copying with thick paper from Tray 3. [–30~+30/1 mm]

2935	[Transfer Current Ti] Transfer Current On/Off Timing (Tray 4) **Japan Only**	
001	La1	Adjusts on transfer current ON timing for front side copying. [–30~+30/1 mm]

002	La1f	Adjusts the area where transfer current is applied for the leading edge during front side copying. [0~+20/1 mm]
003	Lc1r	Adjusts the area where transfer current is applied for the trailing edge during front side copying. [0~+20/1 mm]
004	Lc1	Adjusts the transfer current OFF timing for front side copying. [–30~+30/1 mm]
005	La2	Adjusts on transfer current ON timing for back side copying. [–30~+30/1 mm]
006	La2f	Adjusts the area where transfer current is applied for the leading edge during rear side copying. DFU [0~+20/1 mm]
007	Lc2r	Adjusts the area where transfer current is applied for the trailing edge during back side copying. [0~+20/1 mm]
008	Lc2	Adjusts the transfer current OFF timing for back side copying. [–30~+30/1 mm]
009	La3	Adjusts the transfer current ON timing for copying thick paper from Tray 4. [–30~+30/1 mm]
010	La3f	Adjusts the transfer current OFF timing for the leading edge length when copying thick paper from Tray 4. [0~20/1 mm]
011	Lc3r	Adjusts the transfer current ON timing for the trailing edge length when copying with thick paper from Tray 4. [0~20/1 mm]
012	Lc3	Adjusts the transfer current OFF timing for copying with thick paper from Tray 4. [–30~+30/1 mm]

2940	[Reface Mode]

	Determines if a blade bend prevention pattern is made when the ID sensor pattern is made. This setting controls the pattern count. **DFU** [0~100/1] Increase the setting if the rotation of the drum is not smooth, that is, when drum rotation is making noise.

2950	Vh Pattern Create	Vh Pattern Creation Setting **DFU**
001	Exposure Level	[0~15/1]
002	Offset Light Amount	[-45 ~-100/1]

2961	[Developer Adjust] Developer Adjust Mode **DFU**

2962	[Auto Adjust] Automatic Adjustment of Drum Conditions
	Push [#Enter] to execute the process control cycle manually. Note: This SP executes only if SP3901 is enabled.

2963	[Installation Mod] Installation Mode
	Press [#Enter] to initialize the developer and force toner supply to the toner hopper at machine installation. **Important**: After you replace developer in a machine that has been already installed, do not use SP2963 to initialize the developer. Use SP2801 (TD Sensor Initial Setting) to initialize the TD sensor.

2964	[Transfer Cleaning B] Blade/Drum Protection Pattern
001	Pattern Interval
	Selects the interval for application of a strip of toner across drum and transfer belt to prevent the drum cleaning blade and belt cleaning blade from sticking and bending against the drum or belt. [0~200/1 copy] **DFU** If set to zero, then no pattern is created.
002	Pattern Light Amount Setting
	Adjusts the intensity of light that is used to create the blade protection pattern.

	[0~4/1] **DFU**
003	Transfer Current On/Off Setting
	Determines whether transfer current is switched on or off while the blade protection pattern is created. DFU Sets Off, toner is applied to the entire cleaning area and drum cleaning blade. [0~1/1] 0: Off 1: On

2966	[Periodic Process] Periodic Adjustment of Drum Conditions
	Sets the time interval between automatic adjustments. [1~24/1 hour]

2967	[Developer Densit] Developer Density Adjustment Mode
	Determines whether the amount of toner is checked during auto process control with only the TD sensor. With this feature on, the machine uses the TD sensor only. [0~1/1] 0: Off 1: On During auto process control execution after the main switch is turned on, the toner amount in the development unit is normally checked and adjusted using the ID sensor. However, in some environments, such as where there could be traces ammonia in the air, copies could appear dirty or too dark because the ID sensor reading is not reliable.

2968	[Toner Exit Mode]
	Press Execute to force used toner into the toner collection bottle. The moving components of the cleaning and toner collection areas will rotate for about 60 sec. with the transfer belt released.

2969	[T Bottle Revolut] Toner Bottle Revolution	
001	Copy Count Setting	Sets the standard number of copies by using the number of toner bottle rotations. **DFU** [50~500/1]

002	Count Reset	Press "Execute" to reset the toner bottle rotation count. DFU
003	Copy Count Display	Used to check the number of toner bottle rotations.

2970	[Trans Belt Resist] Transfer Belt Resistance: Disp. Current Value
	Displays the resistance of the bare transfer belt at the interval between the leading edge of a sheet and the trailing edge of the sheet ahead of it in the paper path. The displayed value is (MΩ). DFU

2971	[Trans. Interval] Transfer Interval Output	
001	Voltage	Displays the measurement condition of the value in SP2970.
002	Current	

2972	[Toner Bottle Coo] Toner Bottle Cool. Fan Drive Control
	Switches fan control On/Off. [0~1/1] 0: Off. The toner bottle fan switches off when the machine is switched off and when the machine enters the night mode. 1: On: Toner bottle fan remains on. Switch on in an extremely hot environment to prevent the toner from overheating and clumping.

SP3xxx Processing

3001	[ID Sensor Initial] ID Sensor Initial Setting
001	ID Sensor PWM Setting
	Recovers the machine when an SC is logged because the 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. [0~255/1]
002	ID Sensor Initialization
	Performs the ID sensor initial setting. The ID sensor output for the bare drum (VSG) is adjusted to 4.0 ± 0.2V. Press "Execute".

	This SP mode should be performed after: (1) Replacing or cleaning the ID sensor, (2) Replacing the NVRAM, (3) Clearing NVRAM, (4) Replacing the BICU board.

3103	[ID Sensor Output] ID Sensor Output Display
001	Vsg
	Displays the current value of the ID sensor output after checking the bare drum surface.
002	Vsp
	Displays the current value of the ID sensor output after checking the ID sensor pattern image
003	Vpdp
	Displays the current 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. **Note**: If the ID sensor output is abnormal, an SC is logged and the displays change: • SC350-01 logged: Vsp/Vsg/Vsdp = 0.00/0.00/0.00 • SC350-02 logged: Vsp/Vsg/Vsdp = 5.00/5.00/5.00 • SC350-03 logged: Vsp/Vsg/Vsdp = 0.01/0.01/0.01

3901	[Auto Process Con Set] Auto Process Control On/Off Setting
	Determines whether the machine checks and corrects the drum potential (Vd) and LD power when the fusing temperature is lower than 100°C at power-on. [0~1/1] 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.

3902	[Drum Condition D] Drum Condition Display
001	Auto Process Control On/Off
	Displays whether auto process control is switched on or off (0:Off, 1:On) When auto processing control is set on, displays only when the potential sensor is calibrated correctly. Auto process control is not executed when this SP is switched off.

	[0~1/1] 0: Off 1: On
002	Vd
	Displays drum dark potential, the standard potential, electrical potential of the black areas after exposure.
003	Vh
	Displays standard halftone drum potential, used for laser power adjustment.
004	Vg
	Displays the charge grid voltage resulting from the latest Vd adjustment.
005	LD Level
	Displays the LD power correction value as a result of the latest Vh adjustment.
006	ID Sensor Pattern Potential
	Displays Vid, the latest drum surface voltage measured on the ID sensor pattern.
007	Vql
	Displays the drum potential after quenching.
008	Vl
	Shows the standard electrical potential of white areas on the drum after exposure.

3903	[Drum Time Extens] Drum Rotation Time Extension Mode
001	(0:OFF/1:ON)
	Turns on the drum rotation mode. This increases the time that the drum turns freely after the machine is turned on. After this function is turned on with this SP, it will be enabled only when SP3904 001 is set to "2". If SP3904 001 is set to "0" or "1", the extra drum rotation mode will not be enabled. [0~1/1] 0: Extra drum rotation mode is off. 1: After auto process control, the drum continues to turn until the fusing unit gets to its operation temperature. Use this setting to decrease out-of-focus copy images when the machine is used immediately after power-on.

002	Drum Rotation Time
	Sets the amount of time the drum turns in the drum rotation mode before the first copy after the machine is turned on. SP3903-001 must be on or this setting has no effect. [120~600/1]

3904	[Warm Up Short Mo] Warm Up Short Mode
	Controls when corona wire cleaning is done to adjust the length of time that is necessary for startup. [0~2/1] 0: Charge corona wire not cleaned when the machine is turned on. Warmup Time: 30 sec. (Short Process Control is done) 1: Charge corona wire cleaned only when the machine is turned on. Warmup Time: 30 sec. + 40 sec. (for cleaning) = 70 sec. (Short Process Control is done) 2: Normal startup procedure at power on: Warmup Time: 240 sec. Potential sensor calibrated Drum starts to turn when fusing unit gets to the warmup temperature (not done during Short Process Control) Potential sensor readings are used to adjust development bias, grid voltage, laser diode. ID sensor calibrated (not done during Short Process Control) TD sensor calibrated (not done during Short Process Control)

SP5xxx Mode

5024	[mm/inch Display]
	Selects whether mm or inches are used in the display. After selecting the number, you must turn the power switch off and on. Europe/Asia model: [0 = mm / 1 = inch] American model: [0 = mm / 1 = inch]

5037	[Status Lamp Mode] Enable Call Lamp Operation
	Disables and enables the operaiton of the call lamp installed on top of the machine. [0~1/1]

	0: Off: Disabled 1: On: Enabled (Default) **Note**: The call lamp installation is described in Section "1. Installation".

5051	[Toner Refill Displ] Toner Refill Detection Display **Japan Only**

5055	Display IP add	Display IP Address
	Switches the banner display of the IP address off and on. (Default: *Off) [OFF] ON For example, if this SP is switched on the IP address will be displayed below "Ready" while the printer is in standby mode: **Ready** **169.254.187.055**	

5056	Coverage Counter
	[0~1/0/1] 0:Not Displayed 1:Displayed This SP switches the counter list for the system administrator on/off.

5101	[Timer Set]
	The machine enters the Energy Save mode after this timer runs out after the end of a job. [0~9/**0**/1 min.]
103	Panel Off Set
104	Low Power Set

5104	[Double Count] A3/DLT Double Count
	Specifies whether the counter is doubled for A3/DLT. " When "Yes" is selected, A3 and DLT paper are counted twice (A4 x2 and LT x2 respectively).

5129	[F Paper Size Selection]
	Sets the paper size that the machine detects when the 8 x 13 dial setting on a paper cassette is used (LT/DLT version). [0~2/1]

	0: 8 x 13 1: 8hf x 13 2: 8qr x 13 **Note**: hf = 1/2, qr = 1/4

5131	[Paper Size Type] Paper Size Type Selection
	Selects the paper size type (for originals and copy paper). (Only needs to be adjusted if the optional printer controller is installed) [0~2/1] 0: JP (Japan Only) 1: NA (North America) 2: EU (Europe) After changing the value, turn the power switch off and on.

5302	Set Time **DFU**
	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)

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: - Day and time to go forward automatically in April. - Day and time to go back automatically in October. - Set the length of time to go forward and back automatically. The settings for 002 and 003 are done with 8-digit numbers:	
	Digits	**Meaning**

	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 8should be 3 (30 minutes).
001	Setting	Enables/disables the settings for 002 and 003. [0~1/1] 0: Disable 1: Enable
002	Rule Set (Start)	The start of summer time.
004	Rule Set (End)	The end of summer time.

5404	[UCodeCtrClr] User Code Count Clear
	Clears the counts for the user codes assigned by the key operator to restrict the use of the machine. Press [#Enter] to clear.

5501	PM Alarm **Japan Only**	
001	PM Alarm Level	[0~9999 / 0 / 1 step] 0: Alarm off 1~9999: Alarm goes off when Value (1~9999) ≥ PM counter
003	PCU Count	This SP sets the timing of the display warning for replacement of the PCU. When printing reaches this total, the replace PCU warning is issued. [0 ~ 255 / 150 / 1 step] 0: No alarm is issued

		For example, when the number of prints reaches 150,000 with the default setting of "150" in effect, (150 x 1,000) the warning is issued with the PM Counter Display (SP7803) after the number of prints exceeds 150,000.

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

5505	[Error Alarm] **DFU Japan Only**
	Sets the error alarm level. [0~255 / 50 / 100 copies per step]

5507	[Supply Alarm]	
001	Paper Supply Alarm (0:Off 1:On)	Switches the control call on/off for the paper supply. DFU 0: Off, 1: On 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. DFU 0: Off, 1: On 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. DFU 0: Off, 1: On If you select "1" the alarm will sound when the machine detects toner end.

128	Interval: Others	The “Paper Supply Call Level: nn” SPs specify the paper control call interval for the referenced paper sizes. DFU [00250 ~ 10000 / 1000 / 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	

5515	[SC Call Setting] SC/Alarm Setting	
	With NRS (@Remote) 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 Setting	[0~1/1/1] 0: Off 1: On
002	Service Parts Near End	
003	Service Parts End	
004	User Call	[0~1/1/1]
005	Not Used	
006	Communication Test	
007	Device Information	
008	Alarm Notice	
009	Non-Genuine Toner	
010	Supply Automatic	[0~1/0/1]
011	Supply Management	

5793	ECS Debug SW **DFU**

	This is a debugging tool. Not used for machine servicing.

5801	Memory Clear	
	Resets NVRAM data to the default settings. Before executing any of these SP codes, print an SMC Report.	
001	All	Initializes items 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	Initializes the image file system. (IMH: Image Memory Handler)
05	MCS	Initializes the automatic delete time setting for stored documents. (MCS: Memory Control Service)
008	PRT	Initializes the printer defaults, programs registered, the printer SP bit switches, and the printer CSS counter.
010	WebService	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	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	Initializes the SRM (System Resource Manager) settings.
019	LCS Clear	Initializes the LCS (Log Count Service) settings.

5802	[Printer Free Run]
	Makes a base engine free run [0~1/1] 0: Disable: Release free run mode 1: Enable: Enable free run mode Return this setting to off (0) after testing is completed.

5803	[Input Check]
	Displays signals received from sensors and switches. See " Printer Input Check: SP5803"

5804	[Output Check]
	Turns on the electrical components individually for testing. See "Printer Output Check: SP5804"

5807	[Option Connection] Option Connection Check	
002	Bank (1:Connect)	Displays a 1 or 0 to indicate the status of the device. (002: Bank – Japan only) [0~1/1] 1: Connected 0: Not connected
003	LCT (1:Connect)	
004	Fin (1:Connect)	

5810	[SC Clear] Clear Fatal SC Error and Restore Machine Operation
	This SC clears fatal SC errors and releases the machine to resume operation. Most fatal SC errors are related to the fusing unit problems that could lead to a dangerous fire hazard. Once such an SC error occurs (Class "A"), the machine cannot be used until the service technician does this SP code and replaces the fusing unit. For more, see Section "4. Troubleshooting".

5811	[MachineNo. Sett] Machine Number Code Setting **DFU**
	This setting is done at the factory, and should not be changed in the field.

5812	Tel. No. Setting	
001	Service	Inputs the telephone number of the CE (displayed when a service call condition occurs.)

002	FAX TEL No.	Use this to input the fax number of the CE printed on the Counter Report (UP mode). **Note**: Not used for this machine.

5816	Remote Service	
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 technician 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.	
004	Communication Test	
	NIA	
005	Device Information	
	NIA	
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 Time	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 Timeou	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.	
012	@Remote Service	
	NIA	
021	RCG – C Registed	
	This SP displays the Cumin installation end flag. 1: Installation completed 2: Installation not completed	
022	RCG – C Registed Det	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.	

	0: Internet connection 1: Dial-up connection	
061	Cert. Expire Timing DFU	
	Proximity of the expiration of the certification.	
062	Use Proxy	
	This SP setting determines if the proxy server is used when the machine communicates with the service center.	
067	CERT: Up State	
	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.
	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 Che	Firmware 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 Ver	CERT: Macro Version
	Displays the macro version of the NRS certification	
088	CERT: PAC Ver	CERT: PAC Version
	Displays the PAC version of the NRS certification.	
089	CERT: ID2Code	
	Displays ID2 for the NRS certification. Spaces are displayed as underscores (_). Asteriskes (****) 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 (_). Asteriskes (****) indicate that no DESS exists.	
091	CERT: SerialNo.	CERT: Serial Number
	Displays serial number for the NRS certification. Asteriskes (****) indicate that no DESS exists.	
092	CERT: Issuer	
	Displays the common name of the issuer of the NRS certification. CN = the following 30 bytes. Asteriskes (****) 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.	
095	Server CN Check	
	NIA	
096	GW Host	
	NIA	
097	GW URL Path	
	NIA	
201	Regist: Status	
	Displays a number that indicates the status of the NRS service device.	

	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.
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
	8	Other error
	9	Inquiry executing
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		
	9	Registration executing		
208	Error Code			
	Displays a number that describes the error code that was issued when either SP5816 204 or SP5816 207 was executed.			
	Cause		Code	Meaning
	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
250	CommLog Print		
	Prints the communication log.		

5821	Remote Service A	Remote Service Address Japan Only
001	CSS-PI Device C(ode)	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 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 Note: While using this SP mode, always keep the front cover open. This prevents a software module accessing the NVRAM during the upload.

5825	NVRAM Download
	Downloads data from an SD card to the NVRAM in the machine. After downloading is completed, remove the card and turn the machine power off and on.

5828	Network	
	This machine supports both Internet Protocols IPv4 and IPv6. IPv6 is the next generation protocol designed by the IETF to replace IPV4. IPv6 adds many improvements such as routing and network auto-configuration.	
001	IPv4 Address	This SP allows you to confirm and reset the IPv4 address for Ethernet and a wireless LAN (802.11b): aaa.bbb.ccc.ddd For example, if the 8-bit entry is "192.168.000.001" this is read "0C0A80001h"
002	IPv4 Subnet Mask	This SP allows you to confirm and reset the IPv4 subnet mask for Ethernet and a wireless LAN (802.11b): aaa.bbb.ccc.ddd For example, if the 8-bit entry is "255.255.255.00" this is read "FFFFFF00h".
003	IPv4 DefaultGate	This SP allows you to confirm and reset the IPv4 default gateway used by the network for Ethernet and wireless LAN (802.11b): aaa.bbb.ccc.ddd For example, if the 8-bit entry is "192.169.000.001" this is read "0C0A80001h"
006	DHCP	This SP code allows you confirm and change the setting that determines whether the IP address is used with DHCP on an Ethernet or wireless (802.11b) LAN network. [0~1/1/0] 0: Not used (manual setting) 1: Used
021	ActIPv4Add	This SP allows you to confirm the IPv4 address that was used when the machine started up with DHCP. For example, if the the setting of the the IPv4 address is "0C0A80001h " this is displayed as "192.169.000.001".
022	ActIPv4 SbNet	This SP allows you to confirm the IPv4 subnet mask setting that was used when the machine started up with DHCP. For example, if the setting for the IPv4 subnet mask is "FFFFFF00H" this is displayed as "255.255.255.000"

<table>
<tr><td>023</td><td>ActIPv4GateW</td><td>This SP allows you to confirm the IPv4 default gateway setting that was used when the machine started up with DHCP. For example, if the setting for the IPv4 gateway is "0C0A80001h" this is displayed as "192.168.000.001".</td></tr>
<tr><td>050</td><td>1284 Compatible</td><td>Enables and disables bi-directional communication on the parallel connection between the machine and a computer.
[0~1/1]
0:Off
1: On</td></tr>
<tr><td>052</td><td>ECP</td><td>Disables and enables the ECP feature (1284 Mode) for data transfer.
[0~1/1]
0: Disabled
1: Enabled</td></tr>
<tr><td>065</td><td>Job Spool</td><td>Switches job spooling spooling on and off.
0: No spooling 1: Spooling enabled</td></tr>
<tr><td>066</td><td>HD Job Clear</td><td>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.</td></tr>
<tr><td>069</td><td>JobSpool Protocol</td><td>This SP determines whether job spooling is enabled or dispabled for each protocol. This is a 8-bit setting.
<table>
<tr><td>0</td><td>LPR</td><td>4</td><td>BMLinks (Japan Only)</td></tr>
<tr><td>1</td><td>FTP (Not Used)</td><td>5</td><td>DIPRINT</td></tr>
<tr><td>2</td><td>IPP</td><td>6</td><td>Reserved (Not Used)</td></tr>
<tr><td>3</td><td>SMB</td><td>7</td><td>Reserved (Not Used)</td></tr>
</table></td></tr>
<tr><td>090</td><td>TELNET</td><td>Disables or enables Telnet operation. If this SP is disabled, the Telnet port is closed.
[0~1/1]
0: Disable
1: Enable</td></tr>
</table>

091	Web	Disables or enables the Web operation. [0~1/1] 0: Disable 1: Enable
145	ActIPv6LinkLocal	This is the IPv6 local address 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. These notations can be abbreviated. See "Note: IPV6 Addresses " below this table.
147	ActIPv6Sttles1	These SPs are the IPv6 stateless addresses (1 to 5) referenced on the Ethernet or wireless LAN (802.11b) in the format: "Stateless Address" + "Prefix Length" The IPv6 address consists of a total 128 bits configured in 8 blocks of 16 bits each.
149	ActIPv6Sttles2	
151	ActIPv6Sttles3	
153	ActIPv6Sttles4	
155	ActIPv6Sttles5	
156	IPv6 Manual 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. These notations can be abbreviated. See "Note: IPV6 Addresses" below this table.
158	IPv6 Gateway	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. These notations can be abbreviated. See "Note: IPV6 Addresses " below this table.
161	IPv6StatelessAut	This SP allows you to confirm or set the setting for the stateless automatic setting function used by either the Ethernet or Wireless LAN (802.11b).

Note: IPV6 Addresses

Ethernet and the Wireless LAN (802.11b) reference the IPV6 "Link-Local address + Prefix Length". The IPV6 address consists of 128 bits divided into 8 blocks of 16 bits:

aaaa:bbbb:cccc:dddd:eeee:ffff:gggg:hhhh:

The prefix length is inserted at the 17th byte (Prefix Range: 0x0~0x80). The initial setting is 0x40(64).

For example, the data

2001123456789012abcdef012345678940h

is expressed:

2001:1234:5678:9012:abcd:ef01:2345:6789: prefixlen 64

However, the actual IPV6 address display is abbreviated according to the following rules.

Rules for Abbreviating IPV6 Addresses

1. The IPV6 address is expressed in hexadecimal delmited by colons (:) with the following characters:

   0123456789abcdefABCDEF

2. A colon is inserted as a delimiter every 4th hexadecimal character.

   fe80:0000:0000:0000:0207:40ff:0000:340e

3. The notations can be abbreviated by elminating zeros where the MSB and digits following the MSB are zero. The example in "2" above, then, becomes:

   fe80:0:0:0207:40ff:0:340e

4. Sections where only zeros exist can be abbreviated with double colons (::). This abbreviation can be done also where succeeding sections contain only zeros (but this can be done only at one point in the address). The example in "2" and "3" above then becomes:

   fe80::207:40ff:0:340e (only the first null sets zero digits are abbreviated as "::")

   -or-

   fe80:0:0:0:207:40ff::340e (only the last null set before "340e" is abbreviated as "::")

5832	HDD Init.	Format HDD
	Press [#Enter] to initialize the HDD. After formatting is complete, cycle the machine off/on.	

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 Number

	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.

5842	[NFA Analysis] Net File Application Analysis		
001	Setting 1		
	This is a debugging tool. It sets the debugging output mode of each Net File process. Bit SW 0011 1111 Note: The 7th bit (MSB) suppresses the debug level when set to OFF and outputs the debug level when set to ON. Bits 6-0 output when set to OFF (09 output the logs associated with the bits and suppress outut when set to ON (1).	Bit	Groups
		0	System & other groups (LSB)
		1	Capture related groups
		2	Certification related
		3	Address book related
		4	Machine management related
		5	Output related (printing, delivery server)
		6	Repository, FO document group related
002	Setting 2	Performs optional settings for the optional settings of each NFA process.	

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] DFU	
003	Product ID	
	Sets the product ID. [0x0000~0xFFFF/1] DFU	
004	DevReleaseNum	Device Release Number
	Sets the device release number of the BCD (binary coded decimal) display. [0000~9999/1] DFU Enter as a decimal number. NCS converts the number to hexadecimal number recognized as the BCD.	

5845	Delivery Svr	Delivery Server
	These are delivery server settings.	
003	Retry Interval	
	Sets the time interval before the machine tries again when it goes back to standby after an error occurs during an image transfer with the SMTP server. [60~900/1]	
004	No. of Retries	
	Sets the number of times the machine tries again before it returns to standby after an error occurs during an image transfer with the delivery or SMTP server. [0~99/1]	

5846	[UCS Setting]	
046	Init All Set&Dir	Initialize Address Book Seting and Directories
	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. Note: Be sure to cycle the machine off and on after you execute this SP code. 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.	

	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.	
047	Init Local AddrB	Initialize Local Address Book
	Clears all of the address information from the local address book of a machine managed with UCS.	
050	Init All Dir	Initialize All Address Book Directories
	Clears everything (including users codes) in the directory information managed by UCS. However, the accounts and passwords of the system administrators are not deleted.	
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 Opt1	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 upper case and sets the length of the password. [0~32/1] Note: This SP does not normally require adjustment. This SP is enabled only after the system administrator has set up a group password policy to control access to the address book.	

063	Complexity Opt2	Complexity Option 2
	Use this SP to set the conditions for password entry to access the local address book. Specifically, this SP limits the password entry to lower case and defines the length of the password. [0~32/1] This SP does not normally require adjustment. This SP is enabled only after the system administrator has set up a group password policy to control access to the address book.	
064	Complexity Opt3	Complexity Option 3
	Use this SP to set the conditions for password entry to access the local address book. Specifically, this SP limits the password entry to numbers and defines the length of the password. [0~32/1] This SP does not normally require adjustment. This SP is enabled only after the system administrator has set up a group password policy to control access to the address book.	
065	Complexity Opt4	Complexity Option 4
	Use this SP to set the conditions for password entry to access the local address book. Specifically, this SP limits the password entry to symbols and defines the length of the password. [0~32/1] Note: This SP does not normally require adjustment. This SP is enabled only after the system administrator has set up a group password policy to control access to the address book.	

5848	[Web Service]		
	5847 2 sets the 4-bit switch assignment for the access control setting. Setting of 0001 has no effect on access and delivery from Scan Router. 5847 100 sets the maximum size of images that can be downloaded. The default is equal to 1 gigabyte.		
004	ac:ud		Switches access control on and off. 0000: OFF, 0001: ON
009	ac:jc	Acc. Ctrl.: User Directory	
011	ac:dm		
210	Log Type: Job 1 NIA		

211	Log Type: Job 2 NIA
212	Log Type: Access NIA
213	Primary Srv NIA
214	Secondary Srv NIA
215	Start Time NIA
216	Interval Time NIA
217	Timing NIA

5849	[Installation Dat] 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”.
003	Total Counter	NIA

5851	Bluetooth Mode
	Sets the operation mode for the Bluetooth Unit. *Public Private **Note**: This machine does not support the use of Bluetooth at this time (May 2006)

5856	[Remote Update] Allow ROM Update from Remote Source
	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. [0~1 / 0 / 1] 0: Not allowed 1: Allowed

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	
	Specifies the decimal key number of the log to be written to the SD Card.	
009	Copy HDD to SD (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 (Any)	
	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 Log	Erase Debug Data Log on HDD
	Erases all debug logs on the HDD	
012	Erase SD Log	Erase Debug Data Log on SD Card
	Erases all debug logs on the SD Card. If the card contains only debugging files generated by an event specified by SP5858, the files are erased when SP5857 010 or 011 is executed.	

	To enable this SP, the machine must be cycled off and on.	
013	FreeSpaceonSD	Display Amount of Free Space on SD Card
	Displays the amount of space available on the SD card.	
014	SD to SD (4MB)	
	Copies the last 4MB of the log (written directly to the card from shared memory) onto an SD card.	
015	SD to SD (Any)	
	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 LogFile	
	This SP creates a 32 MB file to store a log on the HDD.	
017	Make SD LogFile	
	This SP creates a 4 MB file to store a log on an SD card.	

5858	DebugSaveWhen	
	These SPs select the content of the debugging information to be saved to the destination selected by SP5857 002. SP5858 3 stores one SC specified by number. Refer to Section 4 for a list of SC error codes.	
001	EngineSC Error	0:OFF 1:ON Stores SC codes generated by engine errors.
002	SystemSC 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 / 0 / 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/IMAP	SMTP/POP3/IMAP4
002	SMTP Svr Port No.	SMTP Server Port Number
	This SP sets the number of the SMTP server port. [1~65535/1]	
003	SMTP Auth	SMTP Certification
	This setting switches SMTP certification on and off for mail sending. 0: Off 1: On	
006	SMTP Auth Encryp	SMTP Certification Encryption
	This setting determines whether the password for SMTP certification is encrypted. 0: Automatic 1: No encryption done 2: Encryption done	
007	POP Before SMTP	
	This setting determines whether the transmission connects with the POP server first for certification before it connects to the SMTP server for sending. 0: No connection to POP server	

	1: Connection to POP server	
008	POP to SMTP Wait	Standby Wait Time After POP3 Certification
	This SP sets the amount of time to allow for the connection to the SMTP server after the transmission has connected to the POP server and been certified during the execution of POP Before SMTP. [0~10000/300/1]	
009	Rcv Protocol	Receive (RX) Protocol
	This SP specifies POP3 protocol or switches off receiving. 0: No receiving 1: POP3 protocol	
013	POP Auth Encrypt	POP3/IMAP4 Certification Encryption
	This SP specifies whether password encryption is done for POP3/IMAP4 certification. 0: Automatic 1: No encryption done 2: Encryption done	
014	POP Srv Port No	POP3 Server Port Number
	This SP sets the number of the POP3 server port. [1~65535/110/1]	
015	IMAP Srv Port No	IMAP4 Server Port Number
	This SP sets the number of the IMAP4 server port. [1~65535/143/1]	
016	SMTP Rcv Port No	SMTP RX Port Number
	This SP sets the number of the port that receives SMTP mail. [1~65535/25/1]	
017	Receive Interval	Mail RX Interval
	This SP sets the timing for mail received at regular intervals. [2~1440/15/1 min.] Note: Setting this SP to "0" switches off receiving mail at timed intervals.	
019	Mail Keep Sett.	Server Mail Storage Setting

	This SP setting determines whether received mail is stored on the server. 0: Received mail not stored 1: All received mail stored 2: Stores only mail that generated errors during receiving	
020	ParMail RecTOut	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 Res RF2298	MDN Response RFC2298Compliance
	Determines whether RFC2298compliance is switched on for MDN reply mail. [0~1/1] 0: No 1: Yes	
022	SMTPAut FieldRep	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.	
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	

5866	[E-Mail Report]

	This SP controls operation of the email notification function.	
001	E-Mail Validity	Disables and re-enables the email notification feature. [0~1/0/1] 0: Enable 1: Disable
005	Add DateField	Disables and re-enables the addition of a date field to the email notification. [0~1/0/1]

5869	[RAM Disk Setting] Use RAM Disk	
	This SP determines whether the RAM disk is used for either the mail function or PDL Storage. [0~1/0/1] 0:Used 1:Not used	
001	Mail Function	
002	PDL Storage	Sets the amount of RAM disk used for PDL storage. The size of the RAM disk may need adjustment, depending on the amount of memory in the machine. [0~255/4/1]

5870	Common Key Info W	Common Key Information Writing
	Writes to flash ROM the common proof for validating the device for NRS specifications.	
001	Writing	These SPs are for future use and currently are not used.
003	Initialize	

5873	[SDCardAppliMove] Move Application on SD Card to Another SD Card	
	Allows you to move applications from one SD card another. For more, see "Merging Applications on One SD Card"	
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.

5876	Security Clear **DFU**

	This SP code clears all security data, only security data in the NCS area, or only security data in the UCS area.	
001	All Clear	
011	Clear NCS Sec.	
015	Clr UCS Sercurity	

5878	Option Setup	Data Overwrite Security (DOS) Setup
	Press [#Enter] to initialize the Data Overwrite Security option.	

5886	[ROM Update] Permit ROM Update **DFU** This SP determines whether the ROM can be updated. [0-1/0/1] 0: On 1: Off

5907	[Plug/Play]	Plug & Play Maker/Model Name
	Selects the brand name and the production name for Windows Plug & Play. This information is stored in the NVRAM. If the NVRAM is defective, these names should be registered again.	

5915	[M Counter Detect]	Mechanical Counter Detection
	Displays whether the mechanical counter is installed in the machine. [0~2/1] 0: Not detected. 1: Detected 2: Unknown	

5930	Meter Charge This SP operates a "meter click charge" that maintains a total counter for the PCU, fusing unit, and other componets. When this SP is switched on, the use of the PCU, for example, is not monitored by the engine but the engine counter continues to operate.

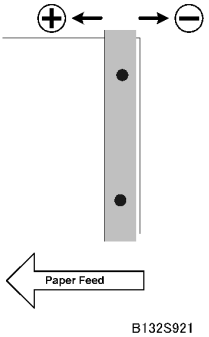
5952	Fact Adjust Mode **DFU**

5959	[Paper Size]	
001	Tray 1	
	The following paper sizes can be set. If the A3 DLT kit is not installed, you can only use settings 0 and 1.	
	0: A4	6: 81/2 x 14 R (LG SEF)
	1: 81/2x 11 (LT)	7: 81/2 x 11 R (LT SEF)
	2:A3	8: B5
	3:B4	9: B5 R (B5 SEF)
	4:A4R (A4 SEF)	10: Custom Size
	5:11 x 17	
005	Tray 4 (LCT)	
	Tray 4 (LCT) accepts three paper sizes. Enter the correct number of the size of the paper loaded in the LCT:	
	0: A4	4: 81/2 x 14 R (LG SEF)
	1:81/2 x 11	5: B4 R (B4 SEF)
	2:B5	6: 81/2 x 14 R (LG SEF)
	3:A4 R (A4 SEF)	7: Custom Size
006	Cover Sheet DFU	
	The Cover Interposer Tray B470 is provided with two arrays of paper size sensors to detect the paper size. However, some of the paper sizes may not be indicated correctly on the display panel. For more details, refer to the Cover Interposer Tray manual section “Paper Size Detection”.	

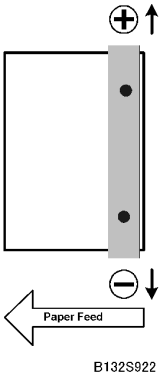
5990	SP Print Mode	SMC Print
	In the SP mode, press Copy Window to move to the copy screen, select the paper size, then press Start. Select A4/LT (Sideways) or larger to ensure that all the information prints. Press SP Window to return to the SP mode, select the desired print, and press Execute.	
001	All (Data List)	All (Data List)
002	SP (Mode Data Li)	SP (Mode Data List)

004	Logging Data	Logging Data
005	Diagnostic Repor	Diagnostic Report
006	Non-Default	Non-Default (Prints only SPs set to values other than defaults.)
007	NIB Summary	NIB (Network Interface Board) Summary

SP6xxx Peripherals

6101	[Punch Hole Adjus] Punch Position Adjustment (Punch Unit B702)	
	Adjusts the punch hole positions in the direction of paper feed. NA: North America JPN: Japan EU: Europe NEU: Northern Europe (Scandinavia)	
001	JPN/EU: 2-Hole	[-75~+75/0.5 mm] + Value: Shifts punch unit in the direction of feed. - Value:Shift punch unit against direction of feed.  B132S921
002	JPN/NA: 3-Hole	
003	EU: 4-Hole	
004	NEU: 4-Hole	
005	NA: 2-Hole	

6102	[Punch Hole Adjus] Punch Position Adjustment (Punch Unit B702)
	Adjusts the punch position perpendicular to the direction of feed. [-20~+20/0.4 mm] + Value: Shifts punch unit toward back of the finisher. - Value:Shift punch unit toward front of the finisher. NA: North America

	JPN: Japan EU: Europe NEU: Northern Europe (Scandinavia)	
001	JPN: 2-Hole	
002	JPN/NA: 3-Hole	
003	EU: 4-Hole	
004	NEU: 4-Hole	
005	NA: 2-Hole	

6103	[Skew Corr Buckle] Correct Skew Before Punching (Finisher B703)	
	This SP corrects punch hole alignment by correcting the skew of each sheet. To do this, it adjusts the amount of time the finisher entrance roller remains off while the exit roller of the machine remains on. This buckles the leading edge of the sheet slightly against the finisher entrance roller while it remains off.	
001	A3 SEF	[-500~+500/0.3 mm]
002	B4 SEF	+ Value:Increases the time that the finisher entrance roller remains off. - Value: Descreases the time that the finisher entrance roller remains off.
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	

6104	[Skew Corr Setting] Correct Skew Before Punching (Finisher B703)	
	This SP determines whether the finisher entrance roller stops to correct skew when paper enters the finisher.	
001	A3 SEF	[0~2/1] 0: No adjustment. Quickly restores the default setting if you forget what the other settings do. 0: Paper stops for skew correction 1: Paper does not stop 2: Paper stops (same as default)
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	

6105	[Jog Fence Adj.] Jogger Fence Fine Adjust	
	This SP adjusts the distance between the jogger fences and the sides of the stack on the finisher stapling tray. 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 the 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	B5 SEF	
006	B5 LEF	
007	DLT SEF	
008	LG SEF	
009	LT SEF	

010	LT LEF	
011	Other	

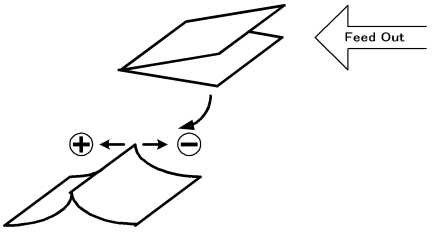
6106	[Output Jog Posit] Adjust Output Jog Position	
	Use this SP code to adjust the positions of the jogger fences when the pages are aligned (jogged) horizontally in the optional output jogger unit. The jogger fences close in on the sides of the stack on the paper tray. These side fences move in and out perpendicular to the direction of paper feed. [-3 to +3 / 0 / 0.1 mm] • 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. • 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.	
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	B5 LEF	
006	A5 LEF	
007	DLT SEF	
008	LG SEF	
009	LT SEF	
010	LT LEF	
011	HLT LEF	
012	Other	

6107	[CoverFeeder Size] Cover Feeder Size Change	
	This SP sets the priority paper size setting for the cover interposer tray (B704).	
001	JP/NA/EU (All)	0: A3

		1: 12"x18"
002	EU	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	0: Taiwan 8-Kai 1: DLT
007	EU	0: Taiwan 16-Kai 1: LT SEF
008	EU	0: Taiwan 16-Kai 1: LT LEF

6109	[Staple Position] Staple Position Adjustment
	Use this SP to shift the position of the stapling done by the corner stapler of the finisher. This SP shifts the staple position forward and back across the direction of paper feed. • A larger value shifts the stapling position to shift forward. • A smaller value shifts the stapling position backward. • The settings are done for each paper size. [-2 to +2 / 0 / 0.5 mm]

6113	[Folder Position] Adjust Booklet Fold Position	
	This SP corrects the folding postion when paper is stapled and folded.	
001	A3 SEF	[-3~+3/0.2 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	Custom Size	

6114	[Folding Number] Set Number of Folding Roller Passes to Sharpen Crease
	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. When set at the default (0): The folding blade pushes the center of the stack into the nip of the folding roller. 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. [1~6/0/1] 0:2, 1:5, 2:10, 3:15, 4:20, 5:25, 6:30 (passes)

6115	[Pre-Stack Number] Number of Pre-Stack Sheets
	This SP sets the number of sheets sent to the pre-stack tray. With this SP set to the default (3): 3 sheets are sent to the pre-stack tray. When the 4th sheet feeds, the 4th sheet and 3 sheets from the pre-stack tray are sent to the stapling tray together. **Note**: You may need to adjust this setting or switch it off when feeding thick or slick paper. [0~3/3/1] 0: None 1: 1 sheet 2: 2 sheets 3: 3 sheets

6116	[Staple Limit] Staple Limit Counter for Thick Paper
	Multiply the normal limit by this number to limit the size of the stack for stapling thick paper. [1~3/1 sheet]

6118	[Jogger Off/On]
	This SP switches the jogging operation of the output jogger unit attached to the side of the finisher off and on. [0~1/0/1] 0: Off, 1: On **Note**: After installation of the Output Jogger Unit B703, this SP must be set to "1" for the jogging motor to operate the jogging fences.

6119	[Thick Paper Punch] Punch Function Enabled (Thick Paper)
	Allows punching heavier paper, including tab sheets. [0~1/1] 0: Punching thick paper prohibited 1: Punching thick paper allowed

6120	[Finisher Free Run] Finisher Free Run (B706)		
	Selects the free run mode during testing.		
001	Free Run 1	Stapling Mode	Stapling only
002	Free Run 2	All Mode	All finisher operation is tested
003	Free Run 3	Packing Mode	Before you move the finisher to a new location, do this SP. When you switch on the machine after you moved it, the finisher automatically goes to the ready condition.
004	Free Run 4	Shift Mode	Tests the shift mode

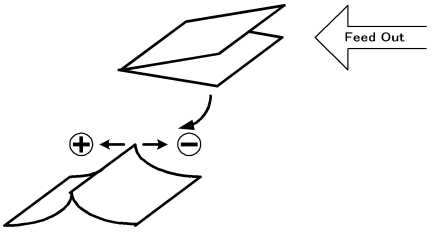
6121	[Input C Fin 1] Finisher Input Check: Finisher 1 (Finisher B700)
	Displays the signals received from sensors and switches of the finisher. See "Finisher 1 Input Check: SP6121"

6122	[Input C Fin 2] Finisher Input Check: Finisher 2 (Finisher B703)
	Displays the signals received from sensors and switches of the finisher. See " Finisher 2 Input Check: SP6122"

6124	[Output C Fin 1] Finisher Output Check: Finisher 1 (Finisher B700)

	Turn on the electrical components of the finisher individually for test purposes. See " Finisher 1 Output Check: SP6124"

6125	[Output C Fin 2] Finisher Output Check: Finisher 2 (Finisher B703)
	Turn on the electrical components of the finisher individually for test purposes. See " Finisher 2 Output Check: SP6125"

6126	[Fold Position Se] Booklet Fold Position Setting (Not used for G148)	
	This SP corrects the folding position when paper is stapled and folded in the Booklet Finisher.	
001	A3 SEF	[-3~+3/0/0.2 mm] + Value: Shifts staple position toward the crease. - Value: Shifts staple position away from the crease.  B132S924
002	B4 SEF	
003	A4 SEF	
004	B5 SEF	
005	DLT SEF	
006	LG SEF	
007	LT SEF	
008	Custom Size	

SP7xxx Data Logs

7001	[Main Motor] Main Motor Operation Time
	Displays the total drum rotation time.

7401	SC Counter	Total SC Counter
	Displays the total number of service calls that have occurred. Display range: 0000~9999	

7403	[Latest10SClog] SC History (Latest 10 Only)
	Displays information about the 10 most recent service calls (Code, Total, Date, and Details).

7502	[Total Jam] Total Paper Jam Counter

	Displays the total number of copy jams. Display range: 0000~9999

7504	[Jam Location] Paper Jam Location
	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.

Paper Late (Remains ON)	Paper Lag (Remains OFF)	What It Means
1 At power on		
3 Tray 1:ON	53 Tray 1:OFF	1st Paper Feed SN
4 Tray 2:ON	54 Tray 2:OFF	2nd Paper Feed SN
5 Tray 3:ON	55 Tray 3:OFF	3rd Paper Feed SN
6 Tray 4:ON	56 Tray 4:OFF	4th Paper Feed SN (Japan Only)
7 LCT:ON	57 LCT:OFF	LCT Paper Feed SN
8 Registration 1:ON	58 Registration 1:OFF	1st Vertical Transport SN
9 Registration 2:ON	59 Registration 2:OFF	2nd Vertical Transport SN
10 Registration 3:ON	60 Registration 3:OFF	3rd Vertical Transport SN
11 Registration 4:ON	61 Registration 4:OFF	4th Vertical Transport SN (Japan Only)
12 Middle Sensor:ON	62 Middle Sensor:OFF	Relay SN
13 Registration:ON	63 Registration:OFF	Registration SN
14 Fusing:ON		Fusing Exit SN
15 Duplex Exit:ON		Exit Unit Entrance SN
16 Duplex Exit:ON	66 Duplex Exit:OFF	Paper Exit SN
19 Ent Duplex:ON	69 Ent Duplex:OFF	Duplex Entrance SN
20 Ent Duplex 1:ON		Duplex Transport SN 1
21 Ent Duplex 2:ON	71 Ent Duplex 2:OFF	Duplex Transport SN 2

Paper Late (Remains ON)	Paper Lag (Remains OFF)	What It Means
22 Ent Duplex 3:ON	72 Ent Duplex 3:OFF	Duplex Transport SN 3
23 Exit Duplex:ON	73 Exit Duplex:OFF	Duplex Inverter SN
24 1-Bin Tray:ON	74 1-Bin Tray:OFF	1-Bin Tray SN Japan Only

7504	3000-Sheet Finisher B700 (Corner Stapling, Booklet Stapling)
Finisher 121	Finisher Entrance Sensor
	When the paper fails to activate the entrance sensor at the precise time or remains at the entrance sensor for longer than the prescribed time.
Finisher 122	Proof Tray Exit
	When the paper fails to activate the proof tray exit sensor at the precise time after activating the entrance sensor or remains at the proof tray exit sensor for longer than the prescribed time.
Finisher 123	Finisher Exit
	When the paper fails to activate the exit sensor at the precise time after activating the entrance sensor or remains at the exit sensor for longer than the prescribed time.
Finisher 124	Staple Tray
	When the paper fails to activate the staple entrance sensor at the precise time after activating the entrance sensor or remains at the staple entrance sensor for longer than the prescribed time.
Finisher 125	Jogging Tray
	When the paper from jogger unit fails to activate the exit sensor at the precise time or remains at the exit sensor for longer than the prescribed time.
Finisher 126	Corner Stapler
	When the stapler unit fails to send any signals while stapling.
Finisher 127	Booklet Stapler
	Finisher : When the booklet stapler fails to send any signals during stapling.
Finisher 128	Fold Unit

	When the status of the paper position does not change at the precise time during paper folding.
Finisher 129	Shift Tray
	When the status of the upper tray limit sensor does not change at the precise time while lifting the upper exit tray, the status of the upper tray full sensor does not change at the precise time while lowering the upper exit tray, or the status of the lower tray encoder sensor does not change at the precise time while moving the lower tray. Returns SC733, SC726
Finisher 130	Jogger Fences
	When the status of the jogger fence HP sensor does not change at the precise time during jogger fence motor rotation. Returns SC722
Finisher 131	Shift Roller or Guide Plate Motor
	When the status of the shift roller HP sensor does not change at the precise time during shift roller motor rotation, or the status of the guide plate position sensor does not change at the precise time during guide plate motor rotation. Returns SC732, SC736
Finisher 132	Stapler Movement or Stapler Rotation Motor
	When the status of the stapler HP sensor does not change at the precise time during stapler movement motor rotation, or the status of the stapler rotation sensor does not change at the precise time during stapler rotation motor. Returns SC730, SC727
Finisher 133	Stapler Unit
	Not logged. Returns SC724, SC740, SC741
Finisher 134	Folder Plate Jam
	When the status of the folder plate HP sensor does not change at the precise time during folder plate motor rotation. Returns SC739
Finisher 135	Feed Out Belt Motor
	When the status of the feed out belt HP sensor does not change at the precise time during feed out belt motor rotation. Returns SC725
Finisher 136	Punch Hole Motor
	When the status of the punch HP sensor does not change at the precise time during punch hole motor rotation. Returns SC729

7504	3000-Sheet Finisher (B706) Corner Stapling Only
141	Entrance Sensor
142	Upper Tray Exit
143	Shift Tray EXit
144	Staple Tray Exit
145	Transport Motors
148	Drive Motor
149	Tray Motor
150	Jogger Motor
151	Shift Tray Lift
153	Finisher 153. Stapler Unit
155	Staple Motor
156	Punch Motor

7504	Cover Interposer Tray (B704)
166	Inserter 1. Feed or Pull-out Sensor
	When the paper fails to activate the feed or pull-out sensor at the precise time.
167	Inserter 2. Exit Sensor
	When the paper fails to activate the exit sensor at the precise time or remains at the exit sensor for longer than the prescribed time.
168	Inserter 3. Bottom Plate Position Sensor
	When the status of the bottom plate position sensor does not change at the precise time during bottom plate motor rotation. Returns SC750,

7506	[Jam Paper Size] 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	
128	Other 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	Other SEF	

7507	[Jam History]	
001	Latest	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: CODE is the SP7504-** number (see above. SIZE is the ASAP paper size code in hex. TOTAL is the total jam error count DATE 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

7803	[PM Counter Displ]	Displays the PM counter since the last PM.
	Displays the PM counter since the last PM and resets the counter for PCU replacement to zero. When the count exceeds the setting for SP5501-03, the PCU count warning for replacement is displayed.	
001	Paper	This count is for the number of pages that exit the machine. Range: 0~9 999 999
002	PCU	

7804	[PM Counter Reset]
	Resets the PM counter. To reset, push [#Enter].

7807	[SC/Jam Clear]
	Resets the SC and jam counters. To reset, push [#Enter].This SP does not reset the jam history counters: SP7-507.

7832	[Diag. Result] Self-Display Diagnostic Test Result
	This SP displays the results of the self-diagnostic test executed at start up, or executed manually by switching the machine off, holding down [Online] and [#Enter], and then switching the machine on.

7834	[P Coverage] Clear Pixel Coverage Data
	These SPs clear the counters for the following items.

001	Last & Average pages	Last page and page average.
002	Toner Bottle in Use	Count for bottle currently in machine.
003	Page Counts (2 Prev. Toner Bottles)	Count for previous 2 toner bottles.
004	Pixel Cove C	Clears all counts.

7836	]Total Memory Size]
	Displays the memory capacity of the controller system.

7853	Alert Display	
	Set this SP to alert the operator when the specified number of sheets have passed through the units below. A total can be set for each unit.	
1	Dev	000 0000 Sheets
2	PCU	
3	Charge	
4	Trans-fer	
5	Fusing	

7901	Assert Info. **DFU**	
001	File Name	Used for debugging.
002	# of Lines	
003	Location	

7910	ROM No	ROM Number
7911	Firmware Ver.	Firmware Version
	Use these SP codes to display the ROM number (SP7910) and firmware version number (SP7911). This is the same information that appears under the "[ROM No./Firmware Version]" in the Self-Diagnostic Report printed with SP5990-005. Use these SP codes to display this information for quick reference or if you cannot print the report with SP5990-005.	

	001	System	154	R16	182	FONT2
	002	Engine	155	RPGL	183	FONT3
	007	Finisher	156	R55	200	Factory
	009	Bank (PTU)	157	RTIFF	202	Net File
	010	LCT	158	PCL	204	Printer
	018	NIB	159	PCXL	209	Test Suite
	023	HDD Format Optio	160	MSIS	210	MIB
	131	Bluetooth	161	MSIS(OPTION)	211	Web System
	150	RPCS	162	PDF	213	SDK1
	151	PS	163	BMLinks	214	SDK2
	152	RPDL	180	FONT	215	SDK3
	153	R98	181	FONT1		

SP8xxx: Data Log2

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.

Prefix	Application	What It Means
T:	Total:	Grand total of the items counted for all applications (C, F, P, etc.).
P:	Print.	Totals (pages, jobs, etc.) executed for each application when the job was not stored on the document server.
L:	Local	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. 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.

Prefix	Application	What It Means
O:	Other	Other applications (external network applications, etc.). Refers to network applications such as Web Image Monitor. Utilities developed with the SDK (Software Development Kit) are also counted.

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.

Note

- This is a complete list of abbreviations applies to all machines, including color copiers and printers. Therefore, not all of them are used in this manual.

Key for Abbreviations

Abbreviation	What It Means
/	"By", e.g. "T:Jobs/Apl" = Total Jobs "by" Application
>	More (2> "2 or more", 4> "4 or more"
AddBook	Address Book
Apl	Application
B/W	Black & White
Bk	Black
C	Cyan
ColCr	Color Create
ColMode	Color Mode
Comb	Combine
Comp	Compression
Deliv	Delivery
DesApl	Designated Application. The application (Copy, Fax, Scan, Print) used to store the job on the document server, for example.
Dev Counter	Development Count, no. of pages developed.
Dup, Duplex	Duplex, printing on both sides

Abbreviation	What It Means
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.
Rez	Resolution
SC	Service Code (Error SC code displayed)
Scn	Scan
Sim, Simplex	Simplex, printing on 1 side.
S-to-Email	Scan-to-E-mail
SMC	SMC report printed with SP5990. All of the Group 8 counters are recorded in the SMC report.
Svr	Server
TonEnd	Toner End
TonSave	Toner Save
TXJob	Send, Transmission
YMC	Yellow, Magenta, Cyan
YMCK	Yellow, Magenta, Cyan, BlacK

Note

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

8001	T:Total Jobs	These SPs count the number of times each application is used to do a job. [0~9999999/ 0 / 1]
8004	P: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 service technician using the SP modes are not counted.
- When a print job is stored 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.

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]
8024	P:Pjob/LS	
8027	O:Pjob/LS	

- When a job already on the document server is printed with another application, 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.

8031	T:Pjob/DesApl	These SPs reveal what applications were used to output documents from the document server. [0~9999999/ 0 / 1]
8034	P: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.

8061	T:FIN Jobs	[0~9999999/ 0 / 1]
	These SPs total the finishing methods. 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.	
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 1)
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 6.)
806x 7	Other	Reserved. Not used.

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.		
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.		
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

- 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.

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.
8384	P: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.
  - 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 jam.

8391	LSize PrtPGS	[0~9999999/ 0 / 1]
	These SPs count pages printed on paper sizes A3/DLT and larger.	

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]

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.	

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.	
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 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	

- These counts 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.

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.	
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.	
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.	
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.	
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)	

- 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.	
001	Bypass Tray	**Not Used**
002	Tray 1	Main Machine
003	Tray 2	Main Machine
004	Tray 3	Paper Tray Unit (Option)
005	Tray 4	Paper Tray Unit (Option)
006	Tray 5	LCT (Option)
007	Tray 6	Currently not used.
008	Tray 7	
009	Tray 8	
010	Tray 9	

8461	T:PrtPGS/Ppr Type	[0~9999999/ 0 / 1]
	These SPs count by paper type the number pages printed by all applications. • These counters are not the same as the PM counter. The PM counter is based on feed timing to accurately measure the service life of the feed rollers. These counts are based on output timing. • Blank sheets (covers, chapter covers, slip sheets) are also counted. • During duplex printing, pages printed on both sides count as 1, and a page printed on one side counts as 1.	
8464	P:PrtPGS/Ppr Type	[0~9999999/ 0 / 1]
	These SPs count by paper type the number pages printed by the printer application.	
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. (The magnification settings are done in the printer driver.)	
001	~49%	
002	50%~99%	
003	100%	
004	101%~200%	
005	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.

	[0~9999999/ 0 / 1]

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.	
001	RPCS	
002	RPDL	
003	PS3	
004	R98	
005	R16	
006	GL/GL2	
007	R55	
008	RTIFF	
009	PDF	
010	PCL5e/5c	
011	PCL XL	
012	IPDL-C	
013	BM-Links	**Japan Only**
014	Other	

- SP8511 and SP8514 return the same results because 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.	
8524	P:PrtPGS/FIN	[0~9999999/ 0 / 1]
	These SPs count by finishing mode the total number of pages printed by the Print application.	

852x 1	Sort
852x 2	Stack
852x 3	Staple
852x 4	Booklet
852x 5	Z-Fold
852x 6	Punch
852x 7	Other

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

8531	Staples	This SP counts the number of staples used by the machine. [0~9999999/ 0 / 1]

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	

8591	O:Counter	[0~9999999/ 0 / 1]
	These SPs count the totals for A3/DLT paper used, number of duplex pages printed, and the number of staples used. These totals are for Other (O:) applications only.	
001	A3/DLT	
002	Duplex	

8601	Coverage Counter		
	These counts correspond to the total counts recorded with the mechanical counter.		
001	Cvg: BW %	Coverage: BW Pages	
011	Cvg: BW Pages	Coverage: BW Percent	

8771	Dev Counter	[0~9999999/ 0 / 1]

	This SP counts the number of development roller rotations for development. frequency of use (number of rotations of the development rollers) for black.

8781	Pixel Coverage Ratio
	This SP displays the count for the number of toner bottles used. The count is done based on the assumption that one toner bottle yields about 1,000 printed pages.

8801	Toner Remain	[0~100/ 0 / 1]
	This SP displays (as a percentage) the amount of toner remaining. 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).	

8851	Toner Coverage 0-10%	[0~9999999]
	These SPs count the percentage of dot coverage for K toner.	
011	0~2%:BK	
021	3~4%:BK	
031	5~7%:BK	
041	8~10%:BK	

8861	Toner Coverage 11-20%	[0~9999999]
	This SP counts the number of prints that had a percentage of black dot coverage in the range 11-20%.	

8871	Toner Coverage 21-30%	[0~9999999]
	This SP counts the number of prints that had a percentage of black dot coverage in the range 21-30%.	

8881	Toner Coverage 31 -%	[0~9999999]
	This SP counts the number of prints that had a percentage of black dot coverage in the range above 31%.	

8891	Coverage Display (Current)	DFU
8901	Coverage Display (Previous)	DFU
8911	Coverage Display (Before Previous)	DFU

8921	Dot Coverage Count Total	
	These counters count the percentage of dot coverage for K toner. (This machine uses only black toner)	
001	Coverage (%):BK	
002	Coverage/P:BK	

8941	Machine Status	[0~9999999/ 0 / 1]
	These SPs count the amount of time the machine spends in each operation mode. These SPs are useful for customers who need to investigate machine operation for improvement in their compliance with ISO Standards.	
001	Operation Time	Engine operation time. Does not include time while controller is saving data to HDD (while engine is not operating).
002	Standby Time	Engine not operating. Includes time while controller saves data to HDD. Does not include time spent in Energy Save mode.
003	Energy Save Time	Includes time while the machine is performing background printing.
004	Low Power Time	Includes time in Energy Save mode with Engine on. Includes time while machine is performing background printing.
005	Off Mode Time	Includes time while machine is performing background printing. Does not include time machine remains powered off with the power switches.
006	SC	Total down time due to SC errors.
007	PrtJam	Total down time due to paper jams during printing.
009	PM Unit End	Total down time due to toner end.

8999	Admin Counter	Machine Administration Counter
	This SP displays the counts for the items listed below. Use this SP as a quick reference to see the total counts of the corresponding SP codes listed below.	

	Note: This machine supports K printing only, so the counts for 015 and 017 are identical.	
001	Total (SP8381 001)	Total output (sheets exited from the machine).
012	A3/DLT (SP8391 001)	Total output for large size paper.
013	Duplex (SP8411 001)	Total output of duplexed sheets.
015	Cvg:BW% (SP8601 001)	Total output of K pages.
017	Cvg:BW Pages (SP8601 011)	Total output of K pages.

Input/Output Check

Printer Input Check: SP5803

Enter the SP mode and select SP5803.

1. **Press △▽ together (5s), release, then press [#Enter].**

   System Ver.1.00
   1. Service

2. **Press ▽.**

   System Ver. 1.00
   2. Engine

3. **Press [#Enter].**

   <Engine>
   1. Feed

4. **Press ▽ to display "5. Mode".**

   <Engine>
   5. Mode

5. **Press [#Enter].**

   SP5024
   mm/inch Display

6. **Press △ to display "Input Check".**

   SP5803 >>
   Input Check

7. **Press [#Enter].**

   SP5803-001
   Paper Feed 1

8. **Press △ or ▽ to select the item to check.**

   SP5803-013
   Full Exit Tray 2

9. Press [#Enter]. Refer to the table on the next page.

Full Exit Tray 2
(7)00001010(0)

1. Paper Feed 1			
Bit	Description	Reading	
		0	1
7	Rear Side Fence Close Sensor	Activated	Deactivated
6	Rear Side Fence Open Sensor	Activated	Deactivated
5	Front Side Fence Close Sensor	Activated	Deactivated
4	Front Side Fence Open Sensor	Activated	Deactivated
3	Near End Sensor	(see tables below)	
2	Paper Height 1 Sensor		
1	Paper Height 2 Sensor		
0	Paper Height 3 Sensor		

2. Paper Feed 2			
Bit	Description	Reading	
		0	0
7	2nd Paper Size Switch	See Paper Size Tables Below	
6	2nd Paper Size Switch		
5	2nd Paper Size Switch		
4	2nd Paper Size Switch		
3	2nd Paper Size Switch		
2	Not used		
1	Not used		
0	Not used		

	1500 sheets	1000 sheets			400 sheets			70 sheets
bit-3	0	0	0	0	0	0	1	1
bit-2	0	0	0	1	1	1	1	0
bit-1	0	0	1	1	1	0	0	0
bit-0	0	1	1	0	0	0	0	0

3. Paper Feed 3			
Bit	Description	Reading	
		0	0
7	3rd Paper Size Switch	See Paper Size Tables Below.	
6	3rd Paper Size Switch		
5	3rd Paper Size Switch		
4	3rd Paper Size Switch		
3	3rd Paper Size Switch		
2	Not used		
1	Not used		
0	Not used		

Universal Tray Size Detection – N.A. models only

Paper Size	Switch Setting (LOW = pressed)					Panel Display
11" x 17"	LOW	HIGH	HIGH	HIGH	HIGH	11" x 17" SEF
81/2" x 14"	LOW	LOW	HIGH	HIGH	HIGH	81/2" x 14" SEF
81/2" x 11"	HIGH	LOW	LOW	HIGH	HIGH	81/2" x 11" SEF
11" x 8 ½"	LOW	HIGH	LOW	LOW	HIGH	81/2" x 11" LEF
51/2" x 81/2"	LOW	LOW	HIGH	LOW	LOW	51/2" x 81/2" SEF
81/2" x 51/2"	LOW	LOW	LOW	HIGH	LOW	81/2" x 51/2" LEF
8" x 101/2"	LOW	LOW	LOW	LOW	HIGH	8" x 101/2" SEF

7¼" x 101/2"	HIGH	LOW	LOW	LOW	LOW	71/4" x 101/2" SEF
8" x 13"	HIGH	HIGH	LOW	LOW	LOW	8" x 13" SEF
*	HIGH	HIGH	HIGH	HIGH	LOW	In [Menu] display (user tool setting).

Universal Tray Size Detection – EU/ASIA models

Paper Size	Switch Setting (LOW = pressed)					Panel Display
A3 SEF	LOW	HIGH	HIGH	HIGH	HIGH	A3 SEF
81/4" x 13"	LOW	LOW	HIGH	HIGH	HIGH	81/4" x 13" SEF
A4 SEF	HIGH	LOW	LOW	HIGH	HIGH	A4 SEF
A4 LEF	LOW	HIGH	LOW	LOW	HIGH	A4 LEF
81/2" x 13"	LOW	LOW	HIGH	LOW	LOW	81/2" x 13" SEF
A5 SEF	LOW	LOW	LOW	HIGH	LOW	A5 SEF
A5 LEF	LOW	LOW	LOW	LOW	HIGH	A5 LEF
*	HIGH	HIGH	HIGH	HIGH	LOW	In [Menu] display (user tool setting).

4. Paper Feed 4			
Bit	Description	Reading	
		0	1
7	1st Paper Height	Less than 30%	30% or more
6	Japan only		
5	2nd Paper Height	Less than 30%	30% or more
4	3rd Paper Height	Less than 30%	30% or more
3	1st Paper Near End	Near End	Not Near End
2	Japan only		
1	2nd Paper Near End	Near End	Not Near End

0	3rd Paper Near End	Near End	Not Near End

5. Paper Feed 5			
Bit	**Item**	**Reading**	
7	Japan Only		
6			
5			
4			
3			
2	Right Tray Paper Sensor	Present	Not Present
1	Tray Type	3 trays	4 trays
0	Not used		

6. Paper Feed 6			
Bit	**Description**	**Reading**	
		0	1
7	Left Tandem Tray Set	Set	Not set
6	Japan only		
5	Japan only		
4	Rear Fence HP Sensor	Deactivated	Activated
3	Japan only		
2	Rear Fence Return Sensor	Deactivated	Activated
1	Left Tray Paper Sensor	Paper present	Paper not present
0	Right Tandem Tray Set	Set	Not set

7. Paper Feed 7

Bit	Item	0	1
7	1st Paper Feed Sensor	Present	Not present
6	Japan Only	---	---
5	2nd Paper Feed Sensor	Present	Not present
4	3rd Paper Feed Sensor	Present	Not present
3	1st Vertical Transport Sensor	Present	Not present
2	Japan Only	---	---
1	2nd Vertical Transport Sensor	Present	Not present
0	3rd Vertical Transport Sensor	Present	Not present

8. Paper Feed 8

Bit	Item	0	1
7	1st Tray Lift Sensor	Off	On
6	Japan Only	Off	On
5	2nd Tray Lift Sensor	Off	On
4	3rd Tray Lift Sensor	Off	On
3	1st Paper End Sensor	Paper	No Paper
2	Japan Only	Paper	No Paper
1	2nd Paper End Sensor	Paper	No Paper
0	3rd Paper End Sensor	Paper	No Paper

9. Paper Feed 9

Bit	Description	Reading	
		0	1
7	Not used		
6	Not used		

5	Toner Overflow SW	Switch not pressed	Switch pressed
4	Toner Collection Bottle Set SW	Switch pressed	Switch not pressed
3	Not used		
2	Not used		
1	Not used		
0	Not used		

10. Paper Feed 10 DFU

11. Paper Feed 11 DFU

12. DIP Switches DFU

13. Exit

Bit	Description	Reading	
		0	1
7	Toner Collection Motor Sensor	Deactivated	Activated
6	Toner End Sensor	Toner end	Not toner end
5	Toner Collection Coil Sensor	Deactivated	Activated
4	Not used		
3	Exit Unit Set	Set	Not set
2	Paper Exit Sensor	Paper present	Paper not present
1	Exit Unit Entrance Sensor	Paper present	Paper not present
0	Web End Sensor	Not web end	Web end

14. Duplex

Bit	Description	Reading

		0	1
7	Not used		
6	Duplex Unit Set	Set	Not set
5	Duplex Transport 3 Sensor	Paper present	Paper not present
4	Duplex Transport 2 Sensor	Paper present	Paper not present
3	Duplex Transport 1 Sensor	Paper present	Paper not present
2	Duplex Jogger HP Sensor	Deactivated	Activated
1	Duplex Inverter Sensor	Paper not present	Paper present
0	Duplex Entrance Sensor	Paper not present	Paper present

15. Lock Detection 1

Bit	Description	Reading	
		0	1
7	Key Card Set	Set	Not set
6	Development Motor Lock	Not locked	Locked
5	Fusing/Exit Motor Lock	Locked	Not locked
4	Drum Motor Lock	Not locked	Locked
3	CPM	60 CPM	75 CPM
2	Not used		
1	Not used		
0	Not used		

16. Lock Detection 2

Bit	Description	Reading	
		0	1
7	Charge Corona Leak	Leaked	Not leaked
6	Not used		

5	Toner Collection Motor Lock	Locked	Not locked
4	Exhaust Fan Lock	Locked	Not locked
3	Not used		
2	Not used		
1	Not used		
0	Not used		

17. Registration Sensor			
Bit	Description	Reading	
		0	1
7	Not used		
6	Not used		
5	Front Door Open	Open	Closed
4	Copy Tray Full Sensor	Not full	Full
3	Guide Plate Position Sensor	Closed	Open
2	Relay Sensor	Paper present	Paper not present
1	By-pass Paper End Sensor (**Not Used**)	Paper present	Paper not present
0	Registration Sensor	Paper present	Paper not present

Printer Output Check: SP5804

Important

- **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.**

Enter the SP mode and select SP5804.

1. **Press △▽ together (5s), release, then press [#Enter].**

```
System Ver.1.00
1. Service
```

2. **Press ▽.**

   System Ver. 1.00
   2. Engine

3. **Press [#Enter].**

   <Engine>
   1. Feed

4. **Press ▽ to display "5. Mode".**

   <Engine>
   5. Mode

5. **Press [#Enter].**

   SP5024
   mm/inch Display

6. **Press ▽ repeatedly to display "Output Check".**

   SP5804 >>
   Output Check

7. **Press [#Enter].**

   SP5804-001
   1st.PaperFeedCl.

8. **Press △ or ▽ to display the item to check.**

   SP5804-027
   Fuser Exit Motor

9. **Press [#Enter].**

   <Fuser Exit Motor>

10. **Press [#Enter] to switch the component on, then press [#Enter] to switch it off.**

    Fuser Exit Motor
    Fuser Exit Motor

11. **Press [Escape], then repeat Steps 8 to 11 to check other items.**
12. **When you are finished press [Escape] until you see "2.Engine", then select "3.End".**

SP5804 Output Check Table

No.	Description
1	Feed Motor 1
2	Feed Motor 2
3	Feed Motor 3
4	Feed Motor 4
5	By-pass Feed Clutch (Not Used)
6	LCT Paper Feed Motor
9	Pick-up SOL 1
10	Pick-up SOL 2
11	Pick-up SOL 3
12	Pick-up SOL 4
13	By-pass Pick-up SOL (Not Used)
14	LCT Pick-up SOL
17	Reverse Release (SOL 1)
18	Reverse Release (SOL 2)
19	Reverse Release (SOL 3)
20	Reverse Release (SOL 4)
22	Tandem Release (SOL)
23	Left Tandem Lock (SOL)
24	Tandem Transport Motor
27	Relay Motor
28	Main Motor
31	Fusing Exit Motor
39	Registration Motor
40	Guide Plate Release (SOL)

41	Exit Junction (SOL)
43	Inverter Duplex Motor
44	Duplex Transport Motor
45	Duplex Entrance (Junction Gate SOL)
46	Inverter Jogger (SOL)
48	Duplex JOG
52	Development Roller Clutch
53	Development Motor
54	Used Toner Motor
55	Web Motor
56	Toner Bottle Motor
57	Transfer Separation CL
62	Quenching Lamp
63	Charge Corona
64	Grid Wire
67	Development Bias
69	Transfer Bias
70	ID Sensor LED
72	Xenon Lamp
75	Duplex Unit Fan
76	Main Ventilation Fan
77	Main Suction Fan
78	Main Vacuum Fan
79	OPC Fan
80	FIN Junction SOL
81	FIN Junction SOL (Stapler)

82	FIN End Roller SOL
84	Total Counter
85	FIN Main Motor 1
86	FIN Main Motor 2
87	FIN Exit Motor
88	FIN Stapler Motors
89	FIN Punch Motor
90	LD DC Lamp DFU
92	FIN Tray Lift Motor
93	FIN Jogger Motor
94	FIN Staple Transport Motor
95	FIN Exhaust Motor
96	FIN Shift Motor
97	FIN Staple Slant Motor
98	Status Lamp (Green)
99	Status Lamp (Red)
100	PTL

Finisher 1 Input Check: SP6121

6121	[Input C Fin 1]		
	These are the input checks for the 2000-Sheet Sheet Finishers B700.		
001	Entrance Sensor	026	Punch Chad Full Sensor
002	Proof Exit Sensor	027	Punch HP Sensor
003	Proof Full Detection Sensor	028	Punch Selection (DIP SW1)
004	Trailing Edge Shift	029	Punch Selection (DIP SW2)

6121	[Input C Fin 1]		
005	Staple Exit Sensor	030	Stack Junction Sensor
006	Shift HP Sensor	031	Leading Edge Detection Sensor
007	Shift Exit Sensor	032	Drum Roller HP Sensor
008	Exit Guide Plate HP Sensor	033	Arrival Sensor
009	Paper Sensor: Staple	034	Rear Edge Fence HP Sensor
010	Paper Sensor: Shift	035	Folder Cam HP Sensor
011	Paper Full Sensor: 2000	036	Folder Plate HP Sensor
012	Oscillating Back Roller HP Sensor	037	Folder Pass Sensor
013	Jogger HP Sensor	038	Saddle Full Sensor: Front
014	Exit Junction Gate HP Sensor	039	Saddle Full Sensor: Rear
015	Staple Tray Paper Sensor	040	Saddle Stapler 1 Rotation: Front
016	Stapler Moving HP Sensor	041	Saddle Detection: Front
017	Skew HP Sensor	042	Saddle Leading Edge Detection
018	Limit Switch	043	Saddle Stapler 1 Rotation: Rear
019	Door Switch	044	Saddle Detection: Rear
020	Stapler 1 Rotation	045	Saddle Leading Edge Detection
021	Staple Detection	046	Full Sensor: 3000-Sheet
022	Staple Leading Edge Detection	047	Exit Jog HP Sensor: Front
023	Punch Moving HP Sensor	048	Exit Jog HP Sensor: Rear
024	Punch Registration Sensor	049	Exit Jog HP Sensor: Upper
025	Punch Registration Detection		

Finisher 1 Output Check: SP6124

6124	[Output C Fin 1]		
	These are the output checks for the 2000-Sheet Finishers B700.		
001	Entrance Motor	017	Knock (Positioning Roller) Solenoid
002	Upper Feed Motor	018	Trailing Edge Hold Sensor
003	Lower Feed Motor	019	Saddle-Stitch Hold Sensor
004	Exit Motor	020	Stack Junction Motor
005	Knock (Positioning) Roller Motor	021	Trailing Edge Fence Motor
006	Shift Motor	022	Saddle Stapler Motor: Front
007	Exit Guide Plate Motor	023	Saddle Stapler Motor: Rear
008	Tray Lift Motor	024	Folder Plate Motor
009	Oscillating Roller Motor	025	Folder Roller Motor
010	Jogger Motor	026	Drive Roller Oscillating (Clamp) Motor
011	Stack Feed Out Motor	027	Punch Motor
012	Stapler Moving Motor	028	Punch Moving Motor
013	Staple Skew (Rotation) Motor	029	Punch Registration Detection Motor
014	End Stapler Motor	030	Exit Jogger Motor: Front

6124	[Output C Fin 1]		
015	Upper Junction Gate Solenoid	031	Exit Jogger Motor: Rear
016	Lower Junction Gate Solenoid	032	Exit Jogger Release Motor

Finisher 2 Input Check: SP6122

6122	[Inpput C Fin 2]		
	These are the input checks for the 3000-Sheet Finisher B706.		
001	Entrance Sensor	021	Proof Full Sensor
002	Proof Exit Sensor	022	Stapler Moving HP Sensor
003	Shift Exit Sensor	023	Staple Waste Hopper Sensor
004	Staple Exit Sensor	024	Pre-Stack Tray HP Sensor
005	Tray Lower Sensor	025	Hold HP Sensor
006	Tray Near Lower Sensor	026	Exit Guide HP Sensor
007	Stack Feed Out HP Sensor	027	Stapler Reverse Sensor
008	Jogger HP Sensor	028	Stapler Sensor
009	Shift HP Sensor	029	Front Hold HP Sensor
010	Stapler Moving HP Sensor	030	Rear Hold HP Sensor

6122	[Inpput C Fin 2]		
011	Staple HP Sensor	031	Knock Hold HP Sensor
012	Staple Cartridge Sensor	032	Reverse Drive HP Sensor
013	Staple Tray Paper Sensor	033	Paper Sensor
014	Door Sensor	034	Tray Lower Sensor
015	Punch Unit Sensor	035	Punch HP2 Sensor
016	Punch HP 1 Sensor	036	Shift Jog Sensor
017	Punch Chad Full Sensor	037	Shift Jog HP Sensor
018	Paper Sensor: Staple	038	Shift Jog Release HP Sensor
019	Paper Sensor: Shift	039	Front Door Safety Switch
020	Staple Cartridge Set Sensor		

Finisher 2 Output Check: SP6125

6125	[Output C Fin 2]		
	These are the input checks for the 3000-Sheet Finisher B706.		
001	Job Cancel	014	Staple Lift Motor
002	Main Motor	015	Staple Exit Motor
003	Shift Tray Exit Motor	016	Exit Motor

6125	[Output C Fin 2]		
004	Proof Junction Gate Solenoid	017	Hold (Fold Plate) Motor
005	Shift Relay Motor	018	Pre-Stack Solenoid
006	Jogger Motor	019	Guide (Junction Gate) Solenoid
007	Stapler Moving Motor	020	Stapler Release Solenoid
008	Stapler Motor	021	Front Hold (Fold) Motor
009	Punch Motor	022	Rear Hold Motor
010	Stapler Solenoid	023	Reverse Drive Motor
011	Knock (Staple Hammer) Motor	024	Reverse Feed Motor
012	Stack Feed Out Motor	025	Exit Jogger Motor
013	Shift Motor	026	Exit Jog Release Motor

DIP Switch Tables

BCU (Base Engine Control Unit)

BCU Base Board DIP SW101

No.	Function	Default	Comments
1	DFU	OFF	
2	DFU	OFF	
3	DFU	OFF	
4	Not used	OFF	
5	Not used	OFF	
6	Region Selection	-	Japan: 6, 7, 8/ OFF, OFF, OFF
7	Region Selection	-	NA (115V): 6, 7, 8/ ON, OFF, OFF
8	Region Selection	-	EU (220/240V): 6, 7, 8/ OFF, ON, OFF

DFU: Design, Factory Use only. Do not change these settings.

Controller Board

Controller Board DIP SW 4

No.	Function	Default	Comments
1	Not used	OFF	
2	Boot mode	ON	ON: Quick Boot, OFF: Normal Boot Note: The boot time is longer when this switch is OFF because the machine performs a full system check.
3	Not Used	OFF	
4	Not Used	OFF	
5	Boot Selection	OFF	Flash ROM Boot: 5, 6, 7/ OFF, OFF, OFF
6	Boot Selection	OFF	SD Card 1 Boot: 5, 6, 7/ OFF, ON, OFF

7	Boot Selection	OFF	SD Card 2 Boot: 5, 6, 7/ ON, ON, OFF SD Card 3 Boot: 5, 6, 7/ OFF, OFF, ON
8	Not Used	OFF	

Controller Board DIP SW 5

No.	Function	Default	Comments
1	DFU	OFF	
2	Not Used	OFF	

Note

- DFU: Design, Factory Use only. Do not change these settings.

Controller Board DIP SW 6

No.	Function	Default	Comments
1	Not Used	OFF	
2	Not Used	OFF	
3	Not Used	OFF	
4	Not Used	OFF	

Using the Debug Log

This machine provides a debug log feature that allows the service technician to save and retrieve error information for analysis.

Every time an error occurs, debug information is recorded in RAM but this information is lost when the machine is switched off and on.

To capture this debug information, the Save Debug Log feature provides two main features:

- Switching on the debug feature so error information is saved directly to the HDD for later retrieval.
- Copying the error information from the HDD to an SD card.

When a user is experiencing problems with the machine, follow the procedures below to set up the machine so the error information is saved automatically to the HDD. Then attempt to duplicate the problem so the error data will be stored.

5

Setting Up "Save Debug Log"

The debug information cannot be saved until the "Save Debug Log" function is switched on and a target is selected.

To Switch Debug Log On

1. **To enter the SP mode, press △▽ together (5s), release, then press [#Enter].**
2. **Select SP5857.**

   SP5857 >>
   Save Debug Log

3. **Push [#Enter].**

   SP5857-001
   On/Off

4. **Push [#Enter].**

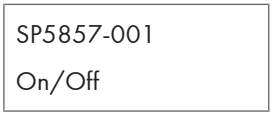
   <On/Off>
   *OFF

5. **Push ▽.**

   <On/Off>
   ON

6. **Push [#Enter].**

7. **Push [Esc].**

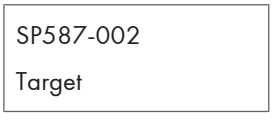


8. **Do the next procedure to select the target.**

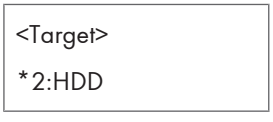
To Select the Target for the Debug Log File

You can select either the HDD (default) or the SD card as the target. This procedure shows you how to select the SD card.

1. **Push ▽.**

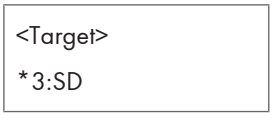


2. **Push [#Enter].**



3. **Push ▽.**

4. **Push [#Enter].**



5. **Push [Esc] twic.**

6. **Do the next procedure to select the events that you want to record in the debug log file.**

To Select Events

1. **Push ▽.**

SP5858 >> DebugSaveWhen

2. **Push [#Enter].**

SP5858-001 EngineSC Error

Here is a list of the events that you can select. Any number of events can be selected.

SP No.	Name	What It Does
SP5858-001	EngineSC Error	Saves error data when an engine-related SC code occurs.
SP5858-002	SystemSC Error	Saves error data when a controller-related SC Code occurs.
SP5858-003	Any SC Error	Saves error data only for the SC code that you specify by manually entering the SC code number.
SP5858-004	Jam	Saves error data for jams.

Example 1: To Select Items 001, 002, or 004

1. **Push △ or ▽ to select 001, 002, or 003. This example shows the selection of 001.**

SP5858-001 EngineSC Error

2. **Push [#Enter].**

<EngineSC Error> *OFF

3. **Push ▽.**

<EngineSC Error> ON

4. **Push [#Enter].**

<EngineSC Error> *ON

5. **Push [Esc].**

SP5858-001 EngineSC Error

6. **Repeat this procedure to select either 002 or 004.**

Example 2: To set an SC code with 003

This example shows you how to enter "672" for SC672.

Note

- For details about SC code numbers, please refer to the SC tables in Section "4. Troubleshooting".

7. **Select "SP5858-003".**

SP5858-003 Any SC Code

8. **Push [#Enter].**

0000000 _

9. **Push [#Enter] to toggle the on the number display in the 2nd line.**

0000000 0

10. **Push △ or ▽ to display "2".**

0000000 2

11. **Push [#Enter] to enter the "2" in the line above.**

0000002 _

12. **Push △ or ▽ to move the cursor to the next digit.**

. 0000002 _

13. **Repeat Steps 2 to 6 to enter the "7".**

. 0000072
_

14. **Repeat Steps 2 to 6 to enter the "6".**

. 0000672
_

15. **Push [Esc] twice.**

SP5858 >>
DebugSaveWhen

16. **Do the next procedure to select one or more memory modules for the debug error data recording.**

5

To select one or more memory modules for recording in the debug log file

1. **Select SP5859.**

SP5859 >>
LogSaveKey No.

2. **Push [#Enter].**

SP5859
Key 1

3. **Push [#Enter].**

0000000
_

Note

- The default settings for Keys 1 to 10 are all zero ("0").

4. **Select the number from the table below, then use these key presses to enter the number.**

0002222
_

Key Press	What It Does
△ or ▽	Moves the cursor to select the digit in the line above.
[#Enter]	Enters the number entry mode (displays a "0" at the cursor).
△ or ▽	Selects the number to enter at the digit position in the line above.
[#Enter]	Enters the selected number in the line above and exits the entry mode you can select the next position with △ or ▽

5. **Refer to the table below for the 4-digit numbers to enter for each key. (The acronyms in parentheses indicate the names of the modules.)**

4-Digit Entries for Keys 1 to 10

Key No.	Printer	Web
1	2222 (SCS)	
2	2223 (SRM)	
3	256 (IMH)	
4	1000 (ECS)	
5	1025 (MCS)	
6	4400 (GPS)	5682 (NFA)
7	4500 (PDL)	6600 (WebDB)
8	4600 (GPS-PM)	3300 (PTS)
9	2000 (NCS)	6666 (WebSys)
10	2224 (BICU)	2000 (NCS)

Key to Acronyms

Acronym	Meaning
ECS	Engine Control Service
GPS	GW Print Service
GSP-PM	GW Print Service – Print Module
IMH	Image Memory Handler

Acronym	Meaning
MCS	Memory Control Service
NCS	Network Control Service
NFA	Net File Application
PDL	Printer Design Language
PTS	Print Server
SCS	System Control Service
SRM	System Resource Management
WebDB	Web Document Box (Document Server)

The machine is now set to record the debugging information automatically on the SD card or HDD (the target selected with SP5857-002) for the events that you selected SP5858 and the memory modules selected with SP5859.

Please keep the following important points in mind when you are doing this setting:

- 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.
- One area of the disk is reserved to store the debug log. The size of this area is limited to 4 MB.

Retrieving the Debug Log from the HDD

1. **Insert the SD card into service slot C3.**
2. **Enter the SP mode and execute SP5857 009 (HDD for SD (4MB)) to write the debugging data to the SD card.**
3. **Use a card reader to copy the file and send it for analysis to your local Ricoh representative by email, or just send the SD card by mail.**

More About Debug Log

SP5857-015: SD to SD (Any)

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: Make HDD LogFile

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: Make SD Log File

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.

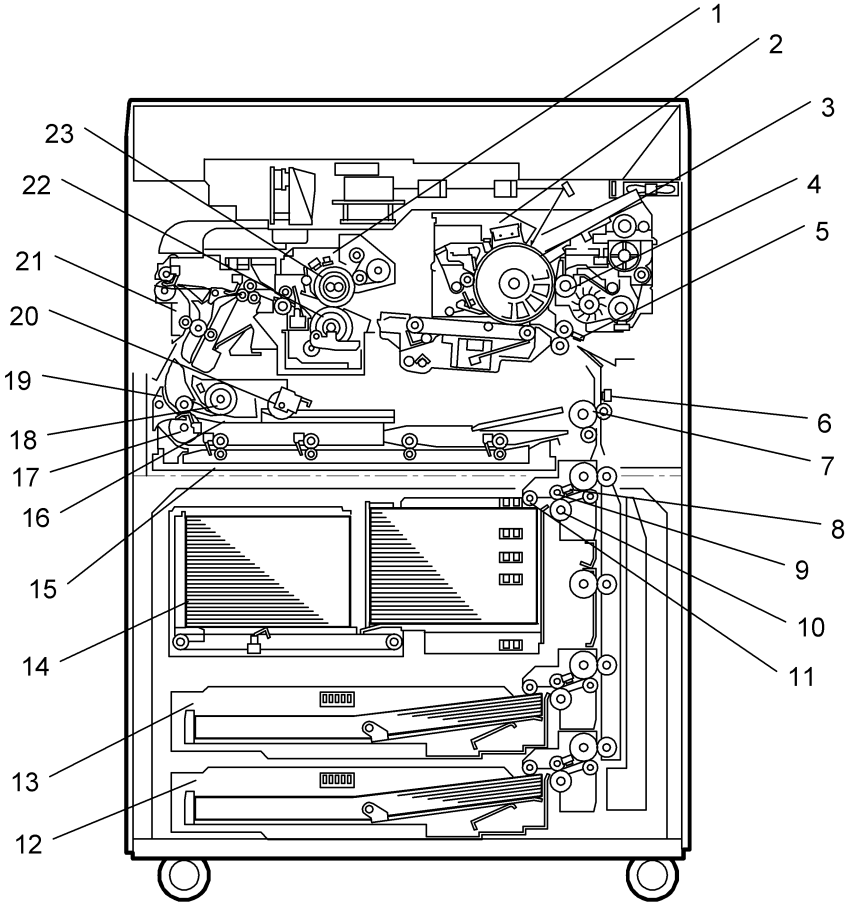
Even if this SP is not executed, a file is created on the SD card when the first log is stored on the SD card, but this operation takes time. This creates the possibility that the machine may be switched off and on before the log can be created completely.

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. Details

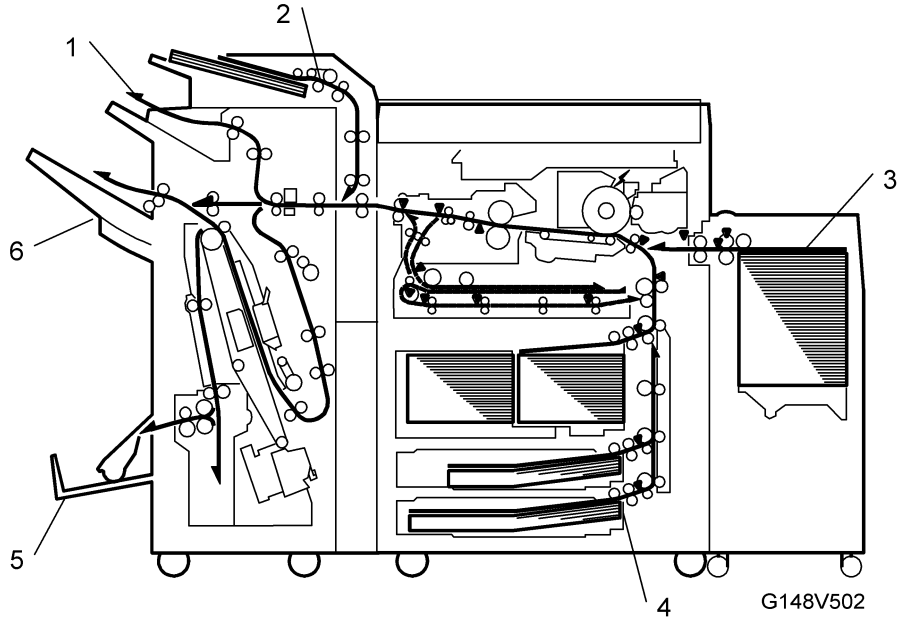
Overview



1. Fusing Unit
2. Development Unit
3. OPC Drum
4. Development Roller
5. Registration Sensor
6. Relay Sensor
7. Upper Relay Roller
13. Universal Tray (Tray 2)
14. Tandem Tray (Tray 1)
15. Duplex Unit
16. Inverter
17. Inverter Exit Roller
18. Inverter Entrance Roller
19. Duplex Junction Gate

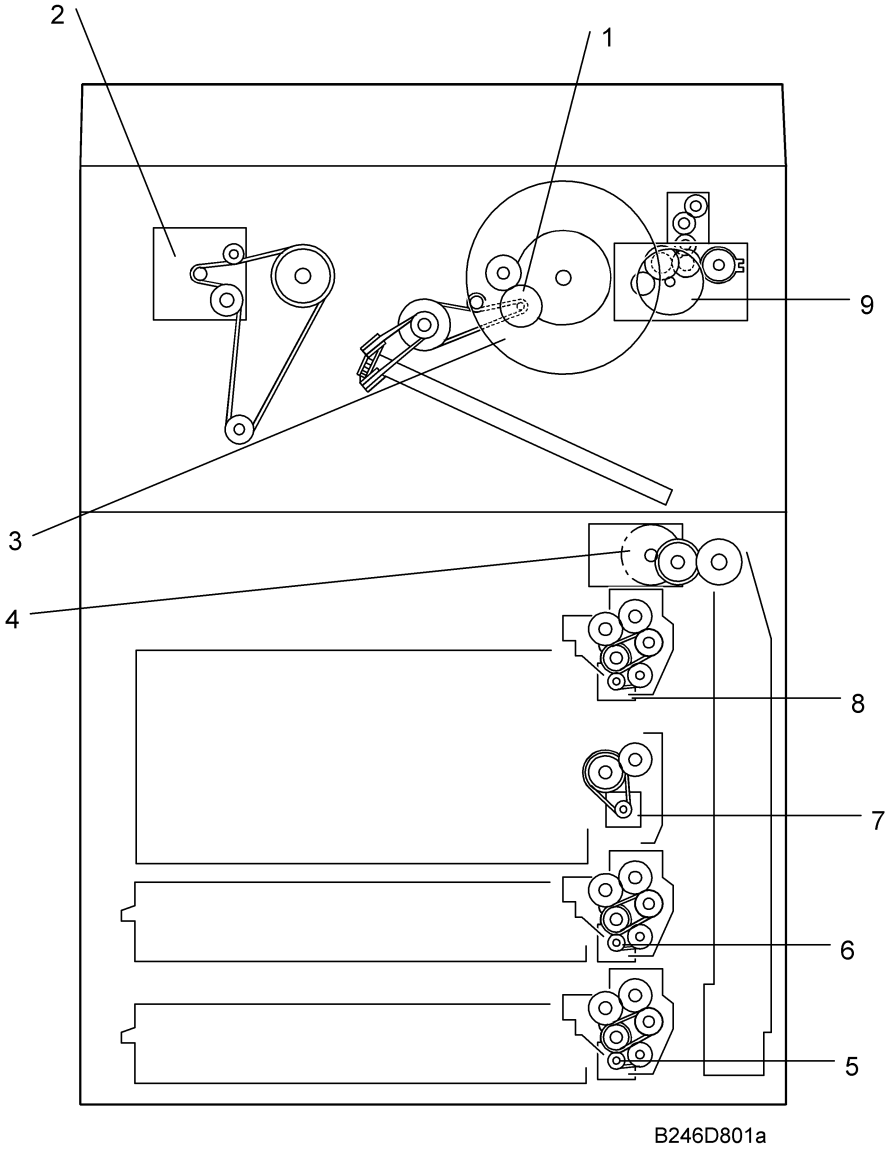
8. Feed Sensor (Paper Tray)
9. Feed Roller (Paper Tray)
10. Separation Roller (Paper Tray)
11. Pick-up Roller (Paper Tray)
12. Universal Tray (Tray 3)
20. Reverse Trigger Roller
21. Exit Unit
22. Pressure Roller
23. Hot Roller

Paper Path (With Cover Interposer Tray)



1. Proof Exit Tray
2. Cover Sheet Path
3. LCT Feed
4. Vertical Transport Path
5. Finisher Exit Tray 2 (for Booklets)
6. Finisher Exit Tray 1

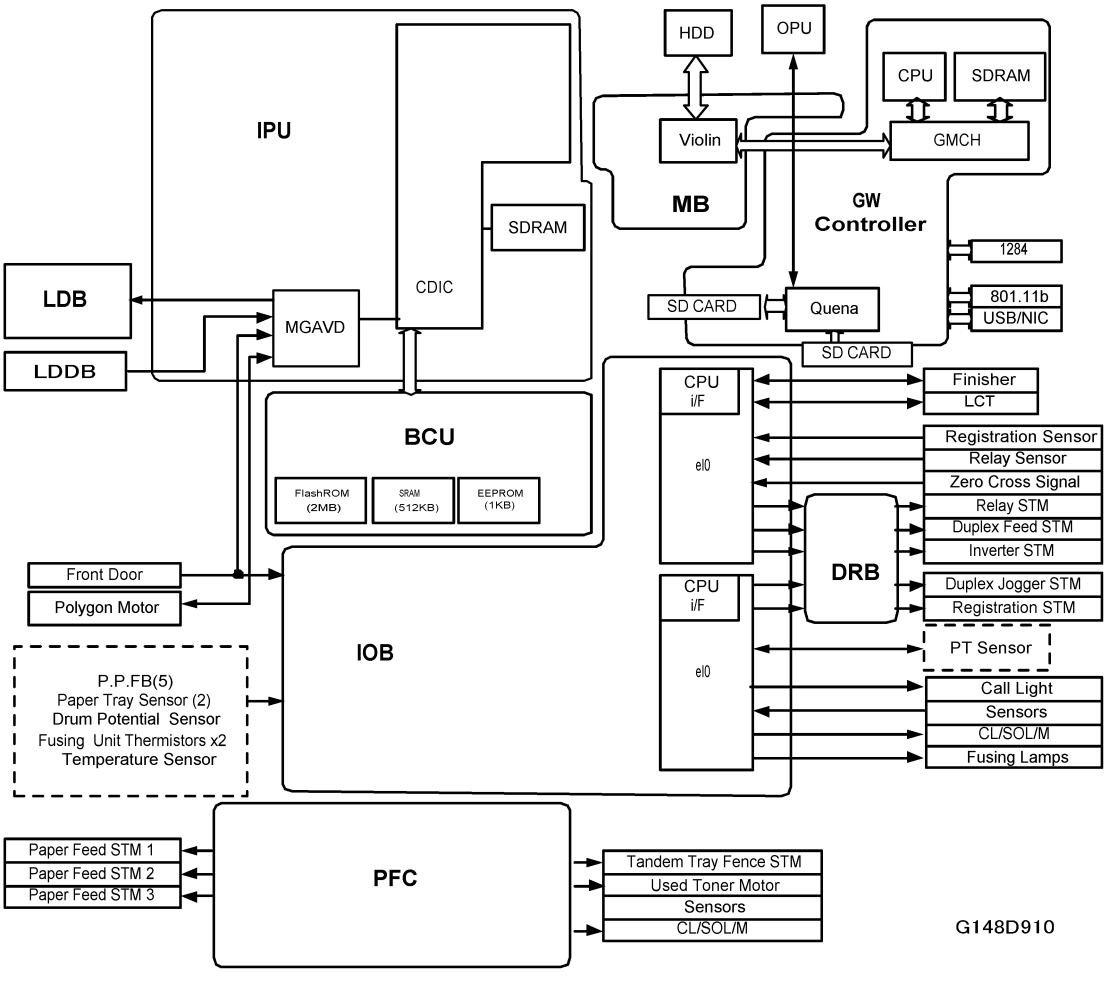
Motor Overview



1. Drum Motor
2. Fusing/Exit Motor
3. Registration Motor
4. Toner Collection Motor
5. Paper Feed Motor 3
6. Paper Feed Motor 2
7. Lower Relay Motor
8. Paper Feed Motor 1
9. Development Motor

Board Structure

Block Diagram



Component Descriptions

IPU (Image Processing Unit)

Processes images scanned by the CIS and SBU.

All IPU Board DIP switches should be set to OFF.

IPU Board DIP SW 102

No.	Function	On\OFF	Comment
1	DFU	OFF	
2	DFU	OFF	
3	DFU	OFF	
4	DFU	OFF	

DFU: Design, Factory Use only. Do not change these settings.

MB (Mother Board)

Interfaces the Controller, BICU, and optional devices such as key counters.

HDD (Hard Disk Drive)

The HDD has a capacity of 40 GB for image storage. It can store up to approximately 1,735 copy images, based on the ITU-T No. 4 Chart.

The HDD for the B148 has 80 GB capacity.

An SC is logged if the HDD is abnormal or cannot be detected. After pressing a key to affirm that you have read the message, the machine shuts down partially but can still be used. However, some features may not be available.

Note the following important points regarding HDD replacement:

- All document server files are lost after the HDD is replaced.
- The "Scan to Email" addresses are also lost by HDD replacement. However, addresses can be backed up with SmartNetMonitor.

OPU (Operation Panel Unit)

Controls operation of the operation panel display and operation keys.

GW Controller

This machine employs Ricoh GW (Grand Work) architecture. The controller controls all devices for memory DIMMs, HDD, printing, etc. In order to add an option, the appropriate DIMM, interface board, or SD card must be installed on the controller board. All Controller DIP SWs should be OFF during normal operation.

DRB (Drive Board)

Drives the duplex stepper motors (x2), the registration motor, and lower relay motor.

PFC (Paper Feed Control)

Controls the paper feed 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. trays built into the main machine. The PFC contains an independent CPU.

IOB (Input/Output Board)

The IOB handles the following functions: (1) Drive control for the sensors, motors, and solenoids of the machine, (2) Serial interface with peripherals, (3) Fusing control.

BCU (Base Engine Control Unit)

This is the main control board that controls engine sequence, timing for peripherals, image processing, and the video data path.

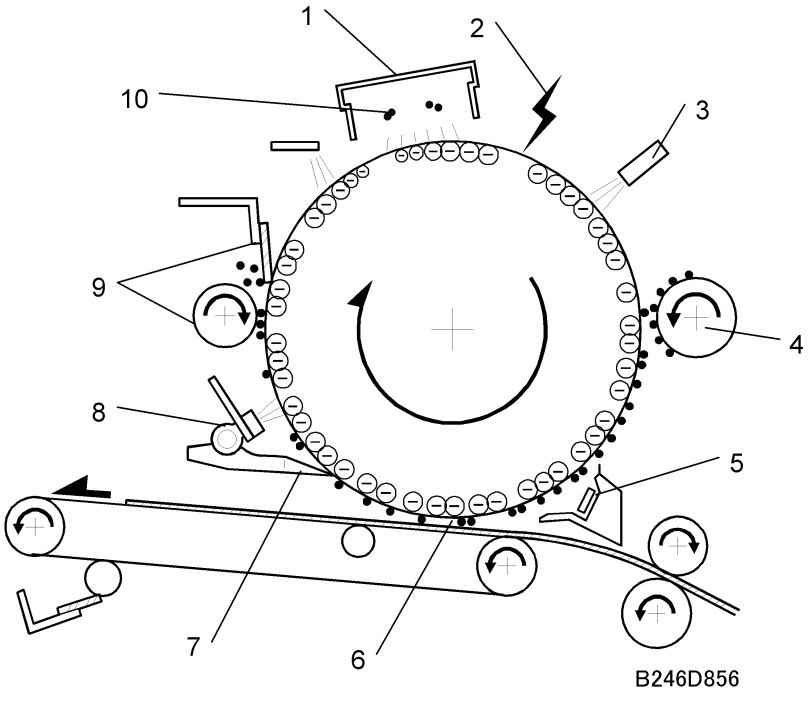
BCU Base Board DIP SW101

No.	Function	On/Off	Comment	
1	Not used	OFF	-	
2	Not used	OFF	-	
3	Design/Factory Use Only	OFF	-	
4	Not used	OFF	-	
5	Not used	OFF	-	
6	Local	OFF	Japan	6,7,8: OFF, OFF, OFF
7	Local	OFF	115 V	6,7,8: ON, OFF, OFF
8	Local	OFF	220/240V	6,7,8: OFF, ON, OFF

LDB (Laser Diode Board)

Powers the laser diode. Output level is controlled to compensate for changes in temperature, humidity to maintain constant light intensity.

Print Process Overview



1. **DRUM CHARGE**

   In the dark, the charge corona unit gives a negative charge to the OPC 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.

2. **LASER EXPOSURE**

   The image from the printer driver is 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 pulse duration, which is controlled by the BICU.

3. **DRUM POTENTIAL SENSOR**

   The drum potential sensor detects the change in drum potential, caused by variable conditions around the drum (heat, humidity, drum service) and adjusts the following voltages:

   - Grid bias voltage (Vg or Vgrid)
   - Laser diode power
   - Development bias voltage (Vb)

4. **DEVELOPMENT**

The magnetic developer brush on the development roller contacts the latent image on the drum surface. Toner particles are electrostatically attracted to the areas of the drum surface where the laser reduced the negative charge on the drum.

PTL (Paper Transfer Lamp)

The PTL removes the charge on the drum to improve paper separation and prevent pawl marks on the paper. The PTL only operates when the machine prints on plain or translucent paper.

5. **IMAGE TRANSFER**

Paper is fed to the area between the drum surface and the transfer belt at the proper time to align the paper and the developed image on the drum. The transfer roller applies 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 while the paper is electrostatically attracted to the transfer belt.

6. **PAPER SEPARATION**

Paper separates from the drum as a result of the attraction between the paper and the transfer belt. The pick-off pawls also help separate the paper from the drum.

7. **ID SENSOR**

The laser writes a sensor pattern on the drum surface. The ID sensor measures the reflectivity of the pattern and outputs this data (Vsp) to the CPU. The Vsp output signal is one of the factors used for toner supply control.

8. **CLEANING**

The cleaning brush removes toner remaining on the drum after image transfer and the cleaning blade scrapes off all remaining toner.

9. **QUENCHING**

The light from the quenching lamp electrically neutralizes the charge on the drum surface. After cleaning and quenching, the drum surface is ready for the next printing cycle.

Laser Exposure

Overview

There are four laser diodes. Four parallel beams write four lines at once, 24 lines with one complete rotation of the polygon mirror, with the polygon motor rotating at 42,756 rpm.

This adoption of multi-beam operation achieves:

- Longer life of the polygon motor (four-beam writing requires fewer motor rotations)
- Quieter operation because fewer polygon motor revolutions are required.

Up to 5 image density levels (0 ~ 4) are used for each pixel. To achieve this, this machine controls the duration of the laser exposure using PWM (Pulse Width Modulation).

(CT Digital Processes> Printing> Laser Printing> Image Processing)

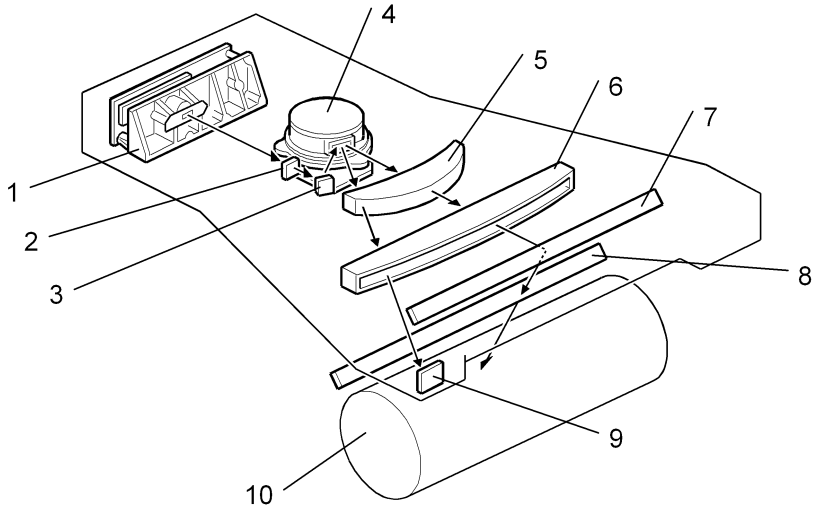
The strength of each beam is 10 mW/channel at a wavelength of 788 nm.

Specifications

LD Unit	Semi-conductor laser encased in an aluminum die-cast bracket.
	Wavelength: 788 nm
	Output: 13.3 mW/channel
	4-beam exposure
	APC (Auto Power Control) provided
	Gradation control with PWM
Line Writing	Light weight, aluminum die-cast housing
	Main line writing by polygon mirror
	Fθ lens controls the beam position and focus in the main scan direction.
	Beam focus correction by WTL.
Polygon Motor	42,756 rpm

A new ceramic shaft increases the durability of the polygon motor. This machine uses APC (Auto Power Control), so no adjustments are required when the LD unit is replaced.

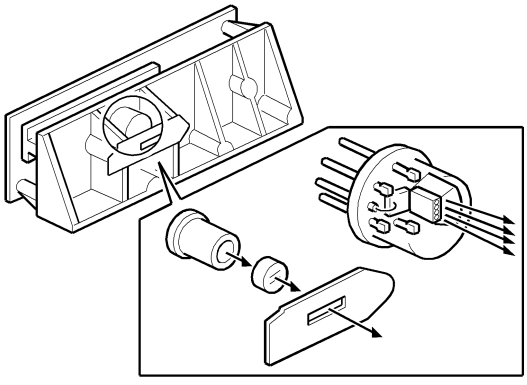
Optical Path



1. LD Unit
2. Cylindrical Lens
3. 1st Mirror
4. Polygonal Mirror Motor
5. Fθ Lens
6. WTL
7. 2nd Mirror
8. Toner Shield Glass
9. Laser Synchronizing Detector
10. OPC Drum

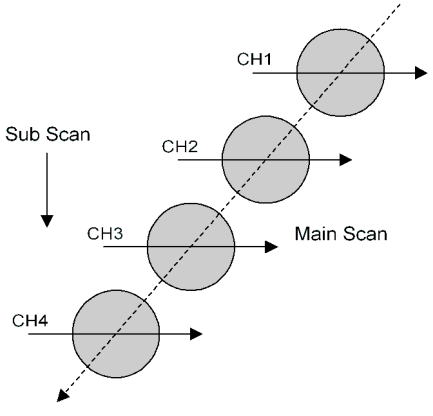
The optical path is a standard arrangement, starting at the LD unit and ending with the creation of the latent image on the OPC drum. (CT Digital Processes> Printing> Laser Printing> Image Processing> Optical Components)

Four-Beam Exposure



B246D902

The LD unit uses four laser diodes to write four lines simultaneously. The diodes are fixed at 1200 dpi, so beam pitch adjustments are not required.



B246D903

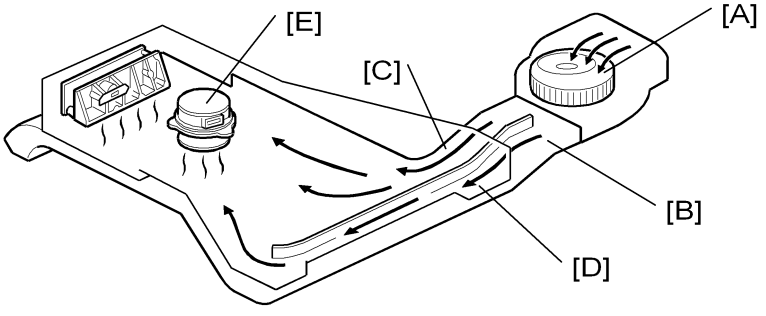
The diagonal arrangement of the four beams achieves 1200 dpi.

600 dpi 8-bit write data is converted to 1200 dpi 1-bit digital data during image processing.

When edge processing or smoothing (FCI fine character adjustment) is used, one-bit data is converted to grayscale data in the LD driver circuit board.

Greyscale control: The greater the exposure time of the laser beam, the darker the pixel. The duration (width) of the pulse is adjusted with PWM (pulse width modulation) in 5 steps.

Cooling Fan



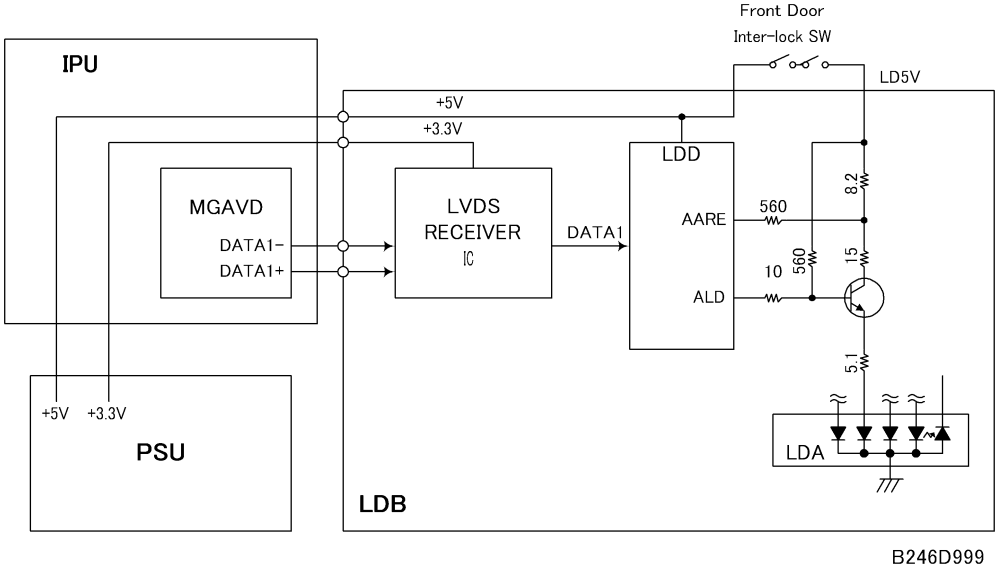
B246D904

The cooling fan [A] at the back of the machine blows air through the duct [B] and sends it above and below the laser exposure unit. The fan switches on and off with the polygon motor.

The air [C] above passes through a dust filter before it reaches the optical path. The air passing below [D] flows over the top of the fusing unit and is expelled by the fusing cooling fan.

The polygonal mirror motor [E] normally remains on. It shuts down when the machine is powered off or enters the auto off mode or night mode.

LD Safety Switches



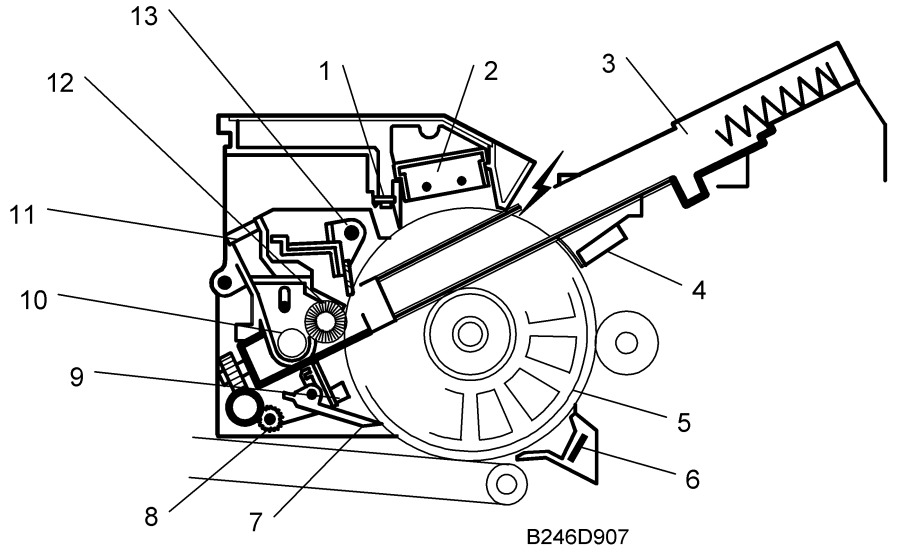
B246D999

To ensure the safety of customers and customer engineers, two switches inside the cover prevent the laser beams from switching on accidentally.

When the front cover is open, the line connecting each LD driver on the LD control board is disconnected.

Drum Unit

Overview



1. Quenching Lamp
2. Charge Corona Unit
3. Toner Recycling Pipe
4. Drum Potential Sensor
5. OPC Drum
6. PTL
7. Pick-off Pawls
8. Pick-off Pawl Spurs
9. ID Sensor
10. Toner Collection Coil
11. Pressure Release Filter
12. Cleaning Brush
13. Cleaning Blade

The OPC drum (diameter 100 mm) is charged by the charge corona unit, a standard Scorotron grid wire charging and cleaning system.

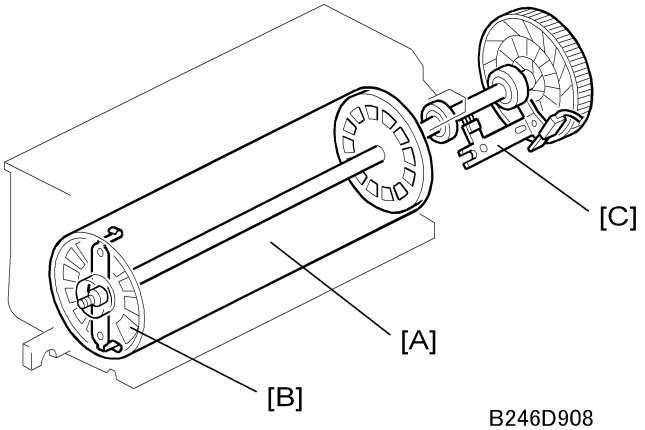
The drum motor drives the drum and the drum cleaning unit. A counter blade system, with both cleaning blade and brush, clean the drum.

Two sensors mounted near the drum, an ID sensor and potential sensor, are used for process control.

Toner is collected at the cleaning area and transported back to the development unit via the toner collection coil and toner recycling pipe.

The PTL removes the charge on the drum. This makes better paper separation. Also, with the PTL, pawl marks do not occur on the leading edges of copies. The PTL only operates when the machine prints on plain or translucent paper.

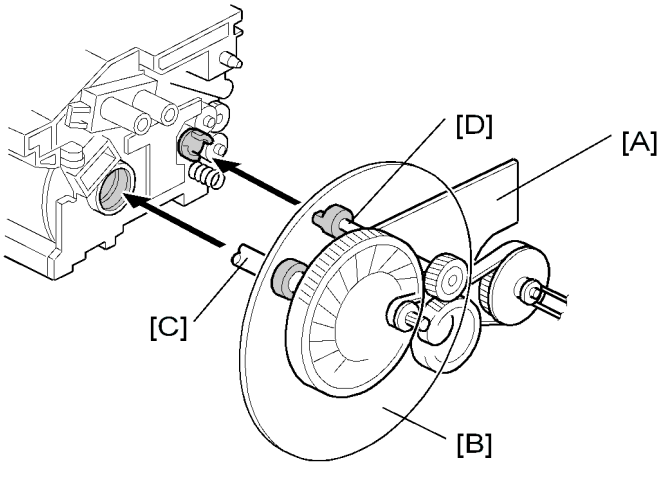
OPC Drum



B246D908

The OPC drum [A] contains ventilation holes [B] to prevent overheating. A ground (earth) brush [C] at the back grounds the drum unit.

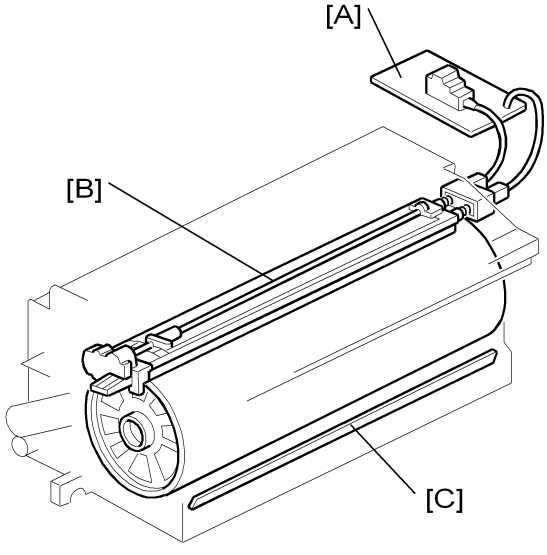
Drum Drive



B246D909

The drum motor [A] drives both the OPC drum and the cleaning unit. A flywheel [B] on the drum drive shaft [C] reduces drum vibration. The other drive shaft [D] drives the cleaning unit. The drum drive shaft [C] drives the drum at 362 mm/s.

Drum Charge



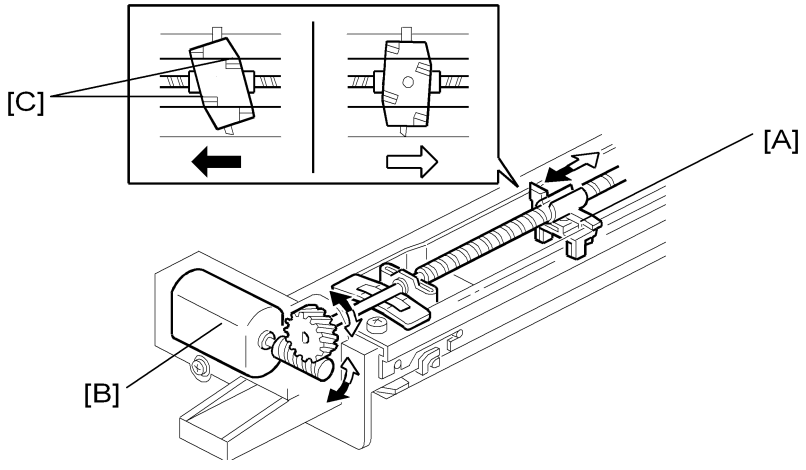
B246D910

The charge power pack [A] provides an even negative charge to the two charge corona wires in the charge corona unit [B]. (CT Photocopying Process> Charge> Corona Charge> Scorotron Method)

The PTL [C] makes better paper separation from the drum, and stops pick-off pawl marks on the leading edges of copies. The PTL removes the charge at the leading edge when copying on plain paper or translucent paper. However, the PTL does not operate when copying with OHP, index sheets, or thick paper.

With SP2602 (PTL Setting), you can adjust the distance from the leading edge where the PTL turns on to remove charge. There is an adjustment for the front side and one for the back side. For more, see section "5. Service Tables, SP2602".

Charge Corona Wire Cleaning



B246D911

Air flowing around the charge corona unit deposits toner particles on the wires. These particles interfere with charging and cause pale bands on copies.

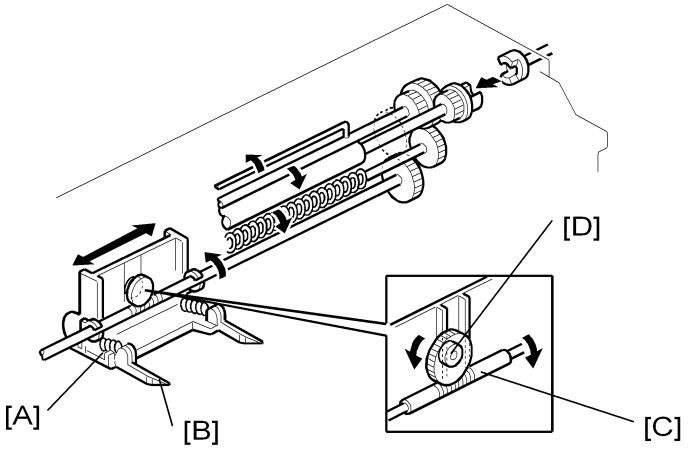
The wire cleaner [A] normally remains at the home position at the front end.

To clean the wires, the charge corona wire cleaner motor [B] switches on and drives the cleaner [A] to the rear, then back to the home position.

The wire cleaner rotates slightly on the forward pass to bring the cleaning pads [C] into contact with the wires. Cleaning is done only on the forward pass. The pads do not contact the wires on their return to home position.

The motor [B] switches on after the machine is switched on, but only after 5,000 or more copies have been made since the last wire cleaning.

Drum Pick-off Mechanism



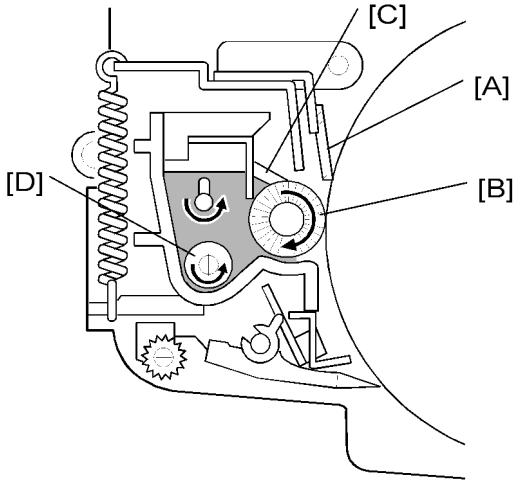
B246D912

Pick-off pawls ride along the surface of the drum to peel off paper that has not separated from the drum.

Weak spring pressure [A] keeps the pick-off pawls [B] against the surface of the drum.

During copying, a shaft [C] turns a cam [D]. The cam moves the pick-off pawls from side to side to prevent drum wear at any fixed location.

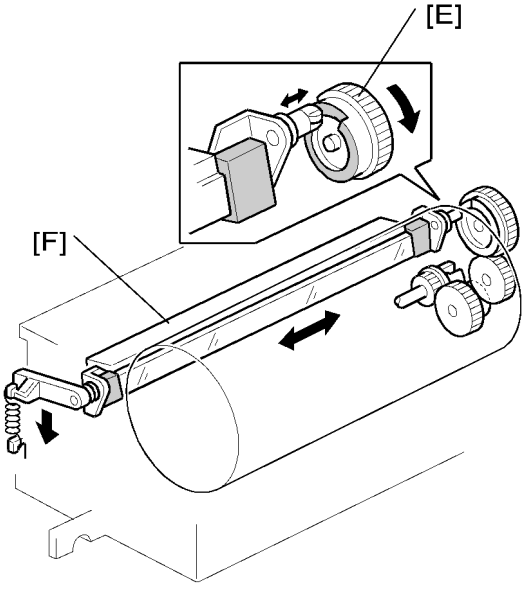
Drum Cleaning



B246D914

This machine uses a counter blade and brush system.

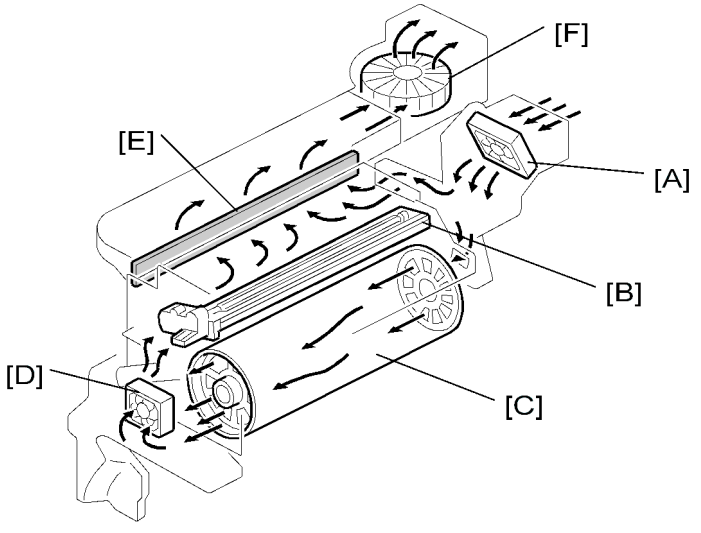
- The drum cleaning blade [A] contacts the drum, and is angled against the direction of rotation to improve cleaning.
- The cleaning brush [B] rotates and removes some toner from the drum, and collects the toner removed by the cleaning blade.
- The mylar [C] scrapes toner from the cleaning brush.
- The toner collection coil [D] receives the toner that falls from the mylar and transports it to the toner collection bottle.



B246D913

- A cam [E] moves the cleaning blade [F] slightly from side to side to prevent it from scouring the drum.
- At the end of every job, the drum reverses about 10 mm to remove toner that has collected at the edge of the counter blade.
- The drum motor drives the cleaning unit, as described in an earlier section.

Drum Ventilation and Ozone Filter



B246D915

Cooling prevents uneven buildup of negative ions which can lead to uneven charge on the drum surface.

The drum cooling fan [A] draws cool air into the machine and sends it over the charge corona unit [B] and down through the vents in the ends of the drum [C].

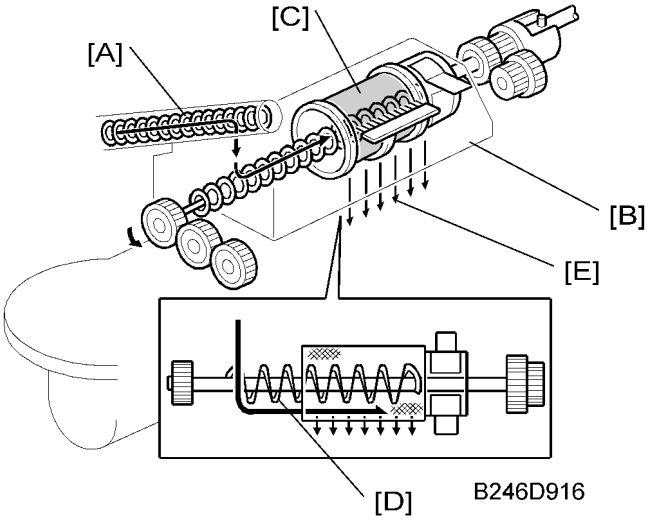
The PCU cooling fan [D] cools the drum and charge corona unit from the other end.

The dust filter [E] above the charge corona unit absorbs ozone in the air coming from around the drum.

The exhaust fan [F] vents the hot filtered air from inside the machine.

Fan	Operation Timing
Drum cooling fan	Turns on and off at the same time the polygon motor
PCU cooling fan	Stays on when the fusing lamp temperature is being controlled (at all times except in auto off or night mode).
Exhaust fan	Switches on after the power switch is turned on, and remains on. However, to reduce noise and conserve energy, this fan turns slower when the drum motor is off.

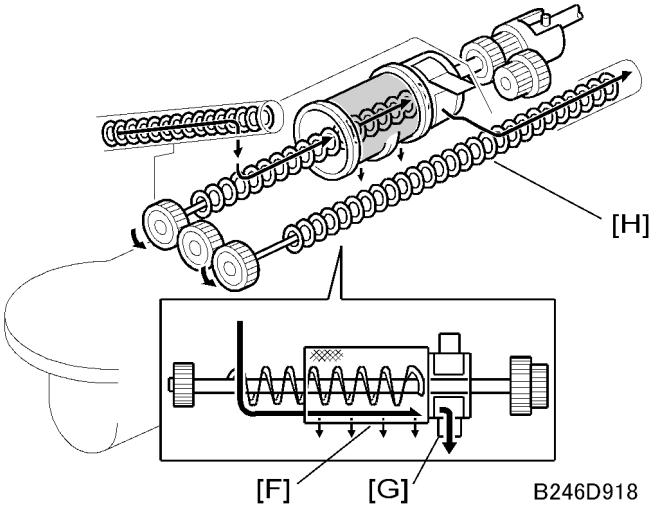
Toner Recycling



The toner collection coil inside the toner recycling pipe [A] carries toner collected from the drum cleaning unit into the toner separation unit [B] (above the toner hopper).

Re-usable toner is separated here from old toner. Sieve [C] sifts the toner, and brush [D] inside the sieve moves the toner forward.

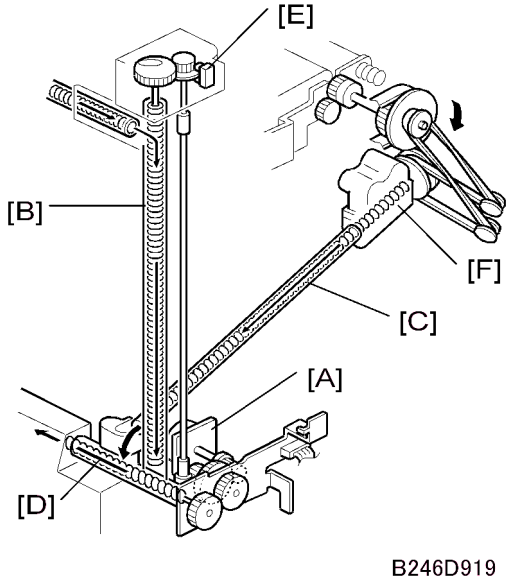
Reusable toner [E] falls through the sieve into the toner hopper. A fine brush outside the sieve prevents toner from plugging the mesh of the sieve.



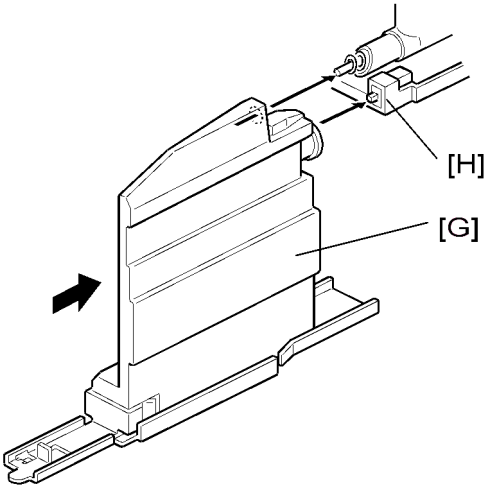
Old toner [F] does not fall through the sieve. It is pushed through opening [G] to the toner transport coil [H]. The coil moves the toner towards the back of the machine, where it is deposited in the toner collection bottle.

The toner separation unit and toner transport coil [H] are connected to the same drive shaft (driven by the development motor).

Old Toner Collection



B246D919



B246D920

Mechanism

The toner collection motor [A] drives the coils [B, C, and D].

- Coil [B] brings old toner from the toner hopper (which originally came from the drum cleaning unit)
- Coil [C] brings old toner from the transfer unit.
- Coil [D] transports old toner from both sources to the toner collection bottle.

The toner collection bottle can hold 5000 cc of old toner, equivalent to about 1,000K copies.

Motor [A] switches on and off at the same time as the drum motor.

Error Detection

The toner collection motor sensor [E] monitors the gear driven by motor [A]. If the sensor output does not change for 3 seconds while motor [A] is on, then SC590 (Toner Collection Motor Error) is logged.

If the toner collection coil sensor [F] (not shown) does not change within 3 seconds after the drum motor turns on, the transport coil is clogged and cannot rotate, then SC495 (Toner Recycling Unit Error) is logged.

When the toner overflow switch (not shown) detects that the toner collection bottle [G] is full, operation halts after an additional 100 copies and the machine prompts the user to replace the toner collection bottle.

The toner collection bottle set switch [H] detects when a new toner collection bottle is installed. If installing a new bottle does not reset the machine, SC496 (Toner Collection Bottle Error) is logged.

Process Control

Drum potential gradually changes toward the end of the service lives for key electrical components such as the charge corona unit or drum surface.

What Happens at Power On

Here is a description of what happens while the fusing temperature is below 100°C immediately after the power switch is switched on (process control must also be enabled with SP3901, or this will not happen).

At any time, this process can also be executed manually by using SP2962. However, process control must be enabled with SP3901 and the fusing temperature must be below 100°C, or this will not work.

1. Potential sensor is calibrated.
2. Drum starts first rotation after fusing temperature reaches 140°C.
3. Readout from the potential sensor is used to adjust:
    - Development bias (Vb)
    - Grid voltage (Vg)
    - Laser diode (LD) power.

      Note

        - This step occurs only if process control is enabled with SP3901 (Auto Process Control On/Off Setting). If this SP is disabled, then:
    - Development bias is set to the value stored in SP 2201 001
    - Grid voltage is set to the value stored in SP 2001 001
    - Laser power is set to a fixed value
4. ID sensor is calibrated (Vsg).
5. TD sensor is calibrated (Vref).

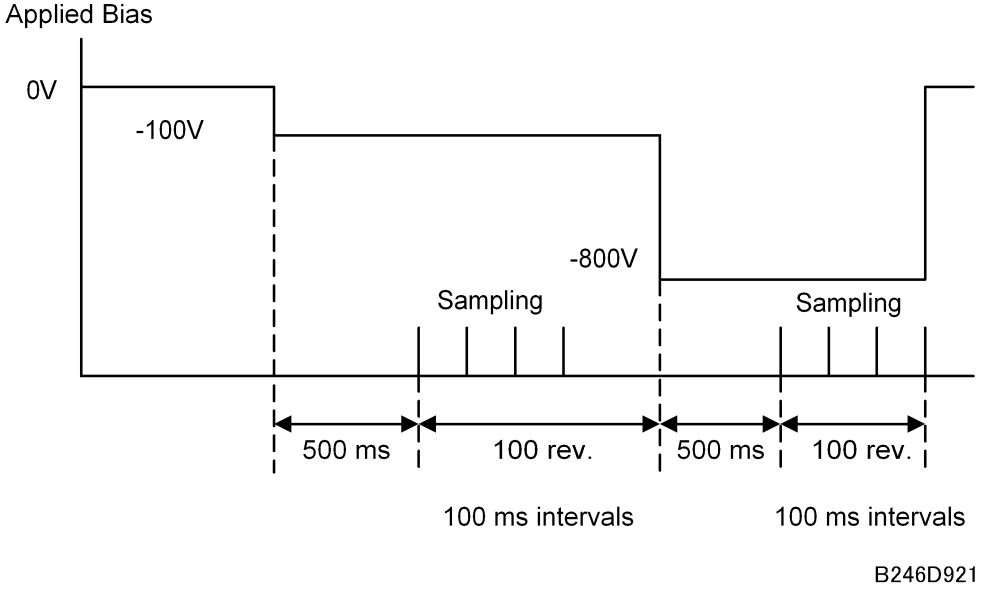
These calibrations are used to determine toner supply, so it is very important that the developer be initialized with SP2963 (Installation Mode) at installation and with SP2801 (TD Sensor Initialization) when the developer is replaced.

Any SC codes that are generated during auto process control are logged in the memory and do not appear. The machine will continue to operate.

Drum Potential Sensor Calibration

The potential sensor output is affected by the distance of the sensor from the OPC, paper dust or other matter on the surface of the sensor, and environmental conditions. For these reasons, the potential sensor is calibrated often, as described below.

1. 100 samples are taken at –100V and at –800V, and the readings are averaged.



2. If the readings are within the normal range, then these readings are used to calibrate the potential sensor.

   If the variations in the readings exceed the specified range, then an SC is logged (Sensor Calibration Error, SC310 to SC317) and automatic process control halts. The charge grid voltage Vg, development bias, and LD power are set as follows.

   - Development bias is set to the value stored in SP2201-001
   - Grid voltage is set to the value stored in SP2001-001
   - Laser power is set to a fixed value

Development Bias, Bias Grid, and LD Adjustment

Development Bias (Vb)

First, the development bias that will be used for copying (Vb) is determined by measuring the potential of a pattern made on the drum using a fixed grid voltage, development bias, and laser power.

1. The drum motor starts.
2. The grid voltage, development bias, and laser power are set to the default values that would be used if process control was disabled. These are as follows:
    - Development bias is set to the value stored in SP2201-001
    - Grid voltage is set to the value stored in SP2001-001
    - Laser power is set to a fixed value

Grid Voltage (Vg)

Then, the machine determines the corona grid voltage (Vg) that will be used during copying. This is done as follows:

1. A Vd pattern is exposed on the drum (if developed with toner, this will be black).
   Vd: Drum potential in black areas after exposure.
2. The potential sensor reads the potential, Vd, from this pattern.
3. Vd should be –800 ± 10V.
    - If it is within this range, the current value of Vg will be used for copying.
    - If it is not in this range, -(Vd + 800)V is added to Vg, and the process starts again from step 1.
4. If Vd cannot be adjusted to this standard within 5 attempts, Vg is fixed to –1,000V and SC312 (Potential Sensor Calibration Error 3) is logged.

LD Power

Finally, the machine determines the laser diode power that will be used during copying. This is done as follows.

The laser power is changed to the value needed to write a halftone pattern to the drum.

1. The potential sensor reads the potential, Vh, from this pattern.(Vh: Standard halftone drum potential)
2. Vh should be –300 ± 20 V.
    - If it is within this range, the current value of the laser power will be used for copying.
    - If it is not, the laser power changes by 3 units, and the process starts again from step 1.
3. The laser power cannot be changed by more than ± 60 units.
4. If Vh cannot be adjusted to this standard within 25 attempts, LD power is set to the most recent value and SC314 (Potential Sensor Calibration Error 4) is logged.

ID Sensor Calibration (Vsg)

After power-on, Vsg (the ID sensor output from reading the bare drum) is set to 4.00±0.2 V by changing the intensity of the light from the sensor shining on the drum. This can also be done at any time with SP3001-002 (ID Initial Setting – Vsg).

The calibrated ID sensor output will be used for calibrating the TD sensor (described below).

If the ID sensor output cannot be adjusted to the standard, then after 20 seconds SC353 or SC354 is issued. Toner supply during copying will then be controlled using the TD sensor only, until the machine is repaired.

TD Sensor Calibration (Vref)

Next, Vref (TD sensor reference voltage) is updated using the latest calibration values from the ID sensor.

Vref is updated to stabilize the concentration of toner in the development unit. By shifting the value of Vref, the density of the ID sensor pattern image is controlled. Toner supply control is covered in the Development and Toner Supply section.

Vref is determined from a table in the machine software, using the following values:

- **Vsp/Vsg**

  Vsp: ID sensor output when checking the ID sensor pattern.
  Vsg: ID sensor output when checking the bare drum.

- **Vref-Vt**:

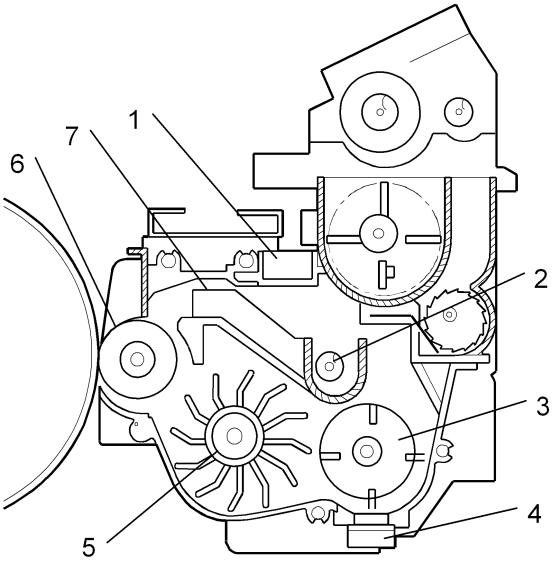
  Vref is the TD sensor reference voltage
  Vt is the current output voltage of the TD sensor.

If the ID sensor could not be calibrated during the latest process control (when measuring Vsg), then the previous ID sensor value is used. If the ID sensor output is abnormal when measuring Vsp, SC350, 351, or 352 is issued, and Vref is not updated (the machine uses the previous value).

Development and Toner Supply

Overview

Development Unit



B246D922

1. Development Filter
2. Toner Auger
3. Developer Agitator
4. TD Sensor
5. Paddle Roller
6. Development Roller Sleeve
7. Separator

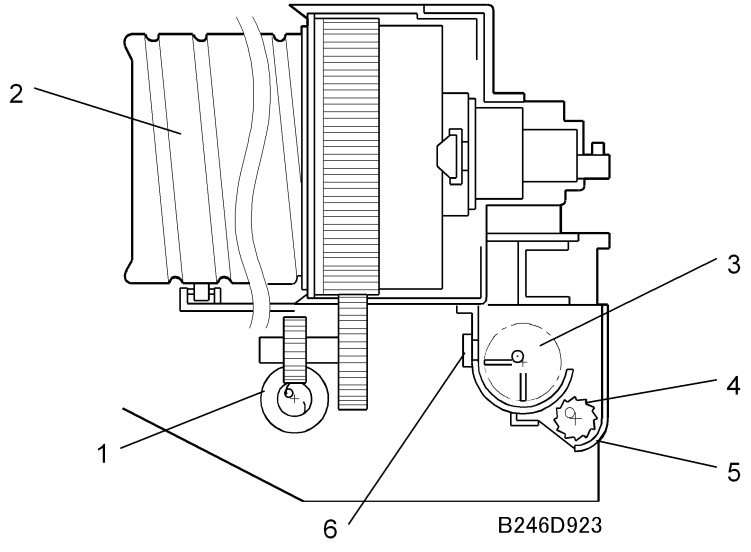
This machine uses dual-component development.

The development unit has its own motor.

The toner concentration is monitored with the ID sensor and TD sensors.

The toner auger, separator, developer agitator, and paddle roller mix and transport the developer and toner. The development power pack applies development bias to the development roller.

Toner Supply



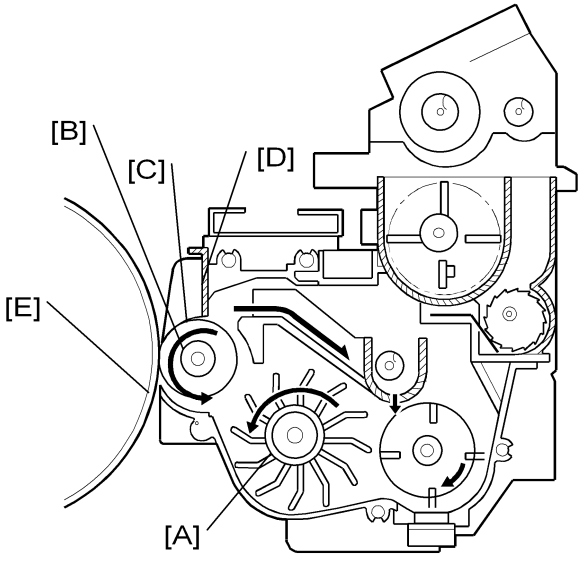
1. Toner Supply Motor
2. Toner Bottle
3. Toner Agitator
4. Toner Supply Roller
5. Toner Hopper
6. Toner End Sensor

The toner supply roller carries toner from front to back in the hopper and into the development unit.

The toner supply motor rotates the toner bottle to supply toner. The cap of the bottle seals itself immediately when the toner bottle is removed from its holder.

A toner recycling system separates old toner from toner that can be re-used. Reusable toner is carried to the development unit, and old toner is sent to the toner collection bottle.

Development Unit



B246D924

[A] Paddle roller

[B] Development roller

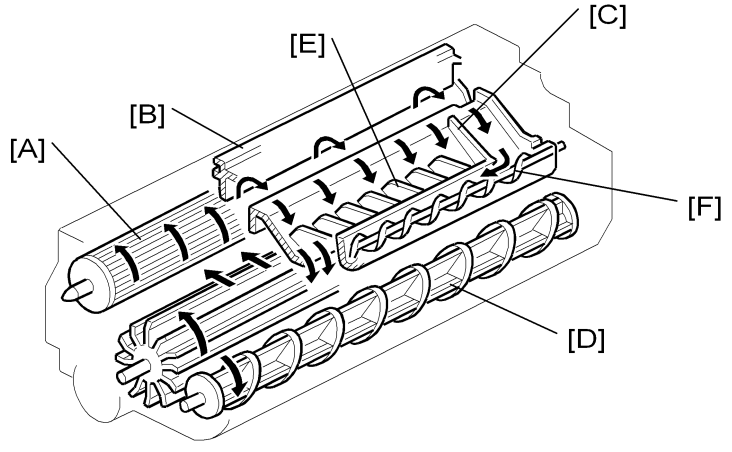
[C] Development roller sleeve

[D] Doctor blade

[E] OPC drum

(CT Photocopying Process> Development> Dual-component Development)

Developer/Toner Mixing (Agitation)



B246D925

[A] Development roller

[B] Doctor blade

[C] Backspill plate

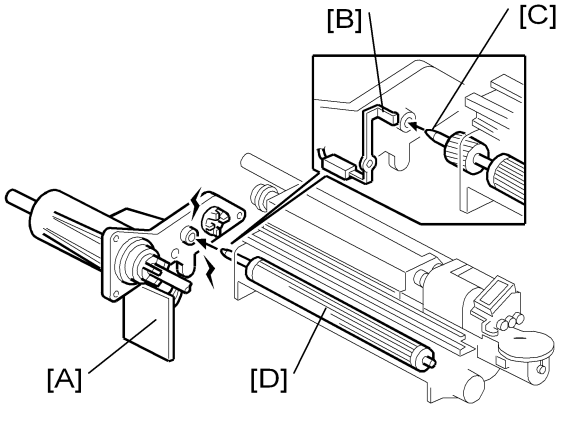
[D] Agitator

[E] Mixing vanes

[F] Auger

(CT Photocopying Process> Development> Crossmixing)

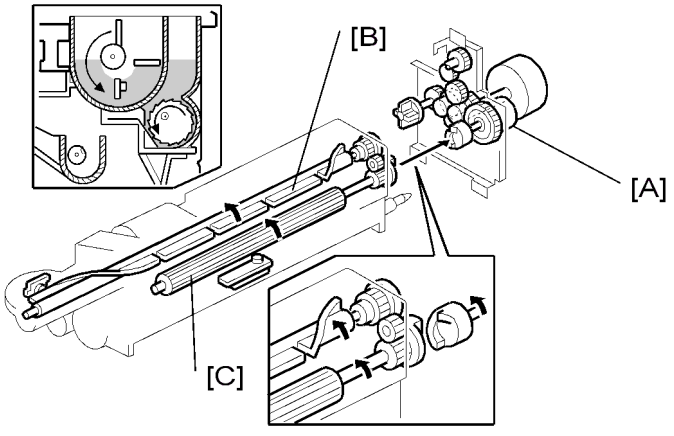
Development Bias



B246D926

Development power pack [A] applies –550V through terminal [B] to the shaft [C] of the development roller [D]. Bias is also applied to the lower casing to prevent toner from being attracted back from the drum.

Toner Supply



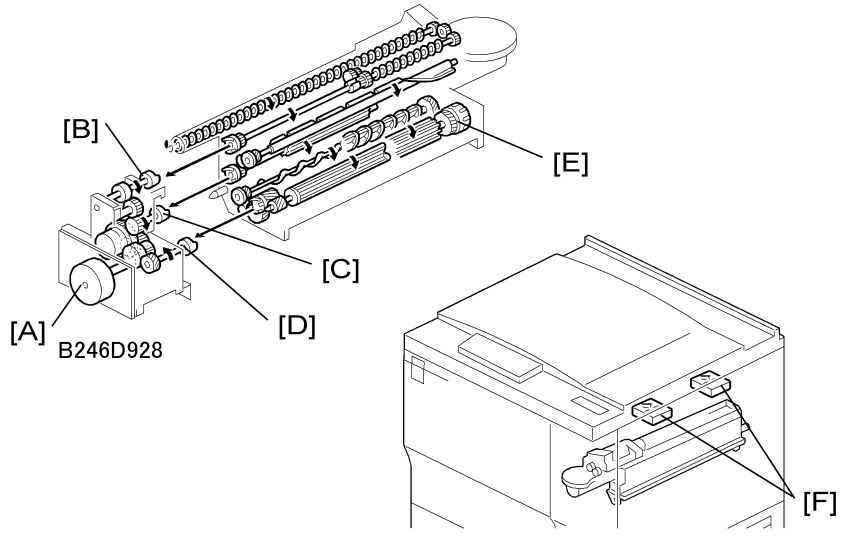
B246D927

The ID sensor and TD sensor control toner density. The output of these two sensors determines when to switch the toner supply clutch [A] on. The clutch transfers drive from the development motor to the toner supply mechanism.

When the toner supply clutch turns on, the agitator [B] mixes the toner in the hopper and sends it to the toner supply roller [C].

Toner is caught in the grooves in the toner supply roller. Then, as the grooves turn past the opening, the toner falls into the development unit.

Development Unit Drive and Ventilation

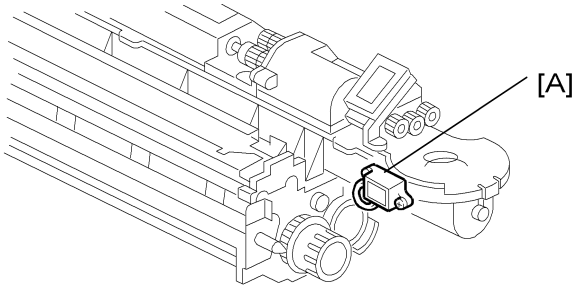


The development motor [A] (a dc motor) drives the following units through three drive shafts: toner separation unit [B], toner supply unit [C], and development unit [D].

The knob [E] attached to the paddle roller can be rotated in one direction only. Use this knob just after adding new developer, to apply an even coating of developer to the development roller sleeve.

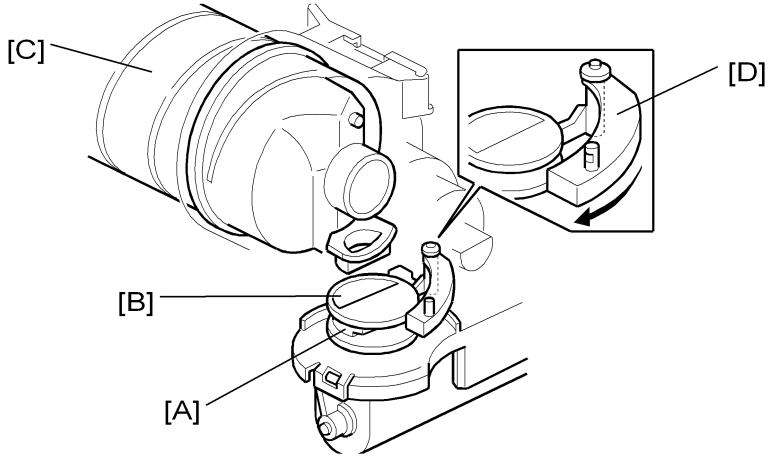
Two cooling fans [F] draw in air to cool the development unit. Both fans switch on when the drum motor switches on, then both switch off 110 seconds after the drum motor switches off.

Toner End Sensor



The toner end sensor [A], a piezoelectric sensor (a sensor sensitive to pressure) is attached to the toner hopper.

Shutter Mechanism



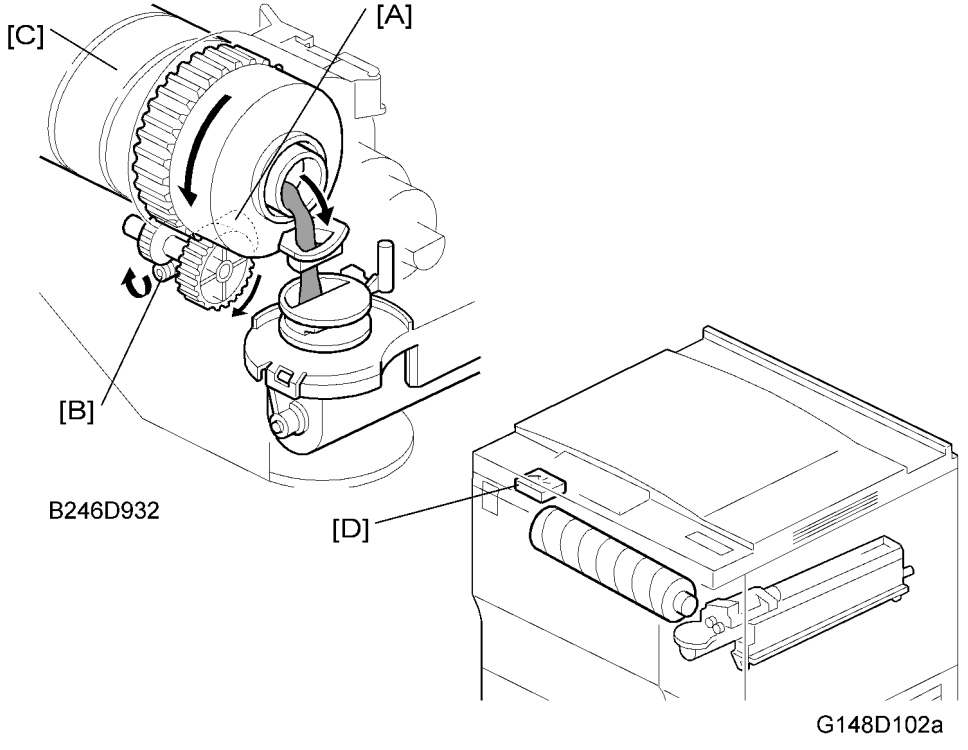
B246D931

When the toner bottle holder is opened, a self-sealing shutter prevents toner spill.

The top of the shutter [A] has a semi-circular opening [B]. Normally, toner from the toner bottle [C] flows through this opening into the hopper below.

However, pulling out the shutter cover [D] closes the cover automatically to prevent toner spill from the hopper.

Toner Bottle Supply and Ventilation



The toner supply motor [A] (a dc motor) and gears [B] rotate the toner bottle [C].

The toner cooling fan [D] (below the operation panel) ventilates the area around the bottle. This fan always switches off and on with the polygonal mirror motor.

Toner Supply Control

There are two toner supply modes: Sensor Control and Image Pixel Count. The mode can be changed with SP2208-001 (Toner Supply Mode). The factory setting is sensor control mode. This setting automatically changes if the TD sensor or ID sensor is defective.

Sensor Control Mode

In sensor control mode, the machine uses the outputs of the TD sensor and the ID sensor.

Every copy, the following occurs.

1. The TD sensor reads the density of the toner in the developer once every copy cycle, after the trailing edge of the image passes the development roller, and outputs this reading as Vt. The current Vt value can be displayed with SP2223-001 (Vt display).

2. For every copy, Vt (TD sensor output) is subtracted from Vref (the targeted control reference voltage for the TD sensor) to set the value of 'GAIN' (0, 1, 2, 3, or 4).
3. The following equation is used to calculate how long the toner supply clutch switches on.

$$\frac{\text{GAIN x Image Pixel Count xTarget Density}}{\text{Toner Supply Rate}} + \text{Clutch Startup Time}$$

B246D934

Factor	Description	
GAIN	With GAIN = 0, "Clutch On Time" is 0 ms	
Image Pixel Count	The density for every dot in the output data for the page is calculated. Example: 255 for A3 all black, for comparison.	
Target Density	0.7 mg/cm2	
Toner Supply Rate	850 mg/s	This default setting can be adjusted with SP2209 – Toner Supply Rate
Clutch Startup Time	16 ms	The actual time required for the toner to arrive at the hopper after the clutch switches on.

If we substitute the default settings, then:

$$\frac{\text{GAIN x Image Pixel Count x 0.7 mg/cm}^2}{\text{850 mg/s}} + \text{16 ms}$$

B246D935

But if GAIN is 0, the '+16 ms' part of the equation is not used, and the time interval that the clutch is turned on becomes zero.

At the end of the job, if Vref has not been updated for 10 copies or more, the following occurs:

1. Vref is updated, as follows (also done just after the machine is switched on):
   - The charge corona and laser diode write the ID sensor pattern on the drum.
   - The ID sensor reads the reflectivity of the ID sensor pattern and outputs this reading as Vsp.
   - The ID sensor also reads the reflectivity of the bare surface of the drum and outputs this reading as Vsg.

   Note

   - The 10 copy interval can be extended with SP2210-001 (ID Sensor Pattern Interval).

- SP2507-002 (ID Sensor Interval – Page Setting) is available for customers who are concerned about changes in toner density during long copy jobs and may want to specify an interval to force creating and reading the ID sensor pattern. However, enabling this SP will pause copying for 2 or 3 seconds every time the ID sensor pattern is created and read

2. The CPU uses the Vsp/Vsg readings to calculate a new value for Vref (TD sensor reference voltage).
3. Finally, Vt and Vref are compared. If Vt is higher than Vref, the CPU switches on the toner supply clutch to supply more toner to the development unit.

Pixel Count Toner Supply Mode

This mode should only be used as a temporary countermeasure while waiting for replacement parts, such as a TD sensor.

For each copy, the CPU adds up the image data value of each pixel and converts the sum to a value between 0 and 255 (0 = blank page, 255= black page).

The toner supply clutch on time is calculated using the same formula, but the GAIN value is fixed at 0.7.

TD Sensor Initialization

The TD sensor must be initialized with SP2801 (TD Sensor Initial Setting) at the following times:

- The first time the development unit is filled with developer
- Every time the developer is replaced.

The sensor control voltage is adjusted until the output is 3.0±0.1V. Then, after setting the control voltage, Vt is sampled 100 times, these samplings are averaged, then the average is used to set the standard value for Vt.

Note

- After developer is replaced, you must execute SP2801.
- After the TD sensor is replaced, you must execute SP2801.
- After a partially used development unit from another machine is installed, you must use SP2220 (Vref Manual Setting) to enter the Vref value for that unit, and use SP2906-001 (TD Sensor Control Voltage Setting) to enter the TD sensor control voltage.
- These initial values are stored in NVRAM. Before replacing the NVRAM, print an SMC report so you can re-enter these settings manually after the NVRAM is replaced.

Determining Vref

At certain intervals (see 'Sensor Control Mode, step 4), the ID sensor reads the bare drum and the ID sensor pattern on the drum.

Vref is calculated from Vsp and Vsg as explained in the Process Control section of the manual.

ID sensor pattern creation parameters depend on whether automatic process control is switched on or off with SP3901-001 (Auto Process Control).

If automatic process control is switched on:

- Charge corona grid voltage: Set automatically for the existing conditions around the drum.
- LD power: The value Vh is used to adjust the laser power. The laser diode writes the Vh halftone pattern on the drum. The reading from this pattern is Vh.
- Development bias: The potential sensor checks the bias voltage when the ID sensor pattern is created (target voltage: -230V) and boosts the voltage by –280, the voltage set for SP2201-004 (ID Sensor Pattern Development Potential), to bring the bias to the target voltage of –510.

If automatic process control is switched off:

- Charge corona grid voltage: Set to –800V, the default setting for SP2001-002 (ID Sensor Pattern: Adj. to Applied Voltage).
- LD power: 185 µW (target drum potential –130V)
- Development bias: -360V, default for SP2201 002 (ID Sensor Pattern: Adj. to Applied Voltage).

Toner Supply without ID Sensor and TD Sensors

Toner supply can continue even if either or both sensors fails:

Failed Sensor	Toner Supply Method
TD sensor	ID sensor + Image Pixel Count
ID sensor	TD sensor (but Vref is nor updated)
TD and ID sensors	Image Pixel Count

Abnormal TD Sensor Output

If this occurs, toner supply is controlled using pixel count and Vsp/Vsg.

Abnormal output detected during initialization of the developer: An SC is logged and SP2906 (TD Sensor Control Voltage & Check) will display 0.00V.

- During the TD sensor auto adjustment, the TD sensor output voltage (Vt) is 2.5 volts or higher even though the control voltage is set to the minimum value (PWM = 0). The machine logs SC341 TD Sensor Adjustment Error 1.
- During the TD sensor auto adjustment, the TD sensor output voltage (Vt) does not come in the target range (3.0 ± 0.1V) within 20 seconds. The machine logs SC342.

Abnormal output detected during copying: If one of the following conditions is detected more than 10 times consecutively:

- Vt = 0.5 volts or lower
- Vt = 4.0 volts or higher

Then SC340 (TD Sensor Output Error) is logged.

Abnormal ID Sensor Output

Abnormal output detected during process control at power-on: SC353 or SC354 is issued. Toner supply during copying will then be controlled using the TD sensor only, until the machine is repaired.

Abnormal output detected when updating Vref: SC350, 351, or 352 is issued, and Vref is not updated (the machine uses the current value).

Toner End Detection

The toner end sensor is checked every copy.

- **Toner near end**. When the toner end sensor remains on for two consecutive pages, the toner supply motor turns on for 1.1 s. If the toner supply motor has turned on more than 30 times during the last 100 prints, the “Toner Near End” warning is issued. The warning is cleared if the toner end sensor turns off.
- **Toner end**. If the toner end sensor remains on for about 1,000 copies (A4 size with 6% coverage), the "Toner End” warning is issued. If the toner end sensor switches off twice consecutively, the toner end sensor copy counter is reset to zero.

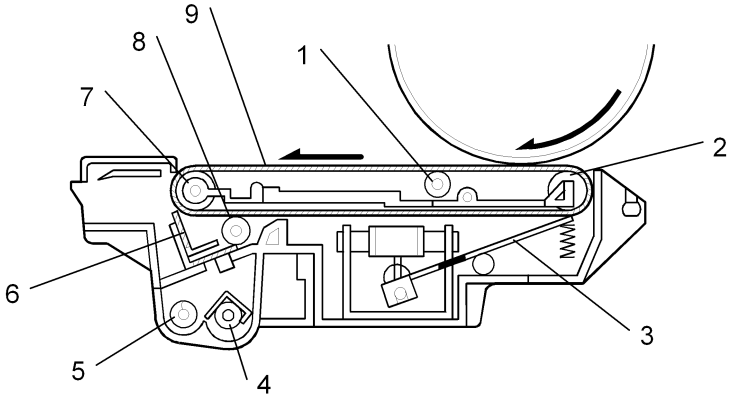
Toner End Recovery

If the front door is opened and closed while a toner near end or toner end condition exists, the machine attempts to recover using measurements from the toner end sensor and TD sensor, based on the possibility that the toner bottle has been replaced.

1. The drum development motor, charge grid, and development bias switch on.
2. The toner supply motor switches on for 1.1 s, the toner supply clutch switches on for 1 s, and the CPU checks the toner end sensor output.
3. If the toner end sensor is OFF, i.e. there is toner in the hopper, the CPU compares Vt and Vref.
    - If Vt is less than or equal to Vref, there is sufficient toner in the development unit. The CPU waits 20 s for the toner in the developer to mix evenly, the above components switch off, and the machine is released from the toner end or toner near end status.
    - If Vt is more than Vref, the CPU turns on the toner supply clutch for 1 s again until Vt becomes less than or equal to Vref.
    - If the toner end sensor output remains on even after seven attempts of the above procedure, the components switch off and the machine remains in the “Toner End” status.

Image Transfer and Paper Separation

Overview



1. Transfer Roller
2. Transfer Belt Drive Roller
3. Belt Lift Lever
4. Used Toner Agitator
5. Used Toner Collection Coil
6. Cleaning Blade
7. Drive Roller
8. Cleaning Roller
9. Transfer Belt

A transfer belt system transfers the image from the OPC drum to paper.

A solenoid lifts the belt against the OPC drum at the correct time.

The transfer belt system is driven by the drum motor, through a shaft and a gear.

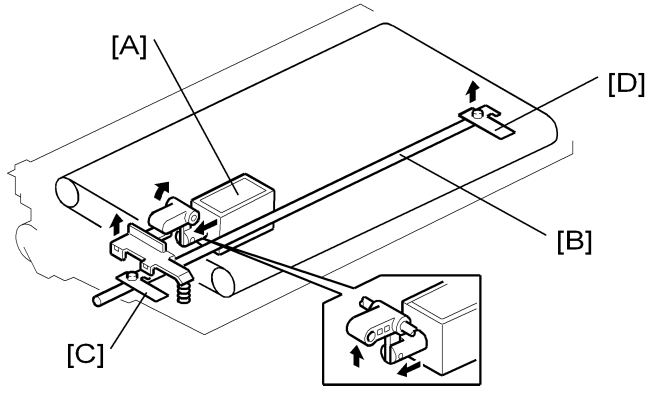
A cleaning blade and a cleaning roller clean the surface of the transfer belt.

Easy access to the transfer belt from behind the front door allows quick removal of paper jams.

A heater near the transfer belt unit ensures that the area around the belt is always dry.

Transfer Belt Lift

Mechanism



B246D937

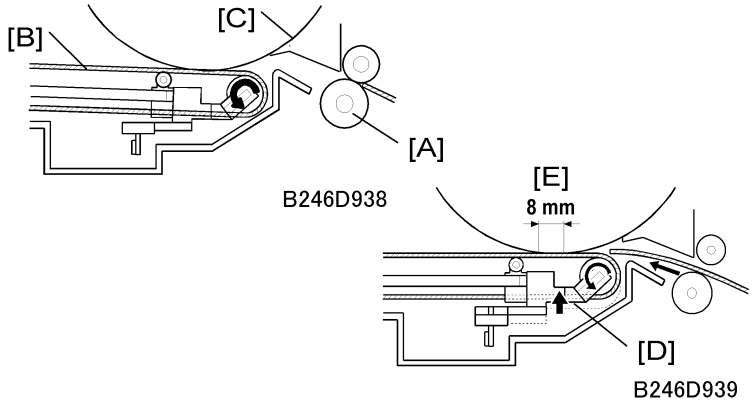
The transfer belt lift solenoid [A] lifts the belt into contact with the drum using the link [B], which is connected to the front [C] and rear [D] belt lift levers.

Springs attached to the front of the solenoid reduce the load on the solenoid as it lifts the drum.

This mechanism raises the transfer belt unit against the OPC drum only when needed, and keeps it separated at all other times because:

- The transfer belt is between the drum unit and the ID sensor, so it would rub off the ID sensor pattern if it remained in contact with the drum.
- Allowing toner to transfer to the belt when making sensor patterns would increase the load on the transfer roller cleaning blade.
- The transfer belt would cause the drum to wear, if it were allowed to remain in contact with the drum.

Timing



[A] Registration roller

[B] Transfer belt

[C] OPC drum

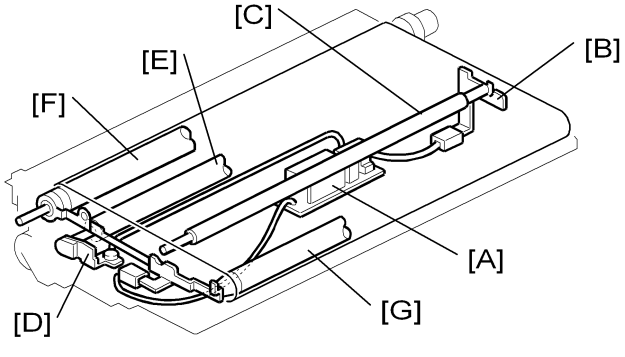
[D] Front and back levers

[E] Nip width (about 8 mm)

The transfer belt stays away from the OPC drum until 500 ms after the drum motor starts. Then the transfer belt lift solenoid switches on to lift the belt.

At the end of the job, the solenoid switches off, and the transfer belt unit lowers away from the drum.

Transfer Belt Charge



The transfer power pack [A], inside the transfer belt unit, applies the following charges:

- Transfer Roller: Max. +7.0 kV through terminal [B] to the transfer roller [C].

- Cleaning Roller: About +1.0 kV max. through terminal [D] to the cleaning roller [E].

Drive rollers [F, G] are grounded so that the cleaning unit can clean the belt easily.

Transfer Current Settings

Here is a list of the default current settings for each paper feed station.

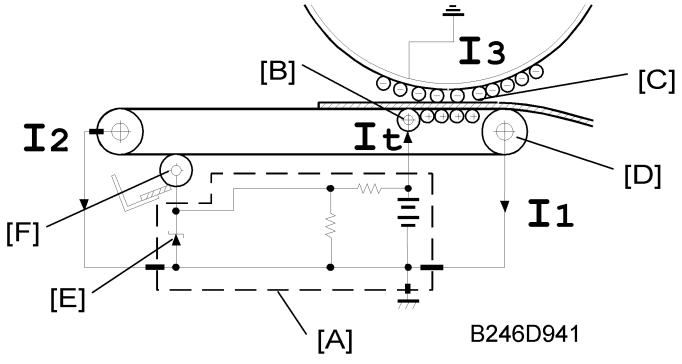
SP No.	Station/Mode	Transfer Current (Initial Value)
SP2301-001	Trays 1, 2, 3: Front Side	80 µA
SP2301-002	Trays 1, 2, 3: Back Side	80 µA
SP2301-004	Postcard: Front Side	165 µA
SP2301-005	Paper Interval	15 µA
SP2301-006	Tab Paper	75 µA
SP2301-007	Thick Paper: Front Side	120 µA
SP2301-008	OHP: Front Side	75 µA
SP2301-009	Tracing Paper: Front Side	120 µA
SP2301-010	Image Leading Edge	65 µA
SP2301-011	Image Trailing Edge	65 µA

The charge for cleaning is applied even during the interval between sheets of copy paper.

The transfer roller output changes to 2.6 kV, and the cleaning roller output is fixed at 1.0 kV:

- When the job ends
- Whenever the drum motor is turning, except during copying and during process control

Transfer Current Circuit



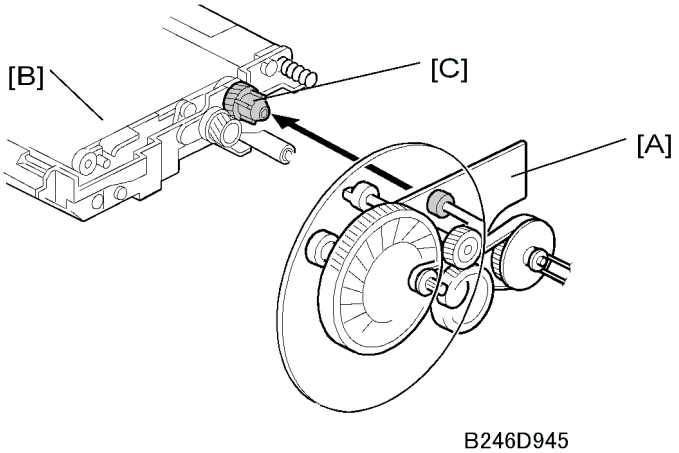
[A]: Transfer power pack
[B]: Transfer roller
[C]: Nip between drum and transfer belt
[D]: Drive rollers

The transfer power pack does the following:

- Monitors the currents I1 and I2
- Adjusts its output (It) to keep the current I3 constant, regardless of changes in temperature or humidity which can affect the surface resistance of the paper.

A varistor [E] keeps the voltage at the cleaning roller constant [F].

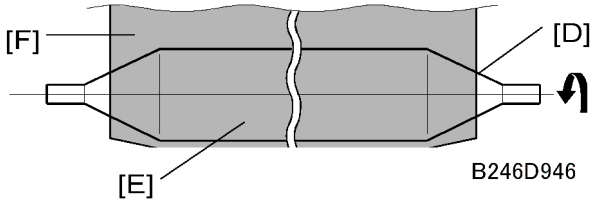
Transfer Belt Drive and Paper Transport



The drum motor [A] drives the transfer belt [B] through belts and gears.

The transfer belt by its electrostatic charge attracts the paper [B], so a transport fan is not required.

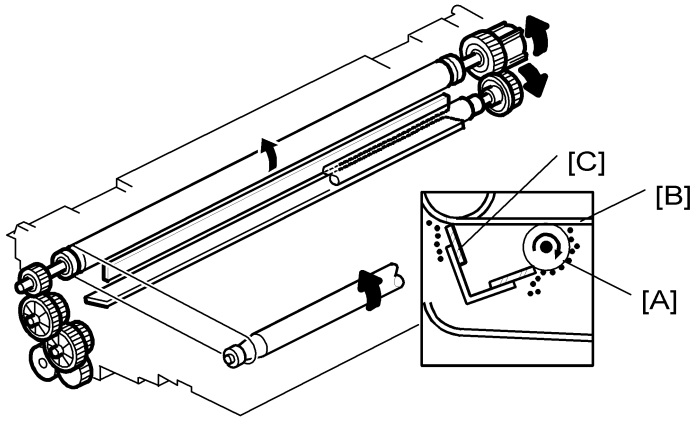
At the turn in the transfer belt, the transfer belt drive roller [C] discharges the belt to reduce paper attraction, and the paper separates from the belt as a result of its own stiffness.



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.

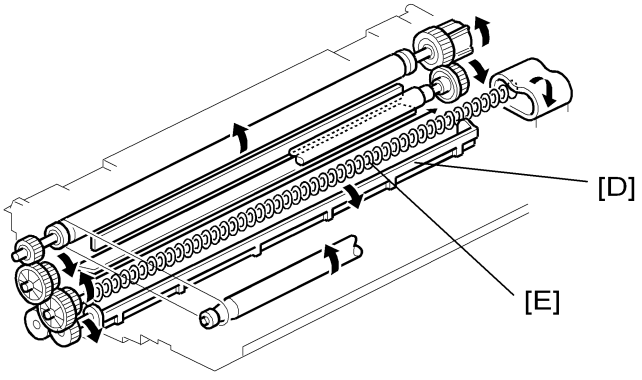
Transfer Belt Cleaning

Toner collects on the transfer belt in the following cases. This toner causes streaking on the reverse sides of prints as a result of a paper jam.



The cleaning roller [A] has a positive charge, so it can collect negatively charged toner and paper dust from the transfer belt [B]. The cleaning roller always contacts the transfer belt.

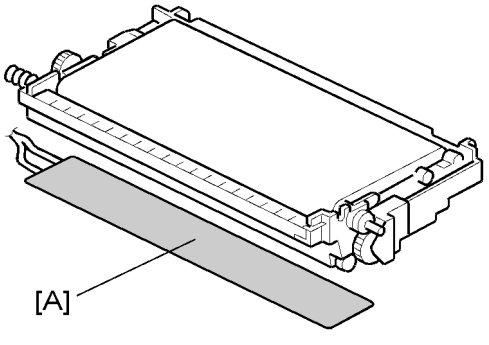
The cleaning blade [C] scrapes toner off the cleaning roller.



B246D943

Toner scraped from the cleaning roller drops it onto the agitator plate [D]. The plate [D] moves the toner into the collection coil [E]. The coil takes the toner to the toner collection bottle.

Anti-Condensation Heater



B246D944

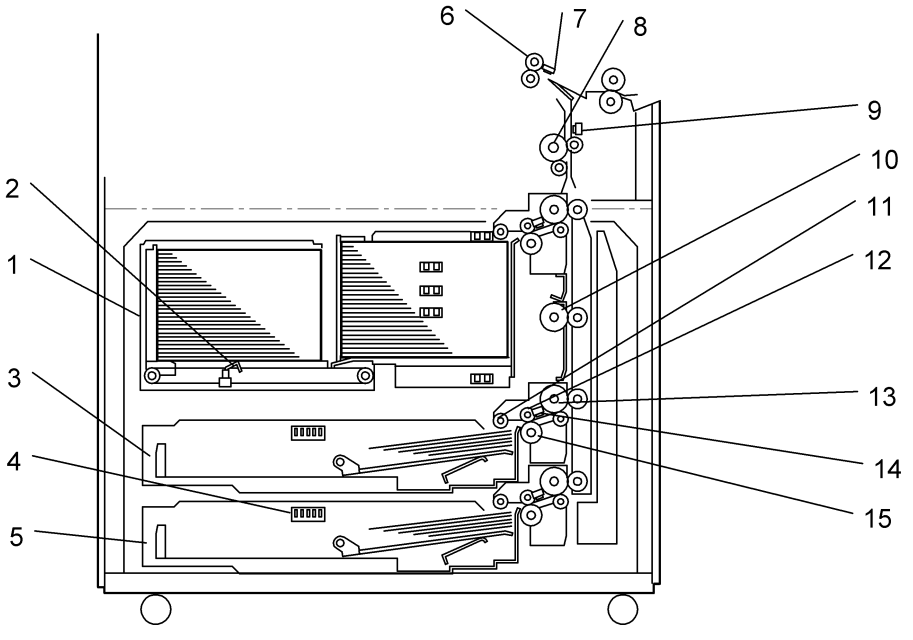
The anti-condensation heater [A] is directly below the transfer belt drive roller.

This anti-condensation heater turns on automatically at the following times:

- When the power switch is turned off
- When the machine enters auto off mode

Paper Feed

Overview



1. Tandem Tray (Tray 1)
2. Left Tray Paper Sensor
3. Universal Tray (Tray 2)
4. 3rd Paper Size Switch
5. Universal Tray (Tray 3)
6. Registration Roller
7. Registration Sensor
8. Upper Relay Roller
9. Relay Sensor
10. Lower Relay Roller
11. Pick Up Roller
12. Feed Roller
13. Grip Roller
14. Paper Feed Sensor
15. Separation Roller

Note

- Items (12)~(16) comprise the standard FRR feed system, which is used for Trays 1, 2, and 3. This machine uses motor on/off time (not clutches) to control paper feed.

Tray Capacities

- The machine has three built-in paper trays:
- Tandem LCT (Tray 1). 1550 + 1550 sheets
- Universal Tray (Tray 2) 550 sheets
- Universal Tray (Tray 3) 550 sheets

Built-in Feed Stations

- **Paper feed and separation**. Standard FRR system with a torque limiter for paper separation and feed. Each tray has an independent stepper motor to drive its paper feed mechanisms.
  CT Handling Paper> Paper Feed Methods> Forward and Reverse Roller (FRR)
- **Tray Lift motors**. Provided for each tray, easily disengage when a tray is removed and engage once again when the tray is re-installed. In trays 2 and 3, the lift of the motors on the bottom plates is also used for paper near-end detection.
- **Tandem tray paper end**. A sensor mounted near the top of the right rail signals paper near end and another sensor under the bottom tray signals paper end after the last sheet is fed. Three paper height sensors, mounted on the left rail, are actuated as the actuator rises with the bottom plate. The combinations of actuating and de-actuating these sensors as the plate rises are used to signal the paper supply display on the operation panel.
- **Paper size detection**. For the tandem tray (Tray 1), an SP setting is required (SP 5959 001). For the universal trays (Tray 2, 3), there is a 5-step manual switch on each tray.
- **Vertical Transport.** A grip roller at each feed station feeds the paper into the vertical paper path.
- **Heaters**. Two anti-condensation heaters are provided for the built-in paper feed stations.

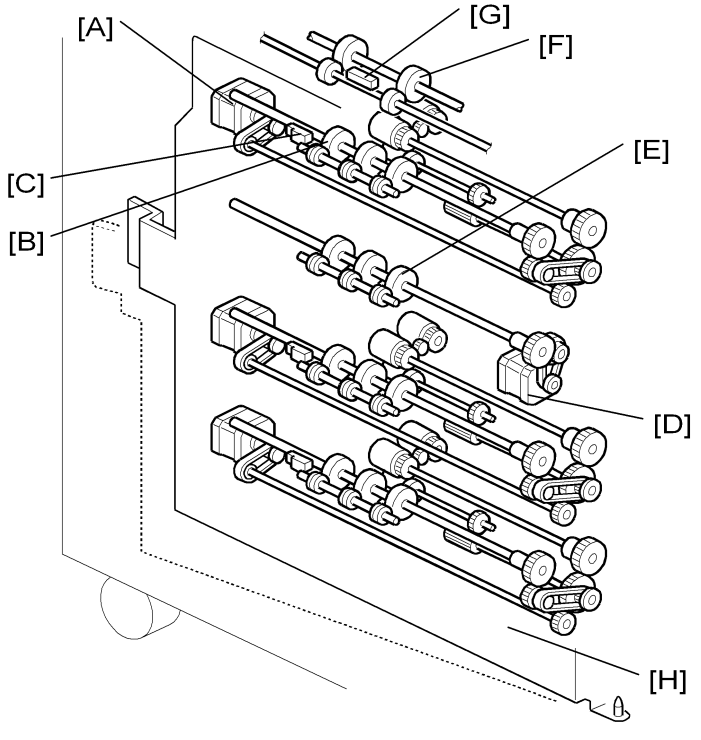
Paper Registration

- Paper is guided to the registration roller from four sources: the 3 built-in paper trays and 1 duplex tray.
- There is a mylar strip over the entire length of the registration roller.

Jam Removal

Pulling out a paper tray releases the pressure on the rollers, making it easy to remove paper jams.

Paper Feed Drive



B246D947

An independent paper feed motor [A] drives the rollers in each tray. It also drives grip rollers [B], which pull the paper out of the tray. The mechanism is identical for each tray.

A vertical transport sensor [C] at each feed station detects paper jams.

The paper feed motors on the trays drive the vertical transport rollers, which are opposite each feed station (not shown here).

The lower relay motor [D] drives the lower relay roller [E], halfway between trays 1 and 2. The relay motor is added here due to the length of the paper path.

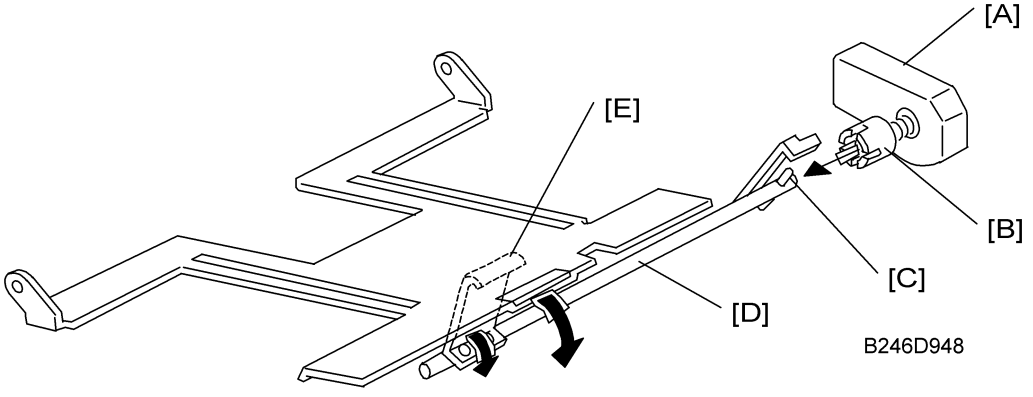
The upper relay roller [F] feeds each sheet to the registration roller.

The relay sensor [G], at the top of the vertical transport path, triggers the start of image exposure on the OPC drum, and detects jams in the paper path.

The transport guide plate [H] swings against the side of the machine and locks in place.

Tray and Paper Lift Mechanism – Tray 2,3

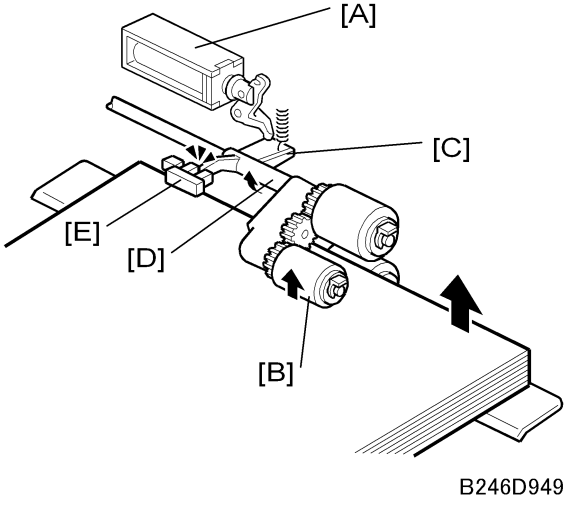
Bottom Plate Lift



Tray lift motor [A] > Coupling [B] > Pin [C] > Shaft [D] > Lift arm [E] (under the bottom plate).

The universal trays (Tray 2, Tray 3) are not provided with near end sensors. The pulse count of the tray lift motor is used to signal near end.

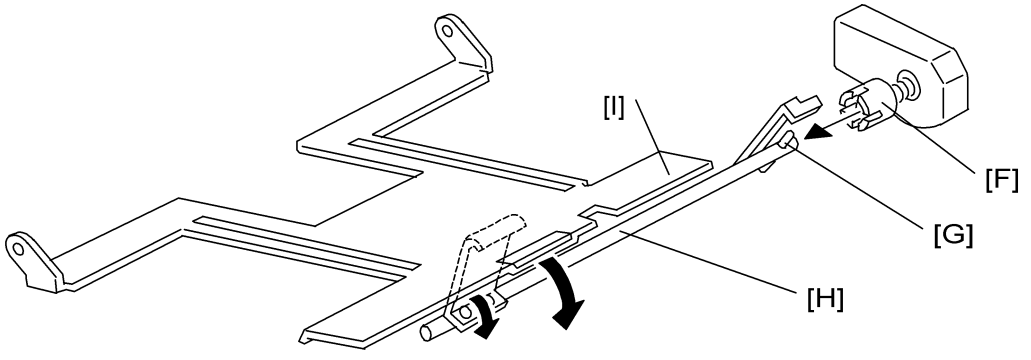
Lift Sensor



When the tray lift motor turns on, the pick-up solenoid [A] turns on, and pick-up roller [B] lowers.

When the top sheet of paper reaches the proper paper feed level, actuator [C] on the pick-up roller support [D] activates the tray lift sensor [E], and the lift motor stops.

After several paper feeds, the paper level gradually lowers and the lift sensor is de-activated. Then the lift motor turns on again until the lift sensor is activated again.



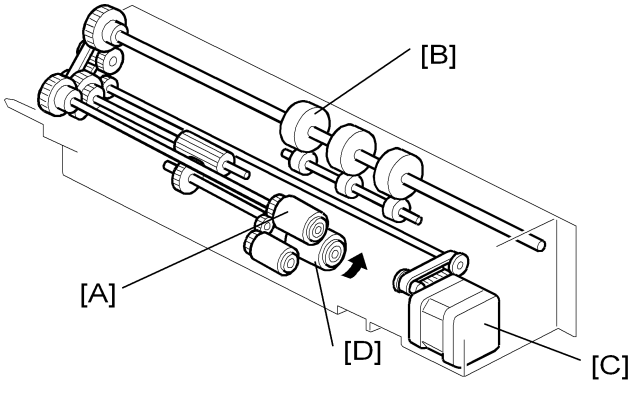
B246D950

When the tray is drawn out of the feed unit: gear [F] disengages pin [G] on shaft [H], then the tray bottom plate [I] drops by its own weight.

6

Paper Feed and Separation Mechanism

Paper Feed and Separation: No Paper Present



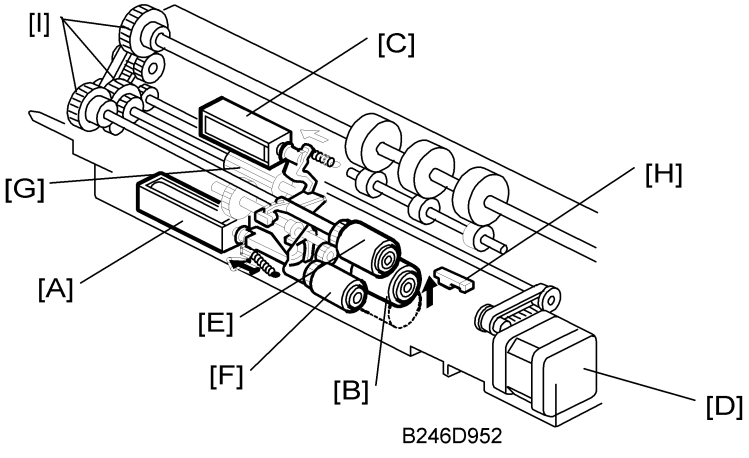
B246D951

While waiting for the first sheet to feed and between sheets, the feed roller [A] must not rotate. However, the grip roller [B] must turn, so that any paper coming up the vertical transport path continues to feed. To do this, the paper feed motor [C] rotates in reverse. The separation roller [D] is free to rotate in the direction shown by the arrow, because the separation roller solenoid is off.

When the feed motor reverses:

Feed roller [A]	>	No rotation
Separation roller [D]	>	Free to rotate
Grip roller [B]	>	Rotates

Paper Feed and Separation



If a paper feed station is not selected, its separation roller solenoid [A] stays off and the separation roller [B] can turn freely in the opposite direction to feed paper.

When the paper feed station is selected and the start key is pressed, the following mechanisms activate:

- Separation roller solenoid [A] > separation roller [B] contacts feed roller [E]
- Pick-up solenoid [C] > pick-up roller [F] lowers to contact the paper
- Paper feed motor [D] > turns feed roller [E] and pick-up roller [F] via gear [G]

When the paper feed sensor [H] detects the leading edge of the paper:

- Pick-up solenoid [C] switches off, and pick-up roller [F] lifts.
- The feed roller [E] then feeds the sheet to the registration roller.

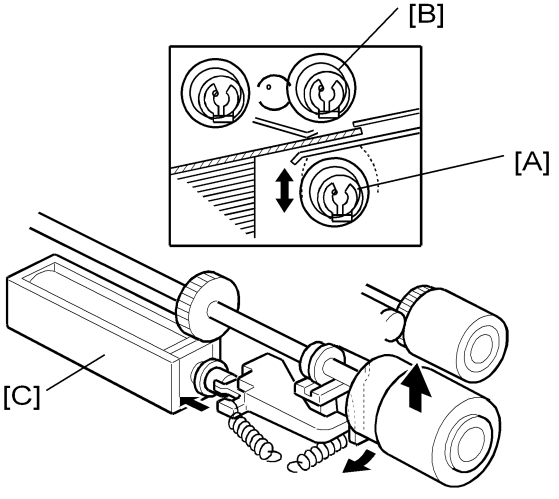
Note the three one-way clutches [I]: One for the grip roller, one for the feed roller, and one for the separation roller.

When the feed motor rotates forward:

Feed roller	>	Rotates
Separation roller	>	Rotates in accordance with the FRR principle CT Handling Paper> Paper Feed Methods> Forward and Reverse Roller (FRR)

Grip roller	>	Rotates

Separation Roller Release Mechanism

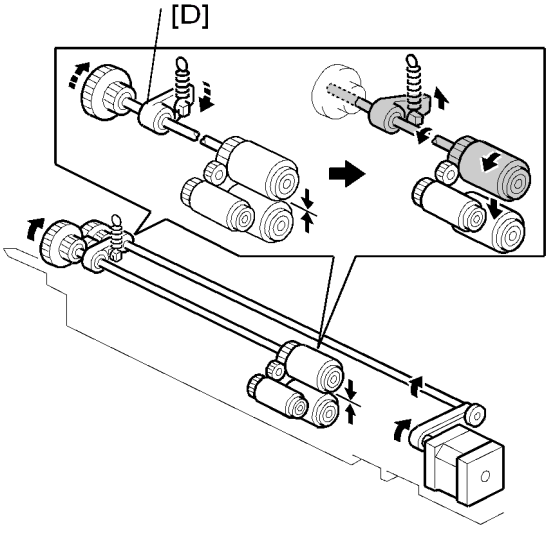


Normally, the separation roller [A] and feed roller [B] are not in contact. However, when the feed station is selected, the separation roller solenoid [C] pushes the separation roller against the feed roller.

This mechanism has these advantages:

- When the paper feed motor turns on, the separation roller rotates. If the separation roller is away from the feed roller, it reduces the load on the paper feed motor and drive mechanism, and it also reduces wear to the rubber surface of the separation roller caused by friction between the separation roller and the feed roller.
- After a job, paper sometimes remains between the feed and separation rollers. If the paper tray is pulled out of the machine, this paper might be torn if the two rollers do not separate.
- The user can easily pull out jammed paper between the feed and separation rollers if the separation roller is away from the feed roller.

Normally, the feed and separation roller separate when the separation roller solenoid switches off.



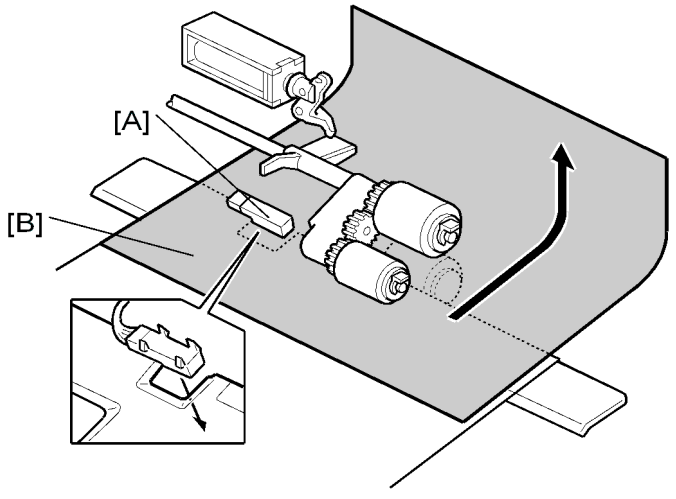
B246D954

This mechanism ensures that the feed and separation rollers do not stick together at the start of a job just after the machine leaves standby mode.

When the feed roller reverses at the start of the job, a small arm [D] pushes the feed roller slightly forward so that it comes away from the separation roller.

If the rollers stay stuck together, the motor may not be able to turn the rollers. When reversing at the start of the job, only a small amount of power is applied from the motor, and this may not be enough to unstick the rollers.

Paper Near-End And Paper End – Trays 2, 3



B246D955

The machine detects paper near end by counting the number of pulses the motor makes when lifting the bottom plate.

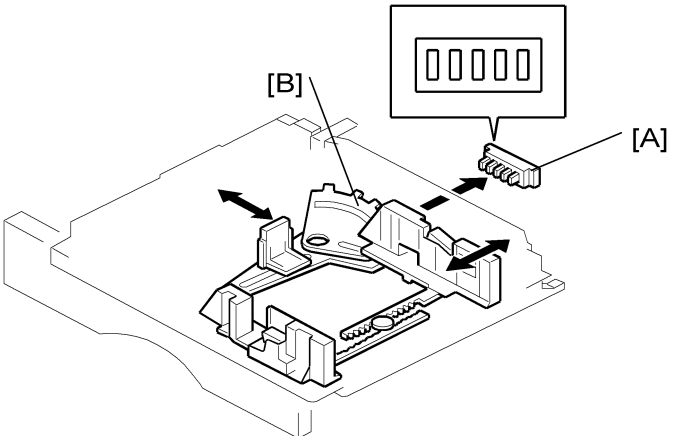
The paper end sensor [A] receives light reflected from the paper below [B] until the last sheet has been fed. Then, paper end is detected.

Paper Size Detection

Tandem Tray (Tray 1)

The tandem tray does not have paper size detection switches. Every time the paper size is changed by moving the front and back fences, you must enter the selected paper size using SP5959-001.

Universal Cassettes (Tray 2, 3)



G148D906A

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.

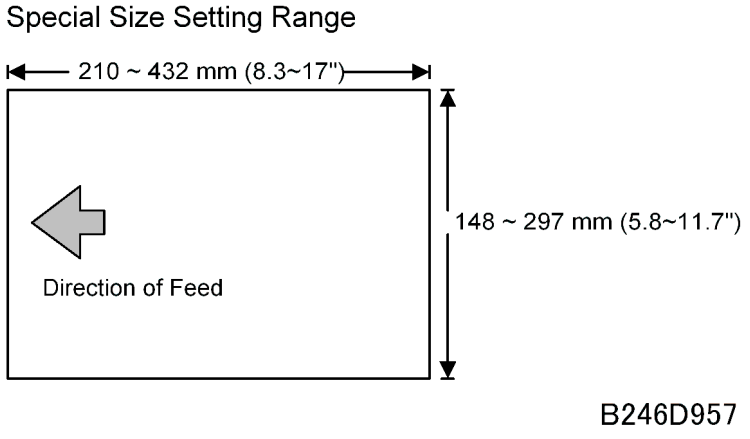
The output from the sensor depends on the position of the side fences, which affects the sensor output, as shown in the table.

Sensor Outputs	A4/A3 Version	LT/DLT Version
01111	A3 SEF	11" x 17" SEF
00111	8¼" x 13" SEF	8½" x 14" SEF
10011	A4 SEF	8½" x 11" SEF
01001	A4 LEF	8½" x 11" LEF
00100	8½" x 13" SEF	5½" x 8½" SEF
00010	A5 SEF	5½" x 8½" LEF
00001	A5 LEF	8" x 10½" SEF
10000	—	7¼" x 10" SEF
11000	—	Set by SP 5129
11100	—	Not used
11110	*	*

0: Actuated 1: Deactuated

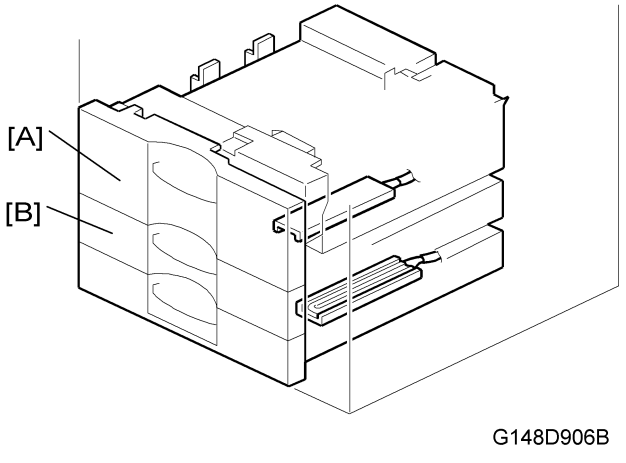
SP5129: The machine can detect 8" x 13" (default), 8½" x 13", or 8¼" x 13".

If the switch is set to the asterisk (*), a range of paper sizes (illustrated below) can be selected, but the size must be entered with a UP mode.



6

Anti-condensation Heaters



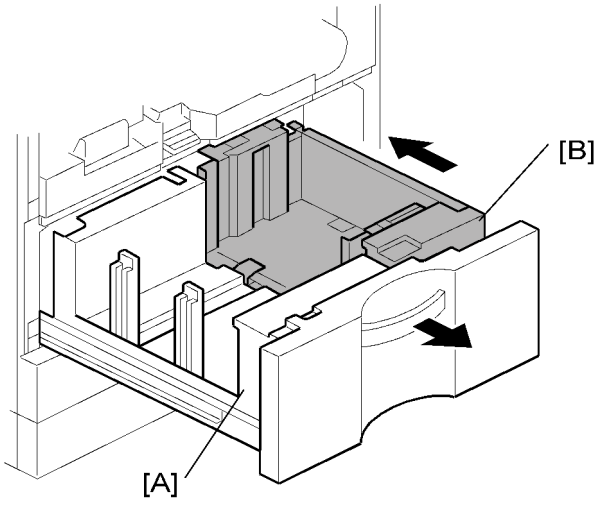
Two heaters, one below the tandem tray [A] and one below the bottom tray [B], prevent condensation around the feed rollers and keep paper dry.

This anti-condensation heater turns on automatically at the following times:

- When the main power switch is turned off
- When the machine enters auto off mode

Tandem Tray – Tray 1

Overview

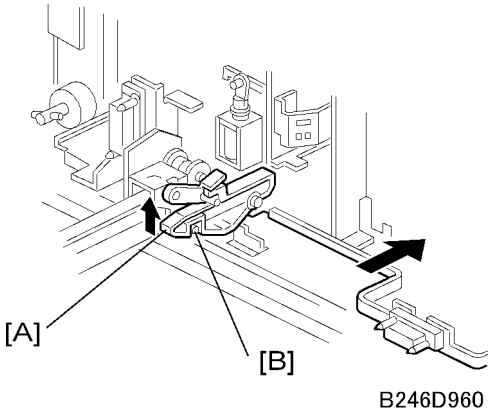


G148i111b

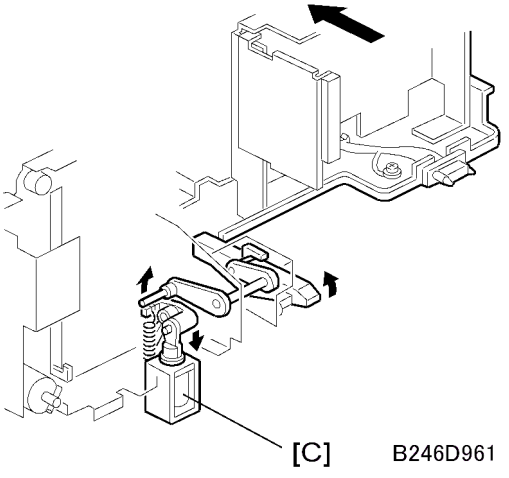
1,550 sheets of paper can be set in each of the left [A] and right trays [B]. Paper is fed from the right tray. When the paper in the right tray runs out, the paper in the left tray automatically transfers to the right tray. After the paper transfers to the right tray, paper feeding resumes.

Normally, both the right and the left trays are joined together. However, during copying, if there is no paper in the left tray, the left tray can be pulled out to load paper. During that time, the right tray stays in the machine and paper feed continues.

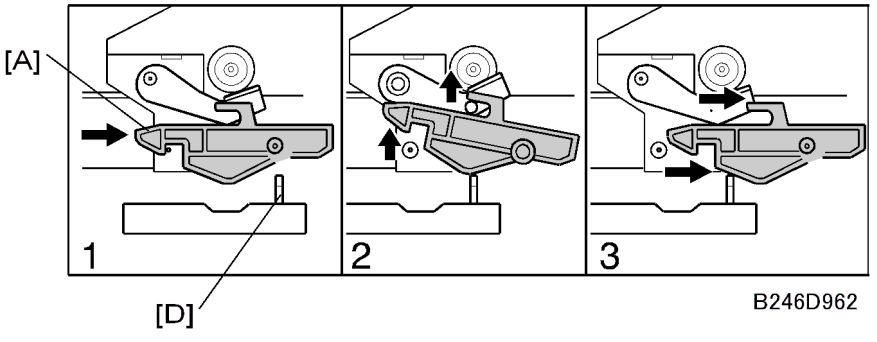
Connecting the Left and Right Sides of the Tray



B246D960



B246D961



B246D962

When there is paper in the left tray:

- Lock lever [A] in the left tray catches the pin [B] in the right tray.

During copying, if there is no paper in the left tray:

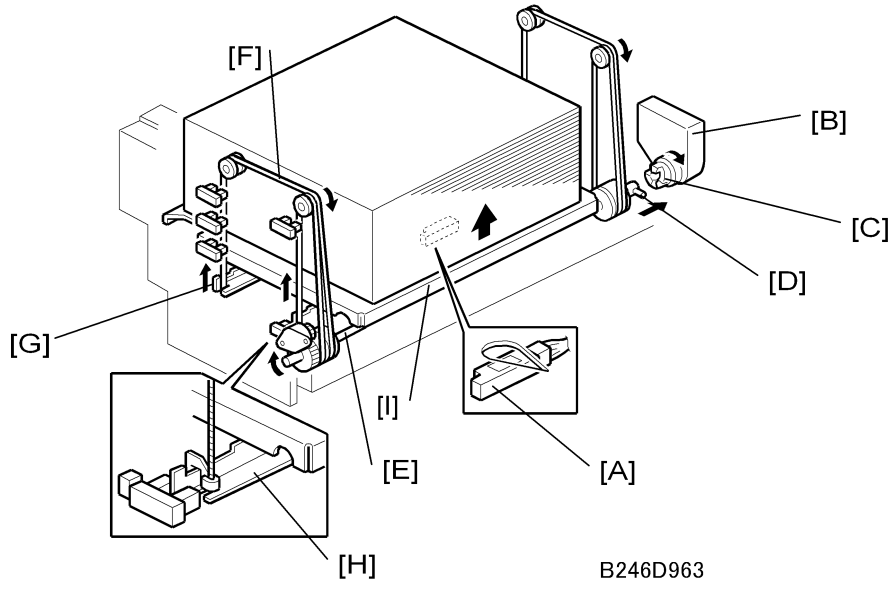
- Right tray lock solenoid [C] turns on, which releases lock lever [A].
- The left tray can now be pulled out to load paper, even while paper is being fed into the machine from the right tray.

When the tandem tray is drawn out fully:

- Projection [D] pushes up lock lever [A] so that both trays separate. This makes paper loading easier.

Paper Lift/Remaining Paper Detection

The machine detects when the 1st tray has been placed in the machine by monitoring the tray set signal through the connector.



When the machine detects that the tray is in the machine, the right tray paper sensor [A] (under the tray) checks whether there is paper in the right tandem tray.

Note

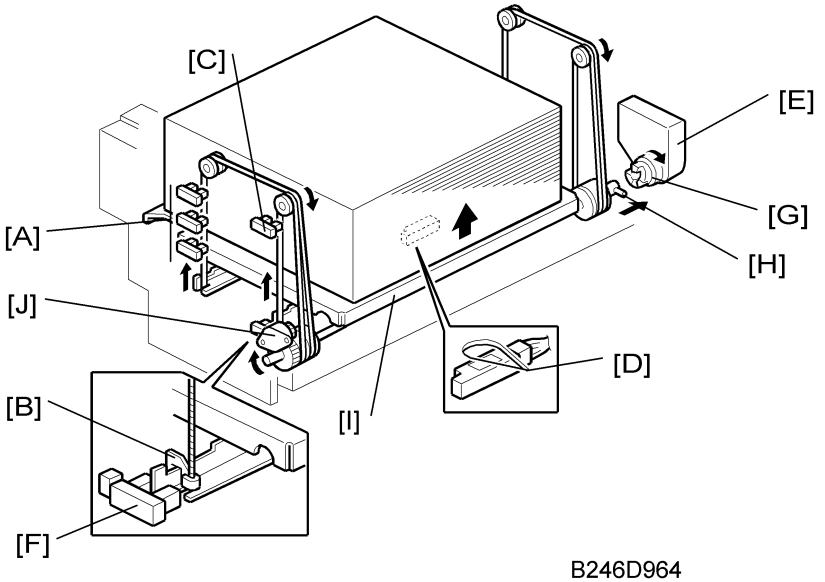
- If sensor [A] was not present and the tray was empty, the bottom plate would have to lift until the 1st tray lift paper end sensor (at the top of the tray) detected that there was no paper, and this would waste several seconds.

If paper is detected, the lift mechanism starts:

- 1st tray Lift motor [B] → Coupling gear [C] → Pin [D] on the lift shaft [E] → Wires [F] → Slots at the ends of the tray support rods [G, H] → Tray bottom plate [I].

The tray goes up until both of the following occur:

- The paper pushes up the pick-up roller and the lift sensor is activated
- The paper end sensor at the top of the tray is deactivated.



B246D964

Paper remaining: The amount of paper remaining in the tray is detected by which combination of the three paper height sensors [A] are actuated by the actuator on the left rail as the bottom plate rises.

- With the actuator below paper height sensor 1 (the bottom sensor), no sensor is actuated and the display indicates the tray is full.
- When the actuator passes paper height sensor, the display indicates 50% of the paper supply remaining.
- When the actuator passes paper height sensor 2 (the middle sensor), the display indicates 30% of the paper supply remaining.
- When the actuator passes paper height sensor 3 (the top sensor), the display does not change. This prevents the signal from returning to the off state, which would indicate 100% of the paper remaining (the same state as when the sensor is below paper sensor 1.

Paper near-end: Detected when the actuator [B] on the right rail activates the paper near end sensor [C]. When the actuator passes this sensor, the display indicates 10% of the paper supply remaining.

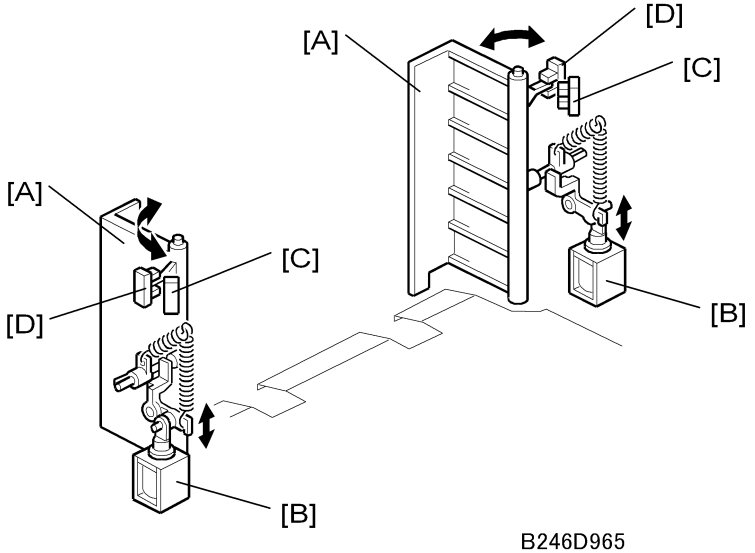
Paper end: After the last sheet feeds, the paper end sensor at the top (by the feed roller) signals paper end.

When paper runs out in the right tray, the stack must be moved across from the left tray. To do that, the tray must first be lowered. The 1st tray lift motor [E] reverses until actuator [B] activates the right tray down sensor [F].

When removing the tray manually, if paper is still present, the tray lowers under its own weight as follows:

- Coupling [G] separates from pin [H] > Tray bottom plate [I] moves down.
- Damper [J] lets the tray bottom plate drop slowly.

Fence Drive



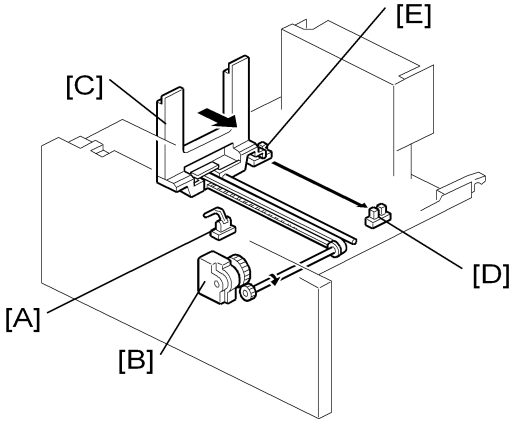
B246D965

The side fences [A] of the right tray open only when paper in the left tray goes to the right tray.

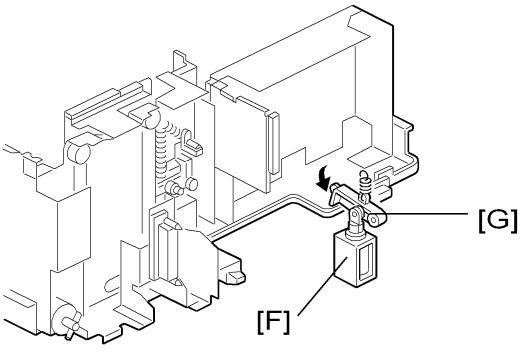
The side fence solenoids [B] turn on to open the side fences, until the side fence open sensors [C] activate.

After the stack has been moved into the right tray: The side fence solenoids turn off to close the side fences, until the side fence close sensors [D] activate. Then, the LCD prompts the user to set some paper in the left side of the tandem tray.

Rear Fence Drive



B246D966



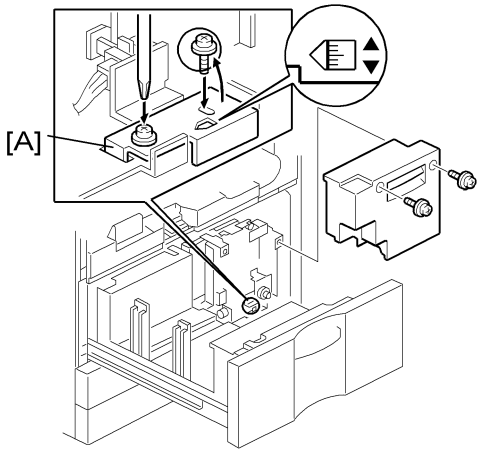
B2246D967

When the left tray paper sensor [A] detects paper but the right tray paper sensor does not, the following happens.

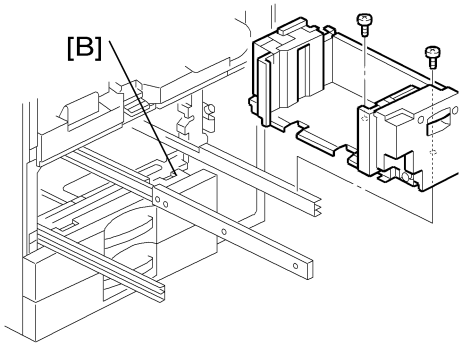
- Rear fence motor [B] (a DC motor, in the left tray) turns counter-clockwise → Rear fence [C] pushes the paper stack into the right tray.
- When rear fence return sensor [D] detects the actuator on the rear fence, motor [B] turns clockwise until rear fence HP sensor [E] detects the actuator.

While the rear fence is moving, the left tray lock solenoid [F] turns on and the lock lever [G] locks the left tray.

Tray Side-to-Side Positioning



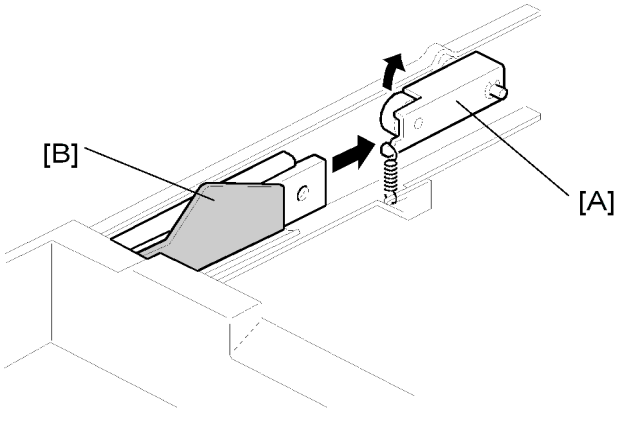
(G148D906C)



(G148R592)

When the feed tray is set in the paper feed unit, the side-to-side positioning plate [A] presses the feed tray against the stopper [B]. By moving the positioning plate, the tray position can be changed to adjust the side-to-side registration.

Tray Positioning Mechanism – Trays 1 to 3

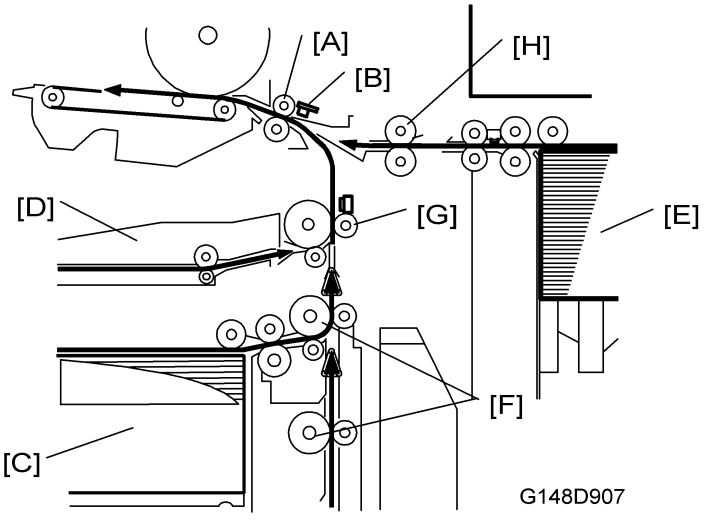


B246D970

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.

Paper Registration

Overview



The registration rollers [A] and registration sensor [B] handle paper fed from four directions:

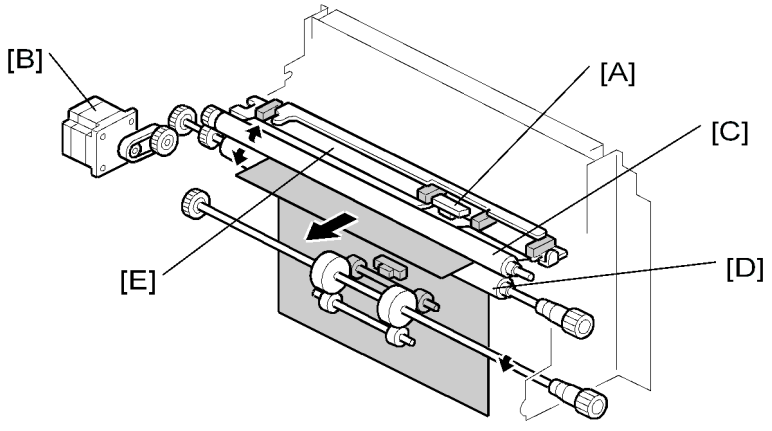
- Tandem tray and universal trays below [C]
- Duplex unit [D]
- Optional LCT [E]

The grip rollers [F] feed paper from the trays into the vertical transport path to the registration rollers.

The upper relay roller [G] feeds all paper exiting the vertical transport path.

The LCT relay roller [H] feeds paper from the LCT to the printer.

Paper Registration Drive



B246D977

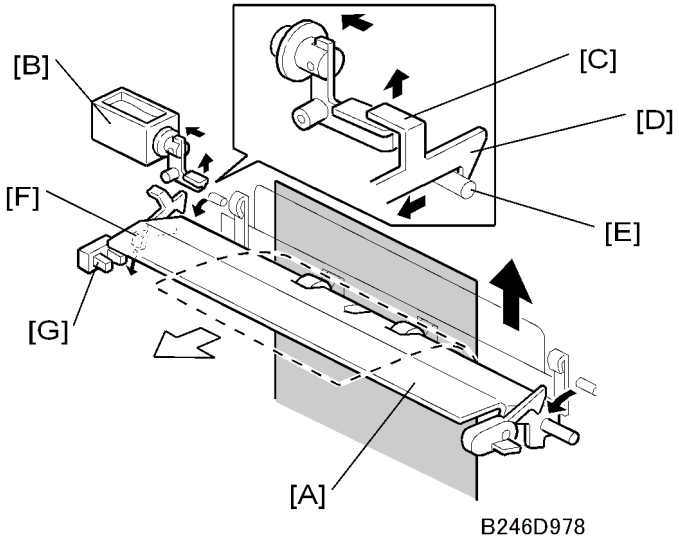
When the registration sensor [A] detects the leading edge of the paper, the registration motor [B] stops the paper at the registration rollers [C, D] for a short while to correct the skew in the paper.

Mylar [E] touches the upper surface of roller [C]. This mylar removes dust from the paper while it passes the registration rollers.

Note

- Use SP1003 (Registration Buckle Adjustment) to adjust the registration motor timing for each paper feed station or the duplex tray. For details see "5. Service Tables".

Jam Removal at Paper Registration



B246D978

If a paper misfeed occurs 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.

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 into the duplex tray.

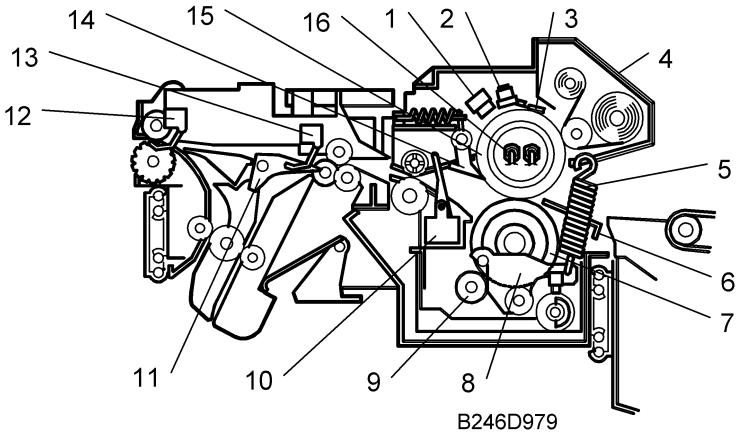
Actuator [F] on the guide plate activates the guide plate position sensor [G] when the guide plate opens.

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.

Image Fusing and Paper Exit

Overview



1. Thermistor (Center) *1
2. Thermostats *2
3. Thermistors *3
4. Web Cleaning Unit
5. Pressure Spring
6. Entrance Guide Plate
7. Pressure Roller
8. Pressure Arm
9. Pressure Roller Cleaning Roller
10. Fusing Exit Sensor
11. Exit Junction Gate
12. Paper Exit Sensor
13. Exit Unit Entrance Sensor
14. Hot Roller Strippers
15. Hot Roller
16. Fusing Lamps *4

*1	Non-contact thermistor
*2	Non-contact thermostats x2
*3	Contact thermistors x1
*4	Fusing lamps x2

The fusing unit is a hot roller/pressure roller system. Two 550W fusing lamps switch on and off at the same time to keep the hot roller temperature steady at 185°C.

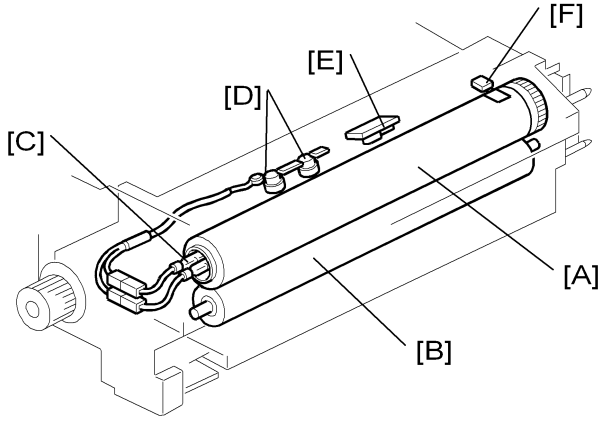
The center thermistor (1) (not in direct contact with the hot roller) controls the temperature at the center of the hot roller. The end thermistor (3) directly contacts the hot roller surface and prevents overheating. The two thermostats (2) also prevent overheating.

The web cleaning unit (web roller, cleaning roller, and take up roller) applies a light coat of silicone oil to the hot roller to prevent toner and paper dust from sticking to the hot roller.

The fusing exit sensor detects concertina jams at the fusing unit exit. This sensor is required because the user may not see this type of jam in the machine when removing a jam at the exit.

The fusing unit and exit unit can be separated, making it easier to service.

Fusing Mechanism



B246D980

The hot roller [A] and pressure roller [B] fuse the toner to the paper.

Two fusing lamps [C] (550 W) are inside the hot roller.

Two thermostats [D] are positioned above the hot roller near the center.

One thermistor [E] is also positioned above the hot roller near the center.

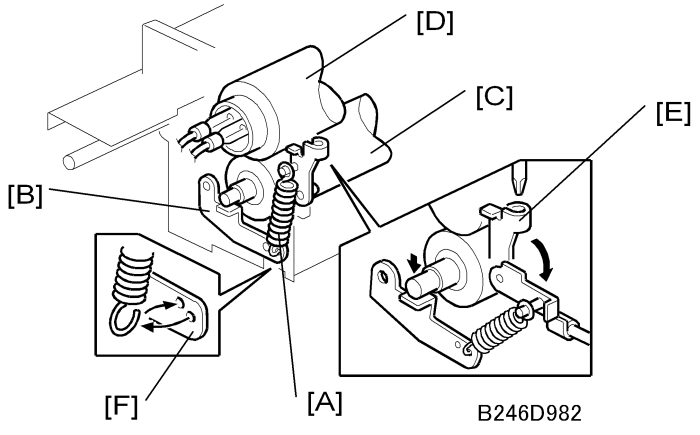
Another thermistor [F] is in contact with the end of the hot roller.

Thermistors	
Center (non-contact) thermistor	Temperature control
End (contact) thermistor	Overheating protection
Thermostats *1	
Center (non-contact) thermostats	Overheating protection

*1 If the thermostats trigger an alert, the thermostat requires replacement.

A fusing exit sensor, located between the hot roller and paper exit roller, detects paper jams inside the fusing unit.

Pressure Roller



Heavy springs [A], attached to pressure arms [B] below both ends of the pressure roller [C], keep the roller pressed against the hot roller [D] above.

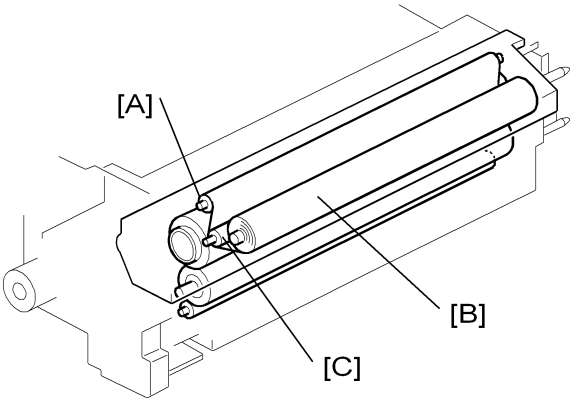
Release the springs [E] in order to release the pressure from the rollers for maintenance.

Two holes [F] are provided on each pressure arm for the springs.

Note

- Normally, the springs should be attached to the lower holes. Attaching the springs to the upper holes exerts less pressure on the hot roller. Attach the springs to the upper holes only for especially thin paper.

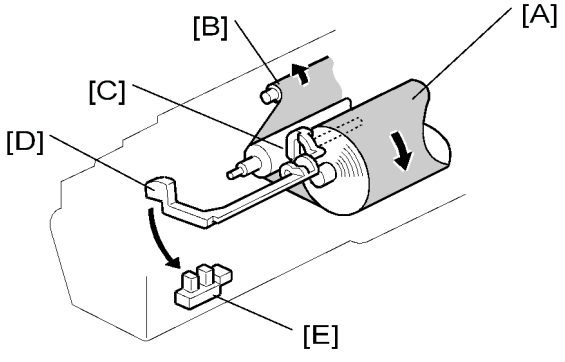
Hot Roller Cleaning



B246D984

The cleaning web is saturated with silicone oil.

Inside the web cleaning unit, the web take-up roller [A] pulls the web from the web supply roller [B] past the cleaning roller [C]. The cleaning roller is pressed against the hot roller.



B246D985

Web Drive

The web motor drives the web supply roller [A] and web take-up roller [B]. The web motor switches on for 0.8 to 2.8 s at 15 s intervals during copying.

Web Near-end

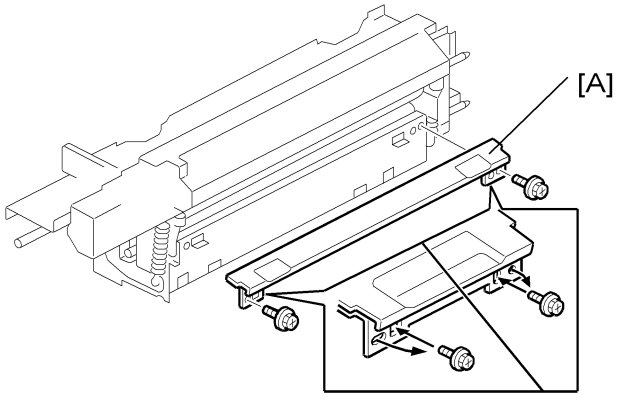
The machine monitors how much of the roll has been fed since it was installed. The setting of SP1902-004 (Fusing Web Motor Control) determines the amount of web remaining on the web roll when the near end alert is issued. (The default setting is after 80% of the web has been used, which is about 266K A4 LEF.)

Web End

A light-tension spring holds the feeler [C] against the top of the feed roll. When the roll runs out, the actuator on the end of the feeler [D] enters the web end sensor [E].

When all of the web has been used (after about another 30k copies), the actuator rotates, its feeler actuates the web end sensor, and SC550 (Fusing Unit Web End) is logged. After replacing the web with a new one, reset SP1902-001 to 0 to release SC550.

Fusing Unit Entrance Guide



B2246D986

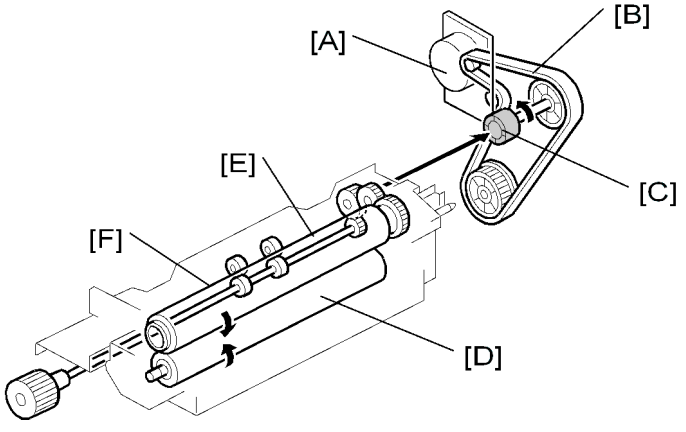
The height of the entrance guide [A] can be adjusted.

- **Normal or thick paper.** For normal or thick paper, the guide should be up with the screws in the outer holes (this is the standard or default position). Thick paper does not bend easily and is less likely to crease. The standard position also allows direct access to the gap between the hot roller and pressure roller. This prevents thick paper from buckling against the hot roller, which can lead to blurring at the leading edge of the copy.
- **Thin paper**. If wrinkling occurs with thin paper, adjust the guide down by removing both screws and moving them to the inner holes. This lengthens the paper path slightly to prevent the paper from wrinkling in the unit.

  Note

  - Before shipping, the screws are set in the outer holes.
  - If the customer is experiencing problems with paper sizes larger than A4, then use the inner holes.

Fusing Unit Drive



B246D987

Fusing/exit motor [A] > timing belt [B] > gear coupling [C] > fusing unit

Inserting the fusing unit engages the coupling [C].

The pressure roller [D] is driven by friction between the pressure roller and the hot roller [E].

The fusing unit exit rollers [F] are driven through some gears.

CPM Down Mode

CPM (Copies Per Minute) Down Control adjusts the copy speed automatically when printing OHP (transparencies) or extremely thick paper.

Slowing down the paper as it goes through the fusing unit makes the paper spend more time in the fusing unit. This compensates for the loss of temperature caused by the demand on the hot roller.

When feeding special paper such as tab paper or thick paper, the copy speed can be adjusted with SP1901 (CPM Down Setting for Special Paper). A slower speed selection ensures better fusing. Adjusting SP1901 does not affect fusing temperature control.

Fusing Temperature Control

This machine uses either on/off control or phase control to control the temperature of the hot roller. Before shipping, the machine is set for on/off control.

Generally, phase control is used only if the customer has a problem with electrical noise or interference on the power line. Phase control can be selected with SP1104-001 (Fusing Temperature Control).

The thermistor contacting the center of the hot roller surface monitors the temperature of the hot roller. The CPU turns the fusing lamps on and off to keep the hot roller surface at the target temperature. The target temperature depends on the paper type.

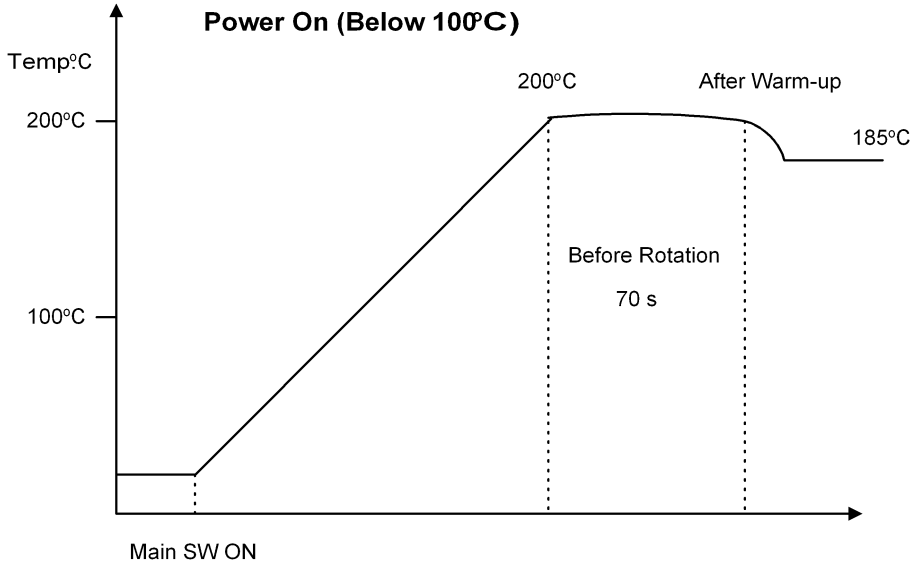
Paper	Temperatures	Adjust With
Normal	195°C±5 (383°F±9	SP1105-001, 002, 007, 008
OHP	165°C (329°F)	SP1105-003, 004
Thick Paper	200°C (392°F)	SP1105-005, 006

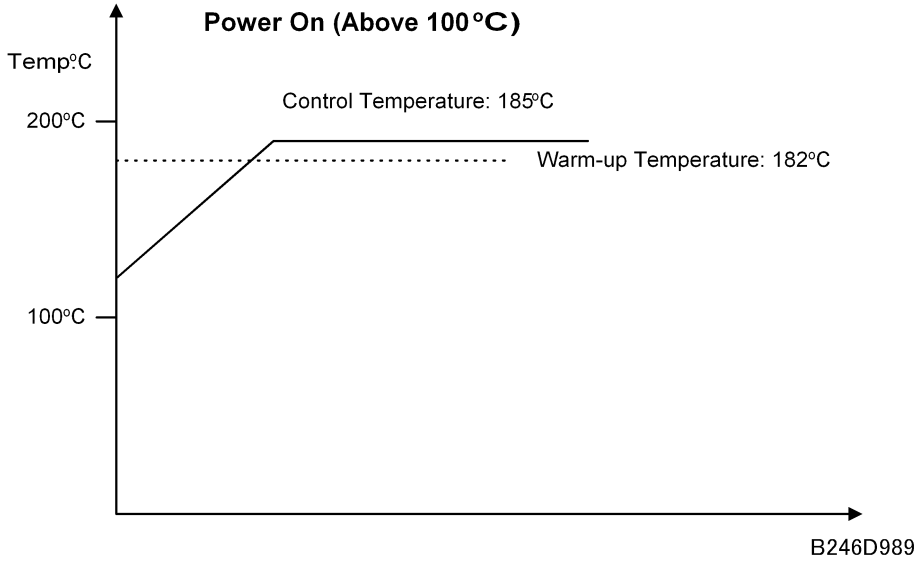
SP1105: See the SP table in Section 5 for details.

As shown in the illustration, at power on when the temperature is less than 100°C, there is an interval of 70 s during which the hot roller rotates before printing starts (this is called 'fusing idling'). This interval allows the hot roller to reach the control temperature. At power on when the temperature is over 100°C, printing can start as soon as the hot roller reaches the warm-up temperature of 182°C.

Note

- SP1106 (Fusing Temperature Display) displays the current center and end temperatures for the hot roller.





Here is a list of SC codes issued if a fusing unit error occurs. For details, see "Troubleshooting".

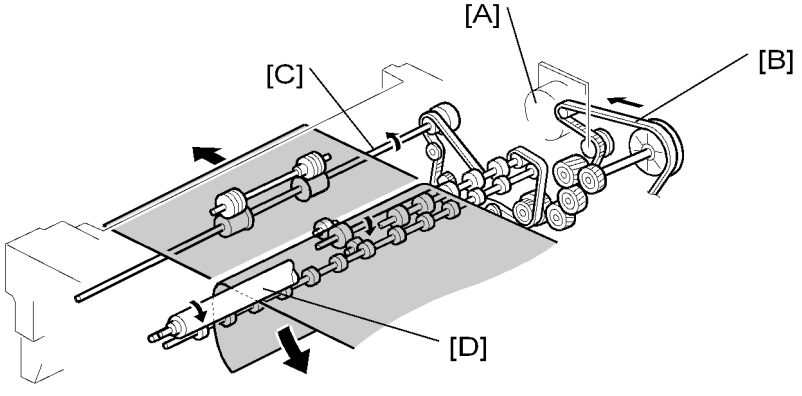
SC541	Fusing thermistor open
SC542	Fusing temperature warm-up error
SC543	Fusing lamp overheat error 1 (software)

SC544	Fusing lamp overheat error 1 (hardware)
SC545	Fusing lamp overheat error 2

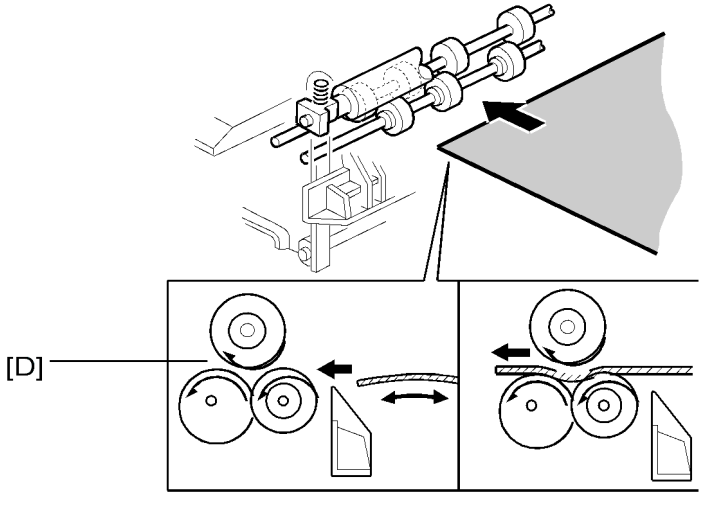
Note

- To release the machine after one of these SC codes is issued, just enter the SP mode.

Paper Exit



B246D990

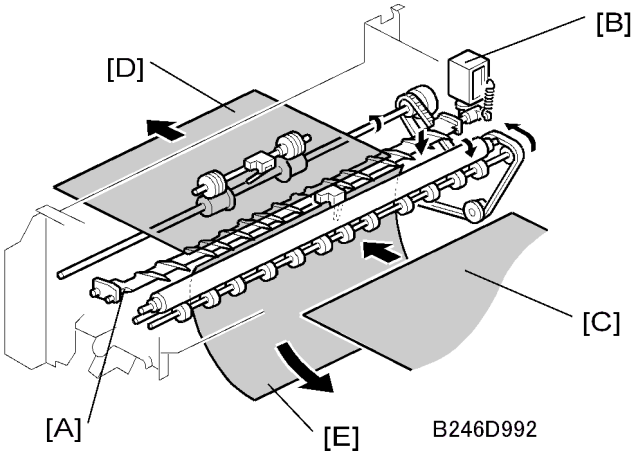


B246D991

Fusing/exit motor [A] > timing belt [B] > exit roller [C] via gears and timing belts.

The de-curler rollers [D] remove curl from the paper before it exits. This improves feed through the duplex unit and finishers.

Exit Junction Gate

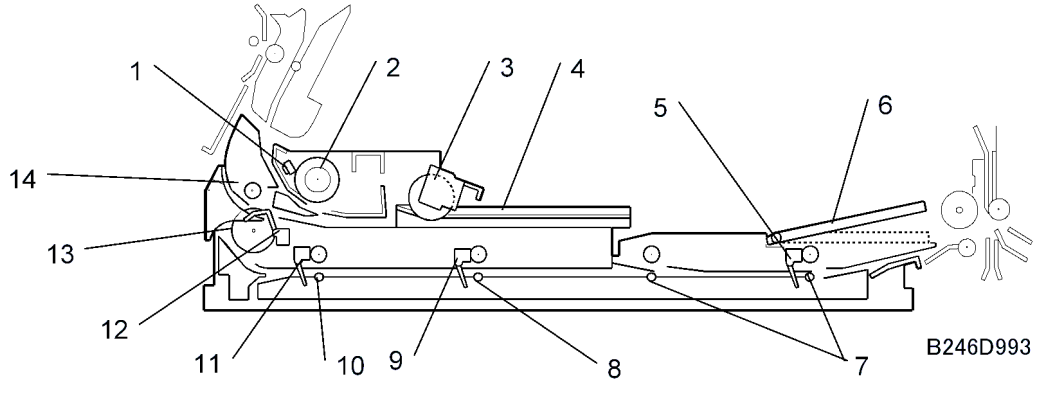


The exit junction gate [A] is controlled by the exit junction gate solenoid [B].

- If the solenoid is on: The gate opens, and paper [C] goes straight through [D] to the output tray (for face-up delivery) or the finisher.
- If the solenoid is off: The gate remains closed and forces the paper down [E] to the duplex unit.

Duplex Unit

Overview



1. Duplex Entrance Sensor
2. Inverter Entrance Roller
3. Reverse Trigger Roller
4. Jogger Fences
5. Duplex Transport Sensor 3
6. Trailing Edge Guide Plate
7. Duplex Transport Rollers 3, 4
8. Transport Roller 2
9. Duplex Transport Sensor 2
10. Transport Roller 1
11. Duplex Transport Sensor 1
12. Duplex Inverter Sensor
13. Inverter Exit Roller
14. Duplex Junction Gate

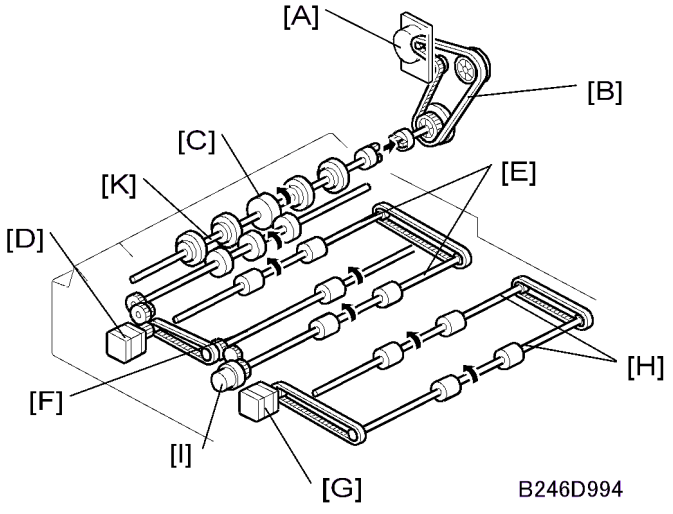
Normally the page is fed out directly face-up to the output tray. If the user selected face-down output, the exit junction gate sends the page to the inverter. The inverter inverts the page for face-down output.

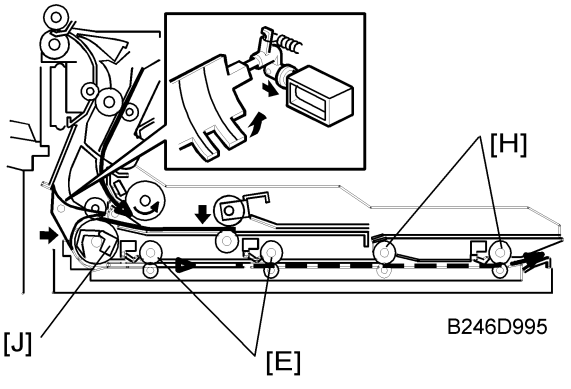
If the user selected duplex mode, after the inverter inverts the page, the duplex junction gate directs the page into the duplex unit, then the duplex unit feeds the page back to the machine for printing the second side.

Note

- When the duplex unit is removed, the trailing edge guide plate (6) drops to the horizontal position to make it easier to remove.

Duplex Drive





Fusing/exit motor [A] > Timing belt [B] > Inverter entrance roller [C]

Duplex inverter motor [D] > Timing belt > Reverse roller [F]

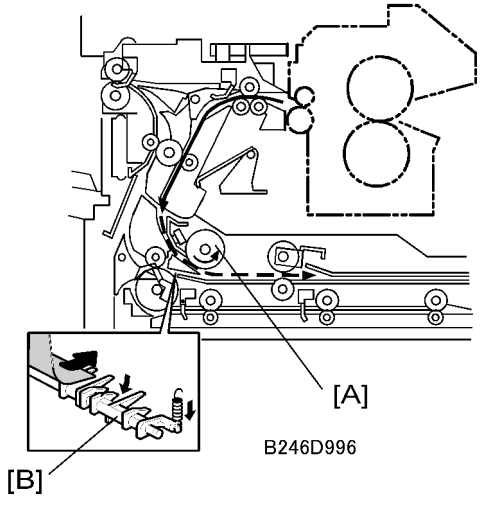
Duplex inverter motor [D] > Duplex transport gear [I] > Transport rollers 1, 2 [E]

Duplex Inverter motor [D] > Inverter exit roller [K]

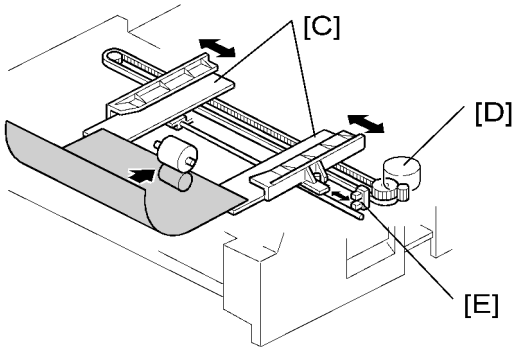
Duplex transport motor [G] > Timing belt > transport rollers 3, 4 [H]

Inverter Operation

Inverter Feed-in and Jogging



B246D996



B246D997

Just after the main switch is turned on:

- Jogger motor [D] (a stepper motor) moves the jogger fences [C] to home position (determined by the duplex jogger HP sensor [E]).

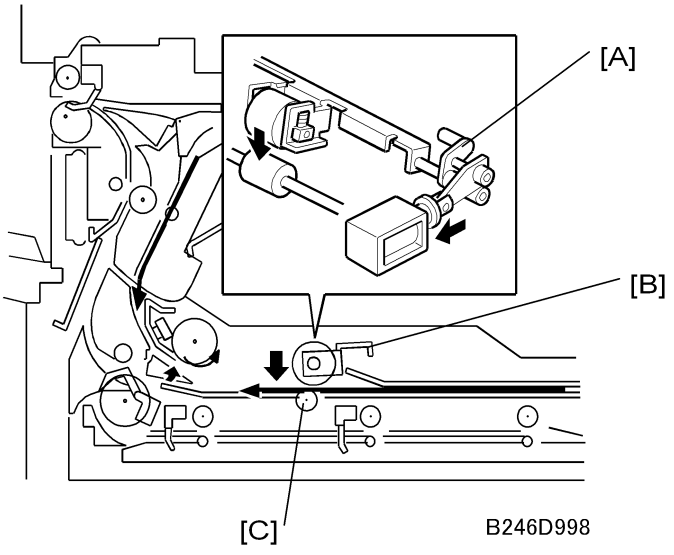
When the Start key is pressed:

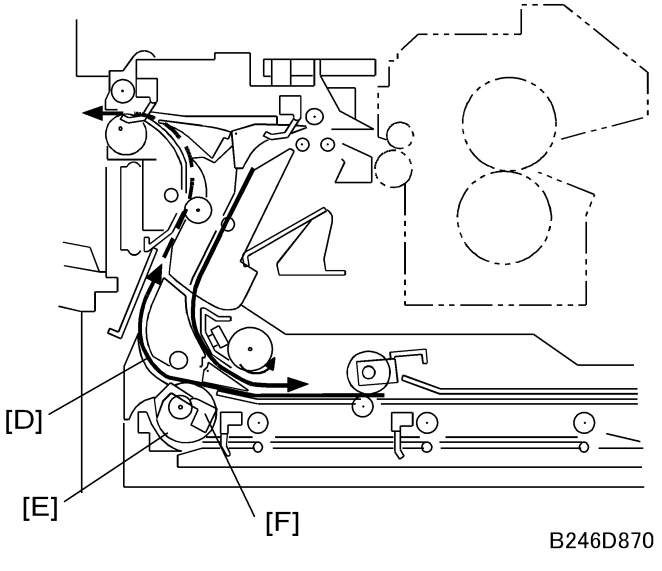
- Motor [D] positions fences [C] 20 mm away from the selected paper size to wait for the paper.
- Inverter entrance roller [A] feeds paper to the jogger section. Then the paper pushes down the gate [B].

After the paper passes through the gate:

- Motor [D] (a stepper motor) moves the jogger fences [C] in to square the paper. This happens every page.
- After this, the jogger fences move back to the previous position (12 mm away from the paper)
- A spring pushes the gate back up again after the paper has gone (there is no solenoid).

Inverter Feed-out





[A] Reverse trigger roller solenoid [A]

[B] Reverse trigger roller [B]

[C] Reverse roller [C]

[D] Paper [D]

[E] Inverter exit roller [E]

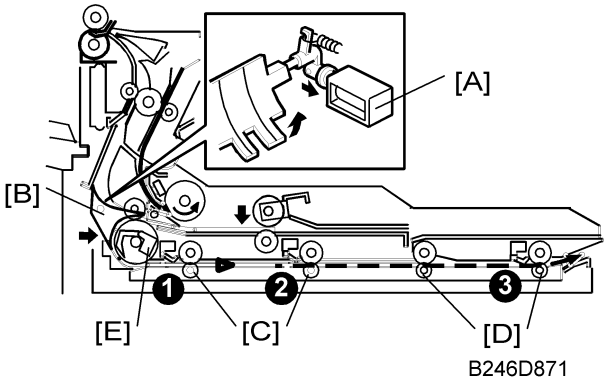
[F] Duplex inverter sensor {F}

After jogging, each page is fed back as follows:

- Solenoid [A] pushes down roller [B].
- Roller [B] contacts roller [C], catching the paper between the two rollers.
- Roller [C] always turns counter-clockwise, and feeds the paper [D] backwards to roller [E].

When the leading edge of the paper, now caught by roller [E], passes duplex inverter sensor [F], solenoid [A] switches off and roller [B] returns to its home position.

Duplex Tray Feed



After inversion:

- If duplex mode is not selected, the duplex junction gate solenoid [A] does not switch on to open the duplex junction gate [B]. The paper goes to the output tray or finisher face down.
- If duplex mode is selected, after the paper leaves the inverter, the solenoid [A] switches on and opens the junction gate [B]. The paper goes down to the duplex tray.

For details about how the transport rollers [C] and [D] and the inverter sensor [E] operate to control duplex feed, refer to the sections above.

Duplex transport sensors ❶, ❷, ❸ detect jams in the paper path.

Duplex Interleave Feed

The number of sheets that can be processed at a time depends on the size of the paper.

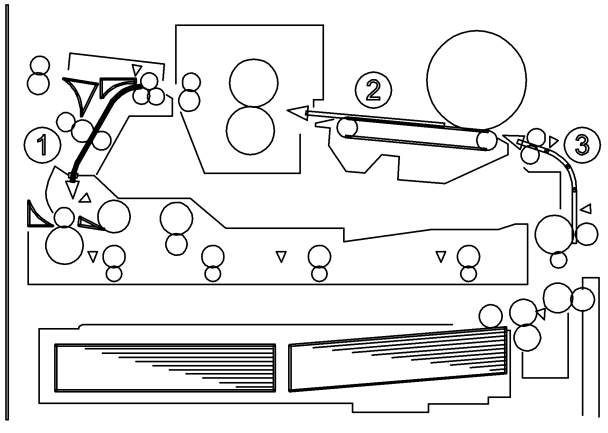
The table below shows the order of page processing for a 14-page job. Odd numbers are the front sides of the pages, even numbers are the back sides. A number in a black circle means printing on the second side of a sheet of paper (black 1 means printing on side 2 of sheet 1).

	Order of Page Processing													
Scanning Order	1	2	3	4	5	6	7	8	9	10	11	12	13	14
A4/LT LEF or smaller [1]	1	3	5	2	7	4	9	6	11	8	13	10	12	14
Longer than A4/LT (LEF) [2]	1	3	2	5	4	7	6	9	8	11	10	13	12	14

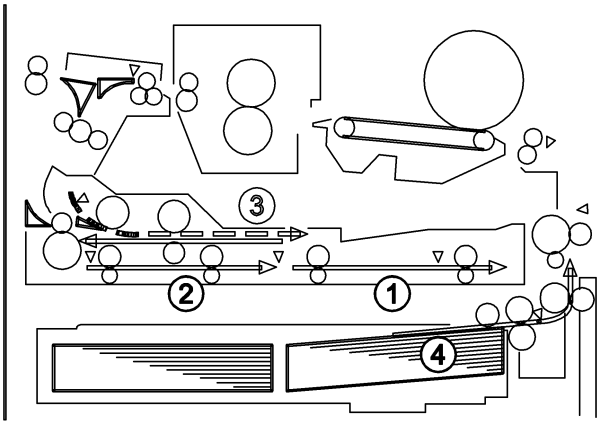
[1]: 3 pages can be interleave processed at once.

[2]: Only 2 pages can be interleave processed at once.

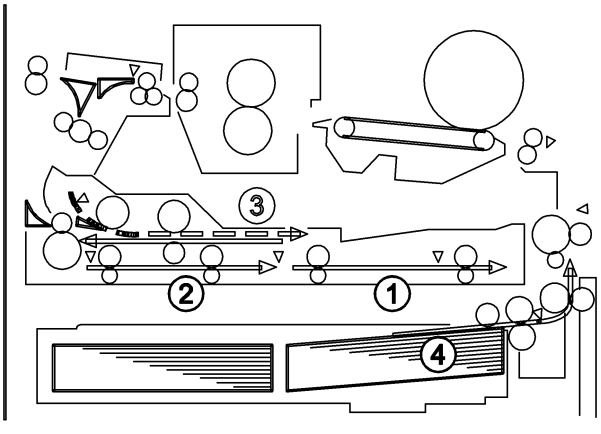
The following diagrams show where the 7 sheets are located at every step during a 14-page duplex print job with A4/LT LEF paper (three pages can be in the feed path at once).



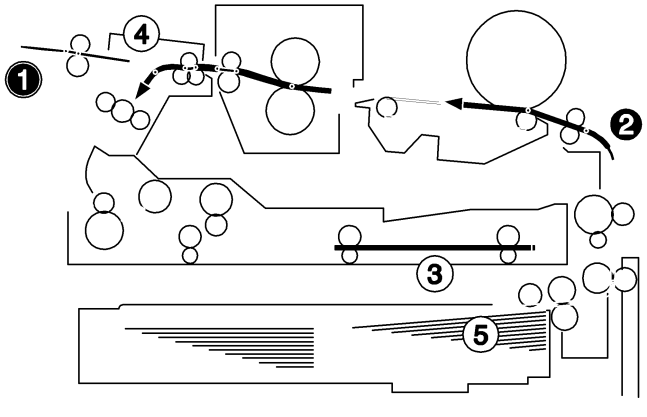
1. First 3 sheets (1) (2) (3) feed.
    - 1st sheet, front page printed (pg. 1)
    - 2nd sheet, front page printed (pg. 3)
    - 3rd sheet, front page printed (pg. 5)



2. 1st, 2nd, 3rd sheet fed to duplex tray and inverter table.
3. 4th sheet feeds.

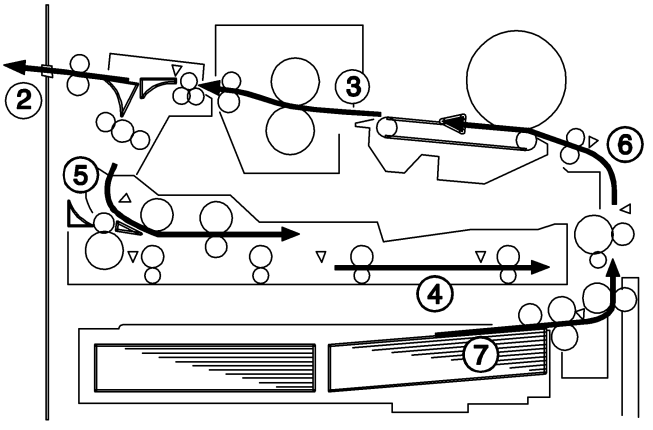


4. 1st sheet, back page printed (pg. 2)



5. 4th sheet feeds, front page printed (pg.7)

6. 1st sheet exits (pp. 1, 2)
7. 4th sheet feeds to duplex tray.
8. 2nd sheet, back page printed (pg. 4)
9. 5th sheet feeds.



10. 2nd sheet exits.
11. 5th sheet, back page printed (pg. 9), feeds to duplex tray.
12. 3rd sheet, back page printed (pg. 6)
13. 6th sheet, front page printed (pg. 11)
14. 4th sheet, back page, (pg. 8), 7th sheet front page (pg. 13) copied in order, the process above repeats.

Energy Save Mode

If the printer remains idle for the selected time interval, the machine automatically enters the energy saver mode and switches off the fusing lamps to reduce power consumption.

The customer can select the idle time interval or switch the energy saver mode off. The Energy Saver selector setting is in the System menu, which can be accessed at the printer operation panel:

[Menu]> System> Energy Saver> E. Saver On/Off (*On)

[Menu]> System> Energy Saver> E. Save Timer (*1 minute)

[Menu]	Settings
Energy Saver On/Off	On (default)
Energy Saver Timer	*1 (default), 5, 15, 30, 45, 60 minutes

- After the machine remains idle for the specified time, the CPU switches off the fusing lamps.
- The machine leaves the energy saver mode and returns to normal operation when any key on the operation panel is pressed, when the printer receives a print job from the computer, or after the printer is switched off and on.
- The time from receiving the print start command to making the first print is longer than when powering up from normal standby mode.

For details, see the Operating Instructions.

7. Specifications

General Specifications

Printer

Configuration	Console	
Paper Size	Paper tray, Duplex	A3/11" x 17" – A5 5.5" x 8.5"
	Non-standard sizes	Width: 139.7 – 297 mm (5.5" x 11.7") Length: 139.7 – 432 mm (5.5" x 17")
Paper Weight	Paper Tray	52.3 to 127.9 g/m^2 (14 ~ 34 lb.)
	Duplex	64 ~ 127.9 g/m^2 (17 ~ 34 lb.)
Printing Speed	75 ppm (A4, LT LEF)	
First Print Time	5.5 s (Tray 1, A4/LT LEF face-up)	
Warm-up Time	Less than 300 sec. from power on at 23°C (73.4°F)	
	Less than 30 sec. at return from energy save mode	
Continuous Print	1 ~ 999 (Operation panel entry)	
Paper Capacity	Tray 1 (tandem tray)	3100 sheets (1550 x2)
	Tray 2	550 sheets
	Tray 3	550 sheets
Paper Output	A4/8 1/2" x 11" and smaller	500 sheets
	B4 and larger	250 sheets
Power Source	North America	120 V / 60 Hz 20 A or more
	Europe/Asia	220 ~ 240 V / 50/60 Hz 10 A or more
Power Consumption	Full System	1.85 kw
Energy Start	Implemented	

Memory	256 MB
HDD Capacity	80 GB
Allowed voltage fluctuation	10%
Dimensions (W x D x H)	690 x 790 x 1005 mm (27.2 x 31.1 x 39.6 in.)
Weight	Approx. 188 kg (413.6 lb.)
Resolution	300 dpi, 400 dpi, 600 dpi, 1200 dpi (with edge smoothing)
Gradation	256 levels (scanning and printing)
Toner Replenishment	Cartridge exchange (1100 g)
Total Counter	Electric Counter

Power Consumption

G148 (120V Model) NA

	Mainframe Only	Full System
Warm-up	Approx. 1400 kW	Approx. 1450 kW
Stand-by	Approx. 250 kW	Approx. 250 kW
Printing	Approx. 1500 kW	Approx. 1600 kW
Maximum	Less than 1850 kW	Less than 1850 kW

G148 (220V to 240V Model) EU

	Mainframe Only	Full System
Warm-up	Approx. 1400 kW	Approx. 1450 kW
Stand-by	Approx. 250 kW	Approx. 250 kW
Printing	Approx. 1500 kW	Approx. 1600 kW
Maximum	Less than 1850 kW	Less than 1850 kW

Noise Emission

Noise Emission: Sound Power Level (NA)

	G148 (75 ppm)
Mainframe Only	
Standby	Less than 51 dB (A)
Printing	Less than 71 dB (A)
Complete System	
Standby	Less than 51 dB (A)
Printing	Less than 74 dB (A)

Noise Emission: Sound Pressure Level (NA)

	G148 (75 ppm)
Mainframe Only	
Standby	Less than 44 dB (A)
Printing	Less than 67 dB (A)
Complete System	
Standby	Less than 44 dB (A)
Printing	Less than 71 dB (A)

Noise Emission: Sound Power Level (EUROPE)

	G148 (75 ppm)
Mainframe Only	
Standby	Less than 51 dB (A)
Printing	Less than 71 dB (A)
Complete System	
Standby	Less than 51 dB (A)

Printing	Less than 74 dB (A)

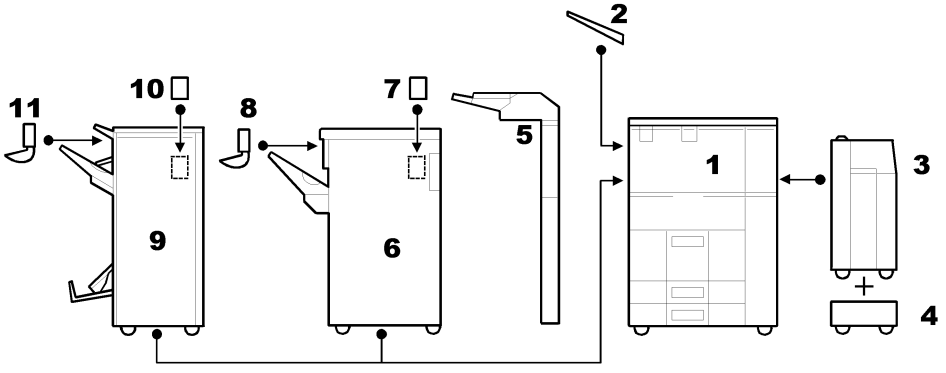
Noise Emission: Sound Pressure Level (EUROPE)

	G148 (75 ppm)
Mainframe Only	
Standby	Less than 44 dB (A)
Printing	Less than 67 dB (A)
Complete System	
Standby	Less than 44 dB (A)
Printing	Less than 71 dB (A)

Note

- The above measurements were made in accordance with ISO 7779. Full system measurements include the Mainframe + Finisher + LCT + Cover Interposer + Punch + Call Light.

System Configuration



G148V105

No.	Item	Code	Comment
1	Mainframe (Printer)	G148	
*	A3/11"x17" Tray Unit Type 1075	B475	Conversion kit for printer tandem tray.
*	Tab Sheet Holder Type 3260	B499	Installed by operator.
2	Copy Tray Type 2075	B756	Attached to side of printer if no other options installed downstream.
3	LCT RT43	B473	Attached to side of mainframe
4	LCT Connection Unit Type A	G845	Raises height of LCT. Required for installation on this printer.
*	8½" x 14" Paper Size Tray Type 1075	B474	Conversion kit for LCT.
5	Cover Interposer Type 3260	B704	Installed on either B706 or B700
6	3000-Sheet Finisher SR842	B706	Either B706 or B700
7	Punch Unit Type 1075 NA 3/2	B531	For B706
*	Punch Unit Type 850 SC	A812	
8	Output Jogger Unit Type 1075	B513	Attached to side of B706 over the shift tray.
9	2000-Sheet Finisher SR4000	B700	Either B700 or B706.
10	Punch Unit Type 3260 NA 2/3	B702	For B700

No.	Item	Code	Comment
11	Output Jogger Unit Type 3260	B703	Attached to side of B700 over the shift tray.

Peripheral Devices (Options)

A3/11"x17" Kit (B475)

Paper Size	A3, B4, 11" x 17", 8½" x 14", A4 SEF, A4 LEF, 8½" x 11" SEF, 11" x 8½" LEF
Paper Weight	52 ~ 163 g/m^2 16 ~ 40 lb. Bond 50 ~ 60 lb. Cover 90 lb. Index (no Tab)
Tray Capacity	1,000 sheets (80 g/m^2, 20 lb)

LCT RT43 (B473)

Paper capacity	4,000 sheets (2,500 with 8½" x 14" Paper Size Tray installed
Paper Sizes	A4 LEF, LT LEF to A6 SEF (With 8½" x 14" Paper Size Tray: B4 SEF, LG SEF, A4 SEF, LT SEF
Paper Weight	52 ~ 216 g/m^2 (14 ~ 58 lb)
Pick-up and Feed	FRR (Feed and Reverse Roller)
Power Consumption	Less than 50 W (Max.)
Power Supply	DC24 V, 5V (powered by the main unit)
Rated Voltage of Output Connector	Max. DC 24 V
Dimensions (W x D x H)	314 x 458 x 659 mm (12.4" x 18.1" x 25.9")
Weight	20.0 kg (44 lb.)

Cover Interposer Tray (B704)

The cover interposer tray is used with the 2000-Sheet Finisher B700 or 3000-Sheet Finisher B706. The interposer tray is installed between the printer and the finisher.

Dimension (w x d x h)	500 x 600 x 600 mm (19.7 x 23.6 x 23.6 in.)

Weight		Less than 12 Kg (26.4 lb.)
Power Consumption		Less than 43 W
Noise		Less than 65 db
Stack Capability*		200 Sheets
Paper Size		A5-A3, 5½" x 8½" - 11" x 17"
Paper Weight		64 g/m^2-216 g/ m^2 17 lb. Bond- 58 lb. Index, 80 lb Cover
Original Set Position		Center
Original Set	Normal Feed	Face-up
	Booklet Feed	Face-down
Paper Capacity (80 g/m^2)		3000 sheets (A4 LEF, B5 LEF, 81/2" x 11" LEF)
		1500 sheets (A3, A4 SEF, B4 and B5 SEF, 11" x 17", 8½" x 14", 8½" x 11" SEF, 12" x 18")
		500 sheets (A5 LEF, 5 1/2" x 8½" LEF)
		100 sheets (A5 SEF, 5½" x 8½" SEF)
Paper Size		A3 to A5, 11" x 17" to 5½" x 8½", 12" x 18" (including tab paper)
Paper Weight		52 to 216 g/ m^2 (14 ~ 58 lb)
Shift Tray Full Detection		Provided
Stapler		
Stapling Stack Size		A4, B5, 8½" x 11" (Max. 100 Sheets) A3, B4, 11" x 17", 8½" x 14" (Max. 50 sheets)
Stapling Paper Size		A3 to B5 11" x 17" to 8½" x 11"
Stapling Paper Weight		64 to 80 g/m^2 (17 ~ 20 lb)
Staple Position		4 Modes
		1 Staple: Front, Rear, Rear-Oblique
		2 Stapes: 2 locations

Staple Capacity	5000 staples/cartridge		
Staple Supply	Cartridge or Staple Replacement		
Stapled Stack Size	Sheets	Sets	Sizes
	10 ~ 100	200 ~ 30	A4 SEF, B5 SEF, 8½" x 11" SEF A4 LEF, B5 LEF, 8½" x 11" LEF
	2 ~ 9	150	
	10 ~ 50	150 ~ 30	A3, B4, 11" x 17", 8½" x 14"
	2 ~ 9	150	
Trim Waste Staple Capacity	30,000 or more		
Waste Staple Hopper Full Detection	Provided		
Power Consumption	Less than 100 W		
Power Source	DC 24 V (From Mainframe)		
Size (W x D x H)	800 x 730 x 980 mm (31.5" x 28.7" x 38.6")		
Weight	Less than 65 kg (143 lb.)		
Compatible Machines	B478: B064/B065, B070 (90 cpm), B071 (105 cpm) B706: B070 (90 cpm), B071 (105 cpm)		

Punch Unit (B531)

The Punch Unit B531 is installed in the 3000 Sheet Finisher B706.

Punch Hole Positions	2/3-hole (North America)
	2/4-hole (Europe)
Punch Paper Size	
2-Hole (NA)	A5 ~ A3 SEF, 11" x 17"~5½" x 8½" SEF A5 ~ A4 LEF, 8½" x 11" LEF, 5 1/2" x 8½" LEF
3-Hole (NA)	A3 SEF, B4 SEF, 11" x 17" SEF A4 LEF, B5 LEF, 8½" x11" LEF
4-Hole (EUR/A)	A3 SEF, 11" x 17" SEF

	A4 LEF, 8½" x 11" LEF
Paper Weight	
2-Hole (NA)	52 g/m^2 ~ 163 g/m^2 (14 ~ 43 lb)
3-Hole (NA)	52 g/m^2 ~ 163 g/m^2 (14 ~ 43 lb)
4-Hole (EUR/A)	52 g/m^2 ~ 128 g/m^2 (14 ~ 34 lb)
Punch Waste Hopper Capacity	
2-Hole (NA)	10K
3-Hole (NA)	15K
4-Hole (EUR/A)	15K
Operation Modes	All (Shift, Proof, Staple)

DIP SW Settings

The correct DIP SW settings of the Punch Unit 531 are provided in the table below for your reference only. The DIP switches of these punch units do not need to be changed at installation, or adjusted for operation.

Punch Unit	Unit No.	DIP SW Settings			
		1	2	3	4
2/3-Hole (NA)	B531-17	1	0	1	0
2/4-Hole (EUR/A)	B531-27	1	0	0	1

0: OFF, 1: ON

Punch Unit (A812)

The Punch Unit A812 is installed in the 3000 Sheet Finisher B706.

Punch Hole Positions	2-hole, 3-hole (NA) 4-hole (EUR/A) 4-hole (North Europe)
Punch Paper Size	
2-Hole	A5 ~ A3 SEF, 11" x 17" ~ 8½" x 11" SEF A5 ~ A4 LEF, 8½" x 11" LEF

3-Hole (NA)	A3 SEF, B4 SEF, 11" x 17" SEF A4 LEF, B5 LEF, 8½" x 11" LEF
4-Hole (EUR/A)	A3 SEF, 11" x 17" SEF A4 LEF, 11" x 17" LEF
4-Hole (North Europe)	B5 ~ A3 SEF, 8½" x 11" ~ 11" x 17" SEF A5 ~ A4 LEF, 8½" x 11" LEF, 5 ½" x 8½" LEF
Paper Weight	
2-Hole, 3-Hole (NA)	52 g/m^2 ~ 163 g/m^2 (14 ~ 43 lb)
4-Hole (Europe/North Europe)	52 g/m^2 ~ 128 g/m^2 (14 ~ 34 lb)
Punch Waste Hopper Capacity	
2-Hole	40K
3-Hole (NA)	15K
4-Hole (EUR/A)	15K
4-Hole (North Europe)	15K
Power Supply	DC 24 V (From Finisher)
Power Consumption	60 W
Weight	Less than 2.4 K (5.3 lb.)
Operation Modes	All (Shift, Proof, Staple)

DIP SW Settings

The correct DIP SW settings of the Punch Unit A812 are provided in the table below for your reference only. The DIP switches of these punch units do not need to be changed at installation, or adjusted for operation.

Punch Unit	Unit No.	DIP SW Settings			
		1	2	3	4
2-Hole (EUR/A)	A812-40/A812-67	0	0	0	0
3-Hole (NA)	A812-57	1	0	0	0
4-Hole (EUR/A)	A812-30	0	1	0	0

4-Hole (North Europe)	A812-31	0	0	1	0
2-Hole (NA)	A812-32	0	0	0	1

0: OFF

1: ON

Jogger Unit (B513)

The Jogger Unit B513 is installed above the shift tray of the 3000 Sheet Finisher B706.

Paper Size	A3 SEF, B4 SEF, 11" x 17" SEF A4 LEF, B5 LEF, 8½" x 11" LEF
Paper Weight	52 g/m^2 ~ 216 g/m^2 (14 ~ 58 lb)
Weight	Less than 1.7 kg (3.7 lb.)
Dimensions (W x D x H)	125 mm x 450 mm x 100 mm (5" x 17.7" x 4")
Power Supply	DC 24 V, DC 5V (From Finisher)
Power Consumption	24 W

8½"x14" Paper Size Tray (B474)

Paper Size	B4, 8½" x 14", A4 SEF,8½" x 11" SEF
Paper Weight	52 ~ 128 g/m^2 (14 ~ 34 lb)
Tray Capacity	1,000 sheets (80 g/m^2, 20 lb)

2000-Sheet Finisher B700

This finisher provides booklet as well as corner stapling. Equipped with two trays, the upper tray holds stapled and shifted copies, and the lower tray holds booklet stapled and folded copies.

Dimension W x D x H	657 x 613 x 960 mm (25.9 x 24.1 x 37.8")
Weight	Less than 63 kg (138.6 lb.) (no punch unit) Less than 65 kg (143 lb.) (with punch unit)

Power Consumption		Less than 96 W	
Noise		Less than 75 db	
Configuration		Console type attached base-unit	
Power Source		From base-unit	
Proof Tray	Stack Capacity*	250 sheets A4, 8½"x11" or smaller 50 sheets B4, 8½"x14 or larger	
	Paper Size	A5-A3 SEF, A6 SEF, A6 LEF 5½" x8½" to11" x 17" SEF, 12"x18" SEF	
	Paper Weight	52 g/m²-163 g/m² 14 lb Bond- 43 lb Bond / 90 lb Index / 60 lb Cover	
Shift Tray	Stack Capacity*	2,000 sheets	A4 LEF, 8½"x11" LEF
		1,000 sheets	A3 SEF, A4 SEF, B4 SEF, B5 11"x17" SEF, 8½" x14" SEF, 8½" x 11" SEF, 12"x18" SEF
		500 sheets	A5 LEF
		100 sheets	A5 SEF, B6 SEF, A6 SEF, 5½" x8½" SEF
	Paper Size	A5 - A3 SEF, A6 SEF, B6 SEF 5½" x8½" to 11" x 17" SEF, 12" x 18" SEF	
	Paper Weight	52 g/m²-256 g/m² 14 lb Bond- 68 lb Bond / 140 lb Index / 90 lb Cover	
Staple			
Paper Size		B5-A3, 8½"x11"-11"x17", 12"x18"	
Paper Weight		64 g/m²-90 g/m², 17 lb Bond-28 lb Bond	
Staple Position		Top, Bottom, 2 Staple, Top-slant	

Staples Capacity*		Same Paper Size	50 sheets	A4, 8½" x 11" or smaller
			30 sheets	B4, 8½" x 14" or larger
		Mixed Paper Size	30 sheets	A4 LEF & A3 SEF, B5 LEF & B4 SEF, 8½"x11" LEF & 11" x17" SEF
		Booklet Stapling	15 sheets	A4 SEF, A3 SEF, B5 SEF, B4 SEF, 8½"x11" SEF, 8½"x14" SEF, 11"x17" SEF, 12"x18" SEF
Staple Replenishment		Corner staple		5,000 staples per cartridge
		Booklet staple		2,000 staples per cartridge
Corner Staple Capacity	Same Size	A4 LEF, 8½"x11" LEF		13-50 pages
				2-12 pages
		A4 SEF, B5, 8½"x11" SEF		10-50 pages
				2-9 pages
		Others		10-30 pages
				2-9 pages
	Mixed Size	A4 LEF + A3 SEF B5 LEF + B4 SEF 8½"x11" LEF + 11" x17" SEF		2-30 pages
Booklet Staple Capacity	A4 SEF, A3 SEF, B5 SEF, B4 SEF 8½"x11" SEF, 8½"x14" SEF, 11"x17" SEF 12"x18" SEF			2-5 pages
				6-10 pages
				11-15 pages

B700 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"	❍	✷	✷	❍	✷

❑	Corner stapling, Shift, YES
●	Booklet stapling/folding, Shift, YES
❍	Shift ONLY
■	Shift NO
✷	Not available

Punch Unit B702

This punch unit is designed for use with the 2000-Sheet Stapler B700. It provides both corner and booklet stapling.

Available Punch Units		NA	2/3 hole switchable
		EU	2/4 holes switchable
		Scandinavia	4 holes
Punch Waste Replenishment		NA 2-hole	Up to 5,000 sheets
		NA 3-hole	Up to 5,000 sheets
		EU 2-hole	Up to 14,000 sheets
		EU 4-hole	Up to 7,000 sheets
		Scandinavia 4-hole	Up to 7,000 sheets
Paper Weight		52 g/m²-163 g/m², 14 lb Bond –43 lb Bond / 90 lb Index / 60 lb Cover	
Paper Sizes	NA 2-hole	SEF	A5 to A3, 5½" x8½" to 11"x17"
		LEF	A5 - A4, 5½" x 8½" , 8½" x 11"
	NA 3-hole	SEF	A3, B4, 11"x17"
		LEF	A4, B5, 8½" x 11"
	EU 2-hole	SEF	A5 - A3, 5½" x 8½" to 11" x 17"
		LEF	A5 to A4, 5½" x 8½", 8½" x 11"
	EU 4-hole	SEF	A3, B4, 11"x17"
		LEF	A4, B5, 8½" x 11"
	Scandinavia 4-hole	SEF	A5 to A3, 5½" x 8½" to 11" x 17"
		LEF	A5 - A4, 5½" x8½", 8½" x 11"