



B064/B065/B140/B141/B142/
B143/B163/B228/G126
SERVICE MANUAL

001360MIU

Gestetner **LANIER** **RICOH** **SAVIN**





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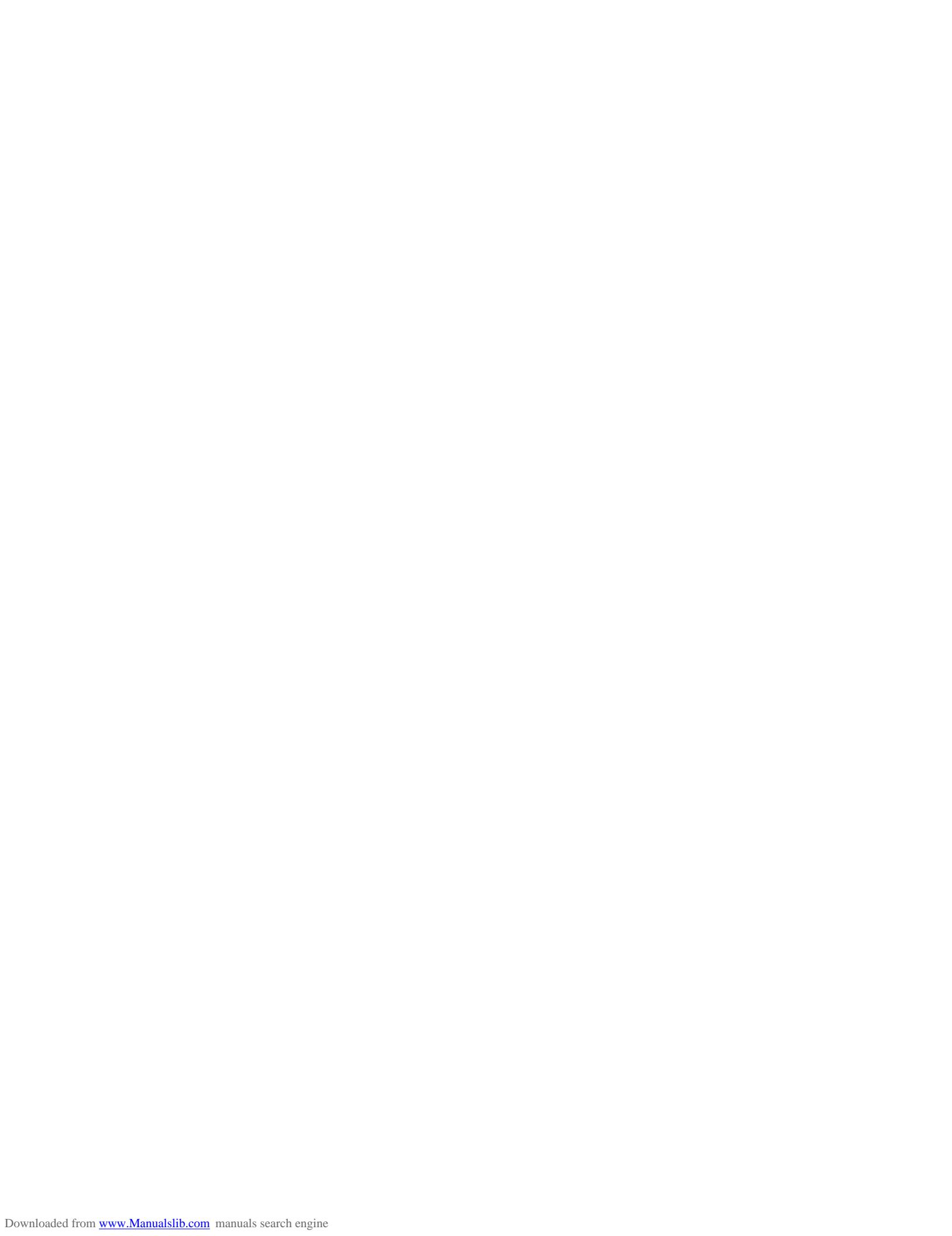
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Ricoh Corporation



LEGEND

PRODUCT CODE	COMPANY			
	GESTETNER	LANIER	RICOH	SAVIN
B064	6002	LD060	Aficio 1060	2560
B065	7502	LD075	Aficio 1075	2575
B140	DSm660	LD160	Aficio 2060	4060
B141	DSm675	LD175	Aficio 2075	4075
B142	DSm660 SP	LD160 SP	Aficio 2060 SP	4060 SP
B143	DSm675 SP	LD175 SP	Aficio 2075 SP	4075 SP
B163	DSm651	LD151	Aficio 2051	4051
B228	DSm651 SP	LD151 SP	Aficio 2051 SP	4051 SP
G126	P7575	LP175hdn	AP900	MLP75n

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B064 Series (B064/B065)
B140 Series (B140/B141/B142/B143/B163/B228)

G126

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LARGE CAPACITY TRAY (B473)

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A3/DLT TRAY KIT (B475)

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3000-SHEET FINISHER (B468/B469/B674)

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**3000-SHEET FINISHER (B478)/JOGGER UNIT (B513)/
PUNCH UNIT (B531)**

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3000-SHEET FINISHER (B706)

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B706 3000-SHEET FINISHER

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INSTALLATION



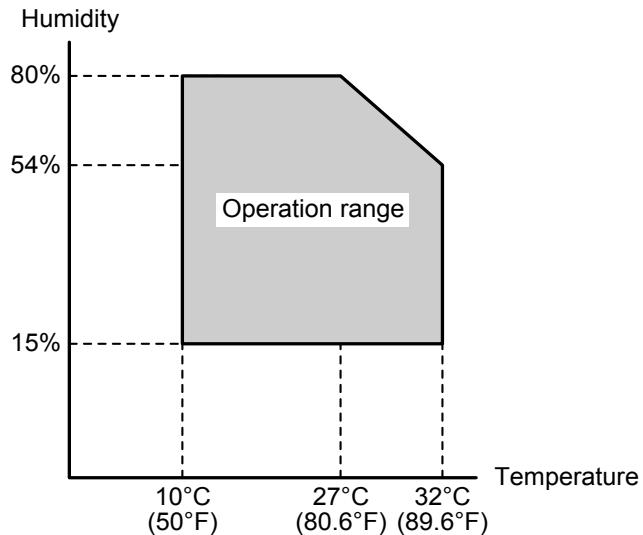
1. INSTALLATION

1.1 INSTALLATION REQUIREMENTS

1.1.1 OPERATING ENVIRONMENT

- 1. Temperature Range: Recommended: 15°C to 25°C (59°F to 77°F)
Possible: 10°C to 32°C (50°F to 90°F)
- 2. Humidity Range: 15% to 80% RH (27°C 80%, 32°C 54%)
- 3. Ambient Illumination: Less than 1,500 lux (do not expose to direct sunlight or strong light.)
- 4. Ventilation: Room air should turn over at least 3 times per hour
- 5. Ambient Dust: Less than 0.10 mg/m³

Installation



- 6. If the place of installation is air-conditioned or heated, do not place the machine where it will be:
 - 1) Subjected to sudden temperature changes
 - 2) Directly exposed to cool air from an air-conditioner
 - 3) Directly exposed to heat from a heater

INSTALLATION REQUIREMENTS

7. Do not place the machine where it will be exposed to corrosive gases.
8. Do not install the machine at any location over 2,000 m (6,500 feet) above sea level.
9. Place the copier on a strong and level base with the front and back of the machine within ± 5 mm (0.2") of level.
10. Do not place the machine where it may be subjected to strong vibrations.
11. Do not connect the machine to a power source shared with another electrical appliance.
12. The machine can generate a an electromagnetic field which could interfere with radio or television reception.

1.1.2 MACHINE LEVEL

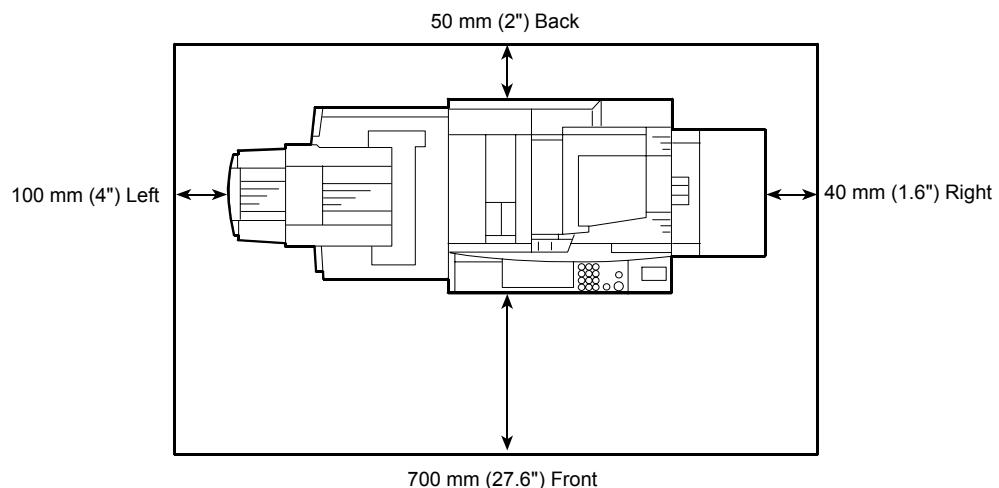
1. Front to back: Within ± 5 mm (0.2") of level
2. Right to left: Within ± 5 mm (0.2") of level

The machine legs may be screwed up or down in order to level the machine. Set a carpenter's level on the exposure glass.

1.1.3 MINIMUM SPACE REQUIREMENTS

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

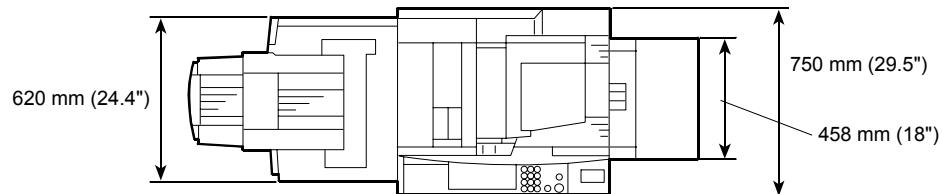
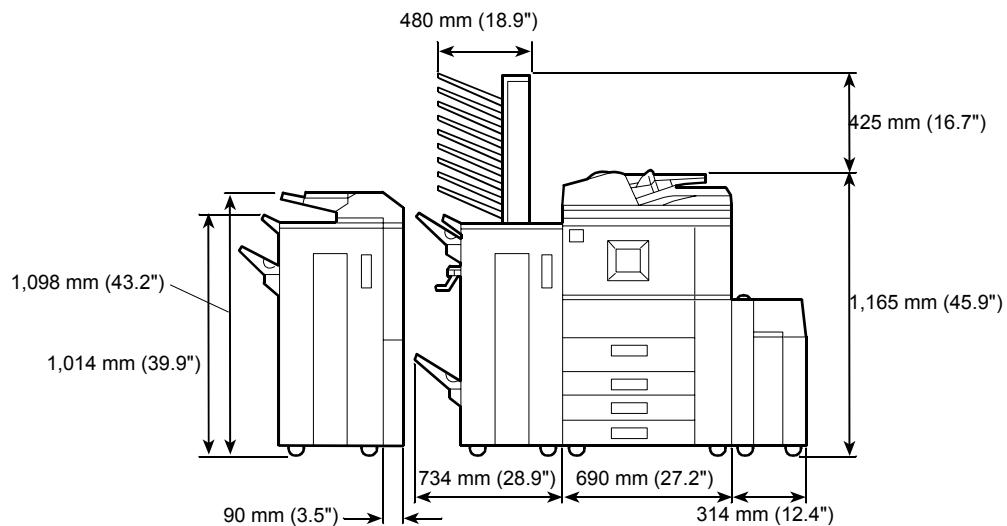
Installation



INSTALLATION REQUIREMENTS

1.1.4 DIMENSIONS

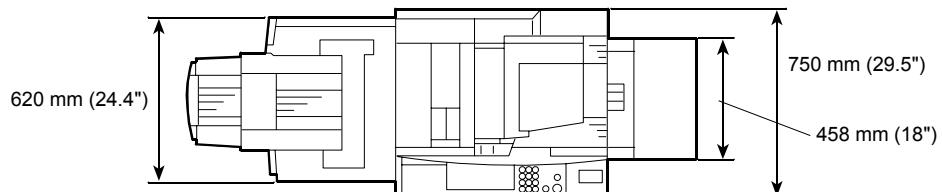
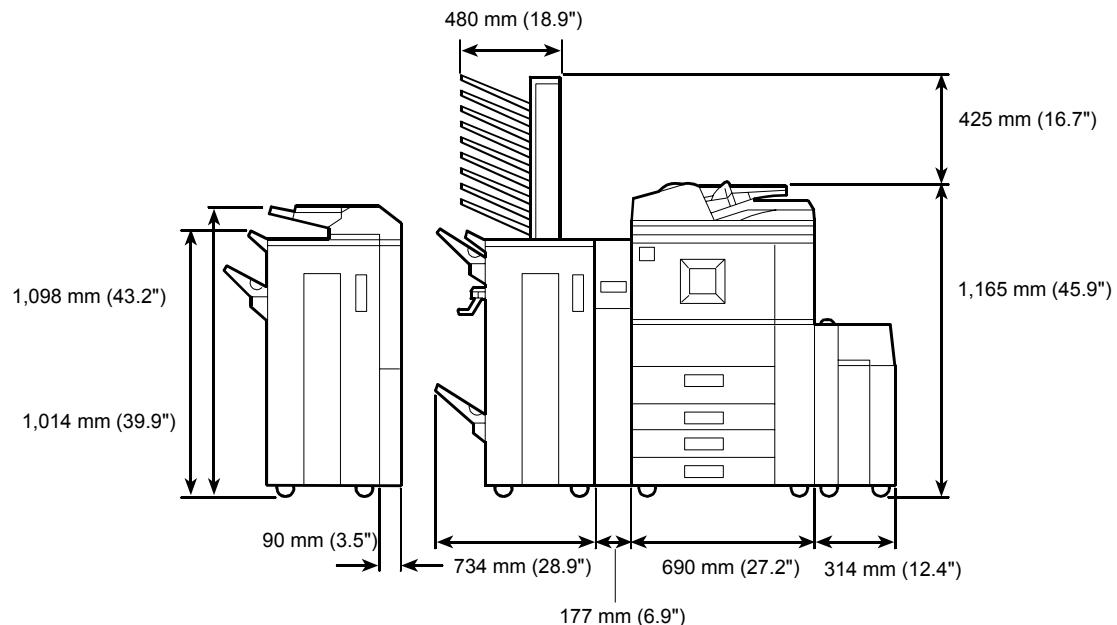
B064 Series



INSTALLATION REQUIREMENTS

B140 Series

Installation



INSTALLATION REQUIREMENTS

1.1.5 POWER REQUIREMENTS

⚠ CAUTION

- 1. Make sure that the wall outlet is near the main machine and easily accessible. Make sure the plug is firmly inserted in the outlet.**
- 2. Avoid multi-wiring.**
- 3. Be sure to ground the machine.**
- 4. Never set anything on the power cord.**

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 Taiwan 110V, 60 Hz, 20A or more
Permissible voltage fluctuation	±10%

⚠ CAUTION

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

The Main Power LED (①) lights or flashes at the following times:

- While the platen cover or ADF is open
- 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.

There are two power switches on the machine:

• **Main Power Switch.**

Located on the front left corner of the machine and covered by a plastic cover. This switch should always remain on unless the machine is being serviced.

• **Operation Power Switch.**

Located on the right side of the operation panel. This is the switch normally used by the customer to power the machine on and off.

1.2 MAIN MACHINE (B064 SERIES/B140 SERIES)

1.2.1 ACCESSORY CHECK

Check the accessories and their quantities against this list:

Description	Q'ty
1. Model Name Decal (-29 Only)	1
2. Operation Instructions (-17, -19, -29, -69 Only)	2
3. NECR with Envelope (-17 Only)	1
4. Decal – Paper Size	1
5. Decal: Caution Chart: Paper Set: Direction.....	1
6. Stand Holder.....	1
7. Operating Instructions Holder	2
8. Decal – Original Table (Face Up)	1
9. Decal – Cleaning - Multiple	1
10. Cloth – DF Exposure Glass	1
11. Cloth Holder.....	1
12. Decal – Toner Supply - Multiple	1
13. Decal: Power Source: Off	1
14. Decal Exposure Glass: Multiple	1
15. Decal – D1/E1 Multiple	1

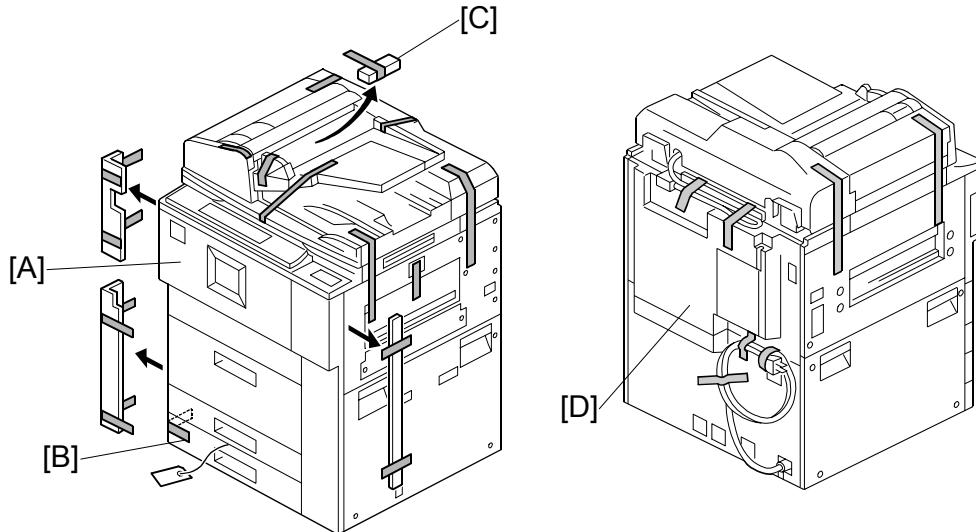
Installation

1.2.2 INSTALLATION PROCEDURE

Removing Tapes and Retainers

CAUTION

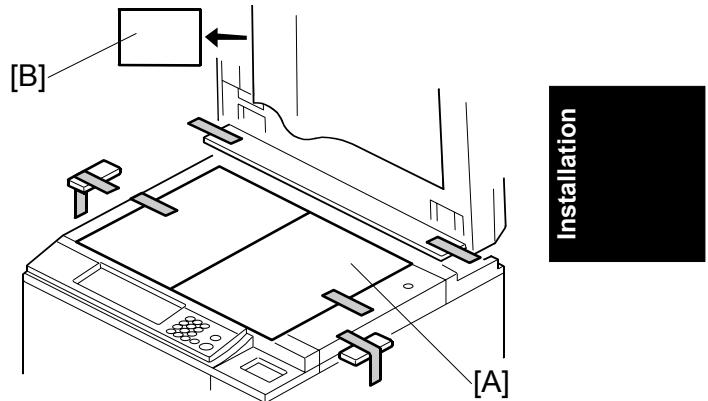
To avoid serious injury, do not connect the power plug to the machine until you are instructed to do so.



1. Unpack the machine and remove all the wrapping.
2. Remove all filament tape from the front [A] of the machine.
NOTE: Ensure that you save the "Birth Certificate" document that is located on the platen glass. This document lists the machine serial, ROM version, and original setup adjustments. Keep this document either near/in the machine, or in another safe location.
3. Open the lower tray [B] and remove the operating instructions holder and foot risers.
4. Open the ADF feed cover and remove the tape and retainer [C].
5. Remove the tape from the back [D] of the machine.

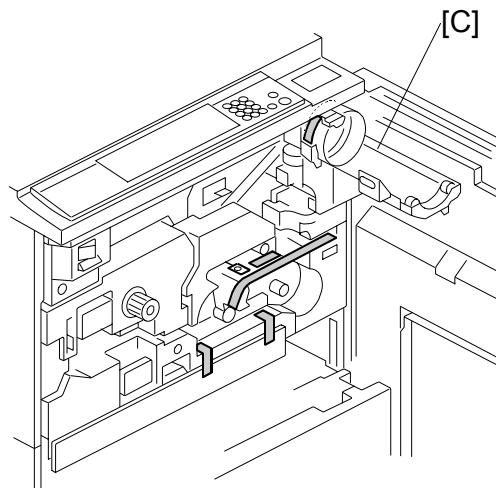
NOTE: Save the filament tape and shipping retainers to prepare the machine for shipping in the future.

6. Raise the ADF and remove all the tape and shipping retainers around the exposure glass [A] and operation panel.
7. Remove the shipping retaining sheet [B] under the white pad.

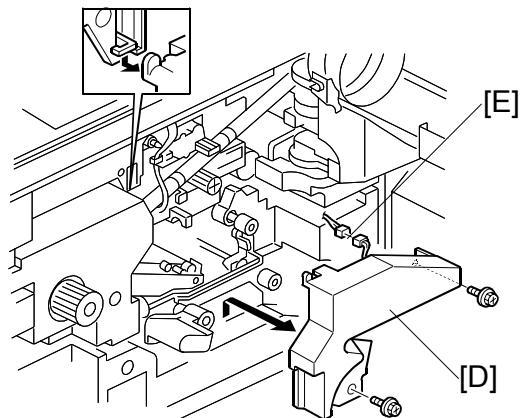


Installation

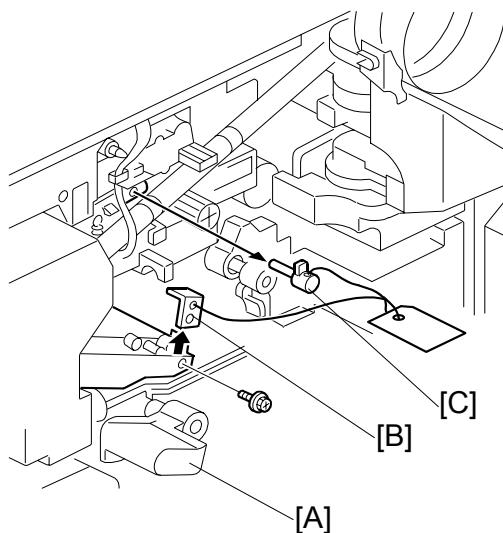
8. Open the front door, open the toner bottle holder [C], then remove all tape and shipping retainers.



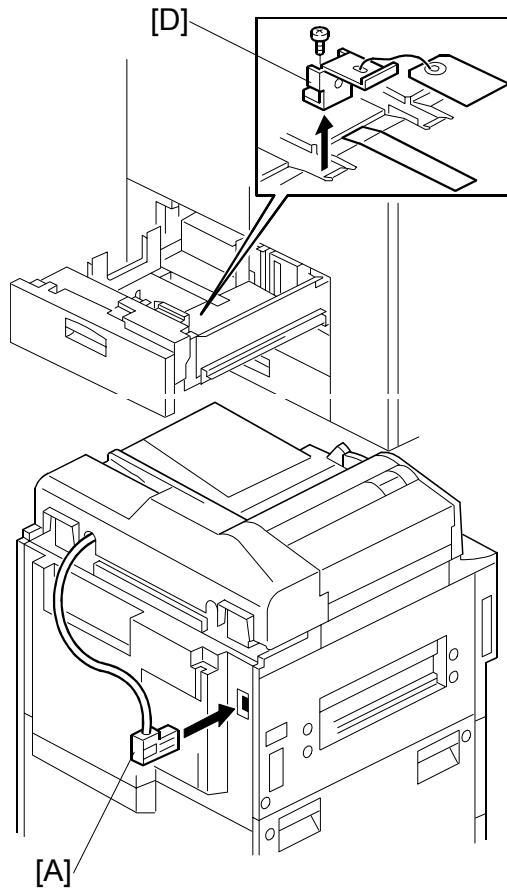
9. Remove the PCU inner cover [D] (\wedge x 2) and disconnect the fan motor [E] (\ominus x 1).



10. Lower the transfer unit by turning its knob [A].
11. Remove the bracket [B], and the red tag from the transfer belt ($\text{J} \times 1$).
12. Remove the pin [C], and the red tag from the cleaning plate.



13. Open the tandem tray (top paper tray) and remove the metal retainer bracket [D] ($\text{J} \times 1$), wire, and red tag. Remove and save any kit or other packaged materials stored in remaining paper trays



Connecting the ADF

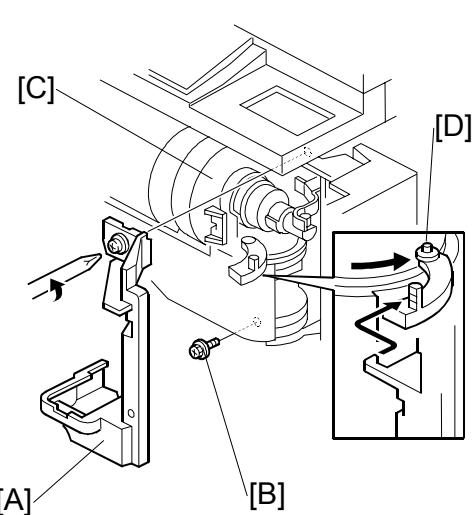
Connect the ADF plug [A] to the connector on the back of the machine.

Removing and Filling the Development Unit

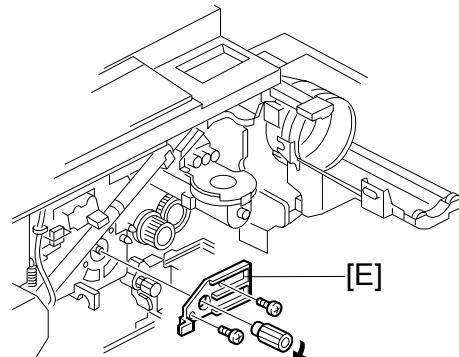
⇒**IMPORTANT:** Before you begin, **remove the toner bottle** if it is installed. Note, if the toner bottle is in the machine when you do this procedure, the toner bottle holder can be damaged.

1. Remove shutter cover [A] of the toner supply unit (\wedge x 1).
2. Remove the lock screw [B] from the toner bottle open/close bracket.
3. Make sure that the shipping tape at [C] has been removed.
4. Pull the toner bottle holder out and swing the toner bottle holder to the right.

NOTE: After re-installation, the tab [D] should be behind the stay and its pin below should be in the open track below.



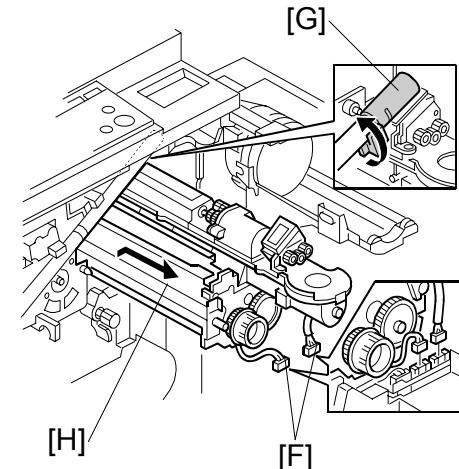
5. Remove the face plate [E] of the development unit (knob x 1, \wedge x 2).



6. Disconnect the development unit [F] (\wedge x 2).

NOTE: 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.

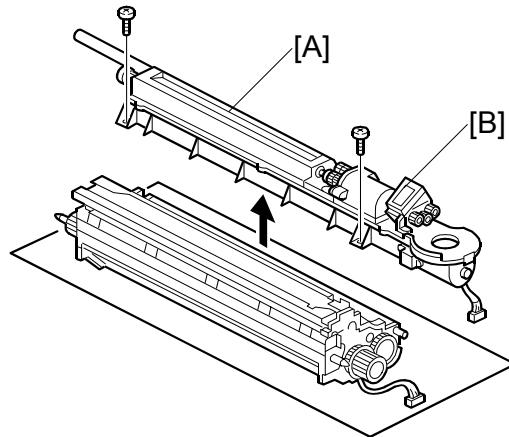
7. Close the supply pipe shutter [G], and then while allowing the development unit [H] to slip to the right, slowly pull it out of the machine.



Installation

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

9. Rotate the toner hopper [B] slightly 10° to 20° as you slide it up to remove it.



10. While turning the knob [C] slowly, pour in one pack of developer [D] from one end of the development unit to the other.

11. Make sure that the developer is evenly distributed. Note the developer lot number printed on the top edge of the bag. You will need the lot number when you execute SP2963 (Installation Mode).

12. Assembly the developer unit then re-install it in the machine.

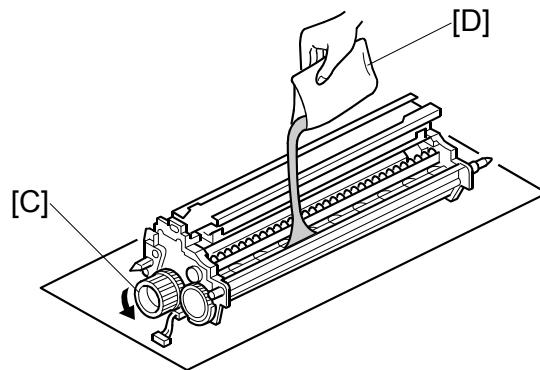
13. Follow the instructions printed on the inside of the front door to install the toner bottle.

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

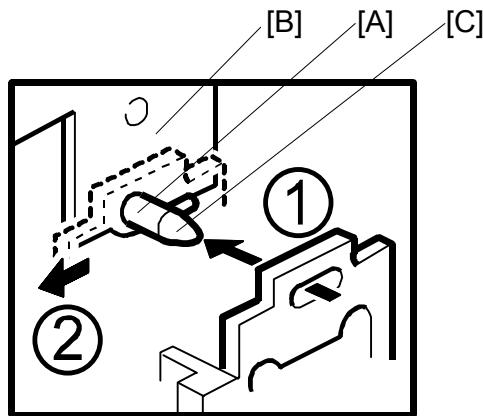
⇒14. Follow steps 1 through 5 for *Re-installing the Development Unit* (→ 1-13).

15. Reattach all the parts you removed in Steps 1-4 of this procedure.

IMPORTANT: Make sure the tab [D] (See step 4) is behind the stay and the lower pin is inside the track.



⇒ Re-installing the Development Unit



Installation

1. Push the development unit all the way to the right.
2. Continue to hold the unit to the right and push it into the machine.
IMPORTANT: Make sure the pin [A] goes into the left side of the hole in the development unit plate.
3. Push the development unit all the way in, so that the development unit plate touches the mainframe plate [B].
IMPORTANT: Make sure you can see the small pin [C] in front of the plate. If you cannot move the development unit plate behind the small pin, turn the front gear of the unit to the left, and try again.
4. Push the development unit to the left, until it contacts the PCU.
5. Make sure the pipeline shutter is rotated down to the open position.

Initializing the Drum Settings (B064 Series)

After switching on the machine, you must execute SP2963 (Installation Mode) within 60 seconds to 1) Initialize the developer and force toner supply to the development unit, and 2) Initialize the auto process control settings.

- SP2963 must be executed before sample copying or test printing.
- If you do not press “Execute” in Step 2 in the following procedure within 60 seconds after the machine is switched on, the auto process control features (potential sensor calibration, Vsg, Vref, etc.) will not initialize correctly.
- If the machine starts the auto process control routine before you have a chance to press Execute, switch the machine off and try again.

1. Connect the power cord.
2. Within one minute, before the auto process control settings initialize, execute SP2963.
 - Press Clear Modes .
 - On the operation panel keypad, press   .
 - Hold down Clear/Stop  for more than 3 seconds.
 - Press “Copy SP” on the touch-panel.
 - Press    .
 - Press Enter .
 - Enter the Developer Lot No. with the key display, then press “Execute”.
- About four minutes is required to initialize toner supply and the auto process control settings.
3. Press “Exit” to leave the SP mode.
4. Attach the appropriate decals (provided) to the paper trays.
5. Check copy quality and machine operation.

NOTE: At installation, use SP2963 to enter the lot number, initialize the developer, and to force toner supply to the toner hopper. After replacing developer in a machine that has already been installed, do not use SP2963; execute SP2801 (TD Sensor Initial Setting) instead to enter the lot number and initialize the TD sensor. ( 3.7.4)

Initializing the Drum Settings (B140 Series)

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 “Execute” 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 main power switch on.
4. Go into the SP mode.
 - Push Clear Modes .
 - On the operation panel keypad, push   .
 - Hold down Clear/Stop  for more than 3 seconds.
5. Close the front door.
6. Do SP2963.
 - On the operation panel keypad, push    .
 - Press “Execute”.
 - Input the Developer Lot No. with the key display, then press “Execute”. Approximately four minutes is necessary to initialize toner supply and the auto process control settings.
7. Press “Exit” to go out of 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

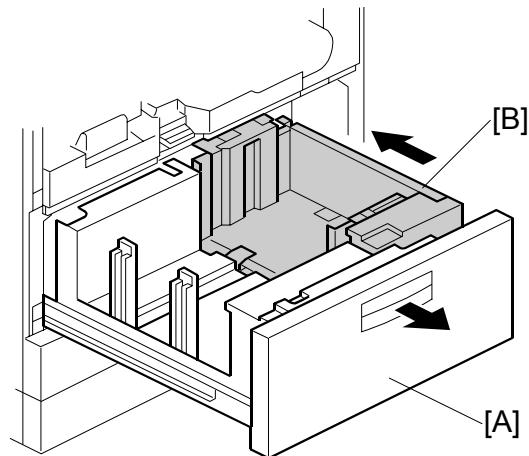
- At installation, use SP2963 to enter the lot number, initialize the developer, and to force toner supply to the toner hopper.
- After you replace developer in a machine that has been already installed, do not use SP2963; use SP2801 (TD Sensor Initial Setting) instead to enter the lot number and initialize the TD sensor. (● 3.7.4)

Tandem Tray

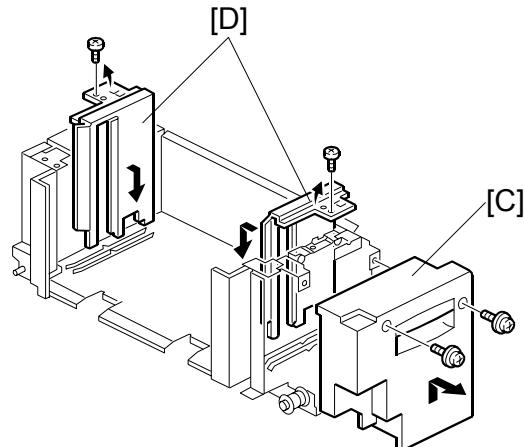
Before shipping the machine, the tandem tray is set for A4 or LT LEF and must be adjusted if the customer wants to use the tandem tray for another paper size.

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

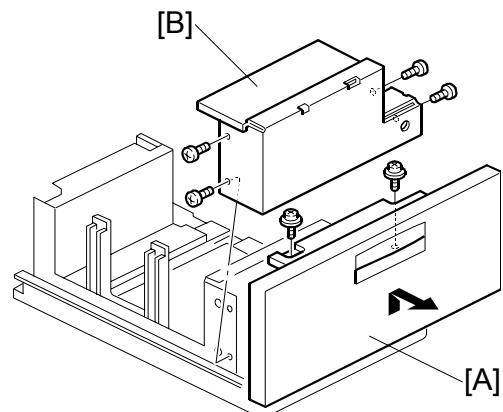
1. Open the front cover.
2. Completely pull out the tandem feed tray [A] so that the right tandem tray [B] separates from the left tandem tray.



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

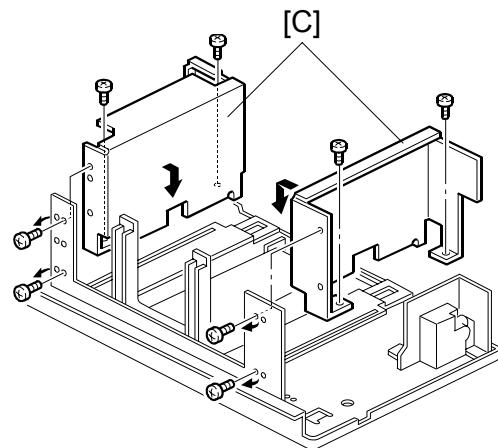


6. Remove the tray cover [A] (\wedge x 2).
7. Remove the motor cover [B] (\wedge x 4).

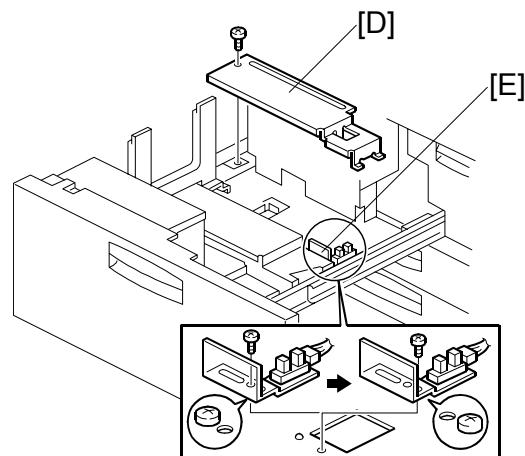


Installation

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

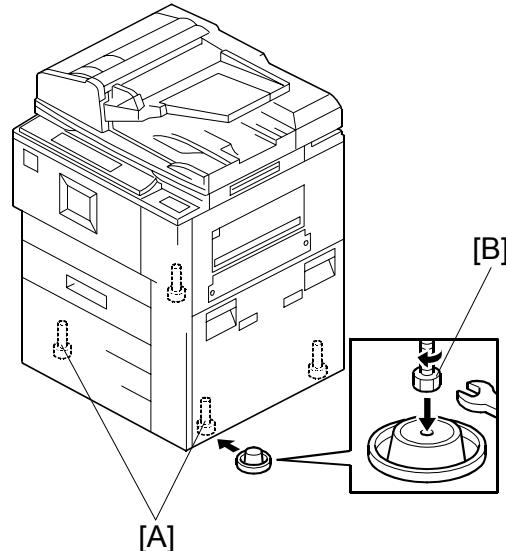


10. Remove the rear bottom plate [D] (\wedge x 1).
11. Re-position the return position sensor bracket [E] (\wedge x 1). To use the paper tray for A4 size, put the screw in the left hole as shown. (For LT size, the screw should be placed on the right.)
12. Re-install the rear bottom plate.
13. Change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



Machine Level

1. Set a stand [A] at each corner of the machine.
2. Place a level on the exposure glass and use a wrench to turn each nut [B] and level the machine to ± 5 mm of the horizontal.
3. Check the machine operation. With the customer, determine the best place to attach the cleaning reminder decal.

**POST-INSTALL:****1. Date/Time Setting**

Use the User Tools menu to set the current date and time.

- On the operation panel, press the User Tools key.
- On the touch-panel, press “System Settings”.
- Press the “Timer Setting” tab.
- Press “Set Date” the enter the date.
- Press “Set Time” to enter the time.

SP Codes

SP5812-001~002	Service Telephone Number Settings	Execute this SP and enter the contact numbers of the custom engineer. These are the numbers displayed when a service call is issued.
SP5841-001	Supply Name Setting – Toner Name Setting: Black	This name appears when the user presses the Inquiry on the User Tools screen.
SP7825 (B064 Series Only)	Total Counter Reset	Execute after installation and after making all test copies to reset the electronic counter total.

2. Set up paper trays, per customer preference. (See Operator Guide “General Settings” for information.)
3. Turn on paper Double Count. Access Special Service Mode (SSP). Locate SP5104. Set to “1” (on). Exit SSP mode.
4. Fill out “New Equipment Condition Report” and fax form to phone number indicated.

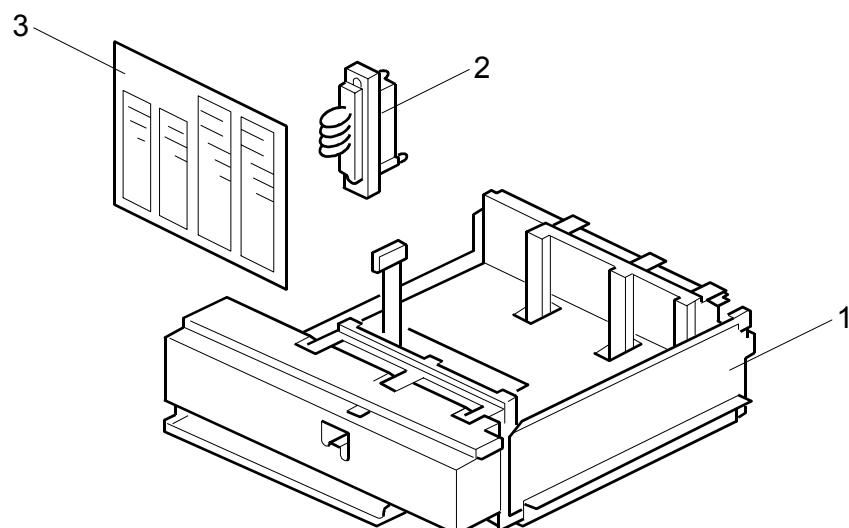
1.3 A3/DLT FEEDER KIT (B475)

1.3.1 ACCESSORY CHECK

Check the accessories and their quantities against this list:

Description	Q'ty
1. A3/DLT Tray	1
2. Short connector	1
3. Page size decals.....	1

Installation

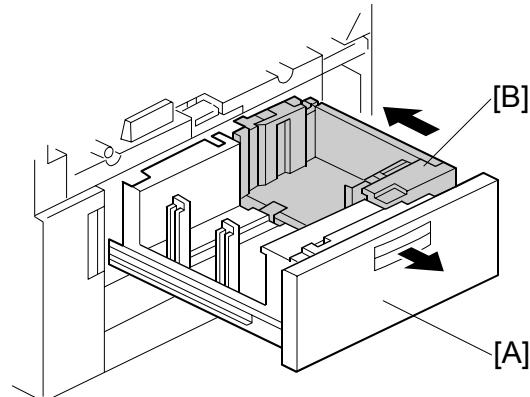


1.3.2 INSTALLATION PROCEDURE

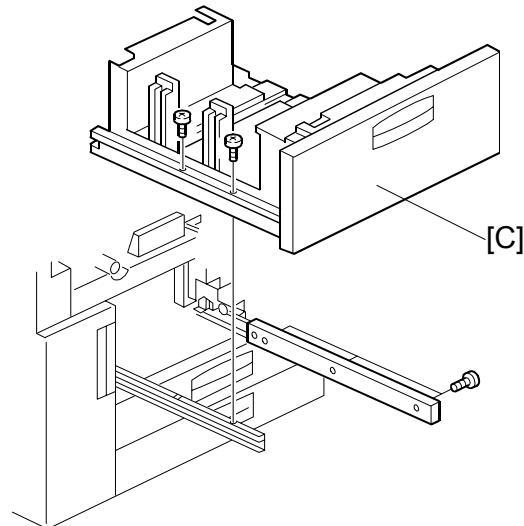
CAUTION

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

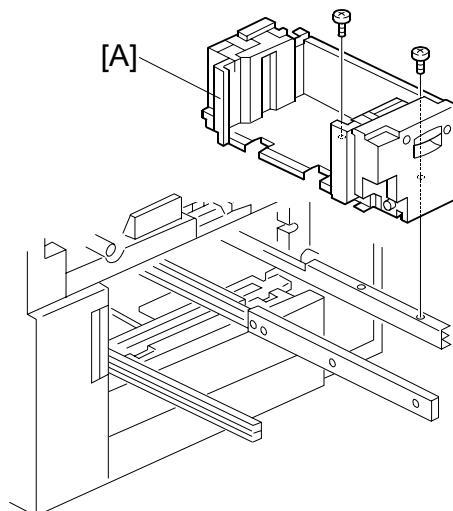
1. Draw out the tandem tray completely to separate the left and right sides of the tray, then remove the front cover [A] ($\wedge \times 2$).
2. Push in the right tandem tray [B].



3. Remove the left tandem tray [C] ($\wedge \times 5$). Save these screws.

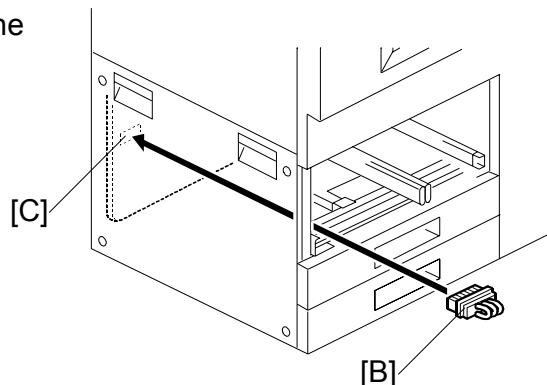


4. Remove the right tandem tray [A] ($\frac{1}{4}$ x 2). Save these screws.

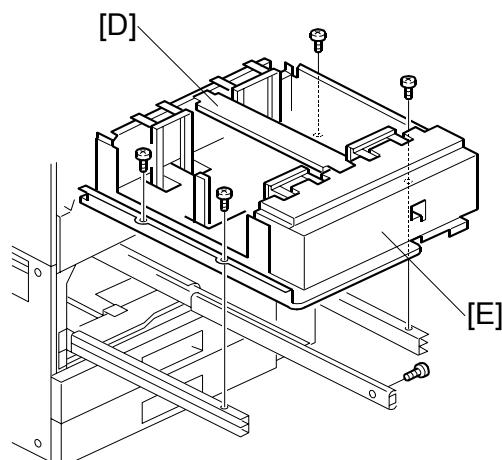


Installation

5. Connect the short connector [B] to the left tandem tray terminal [C].



6. Remove the stay [D] ($\frac{1}{4}$ x 2) and re-install it.
7. Attach the A3/DLT tray [E], 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.



1.4 LCT (B473)

1.4.1 ACCESSORY CHECK

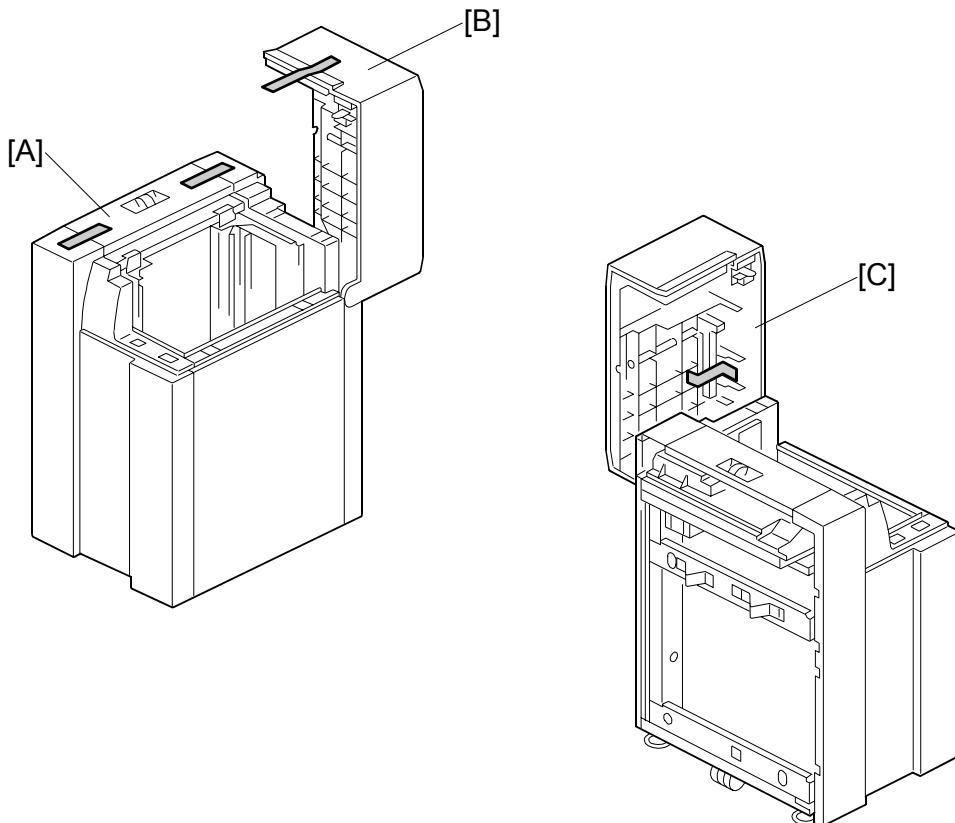
Check the accessories and their quantities against this list:

Description	Q'ty
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

1.4.2 INSTALLATION PROCEDURE

Removing Tape

Installation

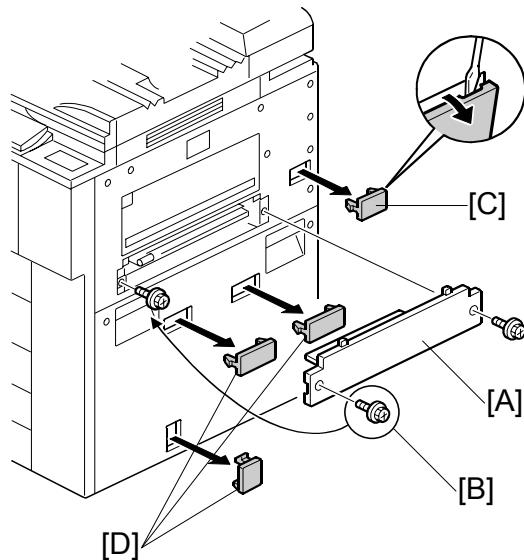


1. Remove the filament tape from the body [A] and top cover [B] of the LCT.
2. Remove the tape under the lid [C] of the LCT.

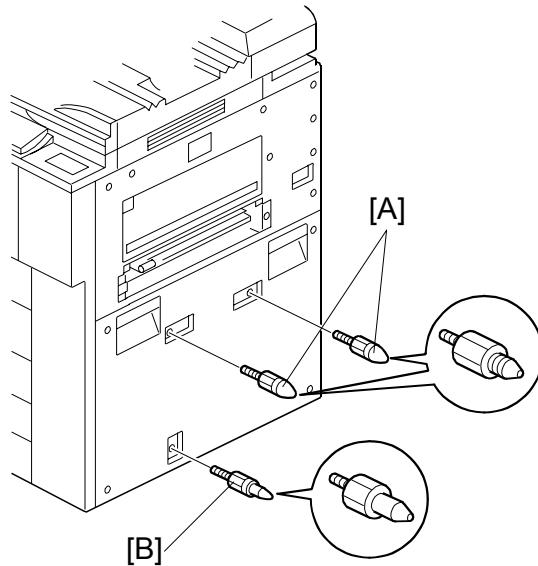
Preparing the Main Machine**⚠ CAUTION**

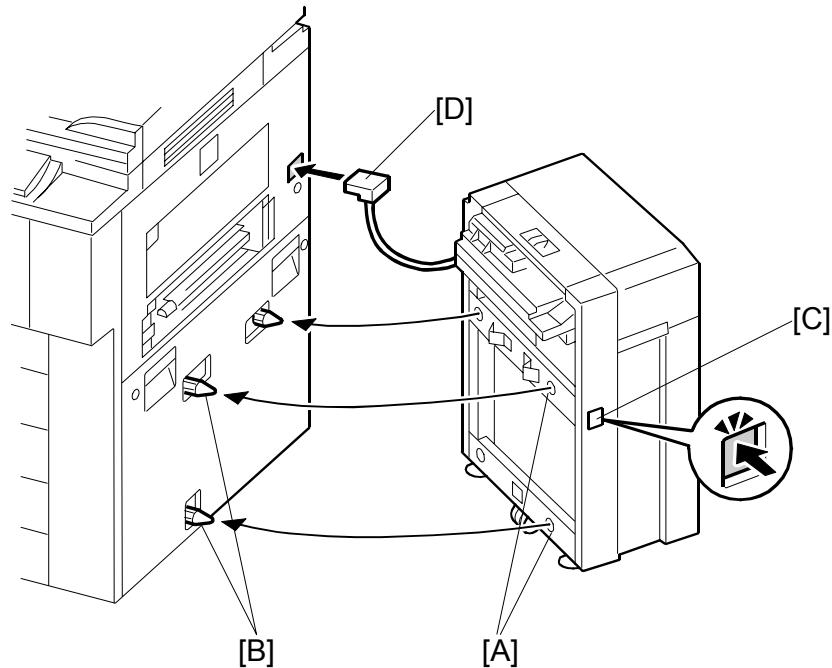
Switch the machine off and unplug the machine before starting the following procedure.

1. Remove the LCT installation cover [A] from the right side of the machine. (x 2).
2. Save the screw on the left [B]. You will need it to install the LCT.
3. Remove the LCT connector cover [C] (x 1) and the covers over the holes for the docking pins [D]. (x 3)

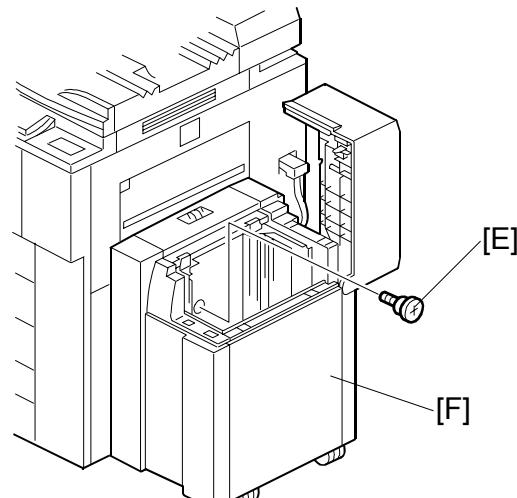
***Installing the LCT***

1. Insert the two upper docking pins (grooved) [A] into the upper slots and the lower docking pin [B] into the lower slot.





2. Align the holes on the side of the LCT [A] with the docking pins on the side of the machine [B], then slowly push the LCT onto the pins.
NOTE: The release button [C] is used to unlock the LCT so it can be disconnected from the machine.
3. Connect the plug [D] of the LCT power cord to the side of the machine.
4. Insert the flat-head shoulder screw [E] into the hole and fasten it to lock the release lever in place.
For easier access to the hole for the screw [E], you can remove the right panel [F] (x 2).
5. Switch the machine on and execute SP5959 005 (Paper Size – Tray 4 (LCT) to select the paper size. For details, see SP5959 in section “5. Service Tables.”



1.5 LG/B4 FEEDER KIT (B474)

1.5.1 ACCESSORY CHECK

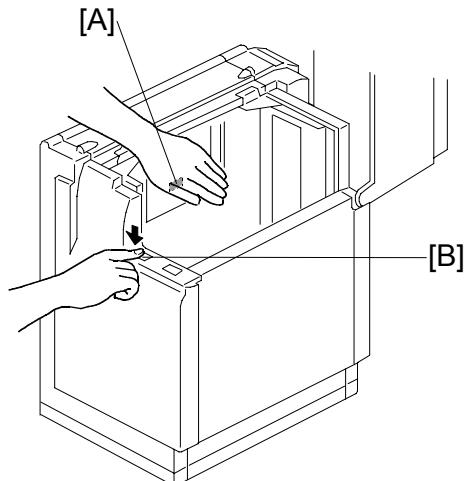
Check the accessories and their quantities against this list:

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

1.5.2 INSTALLATION PROCEDURE

If the LCT is connected to the machine

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



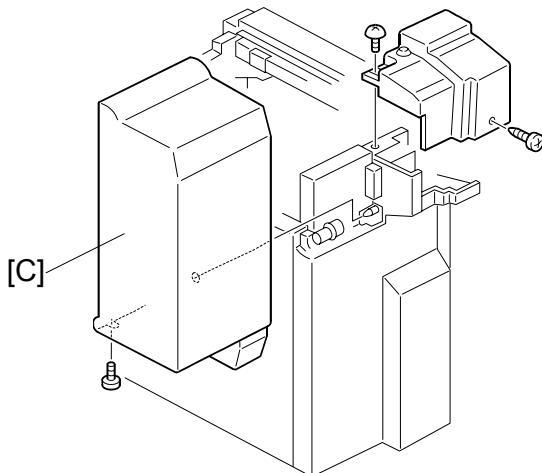
Installation

B474I507.WMF

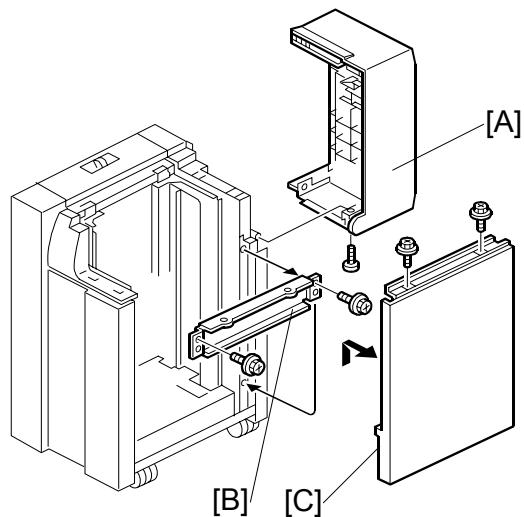
⚠ CAUTION

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

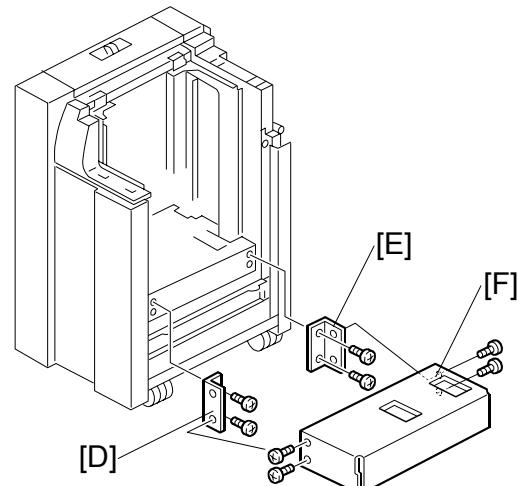
3. Disconnect the LCT from the machine (☞ 1.4.2).
4. Remove the LCT upper cover [C].



5. Remove the LCT cover [A] (\wedge x 1).
6. Remove the right stay [B] and re-attach it below (\wedge x 2).
7. Remove the right cover [C] (\wedge x 2).

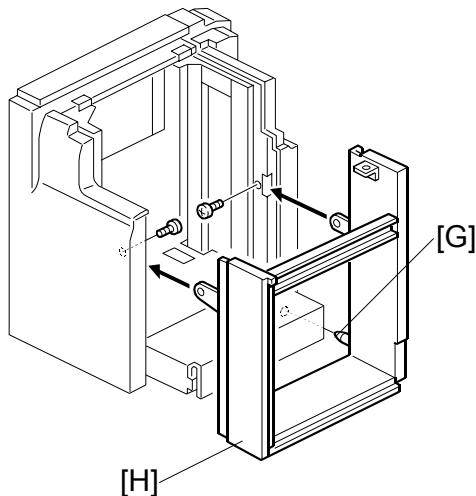


8. Attach the front bracket [D] with the beveled corner down (\wedge x 2).
- NOTE:** If the brackets are difficult to install, raise the bottom plate with your hand.
9. Attach the rear bracket [E] with the beveled corner down (\wedge x 2).
10. Attach the bottom plate extension [F] with the hex nuts (\wedge x 4).

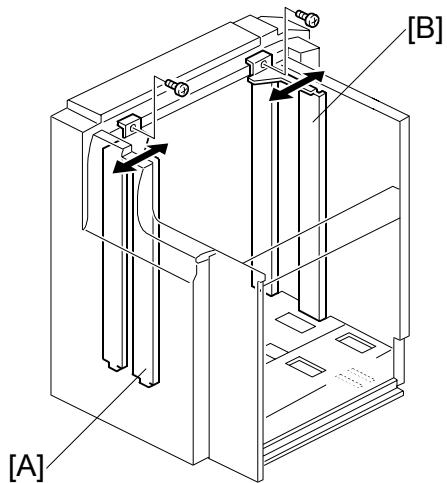


11. Align the positioning pin [G].
12. Attach the B4/LG frame [H] with the hex nuts (\wedge x 2).

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

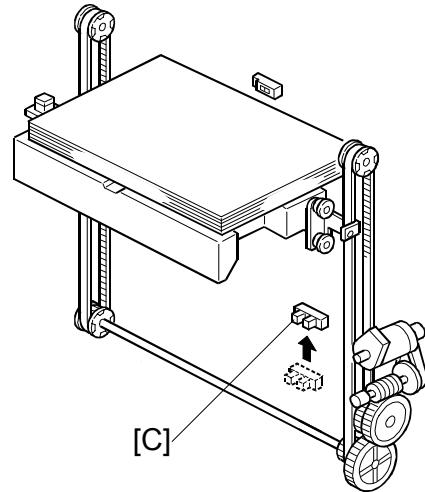


13. Move the front side fence [A] to the LG position and fasten (\wedge x 1).
14. Move the rear side fence [B] to the LG position and fasten (\wedge x 1).

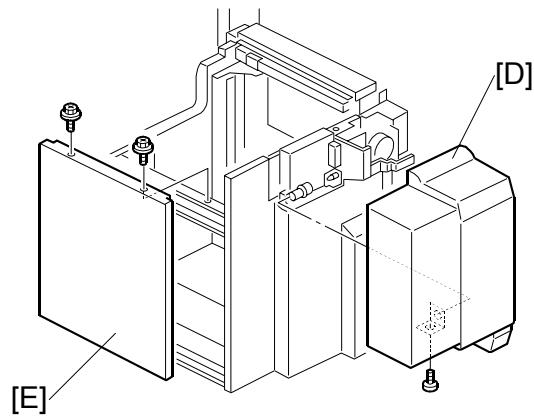


Installation

15. Change the position of the lower limit sensor [C] (\wedge x 1).
16. Attach the harness (not shown) to the back of the plate and secure the sensor connector wire.



17. Attach the LCT cover [D] provided with the kit (\wedge x 1).
18. Re-attach the right cover [E] (\wedge x 2).
19. Connect the LCT to the machine (☞ 1.4.2).
20. 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”.



1.6 3000-SHEET FINISHERS (B468/B469/B674)

1.6.1 ACCESSORY CHECK

Check the accessories and their quantities against this list:

Description	Q'ty
1. Rear joint bracket.....	1
2. Front joint bracket	1
3. Upper output tray	1
4. Lower output tray	1
5. Tapping screws - M3 x 6	2
6. Tapping screws - M4 x 8.....	4
7. Tapping screws - M4x 14.....	4
8. Cushion (with double-sided tape)	1
9. Ground (earth) plate	1
10. Installation Instructions	1

1.6.2 INSTALLATION PROCEDURE

This section describes the common installation instructions for these finishers:

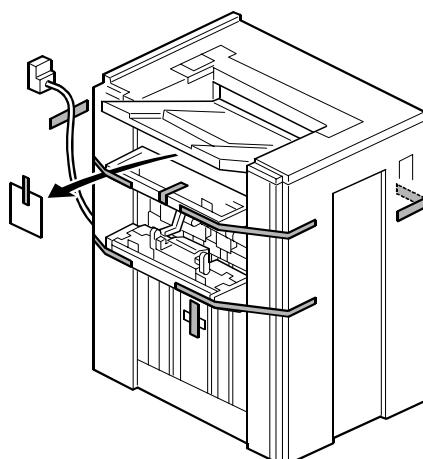
- **B468 Booklet Finisher**, which can do punching, shifting, stapling, and saddle-stitching with staples. *The booklet finisher can be used with the B064 Series.*
- **B469 Finisher**, which can do punching, shifting, and stapling but with no saddle-stitching unit.
- **B674 Booklet Finisher**, which can do punching, shifting, stapling, and saddle-stitching with staples. *The booklet finisher can be used with the B140 Series.*



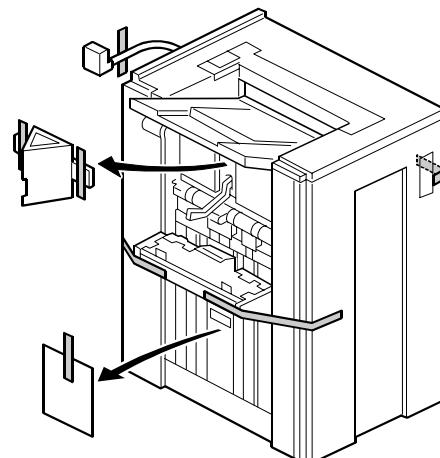
NOTE: Differences in the installation procedures are denoted “**B468**” or “**B469**” or “**B674**”.

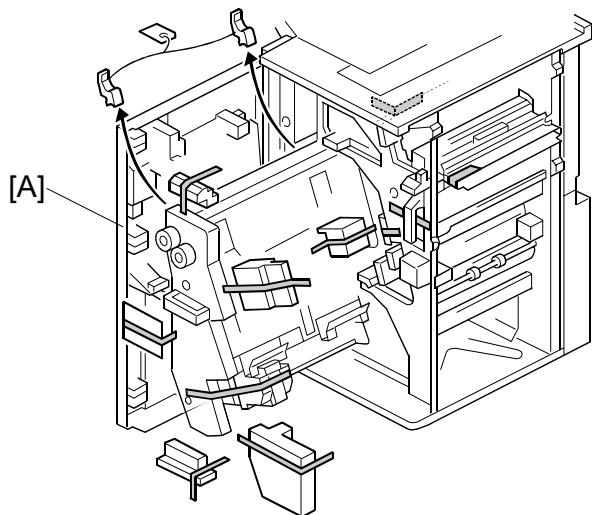
Removing Tapes and Retainers

**B468 (B064 Series)
B674 (B140 Series)**



B469 (B064 Series/B140 Series)

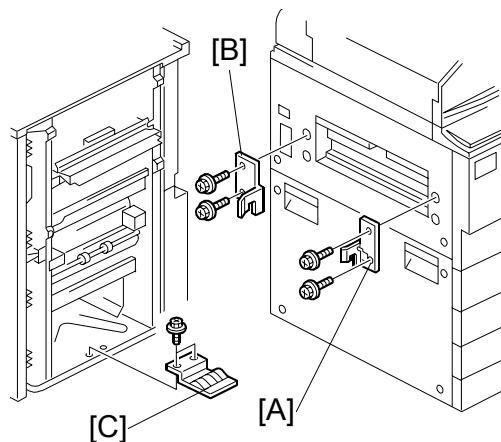




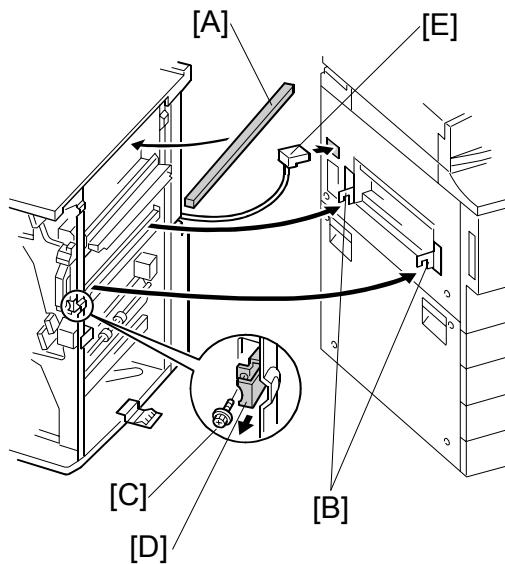
1. Unpack the machine and remove all the wrapping.
2. Remove all filament tape and shipping retainers from the front of the finisher.
3. Open the front door [A] and remove all the tape and shipping retainers from inside the finisher.

Installation**⚠ CAUTION**

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

Installation

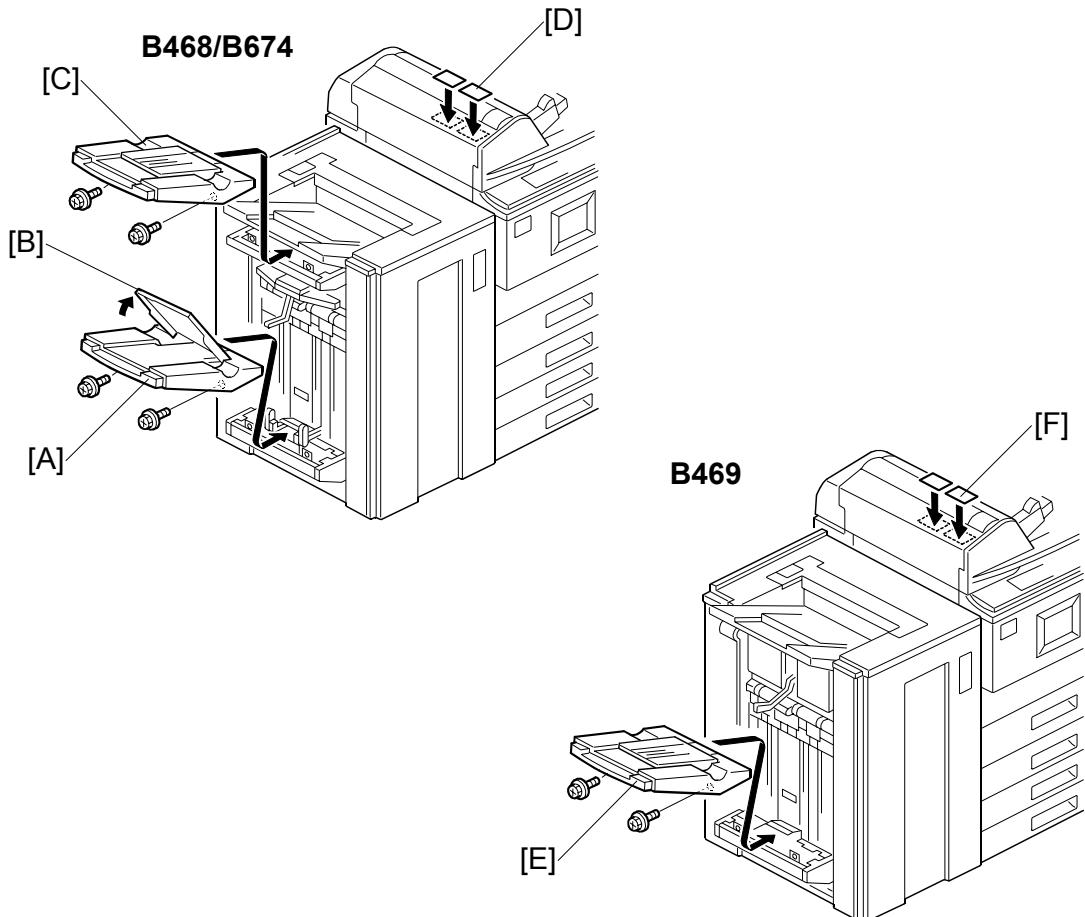
1. Install the front [A] and rear [B] joint brackets (\wedge x 2 each, M4x 14).
2. Install the ground plate [C] (\wedge x 2, M3 x 6).



3. Peel the cover tape from the sponge cushion [A], then install it in the upper slot.
- NOTE:** If you will also install the cover interposer tray, do not attach the cushion here. Attach it to the cover interposer tray. The cover interposer tray must be installed on the finisher before you attach the finisher and tray to the main machine.
4. Align the brackets [B] with the slots in the finisher.
 5. Slowly and carefully, to avoid bending the entrance guide plates of the finisher, push the finisher against the side of the machine until the brackets enter the slots.
 6. Using the screw [C] removed above, secure the lock lever [D] ($\frac{1}{8}$ x 1).
 7. Connect the plug [E] of the finisher power cord to the connector on the machine.

CAUTION

Always move the finisher slowly to avoid bending the entrance guide plates. Bent guide plates could interfere with paper transport from the machine to the finisher.



Installation

B468 (B064 Series)**B674 (B140 Series)**

1. Install the lower output tray [A] (\wedge x 2).
NOTE: Only the lower output tray has a movable support tray [B].
2. Install the upper output tray [C] (\wedge x 2).
3. Attach the staple position decal [D] to the ADF.

B469 (B064 Series/B140 Series)

1. Install the output tray [E] (\wedge x 2).
2. Attach the staple position decal [F].

Selecting the Staple Supply Name

Enter the SP mode and execute the following information.

5841*	Supply Name Setting		These names appear when the user presses the “Inquiry” button on the initial User Tools screen.
	005 (B065)	Staple Std	Enter the name of the staples in use for normal stapling (not booklet stapling). This setting should be done for the B468, B469, and B674.
	006 (B065)	Staple Bind	Enter the name of the staples in use for booklet stapling (saddle-stitching). This setting is required only for the B468 and B674
	011 (B140 Series)	Staple Std	Enter the name of the staples in use for normal stapling (not booklet stapling). This setting should be done for the B468, B469, and B674.
	021 (B140 Series)	Staple Bind	Enter the name of the staples in use for booklet stapling (saddle-stitching). This setting is required only for the B468 and B674

Enabling Booklet Binding

To enable booklet binding, you must select the ‘center stapling’ position.

1. Press the User Tools key.
2. Touch “Copier/Document Server Features”.
3. Touch the “Input/Output” tab, then access “Select Stapling Position”.
4. Touch any “Stapling Position” button and touch the center stapling symbol.
5. Exit the User Tools mode. Specify the number of copies, touch the center stapling symbol on the operation panel, then start the print job.

These SP adjustments are available but not required at installation.

SP6902	Fold Position Adjustment	Use this SP to fine adjust the fold and staple positions if they are not aligned correctly. See “5. Service Tables”.
SP6120	Staple Jogger Adjustment	Allows fine adjustment of the staple unit jogger fences for different paper sizes, if required. See “5. Service Tables”.

1.7 PUNCH UNIT (B377)

The Punch Unit B377 is installed in the 3000-Sheet Finishers B468/B469/B674.

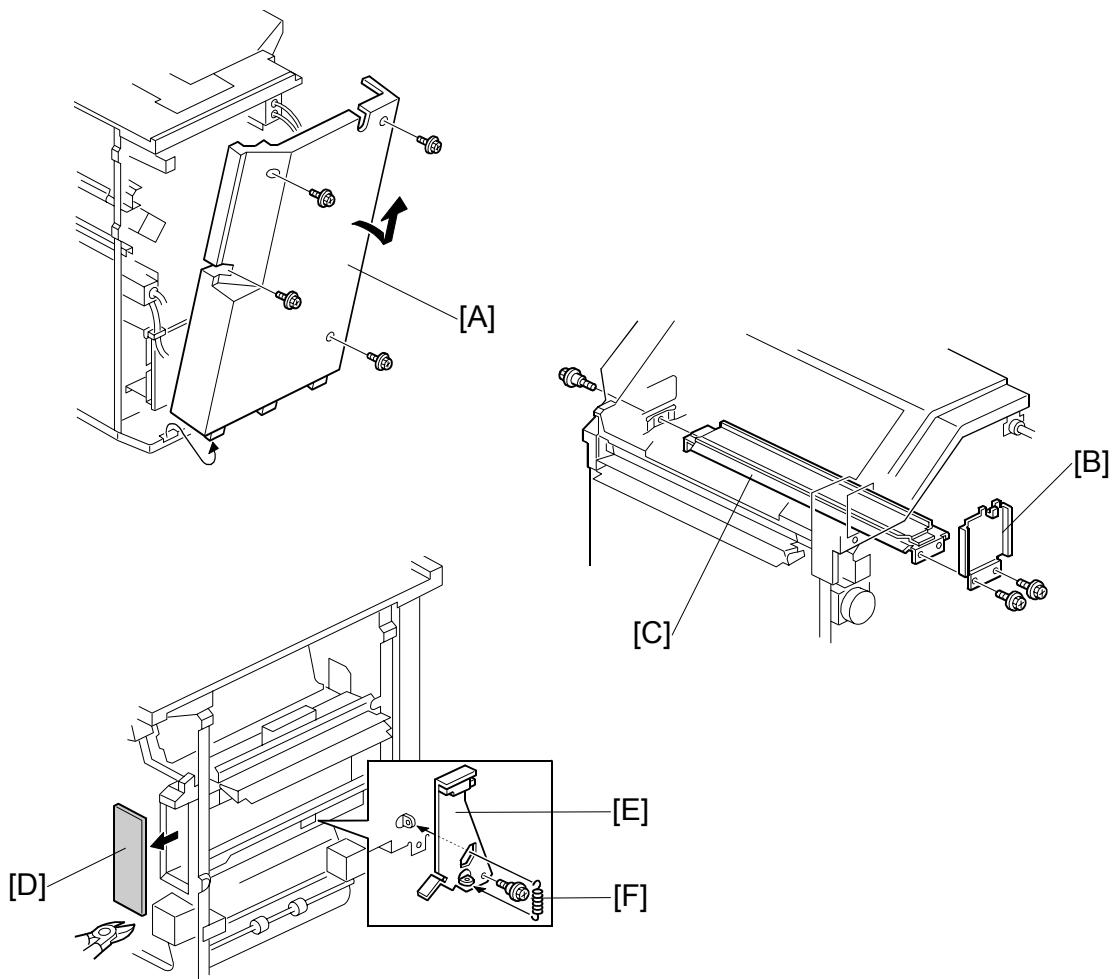
1.7.1 ACCESSORY CHECK

Check the accessories and their quantities against this list:

Installation

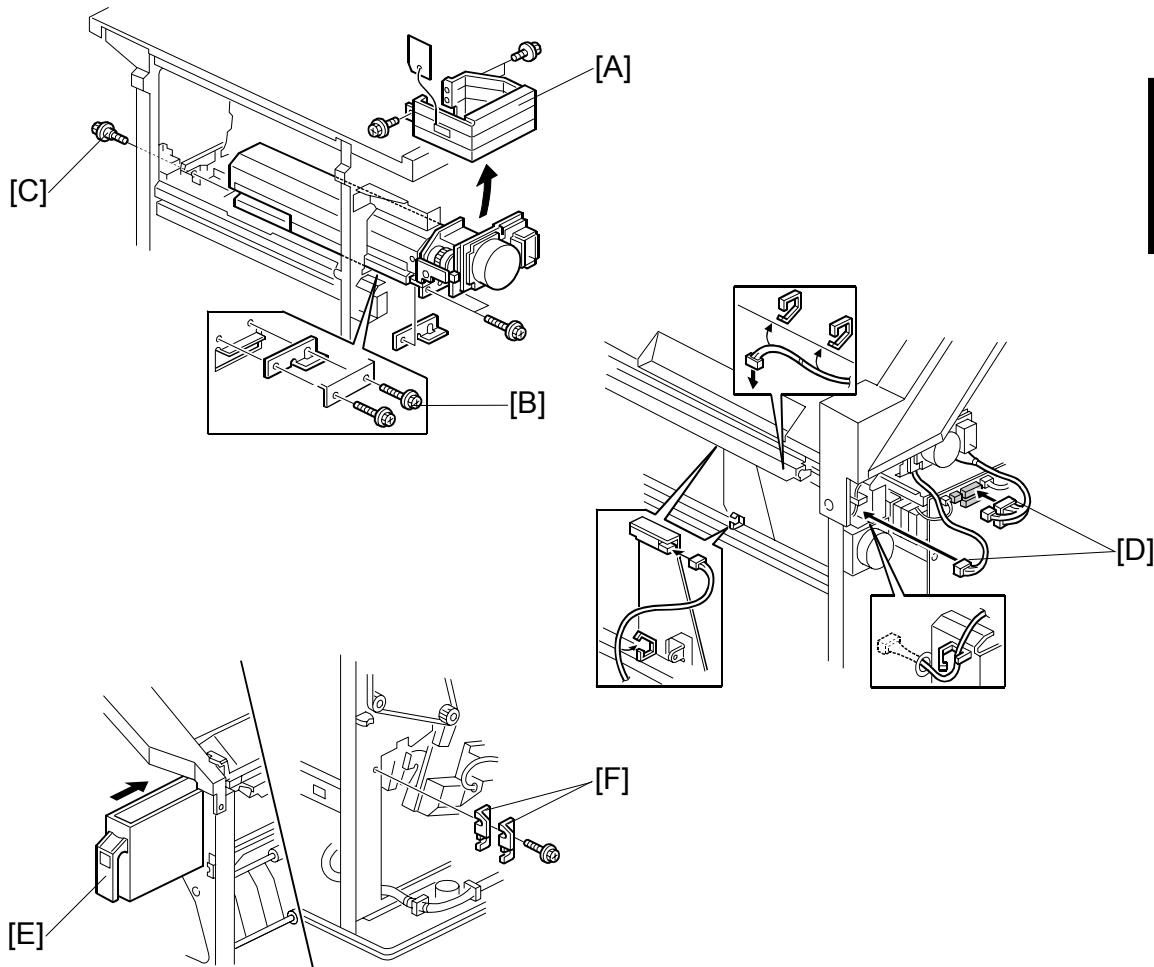
Description	Q'ty
1. Punch unit.....	1
2. Sensor arm	1
3. Hopper.....	1
4. Step screw	1
5. Spring	1
6. Spacer (2 mm).....	1
7. Spacer (1 mm).....	1
8. Tapping screw - M3 x 8.....	1
9. Tapping screw - M3x 10.....	2

1.7.2 INSTALLATION PROCEDURE

**CAUTION**

Switch off the main machine and unplug its power cord.

1. If the finisher is connected to the machine, disconnect it.
2. Unpack the punch unit and remove all tapes and shipping retainers.
3. Open the front door and remove the rear cover [A] (\wedge x 4).
4. Remove the bracket [B] (\wedge x 2) and paper guide [C] (\wedge x 1).
5. Remove the plastic knockout [D].
6. Install the sensor arm [E] (\wedge x 1).
7. Install the spring [F].



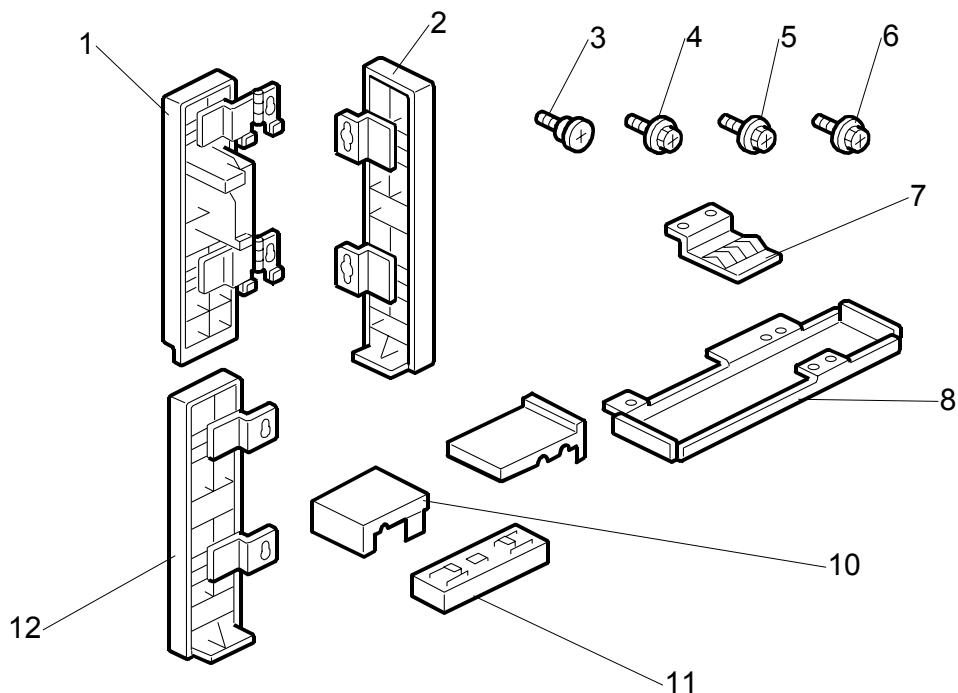
8. Remove the shipping bracket [A] (\wedge x 2).
9. Position the 2 mm spacer [B] and secure the punch unit (\wedge x 2).
10. Secure the punch unit at the front with the shoulder screw [C] (\wedge x 1).
11. Connect the harnesses [D] and clamp them as shown.
NOTE: No special DIP switch settings are required 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.
12. Slide the hopper [E] into the machine.
13. Fasten the two 1 mm spacers [F] to the rear frame. These may be used during future adjustments.
NOTE: The spacers are used to adjust the horizontal positioning of the holes.
14. Reassemble the finisher and check the punch operation.

COVER INTERPOSER TRAY (B470)

1.8 COVER INTERPOSER TRAY (B470)

1.8.1 ACCESSORY CHECK

Check the accessories and their quantities against this list:



Description	Q'ty
1. Front door extension (Top)	1
2. Rear cover extension (bottom).....	1
3. Shoulder screws	3
4. Tapping screws – M4 x 8	7
5. Tapping screws – M3 x 6	2
6. Tapping screws – M3 x 6	5
7. Ground Plate.....	1
8. Plate extension (bottom).....	1
9. Right rear cover plate (for B478/B706 only).....	2
10. Right front corner plate (for B478/B706 only).....	2
11. Spacer (B468/B469/B674 only)	1
12. Front door extension (bottom).....	1

1.8.2 INSTALLATION PROCEDURE

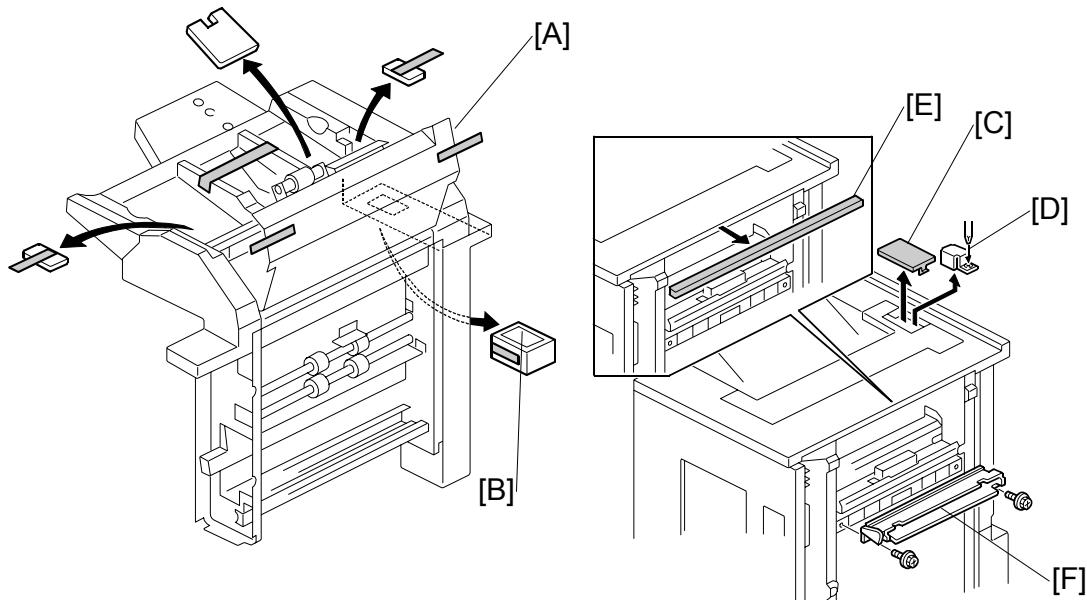
This procedure shows you how to install the Cover Interposer Tray B470 on the:

- 3000-sheet Finisher (Booklet Finisher) B468/B674
- 3000-sheet Finisher B469
- 3000-sheet Finisher B478/B706.

NOTE: The B468/B469/B674 require installation of only the front spacer. The B478/B706 requires installation of corner plates.

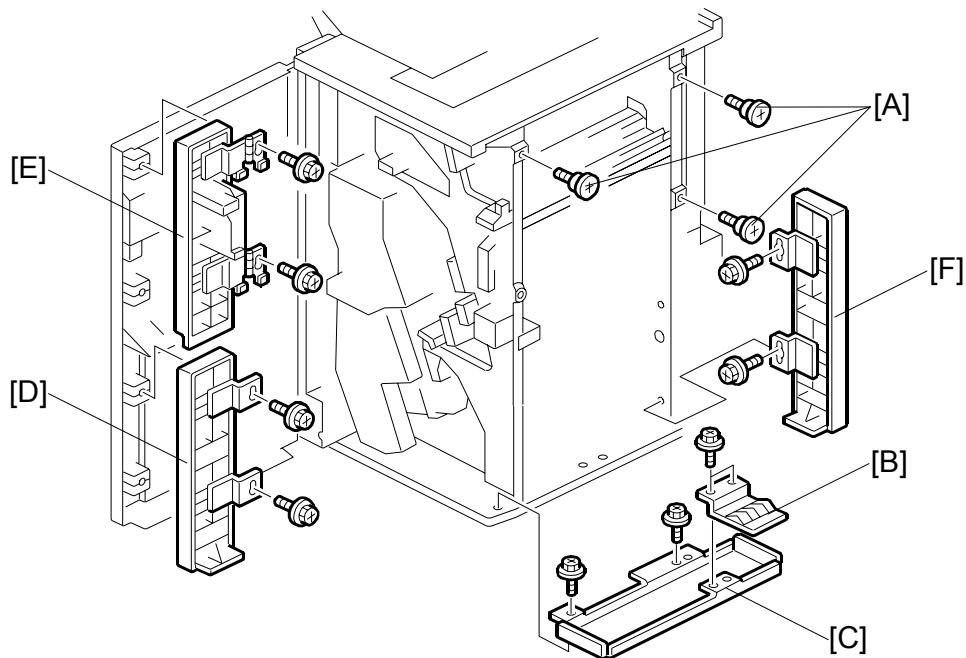
Installation

Removing Tapes and Retainers



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.
4. Remove the cover [C] of the relay connector.
5. Loosen the screw of the bracket [D] ($\frac{1}{8}$ x 1) then remove the bracket.
NOTE: If you will install the cover interposer tray with a finisher that was installed on the machine before this time (B468/ B469/ B478/ B674/ B706), remove the sponge strip [E] from the finisher. Keep it until you attach it again to the interposer tray.
6. Remove the guide plate [F].

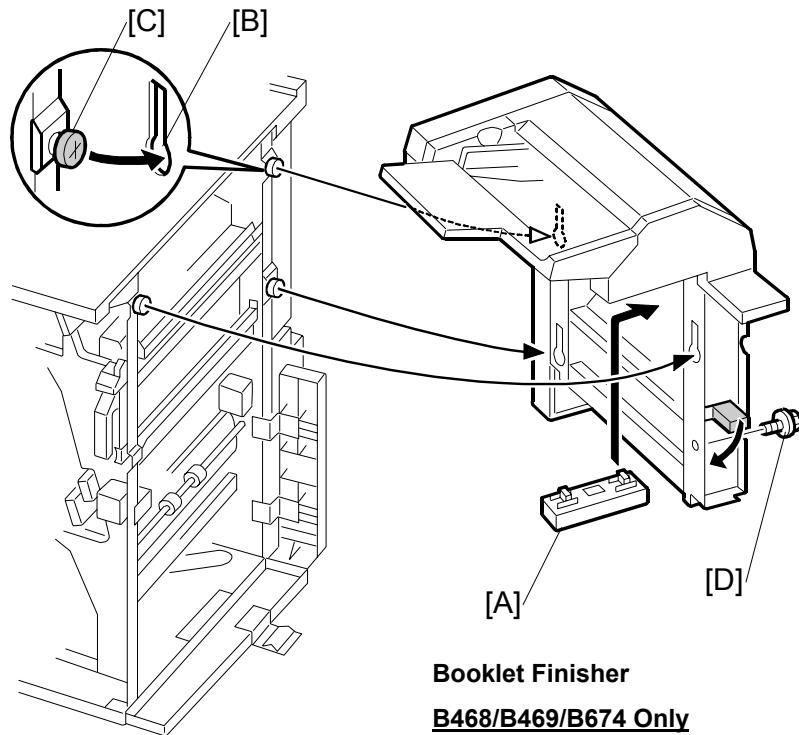
Attaching the Extensions



CAUTION

Make sure that the finisher is disconnected from the main machine and that the copier is turned off and disconnected from the power outlet before you start the following procedure.

1. Attach the three shoulder screws [A] ($\frac{1}{8}$ x 3).
2. Remove the ground plate [B] from the finisher, and keep the screws
3. Attach the bottom plate [C] ($\frac{1}{8}$ x 2, M3 x 6). Then attach the ground plate [B] to the bottom plate ($\frac{1}{8}$ x 2) with the screws that you removed in step 2.
4. Attach the bottom front door extension [D] ($\frac{1}{8}$ x 2, M4 x 8).
5. Attach the top front cover extension [E] ($\frac{1}{8}$ x 2, M4 x 8).
6. Attach the rear cover extension [F] ($\frac{1}{8}$ x 2, M3 x 6).

Attaching the Interposer Tray

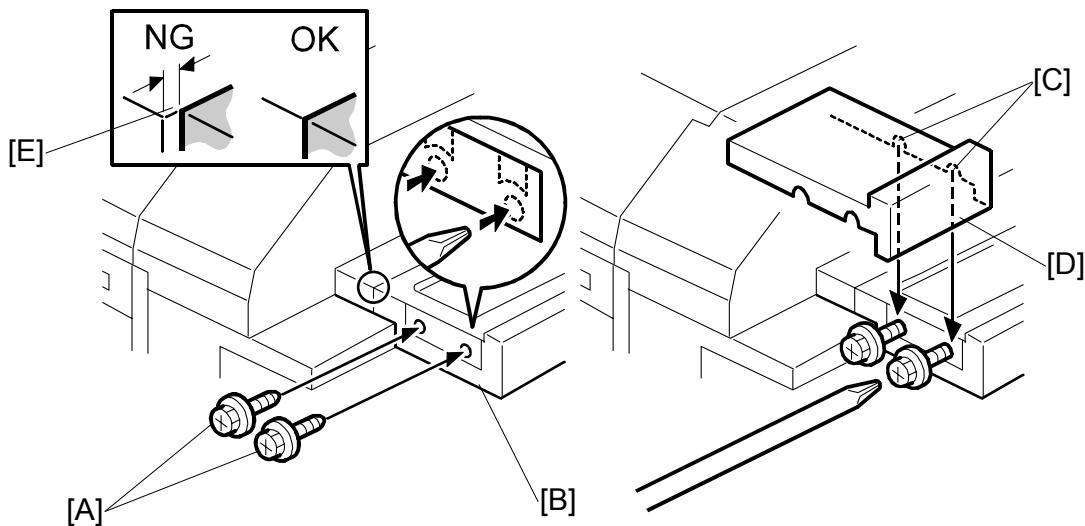
1. If you install the cover interposer tray on the B468/B469/B674 finisher, install the spacer [A]. You will hear a click when it is installed correctly.
NOTE: If you install the cover interposer tray on the B478/B706, do not install this spacer. This spacer is for the B468/B469/B674 installation only.
2. Lift the cover interposer tray, and align the keyholes [B] with the shoulder screws [C]. Then move the cover interposer down onto the screws.
3. Attach the cover interposer with the screw [D] ($\frac{1}{8}$ x 1, M3 x 6).

Important

- If you are installing the cover interposer tray on the B468/B469/B674, skip the next section and go directly to “Attaching the Finisher to the Machine” on page 1-46.
- If you are installing the cover interposer tray on the B478/B706, go to the next section, install the corner plates on the B478/B706, then go to “Attaching the Finisher to the Machine” on page 1-46.

Attaching the Corner Plates for the B478/B706

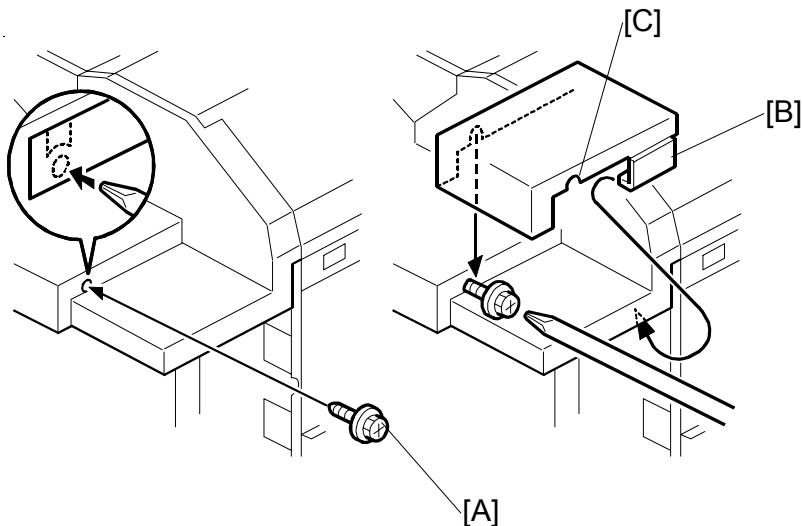
The corner plates are installed on the B478/B706 only. Attach the cover interposer tray to the finisher before you attach the corner plates.

Right Rear Corner Plate (B478/B706 only)

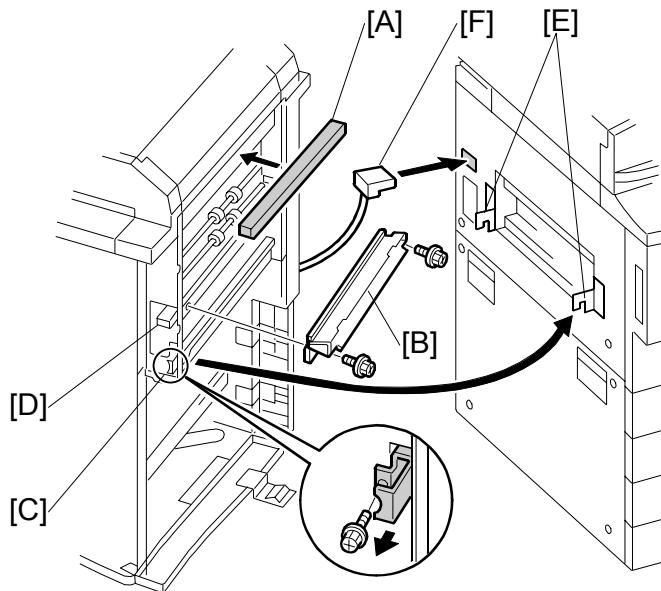
1. Temporarily set the screws [A] (with approximately two turns) at the right end of the finisher extension table [B] ($\frac{1}{4}$ x 2, tapping M4 x 8)
NOTE: You cannot see the holes, because there is tape on them. Punch the screws through the holes.
2. Align the notches [C] in the right rear corner plate [D] with the screws, and attach the plate.
3. If there is a gap [E] between the plate and the tray extension attached to the side of the finisher:
 - Loosen the two screws below the table extension (not shown)
 - Align the table extension with the corner of the finisher and the plate
 - Tighten the tray extension screws.
4. With a long screw driver inserted through the notches in the right rear corner plate [D], tighten the screws. This attaches the right rear corner plate to the table extension [B].

Right Front Corner Plate (B478/B706 only)

Installation



1. Temporarily set the screw [A] (M4 x 8) (with approximately two turns) to attach the panel at the right front corner.
NOTE: You cannot see the hole, because there is tape on it. Punch the screw through the hole.
2. Align the notch in the right front corner plate [B] with the screw and install it. You hear a click when it is put into its correct position.
3. Put a long screwdriver into the plate cutout [C]. Then, tighten the screw to attach the right front corner plate.

Attaching the Finisher to the Machine

1. Attach the sponge strip [A] (this is supplied with the finisher).
NOTE: If you will install the cover interposer tray with a finisher that was installed on the machine before this time, remove the strip from the finisher and attach it to the cover interposer tray.
2. Attach the guide plate [B] (removed from the finisher) to the cover interposer ($\frac{1}{8}$ x 2).
NOTE: Make sure to use the two small tapping screws supplied with the machine, and not the machine screws that you removed from the finisher with the guide plate.
3. Release the lock lever [C] ($\frac{1}{8}$ x 1).
4. Lower the transport guide plate [D].
5. Slowly push the finisher against the side of the machine until the brackets [E] go into the slots.
Important: Do the above step carefully. Do not bend the entrance guide plates. Bent guide plates could cause a blockage for paper transport between the finisher and copier.
6. Attach the lock lever [C] ($\frac{1}{8}$ x 1).
7. Lift the transport guide plate [D] to close it.
8. Connect the connector [E] into the copier.

9. Switch on the machine, and select the default paper size for the cover interposer.

Important: Be sure to execute the correct SP code for the machine. Please refer to the table below.

Machine	Correct SP Code
B064 series	SP5959-006
B140 series	SP5158-001 to 008

Installation

1.9 9-BIN MAILBOX (B471)

1.9.1 ACCESSORY CHECK

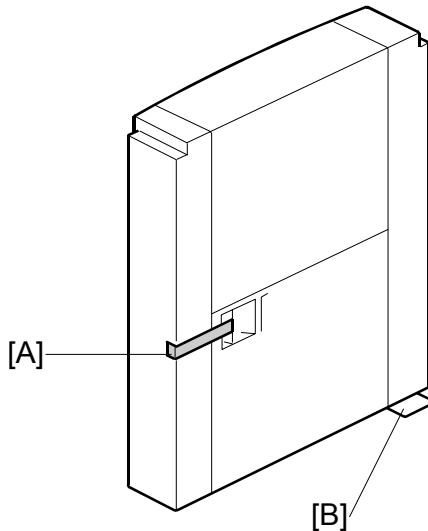
Check the accessories and their quantities against this list:

Description	Q'ty
1. Trays.....	9
2. Guide plate	1
3. Decals (bin display)	1
4. Tapping screws - M3 x 8.....	6
5. Installation Instructions	1

1.9.2 INSTALLATION PROCEDURE

Removing Tapes and Retainers

1. Remove the filament tape [A].
- NOTE:** Handle the mailbox carefully.
The corner leaf [B] can be damaged easily.



Installation

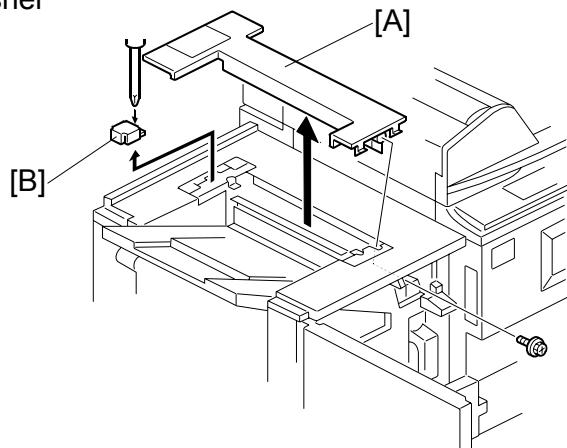
Installation

CAUTION

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

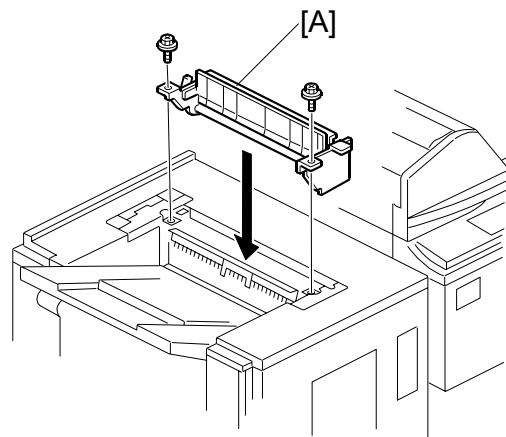
If the Cover Interposer Tray B470 is installed on the Finisher B468/B469/B674, remove it. The cover interposer tray and mailbox cannot be installed on the finisher at the same time.

1. Remove the top cover [A] of the finisher ($\wedge \times 1$).
2. Remove the bracket [B] ($\wedge \times 1$).
NOTE: Loosen the screw. Do not remove it.

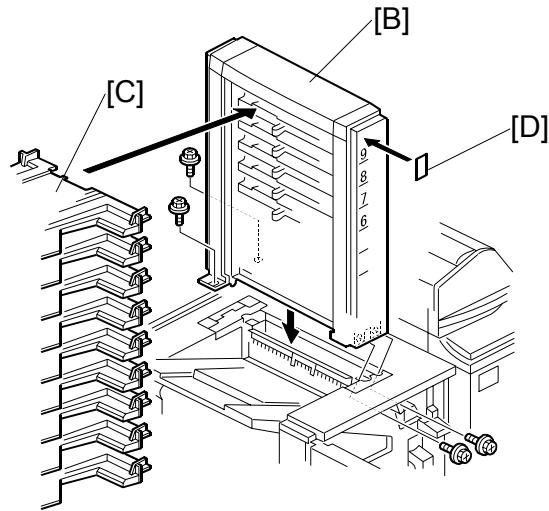


9-BIN MAILBOX (B471)

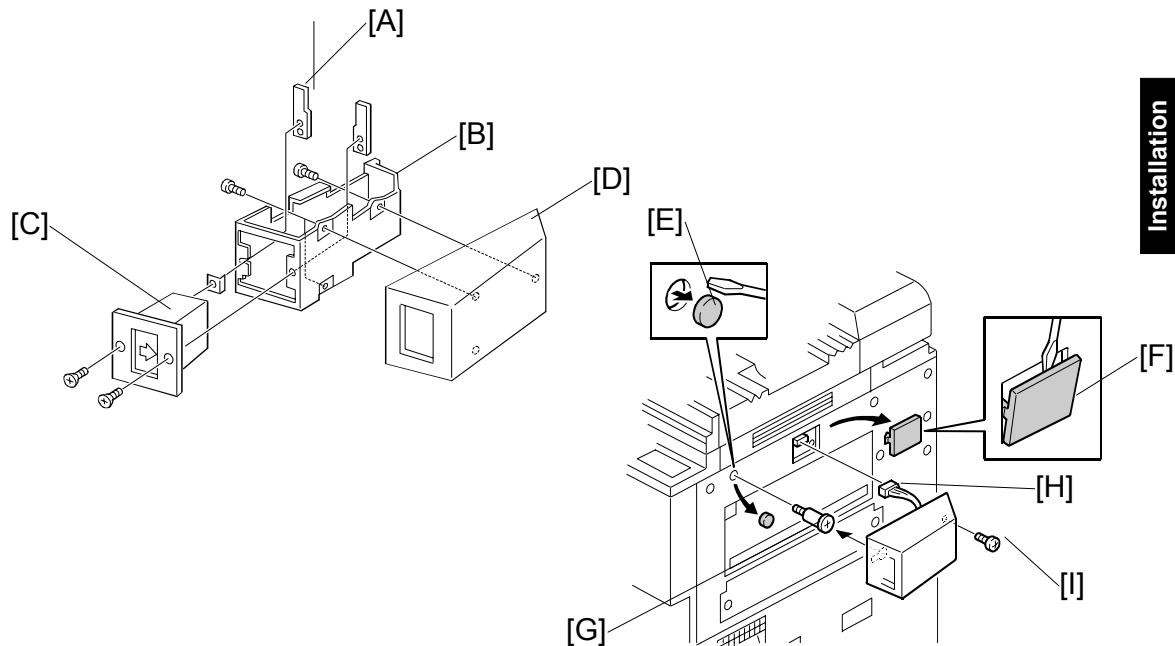
3. Attach the guide plate [A] to the top of the finisher (\wedge x 2, M3 x 8).



4. Attach the mailbox [B] to the top of the finisher (\wedge x 4, M3 x 8).
5. Attach the 9 trays [C] to the mailbox.
6. Give the decals [D] to the customer for notation and pasting at the correct location.



1.10 KEY COUNTER BRACKET (B452)



1. Hold the key counter plate nuts [A] on the inner surface of the key counter bracket [B] and install the key counter holder [C].
2. Attach the key counter holder to the bracket (\wedge x 2).
3. Install the key counter cover [D] (\wedge x 2).
4. Remove the caps [E, F] from the right cover with a screwdriver.
5. Install the stepped screw [G].
6. Join the connectors [H].
7. Put the key counter holder assembly [I] on the stepped screw.
8. Change the setting of the Key Counter Management to the setting that is necessary for the customer (User Tools> System Setting> Key Operator Tools).
9. If necessary, change the setting of SP5121 (Counter Up Timing).

1.11 COPY CONNECTOR KIT

1.11.1 COPY CONNECTOR KIT (B525-10, -12) FOR B064 SERIES

Important Notes

1. The following are the specialized firmware versions for use with the Copy Connector Kit or MLB option. When installing either of these options, it is necessary to install the following firmware together as a set.

Software	Part Number	Version (1st released)
RA2K Controller: System	B5254108	5.07
RA2K Controller: Copy	B5254109	5.07
BCU	B5254123	5.03d
Printer/Scanner	B5255204	4.15/5.00
NIB/Netfile	B5254114	3.00/1.79
LCDC	B5254176 (NA)	2.04
	B5254177 (EU)	

2. With the Copy Connector/MLB modifications, the machine firmware has been divided up into 2 main groups:
 - 1) The Copy Connector/MLB group (beginning with the versions listed above)
 - 2) The usual firmware used up to the present, i.e. for machines without the Copy Connector or MLB options.

Important: Firmware from these two groups **cannot** be used interchangeably. Always update **within** the same group, otherwise the machine will not operate correctly.

3. The Copy Connector Kit and MLB options cannot be installed in the same machine. It is necessary to install one or the other.
4. As shown above, the RA2K controller firmware for the Copy Connector/MLB group has been divided into RA2K System and RA2K Copy, as the increased size has exceeded the card's storage capacity.

AC0CESSORY CHECK

Check the accessories and their quantities against this list:

Description	Q'ty
1. Copy Connector Board	2
2. MLB Interface Board.....	2
3. Interface Cable	3
4. Interface Harness – Power Line.....	2
5. Hub	2
6. Key Top – Application.....	6
7. Operating Instructions (English).....	1
8. Key Top – Printer.....	2
9. Anti-static Cap	2
10. Ferrite Core.....	4
11. Knob Screw	4
12. Decal – Copy Connector.....	4
13. Tapping Screw – M3 x 8	4

Installation

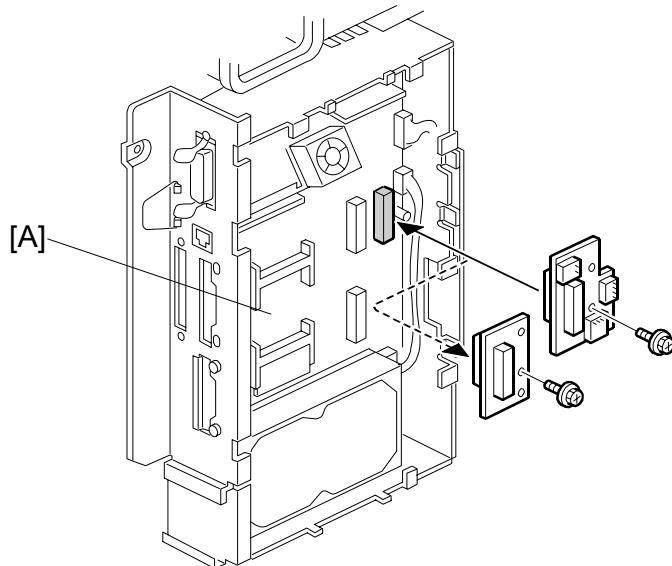
Installation

CAUTION

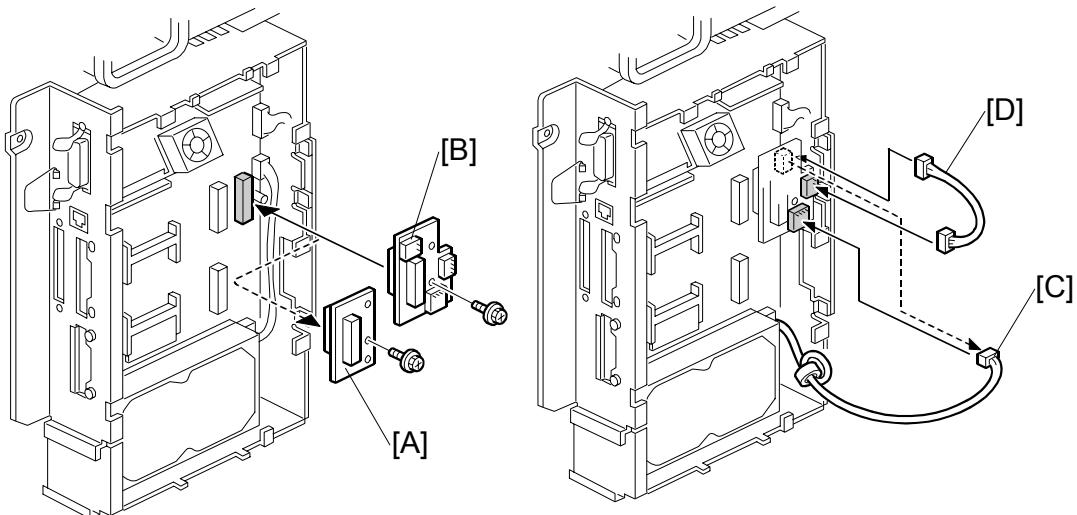
Unplug the machine main power cord before starting the following procedure.

Perform the following procedures for both the main and sub copiers.

Installing the Firmware: B064 Series



1. Remove the rear cover (\wedge x 2).
2. Remove the controller cover (\wedge x 10).
3. Turn on DIP SW2-1 on the controller board [A].
4. Install the following firmware.
 - RA2K Controller (System and Copy)
 - Printer/Scanner
 - NIB Netfile
5. Turn off DIP SW2-1 on the controller board.
6. Install the following firmware.
 - BCU
 - LCDC

Installing the Hardware

Installation

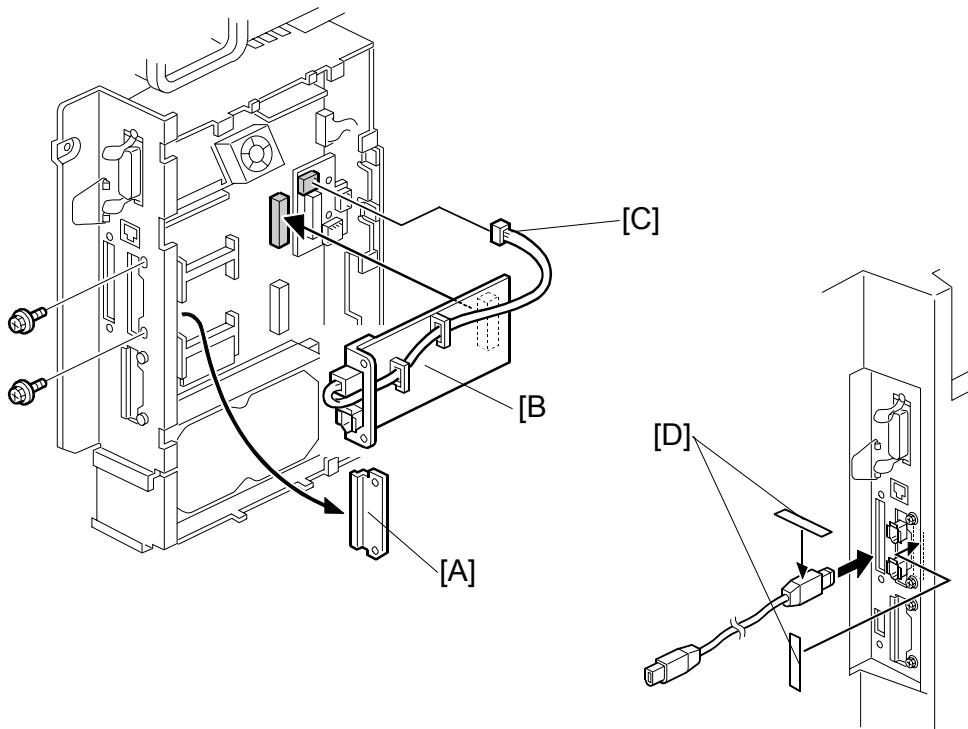
1. Replace the interface board [A] with the MLB Interface Board [B].

NOTE: This step is not necessary from the following Serial Numbers:

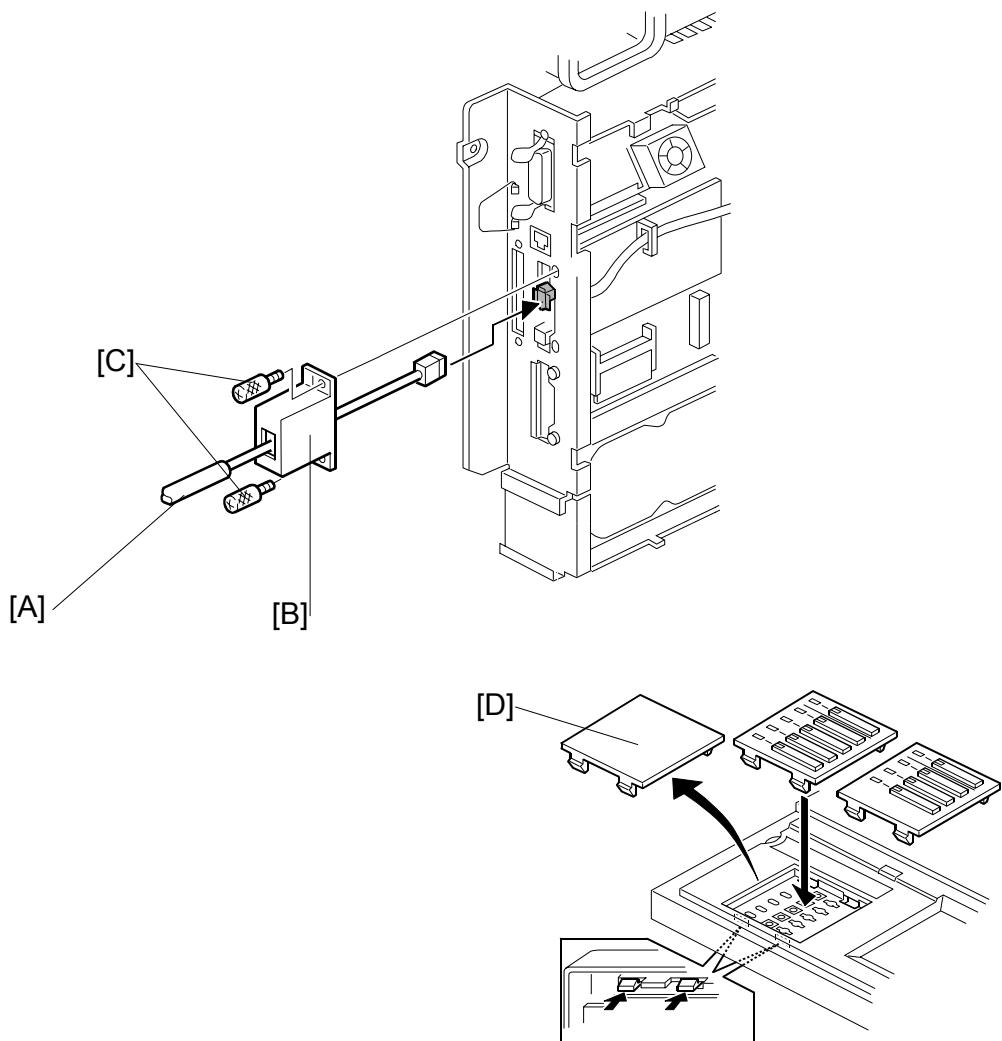
Part Number	Serial Number	Part Number	Serial Number
B06417	J4235300054	B06517	J4335300191
B06419	J42304XXXXX	B06519	J43304XXXXX
B06422	J42304XXXXX	B06522	J43304XXXXX
B06424	L1283040001	B06524	L1293040001
B06426	7P10430001	B06526	7P20430001
B06427	J4230300409	B06527	J43304XXXXX
B06428	J42304XXXXX	B06528	J43304XXXXX
B06429	J42304XXXXX	B06529	J43304XXXXX
B06469	J42304XXXXX	B06569	J43304XXXXX

2. Remove the 4P connector [C] for the HDD and connect it to CN319 on the MLB Board.
3. Connect one end of the power interface harness [D] to the HDD connector, and the other end to CN318 on the MLB Board.

COPY CONNECTOR KIT



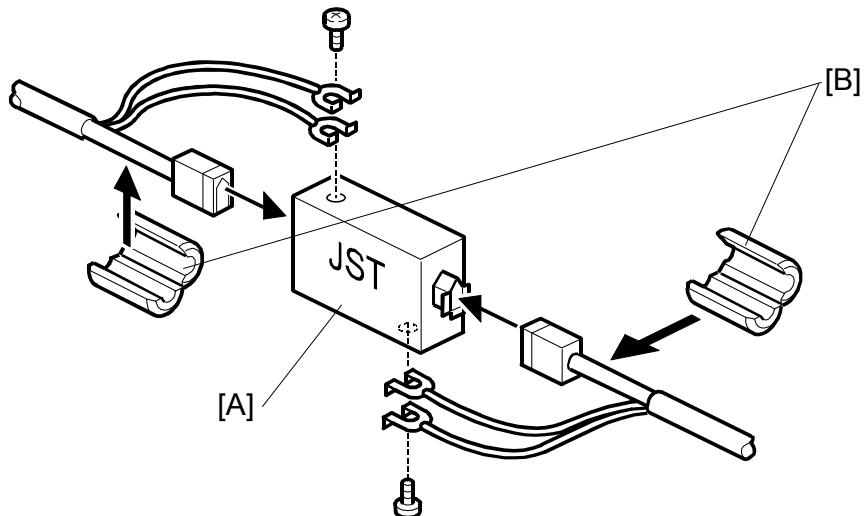
4. Remove the connector cover [A] ($\wedge \times 2$).
5. Install the CCK interface board [B] as shown.
6. Connect the harness [C] to CN315 on the MLB Board.
7. Attach the decals [D] as shown.



8. Lead the interface cable [A] through the anti-static cap [B], and then connect it to the interface board.
9. Attach the anti-static cap (2 knob screws [C]).
10. Replace the key top [D].
11. Repeat both the firmware and hardware procedures above for the other copier.

COPY CONNECTOR KIT

12. Perform Steps 12 and 13 below if the distance between the two machines is more than 4.5m.



13. Use the Hubs [A] to connect the interface cables.

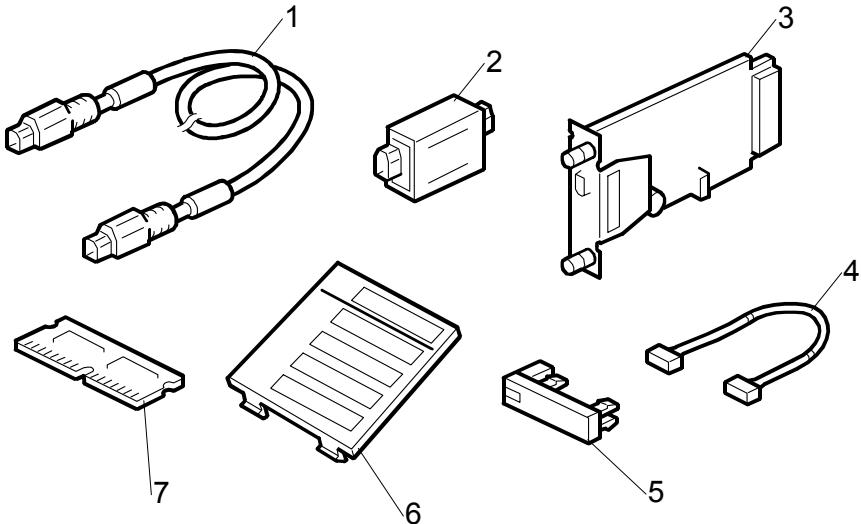
NOTE: When connected in this way, the maximum length possible is 13.5m (3 interface cables).

14. Attach the ferrite cores [B] as shown.

1.12 COPY CONNECTOR KIT (B328-03) FOR B140 SERIES

ACCESSORY CHECK

Check the accessories and their quantities against this list:



Installation

Description	Q'ty
1. Interface Cable 1394.....	3
2. Repeater Hub 1394	2
3. Connection PCB	2
4. Power Repeater Cable.....	2
5. Keytops for B070/B071 (NA, EU 1 each) “Other Function”	2
“Printer/Other Function”	2
6. Keytops for B140 series (NA, EU 1 each) “Other Function”	2
“Printer/Other Function”	2
“Printer/Other Function” + Scanner.....	2
7. SDRAM DIMM 64 MB	2
8. Operating Instructions (NA)	1

Preparation

Before you begin the installation procedure:

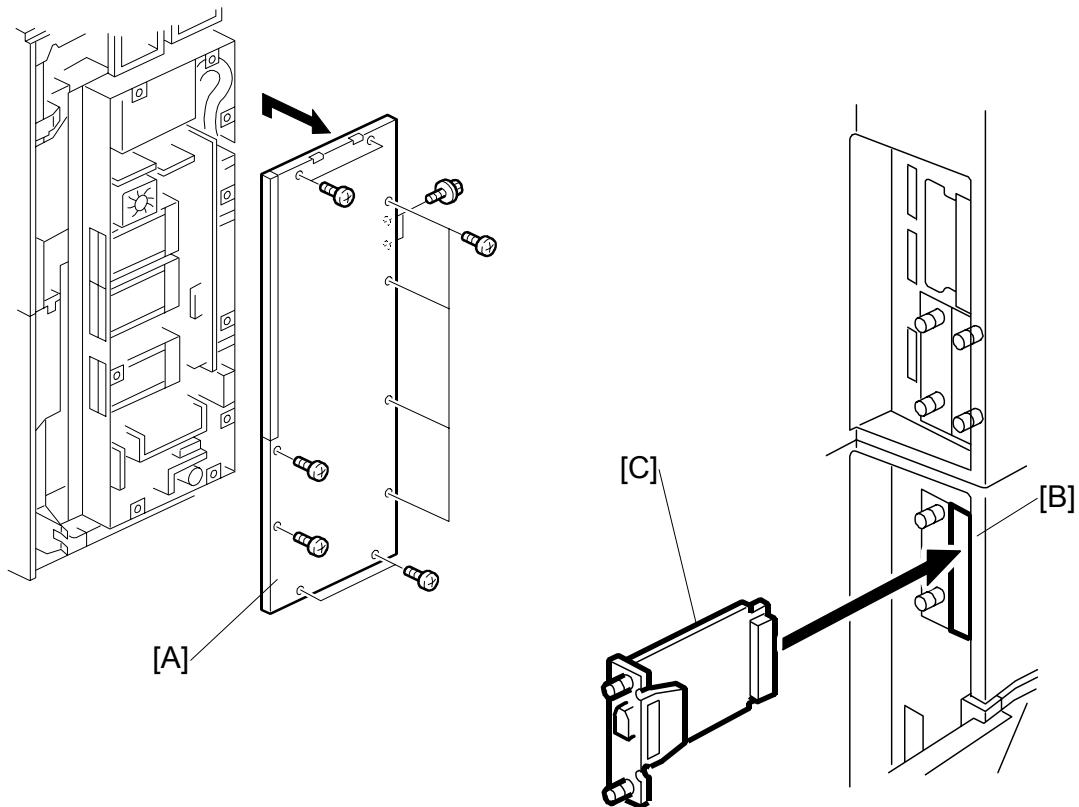
- Check the distance between the machines to be connected.
- Check if the printer/scanner option is installed on the machines.

Measure the distance between the machines. Then check the number of cables and repeater hubs that are necessary.

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

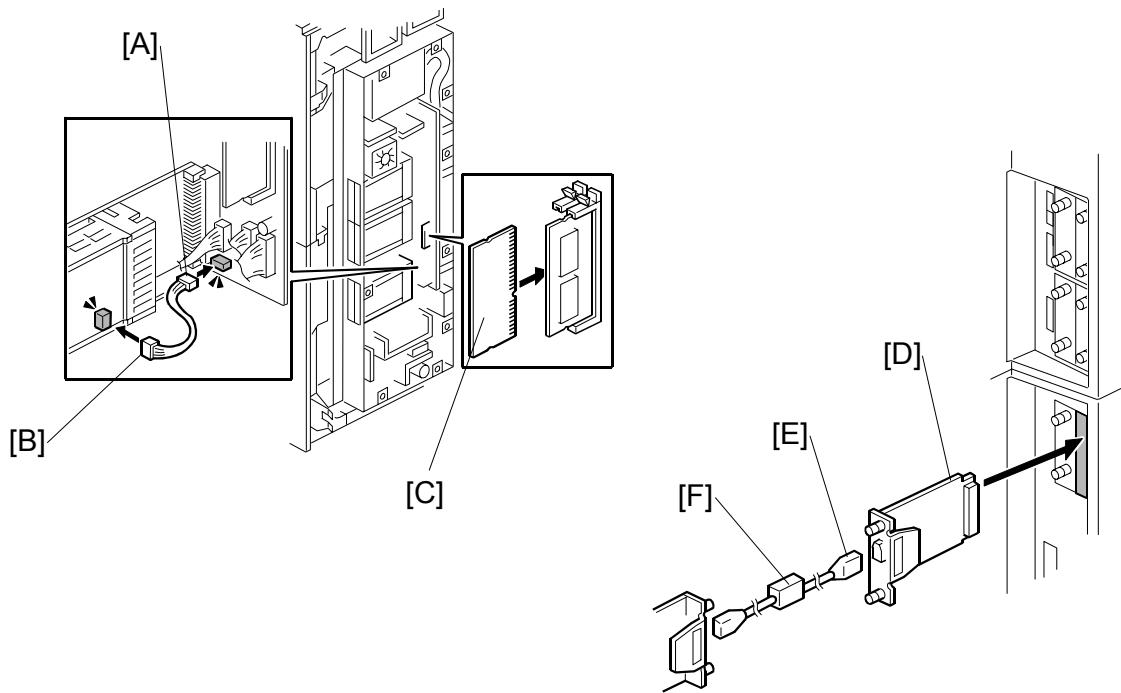
Three sets of key-tops (2 per set, 1 for NA, 1 for EU) are included for each machine, but you must install only one key-top on each machine.

- Install the key labeled “Printer/Other Function + Scanner” (or its equivalent symbol key-top for EU) on a machine with the printer/scanner option installed
- Install the key labeled “Other Function” (or its equivalent symbol key-top for EU) on a machine without the printer/scanner option.

Installation**Installation**

1. Remove the rear cover.
2. Remove the controller box cover [A] (\wedge x 12).
3. Remove the cover from Slot A2 [B] (\wedge x 2).
4. Put the Copy Connector Kit board [C] in Slot A2 and tighten the knob screws (x 2).

COPY CONNECTOR KIT (B328-03) FOR B140 SERIES

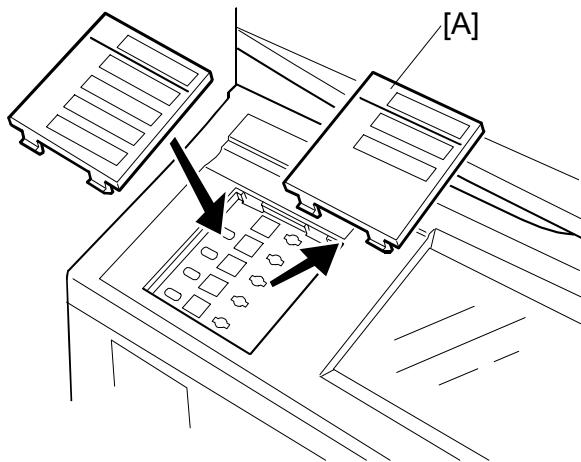


5. Connect one end [A] of the power supply harness to the mother board (⎓ x 1).
6. Connect the other end [B] of the power supply harness to the connector board (⎓ x 1).
7. Connect the 64 MB DIMM [C] to the mother board.
NOTE: This memory chip is a data transfer buffer.
8. Connect the connector board [D] to Slot A2.
9. Connect one end of the connector cable [E] to the copy connector board.
10. Connect the other end of the cable to the other machine.

-or-

If the distance between the machines is more than 4.5 m (14.8 ft.), connect the cables to a connector hub [F].

COPY CONNECTOR KIT (B328-03) FOR B140 SERIES



Installation

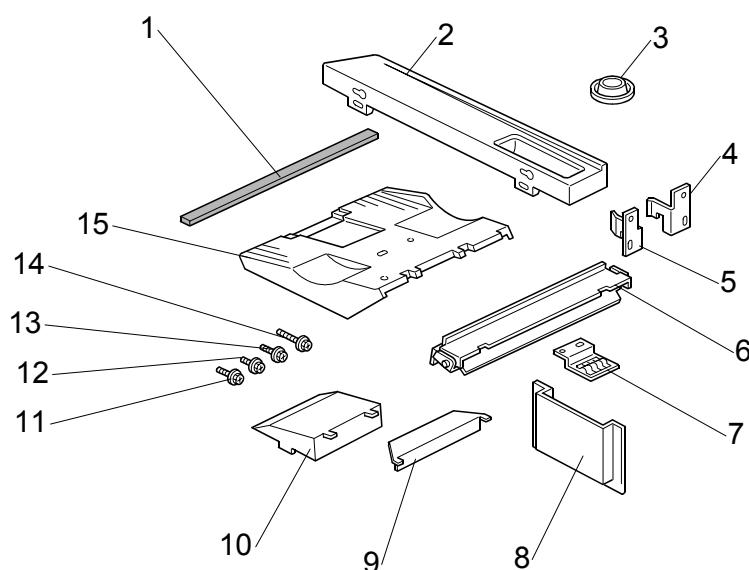
15. Replace the key tops [A].
16. Repeat the firmware and hardware procedures above for the other copier.

1.12 3000 SHEET FINISHER (B478/B706)

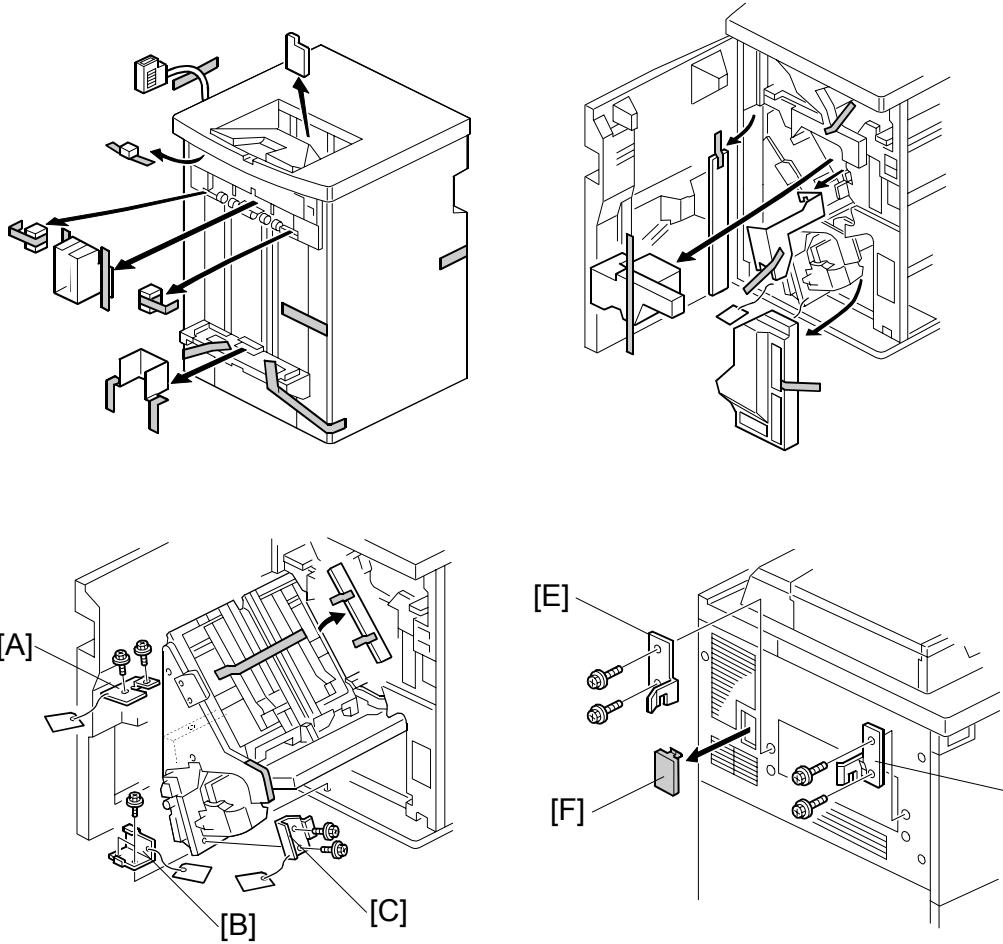
1.12.1 ACCESSORY CHECK

Check the accessories and their quantities against this list:

Description	Q'ty
1. Cushion	1
2. Table Extension	1
3. Leveling Shoes	1
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 - M3 x 6	4
13. Tapping Screws - M3 x 8	4
14. Phillips Screws w/washer - M4 x 14.....	4
15. Shift Tray	4
16. Installation Procedure	1



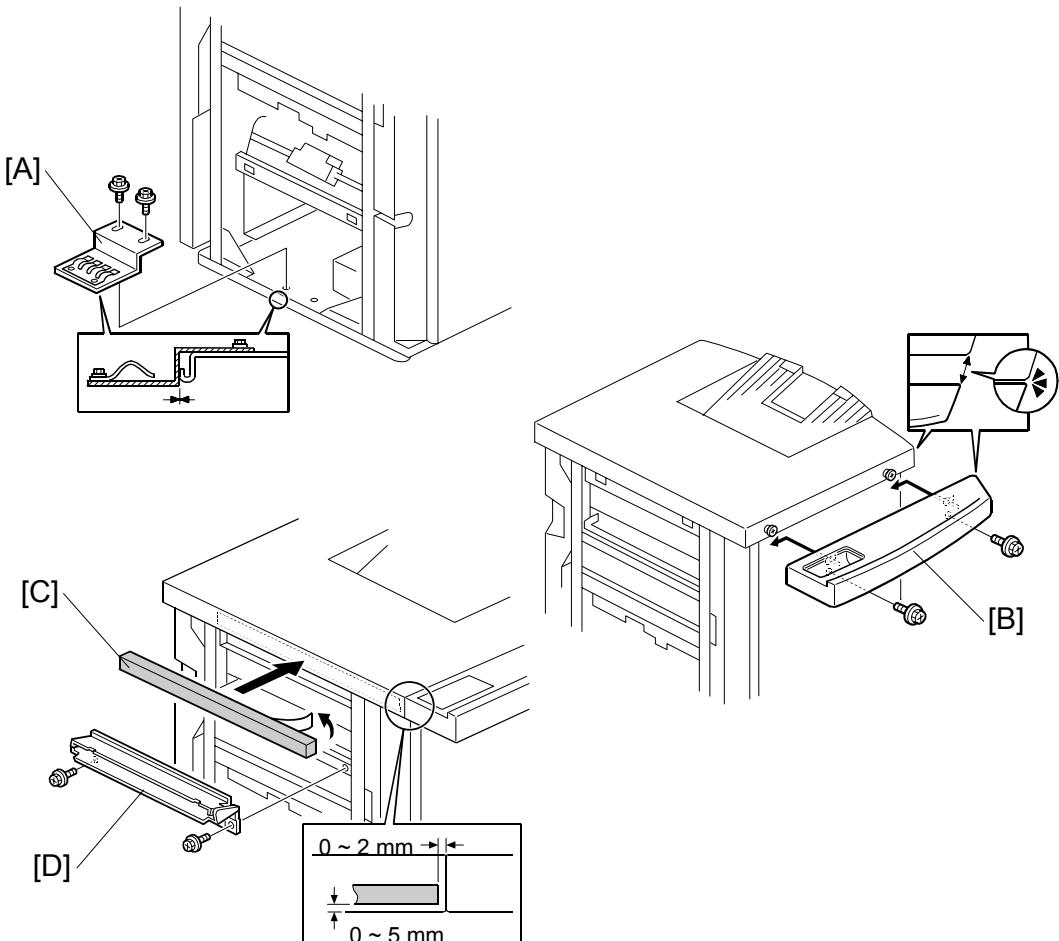
1.12.2 INSTALLATION



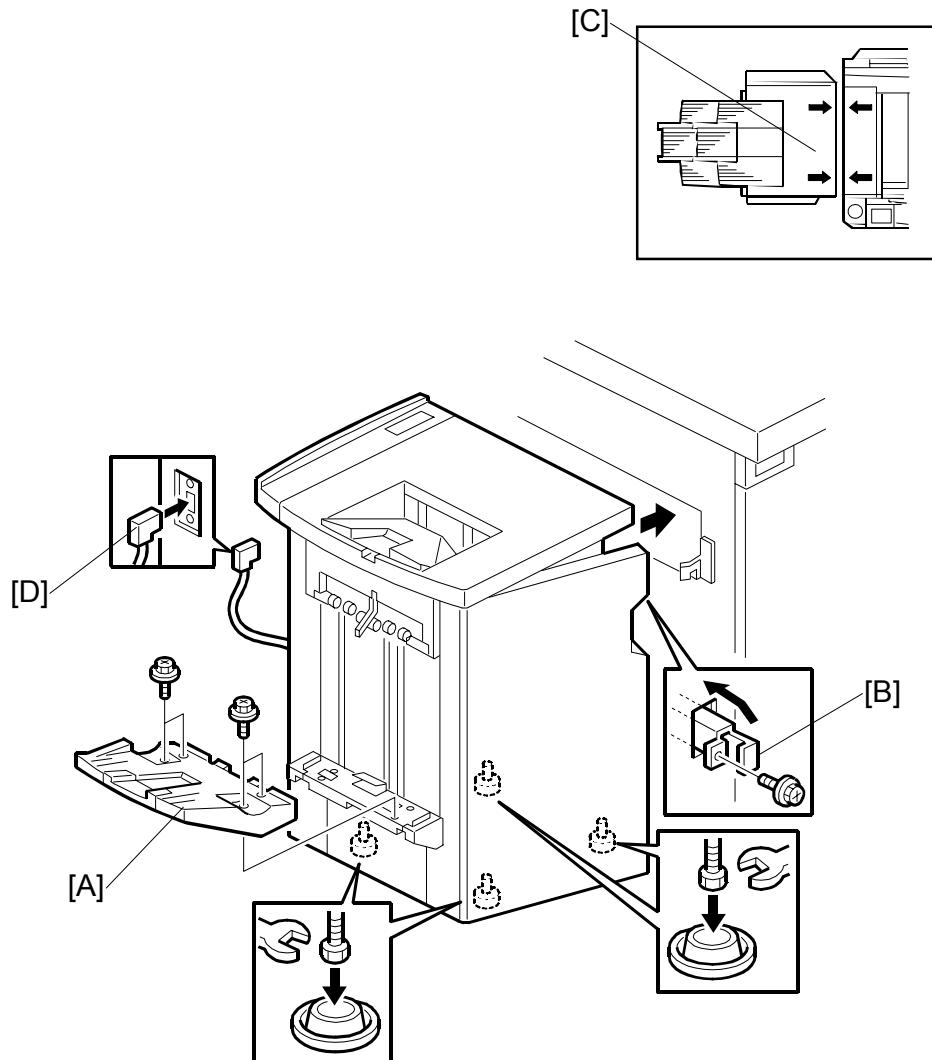
CAUTION

Unplug the machine power cord before starting the following procedure.

1. Unpack the finisher and remove all tapes and shipping retainers.
2. Open the front door and remove the shipping retainers. Remove brackets [A], [B], and [C] ($\frac{1}{4}$ x 2 each).
3. Install the front joint bracket [D] and rear joint bracket [E] ($\frac{1}{4}$ x 2 each) (M4 x 14) on the left side of the copier.
4. Remove the connector cover [F].



5. Install the grounding plate [A] ($\frac{3}{8} \times 2$) (M3 x 6).
NOTE: Set the grounding plate so that there is no gap between the grounding plate and the bottom frame of the finisher (as shown).
6. Install the table extension [B] as shown ($\frac{3}{8} \times 2$) (M4 x 8).
NOTE: The edge of the table extension should be aligned with the edge of the finisher (as shown).
7. Attach the cushion [C] to the right side of the upper cover.
NOTE: 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.
8. Install the entrance guide plate [D] ($\frac{3}{8} \times 2$) (M3 x 6).



9. Attach the shift tray [A] ($\frac{1}{4}$ x 4) (M3 x 8).
 10. Open the front door of the finisher, and remove the screw from the locking lever, then pull out the locking lever [B].
 11. Align the finisher on the joint brackets, and lock it in place by pushing in the locking lever [B].
- NOTE:** Before securing the locking lever, make sure that the top edges of the finisher and the copier are parallel from front to rear as shown [C].
12. Secure the locking lever [B] ($\frac{1}{4}$ x 1) and close the front door.
 13. Connect the finisher cable [D] to the copier.
 14. Set the leveling shoes (x 4) under the feet and level the machine.

1.12.3 WHEN YOU MOVE THE FINISHER TO A NEW LOCATION

Before you move the finisher, do SP6107-003. This moves the mechanisms to their home positions.

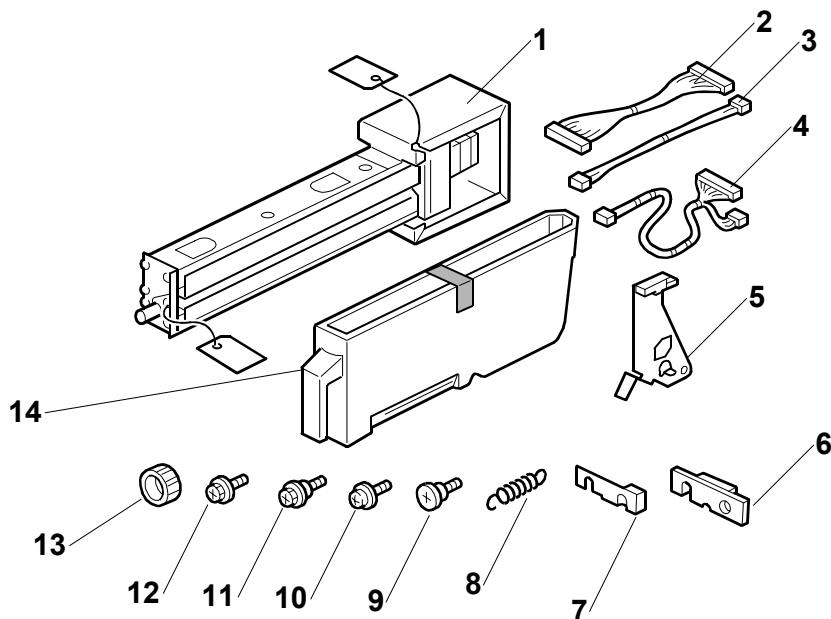
After you move the finisher, the mechanisms go back to the ready condition automatically, after you turn the power on.

1.13 PUNCH UNIT (B531/A812)

The Punch Unit B531/A812 is installed in the 3000-Sheet Finisher B478/B706.

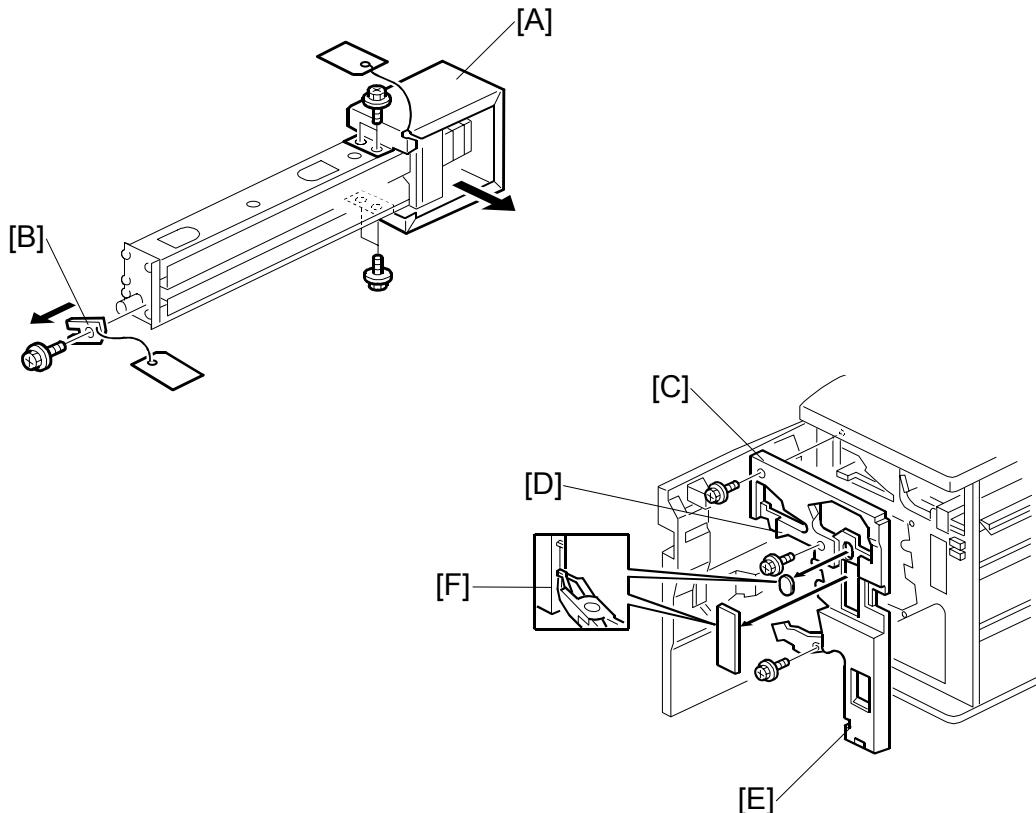
1.13.1 ACCESSORY CHECK

Check the accessories and their quantities against this list:



Description	Q'ty
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

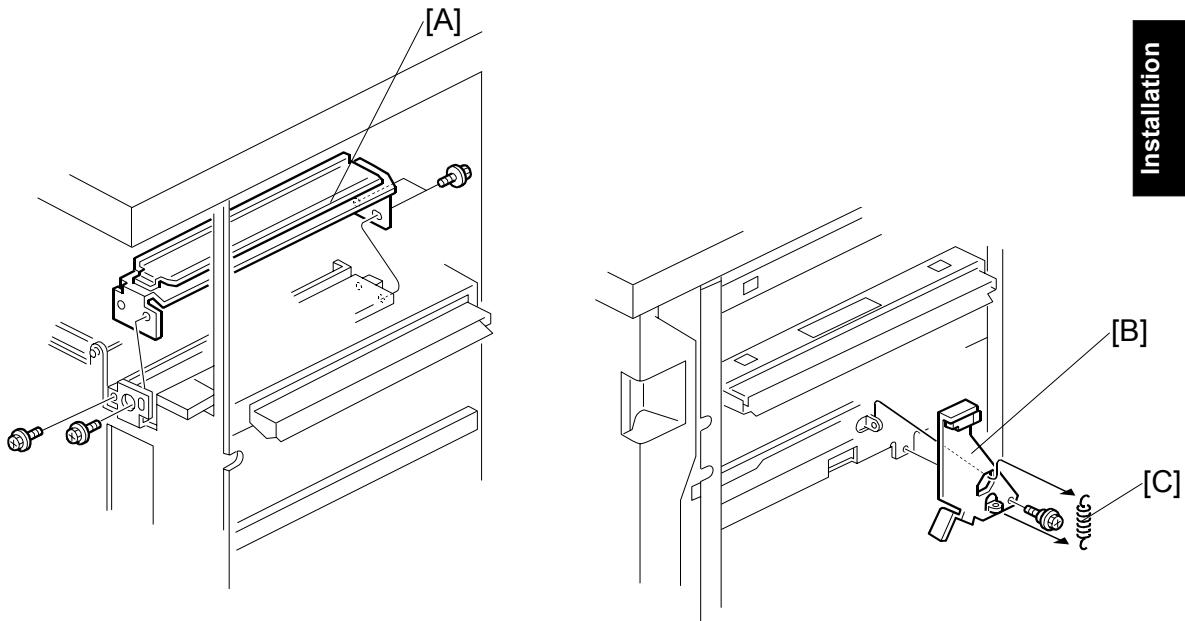
1.13.2 INSTALLATION



CAUTION

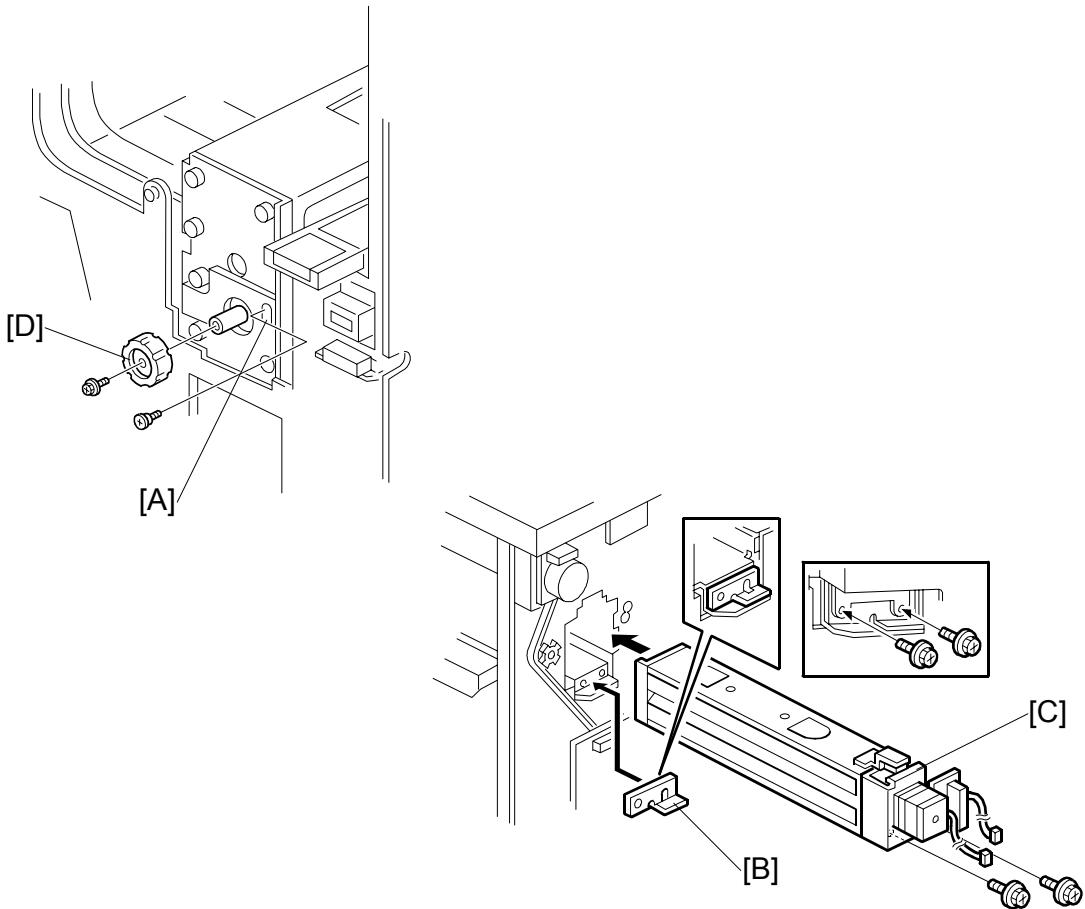
Switch the machine off and unplug the machine before starting the following procedure.

1. If the finisher is connected to the machine, disconnect it.
2. Open the front door and remove the rear cover (\wedge x 2).
3. Unpack the punch unit and remove the motor protector plate [A] (\wedge x 4) and the cam lock plate [B] (\wedge x 1).
4. Remove the inner cover [C] (\wedge x 3).
5. Behind the inner cover at [D] and [E], press the lock tab to the right to release the inner cover from the frame.
6. Remove the plastic knockouts [F].



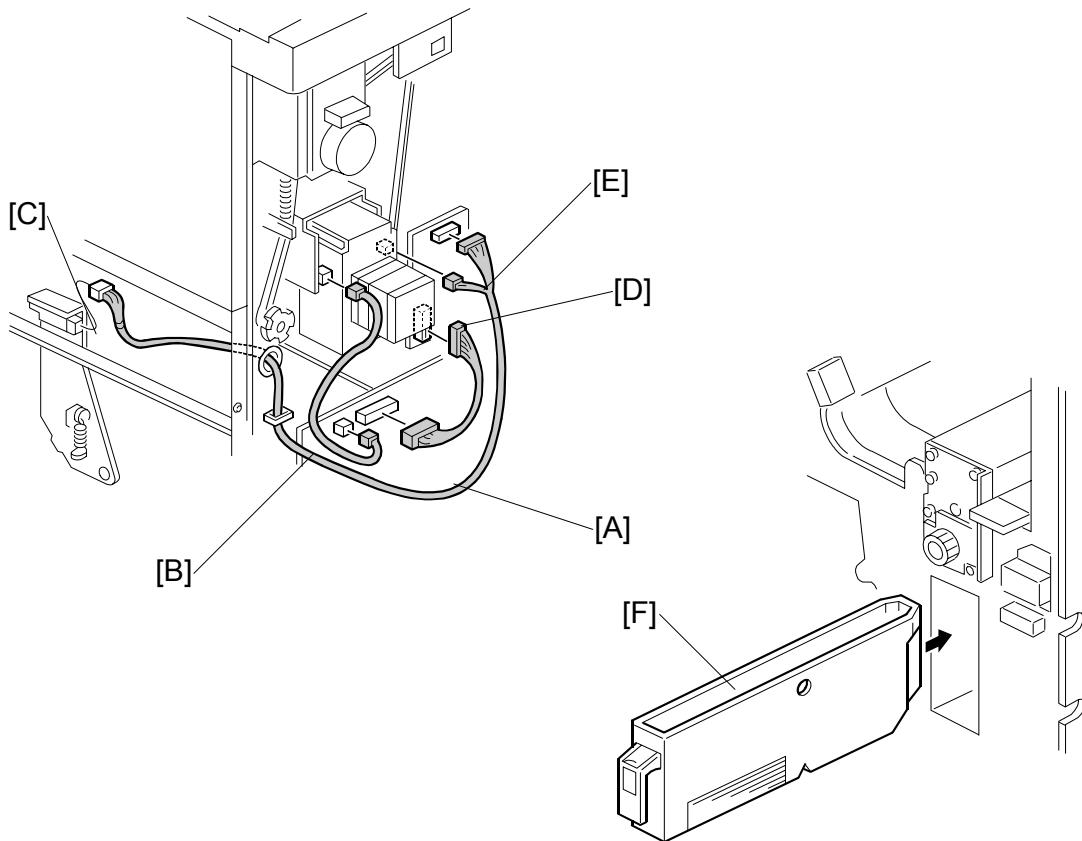
7. Remove the paper guide [A] (\wedge x 4).
8. Install the sensor arm [B] (\wedge x 1, small step screw (M3 x 4).
NOTE: Make sure that the sensor arm swings freely on the step screw.
9. Attach the spring [C].

PUNCH UNIT (B531/A812)



10. At the front, secure the punch unit [A] with the large step screw ($\frac{1}{8}$ x 1, M4 x 10).
11. At the rear, position the 2 mm spacer [B] and attach the punch unit [C] ($\frac{1}{8}$ x 2, M4 x 10).

NOTE: 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.
12. At the front, fasten the punch unit knob [D] ($\frac{1}{8}$ x 1).



13. Connect the PCB harness connector [A] to CN129 of the finisher PCB and to CN600 of the punch unit PCB.
14. Connect the HP Sensor 2 harness connector [B] to CN130 of the finisher PCB and to HP Sensor 2.
15. Connect the single end of the hopper full sensor connector cable [C] to the hopper full sensor on the arm (□ x 1, clamp x 1), then connect the other two connectors to HP Sensor 1 [D] and CN620 [E] 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.
16. Slide the hopper [F] 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.

1.14 JOGGER UNIT (B513)

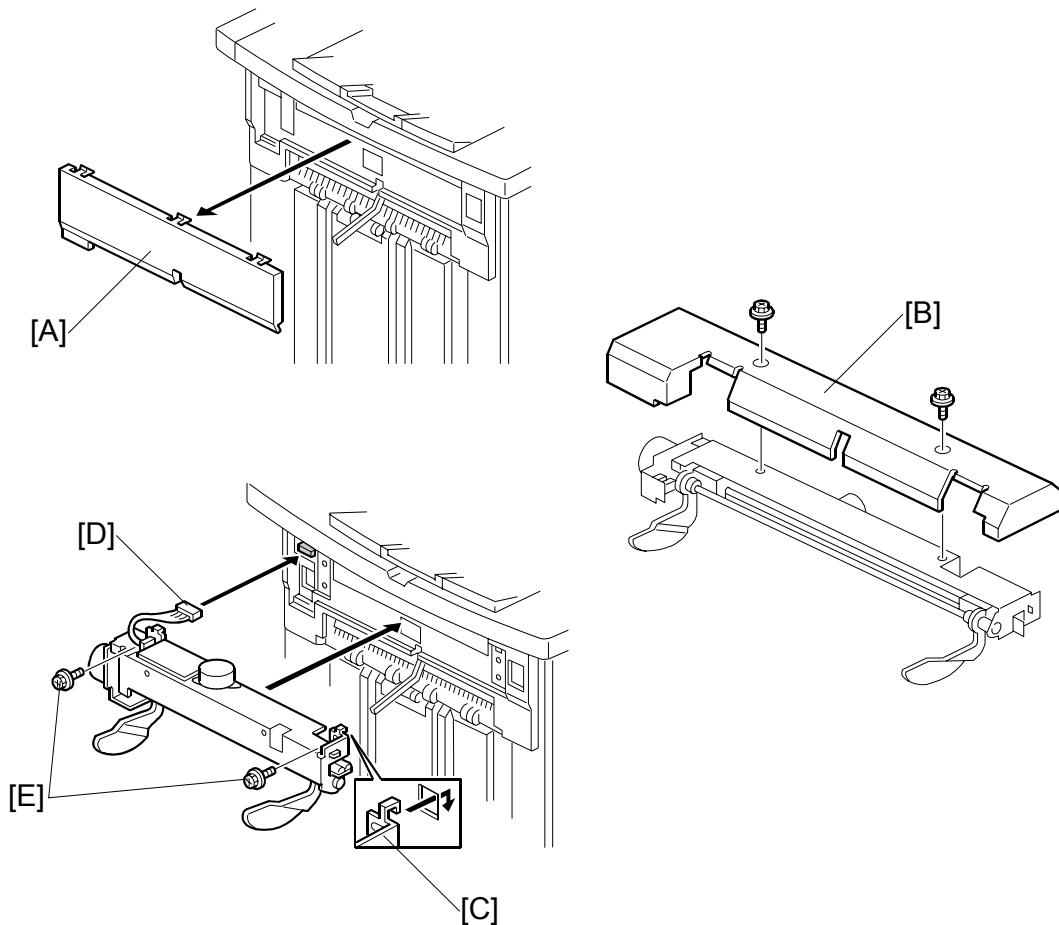
The Jogger Unit B531 is installed in the 3000-Sheet Finisher B478/B706.

1.14.1 ACCESSORY CHECK

Check the accessories and their quantities against this list:

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

1.14.2 INSTALLATION



1. Turn the main machine switch off and disconnect the finisher from the main frame.
2. Use the flat head of a screw driver to remove the left upper cover [A] from the finisher and discard it.
3. Remove the cover plate [B] from the jogger unit (x 2). Save the screws.
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).

1.15 Z-FOLDING UNIT B660

The Z-Folding unit can be installed only on the 3000-Sheet Finisher B674.

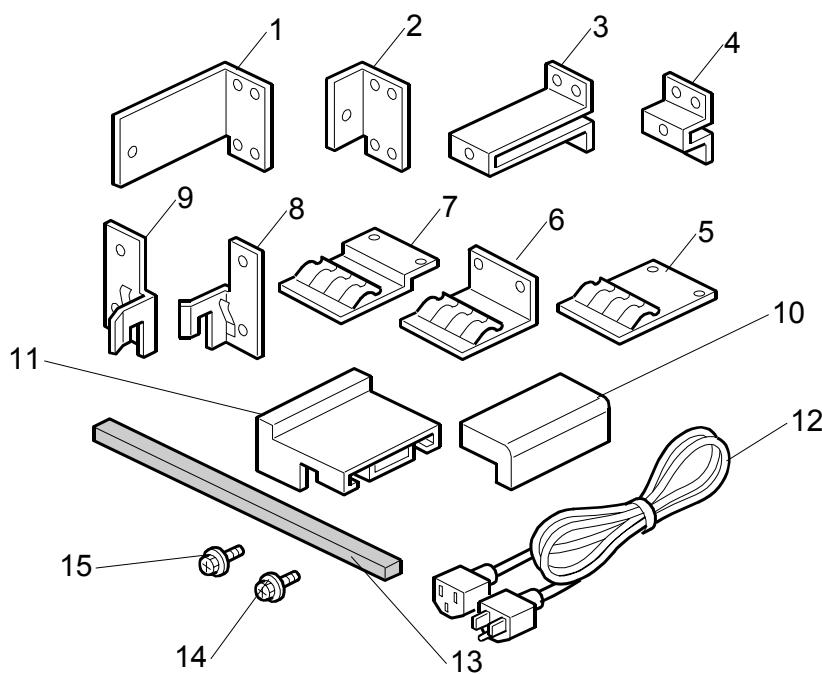
1.15.1 ACCESSORY CHECK

Check the accessories and their quantities against this list:

Description	Q'ty
1. Lock Bracket – Rear (Cover Interposer Tray)	1
2. Lock Bracket – Rear	1
3. Lock Bracket – Front (Cover Interposer Tray)*1	1
4. Lock Bracket – Front*1	1
5. Ground Plate (Cover Interposer Tray)	1
6. Ground Plate (Z-folding unit)	1
7. Ground Plate (Finisher or Cover Interposer Tray)	1
8. Right Docking Bracket	1
9. Left Docking Bracket	1
10. Front Spacer *2	1
11. Rear Spacer *2	1
12. Power Cord.....	1
13. Sponge Strip.....	1
14. Screws M3 x 6	8
15. Screws M4 x 6	8

*¹ Items 3, 4, are not required for the B706 (SR841) with B070/B071.

*² Items 10, 11 are not required for the B674 (SR861)



1.15.2 INSTALLATION PROCEDURE

Installation

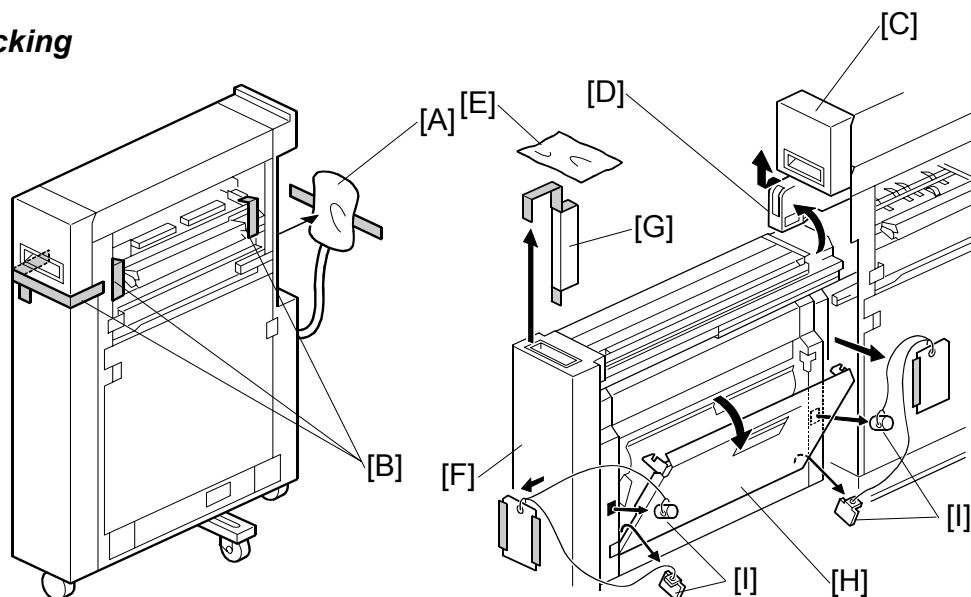
CAUTION

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

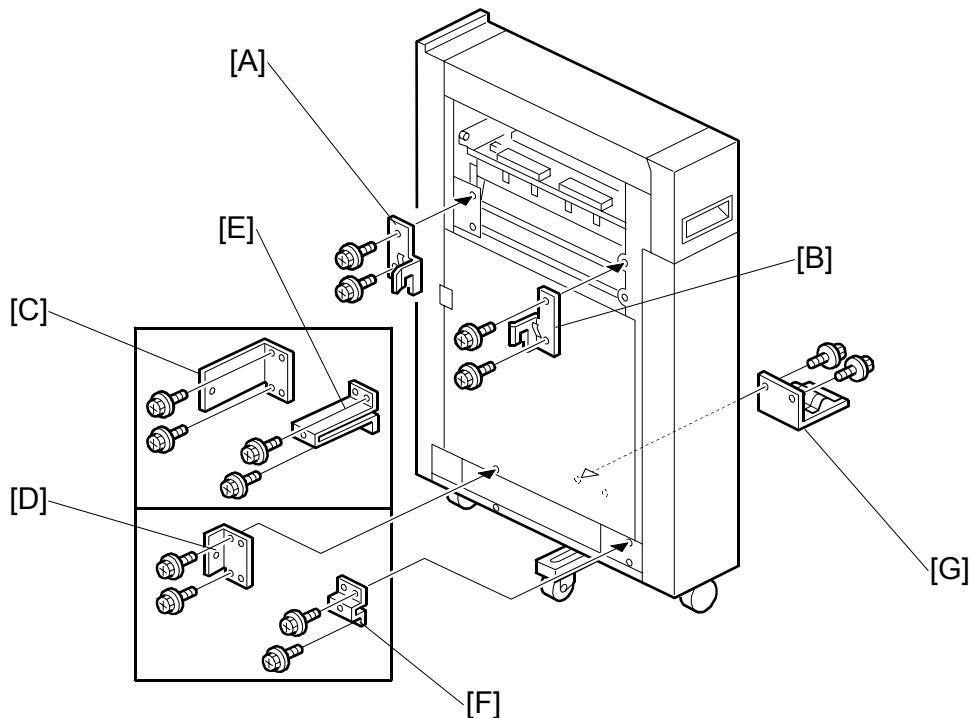
Before You Begin

- Do the installation procedure for the finisher but do not dock it to the machine. The Z-folding unit must be installed between the finisher and the main machine.
- Do the installation for the cover interposer tray (if necessary).
- If the finisher is already installed, disconnect the finisher from the main machine. (If the cover interposer tray is installed on the finisher, it is not necessary to remove the cover interposer tray.)

Unpacking



1. Detach the head of the I/F connector [A].
2. Remove all tape [B] from unit.
3. Open the front door [C].
4. Raise the horizontal transport plate [D] and remove the cushion [E].
5. Pull out the Z-folding mechanism [F] and remove the cushion [G].
6. Open the right vertical transport cover [H].
7. Remove four spacers [I] by pulling on the string.

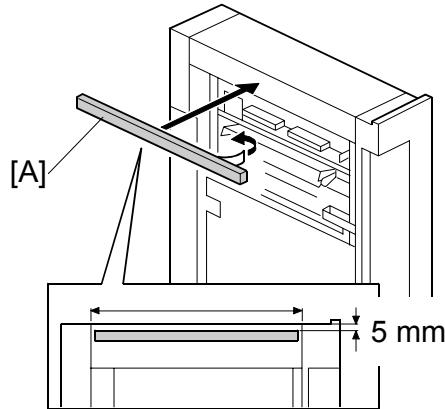
Docking to the Finisher

1. Remove the back cover of the finisher (\wedge x 2).
2. Attach the left docking bracket [A] to the Z-folding unit (\wedge x 2) (Bracket provided with the finisher).
3. Attach the right docking bracket [B] to the Z-folding unit (\wedge x 2). (Bracket provided with the finisher).
4. Attach the rear locking bracket (\wedge x 2).
 - Attach rear bracket [C] if the cover interposer tray is installed.
 - Attach rear bracket [D] if cover interposer tray is not installed.
5. Attach the front locking bracket (\wedge x 2).

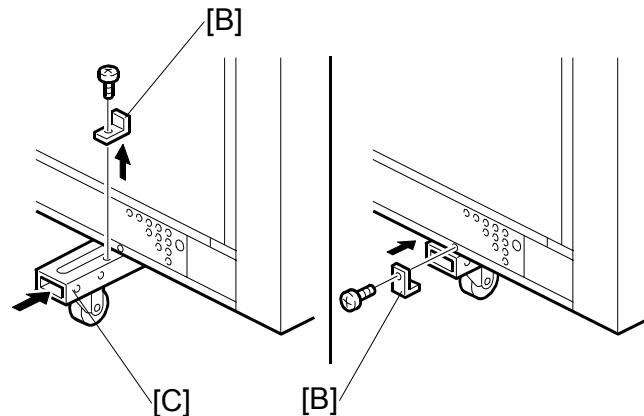
NOTE: This step is required only when the Z-folding unit is installed with the B674 (SR861).

 - Attach front bracket [E] if the cover sheet interposer is installed.
 - Attach front bracket [F] if the cover sheet interposer is not installed.
6. Attach the ground plate [G] to the Z-folding unit (\wedge x 2).

1. Remove the tape from the sponge [A] and attach it to the Z-folding unit.

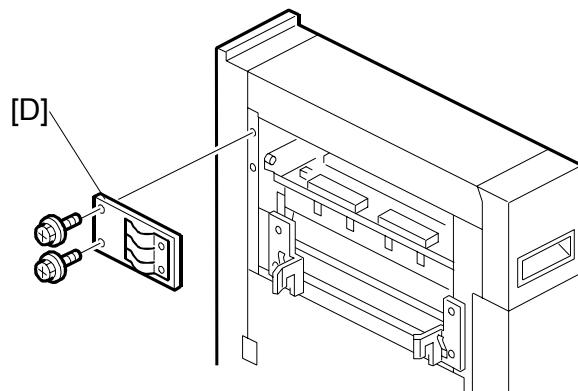


2. At the left bottom edge of the Z-folding unit, remove the bracket [B] (\wedge x 1).
3. Push in the support [C].
4. Reattach the bracket [B] (\wedge x 1).

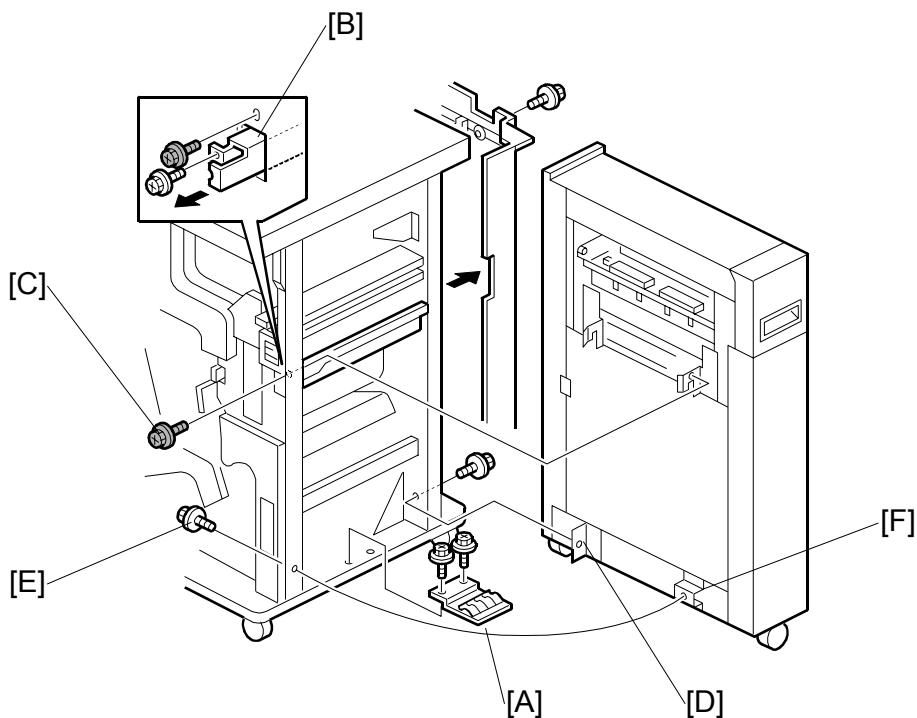


5. If the cover interposer tray is attached to the finisher, attach the ground plate [D] to the Z-folding unit (\wedge x 2)

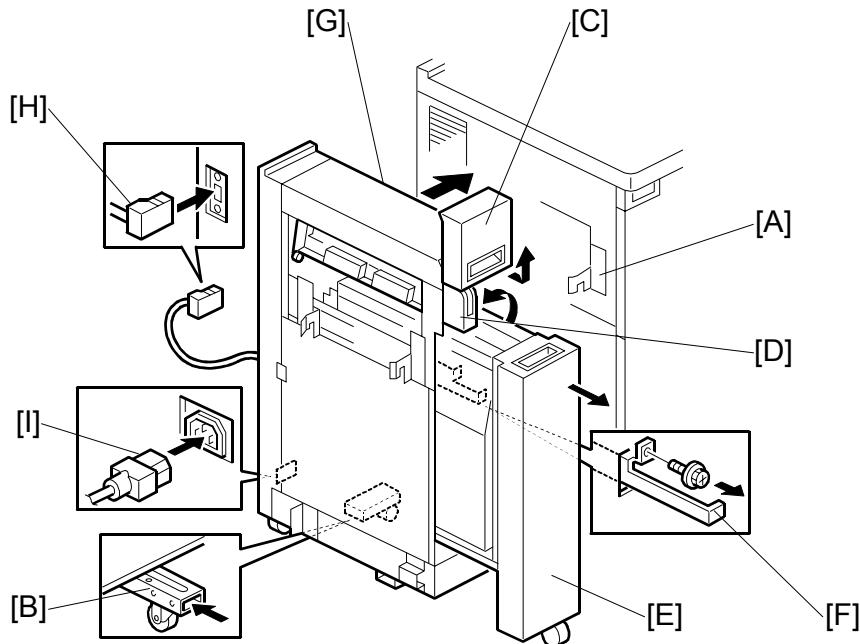
CAUTION
With the support retracted,
the Z-folding unit tips easily!



Z-FOLDING UNIT B660

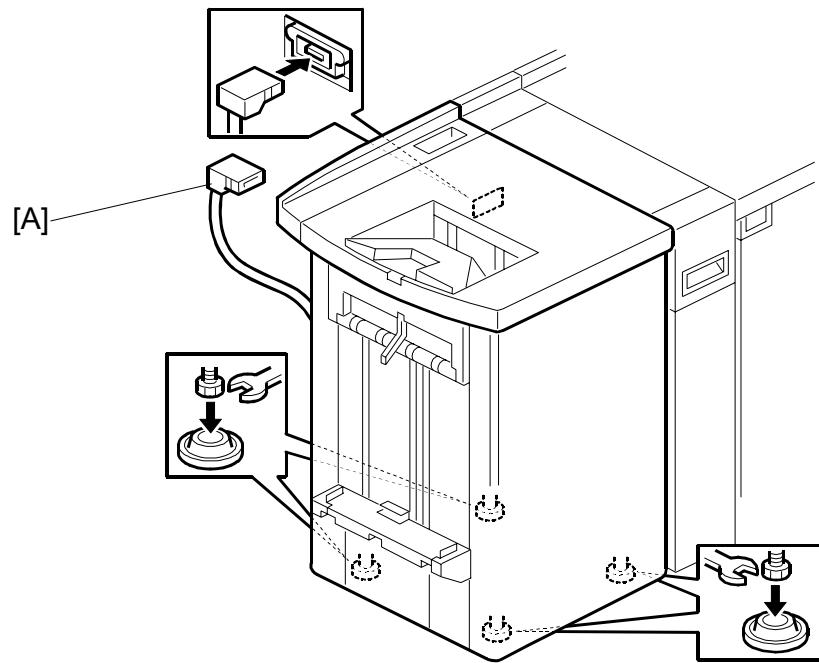


6. Attach the ground plate [A] ($\frac{1}{4}$ x 2) to the finisher (or the cover interposer tray).
NOTE: This is the ground with the flat plate attached with 2 vertical screws.
7. Open the front door of the finisher.
8. Pull out the lock lever [B] of the finisher ($\frac{1}{4}$ x 1).
-or-
If the cover interposer tray is installed, pull out the lock lever of the cover interposer tray.
9. Dock the Z-folding unit to the finisher.
10. Fasten the screw [B] ($\frac{1}{4}$ x 1).
11. Fasten screw [E] to front lock bracket [F].
12. Fasten the rear lock bracket [D] ($\frac{1}{4}$ x 1).

Docking to the Main Frame

1. Fasten the two docking brackets [A] (provided with the Z-folding unit) to the main machine ($\frac{1}{4}$ x 2 each).
2. At the right bottom edge of the Z-folding unit, remove the screw and bracket, push in the support [B], then reattach the screw and bracket
3. Pull the top cover [C] toward you then raise it.
4. Raise the horizontal transport plate [D] to the left.
5. Pull out the Z-folding mechanism [E].
6. Pull out the Z-folding unit lock lever [F] ($\frac{1}{4}$ x 1).
7. At the right bottom edge of the Z-folding unit, confirm that the breaker switch is ON.
NOTE: This switch should display “—”. If you see “O”, set the switch to “—”. The machine will not recognize the Z-folding unit if this switch is off.
8. Dock the Z-folding unit [G] to the main machine.
9. Push in the lock lever [F] and fasten it ($\frac{1}{4}$ x 1).
10. Push in the Z-folding mechanism [E], lower the horizontal transport plate [D], then close the front door [C].
11. Attach the I/F cable [H] of the Z-folding unit to the main machine.
12. Connect the power cord [I] to the Z-folding unit.

Z-FOLDING UNIT B660



13. Reattach the finisher rear cover ($\wedge \times 2$).
14. Connect the I/F cable [A] of the finisher to the Z-folding unit.

1.16 MFP OPTIONS: B064 SERIES

1.16.1 PRINTER/SCANNER KIT (G338), PRINTER KIT (G339)

ACCESSORY CHECK

Check the accessories and their quantities against this list:

Description	Q'ty
1. Scanner/Printer DIMM (G338) or Printer DIMM (G339)	1
2. Centronics Interface	1
3. NIB	1
4. Screws - M3 x 8.....	2
5. Ferrite Core	1
6. Key Top Assembly	1
7. Operating Instructions – Printer.....	1
8. Installation Instructions.....	1
9. FCC Label	1
10. Software CD-ROM	3

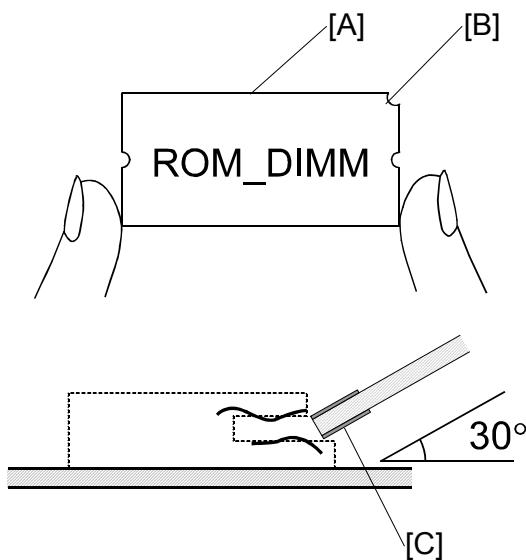
1.16.2 INSTALLATION PROCEDURE

Inserting DIMMs

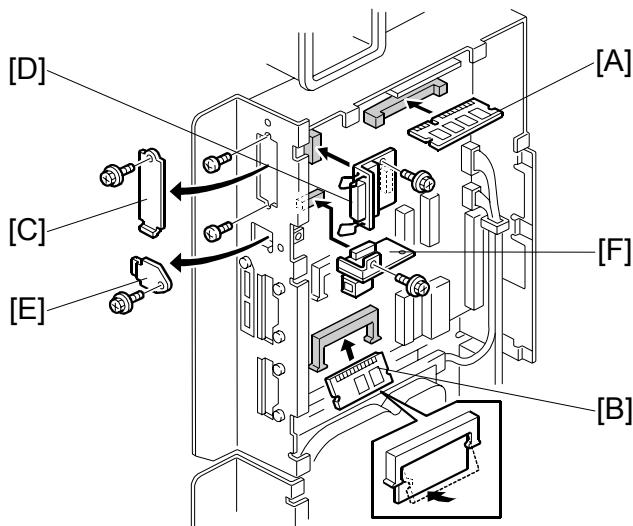
Read this section carefully before installation so you know how to insert the DIMMs correctly.

CAUTION

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.

Installation Procedure**⚠ CAUTION**

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

NOTE: The printer/scanner unit requires at least 128 MB of memory (more is recommended). Memory chips are not packaged with this unit.

1. Disconnect the ADF cable.
2. Remove the rear upper cover (\wedge x 2).
3. Remove the controller cover (\wedge x 10).

⚠ CAUTION

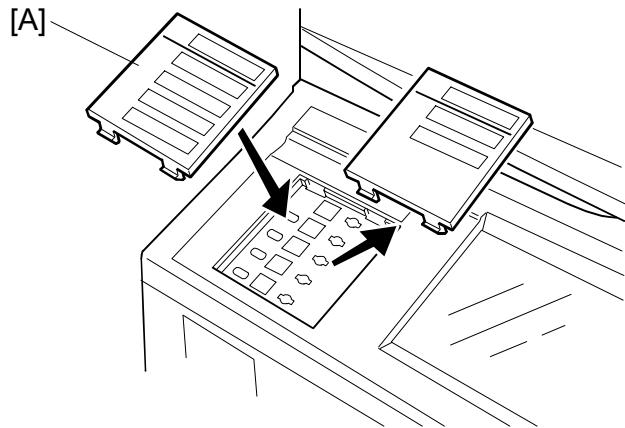
Make sure that the DIMMs are inserted correctly. (☞ 1.16.2)

4. Insert the SDRAM DIMM (expansion memory 128 MB or 256 MB) [A] into PC133 on the controller.
5. Insert the ROM DIMM [B] (printer/scanner) board into Slot 1.
6. Remove the Centronics connector cover [C] and insert the Centronics connector [D] into CN310 and fasten with the provided screws (\wedge x 2).

Rating voltage of interface connectors: Max. DC 5V

7. Remove the slot covers [E] (\wedge x 2).
8. Install the NIB [F] into CN311 (\wedge x 1).

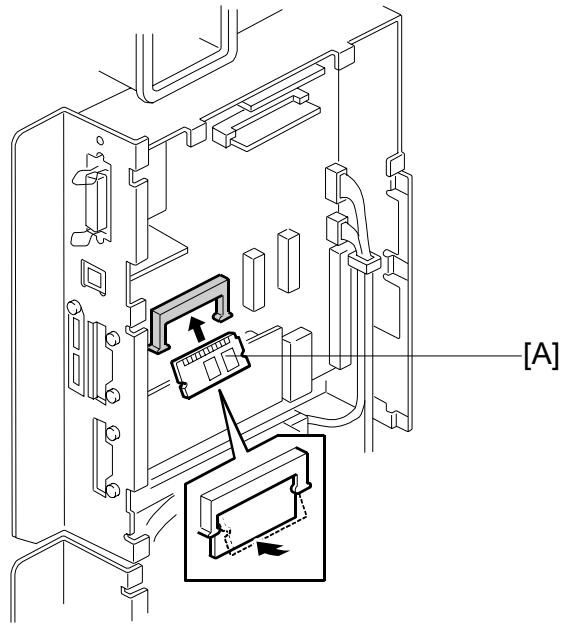
Rating voltage of interface connectors: Max. DC 5V



9. Make sure that the following SP commands are set correctly.
 - SP5811 – Machine No. Setting
 - SP5907 – Plug & Play
10. Attach the provided decal near the machine name on the copier.
11. Wrap the Ethernet cable three times inside the ferrite core, close the ferrite core, then connect the modular jack to the NIB.
12. Follow the procedures in the instruction manuals to perform the user settings.
13. Replace the key top assembly [A].

1.16.3 PS3 (B525-08)

Installation



1. Remove the rear upper cover ($\wedge \times 2$).
2. Remove the controller cover ($\wedge \times 9$).
3. Insert the PS3 module [A] into Slot 2.

⚠ CAUTION

Make sure that the DIMM is inserted correctly. (→1.16.2)

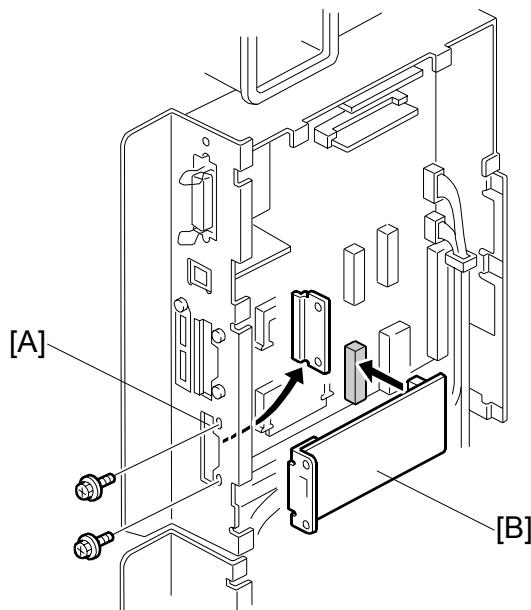
1.16.4 USB 2.0 (B525-01)

ACCESSORY CHECK

Check the accessories and their quantities against this list:

Description	Q'ty
1. USB 2.0 PCB.....	1

Installation Procedure



CAUTION

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

1. Remove the rear upper cover (x 2).
2. Remove the controller cover (x 9).
3. Remove the slot cover [A] (x 2).
4. Insert the USB board [B] into the PCI slot.
5. Fasten the slot cover to the USB board (x 2).
6. Use SP5990-005 to print a Self-Diagnostic Report with the system settings and confirm that the machine correctly recognizes the interface.

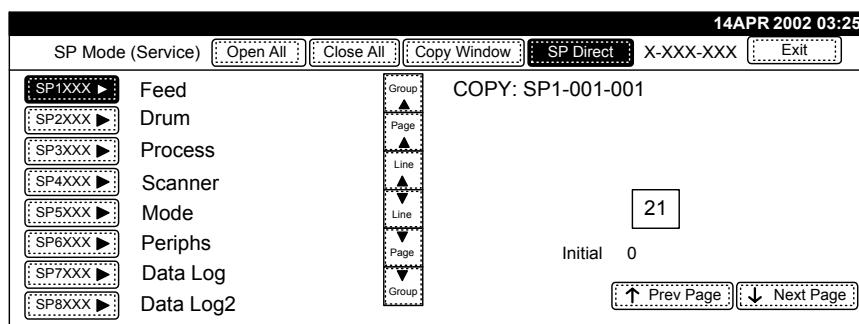
USB SP Settings

The following SP commands are available. However, only one setting may require adjustment and this setting should be performed only if the customer is experiencing USB data transmission errors.

NOTE: Do not change the settings marked “DFU”. These settings are for design and factory use only.

To enter the SP mode:

1. Press Clear Modes 
2. On the operation panel keypad, press   .
3. Hold down Clear/Stop  for more than 3 seconds.
4. Press “Copy SP” on the touch-panel to open the SP command selection screen.



5. Enter    .

SP No.	Name	Function
5844-001	Transfer Rate	Adjusts the USB transfer rate. Do not change the setting unless there is a data transfer error using the USB high speed mode. HS/FS: High speed/Full speed auto adjust (480Mbps/12Mbps) FS: Full speed (12Mbps fixed)
5844-002	Vendor ID	Displays the vendor ID. DFU
5844-003	Product ID	Displays the product ID. DFU
5844-004	Dev. Release Num	Displays the development release version number. DFU

1.16.5 IEEE1394 (G561) FIREWIRE INTERFACE

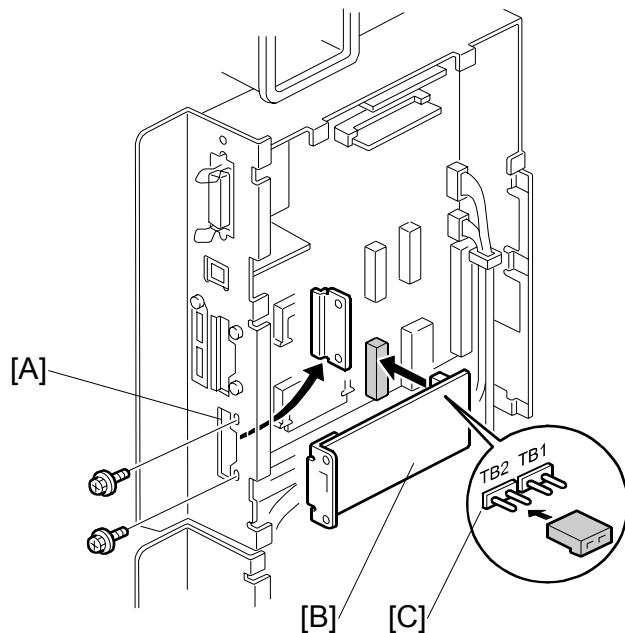
ACCESSORY CHECK

Check the accessories and their quantities against this list:

Description	Q'ty
1. IEEE-1394 Cable 2M 4PI	1
2. IEEE-1394 Cable 2M 6PI	1
3. PCB GW1394.....	1

Installation Procedure

Installation

**CAUTION**

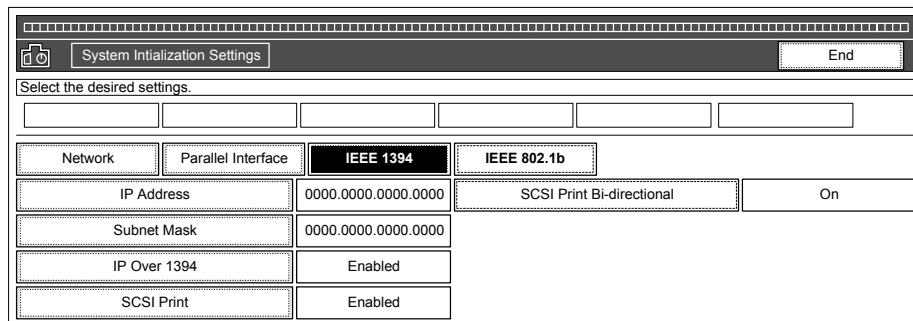
Switch the machine off and unplug the machine before starting the following procedure.

1. Remove the rear upper cover (\wedge x 2).
2. Remove the controller cover (\wedge x 9).
3. Remove the slot cover [A] (\wedge x 2).
4. Attach the IEEE1394 board [B].
5. Use the provided cable to connect the machine and the computer.
6. Make sure that the jumper is on TB2 [C].
7. Print a system settings list and confirm that the machine correctly recognizes the interface.

UP Mode Settings for IEEE 1394

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

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



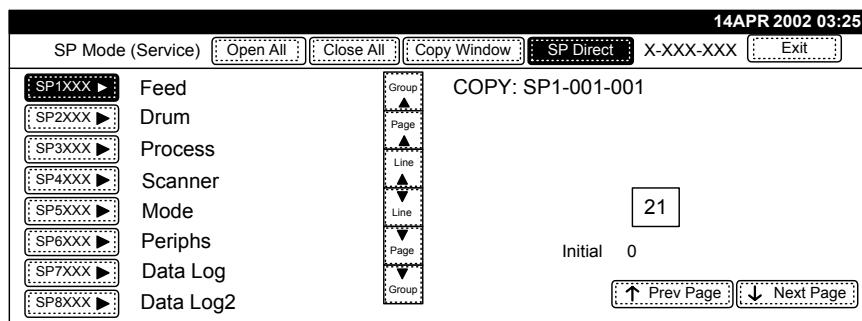
4. Press the key and enter the following settings:
 - IP Address
 - Subnet Mask
 - IP Over 1394. Enable or disable this setting as required. This setting enables IP Over 1394 as the default setting for the printing method.
 - SCSI Print. Enable or disable this setting as required. This setting enables SCSI Print as the default setting for the printing method.
 - SCSI Print Bi-directional. Switch bi-directional printing on or off for SCSI print.

SP Mode Settings for IEEE 1394

The following SP commands can be set for IEEE 1394.

To enter the SP mode:

1. Press Clear Modes 
2. On the operation panel keypad, press **①①⑦**.
3. Hold down Clear/Stop  for more than 3 seconds.
4. Press “Copy SP” on the touch-panel to open the SP command selection screen.



5. Enter **⑤⑧③⑨**.

SP No.	Name	Function
5839-004	Device Name	Sets the names for all the physical devices connected to the IEEE 1394 firewire network.
5839-007	Cycle Master	Enables or disables cycle master function of the IEEE 1394 standard bus.
5839-008	BCR Mode	Sets the BCR (Broadcast Channel Register) setting for the Auto Node operation for the standard IEEE1394 bus for when IRM is not in use. Three settings are available: 00, 01, 11.
5839-009	IRM 1394a Check	Determines whether an IRM check for IEEE 1394 is conducted for the Auto Node when IRM is not used.
5839-010	Unique ID	Enables the “Node_Uuid_Id” setting for enumeration on the standard IEEE 1394 bus.
5839-011	Logout	Determines how successive initiator login requests are handled during login for SBP-2.
5839-012	Login	Enables or disables exclusive login for SBP-2.
5839-013	Login MAX	Sets the limit for the number of logins for SBP-2. Range: 1 ~ 62.

1.16.6 IEEE802.11B WIRELESS LAN (G628)

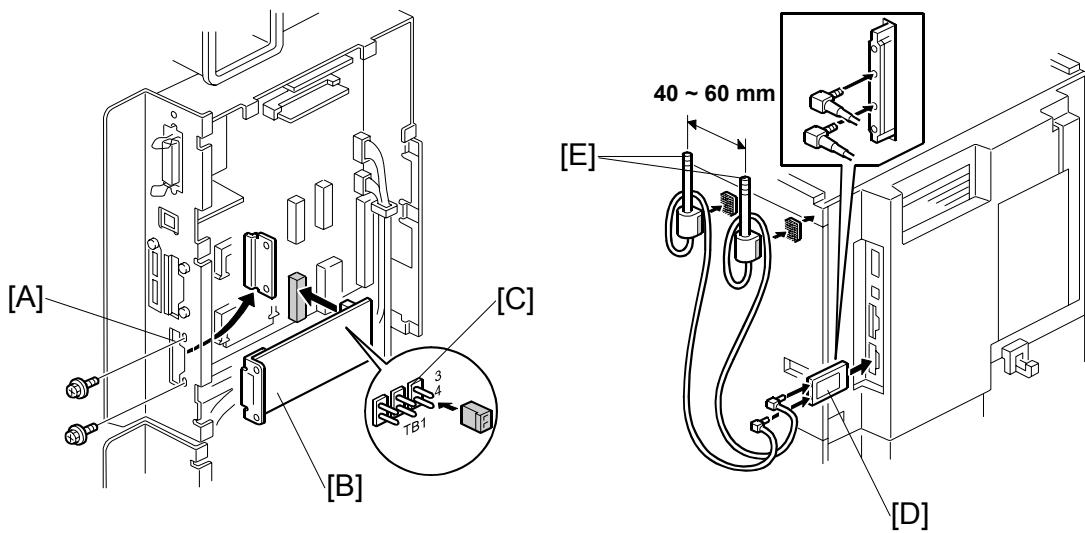
ACCESSORY CHECK

Check the accessories and their quantities against this list:

Description	Q'ty
1. Wireless LAN PCB (GW-WLAN)	1
2. Antenna (GW-WLAN) (options).....	2
3. Card (GW-WLAN)	1
4. Wireless LAN Instructions	1

Installation Procedure

Installation

**CAUTION**

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

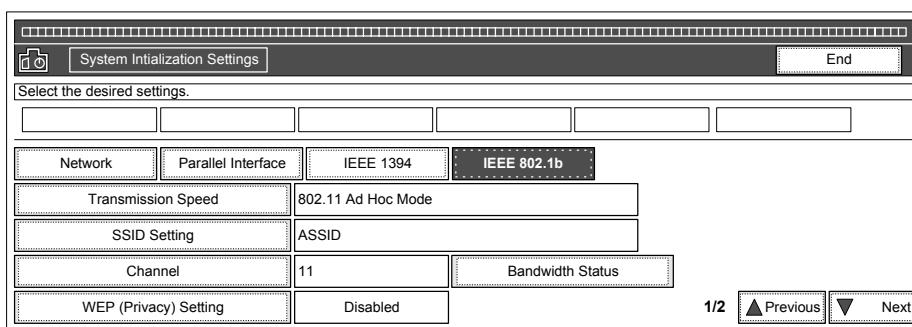
1. Remove the rear upper cover (\wedge x 2).
2. Remove the controller cover (\wedge x 9).
3. Remove the slot cover [A] (\wedge x 2).
4. Insert the wireless LAN board [B] into the PCI Slot 1.
5. Fasten the slot cover to the wireless LAN board (\wedge x 2).
6. Set the jumper [C] between pins 3 and 4 on the wireless LAN board.
7. Insert the LAN PC card [D] into the wireless LAN board.
8. Connect the antennas. Use the provided double-sided tape to attach the antennas [E] to the side of the machine.
NOTE: 1) Set the antennas 40~60 mm apart (1.5~2.5").
2) Attach the antennas where they will not be moved or damaged by opening and closing the door of the machine.
3) Set up the antenna in an area that is free of interference from electrical equipment that generates a strong electromagnetic field.
4) Always remove the antenna before moving the machine.
5) If reception is poor, move the machine and antenna closer to the access point.
9. Print a system settings list and confirm that the machine correctly recognizes the interface.

UP Mode Settings for Wireless LAN

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

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

1. Press the User Tools/Counter key.
2. On the touch panel, press System Settings.
- NOTE:** The Network I/F (default: Ethernet) must be set for either Ethernet or wireless LAN.
3. Select Interface Settings → Network (tab) → Network I/F Setting
4. Select either “Ethernet” or “IEEE 802.11b”.
5. Press IEEE 802.11b. Only the wireless LAN options are displayed.



6. **Transmission Mode.** Select either “Ad Hoc Mode” or “Infrastructure Mode”.
7. **SSID Setting.** Enter the SSID setting. (The setting is case sensitive.)
8. **Channel.** This setting is required when Ad Hoc Mode is selected.
Range: 1 ~ 14 (default: 11)
NOTE: The allowed range for the channel settings may vary for different countries.

9. **WEP (Privacy) Setting.** The WEP (Wired Equivalent Privacy) setting is designed to protect wireless data transmission. In order to unlock encoded data, the same WEP key is required on the receiving side. There are 64 bit and 128 bit WEP keys.

Range of Allowed Settings:

64 bit	10 characters
128 bit	26 characters

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

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

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

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

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

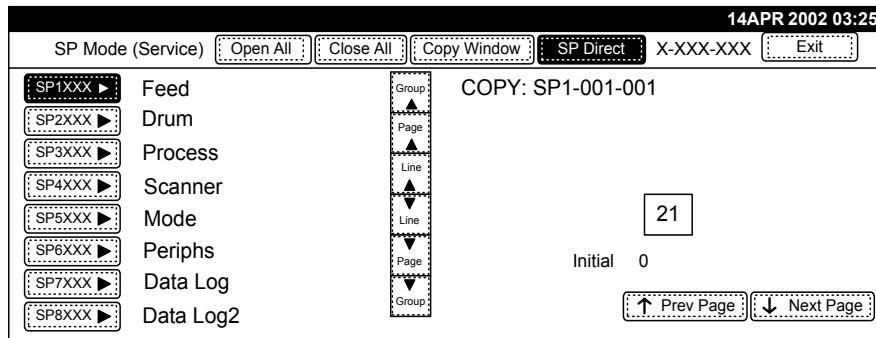
12. To initialize the wireless LAN settings, use page 2/2. Press Execute to initialize the following settings:

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

SP Mode Settings for 802.11b Wireless LAN

The following SP commands can be set for 802.11b

1. Press Clear Modes 
2. On the operation panel keypad, press **①①⑦**.
3. Hold down Clear/Stop  for more than 3 seconds.
4. Press “Copy SP” on the touch-panel to open the SP command selection screen.



5. Enter **⑤⑧④①**.

SP No.	Name	Function
5840-004	SSID	Used to confirm the current SSID setting.
5840-006	Channel MAX	Sets the maximum range of the channel settings for the country.
5840-007	Channel MIN	Sets the minimum range of the channels settings allowed for your country.
5840-010	WEP Key	Used to confirm the current WEP key setting.
5840-011	WEP Key Select	Used to select the WEP key (Default: 00).
5840-020	WEP Mode	Used to display the maximum length of the string that can be used for the WEP Key entry.

1.16.7 FILE FORMAT CONVERTER (MLB) (B519)

NOTE:

1. This table shows the special firmware versions to use with the Copy Connector Kit or File Format Converter (MLB option). When you install one of these options, it is necessary to install these firmware modules **together as a set**.

Software	Part Number	Version (1st released)
RA2K Controller: System	B5254108	5.07
RA2K Controller: Copy	B5254109	5.07
BCU	B5254123	5.03d
Printer/Scanner	B5255204	4.15/5.00
NIB/Netfile	B5254114	3.00/1.79
LCDC	B5254176 (NA)	2.04
	B5254177 (EU)	

2. With the Copy Connector/MLB modifications, the machine firmware is divided into 2 main groups:
 - 1) The Copy Connector/MLB group (this starts with the versions in the table above)
 - 2) The usual firmware that was used until this time, that is, for machines without the Copy Connector or MLB options.

Important: Do not mix firmware from these two. Always use firmware from **the same group**, or the machine will not operate correctly.
3. The MLB option cannot operate with any of these items installed. You must remove these before you start the procedure below:
 - Wireless LAN board
 - IEEE1394 I/F board
 - USB2.0 I/F board
 - Copy Connector Kit components
4. As shown above, the RA2K controller firmware for the Copy Connector/MLB group is divided into RA2K System and RA2K Copy. This is because the firmware is too large to go on one card.

ACCESSORY CHECK

Check the accessories and their quantities against this list:

Description	Q'ty
1. File Format Converter Board	1
2. MLB bracket.....	1
3. MLB panel.....	1
4. Screw M3 x 6	2

Installation Procedure



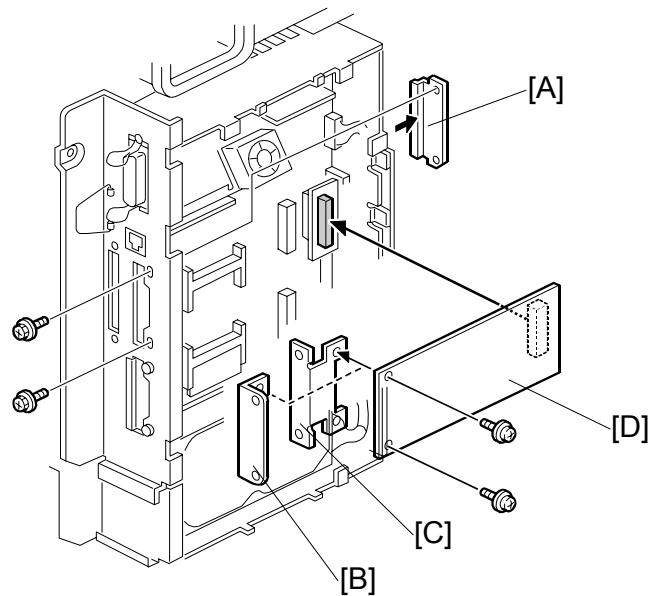
Unplug the main machine power code before you start this procedure.

Installing the Firmware

1. Remove the rear cover (Phillips x 2).
2. Remove the controller cover (Phillips x 10).
3. Turn on DIP SW2-1 on the controller board.
4. Install these firmware modules.
 - RA2K Controller (System and Copy)
 - Printer/Scanner
 - NIB Netfile
5. Turn off DIP SW2-1 on the controller board.
6. Install these firmware modules.
 - BCU
 - LCDC

Installing the Hardware

Installation



1. Remove the slot cover [A] (x 2).
2. Remove the bracket [B] and attach the MLB panel [C].
3. Attach the File Format Converter board [D] to the controller board (x 2).
4. Replace the controller board cover and rear cover.
5. Turn the main switch ON.
6. Do a network function Memory Clear (SP5801-010).
7. Do an NCS function Memory Clear (SP5801-011). This resets the network password to “password”.

NOTE: This step is necessary to make sure that the password is reset correctly.
8. Input these default values manually (SP5836).

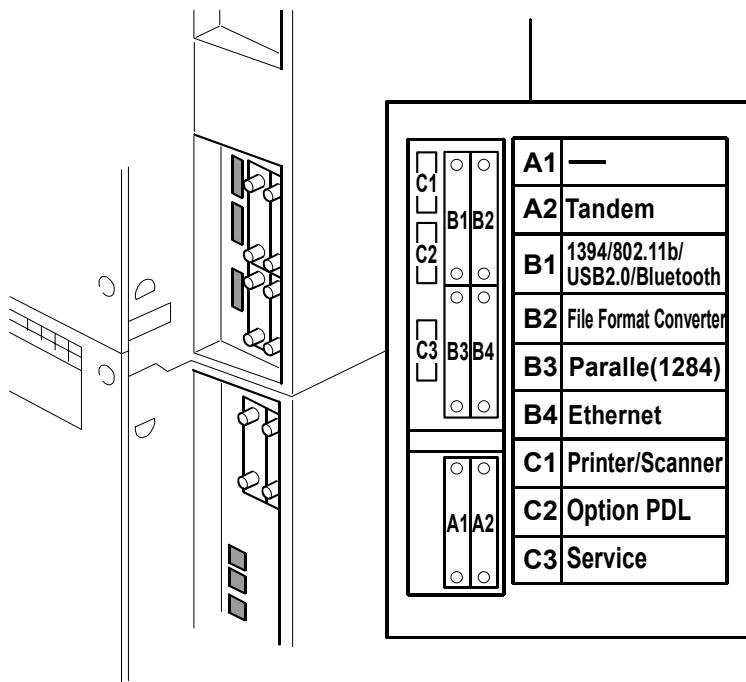
SP Number	Value	SP Number	Value
5836-001	0	5836-082	1
5836-002	0	5836-083	1
5836-072	0	5836-085	1
5836-073	0	5836-086	2
5836-075	0	5836-091	50
5836-076	1		

1.17 MFP OPTIONS: B140 SERIES

1.17.1 OVERVIEW

To make it easy to install MFP options, there are 6 slots (A1, A2, B1 to B4) for boards and 3 slots (C1 to C3) for SD cards on the controller box. Each board or SD card must be put 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).

MFP Option Slot Assignment



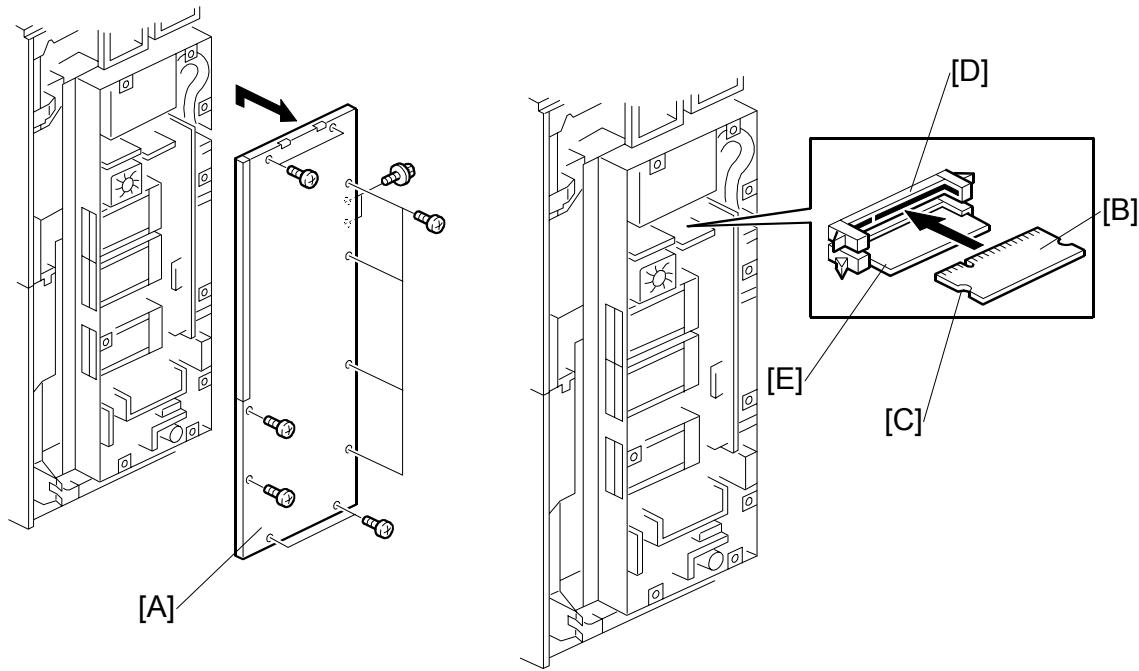
1.17.2 PRINTER/SCANNER KIT (B659)

ACCESSORY CHECK

Check the accessories and their quantities against this list:

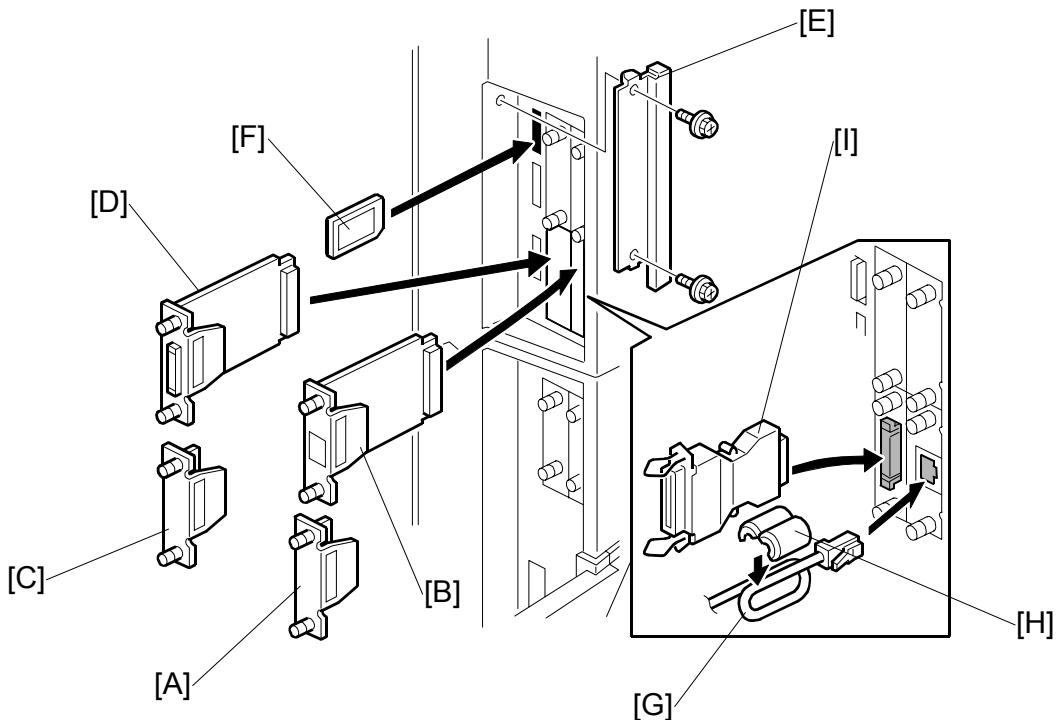
Description	Q'ty
1. 256 MB Memory DIMM	1
2. NIB Board	1
3. Centronics Board (IEEE 1284).....	1
4. Printer/Scanner SD Card	1
5. EULA Sheet.....	1
6. Caution Decal	1
7. Keytop	1
8. Ferrite Core.....	1
9. Adapter for NIB Board	1
10. Operating Instructions.....	1

NOTE: The optional 256 MB Memory Kit B585 is necessary for this installation.
This memory kit is not supplied with the Printer/Scanner Kit B580.

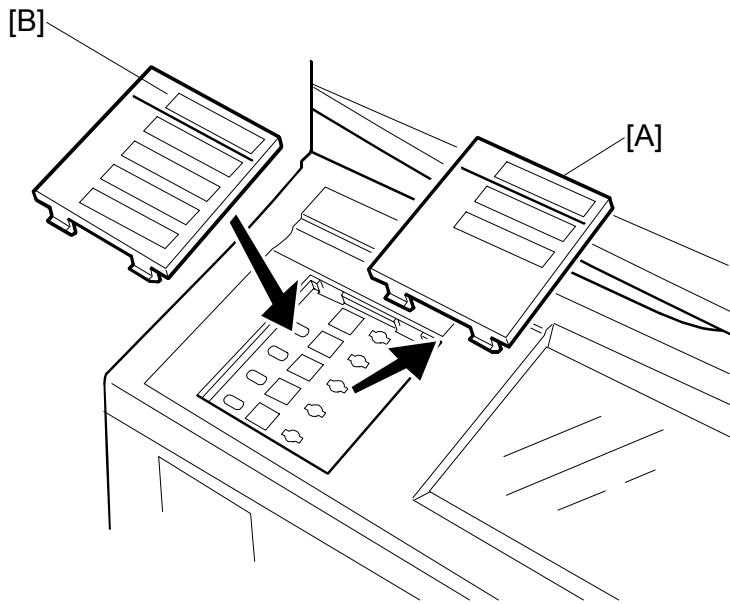
Installation**CAUTION**

Before you start this procedure, turn the machine off and disconnect the power plug from the power source.

1. Remove the controller box cover [A] (\wedge x 12).
2. Hold the 256 MB memory DIMM [B] with the slot [C] in the edge connector on the left.
3. Install the DIMM in the slot [D] above the other memory DIMM [E].
NOTE: To remove the memory DIMM, pull out the spring-loaded clips on one of the two ends of the DIMM.
4. Attach the controller box cover.



5. Remove the cover [A] of Slot B4 (\wedge x 2).
6. Install the NIB board [B] in Slot B4 and secure it with the screws.
7. Remove the cover [C] of Slot B3 (\wedge x 2).
8. Install the Centronics board [D] in Slot B3 and secure it with the screws.
9. Remove the slot cover [E] (\wedge x 2).
10. Hold the SD Card [F] with its label turned as shown above, then install it in Slot C1.
NOTE: If you push in the SD Card, this releases it for removal. Make sure the SD Card is installed and locked in position. If it is not fully in the slot, push it in carefully until it locks in position.
11. Wind the cable [G] one full turn around the ferrite core [H], then close the core to lock it.
12. Connect the adapter [I] to the NIB board.



13. Attach the decal near the machine name on the copier.
14. Obey the procedures in the operating instructions to make the user settings.
15. Replace the old key top assembly [A] with the new one [B].
16. Make sure that these SP commands are set correctly.
 - SP5811 – Machine No. Setting
 - SP5907 – Plug & Play

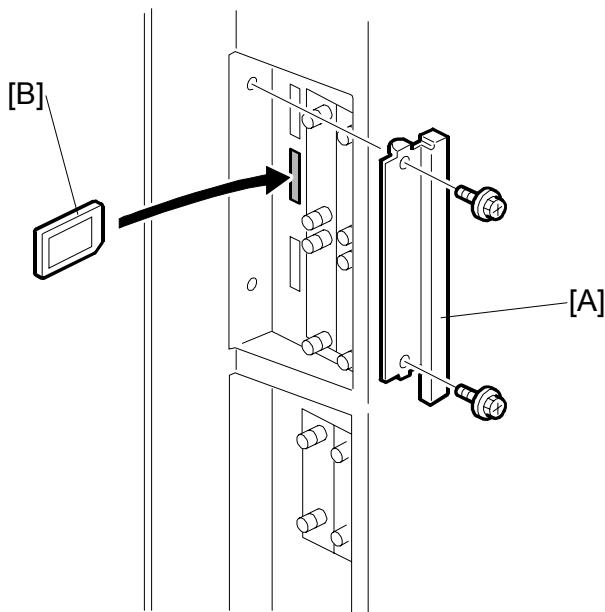
1.17.3 PS3 (B525-15)

ACCESSORY CHECK

Check the accessories and their quantities against this list:

Description	Q'ty
1. PostScript3 Emulation SD Card.....	1

Installation



1. Turn the machine off.
2. Remove the slot cover [A] (x 2).
3. Install the PS3 SD Card [B] in Slot C2.
NOTE: If you push in the SD Card, this releases it for removal. Make sure the SD Card is installed and locked in position. If it is not fully in the slot, push it in carefully until it locks in position.
4. Turn the machine on.

1.17.4 USB 2.0 INTERFACE BOARD (B596-01)

ACCESSORY CHECK

Check the accessories and their quantities against this list:

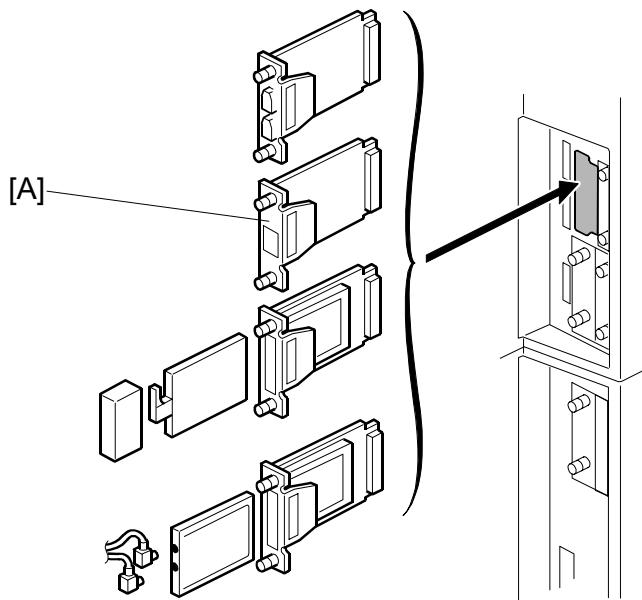
Description	Q'ty
1. USB 2.0 Interface Board.....	1

Installation

You can only install one of these cards, because only one PCI slot (B1) is available for these options:

- USB 2.0
- IEEE 802.11b (Wireless LAN)
- IEEE 1394 (FireWire)
- Bluetooth Interface Unit G377

If a different card is installed in B1, you must remove it before you install USB 2.0 Interface Board.



1. Turn the machine off.
2. Remove the cover of Slot B1 (x 2).
3. Install the USB 2.0 interface board [A] in Slot B1 and attach it with the screws.
4. Print a configuration page to make sure that the machine can see the USB interface board.

User Tools > Printer Features > List Test Print > Configuration Page

1.17.5 IEEE 1394 INTERFACE BOARD (B581-01)

ACCESSORY CHECK

Check the accessories and their quantities against this list:

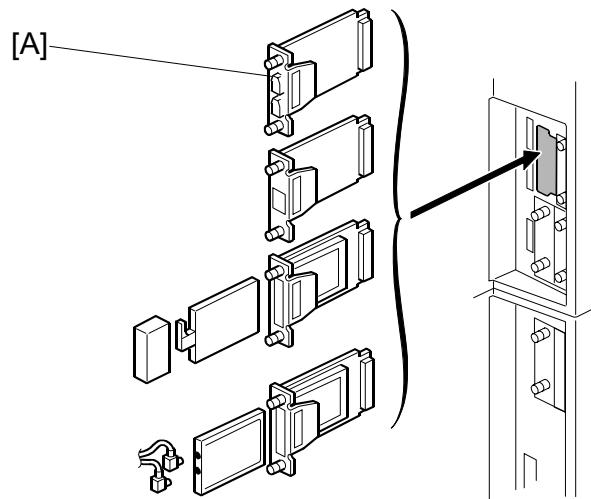
Description	Q'ty
1. IEEE 1394 Interface Board	1
2. 4-Pin Cable	1
3. 6-Pin Cable	1

Installation

You can only install one of these cards, because only one PCI slot (B1) is available for these options:

- USB 2.0
- IEEE 802.11b (Wireless LAN)
- IEEE 1394 (FireWire)
- Bluetooth Interface Unit G377

If a different card is installed in B1, you must remove it before you install IEEE 1394 Interface Board.



1. Turn the machine off.
2. Remove the cover of Slot B1 (x 2)
3. Install the IEEE 1394 board [A] in Slot B1 and attach it with the screws.
4. Turn the machine on and print a configuration page to make sure that the machine can see the IEEE 1394 (FireWire) board:
User Tools> Printer Features> List Test Print> Configuration Page

1.17.6 IEEE 802.11B INTERFACE BOARD (B582-01, -02)

ACCESSORY CHECK

Check the accessories and their quantities against this list:

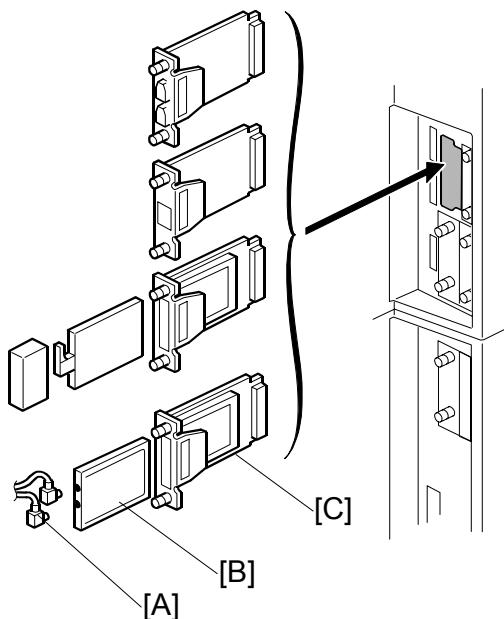
Description	Q'ty
1. IEEE 802.11b Interface Board.....	1
2. WLAN PIC Card	1
3. Antennas	2
4. Velcro pads	2
5. Antenna Cap	1

Installation

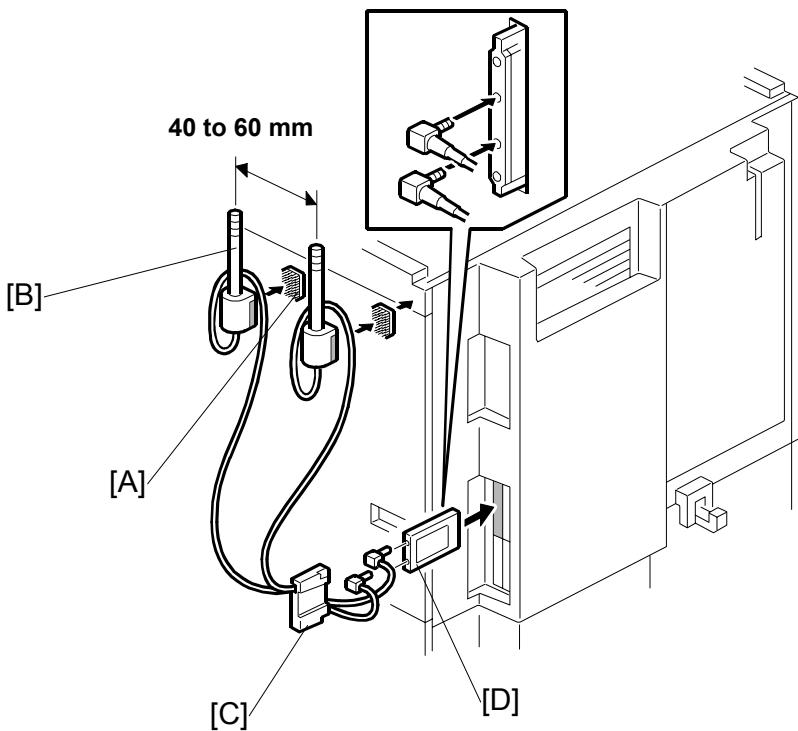
You can only install one of these cards, because only one PCI slot (B1) is available for these options:

- USB 2.0
- IEEE 802.11b (Wireless LAN)
- IEEE 1394 (FireWire)
- Bluetooth Interface Unit G377

If a different card is installed in B1, you must remove it before you install IEEE 802.11b Interface Board.



1. Turn the machine off.
2. Remove the cover of Slot B1 (x 2).
3. Remove the plastic cap [A] from the PCI card.
4. Connect the PCI card [B] to the wireless LAN board.
5. Install the wireless LAN board [C] in Slot B1 and attach it with the screws.



6. Remove the tape from the back of the Velcro patches [A]. Then, attach the patches to the right rear corner of the main frame. Then attach the antennas [B] to the patches.
7. Put the connectors through the antenna cap [C].
8. Connect each antenna to a terminal [D] and attach the antenna cap.

NOTE:

- 1) Attach the antennas as specified above. But, if you change the location of an antenna, make sure that the antennas are separated by a minimum of 40~60 mm (1.5~2.5").
- 2) Install the antennas in an area that is free of interference from electrical equipment that causes a strong electromagnetic field.
- 3) Always remove the antennas from the corners of the machine and disconnect them before you move the machine.
- 4) If reception is not good, move the machine and antennas more near to the access point.

9. Turn the machine on and print a configuration page to make sure that the machine can see the installed IEEE 802.11b interface board:

User Tools> Printer Features> List Test Print> Configuration Page

1.17.7 BLUETOOTH INTERFACE UNIT (G377)

ACCESSORY CHECK

Check the accessories and their quantities against this list:

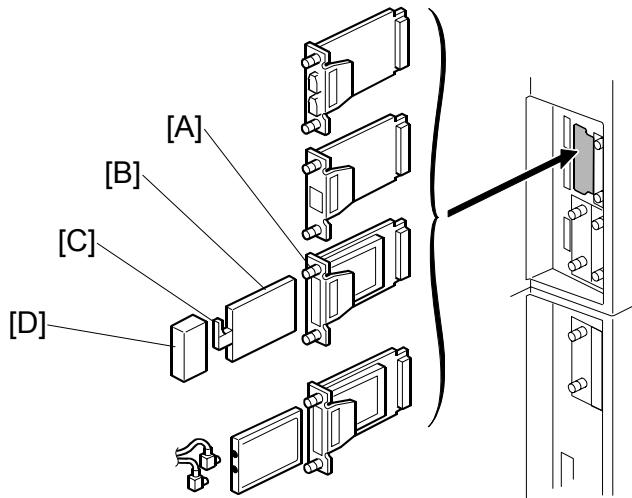
Description	Q'ty
1. Bluetooth Board.....	1
2. Bluetooth Card	1
3. Antenna Cap	2
4. Velcro pads	2

Installation

You can only install one of these cards, because only one PCI slot (B1) is available for these options:

- USB 2.0
- IEEE 802.11b (Wireless LAN)
- IEEE 1394 (FireWire)
- Bluetooth Interface Unit G377

If a different card is installed in B1, you must remove it before you install the Bluetooth interface unit.



1. Remove the slot cover from Slot B1 [A] (x 2).
2. Install the Bluetooth board [A] (Knob-screw x 2).
3. Insert the Bluetooth card [B] in the slot.
4. Push the antenna [C] to extend it.
5. Attach the antenna cap [D].

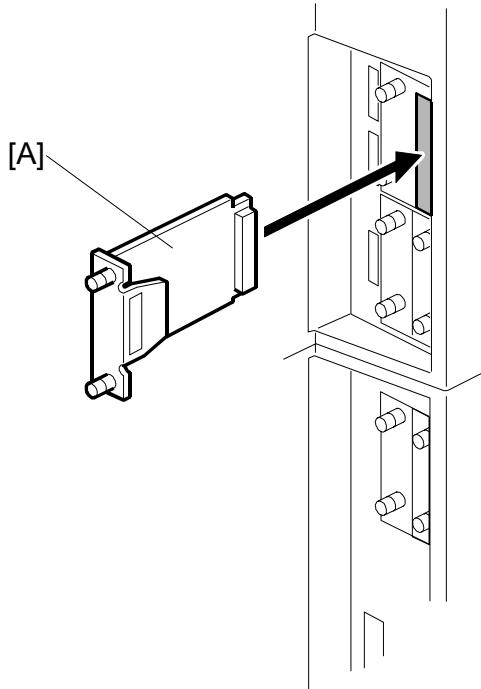
1.17.8 FILE FORMAT CONVERTER (B609)

ACCESSORY CHECK

Check the accessories and their quantities against this list:

Description	Q'ty
1. File Format Converter (MLB: Media Link Board)	1

Installation



1. Turn the machine off.
2. Remove the cover of Slot B2 (x 2).
3. Install the file format converter board [A] in Slot B2 and attach it with the screws.

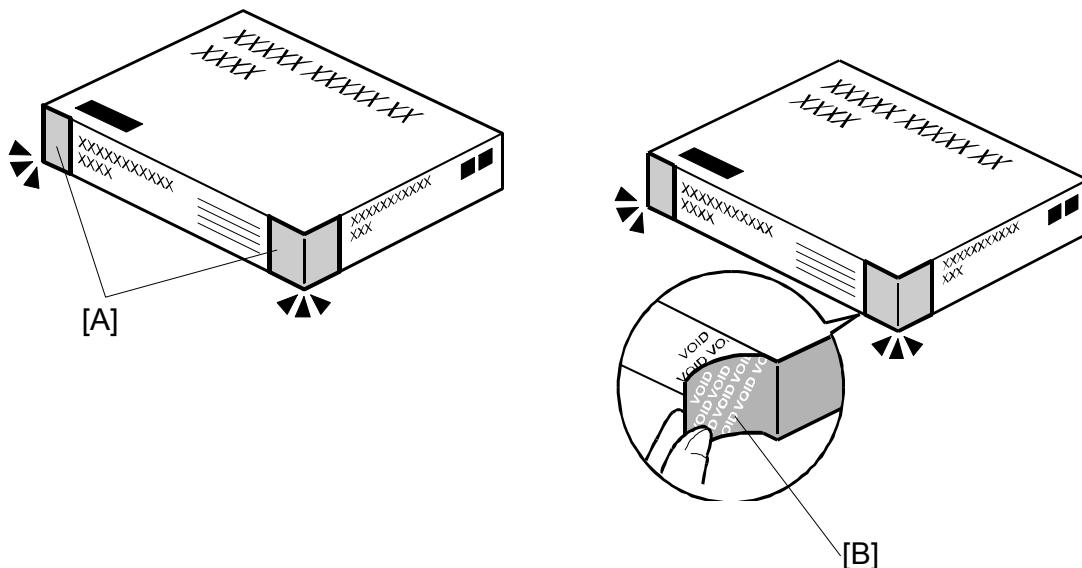
1.17.9 DATA OVERWRITE SECURITY UNIT (B735)

ACCESSORY CHECK

Check the accessories and their quantities against this list:

Description	Q'ty
1. SD Card	1

Seal Check And Removal



- ⇒ 1. Make sure that:
- 1) The box has **two pieces of tape** [A] attached to the corners in the photo, **AND**
 - 2) These two tapes are **blank**.
 - If you can see “VOID” on the surface of the tape, DO NOT install the components in the box. Stop this procedure and contact your Sales division.
2. If the results of Step 1 are OK, remove the two pieces of tape from the box.
NOTE: After you remove the tapes, you will see “VOID” written on the box under the tape [B]. This is normal.

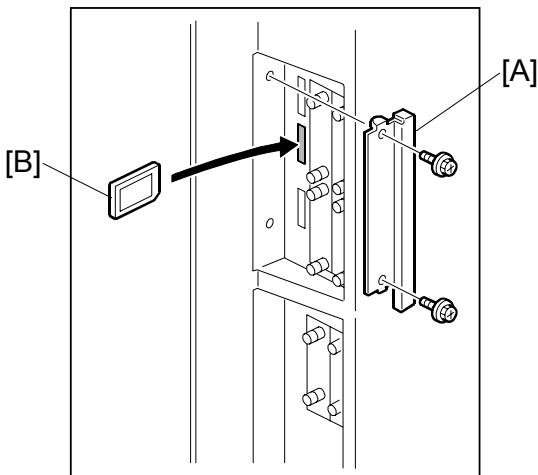
⇒ Installation Procedure

⚠ CAUTION

The machine should always be turned off and its power cord disconnected before you do any of these procedures.

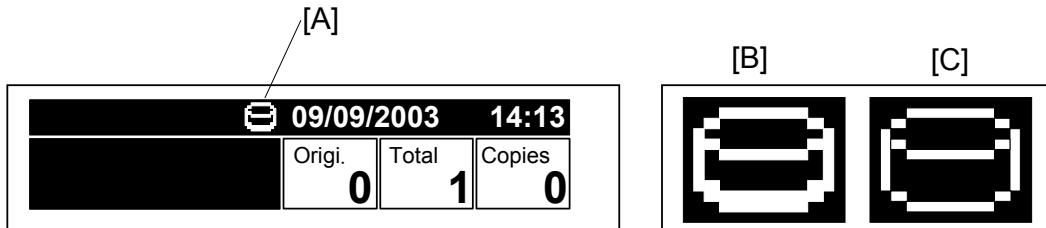
NOTE: If the machine has the PostScript option, refer to “SD Card Application Move” (Section 5.5)

1. If the machine is on, turn the main power switch OFF.
2. If the NIB is installed, disconnect the network cable.



3. Remove the slot cover [A] (x 2).
4. Put the SD card [B] in the slot.
5. If the NIB is installed, connect the network cable.
6. Turn the main power switch ON.
7. Do SP5878 (Option Setup).
8. Exit SP mode.
9. Turn the operation switch OFF, and then turn the main power switch OFF.
10. Turn the main power switch ON.
11. Turn “Auto Erase Memory Setting” ON:
User Tools >> System Settings >> Administrator Tools >> Auto Erase Memory Setting >> ON

⇒ 12. Exit User Tools.

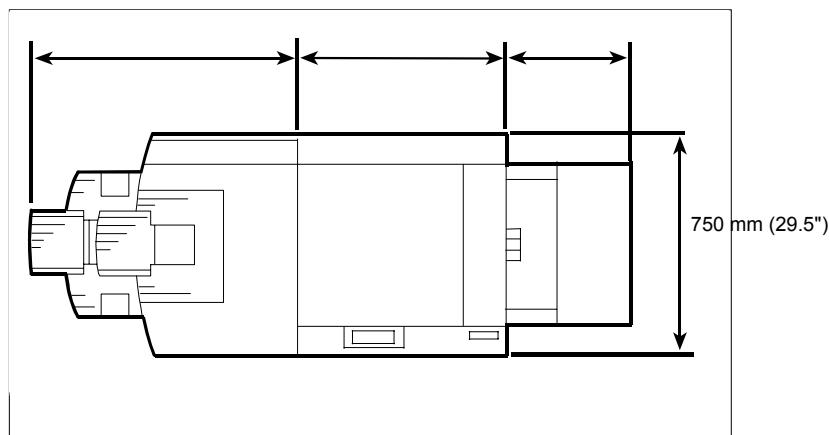


13. Make sure the overwrite erase icon [A] is displayed on the operation panel.
If it is not displayed, do Step 7 again.
14. Make a sample copy.
15. Make sure the overwrite icon changes as follows:
 - The bottom of the icon (white part) becomes thicker [B].
 - “Next Copy” is displayed for a short time under the icon.
 - The icon returns to its usual shape [C].

1.18 MAIN MACHINE (G126)

1.18.1 DIMENSIONS

734 mm (28.9") 690 mm (27.2") 314 mm (12.4")



1.18.2 ACCESSORY CHECK

Check the accessories and their quantities against this list:

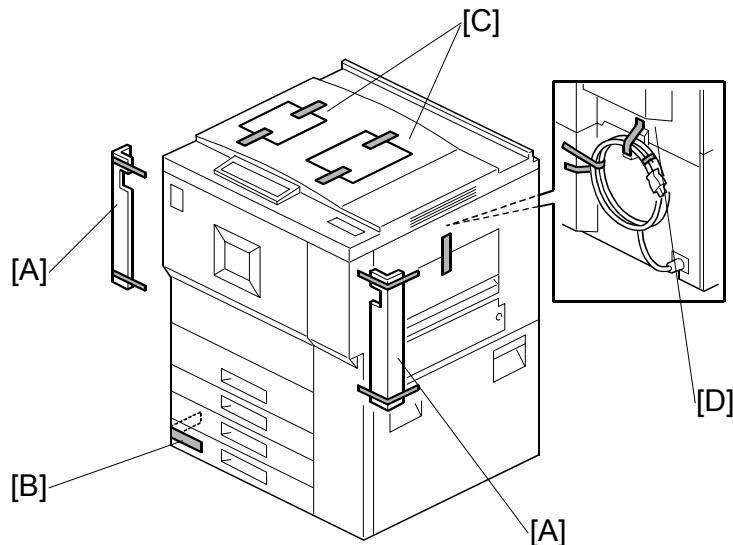
Description	Q'ty
1. Model Name Decal (-22 Only)	1
2. Decal – Paper Size.....	1
3. Decal: caution chart: paper Set: Direction	1
4. Decal – Toner Supply - Multiple	1
5. Decal – D1/E1 Multiple (-22, -27 Only)	1
6. Stand Holder.....	2
7. Ferrite Core (For Ethernet cable).....	1
8. Ferrite Core (For Parallel cable)	1
9. Leveling Stopper.....	2
10. O/I Holder.....	1

1.18.3 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.

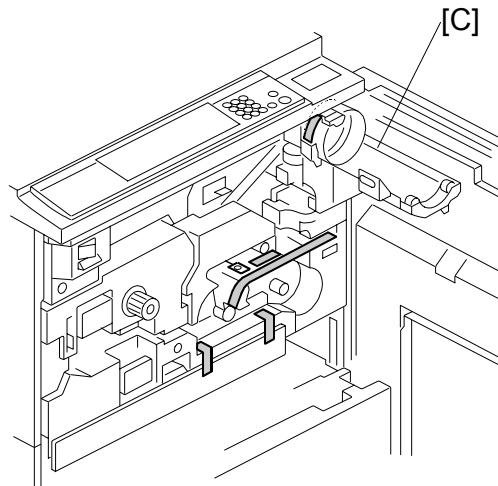


1. Unpack the machine and remove all the wrapping.
2. Remove all filament tape from the front [A] of the machine.
3. Open the lower tray [B] and remove the operating instructions holder and foot risers.
4. Remove the data sheet [C].
5. Remove the tape from the back [D] of the machine.

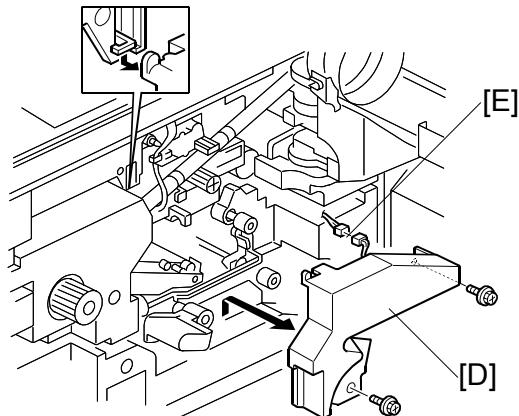
NOTE: Save the filament tape and shipping retainers to prepare the machine for shipping in the future.

Installation

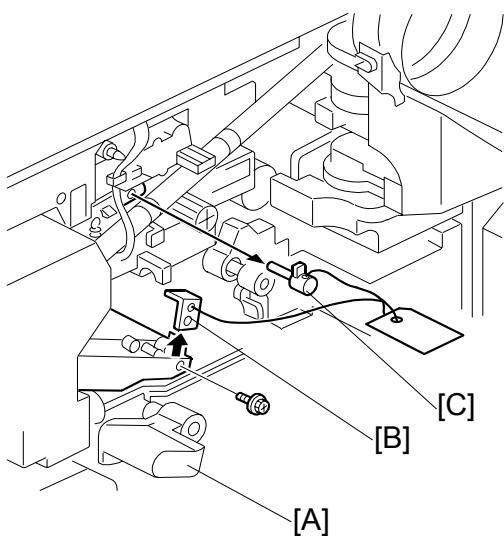
6. Open the front door, open the toner bottle holder [C], then remove all tape and shipping retainers.



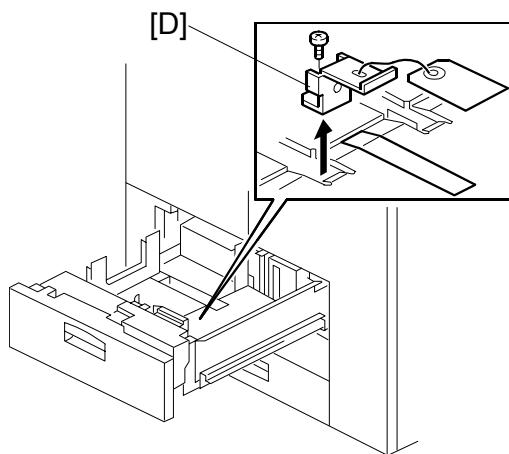
7. Remove the PCU inner cover [D] (2 screws) and disconnect the fan motor [E] (1 connector).



8. Lower the transfer unit by turning its knob [A].
9. Remove the bracket [B], and the red tag from the transfer belt (1 screw).
10. Remove the pin [C], and the red tag from the cleaning plate.



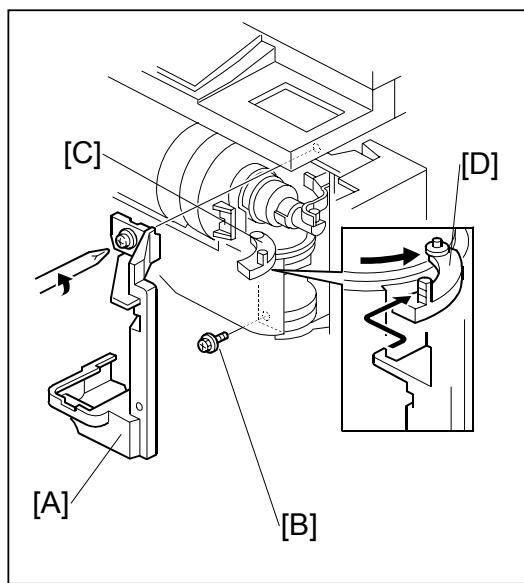
11. Open the tandem tray (top paper tray) and remove the metal retainer bracket [D] (1 screw), wire, and red tag.



Removing and Filling the Development Unit

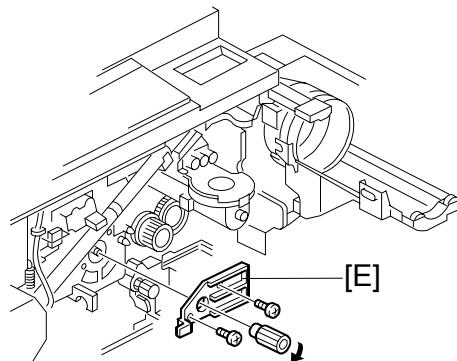
IMPORTANT: Before you begin, **remove the toner bottle** if it is installed.

Note: If the toner bottle is in the machine when you do this procedure, the toner bottle holder can be damaged.



1. Remove the shutter cover [A] of the toner supply unit (1 screw).
2. Remove the lock screw [B] from the toner bottle open/close bracket.
3. Remove the shipping tape [C] if it is still there.
4. Pull the toner bottle holder and swing it to the right.

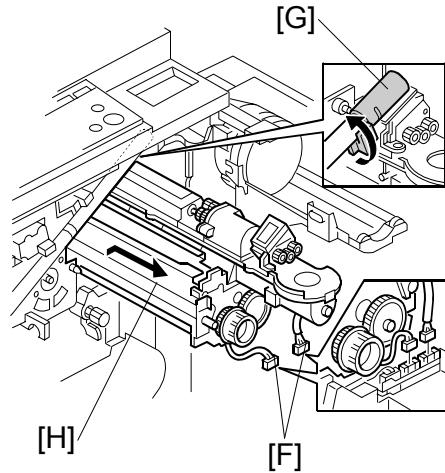
- Remove the face plate [E] of the development unit (1 knob, 2 screws).



- Disconnect the development unit [F] (2 connectors).

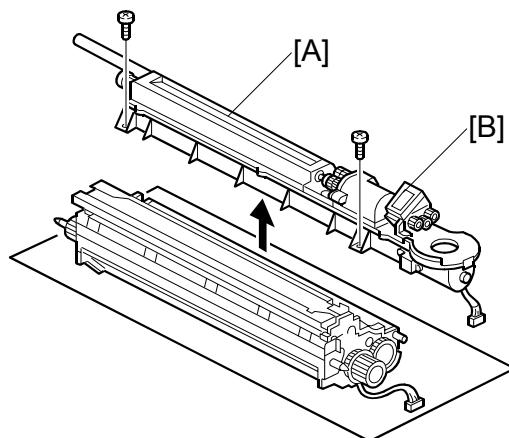
NOTE: If the LCT is installed, you may need to disconnect it so the front door can open far enough to allow removal of the development unit.

- Close the supply pipe shutter [G], and then while allowing the development unit [H] to slip to the right, slowly pull it out of the machine.

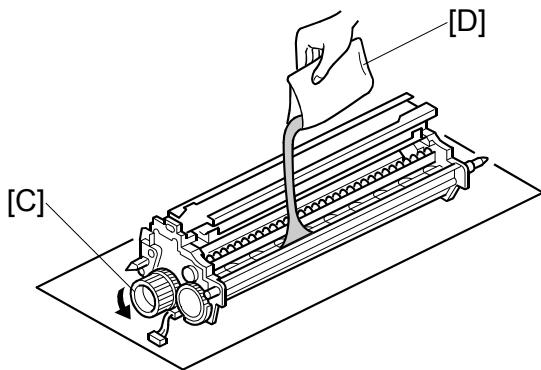


- Remove the toner hopper [A] (2 screws).

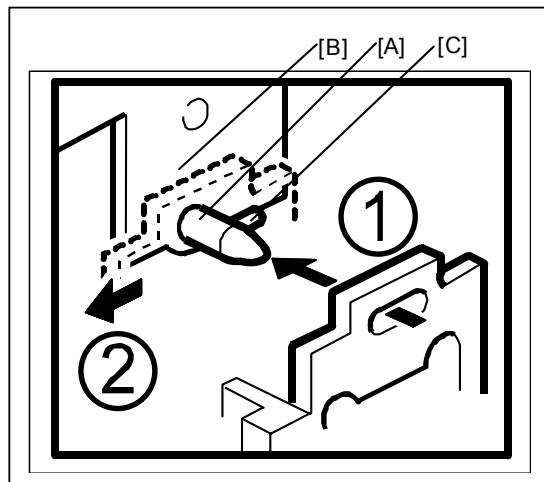
- Rotate the toner hopper [B] slightly 10° to 20° as you slide it up to remove it.



10. While turning the knob [C] slowly, pour in one pack of developer [D] from one end of the development unit to the other.
11. Make sure that the developer is evenly distributed. Note the developer lot number printed on the top edge of the bag. You will need the lot number when you execute SP2963 (Installation Mode).
12. Assembly the developer unit then re-install it in the machine.
13. 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 pipeline shutter is rotated down. (See Step 7 above.)



Re-installing the Development Unit



14. Push the development unit all the way to the right.
15. Continue to hold the unit to the right and push it into the machine.
IMPORTANT: Make sure the pin [A] goes into the left side of the hole in the development unit plate.
16. Push the development unit all the way in, so that the development unit plate touches the mainframe plate [B].
IMPORTANT: Make sure you can see the small pin [C] in front of the plate. If you cannot move the development unit plate behind the small pin, turn the front gear of the unit to the left, and try again.
17. Push the development unit to the left, until it contacts the PCU.
18. Make sure the pipeline shutter is rotated down to the open position.

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 main power switch on.
4. Go into SP mode.
 - Press the "Up/Down arrow" keys together for about 5 seconds, then press the "Enter" key.
5. Close the front door.
6. Do SP2963.
 - Input the Developer Lot No. with the key display, then press "Enter".Approximately four minutes is necessary to initialize toner supply and the auto process control settings.
7. Press "End" to go out of the SP mode.
8. Attach the applicable decals (supplied with the machine) to the paper trays.
9. Check the print quality and machine operation.

IMPORTANT

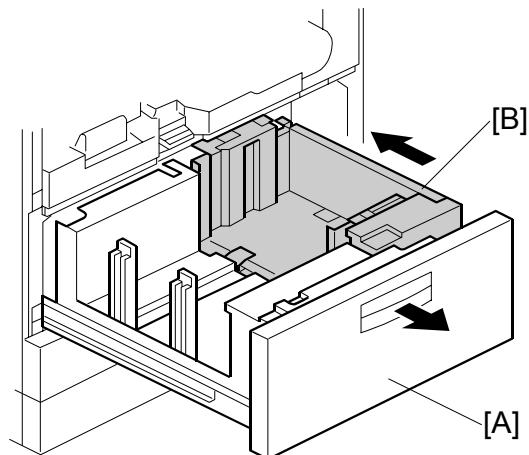
- At installation, use SP2963 to enter the lot number, initialize the developer, and to force toner supply to the toner hopper.
- After you replace developer in a machine that has been already installed, do not use SP2963; use SP2801 (TD Sensor Initial Setting) instead to enter the lot number and initialize the TD sensor.

Tandem Tray

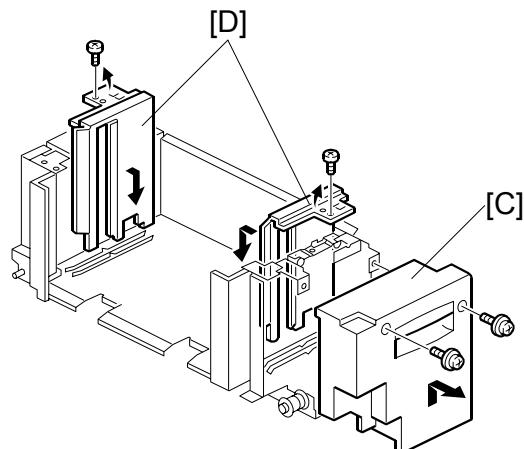
Before shipping the machine, the tandem tray is set for A4 or LT LEF and must be adjusted if the customer wants to use the tandem tray for another paper size.

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

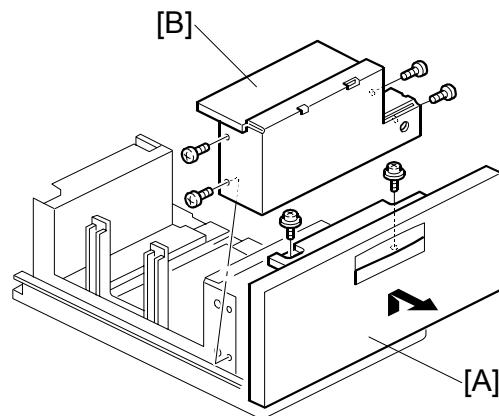
1. Open the front cover.
2. Completely pull out the tandem feed tray [A] so that the right tandem tray [B] separates from the left tandem tray.



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

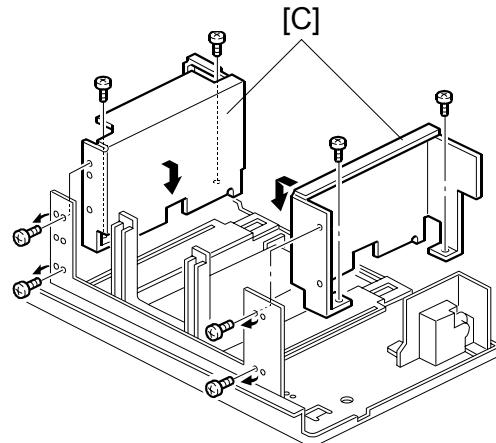


6. Remove the tray cover [A] (2 screws).
7. Remove the motor cover [B] (4 screws).

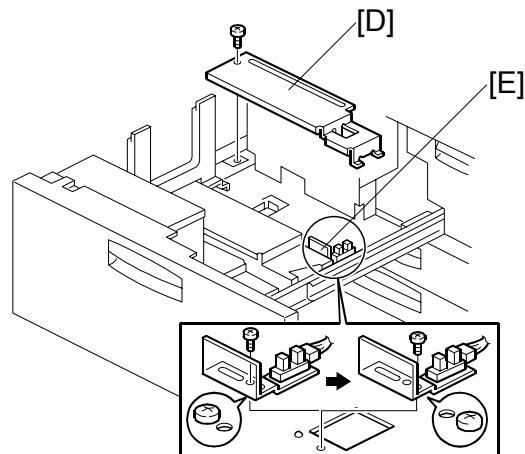


Installation

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

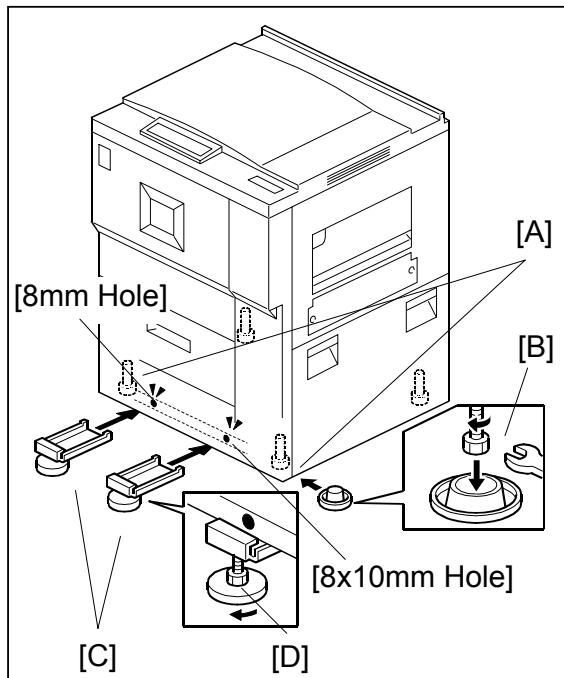


10. Remove the rear bottom plate [D] (1 screw).
11. Re-position the return position sensor bracket [E] (1 screw). To use the paper tray for A4 size, put the screw in the left hole as shown. (For LT size, the screw should be placed on the right.)
12. Re-install the rear bottom plate.
13. Change the paper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



Machine Leveling

1. Set a stand [A] at each corner of the machine.
2. Place a level on the exposure glass and use a wrench to turn each nut [B] and level the machine to ± 5 mm of the horizontal.
3. Check the machine operation. With the customer, determine the best place to attach the cleaning reminder decal.



Leveling Stopper

1. Put the 2 leveling stoppers [C] under the paper bank frame.
Put one under the 8mm hole, and the other under the 8x10mm hole.
2. While you press the leveling stopper flat against the paper bank frame, turn the nuts [D] to increase the height of the leveling stopper.
IMPORTANT: Use a wrench to turn each nut.
3. Do Step 2 until the long part of the leveling stopper is tight against the underside of the paper bank frame.
4. Make sure the machine does not move when you try to push it left and right.
IMPORTANT: If it moves, repeat this procedure.

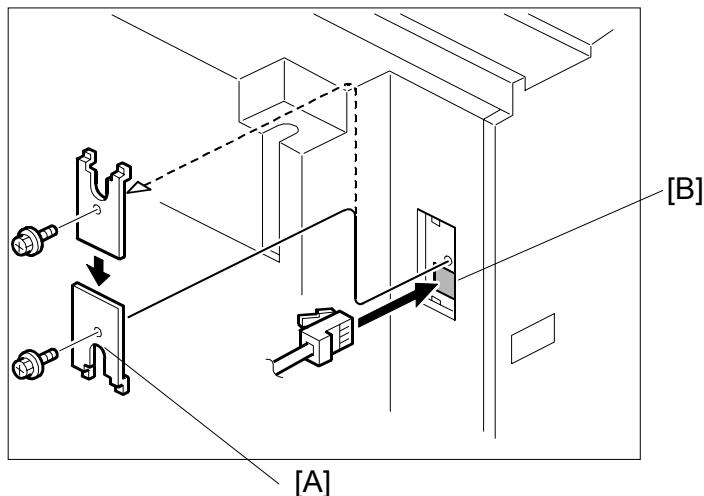
1.18.4 CALL LIGHT SETTING

1. Do an accessory check.

Check the accessories and their quantities against this list:

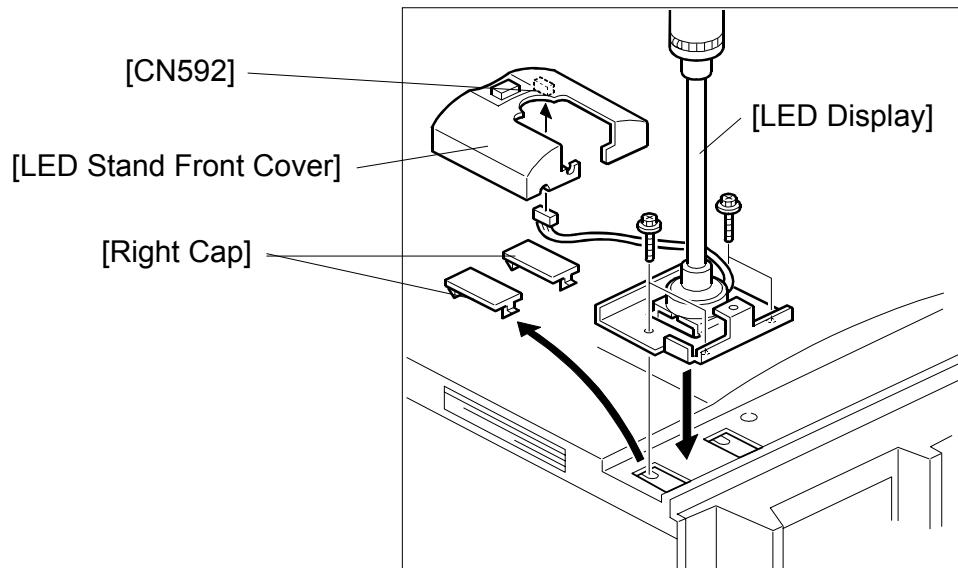
Description	Q'ty
LED Stand	1
LED Stand Front Cover	1
LED Stand Rear Cover	1
Cable: SWB	1
Screw M4X8	1
Screw M4X14	4

2. Remove the rear upper right cover [A] (1 screw).
3. Connect one end of the long cable to the mainframe port [B].

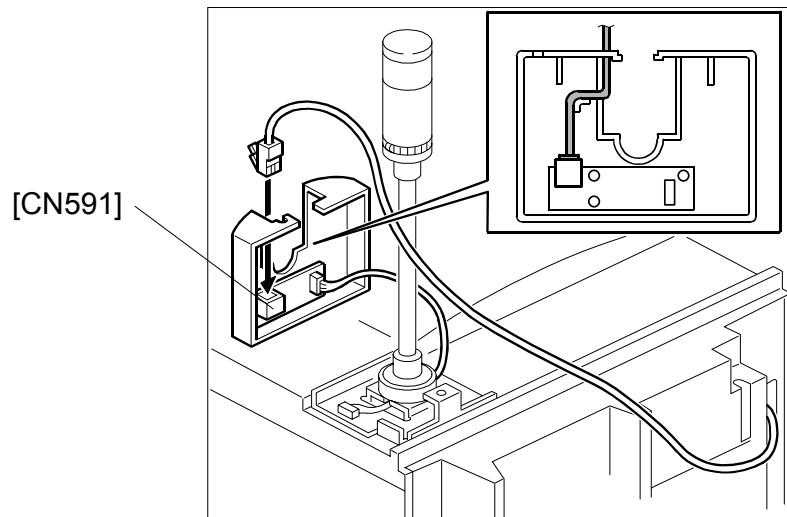


4. Reattach the rear upper right cover [A] so that the cut-in faces downward.

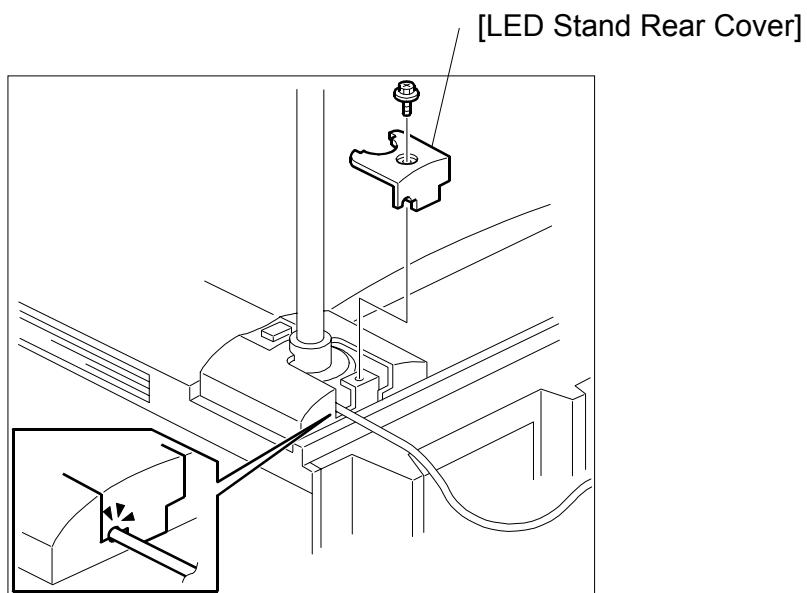
5. Remove the right cap.
6. Attach the LED Stand (4 screws).
7. Connect one end of the long harness to the LED Stand Front Cover (CN592).



8. Connect the other end of the long cable to CN591.
9. Lead the cable through the ribs on the LED Stand Front Cover (see photo).



10. Attach the LED Stand Front Cover.
11. Attach the LED Stand Rear Cover (1 screw).





PREVENTIVE MAINTENANCE



2. PREVENTIVE MAINTENANCE

2.1 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

Preventive Maintenance

⚠ WARNING

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

2.1.1 MAIN MACHINE (ALL MODELS)

SCANNER OPTICS						
	EM	300K	450K	600K	Expected K	Note
1st, 2nd, 3rd Mirror		C	C	C		Optics cloth
Exposure Glass	C	C	C	C		Dry cloth or alcohol
Scanner Guide Rails		L	L	L		After cleaning with alcohol, lubricate scanner guide rails with Launa Oil.
Toner Shield Glass	C	C	C	C		Optics cloth
Reflector		C	C	C		Optics cloth

AROUND THE DRUM						
	EM	300K	450K	600K	Expected K	Note
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.
Quenching Lamp		C	C	C		Dry cloth.
Transfer Entrance Stay		C	C	C		Dry cloth.
Ozone Filter (Top)		R		R		
Cleaning Filter		R		R		
Cleaning Side Seal		C	C	C		Dry cloth.
Cleaning Entrance Seal		C	C	C		Dry cloth.

DEVELOPMENT UNIT						
	EM	300K	450K	600K	Expected K	Note
Developer		R		R		(3.7.1) PM cycle is 350K.
Development Roller Shaft		C		C		Clean with blower brush and dry cloth every time the developer is replaced.
Development Roller		C		C		
Development Filter (x2)		R	I	R		Blower brush.
Development Sleeve Surface		C	C	C		Dry cloth.
Drive Gears		C	C	C		Blower brush.
Entrance Seal		C	C	C		Blower brush, dry cloth.
Side Seals		C	C	C		Blower brush, dry cloth.
Toner Bottle Holder		C	C	C		Dry cloth.
Paddle Roller Shaft		C	C	C		Blower brush, dry cloth.
Used Toner Separation Unit		I		R		

PAPER FEED							
	EM	300K	450K	600K	1000K	Expected 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
By-pass Paper End Sensor		C		C			Dry cloth, blower brush
Grip Rollers		C		C			Dry cloth, blower brush
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

PAPER FEED B064 Series							
	EM	300K	450K	600K	1000K	Expected K	Note
Feed Rollers		R		R		450K	For the K reading, check the logging data for the paper cassette's counter. See NOTE below this table.
Pick-up Rollers		R		R		450K	
Separation Rollers		R		R		450K	
By-pass Feed Rollers		R		R		450K	
By-pass Pick-up Rollers		R		R		450K	
By-pass Separation Rollers		R		R		450K	See NOTE below this table.

Preventive Maintenance

PAPER FEED B140 Series and G126							
	EM	300K	450K	600K	900K	Expected K	Note
Feed Rollers (x3)					R	1000K	See NOTE below this table.
Pick-up Rollers					R	1000K	
Separation Rollers					R	1000K	
By-pass Feed Rollers					R	1000K	
By-pass Pick-up Rollers					R	1000K	
By-pass Separation Rollers					R	1000K	See NOTE below this table.

NOTES

- Always replace pick-up, feed and separation rollers as a set.
- If the copier is a B064 Series machine, check the counter value for each paper tray station with SP7204 (Copy Counter – Paper Trays). If the value has reached 300K, replace the rollers. The quality of the paper can have an effect on the service life of the rollers. Paper with a rough surface, for example, can increase abrasion on the rollers and decrease their service life. After replacing the rollers, reset the counter with SP7816 (Copy Counter Reset).
- If the feeding from the by-pass tray causes frequent jams, and the by-pass tray is not used regularly, check the by-pass tray rollers. If pick-up, feed, and separation rollers for the by-pass tray are of lighter color than those of more frequently used trays, replace them.

TRANSFER BELT UNIT							
	EM	300K	450K	600K	Expected K	Note	
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	
Transfer Drum Roller		C		C		Dry cloth	
Transfer Bias Roller		C		C		Dry cloth	
Transfer Exit Guide Plate		C		C		Dry cloth	
Discharge Plate		R		R			

FUSING UNIT AND PAPER EXIT						
	EM	300K	500K	600K	Expected K	Note
Cleaning Web		R		R		
Cleaning Web Pressure Roller				R		Replace roller and bushings together.
Cleaning Web Pressure Roller Bearings (x2)				R		
De-Curler Rollers		C		C		Alcohol
Exit Rollers		C		C		Alcohol
Exit Static Discharge Brush		I		I		
Fusing Entrance Guide Plate		C		C		Dry cloth.
Fusing Exit Guide Plate		C		C		Dry cloth.
Hot Roller		R	R		600	B140 Series: "R" at 300K B064 Series and G126: "R" at 500K
Hot Roller Bearings (x2)		R	R		1000	
Hot Roller Strippers		R		R	600	
Pressure Cleaning Roller		R		R		Replace as a set.
Pressure Cleaning Roller Bearings (x2)		R	I	R		
Pressure Cleaning Roller Spring Plate		I		I		
Pressure Roller		R	R		600	B140 Series: "R" at 300K B064 Series: "R" at 500K G126: "R" at 300K (use B064 roll/bearings) Always replace pressure roller and bearings together.
Pressure Roller Bearings (x2)		R	R		600	
Thermistors x2		R	I			B140 Series: "R" at 300K B064 Series: "I" at 500K
Transport Rollers		C		C		Alcohol
Fusing Lamp		I	I	I		

DUPLEX						
	EM	300K	450K	600K	Expected K	Note
Entrance Sensor		C	C	C		Blower brush
Inverter Exit Rollers		C		C		Alcohol
Transport Rollers		C		C		Dry cloth
Reverse Trigger 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

2.1.2 ADF

The PM interval is for the number of originals that have been fed.						
	EM	80K	160K	240K	Expected K	Note
Pick-up Roller	C	R	R	R		Water or alcohol, belt cleaner to clean paper feed belt.
Separation Roller	C	R	R	R		Replace these items together.
Paper Feed Belt	C	R	R	R		
CIS Glass		C	C	C		Dry cloth
White Guide Plate		C	C	C		Dry cloth
Sensors	C	C	C	C		Blower brush.
Platen Cover Sheet	C	C	C	C		Water or alcohol
Drive Gears		L	L	L		Grease G501.
Transport Rollers		C	C	C		Water or alcohol
Entrance Roller		C	C	C		
White Platen Roller		C	C	C		
Pre-Scanning Roller		C	C	C		
Scanning Roller		C	C	C		
Exit Roller		C	C	C		

Preventive Maintenance

2.1.3 OPTIONAL PERIPHERAL DEVICES

LCT (Large Capacity Tray) B473

ROLLRES						
	EM	300K	450K	1000K	Expected K	Note
Pick-up Roller				R		See NOTE below this table.
Feed Roller				R		
Separation Roller				R		

NOTE: Replace pick-up, feed and separation rollers as a set. If the copier is a machine of the B064 Series, check the counter value for each paper tray station with SP7204 (Copy Counter – Paper Trays). If the value has reached 300K, replace the rollers. After replacing the rollers, reset the counter with SP7816 (Copy Counter Reset).

Cover Interposer Tray B470

The PM interval is for the number of sheets that have been fed.						
	EM	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		
Bushings	L				Lubricate with silicone oil if noisy.	
Sensors		C	C	C	Blower brush.	
Feed Drive Gear	L				Lubricate with silicone oil if noisy.	

RELATED SP CODES

3000-Sheet Finisher with 50-sheet stapler and Saddle-Stitching B468/B469/B674

	EM	300K	450K	600K	Note
Driver Rollers		C	C	C	Dry cloth
Idle Rollers		C	C	C	
Discharge Brush		C	C	C	
Bushings	L				Lubricate with silicone oil if noisy.
Sensors		C	C	C	Blower brush.
Jogger Fences		I	I	I	Make sure screws are tight.

3000-Sheet Finisher B478/B706

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

Z-Folding Unit Type 2105 (B660)

	As Needed	Note
Drive Rollers	C	Dry cloth.
Idle Rollers	C	Dry cloth.
Anti-Static Brush	C	Dry cloth. Replace every 1000 K.
Bushings	L	Silicone Oil
Sensors	C	Dry cloth.

2.2 RELATED SP CODES

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

7803*	PM Counter Display	Displays the PM count since the last PM.
7804*	PM Counter Reset	Resets the PM count.

REPLACEMENT AND ADJUSTMENT



3. REPLACEMENT AND ADJUSTMENT

3.1 GENERAL CAUTIONS

Do not turn off either of the power switches while any of the electrical components are active. Doing so might cause damage to units such as the transfer belt, drum, and development unit when they are pulled out of or put back into the copier.

3.1.1 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 copier. 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).

Replacement
Adjustment

3.1.2 DRUM UNIT

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

GENERAL CAUTIONS

3.1.3 TRANSFER BELT UNIT

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

3.1.4 SCANNER UNIT

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

3.1.5 LASER UNIT

1. Do not loosen the screws that secure the LD drive board to the laser diode casing. 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.

3.1.6 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.

Replacement
Adjustment

3.1.7 DEVELOPMENT

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

GENERAL CAUTIONS

3.1.8 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.

3.1.9 FUSING UNIT

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

3.1.10 PAPER FEED

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

3.1.11 USED TONER

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

3.2 SPECIAL TOOLS AND LUBRICANTS

3.2.1 SPECIAL TOOLS

Part No.	Description
A0069104	Scanner Positioning Pin (4 pcs./set)
A2929500	Test Chart – S5S (10 pcs./set)
VSST9500	Test Chart – S5S – DF (10 Sheets/Set)
N8036701	Flash Memory Card – 4 MB (B064 Series Only)
N8036701	Case – Flash Memory Card
G0219350	Loop Back Connector
B6455010	SD Card Kit (B140 Series Only)
B6456700	PCMCIA Card Adapter (BN-SDAA2)
B6456800	USB Reader/Writer (BN-SDCE2)



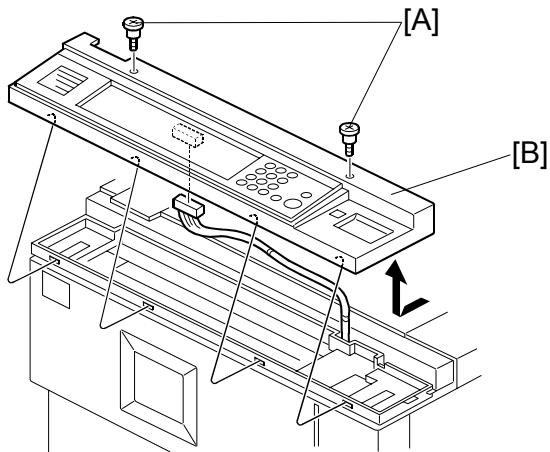
Replacement
Adjustment

3.2.2 LUBRICANTS

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

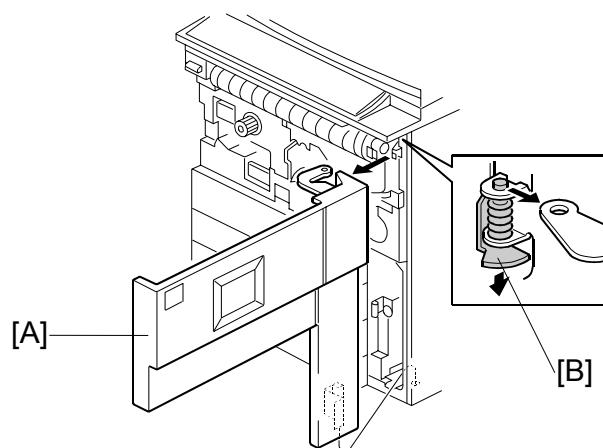
3.3 OPERATION PANEL AND EXTERNAL COVERS

3.3.1 OPERATION PANEL



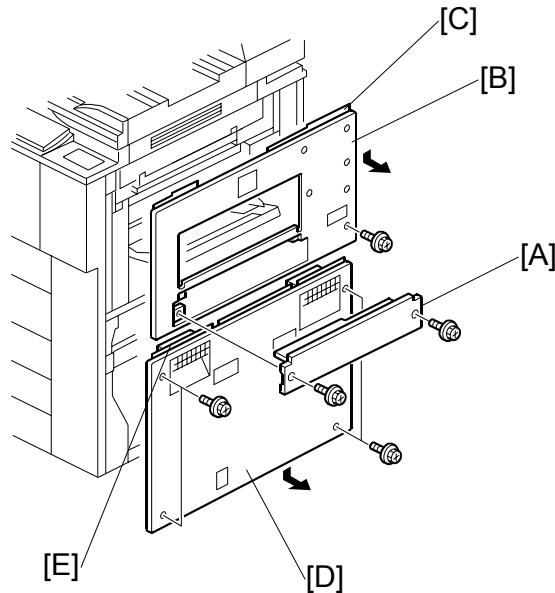
- [A]: Shoulder screws (x 2)
- [B]: Operation panel (x 1)

3.3.2 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.

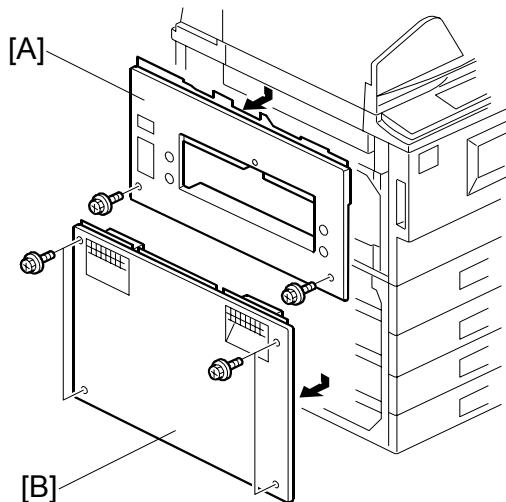
3.3.3 RIGHT COVERS



Replacement
Adjustment

1. LCT entrance guide cover [A] (\wedge x 2)
2. Right upper cover [B] (\wedge x 2)
 - To remove the right cover, remove the LCT entrance guide plate, open the by-pass tray, then slide the right upper cover down to remove it.
 - When re-attaching, before tightening the screws 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] (\wedge 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.

3.3.4 LEFT COVERS



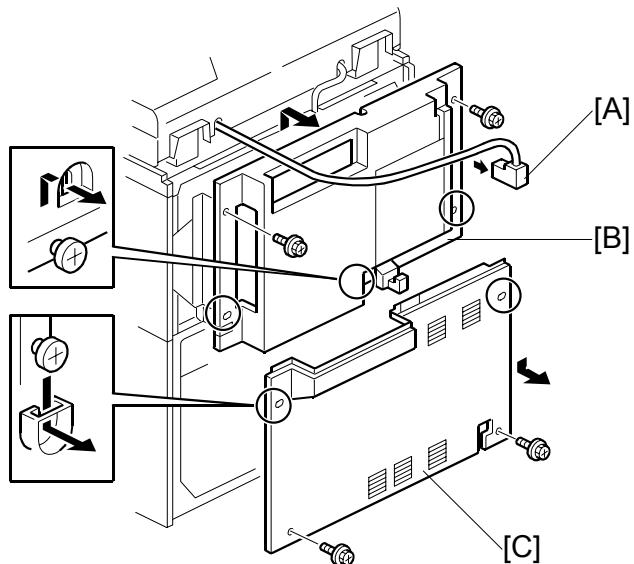
[A]: Left upper cover (2 x 2)

- 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.

[B]: Left lower cover (2 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.

3.3.5 REAR COVERS



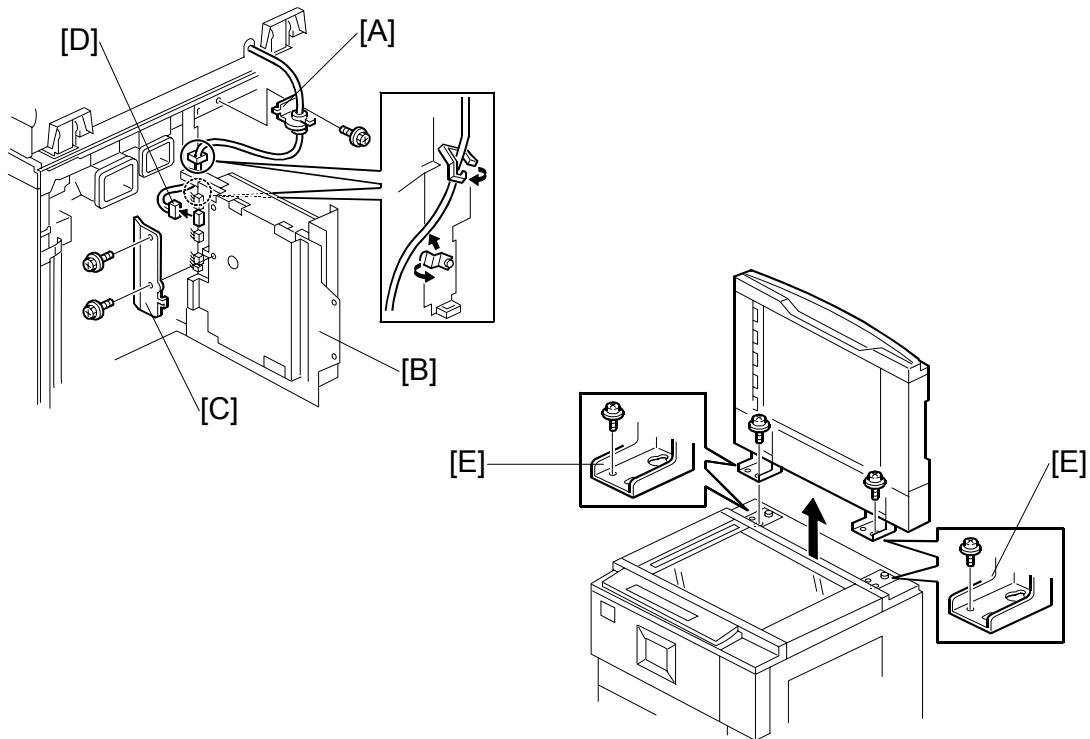
Replacement
Adjustment

- [A]: Disconnect the ADF plug.
- [B]: Rear upper cover (☞ x 3)
 - 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.
- [C]: Rear lower cover (☞ x 2)
 - When re-attaching, before tightening the screws make sure that the tabs on the cover are engaged with the shoulder screws.

3.4 SCANNER

3.4.1 ADF AND TOP COVERS

ADF



Rear upper cover. (☞ 3.3.5)

[A]: Cable bracket (☞ x 1)

[B]: Controller/IPU panel (☞ x 2)

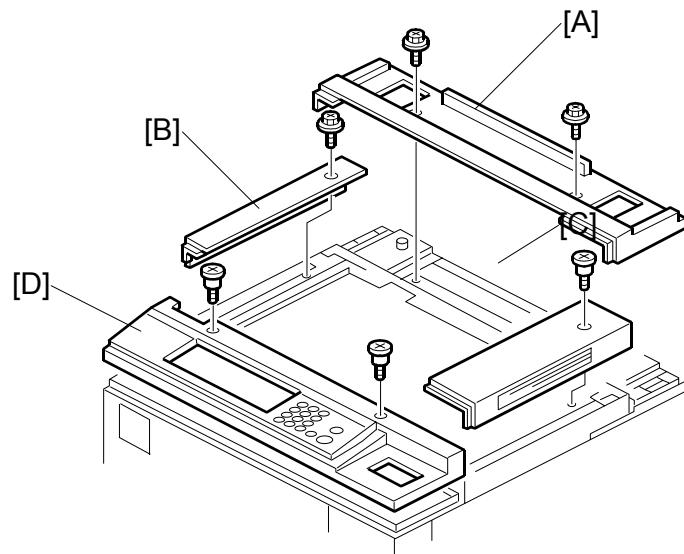
- Swing open the panel so you can see the back.

[C]: Connector cover (☞ x 2)

[D]: Connector (2nd from the top) (☞ x 1)

[E]: ADF base left and right plates (☞ x 2)

- While holding the ADF firmly, slide the ADF back and lift the large end of the keyholes over the shoulder screws.

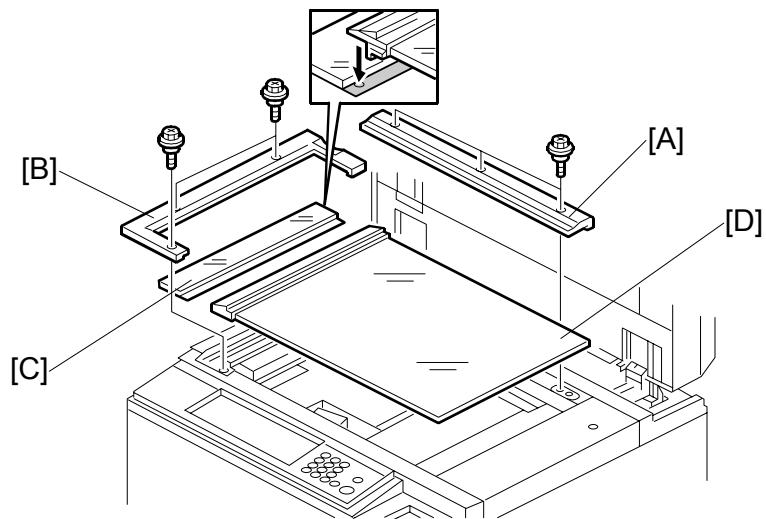
Top Covers

Replacement
Adjustment

ADF (☞ 3.4.1)

- [A]: Top inside cover (☞ x 2)
- [B]: Top left cover (☞ x 1)
- [C]: Top right cover (☞ x 1)
- [D]: Operation panel (☞ x 1) (☞ 3.3.1)

3.4.2 EXPOSURE GLASS



[A]: Rear scale ($\frac{1}{4}$ x 3)

[B]: Left cover ($\frac{1}{4}$ x 3)

[C]: ADF exposure glass

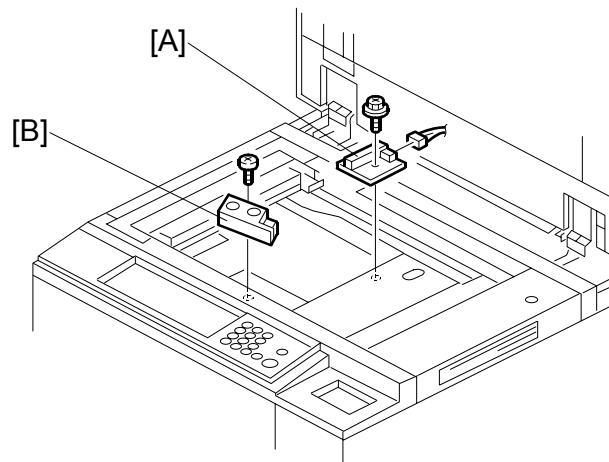
[D]: Exposure glass

NOTE: Lift out the exposure glass and left scale together. The left scale is permanently attached to the exposure glass with double-sided tape. Do not remove the left scale from the exposure glass.

When re-installing the exposure glass:

- Position the exposure glass first. Make sure that the arrow mark is in the upper left corner.
- When re-installing the left cover, make sure it is seated correctly.

3.4.3 SCANNER ORIGINAL SIZE SENSORS



Replacement
Adjustment

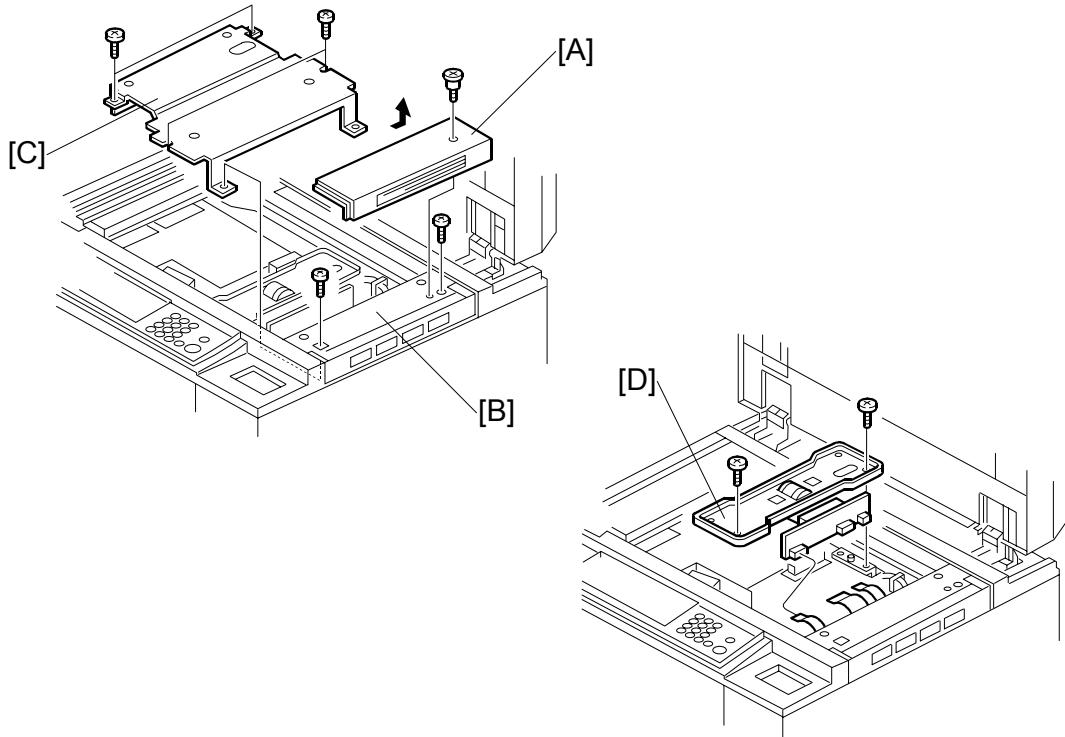
Exposure glass (参照 3.4.2)

[A]: Original length sensor (× 1, × 1)

NOTE: In North America, two length sensors are provided.

[B]: Original width sensor (× 1, × 1)

3.4.4 LENS BLOCK



Exposure glass (☞ 3.4.2)

Operation panel (☞ x 1) (☞ 3.3.1)

[A]: Top right cover (☞ x 1)

[B]: Right upper stay (☞ x 2)

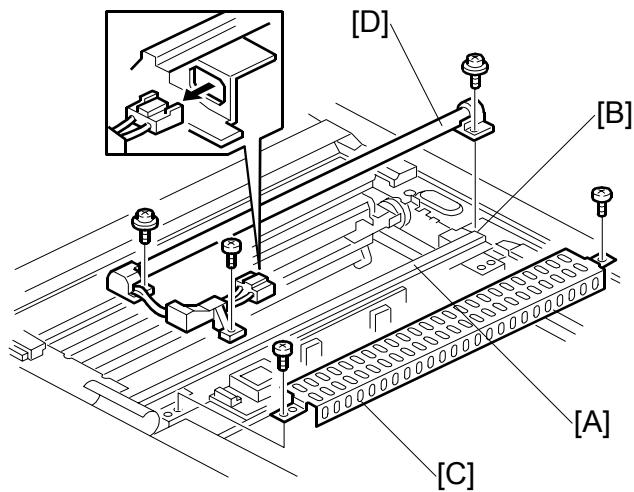
[C]: Lens cover (☞ x 2)

[D]: Lens block (☞ x 2, ☞ x 3)

NOTE: To avoid damaging the lens block, never set it down on the side with the PCB; turn it over with the PCB up.

Re-assemble the machine, then perform the scanner and printer adjustments.
(☞ 3.14)

3.4.5 EXPOSURE LAMP



Replacement
Adjustment

Exposure glass (☞ 3.4.2)

Operation panel (☞ 3.3.1)

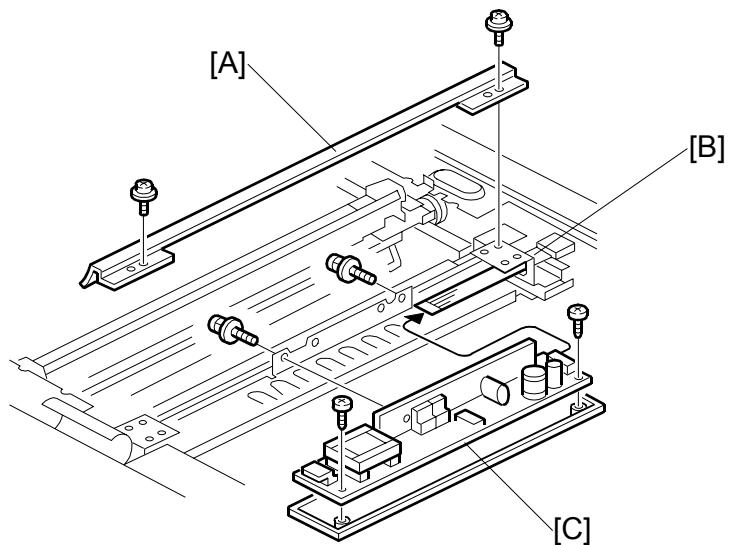
Push the 1st scanner [A] to the cutout [B] in the scanner frame.

[C]: Exposure lamp cover (☞ x 2)

[D]: Exposure lamp (☞ x 3, ☞ x 1)

NOTE: Never touch the surface of the exposure lamp with bare fingers.

3.4.6 LAMP REGULATOR



Operation panel (☞ 3.3.1)

Exposure glass (☞ 3.4.2)

Exposure lamp cover and exposure lamp (☞ 3.4.5)

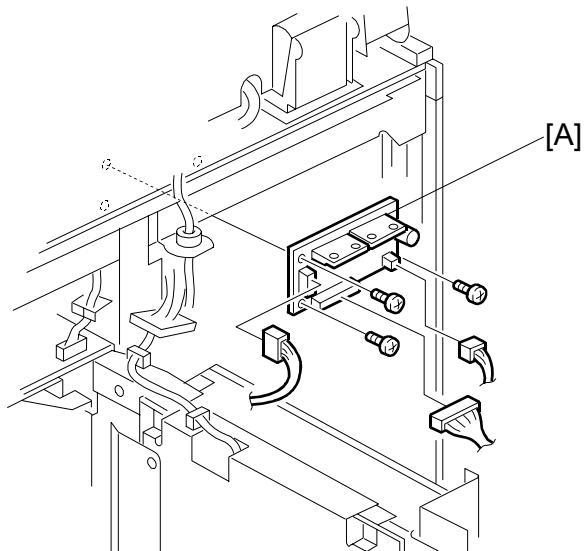
[A]: Metal strip reflector

NOTE: Avoid touching the surface of the reflector and do not bend it.

[B]: Lamp regulator ribbon connector

[C]: Lamp regulator (☞ x 4, ☞ x 1)

3.4.7 SCANNER MOTOR DRIVE BOARD (SDRB)



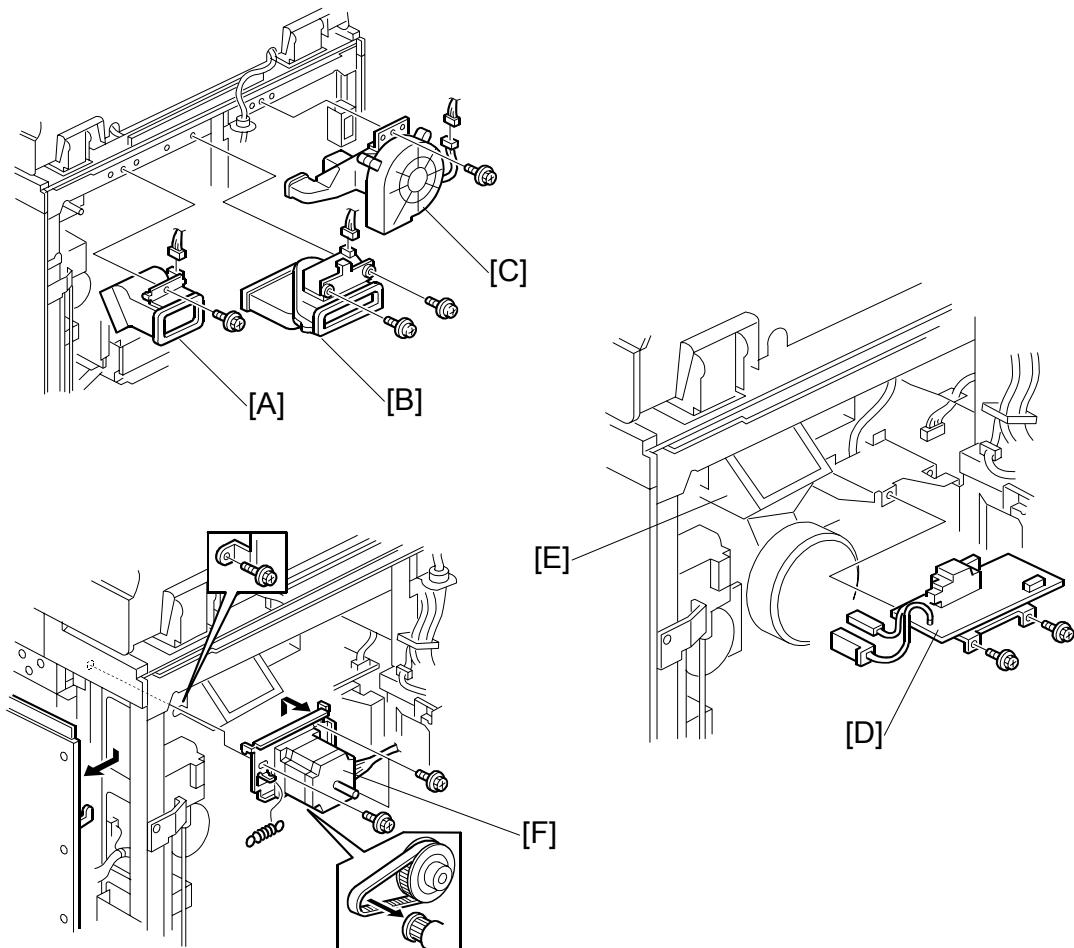
Replacement
Adjustment

Rear upper cover (参照 3.3.5)

[A]: Scanner motor drive board (× 3, × 3)

SCANNER

3.4.8 SCANNER MOTOR



Right upper cover (☞ 3.3.3)

Controller/IPU panel door

Flywheel (☞ x 3)

[A]: Drum cooling fan (☞ x 1, ☞ x 1)

[B]: Charge power pack cooling fan (☞ x 2, ☞ x 1)

[C]: Exhaust fan (☞ x 1, ☞ x 1)

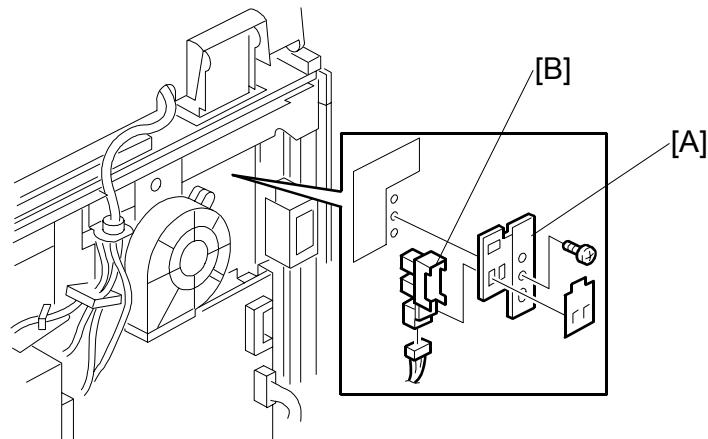
[D]: Development power pack (☞ x 2, ☞ x 3)

[E]: Vent (☞ x 2)

[F]: Scanner motor (☞ x 1, harnesses x 2, ☞ x 3, timing belt x 1)

Re-assemble the scanner, then do the scanner and printer adjustments. (☞ 3.14)

3.4.9 SCANNER HP SENSOR



Replacement
Adjustment

Rear upper cover (3.3.5)

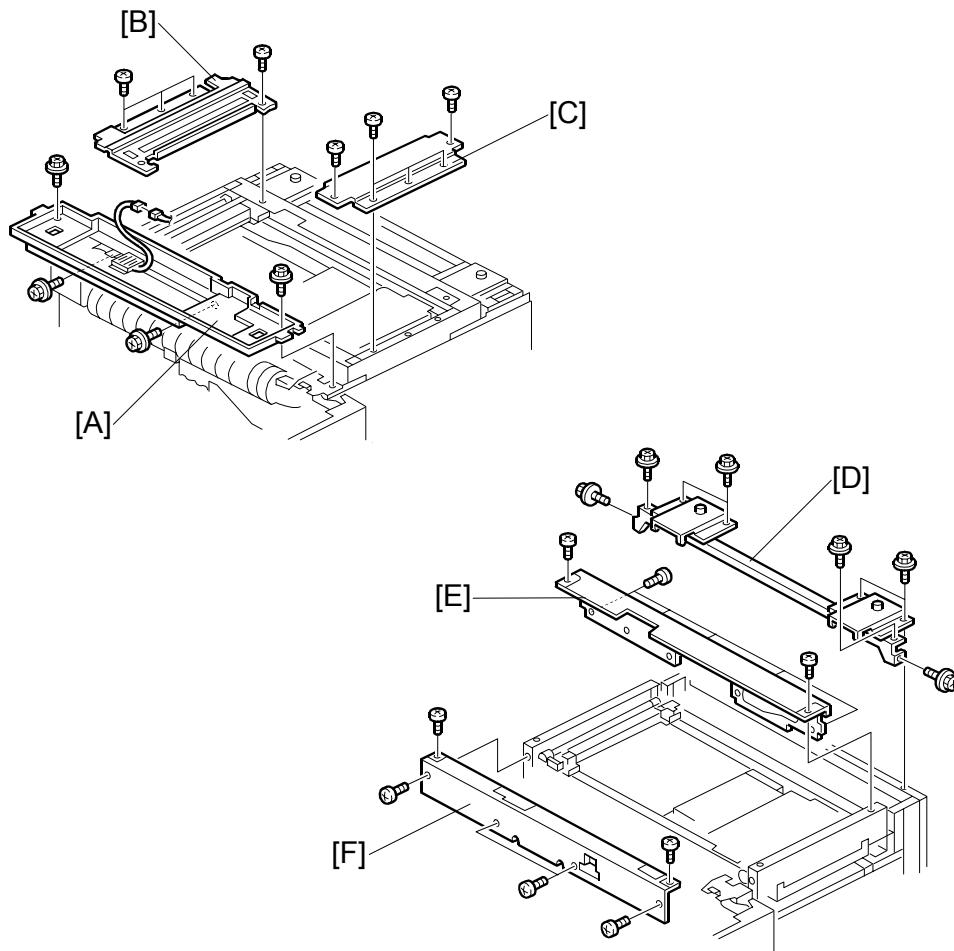
[A]: Sensor bracket and leaf (x 1)

[B]: Scanner HP sensor (x 1)

SCANNER

3.4.10 SCANNER WIRE REPLACEMENT

Preparation for Removal



ADF and top covers (☞ 3.4.1)

Operation panel (☞ x 1) (☞ 3.3.1)

[A]: Scanner unit external cover (☞ x 4, ☞ x 1)

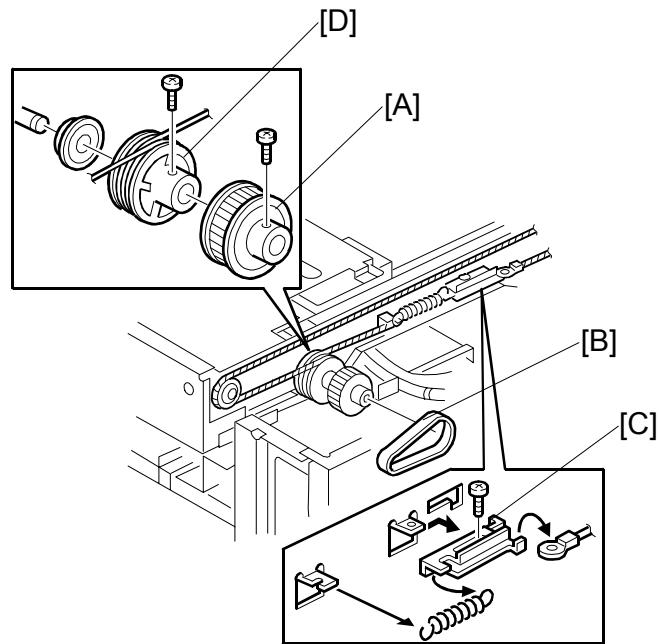
[B]: Left stay (☞ x 5)

[C]: Right stay (☞ x 5)

[D]: ADF upper support frame (☞ x 8)

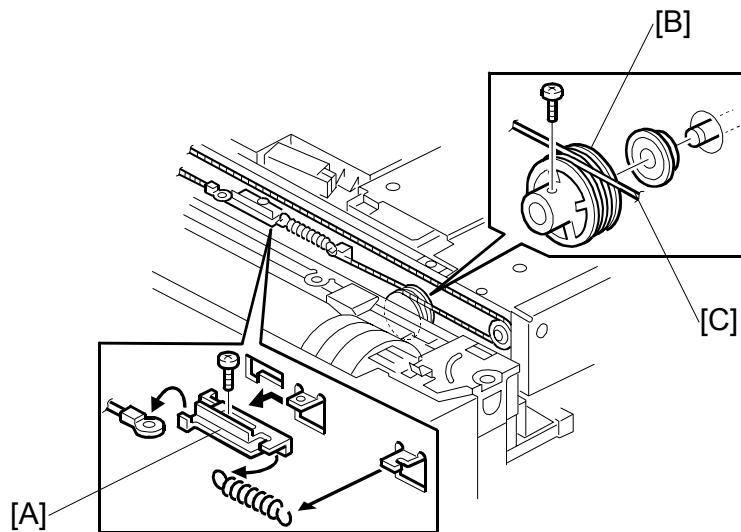
[E]: Lower support frame (☞ x 6)

[F]: Scanner unit front panel (☞ x 6)

Wire Removal: Back

Replacement
Adjustment

- [A]: Drive pulley ($\text{φ} \times 1$)
- [B]: Timing belt
- [C]: Tension bracket ($\text{φ} \times 1$, spring x 1)
- [D]: Rear wire pulley ($\text{φ} \times 1$) and rear scanner wire

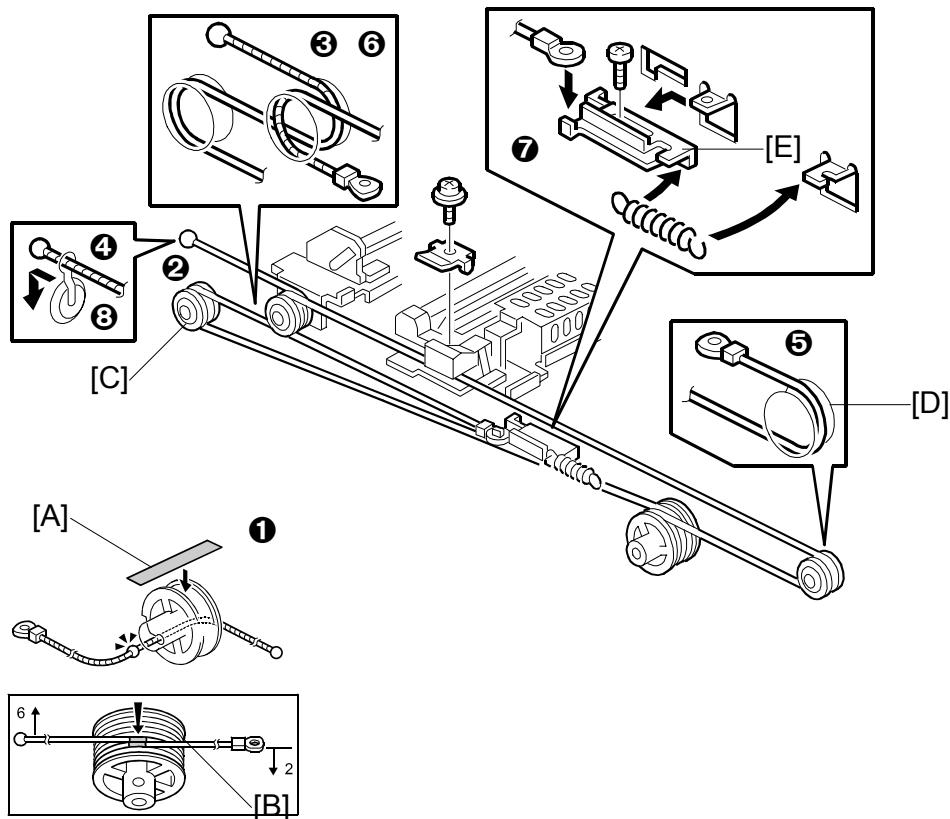
Wire Removal: Front

[A]: Tension bracket (掣子 x 1, spring x 1)

[B]: Front wire pulley (掣子 x 1)

- Remove the screw. While pulling back on the drive shaft, remove the pulley shaft.

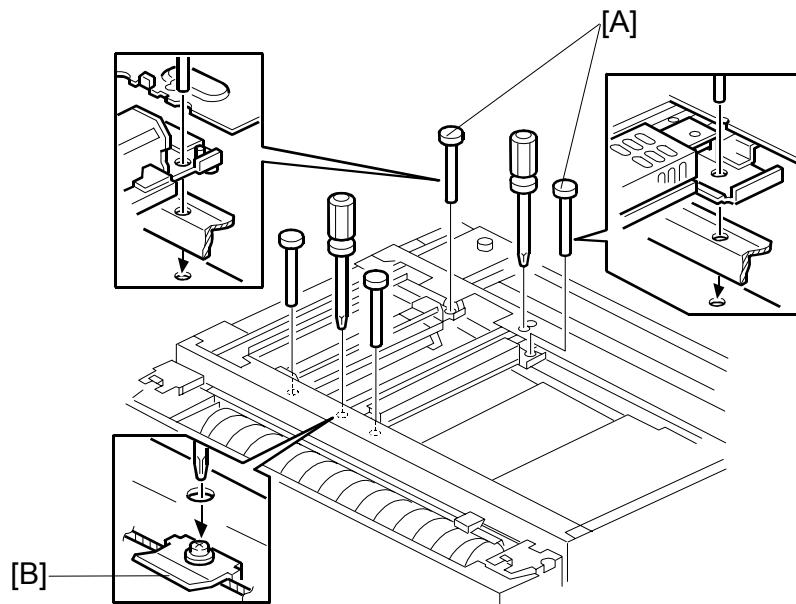
[C]: Scanner wire

Attaching the New Wire

**Replacement
Adjustment**

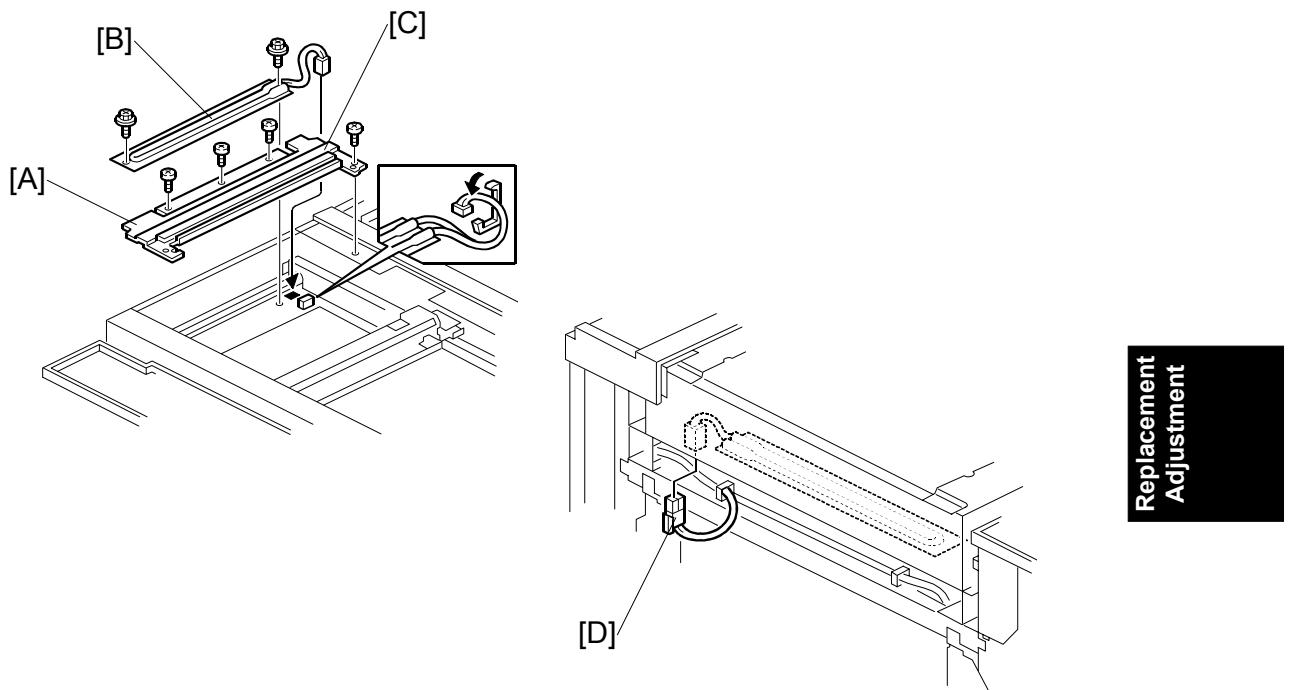
1. While paying attention to the direction of the wire (the leading bead), thread the wire [A] through the pulley, wrap the wire on the pulley, then apply tape to hold it in place.
 - Wind the wire on the bead side [B] clockwise 6 times, and the ring side 2 times as shown (❶).
2. Set the pulley with the taped wire on the scanner drive shaft.
3. Position the 1st scanner with the positioning pins, part number A0069104 ([A] on the next page).
4. Wind the end of the wire with the bead [C] as shown (❷❸❹).
5. Wind the ring-end of the wire around the pulley [D], install the tension bracket [E], then tighten the screw slightly to temporarily lock the wire to the bracket (❺❻❷).

SCANNER



6. Attach the 1st scanner bracket [B].
7. Tighten the screw on the tension bracket ([E] previous page).
8. Remove the positioning pins. Hold the center of the 1st scanner then move it gently left and right to make sure that the wire is seated and positioned correctly.
9. Insert the positioning pins again, then loosen the following screws: 2nd scanner inner screws, 1st scanner bracket screws, tension bracket screw.
10. With the pulley facing directly up, tighten the screws again to fix the pulley in place.
11. Re-assemble the scanner, then perform the scanner and printer adjustments.
(3.14)

3.4.11 SCANNER HEATER



Replacement
Adjustment

Exposure glass (参照 3.4.2)

Operation panel (参照 3.3.1)

[A]: Scanning glass plate (× 4).

[B]: Scanner heater (× 2).

[C]: Fasten the cable with the harness clamp.

[D]: Fasten the connector on the left side of the machine (× 1).

3.5 LASER UNIT

⚠️ WARNING

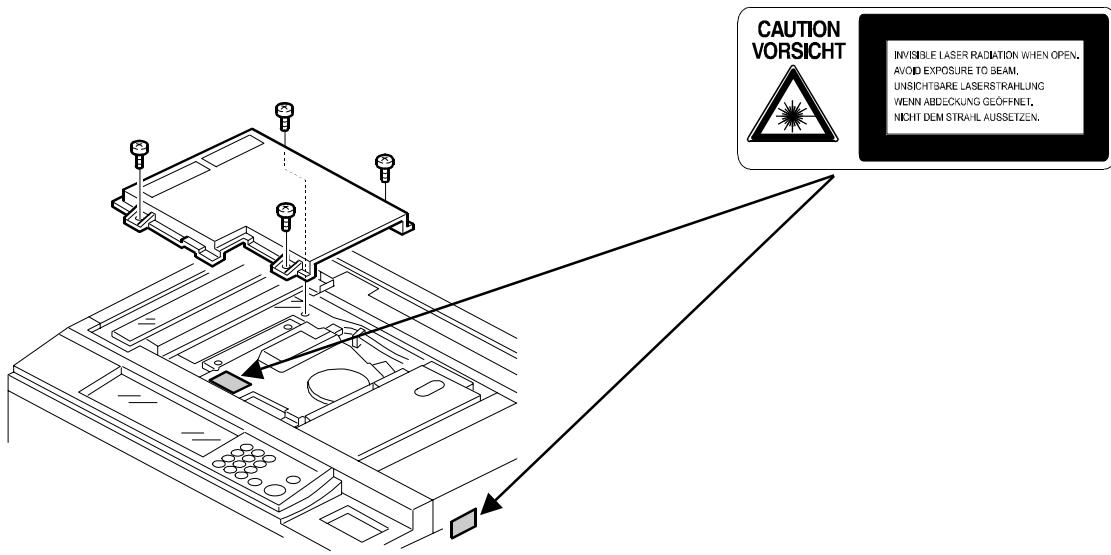
Turn off the main power switch and unplug the machine before performing any procedure in this section. Laser beams can seriously damage the eyes.

⚠️ WARNING

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

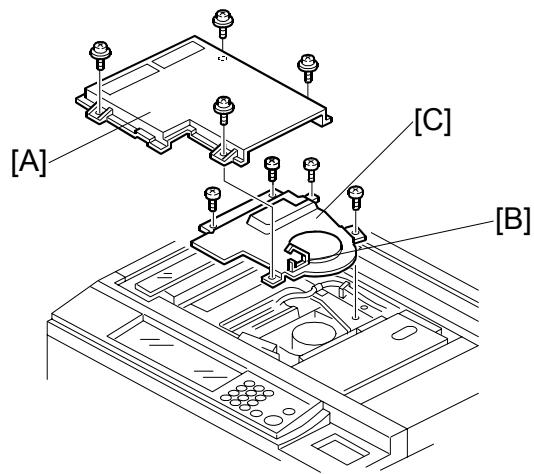
3.5.1 CAUTION DECALS

Two caution decals are provided for the laser section.



3.5.2 LD UNIT AND POLYGON MOTOR

- [A]: LD unit cover (\wedge x 4)
- [B]: Harness connector
- [C]: Polygon motor cover (\wedge x 4)



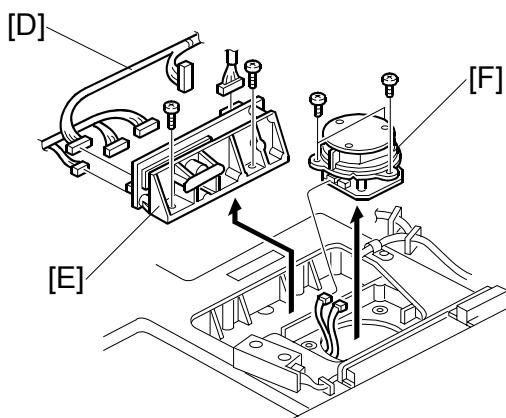
Replacement
Adjustment

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 main power and disconnecting the power plug.

- [D]: LDB connectors (\square x 6)
- [E]: LD unit (\wedge x 2)
- [F]: Polygon motor (\wedge x 3, \square x 2)

- Follow this procedure in reverse order to install the new LD unit or polygon motor.

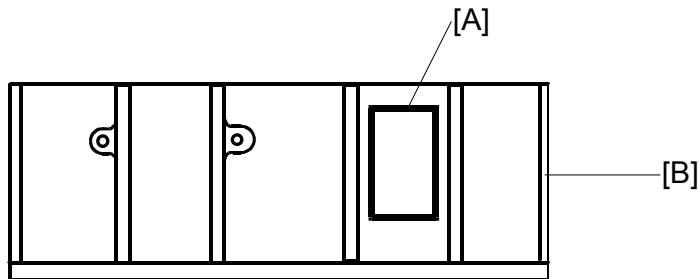


CAUTION

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

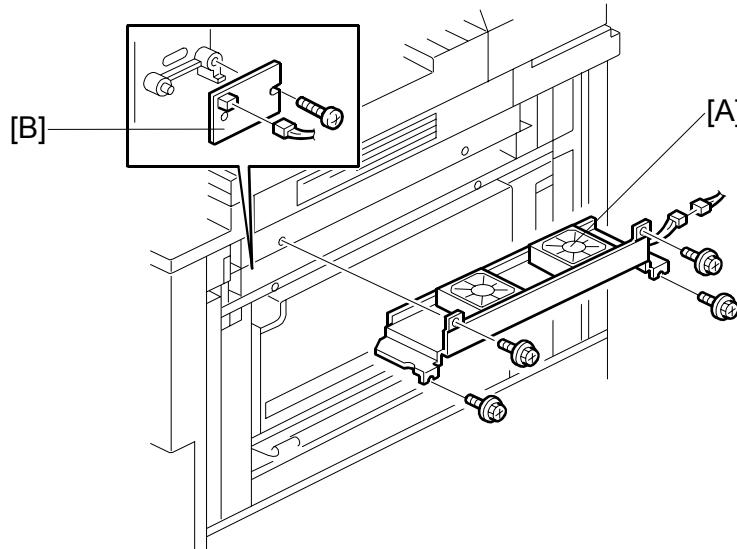
SP Adjustments

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.



- 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 scanner and printer adjustments. (☞ 3.14)

3.5.3 LASER SYNCHRONIZATION DETECTOR REPLACEMENT



Replacement
Adjustment

Remove the right side cover ($\wedge \times 2$)

NOTE: If the optional LCT is installed, disconnect it ($\wedge \times 1$).

[A]: Development unit fans ($\wedge \times 4$, $\square \times 1$)

[B]: Synchronization detector ($\wedge \times 1$, $\square \times 1$)

After replacement, set SP1002-001~007 (Side-to-Side Registration) to the defaults.

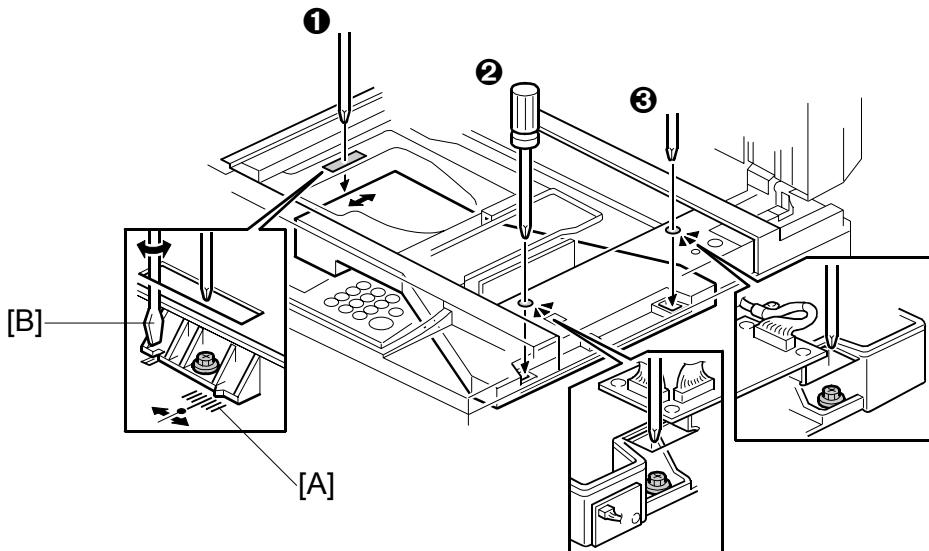
3.5.4 LASER UNIT ALIGNMENT

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.

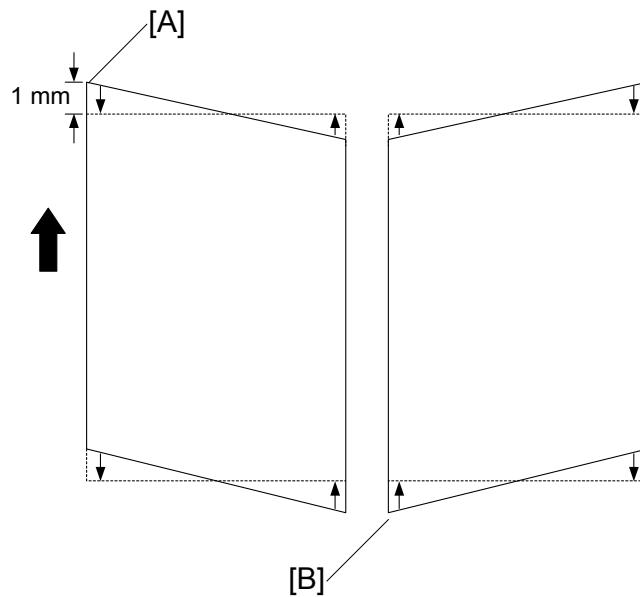
This adjustment corrects the parallelogram pattern to the desired rectangular pattern for printing; it does not correct the skew of scanned images.

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 exposure glass (☞ 3.4.2).
3. Remove the LD unit cover and polygon motor cover (☞ 3.5.2).
4. Remove the right cover (☞ 3.3.3).
5. Loosen the screws of the laser exposure unit ①②③ (☞ 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.

Replacement
Adjustment



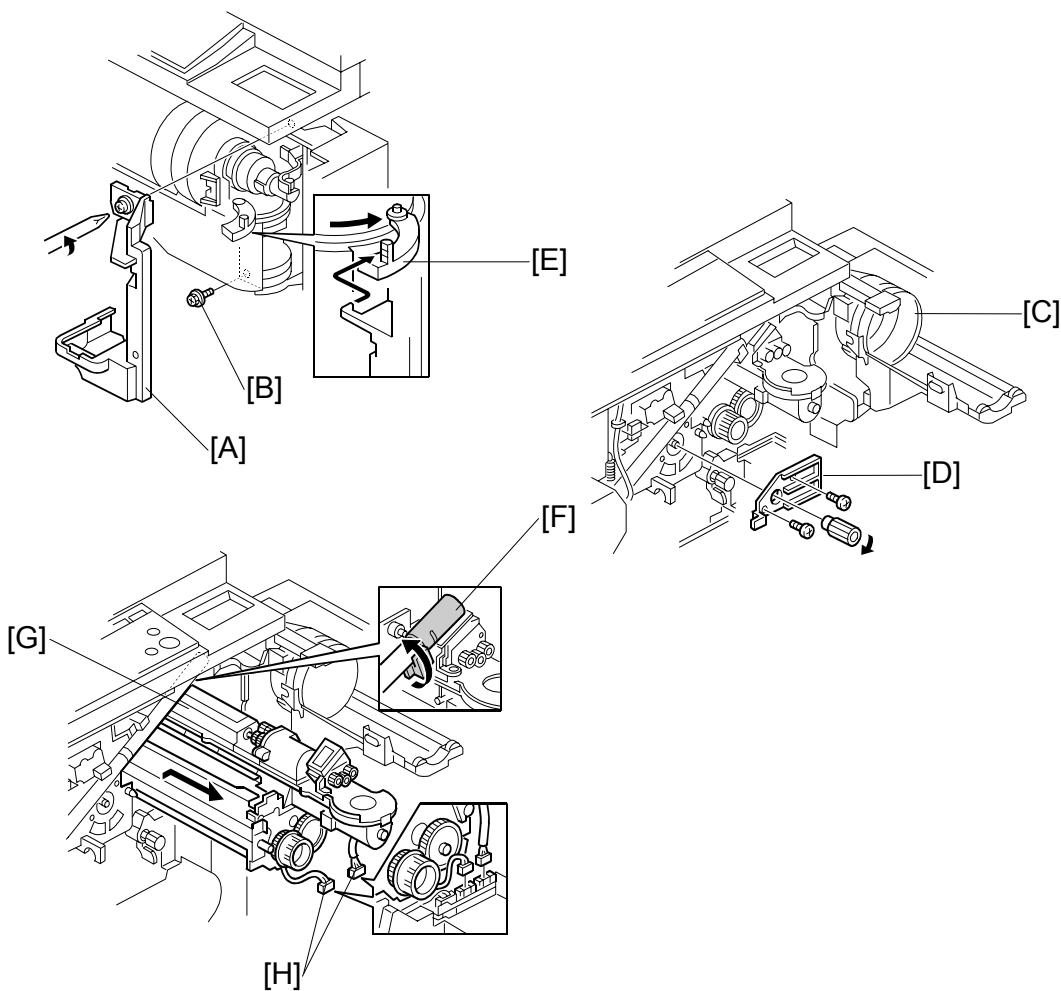
7. Adjust the position of the laser exposure unit.
 - If the pattern is skewed at the corner of the leading edge [A], move the unit so it moves the pointer on the scale toward the back.
 - If the pattern is skewed at the lower left corner of the trailing edge [B], move the unit so it moves the pointer on the scale toward the front.
- NOTE:** 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

3.6 DRUM UNIT

3.6.1 DEVELOPMENT UNIT REMOVAL

Removal



[A]: Shutter cover (\wedge x 1).

[B]: Lock screw

[C]: Toner bottle.

- Pull the toner bottle holder out and swing the toner bottle holder to the right.

[D]: Face plate (knob x 1, \wedge x 2)

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

[F]: Close the supply pipe shutter

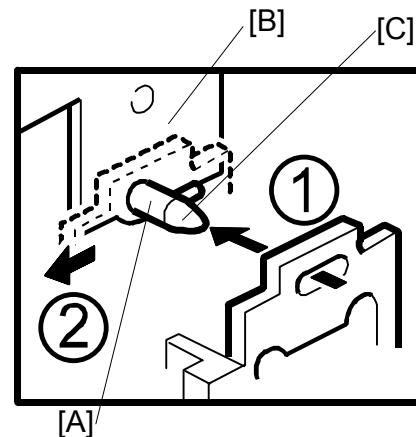
[G]: Development unit (\square x 2 [H])

- Allow the unit to slip to the right, then slowly pull it out of the machine.

NOTE: 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.

→ Re-installation

1. Push the development unit all the way to the right.
 2. Continue to hold the unit to the right and push it into the machine.
- IMPORTANT:** Make sure the pin [A] goes into the left side of the hole in the development unit plate.
3. Push the development unit all the way in, so that the development unit plate touches the mainframe plate [B].
- IMPORTANT:** Make sure you can see the small pin [C] in front of the plate. If you cannot move the development unit plate behind the small pin, turn the front gear of the unit to the left, and try again.
4. Push the development unit to the left, until it contacts the PCU.
 5. Make sure the pipeline shutter is rotated down to the open position.



Replacement
Adjustment

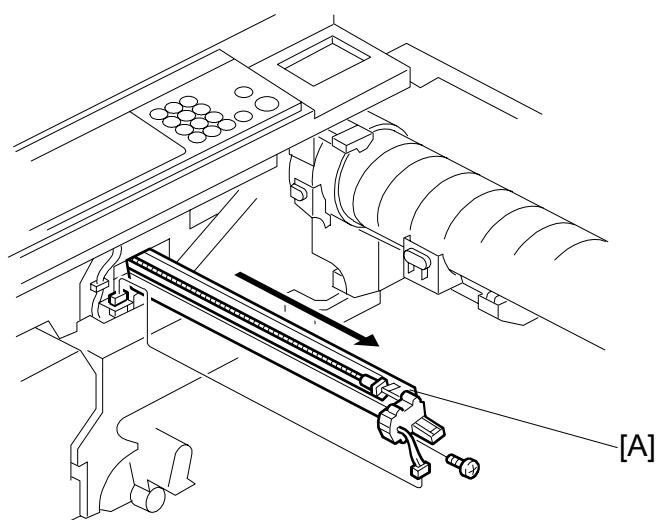
Replacement with a used Development Unit

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 V_{REF} for this unit into SP2220.
3. After the test, reinstall the old development unit, and change SP2220 back to the original value.

DRUM UNIT

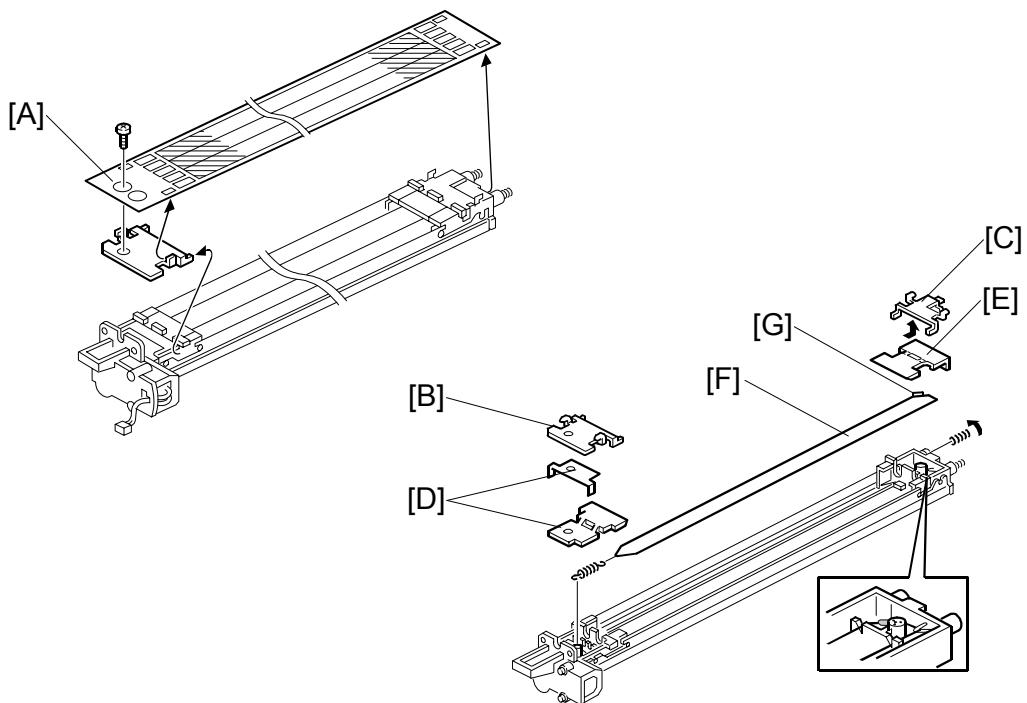
3.6.2 CHARGE CORONA UNIT



Development unit (参照 3.6.1)

[A]: Charge corona unit (× 1, × 1)

3.6.3 CHARGE CORONA WIRE AND GRID



Replacement
Adjustment

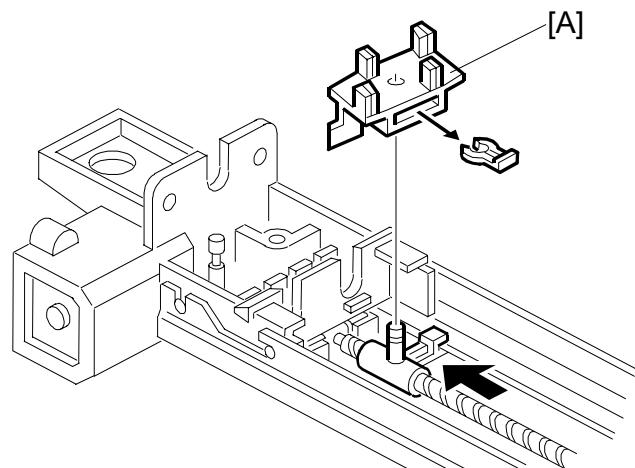
Charge corona unit (☞ 3.6.1)

- [A]: Grid (☞ x 1)
- [B]: Front bracket
- [C]: Rear bracket
- [D]: Front block cover
- [E]: Rear block cover
- [F]: Corona wire
 - Disconnect the wire behind the grid bracket.

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

DRUM UNIT

3.6.4 CHARGE CORONA WIRE CLEANING PADS

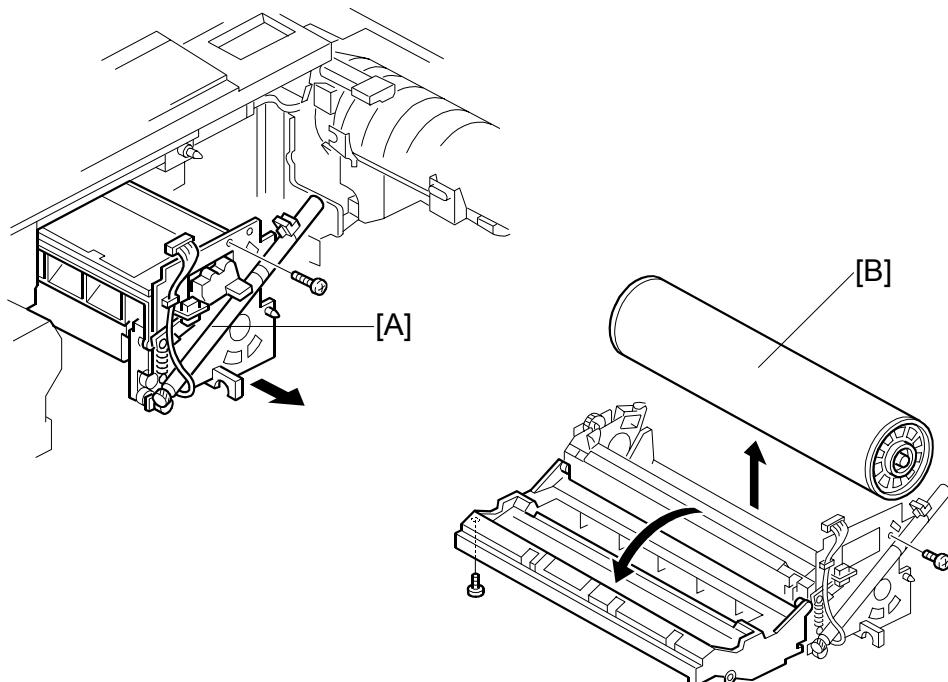


Charge corona unit (☞ 3.6.2)

Charge corona wire and grid (☞ 3.6.3)

[A]: Cleaning pad (◎ x 1)

3.6.5 OPC DRUM REMOVAL



Replacement
Adjustment

Development unit (参照 3.6.1)

Charge corona unit (参照 3.6.2)

[A]: Drum unit (× 1, × 1)

- Grasp the drum unit by the knob to remove it from the machine.

[B]: OPC drum

After replacing the drum, do the following SPs:

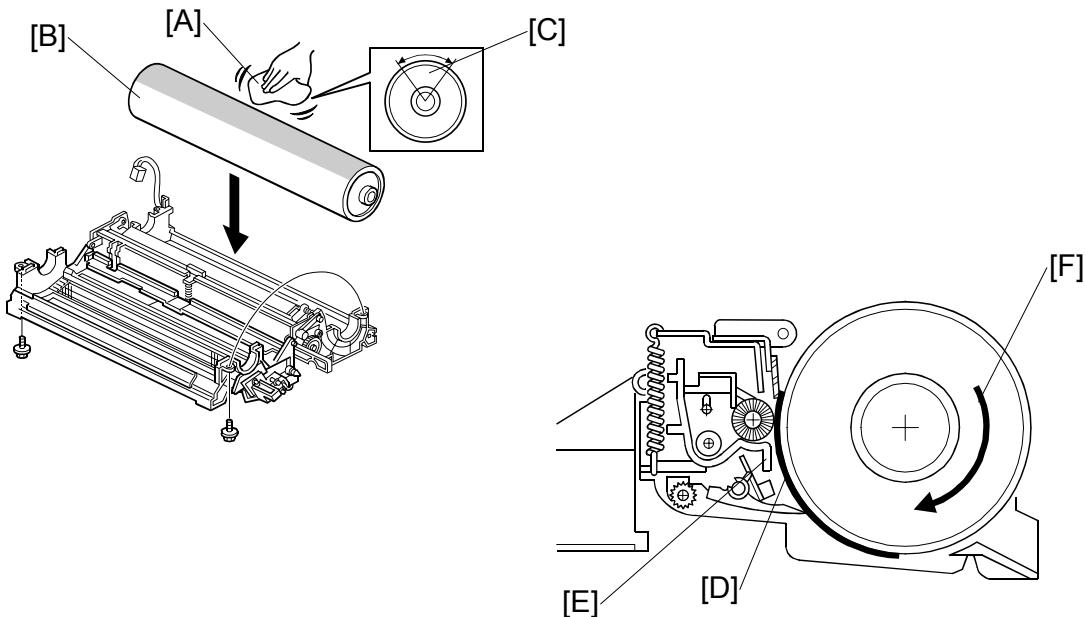
- Set SP2001-001 (Charge Roller Bias Adjustment – Applied Voltage for Image Processing) to the default setting.
- SP2962 (Adjustment of Drum Conditions), only if SP3901 (Auto Process Control) is on.

NOTE: 1) To avoid fingerprints on the surface of the OPC drum, never touch the surface of the drum with bare fingers.
 2) 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.
 3) Before installing a new drum, dust the surface of the OPC drum carefully with setting powder. For more, see next page.

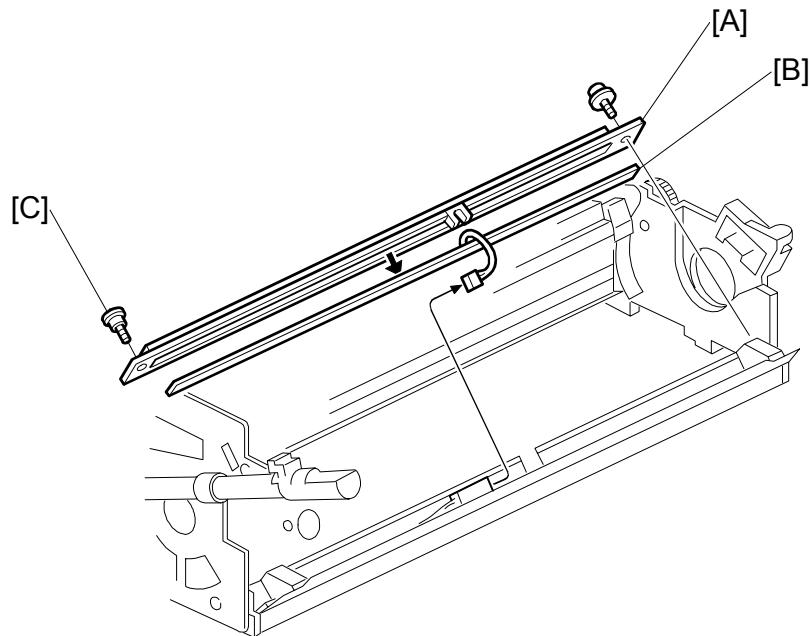
Dusting the Drum Surface

The surface of the drum is less smooth, so you must apply Drum Setting Powder (P/N: 54429101) to the drum surface before installation.

Important!: 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.
 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.

3.6.6 PTL (B140 SERIES ONLY)

Replacement
Adjustment

OPC drum (☞ 3.6.5)

[A]: PTL bracket (☞ x 2)

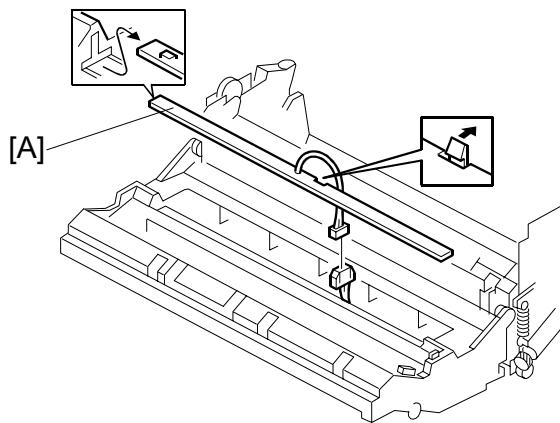
[B]: PTL (☞ x 1)

Reinstallation

- The shoulder screw [C] must be attached again at its initial location.

DRUM UNIT

3.6.7 QUENCHING LAMP



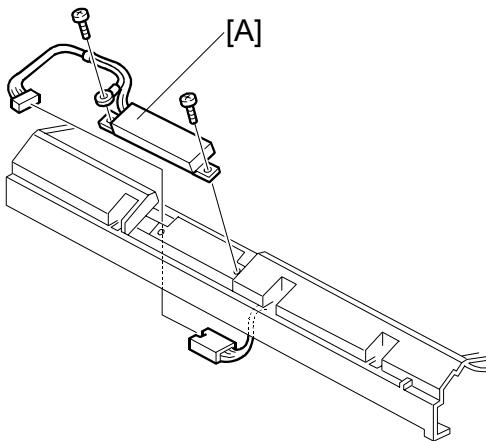
OPC drum (☞ 3.6.5)

[A]: Quenching lamp (✉ 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.

3.6.8 DRUM POTENTIAL SENSOR

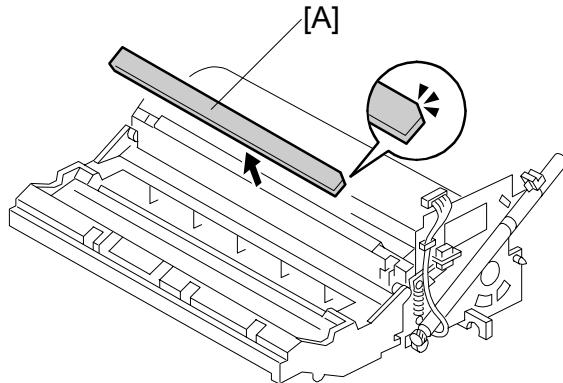


OPC drum (☞ 3.6.5)

[A]: Drum potential sensor (✉ x 2, ✉ x 1)

NOTE: After replacing the drum potential sensor, do SP2962 (Adjustment of Drum Conditions), only if SP3901 (Auto Process Control) is on.

3.6.9 CLEANING FILTER

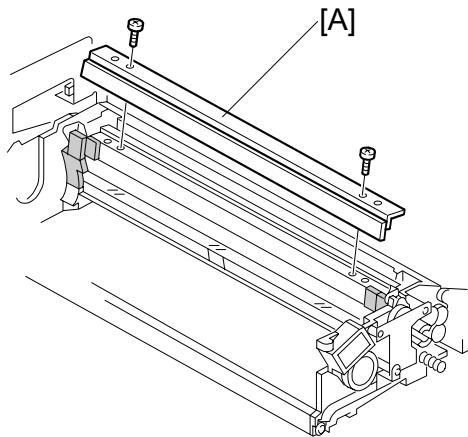


OPC drum (☞ 3.6.5)

[A]: Cleaning filter

Replacement
Adjustment

3.6.10 CLEANING BLADE

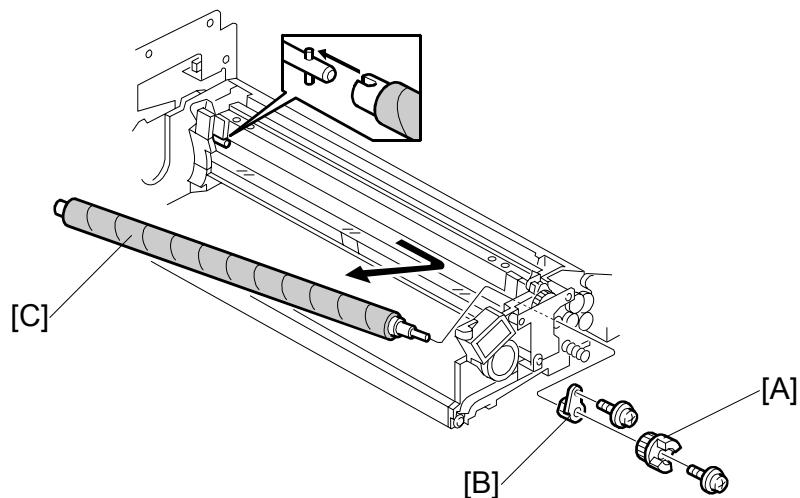


OPC drum (☞ 3.6.5)

[A]: Drum cleaning blade (☞ x 2)

- NOTE:**
- 1) Clean the blade edge carefully with only a soft, clean cloth.
 - 2) Handle the blade carefully to avoid nicking its edge.
 - 3) 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.
 - 4) Before installing a new blade, make sure that the blade side seals are not pinched by the blade.

3.6.11 CLEANING BRUSH



OPC drum (☞ 3.6.5)

Drum cleaning blade (☞ 3.6.10)

[A]: Coupling (x 1)

[B]: Inner bushing

[C]: Cleaning brush

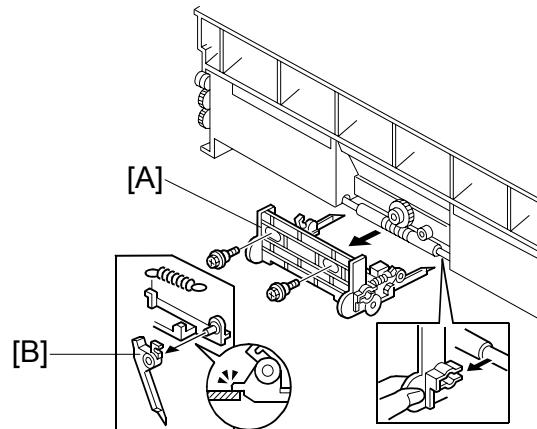
- Pull the shaft toward the rear to disengage the front of the shaft, then pull out.

NOTE: 1) After replacing the cleaning brush, clean the ID sensor to make sure that it is clean and free of toner.

2) Avoid touching the cleaning brush with bare hands.

3) Check the entrance seals and confirm that they are not bent.

3.6.12 PICK-OFF PAWLS



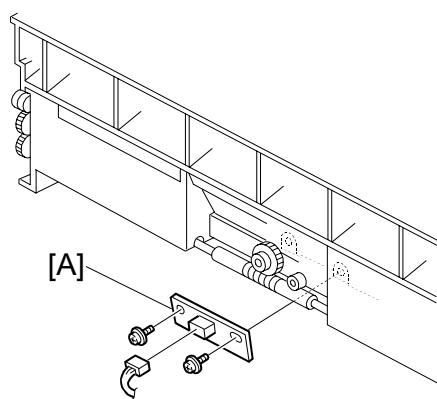
Replacement
Adjustment

OPC drum (☞ 3.6.5)

[A]: Pick-off pawl bracket (☞ x 2)

[B]: Pick-off pawl (spring x 1)

3.6.13 ID SENSOR



OPC drum (☞ 3.6.5)

Pick-off pawls (☞ 3.6.12)

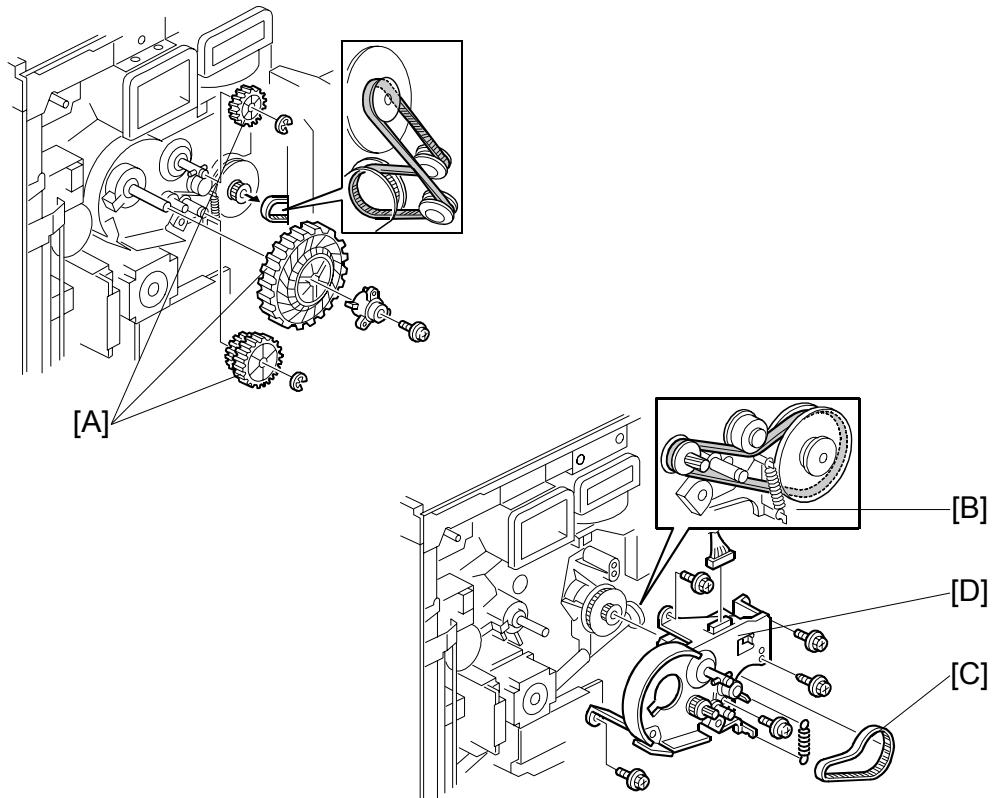
[A]: ID sensor (☞ x 2, ☞ x 1)

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 UNIT

3.6.14 DRUM MOTOR



Rear covers (☞ 3.3.5)

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)

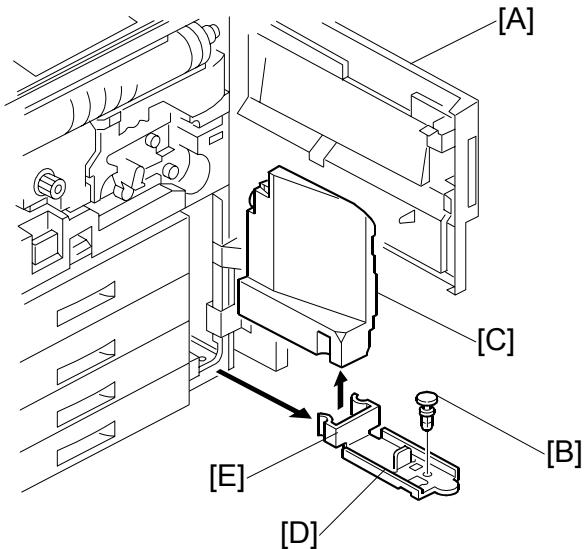
[A]: Three gears (☞ x 1, ☞ x 2, Timing belt x 1)

[B]: Spring

[C]: Timing belt

[D]: Drum motor (☞ x 1, ☞ x 5)

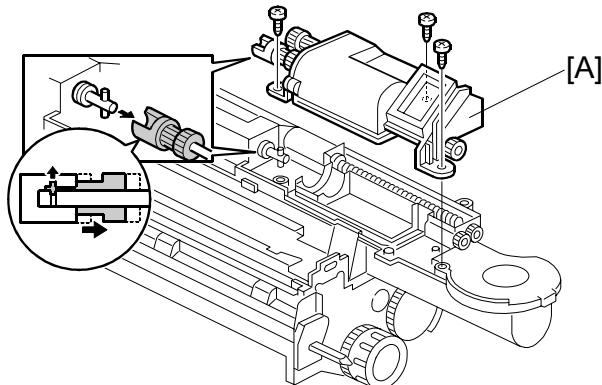
3.6.15 TONER COLLECTION BOTTLE



Replacement
Adjustment

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.

3.6.16 TONER SEPARATION UNIT



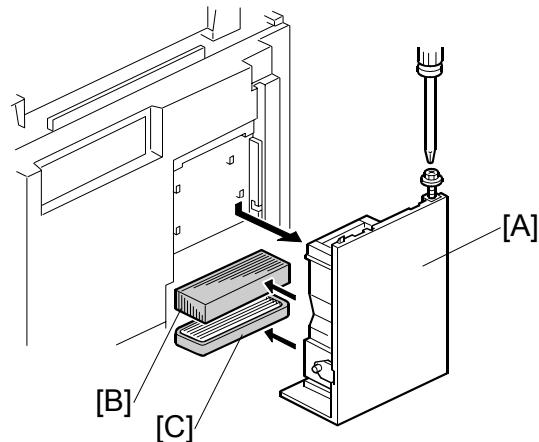
Development unit (3.6.1)

[A]: Toner separation unit (x 3)

DRUM UNIT

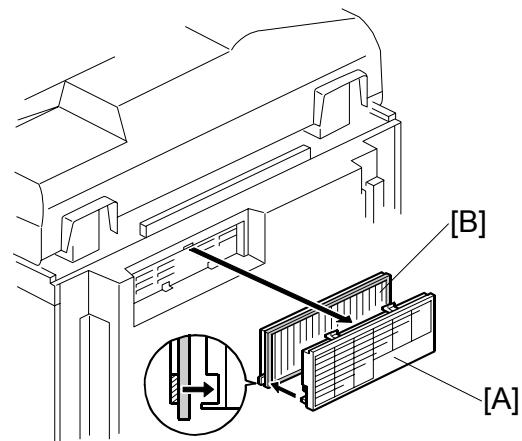
3.6.17 OZONE FILTERS

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



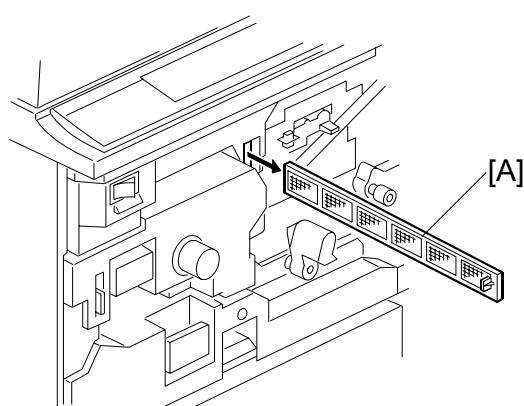
3.6.18 OPTICS DUST FILTER

- [A]: Filter cover
- [B]: Optics dust filter



3.6.19 INTERNAL DUST FILTER

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

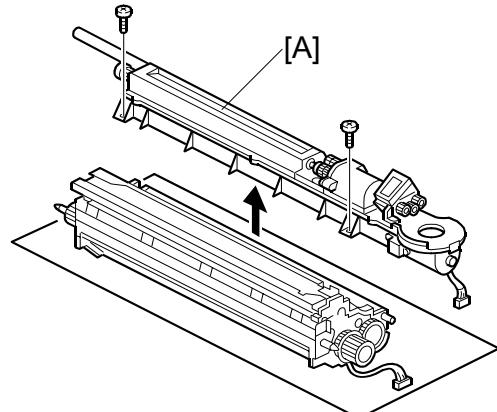


3.7 DEVELOPMENT UNIT

3.7.1 DEVELOPER REPLACEMENT

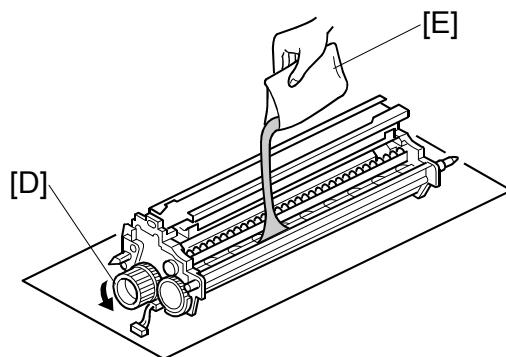
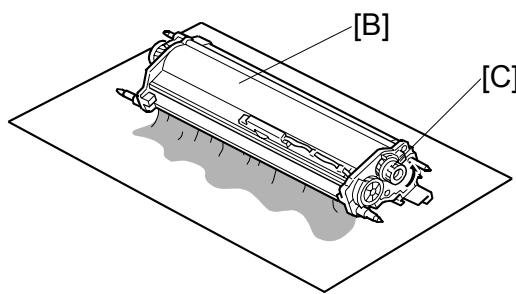
1. Remove the development unit
(3.6.1)
2. Remove the toner hopper [A] (x 2)
 - Rotate the toner hopper very slightly (10° ~ 20°) as you slide it up to remove it.

NOTE: To avoid toner spill, hold the hopper level as you remove it.



Replacement
Adjustment

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. Note the developer lot number printed on the top edge of the bag. You will need the lot number when you input SP2801.
8. Clean the development roller shaft with a clean cloth and blower brush.
9. While turning the knob [D] slowly, pour in one pack of developer [E] from one end of the development unit to the other.
 - Make sure that the developer is evenly distributed.



DEVELOPMENT UNIT

10. Re-assemble the machine.

- Hold the hopper perfectly level when re-attaching it, to prevent toner from entering the rails of the development filter.

NOTE: Automatic process control starts automatically after the machine is switched on, so after replacing the developer, you should enter the SP mode and initialize the developer with SP2801 as soon as possible after switching the machine on.

11. Do SP2801 (TD Sensor Initial Setting).

B064 Series

- Switch the machine on.
- Press Clear Modes 
- On the operation panel keypad, press   .
- Hold down Clear/Stop  for more than 3 seconds.
- Press “Copy SP” on the touch-panel.
- Press    .
- Read the lot number from the package, enter the number, then press .
- Press Execute.

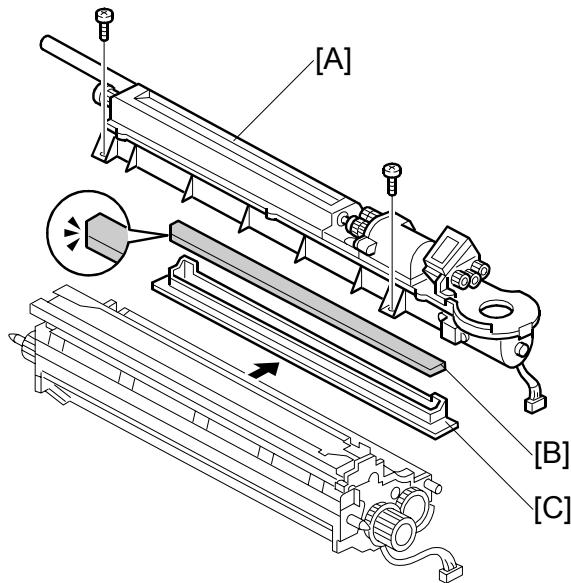
B140 Series

- Open the front door.

Important: If you open the front door, auto process control will not start. SP2801 must be done before auto process control starts.

- Turn the machine on.
- Push Clear Modes 
- On the operation panel keypad, push   .
- Hold down Clear/Stop  for more than 3 seconds.
- Push “Copy SP” on the touch-panel.
- Push    .
- Read the lot number from the pack of developer, input the number, then push .
- Push Execute.

3.7.2 DEVELOPMENT FILTER



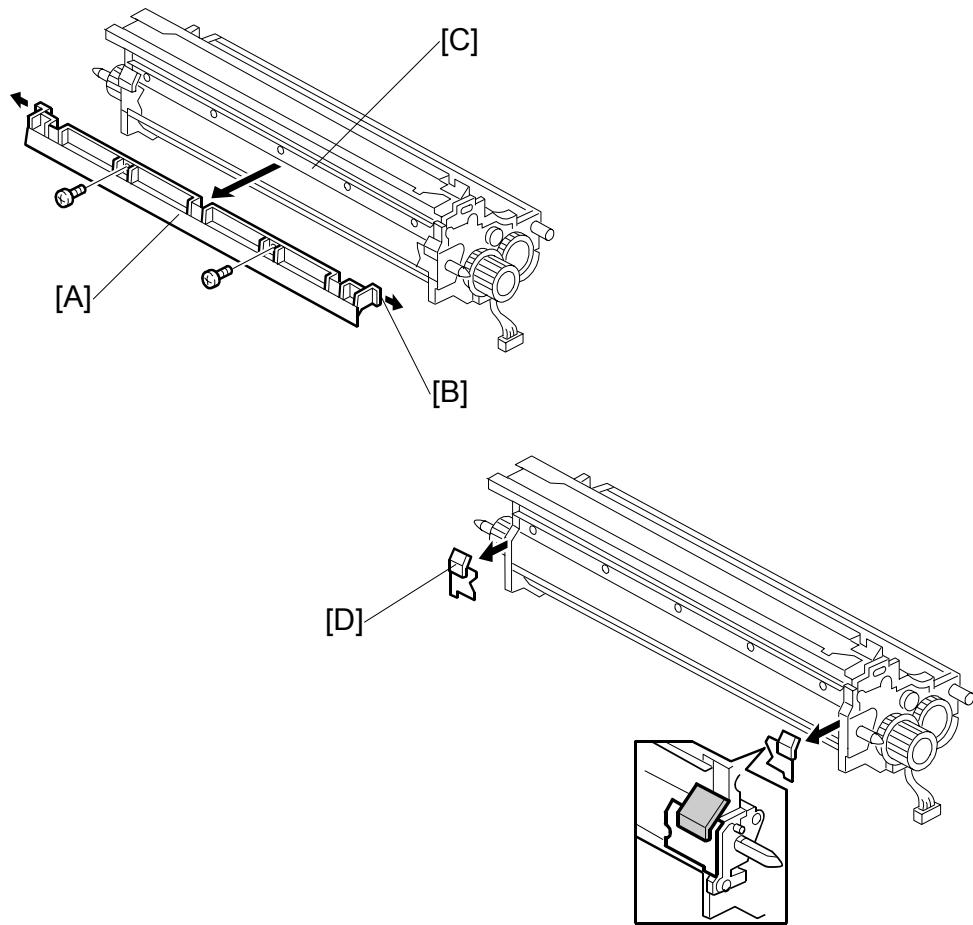
Replacement
Adjustment

Development unit (☞ 3.6.1)

- [A]: Toner hopper
- [B]: Filter case
- [C]: Development filter

- Make sure that the rails where the development filter bracket [D] 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 [D]. The filter case closes any gaps at the edges of the filter to prevent toner scatter.

3.7.3 ENTRANCE SEAL AND SIDE SEALS



Development unit (☞ 3.6.1)

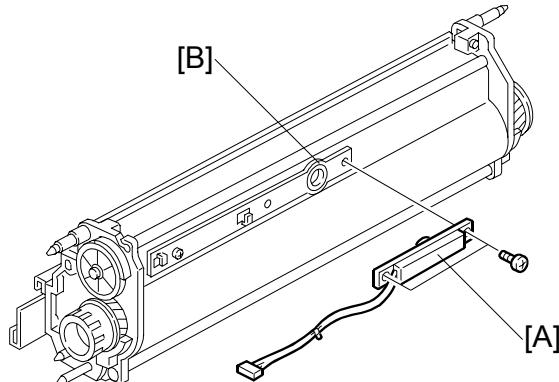
[A]: Entrance seal bracket (☞ x 2)

- 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.

[D]: Side seals

- Remove the side seals from both ends, clean the area, and replace with new seals.

3.7.4 TD SENSOR



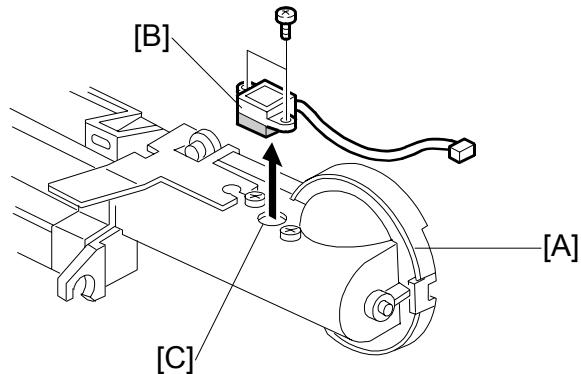
Replacement
Adjustment

Development unit (☞ 3.6.1)

[A]: TD sensor (☞ x 1)

- Before installing a new TD sensor, clean the TD sensor port [B].
- After replacing the TD sensor, do the following SPs
SP2801 TD Sensor Initial Setting
SP2962 Auto Process Control (only if SP3901 – Auto Process Control – is on).

3.7.5 TONER END SENSOR



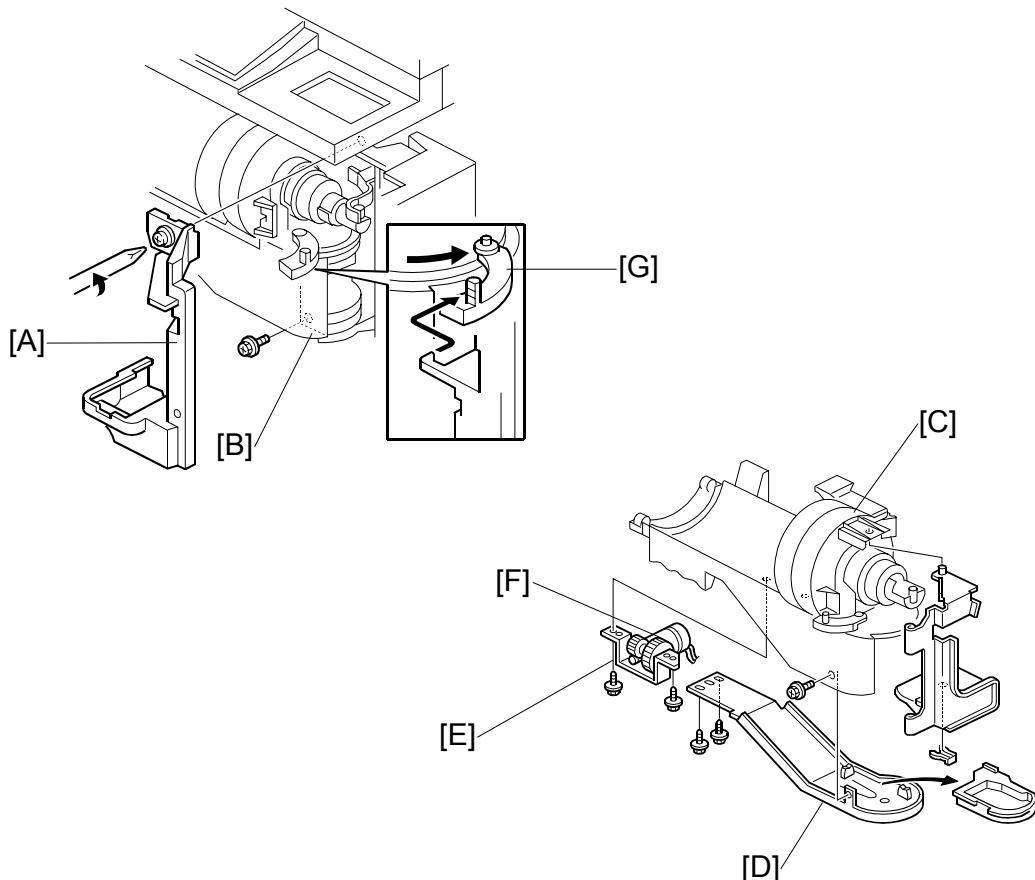
Development unit (☞ 3.6.1)

[A]: Toner hopper (☞ x 2)

[B]: Toner end sensor (☞ 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].

3.7.6 TONER SUPPLY MOTOR



Open the front door.

Swing the toner unit out of the machine and remove the toner bottle.

[A]: Bracket (掣 x 1)

[B]: Lock plate (掣 x 1)

[C]: Toner bottle unit (掣 x 1, harness x 1, 电池 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.

[D]: Bottom plate (掣 x 3, harnesses x 2)

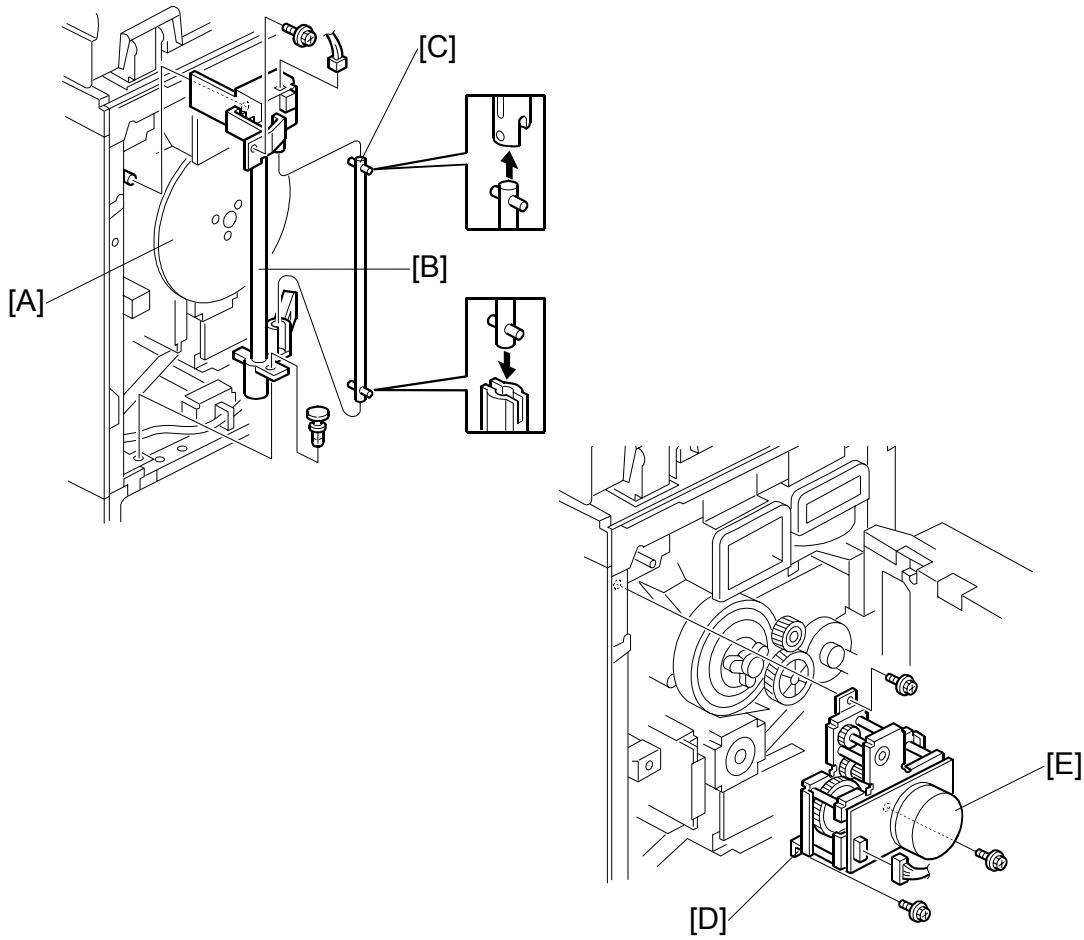
- 2 screws on the bottom, 1 screw on the side.

[E]: Toner supply motor bracket (掣 x 2)

[F]: Toner supply motor (掣 x 2)

NOTE: After re-installation the tab [G] should be behind the stay and its pin below should be in the open track below.

3.7.7 DEVELOPMENT MOTOR



[A]: Flywheel ($\text{φ} \times 3$)

[B]: Waste toner pump tube ($\text{φ} \times 1$, $\text{EP} \times 1$)

[C]: Drive rod

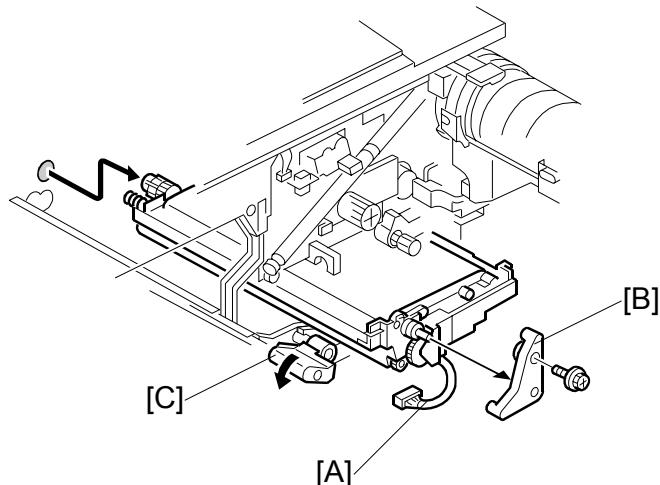
- Lift the toner pump tube to disengage the drive rod, pull out the rod, and push the rubber tube aside.

[D]: Development motor bracket ($\text{φ} \times 3$, $\text{EP} \times 1$)

[E]: Development motor ($\text{φ} \times 4$)

3.8 TRANSFER BELT UNIT

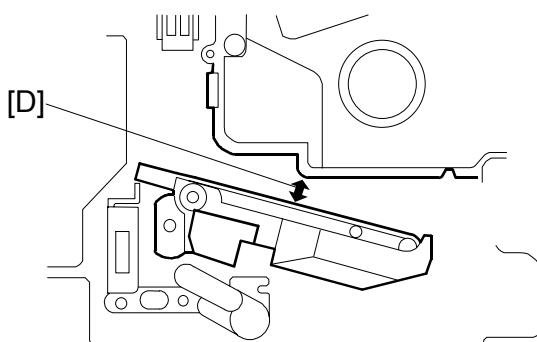
3.8.1 TRANSFER BELT UNIT



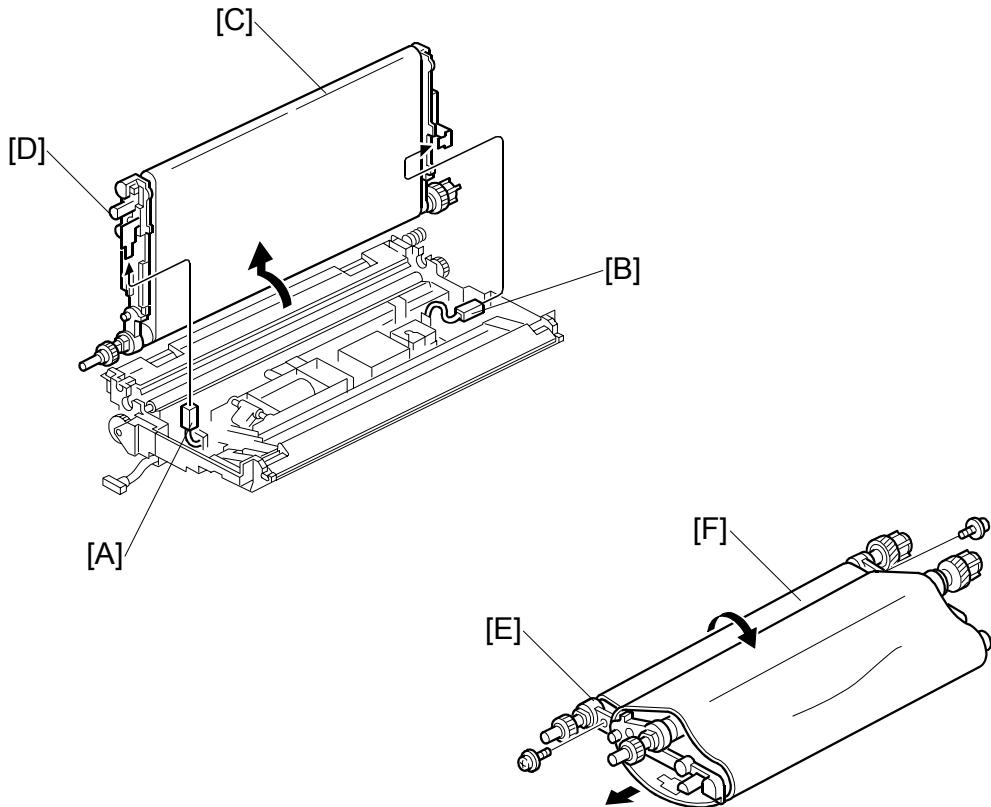
NOTE: Before you begin, spread a mat or some clean paper on the floor where you intend to set the transfer belt unit.

1. Remove the OPC drum unit (→ 3.6.5).
2. Disconnect the transfer belt unit [A] (�述 x 1).
3. Remove the transfer belt unit stay [B] (描述 x 1).
4. 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.

NOTE: 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] above. Avoid touching the belt with bare hands.



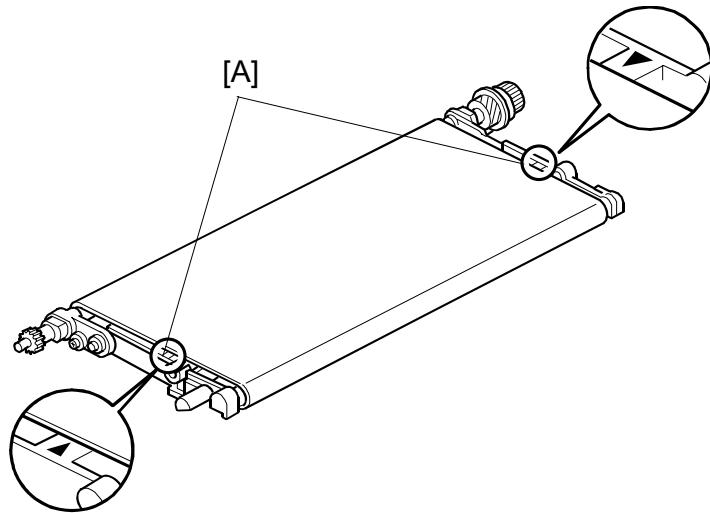
3.8.2 TRANSFER BELT



Replacement
Adjustment

1. Remove the transfer belt unit. (参照 3.8.1)
2. Disconnect the earth terminal [A] and transfer current terminal [B] (× 2). While doing this, hold the transfer belt unit [C] by its knobs [D].
3. 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.
4. Release the drive roller [E] (× 2).
5. Press in on the drive roller to collapse the unit into a "U" shape [F].
6. Remove the belt and replace it.

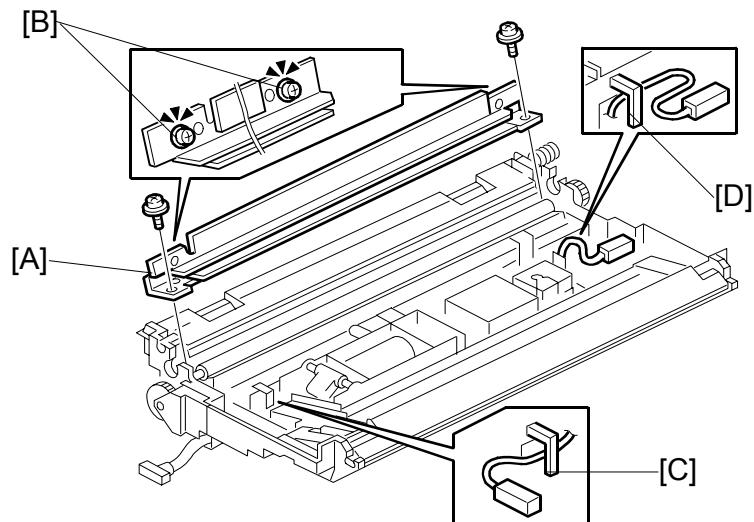
TRANSFER BELT UNIT



Check the following points:

- 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.
- 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 (☞ 3.8.2).**

3.8.3 TRANSFER ROLLER CLEANING BLADE



Replacement
Adjustment

Transfer belt unit (☞ 3.8.1)

Disassemble the transfer belt unit (☞ 3.8.1)

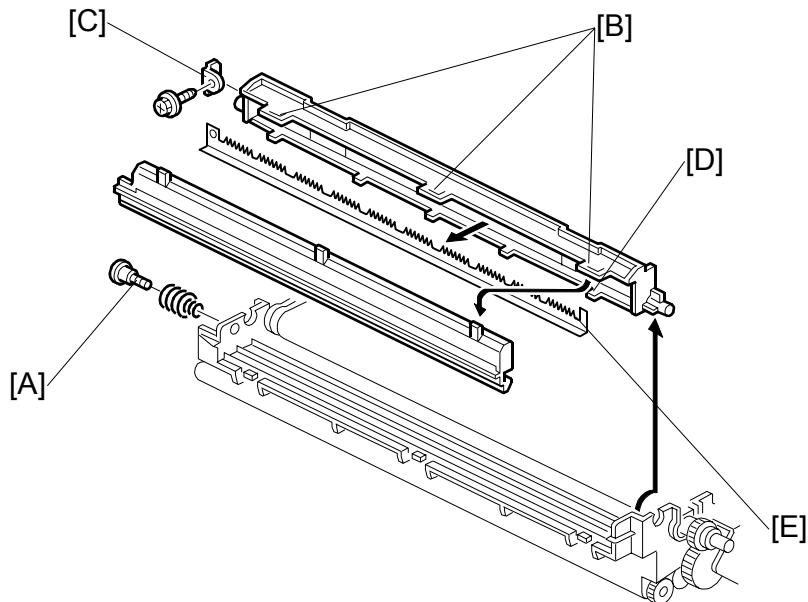
[A]: Transfer roller cleaning blade (☞ x 2, ☞ x 2)

NOTE: 1) 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.

- 2) **The transfer roller cleaning blade should always be replaced when the transfer belt is replaced.**
- 3) 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.
- 4) 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.

TRANSFER BELT UNIT

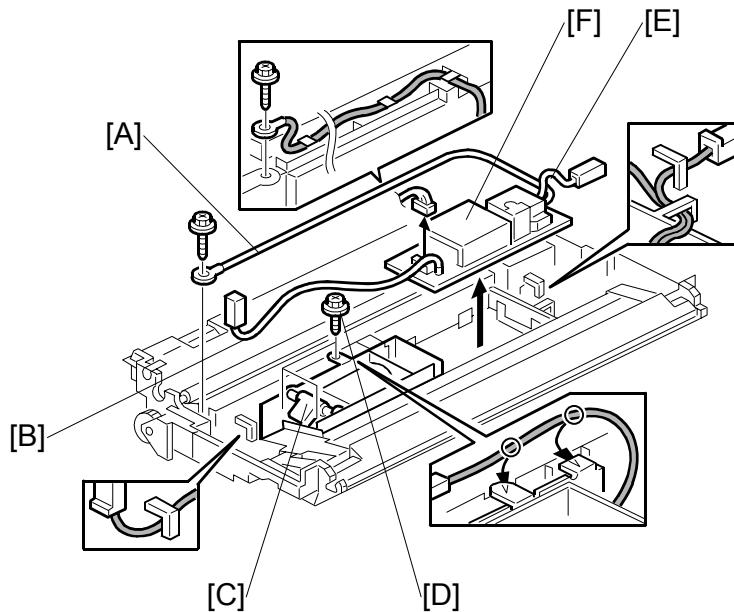
3.8.4 DISCHARGE PLATE



1. Remove the transfer belt unit (3.8.1)
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] (\wedge x 1).
6. Disconnect the 6 small seal case tabs [D].
7. Remove the discharge plate [E].

NOTE: When you re-assemble the discharge unit, set the discharge plate and make sure that it is perfectly flat before re-connecting the tabs. Before re-attaching the bracket [C], make sure that all the tabs are connected.

3.8.5 TRANSFER POWER PACK



Replacement
Adjustment

Transfer belt unit (3.8.1)

[A]: Wire (x 1) (all wire guides)

[B]: Ground terminal wire (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.

[E]: Transfer current terminal wire (wire guides x 2)

[F]: Transfer power pack (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.

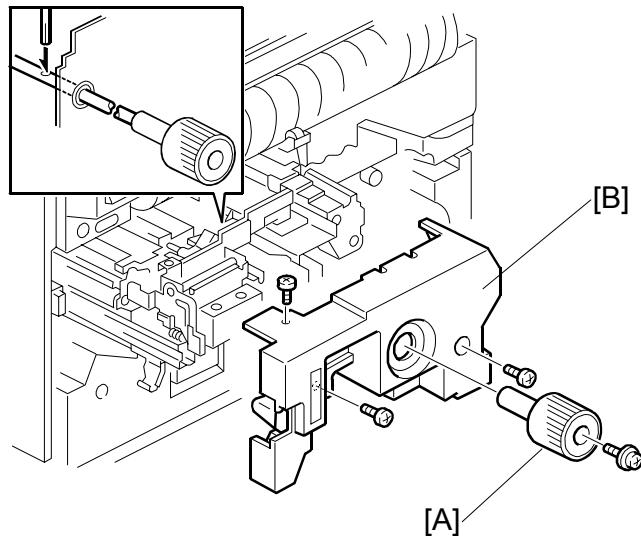
3.9 FUSING UNIT

⚠ 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.

3.9.1 FUSING UNIT

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



Open the front door.

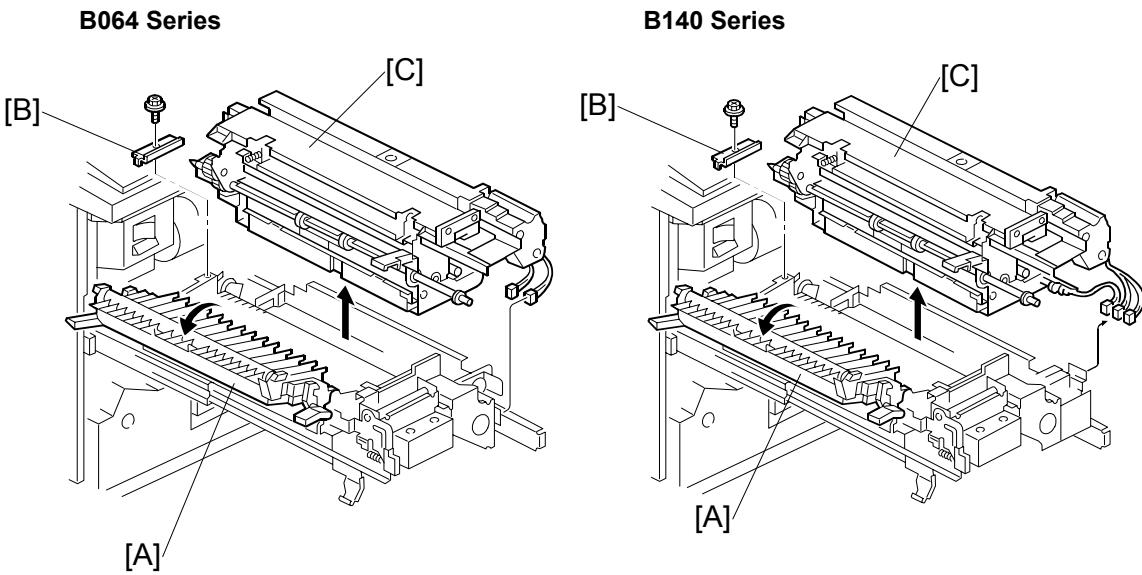
Pull out the transfer unit.

[A]: Knob ($\frac{7}{16}$ 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.

[B]: Inner cover ($\frac{7}{16}$ 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.



[A]: Open the exit separation pawl assembly.

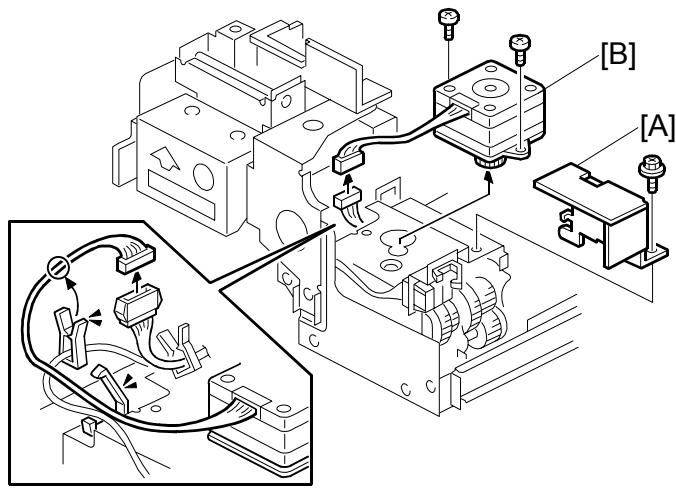
[B]: Stopper bracket (x 1)

[C]: Fusing unit (B064 Series: x 2, B140 Series: x 2)

Important:

- Give support to the bottom of the fusing unit with your hand when you remove it.

3.9.2 FUSING PRESSURE RELEASE MOTOR (B140 SERIES)



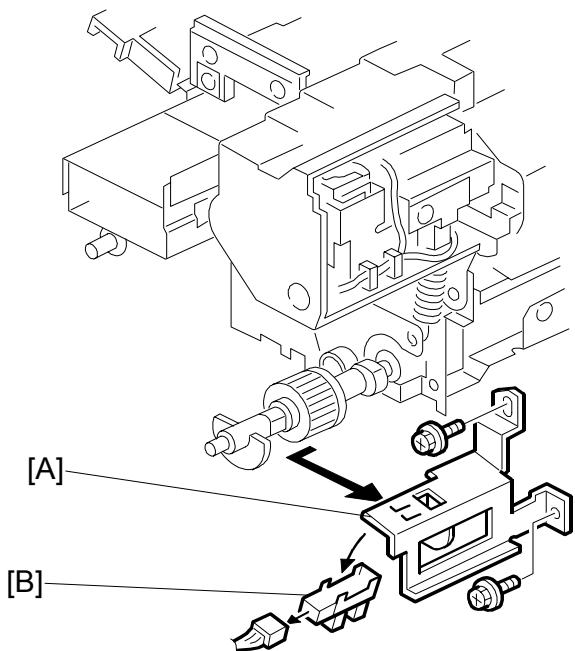
Fusing unit (3.9.1)

[A]: Bracket (x 1)

[B]: Motor (x 2, x 1, x 2)

FUSING UNIT

3.9.3 FUSING PRESSURE RELEASE HP SENSOR (B140 SERIES)

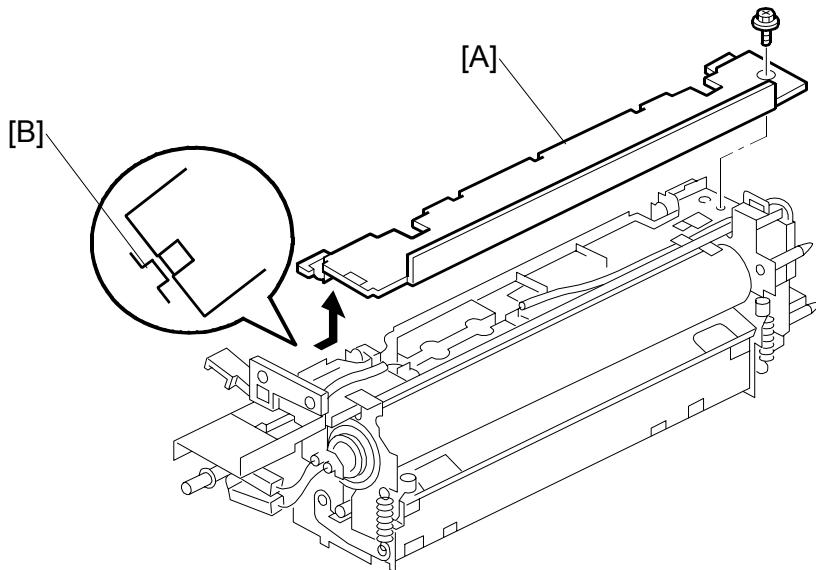


Fusing unit (参照 3.9.1)

[A]: Bracket (× 2)

[B]: HP sensor (pawls × 4)

3.9.4 FUSING UNIT THERMISTORS AND THERMOSTATS



Replacement
Adjustment

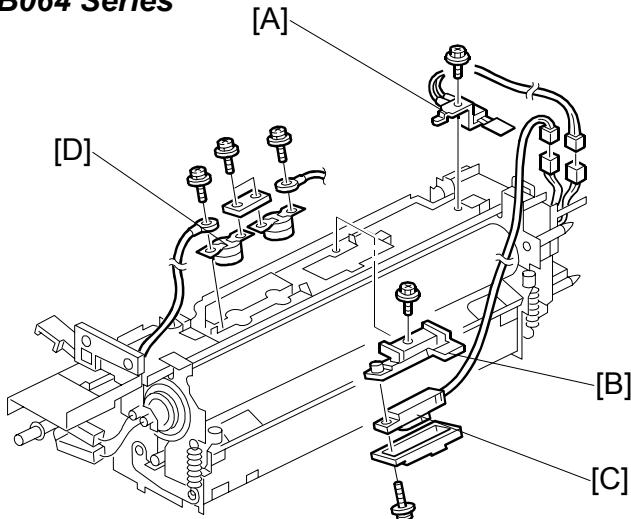
Fusing unit (3.9.1)

[A]: Upper cover (x 1)

[B]: Press in to release the pawls inside, then remove.

Important: Make sure that the pawls [B] engage correctly when you install the unit again.

⇒ **B064 Series**

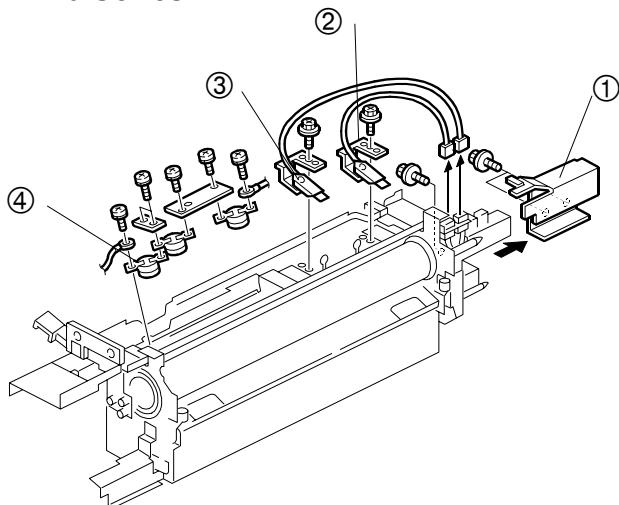


[A]: End thermistor (x 1, x 1)

[B]: Bracket (x 2)

[C]: Center thermistor (x 1)

[D]: Two thermostats (x 3)

⇒ **B140 Series**

- ①: Rear end cover (x 2)
- ②: End thermistor bracket and thermistor (x 1, metal clamps x 1)
- ③: Center thermistor bracket and thermistor (x 1, metal clamps x 1)
- ④: Three thermostats (x 5)

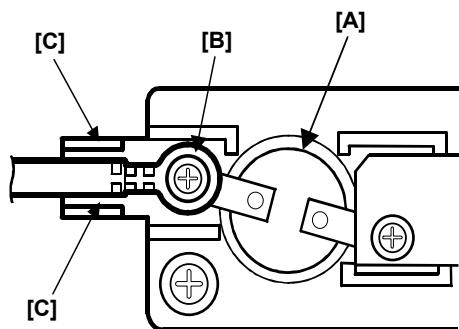
IMPORTANT:

- To prevent damage to a thermostat, never touch its detection surface.
- Do the following when you replace thermostat [A] (P/N- AW110040: Thermostat - 192°C):
 1. Put the end of the thermostat harness that has the round lead [B] **between the two bracket ribs [C]**.
 2. Tighten the screw for the round lead [B] **as tight as you can**.

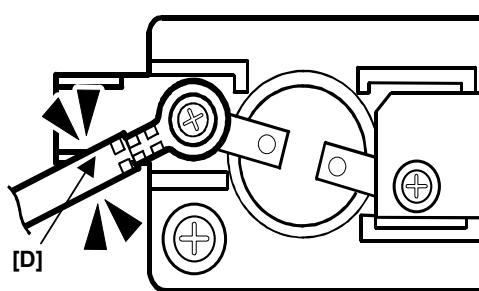
IMPORTANT: Do not damage the screw or screw hole as you tighten the screw.

NOTE: If you do not put the harness between the bracket ribs [D] (See "Incorrect"), a thermostat disconnection or SC542/SC545 error may occur.

[Correct]

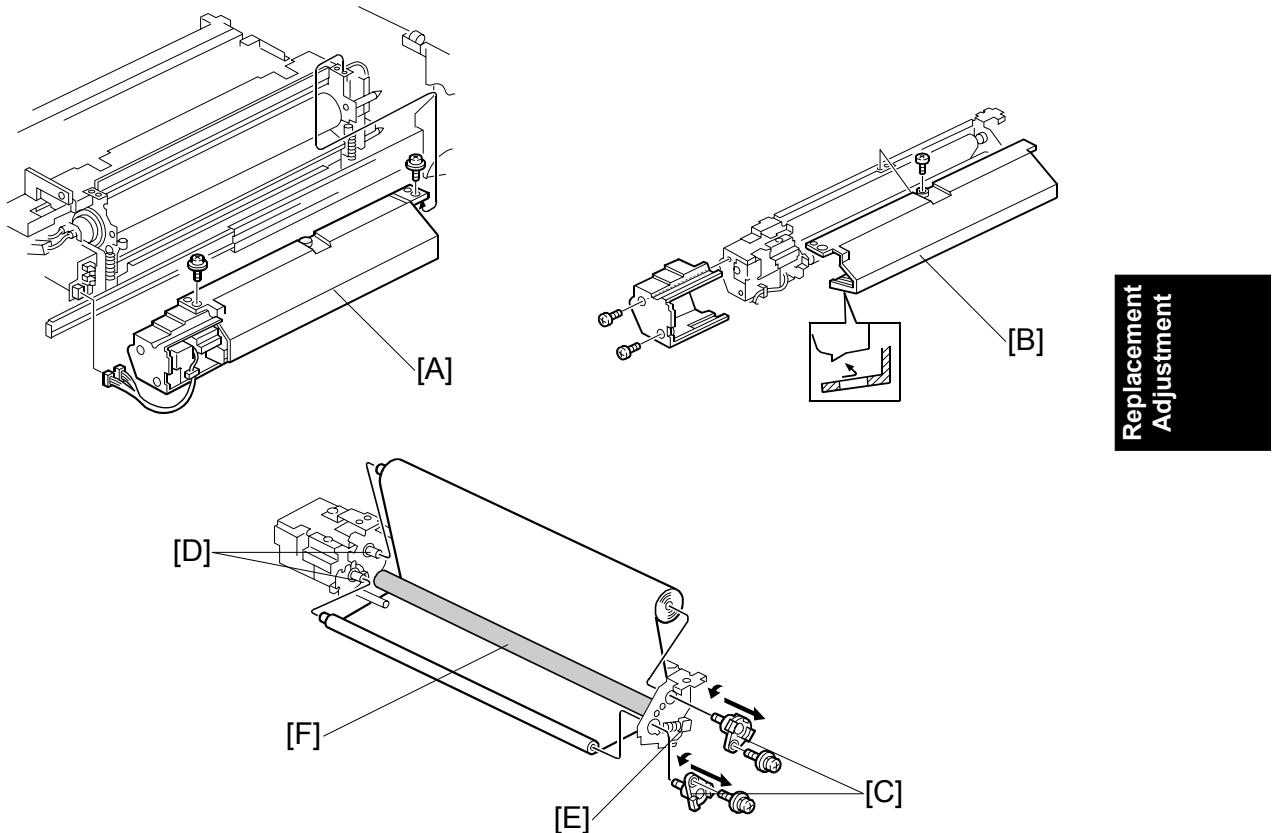


[Incorrect]



3.9.5 WEB CLEANING ROLLER

Web Unit Disassembly



Open the front door and pull out the fusing unit on its support rails.

[A]: Web unit ($\wedge \times 2$, $\square \times 2$)

- The web unit can be removed without removing the fusing unit from the machine.

[B]: Upper cover ($\wedge \times 1$)

- Rotate the cover down slightly to remove.

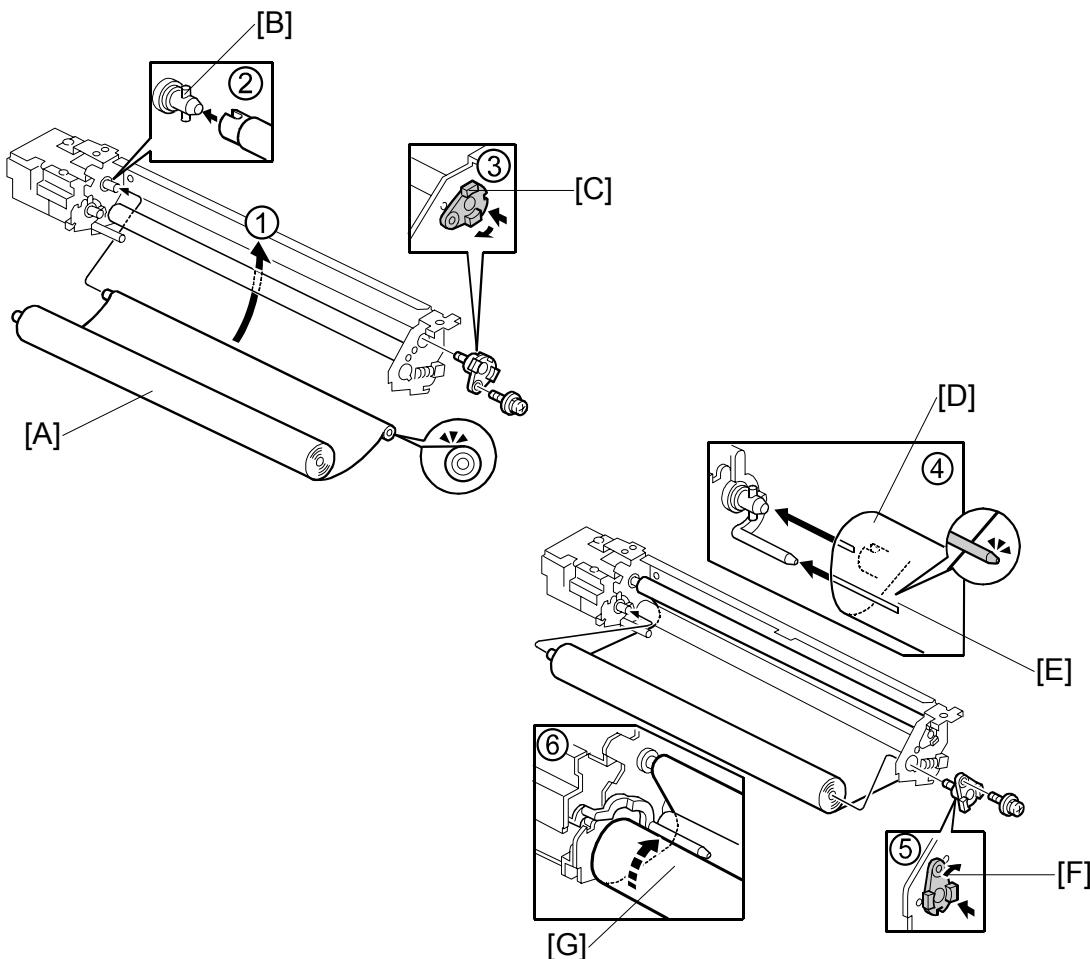
[C]: Web shafts ($\wedge \times 2$)

[D]: Remove the web cleaning rollers from the shaft driver pins.

[E]: Web bushing (spring $\times 1$)

[F]: Cleaning roller

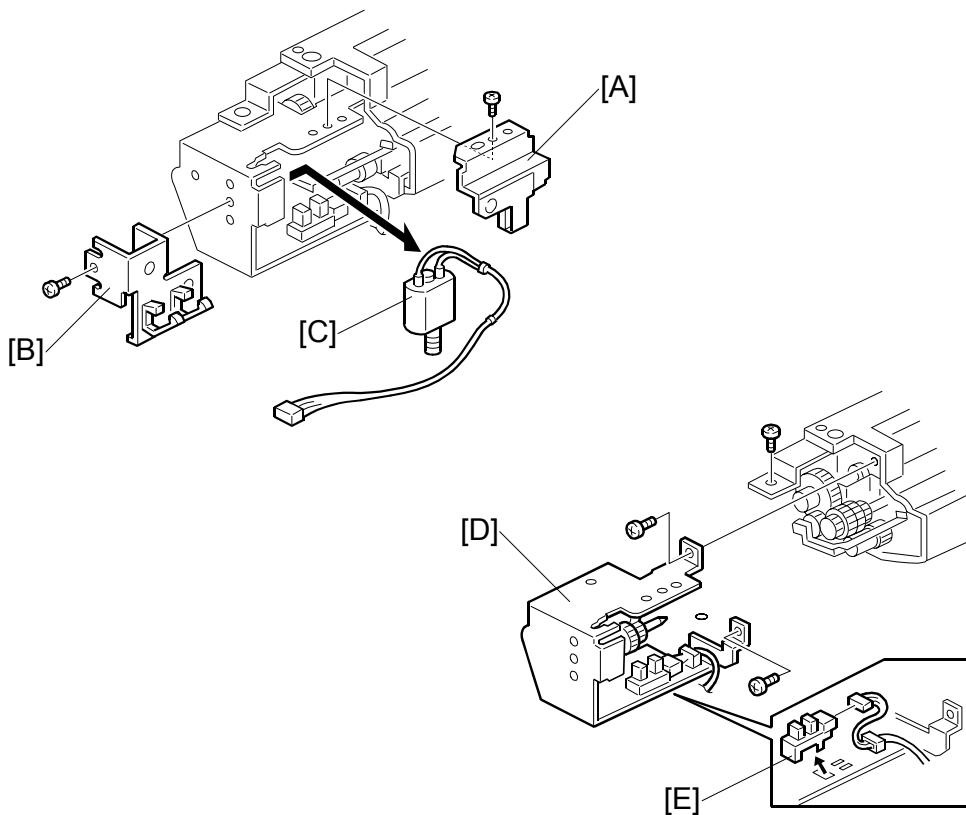
- NOTE:**
- 1) After replacing the web with a new one, you must execute SP1902-001 (Fusing Web Used Area Display/Setting) to reset the web consumption count to zero. This SP code must be executed to release SC550.
 - 2) Be sure to print an SMC report before executing Memory All Clear (SP5801). After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

Web Unit Assembly

1. Attach the cleaning roller [A]
 - Insert the end of the web into the slot ①.
2. Insert the drive pins [B] into the web shaft (②).
3. After installing bushing 1 [C], rotate the shaft right to lock it, then attach the lock screw (③).
4. Set the web [D] under the feeler [E] of the web end sensor (④).
5. Attach bushing 2 [F] (⑤).
6. Attach the new web roll [G] and wind it tight so no slack remains (⑥).

NOTE: 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.

3.9.6 WEB MOTOR AND WEB END SENSOR



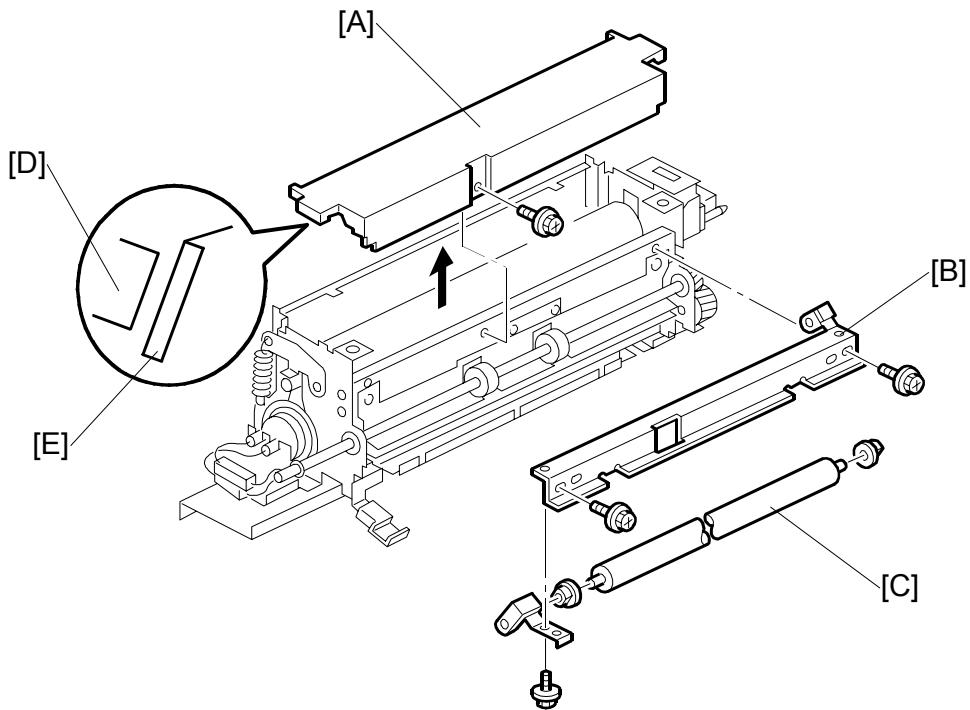
Web unit and end cover (☞ 3.9.5)

- [A]: Bracket (☞ x 1)
- [B]: Web motor positioning bracket (☞ x 1)
- [C]: Web motor
- [D]: Web motor/sensor mount (☞ x 3)
- [E]: Web end sensor (☞ x 1, harness x 1)

NOTE: At reassembly, make sure that the harness of the web driver motor is not pinched by the fusing inner cover

3.9.7 PRESSURE ROLLER CLEANING UNIT

B064 Series

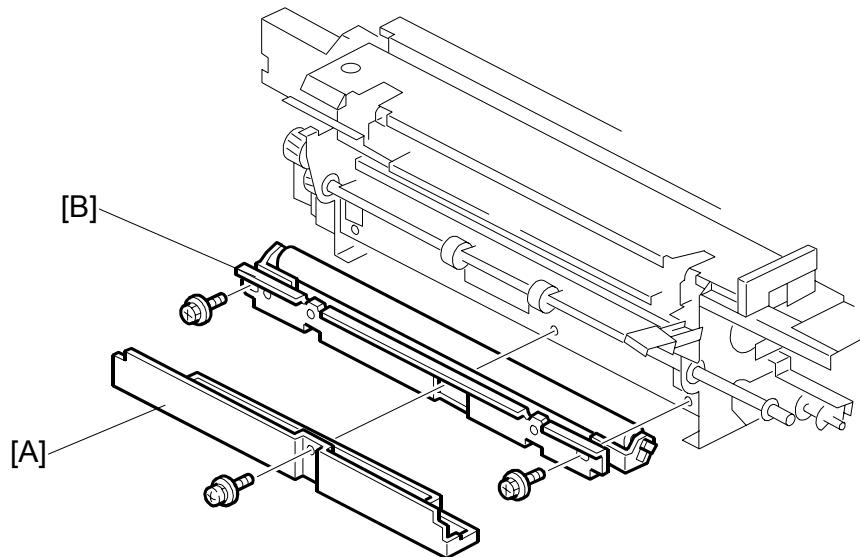


Fusing unit (☞ 3.9.1)

- [A]: Lower cover (☞ x 1)
- [B]: Cleaning roller bracket (☞ x 2)
- [C]: Cleaning roller (☞ x 1)

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

B140 Series



Replacement
Adjustment

Fusing unit (☞ 3.9.1)

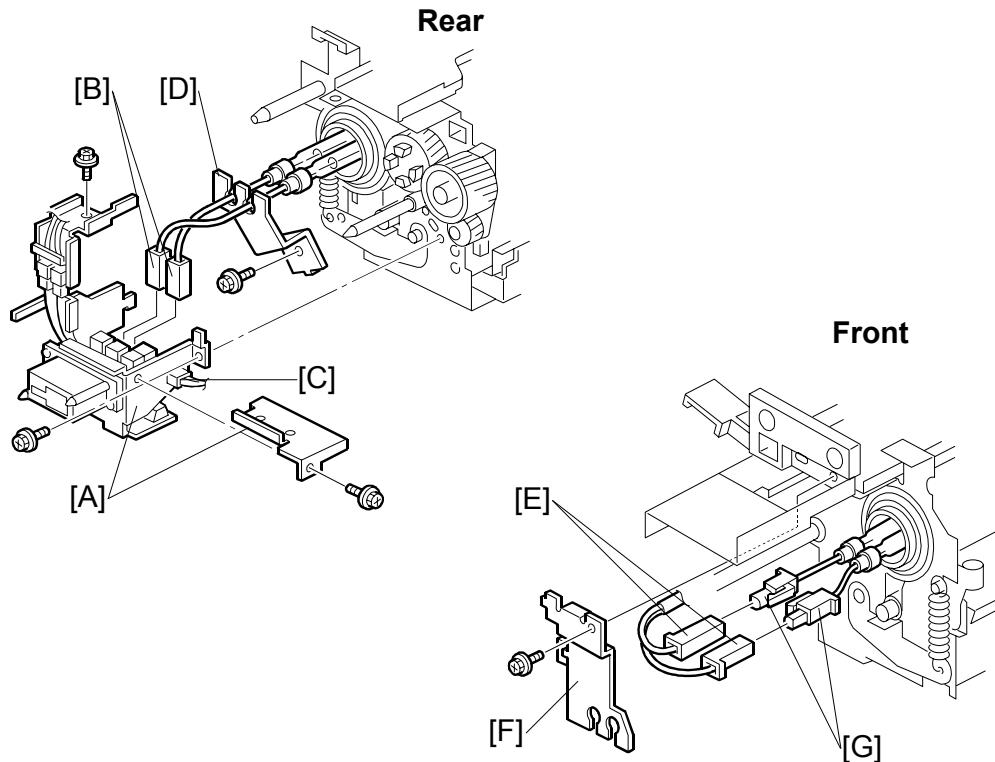
[A]: Cover (☞ x 1)

[B]: Pressure cleaning roller (☞ x 2)

3.9.8 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, do not use this procedure. Use the procedure in the next section.

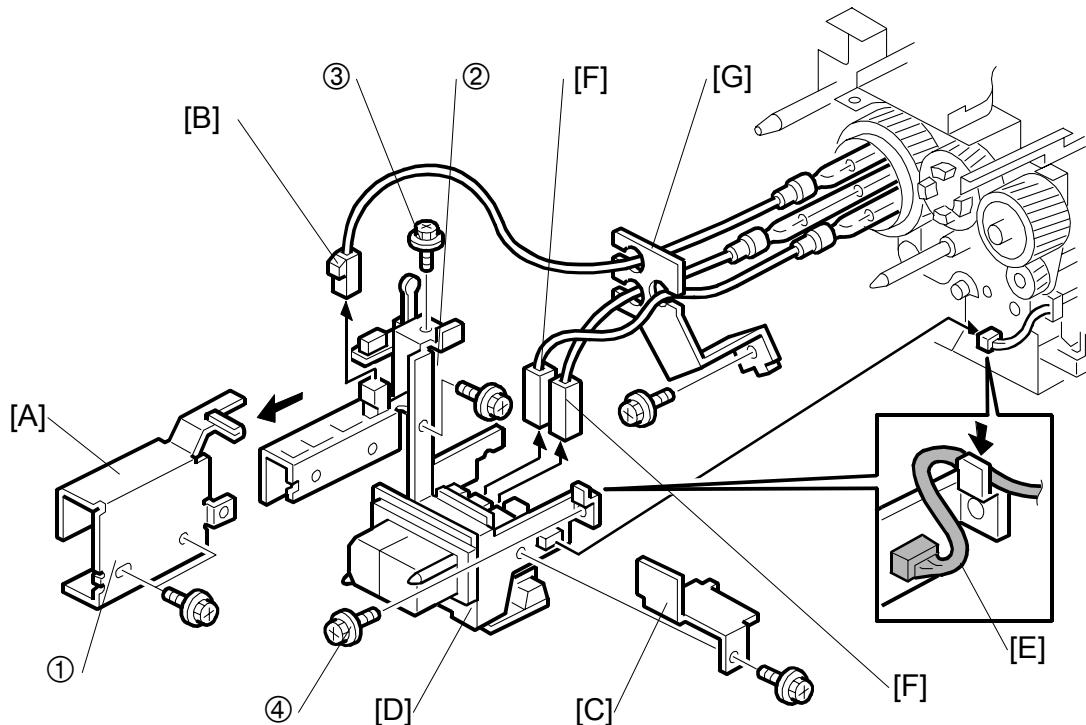
B064 Series: Fusing Lamps



Fusing unit (☞ 3.9.1)

- [A]: Rear terminal brackets (☞ x 3)
- [B]: Upper connectors (☞ x 2)
- [C]: Lower connector (☞ x 1)
- [D]: Rear fusing lamp holder (☞ x 1)
- [E]: Fusing lamp connectors (☞ x 2)
- [F]: Front fusing lamp holder (☞ x 3)
- [G]: Fusing lamps

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

B140 Series: Fusing Lamps**B140 Series Rear**

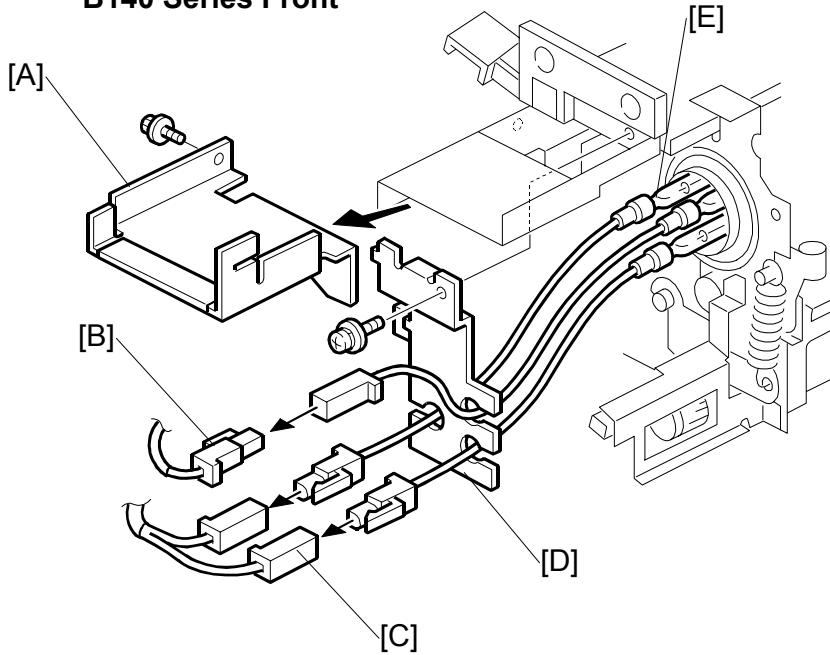
Replacement
Adjustment

Fusing unit (☞ 3.9.1)

- [A]: Rear bracket (\wedge x 2 at ①, \wedge x 1 at ②)
- [B]: White connector (\square x 1)
- [C]: Lock bracket (\wedge x 1)
- [D]: Rear terminal connector bracket (\wedge x 1 at ③ under metal clamp, \wedge x 1 at ④)
- [E]: Connector (\wedge x 1, \square x 1)
- [F]: Blue, green connectors
- [G]: Rear fusing lamp holder (\wedge x 1)

FUSING UNIT

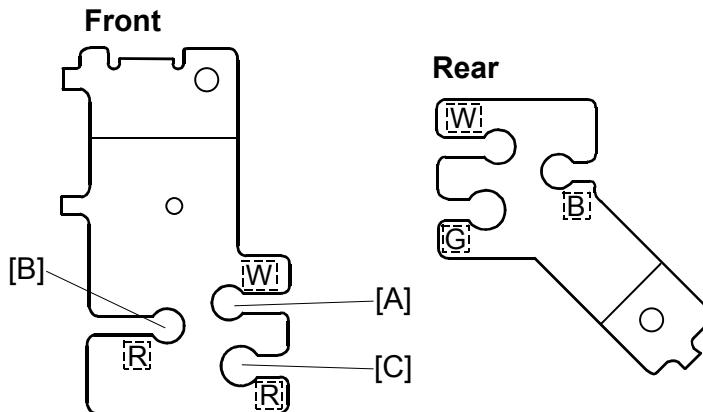
B140 Series Front



- [A]: Plate (掣 x 1)
- [B]: White connector (掣 x 1)
- [C]: Red connectors (掣 x 2)
- [D]: Front fusing lamp holder (掣 x 1)
- [E]: Fusing lamps (x 3)

NOTE: Be careful when you move the fusing lamps. Do not break them. Do not touch them with bare hands.

Reinstallation: B140 Series Fusing Lamps



Replacement
Adjustment

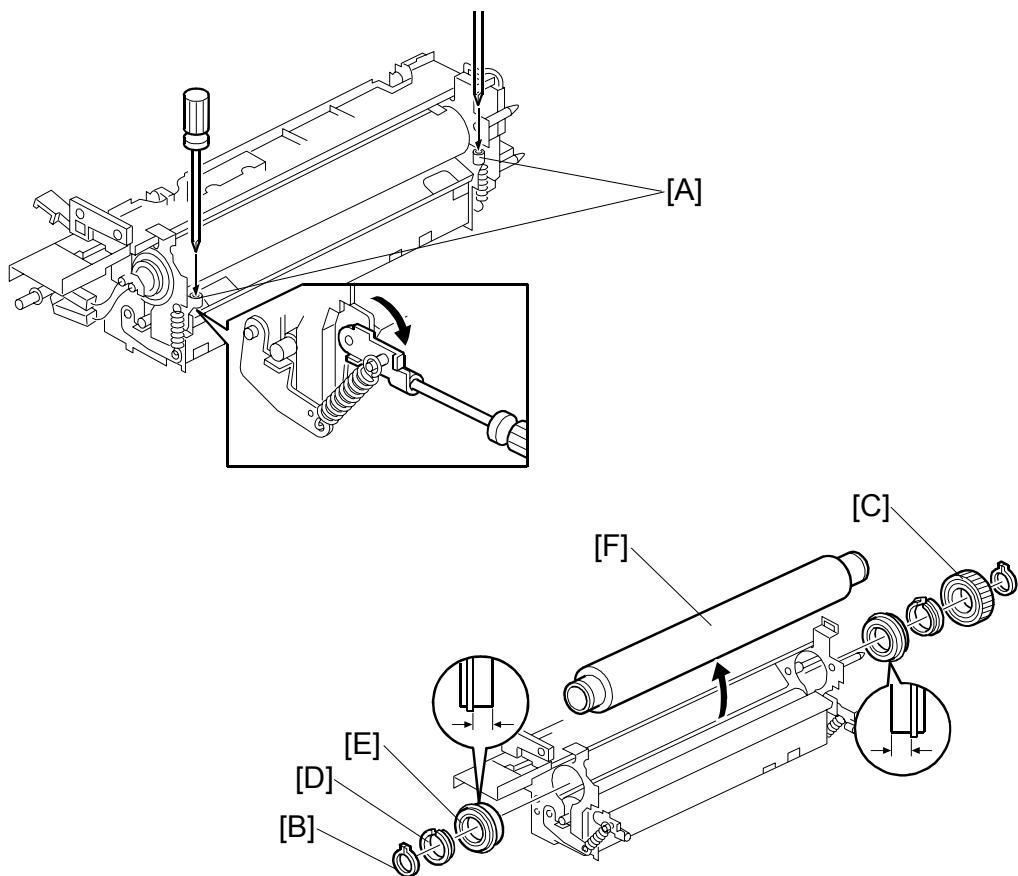
1. Attach the rear fusing holder first.
2. Put in the lamps from the front.
3. Use the color coding of the connectors to set the lamps in the correct opening in the rear fusing lamp holder.
NOTE: The openings in the rear holder have marks W (White), B (Blue), and G (Green). These colors must agree with the letters on the holder: W, B, G.
4. At the front, see the colors of the connectors at the rear, and set the ends of the lamps:

White → [A]

Blue → [B]

Green → [C]

FUSING UNIT



Web unit (⌚ 3.9.5)

[A]: Pressure arm

- Insert the tips of two screwdrivers and press down to release.

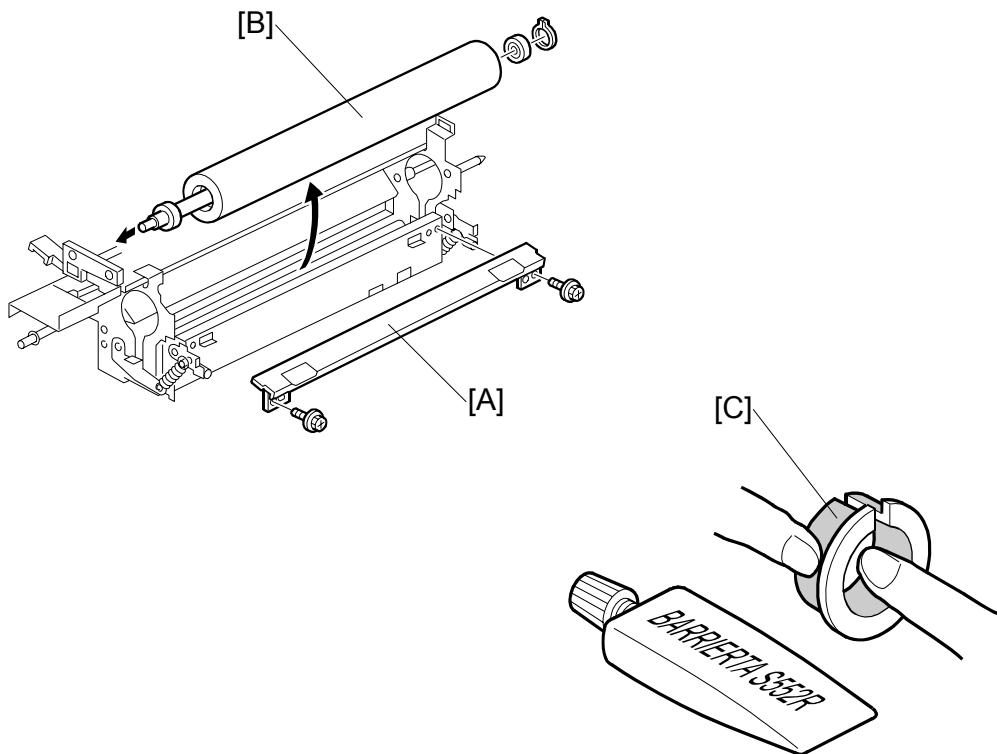
[B]: C-clamps (both ends)

[C]: Drive gear

[D]: Bushings (both ends)

[E]: Bearings

[F]: Hot roller



Replacement
Adjustment

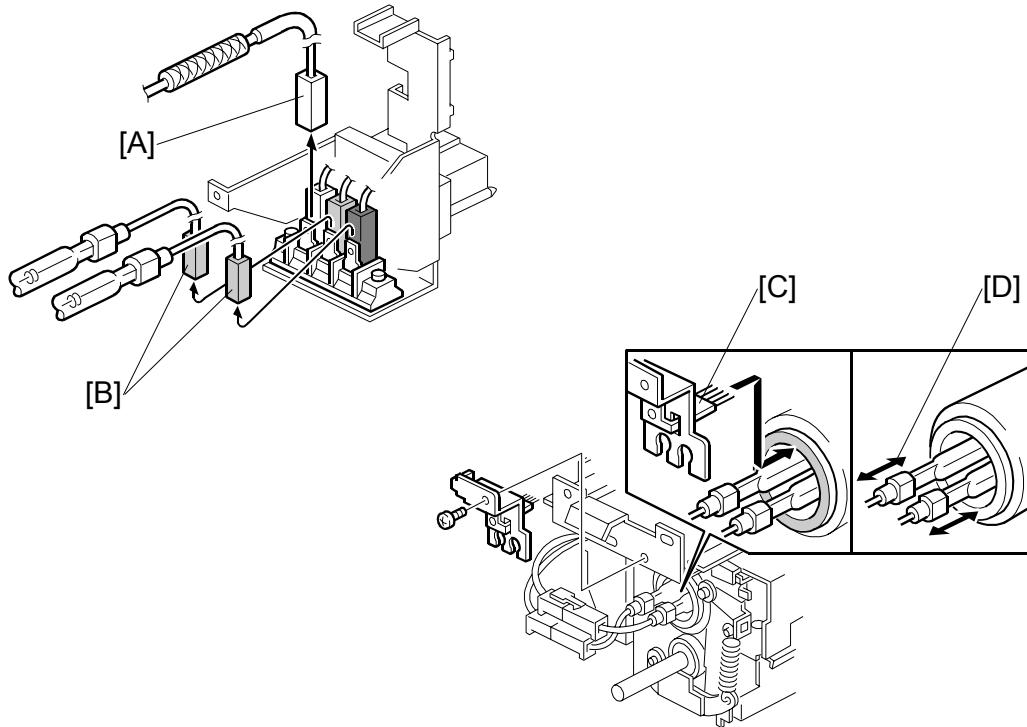
[A]: Entrance guide plate (☞ x 2)

[B]: Pressure roller (☞ x 2)

NOTE: The pressure roller and pressure roller bearing should always be replaced together.

[C]: Lubricate the inner and outer surfaces of the bushings with Barrierta S552R grease.

NOTE: 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.

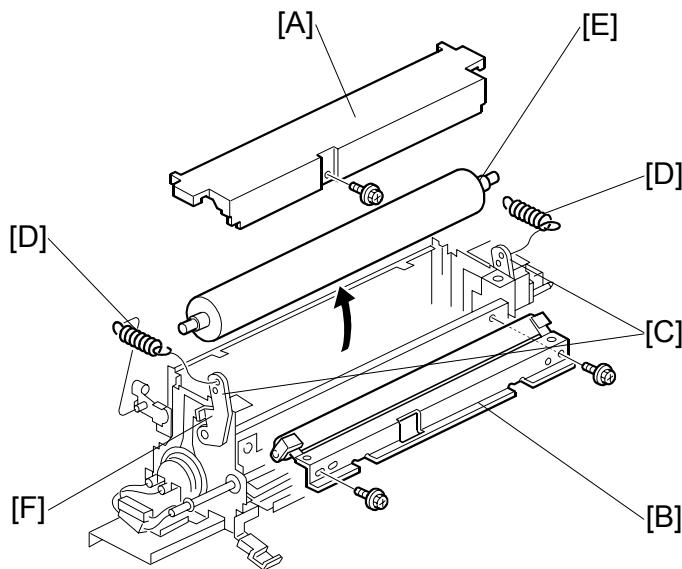
Important Notes about Fusing Unit Assembly (B064 Series)

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

3.9.9 PRESSURE ROLLER

Use this procedure when you wish to remove only the pressure roller.



Replacement
Adjustment

Fusing unit (☞ 3.9.1)

Turn the fusing unit upside down.

[A]: Lower cover (\wedge x 1)

[B]: Pressure roller cleaning unit (\wedge x 2)

[C]: Release the pressure arms

- Use screw driver to lower the pressure arms on both ends of the pressure roller (☞ 3.9.8) and remove the springs [D] (x 2) on both sides.

[E]: Pressure roller

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

Spring Adjustment

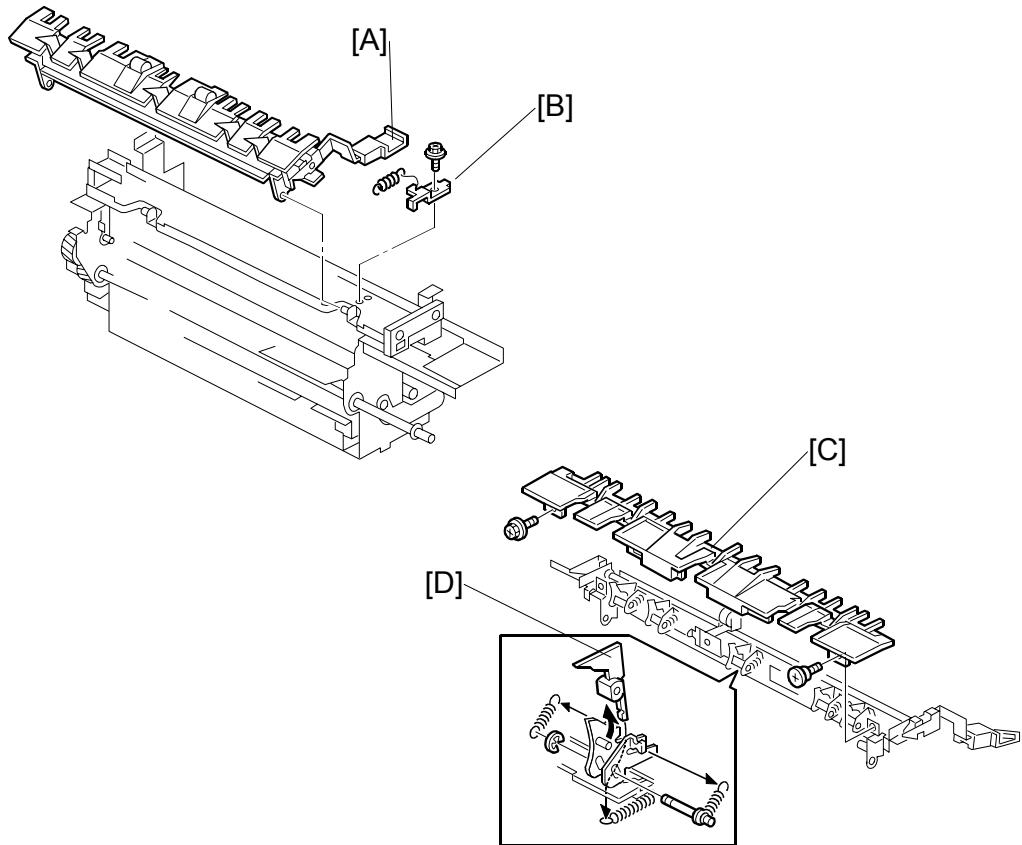
Two holes [F] are provided on each pressure arm for the springs.

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.

FUSING UNIT

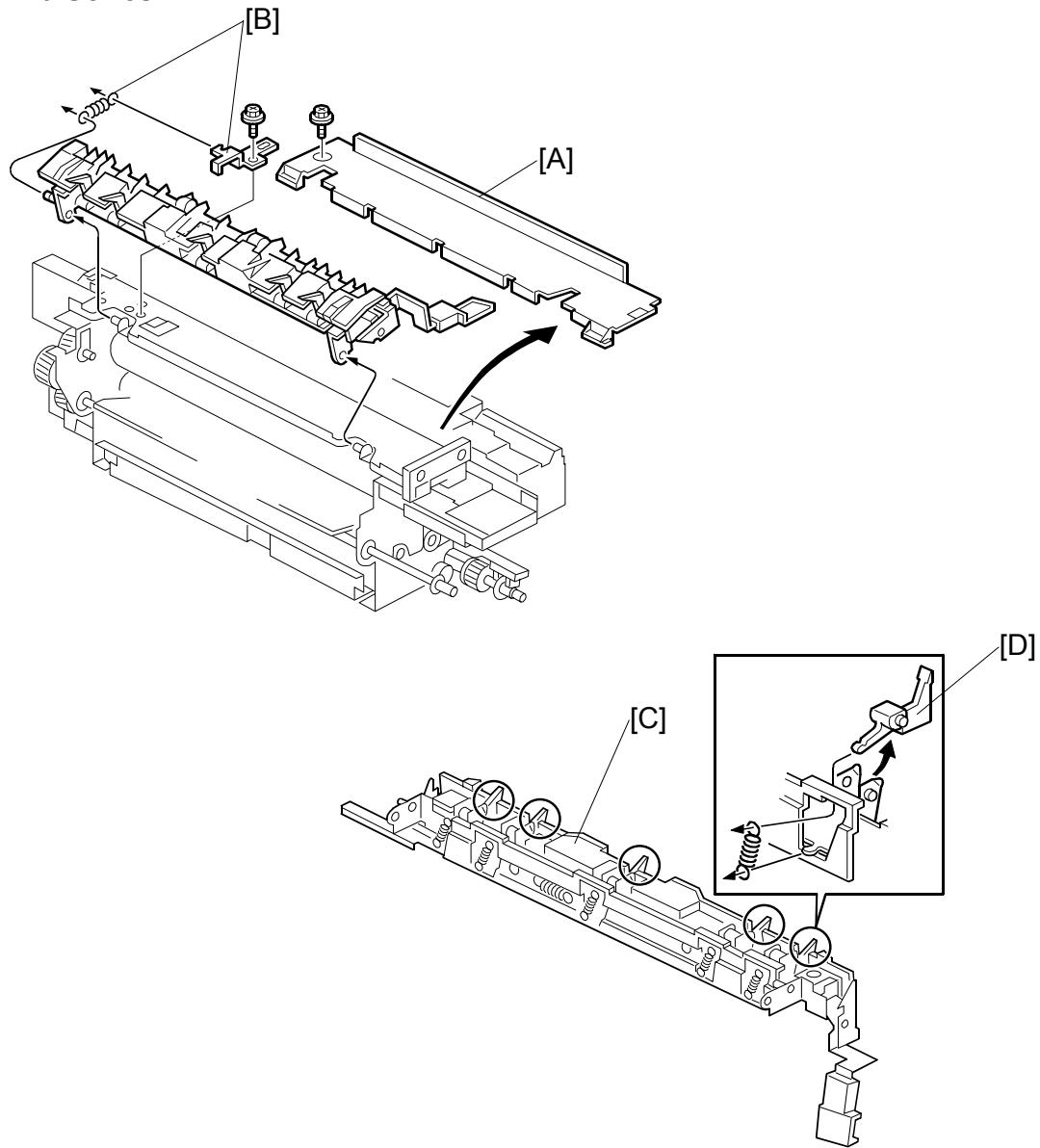
3.9.10 STRIPPER PAWLS

B064 Series



Remove the fusing unit (参照 3.9.1)

- [A]: Top cover (× 1)
- [B]: Bracket (× 1, spring × 1)
- [C]: Inner cover (× 2)
- [D]: Stripper pawl (× 1, spring × 3)

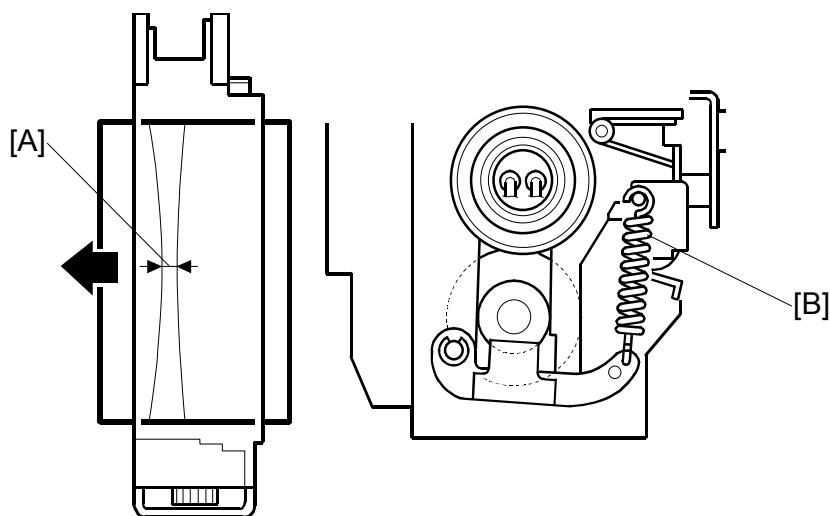
B140 Series

Replacement
Adjustment

Remove the fusing unit (☞ 3.9.1)

- [A]: Top cover (☞ x 1)
- [B]: Bracket (☞ x 1, spring x 1)
- [C]: Inner cover
- [D]: Stripper pawl (spring x 1). Open the arms to release the stripper pawl, and remove it.

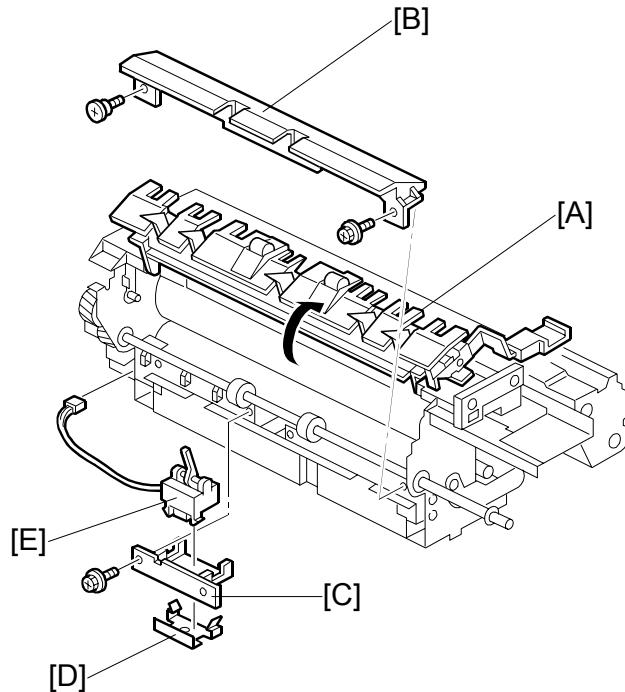
3.9.11 NIP BAND WIDTH ADJUSTMENT



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.

3.9.12 FUSING UNIT EXIT SENSOR

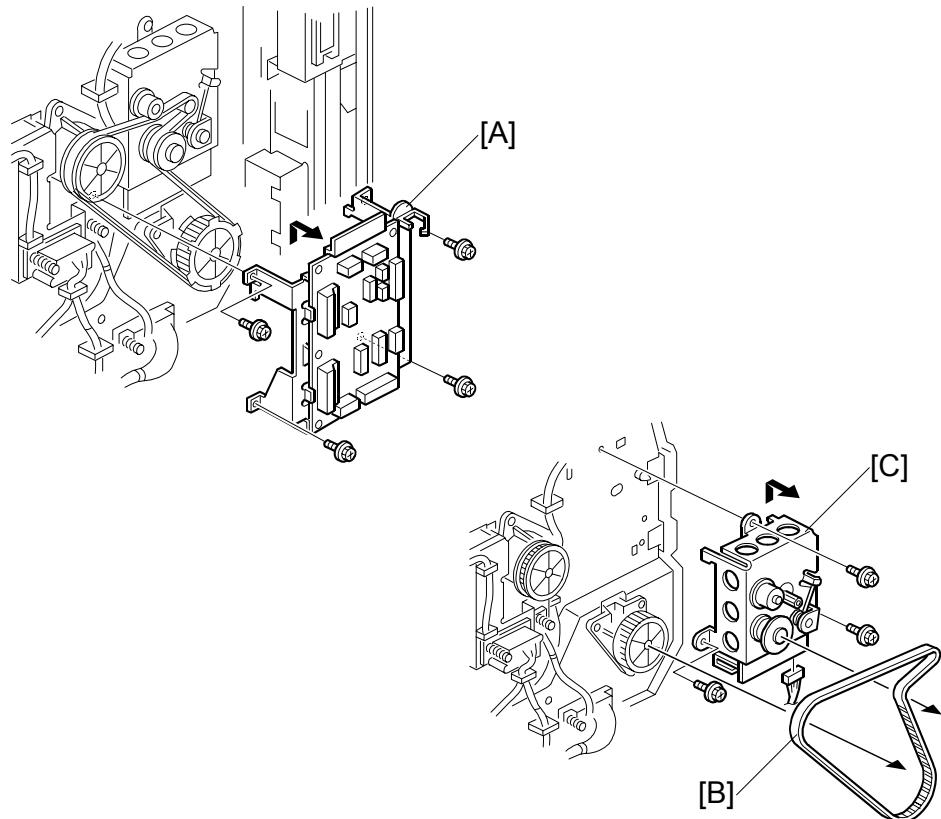


Replacement
Adjustment

Fusing unit (参照 3.9.1)

- [A]: Open the hot roller stripper pawl unit
- [B]: Exit guide plate (× 2)
- [C]: Fusing exit sensor holder (× 2)
- [D]: Plate spring
- [E]: Fusing exit sensor (× 1)

3.9.13 FUSING/EXIT MOTOR



Rear upper cover (☞ 3.3.5)

Open the I/O board (☞ x 2)

[A]: CNB bracket (☞ x 4, ☞ x all)

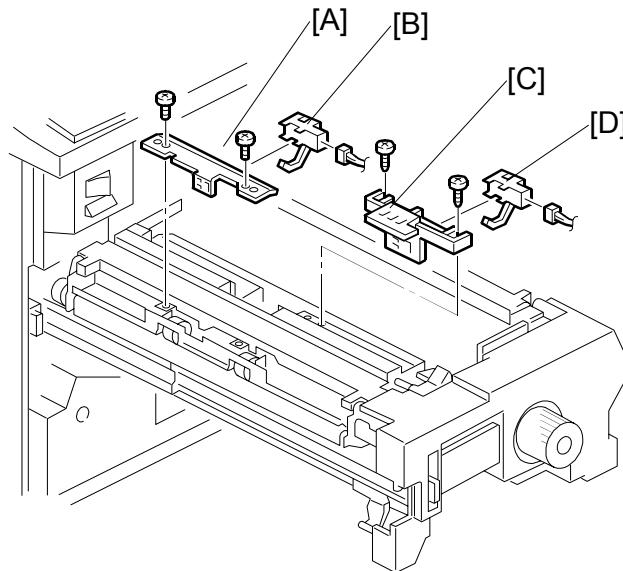
[B]: Timing belt

[C]: Fusing/exit motor bracket (☞ x 1)

Fusing/exit motor (☞ x 2)

- The fusing/exit motor (not shown) is inside the bracket.

3.9.14 FUSING EXIT AND EXIT UNIT ENTRANCE SENSORS



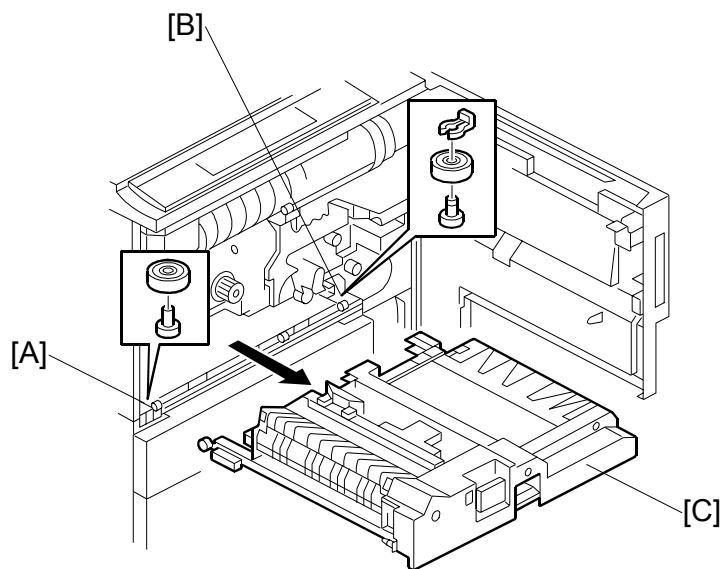
Replacement
Adjustment

Open the front door and pull out the exit/inverter unit.

- [A]: Fusing exit sensor bracket ( x 2)
- [B]: Fusing exit sensor ( x 1)
- [C]: Exit unit entrance sensor bracket ( x 2)
- [D]: Exit unit entrance sensor ( x 1)

3.10 DUPLEX UNIT

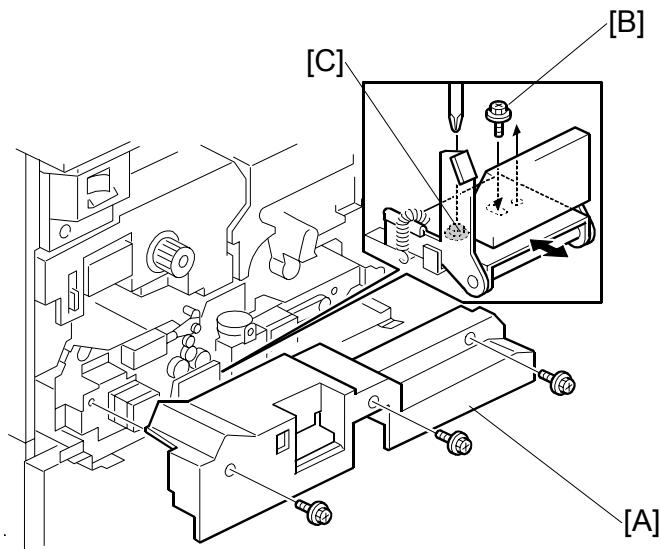
3.10.1 DUPLEX UNIT REMOVAL



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].

NOTE: 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. After that, push the duplex unit into the machine completely. This method prevents interference from the guide plate during installation.

3.10.2 DUPLEX UNIT SIDE-TO-SIDE ADJUSTMENT



Replacement
Adjustment

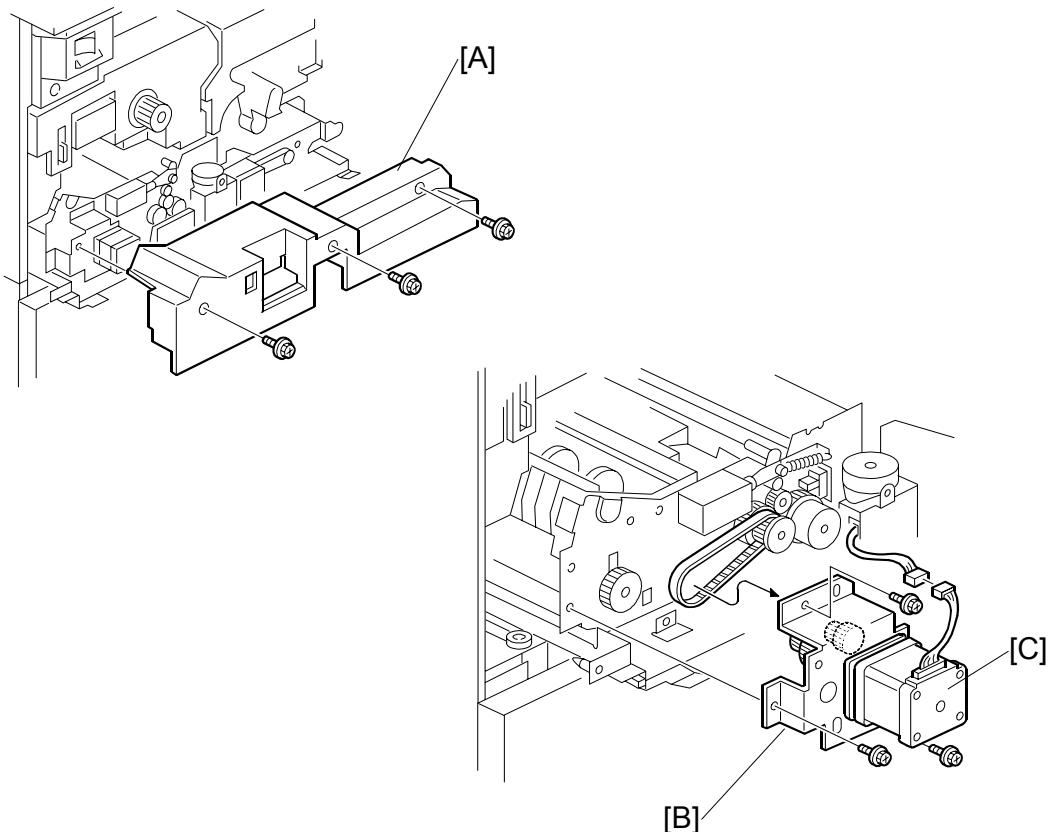
1. Remove the inner cover [A] (x 3)
2. Move the handle lock screw [B] from the right to the center.
3. Loosen the left lock screw [C], then adjust the position of the duplex unit.

3.10.3 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".
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3.10.4 DUPLEX MOTORS

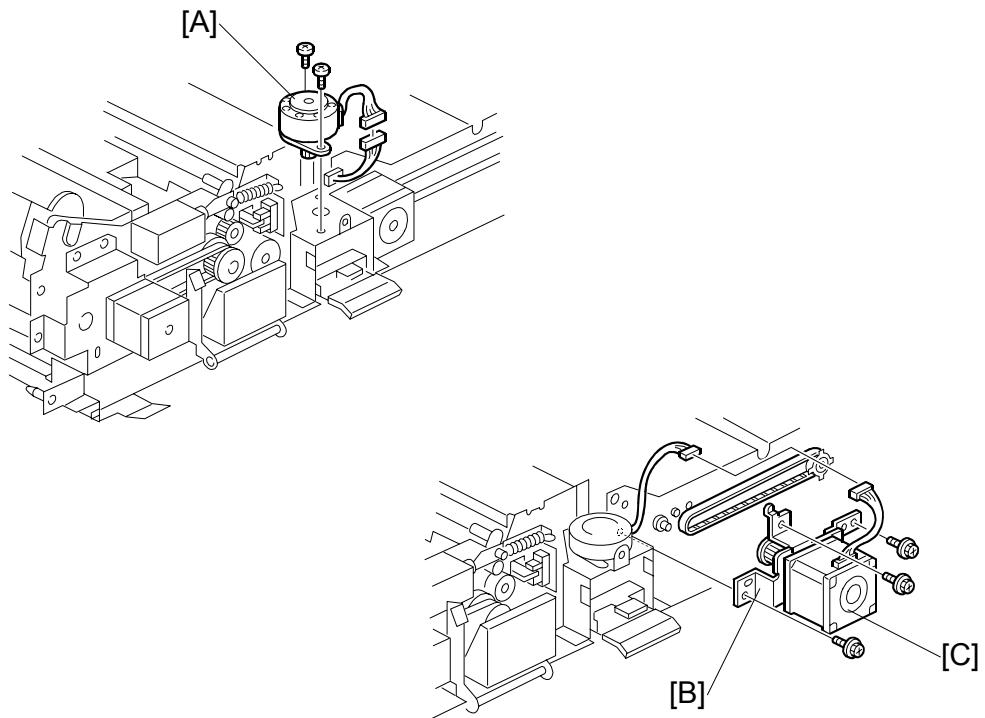
Duplex Inverter Motor



[A]: Remove the cover ($\wedge \times 3$)

[B]: Inverter motor bracket ($\wedge \times 3$)

[C]: Inverter motor (harness x 1, $\square \times 1$, $\wedge \times 2$, timing belt x 1)

Duplex Jogger and Transport Motors

Replacement
Adjustment

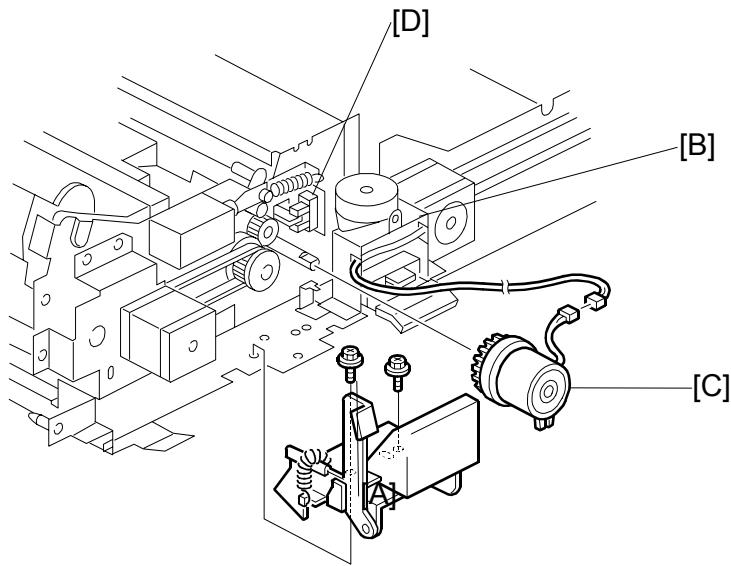
[A]: Jogger motor (□ x 1, ▲ x 2)

[B]: Transport motor bracket (harness x 1, □ x 1, ▲ x 3, timing belt x 1)

[C]: Transport motor (▲ x 2)

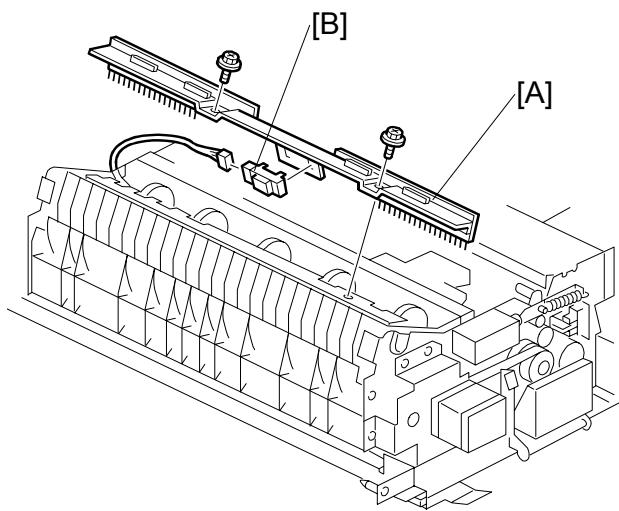
DUPLEX UNIT

3.10.5 DUPLEX TRANSPORT CLUTCH/JOGGER HP SENSOR



- [A]: Duplex unit release lever (掣子 x 2)
- [B]: Jogger motor bracket (Harnesses x 4, 掣子 x 3)
- [C]: Transport clutch (harness x 1, 插头 x 1)
 - To release the clutch, push in the catch pawl on the side of the shaft.
- [D]: Jogger HP sensor (spring x 1, 掣子 x 2, 插头 x 1)

3.10.6 DUPLEX ENTRANCE SENSOR



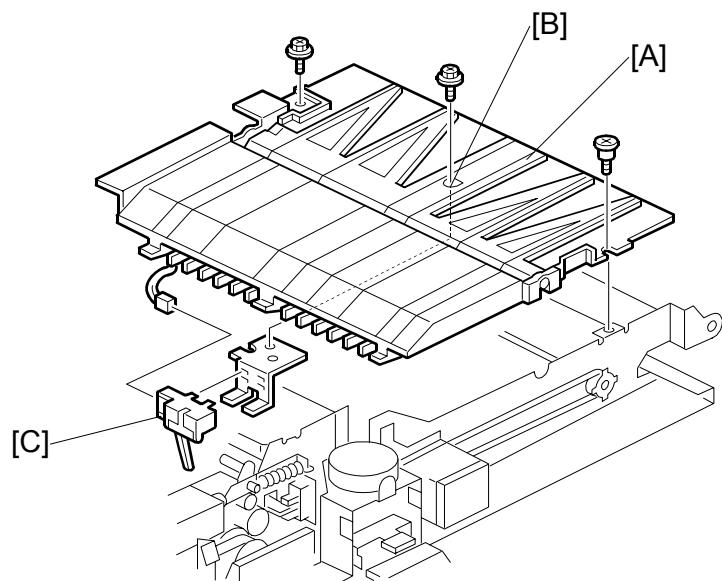
Replacement
Adjustment

[A]: Bracket (☞ x 2)

[B]: Duplex entrance sensor (☞ x 1)

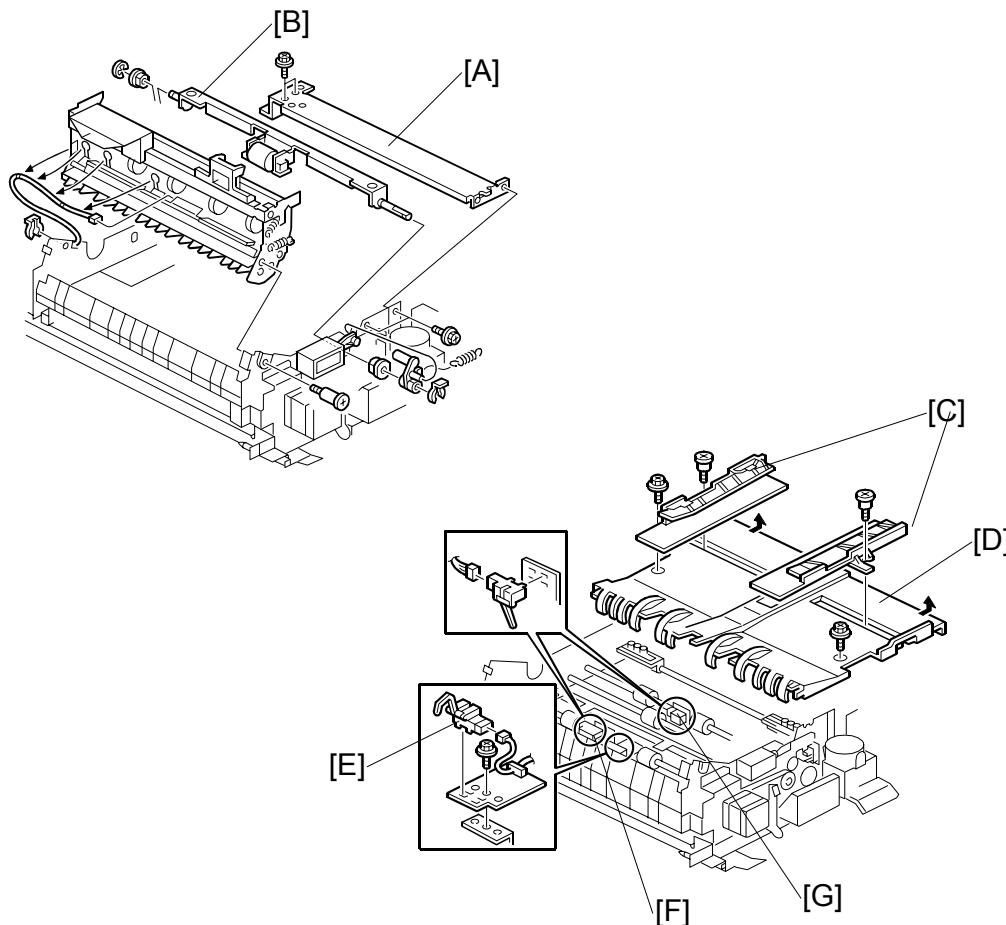
- At re-assembly, insert the plunger into the solenoid before re-attaching the solenoid.

3.10.7 DUPLEX TRANSPORT SENSOR 3



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

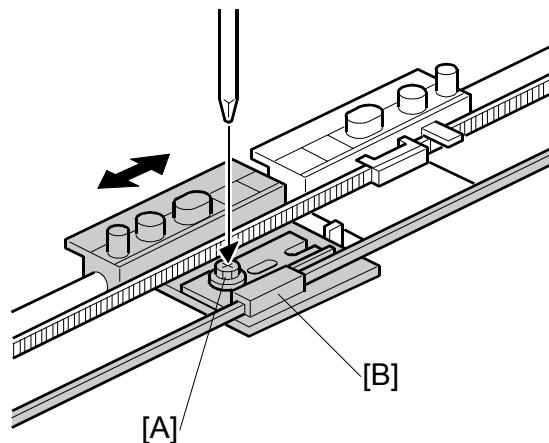
3.10.8 INVERTER EXIT SENSOR, TRANSPORT SENSORS 1 & 2



Replacement
Adjustment

- [A]: Cross-stay ($\frac{1}{2}$ x 4)
- [B]: Reverse trigger roller shaft
- [C]: Jogger fences ($\frac{1}{2}$ x 1 each)
- [D]: Left half of table ($\frac{1}{2}$ 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.
- [E]: Inverter exit sensor ($\frac{1}{2}$ x 1, harness x 1, \square x 1)
- [F]: Transport sensor 1 (harness x 1, \square x 1)
- [G]: Transport sensor 2 (harness x 1, \square x 1)

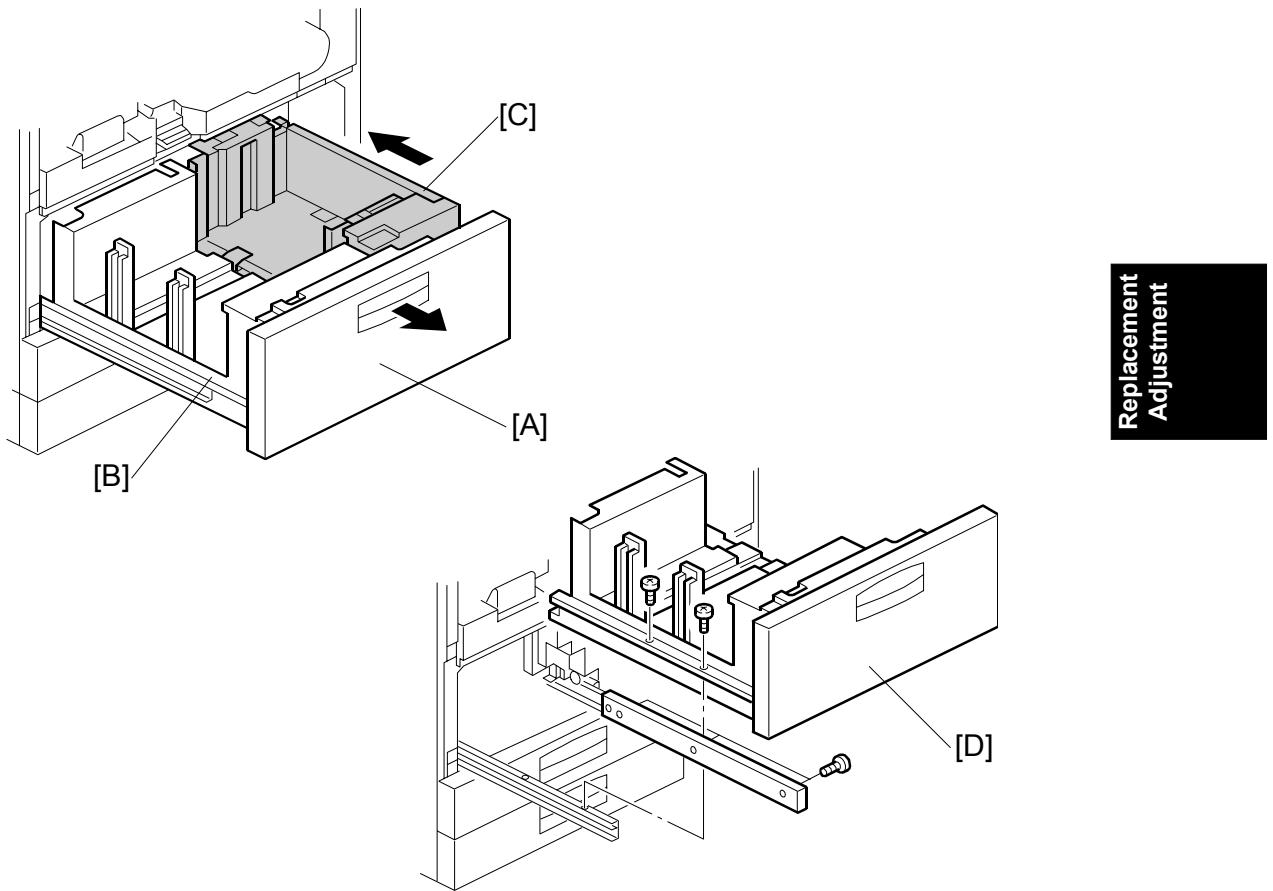
3.10.9 DUPLEX JOGGER BELT ADJUSTMENT



1. Cross stay (3.10.8)
2. Reverse trigger roller shaft (3.10.8)
3. Left half of the table (3.10.8)
4. Jogger motor bracket (3.10.5)
 - 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.
5. If you are replacing the belt, set both jogger fence brackets at the center of the belt and tighten the screw [A].
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.

3.11 PAPER FEED

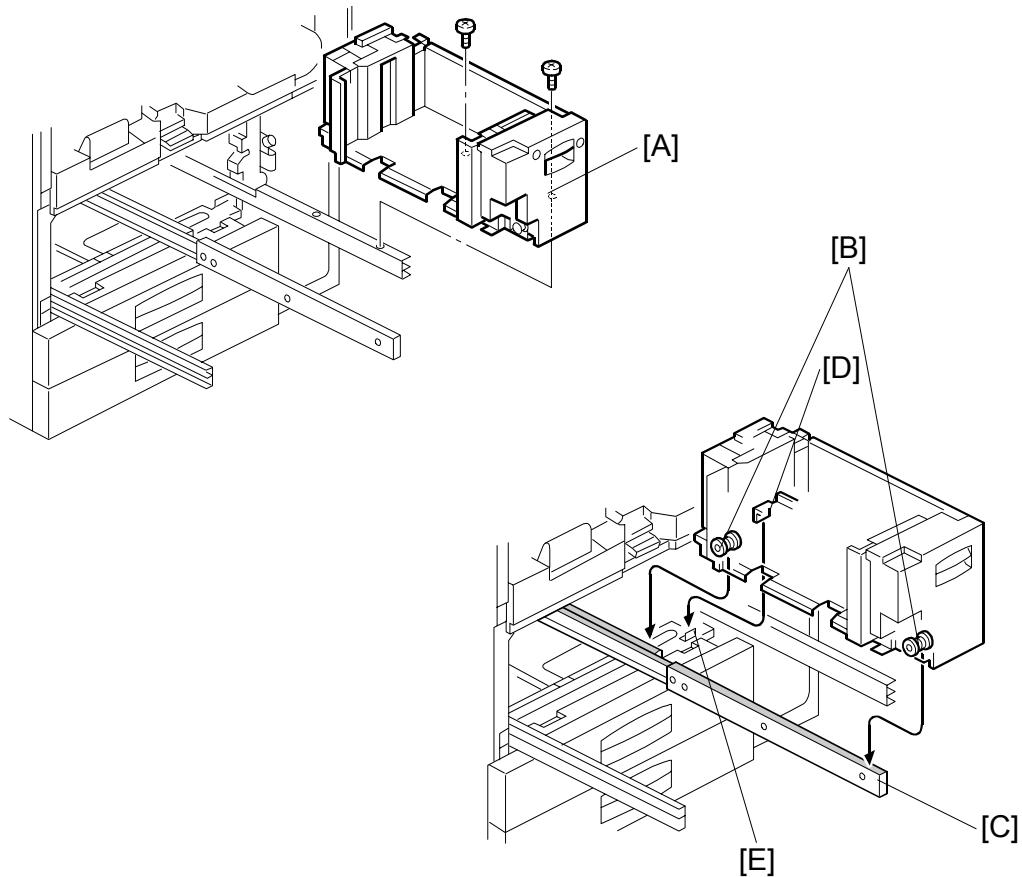
3.11.1 PAPER TRAY REMOVAL



Replacement
Adjustment

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.
3. Remove the left tandem tray [D] ($\frac{1}{4}$ x 5).

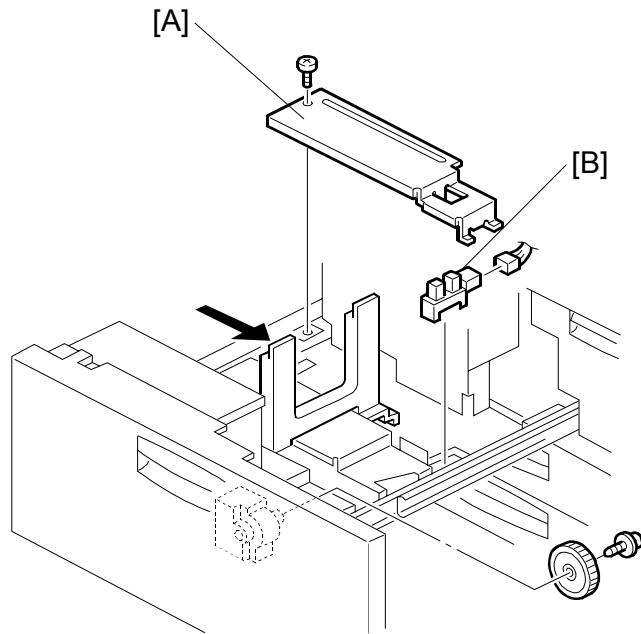
PAPER FEED



[A]: Right tandem tray ($\times 2$).

- NOTE:**
- 1) When re-installing the right tandem tray, make sure that the wheels [B] ride on the slide rail [C].
 - 2) When re-installing the right tandem tray, make sure that the tandem tray stopper [D] is set behind the stopper [E] on the frame.

3.11.2 REAR FENCE RETURN SENSOR REPLACEMENT



Replacement
Adjustment

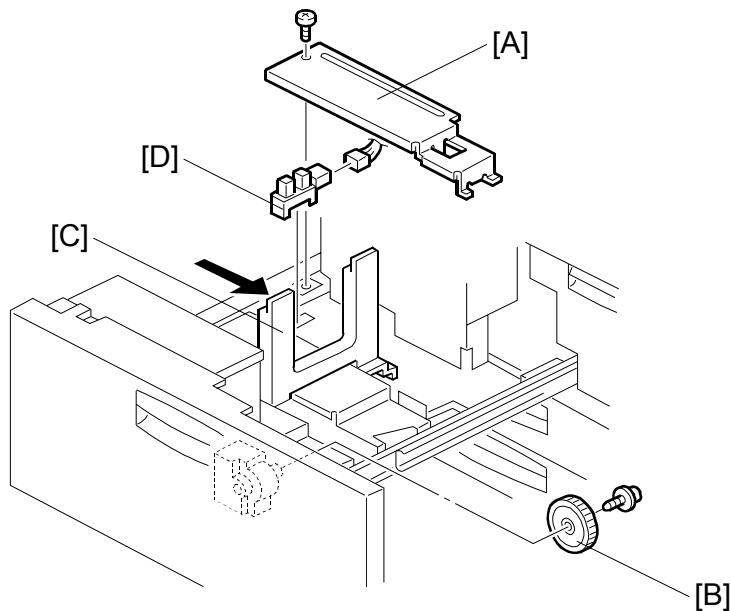
Turn off the main switch.

Pull out the tandem feed tray.

- [A]: Rear bottom plate (x 1)
- [B]: Return sensor (x 1).

PAPER FEED

3.11.3 REAR FENCE HP SENSOR REPLACEMENT

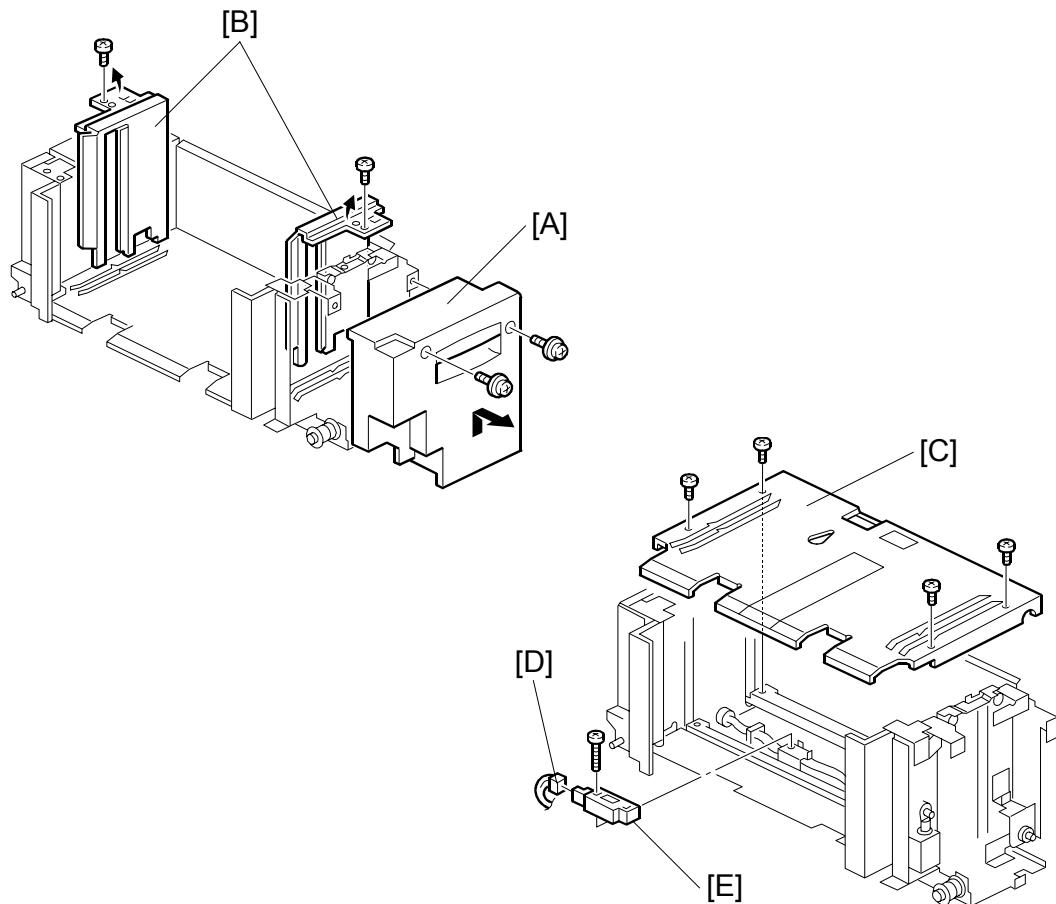


Turn off the main switch.

Pull out the tandem feed tray.

- [A]: Rear bottom plate (x 1).
- [B]: Back fence transport gear (x 1)
- [C]: Move the back fence to the right.
- [D]: Rear HP sensor (x 1)

3.11.4 TANDEM RIGHT TRAY PAPER SENSOR REPLACEMENT



Replacement
Adjustment

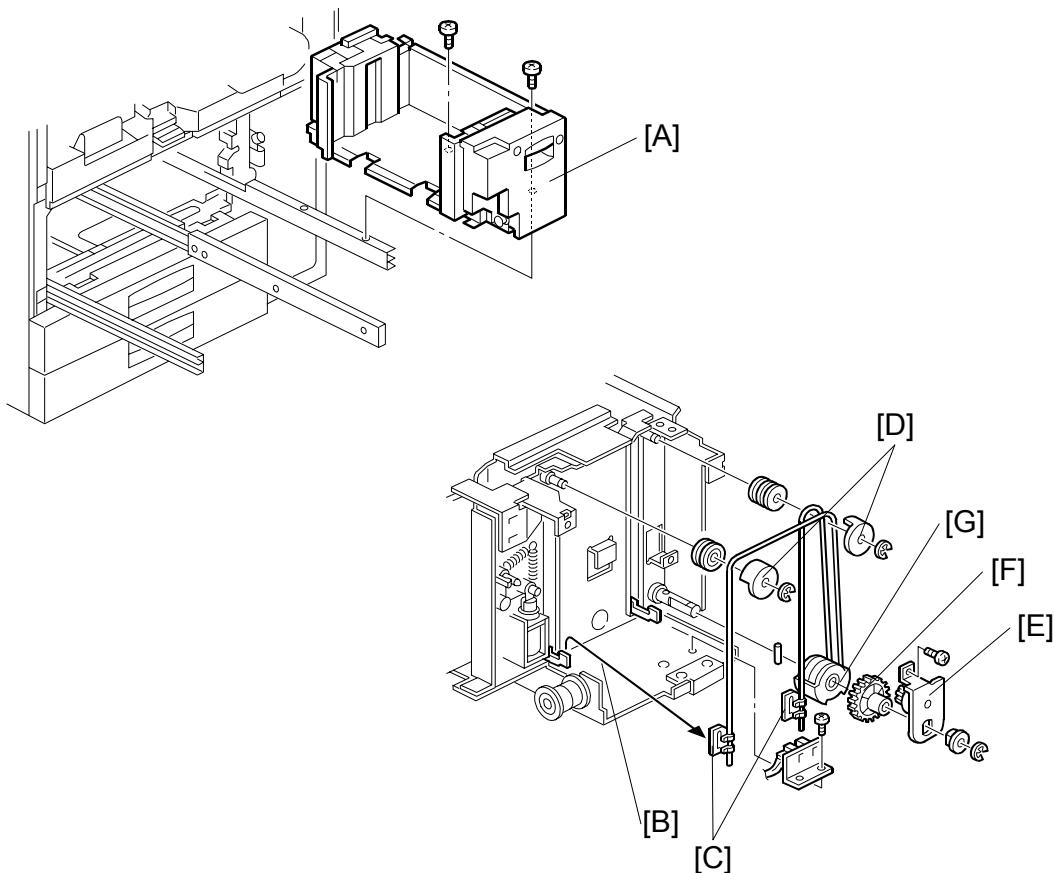
Turn off the main switch.

Remove the right tandem tray (3.11.1)

- [A]: Inner cover (\wedge x 2)
- [B]: Side fences (\wedge x 1 each)
- [C]: Bottom plate (\wedge x 4)
- [D]: Connector (\square x 1)
- [E]: Sensor (\wedge x 1)

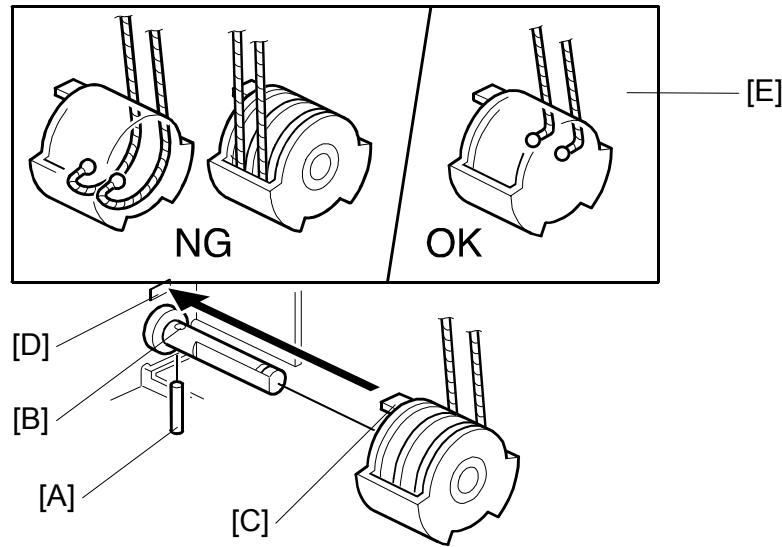
3.11.5 BOTTOM PLATE LIFT WIRE REPLACEMENT

NOTE: Before replacing the rear bottom plate lift wire, remove the front bottom plate lift wire. It is necessary to remove the shaft for replacing the rear bottom plate lift wire.



Remove the right tandem tray. (Refer to Paper Tray Removal.)

- [A]: Remove the inner cover (2)
- [B]: Remove the left stay.
- [C]: Wire stoppers
 - Slightly lift the front bottom plate and unhook.
- [D]: Wire covers (2 x 1 each)
- [E]: Bracket (2 x 1, 2 x 1, bushing x 1)
- [F]: Gear
- [G]: Bottom plate lift wire



Replacement
Adjustment

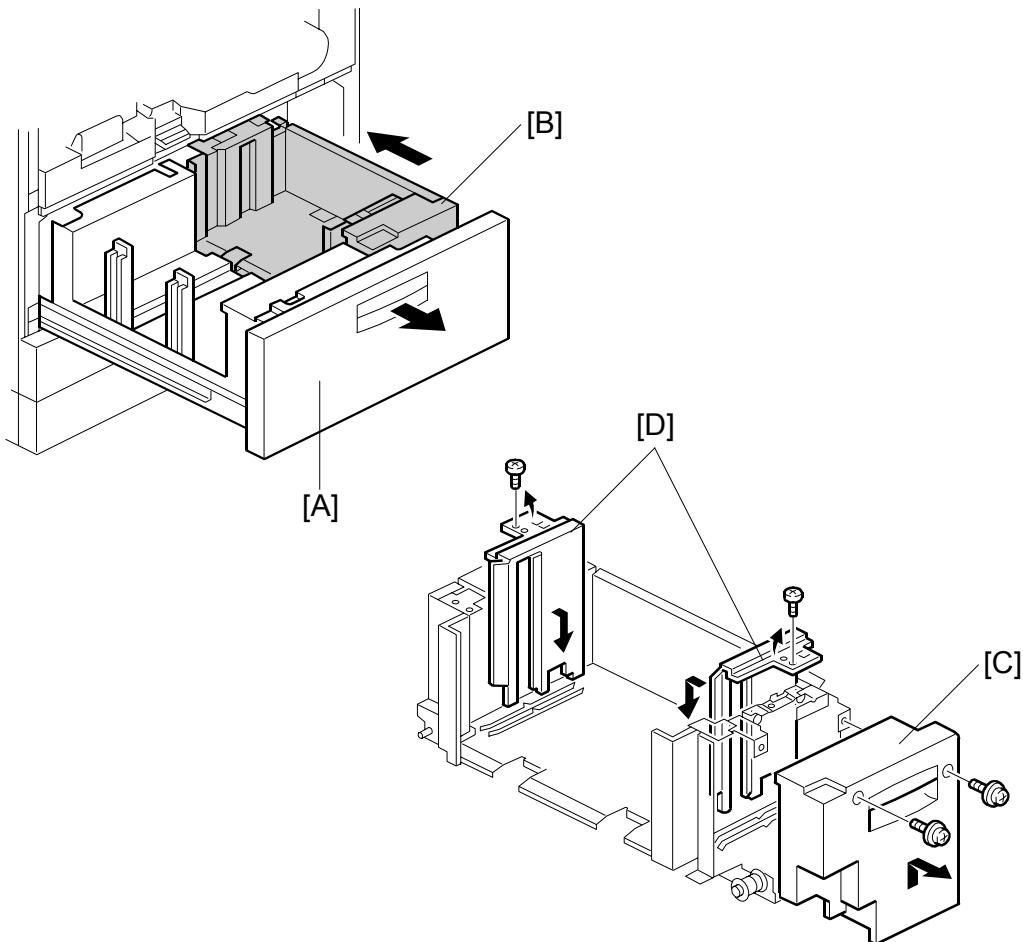
NOTE: When re-installing the bottom plate lift wire:

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

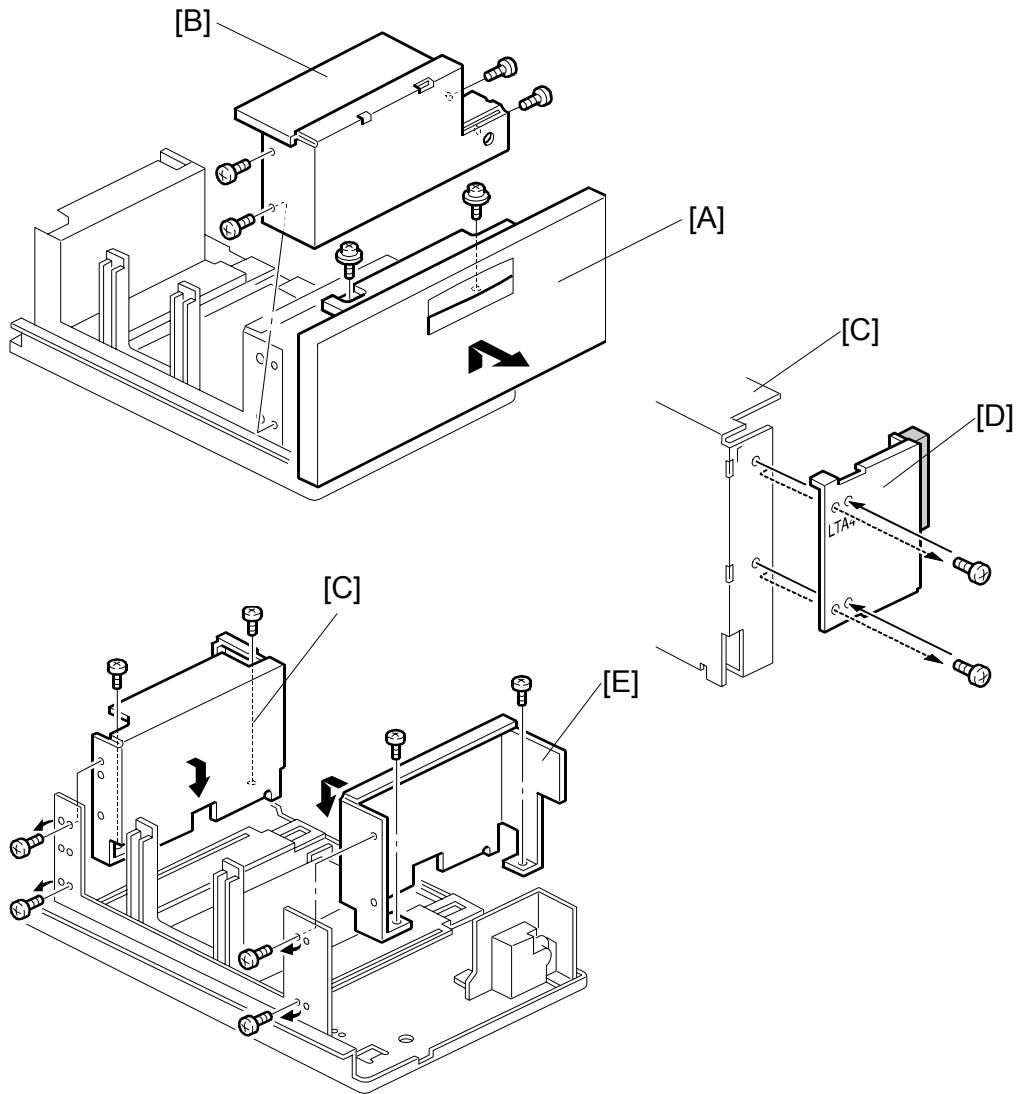
PAPER FEED

3.11.6 TANDEM TRAY PAPER SIZE CHANGE

NOTE: 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.



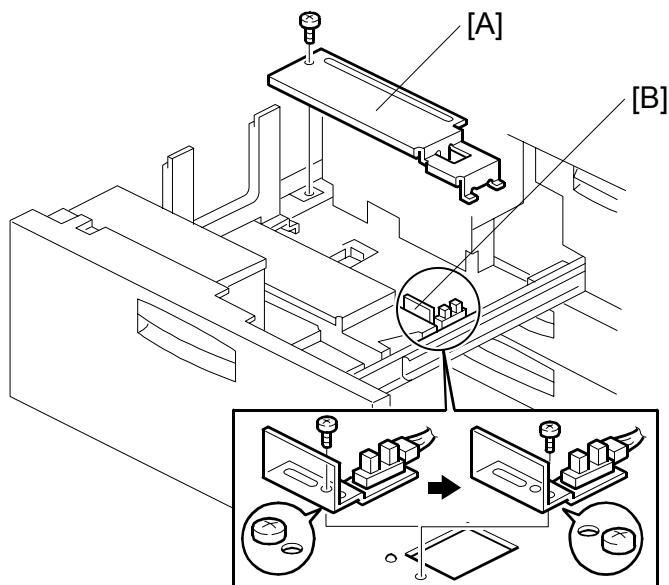
1. Open the front cover.
2. Completely pull out the tandem feed tray [A] to separate the right tandem tray [B] from the left tandem tray.
3. Remove the right tandem inner cover [C] (\wedge x 2).
4. Re-position the side fences [D] (\wedge x 1 each).
A4: Outer slot position
LT: Inner slot position
5. Re-install the right tandem inner cover.



Replacement
Adjustment

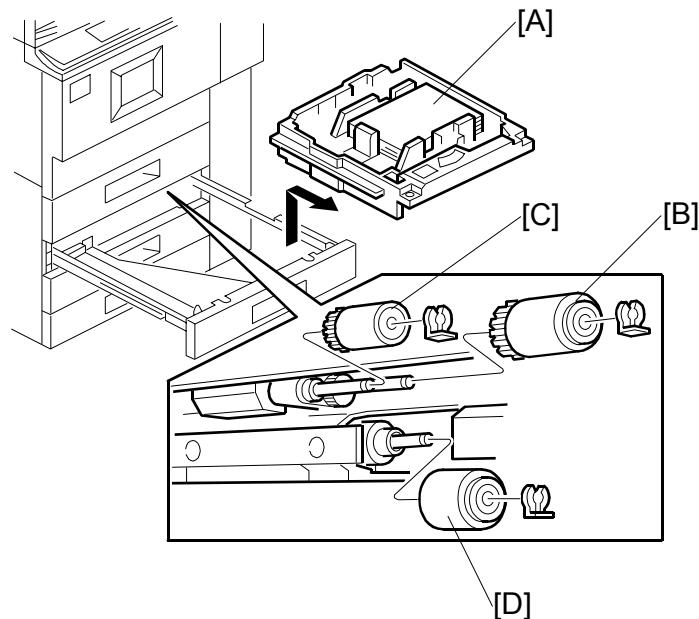
6. Remove the tray cover [A] (\wedge x 2).
7. Remove the DC motor cover [B] (\wedge x 4).
8. Remove the rear side fence [C] (\wedge x 4) and re-position the rear cover [D] (\wedge x 2).
9. Re-position the side fences [C] [E] (\wedge x 4).
 - A4: Outer slot position
 - LT: Inner slot position
10. Re-install the DC motor cover and the tray cover.

PAPER FEED



11. Remove the rear bottom plate [A] (\wedge x 1).
12. Re-position the return position sensor bracket [B] (\wedge 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 scanner and printer adjustments. (参照 3.14)

3.11.7 PICK-UP, FEED, SEPARATION ROLLER REPLACEMENT

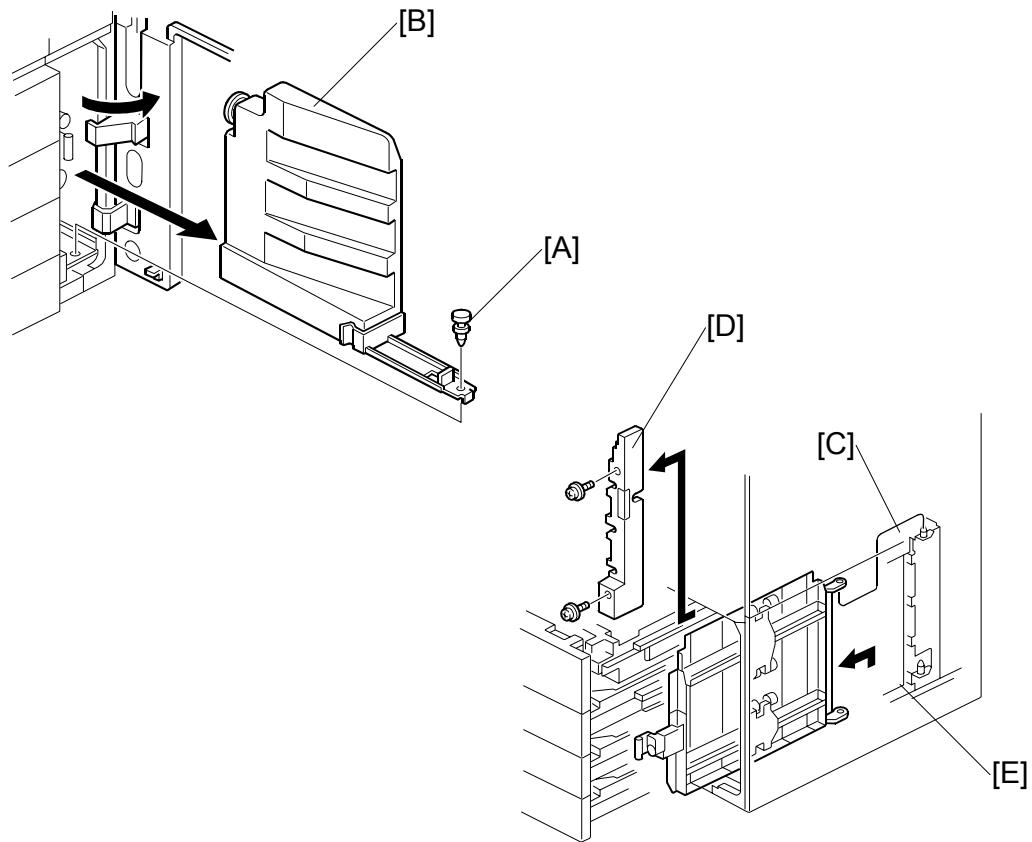


Replacement
Adjustment

- [A]: Remove the tray.
- [B]: Feed roller (Ø x 1)
- [C]: Pick-up roller (Ø x 1)
- [D]: Separation roller (Ø x 1)

NOTE: 1) The operation of the FRR (Feed Roller Replacement) components for the tandem tray (Tray 1), universal trays (Tray 2, Tray 3), by-pass tray, and ADF are similar. However, the only rollers that are interchangeable are the tandem and universal tray rollers (Trays 1, 2, 3).
2) Do not touch the surface of new rollers during replacement.

3.11.8 FEED UNIT



Front door (☞ 3.3.2)

LCT entrance guide cover and right lower cover (☞ 3.3.3)

- If the LCT is connected, disconnect it and pull it away from the machine.

Pull out all three trays (do not remove).

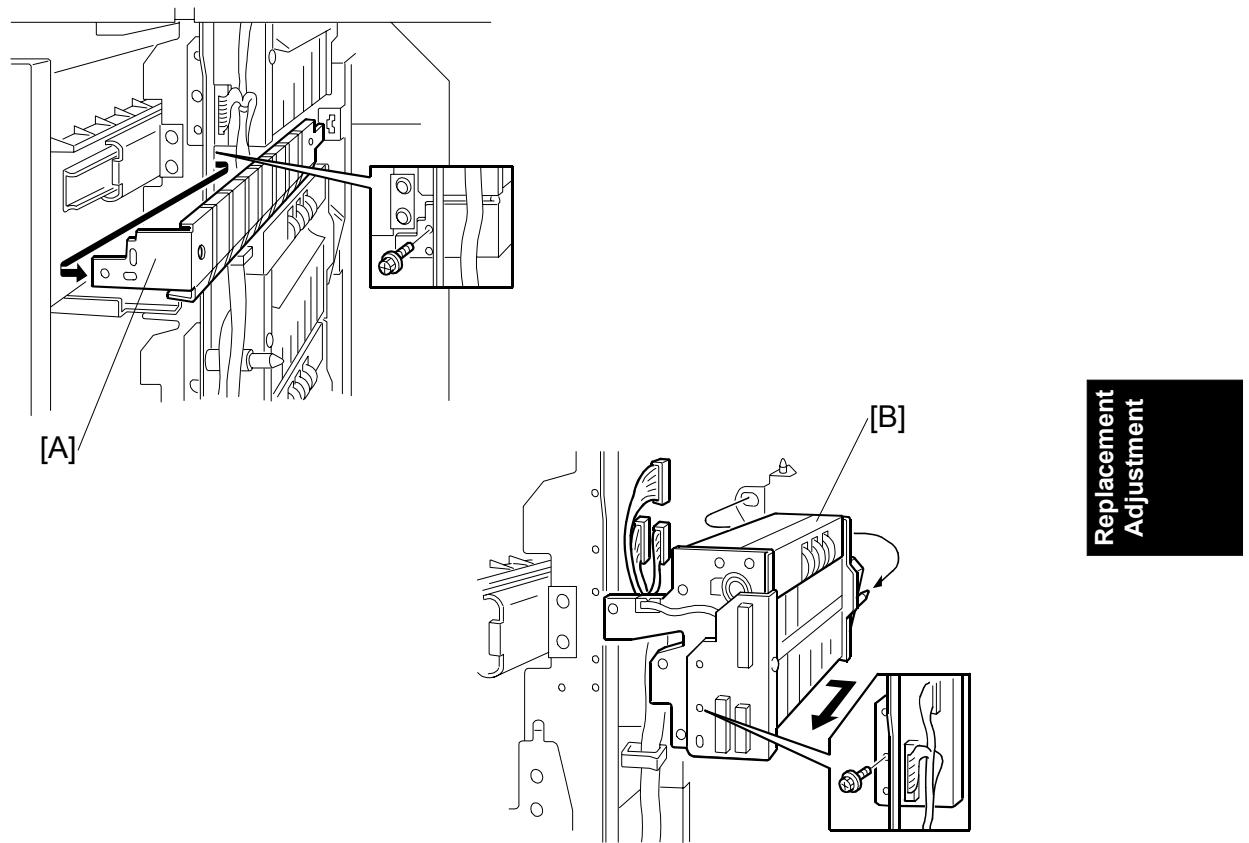
[A]: Nylon peg

[B]: Toner collection bottle

[C]: Vertical transport guide

[D]: Inner cover (☞ x 2)

NOTE: When re-installing the vertical transport guide, remove the lower right cover then insert from [E]. (☞ 3.3.3)



Replacement
Adjustment

[A]: Guide plate (☞ x 1)

- 1st feed unit only.

[B]: Feed unit (☞ x 1, □ x 3)

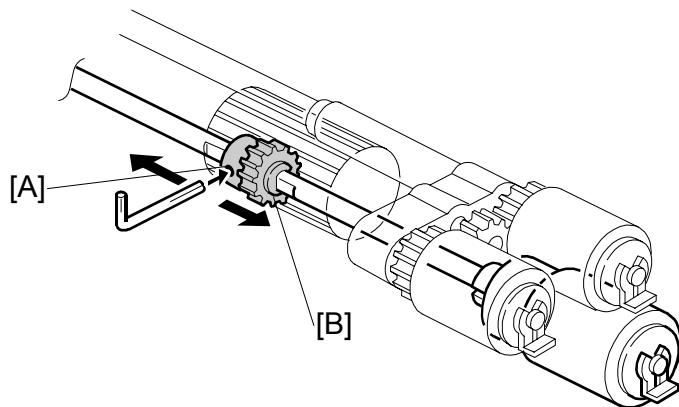
- Insert your hand from the right and pull the feed unit forward.

NOTE: To avoid hitting the unit on the sides of the machine, remove it
carefully and slowly.

3.11.9 SEPARATION ROLLER PRESSURE ADJUSTMENT

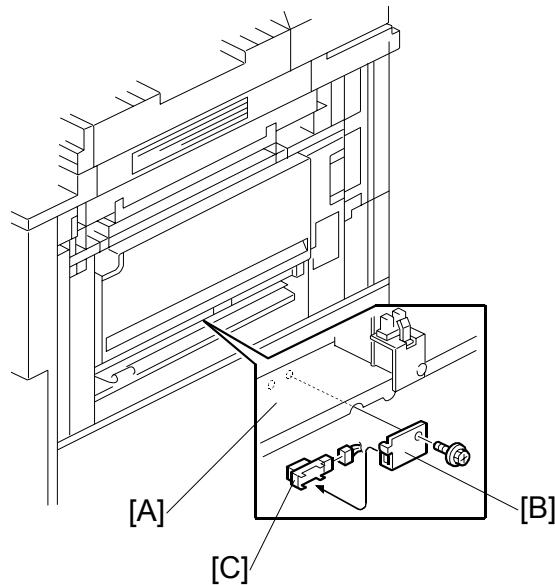
The position of the drive gear for the separation roller can be changed in order to change the amount of pressure exerted by the separation roller. This adjustment can be done:

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



1. Remove the feed unit (参照 3.11.8)
2. Loosen the hex screw [A].
NOTE: The separation roller gear [B] is positioned at the groove before shipping.
3. To adjust for thick paper, move the separation roller gear [B] to the left to decrease the pressure.
-or-
To correct misfeeds, move the separation roller gear to the right to increase the pressure.

3.11.10 RELAY SENSOR



Replacement
Adjustment

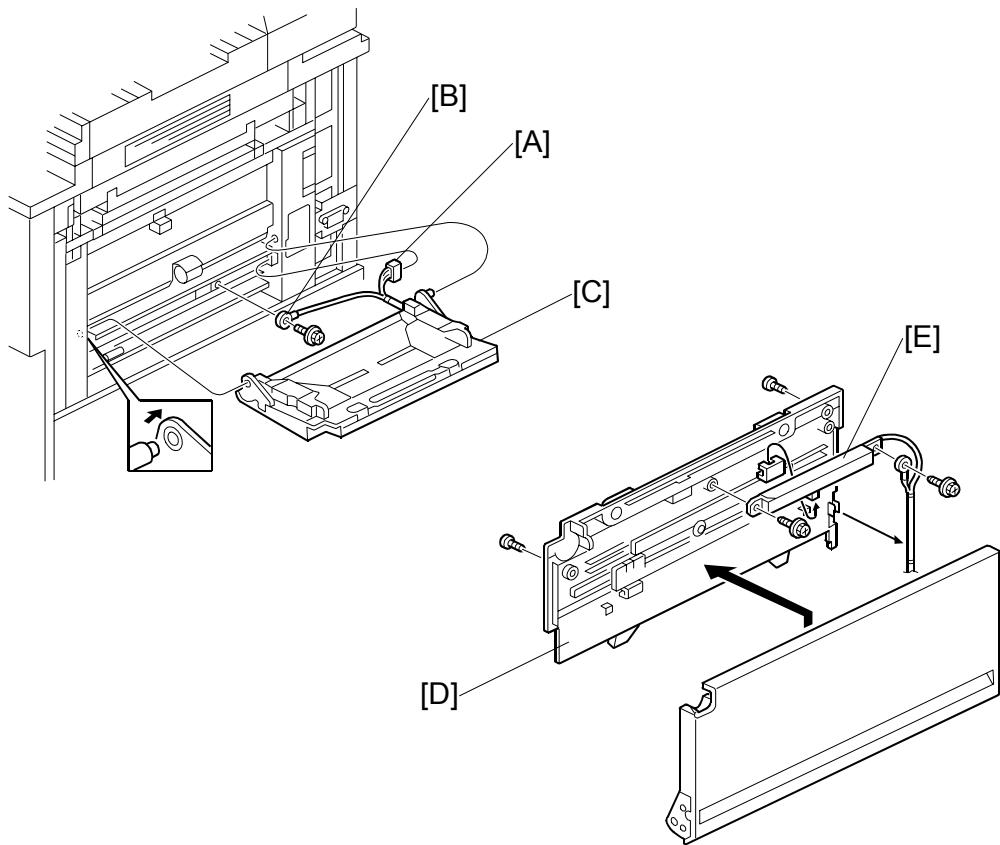
[A]: Remove the LCT entrance guide cover.

[B]: Relay sensor bracket (☞ x 1)

[C]: Relay sensor (☞ x 1)

PAPER FEED

3.11.11 BY-PASS PAPER SIZE DETECTION BOARD



Registration inner cover ($\frac{1}{2}$ x 2)

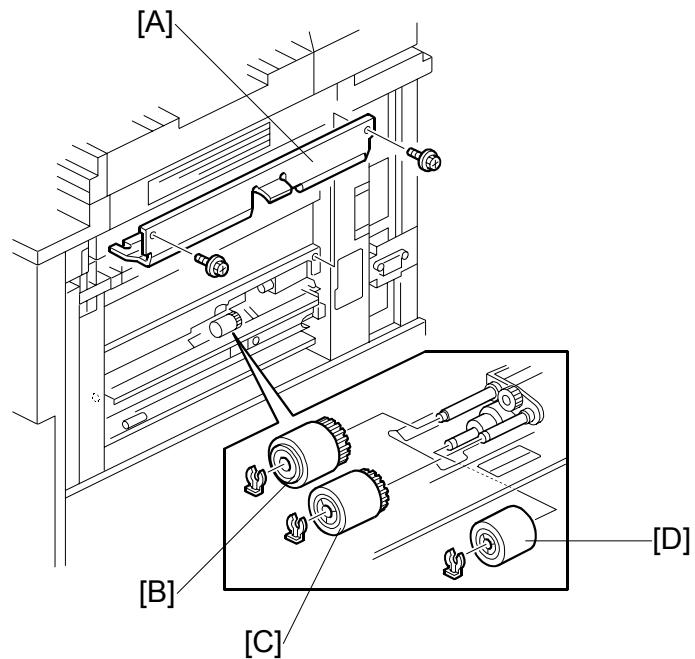
- Not shown. This cover is directly below the by-pass tray.

- [A]: Connector (□ x 1)
- [B]: Ground wire ($\frac{1}{2}$ x 1)
- [C]: By-pass tray
 - Disconnect the by-pass tray from the pins on both sides.
- [D]: By-pass table ($\frac{1}{2}$ x 2)
- [E]: By-pass paper size detection board ($\frac{1}{2}$ x 2)

After installation, execute SP1904 to calibrate the maximum and minimum paper sizes for the side fences:

- SP1904-001 By-pass Tray Paper Size Detection – Minimum Size
Move the side fences to the minimum size, then execute this SP.
- SP1904-002 By-pass Tray Paper Size Detection – Maximum Size
Move the side fences to the maximum size, then execute this SP.

3.11.12 BY-PASS TRAY ROLLERS



Replacement
Adjustment

Right covers (3.3.3)

By-pass tray (3.11.11)

[A]: By-pass cover (x 2)

[B]: Feed roller (x 1)

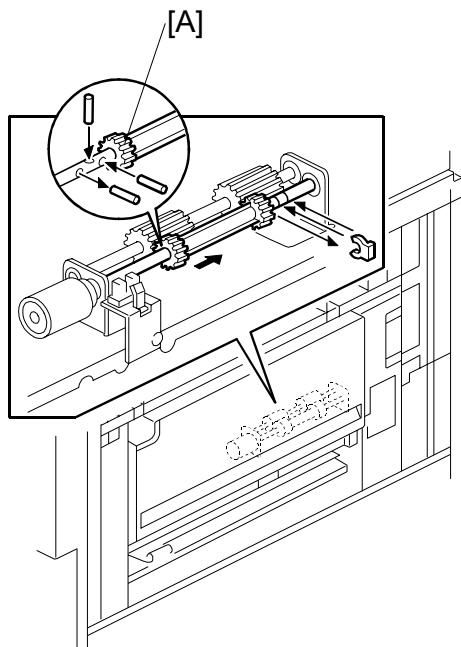
[C]: Pick-up roller (x 1)

[D]: Separation roller (x 1)

- NOTE:**
- 1) Even though the FRR (Feed Roller Replacement) components for the tandem tray (Tray 1), universal trays (Tray 2, Tray 3) and the by-pass tray are identical, the rollers are not interchangeable.
 - 2) Do not touch the surface of new rollers during replacement.

PAPER FEED

3.11.13 BY-PASS SEPARATION ROLLER PRESSURE ADJUSTMENT



1. Loosen the separation roller gear [A].

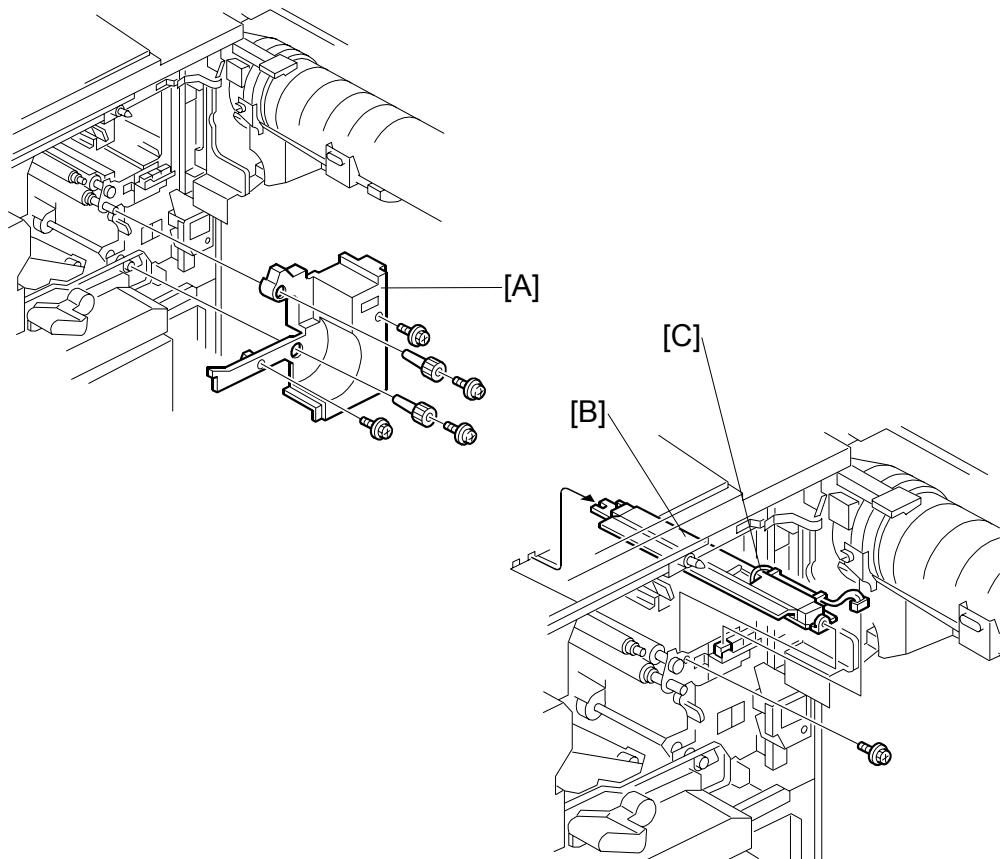
The position of the drive gear for the separation roller can be changed in order to change the amount of pressure exerted by the separation roller. This adjustment can be done:

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

NOTE: The separation roller gear is positioned at the groove before shipping.

2. Move the separation roller gear right to increase the pressure to correct misfeeds.

3.11.14 REGISTRATION SENSOR



Replacement
Adjustment

[A]: Inner cover (\wedge x 4)

Development unit (3.6.1)

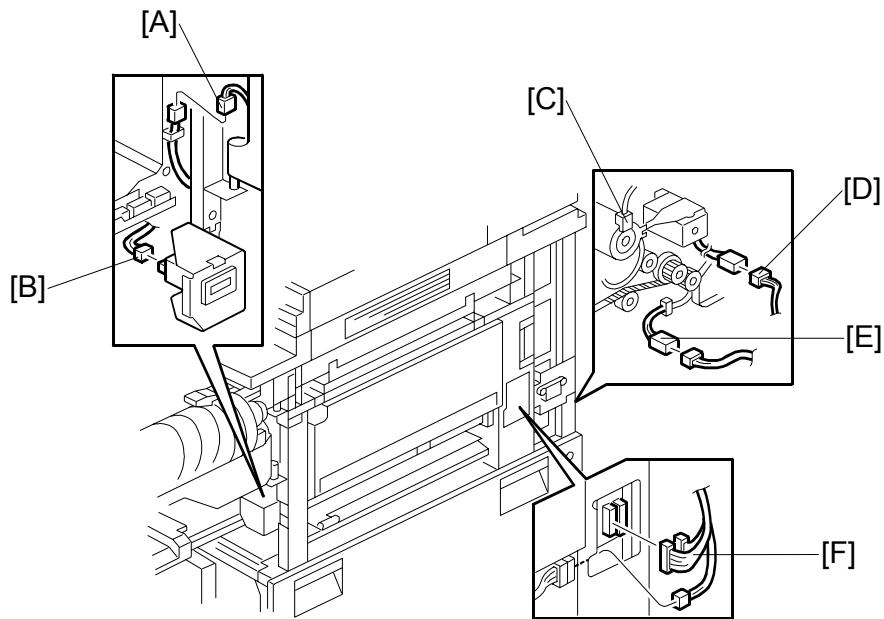
Charge corona unit (3.6.2)

OPC drum unit (3.6.5)

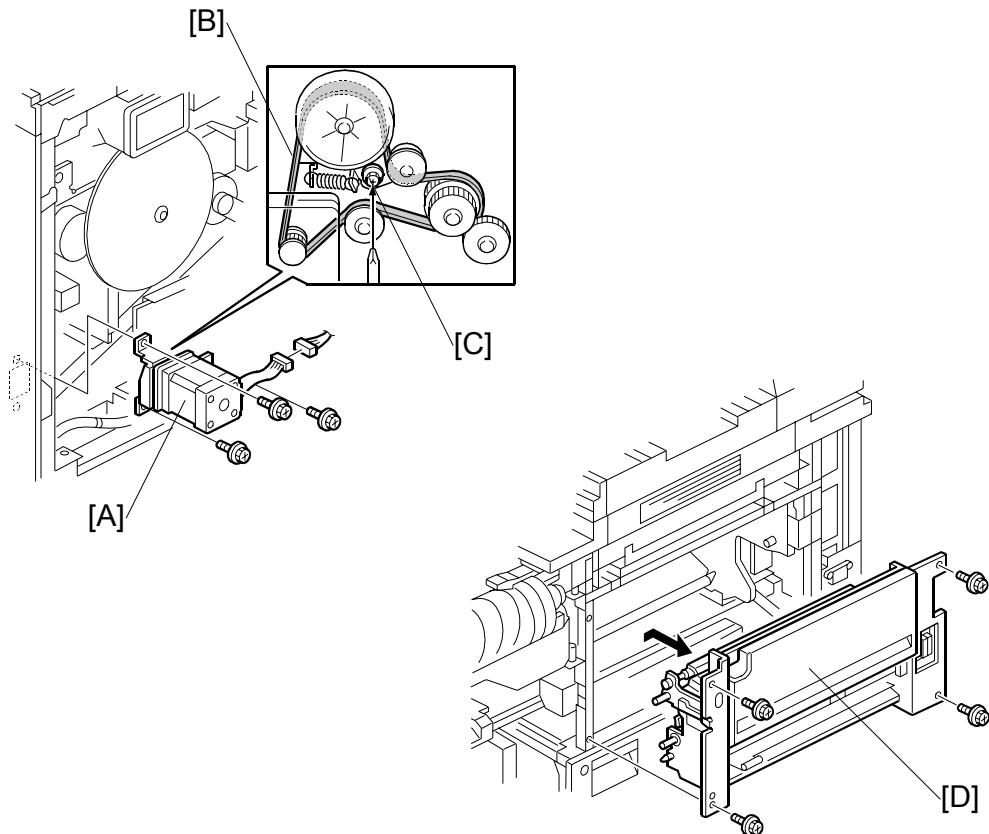
[B]: Paper dust removal unit (\wedge x 1, \square x 1)

[C]: Registration sensor

3.11.15 REGISTRATION AND BY-PASS UNIT REMOVAL



1. Remove the development unit. (☞ 3.6.1)
2. Remove the inner cover. (☞ x 4)
3. Disconnect the toner bottle holder connector [A] and counter connector [B].
4. Pull out the duplex unit about 10 cm.
 - Confirm that the registration roller is separated from the positioning pin.
5. Remove the right upper cover. (☞ 3.3.3)
6. Rear upper cover (☞ 3.3.5)
7. Disconnect the following connectors:
 - Relay clutch connector [C]
 - Guide plate solenoid connector [D]
 - Guide plate sensor connector [E]
 - By-pass tray unit connectors [F]



8. Remove the by-pass feed motor [A] (\wedge x 3, \square x 1).
 - At re-installation, if the tension of the belt [B] is slack, loosen the screw on the tension bracket [C], move the screw to put more tension on the belt, then tighten the screw at the new position.
9. Remove the by-pass unit [D] (\wedge x 4).

When removing and installing the by-pass unit:

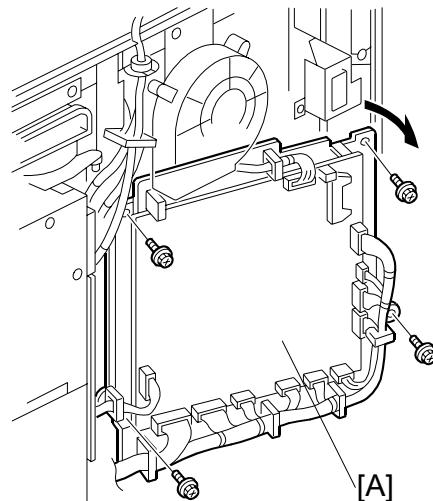
 - Make sure that the unit does not catch on any harnesses.
 - On re-installation, make sure that no harnesses are pinched between the unit and the machine frame.
 - You must re-install the by-pass unit with the duplex unit open.

3.12 PCBS AND HDD

3.12.1 BCU BOARD (BASE ENGINE CONTROL UNIT)

Rear upper cover (☞ 3.3.5)

[A]: BCU board bracket (☞ x 4)



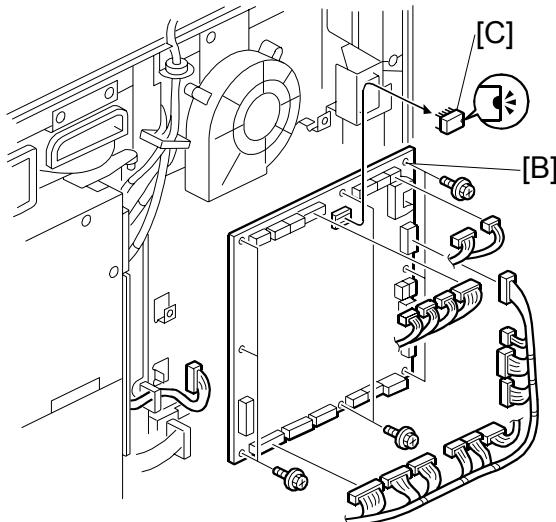
⇒ [B]: BCU board (☞ x 8, ☞ x 17)

[C]: Remove IC31 (EEPROM) from the old BCU board, and then attach it to the new BCU board.

[D]: Make sure the DIP Switch settings on the new BCU board are the same as the DIP Switch settings on the old BCU board.

[E]: Attach the new BCU board.

[F]: After replacing the BCU board, execute SP3001-002 (ID Sensor Initialization).

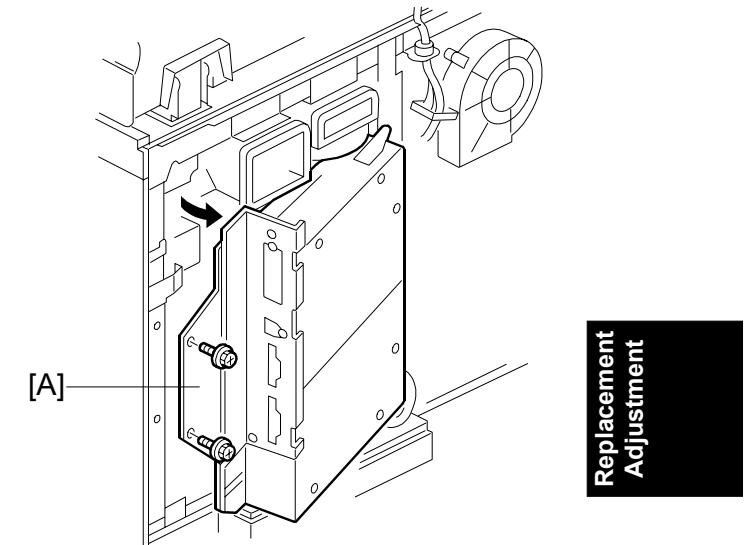


3.12.2 CONTROLLER BOARD

B064 Series: Controller Board

Rear upper cover (☞ 3.3.5)

[A]: Swing-out the PCB unit (☞ x 2)



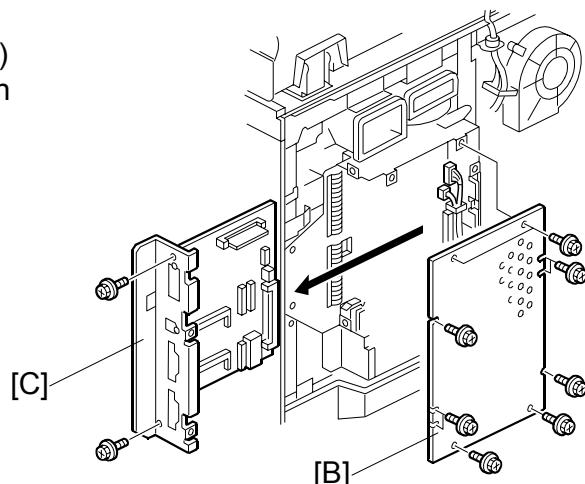
[B]: Controller cover (☞ x 9)

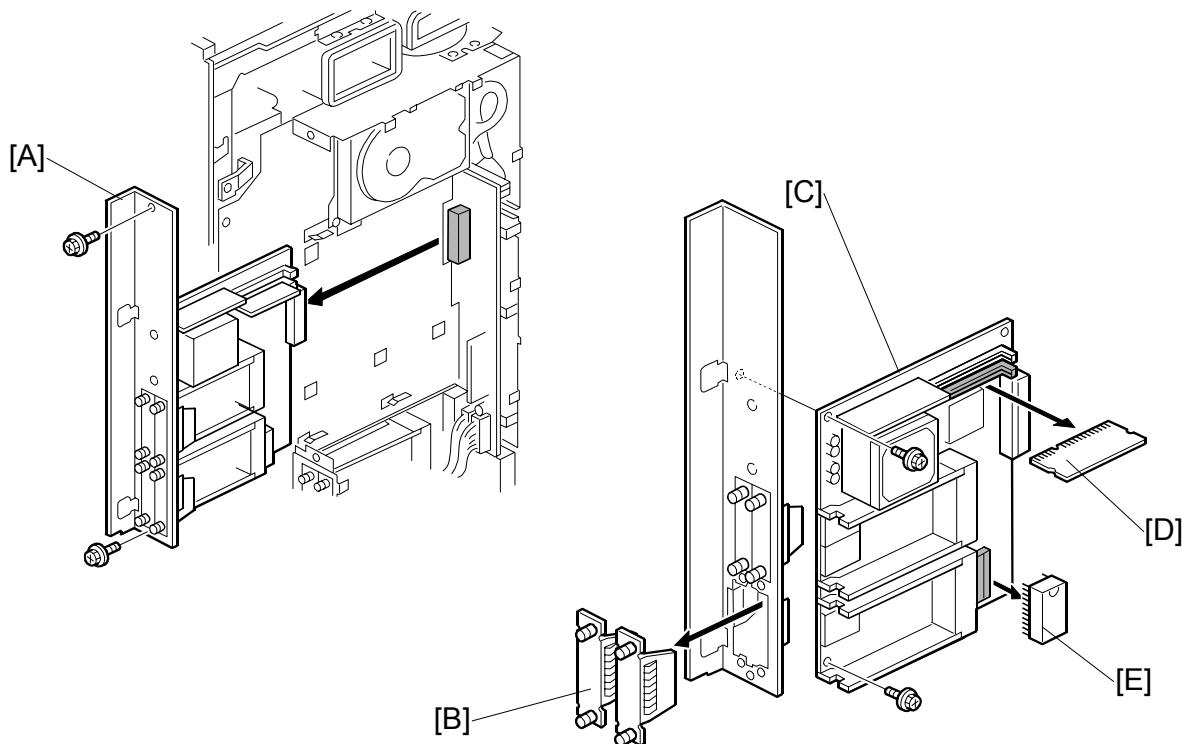
[C]: Controller board (☞ x 2, ☞ x 2)

- Pull the controller board out in the direction of the arrow.

Important:

Remove the NVRAM from the old controller board and install it on the new board.



B140 Series: Controller Board

Rear covers (3.3.5)

Controller box cover (x 12)

[A]: Controller board plate (x 2)

[B]: Lower covers

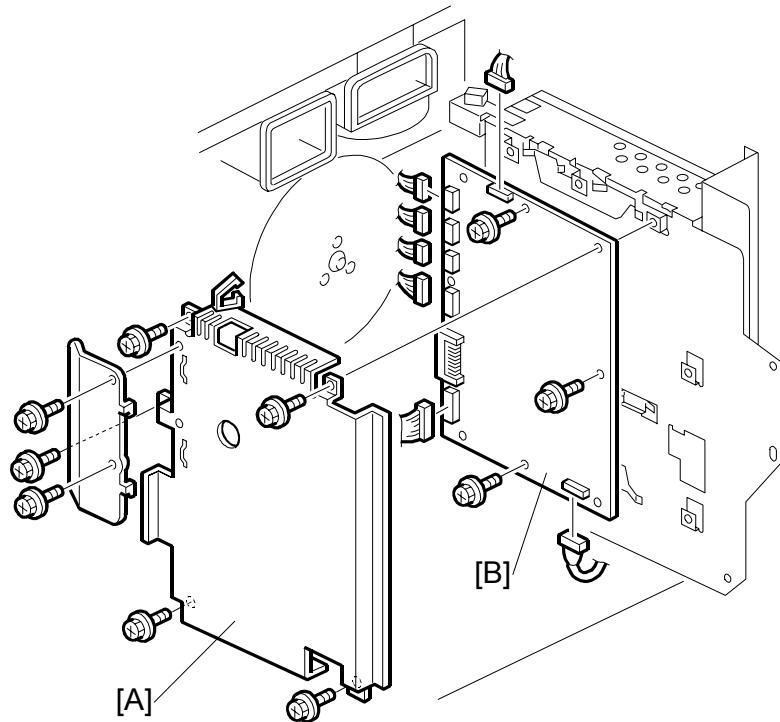
[C]: Controller board (x 2)

[D]: Remove the DIMM from the old controller board, and connect it to the new board.

[E]: Remove the NVRAM from the old controller board, and connect it to the new board.

3.12.3 IPU BOARD

B064 Series: IPU Board



Replacement
Adjustment

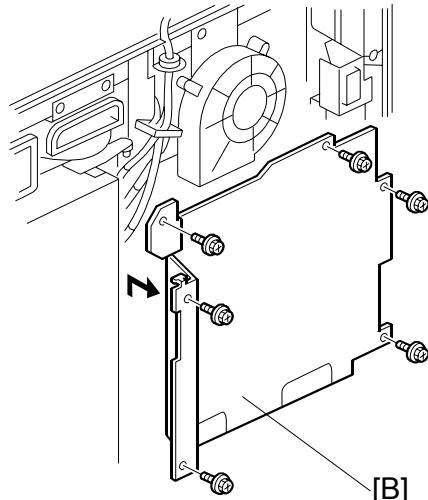
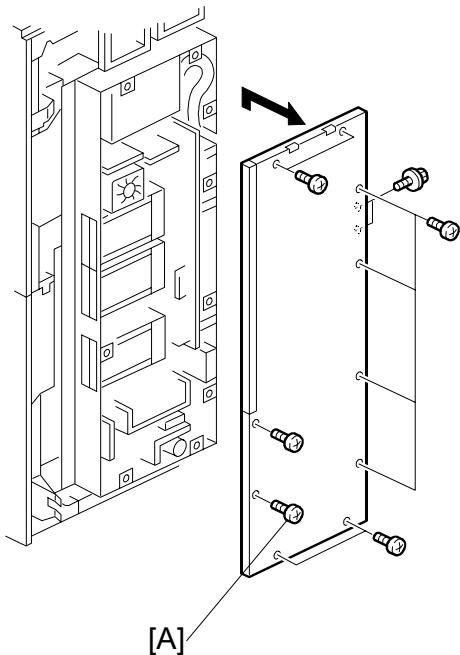
Rear upper cover (☞ 3.3.5)

Swing-out the PCB unit (☞ 3.12.2)

[A]: PCB unit cover (☞ x 7)

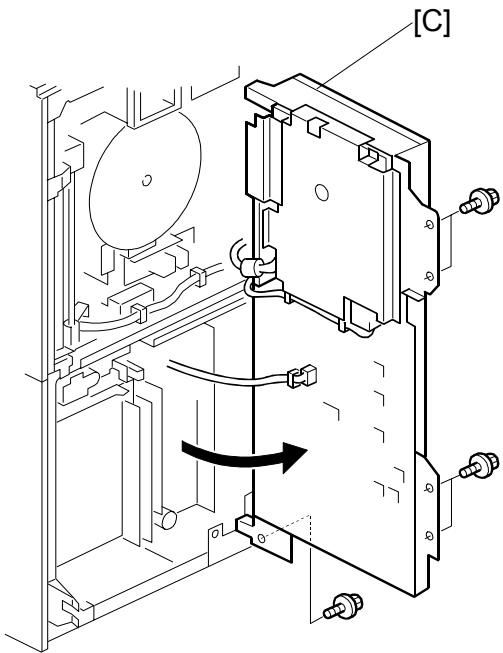
[B]: IPU board (☞ x 3, ☞ x 7)

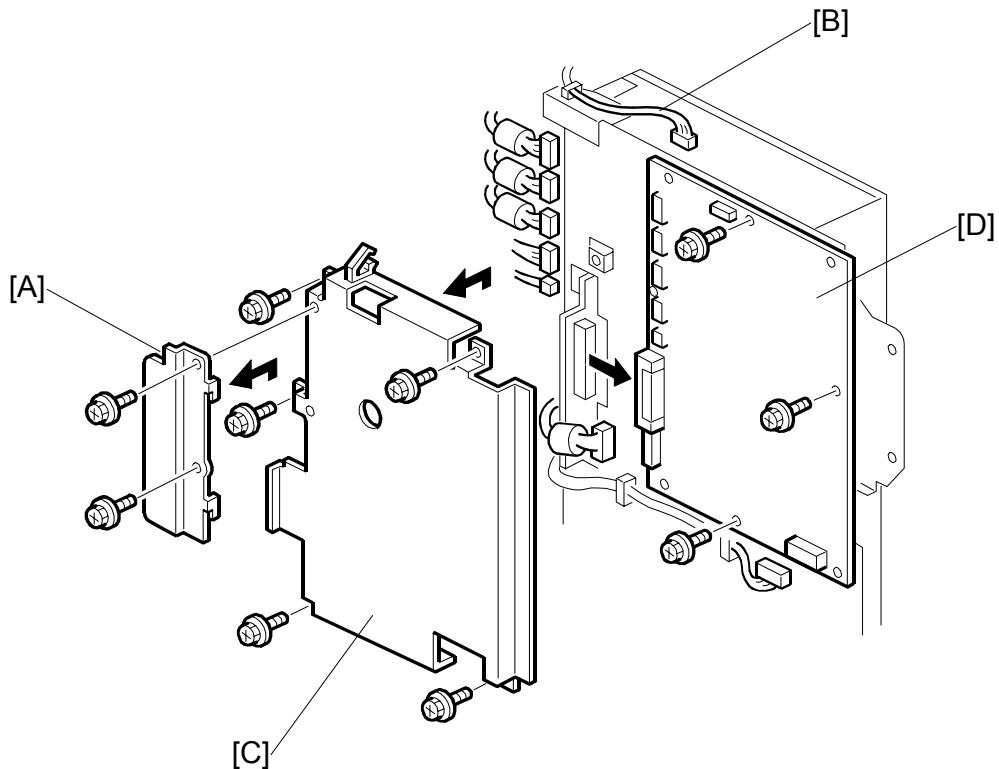
B140 Series: IPU, Mother Board



Rear covers (●3.3.5)

- [A]: Controller box cover (● x 12)
- [B]: BCU cover plate (● x 6)
- [C]: Controller box door (● x 5)



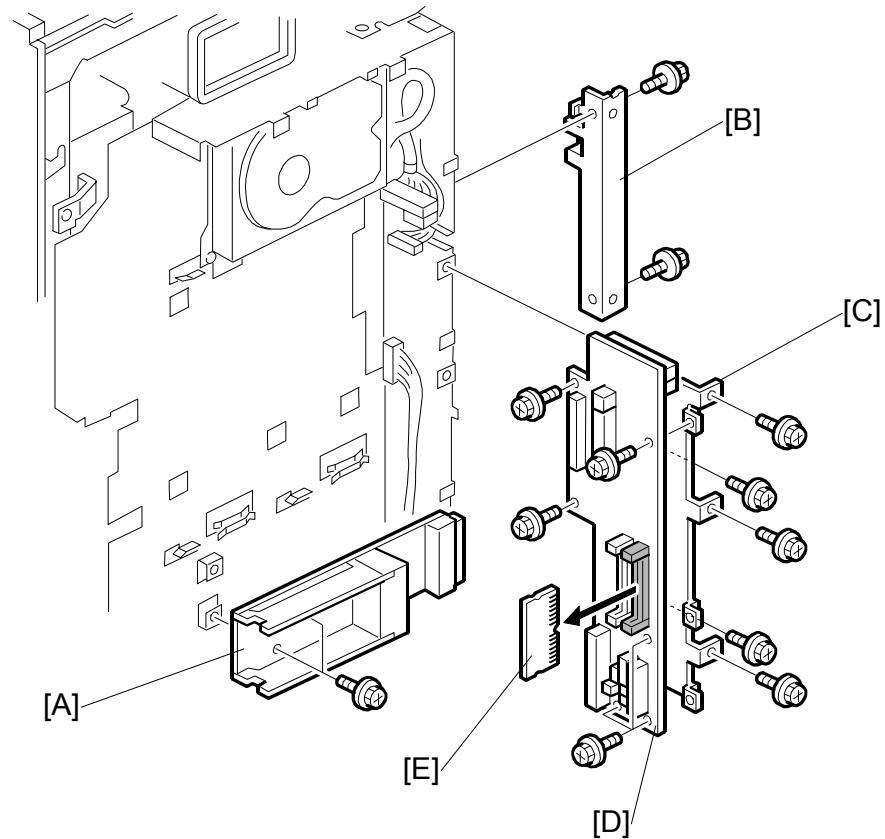


Replacement
Adjustment

- [A]: Connector cover (x 2)
- [B]: Harness (x 1, x 1)
- [C]: IPU cover (x 5)
- [D]: IPU board (x 3, x 8)

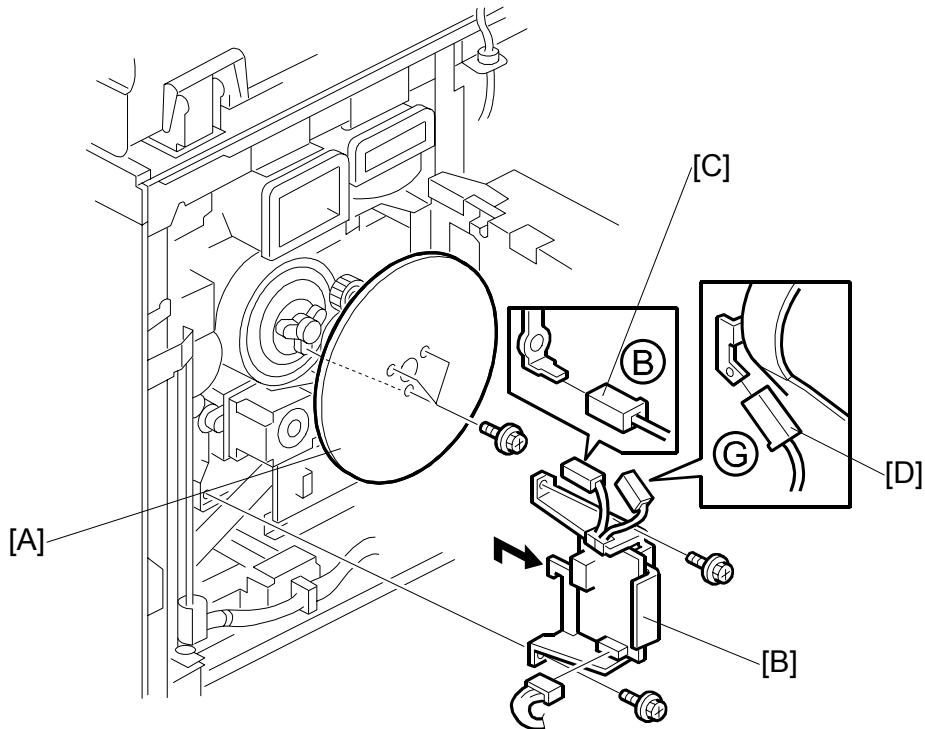
NOTE: Record the positions of the IPU board screws. Attach them at the same positions when you install the board again.

PCBS AND HDD



- [E]: A1, A2 connector slots assembly (x 1)
- [F]: Connector cover (x 2)
- [G]: Mother board support plate (x 5)
- [H]: Mother board (x 1)
- [I]: Mother board DIMM

3.12.4 DEVELOPMENT POWER PACK



Rear upper cover (☞ 3.3.5)

[A]: Flywheel (☞ x 3)

[B]: Development power pack (☞ x 2, ☞ x 3)

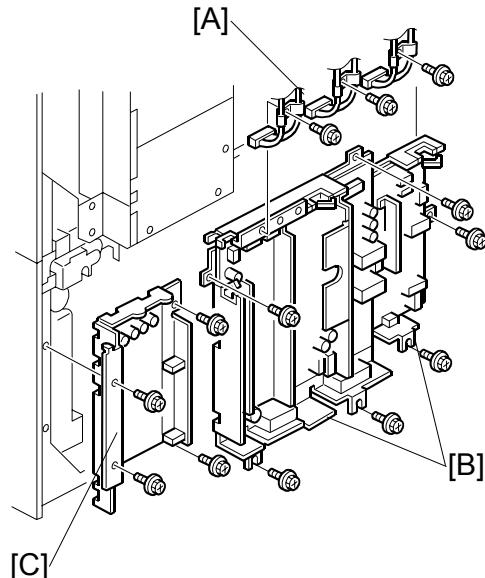
NOTE: Mark the bayonet connectors [C], [D] with a felt pen to ensure that they are not connected incorrectly when the power pack is re-connected.

3.12.5 PSU, PFC BOARDS

B064 Series

Rear lower cover (● 3.3.5)

- [A]: Harness clamps (● x 3)
- [B]: PSU (● x 6, ● x 13)
 - The PSU consists of two PCB's.
- [C]: PFC (● x 4, ● x 14)

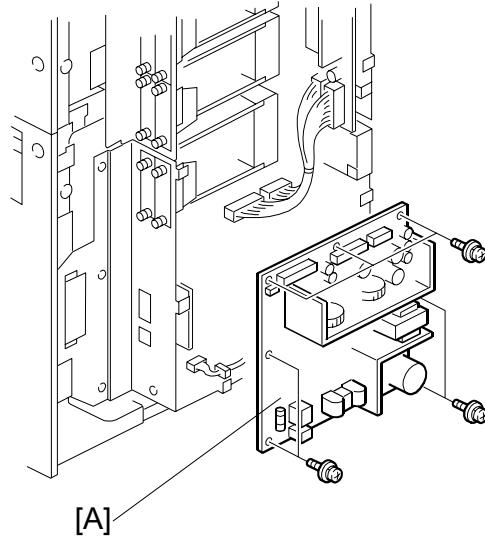


B140 Series PSU

Rear covers (● 3.3.5)

Controller box cover (● x 12)

- [A]: PSU (● x 5, ● x 7)



3.12.6 HDD

CAUTION

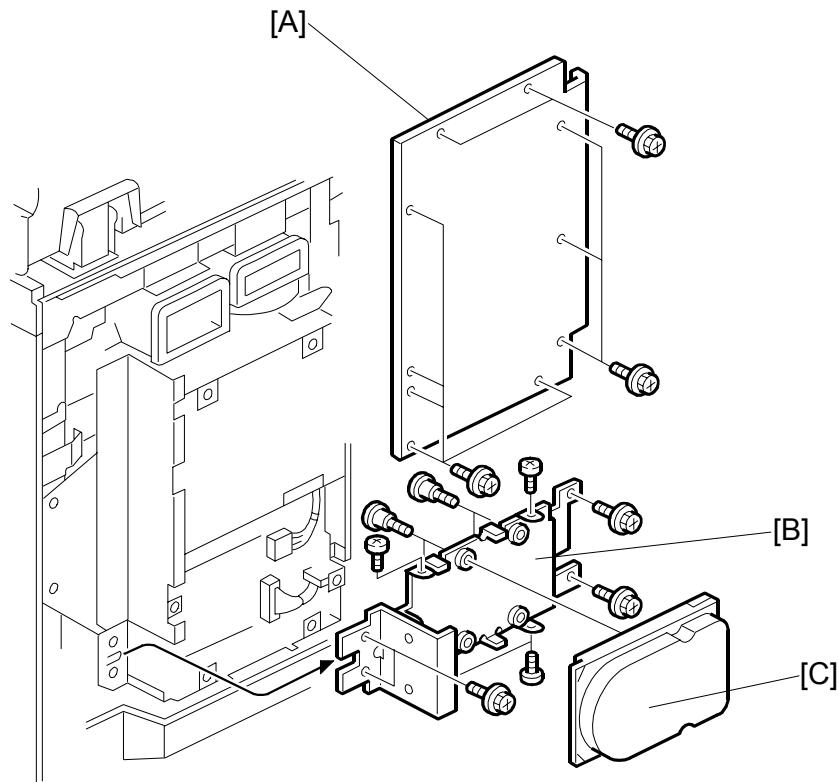
Replacing the NVRAM or the HDD erases documents stored in the document server. Before replacing either of these items, consult with the customer to determine the best time to perform the replacement.

Important

- It is not necessary to format a replacement hard disk designed for this machine.

B064 Series HDD

Replacement
Adjustment

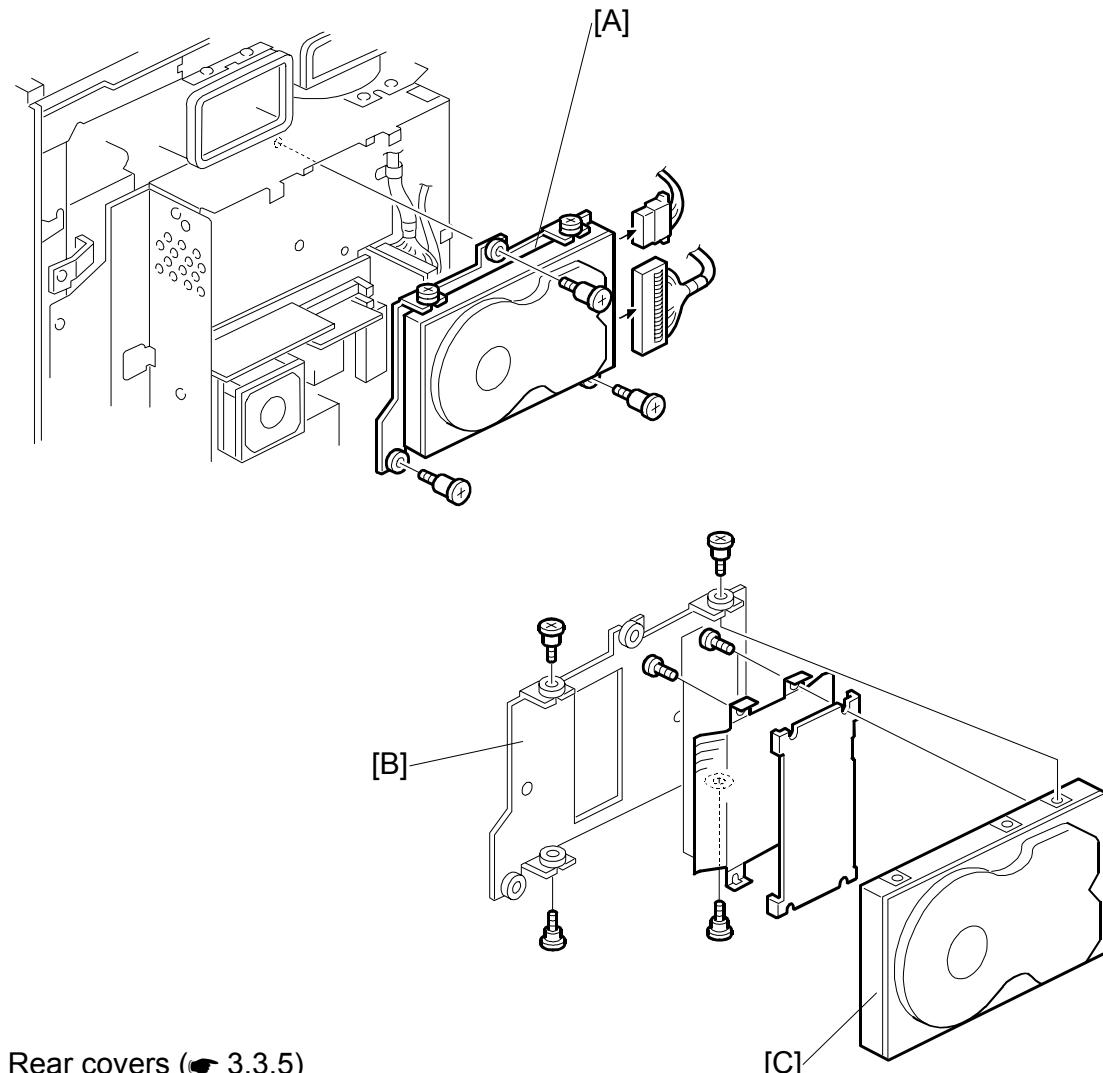


Rear upper cover (☞ 3.3.5)

- [A]: Controller cover (☞ x 10)
- [B]: HDD bracket (☞ x 8, ☞ x 4)
- [C]: HDD (☞ x 8)

Do the procedure in “Stamp Data Update” (☞ 5.4.2) to download the stamp data.

B140 Series HDD



Rear covers (☞ 3.3.5)

Controller box cover (☞ x 12)

[A]: HDD assembly (☞ x 3, ☞ x 2)

[B]: HDD bracket (☞ x 4)

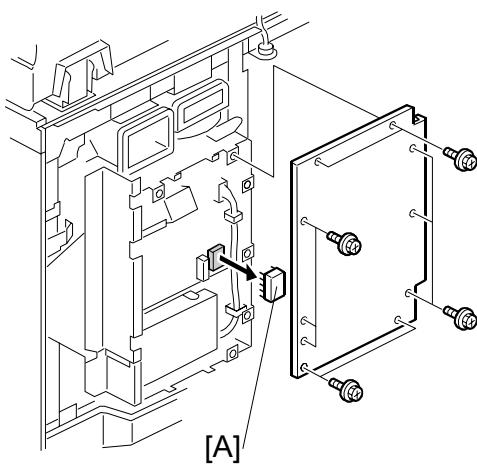
[C]: HDD (☞ x 4)

Do the procedure in "Stamp Data Update" (☞ 5.4.2) to download the stamp data.

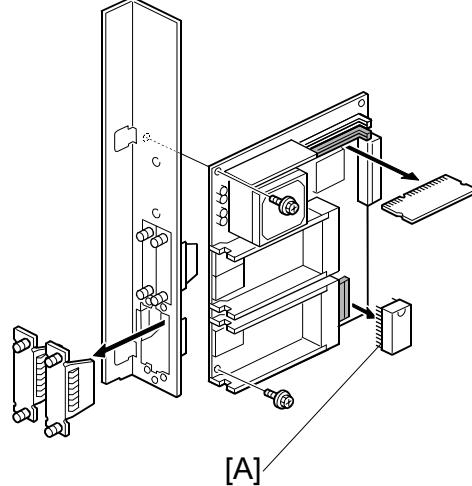
3.12.7 NVRAM

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.

B064 Series



B140 Series



Replacement
Adjustment

1. Enter the SP mode and print the SMC report.
 - Press Clear Modes
 - On the operation panel keypad, press ①①⑦.
 - Hold down Clear/Stop for more than 3 seconds.
 - Press "Copy SP" on the touch-panel.
2. Execute SP5990-001 (All SP Groups) to print an SMC report.
3. Insert the IC card or SD card.

If the machine is a B064 Series machine, remove the slot cover and connect the flash memory card to the controller board.
-or-
If the machine is a B140 Series machine, put the SD card in Slot C3.
4. Execute SP5824 (NVRAM Data Upload) to upload the data to the flash memory card.
5. Switch the machine off and disconnect the power cord.
6. Remove the NVRAM [A].
 - 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.

7. Install the new NVRAM. Make sure that the NVRAM is installed the correct way around.
8. Connect the power cord and switch the machine on.
9. Enter the SP mode and execute SP5801 (Memory All Clear)
10. Execute SP5825 (NVRAM Download) to download the data uploaded from the old NVRAM.
11. Switch the machine off then on.
12. Execute SP5990 to print another SMC report. Confirm that all the SP settings have been initialized.
13. Execute SP3001-002 (ID Sensor Initialization) to initialize the ID sensor.
14. Execute SP5907 (Plug & Play) and enter the brand and model name of the machine for Windows Plug & Play capability.
15. For details about SP initial settings, see “Section 5 Service Tables”.

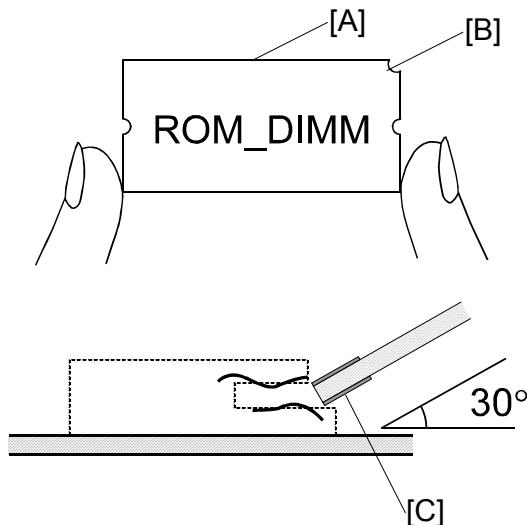
3.12.8 DIMMS

NOTE: Read this section carefully before installation so you know how to insert the DIMMs correctly.

CAUTION

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.

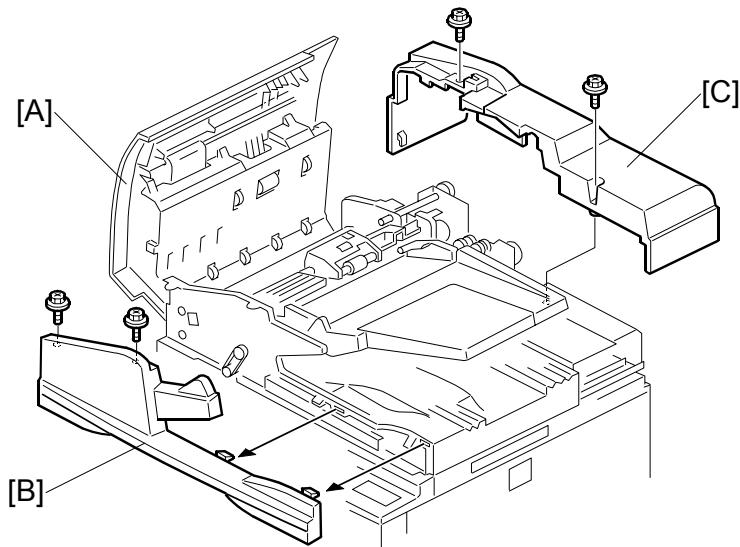
Replacement
Adjustment



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.

3.13 ADF (B140 SERIES/B064 SERIES)

3.13.1 ADF COVERS



Open the feed cover [A] (x 1, x 2, ground wire x 1).

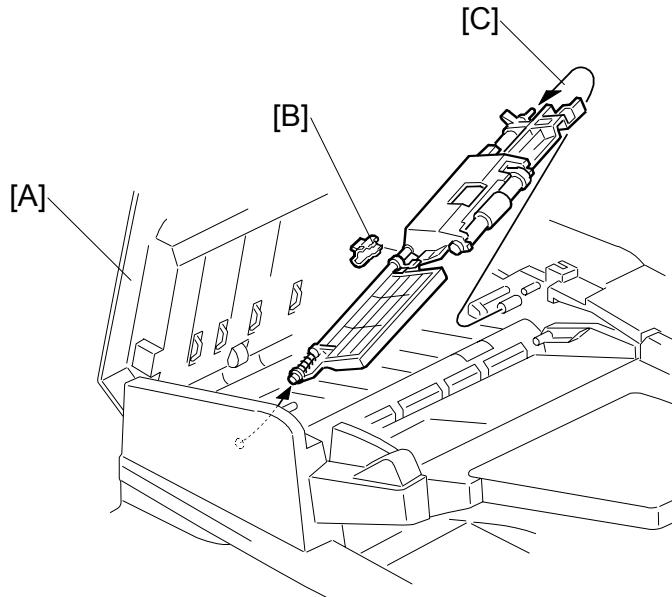
[B]: Front cover (x 2)

- Press down on the tabs to remove.

[C]: Rear cover (x 2)

- Press down on the tabs to remove.

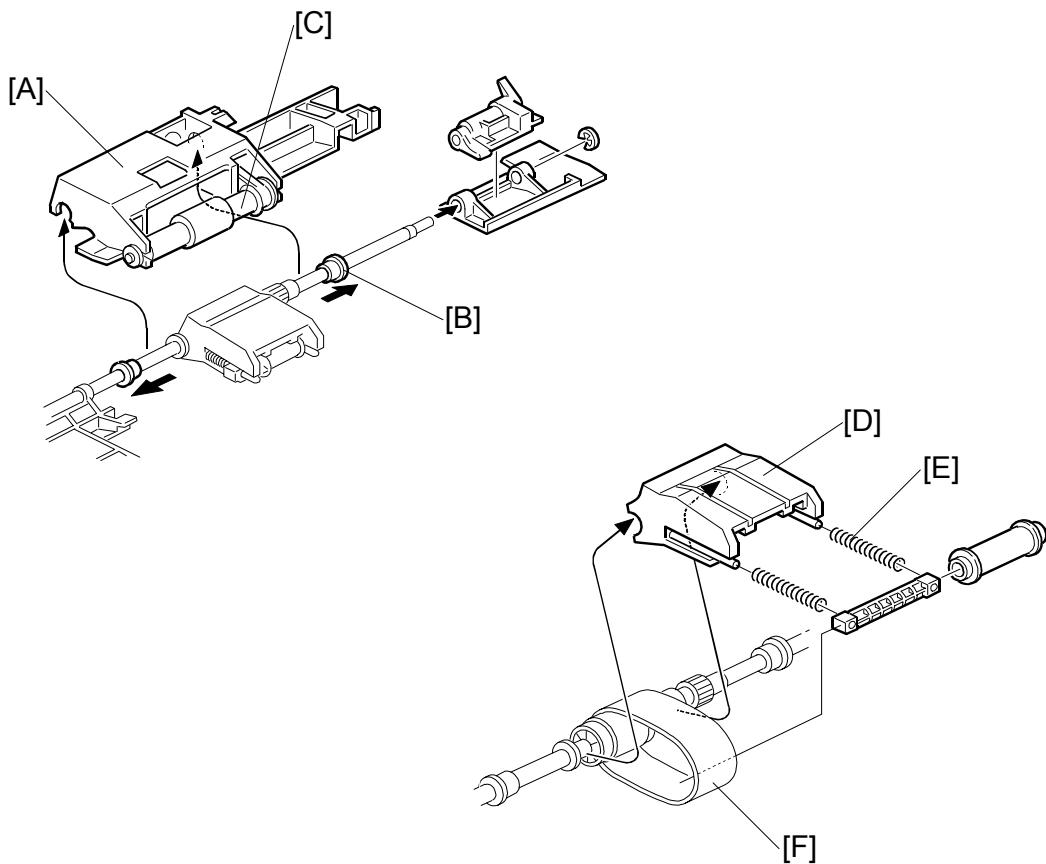
3.13.2 FEED UNIT



Replacement
Adjustment

1. Open the feed cover [A].
2. Remove the snap fitting [B].
3. Push the feed unit slowly to the left to disengage the shaft [C] on the right, then lift it out.

3.13.3 FEED BELT AND PICK-UP ROLLER



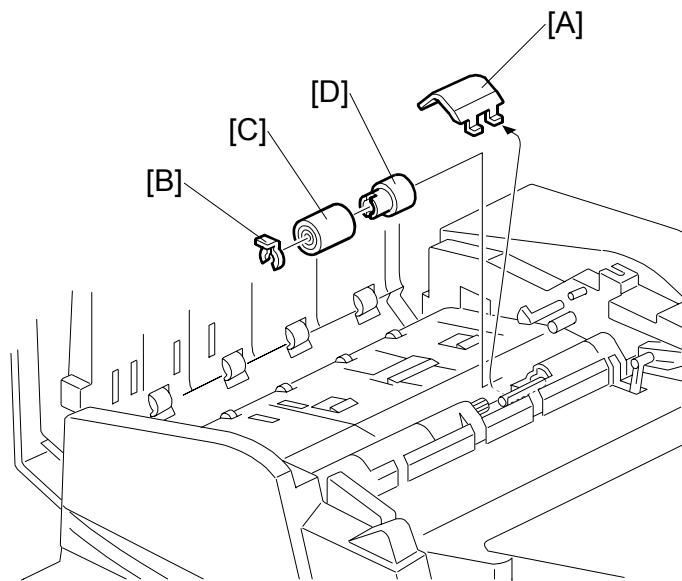
1. Remove the feed unit (参照 3.11.8).
2. Remove the pick-up roller unit [A].
3. Remove the bushings [B].
4. Remove the pick-up roller [C].

NOTE: At re-assembly, make sure that the tab on the front guide plate is above the pick-up roller.

5. Hold the feed belt holder [D] by the left and right sides, then carefully pull it off the bushing. Do not let the springs [E] fall.
6. Remove the feed belt [F].

NOTE: When re-assembling, set the pick-up roller springs first, then follow this procedure in reverse.

3.13.4 SEPARATION ROLLER



Replacement
Adjustment

Open the feed cover.

Feed unit (☞ 3.11.8)

[A]: Separation roller cover

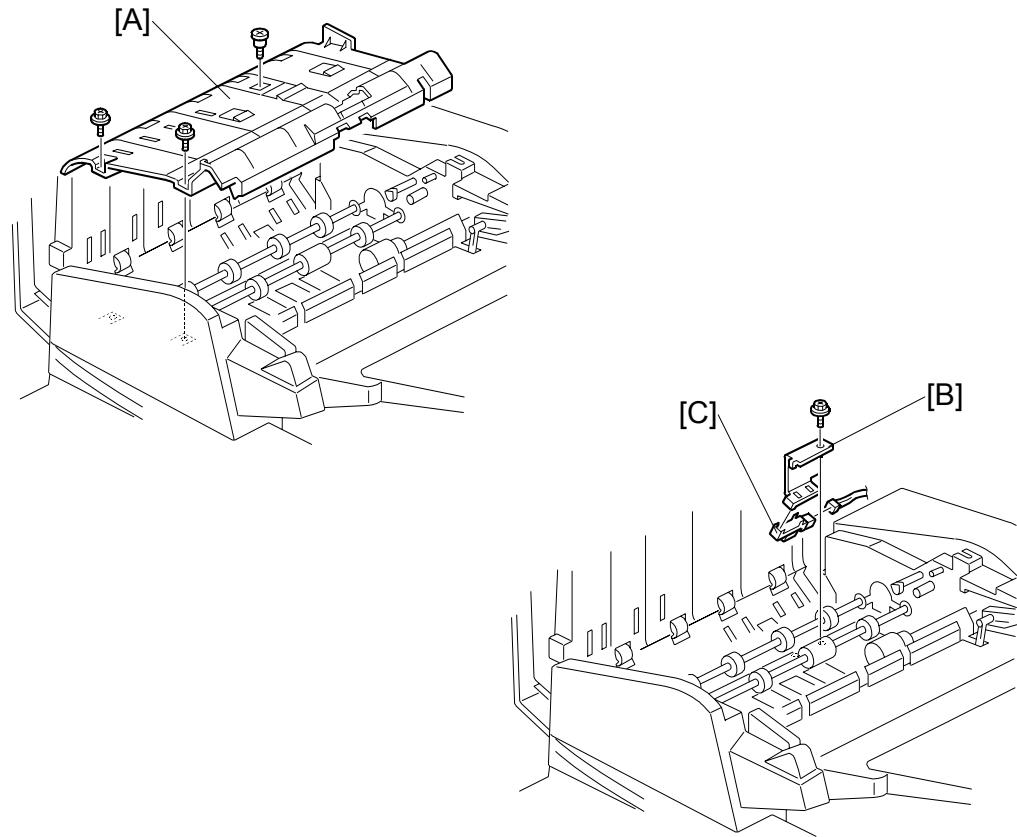
- Use the tip of a screwdriver to push up the cover.

[B]: C-Clamp (Ø x 1)

[C]: Separation roller

[D]: Torque limiter clutch

3.13.5 REGISTRATION SENSOR



Open the feed cover.

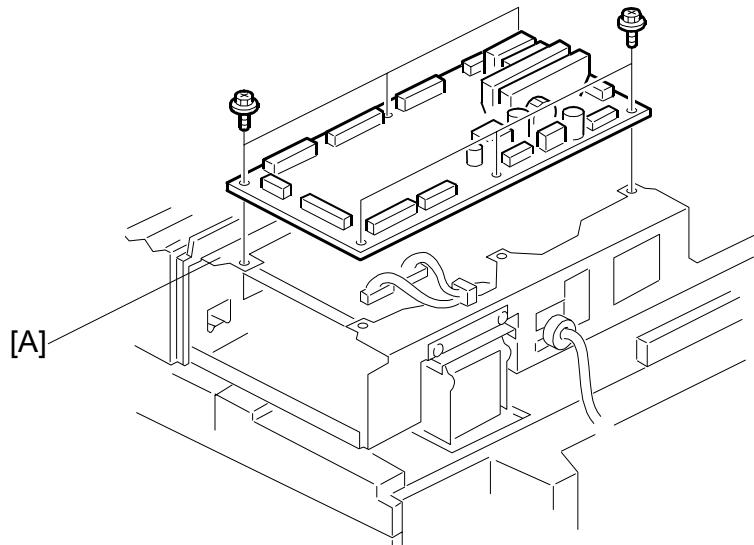
Feed unit (3.11.8)

[A]: Guide plate (x 3)

[B]: Registration sensor bracket (x 1)

[C]: Registration sensor (x 1)

3.13.6 ADF CONTROL BOARD

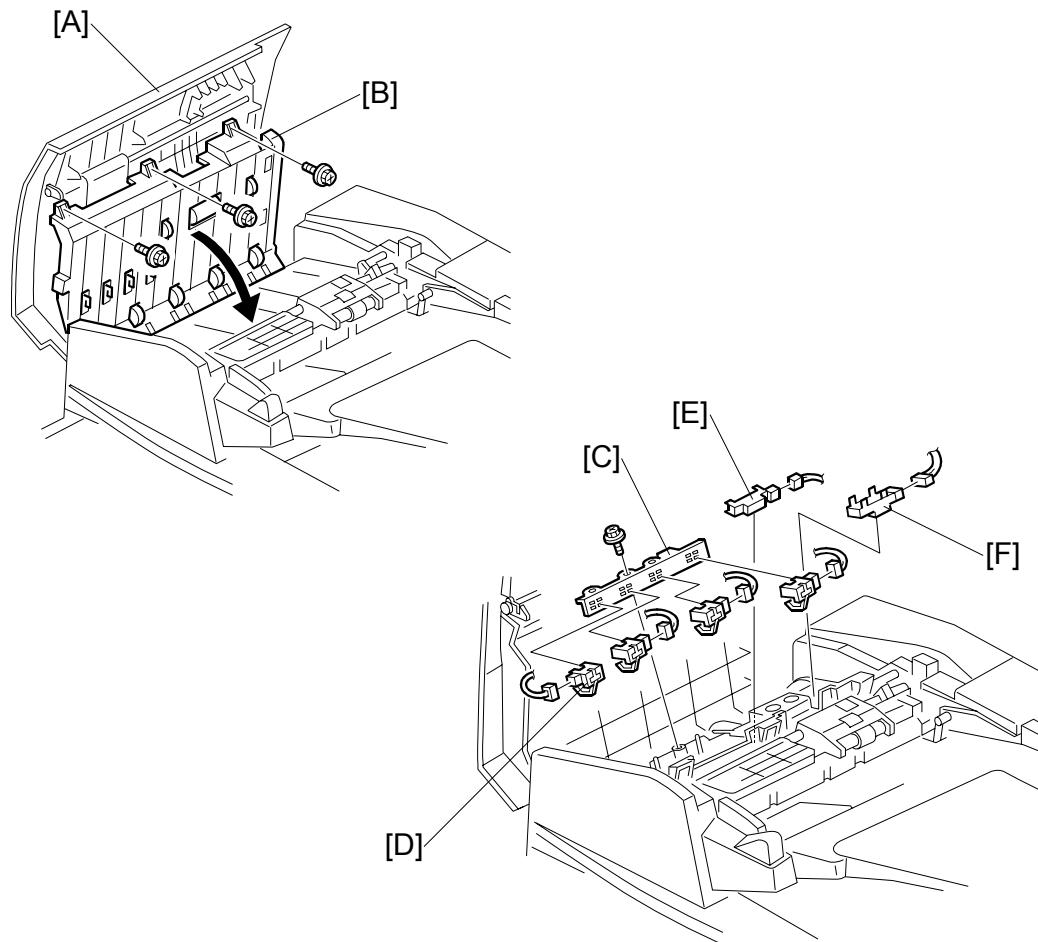


Replacement
Adjustment

ADF Rear cover (参照 3.13.1)

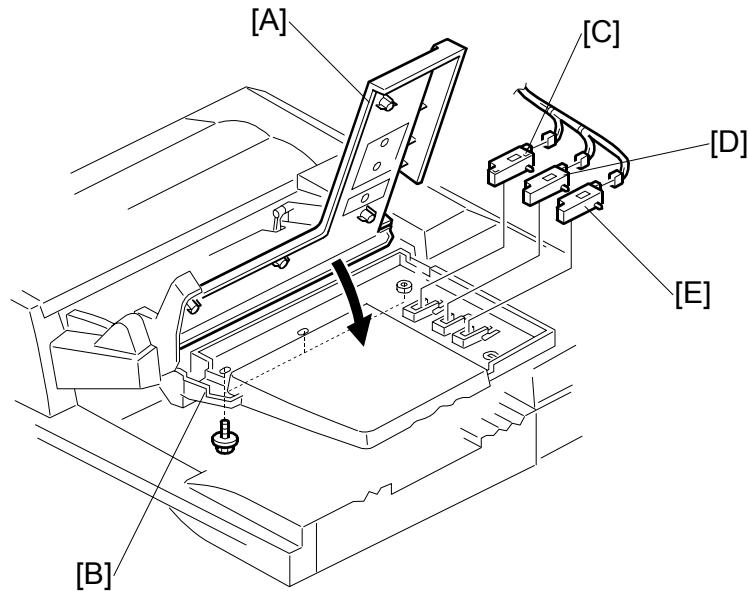
[A]: ADF board (× 2, × 14)

3.13.7 ORIGINAL WIDTH, INTERVAL, AND SKEW CORRECTION SENSORS



- [A]: Open the feed cover.
- [B]: Guide plate (x 3)
- [C]: Width sensor guide plate (x 1)
- [D]: Original width sensors (x 4)
- [E]: Interval sensor (x 1)
- [F]: Skew correction sensor (x 1)

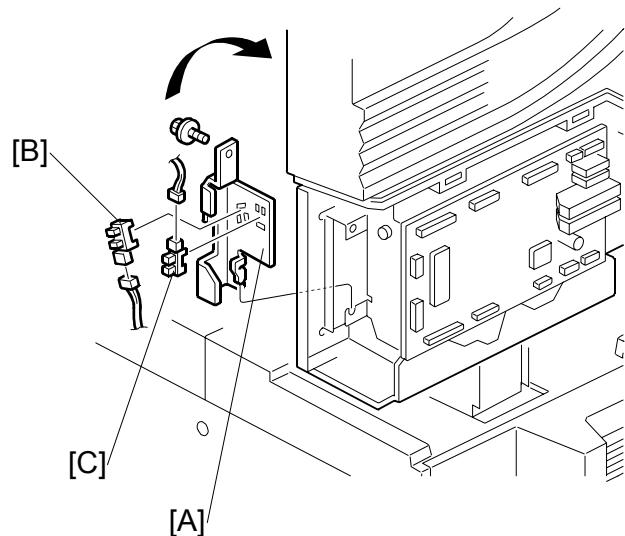
3.13.8 ORIGINAL LENGTH SENSORS



Replacement
Adjustment

- [A]: Open the original tray.
- [B]: Lower cover ( x 4)
- [C]: Original length sensor 1 – B5 ( x 1)
- [D]: Original length sensor 2 – A4 ( x 1)
- [E]: Original length sensor 3 – LG ( x 1)

3.13.9 DF POSITION AND APS SENSOR



Open the ADF.

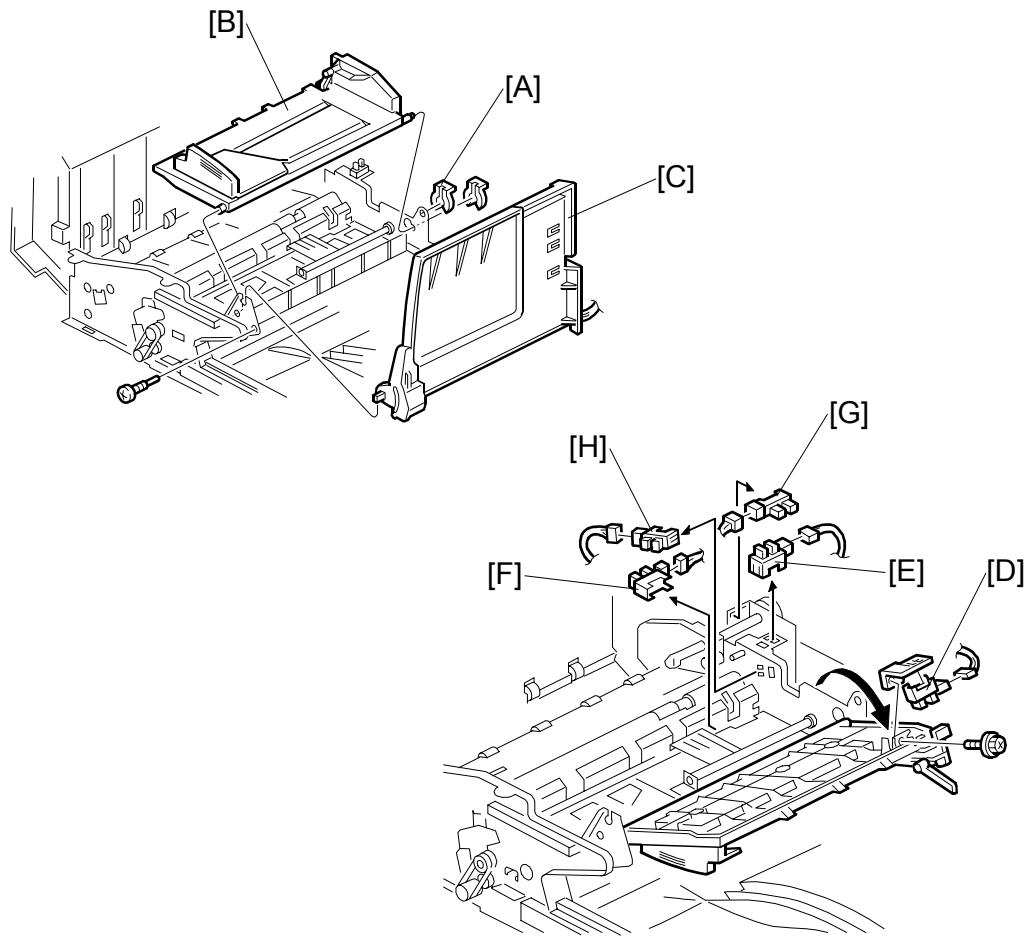
ADF rear cover. (3.13.1)

[A]: Bracket (x 1)

[B]: ADF position sensor (x 1)

[C]: APS sensor (x 1)

3.13.10 OTHER ADF SENSORS



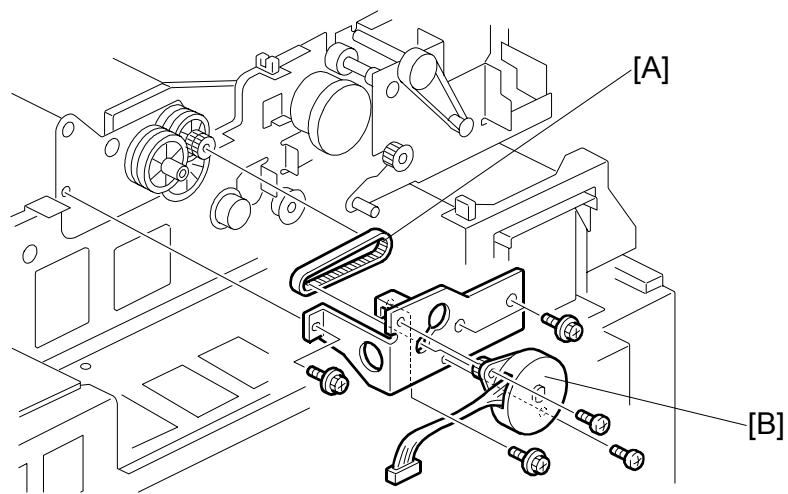
Replacement
Adjustment

Open the feed cover.

ADF Front/rear covers (x 4) (3.13.1)

- [A]: C-Clamps (x 2)
- [B]: Original tray (x 1)
- [C]: Bottom plate (x 1)
- [D]: Original set sensor (x 1)
- [E]: Feed cover sensor (x 1)
- [F]: Bottom plate HP sensor (x 1)
- [G]: Pick-up roller HP sensor (x 1)
- [H]: Bottom plate position sensor (x 1)

3.13.11 BOTTOM PLATE LIFT MOTOR



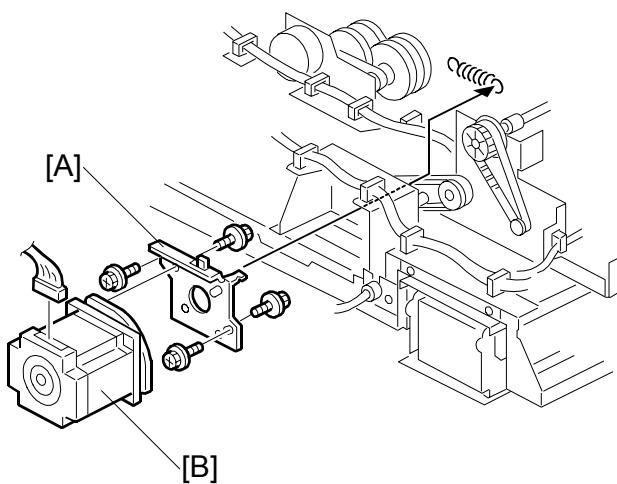
Open the feed cover.

ADF Rear cover (☞ 3.13.1)

[A]: Bottom plate lift motor bracket (harness x 1, x 1, x 2, timing belt x 1)

[B]: Bottom plate lift motor (x 2)

3.13.12 FEED MOTOR

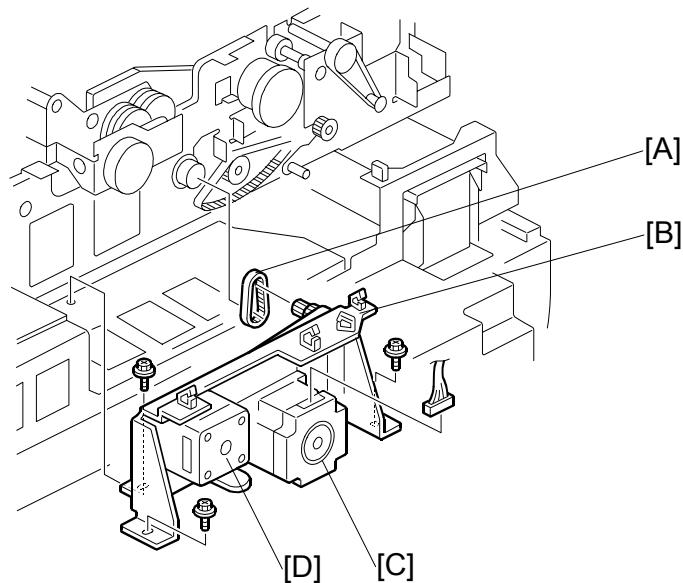


ADF Rear cover (☞ 3.13.1)

[A]: Feed motor bracket (x 2, x 1, spring x 1, belt x 1)

[B]: Feed motor (x 2)

3.13.13 EXIT MOTOR AND TRANSPORT MOTOR



Replacement
Adjustment

Open the feed cover.

ADF Rear cover (3.13.1)

Bottom plate lift motor (3.13.11)

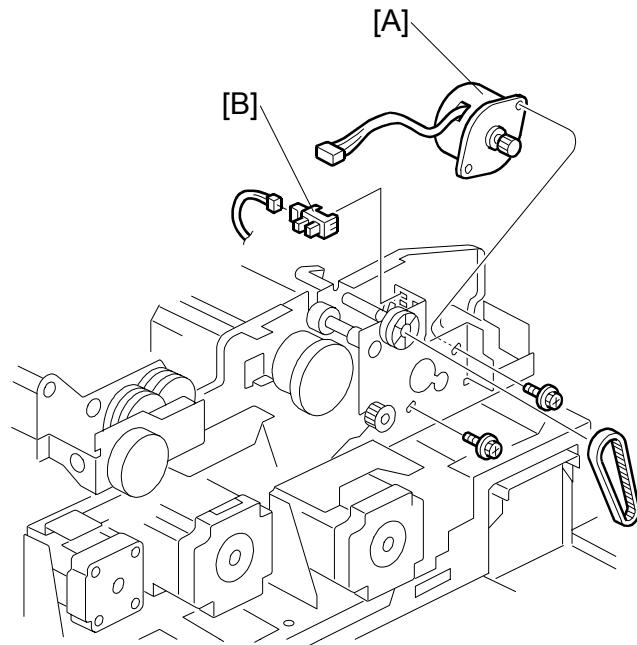
[A]: Timing belt

[B]: Exit/transport motor unit (x 3, x 2)

[C]: Transport motor (x 2)

[D]: Exit motor (x 2)

3.13.14 PICK-UP ROLLER MOTOR AND HP SENSOR



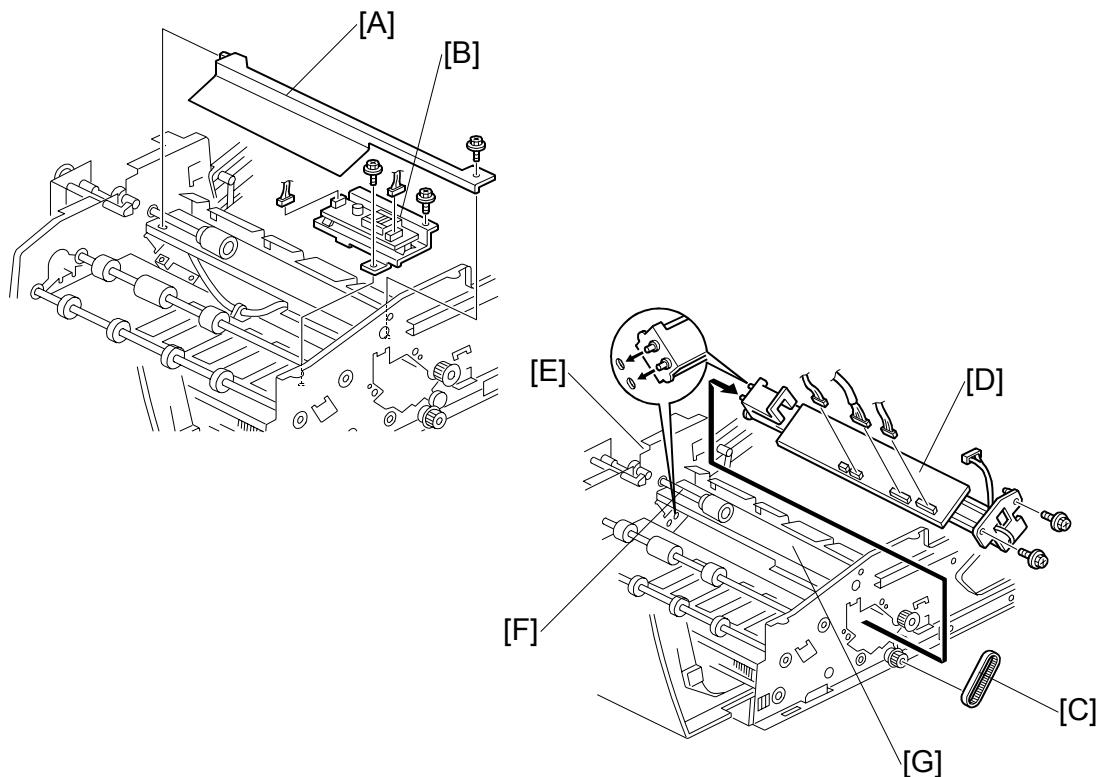
Open the feed cover.

ADF Rear cover (3.13.1)

[A]: Pick-up roller lift motor (x 2, x 1)

[B]: Pick-up roller HP sensor (x 1)

3.13.15 CIS POWER SUPPLY BOARD AND CIS UNIT



⚠️ WARNING

Turn off the main power switch and unplug the machine before performing this procedure.

Open the feed cover.

Feed unit (3.11.8)

Guide plate (3.11.15)

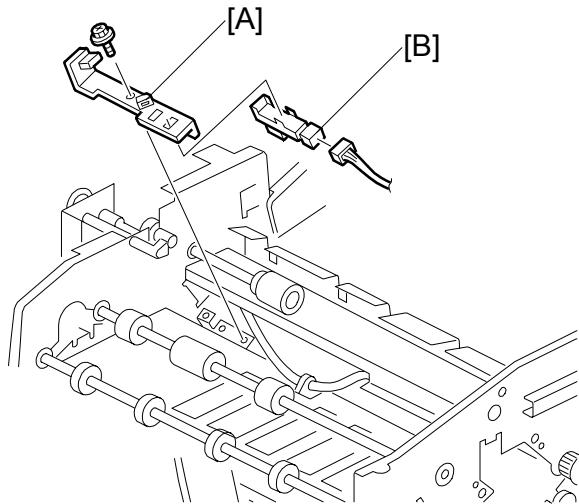
NOTE: To avoid an accidental static discharge which could damage the circuits of the CIS power supply board, ensure that you are using an electrostatic discharge protection device.

- [A]: Guide plate mylar (x 1)
- [B]: CIS power supply board (x 2, x 2)
- [C]: Timing belt
- [D]: CIS unit (x 2, x 3)

- Remove the CIS unit carefully to avoid scratching the glass.

NOTE: If you experience difficulty re-installing the CIS unit, you can remove the two drive gears [E] (x 1), the separation roller shaft [F] (x 2), and cross-stay [G] (x 4).

3.13.16 ADF EXIT SENSOR



CIS Power Supply Board (3.13.15)

[A]: Exit sensor bracket (x 1)

[B]: Exit sensor (x 1)

3.14 COPY IMAGE ADJUSTMENTS: PRINTING/SCANNING

These adjustments must be performed after replacing any of the following parts:

- Scanner wires
- Lens block
- Scanner motor
- Polygon motor
- Tandem tray side fences
- Memory All Clear

3.14.1 PRINTING

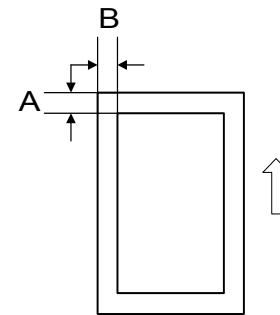
1. Make sure paper is installed correctly in each paper tray before you start these adjustments.
2. Use the Trimming Area Pattern (SP2-902-3, No. 18 to print the test pattern for the following procedures.
3. After completing these printing adjustments, be sure to set SP 2-902-3 to 0 again.



Registration - Leading Edge/Side-to-Side

1. Check the leading edge registration, and adjust it using SP1-001. Specification: $3 \pm 2\text{mm}$.
2. Check side-to-side registration for each paper feed station, and adjust with the following SP modes.

	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	
By-pass Tray	SP1002-005	Japan Only
LCT	SP1002-006	0 ± 1.5
Duplex Tray	SP1002-007	0 ± 1.5



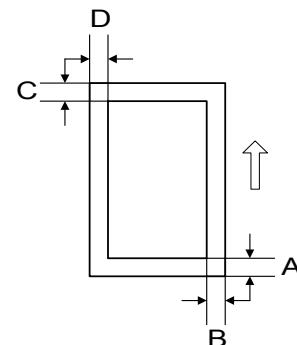
Blank Margin

NOTE: 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.

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	



A: Trailing edge blank margin
 B: Right edge blank margin
 C: Leading edge blank margin
 D: Left edge blank margin

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 Z-fold 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 Z-fold 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 – By-pass Tray

Adjustment range	-9 mm ~ +9 mm (small ~ large buckle)
Initial value	0 mm (Buckle = 10 mm)

3.14.2 SCANNING (B140 SERIES/B064 SERIES)

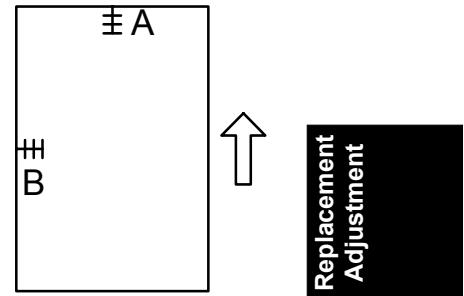
NOTE 1: Before doing the following scanner adjustments, perform or check the printing registration/side-to-side adjustment and the blank margin adjustment.

NOTE 2: Use an S-5-S test chart to perform the following adjustments.

Registration: Platen Mode

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

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



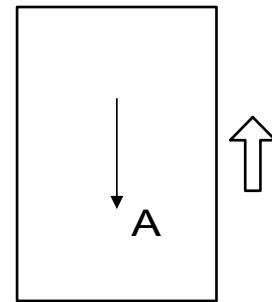
SP No.	Name	Initial	Comment
SP4010	Scanner Leading Edge Registration	0	A positive value shifts the image away from the leading edge, a negative value shifts it toward the leading edge.
SP4011	Scanner Side-to-Side Registration	0	A positive value shifts the image toward the right edge, a negative value shifts it toward the left edge.

Magnification

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

Main Scan Magnification

1. Place the test chart on the exposure glass and make a copy from one of the feed stations.
2. Check magnification, and then SP2909-001 (Main Scan Magnification - Copy) to adjust magnification if required. Specification: $\pm 2\%$.



Sub Scan Magnification

1. Place the test chart on the exposure glass and make a copy from one of the feed stations.
2. Check the magnification ratio. Use SP4008 (Scanner Sub Scan Magnification) to adjust if necessary. Specification: $\pm 0.9\%$.

A: Main scan magnification

3.14.3 ADF SCANNING ADJUSTMENTS (B140 SERIES/B064 SERIES)

Vertical Black Lines

Vertical black lines in scanned images may be caused by dust or scratches on the ADF exposure glass. If the problem cannot be solved by cleaning the ADF exposure glass, execute SP4018 (Scanner Optical Axis Adjustment).

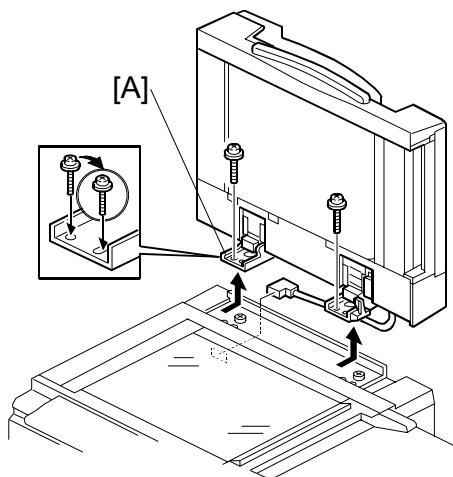
1. Adjust the scanner stopping position with SP4018-003 (just input a new value).
2. Store this value in the machine with SP4018-004.
3. Adjust the ADF registration for the front side scan with SP6006-003.
4. Make a test copy to check that the problem has been solved.

DIP Switch Settings (ADF Main Board)

SW 101				Operation Mode
1	2	3	4	
OFF	OFF	OFF	OFF	I/F Operation
ON	OFF	OFF	OFF	Free run (Simplex: each sheet stopped for registration)
OFF	ON	OFF	OFF	Free run (Simplex: continuous scanning)
ON	ON	OFF	OFF	Free run (Duplex: no registration) SP6009 (ADF Free Run)
ON	OFF	ON	OFF	Not used.
OFF	ON	ON	OFF	
ON	ON	ON	OFF	
OFF	OFF	OFF	ON	
ON	OFF	OFF	ON	Free run (Entrance mode ^{*1} , simplex, no registration)
OFF	ON	OFF	ON	Free run (Entrance mode, simplex, continuous scanning)
OFF	ON	ON	ON	Motor test (feed, transport, exit motors)

^{*1}: The entrance mode disregards paper size. Skew correction is performed at the scanning roller.

ADF Skew Correction



If the skew with A4 SEF paper is more than 0.5/200 mm in the main scan direction, you can adjust the position of the ADF hinge [A] or adjust the appropriate SP codes below.

6006*	ADF Registration Adjustment
001	ADF Horizontal Registration (Front) Adjusts the side-to-side registration for the front in ADF mode. [-3~+3/0.1 mm]
002	ADF Horizontal Registration (Back) Adjusts the side-to-side registration for the back in ADF mode. [-3~+3/0.1 mm]
003	ADF Vertical Registration (Front) Adjusts the vertical registration for the front in ADF mode. [-30 ~+24/1 mm] -30 = -5.1 mm +24 = +4.1 mm
004	ADF Vertical Registration (Back) Adjusts the vertical registration for the back in ADF mode. [-30 ~+30/1 mm] -30 = -5.1 mm +30 = +5.1 mm
005	ADF Buckle Adjustment 1 Adjusts the roller timing at the skew correction sensor/entrance roller. A larger setting causes more buckling. [-12.0~+12/1 mm] -12 = -3.0 mm +12 = +3.0 mm
006	ADF Buckle Adjustment 2 Adjusts the roller timing at the interval sensor/scanning roller. A larger setting causes more buckling. [-8.0~+8/1 mm] -8 = -2 mm +8 = +2 mm
007	ADF Trailing Edge Erase Margin (Front) These settings adjust the erase margin for the trailing edges for the front. [-20~+20/1 mm] -20 = -10 mm +20 = +10 mm
008	ADF Trailing Edge Erase Margin (Back) These settings adjust the erase margin for the trailing edges for the back. [-20~+20/1 mm] -20 = -10 mm +20 = +10 mm

Replacement
Adjustment

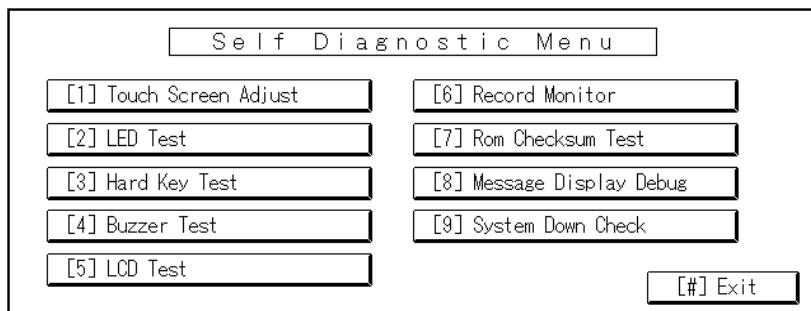
NOTE: Normally, the interval sensor detects the leading edge of small originals (B6, A5, HLT), or originals for duplex copying, and delays the start of the scanning roller for the prescribed number of pulses to buckle the paper and correct skew. This feature can be switched on for all paper sizes with SP6020 (ADF Contact Mode In/Out). However, switching this feature on for all sizes reduces scanning speed slightly.

3.15 TOUCH SCREEN CALIBRATION (B140 SERIES/B064 SERIES)

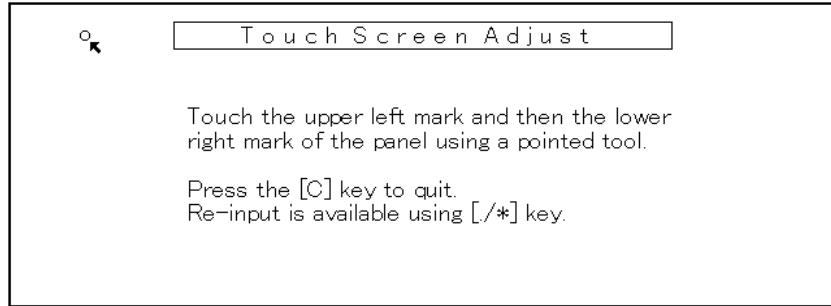
After clearing the memory, or if the touch screen detection function is not working correctly, follow this procedure to calibrate the touch screen.

NOTE: Do not attempt to use items [2] to [9] on the Self-Diagnostic Menu. These items are for design use only. To avoid causing an error, do not touch the Reset key while doing this procedure.

1. Press , press    , and then press  5 times to open the Self-Diagnostics menu.



2. On the touch screen press "Touch Screen Adjust" (or press .



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

TROUBLESHOOTING



4. TROUBLESHOOTING

4.1 OVERVIEW

This section contains the troubleshooting procedures for the B064 Series and B140 Series machines. A full list of SC codes is given for each series. When you perform troubleshooting on a machine, **ensure that you refer to the correct table:**

- B064 Series SC Code Table: Section 4.2
- B140 Series SC Code Table: Section 4.3

Important:

- The general information in this “Overview” section applies to the B064 Series and B140 Series machines.
- The information in section “4.4 Other Problems (B064/B140 Series)” also applies to all the machines of the two series.



OVERVIEW

4.1.1 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 RA2K controller, replace the board where the downloaded program is stored.
- If the download procedure cannot be downloaded for the RA2K controller, set DIP SW 1 to ON. Power the machine off and on to start the downloading program. After downloading has completed, set the DIP SW to OFF then power the machine off and on again.

4.1.2 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 "4. Service Tables".
SP5804	Output Check	Switches electrical components one by one for testing. Refer to the detailed tables in "4. 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. (→4.3.5)
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.
SP7911 (B064) SP7801 (B140)	Firmware Version	Displays the current numbers of all versions of the firmware in the system.
SP7990 (B064) SP7403 (B140)	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".

4.1.3 DOWNLOAD ERROR CODES (B064 SERIES AND B140 SERIES)

	Display	Details	Recovery
01	Reboot after card insert E01 ↓ Module ID Card No. xx/xx	Controller ROM update error 1 When the update break data is stored in NVRAM, the break module information and the decompression module capable of writing do not match.	<ul style="list-style-type: none"> • Use the correct card
02	Download Error E02 Power off/on	Controller ROM update error 2. Error occurs during ROM update program initialization.	<ul style="list-style-type: none"> • Cycle the machine off/on to rewrite
03	Download Error E03 Power off/on	Controller ROM update error 3 The ROM for the write operation does not exist.	<ul style="list-style-type: none"> • Cycle 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)	<ul style="list-style-type: none"> • Cycle 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.	<ul style="list-style-type: none"> • Cycle 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.	<ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> • Software defective
20	Down Error E20 Power Off/On	System error 1 (+SC991) The physical address cannot be mapped. Software/hardware is defective	<ul style="list-style-type: none"> • Cycle the machine off/on and re-try • Replace controller board
21	Download Error E21 Power Off/On	System error 2 (+SC991) There is not sufficient memory to download.	<ul style="list-style-type: none"> • Cycle the machine off/on and re-try. • Replace RAM • Replace the controller board

Trouble
shooting

OVERVIEW

	Display	Details	Recovery
22	Download Error E22 Module ID Card No xx/xx	System error 3 (+SC991) Data fails to decompress. Card defective.	<ul style="list-style-type: none"> • Cycle the machine off/on and re-try. • Replace card • Replace controller board
	SC991	System error 4 “Selfupdate” does not execute. Software defective.	<ul style="list-style-type: none"> • Cycle 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	<ul style="list-style-type: none"> • Cycle the machine off/on and re-try • Replace the card • Replace the controller board
		Card read/write error. Software or card defective.	
30	No Valid Data E30	Download dysfunction 1	<ul style="list-style-type: none"> • HDD defective • HDD harness disconnected, defective
		Print download is not possible. Cannot download to HDD because HDD not installed or defective.	
31	Reboot After Card Insert E31 Module ID Card No. xx/xx	Download dysfunction 2	<ul style="list-style-type: none"> • Set the correct cards in the correct order
		Download continuity error with more than one card. The second or later card is not compatible.	
32	Reboot After Card Insert E32 Module ID Card No. xx/xx	Download dysfunction 3	<ul style="list-style-type: none"> • Use the correct card • If power failure caused the failure, remove the card and insert another.
		Download interrupted because card is not correct, or power failure interrupted download.	
33	No Valid Data E33	Download dysfunction 4	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Use the correct card
		Specification error. DOM card set in EXP machine, or vice versa.	
35	No Valid Data E35	Download dysfunction 6	<ul style="list-style-type: none"> • Use the correct card
		Wrong model. The inserted card is for another model.	
36	No Valid Data E36	Download dysfunction 7	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Cycle the machine off/on and re-try
		Engine download failure.	
41	Download Error E41 Module ID Card No. xx/xx	Download result failure 2	<ul style="list-style-type: none"> • Cycle the machine off/on and re-try
		Fax download failure.	

	Display	Details	Recovery
42	Download Error E42 Module ID Card No. xx/xx	Download result failure 3 Operation panel or language download failed. For this error, sometimes the message may not be displayed.	• Cycle the machine off/on and re-try
43	Download Error E43 Module ID Card No. xx/xx	Download result failure 4 Print download failed.	• Cycle 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.	<ul style="list-style-type: none"> • Turn the machine power off/on. • Replace the SD card with the start-up SD card that has the source data • 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.	<ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> • Try again with the correct data.
53	(no display)	Download result failure 6 The previous download in progress was cancelled.	<ul style="list-style-type: none"> • Do the download procedure again.

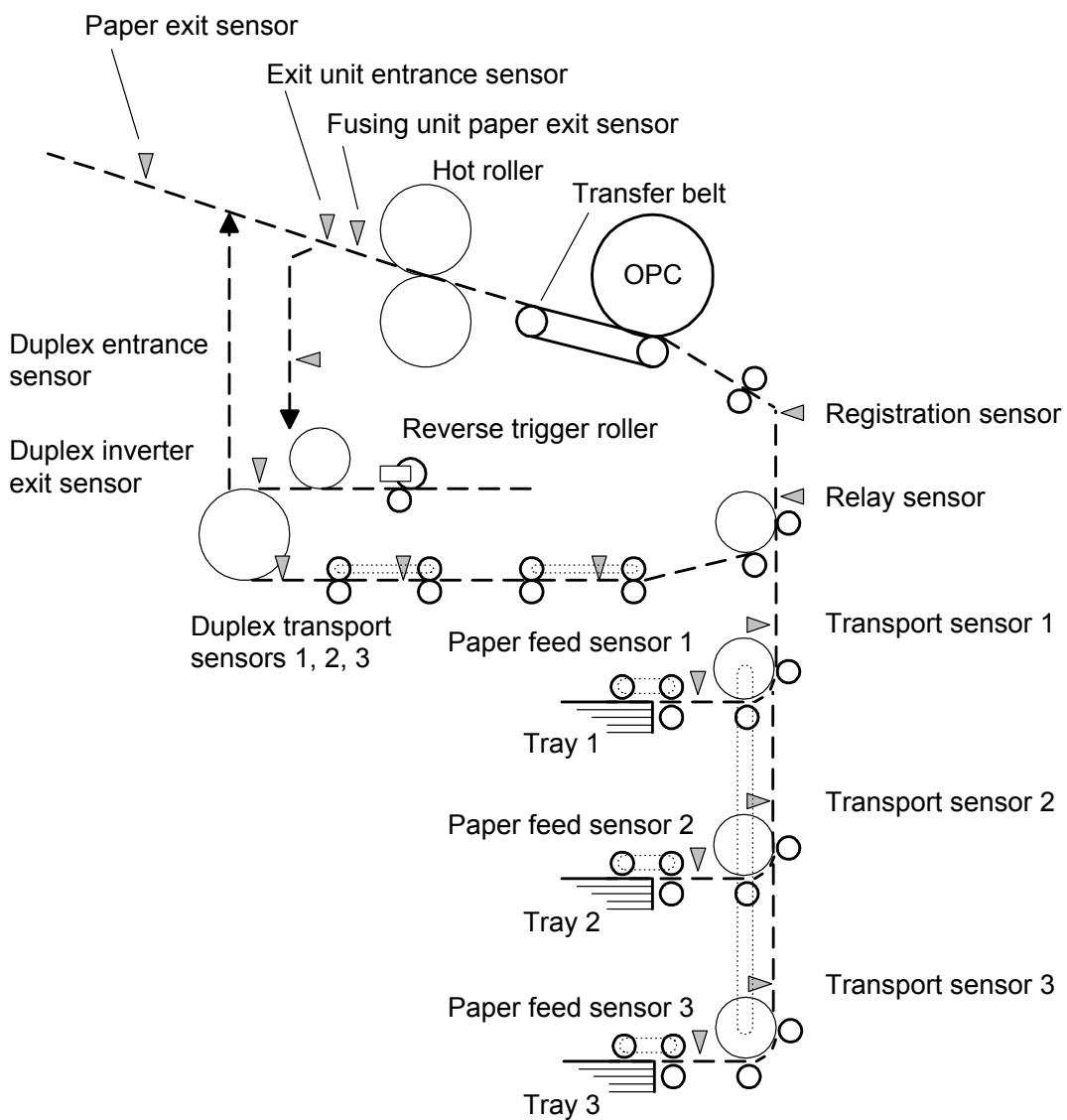
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4.1.4 JAM DETECTION

SENSOR LOCATIONS

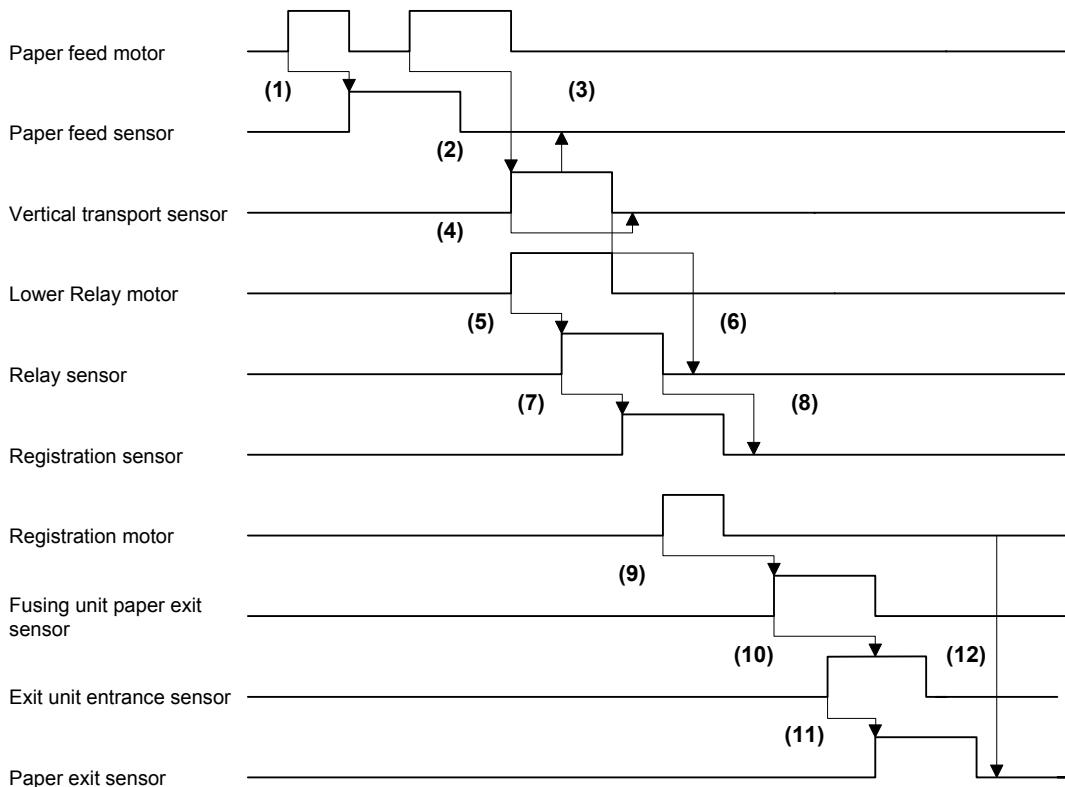
The flashing portion of the jam position display on the operation panel indicates the location of the paper jam, then lights if any paper remains after jam removal. However, paper may remain in the paper path at locations other than where the jam was removed.

The illustration below shows the locations of the jam sensors.



4.1.5 TIMING CHARTS

Feed, Transport, Feed Out: Face-up

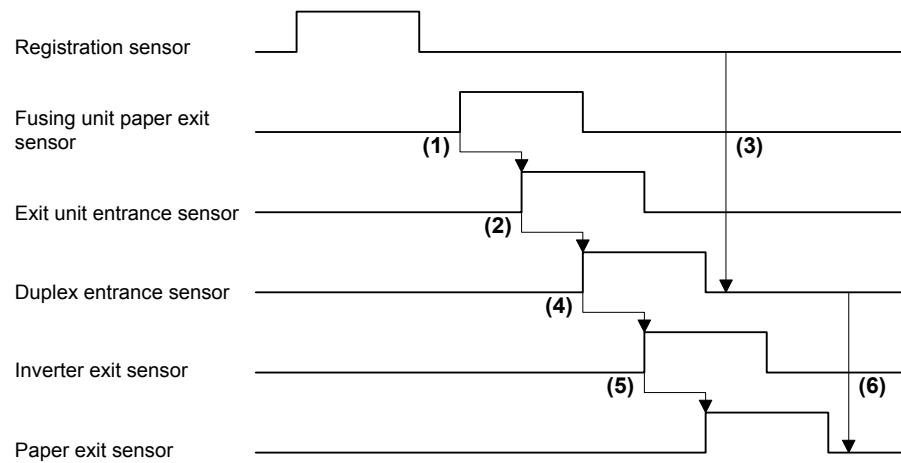


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- (1): Paper feed motor ON → Paper feed sensor does not switch ON at the correct time.
- (2): Paper feed motor ON → Vertical transport sensor does not switch ON at the correct time.
- (3): Vertical transport sensor ON → Paper feed sensor does not switch 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.

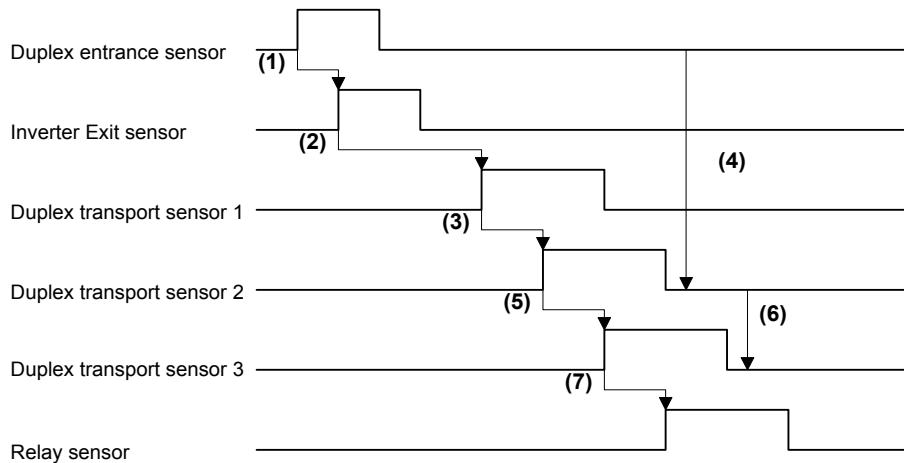
OVERVIEW

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



- (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.

Trouble
shooting

4.1.6 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, “Downloading...” is displayed and when downloading has completed successfully, the message is cleared.
- If the download is interrupted when the “Downloading ...” message is displayed, the machine does not attempt a re-try.
- The program that downloads firmware from an IC card is part of the RA2K controller software. If downloading this software is interrupted, the program stored in the machine may be corrupted. Because of this, it may not be possible to restart the downloading program. (In addition, if the RA2K controller software cannot be downloaded, other software on other IC cards cannot be downloaded.) However, it may be possible to restart the program without replacing the board by setting DIP SW 1 on the controller to ON, and re-starting.

4.2 B064 SERIES SERVICE MODE

4.2.1 B064 SERIES 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, then turn the main power switch off and 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 main power switch off and on.
C	SCs that are not shown on the operation panel. They are internally logged.	Logging only
D	Turning the operation switch or main power switch off then on resets SCs Displayed on the operation panel. These are re-displayed if the error occurs again.	Turn the operation switch or main power switch off and on.

- NOTE:**
- 1) If the problem concerns electrical circuit boards, first disconnect then reconnect the connectors before replacing the PCBs.
 - 2) If the problem concerns a motor lock, first check the mechanical load before replacing motors or sensors.
 - 3) When a Level A or B SC occurs while in an SP mode, the display does not indicate the SC number. If this occurs, check the SC number after leaving the SP mode. This does not apply to Level B' codes.

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4.2.2 B064 SERIES SC CODE DESCRIPTIONS

SC100: Scanning System

SC No.		Symptom	Possible Cause
101	D	<p>Exposure Lamp Error</p> <p>At trigger on, the lamp was not detected on.</p>	<ul style="list-style-type: none"> • Exposure lamp defective • Lamp regulator defective • Exposure lamp connector defective • Dirty standard white plate • Dirty scanner mirror or scanner mirror out of position • SBU board defective • SBU connector defective • IPU defective
120	D	<p>Scanner home position error 1</p> <p>The scanner HP sensor does not detect the on condition during initialization or copying.</p>	<ul style="list-style-type: none"> • BCU, SDRB (Scanner Driver Board) defective. • Scanner motor defective • Harness between BCU, SDRB, scanner motor disconnected. • Scanner HP sensor defective. • Harness between scanner HP sensor and BCU disconnected. • Scanner wire, timing belt, pulley, carriage installation incorrect.
121	D	<p>Scanner home position error 2</p> <p>The scanner HP sensor does not detect the off condition during initialization or copying.</p>	<ul style="list-style-type: none"> • BCU, SDRB (Scanner Driver Board) defective. • Scanner motor defective. • Harness between BCU, SDRB, scanner motor disconnected. • Scanner HP sensor defective. • Harness between scanner HP sensor and BCU disconnected. • Scanner wire, timing belt, pulley, carriage installation incorrect.
122	D	<p>Scanner home position error 3</p> <p>The scanner home position sensor does not detect the on condition during original scanning.</p>	<ul style="list-style-type: none"> • BCU, SDRB (Scanner Driver Board) defective. • Scanner motor defective. • Harness between BCU, SDRB, scanner motor disconnected. • Scanner HP sensor defective. • Harness between scanner HP sensor and BCU disconnected. • Scanner wire, timing belt, pulley, carriage installation incorrect.

SC No.		Symptom	Possible Cause
123	D	<p>Scanner home position error 4</p> <p>The scanner home position sensor does not detect the off condition during original scanning.</p>	<ul style="list-style-type: none"> BCU, SDRB (Scanner Driver Board) defective. Scanner motor defective. Harness between BCU, SDRB, scanner motor disconnected. Scanner HP sensor defective. Harness between scanner HP sensor and BCU disconnected. Scanner wire, timing belt, pulley, carriage installation incorrect.
143	D	<p>SBU auto adjust error</p> <p>Automatic adjustment of the SBU fails when the machine is switched on.</p>	<ul style="list-style-type: none"> Exposure lamp defective. Exposure lamp regulator defective. Harness between exposure lamp and lamp regulator is disconnected. White plate installed incorrectly or is dirty. Scanning mirrors of the exposure unit are dirty or out of position. SBU board defective. VIB board defective. Harness between SBU, VIB disconnected. Harness between VIB, BCU disconnected. IPU defective BCU defective
144	D	<p>SBU transmission error</p> <p>After the SBU switches on, the BCU detects one of the following conditions on the SBU:</p> <ul style="list-style-type: none"> 1 s after power on, the SYDI signal does not go high, even after 1 retry. 1 s after power on, the SYDI signal goes high, but the SBU ID could not be read after 3 attempts. 	<ul style="list-style-type: none"> SBU defective. VIB defective Harness (40-pin shielded) between the SBU, VIB is disconnected. Harness (shielded cable) between the VIB, BCU is disconnected. IPU defective
181	D	<p>CIS lamp abnormal</p> <p>After the CIS lamp trigger goes on, the CIS lamp is not detected on. Detecting the lamp on or off determines the peak white level value for shading correction. (If the peak level is determined to be below a certain level, the CIS lamp is judged to be off.)</p>	<ul style="list-style-type: none"> CIS lamp defective. CIS power supply board defective. Harness between lamp and power supply board is disconnected. Harness between CIS, ADF is disconnected. CIS exposure glass dirty. White roller dirty or installed incorrectly. CIS unit defective. PSU defective

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SC No.		Symptom	Possible Cause
183	D	<p>CIS auto adjust error</p> <p>Automatic adjustment of the CIS unit failed.</p>	<ul style="list-style-type: none"> • CIS unit defective. • CIS exposure glass dirty. • White roller dirty or installed incorrectly. • PSU power supply (+5V, -12V) is abnormal. • IPU defective
184	D	<p>CIS transmission error</p> <p>When the CIS is powered on, the ADF detects one of the following abnormal conditions on the CIS unit:</p> <ul style="list-style-type: none"> • The SOUT signal does not go high within 1 s after power on. • The SOUT signal goes high within 1 s after power on, but the SBU ID cannot be read after 3 attempts. 	<ul style="list-style-type: none"> • CIS unit defective. • Harness between the CIS, ADF is disconnected. • PSU power (5V) is abnormal. • BCU, IPU defective

SC300: Image Development System (1)

SC No.		Symptom	Possible Cause
300	D	Charge corona output error The feedback voltage from the charge corona unit is detected too high 9 times.	<ul style="list-style-type: none"> • Charge corona power pack defective • Charge corona harness disconnected • Poor charge corona unit connection
303	D	Charge corona grid leak When the high voltage is output to the corona grid, feedback voltage exceeds the prescribed value 9 times.	<ul style="list-style-type: none"> • Charge corona power pack defective • Charge corona harness disconnected • Poor charge corona unit connection
305	D	Charge corona wire cleaner error 1 The charge corona wire cleaner motor is detected: <ul style="list-style-type: none"> • Motor locks within 4 s after switching on, or does not lock within 30 s. • Motor locks within 10 s after reversing, or does not lock within 30 s. 	<ul style="list-style-type: none"> • Charge corona wire cleaner motor defective • BCU board defective
306	D	Charge corona wire cleaner error 2 The current at the charge corona motor is detected less than 83 mA.	<ul style="list-style-type: none"> • Charge corona wire cleaner motor connector is defective or not connected.

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.

Trouble shooting

SC No.		Symptom	Possible Cause
310	C	Potential sensor calibration error 1 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.	<ul style="list-style-type: none"> • Potential sensor defective • Potential sensor harness disconnected • Potential sensor connector defective or disconnected • BCU 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.	<ul style="list-style-type: none"> • Potential sensor defective • Potential sensor harness disconnected • Potential sensor connector defective or disconnected • BCU defective • OPC connector defective • Development power pack defective

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SC No.		Symptom	Possible Cause
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 ($-800 \pm 10 + VL + 130V$)	
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: $VH > -500 + VL + 130 V$	
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.	
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.	
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 $0V \sim -400V$. (VL is the potential after exposing a white pattern.)	
321	D	No laser writing signal (F-GATE) error 1 The laser writing signal (F-GATE) for the IPU does not go LOW within 60 s.	
		• IPU board defective • PCI bus between controller board, IPU board defective	

SC No.		Symptom	Possible Cause
322	D	Laser synchronization detector error After the polygon motor reaches standard rotation speed and the LD unit fires for 500 ms, the laser synchronization detector does not generate a signal.	<ul style="list-style-type: none"> • Harness between detector and I/F disconnected or damaged • Detector is installed incorrectly. • Detector board is defective • Controller board defective • IPU board defective • LDB defective
335	D	Polygonal mirror motor error 1 The ready signal does not go low within 20 s after the polygonal mirror motor turns on or changes speed of rotation.	<ul style="list-style-type: none"> • Harness between I/F and polygon motor disconnected or defective • Polygon motor or polygon motor driver defective • IPU board defective
336	D	Polygonal mirror motor error 2 The ready signal does not go high within 20 s after the polygonal mirror motor turns off.	<ul style="list-style-type: none"> • Harness between I/F and polygon motor disconnected or defective • Polygon motor or polygon motor driver defective • IPU board defective
337	D	Polygonal mirror motor error 3 The XSCRDY signal goes high while the polygonal mirror motor turns on, even though there was no demand for either turning off the motor or changing the motor speed.	<ul style="list-style-type: none"> • Harness between the polygon motor and I/F disconnected or defective. • Polygon motor or polygon motor driver defective • IPU board defective
338	D	Polygonal mirror motor error 1 During exposure, while the polygon motor is rotating, the XSCRDY signal goes high.	<ul style="list-style-type: none"> • Harness between the polygon motor and I/F disconnected or defective. • Polygon motor or polygon motor driver defective • IPU board defective
340	D	TD sensor output error TD sensor output voltage (V_t), measured during each copy cycle, is detected 10 times at one of the following levels: $V_t = 0.5$ volts or lower $V_t = 4.0$ volts or higher	<ul style="list-style-type: none"> • TD sensor defective • TD sensor harness disconnected • TD sensor connector disconnected or defective • BCU defective • Toner bottle motor defective <p>Note: When the TD sensor is defective, the toner supply is controlled using pixel count and the ID sensor.</p>

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SC No.		Symptom	Possible Cause
341	C	<p>TD sensor adjustment error 1</p> <p>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.</p>	<ul style="list-style-type: none"> • TD sensor defective • TD sensor harness disconnected • TD sensor connector disconnected or defective • BCU defective • Toner bottle motor defective <p>Note: When the TD sensor is defective, the toner supply is controlled using pixel count and the ID sensor.</p>
342	C	<p>TD sensor adjustment error 2</p> <p>During the TD sensor auto adjustment, the TD sensor output voltage (Vt) does not enter the target range ($3.0 \pm 0.1V$) within 20 s. When this error occurs, the indication 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.</p>	<ul style="list-style-type: none"> • TD sensor defective • TD sensor harness disconnected • TD sensor connector disconnected or defective • BCU defective
345	D	<p>Development output abnormal</p> <p>The high voltage applied to the development unit is detected 10 times higher than the upper limit (45%) of PWM.</p>	<ul style="list-style-type: none"> • Development power pack defective • Development bias connection defective • Development bias connector disconnected or defective
350	C	<p>ID sensor error 1</p> <p>One of the following ID sensor output voltages was detected twice consecutively when checking the ID sensor pattern.</p> <p>$V_{sp} \geq 2.5V$</p> <p>$V_{sg} < 2.5$</p> <p>$V_{sp} = 0V$</p> <p>$V_{sg} = 0$</p>	<ul style="list-style-type: none"> • ID sensor defective • ID sensor harness disconnected • ID sensor connector defective • BCU defective • Defect at ID sensor pattern writing • Charge power pack defective • ID sensor dirty
351	C	<p>ID sensor error 2</p> <p>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.</p>	<ul style="list-style-type: none"> • ID sensor defective • ID sensor harness disconnected • ID sensor connector defective • BCU defective • Defect during ID sensor pattern writing • Charge power pack defective • ID sensor dirty

SC No.		Symptom	Possible Cause
352	C	<p>ID sensor error 3</p> <p>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.</p>	<ul style="list-style-type: none"> • ID sensor defective • ID sensor harness disconnected • ID sensor connector defective • BCU defective • Defect during ID sensor pattern writing • Charge power pack defective • ID sensor dirty
353	C	<p>ID sensor error 4</p> <p>One of the following ID sensor output voltages is detected at ID sensor initialization.</p> <ul style="list-style-type: none"> • $V_{sg} < 4.0V$ when the maximum PWM input (255) is applied to the ID sensor. • $V_{sg} \geq 4.0V$ when the minimum PWM input (0) is applied to the ID sensor. 	<ul style="list-style-type: none"> • ID sensor defective • ID sensor harness disconnected • ID sensor connector defective • BCU defective • Defect during ID sensor pattern writing • Charge power pack defective • ID sensor dirty
354	C	<p>ID sensor error 5</p> <p>20 s after the start of automatic adjustment, V_{sg} cannot be adjusted to target ($4.0 \pm 0.2V$).</p>	<ul style="list-style-type: none"> • ID sensor defective • ID sensor harness disconnected • ID sensor connector defective • BCU defective • Defect during ID sensor pattern writing • Charge power pack defective • ID sensor dirty
355	C	<p>ID sensor pattern voltage error</p> <p>Drum potential sensor output is out of the target range (-100 - -400V) when reading the drum voltage for the ID sensor pattern.</p>	<ul style="list-style-type: none"> • Drum potential sensor defective • Drum potential sensor harness disconnected • Drum potential sensor connector defective • IOB defective • Defect during ID sensor pattern writing • Charge power pack defective • Charge corona wire dirty

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SC400: Image Development System (2)

SC No.		Symptom	Possible Cause
401	D	Transfer output abnormal When the transfer is output, the feedback voltage remains higher than 4V for 60 ms.	<ul style="list-style-type: none"> Transfer power pack defective Poor connection between the transfer current terminal and the transfer power pack
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.	<ul style="list-style-type: none"> Transfer power pack defective Transfer unit harness disconnected Transfer connector disconnected, defective
430	D	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.	<ul style="list-style-type: none"> Quenching lamp defective Quenching lamp harness disconnected Quenching lamp connector disconnected or defective
440	D	Main motor lock The main motor lock signal remains low for 2 seconds while the main motor is on.	<ul style="list-style-type: none"> Too much load on the drive mechanism Main motor defective
441	D	Development motor lock The development motor lock signal remains high for 2 seconds while the development motor is on.	<ul style="list-style-type: none"> Too much load on the drive mechanism Development motor defective
490	D	Main fan abnormal The main fan motor lock signal goes high for 5 s while the fan is on.	<ul style="list-style-type: none"> Too much load on the motor, motor is blocked by something Fan connector disconnected
495	D	Toner recycling unit error Encoder pulse does not change for 3 s after the main motor switches on.	<ul style="list-style-type: none"> Too much load on the drive mechanism 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.	<ul style="list-style-type: none"> No toner collection bottle set Poor connection on the switch connector
497	D	Toner collection motor error The toner collection motor connector set signal remains off for 1 s.	<ul style="list-style-type: none"> Toner collection motor defective Motor connector disconnected

SC500: Feed, Transport, Duplexing, and Fusing Systems

SC No.		Symptom	Possible Cause
501	B	<p>Tray 1 lift malfunction</p> <ul style="list-style-type: none"> • The lift sensor is not activated within 10 seconds after the tray lift motor starts lifting the bottom plate. • Paper height sensor actuator does not move away from the sensor for 4 counts. 	<ul style="list-style-type: none"> • Tray lift motor defective or disconnected • Paper or other obstacle trapped between tray and motor • Pick-up solenoid disconnected or blocked by an obstacle
502	B	<p>Tray 2 lift malfunction</p> <ul style="list-style-type: none"> • The lift sensor is not activated within 10 seconds after the tray lift motor starts lifting the bottom plate. • Paper height sensor actuator does not move away from the sensor for 4 counts. 	<ul style="list-style-type: none"> • Tray lift motor defective or disconnected • Paper or other obstacle trapped between tray and motor • Pick-up solenoid disconnected or blocked by an obstacle
503	B	<p>Tray 3 lift malfunction</p> <ul style="list-style-type: none"> • The lift sensor is not activated within 13 s after the tray lift motor starts lifting the bottom plate. • At power on, or when the tray set sensor goes on after tray inserted, the tray continues to lower for 5 s. The motor stops but restarts when the tray is re-inserted. 	<ul style="list-style-type: none"> • Tray lift motor defective or poor connection • Lift sensor defective or poor connection
504	B	<p>Tray 4 lift malfunction</p> <p>Japan only.</p>	
507	B	<p>LCT feed motor malfunction</p> <p>One of the following conditions is detected:</p> <ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Feed motor defective • Feed motor connector disconnected • Obstacle interfering with operation of motor
510	B	<p>LCT tray malfunction</p> <p>One of the following conditions is detected:</p> <ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Tray lift motor defective or connector disconnected • Lift sensor defective or disconnected • Pick-up solenoid defective or disconnected • Paper end sensor defective

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SC No.		Symptom	Possible Cause
515	B	Tandem rear fence motor error One of the conditions is detected: <ul style="list-style-type: none"> • The rear fence does not reach the return position within 10 s after the rear fence motor switches on, or does not return to the HP. • The HP sensor and return sensor switch on at the same time. 	
516	B	Tandem side fence motor error The side fences do not reach the fully open or closed position within 2 seconds after the side fence motor switches on.	
520	D	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.	
521	D	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.	
541	A	Fusing thermistor open <ul style="list-style-type: none"> • The fusing temperature detected by the thermistor is below 7°C for 35 seconds. • The center thermistor (non-contact) abnormal. 	
542	A	Fusing temperature warm-up error <ul style="list-style-type: none"> • After power on, or after closing the front door, the hot roller does not reach the 80°C control temperature within 360 s. • After the fusing lamp temperature exceeds 80°C, temperature does not change 2 degrees within 20 s. 	
543	A	Fusing lamp overheat error 1 (software) <ul style="list-style-type: none"> • Central thermistor detected a temperature of 230°C at the center of the hot roller. • End thermistor detected 220°C x 100 ms 5 times at the end of the hot roller. 	
544	A	Fusing lamp overheat error 1 (hardware) The BCU detects an overheat error even if the protection in the software does not work.	

SC No.		Symptom	Possible Cause
545	A	<p>Fusing lamp overheat error 2</p> <p>After hot roller reaches the warm-up temperature, the fusing lamps continued full capacity output for 55 s without the hot roller rotating (for a total of 45s).</p>	<ul style="list-style-type: none"> • Fusing thermistor out of position
547	D	<p>Zero cross signal malfunction</p> <p>One of the following conditions is detected 10 times:</p> <ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Noise on the ac power line
550	A	<p>Fusing Web End</p> <p>Web end detected 5 times within 500 ms and web motor continues to rotate 40 s. If web end is detected for another 400 ms, then the SC is logged.</p>	<ul style="list-style-type: none"> • Web end (requires replacement) • Web end sensor defective <p>Note: After replacing the web with a new one, reset SP1902 001 to 0 to release SC550.</p>
590	D	<p>Toner collection motor error</p> <p>The toner collection motor sensor output does not change for 3 seconds while the toner collection motor is on.</p>	<ul style="list-style-type: none"> • Toner collection motor defective • Motor drive defective • Toner collection motor sensor connector defective • Motor overload
599	D	<p>1-bin Exit Motor Error (should only occur in Japanese models)</p> <p>The transport lock sensor output does not change within 300 ms after the motor switches on.</p>	<ul style="list-style-type: none"> • Motor overload • Motor drive defective

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SC600: Data Communication

SC No.		Symptom	Possible Cause
601	D	<p>Communication error between BCU and scanner unit</p> <ul style="list-style-type: none"> • BCU does not communicate with scanner unit within 0.8 s after power on. • BCU does not detect a break signal after connecting to scanner unit. • Communication error detected 3 times. 	<ul style="list-style-type: none"> • Serial line connection unstable • External noise on the line
610	D	<p>BCU ↔ ADF communication/timeout abnormal</p> <p>After 1 data frame is sent to the ADF, an ACK signal is not received within 100 ms, and is not received after 3 retries.</p>	<ul style="list-style-type: none"> • Serial line connection unstable • External noise on the line
611	D	<p>BCU ↔ ADF communication/break reception abnormal</p> <p>During communication a break (Low) signal was received from the ADF.</p>	<ul style="list-style-type: none"> • Serial line connection unstable • Harness disconnected or defective
612	D	<p>BCU ↔ ADF communication/command abnormal</p> <p>An command that cannot be executed was sent from the main machine to the ADF.</p>	<ul style="list-style-type: none"> • A software error, result of an abnormal procedure.
620	D	<p>BCU ↔ ADF communication/timeout error</p> <p>After 1 data frame is sent to the finisher MBX, an ACK signal is not received within 100 ms, and is not received after 3 retries.</p>	<ul style="list-style-type: none"> • Serial line connection unstable • External noise on the line
621	D	<p>BCU ↔ Finisher communication/break error</p> <p>During communication with the finisher MBX, the BCU received a break (Low) signal from the finisher.</p>	<ul style="list-style-type: none"> • Serial line connection unstable • External noise on the line
623	D	<p>BCU ↔ Tray 1~3 communication/timeout error</p> <p>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.</p>	<ul style="list-style-type: none"> • Serial line connection unstable • External noise on the line
624	D	<p>BCU ↔ Tray 1~3 communication/break reception error</p> <p>During communication with the finisher trays, the BCU received a break (Low) signal.</p>	<ul style="list-style-type: none"> • Serial line connection unstable • External noise on the line
626	D	<p>BCU ↔ LCT communication/timeout error</p> <p>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.</p>	<ul style="list-style-type: none"> • Serial line connection unstable • External noise on the line
627	D	<p>BCU ↔ LCT communication/break reception error</p> <p>During communication with the LCT, the BCU received a break (Low) signal.</p>	<ul style="list-style-type: none"> • Serial line connection unstable • External noise on the line
630	D	CSS (RSS) communication error between line adapter and CSS center Japan only	

SC No.		Symptom	Possible Cause
632	B	Key/card counter device error 1 After 1 data frame is sent to the device, an ACK signal is not received within 100 ms, and is not received after 3 retries.	
633	B	Key/card counter device error 2 During communication with the device, the BCU received a break (Low) signal.	
634	B	Key/card counter device error 3 After installation of the device, a message alerts user to a backup RAM error.	
635	B	Key/card counter device error 4 After installation of the device a message alerts user to a battery voltage abnormal error.	
640	C	BCU ↔ Controller data transfer error 1 Data is sent from the BCU to the controller, but the transmission causes a checksum error.	
641	C	BCU ↔ Controller data transfer error 2 Data is sent from the BCU to the controller, but the transmission causes a frame error.	
670	D	Engine startup error <ul style="list-style-type: none">• Engine does not respond within 30 s after power on.• Engine down detected suddenly during power on and warmup.	
672	D	Controller startup error <ul style="list-style-type: none">• After power on the line between the controller and the operation panel does not open for normal operation.• After normal startup, communication with the controller ceases.	
690	D	GAVD Block 12 bus error The register for this block is set for an error.	
691	D	GAVD FCI Block I2 bus error The register for this block is set for an error.	
692	D	CDIC GAVD Block I2 bus error The register for this block is set for an error.	

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SC700: Peripherals

SC No.		Symptom	Possible Cause
700	D	ADF original pick-up error 1 Pick-up roller HP sensor signal does not change after the pick-up motor has turned on.	<ul style="list-style-type: none"> • Pick-up roller HP sensor defective • Pick-up motor defective • Timing belt slipping, out of position • ADF main board defective
701	D	ADF bottom plate motor error <ul style="list-style-type: none"> • Bottom plate position sensor does not detect the plate after the bottom plate lift motor switches on to lift the plate. • Bottom plate HP sensor does not detect the plate after the bottom plate motor reverses to lower the plate. 	<ul style="list-style-type: none"> • Bottom plate position sensor defective • Bottom plate HP sensor defective • Bottom plate motor defective • ADF main board defective
720	D	Finisher transport motor error The encoder pulse of the transport motor does not change state (high/low) within 600 ms and does not change after 2 retries.	<ul style="list-style-type: none"> • Finisher transport motor defective • Transport motor harness disconnected, or defective • Finisher main board defective
722	B	Finisher jogger motor error <ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Jogger HP sensor defective • Jogger mechanism overload • Jogger motor defective (not rotating) • Finisher main board defective • Harness disconnected or defective
724	B	Finisher staple hammer motor error Stapling does not finish within 450 ms after the staple hammer motor switches on and the stapler jams. Stapler is released from the reverse lock status. If the stapler does not operate within 450 ms, even in the reverse lock position, then the SC is logged.	<ul style="list-style-type: none"> • Staple jam • Stapler operation overload • Staple hammer motor defective • Motor connector disconnected, or defective
725	B	Finisher stack feed-out motor error The stack feed-out belt HP sensor does not activate within the prescribed number of pulses after the stack feed-out motor turns on and does not activate after 2 retries.	<ul style="list-style-type: none"> • Stack feed-out HP sensor defective • Harness disconnected or defective • Stack feed-out motor defective • Finisher main board defective • Motor overload
726	B	Finisher upper tray lift motor error The paper height sensor does not activate within the prescribed time after the upper tray lift motor turns on, or the sensor remains on after the motor reverses to lower the tray.	<ul style="list-style-type: none"> • Upper tray paper height sensor defective • Sensor harness disconnected, defective • Tray lift motor defective • Finisher main board defective • Tray lift motor overload

SC No.		Symptom	Possible Cause
727	B	<p>Finisher stapler rotation motor error</p> <p>The stapler motor switches on but the motor does not return to the home position within the prescribed number of pulses. After 2 counts, the SC is logged as a jam.</p>	
729	D	<p>Finisher punch motor error</p> <p>The punch HP sensor does not activate within the prescribed time the punch motor turns on.</p>	
730	B	<p>Finisher stapler movement motor error</p> <p>The stapler HP sensor does not activate within the prescribed time after the stapler motor turns on and moves the stapler away from home position. After 2 counts, the SC is logged as a jam.</p>	
732	B	<p>Finisher shift roller motor error</p> <p>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.</p>	
733	D	<p>Finisher lower tray lift motor error</p> <p>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.</p>	
735	B	<p>Finisher pre-stack motor error</p> <ul style="list-style-type: none"> • 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. 	
736	B	<p>Finisher paper exit guide plate motor error</p> <p>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.</p>	

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SC No.		Symptom	Possible Cause
737	B	Trimmed staple waste hopper full The hopper that holds the waste from staple trimming is full.	
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.	
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.	
740	B	Finisher front saddle-stitch stapler motor error Saddle-stitch stapler motor fails to operate within 450 ms within 2 counts..	
741	B	Finisher rear saddle-stitch stapler motor error Saddle-stitch stapler motor fails to operate within 450 ms within 2 counts..	
742	B	Finisher jogger side fence motor error The jogger motor turns on but the side fences do not return to the home position within 340 pulses for 2 counts.	
743	B	Finisher Jogger Motor Error The jogger fences did not return to their horizontal home positions on both ends of the unit, or to their down home positions within the prescribed number of pulses. Only staple mode is disabled. Shift output, or output to the proof tray can still be used.	
750	B	Cover interposer bottom plate motor error <ul style="list-style-type: none"> • The bottom plate motor turns on to raise the bottom plate but the plate position sensor does not detect the plate within 3 s. • The bottom plate motor reverses to lower the bottom plate but the bottom plate HP sensor does not detect the plate within 3 s. 	

SC800: Overall System

SC No.		Symptom	Possible Cause
800	D	Video output transfer does not end (K) Video signal is sent to the engine but no command is received within the prescribed time from the engine to signal the end of transfer – output all black.	<ul style="list-style-type: none"> Controller board defective
804	D	Video input transfer does not end (K) Video transfer is requested from the scanner, but no command is received within the prescribed time from the scanner to signal a response – output all black.	<ul style="list-style-type: none"> Controller board defective
818	C	Watchdog error Control error	<ul style="list-style-type: none"> System program defective Controller board defective Optional board defective
819	C	Fatal kernel error Software defective	<ul style="list-style-type: none"> Software defective
820	C	Self-diagnostic error: CPU Unexpected external error or interrupt occurred.	<ul style="list-style-type: none"> Controller board defective Software defective
821	C	Self-diagnostic error: ASIC ASIC timer interrupt and CPU timer interrupt are compared and found to be out of range.	<ul style="list-style-type: none"> Controller board defective
822	C	Self-diagnostic error: HDD Check performed when HDD is installed: <ul style="list-style-type: none"> HDD device busy for over 31 s. After a diagnostic command is set for the 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. 	<ul style="list-style-type: none"> HDD defective HDD harness disconnected, defective Controller board defective
823	C	Self-diagnostic error: NIB <ul style="list-style-type: none"> The SUM of the MAC address written in the SEEP ROM for the MAC address is calculated and compared with the stored SUM and judged NG. There is a format error in the MAC address stored in the SEEP ROM for the MAC address. A loopback error occurs on the PHY chip of the NIB. 	<ul style="list-style-type: none"> NIB board defective Controller board defective
824	C	Self-diagnostic error: NVRAM NVRAM device does not exist, or NVRAM device is damaged.	<ul style="list-style-type: none"> NVRAM defective Controller board defective
825	C	Self-diagnostic error: NVRAM (option) Optional NVRAM is installed, but a write/verify error occurred.	<ul style="list-style-type: none"> Incorrect NVRAM installed.

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SC No.		Symptom	Possible Cause
826	C	Self-diagnostic error: NVRAM (option NVRAM) 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.	
827	C	Self-diagnostic error: RAM The write/verify check for the RAM mounted on the board resulted in an error.	
828	C	Self-diagnostic error: ROM <ul style="list-style-type: none"> • 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. 	
829	C	Self-diagnostic error: RAM (option) <ul style="list-style-type: none"> • A write/verify check of the RAM mounted on the board results in a error. • The SPD value of the entire RAM DIM is incorrect, or cannot be read. <p>Note: RAM is not in use so the result is not displayed on the operation panel.</p>	
835	C	Self-diagnostic error: Centronic device <ul style="list-style-type: none"> • Loopback connector is connected but check results in an error. • Loopback connector is connected but DMA data error detected. • Centronic loopback connector is not connected for detailed self-diagnostic test. 	
836	C	Self-diagnostic error: Font ROM A device exists in the font area but it contains corrupted data.	
837	C	Self-diagnostic error: Font ROM (option) A device exists in the font area but it contains corrupted data.	
838	C	Self-diagnostic error: Clock Generator Setup data is read from the clock generator via the I2C bus but differs from the prescribed value.	
850	B	Net I/F error <ul style="list-style-type: none"> • Duplicate IP addresses. • Illegal IP address. • Driver unstable and cannot be used on the network. 	
		<ul style="list-style-type: none"> • IP address setting incorrect • NIB (PHY) board defective • Controller board defective 	

SC No.		Symptom	Possible Cause
851	B	IEEE 1394 I/F error	
		Driver setting incorrect and cannot be used by the 1394 I/F.	<ul style="list-style-type: none"> • 1394 I/F connection incorrect • 1394 I/F board defective • Controller board defective
		USB driver is corrupted or has become unstable and cannot be used by the USB I/F.	<ul style="list-style-type: none"> • USB connection incorrect • Controller board defective
860	B	HDD startup error at main power on	
		<ul style="list-style-type: none"> • HDD is connected but a driver error is detected. • The driver does not respond with the status of the HDD within 30 s. 	<ul style="list-style-type: none"> • HDD is not initialized • Level data is corrupted • HDD is defective
861	B	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.	<ul style="list-style-type: none"> • Harness between HDD and board disconnected, defective • HDD power connector disconnected • HDD defective • Controller board defective
862	A	Number of bad sectors exceeds allowed maximum	
		The number of bad sectors on the HDD in the area for storing images exceeds 101.	<ul style="list-style-type: none"> • Execute 5832 001 to format the HDD and replace the bad sectors. HDD replacement is recommended because an HDD unit that generates bad sectors is probably of poor quality and performs poorly.
863	D	HDD data read failure	
		The data written to the HDD cannot be read normally, due to bad sectors generated during operation.	<ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> • Data transfer did not execute normally while data was being written to the HDD.
865	D	HDD access error	
		HDD responded to an error during operation for a condition other than those for SC863, 864.	<ul style="list-style-type: none"> • HDD defective.

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SC900: Miscellaneous

SC No.		Symptom	Possible Cause
900	D	Electrical total counter error	
		The total counter contains something that is not a number.	<ul style="list-style-type: none"> • NVRAM defective
901	D	Mechanical total counter error	
		The mechanical counter is not connected.	<ul style="list-style-type: none"> • Mechanical total counter defective • Mechanical total counter connector not connected
951	C	F-GATE signal error	
		When the IPU has already received the F-GATE signal (laser writing start trigger signal), the IPU receives another F-GATE signal.	<ul style="list-style-type: none"> • Software defective • BCU defective
953	D	Scanner image setting error	
		The settings required for image processing using the scanner are not sent from the IPU.	<ul style="list-style-type: none"> • Software defective
954	D	Printer image setting error	
		The settings required for image processing using the printer controller are not sent from the IPU.	<ul style="list-style-type: none"> • Software defective
955	D	Memory setting error	
		The settings that are required for image processing using the memory are not sent from the IPU.	<ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> • Controller 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.	<ul style="list-style-type: none"> • Controller board defective • BICU defective • BICU, controller disconnected
986	D	Value of setting for software write parameter incorrect	
		The write parameter received by the write module at the beginning of the setting table is NULL.	<ul style="list-style-type: none"> • Controller board defective • BICU defective • BICU, controller disconnected
990	D	Software performance error	
		The software performs an unexpected function and the program cannot continue.	<ul style="list-style-type: none"> • Software defective, re-boot¹

SC No.		Symptom	Possible Cause
991	C	Software capable of looping cannot continue The software performs an unexpected function and the program cannot continue. However, unlike SC990, recovery processing allows the program to continue.	

*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.

SC No.		Symptom	Possible Cause
992	C	Undefined software error Software encountered an unexpected operation. This error is issued if the error cannot be covered by SC990.	
997	D	Cannot select application function Application does not start after pressing the appropriate key on the operation panel.	
998	D	Application cannot start Register processing does not execute for any application within 60 s after the machine is powered on. All applications do not start correctly, and all end abnormally.	
999	D	Program download error The program download from the IC card does not execute normally. This SC is not logged.	

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4.2.3 ADDITIONAL SC CODES PRINTED IN SMC REPORT (B064 SERIES)

Here is a list of SC codes that are printed in the SMC report but may not appear in the operation panel display. Note that the codes that have the same number are identified by an additional 4-digit hexadecimal number.

SC No.	Symptom	Possible Cause
820 0001	TLB conversion (store) exception error	Unexpected error in CPU device: • Controller board defective • Boot monitor or self-diagnostic program corrupted
820 0002	TLB miss (load) exception error	
820 0003	TLB miss (store) exception error	
820 0004	Read address exception error	
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 • Controller board defective
820 060B	Allocation 1 mask exception error	
820 060C	Allocation 2 mask exception error	
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	

SC No.		Symptom	Possible Cause
820	070A	Data cache clear error	<ul style="list-style-type: none"> • CPU device error • Boot mode setting for CPU error • Controller defective • Insufficient memory
820	0801	TLB virtual address error	
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	
820	4003	Double-precision calculation error	
820	4004	Exception error	
820	4005	Exception mask error	
822	3003	HDD timeout	<ul style="list-style-type: none"> • HDD defective • HDD connector disconnected, defective • ASIC device error (controller board defective)
822	3004	Self-diagnostic command error	<ul style="list-style-type: none"> • HDD defective
823	6101	MAC address SUM error	
823	6104	PHY chip ID illegal	
823	6105	PHY loopback error	
824	1401	NVRAM verify error	<ul style="list-style-type: none"> • NVRAM defective
826	1501	Clock error	<ul style="list-style-type: none"> • Optional NVRAM defective
826	15FF	RTC non-detection error	<ul style="list-style-type: none"> • Incompatible NVRAM installed • NVRAM battery defective
826	0201	Resident memory verify error	<ul style="list-style-type: none"> • Memory on controller board defective • RAM DIMM defective
828	0101	Boost trap code (CODE) error	<ul style="list-style-type: none"> • Software storage error (re-install software) • Controller board defective
828	0104	ROM FS error	<ul style="list-style-type: none"> • ROM device error
828	0105	Forgery prevention error	<ul style="list-style-type: none"> • Forgery prevention chip defective • Forgery prevention chip error • Replace the controller, ROM, or RAM DIMM
829	0301	Option memory 0 verify error	
829	0302	Option memory 0 configuration information error	<ul style="list-style-type: none"> • Controller board internal memory error • RAM DIMM defective
835	1102	Verify error	<ul style="list-style-type: none"> • Loopback connector error (controller board defective)
835	110C	DMA verify error	<ul style="list-style-type: none"> • Loopback connector error • Controller board defective
835	1120	Loopback connector non-detection	
836	1601	Font ROM 0 error	
837	1602	Font ROM 1 error	
838	2701	Verify error	

4.3 B140 SERIES AND G126 SERVICE MODE

4.3.1 SERVICE MODE LOCK/UNLOCK

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

NOTE: This function is not used on B064 series machines.

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

4.3.2 B140 SERIES AND G126 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, then turn the main power switch off and 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 main power switch off and on.
C	SCs that are not shown on the operation panel. They are internally logged.	Logging only
D	Turning the operation switch or main power switch off then on resets SCs Displayed on the operation panel. These are re-displayed if the error occurs again.	Turn the operation switch or main power switch off and on, or the machine reboots automatically. (See below.)

When a Level “D” SC code occurs

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

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

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

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

Important

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

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4.3.3 B140 SERIES AND G126 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.
- The machine reboots automatically when the machine issues a Level "D" SC code. This is done for Level "D" SC codes only. (→4.3.2)

SC100: Scanning System

SC No.		Symptom	Possible Cause
101	D	Exposure Lamp Error At trigger on, the lamp was not detected on.	<ul style="list-style-type: none"> • Exposure lamp defective • Lamp regulator defective • Lamp regulator harness damaged, disconnected • Dirty standard white plate • Scanner mirror dirty or out of position • Lens dirty, out of position • SBU board defective
120	D	Scanner home position error 1 The scanner HP sensor does not detect the on condition during initialization or copying.	<ul style="list-style-type: none"> • BCU, SDRB (Scanner Driver Board) defective • Scanner motor defective • Harness between BCU, SDRB, scanner motor disconnected. • Scanner HP sensor defective. • Harness between scanner HP sensor and BCU disconnected. • Scanner wire, timing belt, pulley, carriage installed incorrectly.
121	D	Scanner home position error 2 The scanner HP sensor does not detect the off condition during initialization or copying.	<ul style="list-style-type: none"> • BCU, SDRB (Scanner Driver Board) defective • Scanner motor defective • Harness between BCU, SDRB, scanner motor disconnected • Scanner HP sensor defective • Harness between scanner HP sensor and BCU disconnected • Scanner wire, timing belt, pulley, carriage installed incorrectly.

122	D	<p>Scanner home position error 3</p> <p>The scanner home position sensor does not detect the on condition during original scanning.</p> <ul style="list-style-type: none"> • BCU, SDRB (Scanner Driver Board) defective • Scanner motor defective • Harness between BCU, SDRB, scanner motor disconnected • Scanner HP sensor defective • Harness between scanner HP sensor and BCU disconnected • Scanner wire, timing belt, pulley, carriage installed incorrectly
123	D	<p>Scanner home position error 4</p> <p>The scanner home position sensor does not detect the off condition during original scanning.</p> <ul style="list-style-type: none"> • BCU, SDRB (Scanner Driver Board) defective • Scanner motor defective • Harness between BCU, SDRB, scanner motor disconnected • Scanner HP sensor defective • Harness between scanner HP sensor and BCU disconnected • Scanner wire, timing belt, pulley, carriage installed incorrectly.
143	C	<p>SBU auto adjust error</p> <p>Automatic adjustment of the SBU fails when the machine is switched on.</p> <ul style="list-style-type: none"> • Exposure lamp defective • Exposure lamp regulator defective • Harness between exposure lamp and lamp regulator is disconnected • White plate installed incorrectly or is dirty • Scanning mirrors of the exposure unit are dirty or out of position • SBU board defective • VIB board defective. • Harness between SBU, VIB disconnected • Harness between VIB, BCU disconnected
144	D	<p>SBU transmission error</p> <p>After the SBU switches on, the BCU detects one of the following conditions on the SBU:</p> <ul style="list-style-type: none"> • 1 s after power on, the SYDI signal does not go high, even after 1 retry. • 1 s after power on, the SYDI signal goes high, but the SBU ID could not be read after 3 attempts. <ul style="list-style-type: none"> • SBU defective • VIB defective • Harness (40-pin shielded) between the SBU, VIB is disconnected • Harness (shielded cable) between the VIB, BCU is disconnected

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181	D	CIS lamp abnormal After the CIS lamp trigger goes on, the CIS lamp is not detected on. Detecting the lamp on or off determines the peak white level value for shading correction. (If the peak level is determined to be below a certain level, the CIS lamp is judged to be off.)	<ul style="list-style-type: none"> • CIS lamp defective • CIS power supply board defective • CIS lamp regulator defective • Harness between lamp and lamp regulator is disconnected. • Harness between CIS, ADF is disconnected • CIS exposure glass dirty. • White roller dirty or installed incorrectly • CIS unit defective
183	C	CIS auto adjust error Automatic adjustment of the CIS unit failed.	<ul style="list-style-type: none"> • CIS unit defective • CIS exposure glass dirty • White roller dirty or installed incorrectly
184	D	CIS transmission error When the CIS is powered on, the ADF detects one of the following abnormal conditions on the CIS unit: <ul style="list-style-type: none"> • The SOUT signal does not go high within 1 s after power on. • The SOUT signal goes high within 1 s after power on, but the SBU ID cannot be read after 3 attempts. 	<ul style="list-style-type: none"> • CIS unit defective • Harness between the CIS, ADF is disconnected

SC300: Image Development System (1)

SC No.		Symptom	Possible Cause
300	D	Charge corona output error The feedback voltage from the charge corona unit is detected too high 9 times.	<ul style="list-style-type: none"> • Charge corona power pack defective • Charge corona harness disconnected • Poor charge corona unit connection
303	D	Charge corona grid leak When the high voltage is output to the corona grid, feedback voltage exceeds the prescribed value 9 times.	<ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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.)	<ul style="list-style-type: none"> • Charge corona wire cleaner motor connector is defective, connected.

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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.

SC No.		Symptom	Possible Cause
310	D	Potential sensor calibration error 1 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.	<ul style="list-style-type: none"> • Potential sensor defective • Potential sensor harness disconnected • Potential sensor connector defective or disconnected • IOB defective • OPC connector defective • Development power pack defective

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SC No.		Symptom	Possible Cause
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.	
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)	
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: $VH > -500 + VL + 130 V$	
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.	
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.	

SC No.		Symptom	Possible Cause
317	C	<p>Potential sensor calibration error 7</p> <p>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.)</p>	
321	D	<p>No laser writing signal (F-GATE error)</p> <p>The laser writing signal (F-GATE) for the IPU does not go LOW within 60 s.</p>	
322	D	<p>Laser synchronization detector error</p> <p>After the polygon motor reaches standard rotation speed and the LD unit fires for 500 ms, the laser synchronization detector does not generate a signal.</p>	
335	D	<p>Polygon mirror motor error 1</p> <p>The ready signal does not go low within 20 s after the polygon mirror motor turns on or changes speed.</p>	
336	D	<p>Polygon mirror motor error 2</p> <p>The ready signal does not go high within 20 s after the polygonal mirror motor turns off.</p>	
337	D	<p>Polygonal mirror motor error 3</p> <p>The XSCRDY signal goes high while the polygon mirror motor turns on, even though there was no request to either turn off the motor or change the motor speed.</p>	
338	D	<p>Polygonal mirror motor error 4</p> <p>While the polygon motor is rotating, the XSCRDY signal goes high during exposure.</p>	

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SC No.		Symptom	Possible Cause
340	C	<p>TD sensor output error</p> <p>TD sensor output voltage (V_t), measured during each copy cycle, is detected 10 times at one of the following levels: $V_t = 0.5$ volts or lower $V_t = 4.0$ volts or higher</p>	<ul style="list-style-type: none"> • TD sensor defective • TD sensor harness disconnected • TD sensor connector disconnected or defective • IOB defective • Toner bottle motor defective <p>Note: When the TD sensor is defective, the toner supply is controlled using pixel count and the ID sensor.</p>
341	D	<p>TD sensor adjustment error 1</p> <p>During the TD sensor auto adjustment, the TD sensor output voltage (V_t) 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.</p> <p>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.</p>	<ul style="list-style-type: none"> • TD sensor defective • TD sensor harness disconnected • TD sensor connector disconnected or defective • IOB defective • Toner bottle motor defective <p>Note: When the TD sensor is defective, the toner supply is controlled using pixel count and the ID sensor.</p>
342	D	<p>TD sensor adjustment error 2</p> <p>During the TD sensor auto adjustment, the TD sensor output voltage (V_t) does not enter the target range ($3.0 \pm 0.1V$) within 20 s. When this error occurs, the display of SP2-906-1 reads 0.00V.</p> <p>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.</p>	<ul style="list-style-type: none"> • TD sensor defective • TD sensor harness disconnected • TD sensor connector disconnected or defective • IOB defective
345	D	<p>Development output abnormal</p> <p>The high voltage applied to the development unit is detected 10 times higher than the upper limit (45%) of PWM.</p>	<ul style="list-style-type: none"> • Development power pack defective • Development bias leak due to poor connection, defective connector
350	C	<p>ID sensor error 1</p> <p>One of the following ID sensor output voltages was detected twice consecutively when checking the ID sensor pattern.</p> <p>$V_{sp} \geq 2.5V$</p> <p>$V_{sg} < 2.5$</p> <p>$V_{sp} = 0V$</p> <p>$V_{sg} = 0$</p>	<ul style="list-style-type: none"> • 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

SC No.		Symptom	Possible Cause
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.	<ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> • 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. <ul style="list-style-type: none"> • $V_{sg} < 4.0V$ when the maximum PWM input (255) is applied to the ID sensor. • $V_{sg} \geq 4.0V$ when the minimum PWM input (0) is applied to the ID sensor. 	<ul style="list-style-type: none"> • 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
354	C	ID sensor error 5 V_{sg} falls out of the adjustment target ($4.0 \pm 0.2V$) during V_{sg} checking.	<ul style="list-style-type: none"> • 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 V_p value, which measures the reflectivity of the ID sensor pattern, was not in the range of $-70V$ to $-400V$.	<ul style="list-style-type: none"> • 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

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SC400: Image Development System (2)

SC No.		Symptom	Possible Cause
401	D	Transfer output abnormal	
		When the transfer is output, the feedback voltage remains higher than 4V for 60 ms.	<ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> • Waste toner transport has stopped due to motor overload • Toner end sensor defective, disconnected
496	D	Toner collection bottle error	
		The toner collection bottle set switch remains off when the front door is closed.	<ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> • Toner pump motor defective • Motor connector loose, disconnected

SC500: Feed, Transport, Duplexing, and Fusing Systems

NOTE: For G126 Fusing System-related SC Codes, it may be necessary to reference the B064 Series SC500 codes section in this manual.

SC No.	Symptom		Possible Cause
501	B	Tray 1 lift malfunction	<ul style="list-style-type: none"> 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.
502	B	Tray 2 lift malfunction	<ul style="list-style-type: none"> 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.
503	B	Tray 3 lift malfunction	<ul style="list-style-type: none"> 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.
504	B	Tray 4 lift malfunction	<ul style="list-style-type: none"> 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.
507	B	LCT feed motor malfunction One of the following conditions is detected: <ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Feed motor defective Feed motor connector disconnected Obstacle interfering with mechanical movement of motor.

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SC No.		Symptom	Possible Cause
510	B	<p>LCT tray malfunction</p> <p>One of the following conditions is detected:</p> <ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Tray lift motor defective or connector disconnected • Lift sensor defective or disconnected • Pick-up solenoid defective or disconnected • Paper end sensor defective
515	B	<p>Tandem rear fence motor error</p> <p>One of the conditions is detected:</p> <ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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
520	C	<p>Duplex jogger motor error 1</p> <p>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.</p>	<ul style="list-style-type: none"> • Paper or other obstacle has jammed mechanism • Sensor connector disconnected or defective • Sensor defective
521	C	<p>Duplex jogger motor error 2</p> <p>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.</p>	<ul style="list-style-type: none"> • Paper or other obstacle has jammed mechanism • Sensor connector disconnected or defective • Sensor defective
531	D	<p>Fusing exit motor error</p> <p>The PLL lock signal was low for 2 seconds during motor operation.</p>	<ul style="list-style-type: none"> • Motor lock caused by too much load • Motor driver defective
541	A	<p>Fusing thermistor open</p> <p>The fusing temperature detected by the center thermistor was below 0°C for 7 sec.</p>	<ul style="list-style-type: none"> • Thermistor open • Thermistor connector defective • Thermistor damaged, or out of position <p>Fusing temperature –15% less than the standard input voltage</p>
542	A	Fusing temperature warm-up error	

SC No.		Symptom	Possible Cause
		<p>One of the following occurred:</p> <ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Fusing lamp disconnected • Thermistor warped, out of position • Thermostat not operating
543	A	<p>Fusing lamp overheat error 1 (software)</p> <p>Central thermistor detected a temperature of 240°C at the center of the hot roller. Fusing temperature control software error</p>	<ul style="list-style-type: none"> • PSU defective • IOB defective • BICU defective
544	A	<p>Fusing lamp overheat error 1 (hardware)</p> <p>Either the central thermistor or an end thermistor detected a temperature of 250°C on the hot roller. -or- Fusing temperature control software error</p>	<ul style="list-style-type: none"> • PSU defective • IOB defective • BICU defective
545	A	<p>Fusing lamp overheat error 2</p> <p>After hot roller reaches warmup temperature, the fusing lamps remained on at full capacity for 11 samplings (1.8 sec. duration) while the hot roller was not rotating.</p>	<ul style="list-style-type: none"> • Thermistor damaged, or out of position • Fusing lamp disconnected
547	D	<p>Zero cross signal malfunction</p> <p>One of the following conditions is detected 10 times:</p> <ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Noise on the ac power line
550	A	<p>Fusing Web End</p> <p>Web end detected 5 times within 500 ms and web motor continues to rotate 40 s. If web end is detected for another 400 ms, then the SC is logged.</p>	<ul style="list-style-type: none"> • Web end (requires replacement) • Web end sensor defective <p>Note: After replacing the web with a new one, reset SP1902 001 to 0 to release SC550.</p>
551	A	Fusing thermistor error 1	

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SC No.		Symptom	Possible Cause
		The end thermistor (contact type) was less than 0C (32F) for more than 7 seconds.	<ul style="list-style-type: none"> Thermistor disconnected Thermistor connector defective
552	A	<p>Fusing thermistor error 2</p> <p>The end thermistor (contact type) could not detect:</p> <ul style="list-style-type: none"> 100°C 25 seconds after the start of the warmup cycle. A change in temperature more than than 16 degrees for 5 seconds. The reload temperature with 56 seconds after the start of the fusing temperature control cycle. 	<ul style="list-style-type: none"> Fusing lamp disconnected Thermistor bent, damaged Thermistor position incorrect
553	A	<p>Fusing thermistor error 3</p> <p>The end thermistor (contact type) was at 240°C (464°F) for more than 1 second.</p>	<ul style="list-style-type: none"> PSU defective IOB control board defective BICU control board defective
555	A	<p>Fusing lamp error</p> <p>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.</p>	<ul style="list-style-type: none"> Thermistor bent, out of position Fusing lamp disconnected Circuit breaker opened
569	D	<p>Fusing pressure release motor error</p> <p>During copying, the HP sensor could not detect the actuator, tried again 3 times and could not detect.</p>	<ul style="list-style-type: none"> Motor lock because of too much load Motor driver defective HP sensor defective, disconnected, connector defective, harness damaged
590	D	<p>Toner collection motor error</p> <p>The toner collection motor sensor output does not change for 3 seconds while the toner collection motor is on.</p>	<ul style="list-style-type: none"> 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	<p>1-bin Exit Motor Error (Japan Only)</p> <p>The transport lock sensor output does not change within 300 ms after the motor switches on.</p>	<ul style="list-style-type: none"> Motor overload Motor driver defective

SC600: Data Communication

SC No.		Symptom	Possible Cause
610	D	BICU ⇄ ADF communication/timeout abnormal After 1 data frame is sent to the ADF, an ACK signal is not received within 100 ms, and is not received after 3 retries.	<ul style="list-style-type: none"> Serial line connection unstable External noise on the line
611	D	BICU ⇄ ADF communication/break reception abnormal During communication a break (Low) signal was received from the ADF.	<ul style="list-style-type: none"> Serial line connection unstable Harness disconnected or defective
612	D	BICU ⇄ ADF communication/command abnormal A command that cannot be executed was sent from the main machine to the ADF.	<ul style="list-style-type: none"> A software error, result of an abnormal procedure.
620	D	BICU ⇄ ADF communication/timeout error After 1 data frame is sent to the finisher MBX, an ACK signal is not received within 100 ms, and is not received after 3 retries.	<ul style="list-style-type: none"> Serial line connection unstable External noise on the line
621	D	BICU ⇄ Finisher communication/break error During communication with the finisher MBX, the BICU received a break (Low) signal from the finisher.	<ul style="list-style-type: none"> 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.	<ul style="list-style-type: none"> 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.	<ul style="list-style-type: none"> 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.	<ul style="list-style-type: none"> 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.	<ul style="list-style-type: none"> Serial line connection unstable External noise on the line
630	C	RSS communication error An error was detected in communication via RSS between the machine and the RSS center. Error occurred on a public line at the RSS terminal.	<ul style="list-style-type: none"> No action required

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SC No.		Symptom	Possible Cause
670	D	<p>Engine startup error</p> <p>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.</p>	<ul style="list-style-type: none"> Check the connections between BICU and controller BICU defective Controller board defective PSU defective
672	B	<p>Controller startup error</p> <ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Controller stalled Controller installed incorrectly Controller board defective Operation panel harness disconnected or defective

SC700 Series: Peripherals

SC No.		Symptom	Possible Cause
700	D	ADF original pick-up error Pick-up roller HP sensor signal does not change after the pick-up motor has turned on.	<ul style="list-style-type: none"> • Pick-up roller HP sensor defective • Pick-up motor defective • Timing belt slipping, out of position • ADF main board defective
701	D	ADF bottom plate motor error One of the following occurred: <ul style="list-style-type: none"> • Bottom plate position sensor does not detect the plate after the bottom plate lift motor switches on to lift the plate. • Bottom plate HP sensor does not detect the plate after the bottom plate motor reverses to lower the plate. 	<ul style="list-style-type: none"> • Bottom plate position sensor defective • Bottom plate HP sensor defective • Bottom plate motor defective • ADF main board defective
720	D	Finisher transport motor error The encoder pulse of the transport motor does not change state (high/low) within 600 ms and does not change after 2 retries.	<ul style="list-style-type: none"> • Finisher transport motor defective, or overloaded due to obstruction • Transport motor harness disconnected, or defective • Finisher main board defective
722	B	Finisher jogger motor error <ul style="list-style-type: none"> • The finisher jogger HP sensor remains de-activated for more than 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. 	<ul style="list-style-type: none"> • Jogger HP sensor defective • Jogger mechanism overloaded due to obstruction • Jogger motor defective (not rotating) • Finisher main board defective • Harness disconnected or defective
724	B	Finisher staple hammer motor error Stapling does not finish within 450 ms after the staple hammer motor switches on and the stapler jams. Stapler is released from the reverse lock status. If the stapler does not operate within 450 ms, even in the reverse lock position, then the SC is logged.	<ul style="list-style-type: none"> • Staple jam • Stapler operation overload • Staple hammer motor defective • Staple hammer motor connector disconnected, or defective
725	B	Finisher stack feed-out motor error The stack feed-out belt HP sensor does not activate within the prescribed number of pulses after the stack feed-out motor turns on and does not activate after 2 retries because the stack feed-out belt failed to return to the home position.	<ul style="list-style-type: none"> • Stack feed-out HP sensor defective • Harness disconnected or defective • Stack feed-out motor defective • Finisher main board defective • Motor overload due to obstruction

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SC No.		Symptom	Possible Cause
726	B	<p>Finisher upper tray lift motor error</p> <p>The paper height sensor does not activate within the prescribed time after the upper tray lift motor turns on, or the sensor remains on after the motor reverses to lower the tray.</p>	<ul style="list-style-type: none"> Upper tray paper height sensor defective Sensor harness disconnected, defective Tray lift motor defective Finisher main board defective Tray lift motor overloaded due to obstruction
727	B	<p>Finisher stapler rotation motor error</p> <p>The stapler motor switches on but the motor does not return to the home position within the prescribed number of pulses.</p>	<ul style="list-style-type: none"> Stapler rotation motor HP sensor disconnected, defective Motor harness damaged, disconnected Stapler lift motor defective Finisher main board defective Rotation motor overload due to obstruction
729	D	<p>Finisher punch motor error</p> <p>The punch HP sensor does not activate within the prescribed time the punch motor turns on.</p>	<ul style="list-style-type: none"> Punch HP sensor defective Sensor harness disconnected, defective Punch motor defective Finisher main board defective Poor punch motor overload due to obstruction
730	B	<p>Finisher stapler movement motor error</p> <p>The stapler HP sensor does not activate within the prescribed time after the stapler motor turns on and moves the stapler away from home position. After 2 counts, the SC is logged as a jam.</p>	<ul style="list-style-type: none"> Stapler HP sensor defective Sensor harness disconnected, defective Stapler movement motor defective Finisher main board defective Stapler movement motor overload due to obstruction
732	B	<p>Finisher shift roller motor error</p> <p>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.</p>	<ul style="list-style-type: none"> Shift roller HP sensor defective Sensor harness disconnected, defective Shift roller motor defective Finisher main board defective Shift roller motor overload
733	B	<p>Finisher lower tray lift motor error</p> <p>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.</p>	<ul style="list-style-type: none"> 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	<p>Finisher pre-stack motor error</p> <ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Jogger HP sensor defective Sensor harnesses disconnected, defective Pre-stack motor defective Finisher main board defective Pre-stack motor overload due to obstruction

SC No.		Symptom	Possible Cause
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.	<ul style="list-style-type: none"> • Guide plate HP sensor defective • Sensor harness disconnected, defective • Paper exit guide plate motor defective • Finisher main board defective • Guide plate motor overload due to obstruction
737	B	Trimmed staple waste hopper full The hopper that holds the waste from staple trimming is full.	<ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> • HP sensor defective • Harness disconnected, defective • Motor defective • Finisher main board defective • Motor overload due to obstruction
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.	<ul style="list-style-type: none"> • Plate HP sensor defective • Harness disconnected, defective • Folder plate motor defective • Finisher main board defective • Folder plate motor overloaded due to obstruction
740	B	Finisher front saddle-stitch stapler motor error Saddle-stitch stapler motor fails to operate within 450 ms within 2 counts..	<ul style="list-style-type: none"> • HP sensor defective • Harness disconnected, defective • Stapler motor defective • Finisher main board defective • Stapler motor overloaded due to obstruction
741	B	Finisher rear saddle-stitch stapler motor error Saddle-stitch stapler motor fails to operate within 450 ms within 2 counts.	<ul style="list-style-type: none"> • HP sensor defective • Harness disconnected, defective • Stapler motor defective • Finisher main board defective • Stapler motor overload
742	B	Finisher jogger side fence motor error The jogger motor turns on but the side fences do not return to the home position within 340 pulses for 2 counts.	<ul style="list-style-type: none"> • HP sensors defective • Harness disconnected, defective • Motor defective • Finisher main board defective • Motor overload
743	B	Finisher shift motor errors For the optional jogger unit for the B706 finisher: During the return operation, the shift jogger motor or shift jogger fence lift motor did not return to the home position within the set number of pulses.	<ul style="list-style-type: none"> • HP sensor of shift jogger motor, harness, connector defective, or motor disconnected • HP sensor, harness, connector of retraction motor defective, or motor disconnected • Shift jogger motor defective • Shift jogger fence lift motor defective • Finisher main control board defective

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SC No.		Symptom	Possible Cause
750	B	Cover interposer bottom plate motor error	
		<ul style="list-style-type: none"> • The bottom plate motor turns on to raise the bottom plate but the plate position sensor does not detect the plate within 3 s. • The bottom plate motor reverses to lower the bottom plate but the bottom plate HP sensor does not detect the plate within 3 s. 	
751	B	Z-Folding unit error 1 The fold roller motor did not get to the set speed after 1200 ms.	
		<ul style="list-style-type: none"> • Motor defective • Motor disconnected • Motor lock because of overload • Z-Fold main control board defective 	
752	B	Z-Folding unit error 2 The HP sensor of the lower stopper motor does not go off after the stopper moved 128.7 mm after the start of the operation.	
		<ul style="list-style-type: none"> • Lower stopper motor defective • Lower stopper motor disconnected, connector defective • Lower stopper motor HP sensor disconnected, defective • Z-Fold main control board defective 	
753	B	Z-Folding unit error 3 The HP sensor of the upper stopper motor does not go off after the stopper moved 128.7 mm.	
		<ul style="list-style-type: none"> • Upper stopper motor defective • Upper stopper motor disconnected, connector defective • Upper stopper motor HP sensor disconnected, defective • Z-Fold main control board defective 	
754	D	Z-Folding unit error 4 2000 ms after the fan motor switched on, the lock signal did not release.	
		<ul style="list-style-type: none"> • Fan motor defective • Fan motor disconnected • Fan motor locked because of too much load • Z-Fold main control board defective 	
755	B	Z-Folding unit error 5 The fold timing sensor does not operate correctly.	
		<ul style="list-style-type: none"> • Paper dust on the sensor • Sensor disconnected, defective • Mirror dirty, or out of position • Z-Fold main control board defective 	
756	B	Z-Folding unit error 6 The leading edge sensor does not operate correctly.	
		<ul style="list-style-type: none"> • Paper dust on the sensor • Sensor disconnected, defective • Mirror dirty, or out of position • Z-Fold main control board defective 	
757	B	Z-Folding unit error 7 The machine could not write to the EEPROM two times (one after the other).	
		<ul style="list-style-type: none"> • EEPROM defective, replace Z-Fold main control board 	

SC800: Overall System

SC No.	Symptom		Possible Cause
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.		<ul style="list-style-type: none"> 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.		<ul style="list-style-type: none"> 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.

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821	D	Self-diagnostic error 2: ASIC	
		The ASIC provides the central point for the control of bus arbitration for CPU access, for option bus and SDRAM access, for SDRAM refresh, and for management of the internal bus gate.	
		0B00	Error code 0xffff ffff is returned when the register Write & Verify check is executed on the ASIC mounted on the controller board. The ASIC controls the ROM and buses for other devices.
		0B06	ASIC not detected
		0B10	Failed to initialize or could not read connection bus. Data in SHM register incorrect.
			<ul style="list-style-type: none"> ASIC (controller board defective)
			<ul style="list-style-type: none"> ASIC defective Poor connection between North Bridge and PCI I/F Replace controller board
			<ul style="list-style-type: none"> Connection bus defective SHM defective Replace 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.

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822	B	Self-diagnostic error 3: HDD		
		3003	Check performed when HDD is installed: <ul style="list-style-type: none">• HDD device busy for over 31 s.• After a diagnostic command is set for the 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	<ul style="list-style-type: none">• HDD defective• HDD harness disconnected, defective• Controller board defective
		3004	No response to the self-diagnostic command from the ASIC to the HDDs	<ul style="list-style-type: none">• 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.	<ul style="list-style-type: none">• 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.	<ul style="list-style-type: none">• HDD defective
824	D	Self-diagnostic error 4: NVRAM		
		NVRAM device does not exist, NVRAM device is damaged, NVRAM socket damaged		<ul style="list-style-type: none">• NVRAM defective• Controller board defective• NVRAM backup battery exhausted• NVRAM socket damaged
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.	<ul style="list-style-type: none">• NVRAM defective• NVRAM installed incorrectly• Replace RTC database
		15FE	Backup battery error. Battery is exhausted or not within rated specification.	<ul style="list-style-type: none">• Replace RTC backup battery
828	D	Self-diagnostic error 7: ROM		
		<ul style="list-style-type: none">• 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.		<ul style="list-style-type: none">• Software defective• Controller board defective• ROM defective

NOTE: For more details about this SC 833, SC834 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. 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.	<ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> • Memory device defective • Replace the mother board
50B1		Could not initialize or read the bus connection.	<ul style="list-style-type: none"> • Bus connection defective, loose • SSCG defective • Replace the mother board
50B2		Value of the SSCG register is incorrect.	<ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> • Controller defective • Mother board defective
850	B	Net I/F error	
		<ul style="list-style-type: none"> • Duplicate IP addresses. • Illegal IP address. • Driver unstable and cannot be used on the network. 	<ul style="list-style-type: none"> • IP address setting incorrect • NIB (PHY) board defective • Controller board defective
851	B	IEEE 1394 I/F error	
		Driver setting incorrect and cannot be used by the 1394 I/F.	<ul style="list-style-type: none"> • NIB (PHY), LINK module defective; change the Interface Board • Controller board defective
853	B	Wireless LAN Error 1	
		During machine start-up, the machine can get access to the board that holds the wireless LAN, but not to the wireless LAN card (802.11b or Bluetooth).	<ul style="list-style-type: none"> • Wireless LAN card missing (was removed)
854	B	Wireless LAN Error 2	
		During machine operation, the machine can get access to the board that holds the wireless LAN, but not to the wireless LAN card (802.11b or Bluetooth).	<ul style="list-style-type: none"> • Wireless LAN card missing (was removed)
855	B	Wireless LAN error 3	
		An error was detected on the wireless LAN card (802.11b or Bluetooth).	<ul style="list-style-type: none"> • Wireless LAN card defective • Wireless LAN card connection incorrect
856	B	Wireless LAN error 4	
		An error was detected on the wireless LAN card (802.11b or Bluetooth).	<ul style="list-style-type: none"> • Wireless LAN card defective • PCI connector (to the mother board) loose
857	B	USB I/F Error	
		The USB driver is not stable and caused an error.	<ul style="list-style-type: none"> • Bad USB card connection • Replace the controller board

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860	B	HDD startup error at main power on	
		<ul style="list-style-type: none"> • HDD is connected but a driver error is detected. • The driver does not respond with the status of the HDD within 30 s. 	<ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> • HDD defective <p>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.</p>
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.	<ul style="list-style-type: none"> • HDD defective
865	D	HDD access error	
		HDD responded to an error during operation for a condition other than those for SC863, 864.	<ul style="list-style-type: none"> • HDD defective.
866	B	SC card error 1: Confirmation	
		<p>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.</p> <p>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.</p>	<ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> • SD card not inserted correctly • SD card defective • Controller board defective <p>Note: If you want to try to reformat the SC card, use SD Formatter Ver 1.1.</p>

870	B	<p>Address book data error</p> <p>Address book data on the hard disk was detected as abnormal when it was accessed from either the operation 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.</p> <p>More Details</p> <ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Software defective. Turn the machine off/on. If this is not the solution for the problem, then replace the controller firmware. • HDD defective.
873	B	<p>HDD mail send data error</p> <p>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.</p>	<ul style="list-style-type: none"> • Do SP5832-007 (Format HDD – Mail TX Data) to initialize the HDD. • Replace the HDD
874	D	<p>Delete All error 1: HDD</p> <p>A data error was detected for the HDD/NVRAM after the Delete All option was used.</p> <p>Note: The source of this error is the Data Overwrite Security Unit B660 running from an SD card.</p>	<ul style="list-style-type: none"> • 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	<p>Delete All error 2: Data area</p> <p>An error occurred while the machine deleted data from the HDD.</p> <p>Note: The source of this error is the Data Overwrite Security Unit B660 running from an SD card.</p>	<ul style="list-style-type: none"> • Turn the main switch off/on and try the operation again.
880	D	<p>File Format Converter (MLB) error</p> <p>A request to get access to the MLB was not answered within the specified time.</p>	<ul style="list-style-type: none"> • MLB defective, replace the MLB

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SC900: Miscellaneous

SC No.		Symptom	Possible Cause
900	D	Electrical total counter error	
		The total counter contains something that is not a number.	<ul style="list-style-type: none"> • NVRAM incorrect type • NVRAM defective • NVRAM data scrambled • Unexpected error from external source
901	D	Mechanical total counter error	
		The mechanical counter is not connected.	<ul style="list-style-type: none"> • Mechanical total counter defective • Mechanical total counter connector not connected

920	B	Printer error 1	
		An internal application error was detected and operation cannot continue.	<ul style="list-style-type: none"> • Software defective; turn the machine off/on, or change the controller firmware • Insufficient memory
921	B	Printer error 2	
		When the application started, the necessary font was not on the SD card.	<ul style="list-style-type: none"> • Font not on the SC card
925	B	Net File 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.), Web services, and other network functions cannot be used. HDD status codes are displayed below the SC code:	<ul style="list-style-type: none"> • Refer to the four procedures below (Recovery from SC 925).

Here is a list of HDD status codes:

Display	Meaning
(-1)	HDD not connected
(-2)	HDD not ready
(-3)	No label
(-4)	Partition type incorrect
(-5)	Error returned during label read or check
(-6)	Error returned during label 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 from SC 925

Procedure 1

If the machine shows SC codes for HDD errors (SC860 ~ SC865) with SC 925, do the recovery procedures for SC860 ~ SC865.

Procedure 2

If the machine does not show one of the five HDD errors (SC860 ~ SC865), turn the machine power off and on. If this is not the solution for 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 you initialize the NetFile partition on the HDD, tell the customer that:
 - Received faxes on the delivery server will be erased
 - All captured documents will be erased
 - DeskTopBinder/Print Job Manager/Desk Top Editor job history will be erased
 - Documents on the document server, and scanned documents, will not be erased.
 - The first time that the network gets access to the machine, the management information must be configured again (this will use a lot of time).

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Before you initialize the Netfile partition with SP5832-011, do these steps:

1. Go into the User Tools mode and do “Delivery Settings” to print all received fax documents that are scheduled for delivery. Then erase them.
2. In the User Tools mode, do Document Management> Batch Delete Transfer Documents.
3. Do SP5832-011, then turn the machine power off and on.

Procedure 3

If “Procedure 2” is not the solution for the problem, do SP5832-001 (HDD Formatting – All), then turn the machine power off and on.

SP5832-001 erases all document and address book data on the hard disks. Ask the customer before you do this SP code.

Procedure 4

If “Procedure 3” is not the solution for the problem, replace the HDD.

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953	D	Scanner image setting error The settings required for image processing using the scanner are not sent from the IPU.	• Software defective
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

990	D	Software error 2 The software performs an unexpected function and the program cannot continue.	• Software defective, re-boot ^{*1}
991	C	Software error 3 The software performs an unexpected function and the program cannot continue. However, unlike SC990, recovery processing allows the program to continue.	• Software defective, re-boot ^{*1}

^{*1}: In order to get more details about SC990 and SC991:

- 3) Execute SP7403 or print an SMC Report (SP5990) to read the history of the 10 most recent logged errors.
- 4) 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.

992	D	Software error 4: Undefined An error not controlled by the system occurred (the error does not come under any other SC code).	
997	B	Cannot select application function An application does not start after the user pushed the correct key on the operation panel.	
998	D	Application cannot start Register processing does not operate for an application within 60 s after the machine power is turned on. No applications not start correctly, and all end abnormally.	

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4.3.4 JAM CODES (B140 SERIES AND G126)

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)
34	Bypass paper end sensor		

NOTE: For fusing-system SC Codes, it may be necessary to reference "Jam Codes (B064 Series)" in this manual.

Finisher B469 Jam Codes

No.	Location	Related SC Code
101	Entrance Sensor	
102	Proof Tray Exit Sensor	
103	Exit Sensor	
104	Staple Entrance Sensor	
105	Exit Sensor after jogging	
106	Stapler Unit 1	
109	Shift Motor	SC733
110	Jogger Fence Motor	SC722
111	Shift Roller or Guide Plate Motor	SC732, SC736
112	Stapler Movement or Stapler Rotation Motor	SC727, SC730
113	Stapler Unit 2	SC724
115	Feed Out Belt Motor	SC725
116	Punch Hole Motor	SC729

Finisher B468/B674 Jam Codes

No.	Location	Related SC Code
121	Entrance Sensor	
122	Proof Tray Exit Sensor	
123	Exit Sensor	
124	Staple Entrance Sensor	
125	Exit Sensor after jogging	
126	Stapler Unit 1	
127	Saddle Stitch Stapler Unit	
128	Saddle Stitch Stapler Unit	
129	Shift Motor	SC733, SC726
130	Jogger Fence Motor	SC722
131	Shift Roller or Guide Plate Motor	SC732, SC736
132	Stapler Movement or Stapler Rotation Motor	SC727, SC730
133	Stapler Unit 2	SC724, SC728, SC740, SC741
134	Folder Plate Motor	SC739
135	Feed Out Belt Motor	SC725
136	Punch Hole Motor	SC729

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Finisher B478/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
158	Z-Fold Jogger Motor (B706 Only)	

Mailbox B471 Jam Codes

No.	Location	Related SC Code
161	Vertical Transport Sensor 1 (CN201)	---
162	Vertical Transport Sensor 2 (CN204)	---
163	Vertical Transport Sensor 3 (CN209)	---
164	Vertical Transport Sensor 4 (CN2014)	---
165	Vertical Transport Sensor 5 (CN2019)	---

Cover Interposer Tray B470 Jam Codes

No.	Location	Related SC Code
166	Feed or Pull-out Sensor	---
167	Exit Sensor	---
168	Bottom Plate Position Sensor	SC750

Z-Folding Unit B660 Jam Codes

No.	Location	Related SC Code
169	Paper Feed Sensor: Paper Late	---
170	Paper Feed Sensor: Paper Remains	---
171	Fold Timing Sensor: Paper Late	---
172	Fold Timing Sensor: Paper Remains	---
173	Leading Edge Exit Sensor: Paper Late	---
174	Leading Edge Exit Sensor: Paper Remains	---
175	Upper Stopper Path Sensor: Paper Late	---
176	Upper Stopper Path Sensor: Paper Remains	---
177	Lower Exit Sensor: Paper Late	---
178	Lower Exit Sensor: Paper Remains	---
181	Upper Exit Sensor: Paper Late	---
182	Upper Exit Sensor: Paper Remains	---
183	Paper Fold Motor Lock	---
184	Lower Stopper Motor Lock	---
185	Upper Stopper Motor Lock	---

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4.3.5 ADDITIONAL SC CODES PRINTED IN SMC REPORT (B140 SERIES AND G126)

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.

SC No.	Symptom	Possible Cause
820 0001	TLB conversion (store) exception error	Unexpected error in CPU device: • Controller board defective
820 0002	TLB miss (load) exception error	• Boot monitor or self-diagnostic program corrupted
820 0003	TLB miss (store) exception error	
820 0004	Read address exception error	
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
820 0602	Write address exception error	• Controller board defective
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
820 060B	Allocation 1 mask exception error	• ASIC device 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

SC No.	Symptom	Possible Cause
820 0702	Command cache error	<ul style="list-style-type: none"> • CPU cache defective • Controller board defective • Memory error (insufficient speed)
820 0709	Data cache error	
820 070A	Data cache clear error	<ul style="list-style-type: none"> • CPU device error • Boot mode setting for CPU error • Controller defective • Insufficient memory
820 0801	TLB virtual address error	
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	<ul style="list-style-type: none"> • CPU error (controller board defective)
820 4003	Double-precision calculation error	
820 4004	Exception error	
820 4005	Exception mask error	
822 3003	HDD timeout	<ul style="list-style-type: none"> • HDD defective • HDD connector disconnected, defective • ASIC device error (controller board defective)
822 3004	Self-diagnostic command error	<ul style="list-style-type: none"> • HDD defective
823 6101	MAC address SUM error	
823 6104	PHY chip ID illegal	
823 6105	PHY loopback error	
824 1401	NVRAM verify error	<ul style="list-style-type: none"> • NVRAM defective
826 1501	Clock error	<ul style="list-style-type: none"> • Optional NVRAM defective
826 15FF	RTC non-detection error	<ul style="list-style-type: none"> • Incompatible NVRAM installed • NVRAM battery defective
826 0201	Resident memory verify error	<ul style="list-style-type: none"> • Memory on controller board defective • RAM DIMM defective
828 0101	Boost trap code (CODE) error	<ul style="list-style-type: none"> • Software storage error (re-install software) • Controller board defective
828 0104	ROM FS error	<ul style="list-style-type: none"> • ROM device error
828 0105	Forgery prevention error	<ul style="list-style-type: none"> • Forgery prevention chip defective • Forgery prevention chip error • Replace the controller, ROM, or RAM DIMM
829 0301	Option memory 0 verify error	
829 0302	Option memory 0 configuration information error	<ul style="list-style-type: none"> • Controller board internal memory error • RAM DIMM defective
835 1102	Verify error	<ul style="list-style-type: none"> • Loopback connector error (controller board defective)
835 110C	DMA verify error	<ul style="list-style-type: none"> • Loopback connector error • Controller board defective
835 1120	Loopback connector non-detection	<ul style="list-style-type: none"> • Loopback connector not set • Loopback connector error
836 1601	Font ROM 0 error	
837 1602	Font ROM 1 error	
838 2701	Verify error	

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SC No.		Symptom	Possible Cause
853	D	IEEE802 11b card startup error Not used.	
854	D	IEEE802 11b card access error Not used.	
855	D	IEEE802 11b card error Not used.	
856	D	IEEE802 11b card connection board error Not used.	
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).	<ul style="list-style-type: none"> • Data corruption • Defective hard disk • Defective software
920	D	Printer error The printer program cannot be continued.	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Defective hardware • Data corruption • Defective software
992	C	Other system SCs The controller received an unknown SC code from the engine.	<ul style="list-style-type: none"> • Contact your product specialist.
993	D	Network error The ASIC program of RA2K controller cannot be continued.	<ul style="list-style-type: none"> • Defective ASIC • Defective RA2K controller

4.4 OTHER PROBLEMS (ALL MODELS)

4.4.1 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	Tray 1 indicates A4 paper. Other trays display the correct size, but show "Add Paper" when selected.
FU104	6.3A/125V	6.3A/250V	Nothing displayed on LCD.
FU105	6.3A/125V	6.3A/250V	"Door Open" is displayed.
FU106	6.3A/125V	6.3A/250V	ADF does not operate.
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	Jams/SC441 after clearing jam.
FU111	6.3A/125V	6.3A/250V	Nothing is displayed on LCD.

B140 Series and G126 Only

FU1	Controller PSU (PCB18)	Failure symptom: "Dead" machine. Green "Operator" LED is lit on right side of operation panel. Cooling fans are running. No 12VDC or 5VDC output at CN131 and CN132 respectively.
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Trouble
shooting

4.4.2 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
Jam – Original	ADF	Pick-up, paper feed, separation rollers
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.
Skew – Original	ADF	Pick-up, paper feed, separation rollers
Toner on transfer belt	Transfer Belt Unit	Transfer belt, transfer belt cleaning blade
Wrinkling	Fusing Unit	Pressure roller

4.4.3 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.

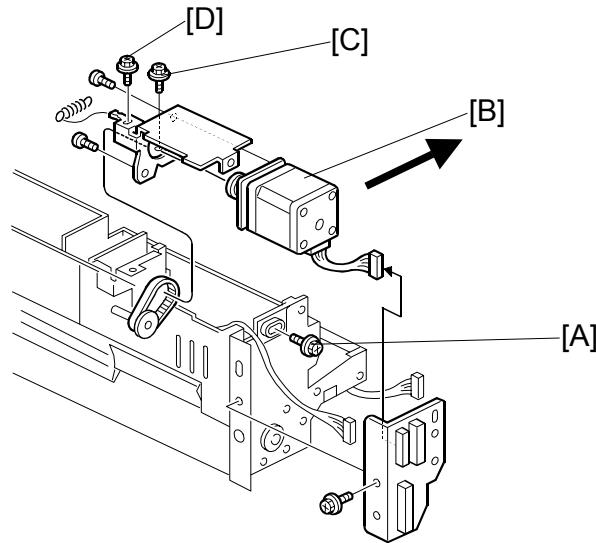
Symptom 1: Jams when paper is fed from a by-pass tray that is not used frequently

If the customer does not use the by-pass tray frequently, the rollers can become worn.

1. Visually check the by-pass tray pick-up, feed, and separation rollers.
2. If these rollers are paler than the rollers in paper trays that are more frequently used, replace the rollers in the by-pass tray.

NOTE: For more details, see 3. Replacement and Adjustment, “3.11.12 By-Pass Tray Rollers.”

Symptom 2: Jams with noise from the paper feed unit



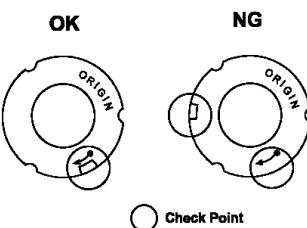
1. Remove the paper feed unit. For details, see 3. Replace and Adjustment, “3.11.8 Paper Feed Unit.”
2. Loosen screw [A].
3. Push the motor [B] toward the tray side, then tighten the screw [A].
4. Loosen screws [C] and [D], let the spring move the unit to the correct position, then tighten the screws.

Symptom 3: Other

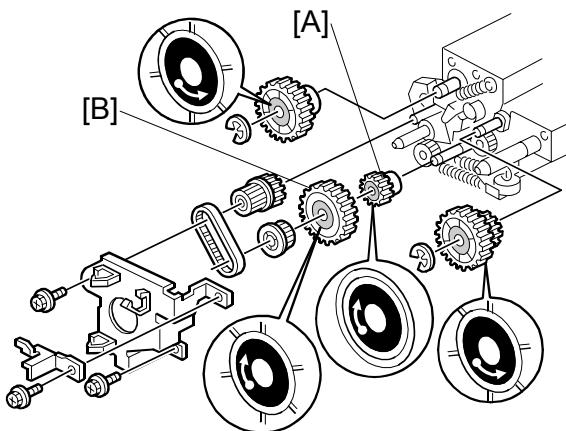
1. If none of the two symptoms 1 or 2 applies, do this procedure.
2. Use SP7504 to check the jam counts and find which SPs have high counts.
3. From the table and illustration below, find which gears must be replaced.
Example: For tray 1, if SP7504-012 is high, replace gear A, or if SP7504-008 is high, 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]

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



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6. 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.
7. If a replacement gear is not available, do this as a temporary procedure:
 - 1) Remove the paper feed unit.
 - 2) Remove the gear.
 - 3) Clean the gear shaft and inside the gear.
 - 4) Attach the gear.
 - 5) Install the paper feed unit.



SERVICE TABLES



5. SERVICE TABLES

5.1 SERVICE PROGRAM MODE

5.1.1 SERVICE PROGRAM MODE OPERATION

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

- **SP Mode (Service).** Includes all the options in the SP displays for normal maintenance and adjustments.
- **SSP Mode (Special Service).** Includes the normal SP modes and *some additional options in the SP displays not required for normal settings and adjustments.* (These SP numbers are in **bold type** and most are marked “DFU” (Design or Factory Use) in the tables.) Do not change these settings needlessly.

 **CAUTION**

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

Entering and Exiting SP mode (B140 Series/B064 Series)



1. Press the Clear Mode key.



2. Use the keypad to enter “107”.



3. Hold down Clear/Stop for at least 3 seconds.

The Copy SP or PM Counter items are displayed. The Printer SP and Scanner SP are also available if installed.

4. Enter the Service Mode.

To enter the Normal Service Mode:

Copy SP

On the touch-panel, press Copy SP.

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To enter the Special Service Mode:

Copy SP

Hold down # and then press Copy SP.

Exit

5. Press Exit to return to the copy window.

Entering and Exiting SP mode (G126)

[▲] [▼]

Press the “Up/Down” keys together for approximately 5 seconds, then press the “Enter” key.

To exit SP Mode, select “End” from the main service menu, then press the “Enter” key.

To Switch to the Copy Window for Test Printing (B140 Series/B064 Series)

1. In the SP mode display, press Copy Window to switch to the copy operation screen when you need to select paper for a test print.
2. Use the copy window (copier mode) to select the appropriate settings (paper size, etc.) for the test print.
3. Press Start  to execute the test print.
4. Press SP Mode (highlighted) to return to the SP mode screen and repeat from step 1.

Using the SP Mode

SP command numbers can be entered directly (if you know the entire number) or the command can be selected from the menus.

Direct Entry (B140 Series/B064 Series)

SP5831 (Initial Setting Clear) an executable SP that initializes the User Tools settings, can be executed immediately by just entering the numbers.

1. Press    .
2. Press Enter .
3. Press "Execute" on the touch panel.

If you know all seven digits of the SP code, enter the seven numbers and press "Execute".

However, if you do not know all the numbers, enter only the first four numbers of the seven-digit SP and press Enter . The display goes immediately to the first SP of that group. Then you can use the buttons to browse to the desired selection.

Command Select Entry (G126)

SP modes must be selected from the displayed menu. Use "Up/Down" arrow on the operation panel to locate the necessary SP mode. Then, press "Enter" to select that SP mode.

Press "Escape" to exit that Sp mode.

Button Selection Entry (B140 Series/B064 Series)

1. Refer to the SP Mode Tables at the end of this section to find the SP that you want to adjust.
2. Press the Group number on the left side SP Mode window that contains the SP that you want to adjust.
3. Use the scrolling buttons in the center of the SP mode window to display the SP number that you want to open, then press that number to expand the list.
4. Use the center touch-panel buttons to scroll to the number and title of the item that you want to set, and press $\#$. The small entry box on the right is activated and displays the default or the current setting below.
5. To enter a setting
 - Press \circlearrowleft to enter a minus sign. Then use the keypad to enter the appropriate number. The number you enter will write over the previous setting.
 - Press $\#$ to enter the setting. (If you enter a number that is out of range, the key press is ignored.)
 - When you are prompted to complete the selection, press Yes.
6. If you need to perform a test print, press Copy Window to open the copy window and select the settings for the test print. Press Start \odot twice, then press SP Mode (highlighted) in the copy window to return to the SP mode display.
7. When you are finished, press Exit twice to return to the copy window.

Service Mode Lock/Unlock (B140 Series Only)

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

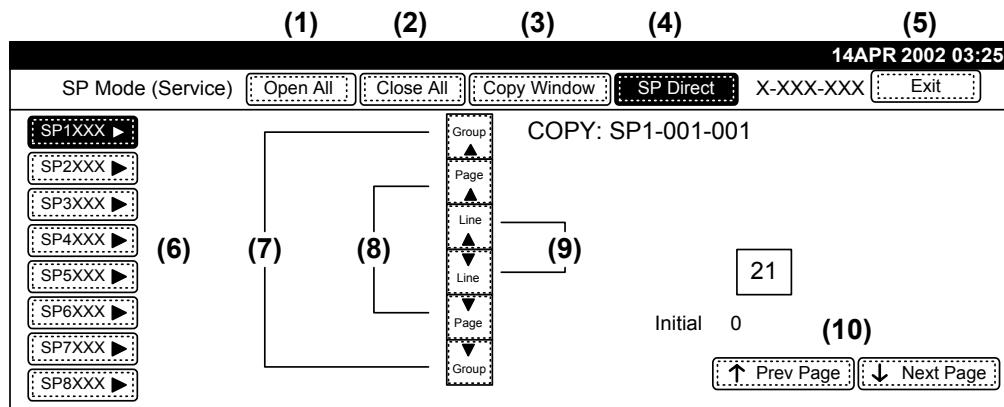
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NOTE: This function is not used on B064 series machines.

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

SP Mode Button Summary (B140 Series/B064 Series)

Here is a short summary of the touch-panel buttons.



- (1): **Open All.**
Opens all SP groups and sublevels.
- (2): **Close All.**
Closes all open groups and sublevels and restores the initial SP mode display.
- (3): **Copy Window.**
Opens the copy window (copy mode) so you can make test copies. To return to the SP mode screen, press SP Mode (highlighted) in the copy window.
- (4): **SP Direct.**
Enter the SP code directly with the number keys if you know the SP number, then press $\#$. (SP Direct must be highlighted before you can enter the number. Just press SP Direct if it is not highlighted.)
- (5): **Exit.**
Press twice to leave the SP mode and return to the copy window to resume normal operation.
- (6): **SPnxxx.**
Press any group number to open a list of SP codes and titles for that group. For example, to open the SP code list for SP1-nnn, press SP1XXX. If an SP has sublevels, it is marked with a right pointing triangle.
- (7): **Group.**
Press to scroll the display to the previous or next group.
- (8): **Page.**
Press to scroll to the previous or next display in segments the size of the screen display (page).
- (9): **Line.**
Press to scroll the display to the previous or next line, line by line.
- (10): **Prev Page or Next Page.**
Press to move the highlight on the left to the previous or next selection in the list.

SP Mode Print (SMC Print)

You can print an SMC Report to check the machine's condition. The SMC Report gives a list of the SP commands and their settings.

5990	SP Print Mode (SMC Print)
	In the SP mode, push 'Copy Window' to move to the copy screen, select the paper size, then push Start. Select A4/LT (Sideways) or larger to make sure that all the information is printed. Push 'SP Window' to go back to the SP mode, select the necessary SP Print Mode, and push Execute.
001	All (Data List)
002	SP (Mode Data List)
003	User Program Data
004	Logging Data
005	Self-Diagnostic Report
006	Non-Default (Prints only SPs that are set to values other than defaults.)
007	NIB Summary (Configuration, Systemlog, Nvramlog)
008	Capture Log
021	Copier User Program (Copy Management Report)
022	Scanner SP
023	Scanner User Program (Scanner Management Report)

5.2 RESETS

5.2.1 MEMORY ALL CLEAR: SP5801

Before shipping, the SP mode data settings are printed in an SMC Report and attached to the exposure glass of the machine for your reference. Store this report in a safe place (next to the toner collection bottle, for example). It is a list of all the SP initial settings. Refer to this list if you need to initialize one or more SPs. The initial SP settings are also written in the SP mode tables at the end of this section.

As a rule, you should always print an SMC Report before initializing or adjusting the SP settings. The SMC Report provides a concise list of all the SP commands and their current settings. The report can be used for reference if the service manual is not available.

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

SP7003-001 (B064)	Electrical total counter value
SP8381 (B140)	
SP5811-001:	Machine serial number

SP5907: Plug & Play Brand Name and Production Name Setting

1. Execute SP5990 to print out all SMC Data Lists.
2. Open SP mode 5801.
3. Press the number for the item that you want to initialize. The number you select determines which application is initialized. For example, press 1 if you want to initialize all modules.

B064 Series

No.	What It Initializes	Comments
1	All modules	Initializes items 2 ~ 15 below.
2	Engine	Initializes all registration settings for the engine and copy process settings.
3	SCS (System Control Service) /SRM	Initializes default system settings, SCS settings, operation display coordinates, and ROM update information.
4	IMH	Initializes the image file system.
5	MCS (Memory Control Service)	Initializes the automatic delete time setting for stored documents.
6	Copier application	Initializes all copier application settings.
7	Fax application	Not used.
8	Printer application	Initializes the printer defaults, programs registered, the printer SP bit switches, and the printer CSS counter.
9	Scanner application	Initializes the defaults for the scanner and all the scanner SP modes.
10	Network application	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
11	NCS (Network Control Service)	Initializes the system defaults and interface settings (IP addresses also), the SmartNetMonitor for Admin settings, WebStatusMonitor settings, and the TELNET settings.
14	DCS	Initializes the DCS (Delivery & Receive Control Service) settings.
15	UCS	Initializes the UCS (User Directory Control Service) settings.

B140 Series

No.	What It Initializes	Comments
1	All Clear	Initializes items 2 ~ 15 below.
2	Engine Clear	Initializes all registration settings for the engine and copy process settings.
3	SCS	Initializes default system settings, SCS (System Control Service) settings, operation display coordinates, and ROM update information.
4	IMH Memory Clear	Initializes the image file system. (IMH: Image Memory Handler)
5	MCS	Initializes the automatic delete time setting for stored documents. (MCS: Memory Control Service)
6	Copier application	Initializes all copier application settings.
7	Fax application	Not used.
8	Printer application	Initializes the printer defaults, programs registered, the printer SP bit switches, and the printer CSS counter.
9	Scanner application	Initializes the defaults for the scanner and all the scanner SP modes.
10	Web Service/ Network application	Deletes the Netfile (NFA) management files and thumbnails, and initializes the Job login ID. Netfiles: Jobs to be printed from the document server using a PC and the DeskTopBinder software
11	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)
14	Clear DCS Setting	Initializes the DCS (Delivery Control Service) settings.
15	Clear UCS Setting	Initializes the UCS (User Information Control Service) settings.
16	MIRS Setting	Initializes the MIRS (Machine Information Report Service) settings.
17	CCS	Initializes the CCS (Certification and Charge-control Service) settings.

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4. Press Execute, then follow the prompts on the display to complete the procedure.
5. Make sure that you perform the following settings:
 - Execute SP2115 – Laser Beam Pitch Adjustment
 - Do the printer and scanner registration and magnification adjustments ( 3.14).
 - Do the touch screen calibration ( 3.15).
 - Referring to the SMC data lists, re-enter any values, which had been changed from their factory settings.
 - Execute SP3001-002 – ID Sensor Initial Setting
6. Check the copy quality and the paper path, and do any necessary adjustments.

5.2.2 SOFTWARE AND SETTING RESET (B064 SERIES AND B140 SERIES)

Software Reset

The software can be rebooted when the machine hangs up. Do one of these two steps.

Turn the main power switch off and on.

-or-

Push and hold down   together for over 10 seconds. When the machine beeps once, release both buttons. After "Now loading. Please wait" is displayed for a few seconds, the copy window will open. The machine is ready for operation.

Resetting the System

The system settings in the UP mode can be reset to their defaults with this procedure.

1. Make sure that the machine is in the copier standby mode.
2. Press the User Tools key.
3. Hold down the "#" key and touch the "System Setting" key.
4. A confirmation message will be displayed, then press "Yes".

Resetting Copy/Document Server Features Only

The copy/document server settings in the UP mode can be reset to their defaults with this procedure.

1. Make sure that the machine is in the copier standby mode.
2. Push the User Tools key.
3. Hold down the "#" key and touch the "Copy/Document Server Features" key.
4. A message will be displayed, then press "Yes".

Resetting Scanner Features Only

The scanner settings in the UP mode can be reset to their defaults with this procedure

1. Make sure that the machine is in the copier standby mode.
2. Push the User Tools key.
3. Hold down the "#" key and touch "Scanner Features" key.
4. A message will be displayed, then press "Yes"

5.3 TEST PATTERN PRINTING

5.3.1 PRINTING TEST PATTERN: SP2902-003

Some of these test patterns are used for copy image adjustments (3.14) but most are used primarily for design testing. These test patterns do not use the IPU.

NOTE: Do not operate the machine until the test pattern is printed out completely. Otherwise, an SC may occur.

1. Enter the SP mode and select SP2902-003.
2. Enter the number for the test pattern that you want to print and press $\#$. (See the table below.)
3. When you are prompted to confirm your selection, press Yes to select the test pattern for printing.
4. Press Copy Window to open the copy window, then select the settings for the test print (paper size, etc.)
5. Press Start  twice (ignore the “Place Original” messages) to start the test print.
6. After checking the test pattern, press SP Mode (highlighted) to return to the SP mode display.
7. Exit the SP mode.

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TEST PATTERN PRINTING

Test Pattern Table

These patterns can be selected for SP2902-003

No.	Test Pattern
0	None
1	Alternating Dot Pattern (1-dot)
2	Alternating Dot Pattern (2-dot)
3	Alternating Dot Pattern (4-dot)
4	Alternating Dot Pattern (1024-dot)
5	Grid Pattern (1-dot): 0ch
6	Grid Pattern (1-dot): 1ch
7	Grid Pattern (1-dot): 2ch
8	Grid Pattern (1-dot): 3ch
9	Grid Pattern (1-dot pair)
10	Checkered Flag Pattern
11	Horizontal Line (2-dot)
12	Vertical Line (2-dot)
13	Horizontal Line (1-dot)
14	Vertical Line (1-dot)
15	Cross Stitch (Horizontal)
16	Cross Stitch (Vertical)
17	Argyle Pattern
18	Trimming Area
19	Full Dot Pattern
20	Black Band (Vertical)
21	Black Band (Horizontal)
22	Stair
23	Blank Image
24	Grid Pattern (1-dot): 0ch (with external data)
25	Trimming Area (with external data)
26	Argyle Pattern (with external data)
27	Outside Data

5.3.2 IPU FRONT/BACK TEST PATTERNS: SP2902-001,002

- **Front side pattern** (SP2902-001). Generated by the IPU in place of data scanned from the front side of an original (CCD→SBU). Generated in the scanner image correction circuit.
- **Back side pattern**. (SP2902-002. Generated by the IPU in place of data scanner from the back side of an original (CIS→SBU). Generated in the scanner image correction circuit.

The IPU test patterns are primarily used for design purposes. However, they can be used as follows:

- To confirm that the IPU is processing images correctly.
- To fine tune the image processing parameters
- To help trace the causes of poor images. For example, if the IPU test patterns are normal when the machine is producing poor quality images, then the problem must be after the IPU.

1. Enter the SP mode, select SP2902.
2. Select 001 to print a test pattern for the front side, or select 002 to print a test pattern for the back side.
3. Scroll then select the number of the test pattern that you want to print (see the table below).
4. Press #.
5. Press Copy Window to open the copy window, then select the settings for the test print (paper size, etc.)
6. Press Start ⌂ to start the test print.
7. Press SP Mode (highlighted) to return to the SP mode display.

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NOTE: Patterns 6, 8, 9, and 11 are the best choices for testing and confirming the operation of the IPU.

TEST PATTERN PRINTING

Test Pattern Table

These patterns can be selected for both SP2902-001 and 002.

No.	Test Pattern
0	None
1	Vertical Line (1-dot)
2	Vertical Line (2-dot)
3	Horizontal Line (1-dot)
4	Horizontal Line (2-dot)
5	Independent Dot (1-dot)
6	Grid Pattern (1-dot)
7	Vertical Stripes
8	Grayscale Horizontal (16-level)
9	Grayscale Vertical (16-level)
10	Grayscale Vertical-Horizontal (16-level)
11	Cross Pattern
12	Argyle Pattern
13	Density Patch (256-level)
14	Density Patch (64-level)
15	Trimming Area
16	Bandwidth (Vertical)
17	Bandwidth (Horizontal)
18	Auto Create Vertical 1-dot Line (Main Scan)
19	Auto Create Horizontal 1-dot Line (Sub Scan)
20	Auto Create Vertical 2-dot Line (Main Scan)
21	Auto Create Horizontal 2-dot Line (Sub Scan)
22	Auto Create 1-dot Independent Dots
23	Auto Create Grid 1-dot Line
24	Auto Create Vertical Stripes
25	Auto Create Horizontal Stripes
26	Auto Create Grayscale Horizontal (20 mm)
27	Auto Create Grayscale Horizontal (40 mm)
28	Auto Create Grayscale Vertical (20 mm)
29	Auto Create Grayscale Vertical (40 mm)
30	Auto Create Argyle

5.3.3 IPU PRINTING TEST PATTERN: SP2902-004

This test pattern is generated in the application input processing circuit in the IPU. The operation path is as follows:

Application input → Memory → Printer

This test pattern is primarily used for design purposes, but it can also be used to trace the source of problems beyond the IPU (in the application input or BICU) which are causing poor print quality.

1. Enter the SP mode and select SP2902-004.
2. Enter the number for the test pattern that you want to print and press $\#$. (See the table below.)

No.	Pattern
0	Off
1	Vertical Grayscale 20
2	Horizontal Grayscale 40
3	Horizontal Grayscale 20
4	Horizontal Grayscale 25
5	Caterpillar

3. When you are prompted to confirm your selection, press Yes to select the test pattern for printing.
4. Press Copy Window to open the copy window, then select the settings for the test print (paper size, etc.)
5. Press Start  twice (ignore the “Place Original” messages) to start the test print.
6. Press SP Mode (highlighted) to return to the SP mode display.
7. Switch the machine off and on.

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5.4 SOFTWARE UPDATE

The cards that are necessary for the software update, and the update procedures, are different for each machine:

Machine	Card	Procedure
B140 Series	SD Card	(☞ 5.4.1)
B064 Series	IC Memory Card	(☞ 5.4.2)

For more, refer to the applicable section below.

5.4.1 SOFTWARE UPDATE PROCEDURE: B140 SERIES

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:

- RA2K controller software
- BCU software
- LCDC (operation panel) software
- Network Sys (network) software
- Web Sys (Web Image Monitor)
- Document Server software
- NFA (Net File) software
- Printer application software
- Scanner application software
- DOS (encryption module) software

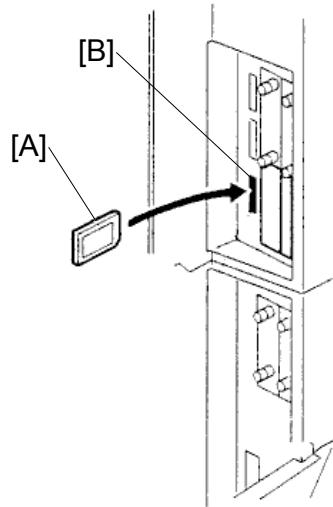
Important: Here are some important points for when you use IC cards.

- Do not connect or remove a SD card with the machine power turned on.
- Do not turn the power off while the machine downloads data from an SD card.
- The SD card is a precision item. Use it carefully. Do not keep the card in a location where there is high temperature, high humidity, or light from the sun.
- Do not bend an SD card, make scratches on it, or apply strong shock or vibration to it.

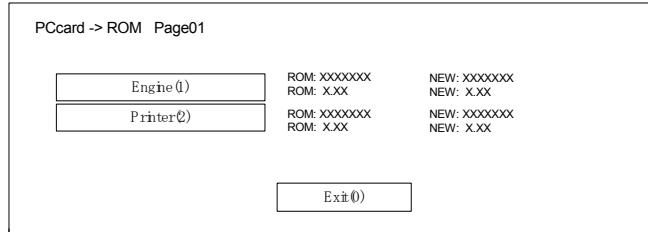
Doing the Software Update Procedure

An SD card with the software downloaded to it is necessary for this procedure.

1. Turn the main switch off.
2. Remove the SD card slot cover from the controller.
3. Hold the SD card [A] (the surface with printing must be away from the front of the machine), and install the SD card in slot C3 [B].
4. Turn the main power switch on.



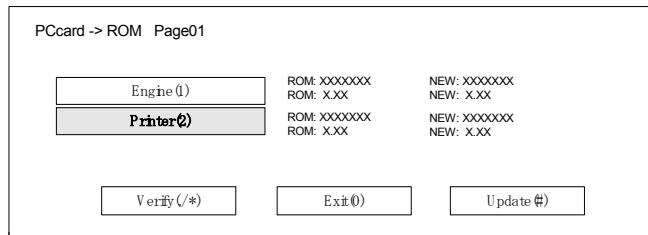
5. Stop until the version update screen is displayed. If the SD card contains more than one software application, the screen will be almost the same as the one below. The screen below shows that the SC card contains two applications: "Engine" and "Printer".



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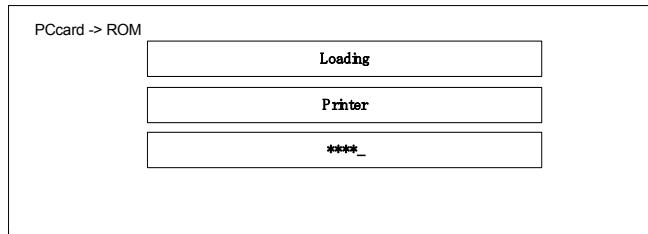
SOFTWARE UPDATE

6. To select the item for upgrade, touch the selection on the touch panel, or push the corresponding key on the 10-key pad (1 to 5) of the operation panel. The number in parentheses tells you which key to push. When you make a selection, the [Verify(/*)] and [Update(#)] buttons come on the screen.



- If you push [Exit] (or the [0] key), you go back to the usual operation screen.
 - Push the [Start] key on the operation panel to select and download all the options shown on the screen.
 - Push the [Clear] key on the operation panel if you want to cancel your selections and make new ones.
 - “ROM”: This is the number and other version information of the ROM firmware installed in the machine at this time.
 - “NEW”: This is the number and other version information of the firmware on the SD card.
7. With the selected items shown in reverse color, push the [Update] button or the [#] key on the operation panel to start the update.

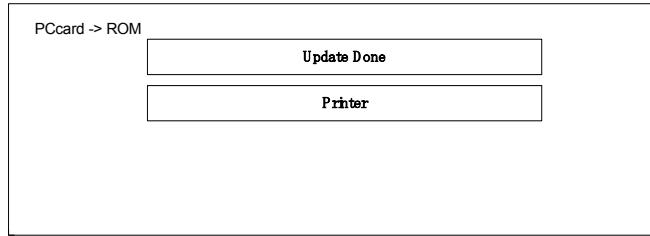
After you push [Update]:



The middle bar shows the name of the module that the machine updates at this time. (The example above shows that the machine updates the “Printer” module at this time.)

The bottom bar is a progress bar. The ‘_’ marks in the progress bar are replaced by ‘*’ marks. This progress bar cannot be displayed during the firmware update for the operation panel. But, the LED of the [Start] key on the operation panel changes from red to green to show that the update of the operation panel firmware continues.

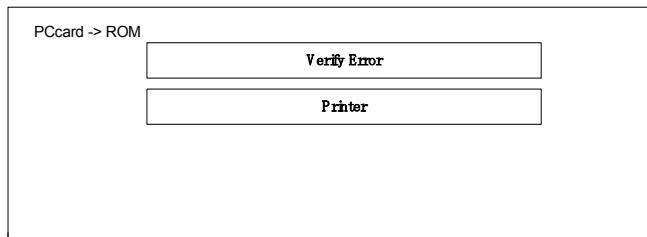
When the update is completed, you will see this screen.



After the firmware update, you will see “Update Done” in the first bar. The name of the module in the bottom bar is the name of the last module that was updated (only the name of the last module is shown, if several modules were been updated).

8. Turn the power off and on. Then, select the items that you updated, and then push the [Verify] button. This is to check that the modules were updated correctly.

If you see “Verify Error” in the first bar on the screen, then you must do the procedure again for the module shown in the bottom bar.



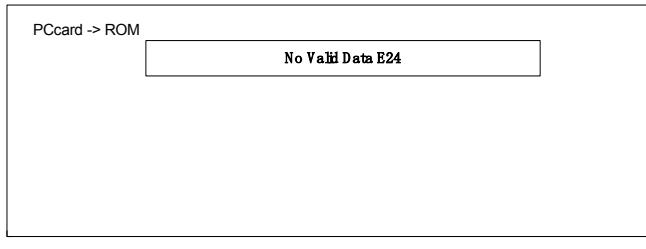
Service
Tables

NOTE: The “Verify” procedure is not necessary but it is strongly recommended.

9. After the firmware is correctly updated, turn the main power switch off.
10. Push the SD card in a small distance to release it, then pull it out of the slot.
11. Turn the main power switch on, and check that the machine operates correctly.

SOFTWARE UPDATE

Errors During Firmware Update



B140S906.WMF

If an error occurs during a download, an error message will be shown in the first line. 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 try 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.

Updating the LCDC for the Operation Panel

Use this procedure to update the LCDC (LCD Control Board).

1. Turn the copier main switch off.
2. Put the SD card into service slot C3.
3. Turn the copier main switch on.
4. Stop until the card utility screen is displayed.
5. After approximately 10 seconds, the initial screen opens in English.
6. Touch [Opepanel.DOM].
7. Touch [UpDate(#)] to start the update.

While the data downloads, the operation panel goes off.

The LED on the [Start] key flashes red at 1/2 second intervals for approximately 6 minutes.

When the update is completed, the [Start] key starts to flash at 1-second intervals.

8. Turn the copier main power switch off, remove the SD card, then turn the copier on again.

Downloading Stamp Data

After you replace or format the HDD, download the stamp data from the controller firmware to the hard disk.

1. Go into the SP mode.
2. Select SP5853 then press “Execute”.
3. Obey the instructions on the screen to complete the procedure.

Service
Tables

NVRAM Data Upload/Download

Uploading Content of NVRAM to an SD card

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

NOTE: Always upload this data to an SD card before you replace the NVRAM.

1. Before you turn the machine off, do SP5990 001 (SMC Print). This gives you a record of the NVRAM settings if the upload fails.
2. Turn the copier main power switch off.
3. Put the SD card into service slot C3, then turn the copier on.
4. Do SP5824 001 (NVRAM Data Upload) then push the “Execute” key
When uploading is completed, a file is copied to the NVRAM folder on the SD card. The file is saved to this path and filename:

NVRAM\<serial number>.NV

Here is an example for Serial Number “B0700017”:

NVRAM\B0700017.NV

5. To prevent an error during the download, write the serial number of the machine on the SD card.

NOTE: This is necessary because NVRAM data from more than one machine can be uploaded to the same SD card.

Downloading an SD Card to NVRAM

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

- If the SD card with the NVRAM data is damaged, or if the connection between the controller and BCU is defective, the NVRAM data download will not complete correctly.
- If the download does not complete correctly, do the download procedure again.
- If this does not complete correctly, input the NVRAM data manually from the SMC print that you made before you uploaded the NVRAM data.

1. Turn the copier main power switch off.
2. Put the SD card with the NVRAM data into service slot C3.
3. Turn the copier main power switch on.
4. Do SP5825-001 (NVRAM Data Download) and push the “Execute” key.

NOTE: The serial number of the file on the SD card must match the serial number of the machine. If the serial numbers do not match, the download will not complete correctly.

This procedure downloads the following data to the NVRAM:

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

5.4.2 SOFTWARE UPDATE PROCEDURE: B064 SERIES

IC cards are used to update the software and to back up important data. Here is a list of the items that can be updated or restored from an IC card:

- BCU software
- RA2K controller software
- LCDC (operation panel) software
- Scanner (DIMM) software
- PHY: NCS (NIB) software
- PHY: NFA (NetFile) software
- Stamp data
- NVRAM software

First, install the BCU software, then the RA2K controller software, then the others can be upgraded in any order.

Important: Here are some important points to keep in mind when handling and using IC cards.

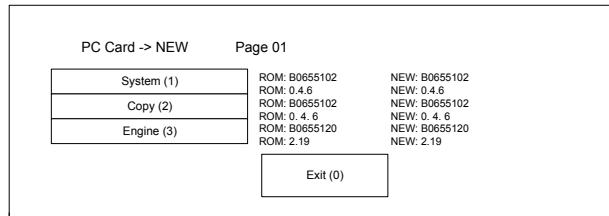
- Never insert or remove a IC card with the machine power switched on.
- Never switch the power off while the machine is downloading data from an IC card.
- The IC card is a precision item so handle it carefully. Never store the card in a location subject to high temperature, high humidity, or direct sunlight.
- Never bend the card, scratch it, or subject it to strong shock or vibration.

If an error occurs during downloading, an error code appears. For full details on these error codes and how to recover the machine, see 'Troubleshooting – Program Download' (Section 4.1).

Service
Tables

GW Controller/BCU Update

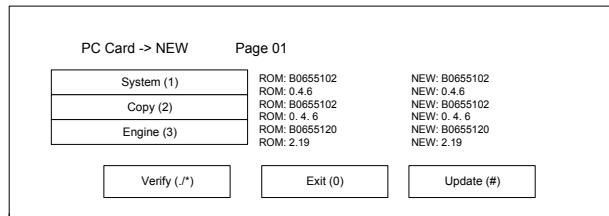
1. Switch the main power switch off.
2. Disconnect the ADF plug, remove the rear upper cover (x 2), then remove the IC card slot cover (x 1).
3. With it's a side facing up, insert the IC card into the slot.
4. Switch the machine on.
5. Wait for the update screen to open.



NOTE: 1) In the ROM number displays, the first line is the software number and the second line is the version number.

2) The left column displays the current software and version numbers of the software in the machine, and the column on the right displays the same information for the data on the IC card.

6. Press the appropriate item on the touch-panel.
 - For the RA2K controller, press System (1) and Copy (2) on the touch-panel, or you can press ① or ② on the operation panel.
 - For the BCU, press Engine (3) on the touch-panel, or you can press ③ on the operation panel.
 - To update all, press two buttons simultaneously.



7. To start the installation, press Update (#) on the touch panel, or press # on the operation panel.
8. The installation screen opens. As the installation progresses, the dashes on the display are replaced by asterisks (****---)
9. When "Power Off/On" is displayed, switch the machine off and remove the IC card.

Forced Update

If the download does not complete normally and you cannot restart the installation procedure, execute a forced installation.

1. Switch off the machine.
2. Remove the controller cover and set DIP SW1 to ON.
3. Make sure that the IC card is inserted correctly and switch the machine on.
4. Repeat from Step 5 of the previous section.

NOTE: If the IC card of a different machine is used by mistake to start the installation, the operation panel will return a message: "Download Error" or "No Matching Data". Then the machine will log SC999.

Stamp Data Update

After the hard disk has been initialized, the preset stamp data must be downloaded to the hard disk.

1. Switch the main power switch off.
2. Disconnect the ADF plug, remove the rear upper cover (× 2), then remove the IC card slot cover (× 1).
3. With the A side facing up, insert the printer IC card into the slot.
4. Switch the machine on.
5. Wait for the update screen to open.
In the lower right corner of the Download Watermark screen, press OK on the touch panel.

Service
Tables

Operation Panel Software Update

1. Switch the main power switch off.
2. Disconnect the ADF plug, remove the rear upper cover (☞ x 2), then remove the IC card slot cover (☞ x 1).
3. With it's A side facing up, put the operation panel IC card into the slot.
4. Switch the machine on.
5. Wait for the update screen to open.
Press "OpePanel.EXP" then press Update (#).
The installation download starts in about 9 seconds.
The operation panel goes off and the Start (⌚) LED flashes red during downloading.
When the download is completed, the Start (⌚) LED flashes green.

6. Switch the machine off, remove the IC card, then switch the machine on.

NOTE: 1) During the download, the operation panel switches off and only the Start key flashes red.
2) You must wait until the Start key stops flashing red and starts flashing green.
3) If a power failure occurs during downloading, E32 (Reboot After Card Insert) is logged. Remove the IC card, switch off the machine. Insert the card again and switch on the machine to restart downloading.

Scanner Update

1. Switch the main power switch off.
2. Disconnect the ADF plug, remove the rear upper cover (☞ x 2), then remove the IC card slot cover (☞ x 1).
3. With it's a side facing up, insert the scanner IC card into the slot.
4. Switch the machine on.
5. Wait for the update screen to open.
Press "Opt DIMM Scn (1)" then press Update (#).
When "Power Off/On" is displayed, the download is completed.
6. Switch the machine off, remove the IC card, then switch the machine on.

NIB Update

1. Switch the main power switch off.
2. Disconnect the ADF plug, remove the rear upper cover (☞ x 2), then remove the IC card slot cover (☞ x 1).
3. With it's a side facing up, insert the NIB data IC card into the slot.
4. Switch the machine on.
5. Wait for the update screen to open.
Press "Network Support (1)" then press Update (#).
When "Power Off/On" is displayed, the download is completed.
6. Switch the machine off, remove the IC card, then switch the machine on.

NetFile Firmware Update

Netfile firmware controls jobs to be printed from the document server using a PC and the DeskTopBinder software.

1. Switch the main power switch off.
2. Disconnect the ADF plug, remove the rear upper cover (☞ x 2), then remove the IC card slot cover (☞ x 1).
3. With it's a side facing up, insert the NetFile IC card into the slot.
4. Switch the machine on.
5. Wait for the update screen to open.
Press "Network DocBox (1)" then press Update (#).
When "Power Off/On" is displayed, the installation is completed.
6. Switch the machine off, remove the IC card, then switch the machine on.

Service
Tables

NVRAM Update

This procedure describes updating the NVRAM firmware (☞ 3.12.7).

NOTE: Before updating NVRAM, the contents of NVRAM should be uploaded to a PC memory card and then downloaded after updating the NVRAM firmware (☞ 3.12.7).

1. Switch the main power switch off.
 2. Disconnect the ADF plug, remove the rear upper cover (☞ x 2), then remove the IC card slot cover (☞ x 1).
 3. With it's a side facing up, insert the NVRAM IC card into the slot.
 4. Open the front door.
- NOTE:** The success of the download cannot be guaranteed if the front door is closed during the download execution.
5. Switch the machine on.
 6. After the download is completed, a message on the operation panel will prompt you to switch the machine off and on.
 7. Switch the machine off, remove the IC card, then switch the machine on.

The NVRAM download execution updates everything except the following SP functions:

SP7003 ***	Total Count
SP7006 ***	C/O, P/O
SP7007 ***	Other Device Counters

Firmware Update Notes

- RA2K Controller Ver. 3.51 (or later), Scanner 2.08 Ver. 2.08 (or later) support SMTP authentication.
- When installing Ver. 4.01 or later, make sure that you install the RA2K Controller firmware and other firmware as a set if the Copy Connector Kit or MLB option are not installed.
- If the Copy Connector Kit or MLB is installed, make sure that you have the correct firmware for installation. You will need the set of firmware that supports the Copy Connector Kit and MLB options.
- When updating BCU firmware Ver. 4.x or later, use RA2K controller firmware Ver. 3x or later.
- When updating RA2K controller firmware Ver. 3x or later, use BCU firmware Ver. 4.x or later.

5.5 SD CARD APPLICATION MOVE

Overview

The service program “SD Card Appli Move” (SP5873) copies application programs from one SD card to a different card.

The machine has three SD card slots. Slots 1 and 2 are used for application programs, and Slot 3 is used for servicing only.

Three SD cards cannot be used at the same time for applications. If the customer must use more than two SD cards, more than one application can be stored on the same SD card.

Important

- The data necessary for authentication is transferred with the application program to the target SD card.
- Always use a new SD card. Do not use the SD card if it was previously used with a computer. Correct operation is not guaranteed if this type of SD card is used.
- Keep the SD card in a safe place after you copy the application program from the card to another card. The SD card is the only evidence that the customer is licensed to use the application program, and the CE may need to check the SD card and its data to solve a problem in the future.
- Licensing does not let you copy PostScript data to a different SD card. But, you can copy an application from an SD card to an SD card that holds PostScript data.
- Licensing and security restrictions do not let you copy the Data Overwrite Security B735 application to a different SD card. But, you can copy other data to the original SD card that holds the B735 application.
- If an SD card was used to combine applications on that card, that SD card cannot be used for a different function.

Service
Tables

Move Exec

Do this procedure to move an application from one SD card to another.

1. Turn the main switch OFF.
2. Put the destination SD card in SD Card Slot 1.
3. Put the source SD card into SD Card Slot 3. This SD card holds the application program that you want to copy to the destination SD card in Slot 1.
4. Turn the main switch ON.
5. Go into the SP mode.
6. Do SP5873-001 "Move Exec."
7. Obey the messages on the operation panel to complete the procedure.
8. Turn the main switch OFF.
9. Remove the SD card from SD Card Slot 3.
10. Turn the main switch ON.
11. Check that the application programs combined on the SD card in Slot 1 operate correctly.

NOTE: Once "Move Exec" is executed, continue to Section 1-17-9, "Data Overwrite Security", Step 5. See RB140015 for explanation if necessary.

Undo Exec

⇒ Do this procedure if you moved an option from the original SD card to another card by mistake, and you want to restore it to the original SD card.

1. Turn the main switch OFF.
2. Put the SD cards into the SD card slots as follows:
 - **Slot 3:** The **original** option SD card.
NOTE: This card is now blank, because the option software was moved.
 - **Slot 1:** The SD card that the option software was **moved to**.
NOTE: This card now contains the option software.
3. Turn the main switch ON.
4. Do SP5873-002 (Undo Exec).
5. Follow the instructions of the operation panel messages.
6. Turn the main switch OFF.
7. Remove the SD card from Slot 1.
8. Remove the option SD card from Slot 3, and then put it in Slot 1.
9. Turn the main switch ON.
10. Do SP5990-005 (Loading Program) and make sure the program runs correctly.
11. Turn the main switch OFF.
12. Remove the option SD card from Slot 1.

5.6 SERVICE PROGRAM MODE TABLES

5.6.1 SERVICE TABLE KEY

Notation	What it means
(B064 only)	This is added to the title of an SP that is for the B064/B065 only. ^{*1}
(B140 only)	This is added to the title of an SP that is for the B140/B141/B142/B143/B163/B228 only. ^{*1}
[range/step]	Example: [-9~+9/0.1 mm] The default setting can be adjusted in 0.1mm steps in the range ± 9 . Note: The default setting for each SP mode is shown on the screen in the "Initial" box immediately below the entry box. Some of the default settings for the B064 Series and B140 Series are slightly different, so be sure to check the "Initial" box on the SP mode screen.
Italics	Comments added for reference.
*	An asterisk marks the SP's that are reset to their factory default settings after an NVRAM reset.
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

*1: SP titles without "B064 only" or "B140 only" are for the B064 and the B140 series machines.

SERVICE PROGRAM MODE TABLES

5.6.2 COPIER SERVICE TABLE

SP1xxx Feed

1001*	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 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
002	Tray-2
003	Tray-3
004	Tray-4 (Japan only)
005	By-pass Tray
006	LCT
007	Duplex Tray

1003	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 LCT
002	Duplex Tray
003*	By-pass Tray

1007	By-pass Feed Paper Size Display Use this SP to confirm the size of the paper detected in the by-pass tray if paper is skewing during feeding.
------	--------------------------------------------------------------------------------------------------------------------------------------------------

1008*	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]
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SERVICE PROGRAM MODE TABLES

1103*	Fusing Idling (B064 only)
	<p>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.</p> <p>Adjusts the fusing idling time: [0~900/1 s]</p> <p>Increase this value when fusing on the 1st and 2nd copies is not completed because of low room temperature.</p>

1104*	Fusing Temperature Control
	<p>Selects the fusing temperature control mode. [0~1/1]</p> <p>0: On/Off control 1: Phase control</p> <p>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.</p> <p><i>Phase control could interfere with radio or TV reception.</i></p>

1105*	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 for B064) B064: [150~230/1 degree C] B140: [180~205/1 degree C]
002	Normal Time (End Thermistors) (B140 Only)	Fusing temperature during the ready condition B140: [180~205/1 degree C]
003	OHP (Center Thermistor)	Fusing temperature during printing: B064: [150~230/1 degree C] B140: [180~205/1 degree C]
004	OHP (End Thermistor) (B140 Only)	Fusing temperature during printing: B140: [180~205/1 degree C]
005	Thick Paper (Center Thermistor)	Fusing temperature during printing: B064: [180~205/1 degree C] B140: [180~205/1 degree C]
006	Thick Paper (End Thermistors) (B140 Only)	Fusing temperature during printing: B140: [180~205/1 degree C]
007	Normal Paper (Center Thermistor) (B140 Only)	Fusing temperature during printing: B140: [150~230/1 degree C]
008	Normal Paper (End Thermistor) (B140 Only)	Fusing temperature during printing: B140: [180~205/1 degree C]

Service
Tables

1106	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.

SERVICE PROGRAM MODE TABLES

1112	Auto Process Control Sets the temperature of the hot roller for auto process control to start. [70°~150°/1°C] DFU	
1901*	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	Tab Sheet	[0~4/1 step] 0: 25 cpm 1: 35 cpm 2: 40 cpm 3: 45 cpm
1902*	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]	

SERVICE PROGRAM MODE TABLES

1903*	Web Job End
001	<p>Yes/No</p> <p>This determines whether the web motor is driven at the end of a job.</p> <p>[0~1/1]</p> <p>0: Off 1: On</p> <p>Enable when too much paper dust is causing copies to blacken.</p>
002	<p>Job End Condition (Continuous PPC Time)</p> <p>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'.</p> <p>[1~99/1s]</p>
003	<p>Job End Frequency</p> <p>If the web motor is driven at the end of a job, this SP determines how many times the web motor operation is executed.</p> <p>[1~5/1]</p>

1904	By-pass Tray Paper Size Correction
001	<p>Minimum Size</p> <p>Calibrates the minimum paper width position of the sensor (100 mm). Move the side fences to the 100 mm position then press Execute.</p>
002	<p>Maximum Size</p> <p>Calibrates the maximum paper width position of the sensor (A3). Move the side fences to the A3 position then press Execute.</p>

1905*	Thick Paper – By-pass Tray
	<p>Adjusts the by-pass feed clutch operation for thick paper.</p> <p>[0~1/1]</p> <p>1: On: 30 ms 0: Off:</p> <p>This setting switches the by-pass feed clutch on for 30 ms when the registration motor turns on. It only happens when thick paper is selected, to help this paper pass through the registration rollers.</p>

Service
Tables

1906	Temperature/Humidity Sensor DFU
001	Temperature Sensor
002	Humidity Sensor

1907	Pre-Fusing Idling On/Off (B140 only)
	<p>Pre-fusing idling: The hot roller turns freely to increase its temperature before thick paper or OHP goes through the fusing unit.</p> <p>[0~1/1]</p> <p>0: Pre-fusing idling is not done. 1: The fusing motor turns the hot roller with no paper in the fusing unit. This makes sure that the hot roller gets to the correct temperature. It is only done for thick paper or OHP. In this mode, the paper stops at the registration roller. This roller starts when the hot roller gets to the correct temperature.</p>

SERVICE PROGRAM MODE TABLES

1910	Japan Only
1911	Japan Only
1912	Japan Only
1920	Japan Only

SP2xxx Drum

2001*	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 Current: Photo Mode Total Adjusts the voltage applied to the grid plate when Photo mode is selected. DFU [-1400~ -2800/10 μA]

Service
Tables

2101*	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	

2103	LD Power Adjustment
001	LD0 Power Adjustment
002	LD1 Power Adjustment
003	LD2 Power Adjustment
004	LD3 Power Adjustment
005	LD0 Adjustment Start/End
006	LD1 Adjustment Start/End
007	LD2 Adjustment Start/End
008	LD3 Adjustment Start/End

SERVICE PROGRAM MODE TABLES

2104*	Small Pitch Banding Reduction DFU
001	Reduction Mode On/Off Setting:1200 dpi Switches on/off the setting that corrects uneven images generated during 1200 dpi printing. [0~1/1] 1: On 0: Off <i>Unevenness may appear in dot patterns or narrowly spaced horizontal lines, i.e. some areas may appear lighter or darker than others.</i>
002	Reduction Mode On: 1200 dpi Printing Adjusts the amount of correction for uneven images generated during 1200 dpi printing. [-20~+10/1]
003	Reduction Mode On/Off: 1200 dpi Copying Switches on/off the setting that corrects uneven images generated during 1200 dpi copying. [0~1/1] 1: On 0: Off
004	Reduction Mode On: 1200 dpi Copying 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 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]

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2114*	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	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*	Development Bias Adjustment	
001	Dev. Bias (Image)	
	Adjusts the development bias for copying when process control is off [100~800/10 V] <i>Adjust as a temporary measure to compensate for an aging drum until the old drum can be replaced.</i>	
002	ID Sensor Pattern	
	Adjusts the development bias used to create the ID sensor pattern. DFU [100~800/10 V] <i>This SP and SP2201-004 must be changed together by the same amount.</i>	
003	OHP	
	Adjusts the development bias for copying with OHP sheets. [100~800/10 V]	
004	ID Sensor Pattern Dev. Potential	
	Adjusts the development potential to create the ID sensor pattern. DFU [100~800/10 V] <i>This SP and SP2201-002 must be changed together by the same amount.</i>	
005	Vb Scale Voltage Setting	
	Sets the Vb target development bias voltage (Vb). DFU [100~800/10 V]	

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2207*	Forced Toner Supply
	<p>Rotates the toner bottle to supply toner to the toner supply unit. Press Execute to force toner supply.</p> <p><i>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.</i></p>
2208*	Toner Supply Mode
	<p>Selects the toner supply mode: Sensor Control or Image Pixel Count.</p> <p>[0~1/1]</p> <p>0: Sensor Control 1: Pixel Count</p> <p>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.</p>
2209*	Toner Supply Rate
	<p>Adjusts the toner supply rate.</p> <p>[50~2000/5 mg pers sec]</p> <p>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.</p>
2210*	ID Sensor Pattern Interval
	<p>Adjusts the time interval between making ID sensor patterns onto the drum for Vsp/Vsg detection.</p> <p>[~-200/1]</p> <p>Reduce the interval for copies that contain a high proportion of black.</p>
2220*	Vref Manual Setting
	<p>Adjusts the TD sensor reference voltage (Vref) manually.</p> <p>[100~400/1 V]</p> <p>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:</p> <ol style="list-style-type: none"> 1) Check the value of SP2220 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, put back the old development unit, and change SP2220 back to the original value.
2223*	Vt Display
	Displays the current TD sensor output voltage.

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2301*	Transfer Curr. Adj.	
	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 Unit Image Development: Front Side	[10~200/1 µA]
002	Main Unit Image Development: Back Side	[10~200/1 µA]
003	By-pass Image Development: Front Side	[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 Side	[10~200/1 µA]
008	OHP: Front Side	[10~200/1 µA]
009	Tracing Paper: Front Side	[10~200/1 µA]
010	Image Leading Edge DFU	[10~200/1 µA]
011	Image Trailing Edge DFU	[10~200/1 µA]

2310*	LCT Trans. Curr. Adj. DFU	
	Adjusts the current applied to the transfer belt during copying and paper feed from the LCT.	
001	Main Unit Image Development: Front	[10~200/1 µA]
002	Main Unit Image Development: Back	
003	Image Leading Edge: Back	
004	Image Trailing Edge: Back	
005	Image Leading Edge: Thick Paper	[10~200/1 µA]
006	Image Trailing Edge: Thick Paper	

2311*	Tray 1 Trans. Curr. Adj. DFU	
	Adjusts the current applied to the transfer belt during copying and paper feed from Tray 1.	
001	Image Leading Edge: Front	[10~200/1 µA]
002	Image Trailing Edge: Front	
003	Image Leading Edge: Back	
004	Image Trailing Edge: Back	
005	Image Leading Edge: Thick Paper	[10~200/1 µA]
006	Image Trailing Edge: Thick Paper	

2312*	Tray 2 Trans. Curr. Adj. DFU	
	Adjusts the current applied to the transfer belt during copying and paper feed from Tray 2.	
001	Image Leading Edge: Front	[10~200/1 µA]
002	Image Trailing Edge: Front	
003	Image Leading Edge: Back	
004	Image Trailing Edge: Back	
005	Image Leading Edge: Thick Paper	[10~200/1 µA]
006	Image Trailing Edge: Thick Paper	

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SERVICE PROGRAM MODE TABLES

2313	Tray 3 Trans. Curr. Adj. DFU	
	Adjusts the current applied to the transfer belt during copying and paper feed from Tray 3.	
001	Image Leading Edge - Front	[10~200/1 µA]
002	Image Trailing Edge -Front	
003	Image Leading Edge – Back	
004	Image Trailing Edge – Back	
005	Image Leading Edge – Thick Paper	
006	Image Trailing Edge – Thick Paper	

2314	Tray 4 Trans. Curr. Adj. (Japan Only)	
	Adjusts the current applied to the transfer belt during copying and paper feed from Tray 4.	
001	Image Leading Edge: Front	[10~200/1 µA]
002	Image Trailing Edge: Front	
003	Image Leading Edge: Back	
004	Image Trailing Edge: Back	
005	Image Leading Edge: Thick Paper	
006	Image Trailing Edge: Thick Paper	

2315	Bypass Trans. Curr. Adj. DFU	
	Adjusts the current applied to the transfer belt during copying and paper feed from the bypass tray.	
001	Image Leading Edge: Front	[10~200/1 µA]
002	Image Trailing Edge: Front	
003	Image Leading Edge: Back	
004	Image Trailing Edge: Back	
005	Image Leading Edge: Thick Paper	
006	Image Trailing Edge: Thick Paper	
007	Image Leading Edge: OHP	
008	Image Leading Edge: OHP	

2506*	Cont. Op. 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.]

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2507*	ID Sen. Patt. During Job
001	<p>Operation Setting</p> <p>Determines whether an ID sensor pattern is created during copy jobs.</p> <p>[0~1/1]</p> <p>0: Off 1: On</p>
002	<p>No. of Copies</p> <p>Selects the interval (number of copies) between ID sensor patterns when 1 is selected for SP2507-001</p> <p>[0~10,000/1]</p>

2602	PTL Setting (1st /2nd Copy Side) (B140 only)	
	<p>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.</p> <p>Note:</p> <ul style="list-style-type: none"> 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 Copy Side)	<p>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.</p> <p>[0~1/1]</p> <p>0: Off 1: On</p> <p>The timing can be adjusted with SP2602-002.</p>
002	OFF Timing (1st Copy Side)	<p>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 +5, then quenching will be done 5 mm from the leading edge on the front side.</p> <p>[1~3/1]</p>
003	ON/OFF Setting (2nd Copy Side)	<p>Turns the PTL lamp on/off during transfer to the front side of the paper at normal speed.</p> <p>[0~1/1]</p> <p>0: Off 1: On</p>
004	OFF Timing (2nd Copy Side)	<p>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 +5, then quenching will be done 5 mm from the leading edge on the back side.</p> <p>[1~3/1]</p>

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2801*	TD Sensor Initial Setting
	<p>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.</p> <p>Note: Execute this SP only after replacing the TD sensor or developer.</p>
2803	Charge Cleaner Start Time
	<p>Press Start to clean the charge corona wire manually.</p> <p>When copy density across the paper is uneven, clean the wire with this mode.</p>
2804	Charge Cleaner
001	<p>Operation Mode</p> <p>Determines whether the charge corona wire is cleaned at regular intervals. [0~1/1]</p> <p>0: No 1: Yes</p> <p>The time interval between cleaning is set with SP2804-002.</p>
002	<p>Number of Sheets</p> <p>Sets the interval (number of sheets printed) between charge corona wire cleanings. [100~10,000/100]</p>
2813	Exposure Gamma Table DFU
	<p>Is the gamma table is used when the printing test pattern is done with SP2902 003. [0~1/1]</p> <p>0: Gamma table used in the printing test pattern. 1: Forces test pattern output with SP2902 003 (Printing Test Pattern). The write exposure gamma table is not applied. Current image mode selection or other settings are ignored.</p>
2902	Test Pattern
001	<p>IPU Test Pattern: Front Side</p> <p>Produces a scan test pattern in place of data scanned from the front side [0~30/1] (CCD→SBU) of an original. (☞ 5.3.2)</p>
002	<p>IPU Test Pattern: Back Side</p> <p>Produces a scan test pattern in place of data scanned from the back side [0~30/1] (CIS→SBU) of an original. (☞ 5.3.2)</p>
003	<p>Printing Test Pattern</p> <p>Produces the printer test patterns. (☞ 5.3.1) [0~27/1]</p>
004	<p>IPU Printing Test Pattern</p> <p>Produces test patterns in place of scan image data. (☞ 5.3.3) [0~5/1]</p>

SERVICE PROGRAM MODE TABLES

2906*	TD Sensor Control Voltage and Check
001	TD Sensor Control Voltage Setting Adjustment mode for production. DFU [4.0~12.0/0.1]
002	Automatic Adjustment Setting Displays the TD sensor data stored when SP2801 (TD Sensor Initial Settings) is executed.

2909*	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*	Sub Scan Magnification
	Adjusts magnification in the main scan direction for copying. [-1.0~+1.0/0.1%]

2912*	Drum Reverse Rotation
001	Rotation Amount Sets the length of time the drum is reversed to clean the drum cleaning blade. [1~3/1] <i>To calculate the actual time of reverse rotation, multiply the selected value by the 15 ms.</i>
002	Rotation Interval Determines the frequency of drum reverse rotation for blade cleaning. [0~6/1 min.]

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2913*	Temperature & Humidity Display	
001	Machine Temperature	Shows the internal temperature of the machine.
002	Machine 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

SERVICE PROGRAM MODE TABLES

2930*	Transfer Idle Cleaning	
	<p>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.</p>	
2931*	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. [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 . [-30~+30/1 mm]
010	La3f	Adjusts the transfer current OFF timing for copying thick paper . [-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]

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2932*	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	DFU	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 front side copying. [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. [-30~+30/1 mm]
010	La3f		Adjusts the transfer current OFF timing for the leading edge length when with copying thick paper. [-30~+20/1 mm]
011	Lc3r		Adjusts the transfer current ON timing for the trailing edge length when copying with thick paper. [0~+20/1 mm]
012	Lc3		Adjusts the transfer current OFF timing for copying with thick paper. [-30~+30/1 mm]

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2933*	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	DFU Adjusts the area where transfer current is applied for the leading edge during front side copying. [0~+20/1 mm]
003	Lc1r	
004	Lc1	
005	La2	
006	La2f	
007	Lc2r	
008	Lc2	
009	La3	
010	La3f	
011	Lc3r	
012	Lc3	

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2934*	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	DFU	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 back side copying. [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. [-30~+30/1 mm]
010	La3f		Adjusts the transfer current OFF timing for the leading edge length when copying thick paper. [0~20/1 mm]
011	Lc3r		Adjusts the transfer current ON timing for the trailing edge length when copying with thick paper from the LCT. [0~20/1 mm]
012	Lc3		Adjusts the transfer current OFF timing for copying with thick paper from the LCT. [-30~+30/1 mm]

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2935*	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	DFU	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 backside copying. [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. [-30~+30/1 mm]
010	La3f		Adjusts the transfer current OFF timing for the leading edge length when copying thick paper. [0~20/1 mm]
011	Lc3r		Adjusts the transfer current ON timing for the trailing edge length when copying with thick paper from the LCT. [0~20/1 mm]
012	Lc3		Adjusts the transfer current OFF timing for copying with thick paper from the LCT. [-30~+30/1 mm]

2936	Transfer Current On/Off Timing (By-pass)		
001	La1	Adjusts on transfer current ON timing for front side copying. [-30~+30/1 mm]	
002	La1f	DFU	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 front side copying. [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 on thick paper. [-30~+30/1 mm]
010	La3f		Adjusts the transfer current OFF timing for the leading edge length when copying on thick paper. [0~20/1 mm]
011	Lc3r		Adjusts the transfer current ON timing for the trailing edge length when copying with thick paper. [0~20/1 mm]
012	Lc3		Adjusts the transfer current OFF timing for the leading edge when copying with thick paper. [-30~+30/1 mm]
013	La4		Adjusts the transfer current OFF timing for copying with OHP. [-30~+30/1 mm]
014	La4f		Adjusts the transfer current OFF timing for the leading edge when copying with OHP. [0~20/1 mm]
015	Lc4r		Adjusts the transfer current OFF timing for the trailing edge when copying with OHP. [0~20/1 mm]
016	Lc4		Adjusts the transfer current OFF timing for copying with OHP. [0~20/1 mm]

SERVICE PROGRAM MODE TABLES

2940*	Reface Mode	
	<p>Controls 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]</p> <p><i>Increase the setting if the rotation of the drum is not smooth, that is, when drum rotation is making noise.</i></p>	
2950 Vh Pattern Creation Setting (B140 only) DFU		
001	Exposure Level	[0~15/1]
002	Offset Light Amount	[-45 ~-100/1]
2961	Developer Adjust Mode DFU	
2962	<p>Automatic Adjustment of Drum Conditions</p> <p>Manually does a process control. Push Execute to start. But, this only operates if process control is enabled with SP3901, and if the fusing temperature is less than 100°C.</p>	
2963	<p>Installation Mode</p> <p>Use the keyboard display to enter the lot number of the developer. (The lot number is embossed on the top edge of the developer pack.) Press "Execute" to initialize the developer and force toner supply to the toner hopper at machine installation.</p>	
2964*	Transfer Cleaning Blade Forming	
001	<p>Pattern Interval Setting</p> <p>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 <i>If set to zero, then no pattern is created.</i></p>	
002	<p>Pattern Light Amount Setting</p> <p>Adjusts the intensity of light that is used to create the blade protection pattern. [0~4/1] DFU</p>	
003	<p>Transfer Current On/Off Setting</p> <p>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</p>	

2965*	Toner Pump System Adjustment DFU (B064 only)	
	<p>The transportability of toner improves if there is more than the prescribed amount of toner in the toner unit. In order to achieve this the prescribed amount of toner must be in the unit. The amount of toner pumped is determined by the amount of toner consumed, so by adjusting the amount of consumption, the machine can determine the amount of tone to pump to keep the toner supply unit topped off:</p> <p>Toner Consumed (g) = Pixel Count x Target Toner Amount</p>	
001	Toner Consumption for First Rotation	[1~100/1 g] DFU
002	Toner Consumption After First Rotation	[1~100/1 g] DFU
003	Pump Clutch On Time	[1~5/1 s] DFU
004	Pump Motor On Time	[1~20/1 s] DFU
005	Toner Consumed: Rev. Returning to First	[1~50/1 g] DFU
006	Amount of Toner Consumed Display	DFU

2966*	Drum Conditions: Periodic Adjustment (B064 Series)	
001	On/Off	
	Controls if auto process control is done and corona wire cleaning is done at a set interval. [0~1/1] 0: On 1: Off When this setting is on, auto process control and wire cleaning are done automatically (1) when the main switch is switched off for 24 hours, and (2) after each copy job.	
002	Time Setting	Sets the time interval between automatic adjustments after SP2966 001 is turned on. [1~24/1 hour]

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2966*	Drum Conditions: Periodic Adjustment (B140 Series)	
	Sets the time interval between automatic adjustments. [1~24/1 hour]	

2967*	Developer Density Adjustment Mode	
	<p>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.</p> <p>[0~1/1] 0: Off 1: On</p> <p><i>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.</i></p>	

SERVICE PROGRAM MODE TABLES

2968	Toner Exit Mode Press Execute to force used toner into the toner collection bottle. The moving parts of the cleaning and toner collection areas will turn for about 60 s with the transfer belt released.	
2969*	Toner Bottle Revolution Count 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 1 004 Copy Count Display 2 005 Copy Count Display 3 006 Copy Count Display 4 007 Copy Count Display 5 008 Copy Count Display 6 009 Copy Count Display 7	
2970*	Transfer Belt Resistance: Disp. Current Value Displays the resistance of the transfer belt and displays this value ($M\Omega$). DFU	
2971*	Trans. Interval Output 001 Voltage Displays the measurement condition of the value in SP2970. 002 Current	
2972*	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 powered off and when the machine enters the night mode. 1: On: Toner bottle fan remains on. <i>Switch on in an extremely hot environment to prevent the toner from overheating and clumping.</i>	

SP3xxx Processing

3001*	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 $4.0 \pm 0.2V$. 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 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	Vsdp 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: 1) SC350-01 logged: Vsp/Vsg/Vsdp = 0.00/0.00/0.00 2) SC350-02 logged: Vsp/Vsg/Vsdp = 5.00/5.00/5.00 3) SC350-03 logged: Vsp/Vsg/Vsdp = 0.01/0.01/0.01

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3901*	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.

SERVICE PROGRAM MODE TABLES

3902*	Drum Condition Display
001	<p>Auto Process Control On/Off</p> <p>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.</p> <p>[0~1/1] 0: Off 1: On</p>
002	<p>Vd</p> <p>Displays drum dark potential, the standard potential, electrical potential of the black areas after exposure.</p>
003	<p>Vh</p> <p>Displays standard halftone drum potential, used for laser power adjustment.</p>
004	<p>Vg</p> <p>Displays the charge grid voltage resulting from the latest Vd adjustment.</p>
005	<p>LD Level</p> <p>Displays the LD power correction value as a result of the latest Vh adjustment.</p>
006	<p>ID Sensor Pattern Potential</p> <p>Displays Vid, the latest drum surface voltage measured on the ID sensor pattern.</p>
007	<p>Vql</p> <p>Displays the drum potential after quenching.</p>
008	<p>VI</p> <p>Shows the standard electrical potential of white areas on the drum after exposure.</p>
3903*	<p>Drum Rotation Time Extension On/Off (B064 Series)</p> <p>Turn this setting on to decrease out-of-focus copy images when the machine is used immediately after power-on.</p> <p>[0~1/1] 0: Off 1: On</p> <p><i>If On is selected, after auto process control, the drum continues to rotate until the fusing unit gets to its operation temperature.</i></p>

SERVICE PROGRAM MODE TABLES

3903*	Drum Rotation Time Extension Mode (B140 Series)
001	<p>(0:OFF/1:ON)</p> <p>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.</p> <p>[0~1/1]</p> <p>0: Extra drum rotation mode is off.</p> <p>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.</p>
002	<p>Drum Rotation Time</p> <p>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.</p> <p>[120~600/1]</p>

3904	Warm Up Short Mode (B140 only)
	<p>Controls when corona wire cleaning is done to adjust the length of time that is necessary for startup.</p> <p>[0~2/1]</p> <p>0: Charge corona wire not cleaned when the machine is turned on. Warmup Time: 30 sec. (Short Process Control is done)</p> <p>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)</p> <p>2: Normal startup procedure at power on: Warmup Time: 240 sec. (Full Process Control is done; same as B064)</p> <ul style="list-style-type: none"> • 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)

SERVICE PROGRAM MODE TABLES

SP4xxx Scanner

4008*	<p>Scanner Sub Scan Magnification</p> <p>Fine adjusts the magnification in the sub scan direction for scanning by changing the speed of the scanner motor. [−0.9~+0.9/0.1 %]</p> <p><i>Setting a lower value reduces the speed of the motor and lengthens the image in the sub scan direction (direction of paper feed).</i></p> <p><i>Setting a higher value increases the speed of the motor speed and shortens the image in the sub scan direction.</i></p>
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4010*	<p>Scanner Leading Edge Registration</p> <p>Adjust the registration of the leading edge for scanning in the sub scan direction. [−0.9~+0.9/0.1 %]</p> <p><i>This setting ensures that the point where the original strikes the registration roller matches the point where the F-GATE signal will trigger the start of scanning in the main scan direction.</i></p> <p><i>Setting a larger value shifts the image away from the leading edge, and a smaller value shifts the image toward the leading edge.</i></p>
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4011*	<p>Scanner Side-to-Side Registration</p> <p>Adjusts the side-to-side registration for scanning in the main scan direction across the page. [−0.3~+0.3/0.1 %]</p> <p><i>Setting a negative value shifts the image toward the left edge, and setting a positive value shifts the image toward the right edge.</i></p>
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4012*	<p>Scanner Erase Margin</p> <p>These settings adjust the margins (erase margins) of the scanned area on the sheet. The leading, trailing, right, and left margins can be set independently.</p>
001	Leading Edge [0~0.9/0.1 mm]
002	Trailing Edge
003	Right
004	Left

4013	<p>Scanner Free Run</p> <p>Switches on/off a scanner free run. The scanning area is A3. Press “On” or “Off”.</p>	
001	Scanner Free Run: Lamp On	Performs a scanner free run with the exposure lamp on.
002	Scanner Free Run: Lamp Off	Performs a scanner free run with the exposure lamp off.

SERVICE PROGRAM MODE TABLES

4016*	White Board Read Adjust	
001	Read Start Position	Adjusts the start position for reading the standard white board. [-9~+9/1]
002	Read Width	Adjusts the width of the area read on the standard white board. [-9~+9/1]

4018*	Scanner Optical Axis Adjust	
002	Adjust Display DFU	
	Displays the result after adjusting SP4018 001 [-2~+2/0.1]	
003*	Read Position Set	Lets you adjust the scanning position for free runs. It changes the scanning stop position if the exposure glass causes black lines because it is dirty. The default is set with SP4018 001. If you adjust this SP, the leading edge registration changes and the setting of SP6006 003 for the ADF also changes. [-4~+4/0.1]
004	Read Position Set Start	If 003 is adjusted, push Execute to force the change to take effect on the main machine.

4019*	Scanner HP View Position Display
	<p>Use to display the status of each error after SC120, SC121, SC122, or SC123 is logged. (These are scanner HP sensor errors.) [0~1/1] 0: Normal 1: Abnormal</p> <p>Bit 0: Sensor OFF at start of high-speed return operation. Bit 1: Remains ON after return. Bit 2: Remains ON during return. Bit 3: Does not switch OFF during forward motion Bit 4: Switches ON at return Bit 5: Scanner HP detection is out of position.</p>

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SERVICE PROGRAM MODE TABLES

4020	ADF Scan Glass Dust Check
	This feature checks the ADF exposure glass for dust that can cause black lines in copies. If dust is detected, a message is displayed, but the process does not stop.
001	<p>Check On/Off Change (0:OFF/1:ON)</p> <p>Issues a warning if there is dust on the narrow scanning glass of the ADF when the original size is detected before a job starts. This function can detect dust on the white plate above the scanning glass, as well as dust on the glass. Sensitivity of the level of detection is adjusted with SP4020-002.</p> <p>[0~1/1]</p> <p>0: Off. No dust warning. 1: On. Dust warning. This warning does not stop the job.</p> <p>Note: Before switching this setting on, clean the ADF scanning glass and the white plate above the scanning glass.</p>
002	<p>Detect Level</p> <p>Adjusts the sensitivity for dust detection on the ADF scanning glass. This SP is available only after SP4020-001 is switched on.</p> <p>[0~8/1]</p> <ul style="list-style-type: none"> • If you see black streaks in copies when no warning has been issued, raise the setting to increase the level of sensitivity. • If warnings are issued when you see no black streaks in copies, lower the setting. • Dust that triggers a warning could move be removed from the glass by the originals in the feed path. If the dust is removed by passing originals, this is not detected and the warning remains on.
003	<p>Rejection Level</p> <p>Sets the level for vertical line correction (the black vertical lines caused by dust on the ADF exposure glass).</p> <p>[0~7/1]</p> <p>0: No vertical line correction. 1-7: Enables and sets the level for vertical line correction. If you select a higher number, this can decrease the unwanted lines caused by dust. But, it can also erase thin vertical lines of the original.</p>

4301	APS Sensor Output Display
	Displays the APS sensor output signals when an original is placed on the exposure glass. If a non-standard size is placed on the glass, asterisks (*) are displayed.
4303*	<p>APS A5 Size Detection</p> <p>Selects whether or not the copier determines that the original is A5/HLT size when the APS sensor does not detect the size.</p> <p>[0~1/1]</p> <p>0: Not detected 1: A5 SEF (51/2" x 81/2")</p> <p>If "1" is selected, paper sizes that cannot be detected by the APS sensors are detected as A5 SEF. If "0" is selected, "Cannot detect original size" will be shown.</p>

SERVICE PROGRAM MODE TABLES

4428	TBD
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4600*	Read SBU ASIC ID Displays the SBU ID code confirmed by reading the SBU after the SBU adjusts automatically at power on. [0~FFFFh/1]
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4601*	SBU PLL Adjustment Adjusts the PLL bandwidth. DFU [0~FFFFh/1]
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4605	Scanner Adjustment
001*	Flag Display Displays a flag to indicate whether density control adjustment was executed with the standard white board for the CCD. [0~1/1] 0: Not executed. 1: Executed
002	Start Starts the density adjustment for the CCD using the standard white board. Place 5 sheets of A3 plain paper on the exposure glass, then press Execute. A message is displayed to indicate the success or failure of the adjustment. DFU

4610*	White Level Adj: Next
4613*	White Level Adj.: Previous Normal
4616*	White Level Adj.: Factory
4624*	Read Offset Data
4632*	Gain Adjustment
4641*	White Adjust Loop
4646*	SBU Adjustment Error Flag
4647*	SBU Hard Error Flag
4662*	Gain Adjustment Normally
4681*	Gain Adjustment at Factory
4691*	Read Shading Data
4694*	Black Level

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4700*	Read CIS ASIC ID Reads and displays the ID of the CIS board at power.
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4701*	Frequency Adjust
4702*	Periodic Adjustment Setting

SERVICE PROGRAM MODE TABLES

4705	CIS Adjustment
001*	Flag Display
	Displays whether density adjustment was executed for the CIS, using the white roller. [0~1/1] 0: Not executed 1: Executed
002	Start
	Starts the standard white density adjustment for the CIS. Place 5 sheets of A3 on the exposure glass, then press Execute. A message is displayed to indicate the success or failure of the adjustment. DFU

4713*	CIS White Level Adjustment	DFU
4716*	CIS White Level Adjustment	
4732*	CIS Gain Adjustment	
4735*	CIS Read White Level	
4741*	CIS White Adjust Loop	
4742*	CIS White Roller Adjust Loop	
4745*	CIS Adjustment Overflow Flag	
4747*	CIS Adjustment Time Out Flag	
4762*	CIS Gain Adjustment Normal	
4765*	CIS Adjustment Overflow Flag	
4781*	CIS Gain Adjustment at Factory	

4901	Front Side Scan Correction	
001*	Front Shading Correction: AEREF Setting Changes the AEREF (Automatic Exposure Reference) value that is used in shading correction for the image scanned from the front side (SBU). DFU [0~63/1]	
002	Front Shading Correction: Shading Data Output Outputs the AEREF value that is used in shading correction for the image scanned from the front side (SBU). DFU [0~1/1] 0: Normal 1: Output After you set 001, go back to the Copy Window and push Start. (The machine automatically goes out of SP mode.)	
003*	Front Digital AE: AEREF Setting Changes the AEREF (Automatic Exposure Reference) value that is used in digital A/E processing for the image data scanned from the front side. DFU [-63/63]	
004*	Front Digital AE: Low Limit Sets the low limit at 120 for the value used in digital A/E processing for the image data scanned from the front side. DFU [0~1/1] 0: No low limit 1: Low limit set	
010*	Front Scan Image Adj. Mode: Text	Changes the density of front side (SBU) scanned image data and the MTF. [0~3/1] 0: Normal 1: Low Level 2: Medium Level 3: High Level
011*	Front Scan Image Adj. Mode: Photo	
012*	Front Scan Image Adj. Mode: Text/Photo	
013*	Front Scan Image Adj. Mode: Pale	
014*	Front Scan Image Adj. Mode: Generation	
019*	Front Scan Image Adj. Mode: Setting	

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SERVICE PROGRAM MODE TABLES

4902	Back Side Scan Correction		
	001*	Back Shading Correction: AEREF Setting	DFU
	002	Back Shading Correction: Shading Output Data	DFU
	003*	Back Digital AE: AEREF Setting	DFU
	004*	Back Digital AE: Low Limit	DFU
	010*	Back Scan Image Adj. Mode: Text	Changes the density of rear side (SBU) scanned image data and the MTF. [0~3/1] 0: Normal 1: Low Level 2: Medium Level 3: High Level
	011*	Back Scan Image Adj. Mode: Photo	
	012*	Back Scan Image Adj. Mode: Text/Photo	
	013*	Back Scan Image Adj. Mode: Pale	
	014*	Back Scan Image Adj. Mode: Generation	
	019*	Back_Scan Image Adj. Scan Select Mode DFU	Selects mode for scan selection. 0: Mode for the default scanner 1: Mode for the upgraded scanner.

4903*	Image Quality Adj.	
	Text Mode	
	Adjusts the sharpness and texture of images processed in Text mode.	
001	Text Mode (25.0~55%)	[0~10/1] 0: Softest 5: Normal 10: Sharpest
002	Text Mode (55.5~75.0%)	
003	Text Mode (75.5%~160%)	
004	Text Mode (160.5~400.0%)	
	Photo Mode Dithering	
	Adjusts the sharpness and texture of images processed in Photo mode with dithering	
005	Photo Mode Dithering (25.0~55%)	[0~6/1]
006	Photo Mode Dithering (55.5~75.0%)	0: Softest
007	Photo Mode Dithering (75.5%~160%)	3: Print Original Mode
008	Photo Mode Dithering (160.5~400.0%)	6: Sharpest
	Photo Mode Error Diffusion	
	Adjusts the sharpness and texture of images processed in Photo mode with error diffusion.	
009	Photo Mode Error Diffusion (25.0~55%)	[0~6/1]
010	Photo Mode Error Diffusion (55.5~75.0%)	0: Softest
011	Photo Mode Error Diffusion (75.5%~160%)	1: Normal (Default)
012	Photo Mode Error Diffusion (160.5~400.0%)	6: Sharpest
	Text/Photo Mode	
	Adjusts the sharpness and texture of images processed in Text/Photo mode.	
013	Text/Photo Mode (25.0~55%)	[0~10/1]
014	Text/Photo Mode (55.5~75.0%)	0: Softest
015	Text/Photo Mode (75.5%~160%)	1: Photo Priority
016	Text/Photo Mode (160.5~400.0%)	5: Normal (Default) 9: Text Priority 10: Sharpest
	Pale Mode	
	Adjusts the sharpness and texture of images processed in Pale mode.	
017	Pale Mode (25.0~55%)	[0~10/1]
018	Pale Mode (55.5~75.0%)	0: Softest
019	Pale Mode (75.5%~160%)	1: Soft
020	Pale Mode (160.5~400.0%)	5: Normal (Default) 9: Sharp 10: Sharpest
	Generation Mode	
	Adjusts the sharpness and texture of images processed in Generation mode.	
021	Generation Mode (25.0~55%)	[0~10/1]
022	Generation Mode (55.5~75.0%)	0: Softest
023	Generation Mode (75.5%~160%)	1: Soft
024	Generation Mode (160.5~400.0%)	5: Normal (Default) 9: Sharp 10: Sharpest

SERVICE PROGRAM MODE TABLES

Independent Dot Erase			
	Sets the level for independent dot erasure. The higher the setting, the stronger the effect.		
060	Independent Dot Erase: Text Mode	[0~14/1]	
061	Independent Dot Erase: Photo Mode	[0~14/1]	
062	Independent Dot Erase: Text/Photo Mode		
063	Independent Dot Erase: Pale Mode		
064	Independent Dot: Generation Mode	[0~14/1]	
Background Erase			
	Sets the level for background erase. The higher the setting, the stronger the effect.		
070	Background Erase: Text Mode	[0~255/1]	
071	Background Erase: Photo Mode		
072	Background Erase: Text/Photo Mode		
073	Background Erase: Pale Mode		
074	Background Erase: Generation Mode		
Line Width Correction			
	Selects the level of line width correction for the copy mode and direction of scanning. Where a range of settings is possible, [0~8] for example, the higher the setting, the thicker the lines.		
080	Line Width Correction: Text Mode Select	[0~8/1]	
081	Line Width Correction: Text Mode (Main Scan)	[0~1/1] 0: Off, 1: On	
082	Line Width Correction: Text Mode (Sub Scan)	[0~1/1] 0: Off, 1: On	
083	Line Width Correction: Photo Mode Select	[0~8/1]	
084	Line Width Correction: Photo Mode (Main Scan)	[0~1/1] 0: Off, 1: On	
085	Line Width Correction: Photo Mode (Sub Scan)	[0~1/1] 0: Off, 1: On	
086	Line Width Correction: Text/Photo Mode Select	[0~8/1]	
087	Line Width Correction: Text/Photo Mode (Main Scan)	[0~1/1] 0: Off, 1: On	
088	Line Width Correction: Text/Photo Mode (Sub Scan)	[0~1/1] 0: Off, 1: On	
089	Line Width Correction: Pale Mode Select	[0~8/1]	
090	Line Width Correction: Pale Mode (Main Scan)	[0~1/1] 0: Off, 1: On	
091	Line Width Correction: Pale Mode (Sub Scan)	[0~1/1] 0: Off, 1: On	
092	Line Width Correction: Generation Mode Select	[0~8/1]	
093	Line Width Correction: Generation Mode (Main Scan)	[0~1/1] 0: Off, 1: On	
094	Line Width Correction: Generation Mode (Sub Scan)	[0~1/1] 0: Off, 1: On	

SERVICE PROGRAM MODE TABLES

4904* Line Width Correct	
002	Processing Select: Photo Selects the image processing mode for Photo Mode. [0~3/1] 0: 106 line dither processing 1: 141 line dither processing 2: 212 line dither processing 3: Error diffusion processing
020	Text Mode
021	Photo Mode
022	Text/Photo Mode
023	Pale Mode
024	Generation Mode

4909 Image Processing Through DFU	
001	IPU Front Side Image Module Selects the image processing module for scanning related to the SBU. The SBU (Sensor Board Unit) converts the scanned image to digital before sending it to the IPU. [0~127/1]
002	IPU Back Side Image Module Selects the image processing module for scanning related to the CIS (Contact Image Sensors). [0~63/1]
003	IPU Plotter Image Module Selects the image processing module for scanning related to the SBU. [0~255/1]

SERVICE PROGRAM MODE TABLES

SP5xxx Mode

5023*	Punch Type Display Selection
011	Punch Type Display Selection
023	Priority Punch Position

5024*	mm/inch Display Selection
	Selects the unit of measurement. After selection, turn the main power switch off and on. [0~1/1] 0: mm 1: inch

5037	Status Lamp Detection
	Enables or disables the function of the status lamp installed above the operation panel. [0~1/1] 0: Off: Disabled 1: On: Enabled <i>This status lamp requires special ordering and installation for this machine.</i>

5044	Operation Panel Bit SW
001	SW1
002	SW2

5045	Counter Method Japan Only
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5047	Reverse Paper Display
	Determines whether the tray loaded with paper printed on one side is displayed. [0~1/1] 0: Not displayed 1: Displayed

5051	Toner Refill Detection Display Japan Only
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5104*	A3/DLT Double Count	Specifies whether the counter is doubled for A3/11"x17" paper. [0~1/ 1 /1] 0: No 1: Yes <i>If "1" is selected, the total counter and the current user code counter count up twice when A3/11"x17" paper is used.</i>
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SERVICE PROGRAM MODE TABLES

5106*	Auto Density Level
	Selects the image density levels that are used in ADS mode by assigning a value to the center notch. [1~7/1 step/notch]

5112*	Non-Std. Paper Sel.
	Determines whether a non-standard paper size can be input for the universal cassette trays (Tray 2, Tray 3) [0~1/1] 0: No 1: Yes. If "1" is selected, the customer will be able to input a non-standard paper size using the UP mode.

5113*	Optional Counter Type
001	Default Optional Counter Type
	Selects the type of counter: 0: None 1: Key card (RK3, 4) Japan only 2: Key card down 3: Pre-paid card 4: Coin Rack 5: MF key card 11: Exp Key Card (Add) 12: Exp Key Card (Deduct)
002	External Optional Counter Type
	Enables the SDK application. This lets you select a number for the external device for user access control. Note: "SDK" refers to software on an SD card. [0~3/1] 0: No external devices. 1: External device 1 2: External device 2 3: External device 3

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5118*	Disable Copying
	Temporarily denies access to the machine. Japan Only [0~1/1] 0: Release for normal operation 1: Prohibit access to machine

5120*	Mode Clear Opt. Counter Removal
	Do not change. Japan Only [0~2/1] 0: Yes. Normal reset 1: Standby. Resets before job start/after completion 2: No. Normally no reset

SERVICE PROGRAM MODE TABLES

5121*	Counter Up Timing
	Determines whether the optional key counter counts up at paper feed-in or at paper exit. Japan Only [0~1/1] 0: Feed count 1: No feed count
5126	F Original Size Selection
	Sets the original size that the machine detects for F sizes. [0~2/1] 0: 8hf x 13 1: 8hf x 13qr 2: 8 x 13 Note: hf = 1/2, qr = 1/4
5127	APS OFF Mode
	This SP can be used to switch APS (Auto Paper Select) off when a coin lock or pre-paid key card device is connected to the machine. [0~1/1] 0: On 1: Off
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 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) 1: NA (North America) 2: EU (Europe) After changing the value, turn the main power switch off and on.

SERVICE PROGRAM MODE TABLES

5141*	Tray for Tab Sheets (B064 only)
	Sets the height of the tabs for each paper source for tab sheets. The height of a tab is measured from the edge of the paper to the edge of the tab.
011	Tab Height: By-pass
012	Tab Height: Tray 1
013	Tab Height: Tray 2
014	Tab Height: Tray 3
015	Tab Height: Tray 4
016	Tab Height: Tray 5
	[0~152/0.1 mm] The height of the tab is the value set for this SP multiplied by 0.1. The default tab height then is: $130 \times 0.1 = 13$ mm To change this setting, measure the height of the tab in millimeters, multiply by 10, then input the result. For example, if the measured height of the tab is 10 millimeters, enter "100".
5150	Bypass Length Setting
	Sets up the by-pass tray for long paper. [0~1/1] 0: Off 1: On. Sets the tray for feeding paper up to 600 mm long. <i>With this SP selected on, paper jams are not detected in the paper path.</i>
5154	Exit Tray Set
001	Limitless
	Allows 'limitless' paper output. [0~1/1] 0: Off 1: On. Once the initial paper exit is full, another will be selected automatically. Switch this SP on only in the job queuing mode, i.e. when printing jobs in the order of selection with the print priority function. Print priority is set in the User Tools mode (System Settings> General Features> Print Priority> Job Order.)
002	Override
	Allows overriding of the setting for SP5154-001. [0~1/1] 0: Off 1: On This SP can be set only when on is selected for SP5154-001. Changing this setting has no effect on the machine when SP5154-001 is off.

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SERVICE PROGRAM MODE TABLES

5158	Cover Feeder Size Change (B140 only)	
	Controls the paper size for the cover interposer tray. Select a paper size and push [Execute]. Note: hf = 1/2, qr = 1/4	
001	For all versions	[0~1/1] 0: A3 1: 12 x 18
002	For Europe and China	[0~2/1] 0: 8hf x 13 1: 8 x 13 2: 8qr x 13
003	For USA	[0~1/1] 0: 8hf x 14 1: 8hf x 13
004	For USA	[0~1/1] 0: 11 x 8hf 1: 10hf x 7qr
005	For USA	[0~1/1] 0: 8hf x 11 1: 8 x 10
006	For Europe and China	[0~1/1] 0: 8K 1: 11 x 17
007	For Europe and China	[0~1/1] 0: 16K (267 x 195) 1: 8hf x 11
008	For Europe and China	[0~1/1] 0: 16K (195 x 267) 1: 11 x 8hf

5162	App. Switch Method (B140 only)
	Controls if the application screen is changed with a hardware switch or a software switch. [0~1/1] 0: Soft Key Set 1: Hard Key Set

5165	2-Fold Position
001	A3T
002	B4T
003	A4T
004	DLTT
005	LGT
006	LTT
007	12 x 18
008	Other

5169	CE Login (B140 only)	
	<p>If you will change the printer bit switches, you must 'log in' to service mode with this SP before you go into the printer SP mode.</p> <p>[0~1/1]</p> <p>0: Off. Printer bit switches cannot be adjusted.</p> <p>1: On. Printer bit switches can be adjusted.</p>	

5212*	Page Numbering	
003	Duplex Printout Left/Right Position	Horizontally positions the page numbers printed on both sides during duplexing. [-10~+10/1 mm] 0 is center, minus is left, + is right.
004	Duplex Printout High/Low Position	Vertically positions the page numbers printed on both sides during duplexing. [-10~+10/1 mm] 0 is center, minus is down, + is up.

5302*	Set Time	
	<p>Sets the time clock for the local time.</p> <p>[-1440~1440/1 min.]</p>	

5307*	Summer Time															
	<p>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:</p> <ul style="list-style-type: none"> - 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. <p>The settings for 002 and 003 are done with 8-digit numbers:</p> <table border="1"> <thead> <tr> <th>Digits</th> <th>Meaning</th> </tr> </thead> <tbody> <tr> <td>1st, 2nd</td> <td>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)</td> </tr> <tr> <td>3rd</td> <td>Day of the week. 0: Sunday, 1: Monday</td> </tr> <tr> <td>4th</td> <td>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.</td> </tr> <tr> <td>5th, 6th</td> <td>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.</td> </tr> <tr> <td>7th</td> <td>The number of hours to change the time. 1 hour: 1</td> </tr> <tr> <td>8th</td> <td>If the time change is not a whole number (1.5 hours for example), digit 8 should be 3 (30 minutes).</td> </tr> </tbody> </table>		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 8 should be 3 (30 minutes).
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001	Setting	Enables/disables the settings for 002 and 003. [0~1/1] 0: Disable 1: Enable														
003	Rule Set (Start)	The start of summer time.														
004	Rule Set (End)	The end of summer time.														

SERVICE PROGRAM MODE TABLES

5404*	User Code Count Clear	
	001	User Code Counter Clear Clears all user code counters. Press # to execute.
5501*	PM Alarm	
	Sets the count level for the PM alarm. [0~9999/1] 0: Alarm disabled The PM alarm goes off when the print count reaches this value multiplied by 1,000.	
5504*	Jam Alarm	Japan Only
5505*	Error Alarm	
5507	Supply Alarm Japan Only (B064 only)	
001	Paper Supply Alarm	Enables or disables the call function. Japan Only [0~1/1] 0: No call 1: Call If this SP is enabled, use the settings below to set the supply level to initiate a call for each paper size.
002	Staple Supply Alarm	
003	Toner Supply Alarm	
128*	Interval: Other	
132*	Interval: A3	
133*	Interval: A4	
134*	Interval: A4	
141*	Interval: B4	
142*	Interval: B5	
160*	Interval: DLT	
164*	Interval: LG	
166*	Interval: LT	
172*	Interval HLT	

SERVICE PROGRAM MODE TABLES

5508* CC Call Japan Only		
001	Jam Remains	Enables/disables initiating a call. [0~1/1] 0: Disable 1: Enable
002	Continuous Jams	
003	Continuous Door Open	
004	Low Call Mode	Enables/disables the new call specifications designed to reduce the number of calls. [0~1/1] 0: Normal mode 1: Reduced mode
011	Jam Detection: Time Length	Sets the length of time to determine the length of an unattended paper jam. [03~30/1] This setting is enabled only when SP5508-004 is enabled (set to 1).
012	Jam Detection Continuous Count	Sets the number of continuous paper jams required to initiate a call. [02~10/1] This setting is enabled only when SP5508-004 is enabled (set to 1).
013	Door Open: Time Length	Sets the length of time the remains opens to determine when to initiate a call. [03~30/1] This setting is enabled only when SP5508-004 is enabled (set to 1).
021	Jam Operation: Time Length	Determines what happens when a paper jam is left unattended. [0~1/1] 0: Automatic Call 1: Audible Warning at Machine
022	Jam Operation: Continuous Count	Determines what happens when continuous paper jams occur. [0~1/1] 0: Automatic Call 1: Audible Warning at Machine
023*	Door Operation: Time Length	Determines what happens when the front door remains open. [0~1/1] 0: Automatic Call 1: Audible Warning at Machine

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SERVICE PROGRAM MODE TABLES

5513 Parts Alarm Level Count Japan Only		
001	Normal	Sets the parts replacement alarm counter to sound for the number of copies. [1~999/1 K]
002	DF	Sets the parts replacement alarm counter to sound for the number of scanned originals. [1~999/1 K]

5514 Parts Alarm Level Japan Only		
001	Normal	
002	DF	

SERVICE PROGRAM MODE TABLES

5801	Memory Clear	
	Clears all data from NVRAM. Before executing this SP, print an SMC Report. ( 5.2.1)	
001	All Clear	Initializes items 2 ~ 15 below.
002	Engine Clear	Initializes all registration settings for the engine and copy process settings.
003	SCS	Initializes default system settings, SCS (System Control Service) settings, operation display coordinates, and ROM update information.
004	IMH Memory Clear	Initializes the image file system. (IMH: Image Memory Handler)
005	MCS	Initializes the automatic delete time setting for stored documents. (MCS: Memory Control Service)
006	Copier application	Initializes all copier application settings.
007	Fax application	Not used.
008	Printer application	Initializes the printer defaults, programs registered, the printer SP bit switches, and the printer CSS counter.
009	Scanner application	Initializes the defaults for the scanner and all the scanner SP modes.
010	Web Service/ Network application	Deletes the Netfile (NFA) management files and thumbnails, and initializes the Job login ID. Netfiles: Jobs to be printed from the document server using a PC and the DeskTopBinder software
011	NCS	Initializes the system defaults and interface settings (IP addresses also), the SmartNetMonitor for Admin settings, WebStatusMonitor settings, and the TELNET settings. (NCS: Network Control Service)
014	Clear DCS Setting	Initializes the DCS (Delivery Control Service) settings.
015	Clear UCS Setting	Initializes the UCS (User Information Control Service) settings.
016	MIRS Setting	Initializes the MIRS (Machine Information Report Service) settings. (B140 only)
017	CCS	Initializes the CCS (Certification and Charge-control Service) settings. (B140 only)

Service
Tables

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.

SERVICE PROGRAM MODE TABLES

5803	Input Check
	Displays signals received from sensors and switches. (5.7.1)

5804	Output Check
	Turns on the electrical components individually for testing. (5.7.2)

5807	Option Connection Check	
001	ADF (1:Connect)	Displays a 1 or 0 to indicate the status of the device.: [0~1/1] 1: Connected 0: Not connected
002	Bank (1:Connect)	
003	LCT (1:Connect)	
004	Finisher (1:Connect)	

5811*	Machine No. Setting	Enters the machine serial number. DFU
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5812*	Service Tel. No. Setting	
001	Service	Inputs the telephone number of the CE (displayed when a service call condition occurs.)
002	Facsimile	Use this to input the fax number of the CE printed on the Counter Report (UP mode). Not Used
003	Supply	Displayed on the initial SP screen.
004	Operation	Allows the service center contact telephone number to be displayed on the initial screen.

5816* Remote Service (B064 only)		
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 customer engineer start or end the remote machine check with CSS or NRS; to do this, push the center report key.
003	Function Flag	Enables and disables remote diagnosis over the NRS network. [0~1/1] 0: Disables remote diagnosis over the network. 1: Enables remote diagnosis over the network.
004	Communication Test Call	Push "Execute" to do a transmission test call for NRS. The test gives a value from 0 to 99. [0~1/1] 0: Normal end (center operates) 1: Normal end (center does not operate) Other: Not normal
005	Device Information Call	Push "Execute" to test if the machine operates. [0~1/1] 0: Normal end (center operates) 1: Normal end (center does not operate) Other: Not normal
006	Device Information Call Display	Controls if the item for initial setting of the screen for the NRS device-information notification-call is shown. [0~1/1] 0: Enabled. Item initial setting not shown. 1: Disable. Item for initial setting shown.
007	SSL Disable	Controls if RCG (Remote Communication Gate) confirmation is done by SSL during an RCG send for the NRS over a network interface. [0~1/1] 0: Yes. SSL not used. 1: No. SSL used.
008	RCG Connect Timeout	Sets the length of time (seconds) for the time-out when the RCG (Remote Communication Gate) connects during a call via the NRS network. [1~90/1 sec.]
009	RCG Write to Timeout	Sets the length of time (seconds) for the time-out when sent data is written to the RCG during a call over the NRS network. [0~100/1 sec.]
010	RCG Read Timeout	Sets the length of time (seconds) for the timeout when sent data is written from the RCG during a call over the NRS network. [0~100/1 sec.]

SERVICE PROGRAM MODE TABLES

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] 0: No. Access denied 1: Yes. Access granted.
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5821*	Remote Service Address Japan Only (B140 only)	
001*	CSS PI Device Code	Sets the PI device code. After you change this setting, you must turn the machine off and on.
002*	RCG IP Address	Sets the IP address of the RCG (Remote Communication Gate) destination for call processing at the remote service center. [00000000h~FFFFFFFh/1]

5824	NVRAM Data Upload	
	Uploads the NVRAM data to an IC flash memory card (B064) or an SD card (B140). Push Execute. Note: When uploading in this SP mode data, the front door must be open.	

5825	NVRAM Data Download	
	Downloads data from an IC flash memory card (B064) or an SD card (B140) to the NVRAM in the machine. After downloading is completed, remove the card and turn the machine power off and on.	

SERVICE PROGRAM MODE TABLES

5828	Network Setting	
012	Device Name (B064 only)	
	Use these SPs to perform the network settings.	
075	DNS Server From DHCP	(B064 only)
076	DNS Server 1	
077	DNS Server 2	
078	DNS Server 3	
079	Domain Name (Ethernet)	
050	1284 Compatibility (Centro)	Enables and disables bi-directional communication on the parallel connection between the machine and a computer. [0~1/1] 0:Off 1: On
051	Data Transfer (Centro)	Determines the speed of data transmission on the parallel line connection between the machine and a computer. [0~1/1] 0: Slow 1: Fast With the "Slow" setting, there is a 120-microsecond interval from the time an STB signal is sent until the data is moved.
052	ECP (Centro)	Disables and enables the ECP feature (1284 Mode) for data transfer. [0~1/1] 0: Disabled 1: Enabled
065	Job Spooling	
066	Job Spooling Clear: Start Time	
069	Job Spooling (Protocol)	
084	Print Settings List	Prints a list of the NCS parameter settings.
090	TELNET (0:OFF 1:ON)	Disables or enables Telnet operation. If this SP is disabled, the Telnet port is closed. [0~1/1] 0: Disable 1: Enable
091	Web (0:OFF 1:ON)	Disables or enables the Web operation. [0~1/1] 0: Disable 1: Enable

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Tables

5831	Initial Setting Clear
	Press Execute to initialize all User Tool settings and restore them to their factory settings.

SERVICE PROGRAM MODE TABLES

5832	HDD Formatting
	Enter the SP number for the partition to initialize, then press #. When the execution ends, cycle the machine off and on.
001	HDD Formatting (All)
002	HDD Formatting (IMH)
003	HDD Formatting (Thumbnail)
004	HDD Formatting (Job Log)
005	HDD Formatting (Printer Fonts)
006	HDD Formatting (User Info.)
007	Mail RX Data
008	Mail TX Data
009	HDD Formatting (Data for a Design)
010	HDD Formatting (Log)
011	HDD Formatting (Ridoc DiskTopBinder)

5833	e-Cabinet Enable
	Enables the e-Cabinet function. Then, the user names in the cabinet are enabled for use with the POP server. [0~1/1] 0: Disabled 1: Enabled

5834	Operation Panel Image Exposure Function
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5836*	Capture	
001	Capture Function (0:Off 1:On)	
	With this function disabled, the settings related to the capture feature cannot be initialized, displayed, or selected. [0~1/1] 0: Disable 1: Enable	
002	Panel Setting	
	Determines whether each capture related setting can be selected or updated from the initial system screen. [0~1/1] 0: Disable 1: Enable The setting for SP5836-001 has priority.	
003	Print Backup Function (0:Off 1:On)	
	Turns the print backup feature on and off. Default: 0 (Off) When this feature is on, the print backup features are shown in the initial system settings. <i>Enabled only when optional File Format Converter (MLB:Media Link Board) is installed.</i> [0~1/1] 0: Disable 1: Enable	
061	Captured File Resend (B064 only)	
	To decrease the load on the network, only the captured document is sent (0), or the network accurately keeps the captured document and it can be sent again (1).	
071	Reduction for Copy Color	[0~3/1] 0:1 1:1/2 2:1/3 3:1/4 DFU
072	Reduction for Copy B&W Text	[0~6/1] 0:1 1:1/2 2:1/3 3:1/4 6:2/3
073	Reduction for Copy B&W Other	[0~6/1] 0:1 1:1/2 2:1/3 3:1/4 6:2/3
074	Reduction for Printer Color	[0~3/1] 0:1 1:1/2 2:1/3 3:1/4 DFU
075	Reduction for Printer B&W	[0~6/1] 0 1 1:1/2 2:1/3 3:1/4 6:2/3
076	Reduction for Printer B&W HQ	[1~5/1] 1:1/2 3:1/4 4:1/6 5:1/8
081	Format for Copy Color	[0~3/1] 0: JFIF/JPEG, 1: TIFF/MMR, 2: TIFF/MH, 3: TIFF/MR DFU
082	Format for Copy B&W Text	[0~3/1] 0: JFIF/JPEG, 1: TIFF/MMR, 2: TIFF/MH, 3: TIFF/MR
083	Format Copy B&W Other	[0~3/1] 0: JFIF/JPEG, 1: TIFF/MMR, 2: TIFF/MH, 3: TIFF/MR
084	Format for Printer Color	[0~3/1] 0: JFIF/JPEG, 1: TIFF/MMR, 2: TIFF/MH, 3: TIFF/MR DFU

SERVICE PROGRAM MODE TABLES

085	Format for Printer B&W	[0~3/1] 0: JFIF/JPEG, 1: TIFF/MMR, 2: TIFF/MH, 3: TIFF/MR
086	Format for Printer B&W HQ	[0~3/1] 0: JFIF/JPEG, 1: TIFF/MMR, 2: TIFF/MH, 3: TIFF/MR
091	Default for JPEG	[5~95/1]
		Sets the JPEG format default for documents sent to the document management server with the MLB, with JPEG selected as the format. <i>Enabled only when optional File Format Converter (MLB: Media Link Board) is installed.</i>
092	High Quality for JPEG	Sets the quality level of JPEG images for high quality sent to the Document Server with the MLB (Media Link Board). [5~95/1]
093	Low Quality for JPEG	Sets the quality level of JPEG images for low quality sent to the Document Server with the MLB (Media Link Board). [5~95/1]
094	Default Format for Backup Files (B140 Only)	Sets the format of the backup files. [0~2/1] 0: TIFF 1: JPEG 2: For printing This feature can be selected only if SP5836-3 is set to "1".
095	Default Resolution for Backup Files	Sets the resolution conversion ratio for the backup files. [0~3/1] 0: 1x 1: 1/2x 2: 1/3 x 3: 1/4x
097	Default Compression for Backup Files	Sets the rate of compression for the backup files. [0~2/1] 0: Standard 1: Low 2: High
098	Back Projection Removal (B140 Only)	Removes the ghost images that are copied from the back sides of two-sided originals. [0~1/1] 0: Disable 1: Enable

5839*	IEEE 1394 (B064 only)
	This SP is displayed only when an IEEE 1394 (firewire) card is installed.
004	Host Name
	Enter the name of the device used on the network. Example: RNP0000000000
007	Cycle Master
	Enables or disables the cycle master function for the 1394 bus standard. [0~1/1] 0: Disable (Off) 1: Enable (On)
008	BCR Mode
	Determines how BCR (Broadcast Channel Register) operates on the 1394 standard bus when the independent node is in any mode other than IRM. (NVRAM: 2-bits) [Always Effective]
009	IRM 1394a Check
	Conducts a 1394a check of IRM when the independent node is in any mode other than IRM. [0~1/1] 0: Checks whether IRM conforms to 1394a 1: After IRM is checked, if IRM does not conform then independent node switches to IRM.
010	Unique ID
	Lists the ID (Node_Unique_ID) assigned to the device by the system administrator. Bit0: Off Bit1: On OFF: Does not list the Node_Unique_ID assigned by the system administrator. Instead, the Source_ID of the GASP header in the ARP is used. ON: The Node_Unique_ID assigned by the system administrator is used, and the Source_ID of the GASP header in the ARP is ignored. Also, when the serial bus is reset, extra bus transactions are opened for the enumeration.
011	Logout
	Handles the login request of the login initiator for SBP-2. (1-bit) Bit0: Off Bit1: On OFF: Disable (refuse login) Initiator retry during login Login refusal on arrival of login request (standard operation) ON: Enable (force logout) Initiator retry during login Login refusal on arrival of login request, and the initiator forces the login.
012	Login
	Enables or disables the exclusive login feature (SBP-2 related). Bit0: Off Bit1: On OFF: Disables. The exclusive login (LOGIN ORB <input checked="" type="checkbox"/> xclusive it) is ignored. ON: Enables. Exclusive login is in effect.

SERVICE PROGRAM MODE TABLES

013	Login MAX
	Sets the maximum number of logins from the initiator (6-bits) [0~63/1] 0: Reserved 63: Reserved

5840*	IEEE 802.11b (B064 only)
006	Channel MAX
	Sets the maximum range of the bandwidth for the wireless LAN. This bandwidth setting varies for different countries. [1~14/1]
007	Channel MIN
	Sets the minimum range of the bandwidth for operation of the wireless LAN. This bandwidth setting varies for different countries. [1~14/1]
011	WEP Key Select
	Determines how the initiator (SBP-2) handles subsequent login requests. [0~1/1] 0: If the initiator receives another login request while logging in, the request is refused. 1: If the initiator receives another login request while logging in, the request is refused and the initiator logs out. <i>Displayed only when the wireless LAN card is installed.</i>

5841*	Supply Name Setting	
	Press the User Tools key. These names appear when the user presses the Inquiry button on the User Tools screen.	
001	Toner Name Setting: Black	Enter the name of the toner in use.
011	StapleStd1	Standard Staples
012	StapleStd2	
013	StapleStd3	
014	StapleStd4	
021	StapleBind1	Saddle-Stitch Staples
022	StapleBind2	
023	StapleBind3	

5842*	001	Net File Analysis Mode Setting	Bit SW 0011 1111
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SERVICE PROGRAM MODE TABLES

5844*	USB
001	Transfer Rate
	Sets the speed for USB data transmission. [Full Speed] [Auto Change]
002	Vendor ID
	Sets the vendor ID: Initial Setting: 0x05A Ricoh Company [0x0000~0xFFFF/1] DFU
003	Product ID
	Sets the product ID. [0x0000~0xFFFF/1] DFU
004	Device Release No.
	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 Server
These are delivery server settings.	
001	FTP Port No.
	[0~65535/1]
002	IP Address
	Use this SP to set the Scan Router Server address. The IP address under the transfer tab can be used with the initial system setting. [0~FFFFFFFFF/1]
003	Retry Interval (B064 only)
	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 delivery scanner or SMTP server. [60~900/1]
004	Number of Retries (B064 only)
	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]
005	Capture Server IP Address (B064 only)
	Sets the capture server IP address for the capture feature. [0~0xFFFFFFFF]
006	Delivery Error Display Time
	Use this setting to set the length of time that the message is shown when a test error occurs during document transfer with the NetFile application and an external device. [0~999/1]
007	Delivery Options (B064 only)
	Connects to the Scan Router server for delivery of scanned documents. [0~1/1] 0: No connection to Scan Router delivery server 1: Connected to Scan Router server for delivery of scanned documents.

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SERVICE PROGRAM MODE TABLES

008	IP Address (Secondary)
	Sets the IP address that is given to the computer that is the secondary delivery server for Scan Router. This SP lets you set only the IP address, and does not refer to the DNS setting.
009	Delivery Server Model (B140 only)
	Lets you change the model of the delivery server that is registered by the I/O device. [0~4/1] 0: Unknown 1: SG1 Provided 2: SG1 Package 3: SG2 Provided 4: SG2 Package
010	Delivery Srv. Capability (B140 only)
	Changes the functions that the registered I/O device can do. [0~255/1] Bit7 = 1 Comment information exists Bit6 = 1 Direct specification of mail address possible Bit5 = 1 Mail RX confirmation setting possible Bit4 = 1 Address book automatic update function exists Bit3 = 1 Fax RX delivery function exists Bit2 = 1 Sender password function exists Bit1 = 1 Function to link MK-1 user and Sender exists Bit0 = 1 Sender specification required (if set to 1, Bit6 is set to "0")
011	Delivery Srv.Capability (Ext) (B140 only)
	These settings are for future use. They will let you increase the number of registered devices (in addition to those registered for SP5845 010). There are eight bits (Bit 0 to Bit 7). All are unused at this time.

5846*	UCS Setting
001	Machine ID (Delivery Server) Displays the unique device ID in use by the delivery server directory. The value is only displayed and cannot be changed. This ID is created from the NIC MAC or IEEE 1394 EUI. The ID is displayed as either 6-byte or 8-byte binary. 6-byte %02X.%02X.%02X.%02X.%02X.%02X 8-byte %02X.%02X.%02X.%02X.%02X.%02X.%02X.%02X
002	Machine ID Clear (Delivery Server) Clears the unique ID of the device used as the name in the file transfer directory. Execute this SP if the connection of the device to the delivery server is unstable. After clearing the ID, the ID will be established again automatically by cycling the machine off and on.
003	Maximum Entries Changes the maximum number of entries that UCS can handle. [2000~50000/1] If a value smaller than the present value is set, the UCS managed data is cleared, and the data (excluding user code information) is displayed.
004	Delivery Server Model (B064 only) Changes the model of the transfer server that is registered for the I/O device. [0~4/1] 0: Not used 1: SG1 Provided 2: SG1 Package 3: SG2 Provided 4: SG2 Package
005	Delivery Server Capability (B064 only) Changes the functions that can be done by the server that is registered for the I/O device. Bit 7 = 1 Comment information Bit 6 = 1 Address direct entry possible Bit 5 = 1 Mail Rx confirmation possible Bit 4 = 1 Address book auto update Bit 3 = 1 Fax Rx function
006	Delivery Server Retry Timer Sets the interval for retry attempts when the delivery server fails to acquire the delivery server address book. [0~255/1 s] 0: No retries
007	Delivery Server Retry Times Sets the number of retry attempts when the delivery server fails to acquire the delivery server address book. [0~255/1]

SERVICE PROGRAM MODE TABLES

008	Delivery Server Maximum Entries
	Lets you set the maximum number of account entries and information about the users of the delivery server controlled by UCS. [20000~50000/1]
010	LDAP Search Timeout (B140 only)
	Sets the length of the time-out for the search of the LDAP server. [1~255/1]
048	Initialize Delivery Info.
	Push [Execute] to delete all items (this does not include user codes) in the delivery address book that is controlled by UCS.
049	Initialize LDAP Info.
	Push [Execute] to delete all items (this does not include user codes) in the LDAP address book that is controlled by UCS.
050	Initialize Local Info.
	Clears everything (including users codes) in the directory information managed by UCS. However, the accounts and passwords of the system administrators are not deleted.
051	Upload All Directory Info.
	Uploads all directory information to the IC card.
052	Download All Directory Info.
	Downloads all directory information from the IC card.
053	Update Info Clear (B140 only)
	Deletes the address book uploaded from the SD card in the slot. Deletes only the files uploaded for that machine. This feature does not work if the card is write-protected. Note: After you do this SP, go out of the SP mode, turn the power off. Do not remove the SD card until the Power LED stops flashing.
070	LDAP Attribute (Name) (B140 only)
	Lets you input a search attribute other than the default mail (cn) for the LDAP server search.
071	LDAP Attribute (Mail) (B140 only)
	Lets you input a search attribute other than the default mail address (mail) for the LDAP server search.
072	LDAP Attribute (Fax) (B140 only)
	Lets you input a search attribute other than the default facsimile telephone number (FacsimileTelephoneNumber) for the LDAP server search.
073	LDAP Attribute (Organization) (B140 only)
	Lets you input a search attribute other than the default organization name (o) for the LDAP server search.
074	LDAP Attribute (Organizational Unit) (B140 only)
	Lets you input a search attribute other than the default organization unit name (ou) for the LDAP server search.

090	Plain Data Forbidden (B140 only)
	Lets you to prevent the address from transmission as plain data. This is a security function that prevents unauthorized access to address book data. [0~1/1] 0: No check. Address book data not protected. 1: Check. Enables operation of UCS without data from HDD or SC card and without creating address book information with plain data.
091	FTP Auth. Port Settings
	Sets the FTP port to get the delivery server address book that is used in the individual authorization mode. [0~65535/1]
094	Encryption Status
	Shows the status of the encryption function of the address book on the LDAP server. [0~255/1] No default
098	UCS Setting; Bit SW2
099	UCS Setting; Bit SW

5847*	Net File Resolution Reduction		
	5847 1 through 5847 6 changes the default settings of image data sent externally by the Net File page reference function. [0~2/1]		
	5847 21 sets the default for JPEG image quality of image files controlled by NetFile. “NetFile” refers to jobs to be printed from the document server with a PC and the DeskTopBinder software.		
	002	Rate for Copy B&W Text	
	003	Rate for Copy B&W Other	
005	Rate for Printer B&W	[0~4 /1] 0: 1x 1: 1/2x	
	006	Rate for Printer B&W HQ	2: 1/3x 3: 1/4x
	021	Network Quality Default for JPEG	
	Sets the default value for the quality of JPEG images sent as NetFile pages. This function is available only with the MLB (Media Link Board) option installed. [5~95/1]		

SERVICE PROGRAM MODE TABLES

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.	
001	Acc. Ctrl. : NetFile (Lower 4 Bits Only)	
	Bit switch settings. 0000: No access control 0001: Denies access to DeskTop Binder. Access and deliveries from Scan Router have no effect on capture.	
002	Acc. Ctrl. : Repository (Lower 4 Bits)	0000: No access control 0001: Denies access to DeskTop Binder.
003	Acc. Ctrl. : Doc. Svr. Print (Lower 4 Bits)	Switches access control on and off. 0000: OFF
004	Acc. Ctrl. : User Directory (Lower 4 Bits)	
005	Acc. Ctrl. : Delivery Input (Lower 4 Bits)	
009	Acc. Ctrl. : Job Control (Lower 4 Bits)	
011	Acc. Ctrl: Device Management (Lower 4 Bits)	
021	Acc. Ctrl: Delivery (Lower 4 Bits)	
022	Acc. Ctrl: User Administration (Lower 4 Bits)	
041	Acc. Ctrl: Security Setting (Lower 4 Bits)	
100	Repository: Download Image Max. Size	[1~1024/1 K]

5849*	Installation Date	
	Displays or prints the installation date of the machine.	
001	Display	The “Counter Clear Day” has been changed to “Installation Date” or “Inst. Date”.
002	Switch to Print	Determines whether the installation date is printed on the printout for the total counter. [0~1/1] 0: No Print 1: Print

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5850* Address Book Function (B064 only)		
001	Switch Module	Selects the module for managing user information. [0~1/1] 0: SCS 1: UCS
002	Select Title	Selects the default heading of the address book. [2~4/1] 2: Heading 1 3: Heading 2 4: Heading 3

5852 SMTP (B064 only)		
		Simple Mail Transfer Protocol. The protocol for communication between Internet main MTAs (Message Transfer Agents).
001	Server Name	Sets the server name.
002	Port Number	Sets the port number

5853 Stamp Data Download		
		Push [Execute] to download the fixed stamp data from the machine ROM onto the hard disk. Then these stamps can be used by the system. If this is not done, the user will not have access to the fixed stamps ("Confidential", "Secret", etc.). You must always execute this SP after replacing the HDD or after formatting the HDD. Always switch the machine off and on after executing this SP.

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

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SERVICE PROGRAM MODE TABLES

5857	Save Debug Log (B140 Only)
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. (●5.8.2)
006	Save to SD Card
	Specifies the decimal key number of the log to be written to the SD Card. (●5.8.2)
009	Copy HDD to SD Card (Latest 4 MB)
	Takes the most recent 4 MB of the log written to the hard disk and copies them to the SD Card. (●5.8.2) <i>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.</i>
010	Copy HDD to SD Card Latest 4 MB Any Key)
	Takes the log of the specified key from the log on the hard disk and copies it to the SD Card. (●5.8.2) <i>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.</i>
011	Erase HDD Debug Data
	Erases all debug logs on the HDD
012	Erase SD Card Debug Data
	Erases all debug logs on the SD Card. If the card contains only debugging files generated by an event specified by SP5858, the files are erased when SP5857 010 or 011 is executed. <i>To enable this SP, the machine must be cycled off and on.</i>
013	Free Space on SD Card
	Displays the amount of space available on the SD card.
014	Copy SD to SD (Latest 4MB)
	Copies the last 4MB of the log (written directly to the card from shared memory) onto an SD card.
015	Copy SD to SD (Latest 4MB Any Key)
	This SP copies the log on an SD card (the file that contains the information written directly from shared memory) to a log specified by key number. (● 5.8.4)
016	Make HDD Debug
	This SP creates a 32 MB file to store a log on the HDD. (● 5.8.4)
017	Make SD Debug
	This SP creates a 4 MB file to store a log on an SD card. (● 5.8.4)

SERVICE PROGRAM MODE TABLES

5858*	Debug Save When (B140 Only)	
	<p>These SPs select the content of the debugging information to be saved to the destination selected by SP5857 002.</p> <p>SP5858 3 stores one SC specified by number. <i>Refer to Section 4 for a list of SC error codes.</i></p>	
001	Engine SC Error (0:OFF 1:ON)	Stores SC codes generated by copier engine errors. [0~1/1] 0: OFF 1: ON
002	Controller SC Error (0:OFF 1:ON)	Stores SC codes generated by RA2K controller errors. [0~1/1] 0: OFF 1: ON
003	Any SC Error	[0~65535/1]
004	Jam (0:OFF 1:ON)	Stores jam errors. [0~1/1] 0: OFF 1: ON

5859*	Debug Log Save Function (B140 Only)	
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. (→5.3.1) [-9999999~9999999/1]
002	Key 2	
003	Key 3	
004	Key 4	
005	Key 5	
006	Key 6	
007	Key 7	
008	Key 8	
009	Key 9	
010	Key 10	

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SERVICE PROGRAM MODE TABLES

5860*	SMTP/POP3/IMAP4 (B140 only)
020	Partial Mail Receive Timeout [1~168/1] Sets the amount of time to wait before saving a mail that breaks up during reception. The received mail is discarded if the remaining portion of the mail is not received during this prescribed time.
021	MDN Response RFC2298 Compliance Determines whether RFC2298 compliance is switched on for MDN reply mail. [0~1/1] 0: No 1: Yes
022	SMTP Auth. From Field Replacement Determines whether the FROM item of the mail header is switched to the validated account after the SMTP server is validated. [0~1/1] 0: No. "From" item not switched. 1: Yes. "From" item switched.
025	SMTP Auth. Direct Setting

5866	E-Mail Alert
001	Notice Function of Email
005	Add Date Function

5870	Common Key Info Writing (B140 only)
	Writes to flash ROM the common proof for validating the device for NRS specifications. Note: This SP is for future use and currently not used.

5871	HDD Function Disable (B140 Only)
	Disables the HDD functions by suppressing all functions that write data to the HDD. After this SP is executed, the machine must be switched off and on to enable the setting. [0~1/1] 0: OFF 1: ON Note: This SP is intended for use during installation of the Data Overwrite Security Unit B735 (a new option). For more, see section "1. Installation".

SERVICE PROGRAM MODE TABLES

5873	SD Card Apli.	
	Allows you to “integrate” (copy) applications from SD cards onto other SD cards. (☞ 5.5)	
001	Move Exec	Executes the move from one SD card to another.
002	Undo Exec	This is an undo function. It cancels the previous execution.

5875	SC Auto Reboot
	Determines whether the machine reboots automatically when an SC error occurs. [0~1/1] 0: The machine reboots automatically when the machine issues an SC error and logs the SC error code. If the same SC occurs again, the machine does not reboot. 1: The machine does not reboot when an SC error occurs. The reboot does not occur for Type A SC codes.

5876	Security Clear
001	All Clear
011	Clear NCS Security Setting
015	Clear UCS Security Setting

5878	Option Setup
001	Option Setup

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SERVICE PROGRAM MODE TABLES

5907*	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. After selecting, press the "Original Type" key and "#" key at the same time. When the setting is completed, the beeper sounds five times.
5913	Switchover Permission Time
002	Print Application Timer
	Sets the length of time to elapse before allowing another application to take control of the display when the application currently controlling the display is not operating because a key has not been pressed. [3~30/1 s]
102	Print Application Set
5914*	Application Counter Display
	Selects the total counts that will be displayed in the UP mode.
001	Print Counter
003	Copier Counter
	[0~1/1] 0: Not displayed 1: Displayed
5915*	Mechanical Counter Detection
	Displays whether the mechanical counter is installed in the machine. [0~2/1] 0: Not detected. 1: Detected 2: Unknown
5918*	A3/DLT Counter Display
	Determines whether pressing the counter key displays count confirmation: system initial settings → system manager settings → counter [0~1/1] 0: No display 1: Display This SP affects the display only, and has no effect on SP5104 (A3/DLT Double Count).

SERVICE PROGRAM MODE TABLES

5921	Key Card Setting Japan Only
	Enables operation with a key card device outside Japan. [0~1] 0: No key card operation 1: Key card operation

5952	Fact Adjust Mode DFU
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5958	Feed Cl. Start Timing
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5959*	Paper Size (B064 only)																
001	Tray 1 Tray 1 (Tandem Tray) can accept two paper sizes: A4 LEF and LT LEF. Enter the correct number to select the size of the paper loaded in Tray 1: A4 LEF: 5 LT LEF: 38 If the A3/DLT Tray Kit B475 is installed, enter the correct number to select the size of the paper loaded in the kit: <table border="1"> <thead> <tr> <th>Size</th><th>No.</th><th>Size</th><th>No.</th></tr> </thead> <tbody> <tr> <td>A3 SEF</td><td>132</td><td>11" x 17"</td><td>160</td></tr> <tr> <td>B4 SEF</td><td>141</td><td>8 1/2" x 14" SEF</td><td>167</td></tr> <tr> <td>A4 LEF</td><td>5</td><td>8 1/2" x 11" LEF</td><td>38</td></tr> </tbody> </table>	Size	No.	Size	No.	A3 SEF	132	11" x 17"	160	B4 SEF	141	8 1/2" x 14" SEF	167	A4 LEF	5	8 1/2" x 11" LEF	38
Size	No.	Size	No.														
A3 SEF	132	11" x 17"	160														
B4 SEF	141	8 1/2" x 14" SEF	167														
A4 LEF	5	8 1/2" x 11" LEF	38														
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: A4 LEF: 5 B5 LEF: 14 LT LEF: 38 If the LG/B4 Feeder Kit B474 is installed, enter the correct number to select the size of the paper loaded in the kit: A4 SEF: 133 B4 SEF: 141 LG SEF: 164																
006	Cover Sheet 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".																

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SERVICE PROGRAM MODE TABLES

5959*	Paper Size (B140 only)	
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 1: 8½ x 11 (LT) 2:A3 3:B4 4:A4R (A4 SEF) 5:11 x 17	6: 8½ x 14 R (LG SEF) 7: 8½ x 11 R (LT SEF) 8: B5 9: B5 R (B5 SEF) 10: Custom Size
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 1:8½ x 11 2:B5 3:A4 R (A4 SEF)	4: 8½ x 14 R (LG SEF) 5: B4 R (B4 SEF) 6: 8½ x 14 R (LG 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".	

5967*	Copy Server: Set Function	
	[0~1/1] 0: ON 1: OFF Enables and disables the document server. This is a security measure that prevents image data from being left in the temporary area of the HDD. After changing this setting, you must switch the main switch off and on to enable the new setting.	

5970	Debug Serial Output	
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5974*	Cherry Server	Do not change. Japan Only
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SERVICE PROGRAM MODE TABLES

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)
002	SP (Mode Data List)
003	User Program Data
004	Logging Data
005	Self-Diagnostic Report
006	Non-Default (Prints only SPs set to values other than defaults.)
007	NIB Summary
008	Capture Log
021	Copier User Program
022	Scanner SP
023	Scanner User Program

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Tables

SP6xxx Peripherals

6006*	ADF Registration Adjustment
001	ADF Horizontal Registration (Front)
	Adjusts the side-to-side registration for the front in ADF mode. [-3~+3/0.1 mm]
002	ADF Horizontal Registration (Back)
	Adjusts the side-to-side registration for the back in ADF mode. [-3~+3/0.1 mm]
003	ADF Vertical Registration (Front)
	Adjusts the vertical registration for the front in ADF mode. [-30 ~+24/1 mm] -30 = -5.1 mm +24 = +4.1 mm
004	ADF Vertical Registration (Back)
	Adjusts the vertical registration for the back in ADF mode. [-30 ~+30/1 mm] -30 = -5.1 mm +30 = +5.1 mm
005	ADF Buckle Adjustment 1
	Adjusts the roller timing at the skew correction sensor/entrance roller. A higher setting causes more buckling. [-12.0~+12/1 mm] -12 = -3.0 mm +12 = +3.0 mm
006	ADF Buckle Adjustment 2
	Adjusts the roller timing at the interval sensor/scanning roller. A higher setting causes more buckling. [-8.0~+8/1 mm] -8 = -2 mm +8 = +2 mm
007	ADF Trailing Edge Erase Margin (Front)
	These settings adjust the erase margin for the trailing edges for the front. [-20~+20/1 mm] -20 = -10 mm +20 = +10 mm
008	ADF Trailing Edge Erase Margin (Back)
	These settings adjust the erase margin for the trailing edges for the back. [-20~+20/1 mm] -20 = -10 mm +20 = +10 mm

SERVICE PROGRAM MODE TABLES

6007	ADF Input Check
Displays signals received from sensors and switches in the ADF. (☞ 5.7.3)	
001	Group 1
002	Group 2
003	Group 3

6008	ADF Output Check
Turns on the ADF electrical components individually for testing. (☞ 5.7.4)	
001	Feed Motor: Forward
002	Feed Motor: Reverse
003	Transport Motor: Forward
004	Exit Motor: Forward
005	Pick-up Motor: Reverse
006	Bottom Plate Motor: Forward
007	Bottom Plate Motor: Reverse

6009	DF Free Run	Performs an ADF free run in duplex original mode.
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6010	DF Stamp Position Adj.
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6016	Original Size Determination Priority
Allows selection of alternate settings for automatic original size detection. (☞ 6.4.9)	

6017*	Sheet Through Magnification
This changes the magnification by adjusting the speed of scanning. [-50~+50/1 %]	

6020*	ADF Contact Mode In/Out
If the original is small (B6, A5, HLT), the delay sensor detects the leading edge of the sheet and delays the original at the entrance roller for the prescribed number of pulses to buckle the leading edge and correct skew. [0~1/1] 0: Delay skew correction only for small originals 1: Delay skew correction for all originals, regardless of size. (May reduce the scanning speed of the ADF)	

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SERVICE PROGRAM MODE TABLES

6105*	Staple Position Adjustment	
	Adjusts the stapling position in the main scan direction. [-3.5~+3.5/0.5 mm] <i>A larger value shifts the stapling position outward.</i>	
6107* Finisher Free Run (B478/B706 only)		
	Selects the free run mode during testing.	
001	Stapling Mode	Stapling only
002	All Mode	All finisher operation is tested
003	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	Shift Mode	Tests the shift mode
6113*	Punch Hole Adjustment	
001	2-Holes	
	Adjusts the punch hole position in the sub-scan direction for the punch unit with two punch holes. [-7.5~+7.5/0.5 mm] <i>A larger value shifts the punch holes towards the edge of the paper.</i>	
002	3-Holes	
	Adjusts the punch hole position in the sub-scan direction for the punch unit with three punch holes. [-7.5~+7.5/0.5 mm] <i>A larger value shifts the punch holes towards the edge of the paper.</i>	
6116*	Staple Limit Counter for Thick Paper	
	Multiply the normal limit by this number to determine the staple limit number for thick paper. [1~3/1 sheet]	
6117	Finisher Input Check	Displays the signals received from sensors and switches of the finisher. (☞ 5.7.5)
001	INPUT1	
002	INPUT2	
003	INPUT3	
004	INPUT4	
005	INPUT5	
006	INPUT6	
6118	Finisher Output Check	Turn on the electrical components of the finisher individually for test purposes. (☞ 5.7.6)
6119*	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	

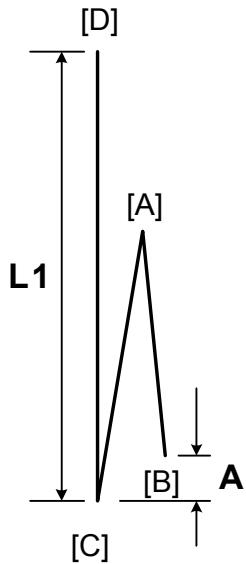
SERVICE PROGRAM MODE TABLES

6120*	Staple Jogger Adjustment	
001	A3	Allows fine adjustment of the staple unit jogger fences for different paper sizes. [-1.5~+1.5/0.5 mm]
002	B4	
003	A4T (SEF)	
004	A4Y (LEF)	
005	B5T (SEF)	
006	B5Y (LEF)	
007	DLT	
008	LG	
009	LTT (LT SEF)	
010	LTY (LT LEF)	
011	Other	

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SERVICE PROGRAM MODE TABLES

6122	Z-Fold Position Adjust (B140 only)
	These settings adjust the positions of the first and second folds of paper fed through the Z-folding unit. The first 8 settings (001-008) adjust the position of the first fold for the paper sizes listed. The second 8 settings (009-016) adjust the position of the second fold. The illustration shows the position of the sheet while it goes through the lower exit rollers after it has been folded.
	1st Fold
001	A3
002	B4
003	A4 SEF
004	DLT
005	LG
006	LT SEF
007	12 x 18
008	1st Fold: Other
	2nd Fold
009	A3
010	B4
011	A4 SEF
012	DLT
013	LG
014	LT SEF
015	12 x 18
016	Other



6900*	ADF Up/Down Setting
	Sets the timing for raising and lowering the bottom plate of the ADF. [0~1/1] 0: Original set 1: Copy start

6902*	Fold Position Adjustment
	Adjusts the fold position of the copies for saddle-stitching according to paper size for multiple sheets. The amount of folding skew for single and multiple sheets is different. This SP adjusts for multiple sheets. SP6903 adjusts for single sheets. Note (B140 only): Always set SP6902 first and then set SP6903. If the order is reversed, the value of SP6902 is added to SP6903. This causes the folding position to shift for single-sheets and causes the booklet to skew.
001	A3
002	B4
003	A4T (SEF)
004	B5T (SEF)
005	DLT
006	LG
007	LT (SEF)
008	Others

6903*	Fold Position Adjustment (1 Sheet) (B140 only)
	Adjusts the fold position for single sheets to minimize vertical skew. The amount of folding skew for single and multiple sheets is different. This SP adjusts for single sheets. SP6902 adjusts for multiple sheets. Note: Always set SP6902 first and then set SP6903. If the order is reversed, the value of SP6902 is added to SP6903. This causes the folding position to shift for single-sheets and causes the booklet to skew.
001	A3
002	B4
003	A4T (SEF)
004	B5T (SEF)
005	DLT
006	LG
007	LT (SEF)
008	Others

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Tables

6904	Punch Function Enabled (Z-Fold) (B140 only)
	Switches on the hole punch for use when the machine operates with the Z-fold unit. [0~1/1] 0: No punching with Z-fold unit operation 1: Punching allowed with Z-fold unit operation

SERVICE PROGRAM MODE TABLES

SP7xxx Data Logs

7001*	Main Motor Operation Time	Displays the total drum rotation time.
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7002* Original Counter (B064 only)		
001	Total	Displays the total number of fed originals.
002	Copy	Displays the total number of fed originals in copy mode.
003	Fax	Not used.
004	Document Box	Displays the total number of fed originals in document server mode.
005	Scanner	Displays the total number of fed originals in scanner mode.
006	Others	Displays the total number of fed originals in other modes.

7003* Print Counter (B064 only)		
		Displays the total number of prints in all modes.
001	Total Count	Displays the total number of prints in all modes.
002	Copy	Displays the total number of prints in copy mode.
004	Printer	Displays the total number of prints in printer mode.
005	Others	Displays the total number of prints in other modes.

7006* C/O, P/O Counter (B064 only)		
001	C/O	Displays the number of sets of copies per original when making 10 or more sets of copies. When making 15 sets of copies of an original, this counter value will increase by "6".
002	P/O	Displays the number of sets of prints per original data when making 10 or more sets. When making 15 sets of prints of an original data, this counter value will increase by "6".

7007* Other Device Counters (B064 only)		
001	Duplex Counter	Displays the count total for the selected item.
002	A3/DLT Counter	
003	Staple Counter	
004	Scan Counter	

SERVICE PROGRAM MODE TABLES

7101*	Print Count – Paper Size (B064 only)	
	Displays the total number of prints by paper size.	
005	A4 LEF	Displays the number of copies by paper size. Display range: 0~9999999
006	A5 LEF	
014	B5 LEF	
038	LT LEF	
044	HLT LEF	
132	A3 LEF	
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	

7105*	P Type Counter (B064 only)	
001	Normal	Displays the total number of prints by paper type. A single-sided print counts as 1 and a two-sided print counts as 2.
002	Recycled	
003	Special	Display range: 0~9999999
004	Color 1	
005	Color 2	
006	Letterhead	
007	Label	
008	Thick	
009	OHP	
010	Used	
011	Index (Tab Sheets)	
012	Tracing	
255	Others	

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7201*	Total Scan Counter	(B064 only)
	Displays the total number of scanned originals.	

7204*	Print Counter – Paper Trays (B064 only)	
	Displays the total number of sheets fed from each paper tray.	
001	By-pass	
002	Tray 1	
003	Tray 2	
004	Tray 3	
005	Tray 4	
006	LCT	
007	Cover Interposer	

SERVICE PROGRAM MODE TABLES

7205*	ADF Counter (B064 only)	
	Displays the total number of originals fed by the ADF.	
7206*	Staple Counter (B064 only)	Displays the total number of staples used.
	001 Normal	
	002 Booklet	
7209*	Punch Counter (B064 only)	Displays the total number of times the punch has been used.
7301*	Number of Copies by Reproduction Ratio (B064 only)	
001	Reduce 25% <-> 49%	Displays the total number of prints for each reproduction ratio range. Display range: 0~9999999 SP7848 clears these counters.
002	Reduce 50% <-> 99%	
003	Full Size	
004	Enlarge 101% <-> 200%	
005	Enlarge 201% <-> 400%	
006	Free Mag. %	
007	Free Size Mag. %	
008	Auto Reduce/Enlarge	

SERVICE PROGRAM MODE TABLES

7304*	Copy: Number of Copies by Mode (B064 only)
	Displays the total number of copies by original type. SP7837 or SP7848 clears this counter.
001	Text
002	Text/Photo
003	Photo
004	Generation Copy
005	Pale
006	Punching
007	Repeat
008	Sort
009	Staple
010	Series
011	Erase
012	Duplex
013	ADF
014	Double Copy
015	Duplex Original
016	Divide Copy
017	Combine 1 Side
018	Combine 2 Side
019	Booklet Gathering
020	Pamphlet Saddle-Stitch
021	Batch
022	SADF
023	Mixed Sizes
024	Stamp
025	Cover/Chapter Sheet
026	Chapter Page

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7305	Copy: Display Jobs by Continuous (B064 only)
	Displays the total number of multiple print jobs by the size of the sets. SP7838 or SP7848 clears this counter.
001	1 to 1
002	1 to 2 <-> 5
003	1 to 6 <-> 10
004	1 to 11 <-> 20
005	1 to 21 <-> 50
006	1 to 51 <-> 100
007	1 to 101 <-> 300
008	1 to 310 <-> Over

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7306	Copy: Display Jobs by Mode (B064 only)
	Displays the total number of copy jobs by operation mode (stapling, punching, etc.). SP7839 or SP7848 clears this counter.
7320	Doc. Svr. – Scan Count
	Displays the total number of pages stored in the document server. SP7840 or SP7848 clears this counter.
7321	Doc. Svr. – Original Size Display
	Displays by paper size the total number of originals stored in the document server. SP7841 or SP7848 clears this counter.
7323	Doc. Svr. – Print Size Display
	Displays by paper size the total number of prints stored in the document server. SP7842 or SP7848 clears this counter.
7324	Doc. Svr. – Print Job Counter
	Displays the total number of jobs executed from the document server. SP7843 or SP7848 clears this counter.
7325	Doc. Svr. – Job Count (Page No)
	Displays the number of pages in jobs executed from the document server. SP7844 or SP7848 clears this counter.
7326	Doc. Svr. – Job Count (File No.)
	Displays the number of files in jobs executed from the document server. SP7845 or SP7848 clears this counter.
7327	Doc. Svr. – Job Count (Set No.)
	Displays the number of sets of multiple page print jobs executed from the document server. SP7846 or SP7848 clears this counter.
7328	Doc. Svr. – Job Count (Print Mode)
	Displays the total number of prints in print mode executed from the document server. SP7847 or SP7848 clears this counter.

7401*	Total SC Counter
	Displays the total number of SCs logged.

7403*	SC History
	Displays information about the 10 most recent service calls (Code, Total, Date, and Details).

7502*	Total Paper Jam Counter
	Displays the total number of copy jams.

7503*	Total Original Jam Counter
	Displays the total number of original jams.

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7504	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)	On Screen	What It Means
1		At power on	
3	53	Tray 1	1st Paper Feed SN
4	54	Tray 2	2nd Paper Feed SN
5	55	Tray 3	3rd Paper Feed SN
6	56	Tray 4	4th Paper Feed SN (Japan Only)
7	57	External Tray	LCT Paper Feed SN
8	58	Registration 1	1st Vertical Transport SN
9	59	Registration 2	2nd Vertical Transport SN
10	60	Registration 3	3rd Vertical Transport SN
11	61	Registration 4	4th Vertical Transport SN (Japan Only)
12	62	Middle Sensor	Relay SN
13	63	Registration	Registration SN
14		Fusing	Fusing Exit SN
15		Duplex Exit	Exit Unit Entrance SN
16	66	Duplex Exit	Paper Exit SN
19	69	Ent Duplex	Duplex Entrance SN
20		Ent Duplex 1	Duplex Transport SN 1
21	71	Ent Duplex 2	Duplex Transport SN 2
22	72	Ent Duplex 3	Duplex Transport SN 3
23	73	Exit Duplex	Duplex Inverter SN
24	74	1-Bin Tray	1-Bin Tray SN Japan Only
34		Bypass: Non-Feed	By-pass Paper End SN

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7504	Finisher (B469: No Saddle Stitch)
101	Finisher 101. 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.
102	Finisher 102. Proof Tray Exit Sensor 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.
103	Finisher 103. Exit Sensor 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.
104	Finisher 104. Staple Entrance Sensor 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.
105	Finisher 105. Exit Sensor after jogging When the paper from the jogger unit fails to activate the exit sensor at the precise time or remains at the exit sensor for longer than the prescribed time.
106	Finisher 106. Stapler Unit 1 When the stapler unit fails to send any signals while stapling.
109	Finisher 109. Shift Motor When the signal status of the lower tray encoder sensor does not change at the precise time during motor rotation. Returns SC733
110	Finisher 110. Jogger Fence Motor When the status of the jogger fence HP sensor does not change at the precise time during jogger fence motor rotation. Returns SC722.
111	Finisher 111. 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
112	Finisher 112. 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
113	Finisher 113. Stapler Unit 2 Not logged. Returns SC724.
115	Finisher 115. 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.
116	Finisher 116. 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	Finisher (B468/B674)
121	Finisher 121. 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.
122	Finisher 122. Proof Tray Exit Sensor 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.
123	Finisher 123. Exit Sensor 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.
124	Finisher 124. Staple Entrance Sensor 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.
125	Finisher 125. Exit Sensor after jogging 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.
126	Finisher 126. Stapler Unit 1 When the stapler unit fails to send any signals while stapling.
127	Finisher 127. Saddle Stitch Stapler Unit Finisher : When the saddle stitch stapler fails to send any signals while stapling. Saddle Stitch,
128	Finisher 128. Saddle Stitch Stapler Unit When the status of the exit sensor does not change at the precise time during saddle stitching.
129	Finisher 129. Shift Motor 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
130	Finisher 130. Jogger Fence Motor When the status of the jogger fence HP sensor does not change at the precise time during jogger fence motor rotation. Returns SC722
131	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
132	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
133	Finisher 133. Stapler Unit 2 Not logged. Returns SC724, SC740, SC741

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134	Finisher 134. Folder Plate Motor
	When the status of the folder plate HP sensor does not change at the precise time during folder plate motor rotation. Returns SC739
135	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
136	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	Finisher (B478/B706)
141	Finisher 141. 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.
142	Finisher 142. Proof Tray Exit Sensor
	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.
143	Finisher 143. Exit Sensor
	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.
144	Finisher 144. Staple Entrance Sensor
	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.
145	Finisher 145. Exit Sensor after jogging
	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.
148	Finisher 148. Upper Transport Motor
	When the upper transport motor fails to send any signals while rotating.
149	Finisher 149. Shift Motor
	When the status of the lower tray encoder sensor does not change at the precise time during shift motor rotation. Returns SC733
150	Finisher 150. Jogger Fence Motor
	When the status of the jogger fence HP sensor does not change at the precise time during jogger fence motor rotation. Returns SC722
151	Finisher 151. 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
153	Finisher 153. Stapler Unit
	When the stapler unit fails to send any signals while stapling. Returns SC724

155	Finisher: 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
156	Finisher : 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	Mail Box (B471)
161	Mail Box 161. Vertical Transport Sensor 1 (CN201)
162	Mail Box 162. Vertical Transport Sensor 2 (CN204)
163	Mail Box 163. Vertical Transport Sensor 3 (CN209)
164	Mail Box 164. Vertical Transport Sensor 4 (CN2014)
165	Mail Box 165. Vertical Transport Sensor 5 (CN2019)
	An error is returned when the status of one or more of these sensors does not change with the prescribed time.

7504	Cover Interposer Tray (B470)
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,

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7504	Z-Folding Unit (B660)
169	Z-Fold 169. Paper Feed Sensor: Paper Late
170	Z-Fold 170. Paper Feed Sensor: Paper Remains
171	Z-Fold 171. Fold Timing Sensor: Paper Late
172	Z-Fold 172. Fold Timing Sensor: Paper Remains
173	Z-Fold 173. Leading Edge Exit Sensor: Paper Late
174	Z-Fold 174. Leading Edge Exit Sensor: Paper Remains
175	Z-Fold 175. Upper Stopper Path Sensor: Paper Late
176	Z-Fold 176. Upper Stopper Path Sensor: Paper Remains
177	Z-Fold 177. Lower Exit Sensor: Paper Late
178	Z-Fold 178. Lower Exit Sensor: Paper Remains
181	Z-Fold 181. Upper Exit Sensor: Paper Late
182	Z-Fold 182. Upper Exit Sensor: Paper Remains
183	Z-Fold 183. Paper Fold Motor Lock
184	Z-Fold 184. Lower Stopper Motor Lock
185	Z-Fold 185. Upper Stopper Motor Lock
	Note: "Paper Late" means the copy did not arrive (check-in) at the sensor site within the prescribed time. "Paper Remains" means the copy did not leave (check-out) from the sensor site within the prescribed time.

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7505*	Original Jam Detection		
001	At power on	Displays the total number of original jams by paper size.	
003	Registration sensor check in failure		
004	Nip-in sensor check in failure		
005	Registration sensor (On check)		
006	Relay Sensor (On check)		
053	Registration sensor check out failure		
054	Nip-in sensor check out failure		
055	Registration sensor (Off check)		
056	Relay sensor (Off check)		
7506*	Jam Count by Paper Size (B064 only)		
	Displays the total number of jams by paper size.		
005	A4 LEF	Displays the total number of jams by paper size.	
006	A5 LEF		
014	B5 LEF		
038	LT LEF		
044	HLT LEF		
132	A3		
133	A4 SEF		
134	A5 SEF		
141	B4 SEF		
142	B5 SEF		
160	DLT SEF		
164	LG SEF		
166	LT SEF		
172	HLT SEF		
255	Others		
7507*	Plotter Jam History		
001	Copy Latest	Displays the following items for the last 10 copy paper jams: 1) Jam code, 2) Paper size, 3) Total count when jam occurred, 4) Date of jam. <i>The "jam codes" are listed in the SMC report under SP7504.</i>	
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		

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7508*	Original Jam History	
001	Original Latest	Displays the following items for the Latest 10 original jams: 1) Jam code, 2) Paper size, 3) Total count when jam occurred, 4) Date of jam. <i>The "jam codes" are listed in the SMC report under SP7504.</i>
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	
7617	Parts PM Counter Display	
001	Normal	Japan Only
002	DF	Japan Only
7618	PM Parts Counter Reset Japan Only	
001	Normal	Press Execute to clear the parts replacement alarm counter for the main machine.
002	DF	Press Execute to clear the parts replacement alarm counter for the ADF.
7801*	ROM No./Firmware Version	Displays the ROM version numbers of the main machine and connected peripheral devices.
7803*	PM Counter Display	Displays the PM count since the last PM.
7804*	PM Counter Reset	Resets the PM count.
7807*	SC/Jam Counter Reset	Press Start to reset the SC and jam counters.
7808*	Counters Reset (B064 only)	Pressing the # key will reset all counters, except for the following: <ul style="list-style-type: none">• Optional card/key counters• Total electronic counts• Copy count• Print count• Duplex count• Staple count• A3/DLT count• P/O count• C/O count
7810*	Key Operator Code Clear (B064 only)	Press # to clear the key operator code if the customer key operator forgets the password and the machine cannot be used.
7811*	Original Feed Count Clear (B064 only)	
	Clears the original total display, displayed with SP7002-***. To clear, press ①.	

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7816*	Copy Counter Reset (B064 only)	
001	Tray 1 (Tandem Tray)	Resets the total feed count for each feed station.
002	Tray 2	
003	Tray 3	
004	Tray 4 Japan Only	
005	LCT	
006	By-pass	
7817*	ADF Counter Reset (B064 only)	Resets the counters of SP7205
7822	Copy Counter Rest – Magnification (B064 only)	Resets all counters of SP7301.
7825	Total Counter Reset (B064 only)	Resets the electronic counter total. Normally, this SP is executed at installation.
7826*	MF Error Counter	Displays the number of counts requested of the card/key counter. Japan Only
001*	Error Total	A request for the count total failed at power on. This error will occur if the device is installed but disconnected.
002*	Error Staple	The request for a staple count failed at power on. This error will occur if the device is installed but disconnected.
7827	MF Error Counter Clear	Press Execute to reset to 0 the values of SP7826. Japan Only
7832	Self-Diagnostic Report Details	Press # to display a list of error codes. Nothing is displayed if no errors have occurred.
7834	Clear Pixel Coverage Data DFU	
001	Last & Average pages	
002	Toner Bottle in Use	
003	Page Counts (2 Prev. Toner Bottles)	
004	Clear Pixel Data Coverage	
7836	Total Memory Size	
	Displays the contents of the memory on the controller board.	
7837	Copy Clear: Pages by Mode (B064 only)	
	Press Execute to clear counter SP7304 (Copy Num – Copies by Mode)	
7838	Copy Clear: Jobs by Count Continuous (B064 only)	
	Press Execute to clear counter SP7305 (Copy: Display Jobs by Mode)	
7839	Copy Clear: Jobs by Mode (B064 only)	
	Press Execute to clear counter SP7306 (Copy: Display Jobs by Mode).	
7840	LS Clear: Stored Image Logins (B064 only)	
	Press Execute to clear counter SP7320 (Doc. Svr. – Scan Count).	
7841	LS Clear: Originals by Size (B064 only)	
	Press Execute to clear counter SP7321 (Doc. Svr. – Original Size Display)	

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7842	LS Clear: Prints by Size (B064 only) Press Execute to clear counter SP7323 (Doc. Svr – Print Size Display).
7843	LS Clear: Print Job Logins (B064 only) Press Execute to clear counter SP7324 (Doc. Svr. – Print Job Counter).
7844	LS Clear: Print to Page Distr. (B064 only) Press Execute to clear SP7325 (Doc. Svr. – Job Count (Page No.).
7845	LS Clear: Print Job File Distr. (B064 only) Press Execute to clear SP7326 (Doc. Svr – Job Count (File No.)
7846	LS Clear: Print Job Copies Distr. (B064 only) Press Execute to clear SP7327 (Doc. Svr. – Job Count (Set No.
7847	LS Clear: Number of Pages by Mode (B064 only) Press Execute to clear SP7328 (Doc. Svr – Job Count (Print Mode).
7848	Copy: All Clear (B064 only) Press Execute to clear the following SP codes: SP7301, SP7304, SP7305, SP7306, SP7320, SP7321, SP7323, SP7324, SP7325, SP7326, SP7327, SP7328.

7852	ADF Scan Glass (B140 only) Displays the count for the number of times the machine detected dust on the ADF exposure glass strip at the beginning of copy jobs. Count range: 00000 to 65535 The count is done only when SP4020 001 has been switched on (Default: Off). For more, see SP4020.	
001	Dust Counter	Total count for the number of times the dust warning message was issued on the operation panel. This warning is issued before the original is copied if there is dust on the ADF exposure glass. [0~1/1] 0: Off 1: On This counter does not operate if SP4020-001 is switched off.
0002	Clear Counter	This counts how many times the machine moves the scanner to a different leading edge position to correct the above problem.
010	Counter Reset	Resets SP7852-001 and 002

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7901	Assert Info.	
001	Filename	Used for debugging. DFU
002	Line No.	
003	Value	

7999	Engine Debug Log Switch
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SP8xxx: Data Log2

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

SP Numbers	What They Do
SP8211~SP8216	The number of pages scanned to the document server.
SP8401~SP8406	The number of pages printed from the document server
SP8691~SP8696	The number of pages sent from the document server

Specifically, the following questions can be answered:

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

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

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

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

Key for Abbreviations

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

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ABBREVIATION	WHAT IT MEANS
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
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 8xxx SPs are reset with SP5801-001 Memory All Clear, or the Counter Reset SP7808.

8001	T:Total Jobs	These SPs count the number of times each application is used to do a job. [0~9999999/1] Note: The L: counter is the total number of times the other applications are used to send a job to the document server, plus the number of times a file already on the document server is used.
8002	C:Total Jobs	
8004	P:Total Jobs	
8005	S:Total Jobs	
8006	L:Total Jobs	

- These SPs reveal the number of times an application is used, not the number of pages processed.
- When an application is opened for image input or output, this counts as one job.
- Interrupted jobs (paper jams, etc.) are counted, even though they do not finish.
- Only jobs executed by the customer are counted. Jobs executed by the customer engineer using the SP modes are not counted.
- When using secure printing (when a password is required to start the print job), the job is counted at the time when either “Delete Data” or “Specify Output” is specified.
- When a copy job on the document server is printed, SP8022 also increments, and when a print job stored on the document server is printed, SP8024 also increments.
- When an original is both copied and stored on the document server, the C: and L: counters both increment.
- When a print job is stored on the document server, only the L: counter increments.
- When the user presses the Document Server button to store the job on the document server, only the L: counter increments.
- When the user enters document server mode and prints data stored on the document server, only the L: counter increments.
- When an image received from Palm 2 is received and stored, the L: counter increments.
- When the customer prints a report (user code list, for example), the O: counter increments

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8011	T:Jobs/LS	These SPs count the number of jobs stored to the document server by each application, to reveal how local storage is being used for input. [0~9999999/1] The L: counter counts the number of jobs stored from within the document server mode screen at the operation panel.
8012	C:Jobs/LS	
8014	P:Jobs/LS	
8015	S:Jobs/LS	
8016	L:Jobs/LS	
8017	O:Jobs/LS	

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

8021	T:Pjob/LS	These SPs reveal how files printed from the document server were stored on the document server originally. [0~9999999/1] The L: counter counts the number of jobs stored from within the document server mode screen at the operation panel.
8022	C:Pjob/LS	
8024	P:Pjob/LS	
8025	S:Pjob/LS	
8026	L:Pjob/LS	
8027	O:Pjob/LS	

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

8031	T:Pjob/DesApl	These SPs reveal what applications were used to output documents from the document server. [0~9999999/1] The L: counter counts the number of jobs printed from within the document server mode screen at the operation panel.
8032	C:Pjob/DesApl	
8034	P:Pjob/DesApl	
8035	S:Pjob/DesApl	
8036	L:Pjob/DesApl	
8037	O:Pjob/DesApl	

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

8041	T:TX Jobs/LS	These SPs count the applications that stored files on the document server that were later accessed for transmission over the telephone line or over a network (attached to an e-mail). [0~9999999/1] Note: Jobs merged for sending are counted separately. The L: counter counts the number of jobs scanned from within the document server mode screen at the operation panel.
8042	C:TX Jobs/LS	
8044	P:TX Jobs/LS	
8045	S:TX Jobs/LS	
8046	L:TX Jobs/LS	
8047	O:TX Jobs/LS	

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

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Tables

8051	T:TX Jobs/DesApl	These SPs count the applications used to send files from the document server over the telephone line or over a network (attached to an e-mail). Jobs merged for sending are counted separately. [0~9999999/1] The L: counter counts the number of jobs sent from within the document server mode screen at the operation panel.
8052	C:TX Jobs/DesApl	
8054	P:TX Jobs/DesApl	
8055	S:TX Jobs/DesApl	
8056	L:TX Jobs/DesApl	
8057	O:TX Jobs/DesApl	

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

SERVICE PROGRAM MODE TABLES

8061	T:FIN Jobs	[0~9999999/1]
These SPs total the finishing methods. The finishing method is specified by the application.		
8062	C:FIN Jobs	[0~9999999/1]
These SPs total finishing methods for copy jobs only. The finishing method is specified by the application.		
8064	P:FIN Jobs	[0~9999999/1]
These SPs total finishing methods for print jobs only. The finishing method is specified by the application.		
8065	S:FIN Jobs	[0~9999999/1]
These SPs total finishing methods for scan jobs only. The finishing method is specified by the application. Note: Finishing features for scan jobs are not available at this time.		
8066	L:FIN Jobs	[0~9999999/1]
These SPs total finishing methods for jobs output from within the document server mode screen at the operation panel. The finishing method is specified from the print window within document server mode.		
8067	O:FIN Jobs	[0~9999999/1]
These SPs total finishing methods for jobs executed by an external application, over the network. The finishing method is specified by the application.		
001	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)
002	Stack	Number of jobs started out of Sort mode.
003	Staple	Number of jobs started in Staple mode.
004	Booklet	Number of jobs started in Booklet mode. If the machine is in staple mode, the Staple counter also increments.
005	Z-Fold	Number of jobs started in any mode other than the Booklet mode and set for folding (Z-fold).
006	Punch	Number of jobs started in Punch mode. When Punch is set for a print job, the P: counter increments. (See SP8064)
007	Other	Reserved. Not used.

8071	T:Jobs/PGS	[0~9999999/1]
These SPs count the number of jobs broken down by the number of pages in the job, regardless of which application was used.		
8072	C:Jobs/PGS	[0~9999999/1]
These SPs count and calculate the number of copy jobs by size based on the number of pages in the job.		
8074	P:Jobs/PGS	[0~9999999/1]
These SPs count and calculate the number of print jobs by size based on the number of pages in the job.		
8075	S:Jobs/PGS	[0~9999999/1]
These SPs count and calculate the number of scan jobs by size based on the number of pages in the job.		
8076	L:Jobs/PGS	[0~9999999/1]
These SPs count and calculate the number of jobs printed from within the document server mode window at the operation panel, by the number of pages in the job.		
8077	O:Jobs/PGS	[0~9999999/1]
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.		
001	1 Page	
002	2 Pages	
003	3 Pages	
004	4 Pages	
005	5 Pages	
006	6~10 Pages	
007	11~20 Pages	
008	21~50 Pages	
009	51~100 Pages	
010	101~300 Pages	
011	301~500 Pages	
012	501~700 Pages	
013	701~1000 Pages	
014	1001~ Pages	

Service
Tables

- For example: When a copy job stored on the document server is printed in document server mode, the appropriate L: counter (SP8076-0xx) increments.
- Interrupted jobs (paper jam, etc.) are counted, even though they do not finish.
- If a job is paused and re-started, it counts as one job.
- If the finisher runs out of staples during a print and staple job, then the job is counted at the time the error occurs.
- For copy jobs (SP8072) and scan jobs (SP8075), the total is calculated by multiplying the number of sets of copies by the number of pages scanned. (One duplex page counts as 2.)
- The first test print and subsequent test prints to adjust settings are added to the number of pages of the copy job (SP8072).
- When printing the first page of a job from within the document server screen, the page is counted.

SERVICE PROGRAM MODE TABLES

8131	T:S-to-Email Jobs	[0~9999999/1]
These SPs count the total number of jobs scanned and attached to an e-mail, regardless of whether the document server was used or not.		
8135	S:S-to-Email Jobs	
These SPs count the number of jobs scanned and attached to an e-mail, without storing the original on the document server.		

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

8141	T:Deliv Jobs/Svr	[0~9999999/1]
These SPs count the total number of jobs scanned and sent to a Scan Router server.		

8145	S:Deliv Jobs/Svr	
These SPs count the number of jobs scanned in scanner mode and sent to a Scan Router server.		

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

8151	T:Deliv Jobs/PC	[0~9999999/1]
	These SPs count the total number of jobs scanned and sent to a folder on a PC (Scan-to-PC).	
	Note: At the present time, SP8151 and SP8155 perform identical counts.	

8155	S:Deliv Jobs/PC
	These SPs count the total number of jobs scanned and sent with Scan-to-PC.

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

8191	T:Total Scan PGS	These SPs count the pages scanned by each application that uses the scanner to scan images. [0~9999999/1]
8192	C:Total Scan PGS	
8195	S:Total Scan PGS	
8196	L:Total Scan PGS	

- SP8191 to 8196 count the number of scanned sides of pages, not the number of physical pages.
- These counters do not count reading user stamp data, or reading color charts to adjust color.
- Previews done with a scanner driver are not counted.
- A count is done only after all images of a job have been scanned.
- Scans made in SP mode are not counted.

Service
Tables

Examples

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

SERVICE PROGRAM MODE TABLES

8205	S:LSize Scan PGS [0~9999999/1]	
		These SPs count the total number of large pages input with the scanner for scan jobs only.
		Note: These counters are displayed in the SMC Report, and in the User Tools display..
8211	T:Scan PGS/LS	These SPs count the number of pages scanned into the document server .
8212	C:Scan PGS/LS	[0~9999999/1]
8215	S:Scan PGS/LS	The L: counter counts the number of pages stored from within the document server mode screen at the operation panel, and with the Store File button from within the Copy mode screen
8216	L:Scan PGS/LS	

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

8221	ADF Org Feeds [0~9999999/1]	
	These SPs count the number of pages fed through the ADF for front and back side scanning.	
001	Front	<p>Number of front sides fed for scanning: With an ADF that can scan both sides simultaneously, the Front side count is the same as the number of pages fed for either simplex or duplex scanning. With an ADF that cannot scan both sides simultaneously, the Front side count is the same as the number of pages fed for duplex front side scanning. (The front side is determined by which side the user loads face up.)</p>
002	Back	<p>Number of rear sides fed for scanning: With an ADF that can scan both sides simultaneously, the Back count is the same as the number of pages fed for duplex scanning. With an ADF that cannot scan both sides simultaneously, the Back count is the same as the number of pages fed for duplex rear-side scanning.</p>

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

8231	Scan PGS/Mode	[0~9999999/1]
	These SPs count the number of pages scanned by each ADF mode to determine the work load on the ADF.	
001	Large Volume	Selectable. Large copy jobs that cannot be loaded in the ADF at one time.
002	SADF	Selectable. Feeding pages one by one through the ADF.
003	Mixed Size	Selectable. Select "Mixed Sizes" on the operation panel.
004	Custom Size	Selectable. Originals of non-standard size.
005	Platen	Book mode. Raising the ADF and placing the original directly on the platen.

Service
Tables

- If the scan mode is changed during the job, for example, if the user switches from ADF to Platen mode, the count is done for the last selected mode.
- If the user selects "Mixed Sizes" for copying in the platen mode, the Mixed Size count is enabled.
- In the SADF mode if the user copies 1 page in platen mode and then copies 2 pages with SADF, the Platen count is 1 and the SADF count is 3.

SERVICE PROGRAM MODE TABLES

8241	T:Scan PGS/Org	[0~9999999/1]					
	These SPs count the total number of scanned pages by original type for all jobs, regardless of which application was used.						
8242	C:Scan PGS/Org	[0~9999999/1]					
	These SPs count the number of pages scanned by original type for Copy jobs.						
8245	S:Scan PGS/Org	[0~9999999/1]					
	These SPs count the number of pages scanned by original type for Scan jobs.						
8246	L:Scan PGS/Org	[0~9999999/1]					
	These SPs count the number of pages scanned and stored from within the document server mode screen at the operation panel, and with the Store File button from within the Copy mode screen						
		8241	8242	8243	8245	8246	8247
001: Text	Yes	Yes	Yes	Yes	Yes	Yes	Yes
002: Text/Photo	Yes	Yes	Yes	Yes	Yes	Yes	Yes
003: Photo	Yes	Yes	Yes	Yes	Yes	Yes	Yes
004: GenCopy, Pale	Yes	Yes	No	Yes	Yes	Yes	Yes
005: Map	Yes	Yes	No	Yes	Yes	Yes	Yes
006: Normal/Detail	Yes	No	Yes	No	No	No	No
007: Fine/Super Fine	Yes	No	Yes	No	No	No	No
008: Binary	Yes	No	No	Yes	No	No	No
009: Grayscale	Yes	No	No	Yes	No	No	No
011 Other	Yes	No	Yes	No	Yes	Yes	Yes

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

SERVICE PROGRAM MODE TABLES

8251	T:Scan PGS/ImgEdt	These SPs show how many times Image Edit features have been selected at the operation panel for each application. Some examples of these editing features are: <ul style="list-style-type: none">• Erase> Border• Erase> Center• Image Repeat• Centering• Positive/Negative [0~9999999/1] Note: The count totals the number of times the edit features have been used. A detailed breakdown of exactly which features have been used is not given.
8252	C:Scan PGS/ImgEdt	
8254	P:Scan PGS/ImgEdt	
8256	L:Scan PGS/ImgEdt	
8257	O:Scan PGS/ImgEdt	

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

8281	T:Scan PGS/TWAIN	These SPs count the number of pages scanned using a TWAIN driver. These counters reveal how the TWAIN driver is used for delivery functions. [0~9999999/1] Note: At the present time, these counters perform identical counts.
8285	S:Scan PGS/TWAIN	

8291	T:Scan PGS/Stamp	These SPs count the number of pages stamped with the stamp in the ADF unit. [0~9999999/1] Note: The L: counter counts the number of pages stored from within the document server mode screen at the operation panel, and with the Store File button from within the Copy mode screen
8295	S:Scan PGS/Stamp	
8296	L:Scan PGS/Stamp	

SERVICE PROGRAM MODE TABLES

8301	T:Scan PGS/Size	[0~9999999/1]	
	These SPs count by size the total number of pages scanned by all applications. Use these totals to compare original page size (scanning) and output (printing) page size [SP8441].		
8302	C:Scan PGS/Size	[0~9999999/1]	
	These SPs count by size the total number of pages scanned by the Copy application. Use these totals to compare original page size (scanning) and output (printing) page size [SP8442].		
8305	S:Scan PGS/Size	[0~9999999/1]	
	These SPs count by size the total number of pages scanned by the Scan application. Use these totals to compare original page size (scanning) and output page size [SP8445].		
8306	L:Scan PGS/Size	[0~9999999/1]	
	These SPs count by size the total number of pages scanned and stored from within the document server mode screen at the operation panel, and with the Store File button from within the Copy mode screen. Use these totals to compare original page size (scanning) and output page size [SP8446].		
001	A3	Yes	
002	A4	Yes	
003	A5	Yes	
004	B4	Yes	
005	B5	Yes	
006	DLT	Yes	
007	LG	Yes	
008	LT	Yes	
009	HLT	Yes	
010	Full Bleed	Yes	
254	Other (Standard)	Yes	
255	Other (Custom)	Yes	

SERVICE PROGRAM MODE TABLES

8311	T:Scan PGS/Rez	[0~9999999/1]
	These SPs count by resolution setting the total number of pages scanned by applications that can specify resolution settings.	
8315	S:Scan PGS/Rez	[0~9999999/1]
	These SPs count by resolution setting the total number of pages scanned by applications that can specify resolution settings. Note: At the present time, SP8311 and SP8315 perform identical counts.	
001	1200dpi ~	
002	600dpi~1199dpi	
003	400dpi~599dpi	
004	200dpi~399dpi	
005	~199dpi	

- Copy resolution settings are fixed so they are not counted.

Service
Tables

SERVICE PROGRAM MODE TABLES

8381	T:Total PrtPGS	
8382	C:Total PrtPGS	
8384	P:Total PrtPGS	
8385	S:Total PrtPGS	
8386	L:Total PrtPGS	
8387	O:Total PrtPGS	

These SPs count the number of pages printed by the customer. The counter for the application used for storing the pages increments.
[0~9999999/1]

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.

- When the A3/DLT double count function is switched on with SP5104, 1 A3/DLT page is counted as 2.
- When several documents are merged for a print job, the number of pages stored are counted for the application that stored them.
- These counters are used primarily to calculate charges on use of the machine, so the following pages are not counted as printed pages:
 - Blank pages in a duplex printing job.
 - Blank pages inserted as document covers, chapter title sheets, and slip sheets.
 - Reports printed to confirm counts.
 - All reports done in the service mode (service summaries, engine maintenance reports, etc.)
 - Test prints for machine image adjustment.
 - Error notification reports.
 - Partially printed pages as the result of a copier jam.

8391	LSize PrtPGS	[0~9999999/1]
These SPs count pages printed on paper sizes A3/DLT and larger. Note: In addition to being displayed in the SMC Report, these counters are also displayed in the User Tools display on the copy machine.		

8401	T:PrtPGS/LS	
8402	C:PrtPGS/LS	
8404	P:PrtPGS/LS	
8405	S:PrtPGS/LS	
8406	L:PrtPGS/LS	

These SPs count the number of pages printed from the document server. The counter for the application used to print the pages is incremented. The L: counter counts the number of jobs stored from within the document server mode screen at the operation panel.
[0~9999999/1]

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

8411	Prints/Duplex	This SP counts the amount of paper (front/back counted as 1 page) used for duplex printing. Last pages printed only on one side are not counted. [0~9999999/1]
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8421	T:PrtPGS/Dup Comb	[0~9999999/1]						
	These SPs count by binding and combine, and n-Up settings the number of pages processed for printing. This is the total for all applications.							
8422	C:PrtPGS/Dup Comb	[0~9999999/1]						
	These SPs count by binding and combine, and n-Up settings the number of pages processed for printing by the copier application.							
8424	P:PrtPGS/Dup Comb	[0~9999999/1]						
	These SPs count by binding and combine, and n-Up settings the number of pages processed for printing by the printer application.							
8425	S:PrtPGS/Dup Comb	[0~9999999/1]						
	These SPs count by binding and combine, and n-Up settings the number of pages processed for printing by the scanner application.							
8426	L:PrtPGS/Dup Comb	[0~9999999/1]						
	These SPs count by binding and combine, and n-Up settings the number of pages processed for printing from within the document server mode window at the operation panel.							
8427	O:PrtPGS/Dup Comb	[0~9999999/1]						
	These SPs count by binding and combine, and n-Up settings the number of pages processed for printing by Other applications							
		8421	8422	8423	8424	8425	8426	8427
001	Simplex > Duplex	Yes	Yes	Yes	Yes	Yes	Yes	Yes
002	Duplex > Duplex	Yes	Yes	No	No	No	No	Yes
003	Book > Duplex	Yes	Yes	No	No	No	No	Yes
004	Simplex Combine	Yes	Yes	Yes	Yes	Yes	Yes	Yes
005	Duplex Combine	Yes	Yes	Yes	Yes	Yes	Yes	Yes
006	2> (2 up, 1 side)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
007	4> (4 up, 1 side)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
008	6> (6 up, 1 side)	Yes	No	No	Yes	No	No	Yes
009	8> (8 up, 1 side)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
012	Booklet	Yes	Yes	Yes	Yes	Yes	Yes	Yes
013	Magazine	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Service
Tables

- These counts (SP8421 to SP8427) are especially useful for customers who need to improve their compliance with ISO standards for the reduction of paper consumption.
- Pages that are only partially printed with the n-Up functions are counted as 1 page.

SERVICE PROGRAM MODE TABLES

Here is a summary of how the counters work for Booklet and Magazine modes:

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

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

8431	T:PrtPGS/ImgEdt	[0~9999999/1]
	These SPs count the total number of pages output with the three features below, regardless of which application was used.	
8432	C:PrtPGS/ImgEdt	[0~9999999/1]
	These SPs count the total number of pages output with the three features below with the copy application.	
8434	P:PrtPGS/ImgEdt	[0~9999999/1]
	These SPs count the total number of pages output with the three features below with the print application.	
8436	L:PrtPGS/ImgEdt	[0~9999999/1]
	These SPs count the total number of pages output from within the document server mode window at the operation panel with the three features below.	
8437	O:PrtPGS/ImgEdt	[0~9999999/1]
	These SPs count the total number of pages output with the three features below with Other applications.	
001	Cover/Slip Sheet	Total number of covers or slip sheets inserted. The count for a cover printed on both sides counts 2.
002	Series/Book	The number of pages printed in series (one side) or printed as a book with booklet right/left pagination.
003	User Stamp	The number of pages printed where stamps were applied, including page numbering and date stamping.

SERVICE PROGRAM MODE TABLES

8441	T:PrtPGS/Ppr Size	[0~9999999/1]						
	These SPs count by print paper size the number of pages printed by all applications.							
8442	C:PrtPGS/Ppr Size	[0~9999999/1]						
	These SPs count by print paper size the number of pages printed by the copy application.							
8444	P:PrtPGS/Ppr Size	[0~9999999/1]						
	These SPs count by print paper size the number of pages printed by the printer application.							
8445	S:PrtPGS/Ppr Size	[0~9999999/1]						
	These SPs count by print paper size the number of pages printed by the scanner application.							
8446	L:PrtPGS/Ppr Size	[0~9999999/1]						
	These SPs count by print paper size the number of pages printed from within the document server mode window at the operation panel.							
8447	O:PrtPGS/Ppr Size	[0~9999999/1]						
	These SPs count by print paper size the number of pages printed by Other applications.							
		8441	8442	8443	8444	8445	8446	8447
001	A3	Yes	Yes	Yes	Yes	Yes	Yes	Yes
002	A4	Yes	Yes	Yes	Yes	Yes	Yes	Yes
003	A5	Yes	Yes	Yes	Yes	Yes	Yes	Yes
004	B4	Yes	Yes	Yes	Yes	Yes	Yes	Yes
005	B5	Yes	Yes	Yes	Yes	Yes	Yes	Yes
006	DLT	Yes	Yes	Yes	Yes	Yes	Yes	Yes
007	LG	Yes	Yes	Yes	Yes	Yes	Yes	Yes
008	LT	Yes	Yes	Yes	Yes	Yes	Yes	Yes
009	HLT	Yes	Yes	Yes	Yes	Yes	Yes	Yes
010	Full Bleed	Yes	Yes	Yes	Yes	Yes	Yes	Yes
254	Other (Standard)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
255	Other (Custom)	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Service
Tables

- These counters do not distinguish between LEF and SEF.

SERVICE PROGRAM MODE TABLES

8451	PrtPGS/Ppr Tray	[0~9999999/1]
	These SPs count the number of sheets fed from each paper feed station.	
001	Bypass	Bypass Tray
002	Tray 1	Copier
003	Tray 2	Copier
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	Currently not used.
009	Tray 8	Currently not used.
010	Tray 9	Currently not used.

8461	T:PrtPGS/Ppr Type	[0~9999999/1]
	These SPs count by paper type the number pages printed by all applications.	
	<ul style="list-style-type: none"> • These counters are not the same as the PM counter. The PM counter is based on feed timing to accurately measure the service life of the feed rollers. However, these counts are based on output timing. • 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. 	
8462	C:PrtPGS/Ppr Type	[0~9999999/1]
	These SPs count by paper type the number pages printed by the copy application.	
8464	P:PrtPGS/Ppr Type	[0~9999999/1]
	These SPs count by paper type the number pages printed by the printer application.	
8466	L:PrtPGS/Ppr Type	[0~9999999/1]
	These SPs count by paper type the number pages printed from within the document server mode window at the operation panel.	
001	Normal	
002	Recycled	
003	Special	
004	Thick	
005	Normal (Back)	
006	Thick (Back)	
007	OHP	
008	Other	

SERVICE PROGRAM MODE TABLES

8471	PrtPGS/Mag	[0~9999999/1]
These SPs count by magnification rate the number of pages printed.		
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. [0~9999999/1] Note: These SPs return the same results as this SP is limited to the Print application.	

Service
Tables

SERVICE PROGRAM MODE TABLES

8511	T:PrtPGS/Emul	[0~9999999/1]
	These SPs count by printer emulation mode the total number of pages printed.	
8514	P:PrtPGS/Emul	[0~9999999/1]
	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 as they are both limited to the Print application.
- Print jobs output to the document server are not counted.

SERVICE PROGRAM MODE TABLES

8521	T:PrtPGS/FIN	[0~9999999/1]
These SPs count by finishing mode the total number of pages printed by all applications.		
8522	C:PrtPGS/FIN	[0~9999999/1]
These SPs count by finishing mode the total number of pages printed by the Copy application.		
8524	P:PrtPGS/FIN	[0~9999999/1]
These SPs count by finishing mode the total number of pages printed by the Print application.		
8525	S:PrtPGS/FIN	[0~9999999/1]
These SPs count by finishing mode the total number of pages printed by the Scanner application.		
8526	L:PrtPGS/FIN	[0~9999999/1]
These SPs count by finishing mode the total number of pages printed from within the document server mode window at the operation panel.		
001	Sort	
002	Stack	
003	Staple	
004	Booklet	
005	Z-Fold	
006	Punch	
007	Other	

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

Service
Tables

8531	Staples	This SP counts the amount of staples used by the machine. [0~9999999/1]
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SERVICE PROGRAM MODE TABLES

8541	T:GPC Counter	[0~9999999/1]
	These SPs count and display the total C/O (Copies/Original) and P/O (Prints/Original) for documents read and output from the document server when making 11 or more copies and prints.	
001	GPC Counter	
002	Lease GPC Counter	
8542	C:GPC Counter	[0~9999999/1]
	These SPs count and display the total C/O (Copies/Original) for documents read and output from the document server when making 11 or more copies.	
001	GPC Counter	
002	Lease GPC Counter	
8544	P:GPC Counter	[0~9999999/1]
	These SPs count and display the total P/O (Prints/Original) for documents read and output from the document server when making 11 or more prints.	
001	GPC Counter	
002	Lease GPC Counter	

- For example, if you make 15 prints of a 3 page original, for a total of 45 sheets, then the P counter would be 15 (5 copies counted from 11 to 15 x 3 pages). No count is returned for 1~10 prints of an original.
- Either the GPC counter or the Lease GPC counter will be used, depending on the contract set up for the machine.
- **Note:** In addition to being displayed in the SMC Report, these counters are also displayed in the User Tools display on the copy machine.

8581	T:Counter	[0~9999999/1]
	These SPs count the total output broken down by color output, regardless of the application used. In addition to being displayed in the SMC Report, these counters are also displayed in the User Tools display on the copy machine.	
Note: This SP is expanded for color MFP and color LP machines. For this machine, the count is done for black only.		

8591	O:Counter	[0~9999999/1]
	These SPs count the totals for A3/DLT paper use, number of duplex pages printed, and the number of staples used. These totals are for Other (O:) applications only.	
001	A3/DLT	
002	Duplex	
003	Staple	

8651	T:S-to-Email PGS	[0~9999999/1]
These SPs count by color mode the total number of pages attached to an e-mail for both the Scan and document server applications.		
Note: This SP is expanded for color MFP and color LP machines. For this machine, the count is done for black only.		
8655	S:S-to-Email PGS	[0~9999999/1]
These SPs count by color mode the total number of pages attached to an e-mail for the Scan application only.		
Note: This SP is expanded for color MFP and color LP machines. For this machine, the count is done for black only.		

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

8661	T:Deliv PGS/Svr	[0~9999999/1]
These SPs count by color mode the total number of pages sent to a Scan Router server by both Scan and LS applications.		
Note: This SP is expanded for color MFP and color LP machines. For this machine, the count is done for black only.		
8665	S:Deliv PGS/Svr	[0~9999999/1]
These SPs count by color mode the total number of pages sent to a Scan Router server by the Scan application.		
Note: This SP is expanded for color MFP and color LP machines. For this machine, the count is done for black only.		

Service
Tables

- NOTE:**
- 1) The B/W and Color counts are done after the document is stored on the HDD of the Scan Router server.
 - 2) If the job is canceled before storage on the Scan Router server finishes, the counts are not done.
 - 3) The count is executed even if regardless of confirmation of the arrival at the Scan Router server.

SERVICE PROGRAM MODE TABLES

8671	T:Deliv PGS/PC	[0~9999999/1]
These SPs count by color mode the total number of pages sent to a folder on a PC (Scan-to-PC) with the Scan and LS applications.		
Note: This SP is expanded for color MFP and color LP machines. For this machine, the count is done for black only.		
8675	S:Deliv PGS/PC	[0~9999999/1]
These SPs count by color mode the total number of pages sent with Scan-to-PC with the Scan application.		
Note: This SP is expanded for color MFP and color LP machines. For this machine, the count is done for black only.		

8691	T:TX PGS/LS	
8692	C:TX PGS/LS	
8694	P:TX PGS/LS	
8695	S:TX PGS/LS	
8696	L:TX PGS/LS	

These SPs count the number of pages sent from the document server. The counter for the application that was used to store the pages is incremented.
[0~9999999/1]

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.

NOTE: 1) Print jobs done with Web Image Monitor and Desk Top Binder are added to the count.
 If several documents are merged for sending, the number of pages stored are counted for the application that stored them.

8701	TX PGS/Port	
These SPs count the number of pages sent by the physical port used to send them. For example, if a 3-page original is sent to 4 destinations via ISDN G4, the count for ISDN (G3, G4) is 12.		
001	PSTN-1	
002	PSTN-2	
003	PSTN-3	
004	ISDN (G3,G4)	
005	Network	

8741	RX PGS/Port	
These SPs count the number of pages received by the physical port used to receive them.		
001	PSTN-1	
002	PSTN-2	
003	PSTN-3	
004	ISDN (G3,G4)	
005	Network	

SERVICE PROGRAM MODE TABLES

8771	Dev Counter	[0~9999999/1] These SPs count the frequency of use (number of rotations of the development rollers) for black and other color toners. Note: For machines that do not support color, the Black toner count is the same as the Total count.
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8791	LS Memory Remain	This SP displays the percent of space available on the document server for storing documents. [0~100/1]
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8801	Toner Remain	[0~100/1] This SP displays the percent of toner remaining for each color. This SP allows the user to check the toner supply at any time. Note: <ul style="list-style-type: none"> This precise method of measuring remaining toner supply (1% steps) is better than other machines in the market that can only measure in increments of 10 (10% steps). This SP is expanded for color MFP and color LP machines. For this machine, the count is done for black only.
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8941	Machine Status	[0~9999999/1] 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, Low Power, or Off modes.
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	Down Time/SC	Total down time due to SC errors.
007	Down Time/PrtJam	Total down time due to paper jams during printing.
008	Down Time/OrgJam	Total down time due to original jams during scanning.
009	Down Time/TonEnd	Total down time due to toner end.

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Tables

SERVICE PROGRAM MODE TABLES

8951	AddBook Register		
	These SPs count the number of events when the machine manages data registration.		
001	User Code	User code registrations.	[0~99999999/1]
002	Mail Address	Mail address registrations.	
004	Group	Group destination registrations.	
005	Transfer Request	Fax relay destination registrations for relay TX.	
007	Copy Program	Copy application registrations with the Program (job settings) feature.	[0~255/1]
009	Printer Program	Printer application registrations with the Program (job settings) feature.	
010	Scanner Program	Scanner application registrations with the Program (job settings) feature.	

5.6.3 PRINTER SERVICE TABLE

1001	Bit Switches	
001	Bit SW 1	Adjust the bit SW settings. Note: These bit switches are not used at this time.
002	Bit SW 2	
003	Bit SW 3	
004	Bit SW 4	
005	Bit SW 5	
006	Bit SW 6	
007	Bit SW 7	
008	Bit SW 8	

1003	Clear Setting	
001	Initialization Printer System	Initializes the settings in the printer features of UP mode.
002	CSS Counter Reset	Japan only
003	Delete Program	Japan only

1004	Print Summary	Prints the printer summary sheet.
1005	Display Version	Displays the version of the printer firmware.

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Tables

5.6.4 SCANNER SERVICE TABLE

SP	Number/Name	Function/[Setting]
1001	001 Model Name	Displays the model name.
	002 Scanner Firmware Version	Displays the scanner firmware version.
	003 Scanner Firmware Number	Displays the firmware's part number.
	004 Detail Model Name	Displays the detail model name.
1002	Error Log Display	Displays the error log data.
1003*	FTP Port Number	<p>Changes the FTP port number. <i>After changing this value, do the following:</i></p> <ol style="list-style-type: none"> 1. Run the Registry Editor 2. Access <code>/HKEY_LOCAL_MACHINE/SOFTWARE/ Ricoh/NetworkScanner</code> 3. Change the value of 'PortNo' to this SP mode's value [0~65535/1]
1004*	Compression Type	<p>Selects the compression type for binary picture processing. [1~3/1]</p> <p>1: MH 2: MR 3: MMR</p>
1005*	Erase Margin	<p>Creates an erase margin for all edges of the scanned image. <i>If the machine has scanned the edge of the original, create a margin.</i> [0~5/1 mm]</p>
1006*	Auto Reset Timer	<p>Adjusts the auto reset timer for the scanner function. <i>If this is "0", the auto reset function is disabled.</i> [0,10~99/1 s]</p>
1009*	Remote Scan Disable	<p>Enables/Disables the TWAIN scanner driver. [0~1/1]</p> <p>0: Disabled 1: Enabled (B140 only)</p>

SERVICE PROGRAM MODE TABLES

2002	Text Mode		
	001*	MTF Filter Coefficient (Text/Binary/Main scan)	Selects the MTF filter coefficient in the main scan direction for Text mode. <i>Select a higher number for a stronger filter.</i> <i>If this is "0", the MTF filter is not applied.</i> [0~15/1]
	002*	MTF Filter Coefficient (Text/Binary/Sub scan)	As above, for sub scan [0~13/1]
	003*	MTF Filter Strength (Text/Binary/Main scan)	Selects the MTF filter strength in the main scan direction for Text mode. <i>Select a higher number for a stronger filter.</i> [0~7/1]
	004*	MTF Filter Strength (Text/Binary/Sub scan)	As above, for sub scan [0~7/1]
	005*	Smoothing Filter (Text/Binary)	Selects the smoothing pattern for Text mode when using binary picture processing mode. <i>A larger value could cause moiré to appear in the image.</i> [0~7/1]
	006*	Scanner Gamma (Text/Binary)	Selects the scanner gamma type for Text mode when using binary picture processing mode. [0~6/1]
	007*	Brightness – Notch 7 (Text/Binary)	The following SPs adjust the image density (brightness, contrast, and thresholds) for each image density level (from 7 to 1) for Text mode when using binary picture processing mode. The settings are reflected in the gamma table. [0~255/1]
	008*	Contrast – Notch 7 (Text/Binary)	[0~255/1]
	009*	Threshold Level – Notch 7 (Text/Binary)	[0~255/1]
	010*	Brightness – Notch 6 (Text/Binary)	[0~255/1]
	011*	Contrast – Notch 6 (Text/Binary)	[0~255/1]
	012*	Threshold Level – Notch 6 (Text/Binary)	[0~255/1]
	013*	Brightness – Notch 5 (Text/Binary)	[0~255/1]
	014	Density Level 5: Contrast	[1~255/1]
	015	Density Level 5: Threshold	[1~255/1]
	016	Density Level 4: Intermediate Brightness	[1~255/1]
	017	Density Level 4: Intermediate Contrast	[1~255/1]

Service
Tables

SERVICE PROGRAM MODE TABLES

018	Density Level 4: Intermediate Threshold	[1~255/1]
019	Density Level 3: Brightness	[1~255/1]
020	Density Level 3: Contrast	[1~255/1]
021	Density Level 3: Threshold	[1~255/1]
022	Density Level 2: Brightness	[1~255/1]
023	Density Level 2: Contrast	[1~255/1]
024	Density Level 2: Threshold	[1~255/1]
025	Density Level 1 Dark Brightness	[1~255/1]
026	Density Level 1 Dark: Contrast	[1~255/1]
027	Density Level 1 Dark: Threshold	[1~255/1]
028	Independent Dot Erase	[0x00~0x07/1]
029	Unevenness Correction	[0x00~0x07/1]
030	Notch No. 1 (Darker): Contrast: 1-255	[1~255/1] (B140 only)
031	Notch No. 1 (Darker): Contrast: 1-255	[1~255/1] (B140 only)

SERVICE PROGRAM MODE TABLES

2003	Text/Photo Mode		
	001	Main Scan MTF Level	Sets the MTF coefficient for the main scan direction. [0x00~0xFF/0x01]
	002	Sub Scan MTF Level	Sets the MTF coefficient for the sub scan direction. [0x00~0xFF/0x01]
	003	Main Scan MTF Strength	Sets the MTF strength for the main scan direction. [0~0x07/0x01]
	004	Sub Scan MTF Strength	Sets the MTF strength for the sub scan direction. [0~0x07/0x01]
	005	Smoothing Level	Sets the smoothing coefficient. [0~0xFF/0x01]
	006	Gamma Selection	Selects the gamma setting. [0x00~0x06/0x01] 0:Normal, 1:Smooth 2:Distinct 3:Sharp 4:Text 5:Photo.
	007	Density Level 7 Light : Brightness	The following SPs adjust the image density (brightness, contrast, and thresholds) for each image density level (from 7 to 1) for Text/Photo mode when using the delivery scanner mode. The settings are reflected in the gamma table. [1~255/1]
	008	Density Level 7 Light: Contrast	[1~255/1]
	009	Density Level 7 Light: Threshold	[1~255/1]
	010	Density Level 6: Brightness	[1~255/1]
	011	Density Level 6: Contrast	[1~255/1]
	012	Density Level 6: Threshold	[1~255/1]
	013	Density Level 5: Brightness	[1~255/1]
	014	Density Level 5: Contrast	[1~255/1]
	015	Density Level 5: Threshold	[1~255/1]
	016	Density Level 4 Intermediate: Brightness	[1~255/1]
	017	Density Level 4 Intermediate: Contrast	[1~255/1]

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Tables

SERVICE PROGRAM MODE TABLES

018	Density Level 4 Intermediate: Threshold	[1~255/1]
019	Density Level 3: Brightness	[1~255/1]
020	Density Level 3: Contrast	[1~255/1]
021	Density Level 3: Threshold	[1~255/1]
022	Density Level 2: Brightness	[1~255/1]
023	Density Level 2: Contrast	[1~255/1]
024	Density Level 2: Threshold	[1~255/1]
024	Density Level 1 Dark: Brightness	[1~255/1]
026	Density Level 1 Dark: Contrast	[1~255/1]
027	Density Level 1 Dark: Threshold	[1~255/1]
028	Notch No. 2: Threshold: 1-255	[1~255/1] (B140 only)
029	Notch No. 1: Brightness: 1-255	[1~255/1] (B140 only)
030	Notch No. 1: Threshold: 1-255	[1~255/1] (B140 only)
031	Notch No. 1: Contrast: 1-255	[1~255/1] (B140 only)

SERVICE PROGRAM MODE TABLES

2004	Photo Mode		
	001	Main Scan MTF Level	Sets the MTF coefficient for the main scan direction. [0x00~0xFF/0x01]
	002	Sub Scan MTF Level	Sets the MTF coefficient for the sub scan direction. [0x00~0xFF/0x01]
	003	Main Scan MTF Strength	Sets the MTF strength for the main scan direction. [0~0x07/0x01]
	004	Sub Scan MTF Strength	Sets the MTF strength for the sub scan direction. [0~0x07/0x01]
	005	Smoothing Level	Sets the smoothing coefficient. [0~0x07/0x01]
	006	Gamma Selection	Selects the gamma setting. [0x00~0x06/0x01] 0:Normal 1:Smooth 2:Distinct 3:Sharp 4:Text 5:Photo.
	007	Dither Pattern	[0x01/0x0x]
	008	Density Level 7 Light: Brightness	The following SPs adjust the image density (brightness, contrast, and thresholds) for each image density level (from 7 to 1) for Photo mode when using the delivery scanner mode. The settings are reflected in the gamma table. [1~255/1]
	009	Density Level 7 Light: Contrast	[1~255/1]
	010	Density Level 7 Light: Threshold	[1~255/1]
	011	Density Level 6: Brightness	[1~255/1]
	012	Density Level 6: Contrast	[1~255/1]
	013	Density Level 6: Threshold	[1~255/1]
	014	Density Level 5: Brightness	[1~255/1]
	015	Density Level 5: Contrast	[1~255/1]
	016	Density Level 5: Threshold	[1~255/1]
	017	Density Level 4 Intermediate: Brightness	[1~255/1]
	018	Density Level 4 Intermediate: Contrast	[1~255/1]

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Tables

SERVICE PROGRAM MODE TABLES

019	Density Level 4 Intermediate: Threshold	[1~255/1]
020	Density Level 3: Brightness	[1~255/1]
021	Density Level 3: Contrast	[1~255/1]
022	Density Level 3: Threshold	[1~255/1]
023	Density Level 2: Brightness	[1~255/1]
024	Density Level 2: Contrast	[1~255/1]
025	Density Level 2: Threshold	[1~255/1]
026	Density Level 1 Dark: Brightness	[1~255/1]
027	Density Level 1 Dark: Contrast	[1~255/1]
028	Density Level 1 Dark: Threshold	[1~255/1]
029	Notch No. 1 (Darker): Brightness: 1-255 (B140 only)	[1~255/1] (B140 only)
030	Notch No. 1 (Darker): Contrast: 1-255 (B140 only)	[1~255/1] (B140 only)
031	Notch No. 1 (Darker): Threshold: 1-255 (B140 only)	[1~255/1] (B140 only)

SERVICE PROGRAM MODE TABLES

2005	Grayscale Mode	
	001	Main Scan MTF Level Sets the MTF coefficient for the main scan direction. [0x00~0xFF/0x01]
	002	Sub Scan MTF Level Sets the MTF coefficient for the sub scan direction. [0x00~0xFF/0x01]
	003	Main Scan MTF Strength Sets the MTF strength for the main scan direction. [0~0x07/0x01]
	004	Sub Scan MTF Strength Sets the MTF strength for the sub scan direction. [0~0x07/0x01]
	005	Smoothing Level Sets the smoothing coefficient. [0~0xFF/0x01]
	006	Gamma Selection Selects the gamma setting. [0x00~0x06/0x01] 0:Normal 1:Smooth 2:Distinct 3:Sharp 4:Text 5:Photo
	007	Density Level 7 Light : Brightness The following SPs adjust the image density (brightness, contrast, and thresholds) for each image density level (from 7 to 1) for grayscale mode when using the delivery scanner mode. The settings are reflected in the gamma table. [1~255/1]
	008	Density Level 7 Light: Contrast [1~255/1]
	009	Density Level 7 Light: Threshold [1~255/1]
	010	Density Level 6: Brightness [1~255/1]
	011	Density Level 6: Contrast [1~255/1]
	012	Density Level 6: Threshold [1~255/1]
	013	Density Level 5: Brightness [1~255/1]
	014	Density Level 5: Contrast [1~255/1]
	015	Density Level 5: Threshold [1~255/1]
	016	Density Level 4 Intermediate: Brightness [1~255/1]
	017	Density Level 4 Intermediate: Contrast [1~255/1]

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Tables

SERVICE PROGRAM MODE TABLES

018	Density Level 4 Intermediate: Threshold	[1~255/1]
019	Density Level 3: Brightness	[1~255/1]
020	Density Level 3: Contrast	[1~255/1]
021	Density Level 3: Threshold	[1~255/1]
022	Density Level 2: Brightness	[1~255/1]
023	Density Level 2: Contrast	[1~255/1]
024	Density Level 2: Threshold	[1~255/1]
025	Density Level 1 Dark: Brightness	[1~255/1]
026	Density Level 1 Dark: Contrast	[1~255/1]
027	Density Level 1 Dark: Threshold	[1~255/1]

SERVICE PROGRAM MODE TABLES

2006	Grayscale Compression	
	001	Standard Sets the rate of compression when Standard is selected for handling JPEG files. [5~95/1] 5: High compression (smaller file) 95: Low compression (larger file)
	002	High Quality Sets the rate of compression when High is selected for handling JPEG files. [5~95/1] 5: High compression (smaller file) 95: Low compression (larger file)
	003	Low Quality Sets the rate of compression when JPEG files.Low is selected for handling [5~95/1] 5: High compression (smaller file) 95: Low compression (larger file)
	004	MTF Filter Strength (Sub Scan) [1~7/1] (B140 only)
	007	Smoothing Filter [1~7/1] (B140 only)
	008	Scanner Gamma [0~3/1] (B140 only)
	011	Notch No. 7 (Lighter) Brightness: 1-255 [1~255/1] (B140 only)
	012	Notch No. 7 (Lighter) Brightness: 1-255 [1~255/1] (B140 only)
	013	Notch No. 7 (Lighter) Threshold: 1-255 [1~255/1] (B140 only)
	014	Notch No. 6: Brightness: 1-255 [1~255/1] (B140 only)
	015	Notch No. 6: Contrast: 1-255 [1~255/1] (B140 only)
	016	Notch No. 6: Threshold: 1- 255 [1~255/1] (B140 only)
	017	Notch No. 5: Brightness: 1-255 [1~255/1] (B140 only)
	018	Notch No. 5: Contrast: 1- 255 [1~255/1] (B140 only)
	019	Notch No. 5: Threshold: 1- 255 [1~255/1] (B140 only)
	020	Notch No. 4 (Middle): Brightness: 1-255 [1~255/1] (B140 only)
	021	Notch No. 4 (Middle): Contrast: 1-255 [1~255/1] (B140 only)
	022	Notch No. 4 (Middle): Threshold: 1-255 [1~255/1] (B140 only)
	023	Notch No. 3: Brightness: 1-255 [1~255/1] (B140 only)

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SERVICE PROGRAM MODE TABLES

024	Notch No. 3: Contrast: 1-255	[1~255/1] (B140 only)
025	Notch No. 3: Threshold: 1- 255	[1~255/1] (B140 only)
026	Notch No. 2: Brightness: 1-255	[1~255/1] (B140 only)
027	Notch No. 2: Contrast: 1-255	[1~255/1] (B140 only)
028	Notch No. 2: Threshold: 1- 255	[1~255/1] (B140 only)
029	Notch No. 1 (Darker): Brightness 1-255	[1~255/1] (B140 only)
030	Notch No. 1 (Darker): Contrast 1-255	[1~255/1] (B140 only)
031	Notch No. 1 (Darker): Threshold 1-255	[1~255/1] (B140 only)

SERVICE PROGRAM MODE TABLES

2021	Compression Ratio of Grayscale (B140 only)		
	001	Compression Ratio (Normal Image)	[5-95/1]
	002	Compression Ratio (High Quality Image)	
	003	Compression Ratio (Low Quality Image)	
	004	Compression Ratio (HighLv2 Quality Image)	
	005	Compression Ratio (LowLvl2 Quality Image)	

8002	File Server		
	001	IP Address	Sets the IP Address for the Scan Router server. The settings below will be displayed on the System Settings tab.
	002	Retry Interval	Sets the time to wait between retries when connection fails. [60~90/1 s]
8003	Delivery Server Retries		
	001	Number of Retries	Determines the number of retries when connection fails. [0~99/1]
	002	Capture Server IP Address	Sets the IP Address for the NOA Capture Server (address for E-Cabinet). Make sure this address is not the same as the IP address.
8004	Transmission Error Display Time		
			A one-line error message when a transmission error occurs on the file server. This setting determines how long this one-line message is displayed. [0~999/1 s]

Service
Tables

5.7 INPUT/OUTPUT CHECK

5.7.1 COPIER INPUT CHECK: SP5803

This procedure allows you to test sensors and other components of the machine. After you select one of the categories below by number, you will see a small 8-bit table with the number of the bit and its current setting (0 or 1). The bits are numbered 0 to 7, reading right to left.

1. Enter the SP mode and select SP5803.
2. Enter the number (1 to 13) for the item that you want to check. A small box will be displayed on the SP mode screen with a series of 0's and 1's.
The meaning of the display is as follows.

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

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

1. Paper Feed 1		Reading	
Bit	Description	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		

Bit	Item	0	1
7	Size 5	Tray 2	See Paper Size Tables Below
6	Size 4	Tray 2	
5	Size 3	Tray 2	
4	Size 2	Tray 2	
3	Size 1	Tray 2	
2	Not used		
1	Not used		
0	Not used		

	1500 sheets	1000 sheets			400 sheets		70 sheets
bit-3	0	0	0	0	0	1	1
bit-2	0	0	0	1	1	1	0
bit-1	0	0	1	1	1	0	0
bit-0	0	1	1	0	0	0	0

3. Paper Feed 3				
Bit	Item		0	1
7	Size 5	Tray 3	See Paper Size Tables Below.	
6	Size 4	Tray 3		
5	Size 3	Tray 3		
4	Size 2	Tray 3		
3	Size 1	Tray 3		
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
8 1/2" x 14"	LOW	LOW	HIGH	HIGH	HIGH	8 1/2" x 14" SEF
8 1/2" x 11"	HIGH	LOW	LOW	HIGH	HIGH	8 1/2" x 11" SEF
11" x 8 1/2"	LOW	HIGH	LOW	LOW	HIGH	8 1/2" x 11" LEF
5 1/2" x 8 1/2"	LOW	LOW	HIGH	LOW	LOW	5 1/2" x 8 1/2" SEF
8 1/2" x 5 1/2"	LOW	LOW	LOW	HIGH	LOW	8 1/2" x 5 1/2" LEF
8" x 10 1/2"	LOW	LOW	LOW	LOW	HIGH	8" x 10 1/2" SEF
7 1/4" x 10 1/2"	HIGH	LOW	LOW	LOW	LOW	7 1/4" x 10 1/2" SEF
8" x 13"	HIGH	HIGH	LOW	LOW	LOW	8" x 13" SEF
*	HIGH	HIGH	HIGH	HIGH	LOW	(size set in User Tools)

Service
Tables

Universal Tray Size Detection – EU/ASIA models

Paper Size	Switch Setting (LOW = pressed)					Panel Display
A3 SEF	LOW	HIGH	HIGH	HIGH	HIGH	A3 SEF
8 1/4" x 13"	LOW	LOW	HIGH	HIGH	HIGH	8 1/4" x 13" SEF
A4 SEF	HIGH	LOW	LOW	HIGH	HIGH	A4 SEF
A4 LEF	LOW	HIGH	LOW	LOW	HIGH	A4 LEF
8 1/2" x 13"	LOW	LOW	HIGH	LOW	LOW	8 1/2" 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	(size set in User Tools)

INPUT/OUTPUT CHECK

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	0	1
7	Size 5	Not used	
6	Size 4	Not used	
5	Size 3	Not used	
4	Size 2	Not used	
3	Size 1	Not used	
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	Tray 1	Present
6	2nd Paper Feed Sensor	Not used	---
5	3rd Paper Feed Sensor	Tray 2	Present
4	4th Paper Feed Sensor	Tray 3	Present
3	1st Paper Feed Sensor	Tray 1	Present
2	2nd Paper Feed Sensor	Not used	---
1	3rd Paper Feed Sensor	Tray 2	Present
0	4th Paper Feed Sensor	Tray 3	Present

8. Paper Feed 8

Bit	Item		0	1
7	1st Tray Lift Sensor	Tray 1	Off	On
6	2nd Tray Lift Sensor	Not used	Off	On
5	3rd Tray Lift Sensor	Tray 2	Off	On
4	4th Tray Lift Sensor	Tray 3	Off	On
3	1st Paper End Sensor	Tray 1	Paper	No Paper
2	2nd Paper End Sensor	Not used	Paper	No Paper
1	3rd Paper End Sensor	Tray 2	Paper	No Paper
0	2nd Paper End Sensor	Tray 3	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

Bit	Description	Reading	
		0	1
7	DFU		
6			
5			
4			
3			
2			
1			
0			

Service
Tables**11. Paper Feed 11**

Bit	Description	Reading	
		0	1
7	DFU		
6			
5			
4			
3			
2			
1			
0			

INPUT/OUTPUT CHECK

12. DIP Switches			
Bit	Description	Reading	
		0	1
7	DFU		
6			
5			
4			
3			
2			
1			
0			

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 not present	Paper present
4	Duplex Transport 2 Sensor	Paper not present	Paper present
3	Duplex Transport 1 Sensor	Paper not present	Paper 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	Paper present	Paper not present
0	Registration Sensor	Paper present	Paper not present

18. Original Size Set Sensor

Bit	Description	Reading	
		0	1
7	Fusing Unit Set	Set	Not set
6	Not used		
5	Key Counter Set	Set	Not set
4	Original Length 2 Sensor	Paper present	Paper not present
3	Original Length 1 Sensor	Paper present	Paper not present
2	Original Width 3 Sensor	Paper present	Paper not present
1	Original Width 2 Sensor	Paper present	Paper not present
0	Original Width 1 Sensor	Paper present	Paper not present

Service
Tables

5.7.2 COPIER OUTPUT CHECK: SP5804

1. Open SP mode 5804.
2. Select the SP number that corresponds to the component you wish to check.
(Refer to the table on the next page.)
3. Press On then press Off to test the selected item.

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

No.	Description
1	Feed Motor 1
2	Feed Motor 2
3	Feed Motor 3
4	Feed Motor 4
5	By-pass Feed Clutch
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
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 Connection 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

No.	Description
45	Duplex Entrance Junction Gate SOL
46	Inverter Jogger SOL
47	Duplex Transport CL
52	Development Roller Clutch
53	Development Motor
54	Used Toner Motor
55	Web Motor
56	Toner Bottle Motor
57	Trigger/Separation CL
62	Quenching Lamp
63	Charge Corona
64	Grid Wire
67	Development Bias
69	Transfer Bias
70	ID Sensor LD
72	Xenon Lamp
74	Fan
75	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	Booklet 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

Service
Tables

5.7.3 ADF INPUT CHECK: SP6007

1. Open SP mode SP6007.
2. Select the SP number that corresponds to the component you wish to check.
(Refer to the table below.)
3. Press On then press Off to test the selected item. You cannot exit and close this display until you click Off to switch off the output check currently executing.

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

Group 1

No.	Description
0	Original Length Sensor 3 (LG)
1	Original Length Sensor 2 (A4)
2	Original Length Sensor 3 (B5)
3	Original Set Sensor
4	Original Width Sensor 1
5	Original Width Sensor 2
6	Original Width Sensor 3
7	Original Width Sensor 4

Group 2

No.	Description
0	Skew Correction Sensor
1	Interval Sensor
2	Registration Sensor
3	Exit Sensor
4	DF Position Sensor
5	APS Start Sensor
6	Feed Cover Sensor
7	Pick-up Roller HP Sensor

Group 3

No.	Description
0	Bottom Plate HP Sensor
1	Bottom Plate Position Sensor
2	Not Used
3	Not Used
4	Not Used
5	Not Used
6	Not Used
7	Not Used

5.7.4 ADF OUTPUT CHECK: SP6008

1. Open SP mode SP6008.
2. Select the SP number that corresponds to the component you wish to check.
(Refer to the table below.)
3. Press On then press Off to test the selected item. You cannot exit and close this display until you click Off to switch off the output check currently executing.

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

No.	Description	0	1
1	Feed Motor: Forward	OFF	ON
2	Feed Motor: Reverse	OFF	ON
3	Transport Motor: Forward	OFF	ON
4	Exit Motor: Forward	OFF	ON
5	Pick-up Motor: Reverse	OFF	ON
6	Bottom Plate Motor: Forward	OFF	ON
7	Bottom Plate Motor: Reverse	OFF	ON

Service
Tables

5.7.5 FINISHER INPUT CHECK: SP6117 (B478/B704 ONLY)

Class 3 No.	Bit No.	Description	Reading	
			0	1
1	7	Stack Feed-out Belt HP Sensor	Home position	Not home position
	6	Not Used		
	5	Shift Tray Lower Limit 2 Sensor	Not detected	Detected
	4	Shift Tray Lower Limit 3 Sensor	Not detected	Detected
	3	Stapler Tray Exit Sensor	Paper not detected	Paper detected
	2	Shift Tray Exit Sensor	Paper detected	Paper not detected
	1	Upper Tray Exit Sensor	Paper detected	Paper not detected
	0	Entrance Sensor	Paper not detected	Paper detected
2	7	Not used		
	6	Front Door Safety Switch	Door closed	Door open
	5	Stapler Tray Paper Sensor	Paper not detected	Paper detected
	4	Staple End Sensor	Not end	End
	3	Staple Hammer HP Sensor	Home position	Not home position
	2	Stapler HP Sensor	Not home position	Home position
	1	Shift Tray Half-turn Sensor	Home position	Not home position
	0	Jogger HP Sensor	Not home position	Home position
3	7	Not Used		
	6	Staple Cartridge Set Sensor	Set	Not set
	5	Staple Mode HP Sensor 2	Not detected	Detected
	4	Staple Mode HP Sensor 1	Not detected	Detected
	3	Not Used		
	2	Punch Waste Hopper Sensor	Not full	Full
	1	Punch HP1 Sensor	Home position	Not home position
	0	Punch Unit Connection	Connected	Not connected
4	7	Stapler Ready	Ready	Not ready
	6	Stapler Return Sensor	Not detected	Detected
	5	Exit Guide Open Sensor	Home position	Not home position
	4	Stack Plate –Center HP Sensor	Not home position	Home position
	3	Pre-stack Tray Paper Sensor	Paper not detected	Paper detected
	2	Staple Waste Hopper Sensor	Not full	Full
	1	Stapler Rotation HP Sensor	Not home position	Home position
	0	Upper Tray Limit Sensor	Not full	Full
5	7	Punch HP 2 Sensor	Home position	Not home position
	6	Not Used		
	5	Shift Lower Limit - Large Paper Sensor	Not detected	Detected
	4	Shift Mode HP Sensor	Not detected	Detected
	3	Stacking Roller HP Sensor	Home position	Not home position
	2	Positioning Roller HP Sensor	Not home position	Home position
	1	Stack Plate – Rear HP Sensor	Not home position	Home position
	0	Stack Plate – Front HP Sensor		Home position
			Not home position	

INPUT/OUTPUT CHECK

Class 3 No.	Bit No.	Description	Reading	
			0	1
6	7	Not Used		
	6	Not Used		
	5	Not Used		
	4	Not Used		
	3	Emergency Stop Switch	Not press	Press
	2	Shift Jogger Lift HP Sensor (Optional Jogger Unit)	Home position	Not home position
	1	Shift Jogger HP Sensor (Optional Jogger Unit)	Not home position	Home position
	0	Optional Jogger Unit Connection	Connection	Not connection

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Tables

5.7.6 FINISHER OUTPUT CHECK: SP6118

No.	Description
1	Upper Transport Motor
2	Shift Tray Exit Motor
3	Upper Tray Junction Gate Solenoid
4	Shift Tray Lift Motor
5	Jogger Motor
6	Stapler Motor
7	Staple Hammer Motor (Stapler Unit)
8	Punch Motor
9	Stapler Junction Gate Solenoid
10	Positioning Roller Solenoid
11	Stack Feed-out Motor
12	Shift Motor
13	Stapler Rotation Motor
14	Lower Transport Motor
15	Exit Guide Motor
16	Stack Plate-Center Motor
17	Pre-stack Junction Gate Solenoid
18	Pre-stack Paper Stopper Solenoid
19	Stapler Return Solenoid
20	Stack Plate- Front Motor
21	Stack Plate – Rear Motor
22	Stacking Roller Drag Motor
23	Stacking Roller Motor
24	Shift Jogger Motor (Optional Jogger Unit)
25	Shift Jogger Lift Motor (Optional Jogger Unit)

5.8 USING THE DEBUG LOG

This machine provides a Save Debug Log feature that allows the Customer Engineer to save and retrieve error information for analysis.

Every time an error occurs, debug information is recorded in volatile memory but this information is lost when the machine is switched off and on.

The Save Debug Log feature provides two main features:

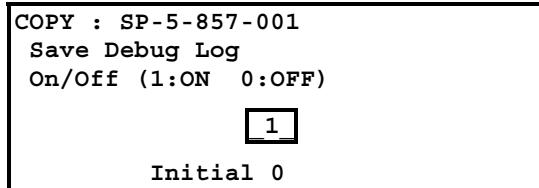
- Switching on the debug feature so error information is saved directly to the HDD for later retrieval.
- Copying the error information from the HDD to an SD card.

When a user is experiencing problems with the machine, follow the procedure below to set up the machine so the error information is saved automatically to the HDD.

5.8.1 SWITCHING ON AND SETTING UP SAVE DEBUG LOG

The debug information cannot be saved until the “Save Debug Log” function has been switched on and a target has been selected.

1. Enter the SP mode and switch the Save Debug Log feature on.
 - Press  then use the 10-key pad to enter ①①⑦.
 - Press and hold down  for more than 3 seconds.
 - Touch “Copy SP”.
 - On the LCD panel, open SP5857.
2. Under “5857 Save Debug Log”, touch “1 On/Off”.



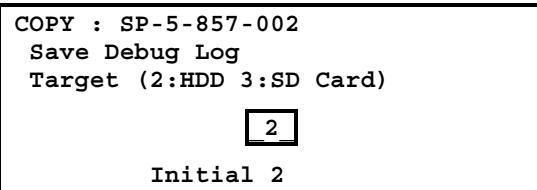
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3. On the control panel keypad, press “1” then press . This switches the Save Debug Log feature on.

NOTE: The default setting is “0” (OFF). This feature must be switched on in order for the debug information to be saved.

USING THE DEBUG LOG

4. Next, select the target destination where the debug information will be saved. Under “5857 Save Debug Log”, touch “2 Target”, enter “2” with the operation panel key to select the hard disk as the target destination, then press #.



NOTE: Select “3 SD Card” to save the debug information directly to the SD card if it is inserted in the service slot.

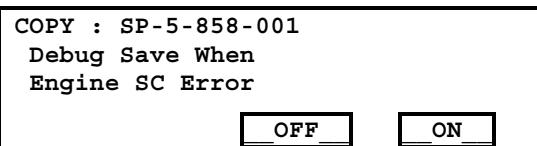
5. Now touch “5858” and specify the events that you want to record in the debug log. SP5858 (Debug Save When) provides the following items for selection.

1	Engine SC Error	Saves data when an engine-related SC code is generated.
2	Controller SC Error	Saves debug data when a controller-related SC Code is generated.
3	Any SC Error	Saves data only for the SC code that you specify by entering code number.
4	Jam	Saves data for jams.

NOTE: More than one event can be selected.

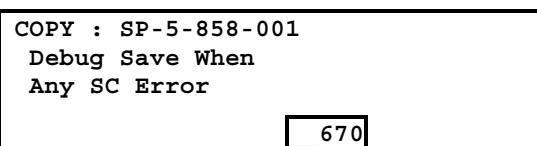
Example 1: To Select Items 1, 2, 4

Touch the appropriate items(s). Press “ON” for each selection. This example shows “Engine SC Error” selected.



Example 2: To Specify an SC Code

Touch “3 Any SC Error”, enter the 3-digit SC code number with the control panel number keys, then press #. This example shows an entry for SC670.



NOTE: For details about SC code numbers, please refer to the SC tables in Section “4. Troubleshooting”.

6. Next, select the one or more memory modules for reading and recording debug information. Touch “5859”.

Under “5859” press the appropriate key item for the module that you want to record.

Enter the appropriate 4-digit number, then press $\#$.

NOTE: Refer to the two tables below for the 4-digit numbers to enter for each key.

The example below shows “Key 1” with “2222” entered.

COPY : SP-5-859-001
Debug Save Key No.
Key 1

2222

The following keys can be set with the corresponding numbers. (The initials in parentheses indicate the names of the modules.)

4-Digit Entries for Keys 1 to 10

KEY NO.	COPY	PRINTER	SCANNER	WEB
1		2222 (SCS)		
2		2223 (SRM)		
3		256 (IMH)		
4		1000 (ECS)		
5		1025 (MCS)		
6	4848 (COPY)	4400 (GPS)	5375 (Scan)	5682 (NFA)
7	2224 (BCU)	4500 (PDL)	5682 (NFA)	6600 (WebDB)
8		4600 (GPS-PM)	3000 (NCS)	3300 (PTS)
9		2000 (NCS)	2000 (NCS)	6666 (WebSys)
10		2224 (BCU)		2000 (NCS)

NOTE: The default settings for Keys 1 to 10 are all zero (“0”).

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Tables

Key to Acronyms

Acronym	Meaning	Acronym	Meaning
ECS	Engine Control Service	NFA	Net File Application
GPS	RA2K Print Service	PDL	Printer Design Language
GSP-PM	RA2K Print Service – Print Module	PTS	Print Server
IMH	Image Memory Handler	SCS	System Control Service
MCS	Memory Control Service	SRM	System Resource Management
NCS	Network Control Service	WebDB	Web Document Box (Document Server)

The machine is now set to record the debugging information automatically on the HDD (the target selected with SP5857-002) for the events that you selected SP5858 and the memory modules selected with SP5859.

Please keep the following important points in mind when you are doing this setting:

- Note that the number entries for Keys 1 to 5 are the same for the Copy, Printer, Scanner, and Web memory modules.
- The initial settings are all zero.
- These settings remain in effect until you change them. Be sure to check all the settings, especially the settings for Keys 6 to 10. To switch off a key setting, enter a zero for that key.
- You can select any number of keys from 1 to 10 (or all) by entering the corresponding 4-digit numbers from the table.
- You cannot mix settings for the groups (COPY, PRINTER, etc.) for 006~010. For example, if you want to create a PRINTER debug log you must select the settings from the 9 available selections for the “PRINTER” column only.
- One area of the disk is reserved to store the debug log. The size of this area is limited to 4 MB.

5.8.2 RETRIEVING THE DEBUG LOG FROM THE HDD

Retrieve the debug log by copying it from the hard disk to an SD card.

1. Insert the SD card into the service slot of the copier.
2. Enter the SP mode and execute SP5857-009 (Copy HDD to SD Card (Latest 4 MB)) to write the debugging data to the SD card.
3. After you return to the service center, use a card reader to copy the file and send it for analysis to Ricoh by email, or just send the SD card by mail.

5.8.3 RECORDING ERRORS MANUALLY

Since only SC errors and jams are recorded to the debug log automatically, for any other errors that occur while the customer engineer is not on site, please instruct customers to perform the following immediately after occurrence to save the debug data. Such problems would include a controller or panel freeze.

NOTE: In order to use this feature, the customer engineer must have previously switched on the Save Debug Feature (SP5857-001) and selected the hard disk as the save destination (SP5857-002).

1. When the error occurs, on the operation panel, press  (Clear Modes).
2. On the control panel, enter “01” then hold down  for at least 3 sec. until the machine beeps then release. This saves the debug log to the hard disk for later retrieval with an SD card by the service representatives.
3. Switch the machine off and on to resume operation.

The debug information for the error is saved on the hard disk so the service representatives can retrieve it on their next visit by copying it from the HDD to an SD card.

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5.8.4 NEW DEBUG LOG CODES

SP5857-015 *Copy SD Card-to-SD Card: Any Desired Key*

This SP copies the log on an SD card (the file that contains the information written directly from shared memory) to a log specified by key number. The copy operation is executed in the log directory of the SD card inserted in the same slot. (This function does not copy from one slot to another.) Each SD card can hold up to 4 MB of file data. Unique file names are created for the data during the copy operation to prevent overwriting files of the same name. This means that log data from more than one machine can be copied onto the same SC card. This command does not execute if there is no log on the HDD for the name of the specified key.

SP5857-016 *Create a File on HDD to Store a Log*

This SP creates a 32 MB file to store a log on the HDD. However, this is not a completely empty file. The created file will hold the number “2225” as the SCS key number and other non-volatile information. Even if this SP is not executed, a file is created on the HDD when the first log is stored on the HDD, but this operation takes time. This creates the possibility that the machine may be switched off and on before the log can be created completely. If you execute this SP to create the log file beforehand, this will greatly reduce the amount of time required to acquire the log information and save onto the HDD. With the file already created on the HDD for the log file, the data only needs to be recorded; a new log file does not require creation. To create a new log file, execute SP5857-011 to delete the debug log data from the HDD and then execute this SP (SP5857-016).

SP5857-017 *Create a File on SD Card to Store a Log*

This SP creates a 4 MB file to store a log on an SD card. However, this is not a completely empty file. The created file will hold the number “2225” as the SCS key number and other non-volatile information. Even if this SP is not executed, a file is created on the SD card when the first log is stored on the SD card, but this operation takes time. This creates the possibility that the machine may be switched off and on before the log can be created completely. If you execute this SP to create the log file beforehand, this will greatly reduce the amount of time required to acquire the log information and save onto the SD card. With the file already created on the SD card for the log file, the data only needs to be recorded; a new log file does not require creation. To create a new log file, execute SP5857-012 to delete the debug log data from the SD card and then execute this SP (SP5857-017).

5.9 USER TOOLS

5.9.1 OVERVIEW

This section is a summary of the user tools. Refer to the operator's manual for more details.

1. On the operation panel, press the User Tools button.
2. Press the appropriate key, then access the following items:
 - Initial System
 - Copier/Document Box
 - Initial Printer Settings
 - Initial Scanner Settings
 - Display Language
 - Contact Information
 - Counters

You can use these tools while the machine is operating, during a jam, or even when a warning is displayed. However, you cannot move to the user screen while in the SP mode, but you can easily switch between the SP mode screen and the operation screen by pressing Copy Window.

During machine operation, in the jam mode, or while a warning message is displayed, the display language can be changed and the counters can be displayed. However, the counters cannot be printed.

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5.9.2 SYSTEM SETTINGS

B064 Series System Settings

General Features
Panel Tone
Warm Up Notice
Copy Count Display
Function Priority
Print Priority
Function Reset Timer
Interleave Print
Output Tray Setting
Output Copier
Output: Document Server
Output: Printer
ADF Original Table Elevation
Job List Display Time
Tray Paper Settings
Paper Tray Priority: Copier
Paper Tray Priority: Printer
Tray Paper Size: Tray 2
Tray Paper Size: Tray 3
Tray Paper Size: Tray 4
Paper Type: Bypass Tray
Paper Type: Tray 1
Paper Type: Tray 2
Paper Type: Tray 3
Paper Type: Tray 4
Paper Type: LCT
Slip Sheet Tray
Cover Sheet Tray
Slip Sheet Tray 1
Slip Sheet Tray 2
Timer Setting
Auto Off Timer
Energy Saver Timer
Panel Off Timer
System Reset Timer
Copier/Document Server Auto Reset Timer
Scanner Auto Reset Timer
Set Date
Set Time
Weekly Timer Code
Weekly Timer: Monday
Weekly Timer: Tuesday
Weekly Timer: Wednesday
Weekly Timer: Thursday
Weekly Timer: Friday
Weekly Timer: Saturday
Weekly Timer: Sunday

Interface Settings
Network
IP Address
Subnet Mask
Gateway Address
Network Boot
Effective Protocol
NW Frame Type
Ethernet Speed
Parallel Interface
Parallel Timing
Parallel Communication Speed
Selection Signal Status
Input Prime
Bidirectional Communication
File Transfer
Delivery Option
Scanner Recall Interval Time
Number of Scanner Recalls
Key Operator Tools
User Code Management
Key Counter Management
Key Operator Code
Display/Print Counter
Display/Clear/Print Counter per User Code
Address Book Management
Address Book: Program/Change/Delete Group
Address Book: Change Order
Address Book: Edit Title
Address Book: Select Title
Auto Delete File
Delete All Files
Display Password with Stored File
Key Operator's E-Mail Address
AOF (Always On)

Service
Tables

B140 Series System Settings

General Features
Panel Tone
Warm Up Notice
Copy Count Display
Function Priority
Print Priority
Function Reset Timer
Interleave Print
Output: Copier
Output: Document Server
Output: Printer
ADF Original Table Elevation
Job List Display Time
<F/F4> Size Setting
Z-fold Position
Tray Paper Settings
Paper Tray Priority: Copier
Paper Tray Priority: Printer
Tray Paper Size: Tray 2
Tray Paper Size: Tray 3
Paper Type: Bypass Tray
Paper Type: Tray 1
Paper Type: Tray 2
Paper Type: Tray 3
Paper Type: LCT
Cover Sheet Tray
Slip Sheet Tray
Designation Sheet Tray 1
Designation Sheet Tray 2
Printer Bypass Paper Size
Timer Settings
Auto Off Timer
Energy Saver Timer
Panel Off Timer
System Reset Timer
Copier/Document Server Auto Reset Timer
Scanner Auto Reset Timer
Set Date
Set Time
Weekly Timer Code
Auto Logout Timer
Weekly Timer: Monday
Weekly Timer: Tuesday
Weekly Timer: Wednesday
Weekly Timer: Thursday
Weekly Timer: Friday
Weekly Timer: Saturday
Weekly Timer: Sunday

Interface Settings
Network
IP Address
Gateway Address
DNS Configuration
DDNS Configuration
Domain Name
WINS Configuration
Effective Protocol
NW Frame Type
SMB Computer Name
SMB Work Group
Ethernet Speed
Ping Command
Permit SNMP V3 Communication
Permit SSL/TLS Communication
Host Name
Machine Name
Parallel Interface
Parallel Timing
Parallel Communication Speed
Selection Signal Status
Input Prime
Bidirectional Communication
Signal Control
File Transfer
Delivery Option
SMTP Server
SMTP Authentication
POP Before SMTP
POP3 Setting
Administrator's E-mail Address
E-mail Communication Report
Default User Name/Password (Send)
Program/Change/Delete E-mail Message
Program/Change/Delete Subject
Scanner Recall Interval Time
Number of Scanner Recalls
Auto Specify Sender Name

Service
Tables

USER TOOLS

Administrator Tools
User Authentication Management
Administrator Authentication Management
Program/Change Administrator
Extended Security
Extend Change Unit Management
Enhanced Extend Change Unit Management
Display Print Counter
Display/Clear/Print Counter Per User
Address Book Management
Address Book: Program/Change/Delete/Delete Group
Address Book: Edit Title
Address Book: Change Order
Print Address Book: Destination List
Address Book: Select Title
Auto Delete File
Delete All Files
Program/Change/Delete LDAP Server
Use LDAP Server
AOF (Always ON)
Firmware Version
Auto Erase Memory Setting
Erase All Memory

5.9.3 COPIER/DOCUMENT SERVER FEATURES

General Features
Auto Paper Select Priority
Auto Tray Switching
Paper Display
Original Type Priority
Original Type Display
Auto Image Density Priority
Copy Quality
Image Density
Duplex Mode Priority
Copy Orientation in Duplex Mode
Original Orientation in Duplex Mode
Change Initial Mode
Tone: Original Remains
Job End Call
Copy Function Key: F1
Copy Function Key: F2
Copy Function Key: F3
Copy Function Key: F4
Copy Function Key: F5
Document Server Storage Key: F1
Document Server Storage Key: F2
Document Server Storage Key: F3
Document Server Storage Key: F4
Document Server Storage Key: F5
Document Server Print Key 1: F1
Document Server Print Key 1: F2
Document Server Print Key 1: F3
Document Server Print Key 1: F4
Document Server Print Key 1: F5
Reproduction Ratio
Shortcut R/E 1
Shortcut R/E 2
Shortcut R/E 3
Enlarge 1
Enlarge 2
Enlarge 3
Enlarge 4
Enlarge 5
Priority Setting: Enlarge
Reduce 1
Reduce 2
Reduce 3
Reduce 4
Reduce 5
Reduce 6
Priority Setting: Reduce
Ratio for Create Margin
R/E Priority

Service
Tables

USER TOOLS

Edit
Front Margin: Left/Right
Back Margin: Left/Right
Front Margin: Top/Bottom
Back Margin: Top/Bottom
1-Sided → 2-Sided Auto Margin: T to T
1-Sided → 2-Sided Auto Margin: T to B
Erase Border Width
Erase Original Shadow in Combine
Erase Center Width
Image Repeat Separation Line
Double Copies Separation Line
Separation Line in Combine
Copy Back Cover
Front Cover Copy in Combine
Copy on Designating Page in Combine
Orientation: Booklet, Magazine
Copy Order in Combine

Stamp
Background Numbering
Size
Density
Preset Stamp
Stamp Priority
Stamp Language
Stamp Position: COPY
Stamp Position: URGENT
Stamp Position: PRIORITY
Stamp Position: For Your Info.
Stamp Position: PRELIMINARY
Stamp Position: For Internal Use Only
Stamp Position: CONFIDENTIAL
Stamp Position: DRAFT
Stamp Format: COPY
Stamp Format: URGENT
Stamp Format: PRIORITY
Stamp Format: For Your Info.
Stamp Format: PRELIMINARY
Stamp Format: For Internal Use Only
Stamp Format: CONFIDENTIAL
Stamp Format: DRAFT
User Stamp
Program/Delete Stamp
Stamp Position: 1
Stamp Position: 2
Stamp Position: 3
Stamp Position: 4
Stamp Format: 1
Stamp Format: 2
Stamp Format: 3
Stamp Format: 4
Date Stamp
Format
Font
Stamp Position
Stamp Setting
Size
Superimpose

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USER TOOLS

Page Numbering
Stamp Format
Font
Size
Duplex Back Page Stamping Position
Page Numbering in Combine
Stamp on Designating Slip Sheet
Stamp Position P1, P2
Stamp Position: 1/5, 2/5 ...
Stamp Position: -1-, -2- ...
Stamp Position: P.1, P.2 ...
Stamp Position: 1, 2, ...
Stamp Position: 1-1, 1-2 ...
Superimpose

Input/Output
Switch to Batch
SADF Auto Reset
Rotate Sort: Auto Paper Continue
Auto Sort
Memory Full Auto Scan Restart
Select Stapling Position (Top Left)
Select Stapling Position (Bottom Left)
Select Stapling Position (Top Right)
Select Stapling Position (Bottom Right)
Select Stack Position
Select Punch Type
Letterhead Setting
Eject Copy Face Up/Down in Glass Mode
Eject Copy Face Up/Down in Bypass Mode

5.9.4 INQUIRY

B064 Series INQUIRY

Machine Repair
Telephone No.
Machine Serial No.
Sales Representative
Telephone Number
Consumables
Toner
Staple

B140 Series INQUIRY

Machine Repair
Telephone No.
Machine Serial No.
Sales Representative
Telephone Number

5.9.5 COUNTER

Total Counter
Print Counter List

Service
Tables

⇒ 5.10 DIP SWITCHES

5.10.1 BCU

BCU Base Board DIP SW101

No.	Function	Default	Comments
1	B163 CPM	OFF	OFF: 51cpm, ON: 50cpm Note: This switch is for the France model only.
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.

5.10.2 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	

* Dips 5, 6, &7 are for factory use only.

Controller Board DIP SW 5

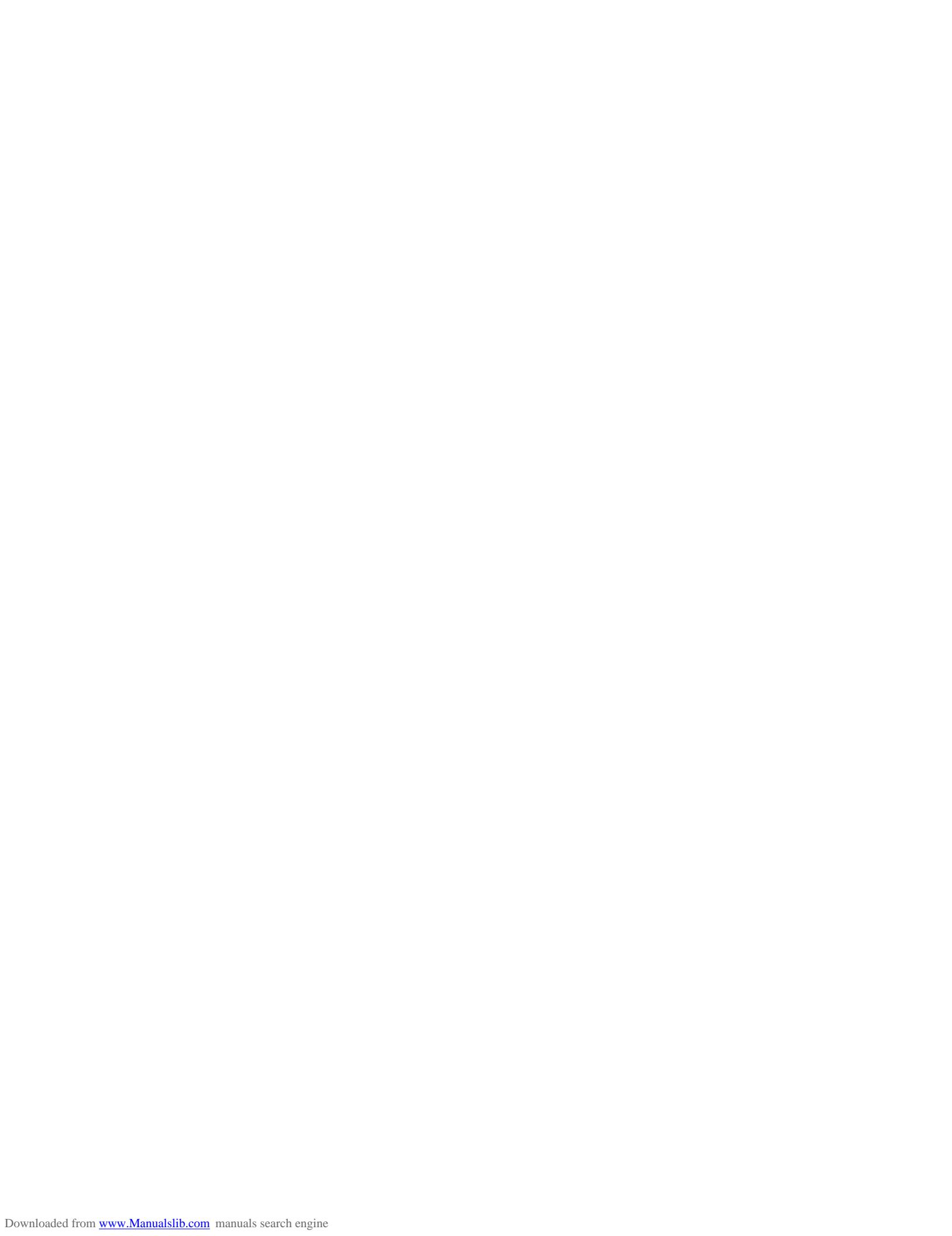
No.	Function	Default	Comments
1	DFU	OFF	
2	Not Used	OFF	

DFU: Design, Factory Use only. Do not change these settings.

Service
Tables

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	

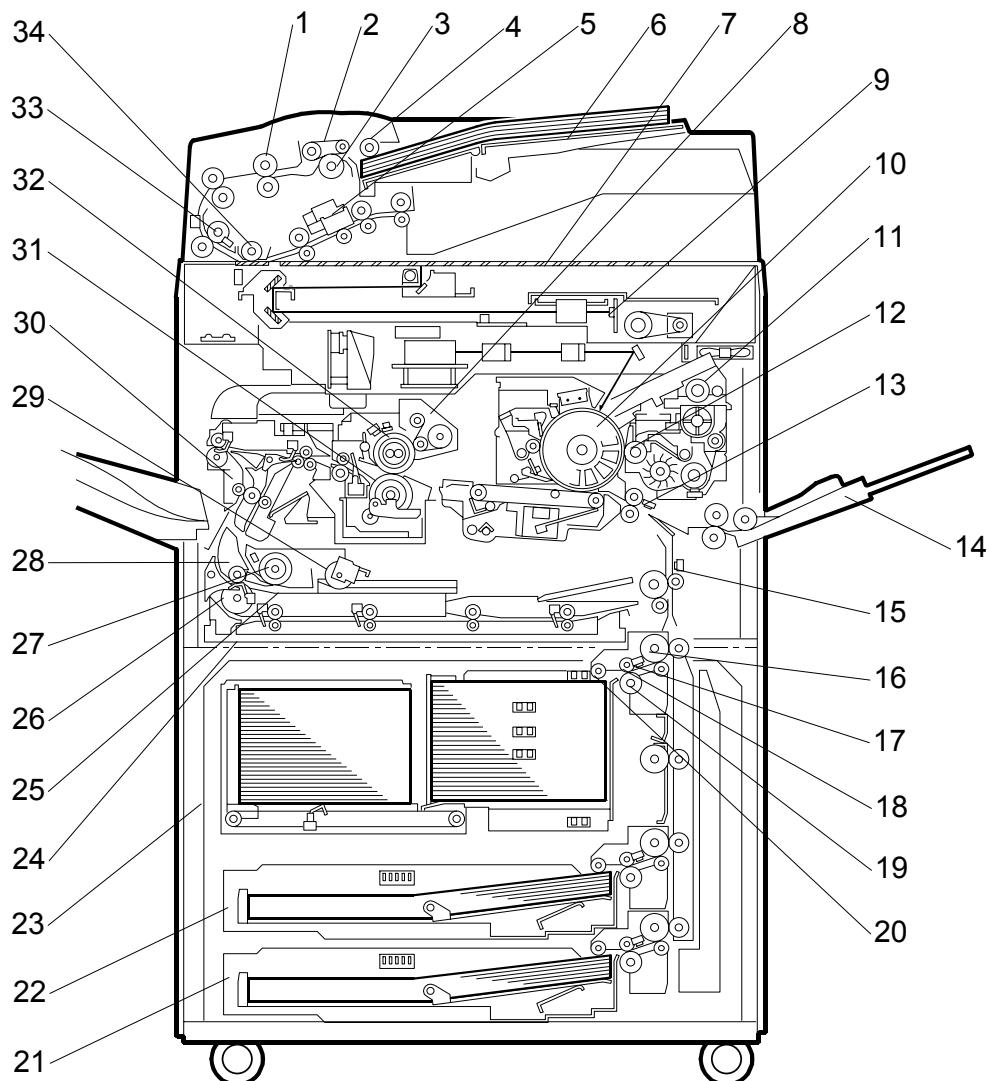


DETAILED DESCRIPTIONS



6. DETAILED DESCRIPTIONS

6.1 OVERVIEW

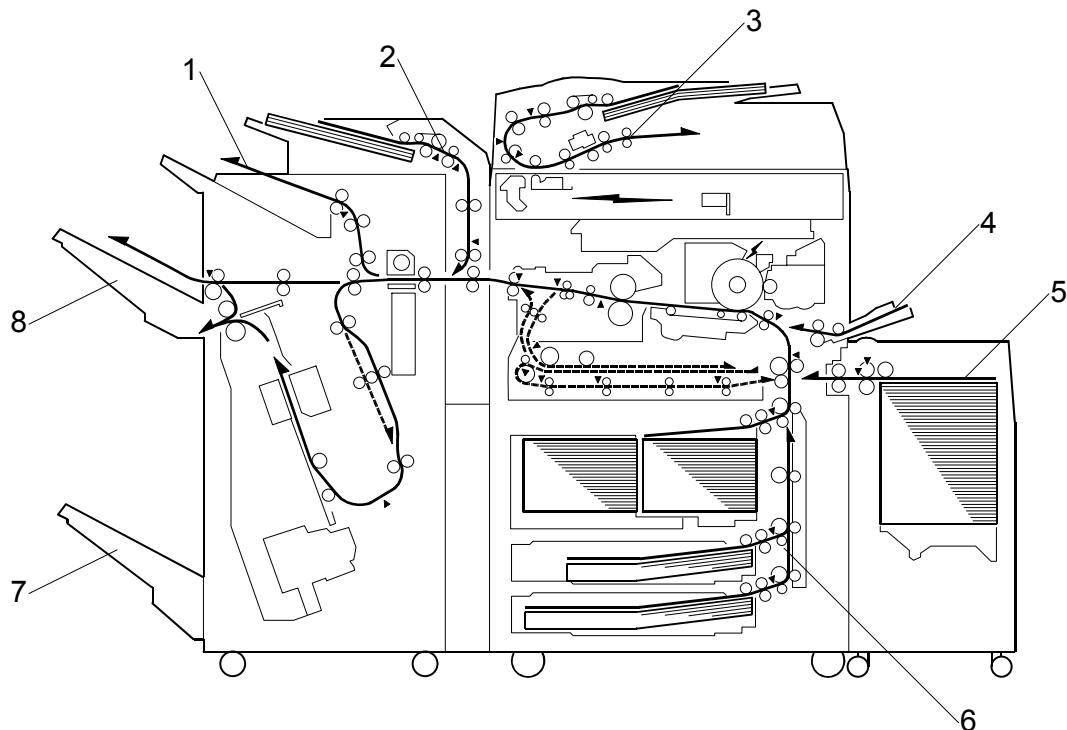


Detailed
Descriptions

OVERVIEW

1. Entrance Roller (ADF)
2. Feed Belt (ADF)
3. Separation Roller (ADF)
4. Pick-up Roller (ADF)
5. CIS (Contact Image Sensor)
6. Original Feed-in Tray
7. Exposure Glass
8. Fusing Unit
9. CCD
10. OPC Drum
11. Development Unit
12. Development Roller
13. Registration Sensor
14. By-pass Tray
15. Relay Sensor
16. Grip Roller
17. Feed Sensor (Paper Tray)
18. Feed Roller (Paper Tray)
19. Separation Roller (Paper Tray)
20. Pick-up Roller (Paper Tray)
21. Universal Tray (Tray 3)
22. Universal Tray (Tray 2)
23. Tandem Tray (Tray 1)
24. Duplex Unit
25. Inverter
26. Inverter Exit Roller
27. Inverter Entrance Roller
28. Duplex Junction Gate
29. Reverse Trigger Roller
30. Exit Unit
31. Pressure Roller
32. Hot Roller
33. Scanning (ADF)
34. Exposure (ADF)

6.1.1 PAPER PATH (WITH COVER INTERPOSER TRAY)

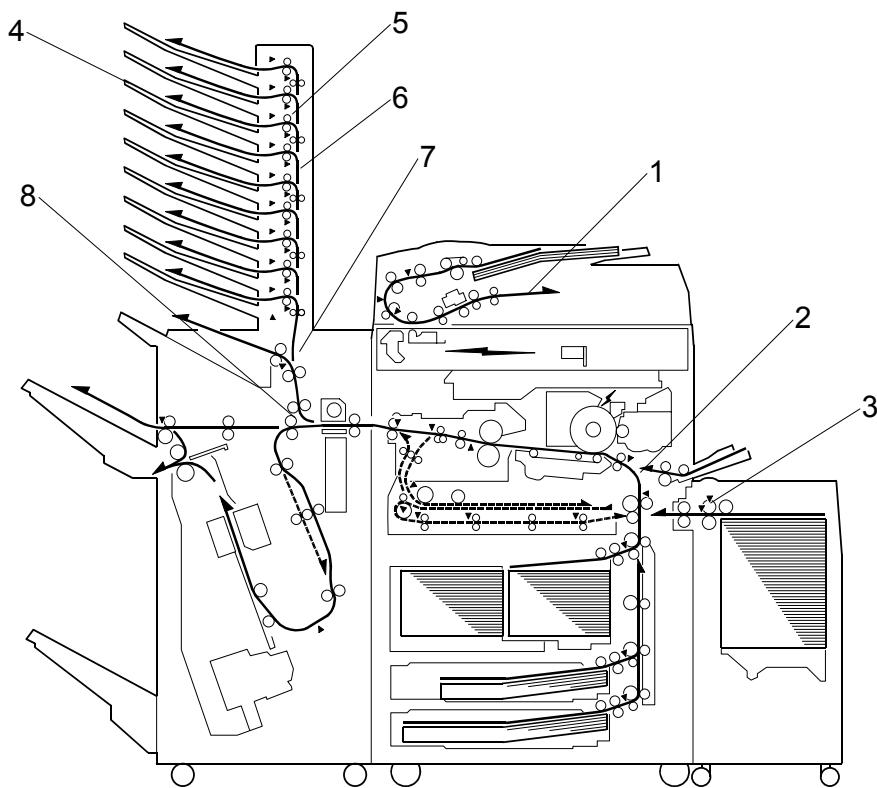


1. Proof Exit Tray
2. Cover Sheet Path
3. Original Path
4. By-pass Tray
5. LCT Feed
6. Vertical Transport Path
7. Finisher Exit Tray 2
8. Finisher Exit Tray 1

Detailed
Descriptions

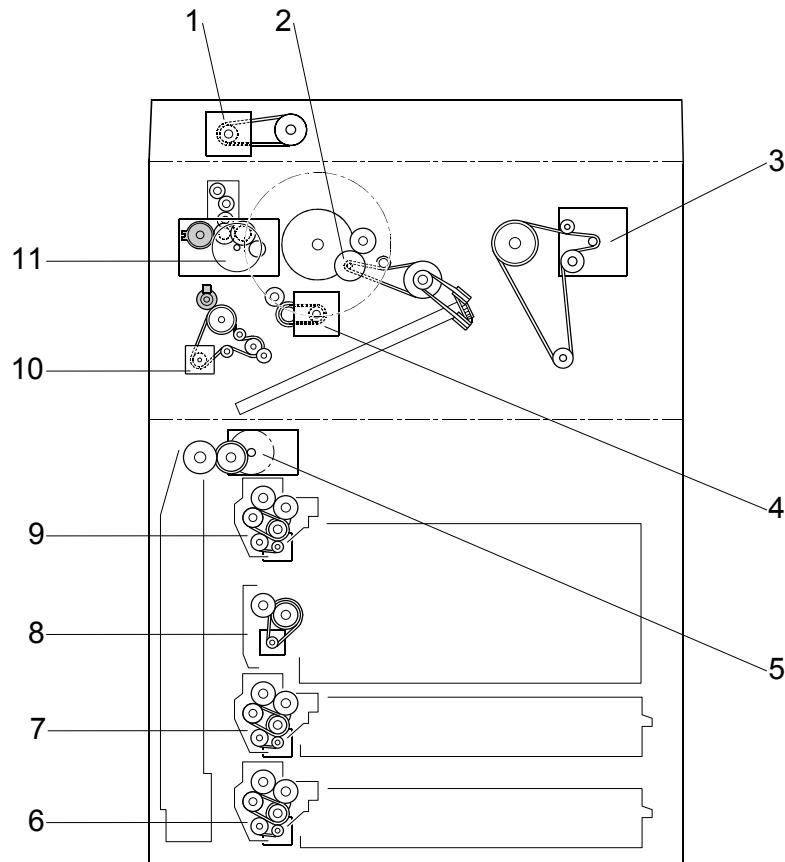
OVERVIEW

6.1.2 PAPER PATH (WITH 9-BIN MAILBOX)



1. Original Paper Path
2. Vertical Transport Path
3. LCT Feed
4. Selected Trays
5. Turn Gates
6. Mailbox Paper Path
7. Junction Gate (paper goes either up to the mailbox or out to the finisher's proof tray)
8. Junction Gates (two junction gates control the paper path inside the finisher)

6.1.3 DRIVE LAYOUT



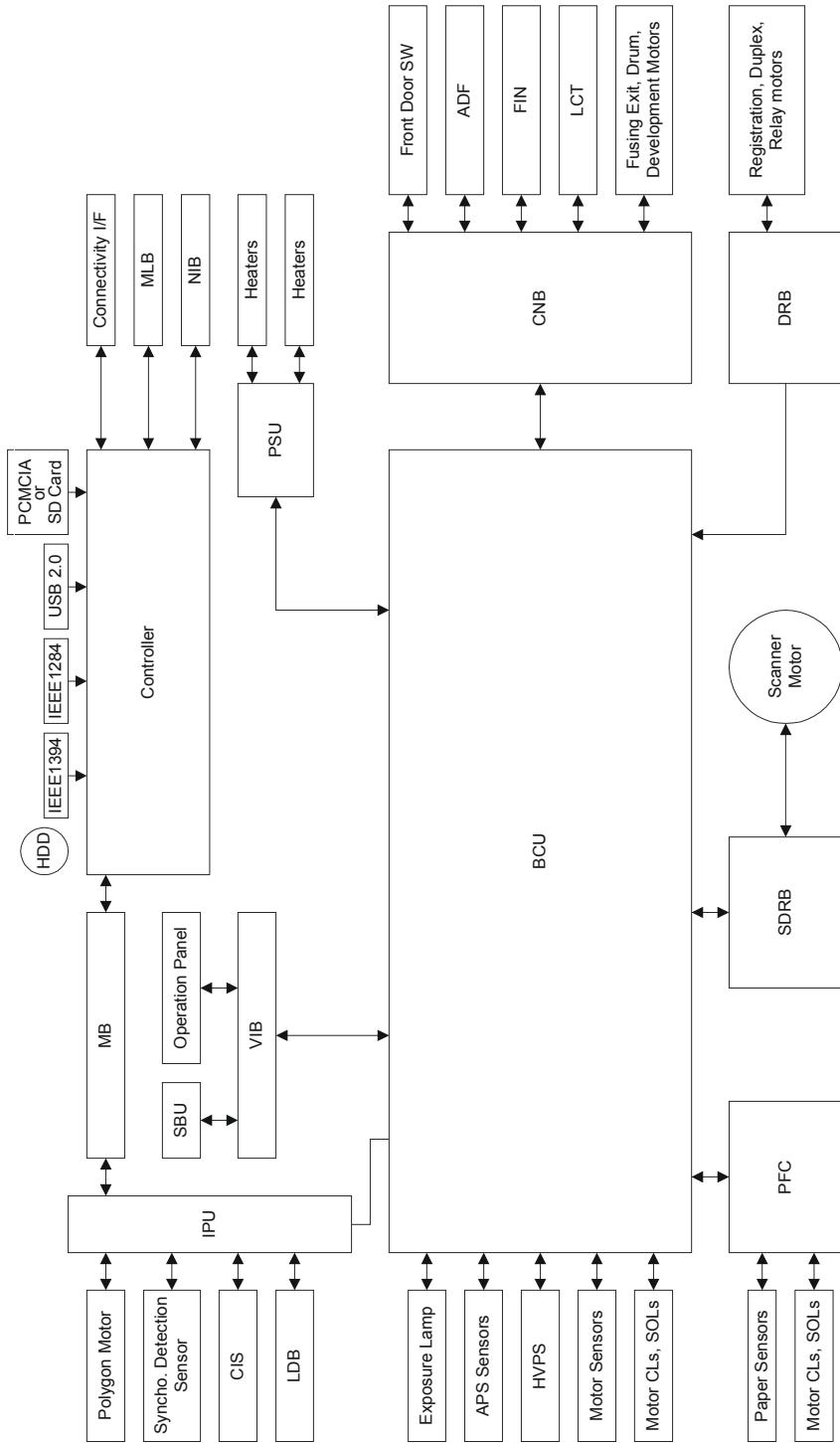
Detailed
Descriptions

- 1. Scanner Motor
- 2. Drum Motor
- 3. Fusing/Exit Motor
- 4. Registration Motor
- 5. Toner Collection Motor
- 6. Paper Feed Motor 3
- 7. Paper Feed Motor 2
- 8. Lower Relay Motor
- 9. Paper Feed Motor 1
- 10. By-pass Motor
- 11. Development Motor

BOARD STRUCTURE

6.2 BOARD STRUCTURE

6.2.1 BLOCK DIAGRAM



6.2.2 COMPONENT DESCRIPTIONS

This machine employs Ricoh RA2K architecture.

Here is a summary of the main parts of the board structure.

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

Controller Board

The controller controls all devices for memory DIMMs, HDD, copying, printing, scanning, etc. In order to add an option (printer, scanner, FireWire, wireless LAN, etc.), install the appropriate ROM DIMM on the controller board.

- NOTE:** 1) The Controller is on the front side of the swing out circuit board unit, with the IPU on the back side.
 2) All Controller DIP SWs should be OFF during normal operation.

MB (Mother Board)

Interfaces the Controller, BICU, and optional devices such as key counters.

Detailed
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.

- NOTE:** The IPU is on the back side of the swing out circuit board unit.

BOARD STRUCTURE

SBU (Sensor Board Unit)

The SBU receives analog signals from the CCD and converts these into digital signals used for image processing.

PFC (Paper Feed Control)

Controls the paper feed trays built into the main machine. The PFC contains an independent CPU.

SDRB (Scanner Driver Board)

Located behind the BCU, drives the scanner and ADF motors and exposure lamp, monitors the scanner HP sensor and the ADF components.

VIB (Video Interface Board)

Located under the exposure glass, interfaces the BCU and IPU with the operation panel and SBU.

DRB (Drive Board)

Drives the duplex stepper motors (x2), the registration motor, and lower relay motor.

CNB (Connection Board)

Relays signals for the ADF, finishers, LCT, fusing exit, drum motor, development motor, and front cover switches.

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.

Area	Power Off	Capacity	Control		Comment
For image storage	Store		Copy conversion 1735		Copy server, local storage
For temporary images	Delete	37124 MB	Copy Allocated copies Printer Scanner	500 100 200 500	Electronic sort, test printing, confidential printing
FileSystem1	Store	500 MB			Print font download, form registration
FileSystem2	Delete	500 MB	50 jobs		Job spooling area
FileSystem3	Store	2000 MB			Work data of SmartNet Monitor for ADMIN.
FileSystem4	Store	2 MB			Area for storing email addresses
Other	Store	174 MB			For debugging

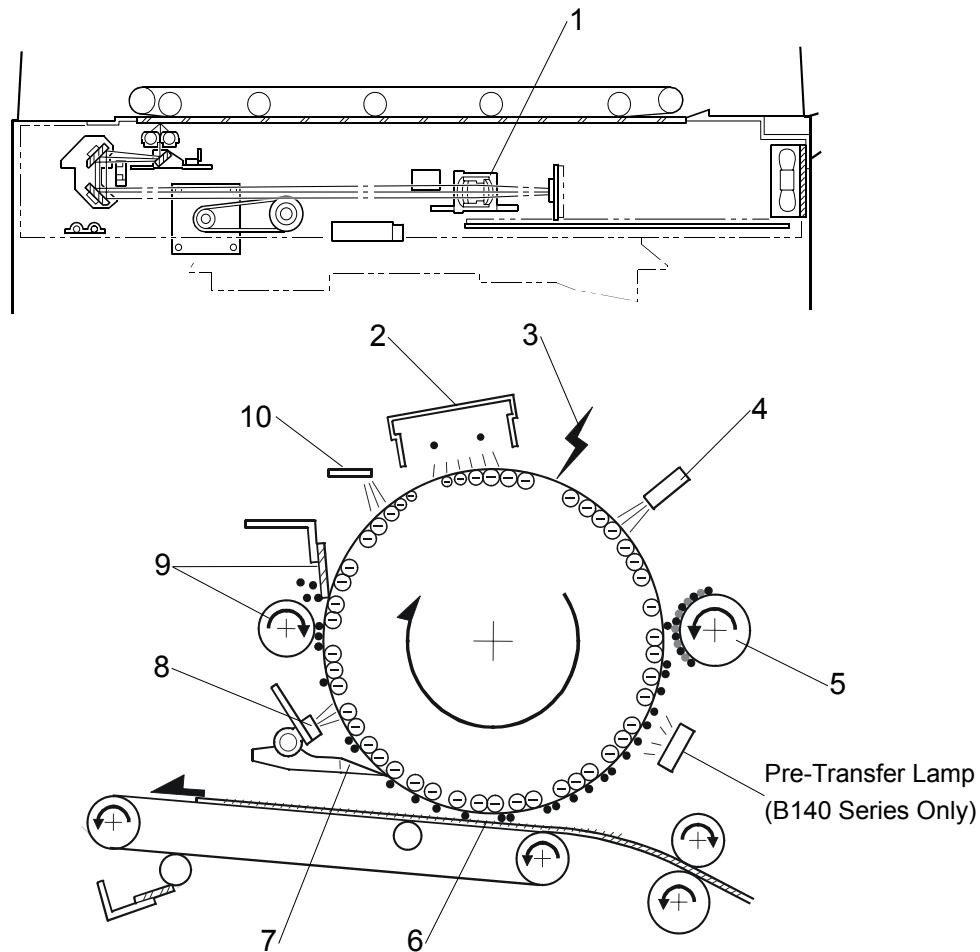
An SC is logged if the HDD is abnormal or cannot be detected. After pressing a key to affirm that you have read the message, the machine shuts down partially but can still be used. However, some features may not be available.

Note the following important points regarding HDD replacement:

- Replacing the HDD loses all document server documents, and user stamps.
- When the HDD is replaced, the print data (user stamps) must be re-installed, so bring an IC card holding the print data so it can be downloaded.
- The “Scan to Email” addresses are also lost by HDD replacement. However, addresses can be backed up SmartNetMonitor.

Detailed Descriptions

6.3 COPY PROCESS OVERVIEW



1. EXPOSURE (B140 Series and B064 Series Only)

A xenon lamp exposes the original. Light reflected from the original passes to the CCD, where it is converted into an analog data signal. This data is converted to a digital signal, processed, and stored in the memory. At the time of printing, the data is retrieved and sent to the laser diode. For multi-copy runs, the original is scanned once and stored on the hard disk.

2. 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.

3. LASER EXPOSURE

The processed image data from the scanned original is retrieved from the hard disk (or, as with the G126, print job information) and transferred to the drum by four laser beams, which form an electrostatic latent image on the drum surface.

The amount of charge remaining as a latent image on the drum depends on the laser beam pulse duration, which is controlled by the BICU.

4. 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 (V_g or V_{grid})
- Laser diode power
- Development bias voltage (V_b)

The drum thermistor detects drum temperature and this data is used to control the above voltages.

5. 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.

PRE-TRANSFER LAMP (B140 Series Only)

After the latent image is developed but before the image is transferred to the copy paper, the photoconductor surface is illuminated by a lamp. This illumination functions in much the same way as the exposure process. The light neutralizes some of the charge on the photoconductor, and thus reduces the attraction of the toner to the photoconductor. This prevents the toner particles from being re-attracted to the photoconductor during the paper separation process. It also makes image transfer and paper separation easier.

6. IMAGE TRANSFER

Paper is fed to the area between the drum surface and the transfer belt at the proper time to align the copy 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.

7. 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.

8. 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 (V_{sp}) to the CPU. The V_{sp} output signal is one of the factors used for toner supply control.

9. CLEANING

The cleaning brush removes toner remaining on the drum after image transfer and the cleaning blade scrapes off all remaining toner.

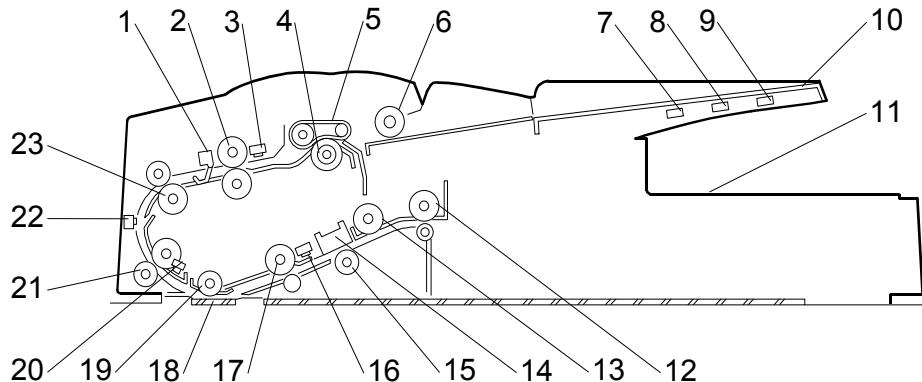
10. QUENCHING

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 cycle.

Detailed
Descriptions

6.4 ADF (B140 SERIES/B064 SERIES ONLY)

6.4.1 OVERVIEW



- | | |
|---------------------------------|--------------------------------|
| 1. Original Width Sensors (x 4) | 13. 3rd Transport Roller |
| 2. Entrance Roller | 14. CIS (Contact Image Sensor) |
| 3. Skew Correction Sensor | 15. White Platen Roller |
| 4. Separation Roller | 16. Exit Sensor |
| 5. Feed Belt | 17. 2nd Transport Roller |
| 6. Pick-up Roller | 18. ADF Exposure Glass |
| 7. Original Length Sensor 1 | 19. Scanning Roller |
| 8. Original Length Sensor 2 | 20. Registration Sensor |
| 9. Original Length Sensor 3 | 21. Pre-scanning Roller |
| 10. Original Tray | 22. Interval sensor |
| 11. Exit Tray | 23. 1st Transport Roller |
| 12. Exit Roller | |

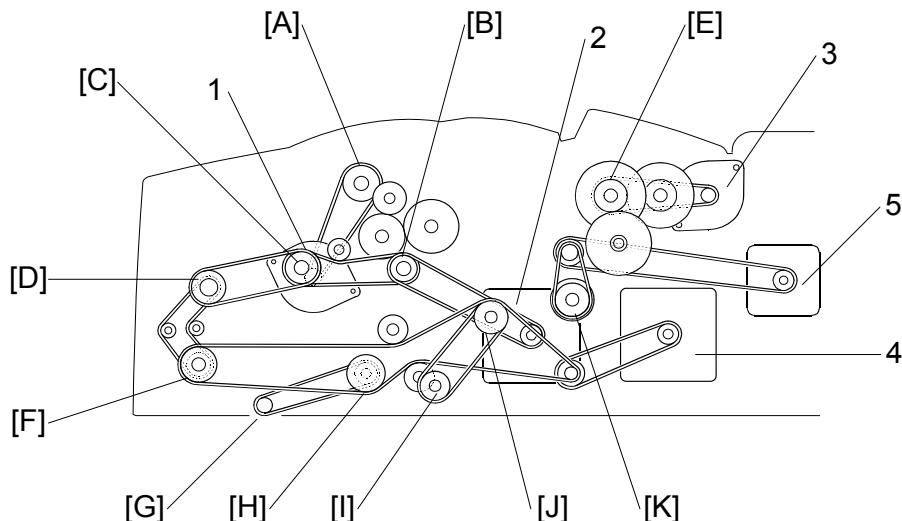
Some sensors are not shown, but the callouts indicate their approximate locations.

Original Separation and Feed. The standard FRR system for paper separation and feed. (Handling Paper> Handling Originals> Document Feed> **FRR with Feed Belt**)

Original Size Detection. A combination of three original length sensors on the original tray and an array of four original width sensors in the paper feed path is used. (Handling Paper> Handling Originals> Original Size Detection> **Dynamic Original Size Detection**)

Duplex Scanning. The front side of the original is scanned as it passes over the ADF exposure glass below, and the back is scanned by a CIS mounted above the paper path. There is no inverter mechanism for duplex scanning in the ADF.

6.4.2 ADF DRIVE LAYOUT



1. Pick-up Roller Lift Motor
2. Feed Motor
3. Bottom Plate Motor
4. Transport Motor
5. Exit Motor

Pick-up roller lift motor: Drives the pick-up roller lift mechanism through gear [A].

Feed motor: Drives the following:

- Pick-up roller and feed belt drive gear [B]
- Entrance roller [C] and 1st transport roller [D]

Bottom plate motor: Drives the bottom plate lift mechanism through gear [E].

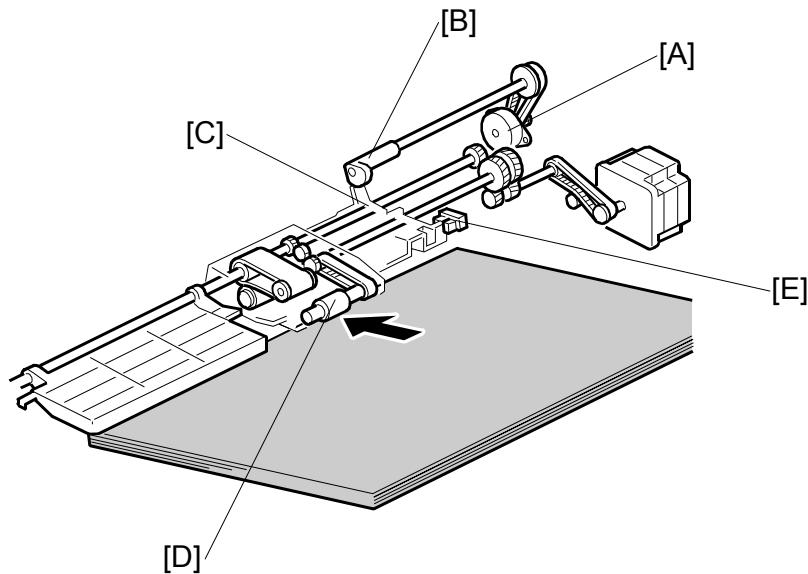
Transport motor: Drives the following:

- Pre-scanning roller [F]
- Scanning roller [G]
- 2nd transport roller [H]
- White platen roller [I]
- 3rd transport roller [J]

Exit motor: Drives the exit roller [K].

Detailed Descriptions

6.4.3 PICK-UP ROLLER LIFT



[A]: Pick-up roller lift motor

[B]: Cam

[C]: Pick-up roller release lever

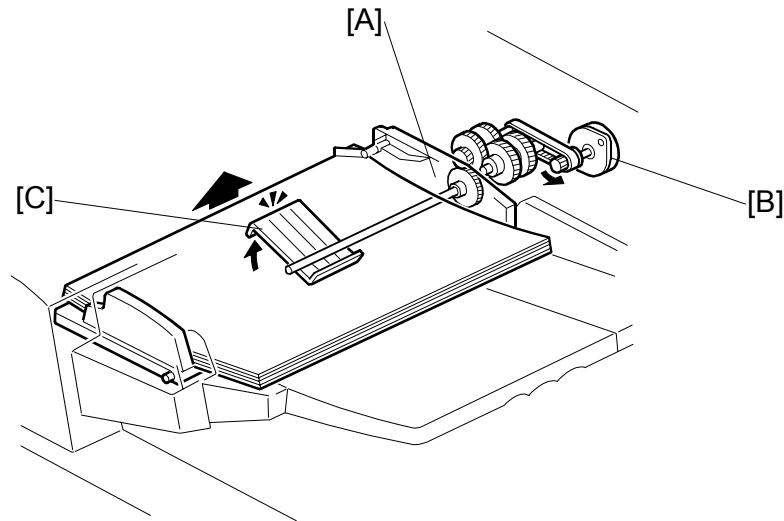
[D]: Pick-up roller

[E]: Pick-up roller HP sensor

When there are no originals: The pick-up roller [D] remains up (this is the home position).

When an original is placed on the tray: The original set sensor switches on, and this switches motor [A] on. The cam [B] releases lever [C]. The lever rises and the pick-up roller [D] drops onto the stack of paper. Then the pick-up roller feeds the paper to the feed belt and separation roller.

6.4.4 BOTTOM PLATE LIFT



- [A]: Bottom plate sensor
- [B]: Bottom plate motor
- [C]: Lift lever

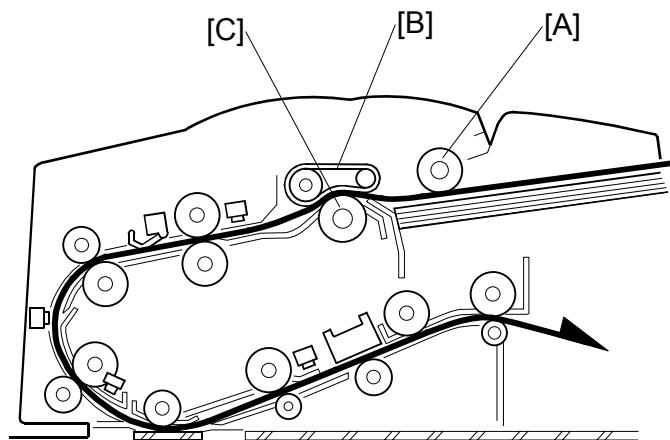
When an original is placed on the original tray: The original set sensor switches on, the pick-up roller drops, and sensor [around location A] (on the pick-up roller assembly) switches off. Then, motor [B] lifts lever [C], raising the bottom plate.

When the bottom plate reaches the correct feed position: Sensor [A] switches off and motor [B] stops.

During the job, when the top of the stack becomes too low: When the pick-up roller drops low enough to switch sensor [A] on again, motor [B] switches on again to raise the stack to the correct feed position.

Detailed
Descriptions

6.4.5 ORIGINAL SEPARATION



[A]: Pick-up roller

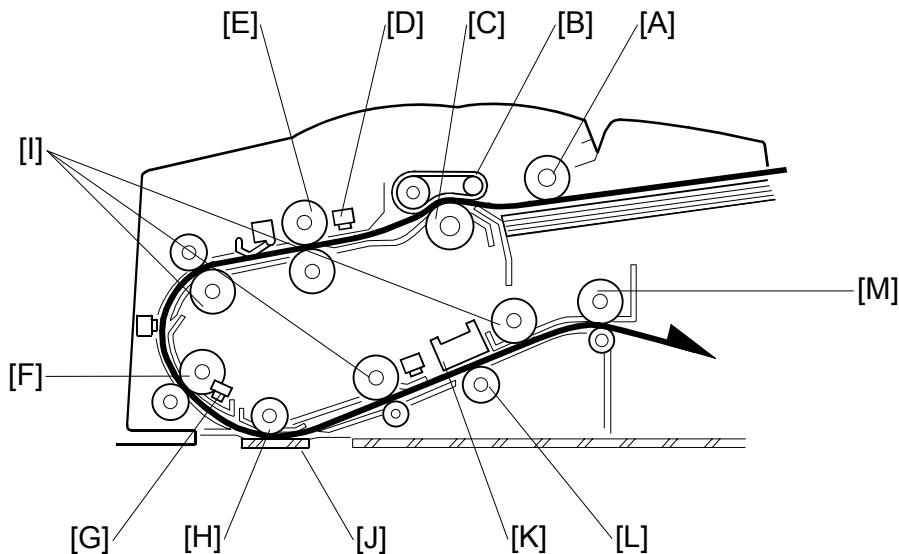
[B]: Feed belt

[C]: Separation roller

This mechanism prevents feeding more than one sheet at a time.

(Handling Paper> Handling Originals> Document Feed> **FRR with Feed Belt**)

6.4.6 ORIGINAL TRANSPORT



The pick-up roller [A] feeds the original to the feed belt [B] and separation roller [C]. Skew is corrected at the skew correction sensor [D] and entrance roller [E].
(☞ 6.4.7)

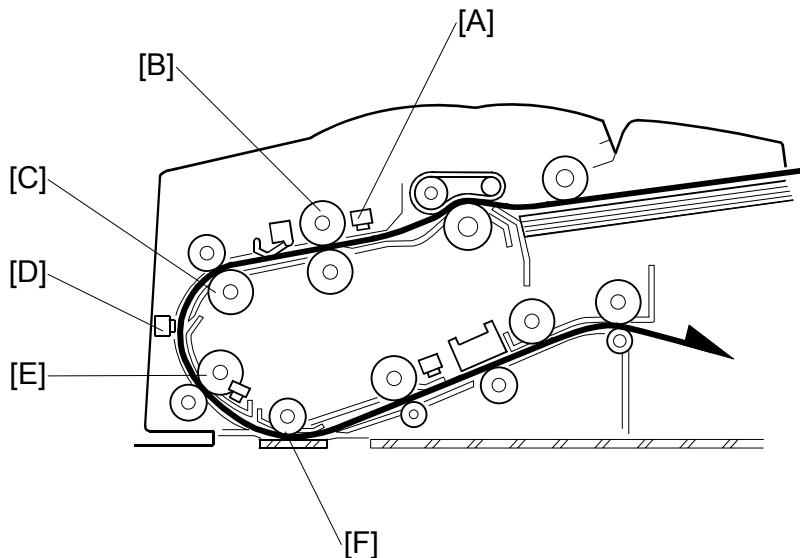
When the skew correction sensor detects the leading edge of the original, the pre-scanning roller [F] switches on. Skew is also corrected at the pre-scanning roller.
(☞ 6.4.7)

Shading correction, which attempts to compensate for slight distortions caused by the differences in brightness of the light elements due to wear, temperature variation, or distortion by the lenses, is done for the first sheet:

- The original is fed for a few clock pulses after the registration sensor [G] detects the leading edge of the original.
- The original is then delayed slightly at the ADF exposure glass while the CPU uses the white plate to determine the white peak level for the job.
- The pre-scanning roller [F], scanning roller [H] and transport rollers [I] feed the original over the ADF exposure glass [J] and under the CIS [K], until it reaches the exit roller [M].
- If the reverse side of the original is to be scanned, the CPU uses the surface of the white platen roller [L] to determine the white peak level for the job.

Detailed Descriptions

6.4.7 ORIGINAL SKEW CORRECTION



- [A]: Skew correction sensor
- [B]: Entrance roller
- [C]: Feed roller (Transport Roller 1)
- [D]: Interval sensor
- [E]: Pre-scanning roller
- [F]: Scanning roller

After pick-up and separation, the skew correction sensor [A] detects the leading edge of the original and the entrance roller [B] is delayed for the prescribed number of pulses to buckle the original and correct skew.

If the original is B6, A5, or HLT, or during any duplex scanning regardless of original size, when the interval sensor [D] detects the leading edge of the original, the pre-scanning motor [E] is delayed for the prescribed number of pulses to buckle the original and correct skew.

When scanning only the front side of originals larger than A5, after the entrance roller [B] starts rotating, the feed motor increases the speed of roller [C] to reduce the interval between the original just fed and the original ahead being scanned.

When the interval sensor [D] detects the leading edge of the original approaching the pre-scanning roller, the pre-scanning roller slows down slightly. Roller [C] is still feeding the paper faster than the pre-scanning roller [E], and this slows the original at the leading edge and corrects skew.

Here is a summary of the skew correction methods.

① Skew correction sensor/entrance roller

	B6, A5, HLT	Larger Than A5
Duplex Scanning	Yes	Yes
Simplex Scanning	Yes	Yes

NOTE: Skew is always corrected with method ① for every job, regardless of the paper size and mode.

② Interval sensor/pre-scanning roller stop correction

	B6, A5, HLT	Larger Than A5
Duplex Scanning	Yes	Yes
Simplex Scanning	Yes	No

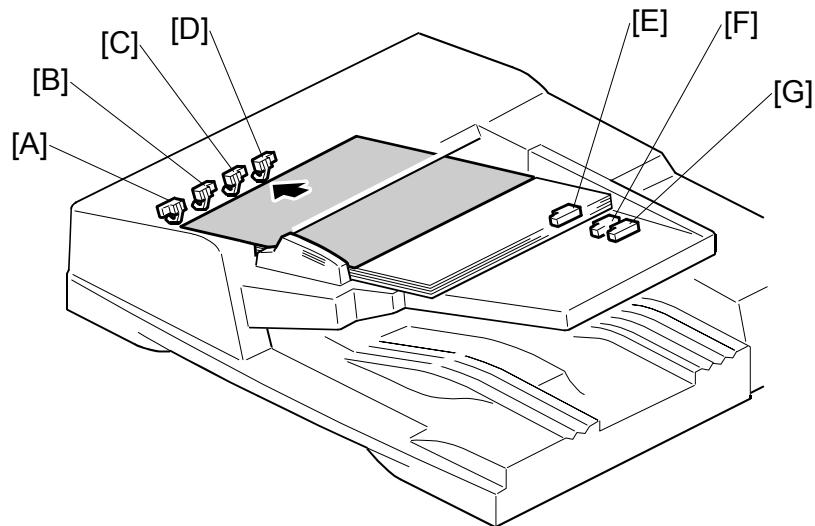
NOTE: Use SP6020 (ADF Contact Mode In/Out) to enable skew correction method ② for all jobs to ensure accurate original feeding. However, switching this feature on slows original feed slightly.

③ Interval sensor/pre-scanning roller slow-down correction

	B6, A5, HLT	Larger Than A5
Duplex Scanning	No	No
Simplex Scanning	No	Yes

Detailed
Descriptions

6.4.8 ORIGINAL SIZE DETECTION



- [A]: Original width sensor 1
- [B]: Original width sensor 2
- [C]: Original width sensor 3
- [D]: Original width sensor 4
- [E]: B5 length sensor
- [F]: A4 length sensor
- [G]: LG length sensor

When the leading edge of the paper passes the skew correction sensor, the CPU reads the outputs from the original width and length sensors.

Please refer to the table on the next page.

Original Size Detection Table

Size (W x L)	Original Width Sensors				Original Length Sensors				
	1	2	3	4	B5	A4	LG	NA	EU
A3 SEF (297 x 420 mm)	1	1	1	1	1	1	1	Y	Y
B4 SEF (257 x 364 mm)	1	1	0	0	1	1	1	N	Y
A4 SEF (210 x 297 mm)	1	0	0	0	1	1	0	Y	Y
A4 LEF (297 x 210 mm)	1	1	1	1	0	0	0	Y	Y
B5 SEF (182 x 257 mm)	0	0	0	0	1	0	0	N	Y
B5 LEF (257 x 182 mm)	1	1	0	0	0	0	0	N	Y
A5 SEF (148 x 210 mm) ^{*1}	0	0	0	0	0	0	0	N	Y
A5 LEF (210 x 148 mm)	1	0	0	0	0	0	0	N	Y
B6 SEF (128 x 182 mm) ^{*1}	0	0	0	0	0	0	0	N	Y
B6 LEF (182 x 128 mm) ^{*1}	0	0	0	0	0	0	0	N	Y
11" x 17" SEF (DLT)	1	1	1	0	1	1	1	Y	S
11" x 15" SEF	1	1	1	0	1	1	1	S	N
10" x 14" SEF	1	1	0	0	1	1	1	Y	N
8 1/2" x 14" SEF (LG)	1	0	0	0	1	1	1	Y	N
8 1/2" x 13" SEF (F4)	1	0	0	0	1	1	1	S	Y
8 1/4" x 13" SEF	1	0	0	0	1	1	1	N	N
8" x 13" SEF (F)	1	0	0	0	1	1	1	S	S
8 1/2" x 13 1/4" SEF (F)	1	0	0	0	1	1	1	S	S
8 1/2" x 11" SEF (LT)	1	0	0	0	1	0	0	Y	S
11" x 8 1/2" LEF (LT)	1	1	1	0	0	0	0	Y	S
7 1/4" x 10 1/2" SEF	1	0	0	0	1	0	0	Y	N
10 1/2" x 7 1/4" LEF	1	1	1	0	0	0	0	S	N
8" x 10" SEF (F)	1	0	0	0	1	0	0	S	N
5 1/2" x 8 1/2" SEF (HLT)	0	0	0	0	0	0	0	Y	N
8 1/2" x 5 1/2" LEF (HLT)	1	0	0	0	0	0	0	Y	N
8 K SEF (267 x 390 mm)	1	1	1	0	1	1	1	N	Y
16 K SEF (195 x 267 mm)	1	0	0	0	1	0	0	N	Y
16 K LEF (267 x 195 mm)	1	1	1	0	0	0	0	N	Y

1: Actuated

0: Not actuated

Y: Yes. Size detected.

N: No. Size not detected.

S: Selectable. Size not detected with default but default can be changed with SP6016 (Original Size Determination Priority) or SP5126 (F Original Size Selection). Refer to the description in the next section.

^{*1}: For A5 SEF, B6 SEF, and B6 LEF, all sensors are off. The machine determines the paper size by measuring the distance between the leading and trailing edges using the skew correction sensor and clock pulses.

Detailed Descriptions

Changing the Default Selection with SP6016 and SP5126

Here is a list of paper sizes that can be set for the default to enable detection. The **bold sizes** are the default settings, and the italic sizes are the alternate settings.

North America			Europe/Asia		
64	DL SEF	<i>11" x 15"</i>	4	8 K	<i>DL SEF</i>
32	LT LEF	<i>Exec LEF</i>	2	16 K SEF	<i>LT SEF</i>
16	LT SEF	<i>8" x 10" SEF</i>	1	16 K LEF	<i>LT LEF</i>
8	LG SEF	<i>Set by SP 5126</i>			

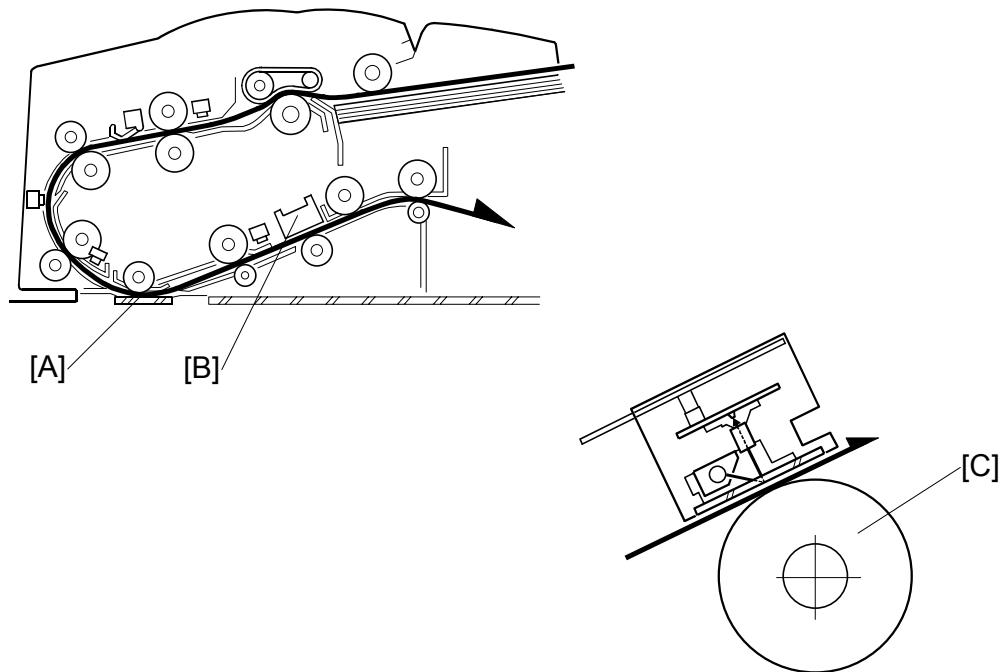
To change the default settings:

1. Enter the SP mode.
2. Select SP6016.
3. Replace the default settings with the alternate settings.
 - In North America, enter 120 to replace the default settings with the alternate settings. The bold settings in the table above are replaced with the italicized settings.
 - In Europe (or Asia), enter 7 to replace the default settings with the alternate settings. The bold settings in the table above are replaced with the italicized settings.
4. To restore all the default settings in either North America or Europe/Asia, enter "0".

SP 5126

This SP controls the alternative paper sizes that are detected for LG SEF (USA) or 8 ½ x 13" (Europe/Asia).

6.4.9 ADF SCANNING



The ADF scans both sides of an original without inverting the original:

- Front side: Scanned at the ADF exposure glass [A] by a xenon exposure lamp and CCD below the original
- Back side: Scanned by a CIS [B] above the paper path

The CIS can scan a line 306 mm (12") wide at 600 dpi. To increase the scanning speed, the sensors are divided into 13 parallel blocks.

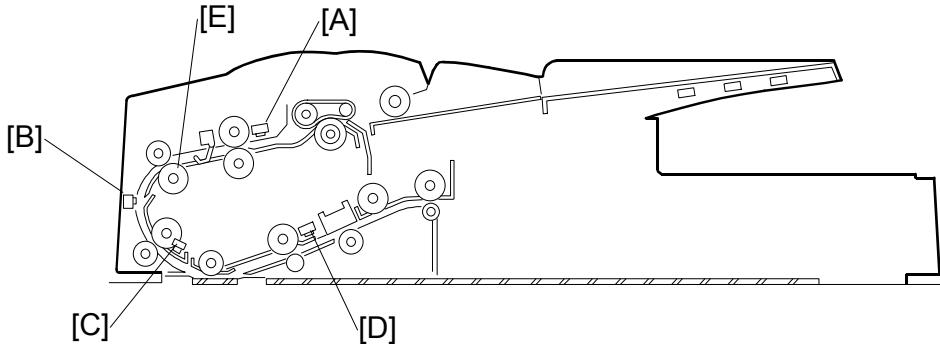
NOTE: Both sides are scanned at 600 dpi. The 600 dpi output is boosted to 1200 dpi by image processing at the IPU.

The CIS reads the surface of the white roller [C] and uses this reading (white point =0) as a reference point for density correction.

CT Digital Processes> Image Processing> Black and White CCD Systems, Black and White CIS Systems

Detailed Descriptions

6.4.10 JAM DETECTION



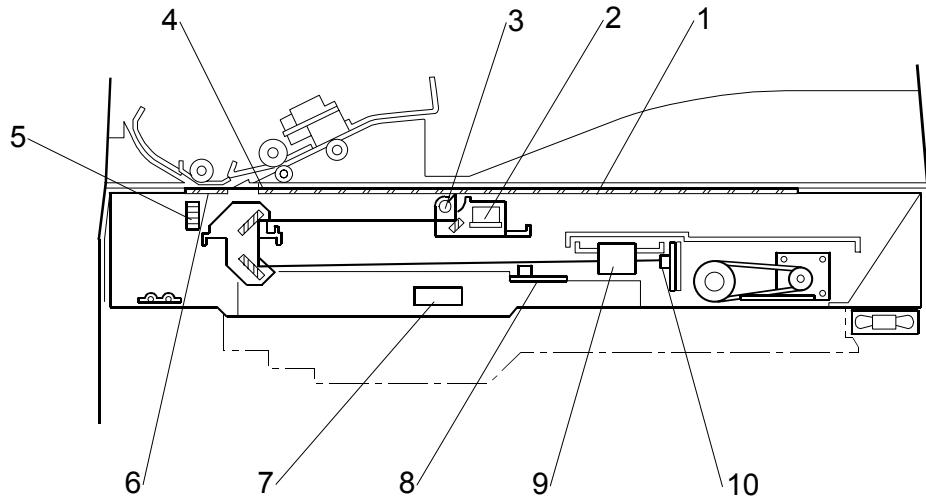
Four sensors, the skew correction sensor [A], interval sensor [B], registration sensor [C], and exit sensor [D] detect jams in the paper path. The conditions that trigger a jam detection are listed below.

Jam Type	Cause
Skew correction sensor	Check in failure
Interval sensor	Check in failure
Registration sensor	Check in failure
Exit sensor	Check in failure
Skew correction sensor	Check out failure
Interval sensor	Check out failure
Registration sensor	Check out failure
Exit sensor	Check out failure

NOTE: If a problem occurs in the ADF, either SC700 or SC701 will be issued. For details, please refer to Section 4 of this manual.

6.5 SCANNING (B140 SERIES/B064 SERIES ONLY)

6.5.1 OVERVIEW



- | | |
|--------------------------|---------------------------------|
| 1. Exposure Glass | 6. Exposure Glass (ADF) |
| 2. Lamp Regulator | 7. Original Width Sensor |
| 3. Exposure Lamp (Xenon) | 8. Original Length Sensors 1, 2 |
| 4. White Plate | 9. Scanner Lens Block |
| 5. Scanner HP Sensor | 10. CCD (Charge Coupled Device) |

A xenon lamp (23W) illuminates the original. Light is reflected from the original to the CCD: 1st Mirror → 2nd Mirror → 3rd Mirror → Scanner Lens → CCD

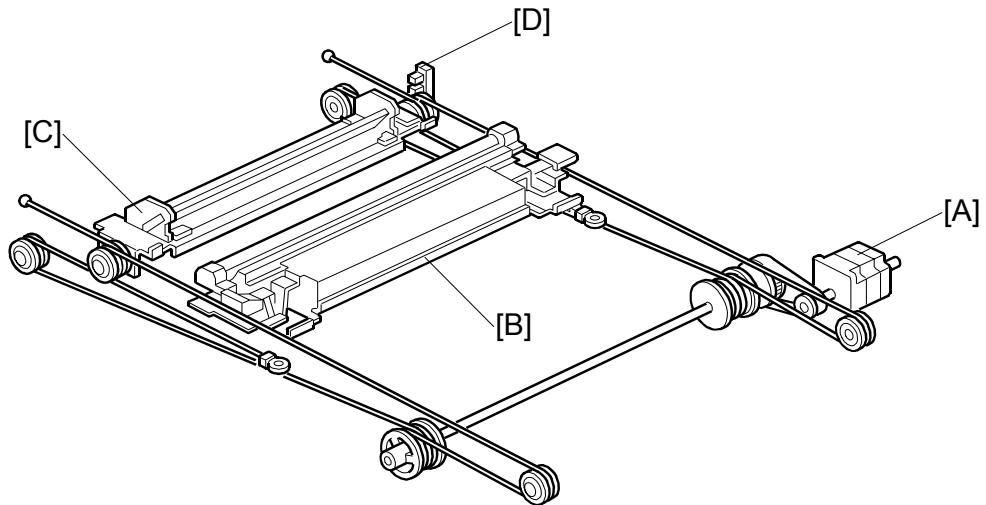
The lens block (which consists of the scanner lens, CCD, and SBU) adjusts for refraction, MTF, and focusing. The lens block is replaced as a unit and requires no adjustment in the field.

The resolution of the CCD is 600 dpi.

Detailed Descriptions

SCANNING (B140 SERIES/B064 SERIES ONLY)

6.5.2 SCANNER DRIVE



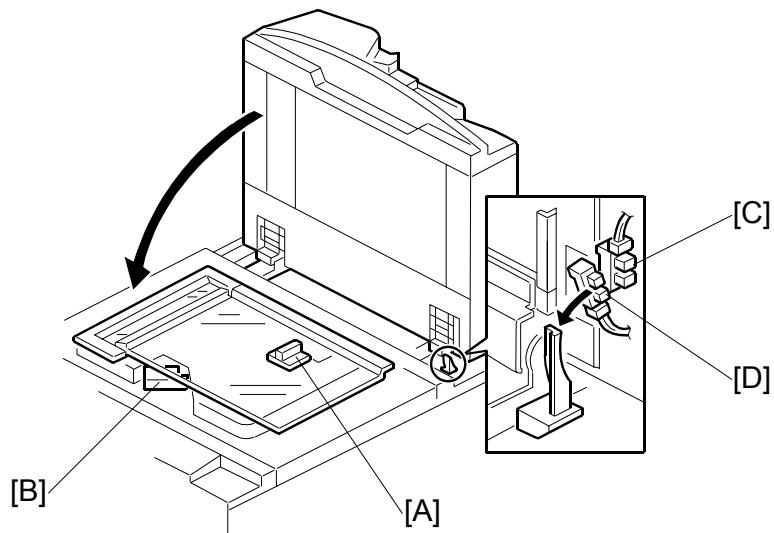
The scanner motor [A] (a dc stepper motor) drives the first scanner [B] and second scanner [C] through drive wires and pulleys.

The scanner HP sensor [D] detects when the scanner is at home position. The machine measures distance from home position by counting scanner motor pulses.

Scanning Mode	Speed
100% Reproduction Ratio	420 mm/s
Returning to HP	840 mm/s

6.5.3 ORIGINAL SIZE DETECTION

Sensors

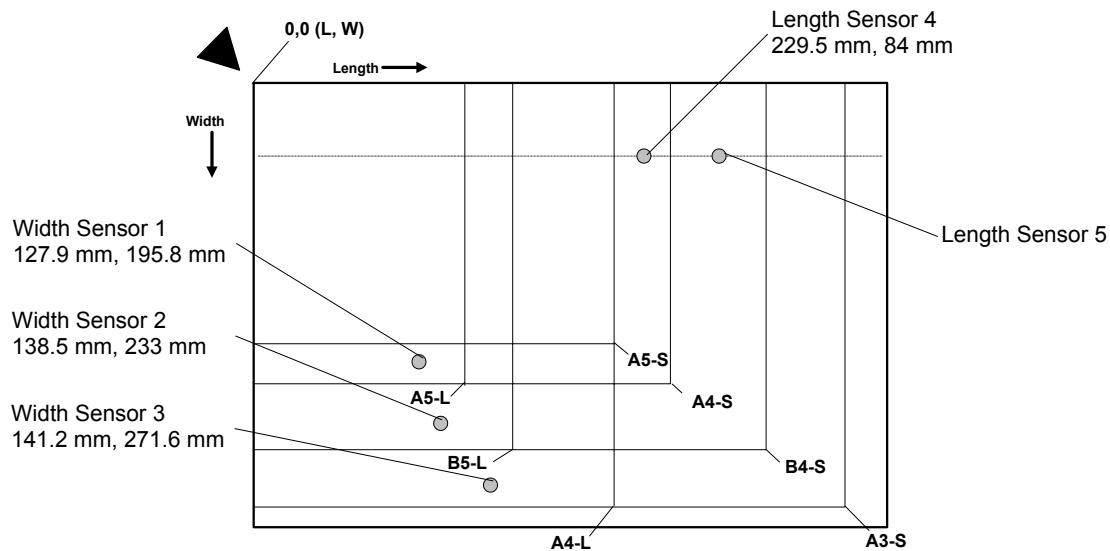


Original length sensor [A] and Original width sensor [B] (reflective sensors) detect the width and length of the original on the exposure glass.

The ADF functions as the platen. The DF position sensor [C] (attached to the ADF) detects whether the ADF is open or closed.

The APS start sensor [D] triggers auto paper size detection.

The following diagram shows the locations of the sensors.



SCANNING (B140 SERIES/B064 SERIES ONLY)

The table below lists the sensor output for each paper size.

If an original is on the exposure glass, you can check the sensor output by using SP4301 (APS Sensor Output Display).

Original Size		APS Length		APS Width			SP4301 Display
A4/A3	LT/DLT	5	4	1	2	3	
A3	11" x 17"	1	1	1	1	1	000 11111
B4	—	0	1	1	1	0	000 01110
A4 SEF	8 1/2" x 11"	0	0	1	1	1	000 00111
A4 LEF	11" x 8 1/2"	0	1	1	0	0	000 01100
B5 SEF	—	0	0	1	1	0	000 00110
B5 LEF	—	0	1	0	0	0	000 01000
A5 SEF	5 1/2" x 8 1/2"	0	0	1	0	0	000 00100
A5 LEF	8 1/2" x 5 1/2"	0	0	0	0	0	000 00000

1: High (Paper Present), 0: Low (No Paper)

If the original is small (such as A5-LEF), all sensors remain off and the machine indicates that the original size cannot be detected. However, you can force the machine to detect A5/HLT in this situation by adjusting SP4303 (APS A5 Size Detection).

Detection Timing

When the power is on, the APS sensors are always active, but the CPU checks their signals only after the platen is lowered.

Book Mode

In the Book mode (when the ADF is open), the CPU checks the APS sensors and determines the original size after Start  is pressed.

ADF Mode

The CPU checks the APS sensors after the platen is lowered.

By-pass Mode

The APS sensors are ignored when copy paper is fed from the by-pass tray, but the by-pass tray can handle a variety of sizes and orientations. To accomplish this:

- The machine always assumes short-edge feed for paper on the by-pass tray.
- Width is measured by a sensor inside the by-pass tray.
- The bypass tray cannot measure length, so the registration sensor determines the length of the paper using clock pulses.

The copy time for the first sheet is slower, because the entire exposure glass area (or width for the CIS) is scanned. However, when the size of the first sheet has been detected, scanning is at normal speed for the remaining sheets. ( Handling Paper> Paper Feed> Paper Size Detection> **By-pass Size Detection**)

6.5.4 SCANNING MAGNIFICATION

Book Mode

Reduction and enlargement is done differently for main scan and sub scan:

- Main scan: Handled by image processing in the IPU.
- Sub scan: Handled by varying the speed of the scanner motor.

Reproduction ratios of 50% or higher: The scanner speed is lower for higher magnification ratios. For example, for 200% enlargement, the scanner motor speed is reduced to 50%.

Reproduction ratios of less than 50%: The scanner motor cannot run fast enough. So, the scanner slows to half the speed required for that reduction ratio. For a 49% magnification ratio, the scanner speed is the same as for 98% magnification. This causes twice as many scan lines as needed, so alternate lines are removed.

Detailed
Descriptions

6.5.5 AUTO IMAGE DENSITY (ADS)

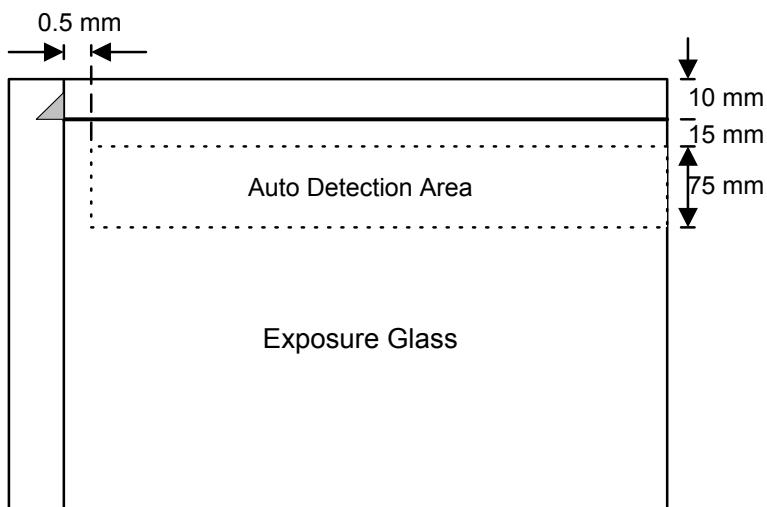
Auto Image Density (ADS), also called *original background correction*, corrects for variation in background density down the page to prevent the background of an original from appearing in copies. This machine uses rear scale peak sampling (the area sampled, which must contain no data, is near the rear scale).

Xenon Lamp → CCD ADS

When an original with a gray background is scanned, for example, the gray area becomes the peak white level density; therefore, the gray background will not appear on copies.

The area that the CCD uses as a reference for ADS is shown in the following diagram.

( Digital Processes> Image Processing> Black and White CCD Systems> Analog Signal Processing> **Automatic Image Density**)



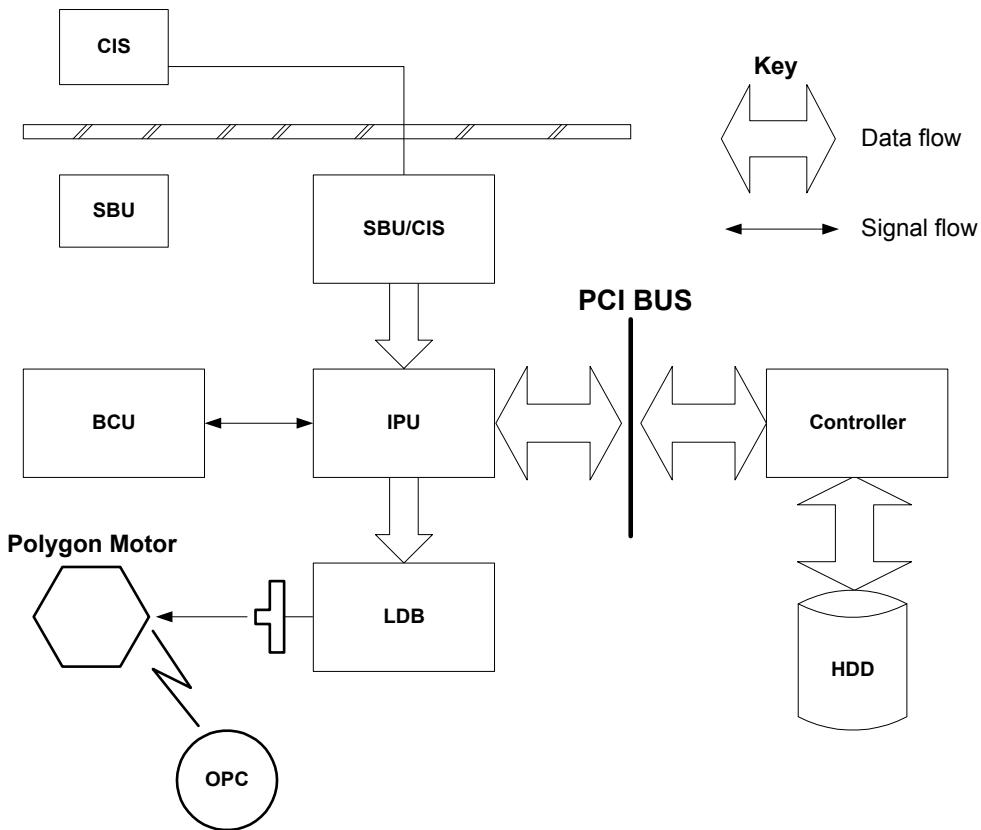
CIS ADS

The CIS reads the surface of the white platen roller and uses this reading (white point = 0) as a reference point for density correction. When an original is scanned, the CIS starts 20 mm from the edge away from the operation panel and reads 65 mm in towards the center of the white platen roller and then performs image density correction line by line.

6.6 IMAGE PROCESSING

6.6.1 OVERVIEW

This diagram shows the machine components that do the image processing.



Detailed Descriptions

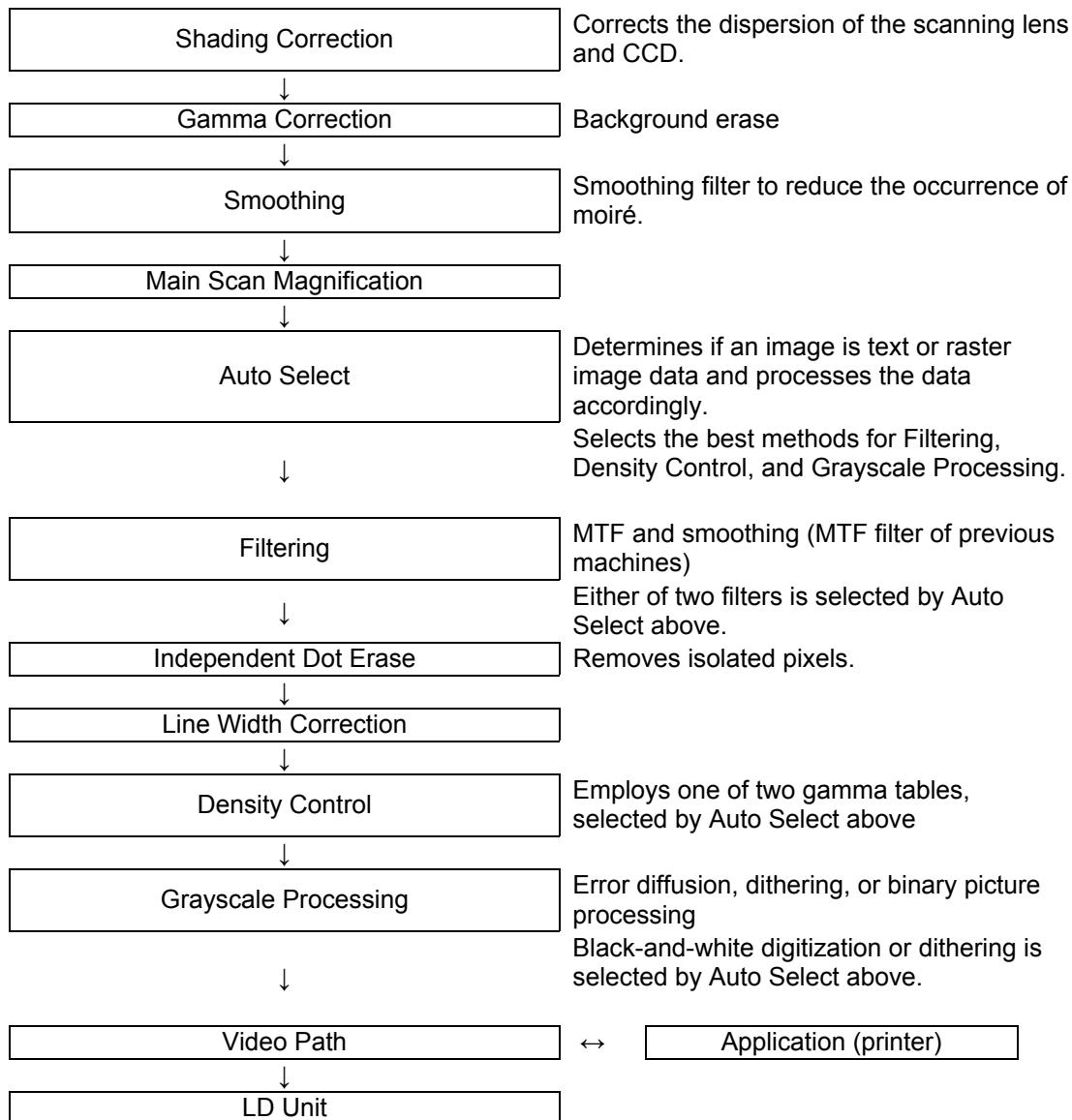
- SBU/CIS:** Photoelectric conversion (600 dpi, 2-channel CCD odd/even allocation), Amplification, A/D Conversion (analog to digital), Light intensity detection (scanning)
- BCU:** Engine control, Scanner control, SBU settings, LDB settings
- IPU:** Shading correction, Image Processing, Main/Sub scan magnification, Video patch switching, Compression/ decompression, GAVD
- Controller:** System control, software application control, image storage control, compression/decompression
- LDB:** 4-beam laser exposure, digital-to-grayscale conversion, synchronization detection

6.6.2 IMAGE PROCESSING FLOW

Image processing is done by the IPU (Image Processing Unit), following the steps shown below.

Overall image processing for this machine is designed to:

- Target edges with filters to improve the angles of text characters and reduce the occurrence of moiré filled areas.
- Improve the evenness of granular areas in images



6.6.3 IMAGE PROCESSING MODES

The user can select one of the following five modes with the User Tools screen: Text, Text/Photo, Photo, Pale, Generation.

Each mode has four different settings (described below). Each mode has a Custom Setting that can be customized with SP modes to meet special requirements that cannot be covered by the standard settings.

NOTE: To see these settings in the User Tools mode, press the User Tools key, press “Copier/Document Server Functions”, then press “Copy Quality”.

Mode	Setting	Function
Text	Soft	Used for black-and-white printed material and documents that contain mainly text. Easily reads lines as well as text
	Normal	
	Sharp	Used for newspapers, time schedules, or any type of printed material with fine print.
	Custom Setting	Stores SP command settings.
Text/Photo	Photo Priority	Used for documents that contain text and color or black-and-white photos, such as catalogs, magazines, maps, etc. Provides more faithful reproduction than the Text mode.
	Normal	
	Text Priority	
	Custom Setting	Stores SP command settings.
Photo	Print Photo	Used for magazines, graphics, for smooth reproduction. Employs dithering.
	Normal	Used for copying photographs, graphics, for sharp reproduction. Employs error diffusion.
	Glossy Photo	Used for best results in copying glossy photographs for sharp reproduction. Employs error diffusion.
	Custom Settings	Stores SP command settings. Employs either error diffusion or dithering, depending on an SP setting.
Pale	Soft	Used for low density documents with text handwritten in black or color pencil (or carbon copies) such as receipts, invoices, etc.
	Normal	
	Sharp	
	Custom Setting	Stores SP command settings.
Generation Copy	Soft	Used to achieve an image smoother than Normal.
	Normal	Used to achieve best reproduction of “copies of copies” by smoothing the image.
	Sharp	Used to emphasize lines and text stronger than Normal for better image quality.
	Custom Setting	Stores SP command settings.

Detailed Descriptions

6.6.4 IMAGE QUALITY SP ADJUSTMENTS

Adjustments are easier with this machine, because the parameters have been grouped and no longer have to be adjusted one by one.

In this section, we will cover the custom settings for each of the 5 original modes: These custom settings are:

- Image Quality
- Line Width Correction
- Duplex Scanning Mode

Settings adjustable for each original mode will also be covered (these do not just affect the custom settings; they also affect all sub original modes, such as sharp text).

- Independent Dot Erase
- Background Erase

Note concerning Photo Mode: There are two sets of custom settings for photo mode. One is for dithering, and one is for error diffusion. The set of custom settings that will be used depends on the setting of SP 4904 002.

Custom Settings for Each Mode: Image Quality

Custom Setting: Text Mode Image Quality

Item	Range	Default	SP No.
Text	25~55%	0~10	SP4903-001
	55.5~75%		SP4903-002
	75.5~160%		SP4903-003
	160.5~400%		SP4903-004

If the value is increased, the outlines of lines become sharper but this could cause moiré to appear in dot patterns. If the value is decreased, image patterns become smoother, the occurrence of moiré decreases, but the corners of characters and intersections of lines at acute angles may not be as sharp.

Custom Setting: Photo Mode (Dithering) Image Quality

Item	Range	Default	SP No.
Photo	25~55%	0~6	SP4903-005
	55.5~75%		SP4903-006
	75.5~160%		SP4903-007
	160.5~400%		SP4903-008

Used for coarse, dithered tone photographs such as newsprint.

If the value is increased, the photo becomes sharper, but blurring could occur in the sub scan direction. If the value is decreased, blurring in the sub scan direction is less obvious but outlines become fuzzy.

Custom Setting: Photo Mode (Error Diffusion) Image Quality

Item	Range	Default	SP No.
Photo	25~55%	0~6	SP4903-009
	55.5~75%		SP4903-010
	75.5~160%		SP4903-011
	160.5~400%		SP4903-012

Used for printed materials (magazines, etc.) with photographs to sharp patterns in copies.

If the photos have dithered tones, the image becomes sharper if the value is increased, but blurring could occur in the sub scan direction. If the value is decreased, blurring in the sub scan direction is less obvious but outlines become fuzzy.

Custom Setting: Text/Photo Mode Image Quality

Item	Range	Default	SP No.
Text/Photo	25~55%	0~10	SP4903-013
	55.5~75%		SP4903-014
	75.5~160%		SP4903-015
	160.5~400%		SP4903-016

See the remarks for 'Custom Setting: Text Mode Image Quality' above.

Custom Setting: Pale Mode Image Quality

Item	Range	Default	SP No.
Pale	25~55%	0~10	SP4903-017
	55.5~75%		SP4903-018
	75.5~160%		SP4903-019
	160.5~400%		SP4903-020

If the value is increased, low density areas become sharper, but the background could become dirtier. If the value is decreased, the background disappears but the density of low density areas becomes low.

Detailed Descriptions

Custom Setting: Generation Mode Image Quality

Item	Range	Default	SP No.
Generation	25~55%	0~10	SP4903-021
	55.5~75%		SP4903-022
	75.5~160%		SP4903-023
	160.5~400%		SP4903-024

See the remarks for 'Custom Setting: Pale Mode Image Quality' above.

Custom Settings for Each Mode: Line Width Correction**Custom Setting: Text Mode Line Width Correction**

Selection		Range	Default	Content	SP No.
Item	Line Width Correction	0~8	1	0 (Thin) - 4 (Off) - 8 (Thick)	SP4903-080
	Main Scan	0~1	1	0:OFF 1:ON	SP4903-081
	Sub Scan	0~1	1	0:OFF 1:ON	SP4903-082

If the value is made smaller, the line width correction becomes thinner, and if the value is made larger, the line width correction becomes thicker. To switch this feature off, select “4”.

If the above settings do not make the lines thin enough, use SP4904 020 (Image Quality Exposure: Thin Line - Text Mode). Normally, SP4904 020 is set to 0 (OFF). As the setting is increased (1~3), the line width correction effect becomes stronger, and lines become thinner. All settings of SP4903 080 will be affected by the same amount.

Custom Setting: Photo Mode Line Width Correction

Selection		Range	Default	Content	SP No.
Item	Line Width Correction	0~8	4	0 (Thin) - 4 (Off) - 8 (Thick)	SP4903-083
	Main Scan	0~1	1	0:OFF 1:ON	SP4903-084
	Sub Scan	0~1	1	0:OFF 1:ON	SP4903-085

See the remarks for ‘Custom Setting: Text Mode Line Width Correction’ above.

If the above settings do not make the lines thin enough, use SP4904 021 (Image Quality Exposure: Thin Line – Photo Mode). Normally, SP4904 021 is set to 0 (OFF). As the setting is increased (1~3) the line width correction effect becomes stronger, and lines become thinner. All settings of SP4903 083 will be affected by the same amount.

Custom Setting: Text/Photo Mode Line Width Correction

Selection		Range	Default	Content	SP No.
Item	Line Width Correction	0~8	4	0 (Thin) - 4 (Off) - 8 (Thick)	SP4903-086
	Main Scan	0~1	1	0:OFF 1:ON	SP4903-087
	Sub Scan	0~1	1	0:OFF 1:ON	SP4903-088

See the remarks for ‘Custom Setting: Text Mode Line Width Correction’ above.

If the above settings do not make the lines thin enough, use SP4904-022 (Image Quality Exposure: Thin Line – Text/Photo Mode). Normally, SP4904-022 is set to 0 (OFF). As the setting is increased (1~3) the line width correction effect becomes stronger, and lines become thinner. All settings of SP4903-086 will be affected by the same amount.

Custom Setting: Pale Mode Line Correction

Selection		Range	Default	Content	SP No.
Item					
Item	Line Width Correction	0~8	4	0 (Thin) - 4 (Off) - 8 (Thick)	SP4903-089
	Main Scan	0~1	1	0:OFF 1:ON	SP4903-090
	Sub Scan	0~1	1	0:OFF 1:ON	SP4903-091

See the remarks for 'Custom Setting: Text Mode Line Width Correction' above.

If the above settings do not make the lines thin enough, use SP4904 023 (Image Quality Exposure: Thin Line – Pale Mode). Normally, SP4904 023 is set to 0 (OFF). As the setting is increased (1~3) the line width correction effect becomes stronger, and lines become thinner. All settings of SP4903 089 will be affected by the same amount.

Custom Setting: Generation Copy Line Width Correction

Selection		Range	Default	Content	SP No.
Item					
Item	Line Width Correction	0~8	0	0 (Thin) - 4 (Off) - 8 (Thick)	SP4903-092
	Main Scan	0~1	1	0:OFF 1:ON	SP4903-093
	Sub Scan	0~1	1	0:OFF 1:ON	SP4903-094

See the remarks for 'Custom Setting: Text Mode Line Width Correction' above.

If the above settings do not make the lines thin enough, use SP4904-024 (Image Quality Exposure: Thin Line – Generation Mode). Normally, SP4904-024 is set to 0 (OFF). As the setting is increased (1~3) the line width correction effect becomes stronger, and lines become thinner. All settings of SP4903-092 will be affected by the same amount.

Detailed
Descriptions

IMAGE PROCESSING

Custom Setting: Duplex Scanning Mode Original Image Quality Settings

Front Side Quality Adjustment

Item		Range	Default	Content	SP No.
Front Side Scan	Text	0~3	0	0: Normal 1: Weak 2: Medium 3: Strong	SP4901-010
	Photo				SP4901-011
	Text/Photo				SP4901-012
	Pale				SP4901-013
	Generation Copy				SP4901-014

Rear Side Quality Adjustment

Item		Range	Default	Content	SP No.
Back Side Scan	Text	0~3	0	0: Normal 1: Weak 2: Medium 3: Strong	SP4902-010
	Photo				SP4902-011
	Text/Photo				SP4902-012
	Pale				SP4902-013
	Generation Copy				SP4902-014

Simplex/Duplex Front Side Quality Adjustment

Item	Range	Default	SP No.
Determines if SP4901-010 ~ 014 applies to scanning single-side or single and double-side originals.	0~1	0	SP4901-019

0: The adjustment will be applied only for duplex mode front side copies.

1: The adjustment will be applied for simplex mode, and for front side copies in duplex mode.

Settings Adjustable for Each Original Mode**Independent Dot Erase**

Item	Range	Default	SP No.
Text	0~14	0 (Off)	SP4903-060
Photo			SP4903-061
Text/Photo			SP4903-062
Pale			SP4903-063
Generation Copy			SP4903-064

Independent dot erase removes isolated black pixels. As this setting is increased, the greater the number of eliminated isolated pixels. Setting to zero switches this function off.

Background Erase

Item	Range	Default	SP No.
Text	0~255	0 (Off)	SP4903-070
Photo			SP4903-071
Text/Photo			SP4903-072
Pale			SP4903-073
Generation Copy			SP4903-074

Background erase attempts to eliminate the heavy background texture from copies of newspaper print or documents printed on coarse paper. Pixels of density below the selected threshold level are eliminated. Setting this feature to zero switches it off. Increasing this setting increases the effect of background erase.

Detailed
Descriptions

6.6.5 RELATION BETWEEN THE SP AND UP SETTINGS

The tables below illustrate the relationship between the UP and SP settings for each of the 5 original modes. The scale across the top of the table is the range of settings for the SP modes.

NOTE: The settings in the gray areas indicate the UP settings overlaid on the SP scale of the table. Words that are not shaded within the tables, such as 'softer', indicate how the image changes if you change the SP setting in a certain direction.

The related UP mode is User Tools – Copier Features – General Features – Copy Quality.

Text Mode

Setting	0	1	2	3	4	5	6	7	8	9	10	SP No.
25% ~55%	Soft	Normal									Sharp	SP4903-001
55.5 ~ 75%												SP4903-002
75.5 ~ 160%												SP4903-003
160.5 ~ 400%												SP4903-004

Photo Mode (Dithering)

Setting	0	1	2	3	4	5	6	SP No.
25% ~55%	Softer	Print Photo						SP4903-005
55.5 ~ 75%								SP4903-006
75.5 ~ 160%								SP4903-007
160.5 ~ 400%								SP4903-008

Photo Mode (Error Diffusion)

Setting	0	1	2	3	4	5	6	SP No.
25% ~55%	Softer	Normal						SP4903-009
55.5 ~ 75%								SP4903-010
75.5 ~ 160%								SP4903-011
160.5 ~ 400%								SP4903-012

Text/Photo Mode

Setting	0	1	2	3	4	5	6	7	8	9	10	SP No.
25% ~55%	Photo Priority					Normal				Text Priority		SP4903-013
55.5 ~ 75%												SP4903-014
75.5 ~ 160%												SP4903-015
160.5 ~ 400%												SP4903-016

Pale Mode

Setting	0	1	2	3	4	5	6	7	8	9	10	SP No.
25% ~55%	Soft					Normal				Sharp		SP4903-017
55.5 ~ 75%												SP4903-018
75.5 ~ 160%												SP4903-019
160.5 ~ 400%												SP4903-020

Generation Copy

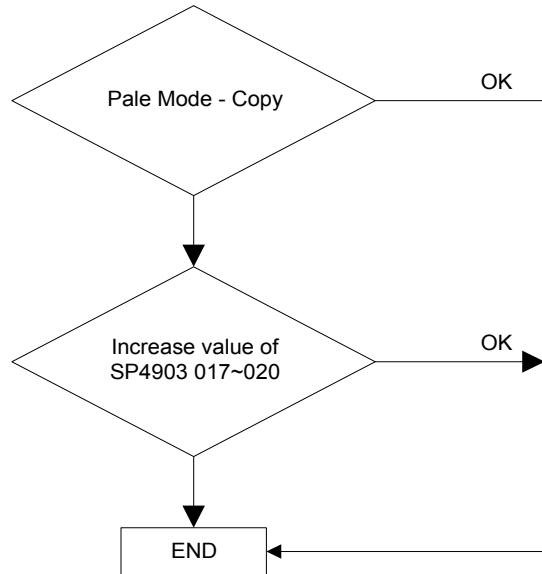
Setting	0	1	2	3	4	5	6	7	8	9	10	SP No.
25% ~55%	Soft					Normal				Sharp		SP4903-021
55.5 ~ 75%												SP4903-022
75.5 ~ 160%												SP4903-023
160.5 ~ 400%												SP4903-024

Detailed
Descriptions

6.6.6 IMAGE PROCESSING TROUBLESHOOTING

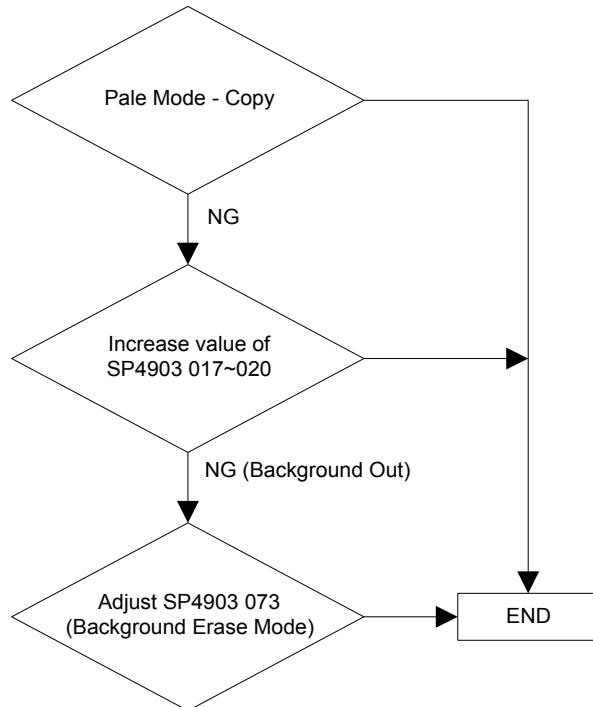
Removing Background from Coarse Paper

NOTE: If text fades and thin lines appear broken, then adjust SP4903 080~082 (Text Mode – Select Thick Lines for Line Width Correction).



Improving the Appearance of a Copy of a Color Document

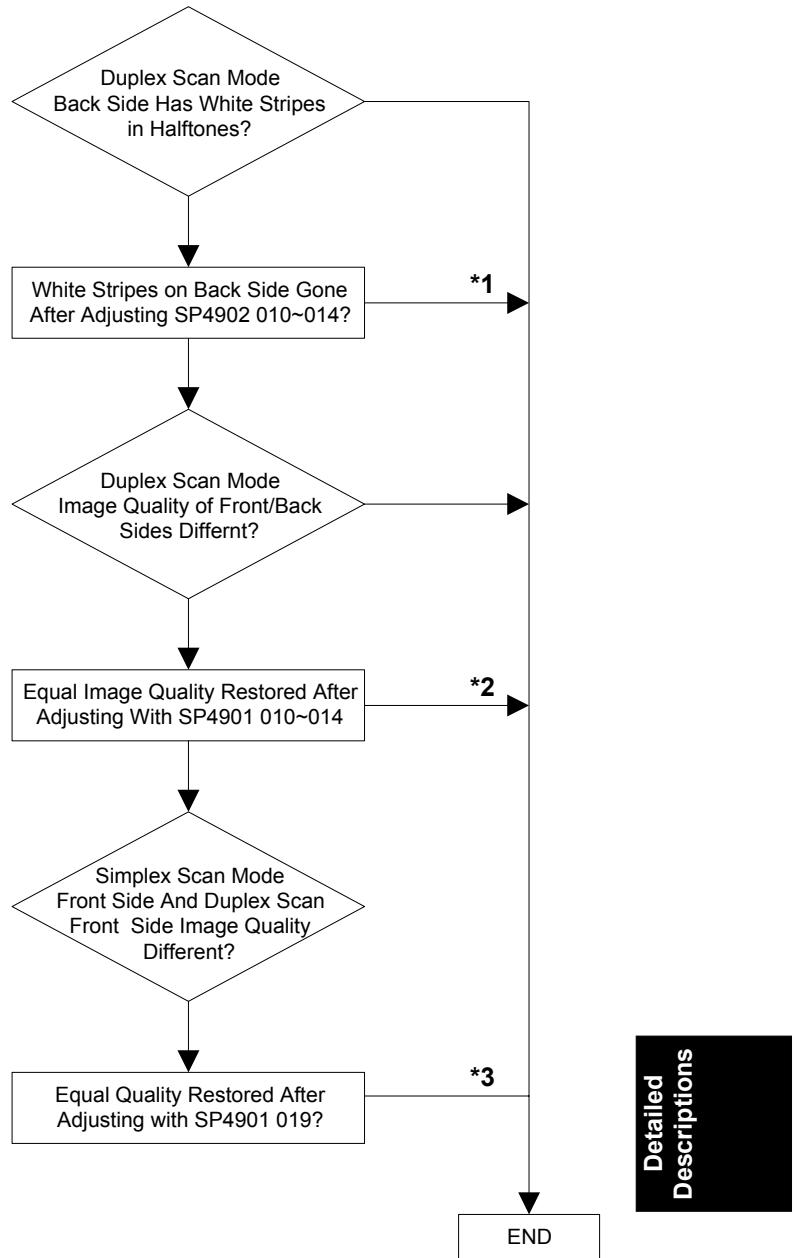
NOTE: If text fades, adjust SP4903 089~091 (Pale Mode – Select Thick Lines for Line Width Correction).



Removing Vertical White Lines During Duplex Scanning

During duplex scanning, the CCD scans the front side and the CIS scans the rear side. In Text, Pale, or Generation Copy mode, when there are halftones (such as photos) on the rear side, vertical white lines may appear in these areas. This is because of gaps at the junctions between blocks of elements in the CIS (there is a junction every 25 mm). If this occurs, adjust SP4902 010~014 (Image Adjust Mode – Back Side Scan). Increasing the value reduces the white stripes, but could reduce resolution slightly. Otherwise, try using Text/Photo mode.

NOTE: Each original mode has a separate adjustment.



*1: Front Side Quality Adjustment

*2: Rear Side Quality Adjustment

*3: Simplex/Duplex Front Side Quality Adjustment

Equalizing Duplex Scanned Image Quality of Front/Back Sides

During duplex scanning, when SP4902-010~014 is adjusted, only the back side is affected, so you may see a slight difference in the quality of the images scanned from the front and back sides of the same page. You can adjust the quality of the front side image by changing SP4901-010~014 (Image Quality Adjustment For Front Side Scan). This mode is enabled for the Custom Setting original mode only.

NOTE: Each original mode has a separate adjustment.

Equalizing Image Quality of Front Sides for Duplex and Simplex Modes

Normally, the front side adjustment (SP4901-010~014) is only applied for duplex jobs. So, you may see a slight difference in the quality of images scanned in simplex mode and for the front sides of duplex mode jobs.

If you change SP4901-019 to 1, the front side image quality adjustment (SP4901 010~014) will be applied to both duplex and simplex jobs. This mode is enabled for the Custom Setting only.

SP4901-019

0: Enabled for Duplex Only (default setting)

1: Enabled for Simplex and Duplex Scanning

6.7 LASER EXPOSURE

6.7.1 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.

Multiple beam scanning achieves:

- Longer life of the polygon motor (four-beam scanning 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).

( Digital Processes> Printing> Laser Printing> Image Processing)

The strength of each beam is 10 mW/channel at a wavelength of 788 nm.

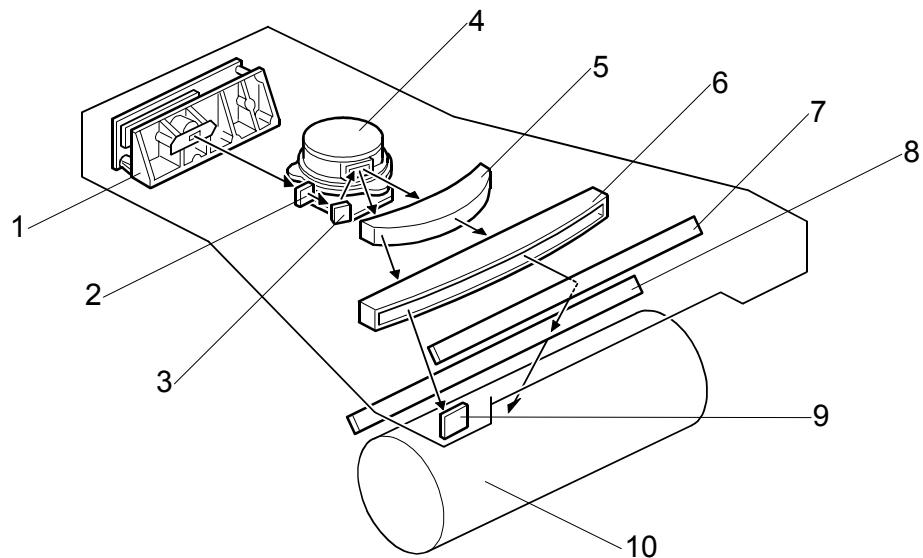
Specifications

LD Unit	Semi-conductor laser encased in an aluminum die-cast bracket. Wavelength: 788 nm Output: 10 mW/channel 4-beam exposure APC (Auto Power Control) provided Gradation control with PWM
Line Scanning	Light weight, aluminum die-cast housing Main line scanning 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

⇒ **NOTE:** A new ceramic shaft increases the durability of the polygon motor.

Detailed Descriptions

6.7.2 OPTICAL PATH

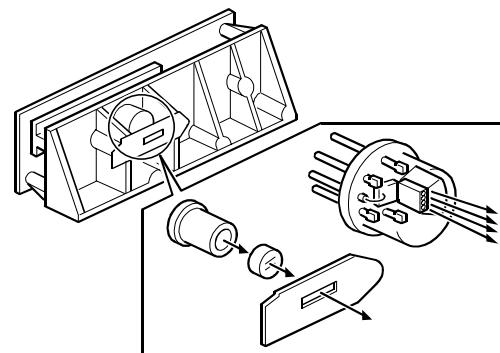


- | | |
|---------------------------|---------------------------------|
| 1. LD Unit | 6. WTL |
| 2. Cylindrical Lens | 7. 2nd Mirror |
| 3. 1st Mirror | 8. Toner Shield Glass |
| 4. Polygonal Mirror Motor | 9. Laser Synchronizing Detector |
| 5. Fθ Lens | 10. OPC Drum |

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. (Digital Processes> Printing> Laser Printing> Image Processing> Optical Components)

6.7.3 FOUR-BEAM EXPOSURE

The LD unit uses four laser diodes to scan four lines simultaneously. The diodes are fixed at 1200 dpi, so beam pitch adjustments are not required.

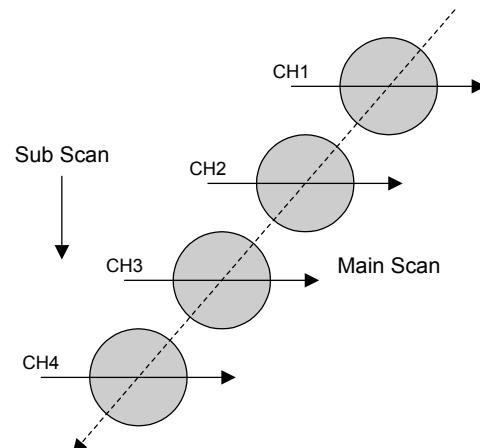


The diagonal arrangement of the four beams achieves 1200 dpi.

600 dpi 8-bit scanner data is converted to 1200 dpi 1-bit digital data during image processing.

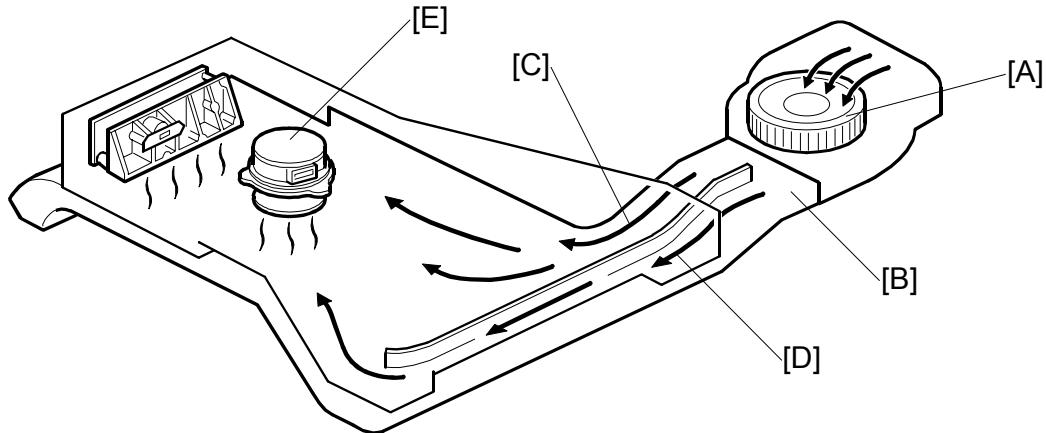
When edge processing or smoothing (FCI fine character adjustment) is used, one-bit data is converted to grayscale data in the LD driver circuit board.

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.



Detailed
Descriptions

6.7.4 COOLING FAN

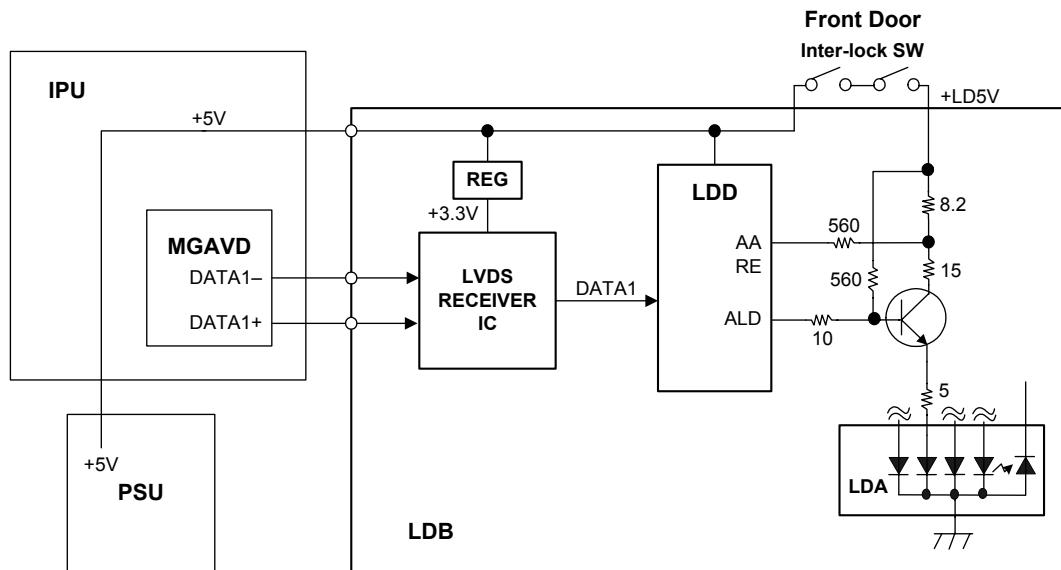


The cooling fan [A] at the back of the machine blows air through the duct [B] and sends it above and below the laser exposure unit. The fan switches on and off with the polygon motor.

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.

6.7.5 LD SAFETY SWITCHES



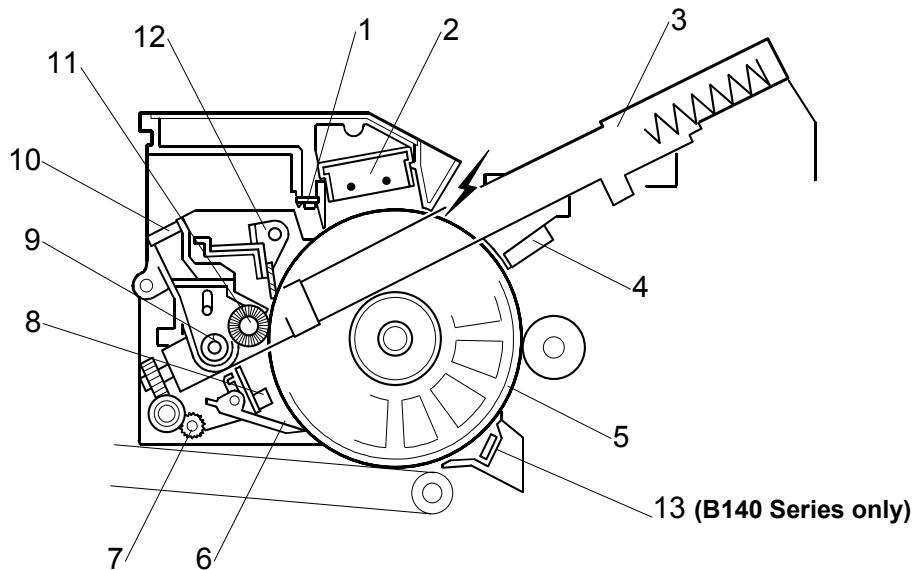
To ensure the safety of customers and customer engineers, two switches inside the cover prevent the laser beams from switching on accidentally.

When the front cover is open, the 5V line connecting each LD driver on the LD control board is disconnected.

Detailed
Descriptions

6.8 DRUM UNIT

6.8.1 OVERVIEW

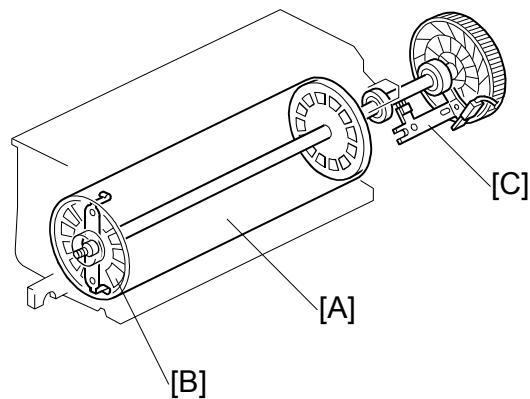


- The OPC drum (diameter 100 mm) is charged by the charge corona unit, a standard Scorotron grid wire charging and cleaning system.
- The drum motor drives the drum and the drum cleaning unit. A counter blade system, with both cleaning blade and brush, clean the drum.
- Two sensors mounted near the drum, 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.
- B140 Series**
- 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. (6.8.4)

6.8.2 OPC DRUM

The OPC drum [A] contains ventilation holes [B] to prevent overheating.

A ground (earth) brush [C] at the back grounds the drum unit.

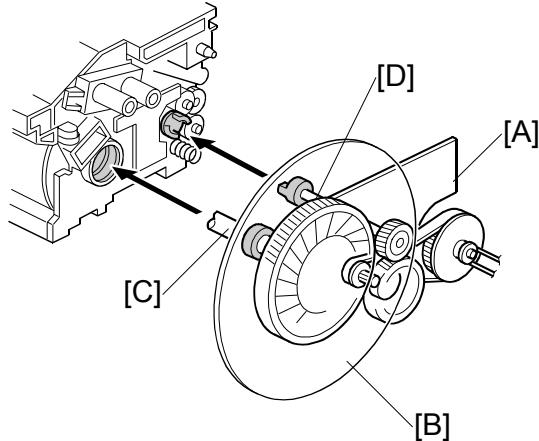


6.8.3 DRUM DRIVE

The drum motor [A] drives both the OPC drum and the cleaning unit.

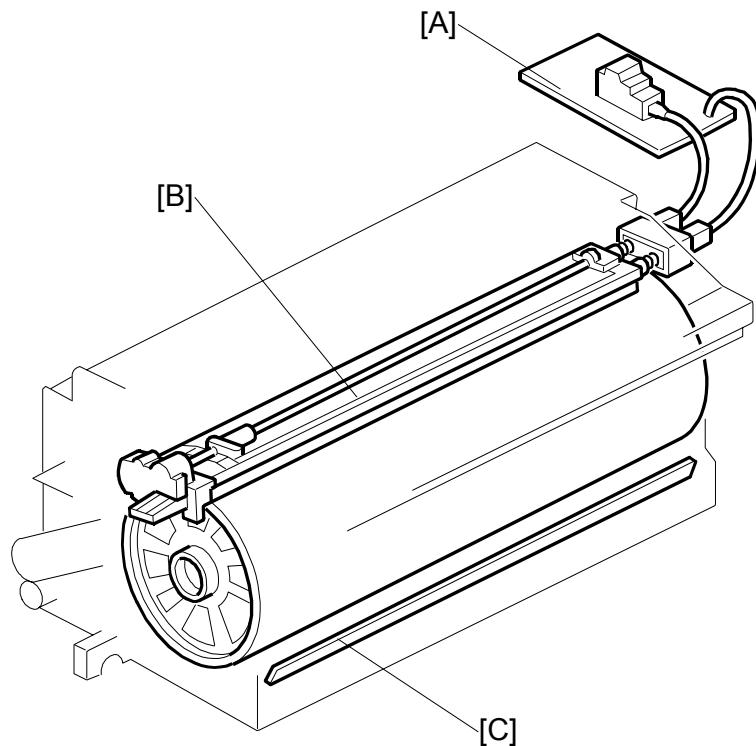
A flywheel [B] on the drum drive shaft [C] reduces drum vibration. The other drive shaft [D] drives the cleaning unit.

The drum drive shaft [C] drives the drum at 362 mm/s.



Detailed
Descriptions

6.8.4 DRUM CHARGE



The charge power pack [A] provides an even negative charge to the two charge corona wires in the charge corona unit [B].

(Photocopying Process> Charge> Corona Charge> **Scorotron Method**)

B140 Series

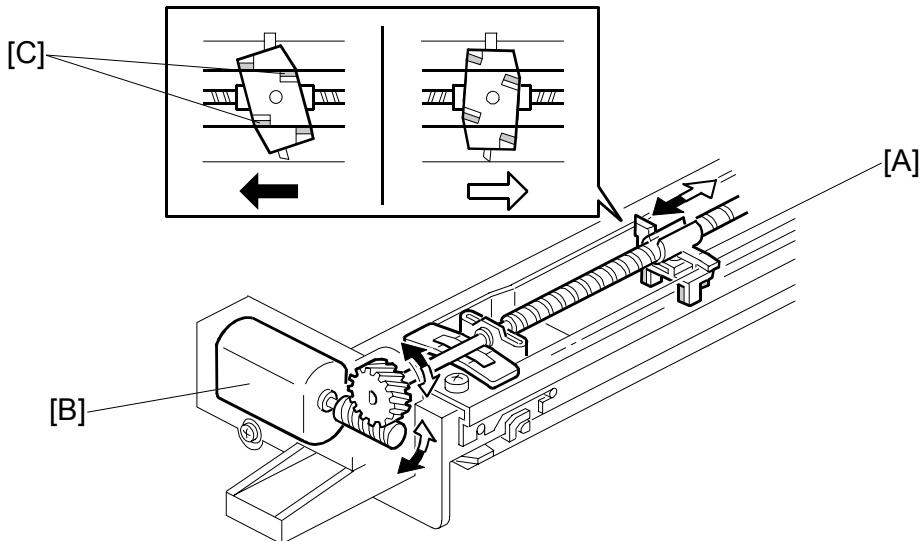
The PTL [C] makes better paper separation from the drum, and stops pick-off pawl marks on the leading edges of copies. The PTL removes the charge at the leading edge when copying on plain paper or translucent paper.

(Photocopying Processes - Image Transfer And Paper Separation - Pre-Transfer Potential Reduction)

NOTE: The PTL lamp 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”.

6.8.5 CHARGE CORONA WIRE CLEANING



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.

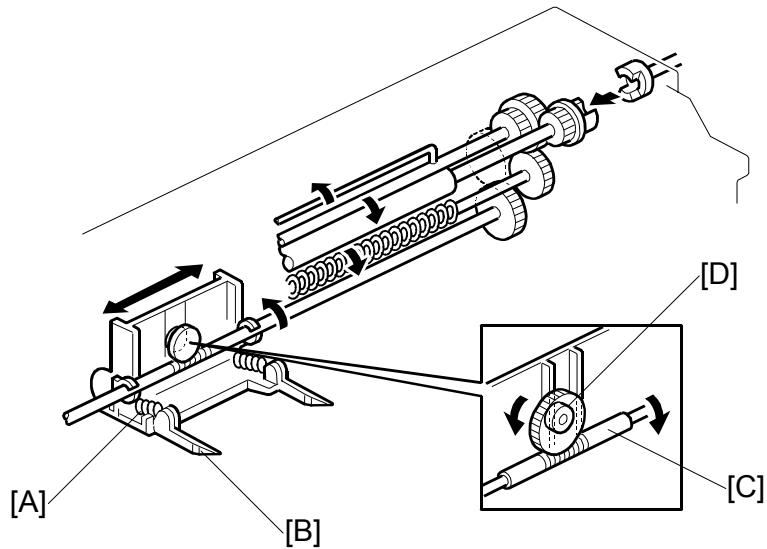
To clean the wires, the charge corona wire cleaner motor [B] switches on and drives the cleaner [A] to the rear, then back to the home position.

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.

Detailed Descriptions

6.8.6 DRUM PICK-OFF MECHANISM

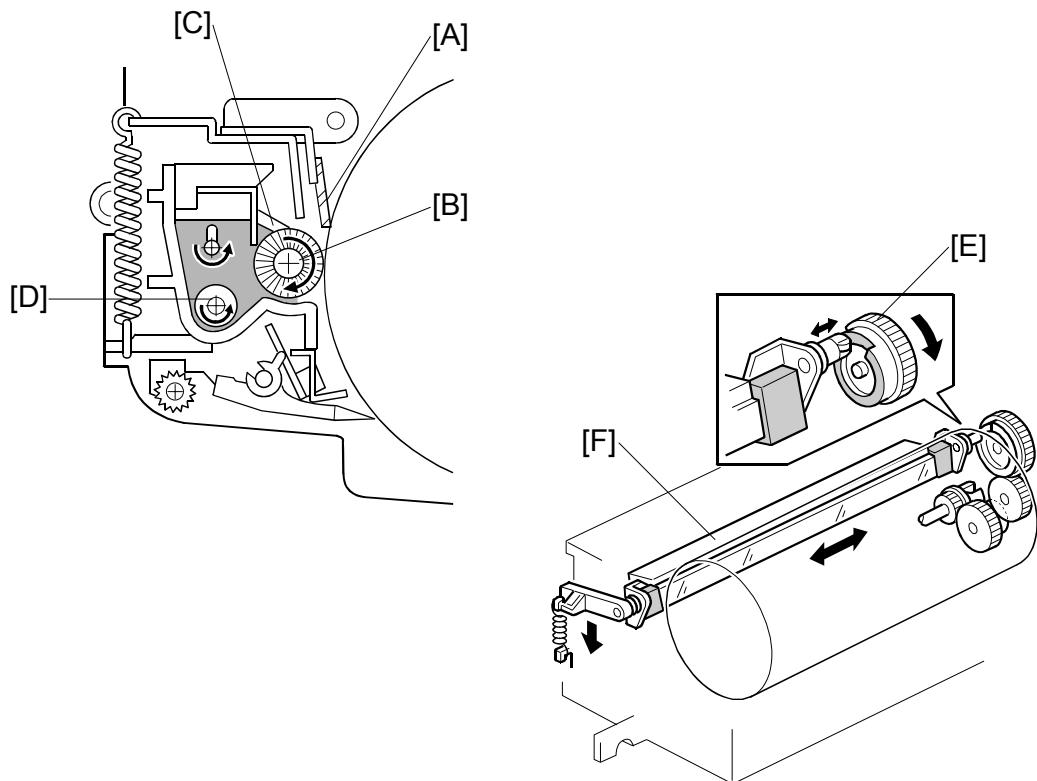


Pick-off pawls ride along the surface of the drum to peel off paper that has not separated from the drum.

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.

6.8.7 DRUM CLEANING



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.

- A cam [E] moves the cleaning blade [F] slightly from side to side to prevent it from scouring the drum.

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.

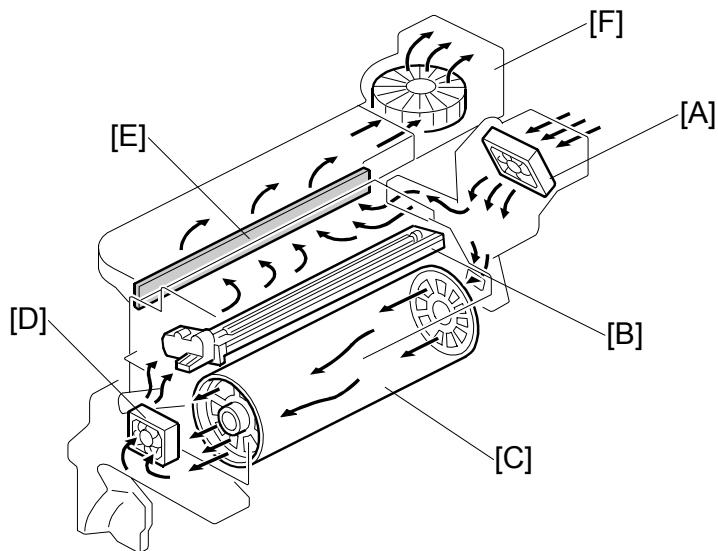
At the end of every job, the drum reverses about 10 mm to remove toner that has collected at the edge of the counter blade.

The drum motor drives the cleaning unit, as described in an earlier section.

Detailed Descriptions

DRUM UNIT

6.8.8 DRUM VENTILATION AND OZONE FILTER



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].

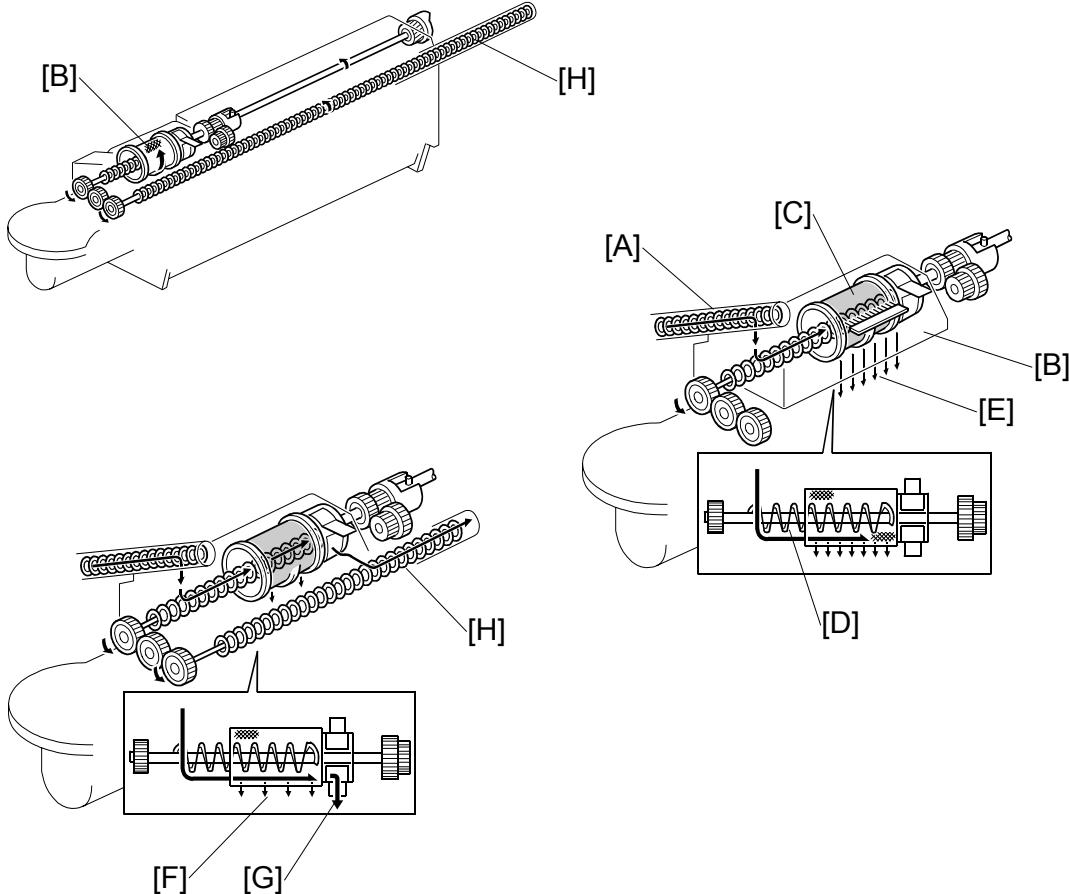
The PCU cooling fan [D] cools the drum and charge corona unit from the other end.

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 main 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.

6.8.9 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).

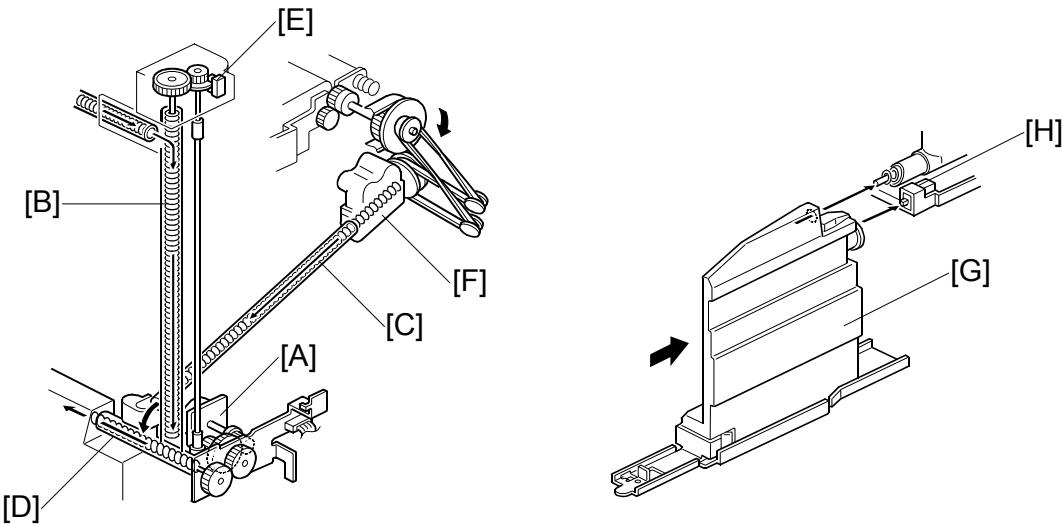
Re-usable toner is separated here from waste toner. Sieve [C] sifts the toner, and brush [D] inside the sieve moves the toner forward.

Detailed Descriptions

- 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.
- Waste toner [F] does not fall through the sieve. It is pushed through opening [G] to the waste toner transport coil [H]. The coil moves the toner towards the back of the machine, where it is deposited in the waste toner bottle.

The toner separation unit and waste toner transport coil [H] are connected to the same drive shaft (driven by the development motor).

6.8.10 WASTE TONER COLLECTION



Mechanism

The toner collection motor [A] drives the coils [B, C, and D].

- Coil [B] brings waste toner from the toner hopper (which originally came from the drum cleaning unit)
- Coil [C] brings waste toner from the transfer unit.
- Coil [D] transports waste toner from both sources to the toner collection bottle.

The toner collection bottle can hold 5000 cc of waste 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.

6.8.11 PROCESS CONTROL

Drum potential gradually changes for the following reasons:

- Dirty optics, exposure glass
- Dirty charge corona casing, grid plate
- Deterioration of drum sensitivity

What Happens at Power On

Here is a description of what happens while the fusing temperature is below 100°C immediately after the main 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.
4. ID sensor is calibrated (Vsg).
5. TD sensor is calibrated (Vref).

NOTE: 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.

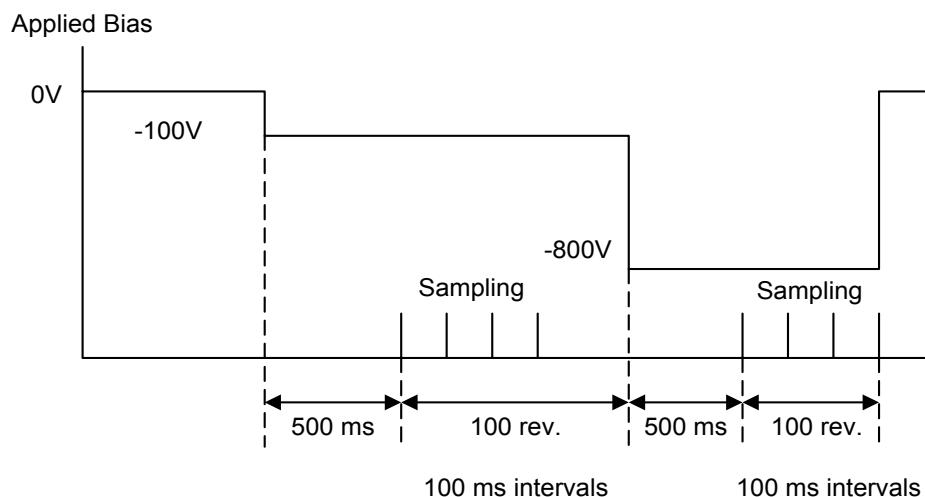
B140 series: Steps 2, 4, and 5 are not done if SP3904 is set to 0 (default) or 1.

Detailed
Descriptions

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 V_g , 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
3. A VL pattern is made on the drum, and VL is measured. The target value of VL is –130V.
VL: Potential measured after exposing a white pattern
4. Vb is adjusted to a value that is calculated to bring the value of VL to –130V. There are no limitations on the amount of change that can be made to Vb.

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 $-800 \pm 10V$. If it is within this range, the current value of Vg will be used for copying.
 - If it is not, $-(Vd + 800)V$ 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.

Detailed Descriptions

LD Power

Finally, the machine determines the laser diode power that will be used during copying. This is done as follows.

1. The laser power is changed to the value needed to write a halftone pattern to the drum.
2. The potential sensor reads the potential, V_h, from this pattern.
V_h: Standard halftone drum potential
3. V_h 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.
 - The laser power cannot be changed by more than ± 60 units.
4. If V_h 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).

NOTE: 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.

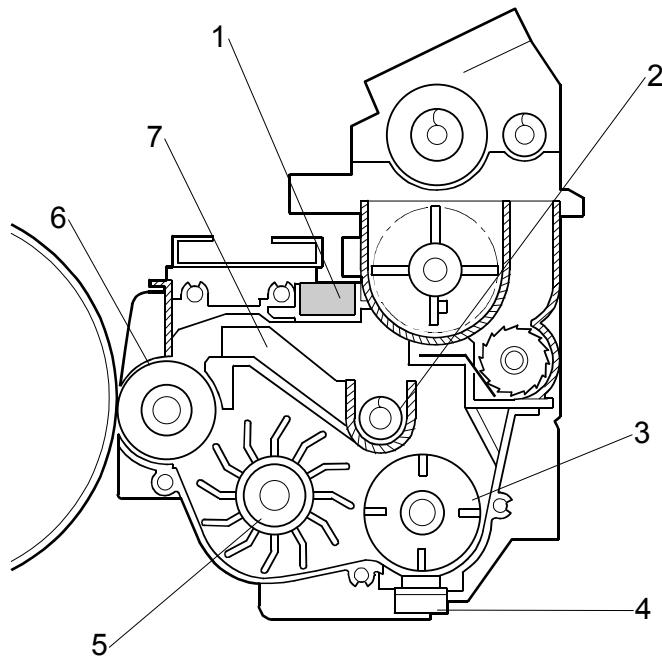
NOTE: If the ID sensor could not be calibrated during the latest process control (when measuring Vsg), then the previous ID sensor value is used. If the ID sensor output is abnormal when measuring Vsp, SC350, 351, or 352 is issued, and Vref is not updated (the machine uses the previous value).

Detailed Descriptions

6.9 DEVELOPMENT AND TONER SUPPLY

6.9.1 OVERVIEW

Development Unit



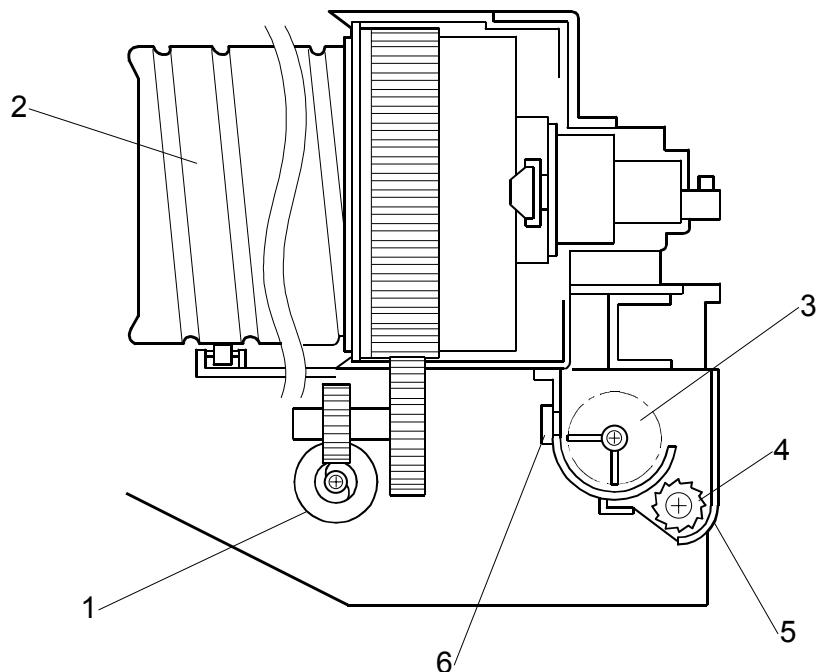
- | | |
|-----------------------|------------------------------|
| 1. Development Filter | 5. Paddle Roller |
| 2. Toner Auger | 6. Development Roller Sleeve |
| 3. Developer Agitator | 7. Separator |
| 4. TD Sensor | |

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

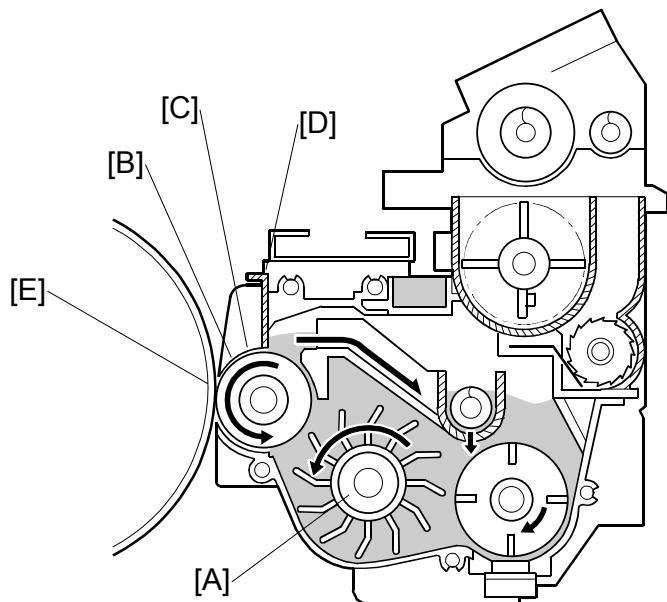
Detailed Descriptions

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 waste toner from toner that can be re-used. Reusable toner is carried to the development unit, and waste toner is sent to the waste toner bottle.

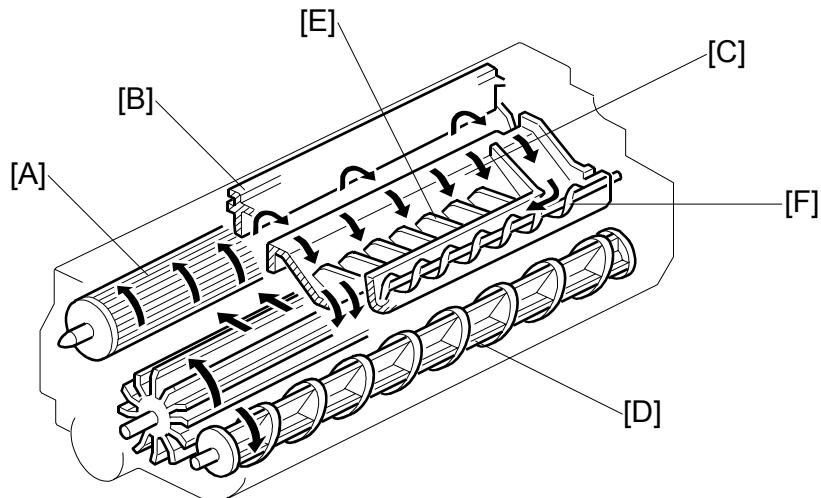
6.9.2 DEVELOPMENT UNIT



- [A]: Paddle roller
- [B]: Development roller
- [C]: Development roller sleeve
- [D]: Doctor blade
- [E]: OPC drum

(Photocopying Process> Development> Dual-component Development)

6.9.3 DEVELOPER/TONER MIXING (AGITATION)



[A]: Development roller

[B]: Doctor blade

[C]: Backspill plate

[D]: Agitator

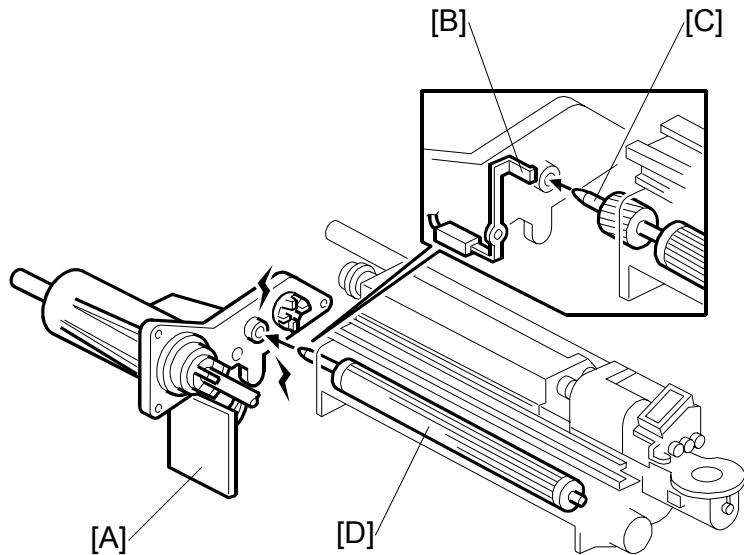
[E]: Mixing vanes

[F]: Auger

(Photocopying Process> Development> Crossmixing)

Detailed
Descriptions

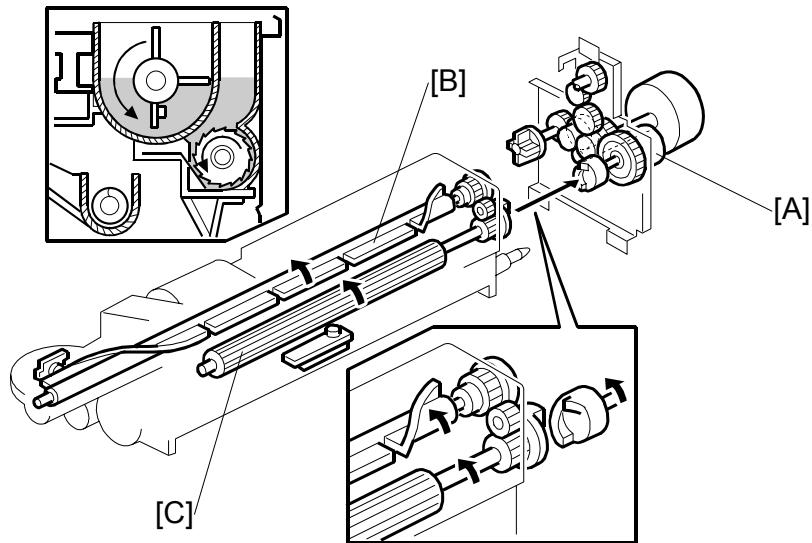
6.9.4 DEVELOPMENT BIAS



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.

6.9.5 TONER SUPPLY



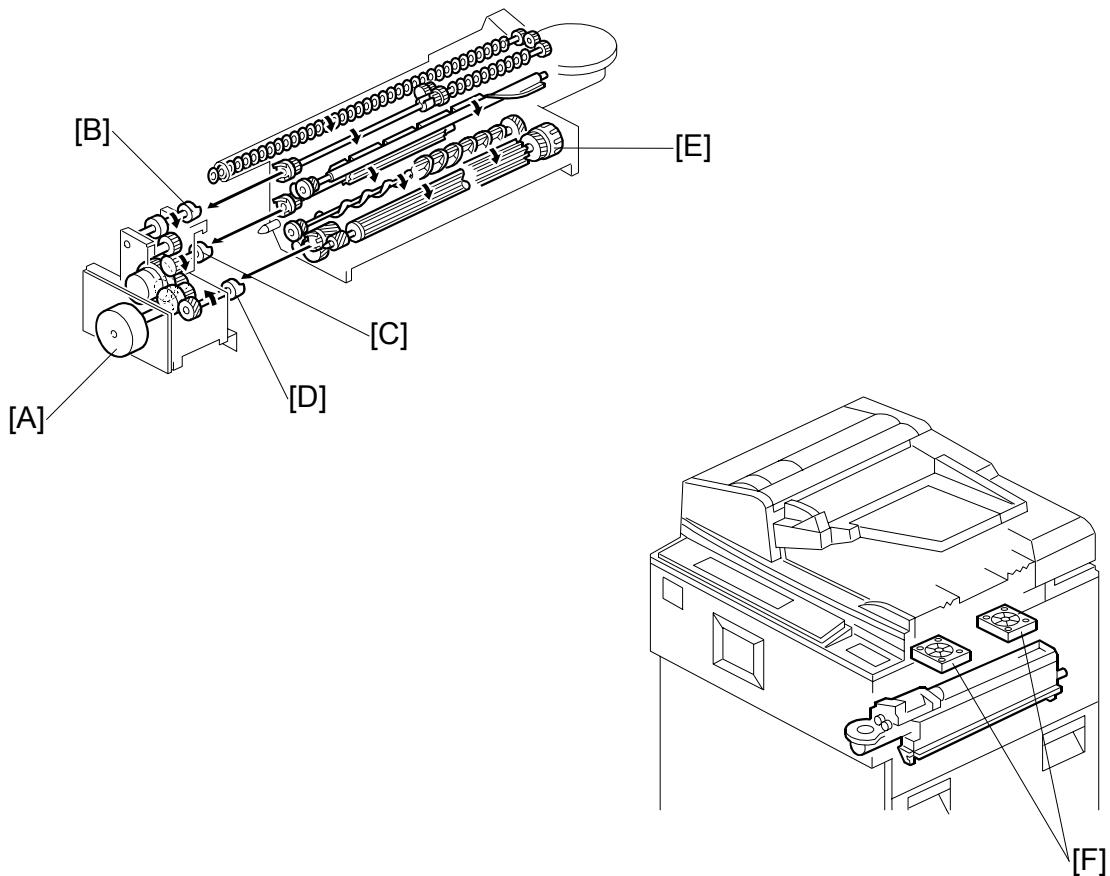
The ID sensor and TD sensor control toner density. The output of these two sensors determines when to switch the toner supply clutch [A] on. The clutch transfers drive from the development motor to the toner supply mechanism.

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.

Detailed Descriptions

6.9.6 DEVELOPMENT UNIT DRIVE AND VENTILATION

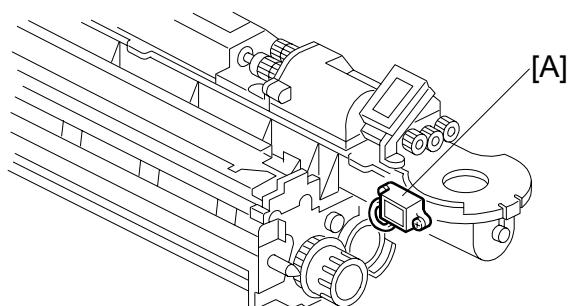


The development motor [A] (a dc motor) drives the following units through three drive shafts: toner separation unit [B], toner supply unit [C], and development unit [D].

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.

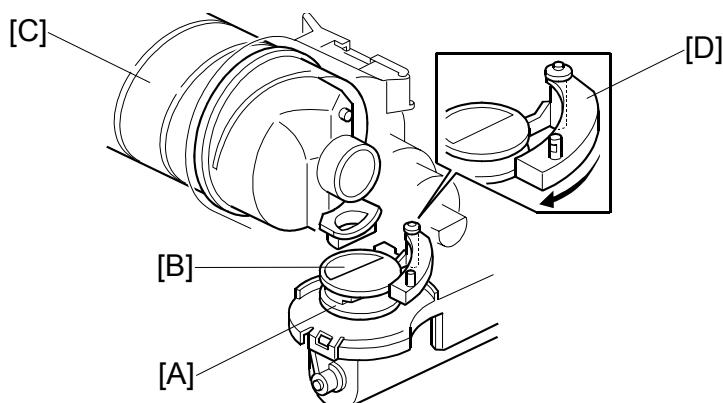
Two cooling fans [F] above the bypass tray draw in air to cool the development unit. Both fans switch on when the drum motor switches on, then both switch off 110 seconds after the drum motor switches off.

6.9.7 TONER END SENSOR



The toner end sensor [A], a piezoelectric sensor (a sensor sensitive to pressure) is attached to the toner hopper.

6.9.8 SHUTTER MECHANISM



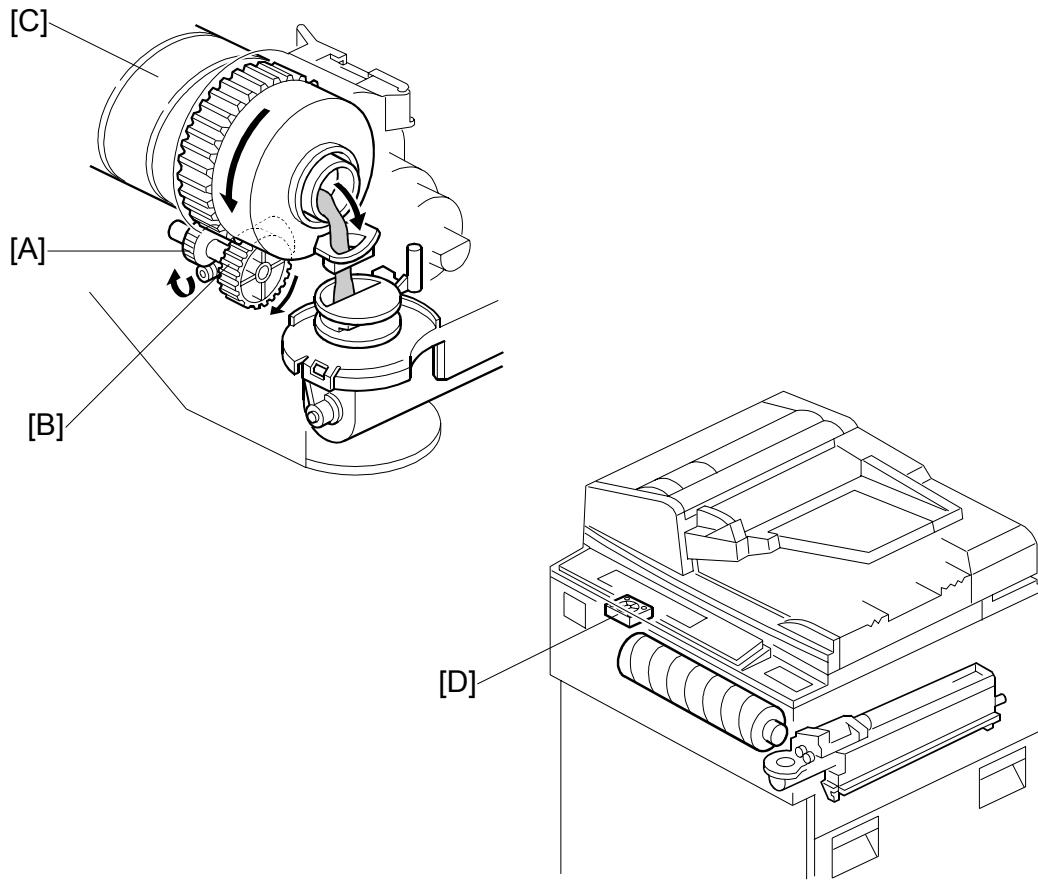
Detailed Descriptions

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.

6.9.9 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.

6.9.10 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 V_t . The current V_t value can be displayed with SP2223-001 (Vt display).
2. For every copy, V_t (TD sensor output) is subtracted from V_{ref} (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.

$$\frac{\text{GAIN} \times \text{Image Pixel Count} \times \text{Target Density}}{\text{Toner Supply Rate}} + \text{Clutch Startup Time}$$

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/cm^2	
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.

Detailed Descriptions

If we substitute the default settings, then:

$$\frac{\text{GAIN} \times \text{Image Pixel Count} \times 0.7 \text{ mg/cm}^2}{\text{850 mg/s}} + 16 \text{ ms}$$

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.

DEVELOPMENT AND TONER SUPPLY

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: 1) The 10 copy interval can be extended with SP2210-001 (ID Sensor Pattern Interval).
2) 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 $3.0 \pm 0.1\text{V}$. Then, after setting the control voltage, V_t is sampled 100 times, these samplings are averaged, then the average is used to set the standard value for V_t .

- NOTE:**
- 1) After developer is replaced, you must execute SP2801.
 - 2) After the TD sensor is replaced, you must execute SP2801.
 - 3) 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.
 - 4) 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 V_{sp} and V_{sg} 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 V_h is used to adjust the laser power. The laser diode writes the V_h halftone pattern on the drum. The reading from this pattern is V_h .
- 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 .

Detailed Descriptions

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: $185 \mu\text{W}$ (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 ($3.0 \pm 0.1V$) 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

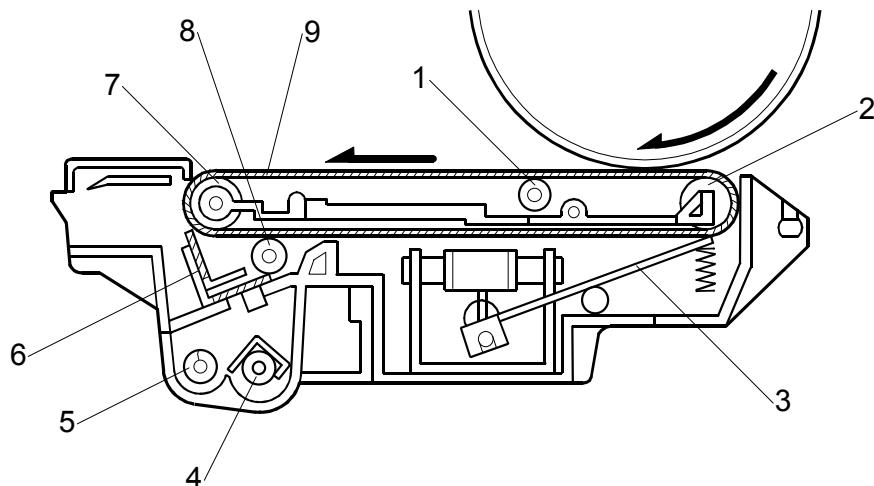
If the front door is opened and closed while a toner near end or toner end condition exists, the machine attempts to recover using measurements from the toner end sensor and TD sensor, based on the possibility that the toner bottle has been replaced.

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.

Detailed
Descriptions

6.10 IMAGE TRANSFER AND PAPER SEPARATION

6.10.1 OVERVIEW



- | | |
|--------------------------------|--------------------|
| 1. Transfer Roller | 6. Cleaning Blade |
| 2. Transfer Belt Drive Roller | 7. Drive Roller |
| 3. Belt Lift Lever | 8. Cleaning Roller |
| 4. Waste Toner Agitator | 9. Transfer Belt |
| 5. Waste Toner Collection Coil | |

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.

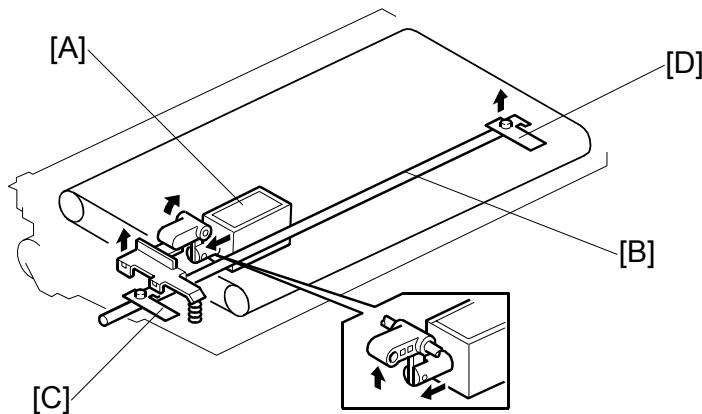
A cleaning blade and a cleaning roller clean the surface of the transfer belt.

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.

6.10.2 TRANSFER BELT LIFT

Mechanism



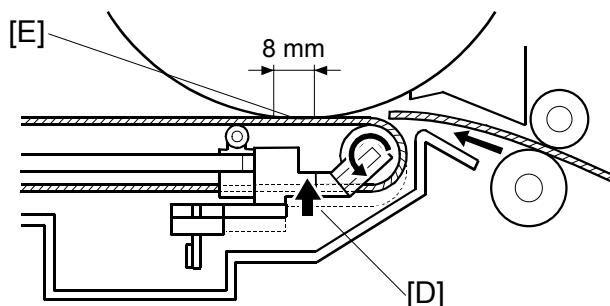
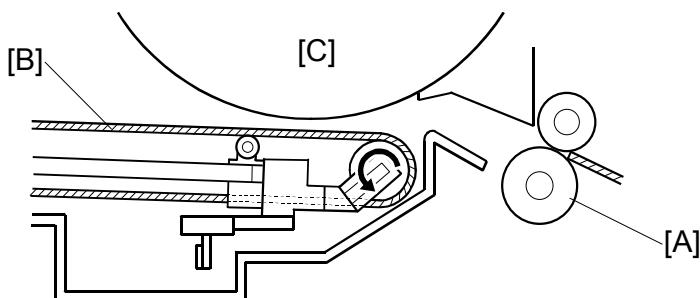
The transfer belt lift solenoid [A] lifts the belt into contact with the drum using the link [B], which is connected to the front [C] and rear [D] belt lift levers.

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.

Detailed
Descriptions

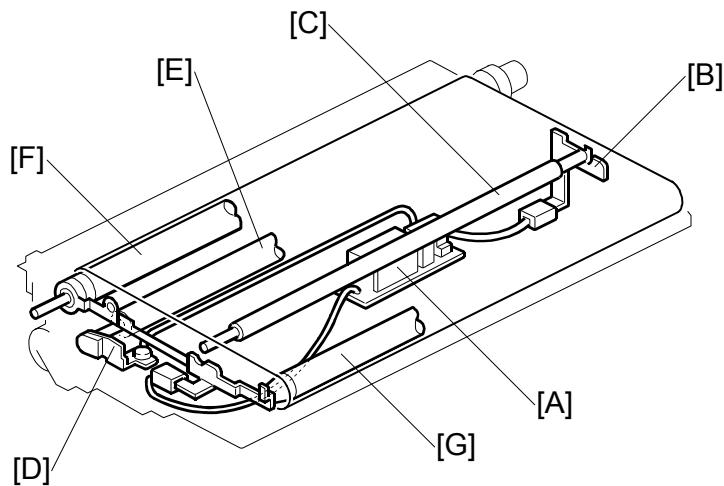
Timing

- [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.

6.10.3 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.

Detailed
Descriptions

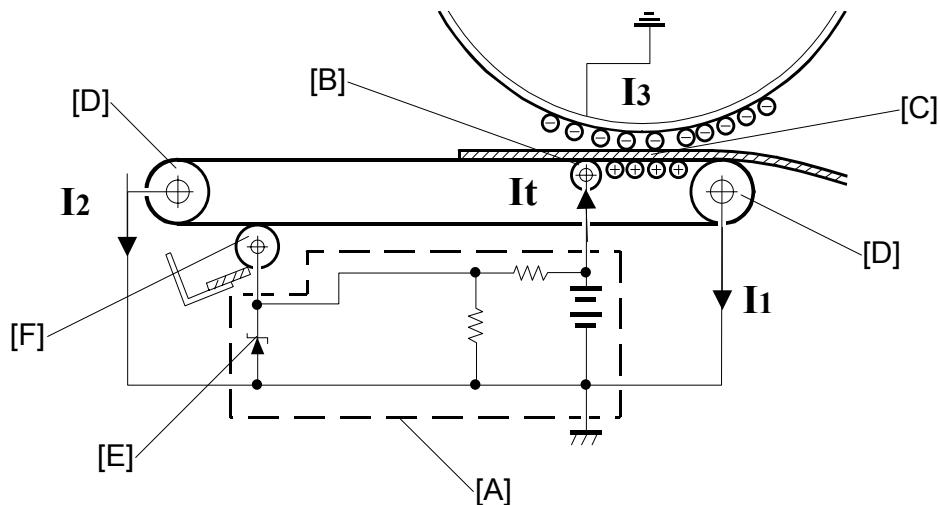
6.10.4 TRANSFER CURRENT SETTINGS

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
SP2301-003	Bypass: Front Side	75 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

- NOTE:**
- 1) For postcards, use the by-pass tray and set the side fences for A6 width.
 - 2) The charge for cleaning is applied even during the interval between sheets of copy paper.
 - 3) At the following times, 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

6.10.5 TRANSFER CURRENT CIRCUIT



[A]: Transfer power pack

[B]: Transfer roller

[C]: Nip between drum and transfer belt

[D]: Drive rollers

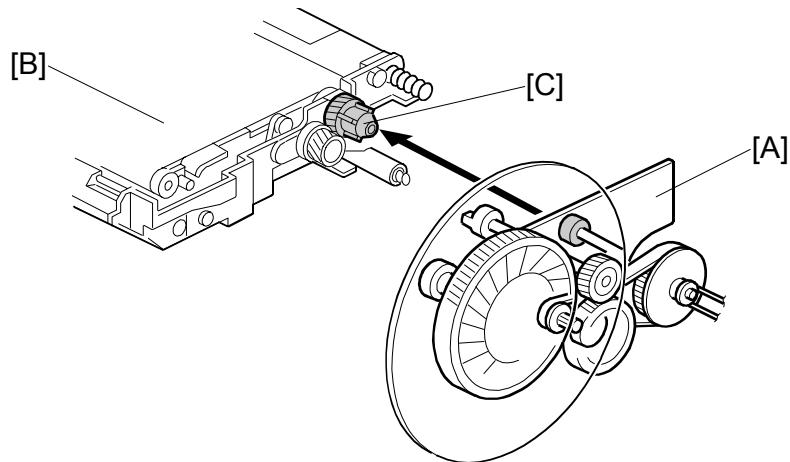
The transfer power pack does the following:

- Monitors the currents I_1 and I_2
- Adjusts its output (I_t) to keep the current I_3 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].

Detailed
Descriptions

6.10.6 TRANSFER BELT DRIVE AND PAPER TRANSPORT

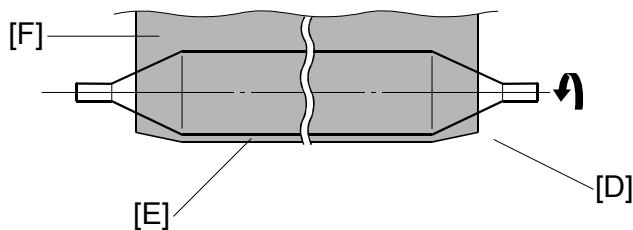


The drum motor [A] drives the transfer belt [B] through belts and gears.

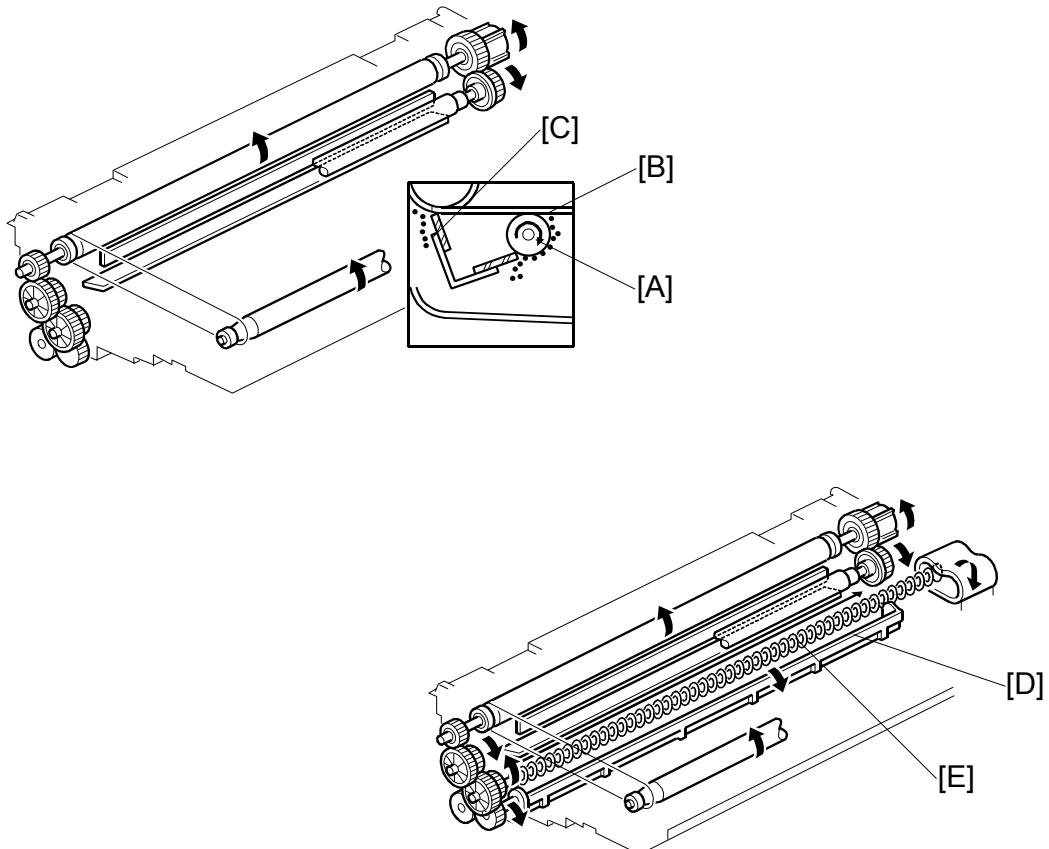
The transfer belt by its electrostatic charge attracts the paper [B], so a transport fan is not required.

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.



6.10.7 TRANSFER BELT CLEANING



Toner collects on the transfer belt in the following cases. This toner causes streaking on the reverse sides of copies.

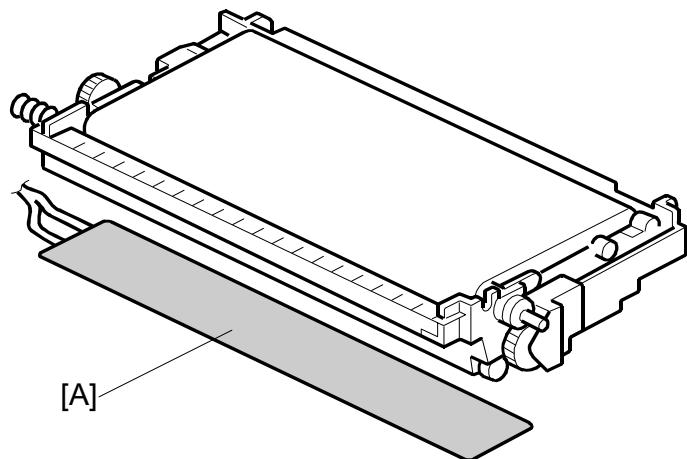
- As a result of a paper jam
- If the by-pass feed tray side fences are set in the wrong position

Detailed Descriptions

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 and 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.

6.10.8 ANTI-CONDENSATION HEATER



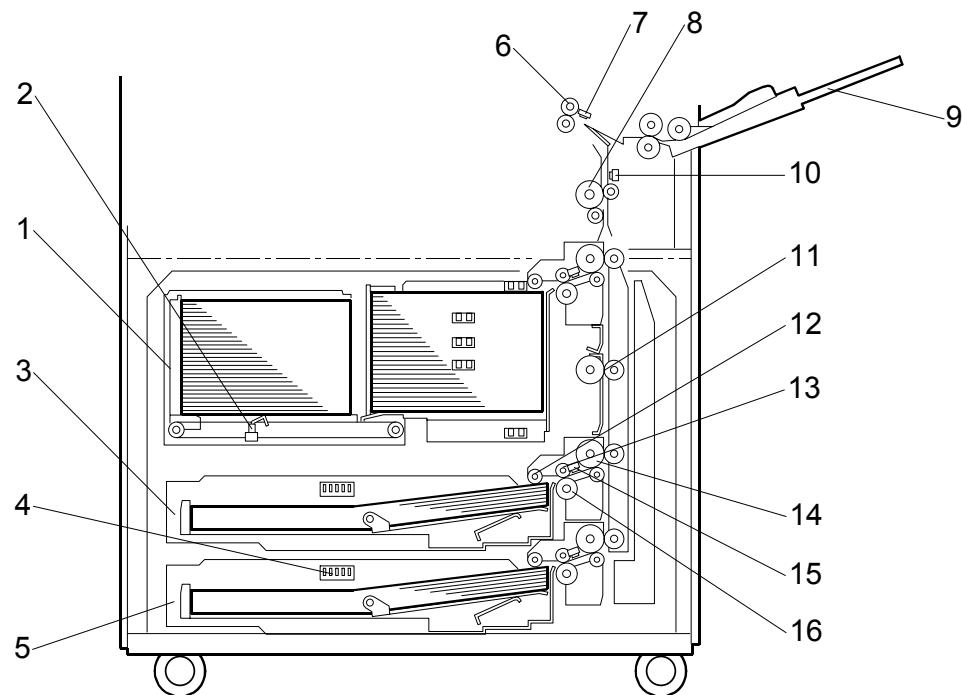
The anti-condensation heater [A] is directly below the transfer belt drive roller.

This anti-condensation heater turns on automatically at the following times:

- When the main power switch is turned off
- When the machine enters auto off mode

6.11 PAPER FEED

6.11.1 OVERVIEW



- | | |
|----------------------------|------------------------|
| 1. Tandem Tray (Tray 1) | 9. By-pass Tray |
| 2. Left Tray Paper Sensor | 10. Relay Sensor |
| 3. Universal Tray (Tray 2) | 11. Lower Relay Roller |
| 4. 3rd Paper Size Switch | 12. Pick Up Roller |
| 5. Universal Tray (Tray 3) | 13. Feed Roller |
| 6. Registration Roller | 14. Grip Roller |
| 7. Registration Sensor | 15. Paper Feed Sensor |
| 8. Upper Relay Roller | 16. Separation Roller |

Detailed
Descriptions

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.

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

The machine also has a by-pass feed tray which can hold 100 sheets (T-6200).

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.

By-pass Feed

- **Capacity:** 100 sheets.
- **Paper feed and separation:** Standard FRR system with a torque limiter for paper separation and feed. By-pass tray motor and clutch.
- **Paper end detection:** Photointerrupter and feeler.
- **Size detection:** Side fence is used for width detection, registration sensor pulse count is used for length detection.
- **Thick paper feed:** By-pass feed clutch switches on twice.

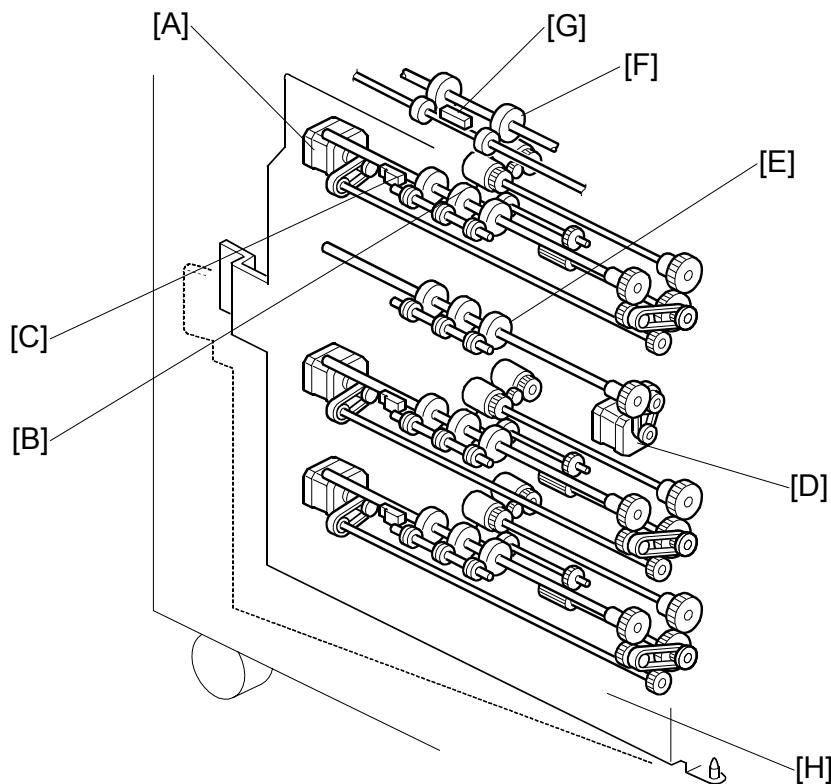
Paper Registration

- Paper is guided to the registration roller from five sources: the 3 built-in paper trays, 1 by-pass tray, 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.

6.11.2 DRIVE



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 by-pass feed motor (not shown here) drives the upper relay roller [F].

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.

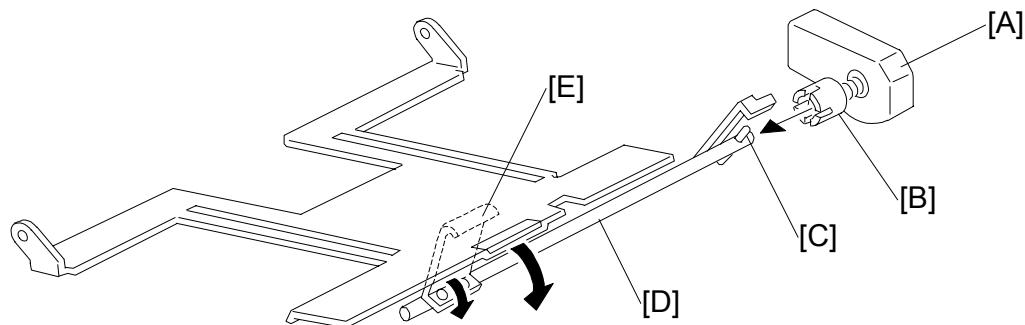
The transport guide plate [H] swings against the side of the machine and locks in place.

Detailed Descriptions

PAPER FEED

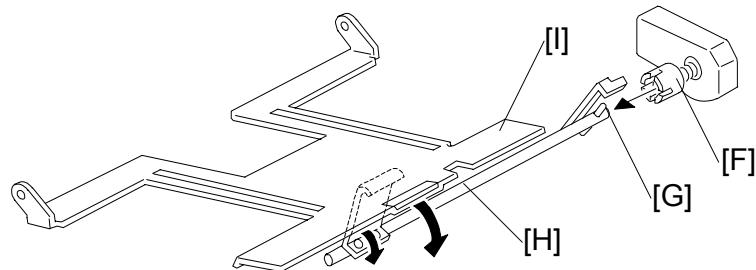
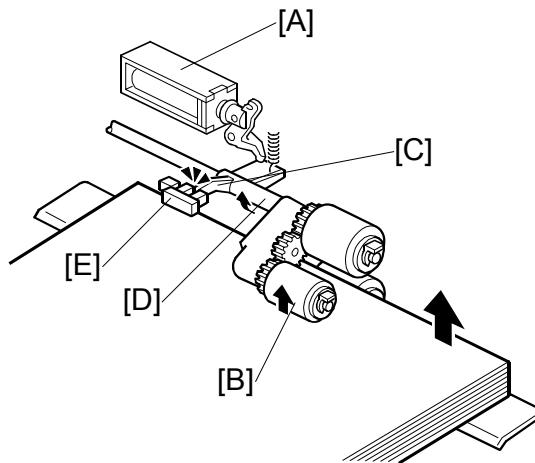
6.11.3 TRAY AND PAPER LIFT MECHANISM – TRAY 2,3

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 deactivated. Then the lift motor turns on again until the lift sensor is activated again.

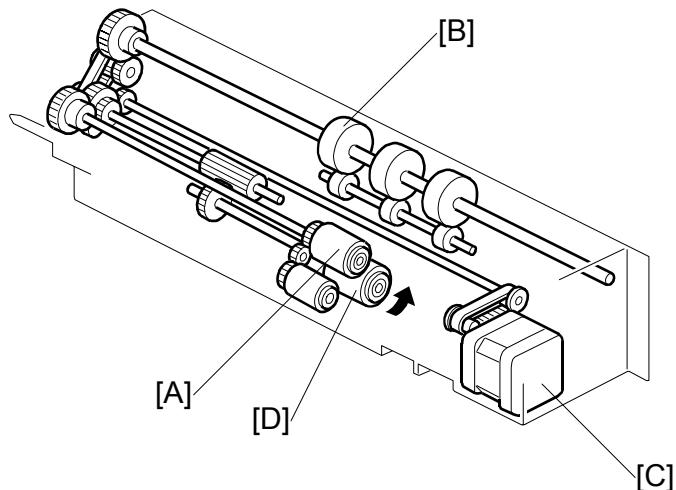
When the tray is drawn out of the feed unit: gear [F] disengages pin [G] on shaft [H], then the tray bottom plate [I] drops by its own weight.

Detailed Descriptions

PAPER FEED

6.11.4 PAPER FEED AND SEPARATION MECHANISM

Paper Feed and Separation: No Paper Present

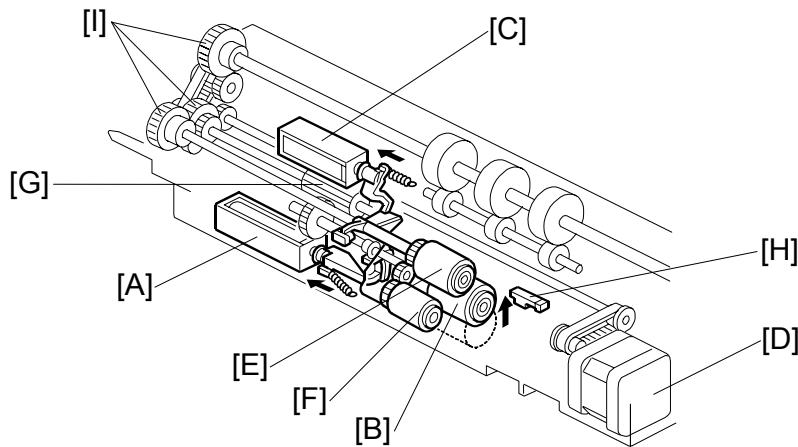


While waiting for the first sheet to feed and between sheets, the feed roller [A] must not rotate. However, the grip roller [B] must turn, so that any paper coming up the vertical transport path continues to feed. To do this, the paper feed motor [C] rotates in reverse. The separation roller [D] is free 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] → turns pick-up roller [F] via gear [G]

When the paper feed sensor [H] detects the leading edge of the paper:

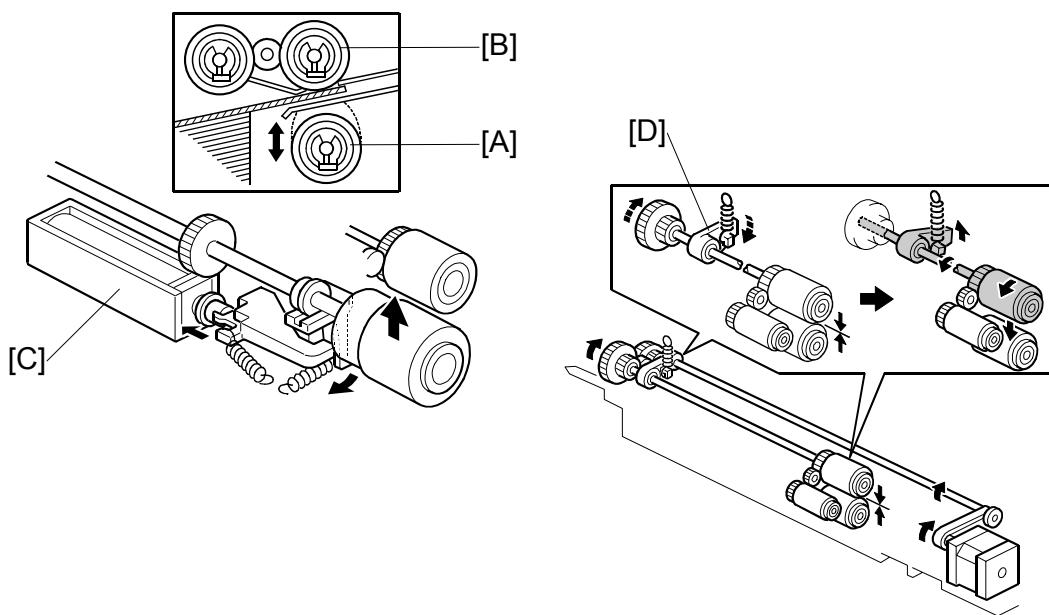
- Pick-up solenoid [C] switches off, and pick-up roller [F] lifts.
- The feed roller [E] then feeds the sheet to the registration roller.

Note the three one-way clutches [I]: One for the grip roller, one for the feed roller, and one for the separation roller.

Detailed Descriptions

When the feed motor rotates forward:

Feed roller	→ Rotates
Separation roller	→ Rotates in accordance with the FRR principle  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:

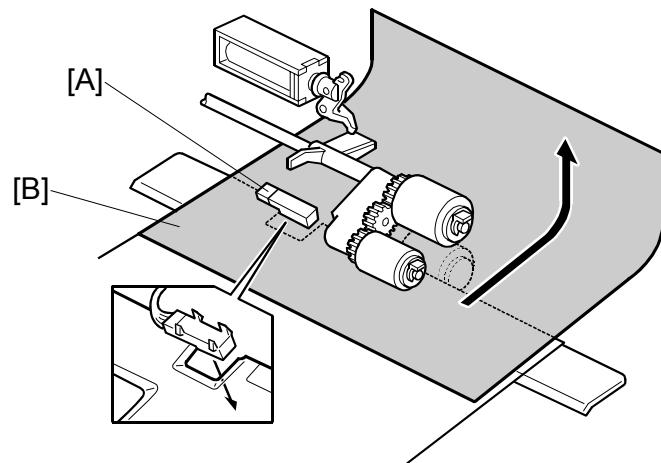
- When the paper feed motor turns on, the separation roller rotates. If the separation roller is away from the feed roller, it reduces the load on the paper feed motor and drive mechanism, and it also reduces wear to the rubber surface of the separation roller caused by friction between the separation 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.

However, if the rollers stick together after paper passes between them, the separation roller could rotate the feed roller in reverse before the motor and solenoid switch off. To prevent this, if the feed roller starts to reverse, a small brake arm [D] on the feed roller shaft rotates down, strikes a stopper, and drives the feed roller forward slightly to separate it from the reverse roller below.

The rollers are composed of rubber and may stick occasionally. This mechanism prevents excessive wear on the rollers.

6.11.5 PAPER NEAR-END AND PAPER END – TRAYS 2 AND 3



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.

Detailed
Descriptions

6.11.6 PAPER SIZE DETECTION

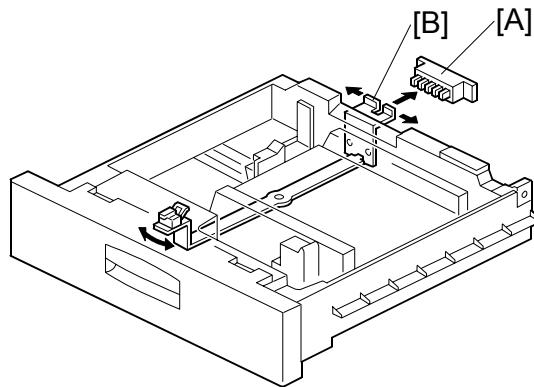
Tandem Tray (Tray 1)

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)

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 dial, as shown in the table.



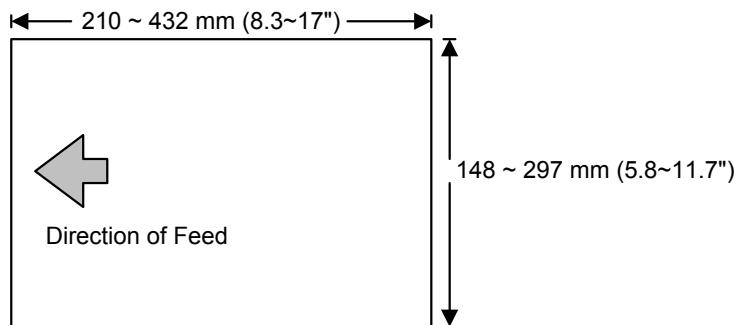
Sensor Outputs	A4/A3 Version	LT/DLT Version
01111	A3 SEF	11" x 17" SEF
00111	8 1/4" x 13" SEF	8 1/2" x 14" SEF
10011	A4 SEF	8 1/2" x 11" SEF
01001	A4 LEF	8 1/2" x 11" LEF
00100	8 1/2" x 13" SEF	5 1/2" x 8 1/2" SEF
00010	A5 SEF	5 1/2" x 8 1/2" LEF
00001	A5 LEF	8" x 10 1/2" SEF
10000	—	7 1/4" x 10" SEF
11000	—	Set by SP 5129
11100	—	Not used
11110	*	*

0: Actuated 1: Deactuated

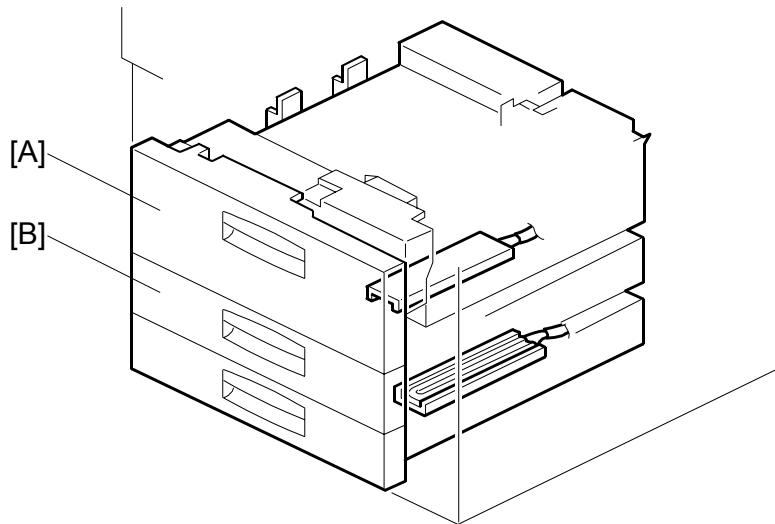
SP5129: The machine can detect 8" x 13" (default), 8 1/2" x 13", or 8 1/4" x 13".

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.

Special Size Setting Range



6.11.7 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.

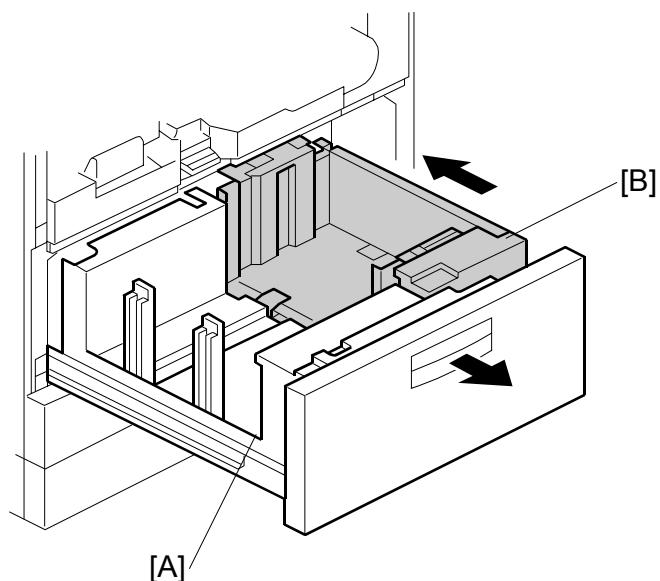
This anti-condensation heater turns on automatically at the following times:

- When the main power switch is turned off
- When the machine enters auto off mode

Detailed
Descriptions

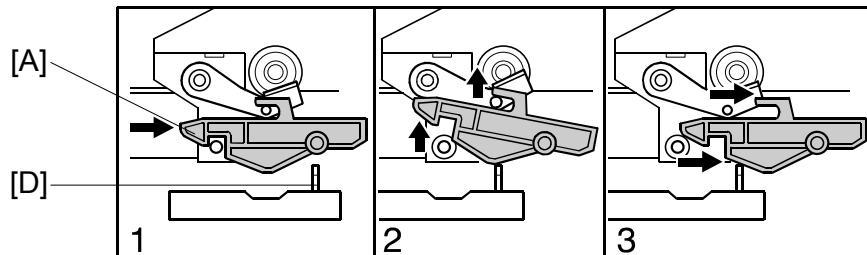
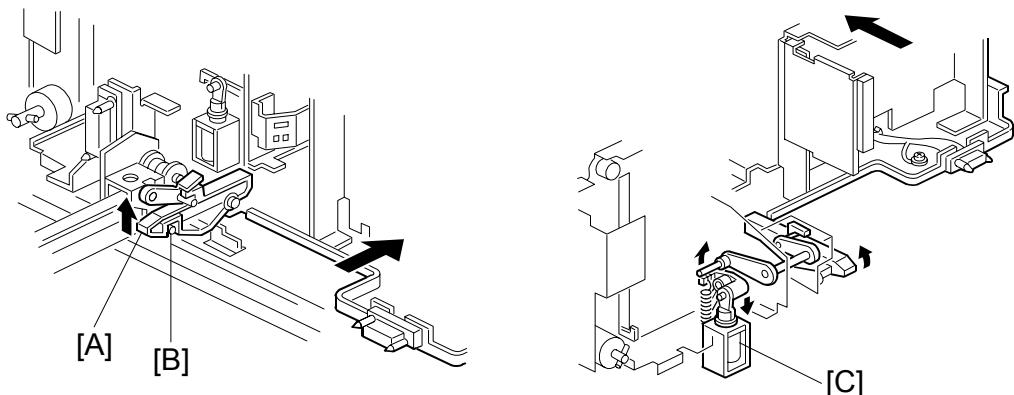
6.11.8 TANDEM TRAY – TRAY 1

Overview



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

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.

Detailed
Descriptions

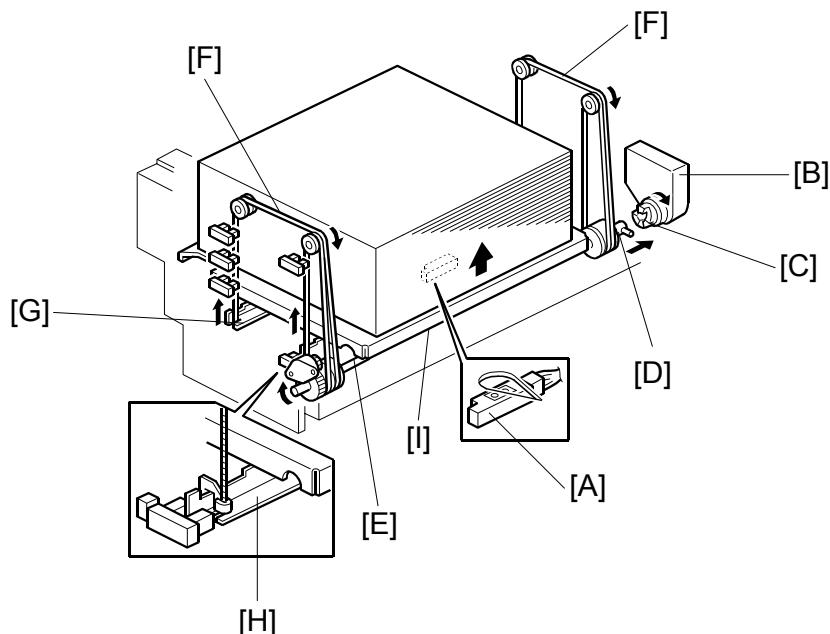
When the tandem tray is drawn out fully:

- Projection [D] pushes up lock lever [A] so that both trays separate. This makes paper loading easier.

PAPER FEED

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.

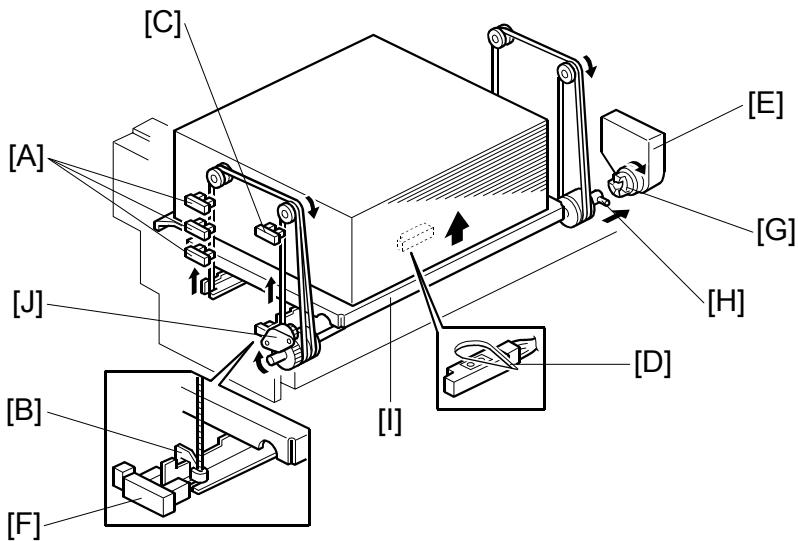
NOTE: If sensor [A] was not present and the tray was empty, the bottom plate would have to lift until the 1st tray lift paper end sensor (at the top of the tray) detected that there was no paper, and this would waste several seconds.

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.



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.

Detailed Descriptions

Paper end: After the last sheet feeds, the right tray paper sensor [D] below the bottom of the tray actuates and signals paper end.

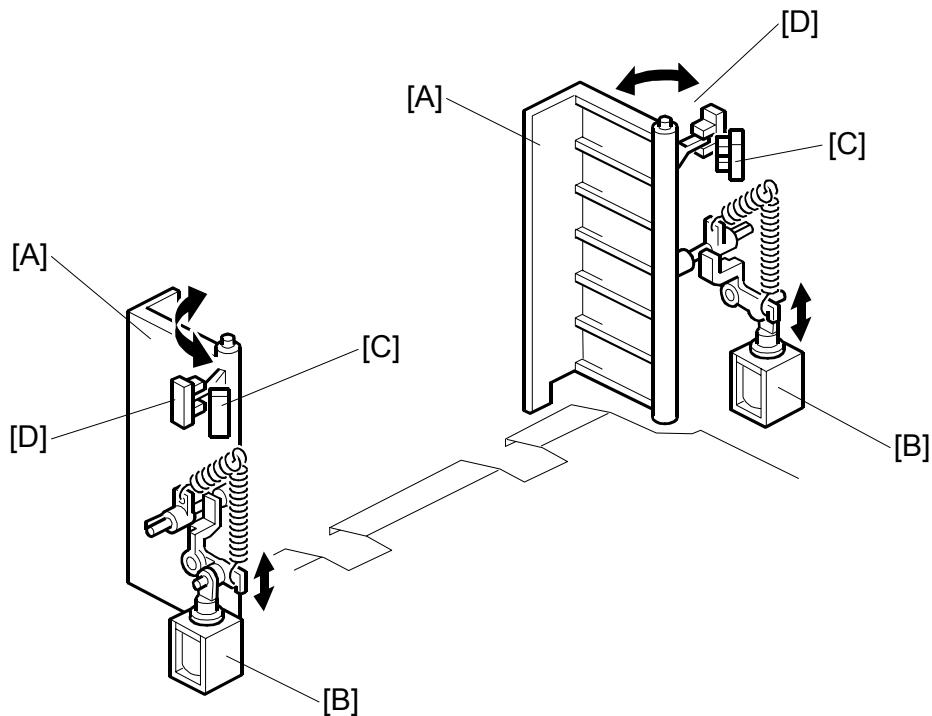
When paper runs out in the right tray, the stack must be moved across from the left tray. To do that, the tray must first be lowered. The 1st tray lift motor [E] reverses until actuator [B] activates the right tray down sensor [F].

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.

PAPER FEED

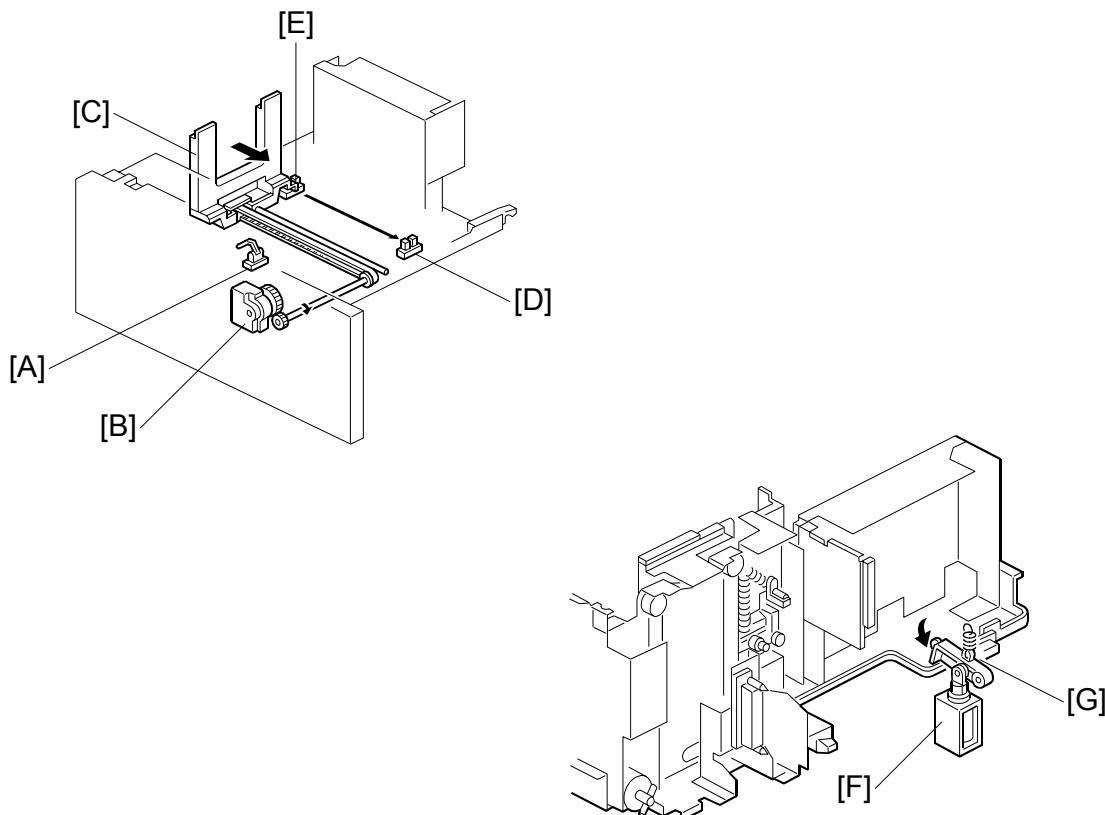
Fence Drive



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

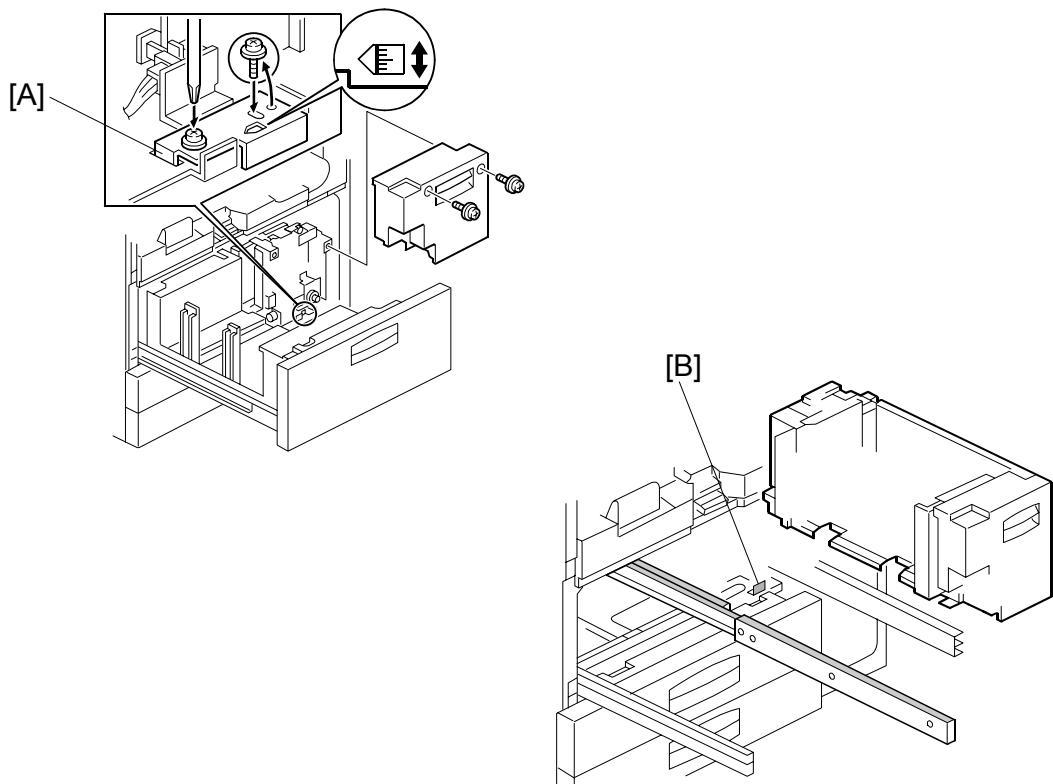
When the left tray paper sensor [A] detects paper but the right tray paper sensor does not, the following happens.

- 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.

Detailed Descriptions

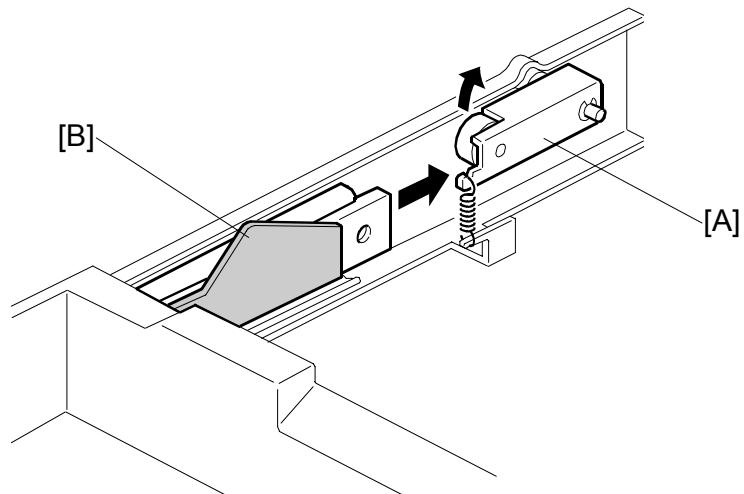
While the rear fence is moving, the left tray lock solenoid [F] turns on and the lock lever [G] locks the left tray.

Tray Side-to-side Positioning



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.

6.11.9 TRAY POSITIONING MECHANISM – TRAYS 1 TO 3

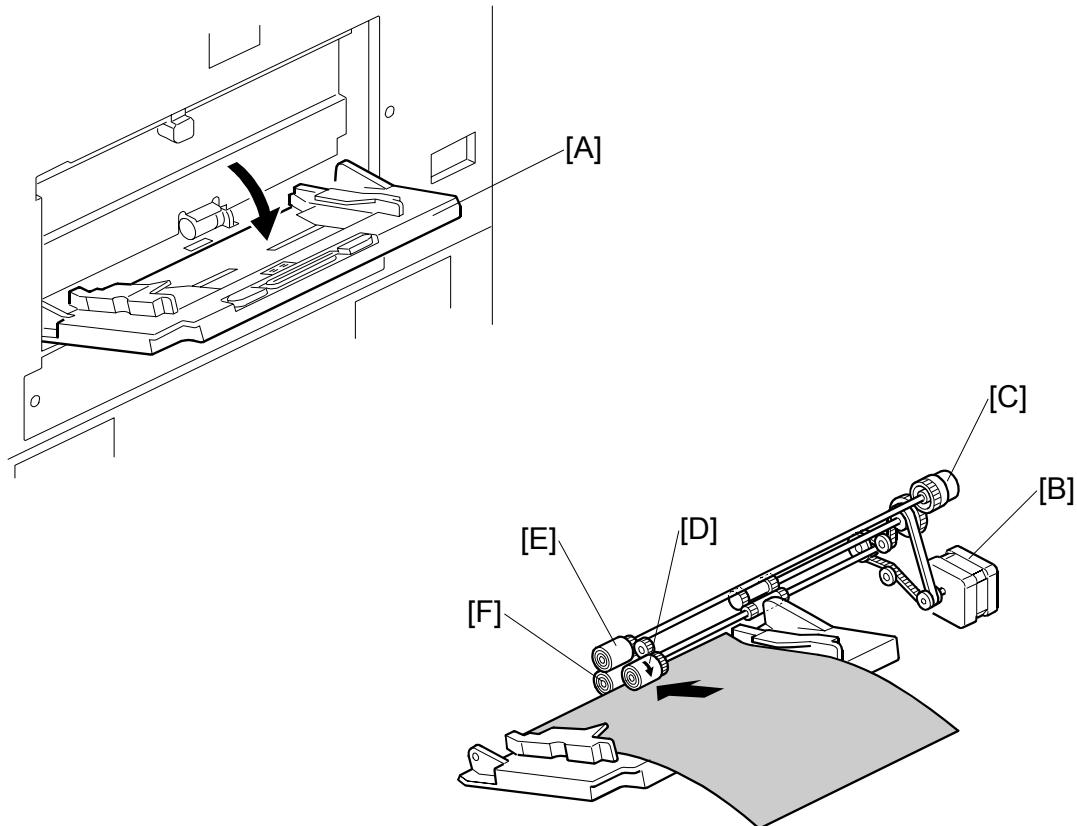


When the tray is placed in the paper feed unit, the lock lever [A] drops behind the lock plate [B] on the support bracket to lock the tray in the proper position.

Detailed
Descriptions

6.11.10 BY-PASS TRAY

By-pass Feed and Separation



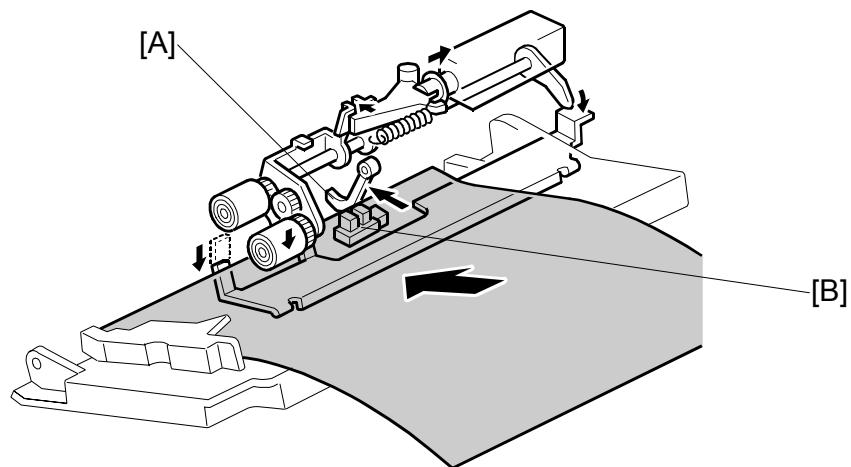
The by-pass tray [A] opens from the right side of the machine.

By-pass feed motor [B] → By-pass feed clutch [C] → Pick-up roller [D] (pick-up solenoid – see the next page) → Feed roller [E] and separation roller [F]

The by-pass tray uses a standard FRR feed system.

(Handling Paper> Paper Feed Methods> **Forward and Reverse Roller (FRR)** or **By-pass Feed Tray**)

NOTE: The direction of feed in the by-pass tray is opposite from that of the other paper trays, so their parts (with the exception of the separation roller) are not interchangeable.

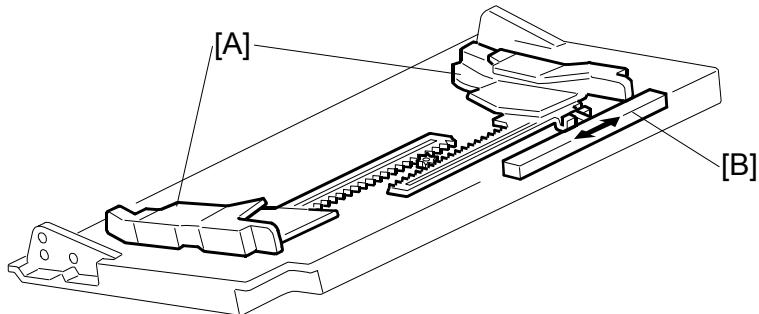
By-pass Tray Paper End Detection

When the paper runs out, the paper end feeler [A] drops through the cutout in the by-pass paper end sensor [B].

Detailed
Descriptions

PAPER FEED

By-pass Paper Size Detection



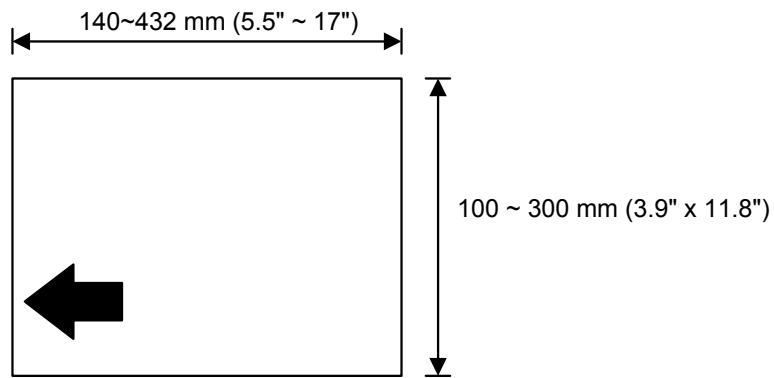
The positions of the side fences [A], connected to the by-pass paper size sensor [B] determine the paper width.

Paper length is determined with pulse counts read from the registration sensor.

(Handling Paper> Paper Feed> Paper Size Detection> **By-pass Size Detection**)

NOTE: Use SP1007 (By-pass Feed Paper Size Display) to confirm the size of the paper detected in the by-pass tray if paper is skewing during feeding.

The user can specify non-standard paper sizes for feeding from the by-pass tray. The size must be within the range shown in the illustration.



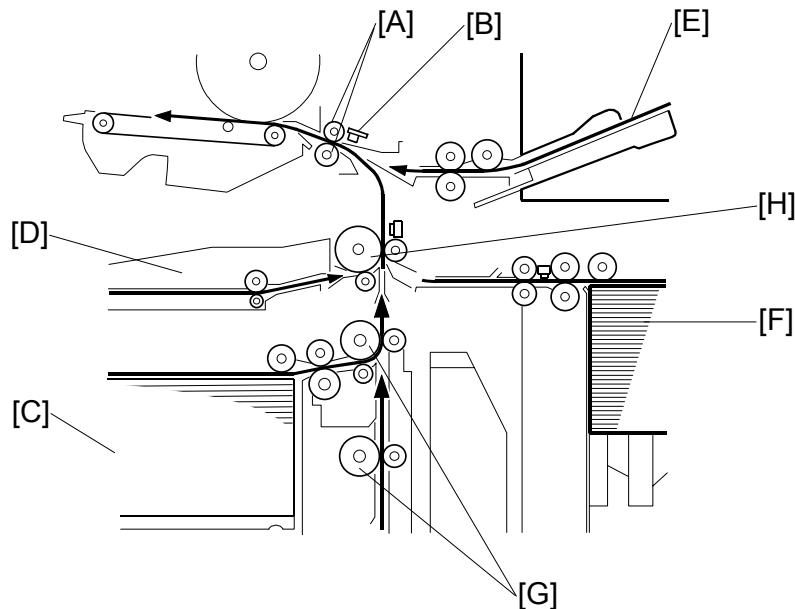
NOTE: SP1904-001~002 (By-pass Paper Size Selection): Use this to calibrate the minimum and maximum size positions of the by-pass tray side fences.

Refer to Replacement and Adjustment> Paper Feed> By-pass Paper Size Detector.

SP1905 (Thick Paper – Bypass Tray): Use this to adjust the by-pass feed clutch operation if thick paper often jams at the registration roller. See “5. Service Tables” for details.

6.11.11 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]
- By-pass tray [E]
- Optional LCT [F]

The grip rollers [G] feed paper from the trays into the vertical transport path to the registration rollers.

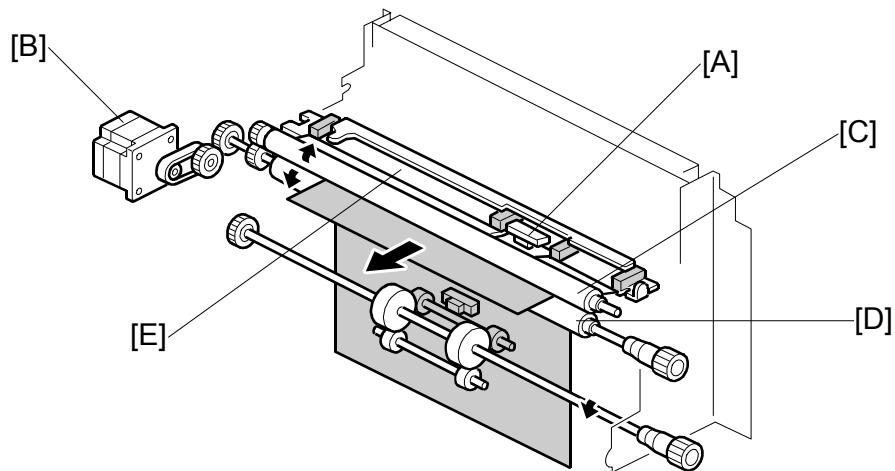
The upper relay roller [H] feeds all paper exiting the vertical transport path. It also feeds paper from the duplex unit and LCT.

The by-pass tray feeds paper directly to the registration rollers.

Detailed
Descriptions

PAPER FEED

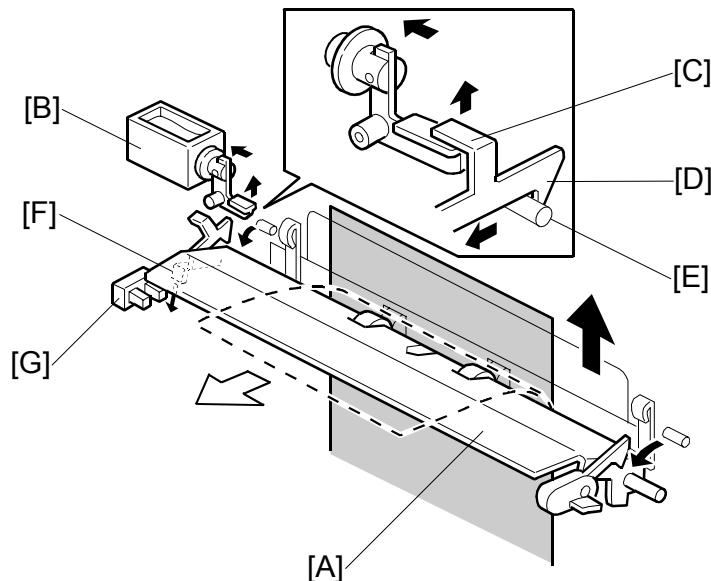
Paper Registration Drive



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

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.

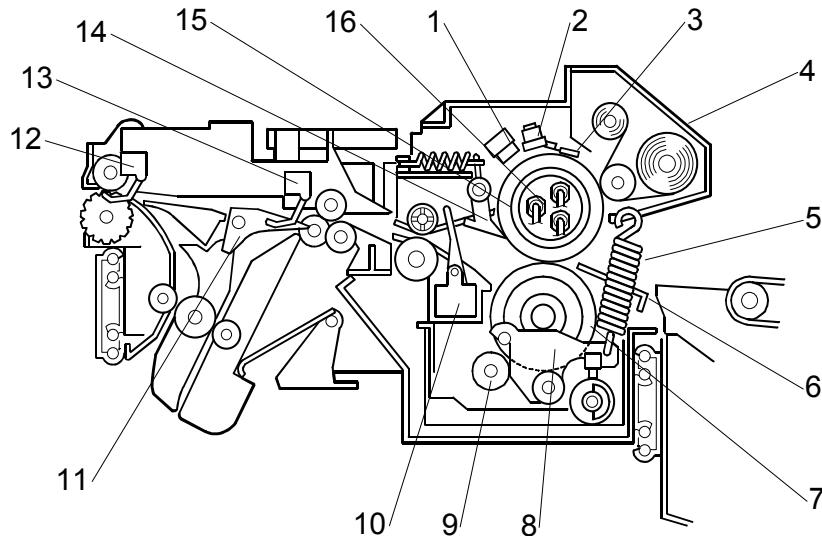
The user must remove jammed paper in the feed path, the sheet in the duplex tray, and manually close the guide plate.

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.

Detailed
Descriptions

6.12 IMAGE FUSING AND PAPER EXIT

6.12.1 OVERVIEW



- | | |
|---------------------------------------|------------------------------------|
| 1. Thermistor (Center) * ¹ | 9. Pressure Roller Cleaning Roller |
| 2. Thermostats * ² | 10. Fusing Exit Sensor |
| 3. Thermistors * ³ | 11. Exit Junction Gate |
| 4. Web Cleaning Unit | 12. Paper Exit Sensor |
| 5. Pressure Spring | 13. Exit Unit Entrance Sensor |
| 6. Entrance Guide Plate | 14. Hot Roller Strippers |
| 7. Pressure Roller | 15. Hot Roller |
| 8. Pressure Arm | 16. Fusing Lamps * ⁴ |

*¹ Non-contact thermistor (B064 Series only)

*² Non-contact thermostats (B064 Series x2, B140 Series x3).

*³ Contact thermistors (B064 Series x1 end, B0140 Series x 2, end and center)

*⁴ B064 Series x2, B140 Series x3

The fusing unit is a hot roller/pressure roller system.

B064 Series and G126

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.

B140 Series

Many changes were made to make sure that the fusing unit can get to the target operation temperature in 30 seconds or less.

There are three fusing lamps:

- 650 W Fusing Lamp: Applies heat to the center of the hot roller.
- 550 W Fusing Lamp: Applies heat to the ends of the hot roller.
- 280 W Fusing Lamp: Also applies heat to the ends of the hot roller, but only during the warmup (after the machine is turned on, or when it recovers from the energy save mode).

NOTE: Only the 650 W and 550 W fusing lamps turn on and off to keep the hot roller temperature steady at 185°C.

These changes were made to the hot roller and the pressure roller:

- To make the roller surface become hot more quickly, the thickness and diameter of the hot roller were decreased.
- The pressure roller surface was changed to a bubble-type material. This gives the correct nip width between the hot roller and the pressure roller.

The center and end thermistors touch the hot roller. They monitor the temperature of the hot roller and give feedback for fusing-temperature control.

The thermistor at the center of the hot roller makes temperature detection better. But its service life is shorter because it always touches the hot roller. For more, see section "2. Preventive Maintenance".

The three thermostats also monitor the temperature of the hot roller, to prevent overheating. These thermostats do not touch the hot roller.

All Models

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.

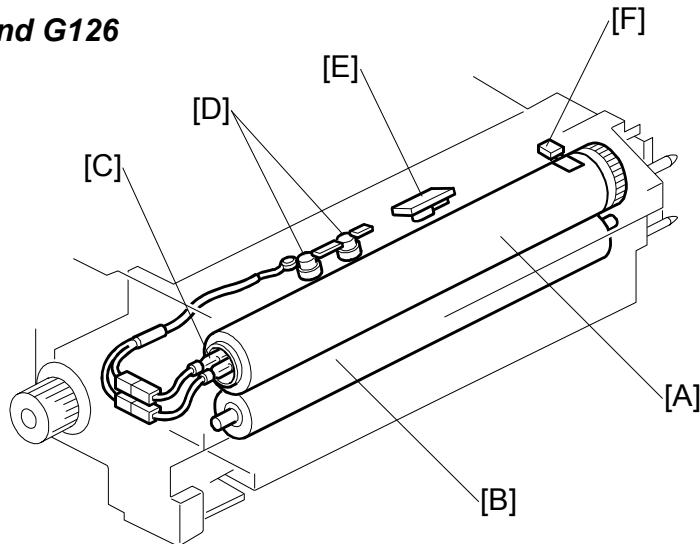
The fusing exit sensor detects concertina jams at the fusing unit exit. This sensor is required because the user may not see this type of jam in the machine when removing a jam at the exit.

The fusing unit and exit unit can be separated, making it easier to service.

Detailed
Descriptions

6.12.2 FUSING MECHANISM

B064 Series and G126



The hot roller [A] and pressure roller [B] fuse the toner to the paper.

The hot roller, constructed of soft silicone rubber, is about 0.3 mm thick and coated with a thin coat of Teflon (30 µ).

Two fusing lamps [C] (550 W) are inside the hot roller.

Two thermostats [D] are positioned above the hot roller near the center.

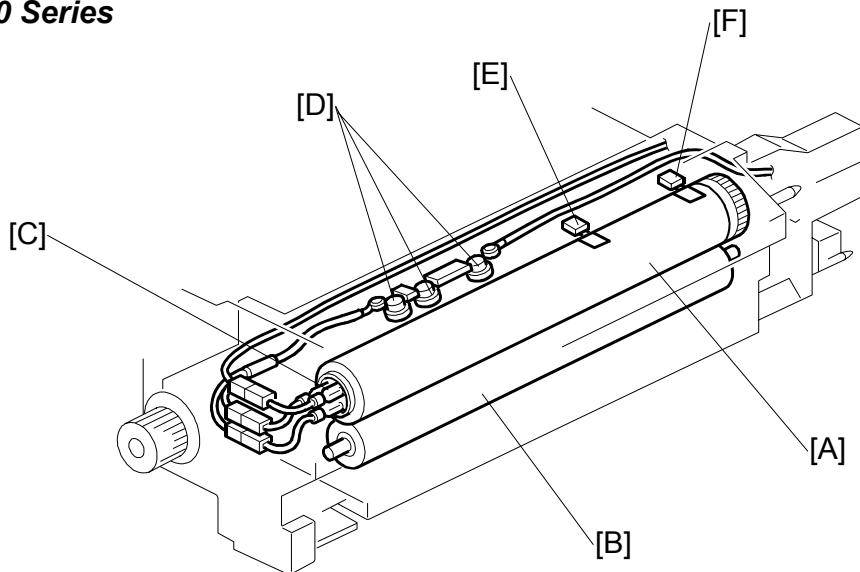
One thermistor [E] is also positioned above the hot roller near the center.

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[†]	
Center (non-contact) thermostats	Overheating protection

[†] 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.

B140 Series

The hot roller [A] and pressure roller [B] fuse the toner to the paper.

The hot roller, made of soft silicone rubber, has a thin layer of Teflon on the surface.

There are three fusing lamps [C] in the hot roller.

There are three thermostats [D] above the hot roller, near the center.

One thermistor [E] touches the hot roller near the center.

Another thermistor [F] touches the end of the hot roller.

Thermistors

Center (contact) thermistor	Temperature control
-----------------------------	---------------------

End (contact) thermistor	Temperature control
--------------------------	---------------------

Thermostats¹

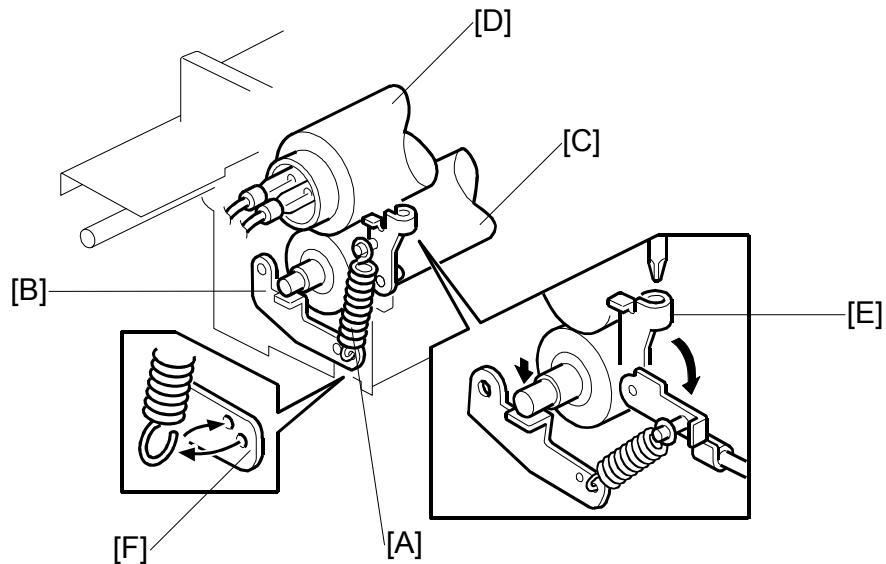
Center (non-contact) thermostats	Overheating protection
----------------------------------	------------------------

Detailed Descriptions

¹ If the thermostats trigger an alert, the thermostats must be replaced.

6.12.3 PRESSURE ROLLER

B064 Series and G126

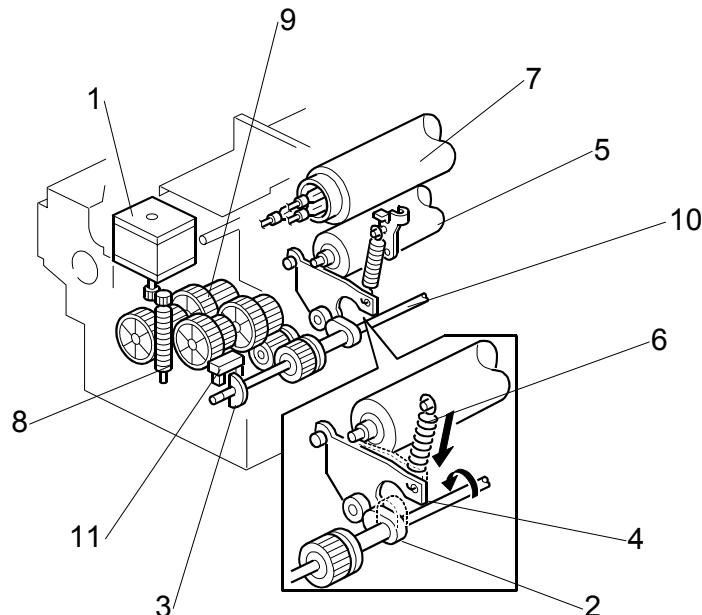


Heavy springs [A], attached to pressure arms [B] below both ends of the pressure roller [C], keep the roller pressed against the hot roller [D] above.

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.

B140 Series

This mechanism makes sure that the hot roller and pressure roller touch only when the machine makes copies. This prevents distortion of the pressure roller.

While the machine is turned on:

- The fusing pressure release motor [1] comes on and turns the cams [2] until the cam position actuator [3] is at the home position. This turns the cams down and pushes the pressure arms [4] below the ends of the pressure roller [5].
- This expands the heavy springs [6] and pulls the pressure roller away from the hot roller [7].

When a job starts:

- The pressure release motor turns on.
- The vertical worm gear [8] turns the sequence of gears [9], and this turns the cam shaft [10].
- The cam shaft turns the actuator into the gap in the fusing pressure release HP sensor [11].
- The actuator goes out of the gap in the fusing pressure release HP sensor when the cam is in the 'up' position. This turns the motor off. This lets the heavy springs pull the pressure roller against the hot roller.

Detailed Descriptions

When the job ends and the machine goes back to the ready condition:

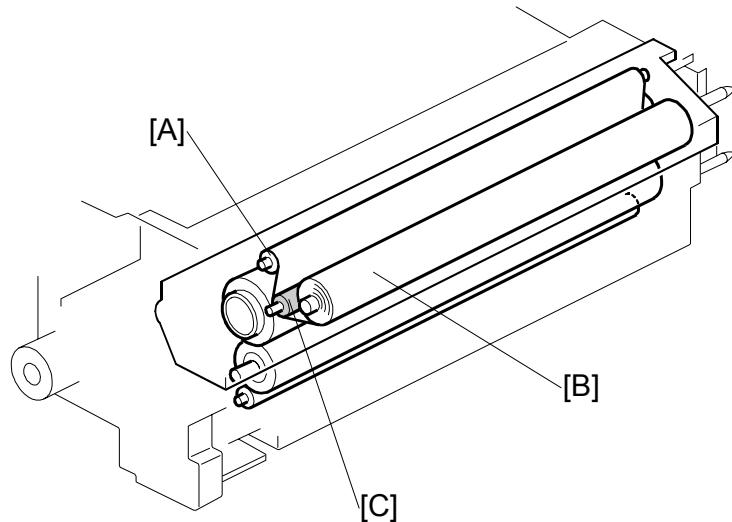
- The pressure release motor comes on again and turns the cams to the 'down' position. This pulls the pressure roller away from the hot roller.
- When the cams are in the 'down' position again, and the actuator goes out of the gap, the sensor turns the motor off.

At paper jam or SC error:

- The pressure roller is again pulled away from the hot roller.

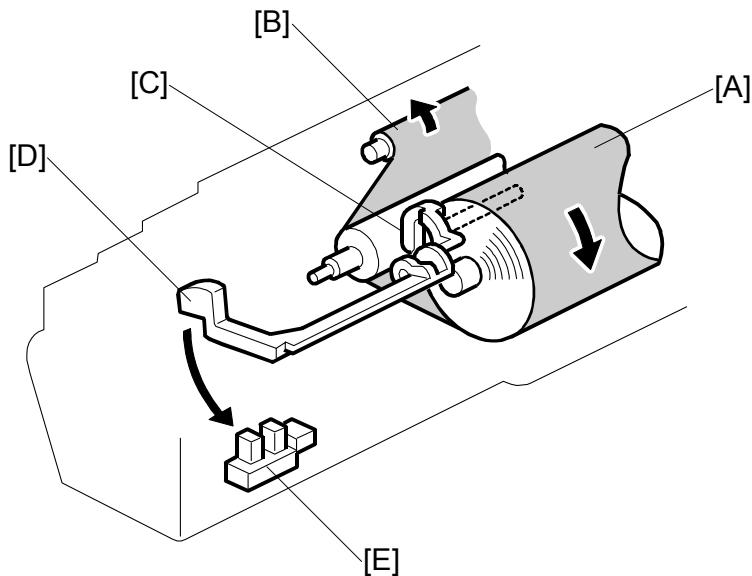
6.12.4 HOT ROLLER CLEANING

Overview



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.



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.)

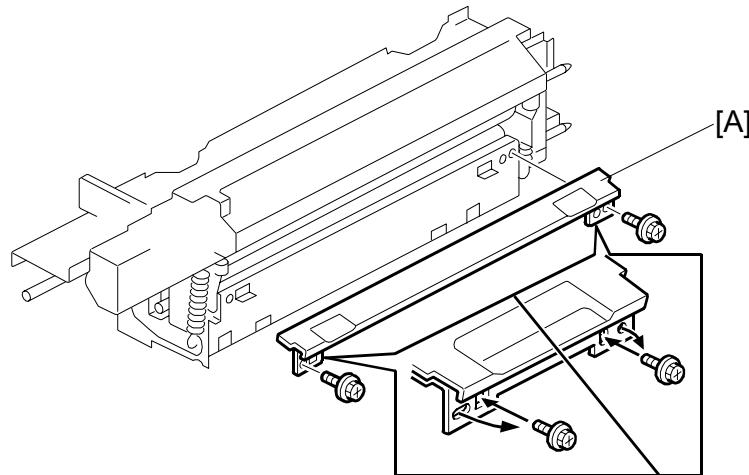
Detailed Descriptions

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.

6.12.5 FUSING UNIT ENTRANCE GUIDE



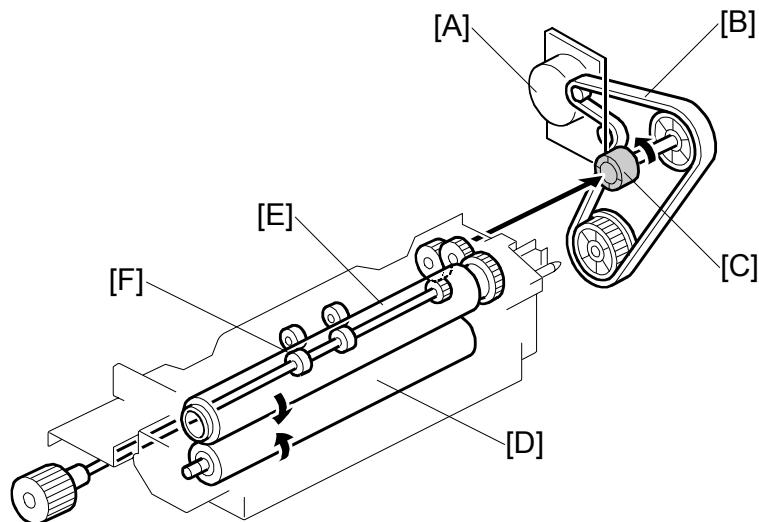
The height of the entrance guide [A] can be adjusted.

- **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: 1) Before shipping, the screws are set in the outer holes.

2) If the customer is experiencing problems with paper sizes larger than A4, then use the inner holes.

6.12.6 FUSING UNIT DRIVE



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.

Detailed
Descriptions

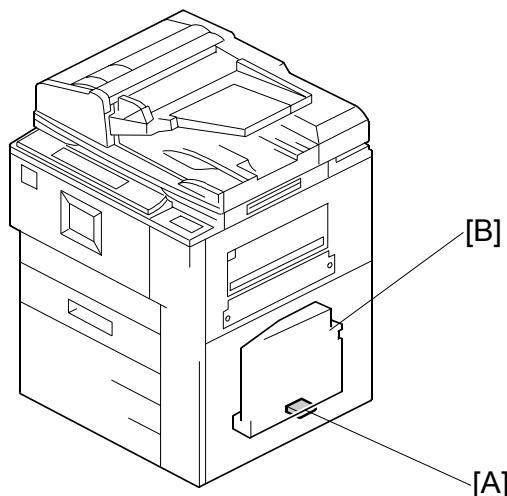
6.12.7 CPM DOWN MODE

CPM (Copies Per Minute) Down Control adjusts the copy speed automatically when printing OHP (transparencies) or extremely thick paper from the bypass tray.

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 from a paper station other than the by-pass tray, 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.

B140 Series



There is a temperature and humidity sensor [A] below the toner collection bottle [B].

If this sensor detects that the ambient temperature is less than 15°C (59°F) and the center thermistor detects that the hot roller temperature is less than 153°C, CPM down automatically decreases speed to 80% (60 to 48 cpm). The speed goes back to 100% when the fusing temperature gets to 156°C (153°C+3°C).

At normal room temperature, if the center thermistor detects that the hot roller temperature is less than 148°C, CPM down automatically decreases speed to 80% (60 to 48 cpm). The speed goes back to 100% when the fusing temperature gets to 151°C (148°C +3°C).

6.12.8 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	B064 Series	B140 Series	Adjust With
Normal	185°C±5 (365°F±9)	195°C±5 (383°F±9)	SP1105-001, 002, 007, 008
OHP	165°C (329°F)	374°C (329°F)	SP1105-003, 004
Thick Paper	190°C (374°F)	200°C (392°F)	SP1105-005, 006

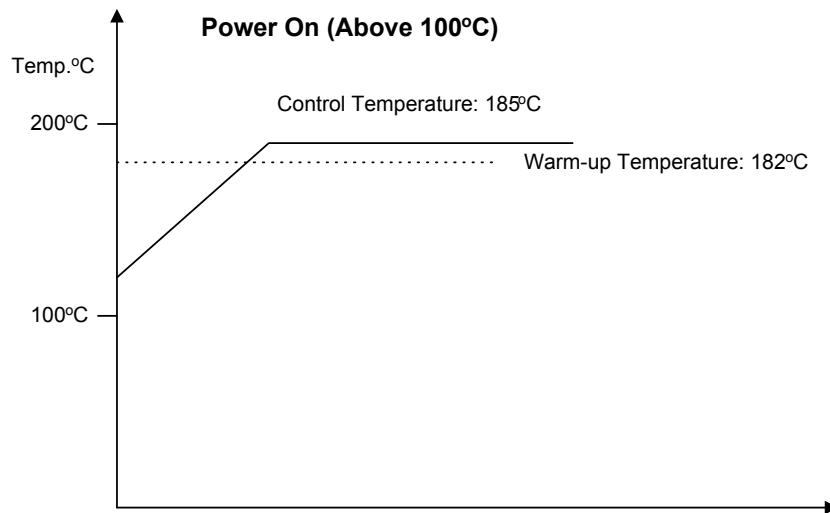
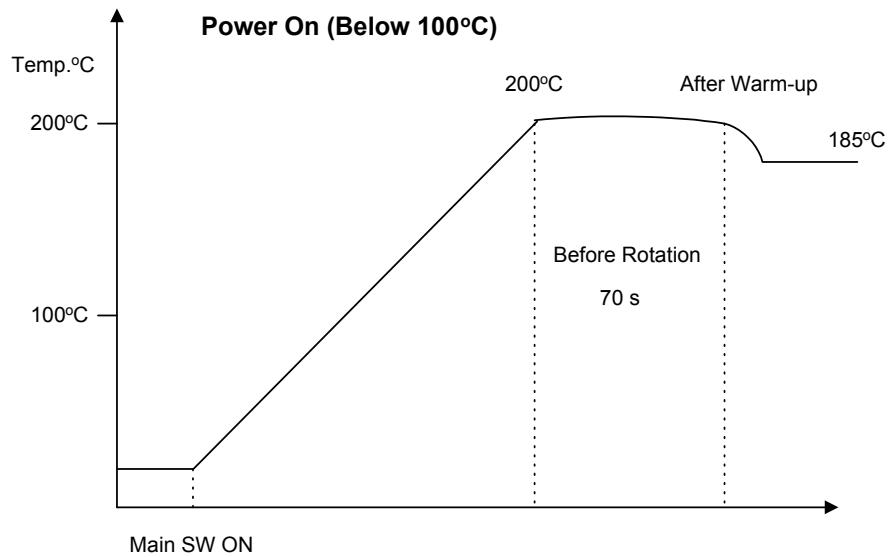
SP1105: See the SP table for details.

B064 only: 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:**
- 1) SP1103 (Fusing Idling) adjusts the fusing idling time if fusing on the first and second copies is incomplete due to low room temperature. This function is available for the B064 Series only.
 - 2) SP1106 (Fusing Temperature Display) displays the current center and end temperatures for the hot roller.
 - 3) B140 series: SP1907 (Pre Fusing Idling On/Off). If fusing is not completed on the first few copies with thick paper or OHP, turn idling on for these paper types with this SP.

Detailed
Descriptions

IMAGE FUSING AND PAPER EXIT

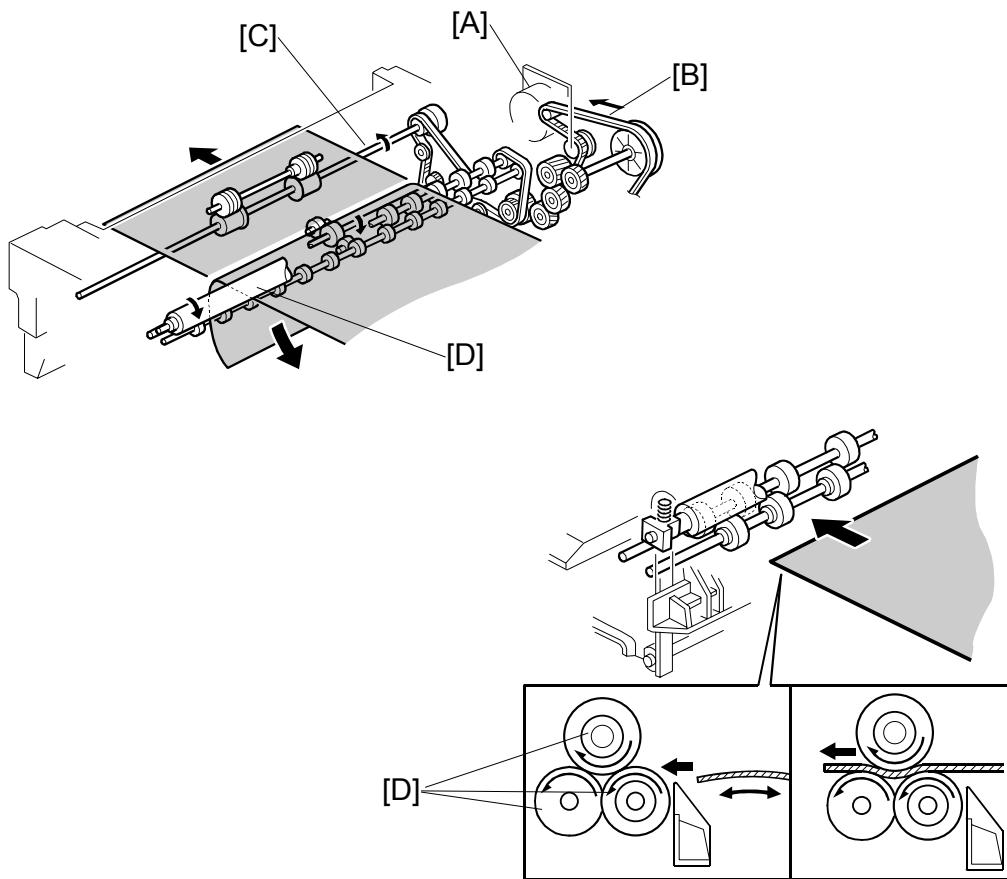


Here is a list of SC codes issued if a fusing unit error occurs. For details, see "Troubleshooting".

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 these machine after one of these SC codes is issued, just enter the SP mode.

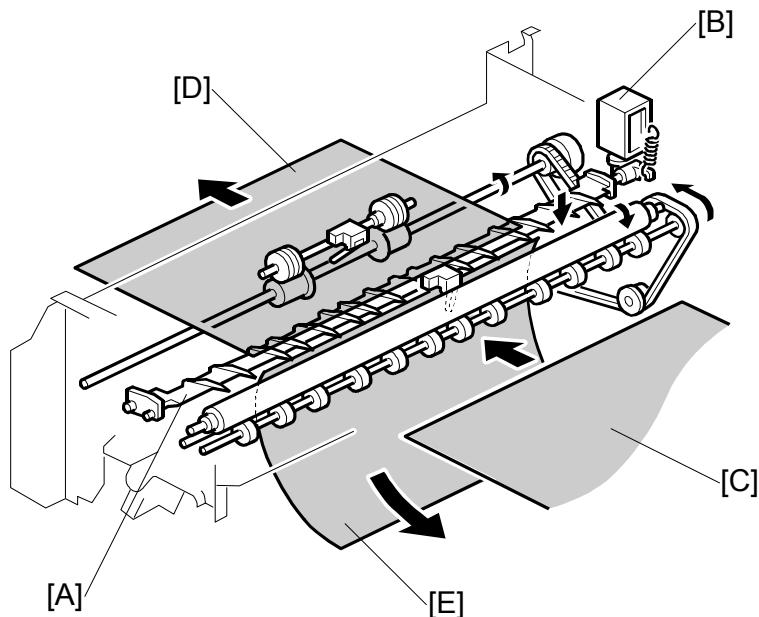
6.12.9 EXIT



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.

Detailed Descriptions

6.12.10 EXIT JUNCTION GATE

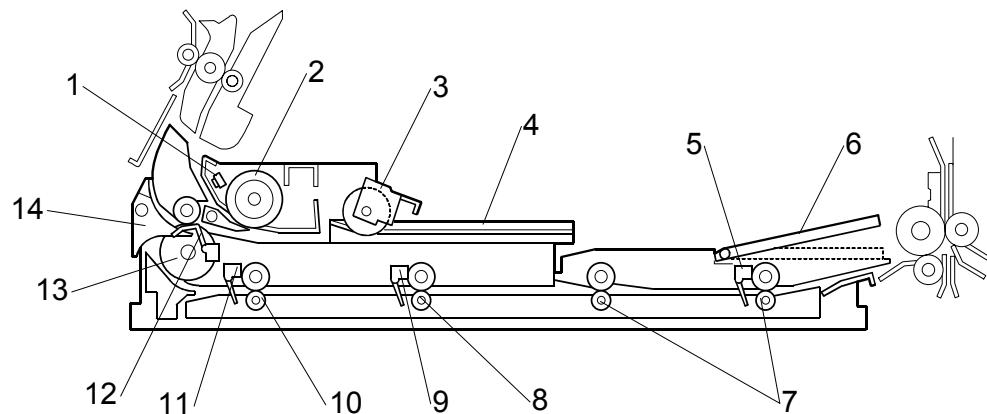


The exit junction gate [A] is controlled by the exit junction gate solenoid [B].

- 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.

6.13 DUPLEX UNIT

6.13.1 OVERVIEW



- | | |
|----------------------------------|-------------------------------|
| 1. Duplex Entrance Sensor | 8. Transport Roller 2 |
| 2. Inverter Entrance Roller | 9. Duplex Transport Sensor 2 |
| 3. Reverse Trigger Roller | 10. Transport Roller 1 |
| 4. Jogger Fences | 11. Duplex Transport Sensor 1 |
| 5. Duplex Transport Sensor 3 | 12. Duplex Inverter Sensor |
| 6. Trailing Edge Guide Plate | 13. Inverter Exit Roller |
| 7. Duplex Transport Rollers 3, 4 | 14. Duplex Junction Gate |

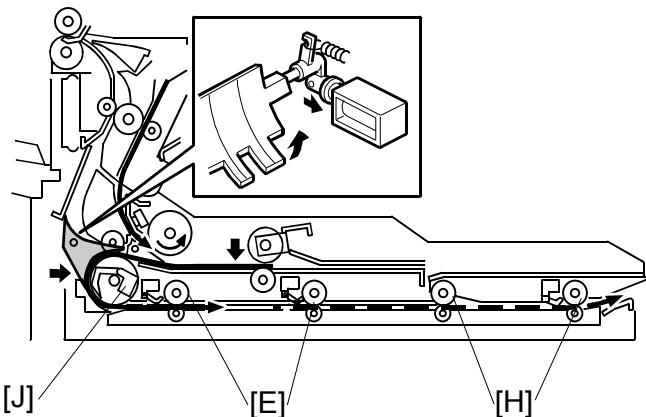
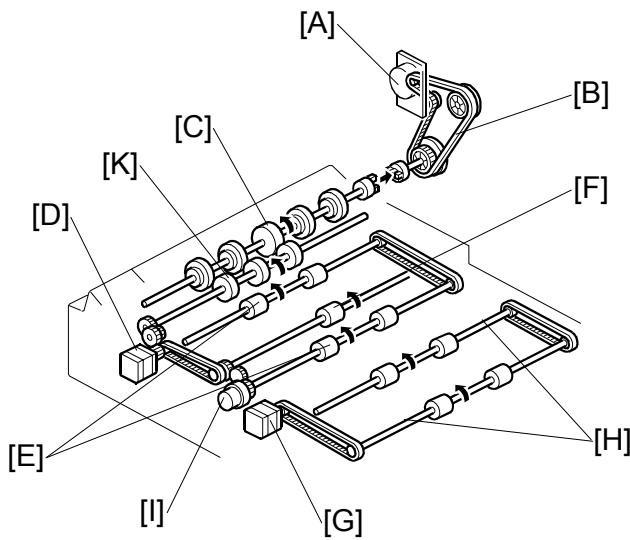
Normally the page is fed out directly face-up to the output tray. If the user selected face-down output, the exit junction gate sends the page to the inverter. The inverter inverts the page for face-down output.

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.

Detailed
Descriptions

6.13.2 DUPLEX DRIVE



Fusing/exit motor [A] → Timing belt [B] → Inverter entrance roller [C]

Duplex inverter motor [D] → Timing belt → Transport rollers 1, 2 [E] and reverse trigger rollers [F]

Duplex Inverter motor [D] → Inverter exit roller [K]

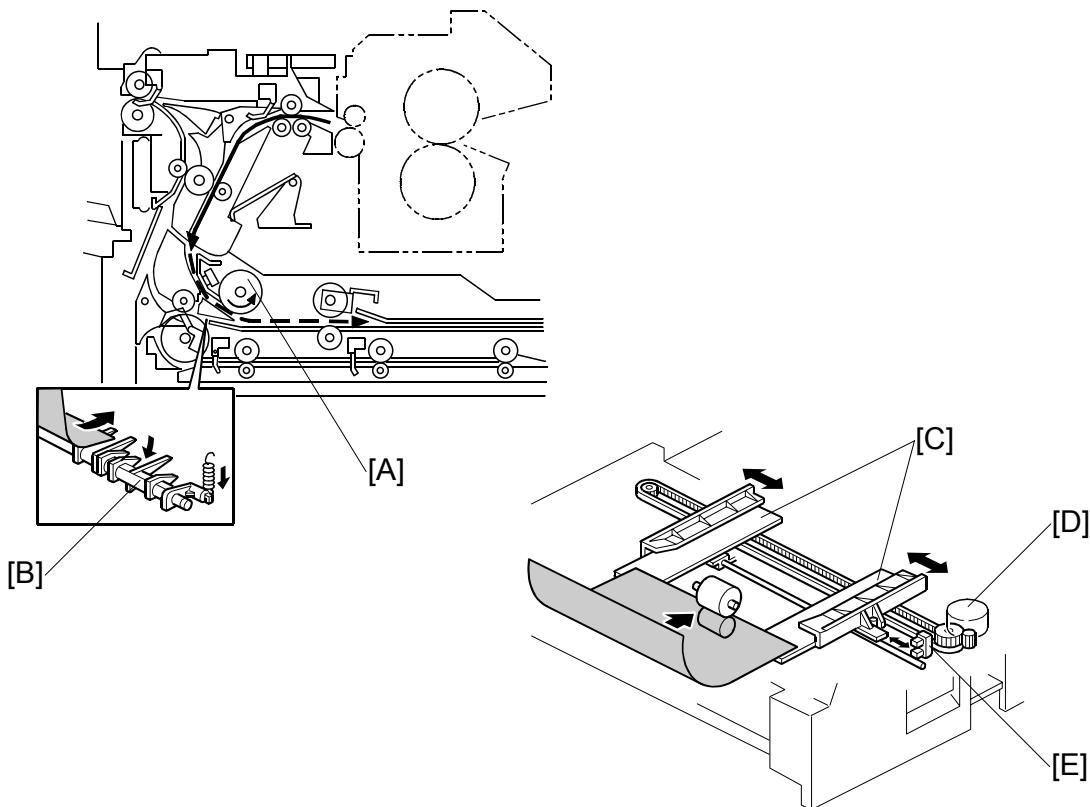
Duplex transport motor [G] → Timing belt → transport rollers 3, 4 [H]

Duplex transport clutch [I]:

- Stops transport rollers 1, 2 [E] when there are two sheets in the duplex paper path (when interleaving is used) → Allows the sheet in front to be fed out of the duplex unit by motor [G] and rollers [H].
- Controlled by the duplex inverter sensor [J]

6.13.3 INVERTER OPERATION

Inverter Feed-in and Jogging



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]).

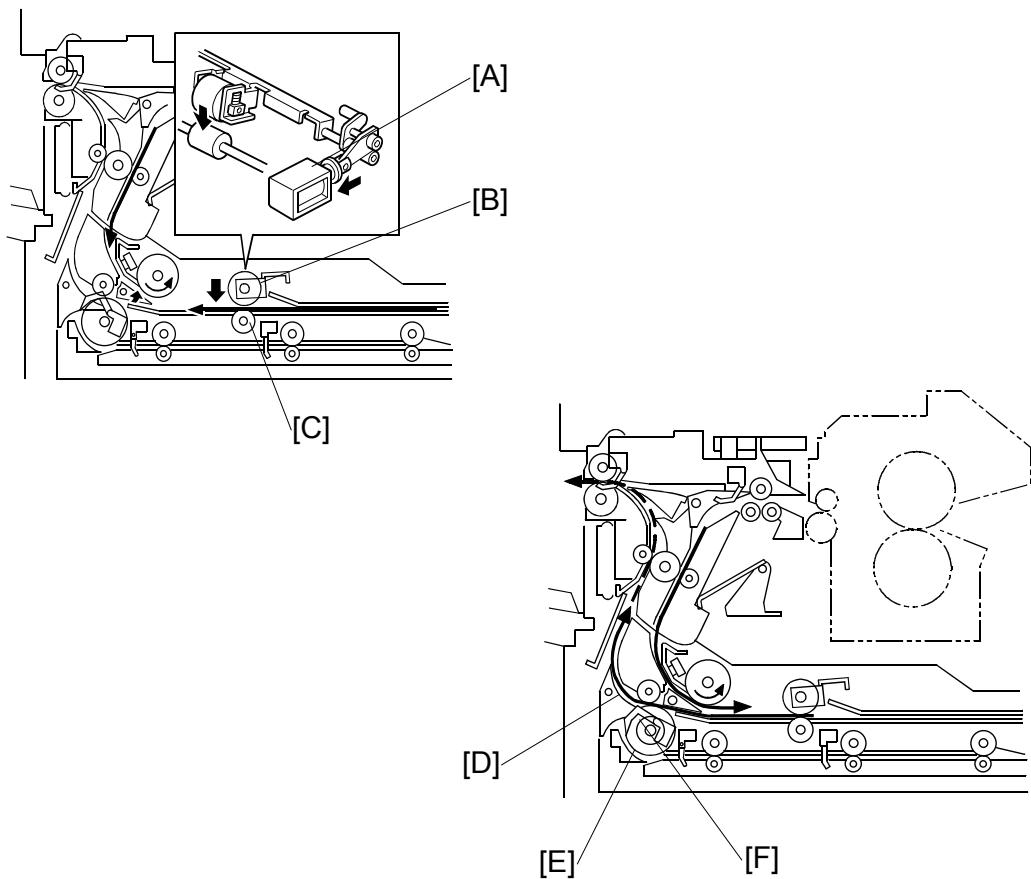
Detailed Descriptions

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 → 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

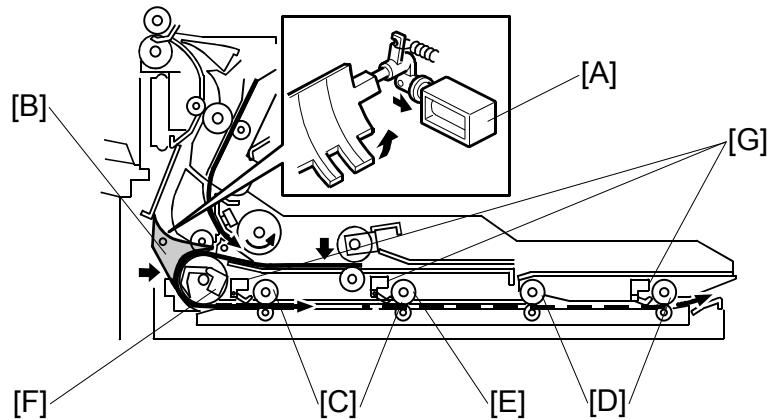
- [A]: Reverse trigger roller solenoid
- [B]: Reverse trigger roller
- [C]: Reverse roller
- [D]: Paper
- [E]: Inverter exit roller
- [F]: Duplex inverter sensor

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 sensor [F], solenoid [A] switches off and roller [B] returns to its home position.

6.13.4 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 of how the transport rollers [C, D], duplex transport clutch [E (not shown here)], and duplex inverter sensor [F] control duplex feed, see 6.13.2.

Duplex transport sensors 1, 2, 3 [G] detect jams in the paper path.

Detailed Descriptions

6.13.5 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.

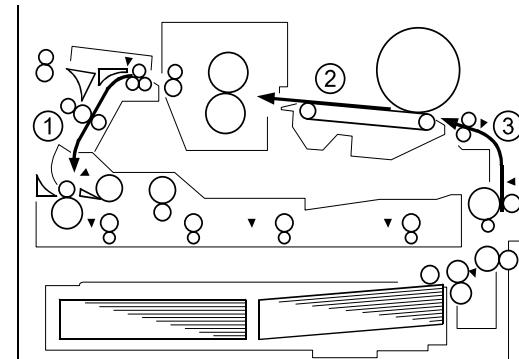
Scanning Order	Order of Page Processing →													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
A4/LT LEF or *1 smaller	1	3	5	2	7	4	9	6	11	8	13	10	12	14
Longer than A4/LT(LEF) *2	1	3	2	5	4	7	6	9	8	11	10	13	12	14

*1: 3 pages can be interleave processed at once.

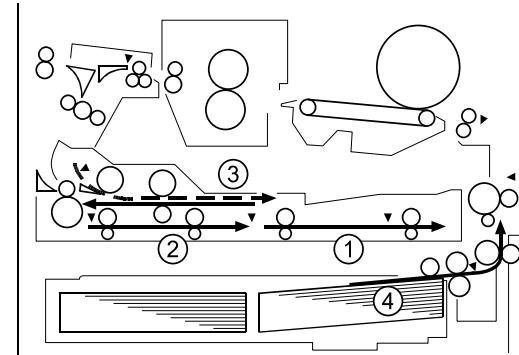
*2: Only 2 pages can be interleave processed at once.

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 ①②③ fed.
 - 1) 1st sheet, front page printed (pg. 1)
 - 2) 2nd sheet, front page printed (pg. 3)
 - 3) 3rd sheet, front page printed (pg. 5)

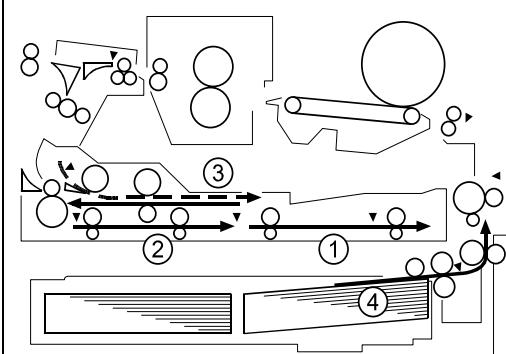


2. 1st, 2nd, 3rd sheet fed to duplex tray and inverter table.
3. 4th sheet feeds.



DUPLEX UNIT

4. 1st sheet, back page printed (pg. 2)



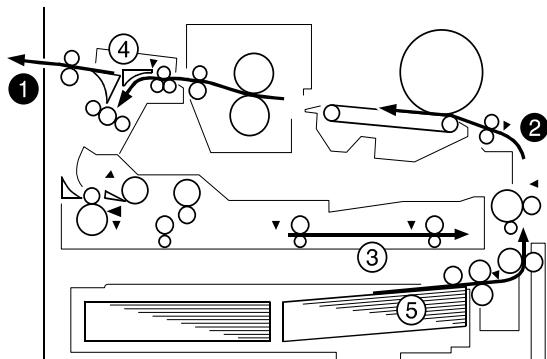
5. 4th sheet feeds, front page printed (pg. 7)

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.



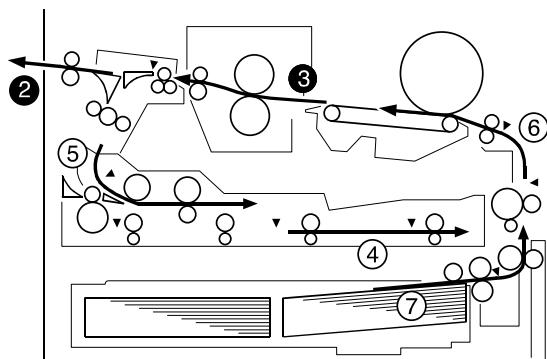
10. 2nd sheet exits.

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.

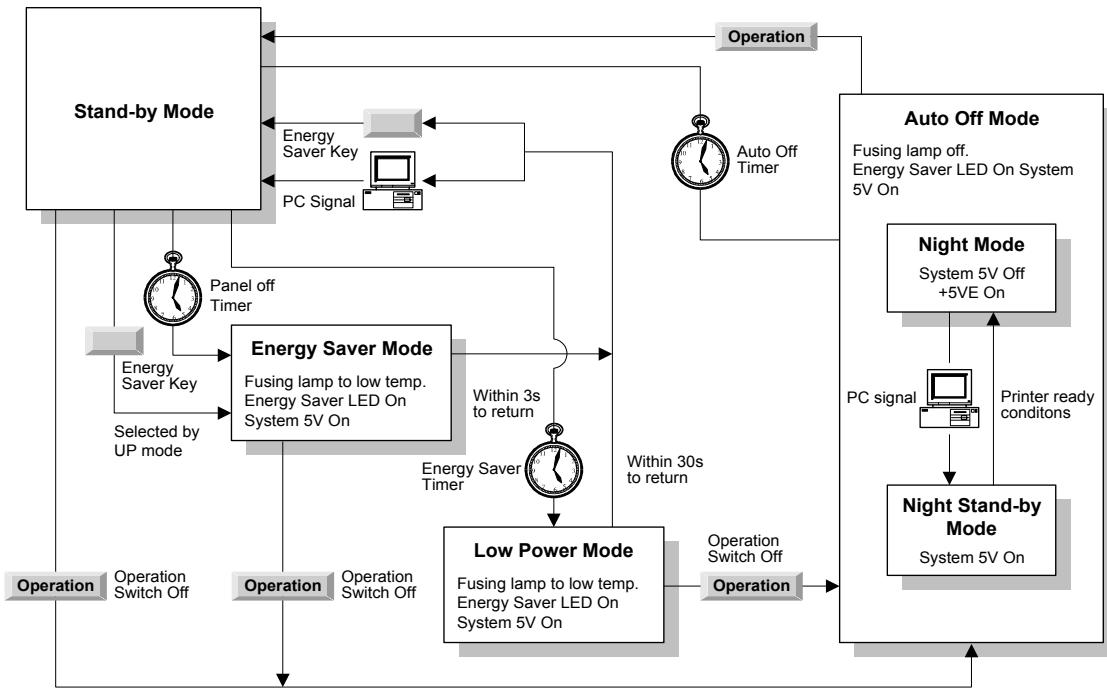


Detailed Descriptions

ENERGY SAVER MODES

6.14 ENERGY SAVER MODES

6.14.1 OVERVIEW



When the machine is not used, the energy saver function reduces power consumption by lowering the fusing temperature.

This machine has four types of energy saver mode as follows.

- 1) Energy saver mode (called 'panel off mode' in the operation manual)
- 2) Low power mode (called 'energy saver mode' in the operation manual)
- 3) Auto off mode (copier configuration only)
- 4) Night mode (copier/printer/scanner configuration only)

These modes are controlled by the following User Tools:

- Panel off timer
- Energy saver timer
- Auto off timer
- Auto off disabling

The way that the machine operates depends on the combination of installed equipment (copier only, or whether a printer/scanner is installed).

6.14.2 ENERGY SAVER MODE

Entering the energy saver mode

The machine enters energy saver mode when one of the following is done.

- The Energy Saver Key is held down for a second.
- The panel off timer runs out after the last job (User Tools - System Settings - Timer Setting - Panel Off Timer: default setting is 60 s).

What happens in energy saver mode

When the machine enters energy saver mode, the fusing lamps drops to a certain temperature and the operation panel indicators are turned off except for the Energy Saver LED and the Power LED.

If the CPU receives the image print out command from an application (e. g. to print data from a PC), the fusing temperature rises to print the data. However, the operation indicators stay off.

Return to stand-by mode

If one of the following is done, the machine returns to stand-by mode:

- The Energy Saver Mode key is pressed
- An original is placed in the ADF
- The ADF is lifted
- A sheet of paper is placed in the by-pass feed table

Operation Switch	Energy Saver LED	Fusing Temp.	Approx. Recovery Time	System +5V
On	On	182 °C	3 s	On

Detailed
Descriptions

ENERGY SAVER MODES

6.14.3 LOW POWER MODE

Entering the low power mode

The machine enters low power mode when:

The energy saver timer runs out after the last job.

(User Tools - System Settings - Timer Setting - Energy Saver Timer: default setting is 15 min)

What happens in low power mode

The fusing lamp drops to the prescribed temperature, as shown in the table below (the temperature drops more than that in energy saver mode). The other conditions are the same as for the energy saver mode.

Return to stand-by mode

The machine returns to standby mode in the same way as from the energy saver mode.

Operation Switch	Energy Saver LED	Fusing Temp.	Approx. Recovery Time	System +5V
On	On	165 °C	30 s	On

6.14.4 AUTO OFF MODE

Auto off mode is used only if no optional printer/scanner unit is installed.

Entering auto off mode

The machine enters auto off mode when one of the following is done.

- The auto off timer runs out after the last job (User Tools – System Settings – Timer Setting – Auto Off Timer: default setting is 90 min)
- The operation switch is pressed to turn the power off

What happens in auto off mode

When the machine enters auto off mode, the main power switch turns off automatically. The fusing lamp and all dc supplies except +5VE (+5V for energy saver mode) turn off.

Returning to stand-by mode

The machine returns to stand-by mode when the main power switch is turned on.

Operation Switch	Energy Saver LED	Fusing Temp.	Approx. Recovery Time	System +5V	Note
Off	Off	Room Temp. (Fusing lamp off)	300 s	Off	Only +5VE is supplied to the BICU.

Disabling auto off mode

If the user wishes to disable auto off mode, use the following user tool: User Tools – System Settings – AOF (change the setting to “OFF”).

Detailed
Descriptions

6.14.5 NIGHT MODE

This is used instead of auto off mode when an optional scanner/printer unit is installed.

There are two types of night mode: Night Stand-by Mode and Night Mode. The difference between night stand-by mode and night mode is the machine's condition when the machine enters auto off mode.

Entering night stand-by and night modes

The machine enters the night stand-by mode and night modes when one of the following is done.

- The operation switch is pressed to turn the power off
- The auto off timer runs out (the operation switch is then turned off, but the main power switch stays on)

If the machine is in one or more of the following conditions, the machine enters night stand-by mode. If not, the machine enters night mode.

- Error or SC condition
- Image data is stored in the memory
- An original is in the ADF
- The ADF is open
- Paper is left in the duplex unit or staple tray

What happens in night stand-by and night modes

When the machine enters either of these modes, the fusing lamp and operation switch turn off, and only the main power LED is lit.

Night stand-by mode

The system +5V and +24 V are supplied to all components.

Night mode

The system +5V supply is also turned off. However, +5VE (+5V for energy saver mode) is still activated. When the machine detects a signal from the PC, the machine goes back to night stand-by mode and the system +5V and +24V supplies are activated. Then the machine receives the incoming message and prints it.

Returning to stand-by mode

The machine returns to stand-by mode when the operation switch is pressed. The recovery time is about 45 s.

Mode	Operation Switch	Energy Saver LED	Fusing Temp.	System +5V	Note
Night stand-by mode	Off	Off	Room Temp. (Fusing lamp off)	On	
Night mode	Off	Off	Room Temp. (Fusing lamp off)	Off	Only +5VE is supplied to the printer controller.

SPECIFICATIONS



SPECIFICATIONS

1. GENERAL SPECIFICATIONS

1.1 COPIER (B140 SERIES/B064 SERIES) PRINTER (G126)

Configuration	Console		
Original	Sheet/Book/Objects		
Original Size	Max. A3/11" x 17"		
	Min. B5 SEF/5.5" x 8.5" (using ADF)		
Original Alignment	Rear left corner		
Copy Paper Size	Paper tray, Duplex	A3/11" x 17" – A5 SEF/5.5" x 8.5"	
	By-pass tray	A3/11" x 17" – A6 SEF/5.5" x 8.5"	
	Non-standard sizes	Width: 100 – 305 mm (4" x 12") Length: 140 - 600 mm (5.5" x 23.4")	
Copy Paper Weight	Paper Tray	52.3 ~ 127.9 g/m ² (14 ~ 34 lb.)	
	Duplex	64 ~ 127.9 g/m ² (17 ~ 34 lb.)	
	By-pass: Standard Thick Paper mode	52.3 ~ 157 g/m ² (14 ~ 43 lb.) 52.3 ~ 216 g/m ² (14 ~ 58 lb.)	
Reproduction Ratios	6 reduction ratios, 5 enlargement ratios	Metric (%)	400, 200, 141, 122, 115, 93, 82, 75, 71, 65, 50
		Inch (%)	400, 200, 155, 129, 121, 93, 85, 78, 73, 65, 50
	Zoom	25 ~ 400% in 1% steps	
Copying Speed	B163/B228	51 cpm (A4/11" x 8.5" LEF)	
	B064/B140/B142	60 cpm (A4/11" x 8.5" LEF)	
	B065/B141/B143	75 cpm (A4/11" x 8.5" LEF)	
First Copy Time	B064/B065	3.5 s	
	B141/B143	(1st Tray, A4/11" x 8.5" LEF Face-up mode)	
	B140/B142	4.2 s	
	B163/B228	(1st Tray, A4/11" x 8.5" LEF Face-up mode)	
	B064/B065	5.3 s	
Warm-up Time (under 20°C room temp.)	B141/B143	(1st Tray, A4/11" x 8.5" LEF Face-down mode)	
	B140/B142	6.3 s	
	B163/B228	(1st Tray, A4/11" x 8.5" LEF Face-down mode)	
	B064/B065	Less than 300 s from Off mode	
		Less than 25 s from low power mode	
Continuous Copy	B140/B141	Less than 30 s	
	B142/B1B16		
	B163/B228		
Paper Capacity	Tray 1 (tandem tray)	3100 sheets	
	Tray 2	550 sheets	
	Tray 3	550 sheets	
	By-pass Tray	100 sheets (80 g/m ² , 20 lb.)	
Paper Output	A4/8½" 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	
	Taiwan	110 V / 60 Hz 20 A or more	

Specifications

Allowed voltage fluctuation	10%	
Dimensions (W x D x H)	B064/B065	690 x 750 x 1165 mm (27.2" x 29.6" x 45.9")
	B140/B141/B142 B143/B163/B228	690 x 760 x 1165 mm (27.2" x 29.9" x 45.9")
Weight	B064/B065	Approx. 200 kg (440.9 lb.)
	B140/B141/B142 B143/B163/B228	Approx. 203 kg (447.6 lb.)
Resolution	1200 dpi (printing) 600 dpi (scanning)	
Gradation	256 levels (scanning and printing)	
Original Archive	10,000 A4/8½" x 11" pages for document server	
Toner Replenishment	Cartridge exchange (1100 g)	
Total Counter	Electric Counter	

1.2 ADF (B140 SERIES/B064 SERIES)

Original Size	A3/11" x 17" – B6/5.5" x 8.5"	
Original Weight	1-sided original	40 ~ 128 g/m ² (11 ~ 34 lb.)
	2-sided original	52 ~ 128 g/m ² (14 ~ 34 lb.)
Table Capacity	100 sheets (80 g/m ² , 20 lb.) or less than 12 mm (0.4") original stack height	
Original Standard Position	Rear left corner	
Separation	Feed belt and separation roller	
Original Transport	Roller transport	
Original Feed Order	From top original	
Reproduction Range	100%	
Power Source	DC 24 V from the main machine	
Power Consumption	Less than 110 W	
Rated Voltage of Output Connector	Max. DC 24 V	
Permissible voltage fluctuation	±10%	
Dimensions (W x D x H)	680 x 560 x 180 mm (26.8" x 22.0" x 7.1")	
Weight	18 kg (39.6 lb.)	

1.3 POWER CONSUMPTION

B064/B065 Copier (120V Model)

	Mainframe Only	Full System
Warm-up	Approx. 1.20 kW	Approx. 1.25 kW
Stand-by	Approx. 0.30 kW	Approx. 0.32 kW
Copying	Approx. 1.55 kW	Approx. 1.65 kW
Maximum	Less than 1.60 kW	Less than 1.70 kW

B064/B065 Copier (220V to 240V Model)

	Mainframe Only	Full System
Warm-up	Approx. 1.25 kW	Approx. 1.26 kW
Stand-by	Approx. 0.27 kW	Approx. 0.27 kW
Copying	Approx. 1.60 kW	Approx. 1.60 kW
Maximum	Less than 1.75 kW	Less than 1.75 kW

B140/B141/B163 Copier (120V Model)

	Mainframe Only	Full System
Warm-up	Approx. 1.761 kW	Approx. 1.761 kW
Stand-by	Approx. 0.329 kW	-
Copying	Approx. 1.274 kW	Approx. 1.842 kW
Maximum	Less than 1.386 kW	Less than 1.850 kW

B140/B141/B163 Copier (220V to 240V Model)

	Mainframe Only	Full System
Warm-up	Approx. 1.750 kW	Approx. 1.750 kW
Stand-by	Approx. 0.333 kW	-
Copying	Approx. 1.281 kW	Approx. 1.782 kW
Maximum	Less than 1.401 kW	Less than 1.850 kW

SPECIFICATIONS

Noise Emission: Sound Power Level

	B064 (60 CPM)	B065 (75 CMP)
Mainframe Only		
Standby	Less than 48 dB (A)	Less than 48 dB (A)
Copying	Less than 71 dB (A)	Less than 71 dB (A)
Complete System		
Standby	Less than 49 dB (A)	Less than 49 dB (A)
Copying	Less than 74 dB (A)	Less than 74 dB (A)

	B163/B228 (51 CPM)	B140/B142 (60 CPM)	B141/B143 (75 CMP)
Mainframe Only			
Standby	Less than 49 dB (A)	Less than 49 dB (A)	Less than 49 dB (A)
Copying	Less than 70 dB (A)	Less than 70 dB (A)	Less than 71 dB (A)
Complete System			
Standby	Less than 49 dB (A)	Less than 49 dB (A)	Less than 49 dB (A)
Copying	Less than 74 dB (A)	Less than 74 dB (A)	Less than 74 dB (A)

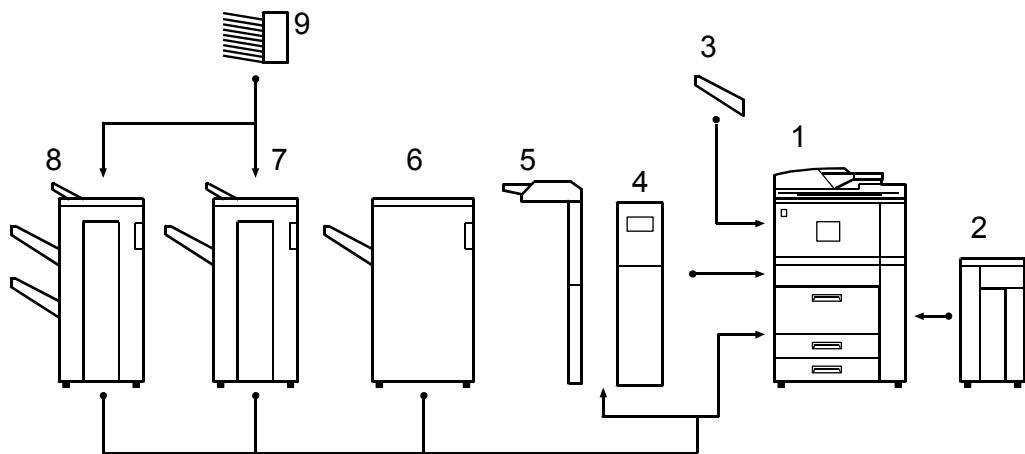
Noise Emission: Sound Pressure Level

	B064 (60 CPM)	B065 (75 CMP)
Mainframe Only		
Standby	Less than 38 dB (A)	Less than 38 dB (A)
Copying	Less than 57 dB (A)	Less than 57 dB (A)
Complete System		
Standby	Less than 39 dB (A)	Less than 39 dB (A)
Copying	Less than 64 dB (A)	Less than 64 dB (A)

	B163(51 CPM)	B064 (60 CPM)	B065 (75 CMP)
Mainframe Only			
Standby	Less than 44 dB (A)	Less than 44 dB (A)	Less than 44 dB (A)
Copying	Less than 65 dB (A)	Less than 65 dB (A)	Less than 67 dB (A)
Complete System			
Standby	Less than 44 dB (A)	Less than 44 dB (A)	Less than 44 dB (A)
Copying	Less than 69 dB (A)	Less than 69 dB (A)	Less than 69 dB (A)

NOTE: The above measurements were made in accordance with ISO 7779. Full system measurements include the Finisher, LCT, and Mailbox. In the above stand-by condition, the polygon mirror motor is not rotating.

2. MACHINE CONFIGURATION



Item	Machine code				Letter
Mainframe		B065 B064	B140 B141 B163	G126	1
A3/DLT Kit	B475	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Inside mainframe
Tab Sheet Kit	B499	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
LCT (Large Capacity Tray)	B473	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
LG/B4 Kit	B474	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Inside LCT
Copy Tray	B476	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	3
Z-Folding Unit	B660		<input type="radio"/>		4
Cover Interposer Tray	B470	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	5
Finisher with 100-sheet stapler	B478	<input type="radio"/>			6
	B706		<input type="radio"/>	<input type="radio"/>	6
Finisher with 50-sheet Stapler	B469	<input type="radio"/>	<input type="radio"/>		7
Finisher with saddle-stitching and 50-sheet Stapler	B468	<input type="radio"/>			8
Finisher with 50-sheet Stapler for Z-folding	B674		<input type="radio"/>	<input type="radio"/>	8
9-Bin Mailbox	B471	<input type="radio"/>	<input type="radio"/>		9
Punch Unit for 50-staple Finisher	B377	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Inside Finisher No. 7 or 8
Punch Unit for 100-staple Finisher (NA 3/2, EU 2/4)	B531	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Inside Finisher No. 6
Punch Unit for 100-staple Finisher (SC)	B812	<input type="radio"/>	<input type="radio"/>		Inside Finisher No. 6
Jogger Unit	B513	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Inside Finisher No. 6
Copy Connector Kit	B525	<input type="radio"/>			Inside mainframe
	B328		<input type="radio"/>		Inside mainframe
File Format Converter	B519	<input type="radio"/>			Inside mainframe
	B609		<input type="radio"/>		Inside mainframe

Specifications

3. OPTIONAL EQUIPMENT

3.1 A3/DLT KIT (B475)

Paper Size	A3, B4, 11" x 17", 8 1/2" x 14", A4 SEF, A4 LEF, 8 1/2" x 11" SEF, 11" x 8 1/2" 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 , 20lb)

3.2 LCT (LARGE CAPACITY TRAY) (B473)

Paper capacity	4,000 sheets ³
Paper Sizes	A4 LEF, B5 LEF, 8 1/2" x 11" LEF ^{*1}
Paper Weight	52 ~ 128 g/m ² (14 ~ 34 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.)

^{*1}: In platen mode, APS (Auto Paper Select) with the original length and original width sensors are not used.

3.3 3000-SHEET FINISHER WITH SADDLE-STITCH AND 50-SHEET STAPLER (B468)

General

Rated Voltage of Output Connector	Max. DC 24 V
Dimensions (W x D x H)	700 x 620 x 960 mm (27.6" x 24.4" x 37.8")
Weight	Approx. 63 kg (139 lb.)
Power Consumption	72 W (3 A/24 V)
Power Supply	DC 24 V

Upper Tray

Tray Capacity (80 g/m ²)	Unstapled	500 sheets (A4, A5 LEF, B5, 81/2" x 11") 250 sheets (A3, B4, 12" x 18", 11" x 17") 100 sheets (A5 SEF, A6 SEF, B6 SEF, 51/2" x 81/2")		
	Stapled	Max docs.	Total sheets	Size
		50 docs.	500 sheets	A4 LEF, 81/2" x 11" LEF
		25 docs.	250 sheets	A3, A4 SEF, B4, B5, 12" x 18", 11" x 17", 81/2" x 11"
Paper Size		A3 ~ A5, A6 SEF, B6 SEF, 12" x 18", 11" x 17" ~ 51/2" x 81/2"		
Paper Weight		52 g/m ² ~ 216 g/m ² (14 ~ 58 lb)		
Mixed Sizes		A3 and A4 LEF, B4 and B5 LEF, 11" x 17" and 81/2" x 11" LEF (Max: 16 docs, Max sheets: 30 sheets or less)		

Lower Tray

Tray Capacity (80 g/m ²)	Unstapled	2,500 sheets (A4 LEF, 81/2" x 11" LEF) 500 sheets (A5 LEF) 100 sheets (A5 SEF, A6 SEF, B6 SEF, 51/2" x 81/2")		
	Stapled	Max docs.	Total sheets	Size
		50 docs.	2,500 sheets	A4 LEF, 81/2" x 11" LEF
		50 docs.	1,250 sheets	A4 SEF, B5, 81/2" x 11" SEF
		30 docs.	1,250 sheets	A3, B4, 12" x 18", 11" x 17"
Paper Size		A3 ~ A5, A6 SEF, B6 SEF, 12" x 18", 11" x 17" ~ 51/2" x 81/2"		
Paper Weight		52 g/m ² ~ 216 g/m ² (14 ~ 58 lb)		
Mixed Sizes		A3 and A4 LEF, B4 and B5 LEF, 11" x 17" and 81/2" x 11" LEF (Max: 50 docs, Max sheets: 30 sheets or less)		

Proof Tray

Tray Capacity	250 sheets (A4, 81/2" x 11" or smaller) 50 sheets (B4, 81/2" x 14" or larger)
Paper Weight	52 g/m ² ~ 216 g/m ² (14 ~ 58 lb)

Specifications

SPECIFICATIONS

Staple Specifications

Binding Capacity (80 g/m ²)	Same Size	50 sheets (A4, 8 1/2" x 11" or smaller) 30 sheets (B4, 8 1/2" x 14" or larger)
	Mixed Size	30 sheets (A3 and A4 LEF, B4 and B5 LEF, 11" x 17" and 8 1/2" x 11" LEF)
Paper Size	A3-B5, 11" x 17" ~ 8 1/2" x 11"	
Paper Weight	64 g/m ² ~ 90 g/m ² (17 ~ 24 lb)	
Stapling Position	Front (1), Back (1), Back (1: diagonal), Duplex Binding	
Stapling Capacity	5,000 staples/Cartridge	

Saddle-Stitch Staple Specifications

Binding Capacity (80 g/m ²)	15 sheets		
Paper Size	A3, B4, A4 SEF, 11" x 17", 8 1/2" x 11" SEF		
Paper Weight	64 g/m ² ~ 90 g/m ² (17 ~ 24 lb)		
Stapling Position	Center, 2 locations		
Staple Capacity	2,000 staples/Cartridge		
Fold Position	Center, half-folding		
Saddle-Stitch Capacity	Max docs.	Total sheets	Size
	25 docs.	2 ~ 5 sheets	A4 SEF, 8 1/2" x 11" SEF
	15 docs.	6 ~ 10 sheets	
	10 docs.	11 ~ 15 sheets	
	30 docs.	2 ~ 5 sheets	A3, B4, 11" x 17"
	20 docs.	6 ~ 10 sheets	
	10 docs.	11 ~ 15 sheets	

3.4 3000-SHEET FINISHER WITH 50-SHEET STAPLER (B469)

General

Rated Voltage of Output Connector	Max. DC 24 V
Dimensions (W x D x H)	700 x 620 x 960 mm (27.6" x 24.4" x 37.8")
Weight	Approx. 65 kg (143 lb.)
Power Consumption	72 W (3 A/24 V)
Power Supply	DC 24 V

Lower Tray

Tray Capacity (80 g/m ²)	Unstapled	3,000 sheets (A4 LEF, 81/2" x 11" LEF) 1,500 sheets (A3, A4 SEF, B4, B5, 12" x 18", 11" x 17", 81/2" x 14", 81/2" x 11" SEF) 500 sheets (A5 LEF) 100 sheets (A5 SEF, A6 SEF, B6 SEF, 51/2" x 81/2")		
	Stapled	Max docs.	Total sheets	Size
		50 docs.	3,000 sheets	A4 LEF, 81/2" x 11" LEF
		50 docs.	1,500 sheets	A4 SEF, B5, 81/2" x 11" SEF
		30 docs.	1,500 sheets	A3, B4, 12" x 18", 11" x 17"
Paper Size		A3 ~ A5, A6 SEF, B6 SEF, 12" x 18", 11" x 17" ~ 51/2" x 81/2"		
Paper Weight		52 g/m ² ~ 216 g/m ² (14 ~ 58 lb)		
Mixed Sizes		A3 and A4 LEF, B4 and B5 LEF, 11" x 17" and 81/2" x 11" LEF (Max: 50 docs, Max sheets: 30 sheets or less)		

Proof Tray

Tray Capacity	250 sheets (A4, 81/2" x 11" or smaller) 50 sheets (B4, 81/2" x 14" or larger)
Paper Weight	52 g/m ² ~ 216 g/m ² (14 ~ 58 lb)

Staple Specifications

Binding Capacity (80 g/m ²)	Same Size	50 sheets (A4, 81/2" x 11" or smaller) 30 sheets (B4, 81/2" x 14" or larger)
	Mixed Size	30 sheets (A3 and A4 LEF, B4 and B5 LEF, 11" x 17" and 81/2" x 11" LEF)
Paper Size	A3 ~ B5, 11" x 17" ~ 81/2" x 11"	
Paper Weight	64 g/m ² ~ 90 g/m ² (17 ~ 24 lb)	
Stapling Position	Front (1), Back (1), Back (1: diagonal), Duplex Binding	
Stapling Capacity	5,000 staples/Cartridge	

Specifications

SPECIFICATIONS

3.5 3000-SHEET FINISHER WITH SADDLE-STITCH AND 50-SHEET STAPLER (B674)

General

Rated Voltage of Output Connector	Max. DC 24 V
Dimensions (W x D x H)	700 x 620 x 960 mm (27.6" x 24.4" x 37.8")
Weight	Approx. 65 kg (143 lb.) (with punch unit)
Power Consumption	72 W (3 A/24 V)
Power Supply	DC 24 V

Upper Tray

Tray Capacity (80 g/m ²)	Unstapled	500 sheets (A4, A5 LEF, B5, 8½" x 11") 250 sheets (A3 SEF, B4 SEF, 12" x 18", 11" x 17" SEF) 100 sheets (A5 SEF, B6 SEF, 5½" x 8½")			
		Stapled			
		Max docs.	Total sheets	Size	
		50 docs.	500 sheets	A4 LEF, 8½" x 11" LEF	
Paper Size		25 docs.			
Paper Weight		250 sheets			
Mixed Sizes		A3, A4 SEF, B4, B5, 12" x 18", 11" x 17", 8½" x 11" (Max: 16 docs, Max sheets: 30 sheets or less)			
Note: Z-folded paper cannot be output to the upper tray.					

Lower Tray

Tray Capacity (80 g/m ² 20 lb)	Unstapled	No Z-folded paper 2,500 sheets (A4 LEF, 8½" x 11" LEF) 1,250 sheets (A3 SEF, A4 SEF, B4 SEF, B5, 11" x 17" SEF, 8½" x 14" SEF, 8½" x 11" SEF) 100 sheets (A5 SEF, B6 SEF, B6 SEF, 5½" x 8½") Z-folded sheets only 30 sheets 20 sheets		
	Stapled	Max docs	Total sheets	Size
	50 docs.	2,500 sheets	A4 LEF, 8½" x 11" LEF	
	50 docs.	1,250 sheets	A4 SEF, B5, 8½" x 11" SEF	
	30 docs.	1,250 sheets	A3, B4, 12" x 18", 11" x 17"	
	Stapled and Z-folded	5 docs	30 sheets	A3 (Z) and A4 LEF B4 (Z) and B5 LEF, 11" x 17" (Z) and 8½" x 11" LEF
Paper Size	No Z-folded		A3 ~ A5, A6 SEF, B6 SEF, 12" x 18" 11" x 17" ~ 5½" x 8½"	
	Z-folded		A3 SEF ~ A4 SEF 11" x 17" SEF ~ 5½" x 8½" SEF	
Paper Weight	No Z-folded		52 g/m ² ~ 216 g/m ² (14 ~ 58 lb)	
	Z-folded		64 g/m ² ~ 80 g/m ² (17 ~ 20 lb)	
Mixed Sizes	No Z-folded		A3 and A4 LEF, B4 and B5 LEF 11" x 17" and 8½" x 11" LEF (Max: 50 docs, Max sheets: 30 sheets or less)	
	Z-folded		A3 (Z) and A4 LEF, B4 (Z) and B5 LEF 11" x 17" (Z) and 8½" x 11" LEF (Max: 6 docs, Max sheets: 30 sheets or less)	

Proof Tray

Tray Capacity	No Z-folded	250 sheets (A4, 8½" x 11" or smaller) 50 sheets (B4, 8½" x 14" or larger)
	Z-folded	20 sheets (A4, 8½" x 11" or smaller) 30 sheets (B4, 8½" x 14" or larger)
	Mixed	250 sheets (A4, 8½" x 11" or smaller) 50 sheets (B4, 8½" x 14" or larger) (One Z-folded sheet is counted as 10 unfolded sheets.)
Paper Weight	No Z-folded	52 g/m ² ~ 163 g/m ² (14 ~ 43 lb)
	Z-folded	64 g/m ² ~ 80 g/m ² (17 ~ 20 lb)

SPECIFICATIONS

Staple Specifications

Binding Capacity (80 g/m ² , 20 lb)	Same Size	50 sheets (A4, 8 1/2" x 11" or smaller) 30 sheets (B4, 8 1/2" x 14" or larger)
	Mixed size	30 sheets (A3 and A4 LEF, B4 and B5 LEF, 11" x 17" and 8 1/2" x 11" LEF)
Z-folded	Z-folded Sheets	No Z-folded sheets
One Z-folded sheet is counted as 10 unfolded sheets.		
Paper Size	No Z-folded	A3-B5, 11" x 17" ~ 8 1/2" x 11"
	Z-folded	A3SEF, B4SEF, 11" x 17" SEF
Paper Weight	No Z-folded	64 g/m ² ~ 90 g/m ² (17 ~ 24 lb)
	Z-folded	64 g/m ² ~ 80 g/m ² (17 ~ 20 lb)
Stapling Position	Front (1), Back (1), Back (1: diagonal), Duplex Binding	
Stapling Capacity	5,000 staples/Cartridge	

Saddle-Stitch Staple Specifications

Binding Capacity (80 g/m ²)	15 sheets		
Paper Size	A3, B4, A4 SEF, 11" x 17", 8 1/2" x 11" SEF		
Paper Weight	64 g/m ² ~ 90 g/m ² (17 ~ 24 lb)		
Stapling Position	Center, 2 locations		
Staple Capacity	2,000 staples/Cartridge		
Fold Position	Center, half-folding		
Saddle-Stitch Capacity	Max docs.	Total sheets	Size
	25 docs.	2 ~ 5 sheets	A4 SEF, 8 1/2" x 11" SEF
	15 docs.	6 ~ 10 sheets	
	10 docs.	11 ~ 15 sheets	
	30 docs.	2 ~ 5 sheets	A3, B4, 11" x 17"
	20 docs.	6 ~ 10 sheets	
	10 docs.	11 ~ 15 sheets	

3.6 PUNCH UNIT (B377)

The Punch Unit B377 is installed in the 3000 Sheet Finisher B468/B469/B674.

Punch Specifications			
Punch Position	North America (NA)	2/3 holes	B377-17
	Europe (E)	2/4 holes	B377-27
	Northern Europe (NE)	4 holes	B377-31
Punching Allowed	All modes		
Allowed Paper Sizes	Holes	Feed	Paper Size
	2 holes (E)	SEF	A3 ~ A5, 11" x 17" ~ 51/2" x 81/2"
		LEF	A4 ~ A5, 81/2" x 11", 51/2" x 81/2"
	2 holes (NA)	SEF	A3 ~ A5, 11" x 17" ~ 51/2" x 81/2"
		LEF	A4 ~ A5, 81/2" x 11", 51/2" x 81/2"
	3 holes (NA)	SEF	A3, B4, 11" x 17"
		LEF	A4, B5, 81/2" x 11"
	4 holes (E)	SEF	A3, B4, 81/2" x 11"
		LEF	A4, B5, 81/2" x 11"
	4 holes (NE)	SEF	A3 ~ A5, 11" x 17" ~ 51/2" x 81/2"
		LEF	A3 ~ A5, 81/2" x 11", 51/2" x 81/2"
Allowed Paper Weight	Holes	Weight	
	2 holes	52 ~ 163 g/m ² (14 ~ 43 lb.)	
	3 holes		
	4 holes (E)		
	4 holes (NE)		
	2 holes (NA)		
Hopper Capacity	North America (2/3 hole)		More than 60 K prints
	Europe, Europe (4 holes)		More than 80 K prints
Rated Voltage of Output Connector	Max. DC 24 V		
Dimensions (W x D x H)	700 x 620 x 960 mm (27.6" x 24.4" x 37.8")		
Weight	Approx. 65 kg (143 lb.) (with punch unit)		
Power Consumption	72 W (3 A/24 V)		
Power Supply	DC 24 V		

SPECIFICATIONS

3.7 COVER INTERPOSER TRAY (B470)

Configuration	Attached to 3000-sheet finisher B468, B469, B478, B674 and B706.
Paper Separation	FRR system with feed belt.
Paper Transport	Feed from top tray via vertical roller transport to finisher.
Paper Sizes	A3 ~ A5, 11" x 17" ~ 51/2" x 81/2"
Paper Weight	64 ~ 216 g/m ² (17 ~ 58 lb)
Capacity	200 sheets (80 g/m ²)
Paper Set Detection	Provided
Power Supply (from main machine)	24 V ±10%, 5 V ±5%
Power Consumption	Less than 48 W
Dimensions (W x D x H)	500 x 620 x 200 mm (19.7" x 24.4" x 7.9")
Weight	12 kg (26.4 lb.)

3.8 3000 SHEET FINISHER (B478/B706)

UPPER TRAY																	
Paper Capacity (80 g/m ²)	500 sheets (A4, 8 1/2" x 11" and smaller) 250 sheets (B4, 8 1/2" x 14" and larger)																
Paper Size	A3 to A6 SEF, 11" x 17" to 5 1/2" x 8 1/2", 12" x 18"																
Paper Weight	52 to 216 g/m ² (14 ~ 58 lb)																
Upper Tray Full Detection	Provided																
SHIFT TRAY																	
Paper Capacity (80 g/m ²)	3000 sheets (A4 LEF, B5 LEF, 8 1/2" x 11" LEF) 1500 sheets (A3, A4 SEF, B4 and B5 SEF, 11" x 17", 8 1/2" x 14", 8 1/2" x 11" SEF, 12" x 18") 500 sheets (A5 LEF, 5 1/2" x 8 1/2" LEF) 100 sheets (A5 SEF, 5 1/2" x 8 1/2" SEF)																
Paper Size	A3 to A5, 11" x 17" to 5 1/2" x 8 1/2", 12" x 18" (including tab paper)																
Paper Weight	52 to 216 g/m ² (14 ~ 58 lb)																
Shift Tray Full Detection	Provided																
STAPLER																	
Stapling Stack Size	A4, B5, 8 1/2" x 11" (Max. 100 Sheets) A3, B4, 11" x 17", 8 1/2" x 14" (Max. 50 sheets)																
Stapling Paper Size	A3 to B5 11" x 17" to 8 1/2" x 11"																
Stapling Paper Weight	64 to 80 g/m ² (17 ~ 20 lb)																
Staple Position	4 Modes 1 Staple: Front, Rear, Rear-Oblique 2 Staples: 2 locations																
Staple Capacity	5000 staples/cartridge																
Staple Supply	Cartridge or Staple Replacement																
Stapled Stack Size	<table border="1"> <thead> <tr> <th>Sheets</th><th>Sets</th><th>Sizes</th></tr> </thead> <tbody> <tr> <td>10 ~ 100</td><td>200 ~ 30</td><td>A4 SEF, B5 SEF, 8 1/2" x 11" SEF</td></tr> <tr> <td>2 ~ 9</td><td>150</td><td>A4 LEF, B5 LEF, 8 1/2" x 11" LEF</td></tr> <tr> <td>10 ~ 50</td><td>150 ~ 30</td><td>A3, B4, 11" x 17", 8 1/2" x 14"</td></tr> <tr> <td>2 ~ 9</td><td>150</td><td></td></tr> </tbody> </table>		Sheets	Sets	Sizes	10 ~ 100	200 ~ 30	A4 SEF, B5 SEF, 8 1/2" x 11" SEF	2 ~ 9	150	A4 LEF, B5 LEF, 8 1/2" x 11" LEF	10 ~ 50	150 ~ 30	A3, B4, 11" x 17", 8 1/2" x 14"	2 ~ 9	150	
Sheets	Sets	Sizes															
10 ~ 100	200 ~ 30	A4 SEF, B5 SEF, 8 1/2" x 11" SEF															
2 ~ 9	150	A4 LEF, B5 LEF, 8 1/2" x 11" LEF															
10 ~ 50	150 ~ 30	A3, B4, 11" x 17", 8 1/2" 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)																

SPECIFICATIONS

3.9 PUNCH UNIT (B531)

The Punch Unit B531 is installed in the 3000 Sheet Finisher B478/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"~5 1/2" x 8 1/2" SEF A5 ~ A4 LEF, 8 1/2" x 11" LEF, 5 1/2" x 8 1/2" LEF
3-Hole (NA)	A3 SEF, B4 SEF, 11" x 17" SEF A4 LEF, B5 LEF, 8 1/2" x 11" LEF
4-Hole (EUR/A)	A3 SEF, 11" x 17" SEF A4 LEF, 8 1/2" 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

3.10 PUNCH UNIT (A812)

The Punch Unit A812 is installed in the 3000 Sheet Finisher B478/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, 5½" 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

SPECIFICATIONS

3.11 JOGGER UNIT (B513)

The Jogger Unit B513 is installed above the shift tray of the 3000 Sheet Finisher B478/B706.

Paper Size	A3 SEF, B4 SEF, 11" x 17" SEF A4 LEF, B5 LEF, 8 1/2" 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

3.12 9-BIN MAILBOX (B471)

Bin Capacity	100 sheets per bin (80 g/m ²)
Allowed Paper Sizes	A3 ~ A5 11" x 17" ~ 5 1/2" x 8 1/2"
Allowed Paper Thickness	52 ~ 128 g/m ² (14 ~ 34 lb)
Power Consumption	Less than 48W (average)
Power Supply	DC 24 V, 5 V
Dimensions (W x D x H)	480 x 600 x 660 mm (18.9" x 23.6" x 26")
Weight	15 kg (33 lb.)

3.13 LG/B4 KIT (B474)

Paper Size	B4, 8 1/2" x 14", A4 SEF, 8 1/2" x 11" SEF
Paper Weight	52 ~ 128 g/m ² (14 ~ 34 lb)
Tray Capacity	1,000 sheets (80 g/m ² , 20lb)

3.14 Z-FOLDING UNIT (B660)

Paper Size	No Folding (52 - 216 g/m ²) (17 ~ 58 lb)	A3, A4, A5, A6 SEF, B4, B5, B6 SEF 11" x 17", 8 1/2" x 14", 8 1/2" x 11" 8 1/2" x 5 1/2", 12" x 18"
	Folding (64-80 g/m ²) (17 ~ 20 lb)	A3, B4, A4 SEF 11" x 17", 8 1/2" x 14", 8 1/2" x 11" SEF 12" x 18"
Dimensions (W x D x H)	177 x 620 x 960 mm (7" x 24.5" x 37.8")	
Weight	50 kg (110 lb.)	
Power Consumption	100 W max.	
Power Supply	North America	120 V, 60 Hz
	Europe/Asia	220-240 V, 50/60 Hz
Compatible Finishers	B674	

B473

LARGE CAPACITY TRAY



LARGE CAPACITY TRAY B473

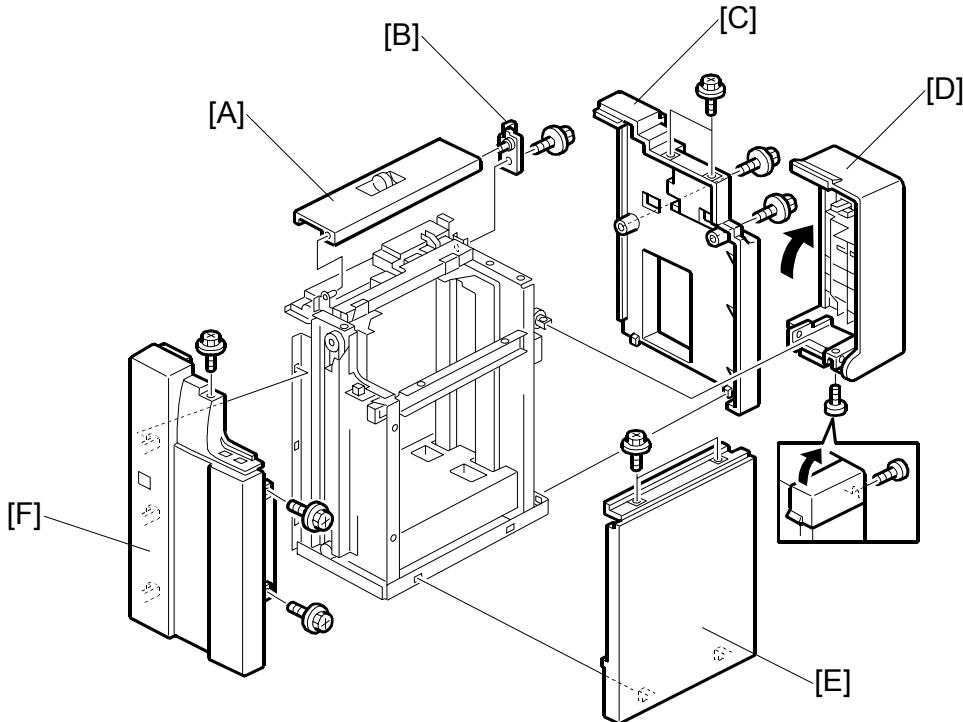
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1. REPLACEMENT AND ADJUSTMENT

1.1 EXTERNAL COVERS

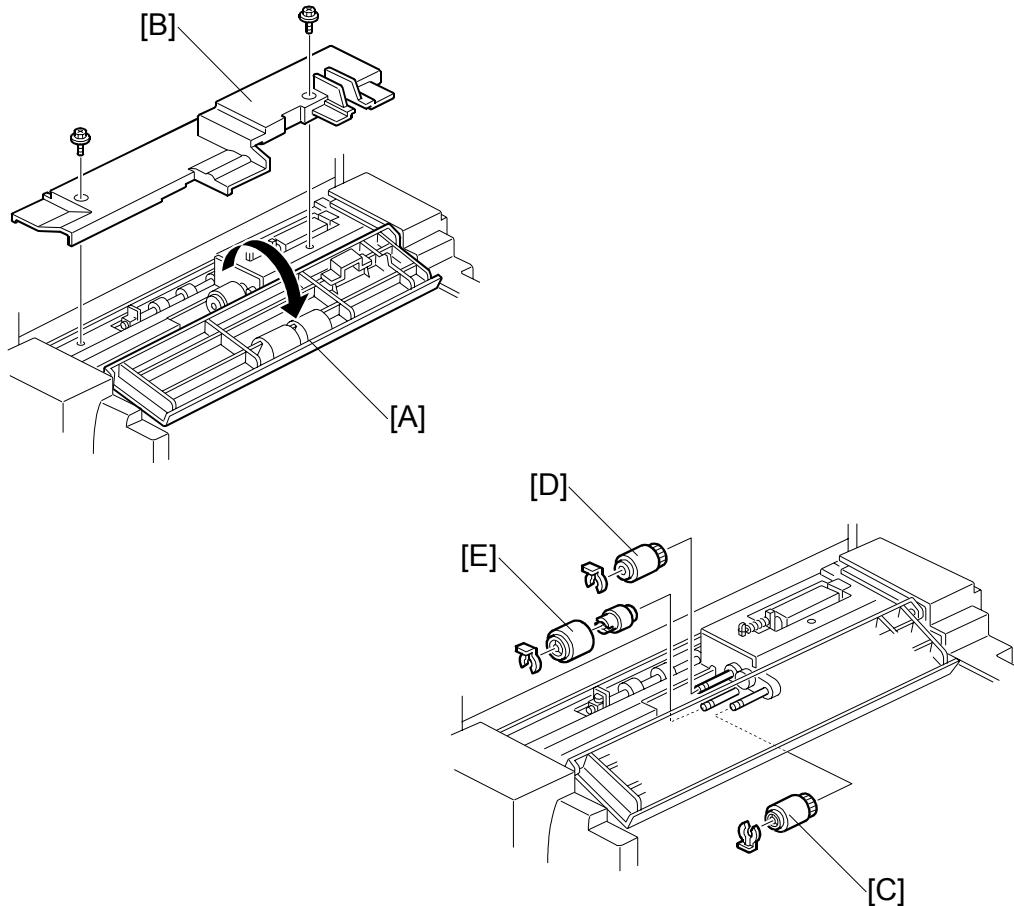


Large
Capacity Tray
B473

- [A]: Transport cover
- [B]: Transport cover hinge (x 1)
- [C]: Rear cover (x 4)
- [D]: Top cover (x 1)
- [E]: Right cover (x 2)
- [F]: Front cover (x 3)

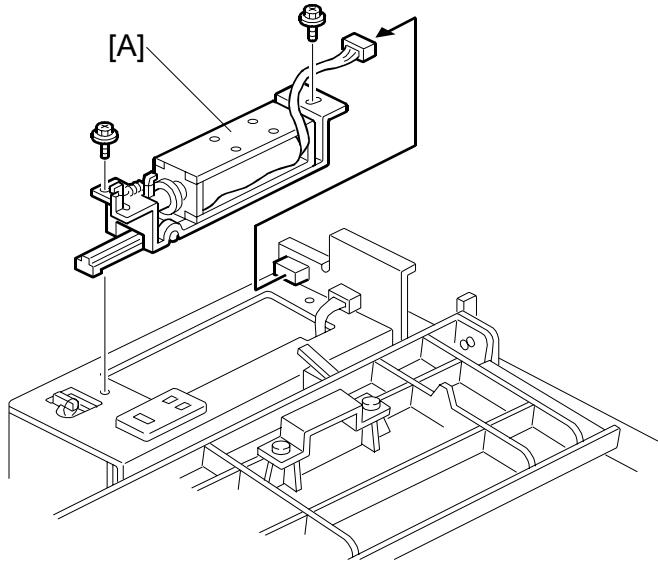
PICK-UP/FEED/SEPARATION ROLLERS

1.2 PICK-UP/FEED/SEPARATION ROLLERS



- [A]: Open the transport cover
- [B]: Bracket cover (x 2)
- [C]: Pick-up roller (x 1)
- [D]: Feed roller (x 1)
- [E]: Separation roller (x 1)

1.3 PICK-UP SOLENOID



Large
Capacity Tray
B473

Rear cover (✖ x 4)

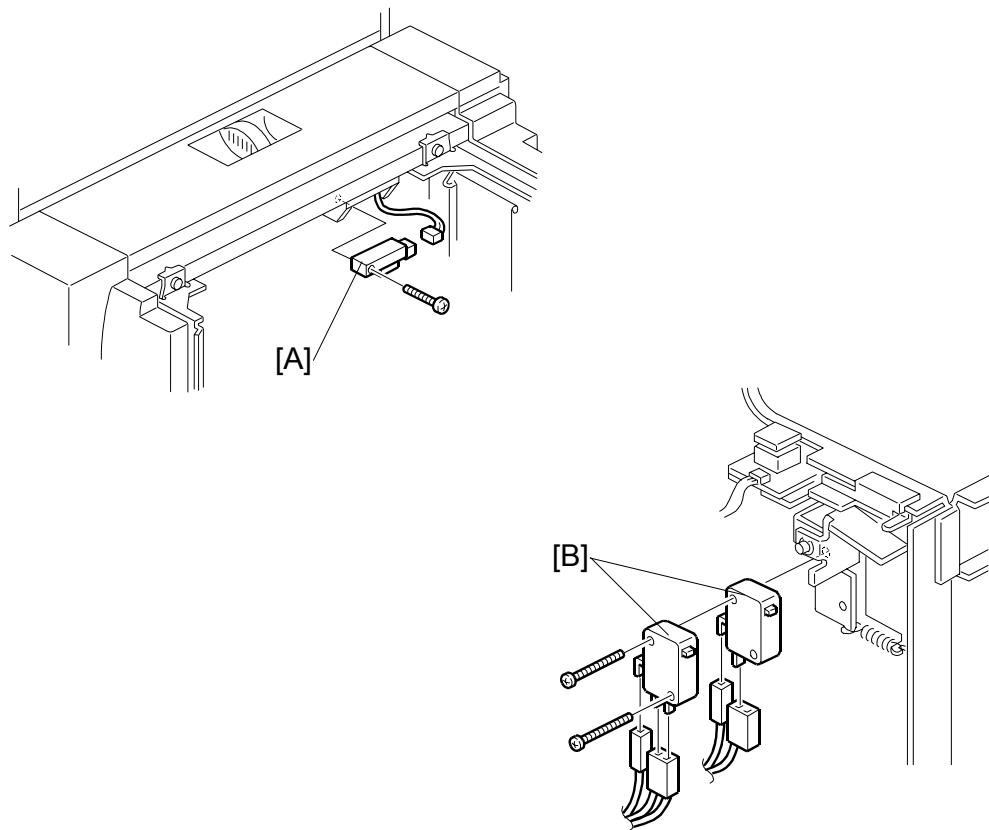
Open the transport cover (● 1.2)

Bracket cover (● 1.2)

[A]: Pick-up solenoid (✖ x 2, □ x 1)

PAPER END SENSOR, UPPER COVER SWITCHES

1.4 PAPER END SENSOR, UPPER COVER SWITCHES



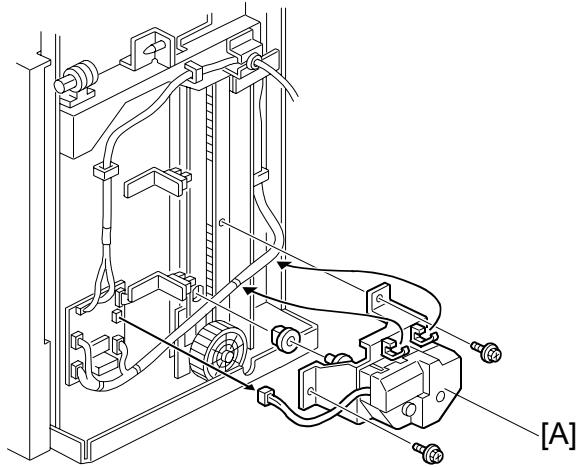
Open the top cover.

Right cover (☞ 1.1)

[A]: Paper end sensor (☞ x 1)

[B]: Upper cover switches 1, 2 (☞ x 2)

1.5 TRAY MOTOR

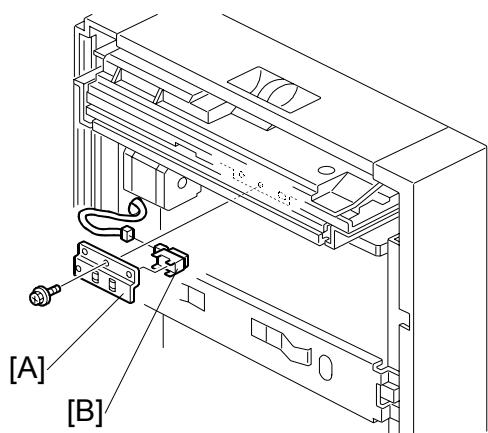


Large Capacity Tray
B473

Rear cover (☞ 1.1)

[A]: Tray motor (☞ x 2, ☐ x 1)

1.6 PAPER STACK SENSOR



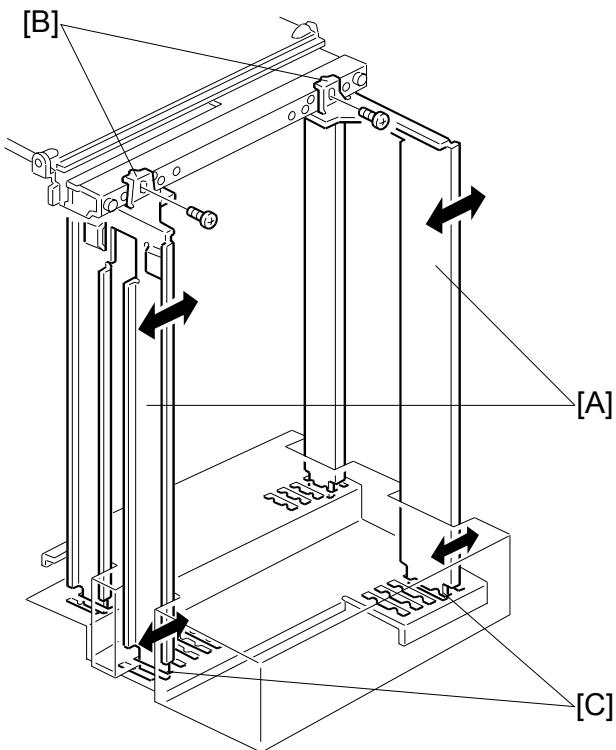
Disconnect the LCT from the machine

[A]: Sensor cover (☞ x 1)

[B]: Paper stack sensor (☐ x 1)

PAPER SIZE ADJUSTMENT

1.7 PAPER SIZE ADJUSTMENT



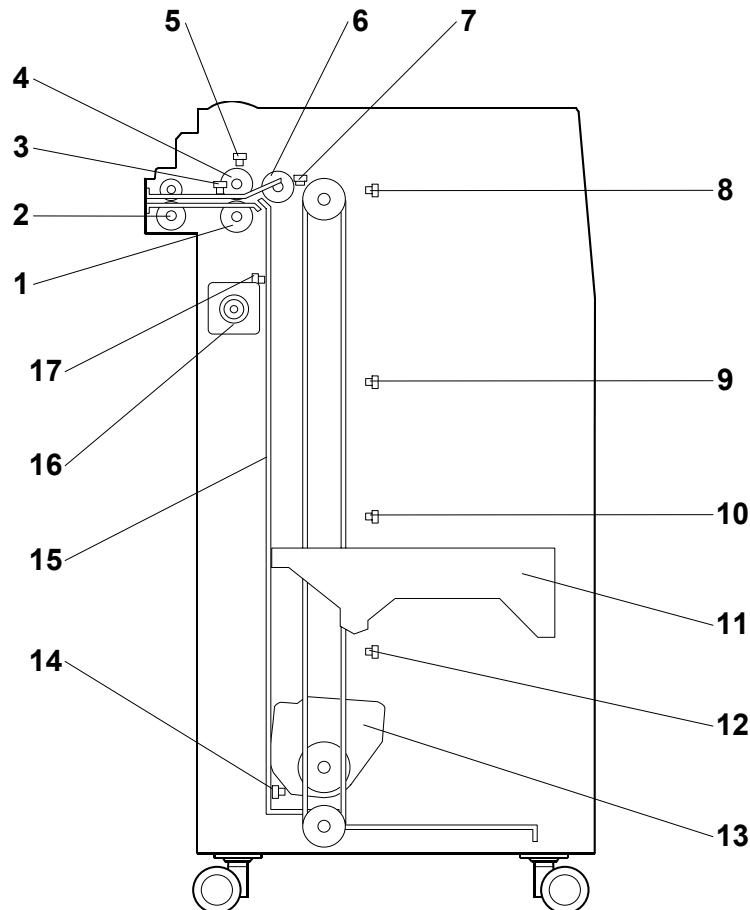
The side fences [A] can be adjusted for A4 Sideways, B5 Sideways, or LT sideways at the top [B] and bottom brackets [C].

After changing the side fences to accept another paper size, you must execute SP5959 005 (Paper Type – Tray 4) and select the paper size of the side fence positions. For details, see SP5959 in section “5. Service Tables” of the B064/B065 manual.

2. DETAILS

2.1 OVERVIEW

2.1.1 LCT MAIN COMPONENTS



Large
Capacity Tray
B473

- | | |
|--------------------------|---------------------------|
| 1. Separation Roller | 10. Paper Height Sensor 2 |
| 2. Transport Roller | 11. Paper Tray |
| 3. Feed Sensor | 12. Paper Height Sensor 3 |
| 4. Feed Roller | 13. Paper Tray Motor |
| 5. Lift Sensor | 14. Low Limit Sensor |
| 6. Pick-up Roller | 15. Tray Drive Belt |
| 7. Paper End Sensor | 16. Feed Motor |
| 8. Paper Near End Sensor | 17. Stack Sensor |
| 9. Paper Height Sensor 1 | |

OVERVIEW

Pick-up, Separation, Feed. Non-contact, maintenance free FRR system. ( Handling Paper> Paper Feed Methods> **Forward and Reverse Roller (FRR)**)

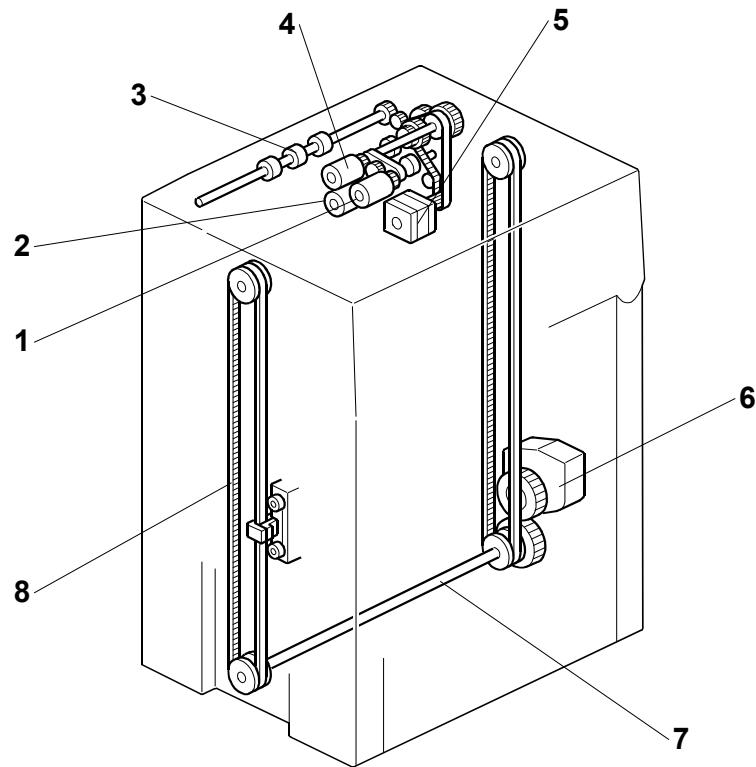
Tray Lift. Tray lift motor and timing belt raise and lower the paper tray.

Paper Size Detection. The side fences cannot be adjusted by customers. The paper size must be entered with SP5959 005. For details, see SP5959 in section “4. Service Tables.”

Paper Height Detection. A feeler and four photointerrupters are used.

Paper End Detection. A reflective sensor on the upper stay detects paper end.

2.1.2 LCT DRIVE LAYOUT

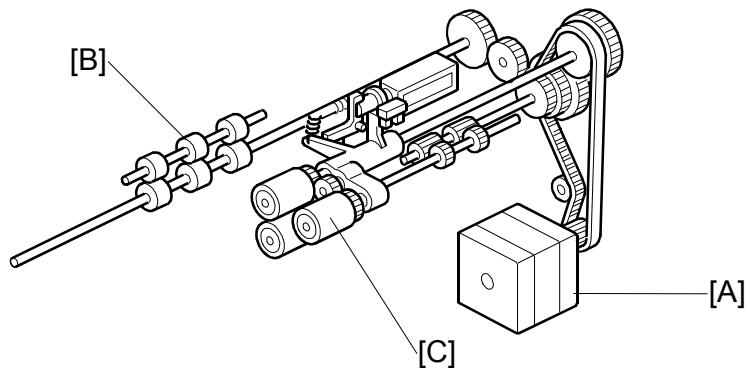


1. Pick-up Roller
2. Separation Roller
3. Transport Rollers
4. Feed Roller
5. Feed Motor
6. Tray Motor
7. Tray Lift Shaft
8. Tray Drive Belt

2.2 PAPER FEED AND SEPARATION

A standard FRR system is used. It consists of the pick-up, feed, and separation rollers.

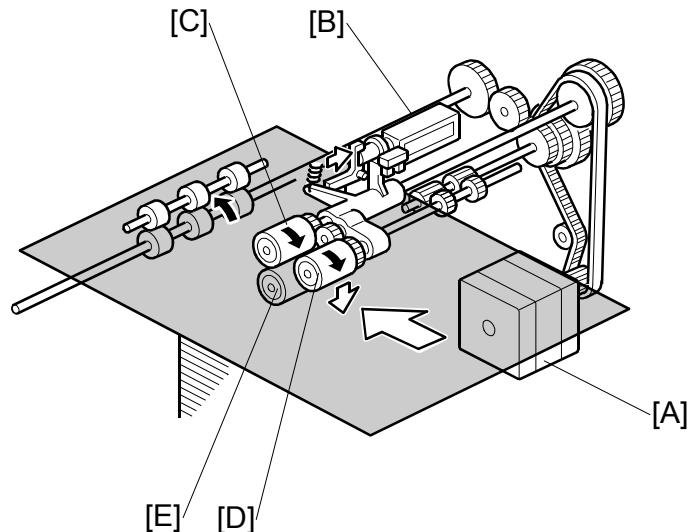
2.2.1 STARTING PAPER FEED



The feed motor [A] drives the transport rollers [B].

The separation roller [C], which is free to rotate in the direction indicated by the arrow, remains at rest.

2.2.2 FEED AND SEPARATION



Large Capacity Tray
B473

The feed motor [A] switches on, then the pick-up solenoid [B] switches on and transfers drive to the paper feed roller [C] and pick-up roller [D].

The rotating pick-up roller lowers and feeds the first sheet when it contacts the top of the stack.

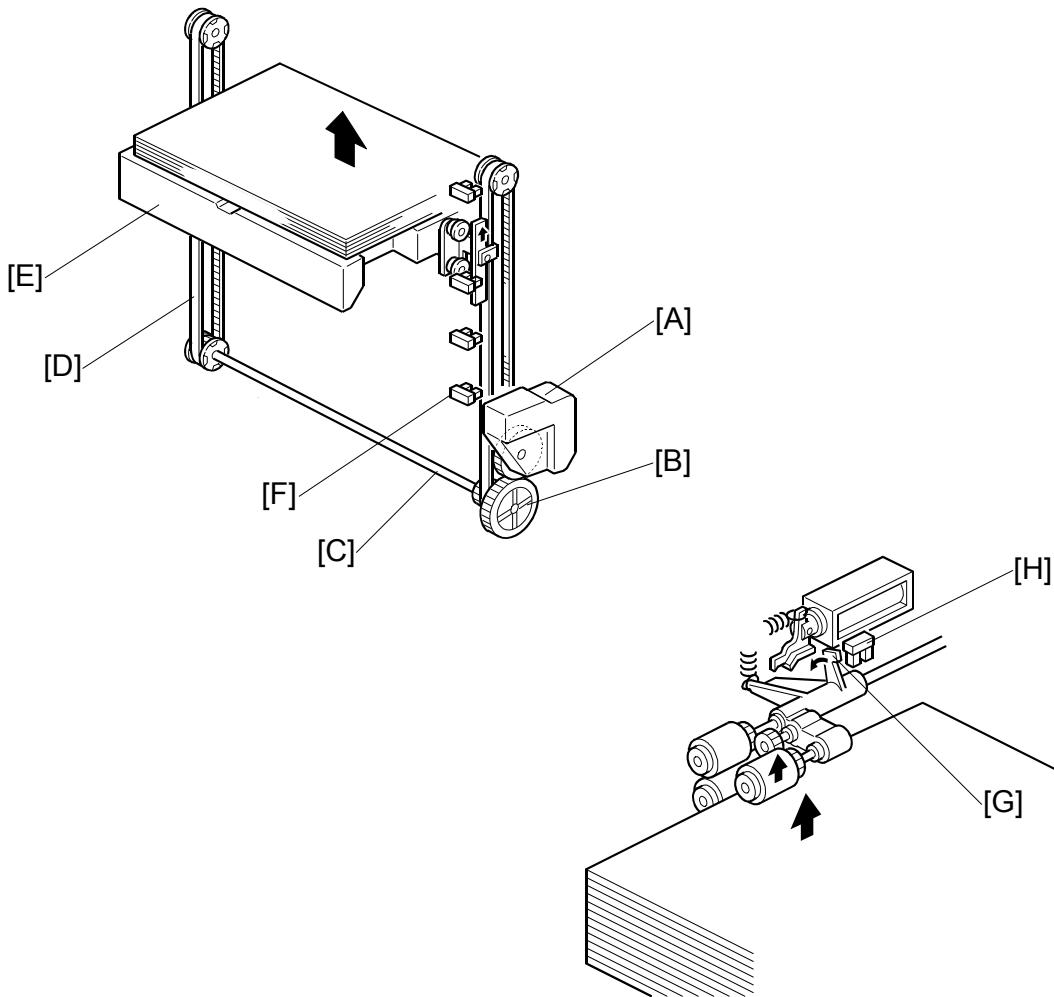
The separation roller [E], in contact with the feed roller, only allows one sheet out of the tray.

As soon as the paper feed sensor (not shown) detects the leading edge of the paper, it switches off the pick-up solenoid which raises the pick-up roller. The feed roller feeds the sheet to the registration roller.

This process is repeated for each sheet.

PAPER LIFT

2.3 PAPER LIFT

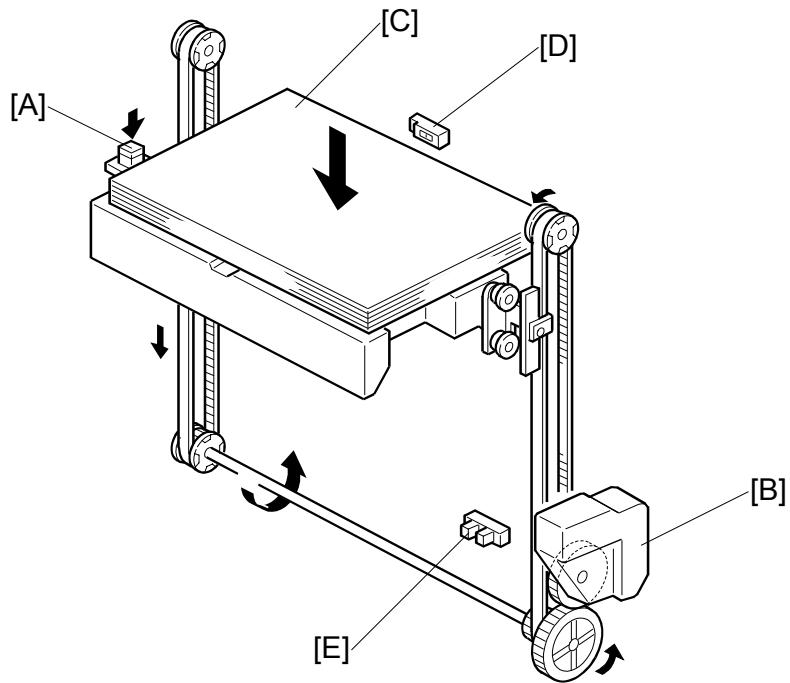


Tray motor [A] → Gear [B] → Shaft [C] → Tray belts [D] raise and lower the paper tray [E].

After paper is set in the LCT and the upper cover is closed, if the paper height sensor [F] is not activated, the tray motor lowers the tray and stops. When the paper height sensor activates, the tray motor lifts the tray.

After several sheets have been fed, the paper level lowers, the actuator [G] activates the lift sensor [H], and switches on the motor again. The motor raises stack until the actuator de-activates the lift sensor.

This cycle repeats to maintain the correct height of the stack until the end of the job.



Large
Capacity Tray
B473

Pressing the tray down button [A] reverses the rotation of the tray motor [B] and lowers the tray [C].

The tray lowers until the stack sensor [D] detects the top of the stack and stops the tray motor.

- This mechanism lowers the tray by 5 cm, which gives the user enough space to add 500 sheets of paper.
- If the down switch is then pressed again, the bottom plate moves down once again by 5 cm. This allows the customer to replenish paper in convenient amounts and at the same position.

A lower limit sensor [E] (triggered by an actuator on the bottom of the tray) is also provided to stop the tray motor if the stack sensor should fail.

Summary

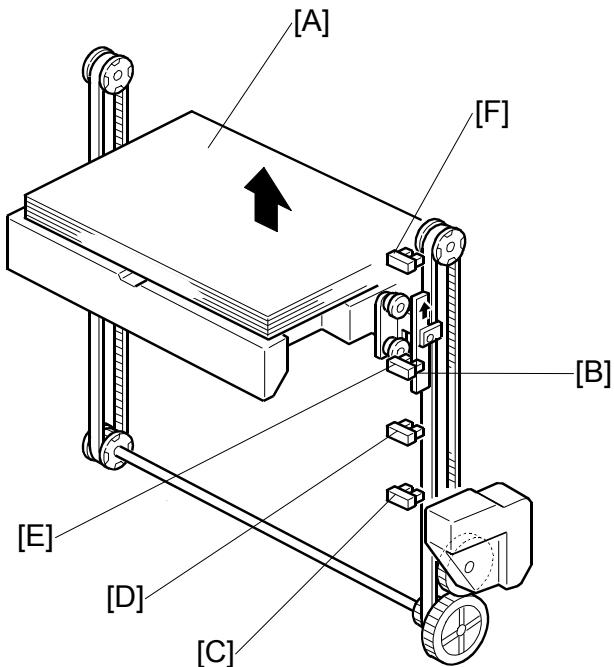
The tray raises when:

- The main power switch is turned on
- When the lift sensor switches on during copying
- The top cover is closed and the lift sensor switches on

The tray lowers when:

- The tray down button is pressed.
- The paper end sensor signals that there is no paper in the tray.

2.4 PAPER HEIGHT DETECTION



As paper is consumed from the top of the stack [A], the paper tray rises and the actuator [B] attached to the tray passes through paper height sensor 3 [C], paper height sensor 2 [D], and paper height sensor 1 [E] until the actuator reaches the paper near end sensor [F].

The operation panel displays a message for each paper height until the actuator reaches the near-end sensor, then a message warns the user that the tray is nearly empty.

The table summarizes the relation between sensor detection and the number of sheets remaining in the stack.

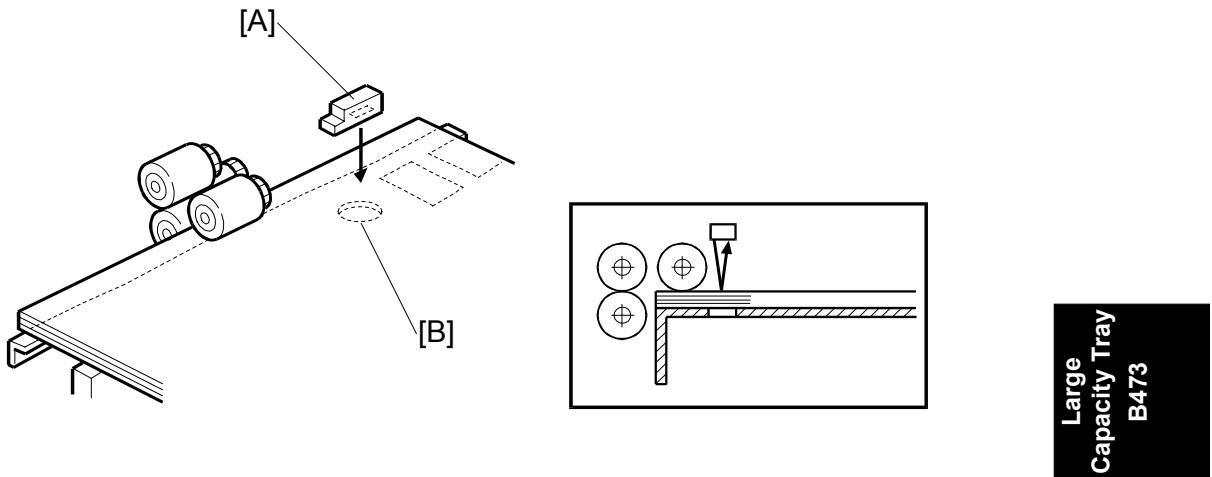
Sheet Remaining	Bars *1	Sensors			
		Near-end	P.Height 1	P.Height 2	P.Height 3
75	1	●	—	—	—
1500	2	○	●	—	—
2500	3	○	○	●	—
3500	4	○	○	○	●

*1: The number of vertical bars in the paper height display on the operation panel.

●: Actuator blocking the sensor gap.

○: Sensor gap is open

2.5 PAPER END DETECTION



The paper end sensor [A] monitors the light reflected by each sheet on top of the stack.

When the last sheet feeds, the cutout [B] is exposed, and the paper end sensor receives no reflected light from below because there is no paper and this signals paper end.



B475
A3/DLT TRAY KIT



A3/DLT TRAY KIT B475

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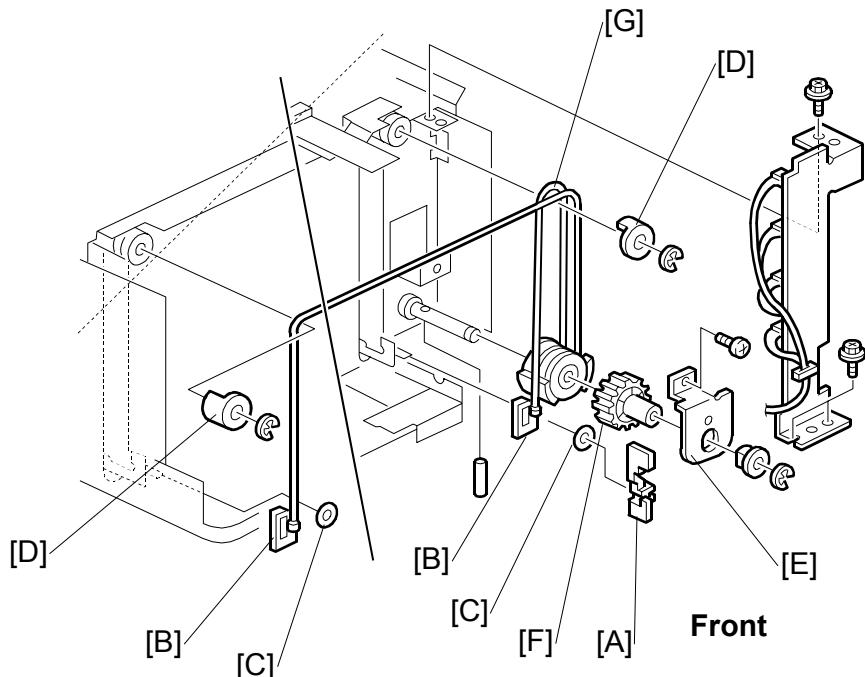


1. REPLACEMENT AND ADJUSTMENT

1.1 BOTTOM PLATE LIFT WIRE REPLACEMENT

1.1.1 REMOVING THE LIFT WIRE

NOTE: The procedures for front and rear wire removal are the same.



Remove the A3/DLT tray from the machine.

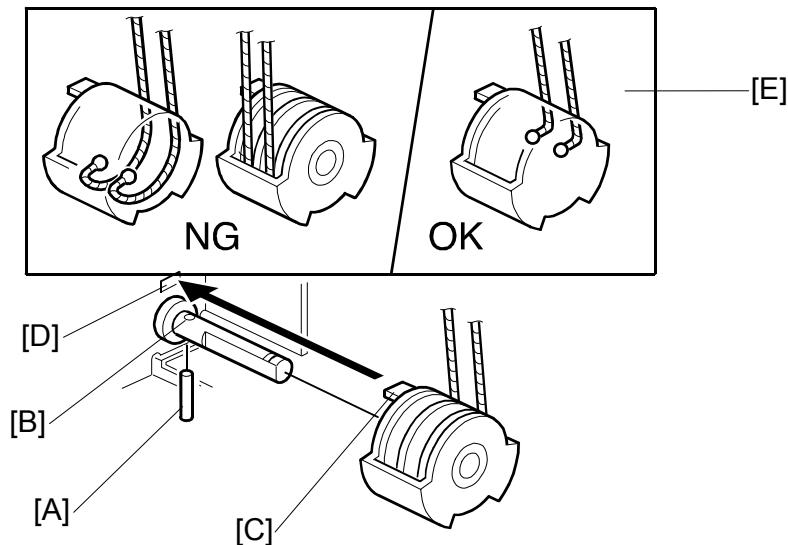
Inner cover (x 2)

- [A]: Sensor bracket (x 1)
- [B]: Wire stoppers
- [C]: Wire stopper rings
- [D]: Wire covers x 2 (x 1 each)
- [E]: Bracket (x 1, x 1, Bushing x 1)
- [F]: Gear
- [G]: Bottom plate lift wire

A3/DLT Tray
Kit
B475

BOTTOM PLATE LIFT WIRE REPLACEMENT

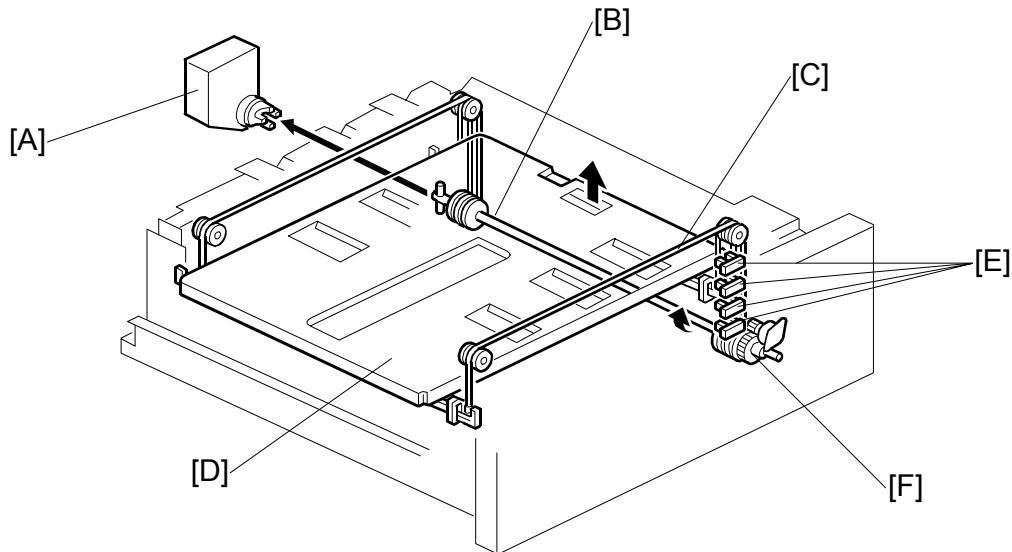
1.1.2 INSTALLING THE LIFT WIRE



1. Put the positioning pin [A] in hole [B]
2. Fit the projection [C] into slot [D].
3. Attach the wire as shown [E].

NOTE: Make sure that the wires are not crossed.

2. DETAILS



With this option installed, only one stack of paper can be loaded.

Lift motor [A] → Shaft and pulleys [B] → Tray wires [C] → Tray bottom plate [D].

An array of four paper height sensors [E] provide paper supply detection. As each sensor is actuated, a message (percent of paper remaining) alerts the user about the remaining amount of paper. When the bottom sensor [F] of the four sensors is actuated, the paper end message is displayed.

A3/DLT Tray
Kit
B475



B468/B469/B674
3000-SHEET FINISHER



3000-SHEET FINISHER

B468/B469/B674

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What This Manual Contains

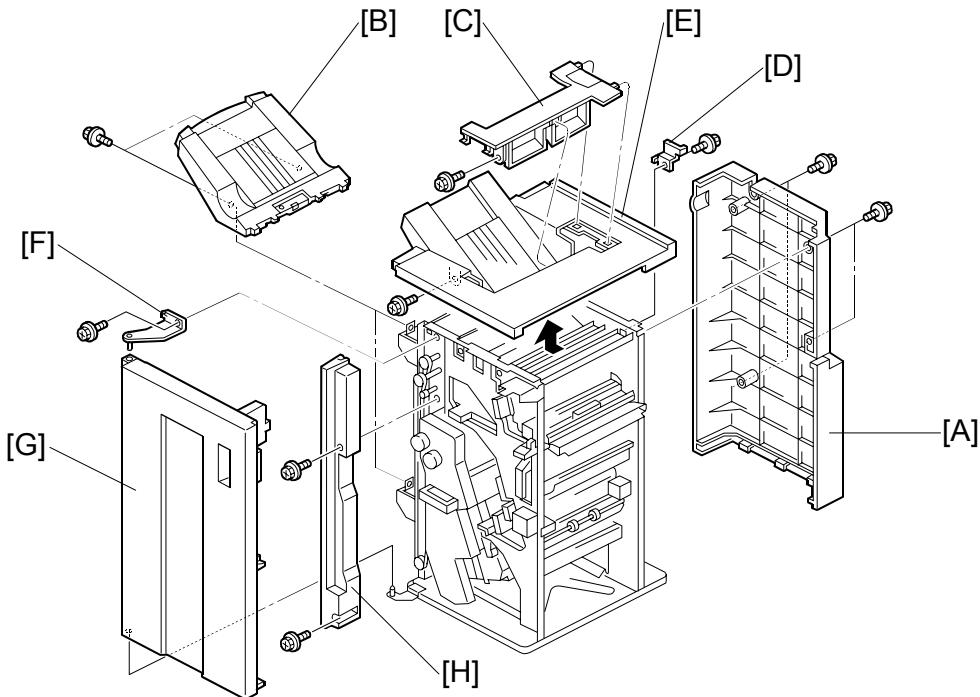
This manual describes three 3000-sheet finishers:

- B468 does center folding and saddle-stitching with staples.
- B469 does stapling, but not saddle-stitching.
- B674 does center folding and saddle stitching with staples, and also can staple of Z-folded sheets when the Z-Folding unit is installed with the finisher.

NOTE: Almost all descriptions in this manual apply to all three finisher units.
When the machines are different, you will see the codes: B468, B469, or B674.

1. REPLACEMENT AND ADJUSTMENT

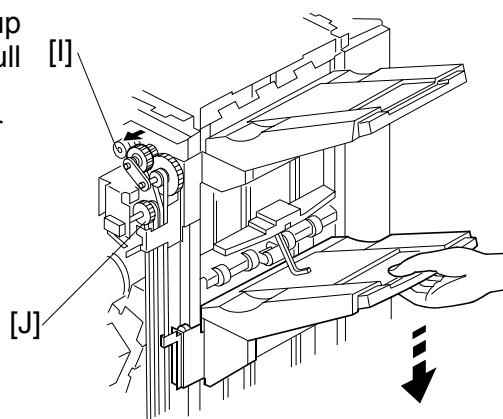
1.1 EXTERNAL COVERS



3000-Sheet
Finisher
B468/B469/
B674

- [A]: Rear cover (x 4)
- [B]: Upper tray, lower tray (x 2 each) (See note below)
- [C]: Top cover center (x 1)
- [D]: Stopper (x 1)
- [E]: Top cover (x 1)
- [F]: Front door hinge (x 2)
- [G]: Front door
- [H]: Left side cover (x 2)

The trays may be difficult to remove at the up position. Support the tray with your hand, pull out the gear [I] (for the lower tray) or [J] (for the upper tray) to release the tray and lower it slowly.

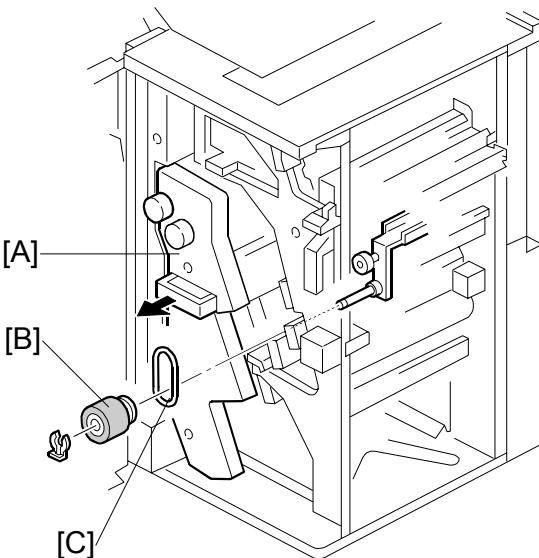


POSITIONING ROLLER

1.2 POSITIONING ROLLER

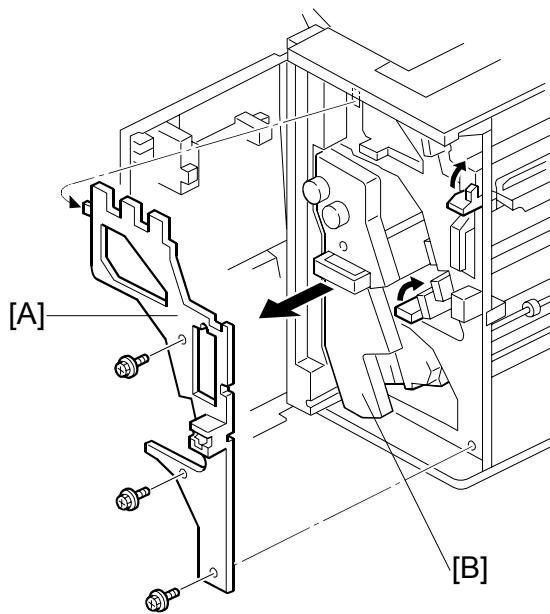
Open the front door.

- [A]: Pull out the jogger unit.
- [B]: Positioning roller ( x 1)
- [C]: Positioning roller drive belt

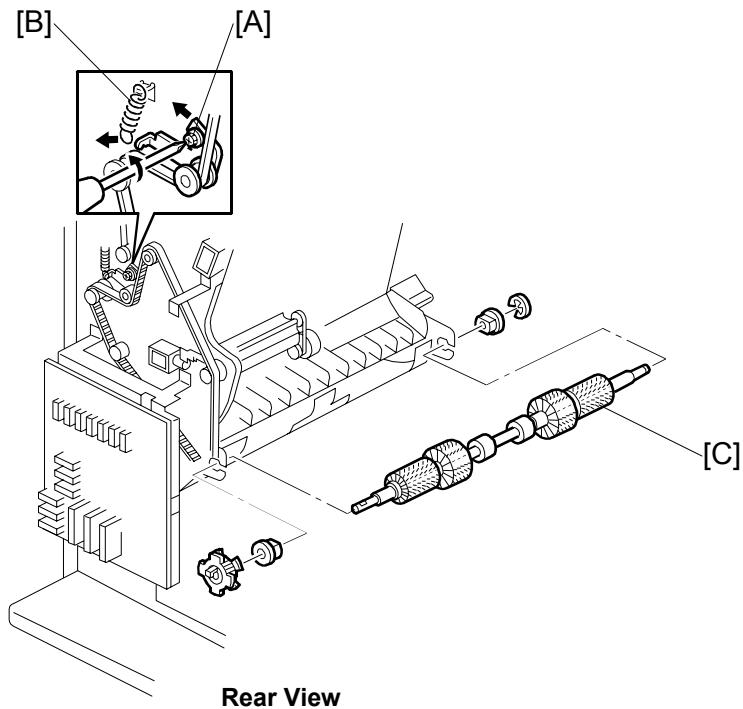


1.3 INNER COVER

- [A]: Inner cover ( x 3)
- [B]: Pull out the jogger unit.



1.4 BRUSH ROLLER



3000-Sheet
Finisher
B468/B469/
B674

Open the front door.

Pull out the jogger unit.

Rear cover (☞ 1.1)

[A]: Loosen tension bracket (\wedge x 1)

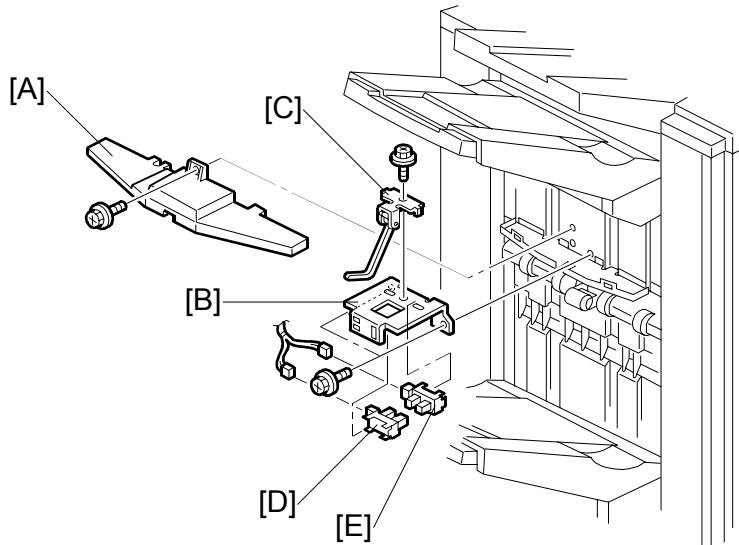
[B]: Spring

[C]: Brush roller assy (\odot x 1, bushing x 3)

- Remove the e-ring and bushing at [C] before removing the bushings on the back end of the shaft.

LOWER TRAY PAPER HEIGHT SENSORS 1, 2

1.5 LOWER TRAY PAPER HEIGHT SENSORS 1, 2



[A]: Paper height sensor cover (☞ x 1)

- Lift the back edge of the cover up. Then pull it toward you slowly to disengage the tabs under the front edge of the cover and remove it.

[B]: Paper height sensor bracket (☞ x 2, ☜ x 2)

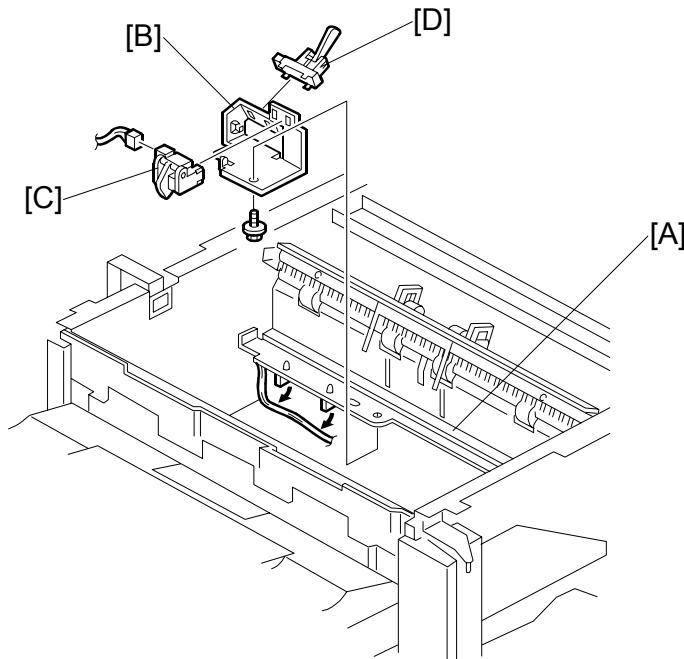
- Mark the one socket and its connector with a felt pen to ensure that you do not reverse the connectors at re-connection.

[C]: Paper height sensor feeler (☞ x 1)

[D]: Paper height sensor 1

[E]: Paper height sensor 2

1.6 PROOF TRAY EXIT AND FULL SENSORS



3000-Sheet
Finisher
B468/B469/
B674

Open the front door.

Top cover (☞ 1.1)

[A]: Guide plate (☞ x 4)

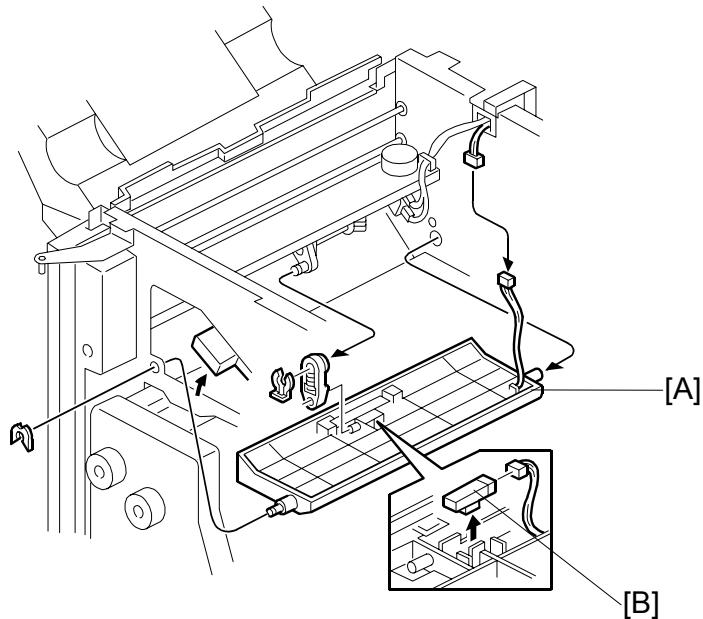
[B]: Sensor bracket (☞ x 1)

[C]: Proof tray full sensor (☞ x 1)

[D]: Proof tray exit sensor (☞ x 1)

EXIT SENSOR

1.7 EXIT SENSOR



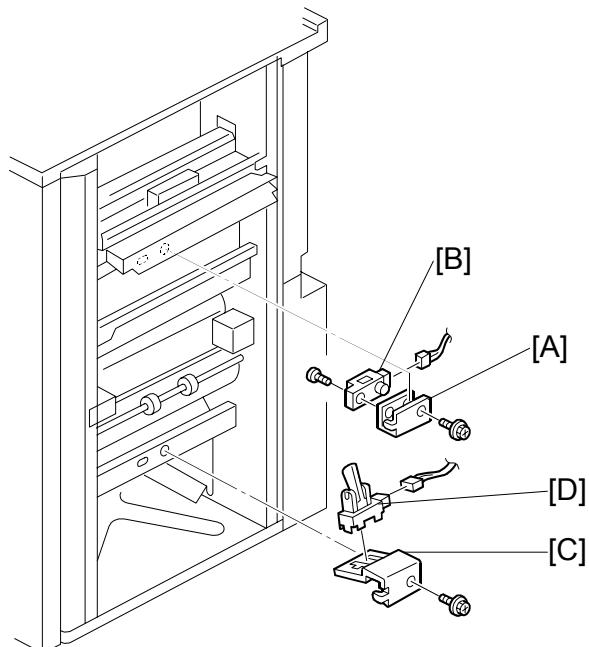
Open the front door.

Top and rear cover (☞ 1.1)

[A]: Guide plate (☞ x 1) (☞ x 2)

[B]: Exit sensor (☞ x 1)

1.8 FINISHER, STAPLER ENTRANCE SENSORS



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Disconnect the finisher from the main unit.

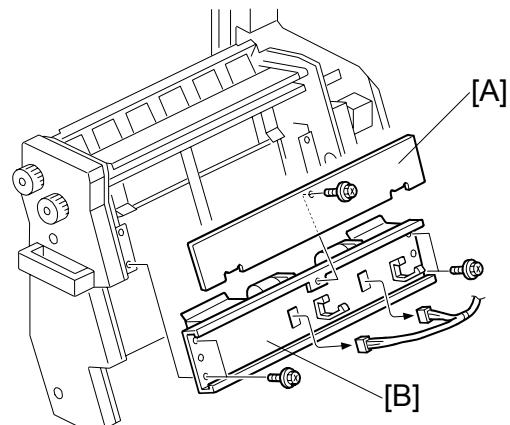
If the Cover Interposer Tray B470 is installed, remove it. Loosen the three shoulder screws, remove one set screw, then lift it off the frame.

- [A]: Finisher entrance sensor bracket (☞ x 1)
- [B]: Finisher entrance sensor (☞ x 1) (☜ x 1)
- [C]: Stapler entrance sensor bracket (☞ x 1)
- [D]: Stapler entrance sensor and feeler (☜ x 1)

SADDLE-STITCH STAPLER REPLACEMENT

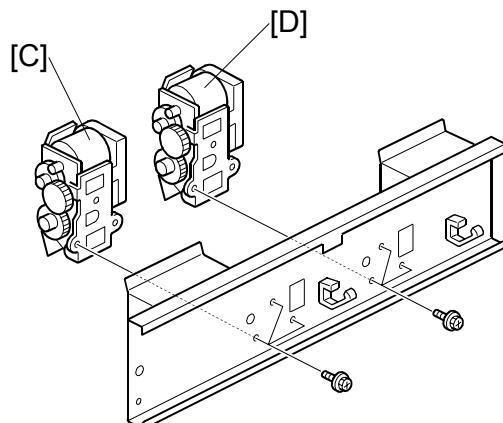
1.9 SADDLE-STITCH STAPLER REPLACEMENT

1. Remove the cover [A] (x 1).
2. Remove the staple unit motor mount [B] (x 4, x 2).

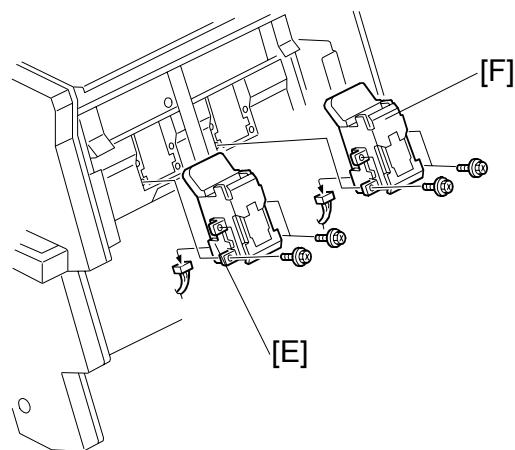


3. Remove the old booklet stapler motors (x 3 each x 1 each).
4. Attach the left booklet stapler motor [C] and right stapler motor [D] (x 3 each).

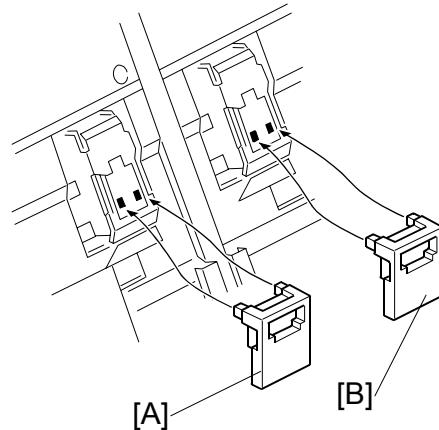
NOTE: Do not tighten the screws.



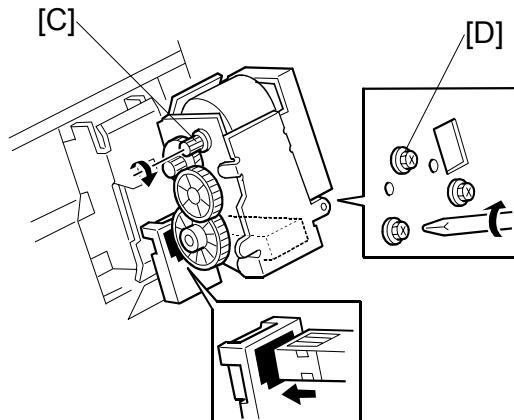
5. Remove the old booklet staplers (x 4 each, x 1 each).
6. Attach the booklet stapler [E] and the stapler [F] (x 4 each, x 1 each) and tighten the screws.



7. Attach the Teflon jigs [A] and [B].
8. Attach the new booklet stapler motor mount to the frame ($\text{Screw } \times 4$).



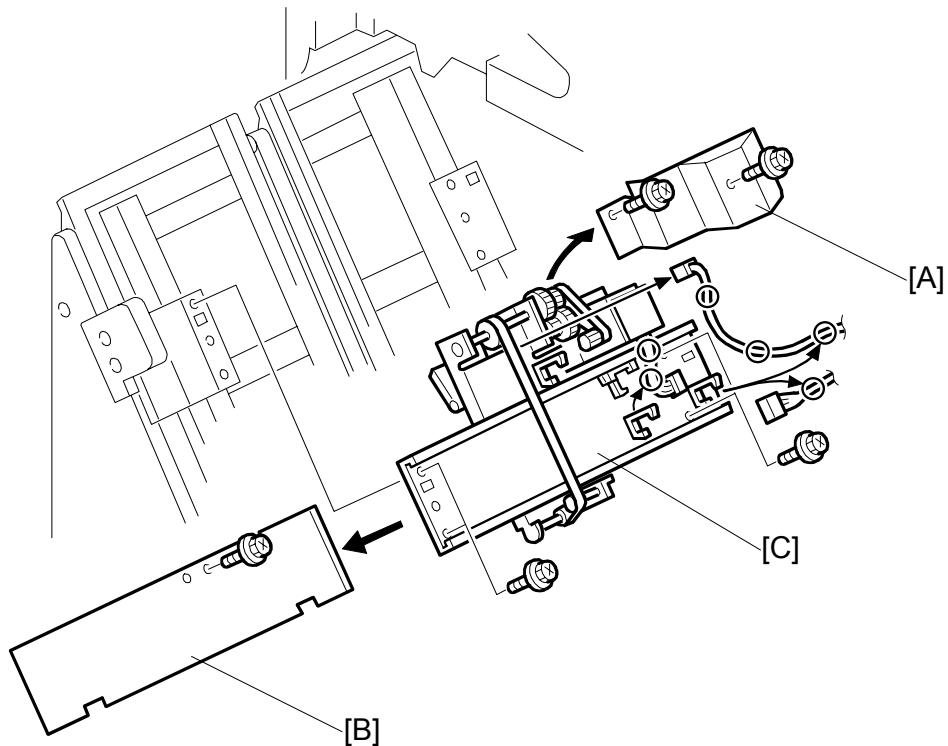
9. On each motor, with your finger turn the brass gear [C] toward you until it stops then tighten the motor screws [D] .($\text{Screw } \times 3$)
10. Remove the motor mount board ($\text{Board } \times 4$) and remove the jigs.
11. Fasten the new motor mount to the frame ($\text{Screw } \times 4$, $\text{Board } \times 2$).



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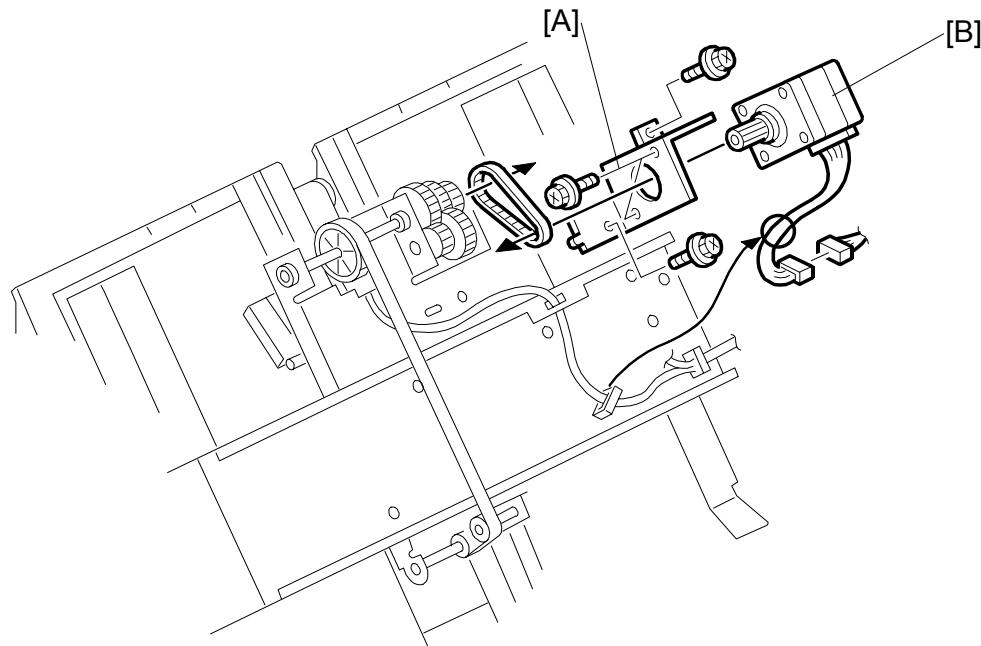
Z-FOLD JOGGER UNIT (B674 ONLY)

1.10 Z-FOLD JOGGER UNIT (B674 ONLY)



1. Open the front door and pull out the stapler tray unit.
2. Remove the Z-fold jogger unit cover [A]. (\wedge x 2)
3. Remove the Z-fold jogger unit cover [B]. (\wedge x 1)
4. Remove the Z-fold jogger unit [C] (\wedge x 4, \square x 4, \square x 2)

1.11 JOGGER TOP FENCE MOTOR (B674 ONLY)

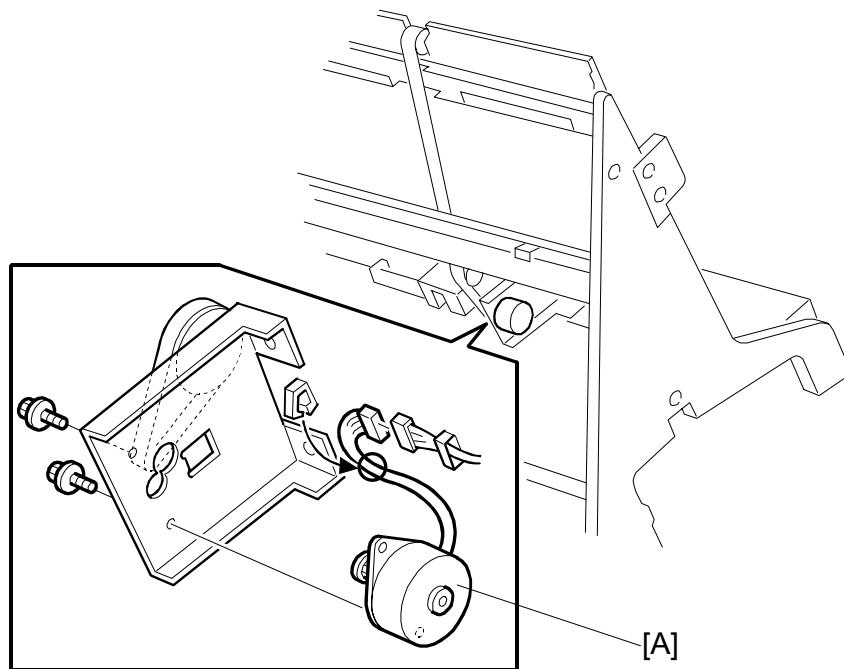


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1. Open the front door and pull out the stapler tray unit.
2. Remove the Z-fold jogger unit cover (x 2)
3. Remove the motor bracket [A] (x 2, timing belt x 1)
4. Remove the jogger top fence motor [B] (x 2, x 1, x 1)

JOGGER BOTTOM FENCE MOTOR(B674 ONLY)

1.12 JOGGER BOTTOM FENCE MOTOR(B674 ONLY)

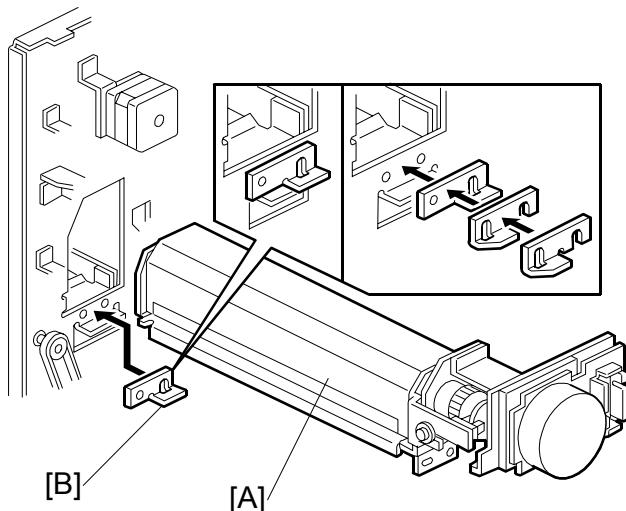


1. Open the front door and pull out the stapler tray unit.
2. Remove the jogger bottom fence motor [A] (x 2, timing belt x 1, x 1, x 1).

1.13 PUNCH POSITION ADJUSTMENT

The positions of punch holes can be adjusted in two directions:

- **Vertical position.** To adjust the vertical positions of the punch holes, execute SP6113 002 (Punch Hole Adjustment – 2 Holes) or 003 (3 Holes) to adjust the timing of the punch motor.



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- **Horizontal position.** To adjust the horizontal positions of the punch holes, install or remove the metal spacers. Three spacers are used:
 - 1 spacer, 2 mm thick
 - 2 spacers, each 1 mm thick.

Rear cover (► 1.1)

[A]: Punch unit (☞ x 2)

[B]: Spacer

- Attach or remove the required number of spacers.
- The 2 mm spacer should be installed to set the default punch hole positions. Use the 1 mm spacers to adjust.

1.14 JAM DETECTION

Mode	Jam	Cause
Proof/Shift/Staple	Finisher entrance sensor check in failure	Remains off even after the main machine exit sensor goes OFF and the paper feeds 270 mm.
	Finisher entrance sensor check out failure	Remains on even after enough time has elapsed for twice the length of the paper to feed.
Proof	Proof tray exit sensor check in failure	Remains OFF even after the entrance sensor goes ON and the paper has fed 380 mm.
	Proof tray exit sensor check out failure	Remains OFF even after enough time has elapsed for twice the length of the paper to feed.
Shift	Exit sensor check in failure	Remains OFF after the entrance sensor goes ON and the paper has fed 570 mm.
	Exit sensor check out failure	Remains ON after enough time has elapsed for twice the length of the paper to feed.
Staple	Booklet exit sensor check in failure	Remains OFF after the entrance sensor goes ON and the paper has 760 mm.
	Booklet exit sensor check out failure	Remains ON after the stapler tray entrance sensor goes ON, and enough time has elapsed for twice the length of the paper to feed.
	Stapler tray paper sensor check out failure	Remains ON after the feed out belt motor switches ON and pulse count exceeded 466.
	Exit sensor check in failure	Remains OFF after the feed out belt motor switches ON for 1260 ms.

1.15 DIP SW 100 (MAIN BOARD)

The settings of DIP SW 100 on the main finisher board should remain set to OFF (zero in the table below). These settings should not be changed by the customer or the customer engineer during normal operation or testing. These settings are provided for reference only.

DIP SW 101				Mode	Content
1	2	3	4		
0	0	0	0	Default	
1	0	0	0	Not Used	
0	1	0	0	Cover Feeder Test	Operation Check
1	1	0	0	Cover Feeder Test	Operation Check
0	0	1	0	Move to Shipping Position ^{*1}	See note below.
1	0	1	0	Cover Feeder Check	Operation Check
1	1	1	0	Cover Feed Test	Operation Check

^{*1}: The following procedure repositions the trays to the shipping position.

- 1) Make sure that the main switch is turned off.
- 2) Turn on DIP SW101-3.
- 3) Turn on the main switch. The finisher automatically repositions the trays to the shipping position.
- 4) After the finisher completes moving the trays, turn off DIP SW101-3.

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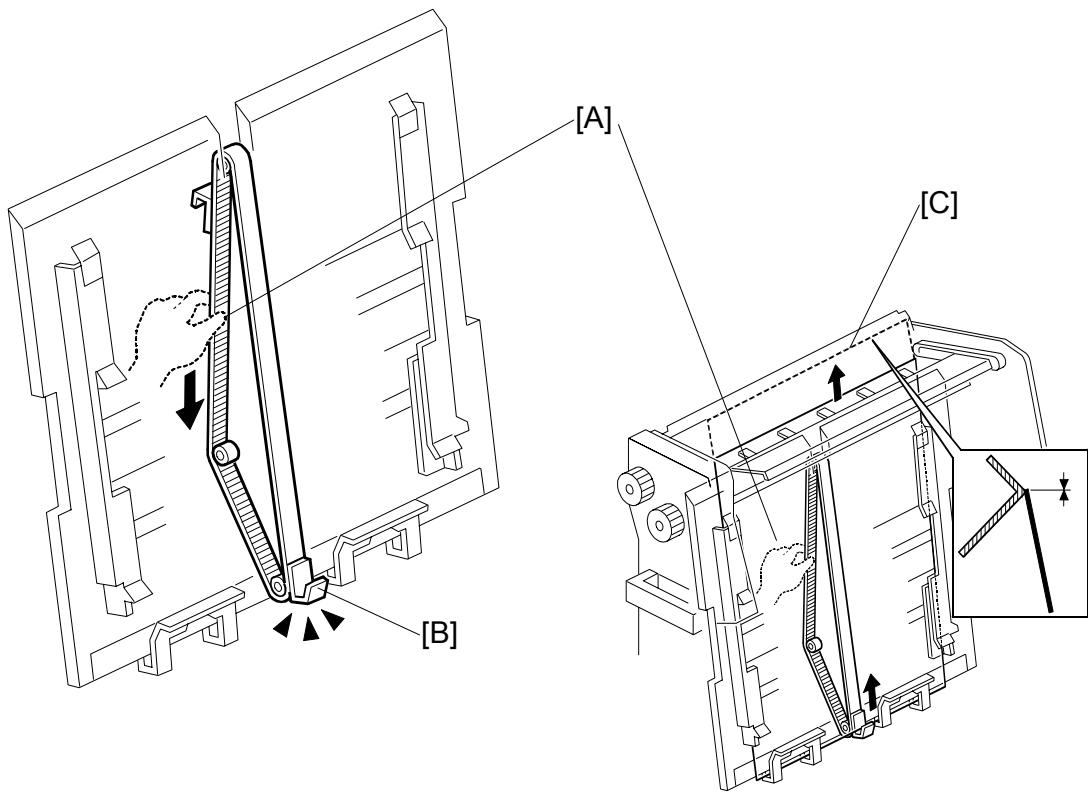
1.16 JOGGER FENCE ADJUSTMENT

This adjustment corrects booklet skew to ensure that horizontal and vertical skewing occurs only within the specific tolerance of 2 mm or less. The tolerance (2 mm or less) refers to the amount of skew between the edges of the innermost sheet of a folded booklet (or a single sheet).

What You Need

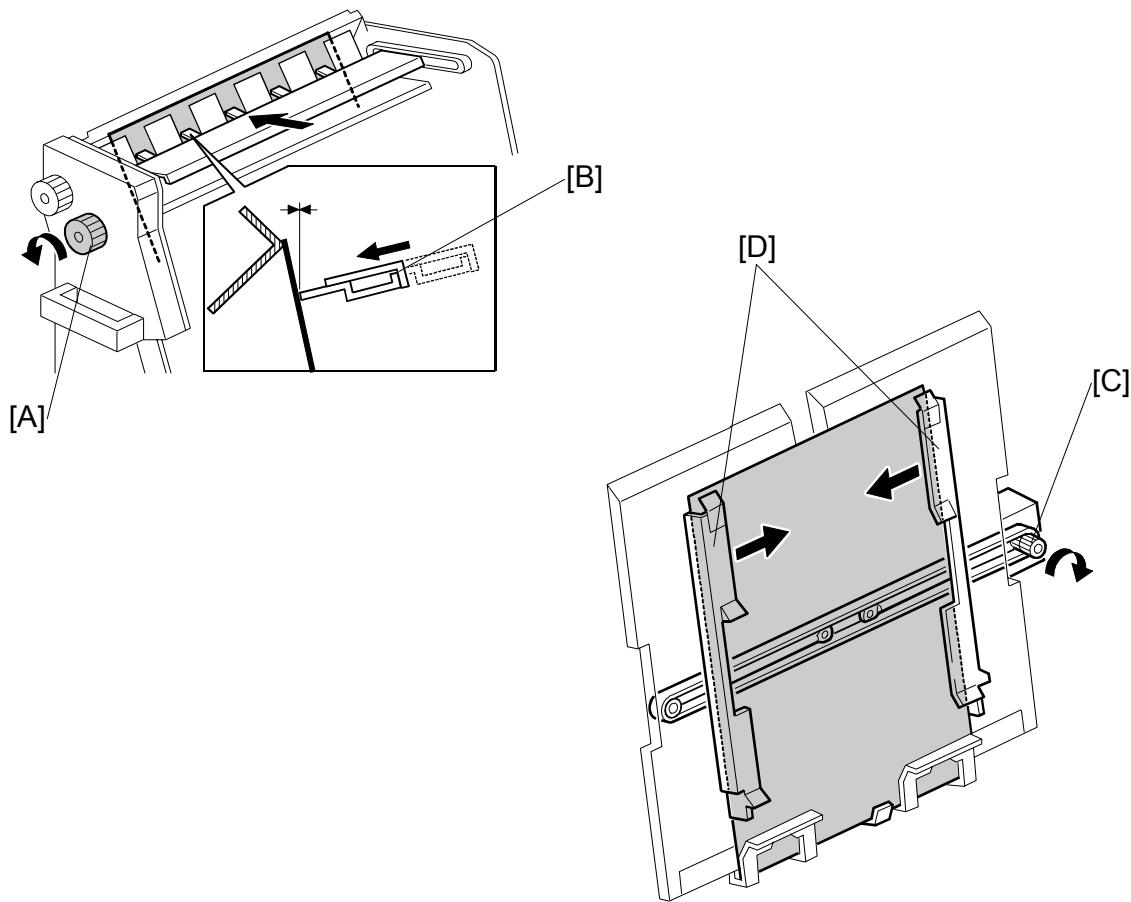
Adjustment board B4689003. A stiff board inserted between the jogger fences during adjustment to ensure more accurate alignment. (A sheet of paper bends and does not allow accurate adjustment.)

JOGGER FENCE ADJUSTMENT



1. On the back of the unit, pull the belt [A] (not the hook) down until the hook is at [B].
2. Insert the adjustment board (B4689003) between the jogger fences.
3. Pull the belt [A] down slightly to raise the adjustment board until its top edge is even with the upper stay [C].

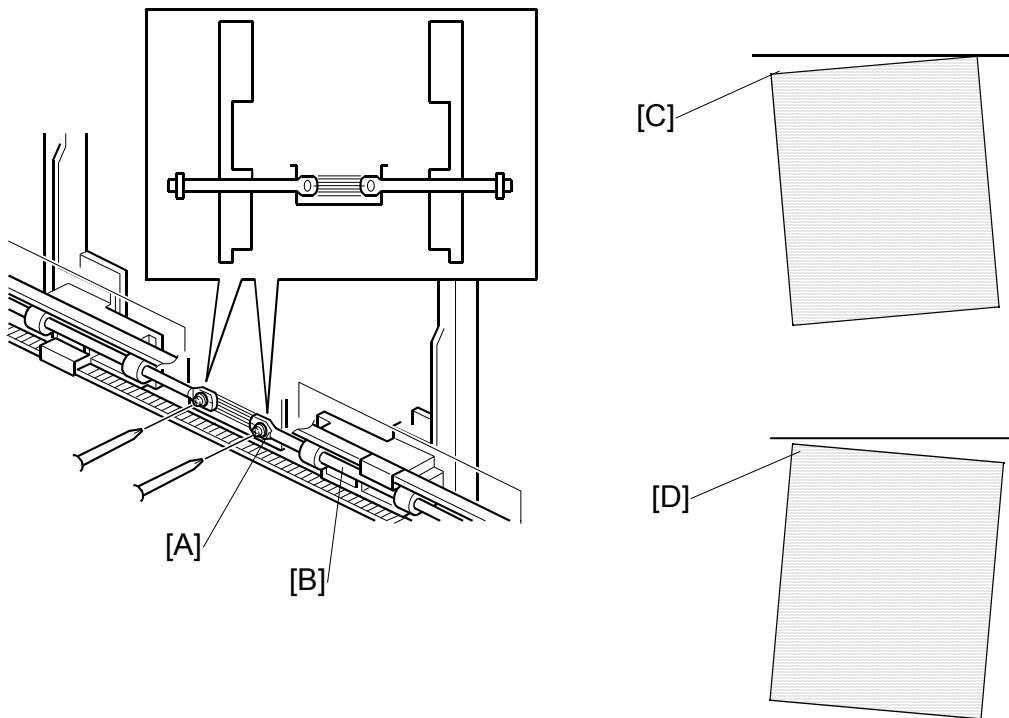
JOGGER FENCE ADJUSTMENT



4. Rotate Knob R7 [A] until the folder plate [B] touches the adjustment board.
5. Turn knob [C] to bring both jogger fences[D] parallel to sides of the adjustment board.

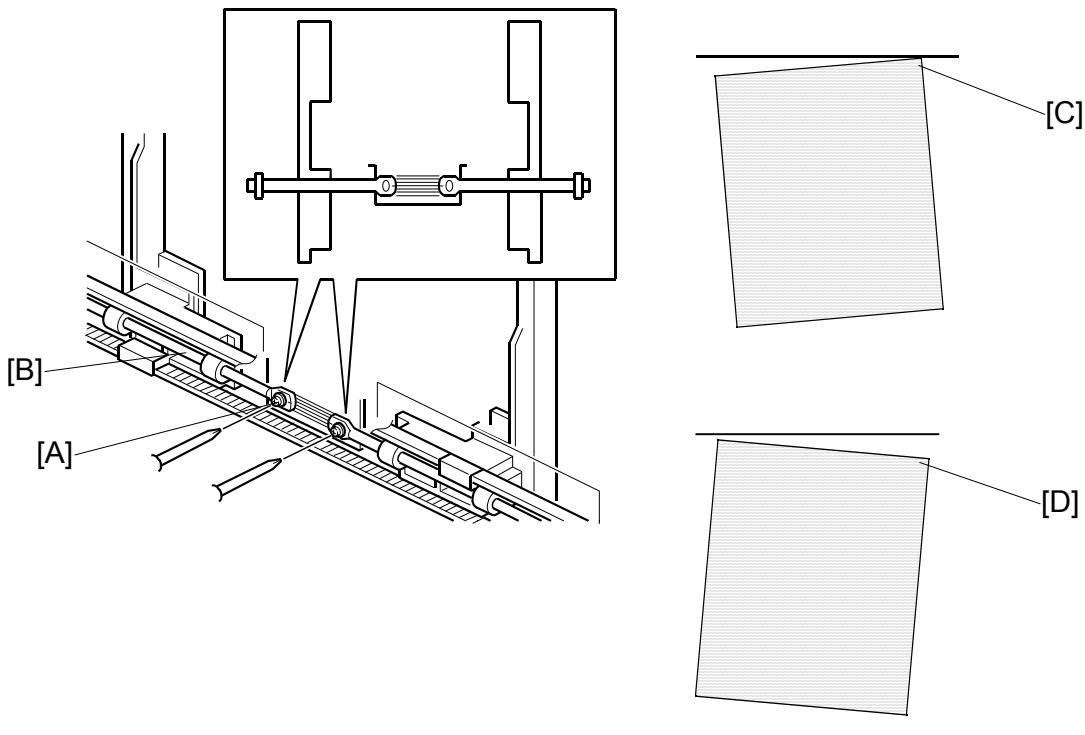
NOTE: Make sure that the adjustment board is flat. There should be a very small gap between the jogger fences and the sides of the adjustment board.

JOGGER FENCE ADJUSTMENT



6. Push the left edge of the adjustment board against the front fence.
7. At the back of the unit, loosen screw [A] to release jogger shaft [B].
8. At the front, check the position of the upper left corner. The leading edge should be parallel to the stay.
 - If the left corner of the board is low [C], lower the jogger shaft [B] until the leading edge of the board is parallel to the stay then tighten screw [A].
 - If the left corner of the board is high [D], raise the jogger shaft [B] until the edge is parallel then tighten the screw [A].

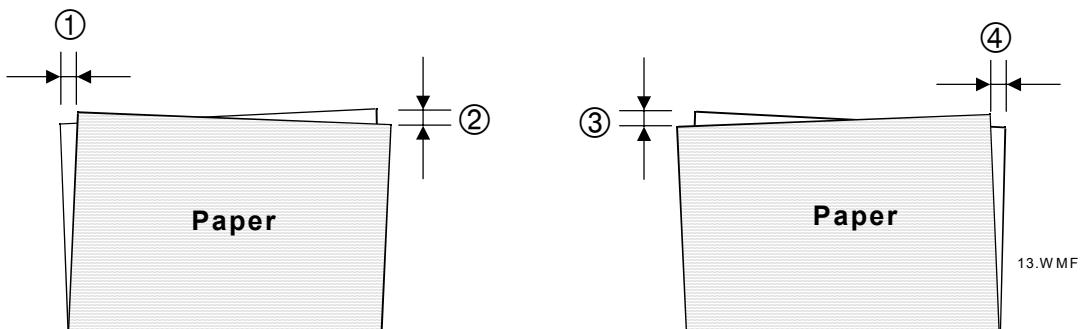
JOGGER FENCE ADJUSTMENT



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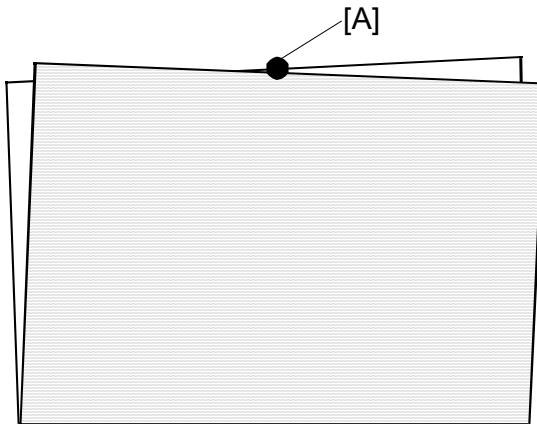
9. Push the right edge of the adjustment board against the back fence.
10. At the back of the unit, loosen screw [A] to release jogger shaft [B].
11. At the front, check the position of the upper right corner. The leading edge should be parallel to the stay.
 - If the right corner of the board is high [C], raise the jogger shaft [B] until the leading edge of the board is parallel to the stay then tighten screw [A].
 - If the right corner of the board is low [D], lower the jogger shaft [B] until the edge is parallel then tighten the screw [A].
12. Reassemble the finisher.
13. Print three booklet sets of 2 or 3 sheets each.

JOGGER FENCE ADJUSTMENT



14. To check for skew, measure from the edges of the innermost sheet and make sure that the amount of skew is less than 2 mm for ①, ②, ③, ④.
If ①, ②, ③, or ④ is more than 2 mm, do the following procedure.
 - (1) Insert a screwdriver into the door switch then push in the stapler unit.
 - (2) Scan and print 3 booklet sheets in book mode from the platen (do not scan the originals with the ADF).
 - (3) Once the paper is fed into the stapler unit and the machine stops, pull the stapler unit out.
 - (4) Press the $\#$ key on the operation panel, then remove the screwdriver from the door switch as soon as the jogger fences come close to the paper edges (about 10 mm wider than the paper width).
 - (5) Measure the gaps between the edges and fences on both sides.
Paper/Fence gap (top + bottom) = 0 to 0.5 mm
 - (6) If the gaps are too wide or too narrow, do SP6120 (Staple Jogger Adjustment) to adjust the gap for the paper size.
15. Repeat Step 14. If ①, ②, ③, or ④ is still more than 2 mm, go to Step 16.

JOGGER FENCE ADJUSTMENT



16. Use SP6902 (Fold Position Adjustment) until the two edges intersect in the middle at [A]. This minimizes vertical fold skewing by bringing the leading and trailing edges of the sheets closer together.

NOTE: B140 copiers: First adjust SP 6902. Then if the same problem occurs when single sheets are folded, adjust SP 6903. See the SP tables in the B140 service manual for how to use SP 6903.

17. Repeat Step 15. If ①, ②, ③, or ④ is still more than 2 mm, go to Step 18.

NOTE: Although the fences may be parallel and within range of the distance from the paper edges (0 to 0.5 mm), they may not be perpendicular to the folding mechanism. Step 14 corrects this.

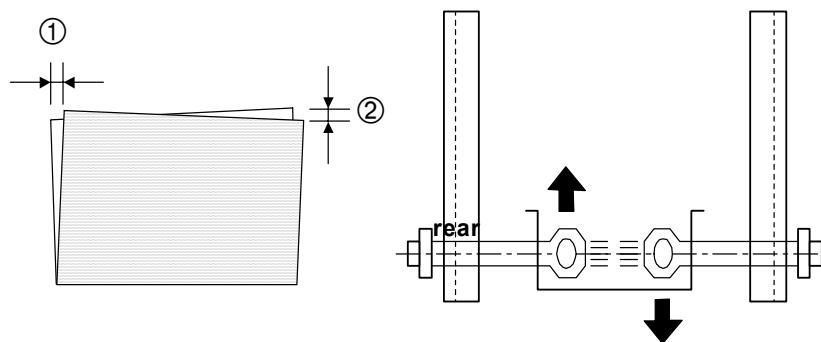
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JOGGER FENCE ADJUSTMENT

18. Do the following procedures.

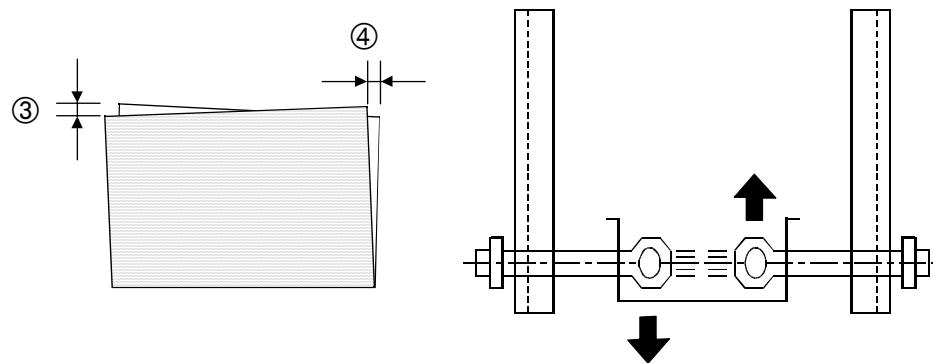
① or ② Over 2 mm

- (1) Loosen the rear jogger fence shaft screw, raise the rear jogger fence shaft then tighten the screw.
- (2) Loosen the screw of the front jogger fence shaft, lower the shaft to bring the front jogger fence flush against the paper, then tighten the screw.



③ or ④ Over 2 mm

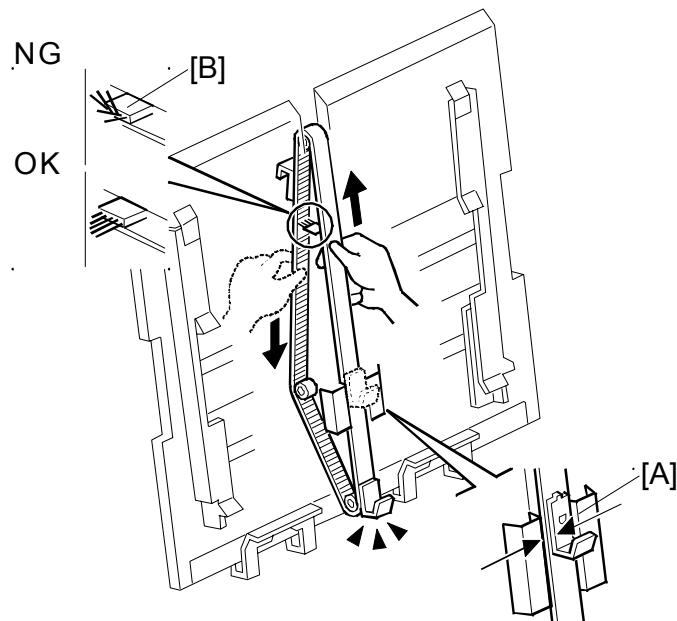
- (1) Loosen the rear jogger fence screw, lower the rear jogger fence shaft, then tighten the screw.
- (2) Loosen the screw of the front jogger fence shaft, raise the shaft to bring the front jogger fence flush against the paper, then tighten the screw.



NOTE: Be sure to raise or lower both shafts by the same number of marked increments.

19. Repeat Step 18 until the gaps are all less than 2 mm.

JOGGER FENCE ADJUSTMENT

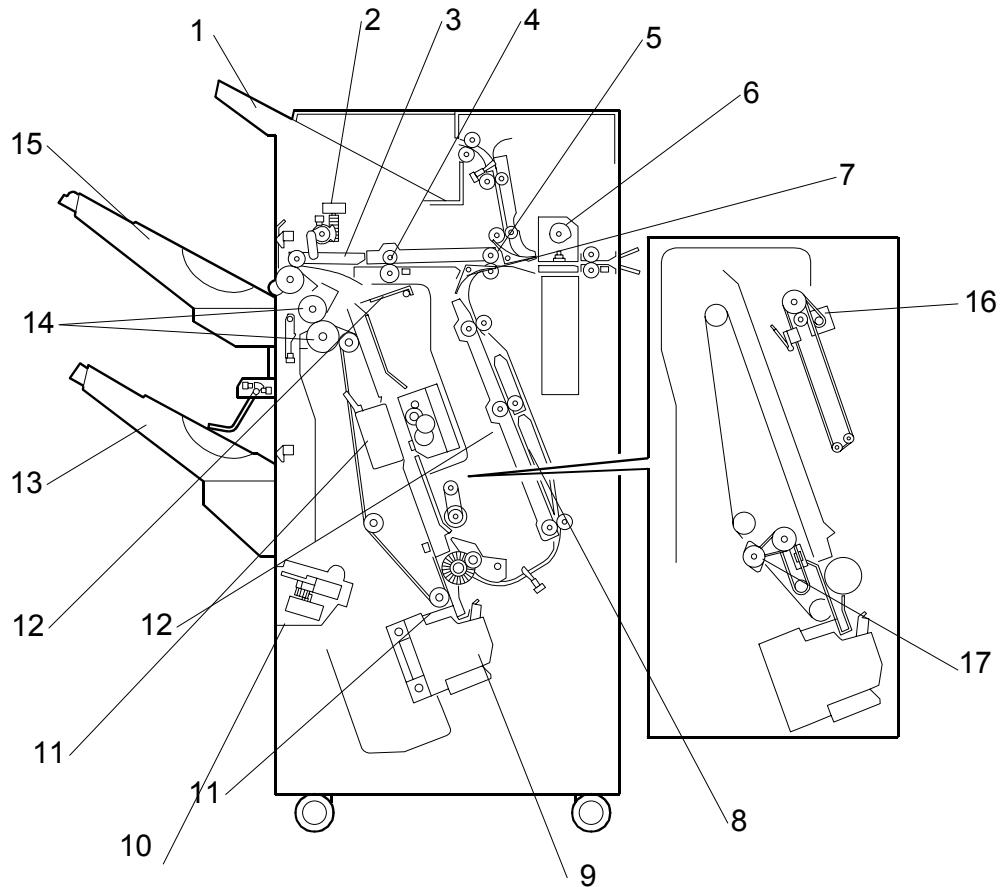


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20. Position the belt hook [A] as shown.
21. If the charge removal brush [B] is turned up, push down the fibers so that are perpendicular to the belt.

2. DETAILS

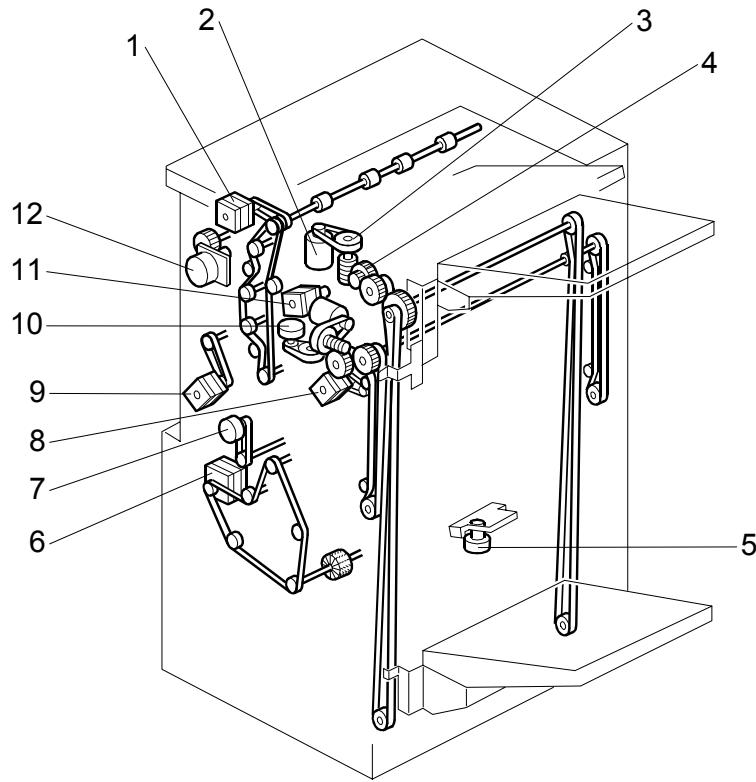
2.1 OVERVIEW



- | | |
|--------------------------|---------------------------------|
| 1. Proof Tray | 9. Stapler Unit |
| 2. Guide Plate Motor | 10. Pressure Plate Unit* |
| 3. Guide Plate | 11. Saddle Stitch Stapler* |
| 4. Shift Roller | 12. Folder Plate* |
| 5. Tray Junction Gate | 13. Lower Tray* |
| 6. Punch Unit | 14. Folder Rollers* |
| 7. Stapler Junction Gate | 15. Upper Tray |
| 8. Pre-Stack Tray | 16. Jogger Top Fence Motor** |
| | 17. Jogger Bottom Fence Motor** |

* B468/B674 Only ** B674 Only

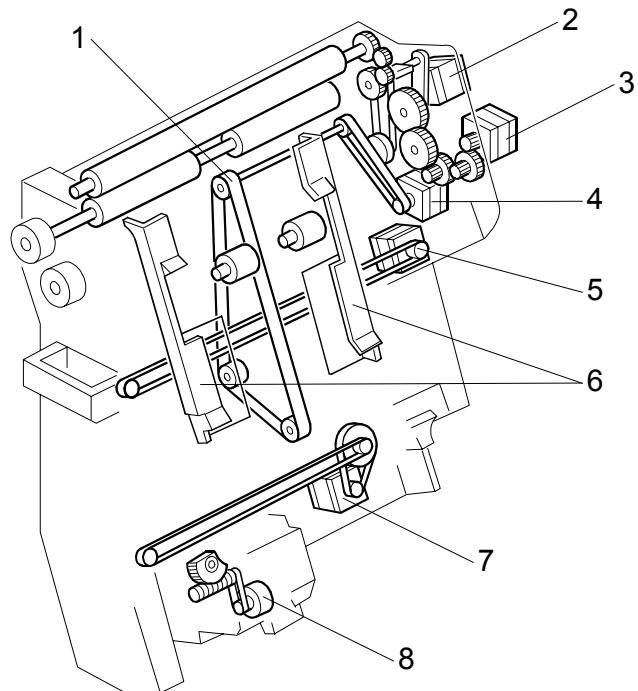
2.2 DRIVE LAYOUT



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- | | |
|----------------------------|------------------------|
| 1. Proof Tray Motor | 7. Pre-Stack Motor |
| 2. Lower Tray Lift Motor | 8. Exit Motor |
| 3. Lower Tray Encoder Disk | 9. Entrance Motor |
| 4. Upper Tray Lift Motor | 10. Shift Roller Motor |
| 5. Pressure Plate Motor | 11. Shift Drive Motor |
| 6. Stapler Transport Motor | 12. Punch Motor |

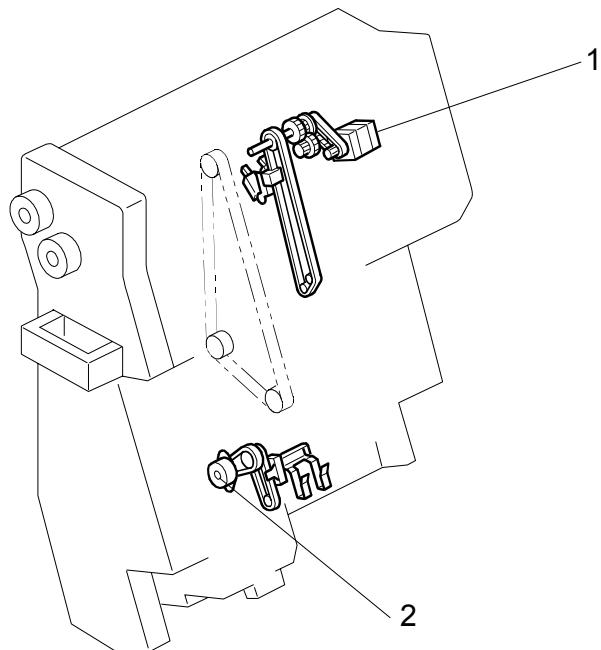
DRIVE LAYOUT



- | | |
|------------------------|---------------------------|
| 1. Stack Feed Out Belt | 5. Jogger Fence Motor |
| 2. Folder Roller Motor | 6. Jogger Fences |
| 3. Folder Plate Motor* | 7. Stapler Movement Motor |
| 4. Feed Out Belt Motor | 8. Stapler Rotation Motor |

* B468/B674 Only

DRIVE LAYOUT

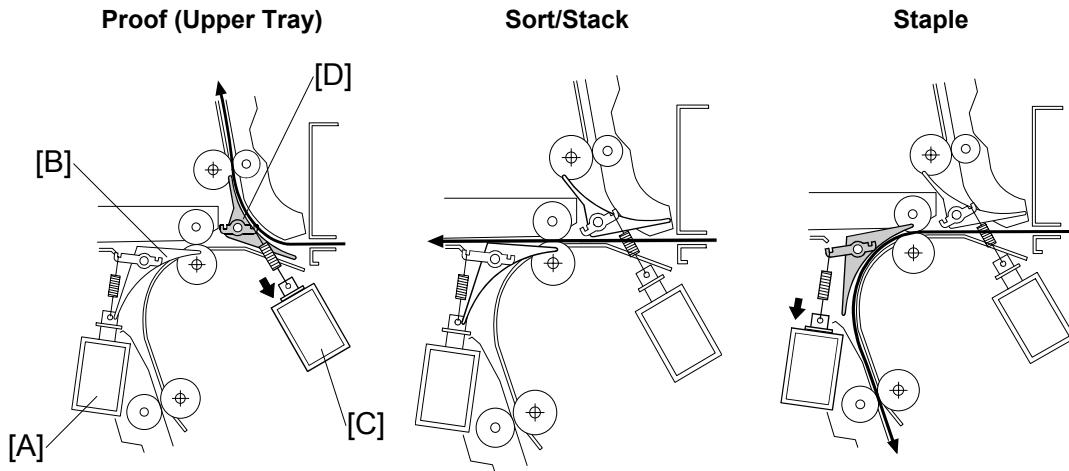


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1. Jogger Top Fence Motor**
2. Jogger Bottom Fence Motor**

**** B674 Only**

2.3 TRAY/StAPLER JUNCTION GATES

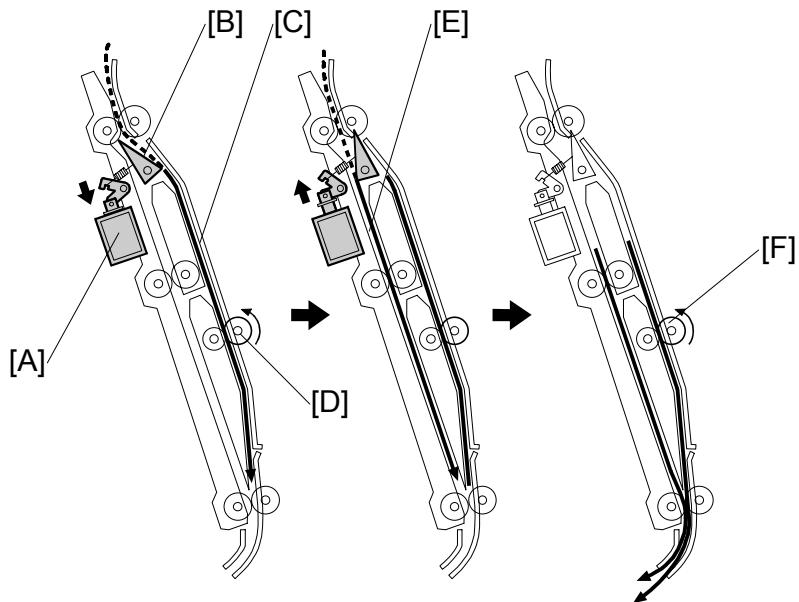


The finishing mode selected for the job determines the direction of the paper in the finisher.

- **Proof Tray (Top of the unit).** Paper is sent to the top tray.
- **Shift.** Paper is sent straight to the upper or lower tray.
- **Staple.** Paper is sent down to the stapler unit

Solenoid/Gate	Selected Operation Mode			
	Proof	Sort/Stack	Staple	
[A]	Stapler junction gate solenoid	OFF	OFF	ON
[B]	Stapler junction gate	Closed	Closed	Open
[C]	Proof tray junction gate solenoid	ON	OFF	OFF
[D]	Proof tray junction gate	Open	Closed	Closed

2.4 PRE-STACKING



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During a multiple copy job selected for stapling, the pre-stacking mechanism delays the first two sheets of every set (after the first set) to allow enough time to staple the preceding stack on the stapler tray. Pre-stacking is performed with the first and second sheets for the second and all subsequent sets.

Shortly after the first sheet of the set enters the finisher, the pre-stack junction gate solenoid [A] switches on, opens the pre-stack junction gate [B] and shunts the first sheet to the paper pre-stack tray [C]. When the first sheet passes the pre-stack roller [D], the pre-stack motor switches off and the sheet stops.

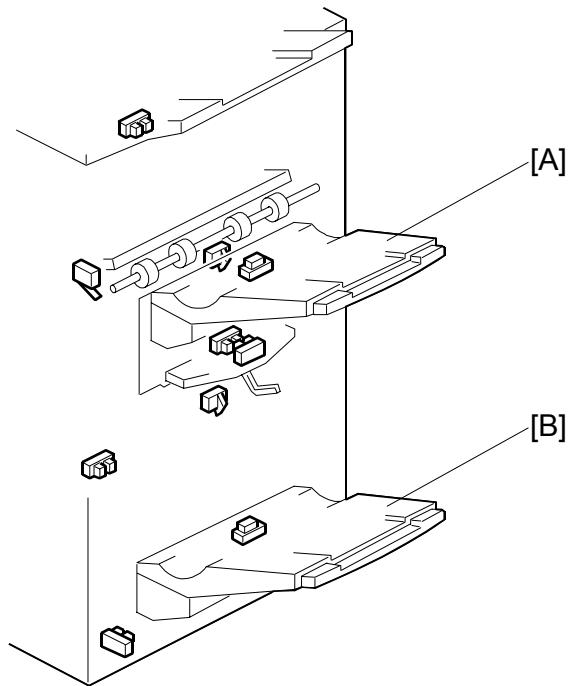
Shortly after the trailing edge of the first sheet enters the finisher, the solenoid switches off, and the junction gate closes. This allows the second sheet of the set to pass the closed junction gate and enter the main paper path [E].

At the prescribed time, the pre-stack motor switches on, and the pre-stack transport roller [F] rotates and sends the first sheet to the stapler tray at the same time as the second sheet arrives there.

All subsequent sheets of the same set are sent through the main paper path to the stapler tray for stapling.

2.5 VERTICAL LIFT MECHANISM

2.5.1 OVERVIEW

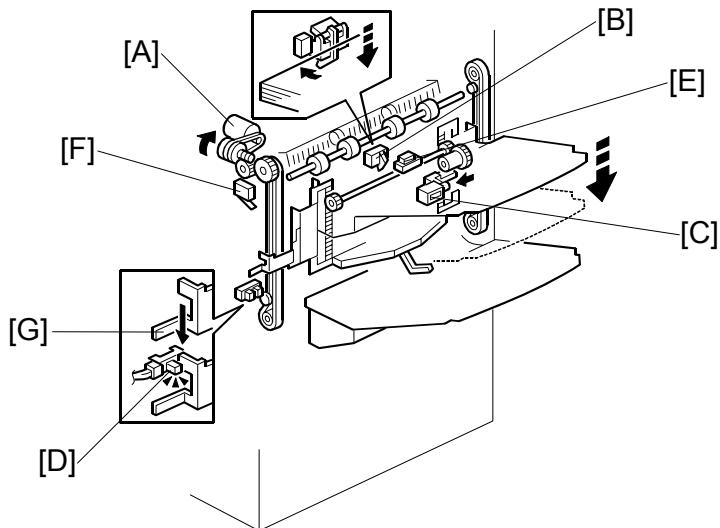


At power on, both trays lower slightly, then the upper tray stops at the feed-out position. The machine is ready for feed out to the upper tray [A]

During printing, the upper [A] or lower tray [B] (whichever is selected) is repeatedly lowered until the stack reaches a certain height and then the job halts. The upper tray holds 500 sheets (A4 LEF), and the lower tray holds 2500 sheets.

Both trays can be used for the normal, shift, and staple modes. However, only the lower tray can be used for the booklet binding (saddle-stitch mode).

2.5.2 UPPER TRAY



- [A]: Upper tray lift motor
- [B]: Upper tray paper height sensor
- [C]: Upper tray lift solenoid
- [D]: Upper tray full sensor
- [E]: Upper tray paper sensor
- [F]: Upper limit switch (upper tray)

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Just After the Power is Switched on

At power on, the motor [A] moves the upper tray to the start position just under the feed-out slot. The motor stops when the paper height sensor [B] detects the tray.

Height Adjustment During Feed-Out

The upper tray moves up and down on a rack and pinion on a movable side fence that remains locked in place during copying.

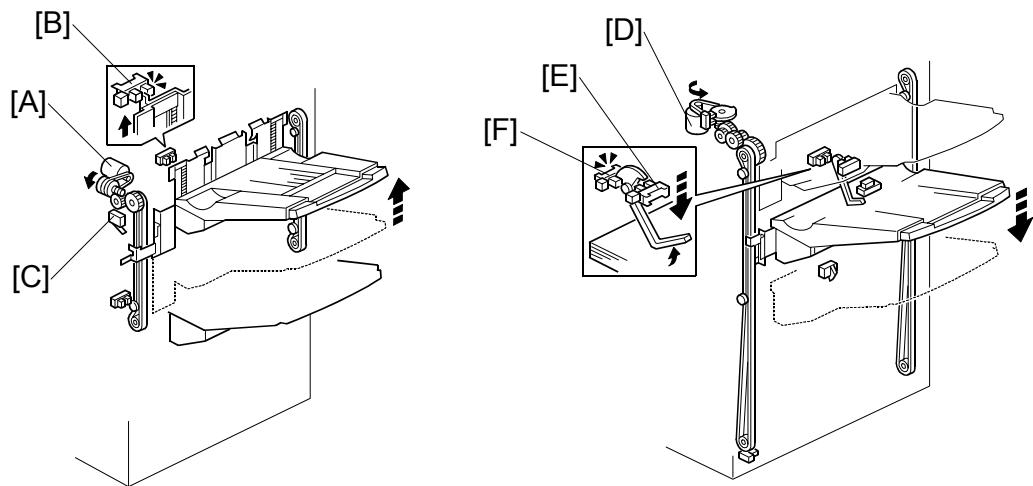
When the top of the stack actuates the sensor [B], a solenoid [C] inside the upper tray releases a locked one-way clutch long enough to lower the upper tray a short distance on its track to allow more pages to feed out. This process repeats until the tray is full.

Upper Tray Full

When the tray is full, a metal actuator [G] on the side of the upper tray frame actuates the upper tray full sensor [D] and the job stops.

The paper sensor [E] inside the upper tray detects when the stack is removed from the tray, and the tray returns to the initial position at the feed-out slot. The upper limit switch [F] (a micro-switch) is a backup if sensor [B] fails to stop the tray.

2.5.3 LOWER TRAY



- [A]: Upper tray lift motor
- [B]: Upper tray upper limit sensor
- [C]: Upper limit switch (upper tray)
- [D]: Lower tray lift motor
- [E]: Lower tray paper height sensor 1
- [F]: Lower tray paper height sensor 2

Just After the Power is Switched on

At power on, the upper tray moves to the start position under the feed-out slot, as described previously.

Positioning the Lower Tray for Feed-out

If the lower tray is selected for a job, the upper tray is moved away from the feed-out slot at the start of the job. The motor [A] lifts the side fence and upper tray to upper limit sensor [B], which stops the motor. The upper tray remains locked in position on the side fence (by the upper tray lift solenoid) while the lower tray is in use.

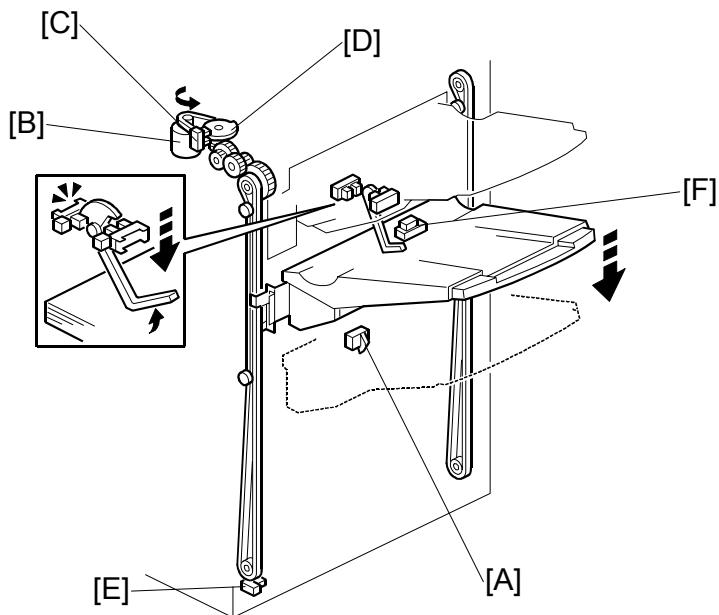
If sensor [B] fails, switch [C] stops the tray.

While the upper tray is being raised, motor [D] lifts the lower tray to the feed-out slot. The motor stops when the upper tray paper height sensor detects the tray.

Lower Tray Height Adjustment During Feed-out

Two sensors and a long feeler that contacts the top of the stack control the lower tray height during feed-out.

When the top of the stack is low, the feeler drops and the actuator swings up and actuates height sensor 1 [E]. As the stack grows higher, the feeler is pushed up until it actuates height sensor 2 [F]. After height sensor 2 remains active for 3 seconds, the lift motor [D] switches on and lowers the tray a short distance. This process repeats until the tray is full.

Lower Tray Full

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- [A]: Lower tray full sensor (sort/shift mode)
- [B]: Lower tray lift motor
- [C]: Lower tray encoder sensor
- [D]: Encoder disk
- [E]: Lower tray full sensor (saddle-stitch mode)
- [F]: Lower tray paper sensor

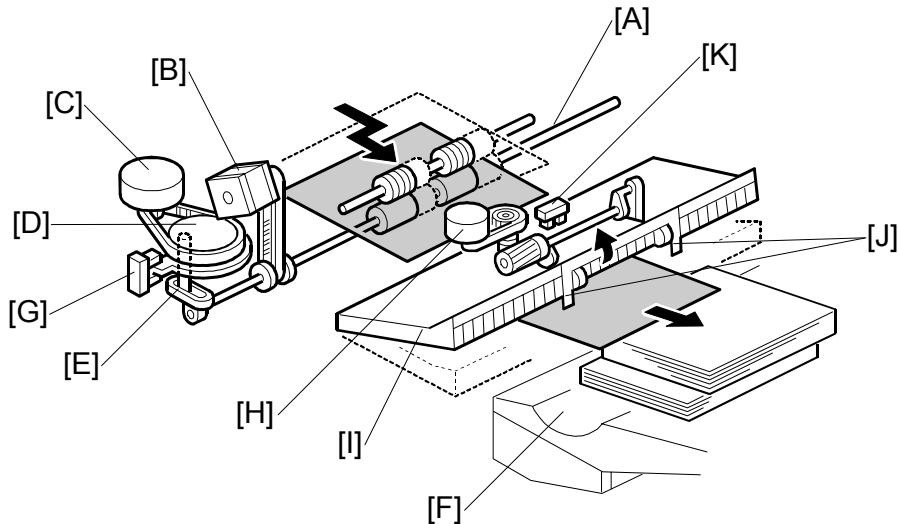
The sensor that is used depends on which mode the user has selected.

Normal sorting/stapling, without saddle stitching: When the bottom of the tray actuates sensor [A], the lift motor [B] continues to rotate for a certain number of rotations. The rotations are detected using sensor [C] and encoder disk [D]. Then printing stops. If sensor [C] fails, the upper limit switch (lower tray) stops the motor. This switch (not shown in the diagram) is next to the plastic foam roller at the feed-out slot.

Saddle-stitch mode: Sensor [A] is not used. The tray is lowered until the actuator on the side of the tray actuates sensor [E]. Then printing stops.

In both modes, when the stack is removed from the tray, sensor [F] de-actuates and returns the lower tray to the initial position at the feed-out slot.

2.6 SHIFT MECHANISM



The same shift mechanism is used for the upper tray and lower tray.

Shift Roller Rotation

The shift roller [A] is turned by the shift roller motor [B].

Shift Roller Horizontal Movement

The shift roller is moved from left to right by the shift motor [C] and shift gear disk [D].

When the trailing edge of the copy passes the upper transport roller, the shift motor switches on, moving the shift roller to the left or right via the shift gear disk [D] and the link [E].

After the paper is delivered to the tray [F], the shift roller moves to the home position, detected by the shift HP sensor [G].

The process is repeated for every page of the same set, when the trailing edge of the page passes the transport roller.

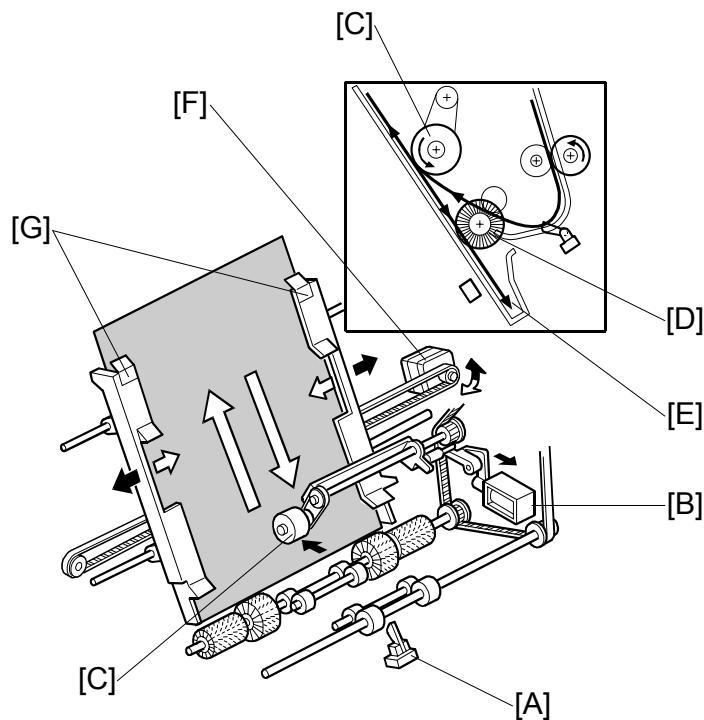
For the next set, the shift motor rotates the gear disk in the opposite direction to shift every page of the next stack to the opposite side.

Exit Guide Plate

The guide plate motor [H] (a stepper motor) controls the opening and closing of the guide plate [I], via a cam and pin mechanism. The guide plate opens for each sheet to allow the shift, then closes to keep the sheet in the correct position for feed out. Two mylars [J] above the feed-out slot keep the copies straight in the feed path.

The guide plate position sensor [K] detects whether the guide plate is open or closed.

2.7 PAPER POSITIONING



3000-Sheet
Finisher
B468/B469/
B674

Vertical Alignment

When the trailing edge of the copy passes the stapler tray entrance sensor [A], the positioning roller solenoid [B] switches on long enough for the selected paper size and pushes the positioning roller [C] onto the paper. The positioning roller and alignment brush roller [D] rotate to push the paper and align the trailing edge of the paper with the stack stopper [E].

The stapler transport motor (not shown in this diagram) drives rollers [C] and [D].

Horizontal alignment

When the Start key is pressed, the jogger motor [F] switches on and opens the jogger fences 10 mm wider than the selected paper size.

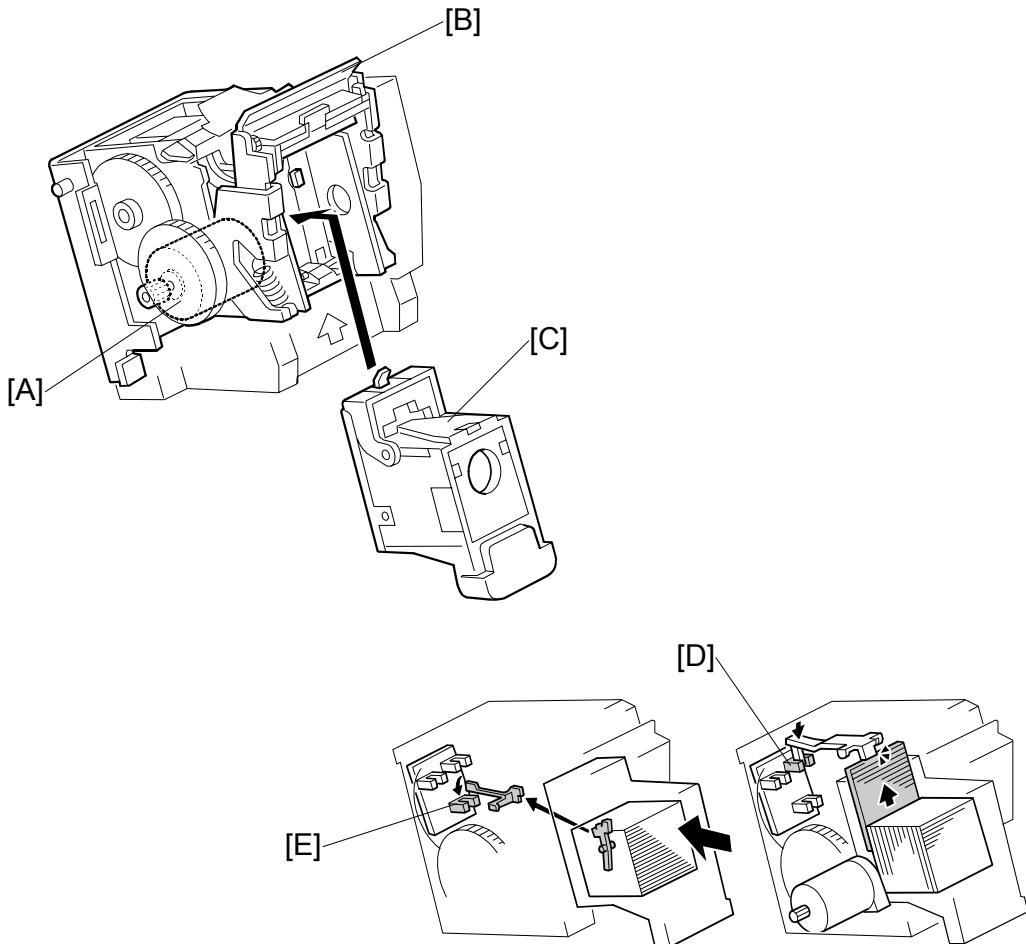
When the leading edge of the sheet passes the staple unit entrance sensor, for the initial alignment, the jogger motor switches on for the prescribed time and closes the jogger fences 4 mm (2 mm closer to either side of the paper)

Next, the jogger motor switches on again for the prescribed time for the horizontal alignment to close the jogger fences 6 mm (3 mm to the sides of the paper) for the final alignment correction. The jogger motor switches on again and the fences return to the wait position 10 mm wider than the selected paper size.

STAPLER

2.8 STAPLER

2.8.1 STAPLING MECHANISM



Staple firing is driven by the stapler motor [A] inside the stapler unit. The stapler hammer [B] fires the stapler [C].

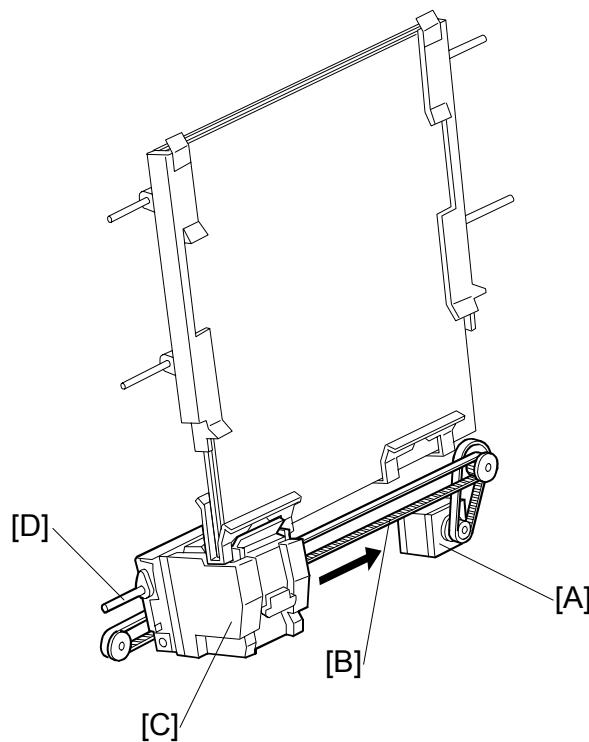
The cartridge set sensor [D] detects the cartridge at the correct position, or logs an SC if the stapler unit is not at the correct position.

The stapler end sensor [E] detects the staple end condition and logs an SC.

2.8.2 STAPLER MOVEMENT

The stapler performs horizontal and rotational movement in each of the four staple modes.

Horizontal Stapler Movement



3000-Sheet
Finisher
B468/B469/
B674

The stapler movement motor [A] drives the timing belt [B] which moves stapler [C] left and right on a support bar [D].

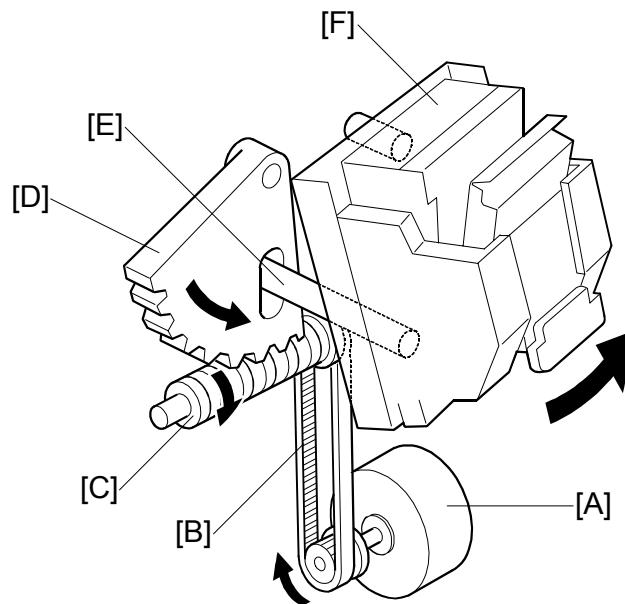
When the Start key is pressed, the jogger fences move to the wait position 10 mm wider than the selected paper size, the stapler motor switches on and moves the stapler to the staple position and then switches off. The motor switches on and off for the time needed to position the stapler for the paper size selected for the job.

If the stack is to be stapled at two locations, the stapler moves to the front position first, staples, moves to the back position, staples, and then returns to the home position.

NOTE: SP6120 001~011 (Staple Jogger Adjustment). Use this SP to fine adjust the staple unit jogger fences for different paper sizes. For details, see section “5. Service Tables”.

STAPLER

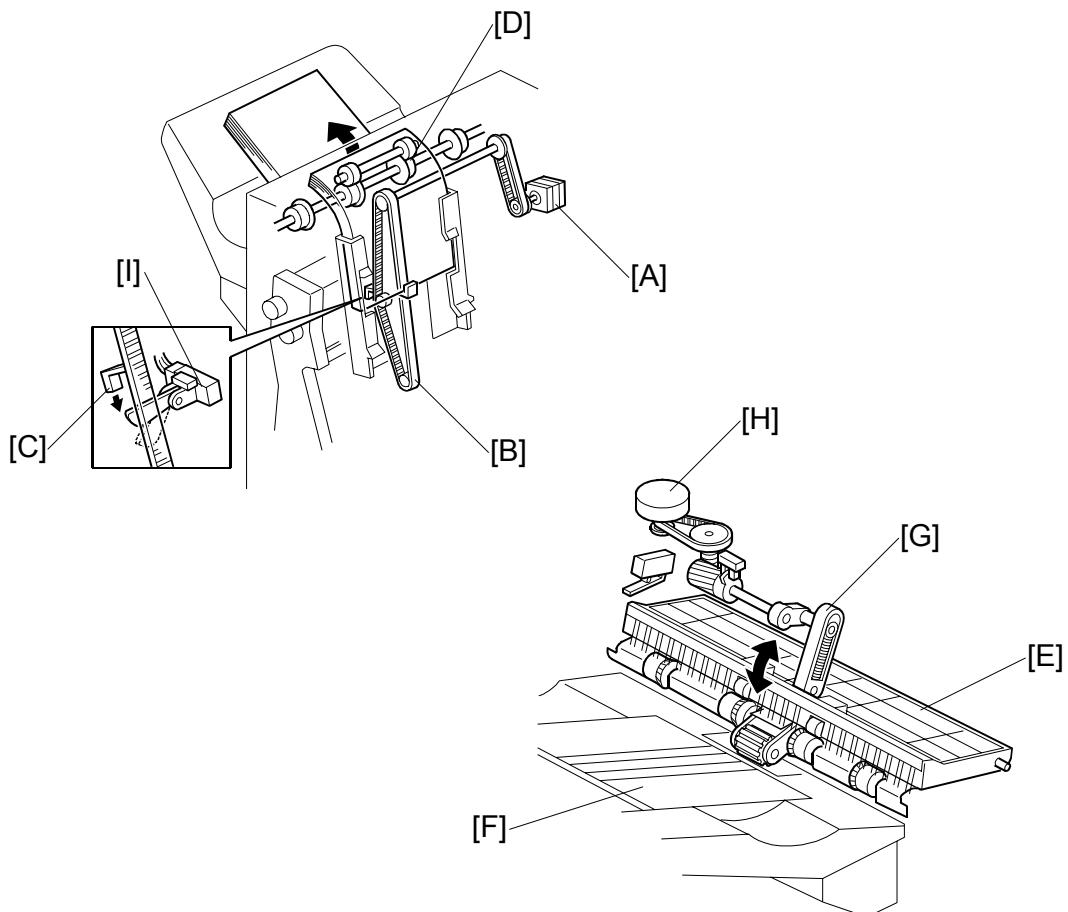
Rotational Stapler Movement



When the user has selected oblique stapling at one position, first the stapler motor switches on and off for the amount of time needed to move the stapler to the stapling position for the selected paper size.

At the correct time, the stapler rotation motor [A] switches on and via the timing belt [B] rotates the worm gear [C]. The worm gear drives the gear [D] and the lift arm [E], which lifts and positions the stapler unit [F] so the stapler can fire the staple at a 45 degree angle.

2.8.3 FEED OUT



3000-Sheet
Finisher
B468/B469/
B674

After a set has been stapled, the stack feed out motor [A] switches on and drives the stack feed out belt [B]. The pawl [C] on the belt lifts the stapled stack and transports it to the exit rollers [D]. There are two pawls on the belt, to increase productivity.

The exit guide plate [E] remains open until the leading edge of the stapled sheets has passed the prescribed distance from the tray exit rollers, then the exit guide plate closes, and the stapled sheets feed out to the tray [F].

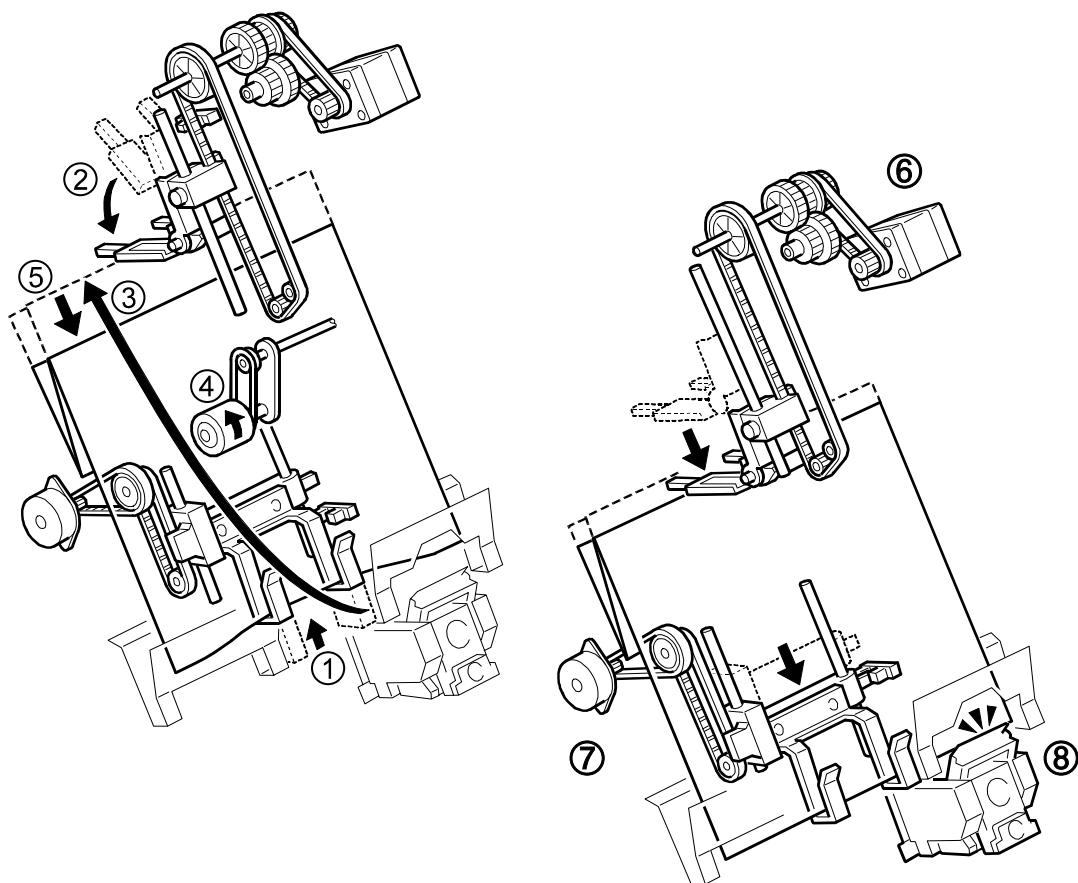
A cam and pin [G], powered by the guide plate motor [H], opens and closes the guide plate.

The stack feed out motor stops for 300 ms to allow the exit rollers to feed out the stapled sheets to the output tray. This pause prevents the copies from pushing out too far onto the tray.

The stack feed out motor switches on again until the pawl actuates the stack feed out belt HP sensor [I].

STAPLING Z-FOLDED PAPER (B674 ONLY)

2.9 STAPLING Z-FOLDED PAPER (B674 ONLY)



Here is the operation sequence for jogging and stapling Z-folded sheets:

- ① The lower jogger fence lifts to receive the Z-folded sheets.
- ② The top fence moves down, to the horizontal position.
- ③ A sheet of paper goes into the stapler tray.
- ④ The positioning roller turns when each sheet is fed to the stapler tray.
- ⑤ Each sheet is fed down against the lower jogger fence to align the bottom edge.
- ⑥ After the set number of sheets come in, the jogger top-fence motor switches on and lowers the top fence against the top of the stack. This aligns the stack for stapling.
- ⑦ The bottom fence motor lowers the aligned stack to the stapling position.
- ⑧ The stapler staples the stack.

2.10 BOOKLET FINISHING

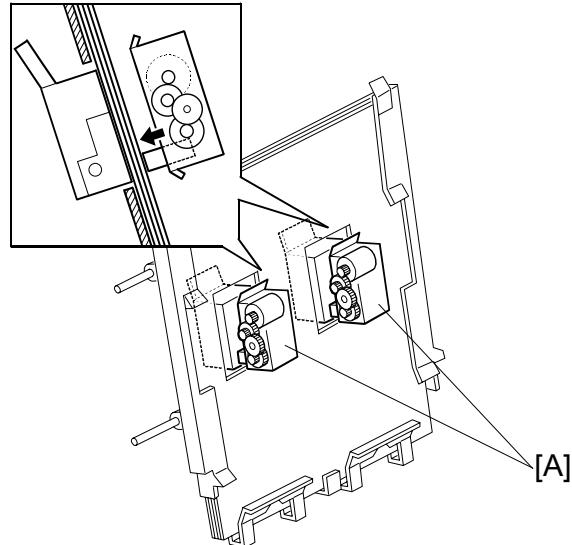
2.10.1 OVERVIEW

Stapling: Two booklet staplers are used. These are about half way up the stack feed-out path. The stack feed-out belt moves the stack to the correct position for stapling.

Folding: This is done in two phases: initial folding and final folding.

- Initial folding: At the top of the stack feed-out belt, a plate pushes the centre of the copy (at the stapled place) through a pair of rollers to give the booklet an initial fold. However, this fold is only a partial fold.
- Final folding: The partially folded copy drops to the lower tray, where it is caught by a pressure plate mechanism, which completes the fold in the booklet before letting it drop onto the lower tray.

2.10.2 BOOKLET STAPLING AND FOLDING



3000-Sheet
Finisher
B468/B469/
B674

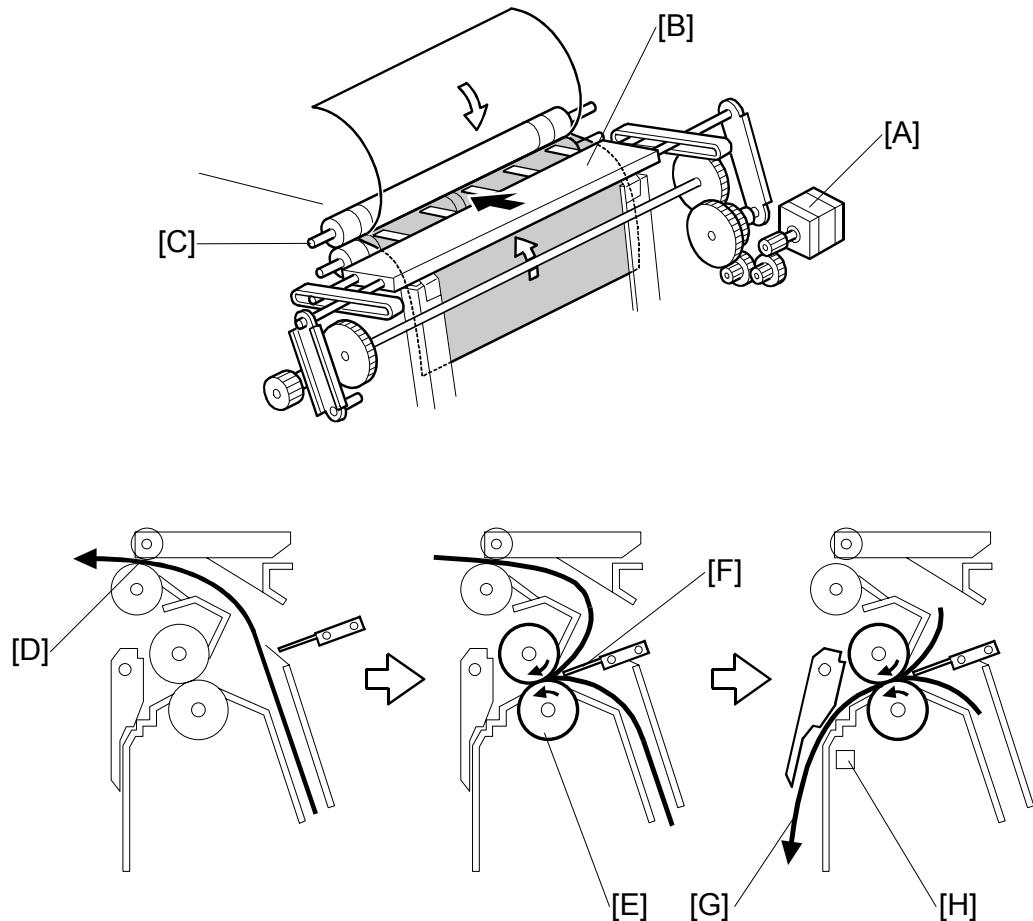
The sheets are aligned by the jogger fences before stapling. (→ 2.7)

The aligned sheets are sent to the booklet stapler unit and positioned below the booklet staplers [A] for stapling at two locations in the center of the paper.

The stack feed-out belt lifts the booklet until two pawls on the folder plate mechanism (see the next page) catch the staples to position the booklet for folding.

2.10.3 INITIAL FOLDING

BOOKLET FINISHING



The folder plate motor [A] switches on and drives the folder plate [B] forward to push the center of the booklet into the nip of the folder rollers [C], giving the booklet a partial fold.

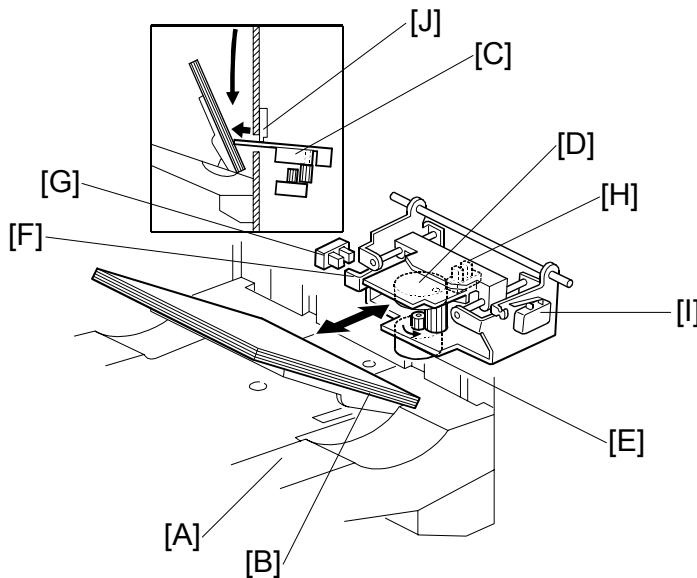
This is a detailed cross-section of the operation described above. The timing of the sequence depends on the size of the paper selected for the job.

The stack feed-out belt transports the booklet toward the paper exit [D] and stops when the center of the booklet is opposite the nip of the folder rollers [E].

The folder roller motor starts to turn and the folder rollers [E] start rotating. Then the folder plate motor switches on and pushes the folder plate [F] into the center of the booklet, driving the booklet between the rotating rollers. The booklet [G] (partially folded) then feeds out between the folder rollers.

The booklet exit sensor [H] detects the booklet when it leaves the folder rollers. This sensor triggers the mechanism for the next phase of the operation.

2.10.4 FINAL FOLDING AND FEED-OUT



3000-Sheet
Finisher
B468/B469/
B674

When the finisher is ready to feed out the first stapled booklet, the lower tray [A] descends past the pressure plate slot [J], the spring-loaded arms inside the lower tray snap into the grooves on the side fence, and the springs push the arms against the bottom of the support wing [B] to raise it.

Then, before the first stapled booklet falls from the slot above, the pressure plate motor [E] (stepper motor) rotates the gear and cam [D] counter-clockwise to extend the pressure plate [C]. The lower tray then raises and pushes the pressure plate up until the actuator [F] actuates the pressure plate lift sensor [G] and switches off the lower tray lift motor.

Then, the folded and stapled booklet comes out of the booklet exit slot, actuates the booklet exit sensor, and falls onto the pressure plate below. The actuated booklet exit sensor switches on the pressure plate motor, which rotates the gear and cam clockwise to retract the pressure plate. The motor rotates until the actuator on the rim of the cam actuates the pressure plate HP sensor [H] and stops the motor. Retracting the pressure plate allows the stapled booklet to fall past the pressure plate slot onto the stack below.

Next, the pressure plate motor switches on again to extend the pressure plate, while the lower tray raises and pushes the folded and stapled edges of the booklets up against the pressure plate until the actuator [F] actuates the pressure plate lift sensor [G] and switches off the lower tray lift motor. The booklets remain pressed between the extended pressure plate and lower tray until the next booklet is fed out.

The pressure plate limit switch [I] switches off the lower tray lift motor if the pressure plate lift sensor fails.

B377
PUNCH UNIT



PUNCH UNIT B377

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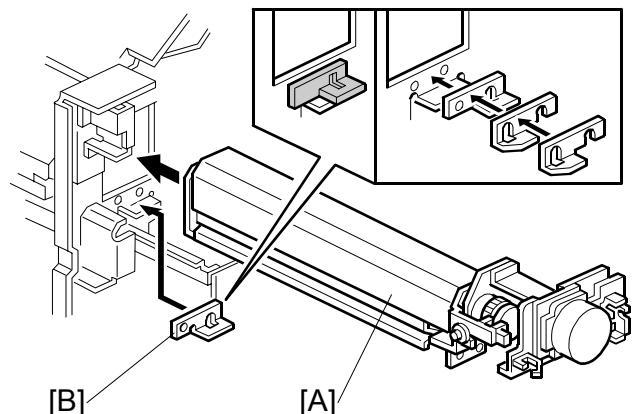


1. REPLACEMENT AND ADJUSTMENT

1.1 PUNCH POSITION ADJUSTMENT

To adjust the position of the punch holes in the paper feed direction, use SP6113 (Punch Hole Adjustment).

The punch position can be adjusted by up to 4 mm using combinations of the 3 spacers provided with the finisher. To adjust the horizontal position of the holes, use the spacers provided with the punch unit.



Punch Unit
B377

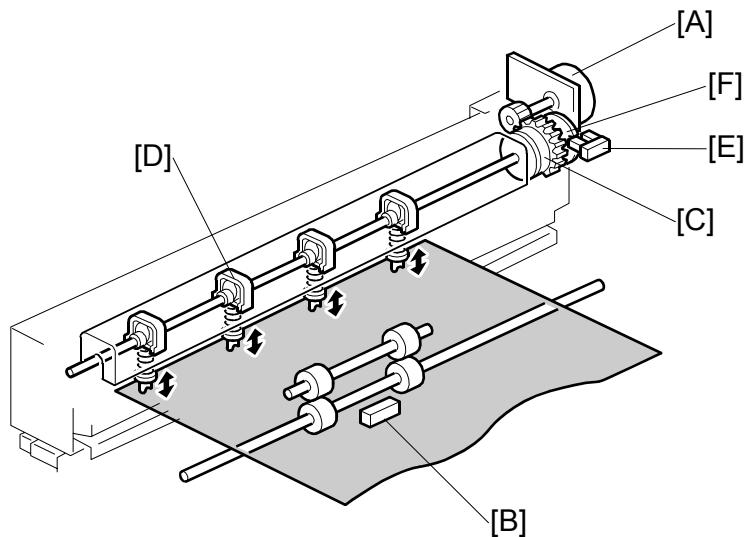
1. Rear cover ($\wedge \times 4$)
2. Punch unit [A] ($\wedge \times 3$, $\square \times 5$)
3. Spacers [B]

2. DETAILS

The punch unit punches holes in printed sheets, one by one. The punch unit is provided with a new punch mechanism to improve the accuracy of punching.

NOTE: The illustrations below show the unit for Europe for 2/4 hole punching. The North American unit has five holes for 2/3 hole punching.

2.1 PUNCH DRIVE MECHANISM

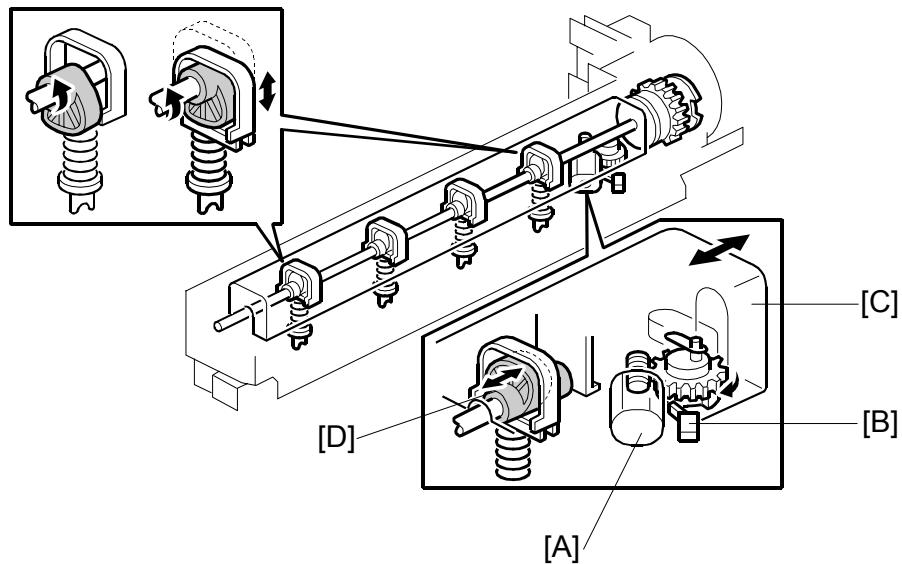


The punch motor [A] drives the punch mechanism. At the correct time after the trailing edge of the paper passes the finisher entrance sensor [B], the punch motor turns on and the paper stops. The punch clutch [C] turns and drives the punch heads [D].

The punch HP sensor [E] detects the home position for the actuator. The punch unit switches off when the cut-out in the punch shaft disk [F] enters the punch HP sensor.

NOTE: SP6113 (Punch Hole Adjustment) adjusts the punch hole position in the sub scan direction for two holes (001 2-Hole) or for three holes (002 3-Hole). Use the spacers provided with the punch unit to adjust the position of the punch in the main scan direction. For details, refer to the installation of the punch unit in section “1. Installation”).

PUNCH DRIVE MECHANISM

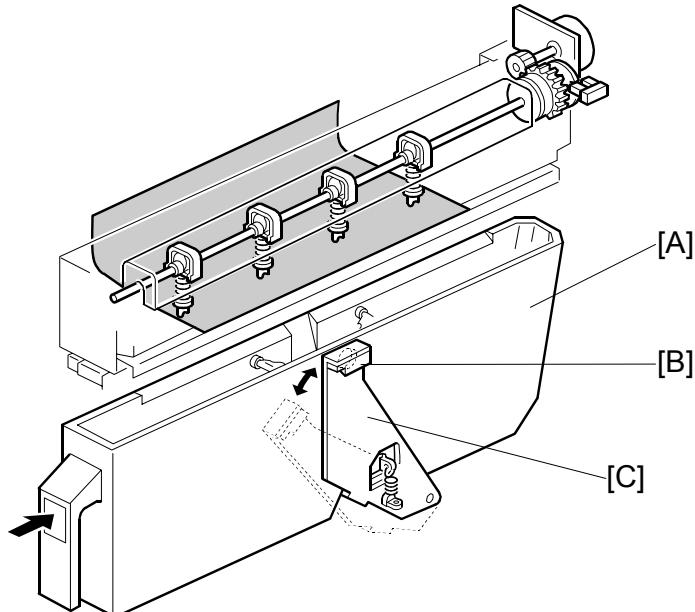


Punch Unit
B377

When the finisher has received the command that changes the number of punch holes for the job, the punch hole motor [A] turns on until the actuator disk changes the status of the punch hole switch [B] (until it switches on or off). This indicates that the cover [C] and the punch cam [D] have moved to one side or the other to determine which punchers are used.

PUNCH WASTE COLLECTION

2.2 PUNCH WASTE COLLECTION



Waste punchouts are collected in the punch waste hopper [A] below the punch unit inside the finisher.

When the top of the punchout waste in the hopper reaches and actuates the hopper sensor [B], a message will be displayed on the operation panel after the current job is completed.

This sensor also detects whether the punch waste hopper is installed. When the waste hopper is taken out, the arm [C] moves down and this will actuate the sensor and display a message in the operation panel. This message is the same as for the hopper full condition.

B470

COVER INTERPOSER TRAY



COVER INTERPOSER TRAY B470

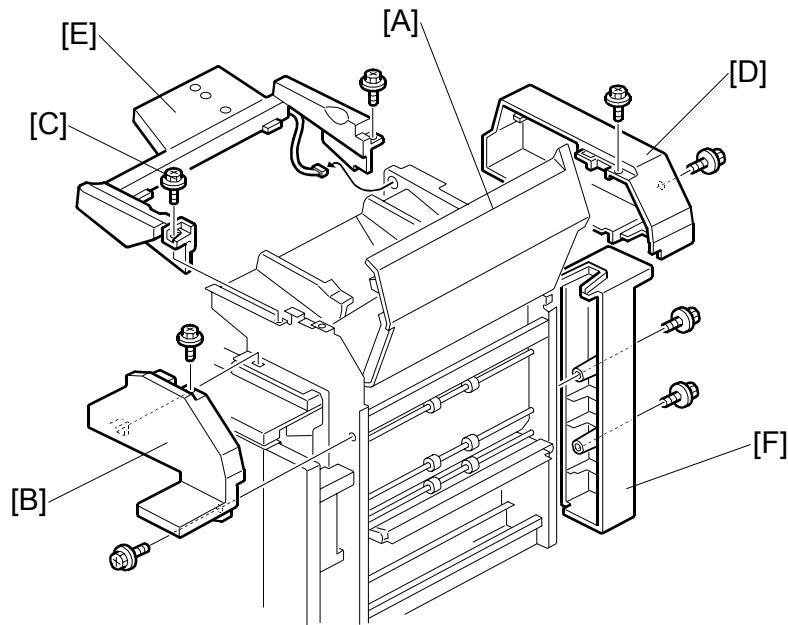
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1. REPLACEMENT AND ADJUSTMENT

1.1 EXTERNAL COVERS



[A]: Open the feed cover.

[B]: Upper front cover ($\frac{1}{4}$ x 2)

NOTE: To remove the upper front cover, screw [C] must be removed.

[D]: Rear upper cover ($\frac{1}{4}$ x 2)

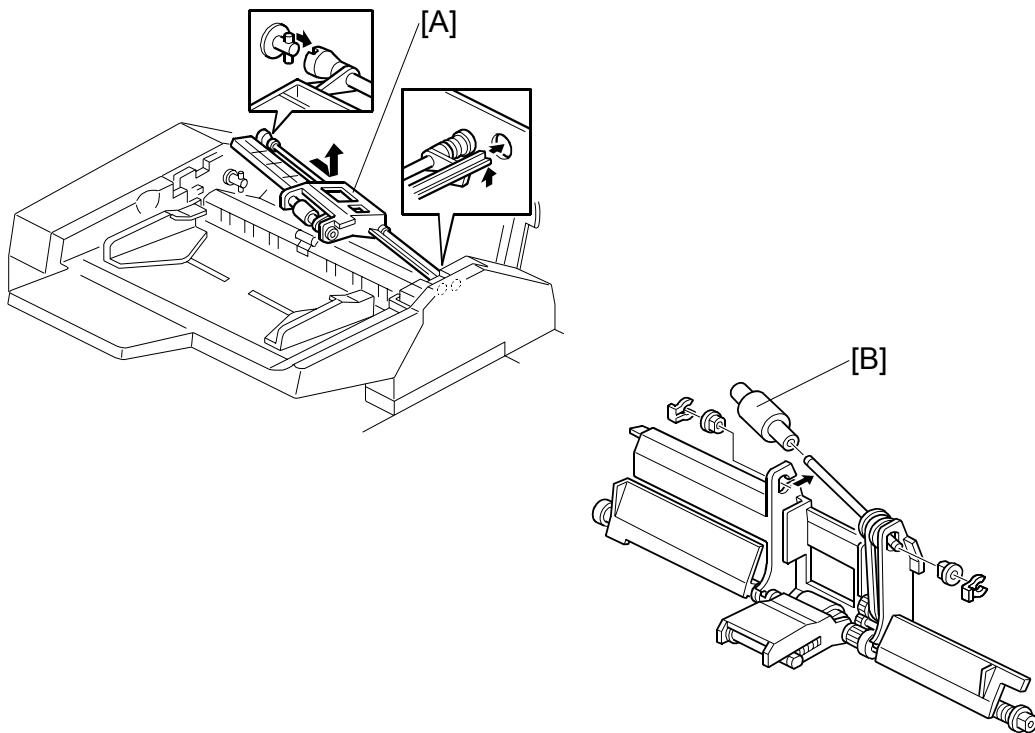
[E]: Slip sheet tray ($\frac{1}{4}$ x 2, $\frac{1}{4}$ x 1)

[F]: Rear middle cover ($\frac{1}{4}$ x 2)

Cover
Interposer
Tray
B470

FEED UNIT AND PICK-UP ROLLER

1.2 FEED UNIT AND PICK-UP ROLLER



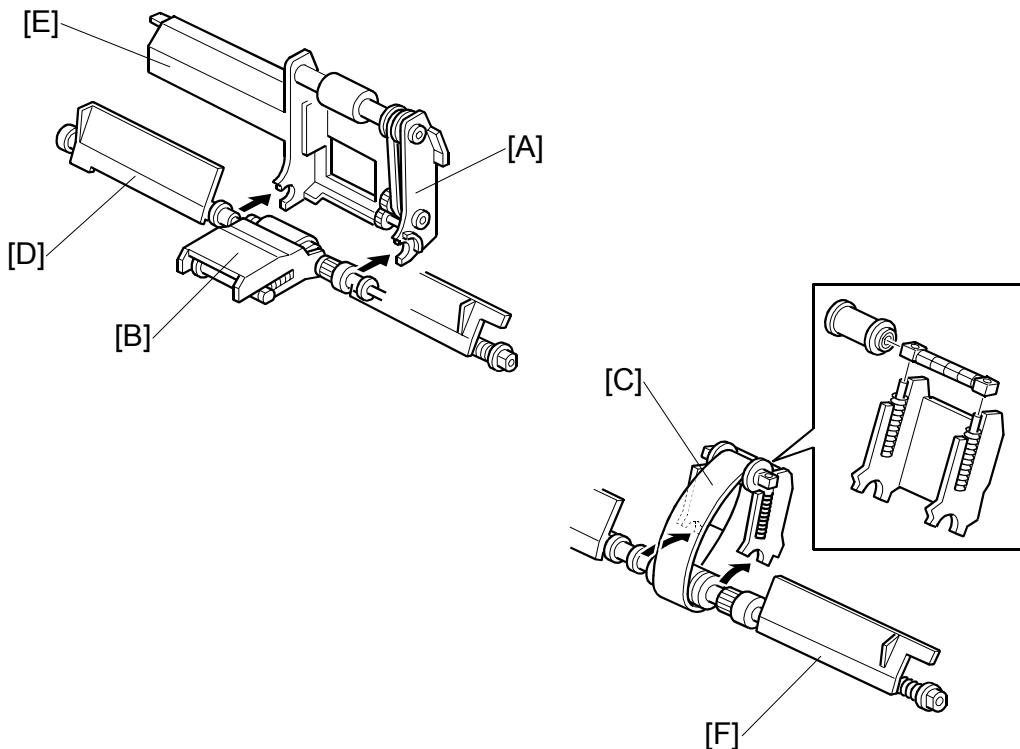
Open the feed cover.

[A]: Feed unit

- The unit is spring loaded. Push it to the right to release it, then lift it out.

[B]: Pick-up roller (Ø x 2, bushings x 2)

1.3 FEED BELT



Feed unit (1.2)

[A]: Pick-up roller unit.

- Pull the unit away from the bushings in the direction of the arrow.

[B]: Feed belt holder

- Hold the feed belt holder by the sides, then lift up to separate from the holder.
- Pull slowly to avoid losing the springs.

[C]: Feed belt.

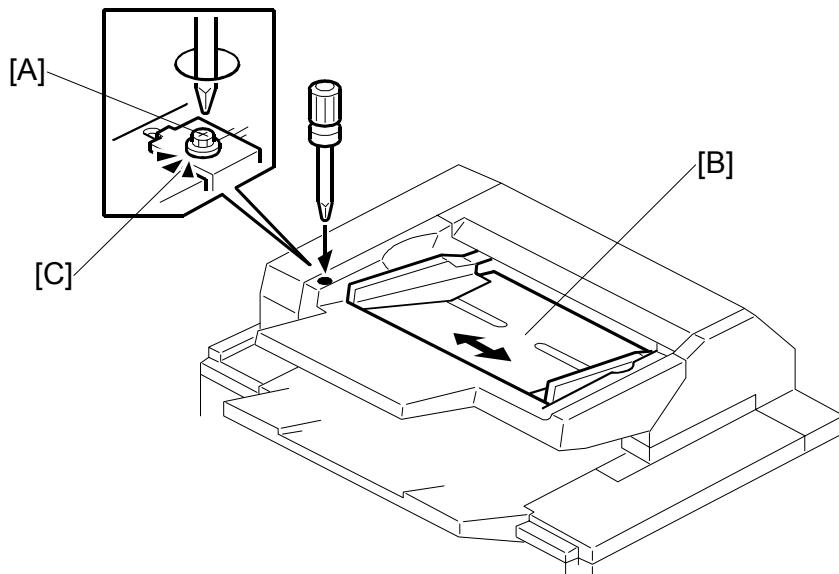
Re-assembly

1. Position the pick-up roller unit [A] and feed belt holder [B] as shown above.
2. On the rear side, slide out the bushing, and rotate [D] until its flat side is parallel with [E], then snap it on.
3. On the front side, rotate [F] until its flat side is parallel with [D], then snap it on.
Viewed from the bottom, the plates must be aligned.

Cover
Interposer
Tray
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GUIDE PLATE ADJUSTMENT

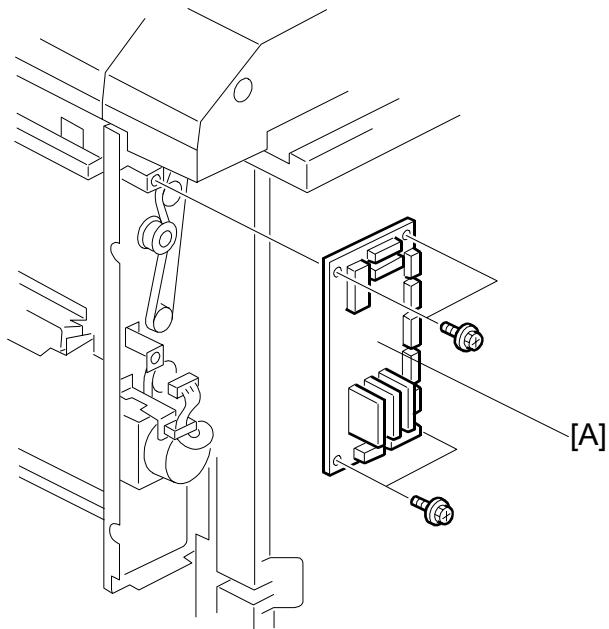
1.4 GUIDE PLATE ADJUSTMENT



Adjust the guide plate if the holes punched in the covers or slip sheets are not correctly aligned with holes punched in the other sheets.

1. Open the feed cover.
2. Loosen the screw [A].
3. Push the table [B] left or right to change its position, then tighten the screw.
NOTE: If you want to see the scale [C], you must remove the rear cover and the support tray.

1.5 MAIN BOARD



Open the top cover.

Rear cover (撬 x 1)

[A]: Main board (撬 x 9, 螺 x 4)

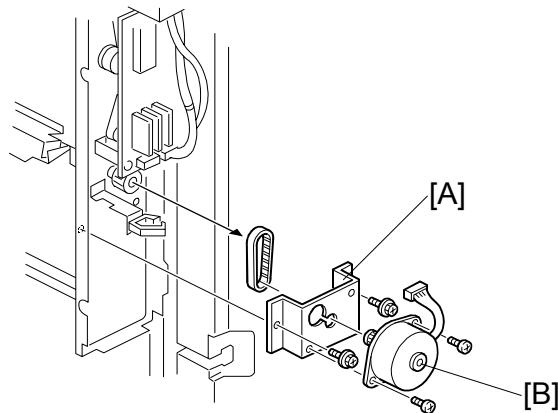
NOTE: All DIP switch settings on the main board of the cover sheet unit should be set to OFF.

Cover
Interposer
Tray
B470

MOTOR REPLACEMENT

1.6 MOTOR REPLACEMENT

1.6.1 VERTICAL TRANSPORT MOTOR



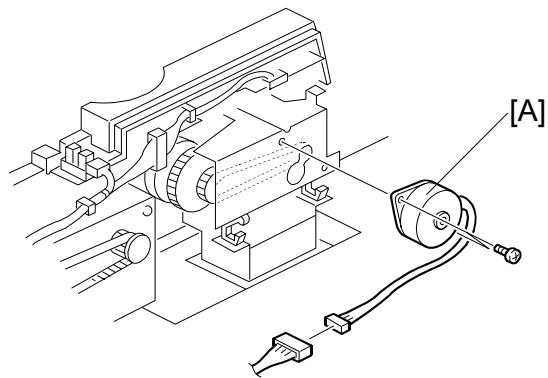
Open the top cover.

Rear middle cover (☞ 1.1)

[A]: Motor bracket (☞ x 1, harness x 1, ⚡ x 2, timing belt x 1)

[B]: Motor (⚡ x 2)

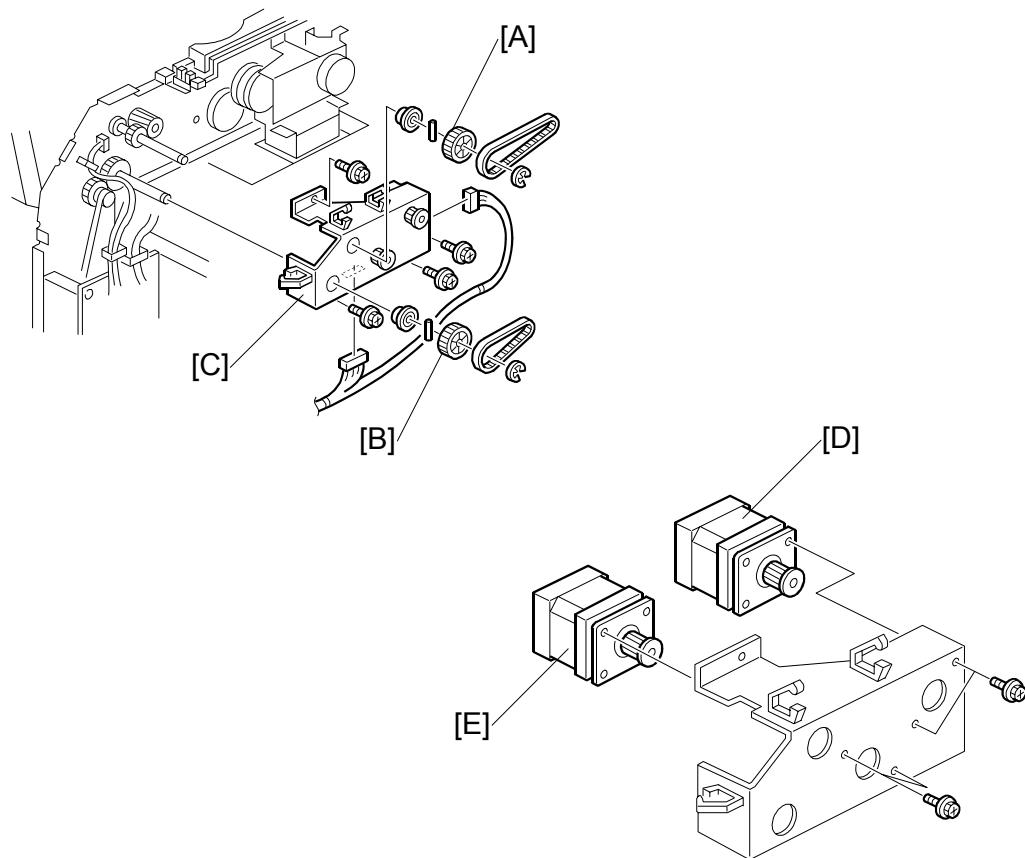
1.6.2 BOTTOM PLATE LIFT MOTOR



Rear upper cover (☞ 1.1)

[A]: Bottom plate lift motor (harness x 2, ☞ x 1, ⚡ x 2)

1.6.3 FEED MOTOR, TRANSPORT MOTOR



Rear upper cover (☞ 1.1)

NOTE: When removing the feed gear and transport gear, hold one hand under the gear to catch the pin as it falls from the hole in the shaft.

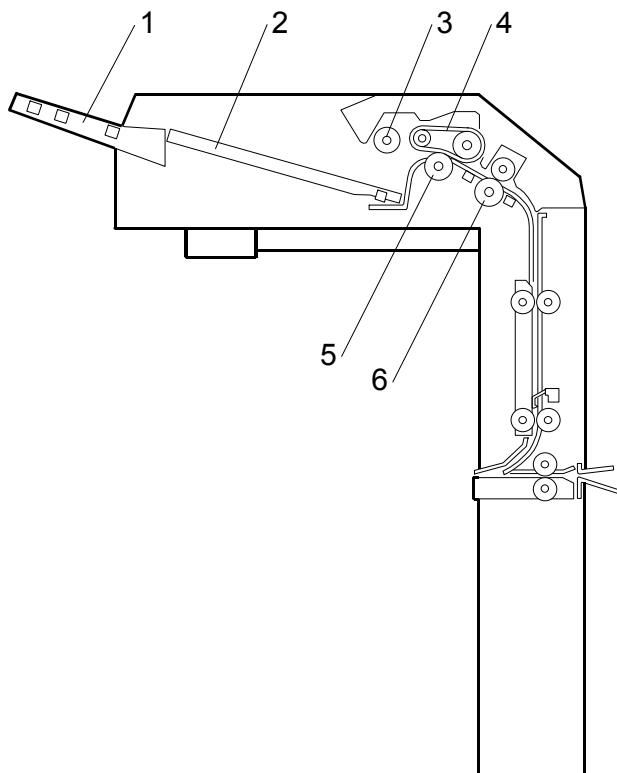
- [A]: Feed gear (☞ x 1, pin x 1, timing belt x 1, bushing x 1)
- [B]: Transport gear (☞ x 1, pin x 1, timing belt x 1, bushing x 1)
- [C]: Motor bracket (harness x 5, ☞ x 4)
- [D]: Feed motor (☞ x 1, ☞ x 2)
- [E]: Transport motor (☞ x 1, ☞ x 2)

Cover
Interposer
Tray
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2. DETAILS

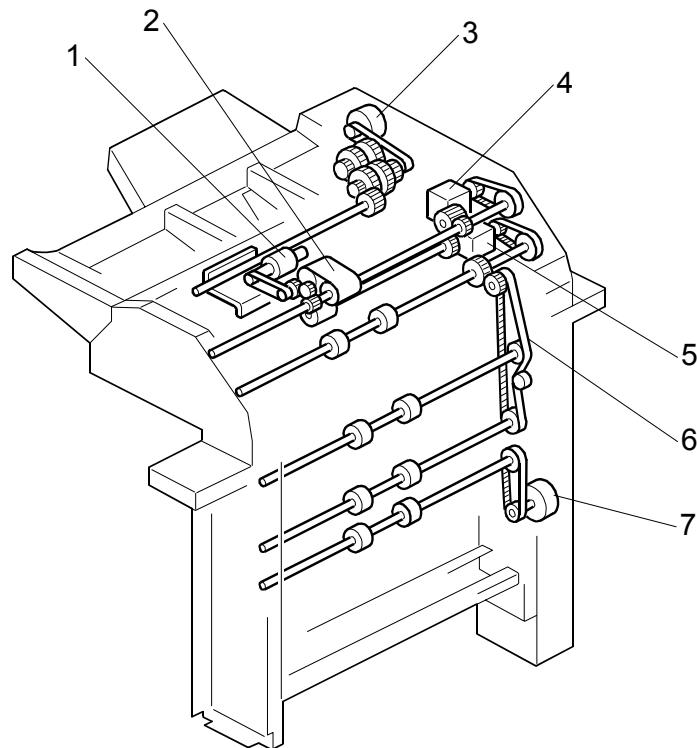
2.1 OVERVIEW

2.1.1 MAIN LAYOUT



1. Support tray
2. Slip sheet tray
3. Pick-up roller
4. Feed belt
5. Separation roller
6. Grip roller

2.1.2 DRIVE LAYOUT



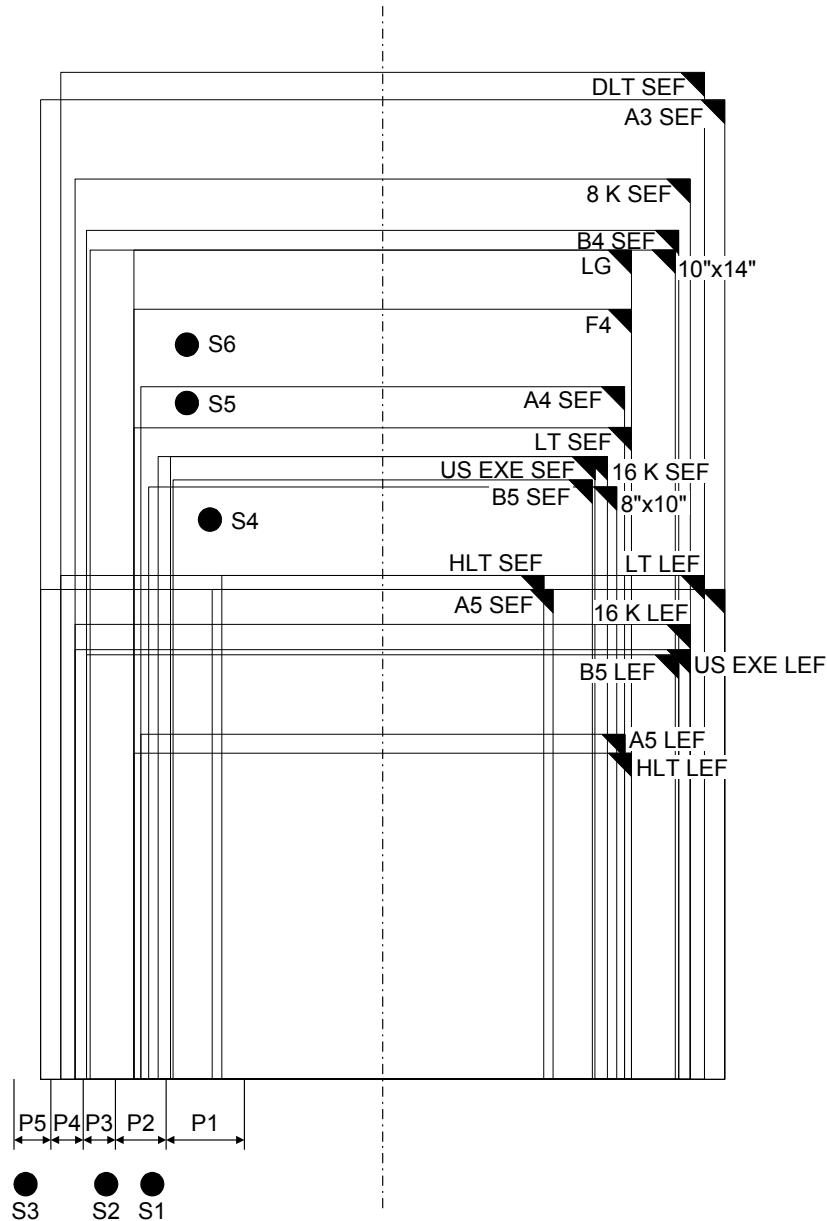
1. Pick-up Roller
2. Feed Belt
3. Bottom Plate Lift Motor
4. Feed Motor
5. Transport Motor
6. Timing Belt
7. Vertical Transport Motor

Cover
Interposer
Tray
B470

OVERVIEW

2.1.3 PAPER SIZE DETECTION

The width sensors [A] (S1, S2, S3) and length sensors [B] (S4, S5, S6) detect the width and length of the original on the interposer feed tray.



The table below lists the sensor output for each paper size.

	S1	S2	S3	S4	S5	S6
A3	0	1	1	1	1	1
B4	1	1	0	1	1	1
A4 SEF	1	0	0	1	1	0
A4 LEF	0	1	1	0	0	0
B5 SEF	0	0	0	1	0	0
B5 LEF	1	1	0	0	0	0
A5 SEF	0	0	0	0	0	0
A5 LEF	1	0	0	0	0	0
11" x 17"	1	1	1	1	1	1
10" x 14" SEF	1	1	0	1	1	1
8½" x 14"	1	0	0	1	1	1
8½" x 13"	1	0	0	1	1	1
8½" x 11"	1	0	0	1	0	0
11" x 8½"	1	1	1	0	0	0
8" x 10"	1	0	0	1	0	0
5½" x 8½"	0	0	0	0	0	0
8½" x 5½"	1	0	0	0	0	0
7½" x 10½" (US Exec.)	0	0	0	1	0	0
10½" x 7½" (US Exec.)	1	1	1	0	0	0
8 K	1	1	1	1	1	1
16 K SEF	1	0	0	1	0	0
16 K LEF	1	1	1	0	0	0

The cover interposer tray detects all the paper sizes listed above. However, there are some limitations on the display of the correct paper size.

		North America	Europe/Asia
B4 SEF	257 x 364 mm	Displays 10" x 14" *1	
B5 SEF	182 x 257	Displays "US Exec." *1	
A5 SEF	148 x 210	Displays "HLT SEF" *1	
A5 LEF	210 x 148	Displays "HLT LEF" *1	
DLT SEF	11" x 17"		Displays "8K LEF" *2
LG SEF	8½" x 14"		Displays "F4 SEF" *2
LT SEF	8½" x 11"		Displays "16 K SEF" *2
LT LEF	11" x 8½"		Displays "16 K LEF" *2

*1: Cannot be corrected.

*2: B064 series: Can be corrected with SP5959 006 (Paper Size – Cover Sheet).

B140 series: Can be corrected with SP5158

Cover
Interposer
Tray
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OVERVIEW

B064 series: Paper Size Detection

North America

Execute SP5959 006 and enter the correct number for the size of the paper loaded for feeding from the cover interposer tray.

Loaded	Display (Default)	To Select for Display	Enter
8 1/2" x 13"	8 1/2" x 14"	8 1/2" x 13"	165
10 1/2" x 7 1/2"	8 1/2" x 11"	10 1/2" x 7 1/2"	173
8" x 10"	8 1/2" x 11"	8" x 10"	171

Europe/Asia

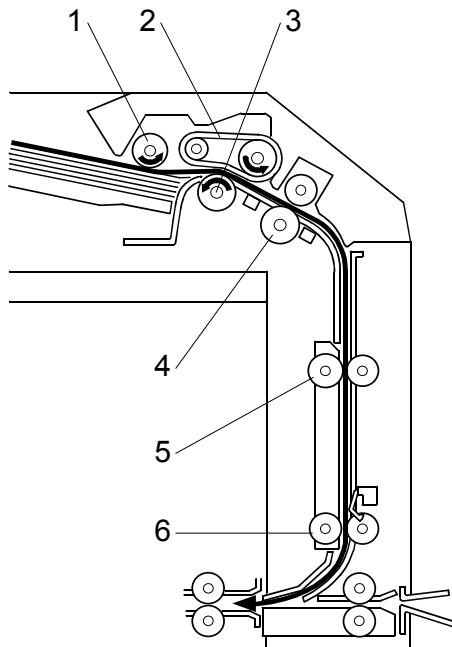
Execute SP5959 006 and enter the correct number for the size of the paper loaded for feeding from the cover interposer tray.

Loaded	Display (Default)	To Select for Display	Enter
11" x 17"	8 K	11" x 17"	160
8 1/2" x 11"	16 K SEF	8 1/2" x 11"	166
11" x 8 1/2"	16 K LEF	11" x 8 1/2"	38
8 1/4" x 13"	8 1/2" x 13" SEF	8 1/4" x 13"	168

B070/B071, B140 series: Paper Size Detection

Some paper sizes are almost the same and cannot be detected as different sizes by the sensors. To select the sizes that are detected, use SP 5158.

2.1.4 PAPER PATH

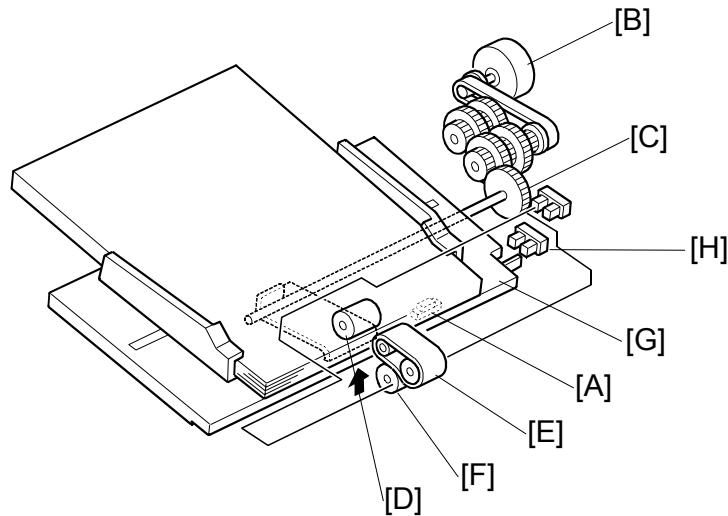


1. Pick-up Roller
2. Feed Belt
3. Separation Roller
4. Grip Roller
5. Transport Roller 1
6. Transport Roller 2

The paper feeds from the tray, to the feed belt, then to the grip roller and down into the paper path to the finisher below.

Cover
Interposer
Tray
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2.2 PAPER FEED



Power On

When paper is placed on the tray, the paper set sensor [A] in the tray actuates and switches on the bottom plate lift motor [B]. The top of the stack raises the pick-up roller unit until the actuator on this unit actuates the pick-up roller position sensor [C] and switches the motor off.

Paper Separation and Feed

The pick-up roller [D] picks up the original, and the feed belt [E] feeds the sheet to the grip roller. The separation roller [F] reverses if more than one sheet is fed

Bottom Tray Lift

As sheets feed from the top of the stack:

- The pick-up roller unit descends until the actuator on the pick-up roller unit drops out of the pick-up roller position sensor [C].
- The bottom plate lift motor switches on to raise the stack until the actuator enters the pick-up roller unit position sensor again and switches the motor off.
- This repeats until the end of the job or until paper runs out.

Paper Near-end

Near-end is detected when the actuator [G] on the bottom plate enters the near-end sensor [H].

Paper End

After the last sheet feeds the paper set sensor [A] goes off and signals paper out.

B471
9-BIN MAILBOX



9-BIN MAILBOX B471

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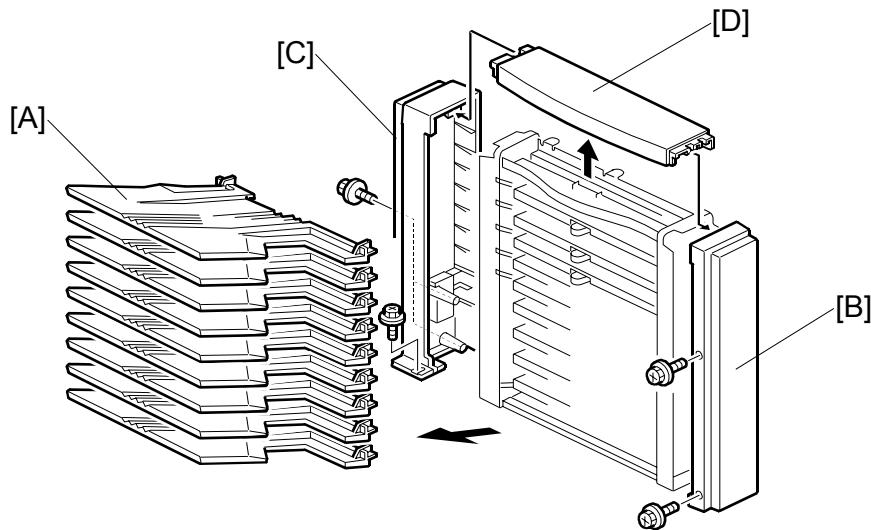


1. REPLACEMENT AND ADJUSTMENT

⚠ CAUTION

Switch the machine off and unplug the machine before starting and procedure in this section.

1.1 COVERS AND TRAYS



9-Bin Mailbox
B471

[A]: Trays

- Grip each tray by the front and lift out.

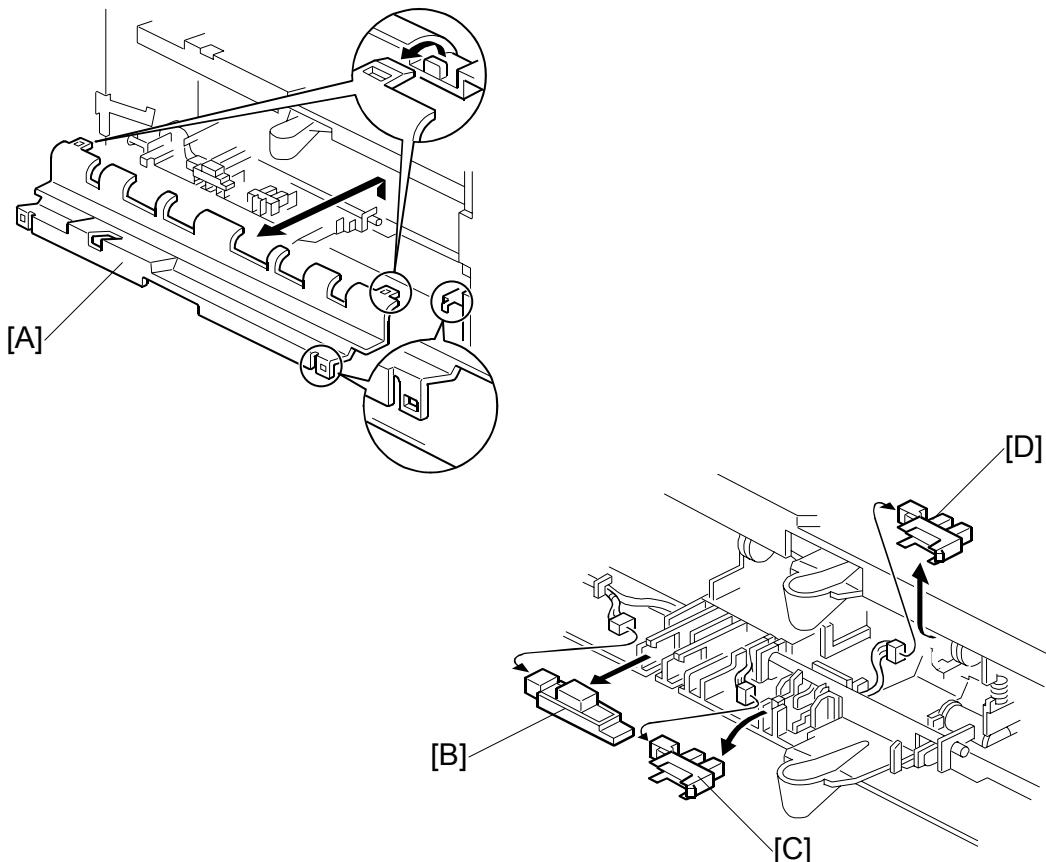
[B]: Front cover (2 x 2)

[C]: Rear cover (3 x 3)

[D]: Top cover

SENSORS

1.2 SENSORS



Remove the tray (☞ 1.1)

[A]: Bin cover

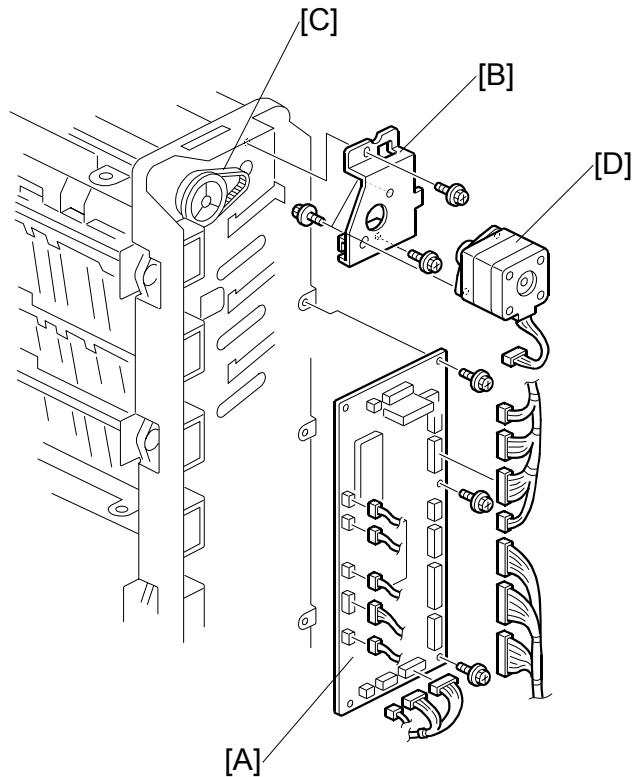
[B]: Tray sensor (✉ x 1)

[C]: Tray overflow sensor (✉ x 1)

[D]: Vertical transport sensor (✉ x 1)

- Raise the pawl, then grip the bottom of the sensor to remove.

1.3 MAIN MOTOR AND CONTROL BOARD



9-Bin Mailbox
B471

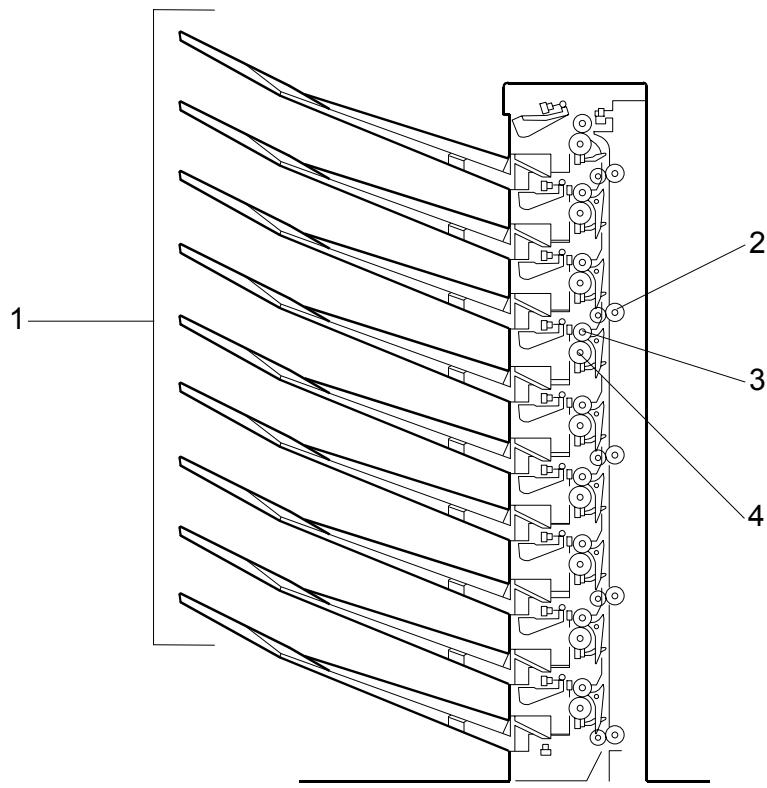
Rear cover (► 1.1)

- [A]: Control board (Screw x 3, Nut x 17)
- [B]: Main motor bracket (main motor Nut x 1, Screw x 2)
- [C]: Timing belt
- [D]: Main motor (Screw x 1)

2. DETAILS

2.1 OVERVIEW

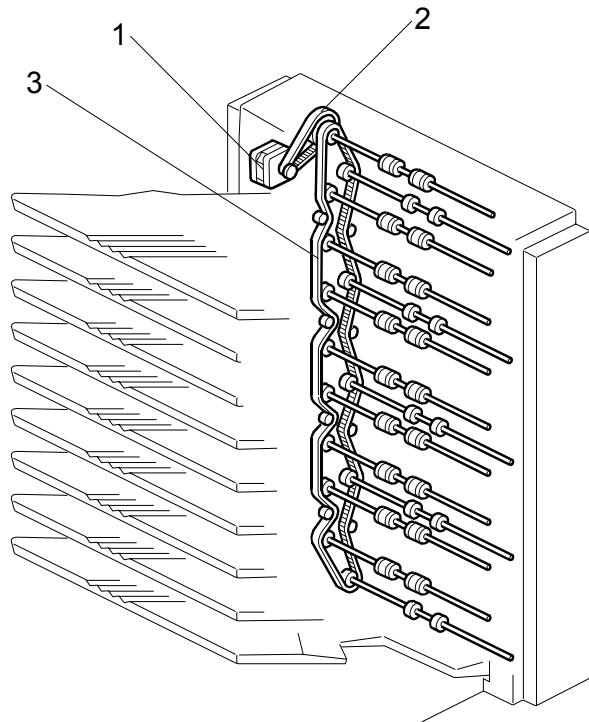
2.1.1 MAIN COMPONENT LAYOUT



1. Bins (x 9)
2. Vertical Transport Rollers (x 5)
3. Turn Gates (x 8)
4. Exit Rollers (x 9)

The trays are 1 to 9 (bottom to top). The numbers are clearly marked on the side of the unit. The top tray does not require a turn gate. When the top tray is selected for output, all turn gates remain closed, leaving only the top bin open.

2.1.2 DRIVE LAYOUT

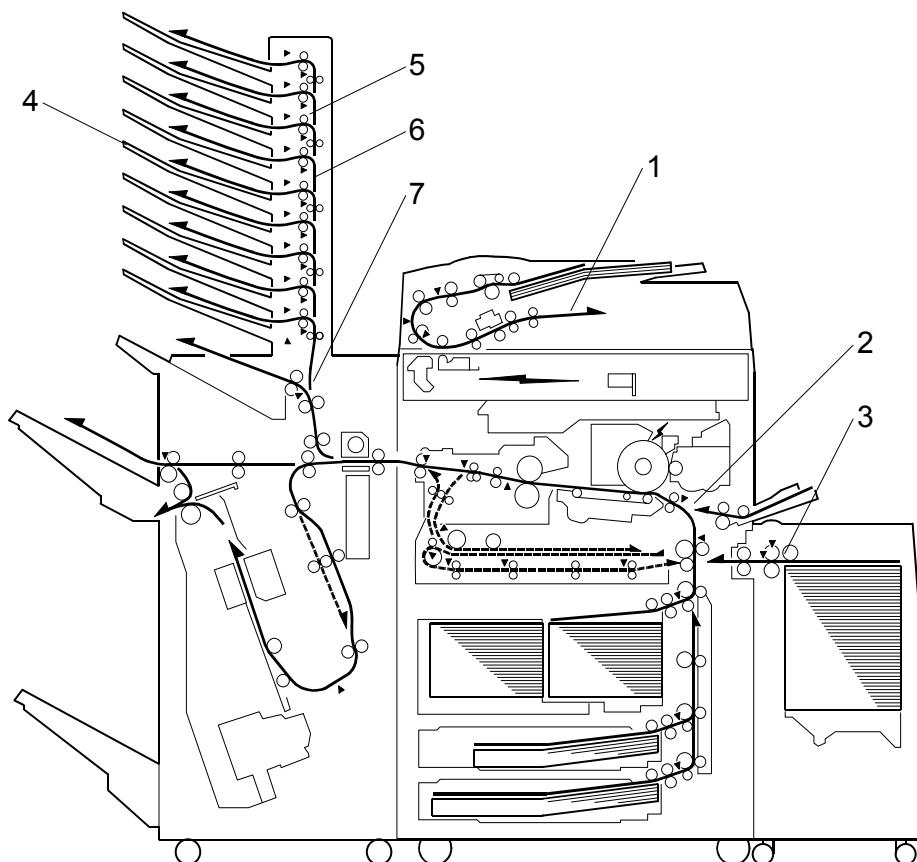


9-Bin Mailbox
B471

1. Main Motor
2. Main Timing Belt
3. Timing Belt

OVERVIEW

2.1.3 PAPER PATH

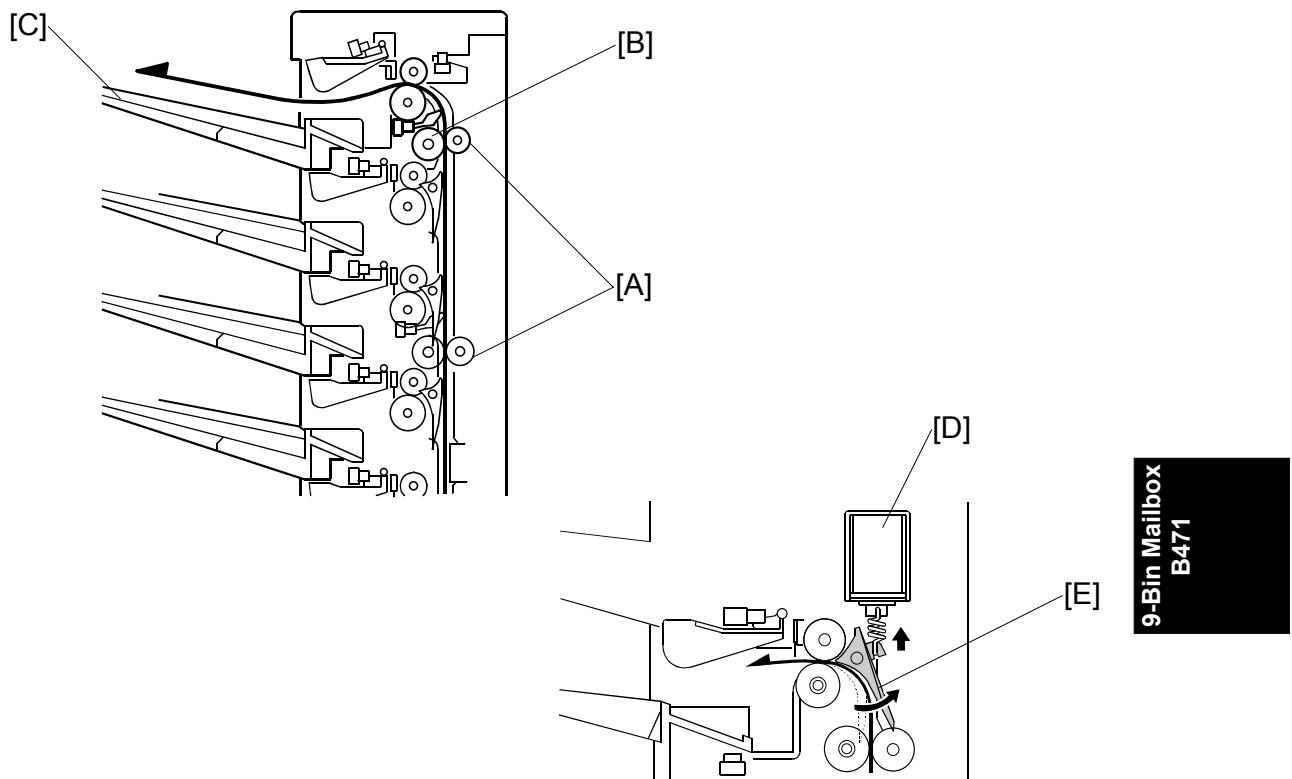


1. Original Paper Path
2. Vertical Transport Path
3. LCT Feed
4. Selected Trays
5. Turn Gates
6. Mailbox Paper Path
7. Junction Gate (paper goes either up to the mailbox or out to the finisher's proof tray)

The solenoid for the junction gate (7) is part of the mailbox.

2.2 BASIC OPERATION

2.2.1 PAPER PATH



The unit is mounted on top the finisher and connected to the finisher by a 14-pin connector. When the leading edge of the paper passes and activates the entrance sensor of the finisher, the mailbox main motor switches on and the mailbox vertical transport rollers [A] begin to turn. The exit roller [B] feeds the paper out to the selected tray [C].

A solenoid [D] opens and closes the junction gate [E]. When a solenoid switches on, the gate opens and directs to the paper to the tray.

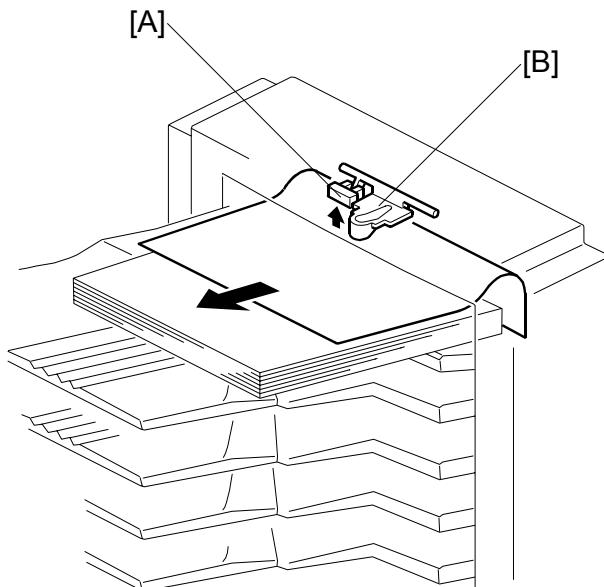
NOTE: When the top tray (bin 9) is selected, all solenoids are off and closed, allowing the paper to pass to the top tray (bin 9 does not require a solenoid).

When the last sheet is fed out, it switches off the vertical transport sensor, and both the mailbox main motor and the junction gate solenoid of the selected bin switch off. The mailbox normally feeds paper at 372 mm/s, about the same speed as the finisher. (The finisher speed is 370 mm/s.)

OVERFLOW DETECTION

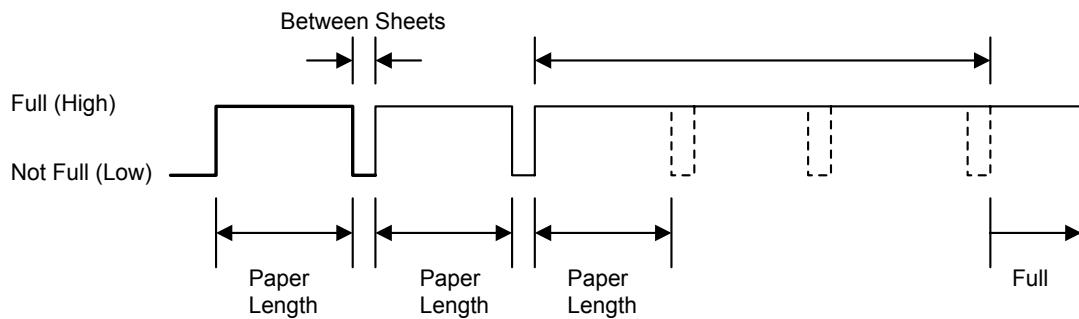
2.3 OVERFLOW DETECTION

2.3.1 OVERVIEW



An overflow sensor [A] and actuator [B] are above the exit of each paper tray. The actuator, mounted on a swivel arm, remains in contact with the top of the stack. The actuator rises as the stack becomes higher until it activates the sensor. Then, a tray full message appears on the operation panel and the job halts. If the paper is removed before the tray is full, the job continues.

2.3.2 DETECTION TIMING



When the mailbox exit sensor goes high for the prescribed time (T), the machine determines that the tray is full. The value of T is calculated, regardless of paper size, as follows:

$$T \text{ (s)} = (60/\text{s} \times \text{max. size ppm}) \times 3 \text{ s}$$

After the tray full sensor switches on, if it remains on for the feeding of eight additional sheets, then this notifies the machine that the tray is full.

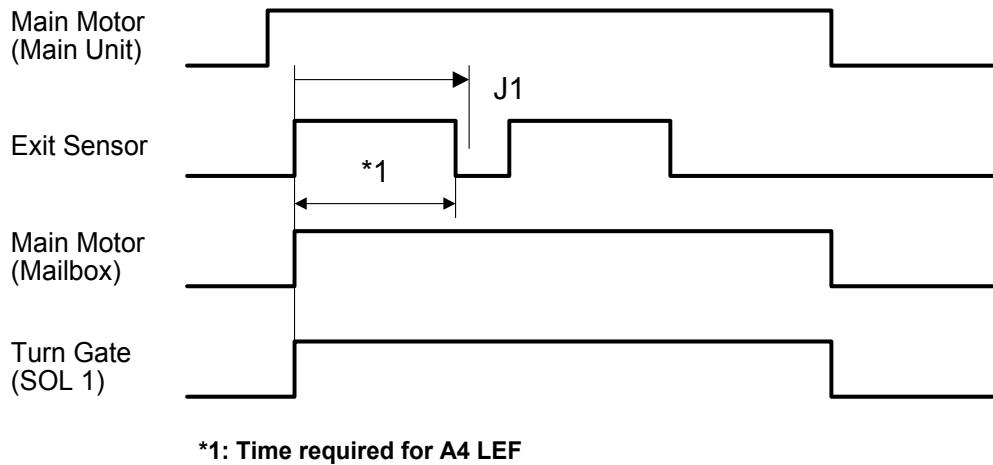
" T " is calculated as shown below. For example, for a minimum ppm of 12 prints (regardless of paper size), the value T is 15 s. Then, if the sensor detects paper for 15 s or more, the machine stops the copy job.

9-Bin Mailbox
B471

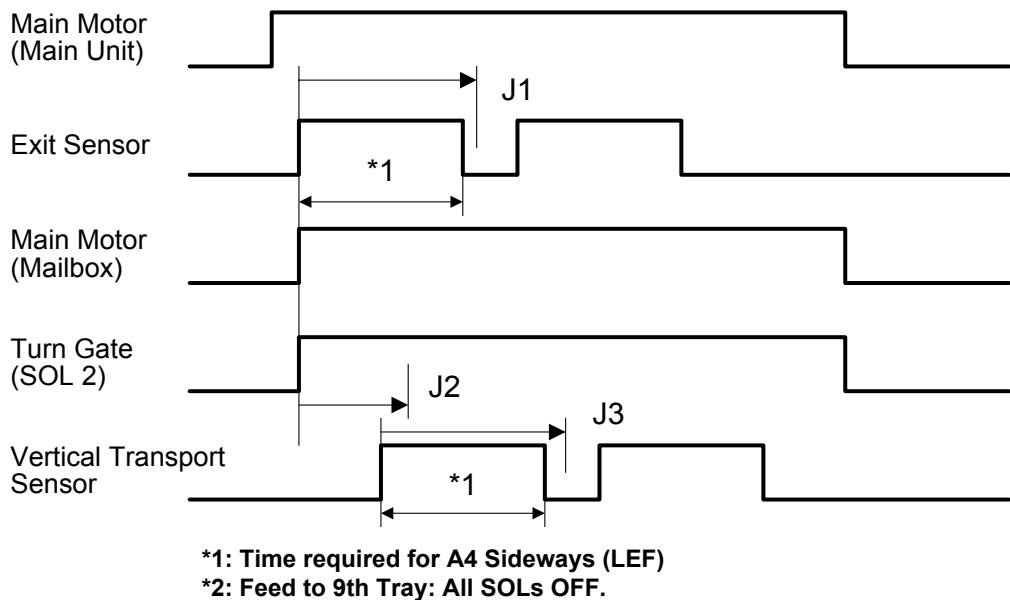
PAPER MISFEED DETECTION TIMING

2.4 PAPER MISFEED DETECTION TIMING

2.4.1 A4 SIDEWAYS (LEF) → 1ST BIN TRAY



2.4.2 A4 SIDEWAYS (LEF) → 2ND ~ 9TH BIN TRAY



J1 Timing: After the leading edge of the sheet activates the mailbox exit sensor, a misfeed is detected if the sensor does not switch off within:

$$X+0.5 \text{ s}$$

Where X = The amount of time prescribed for the paper size to pass the sensor. (X = 1.74 s for A4 Sideways for example)

J2 Timing: After the mailbox paper exit sensor is activated, the machine determines that the paper has not yet fed and detects a misfeed if the vertical transport sensor does not activate within the time prescribed for the paper size (1.94 s for A4 paper, for example)

J3 Timing: After the vertical transport sensor is activated, a misfeed is detected if the vertical transport sensor does not turn off within:

$$X+0.52 \text{ s}$$

Where X = The amount of time prescribed for the paper size to pass the sensor. (X = 2.26 s for A4 Sideways for example)





B478/B513/B531

3000-SHEET FINISHER/JOGGER

UNIT/PUNCH UNIT



3000-SHEET FINISHER B478/JOGGER UNIT B513/PUNCH UNIT B531

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1. INSTALLATION

For details about installing the 3000 Sheet Finisher B478, please refer to the instructions you received with the instructions or the “1. Installation” in the main machine service manual.

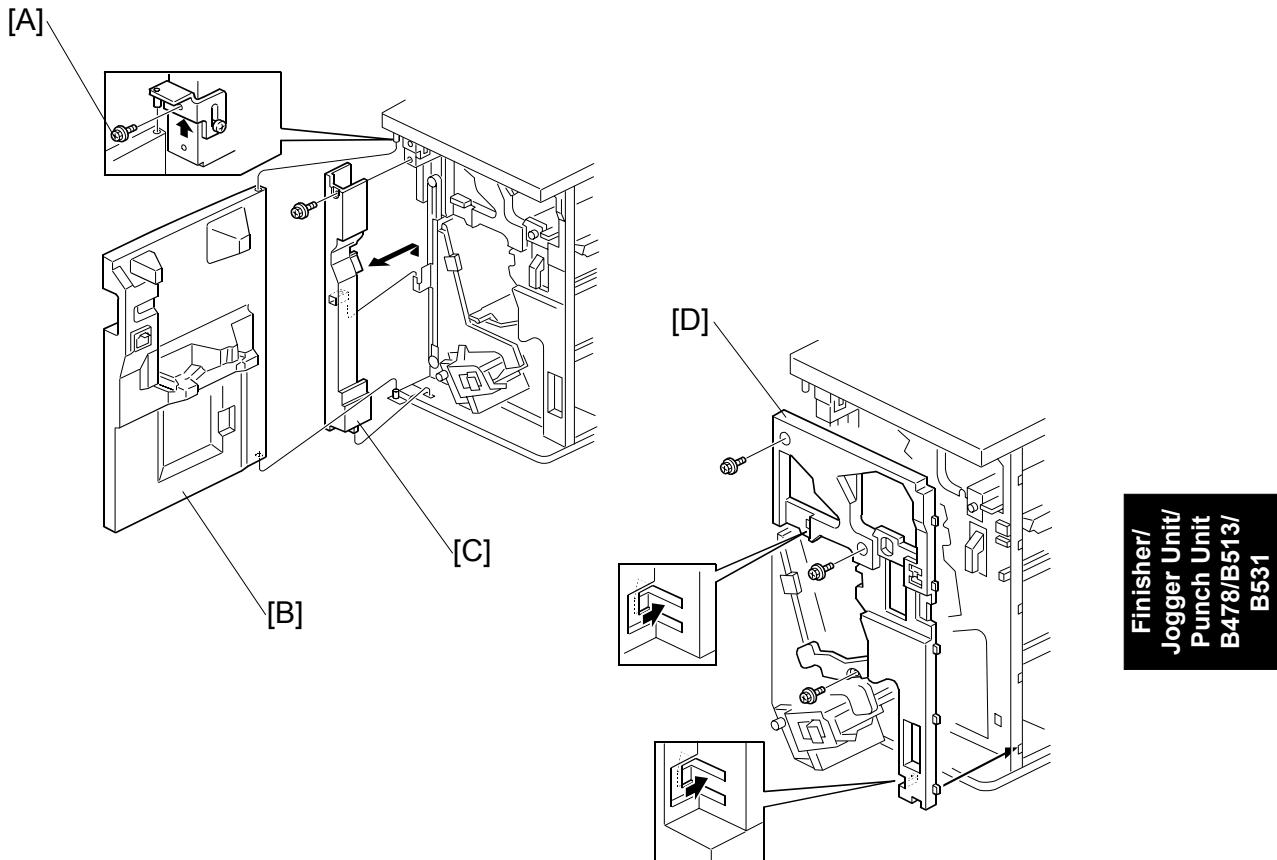
Finisher/
Jogger Unit/
Punch Unit
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2. PREVENTIVE MAINTENANCE

For details about the 3000 Sheet Finisher B478 PM table, please refer to Section "2. Preventive Maintenance" in the main Service Manual.

3. REPLACEMENT AND ADJUSTMENT

3.1 DOOR AND COVER



Front Door

1. Remove the front door screw [A] ($\text{S} \times 1$).
2. Remove the front door [B].

Left Inner Cover

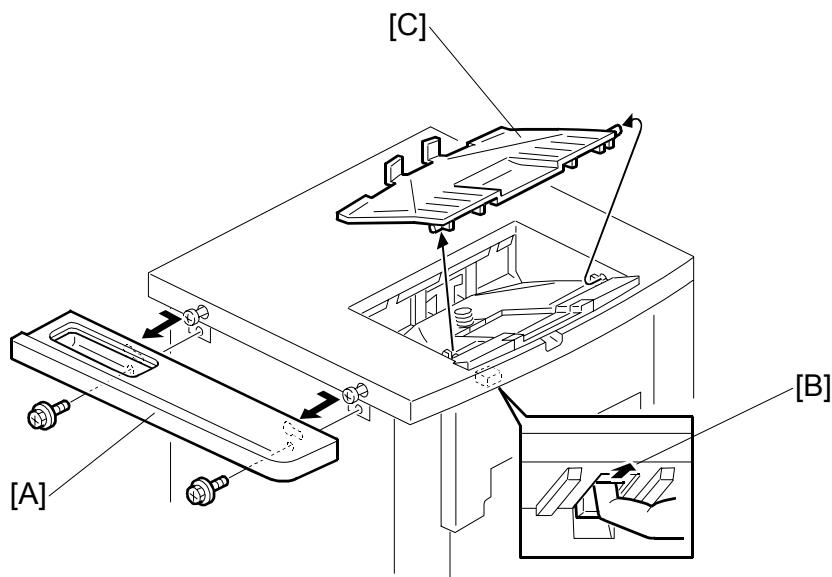
1. Remove the front door.
2. Remove the left inner cover [C] ($\text{S} \times 1$).

Inner Cover

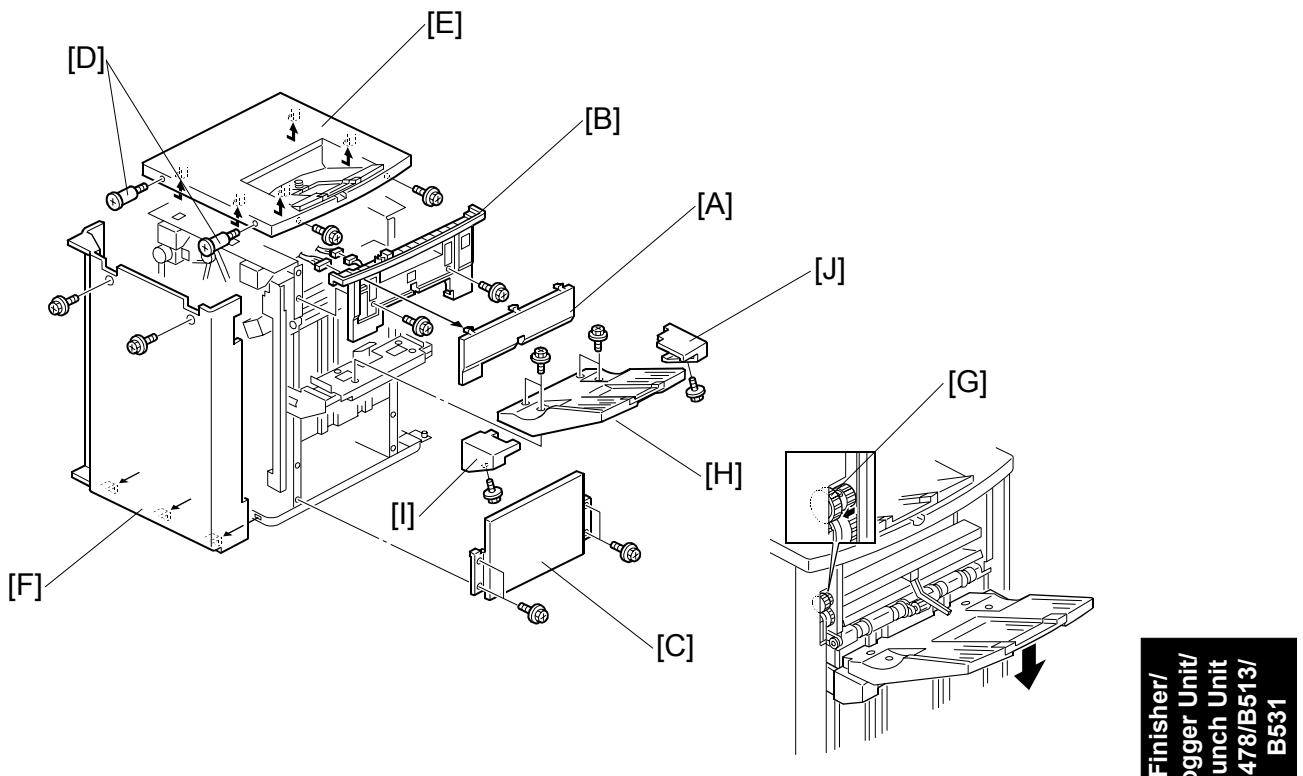
1. Remove the inner cover [D] ($\text{S} \times 3$).

REPLACEMENT AND ADJUSTMENT

Side Table and Upper Tray



1. Remove the side table [A] (\wedge x 2). Slide to the right to remove it.
2. Click the release lever [B] and remove the upper tray [C].



Left Covers

1. Remove the left upper panel [A].
2. Remove the left upper cover [B] (\wedge x 2, \square x 2).
3. Remove the door and left inner cover. (See “Front Door and Left Inner Cover Replacement”.)
4. Remove the rear cover [F] (\wedge x 2).
5. Remove the left lower cover [C] (\wedge x 4).

Rear Cover and Top Cover

1. Remove the upper tray. (See “Side Table and Upper Tray”.)
2. Remove the step screws [D] (\wedge x 2).
3. Remove the top cover [E] (\wedge x 2). Slide to the right to remove.
4. Remove the rear cover [F] (\wedge x 2).

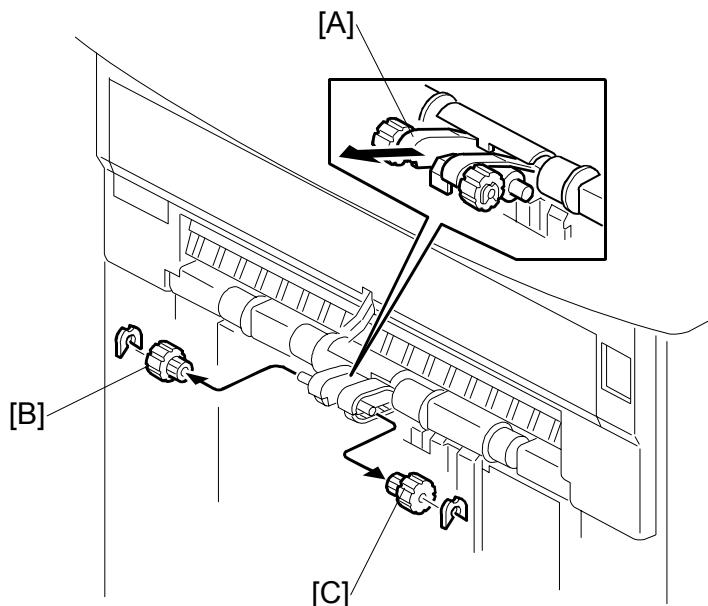
Shift Tray

1. If you need to lower the shift tray, support the bottom of the tray with your hand, then pull the gear toward you [G] to release the tray and lower it.
2. Remove the shift tray [H] (\wedge x 4).
3. Remove the shift tray rear cover [I] and front cover [J] (\wedge x 1 each).

REPLACEMENT AND ADJUSTMENT

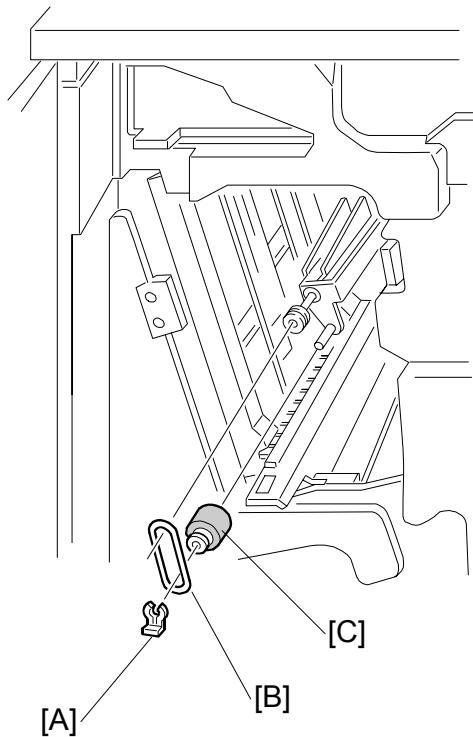
3.2 ROLLERS

3.2.1 SHIFT POSITIONING ROLLER



1. Above the shift tray, pull the roller mount [A] out.
2. Remove the rollers [B] and [C] (\varnothing x 1 each)

3.2.2 POSITIONING ROLLER

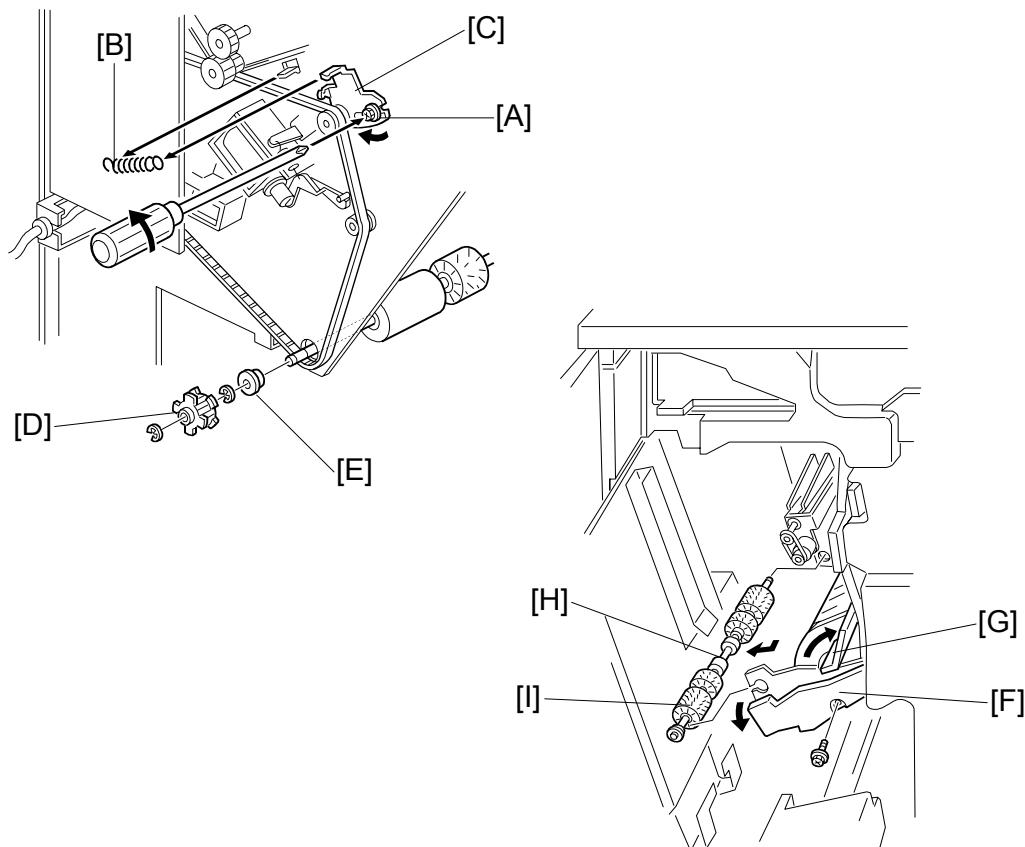


Finisher/
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Punch Unit
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1. Open the front door.
2. Remove the snap ring [A].
3. Release the rubber belt [B].
4. Replace the positioning roller [C].

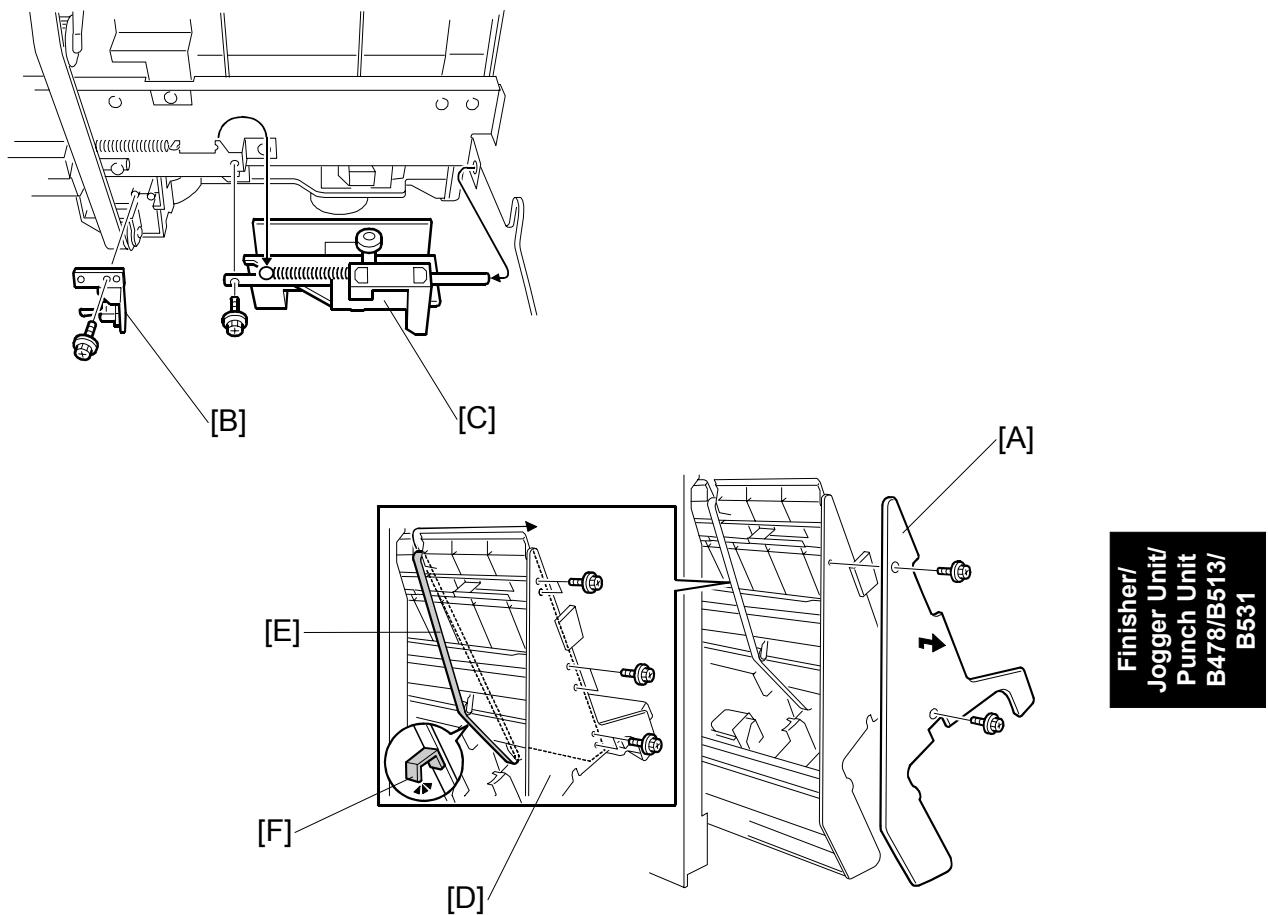
REPLACEMENT AND ADJUSTMENT

3.2.3 ALIGNMENT BRUSH ROLLER



1. Open the front door and pull out the staple unit.
2. Remove the rear cover.
3. Remove the main board and all connectors (\wedge x 8).
4. Remove the screw [A] and tension spring [B] for the tension bracket [C], and release the tension of the timing belt.
5. Remove the pulley [D] and bushing [E] (\odot x 2).
6. Remove the inner cover [F] (\wedge x 1).
7. Open the guide [G], then remove the alignment brush roller assembly [H] (\odot x 1).
8. Remove the alignment brush roller [I] (\square x 1, bushing x 1 front/back).

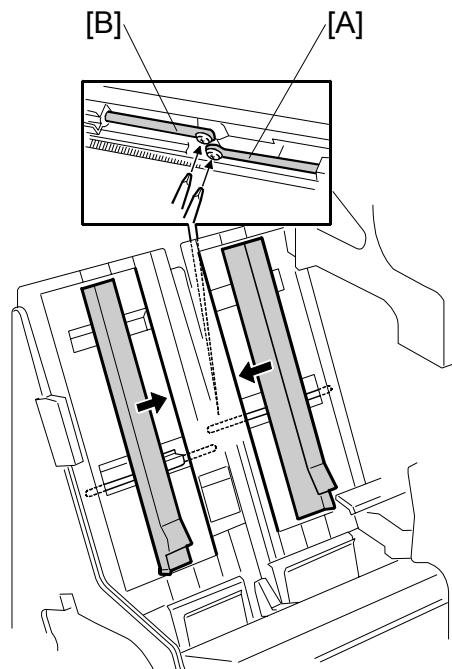
3.3 STACK FEED-OUT BELT



1. Open the front door.
 2. Pull out the jogger and stapler unit.
 3. Remove the inner cover [A] (\wedge x 2).
 4. Remove the sensor bracket [B] (\wedge x 1, \square x 1, clamp x 1).
 5. Remove the front guide [C] (\wedge x 1, spring x 1).

NOTE: When re-installing, make sure that the flat end of the shaft is against the plate.
 6. Remove the front panel [D] from the stays (\wedge x 6).
 7. Remove the old belt [E] from the bottom, center, then the top.
- NOTE:** 1) Make sure the ribbed side of the new belt and pawl [F] are facing down.
2) Make sure the new belt is engaged at all three rollers.

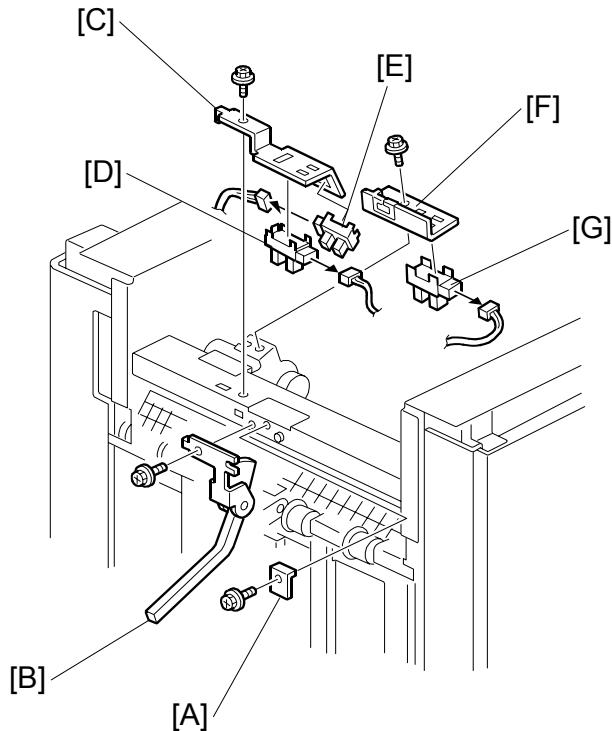
3.4 JOGGER FENCE



1. Open the front door.
 2. Pull out the jogger and stapler unit.
 3. Push both fences to the center.
 4. Remove the left jogger fence [A] (x 1)
 5. Remove the right jogger fence [B] (x 1).
- NOTE:** If the screws are difficult to remove or re-attach, remove the jogger fence belt and spring plate.

3.5 SENSORS

3.5.1 STACK HEIGHT 1, 2 AND EXIT GUIDE OPEN SENSOR



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Punch Unit
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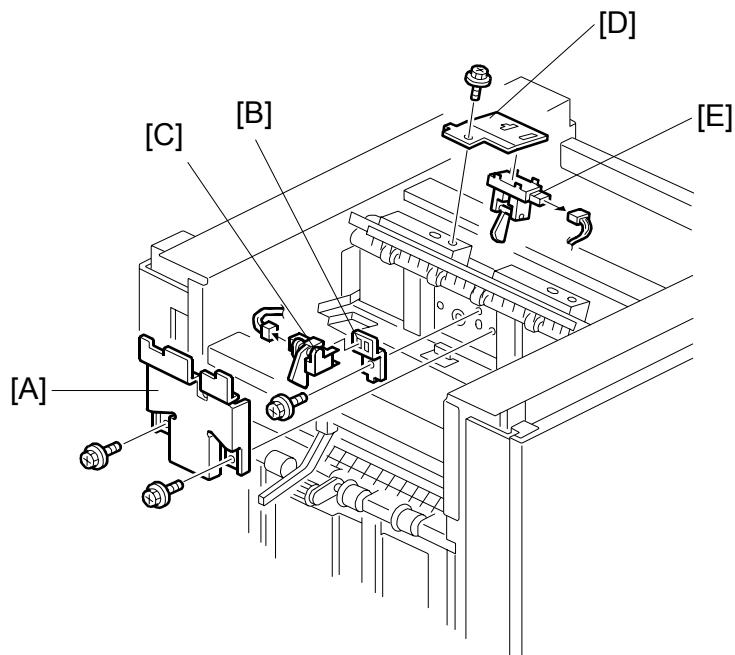
Stack Height Sensors 1 and 2

1. Remove the top cover. (☞ 3.1)
2. Remove the left upper panel and left upper cover (☞ x 2, ☞ x 2).
3. Remove the protector plate [A] (☞ x 1).
4. Remove the sensor feeler [B] (☞ x 1).
5. Remove the sensor bracket [C] (☞ x 1).
6. Replace the stack height sensor 1 [D] (☞ x 1) or 2 [E] (☞ x 1).

Exit Guide Open Sensor

1. Remove the sensor bracket [F] (☞ x 1).
2. Replace the exit guide open sensor [G] (☞ x 1).

3.5.2 UPPER TRAY PAPER LIMIT AND EXIT SENSOR



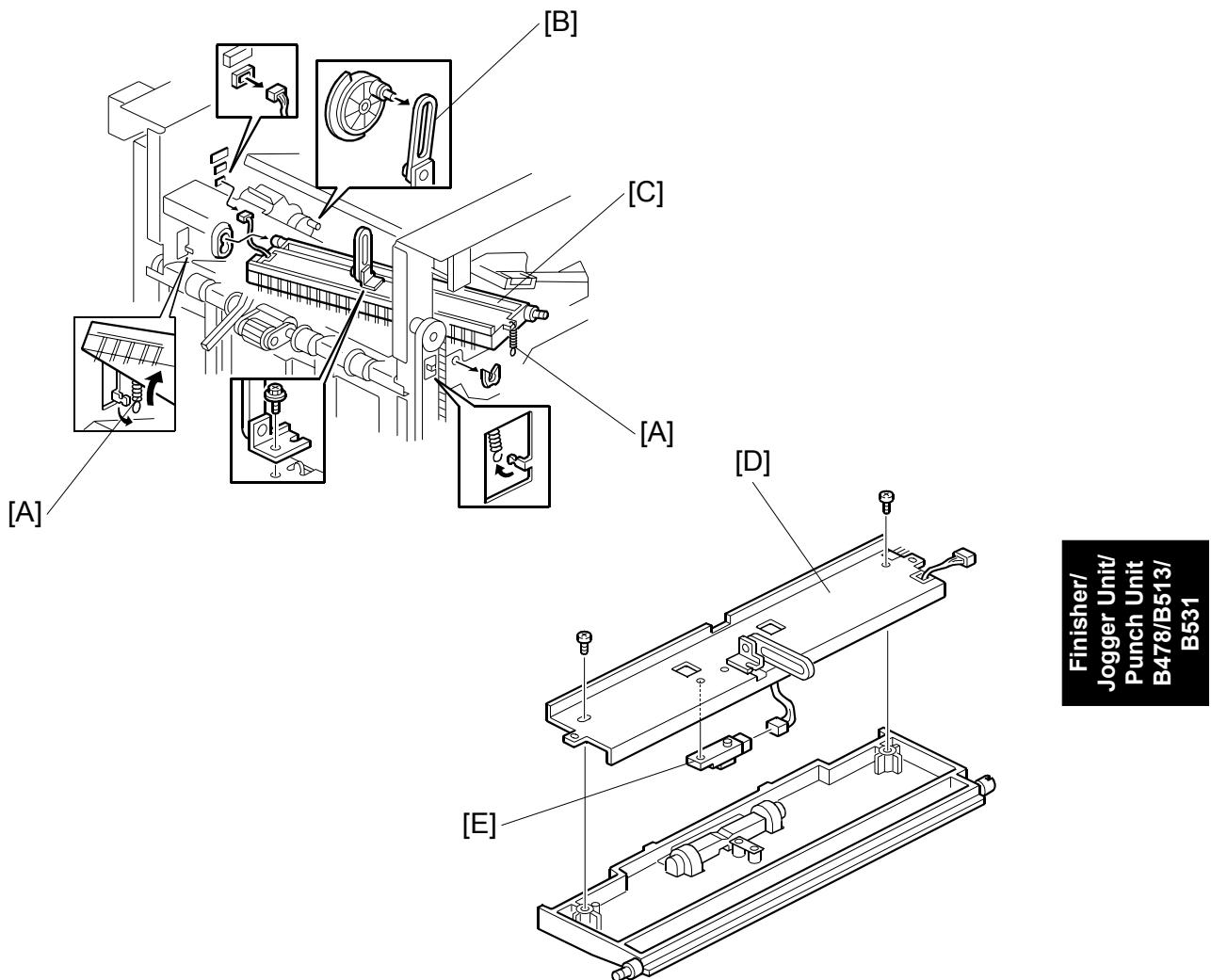
Upper Tray Paper Limit Sensor

1. Remove the top cover.
2. Remove the sensor cover [A] (\wedge x 2).
3. Remove the sensor bracket [B] (\wedge x 1).
4. Replace the upper tray paper limit sensor [C] (\square x 1).

Upper Tray Exit Sensor

5. Remove the sensor bracket [D] (\wedge x 1).
6. Replace the upper tray exit sensor [E] (\square x 1).

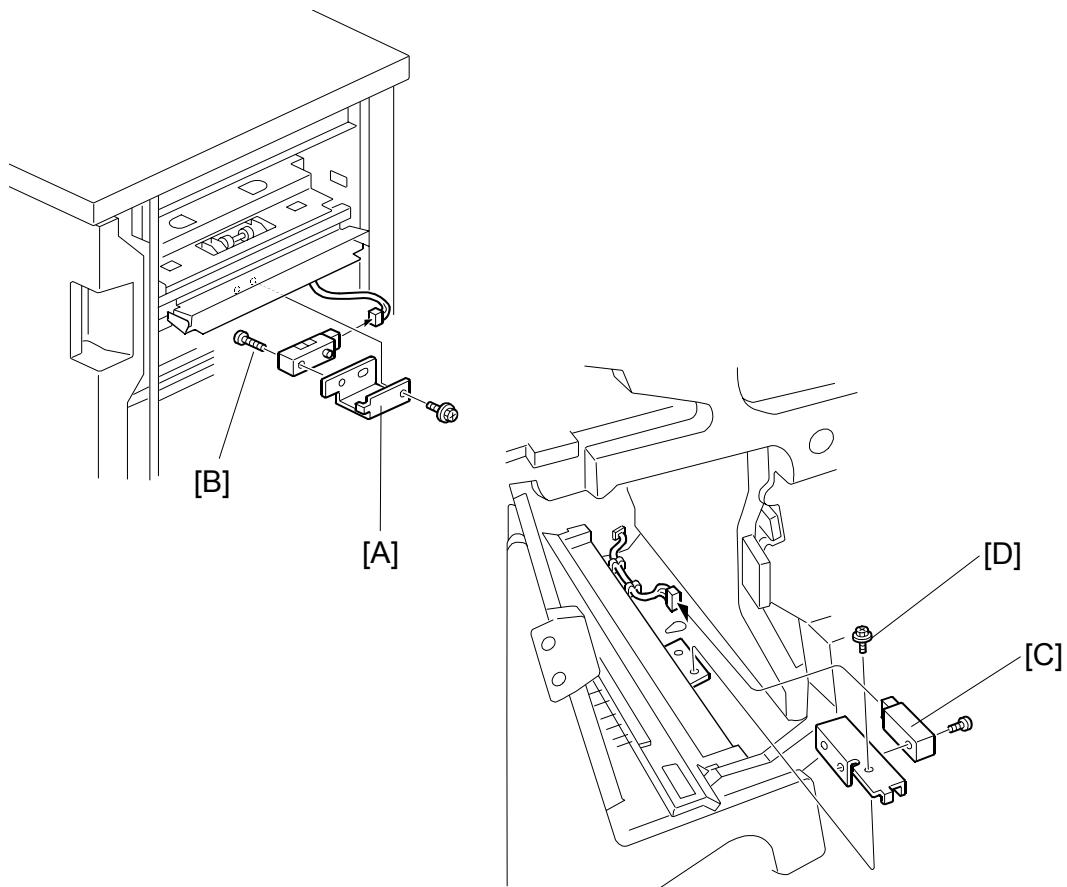
3.5.3 SHIFT TRAY EXIT SENSOR



1. Remove the top cover.
2. Open the front door.
3. Remove the inner cover.
4. Release the upper exit guide springs [A] (x 2).
5. Disconnect the link [B] from the cam (☞ x 1).
6. Remove the upper exit guide [C] (☞ x 1, ↘ x 1).
7. Remove the guide stay [D] (☞ x 2).
8. Replace the shift tray exit sensor [E] (☞ x 1, ↘ x 1).

REPLACEMENT AND ADJUSTMENT

3.5.4 ENTRANCE AND STAPLER TRAY ENTRANCE SENSORS



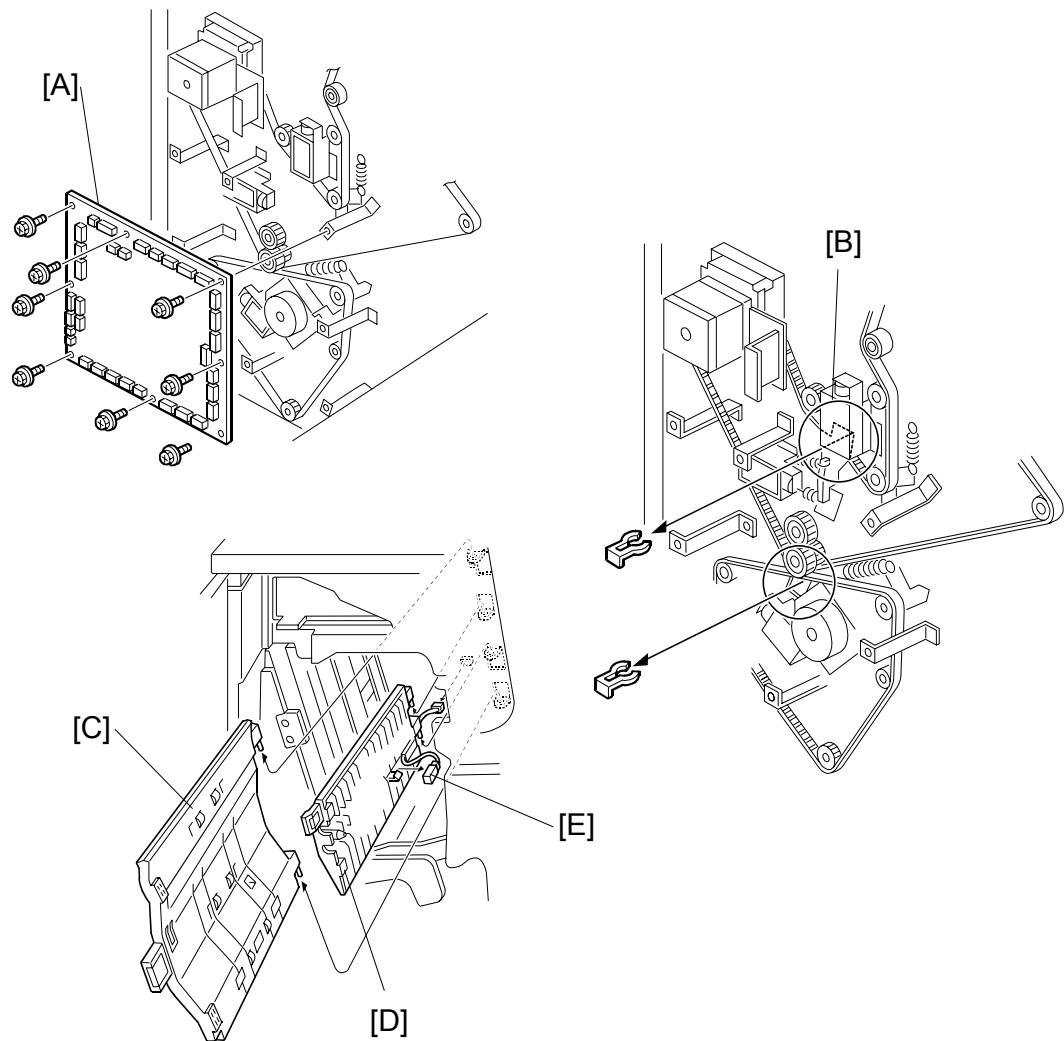
Entrance Sensor

1. Disconnect the finisher from the copier.
2. Remove the sensor bracket [A] (\wedge x 1).
3. Replace the entrance sensor [B] (\wedge x 1, \square x 1).

Stapler Tray Entrance Sensor

1. Open the front door.
2. Remove the sensor bracket [C] (\wedge x 1).
3. Replace the stapler tray entrance sensor [D] (\wedge x 1, \square x 1).

3.5.5 PRE-STACK PAPER SENSOR

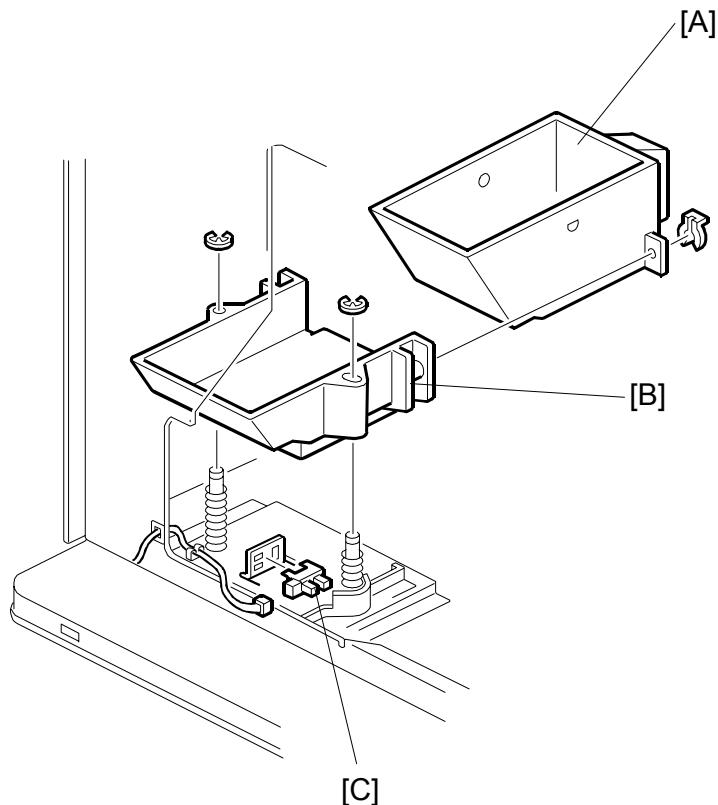


Finisher/
Jogger Unit/
Punch Unit
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1. Remove the rear cover.
2. Remove the main board [A] (x 8, x all).
3. Release the guide [B] (x 2).
4. Open the front door.
5. Remove the left vertical transport guide [C].
6. Remove the middle vertical transport guide [D] (x 1).
7. Replace the pre-stack paper sensor [E] (x 1).

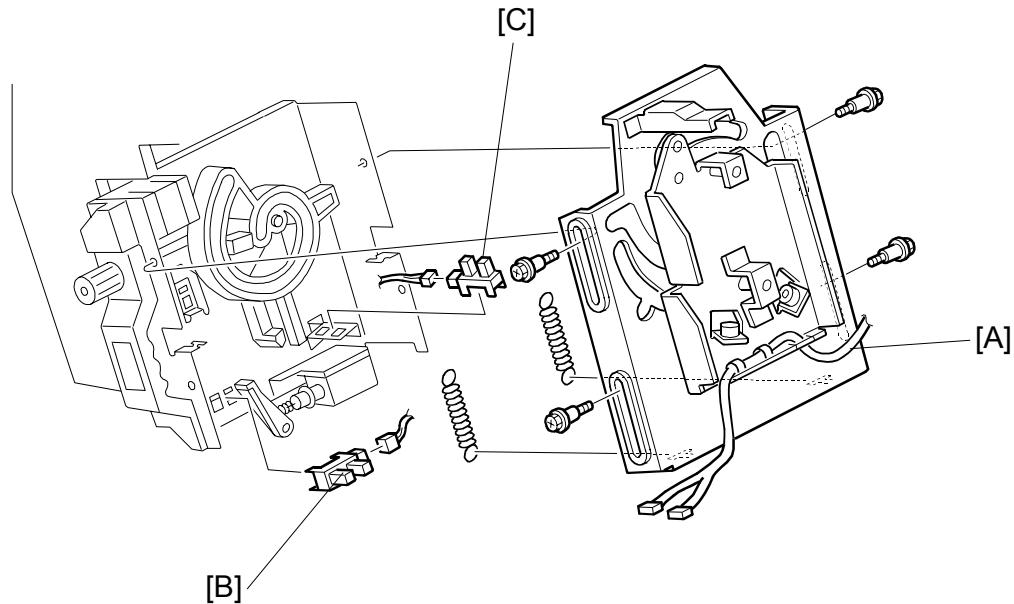
REPLACEMENT AND ADJUSTMENT

3.5.6 STAPLE WASTE HOPPER SENSOR



1. Open the front door, pull out the stapler unit, then remove the rear cover.
2. Remove the rear cover (☞ x 2).
3. Remove the staple waste hopper [A] (☞ x 1).
4. Remove the hopper holder [B] (☞ x 2).
5. Replace the staple waste hopper sensor [C] (☞ x 1).

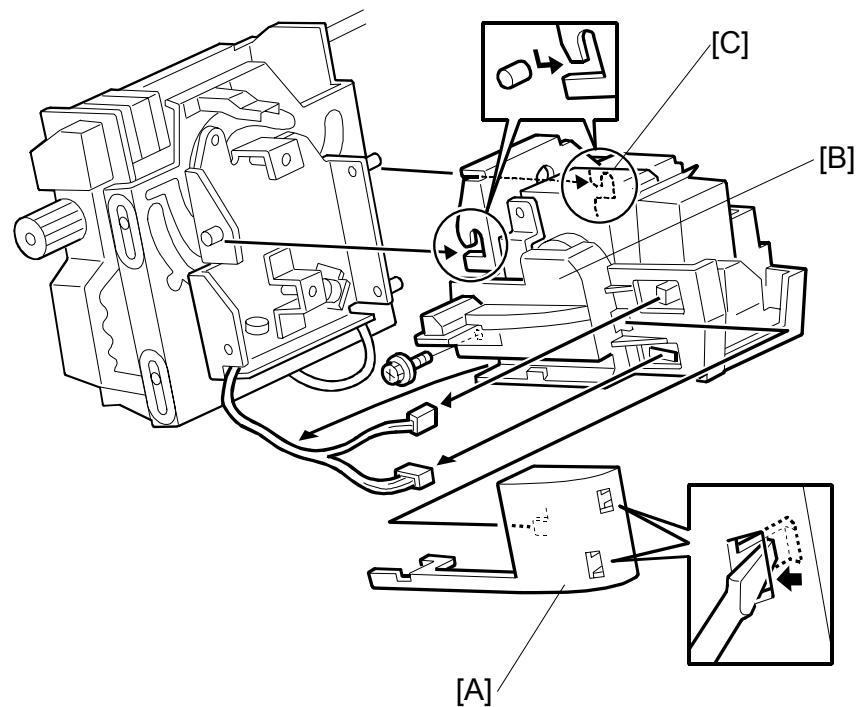
3.5.7 STAPLER ROTATION HP AND STAPLER RETURN SENSORS



Finisher/
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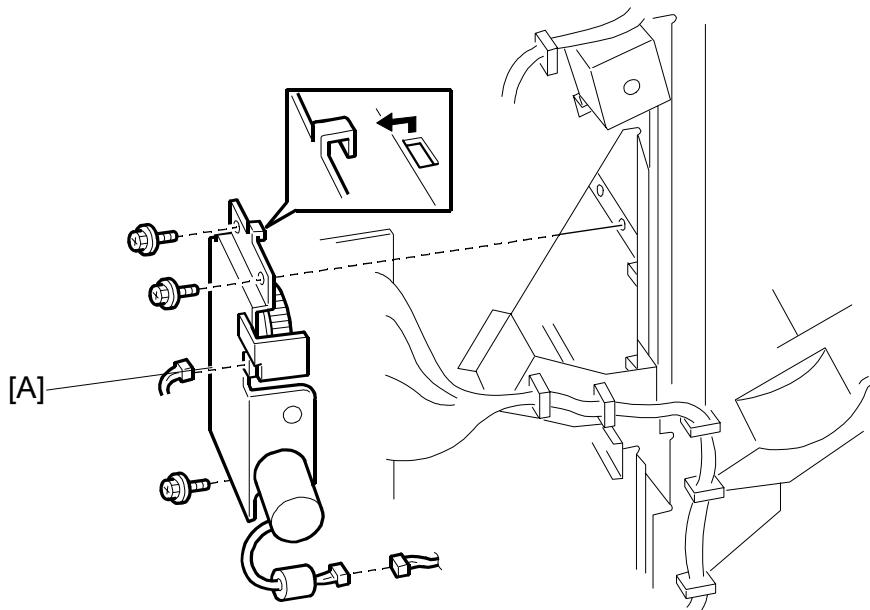
1. Remove the stapler unit. (See next page.)
2. Remove the stapler mount bracket [A] (\wedge x 4, springs x 2).
3. Replace the stapler rotation HP sensor [B] (\square x 1).
4. Replace the stapler return sensor [C] (\square x 1).

3.6 STAPLER



1. Open the front door and pull out the staple tray.
2. Remove the stapler unit harness cover [A].
3. Remove the stapler cover [B] (x 1, x 2).
4. Lift the stapler off of the pegs [C].

3.7 SHIFT TRAY MOTOR

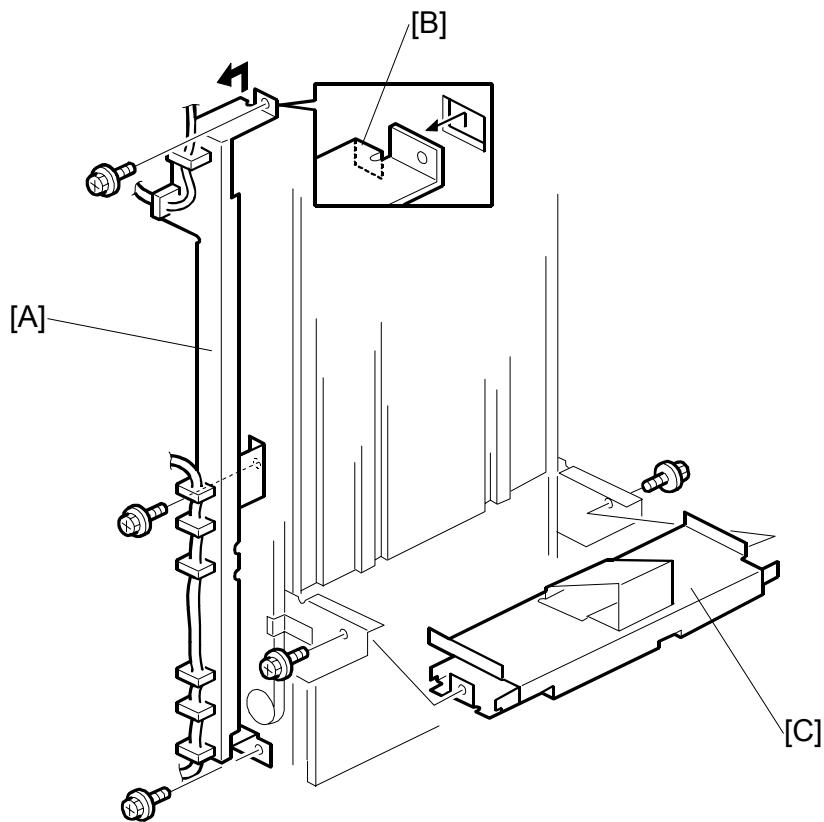


Finisher/
Jogger Unit/
Punch Unit
B478/B513/
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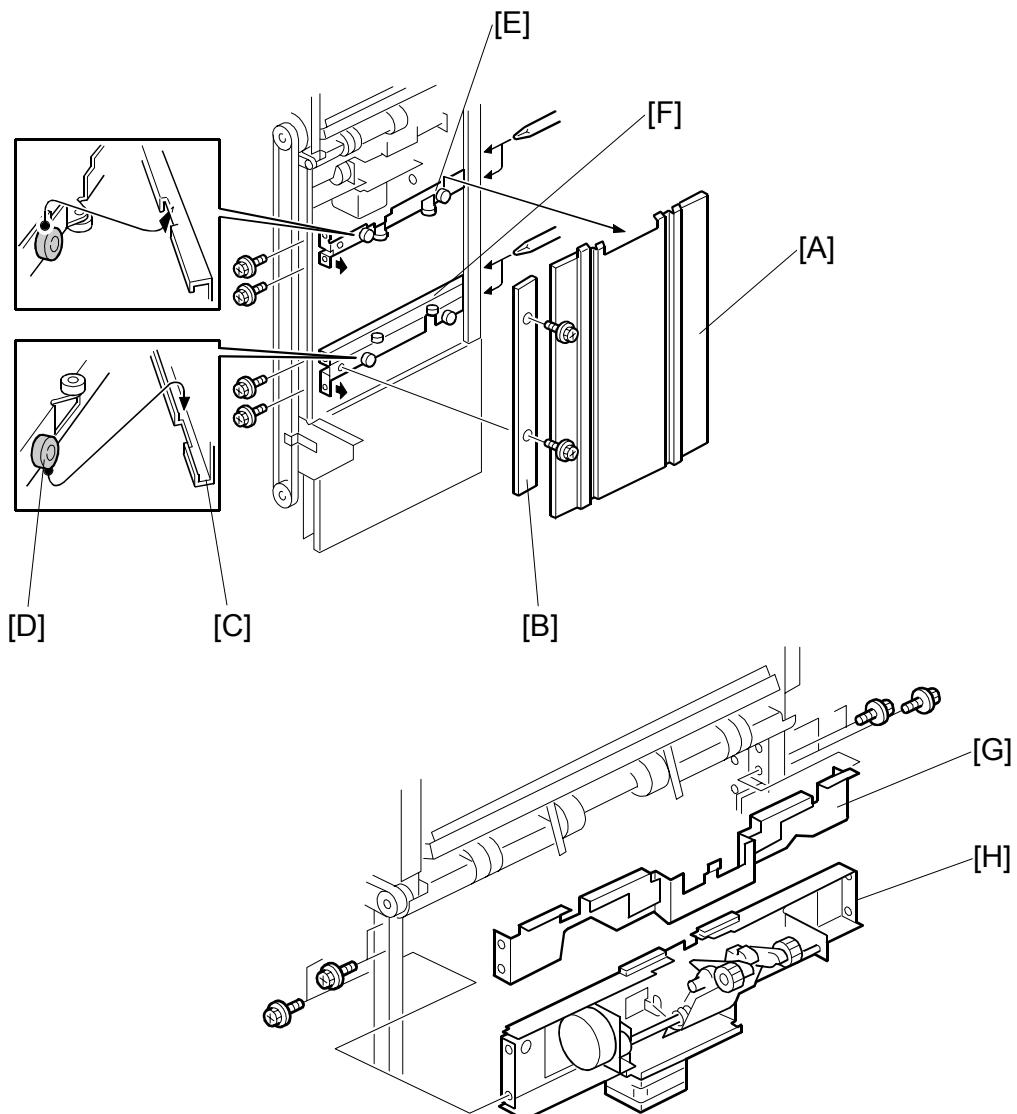
1. Remove the front door and rear cover (参照 3.1).
2. Shift motor [A] (× 2, × 3)

REPLACEMENT AND ADJUSTMENT

3.7.1 STACKING ROLLER/ROLLER DRAG MOTORS, RETURN HP SENSOR



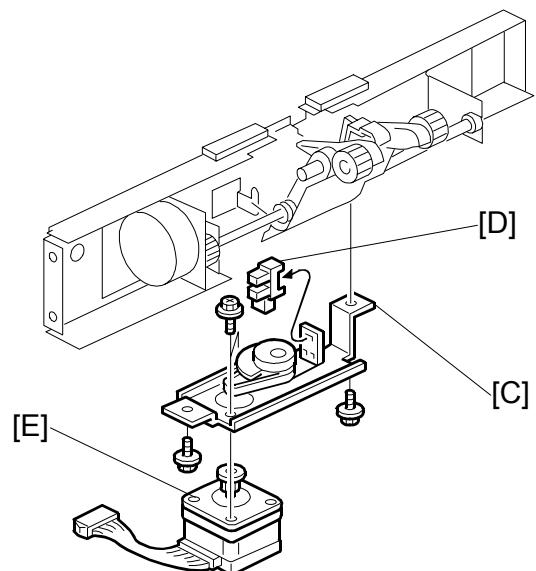
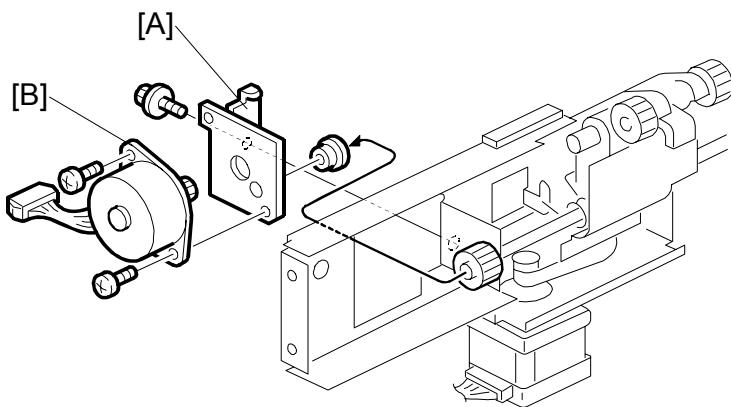
1. Do the procedures to remove the front door and all covers, with the exception of the left lower cover and top cover (labeled [C] and [E]).
NOTE: Be sure to lower the shift tray by pulling the gear toward you. The shift tray must be down.
2. Remove the shift tray motor. (3.7)
3. Remove the left stay [A] (\wedge x 3).
4. Unhook the stay at top [B].
5. Remove the shift tray mounting plate [C] (\wedge x 2).



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6. Remove the end fence [A] and plate [B] (\wedge x 2).
 7. Disengage the end fence races [C] from the rollers [D] behind the fence.
 8. Remove the upper stay [E] (\wedge x 4).
 9. Remove the lower stay [F] (\wedge x 4).
 10. Remove the cover [G] (\wedge x 4).
 11. Remove the stacking roller/drag motor stay [H] (\square x 3, \wedge x 4).
- NOTE:** Make sure the motor and sensor connectors are disconnected before removing.

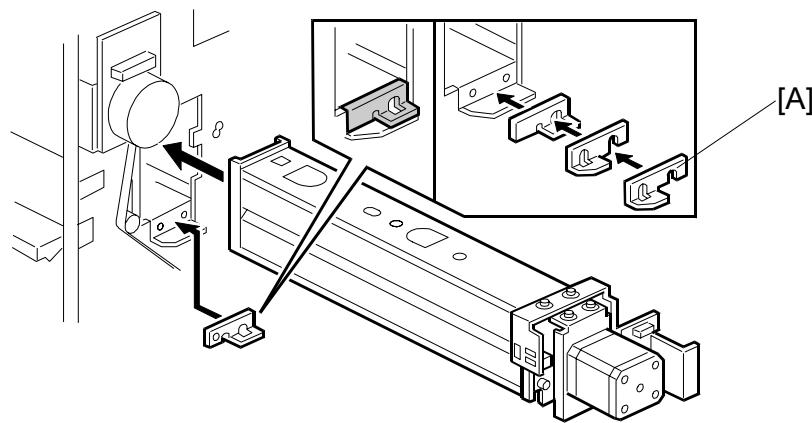
REPLACEMENT AND ADJUSTMENT



12. Remove the stacking motor bracket [A] (bushing x 1, \wedge x 1).
13. Remove the stacking motor [B] (\wedge x 2).
14. Remove the roller drag motor bracket [C] (\wedge x 2).
15. Remove return HP sensor [D].
16. Remove the roller drag motor [E] (\wedge x 1).

3.8 PUNCH UNIT B531 (OPTION)

3.8.1 PUNCH POSITION ADJUSTMENT



The position of the punched holes can be adjusted in two ways.

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Front to Rear Adjustment

Three spacers [A] are provided with the punch unit for manual adjustment of the hole position in the main scan direction:

- 2 mm (x 1)
- 1 mm (x 2)

NOTE: One spacer was installed at installation and the remaining spacers were fastened with a screw to the rear frame of the finisher under the rear cover and slightly above the lock bar.

Right to Left Adjustment

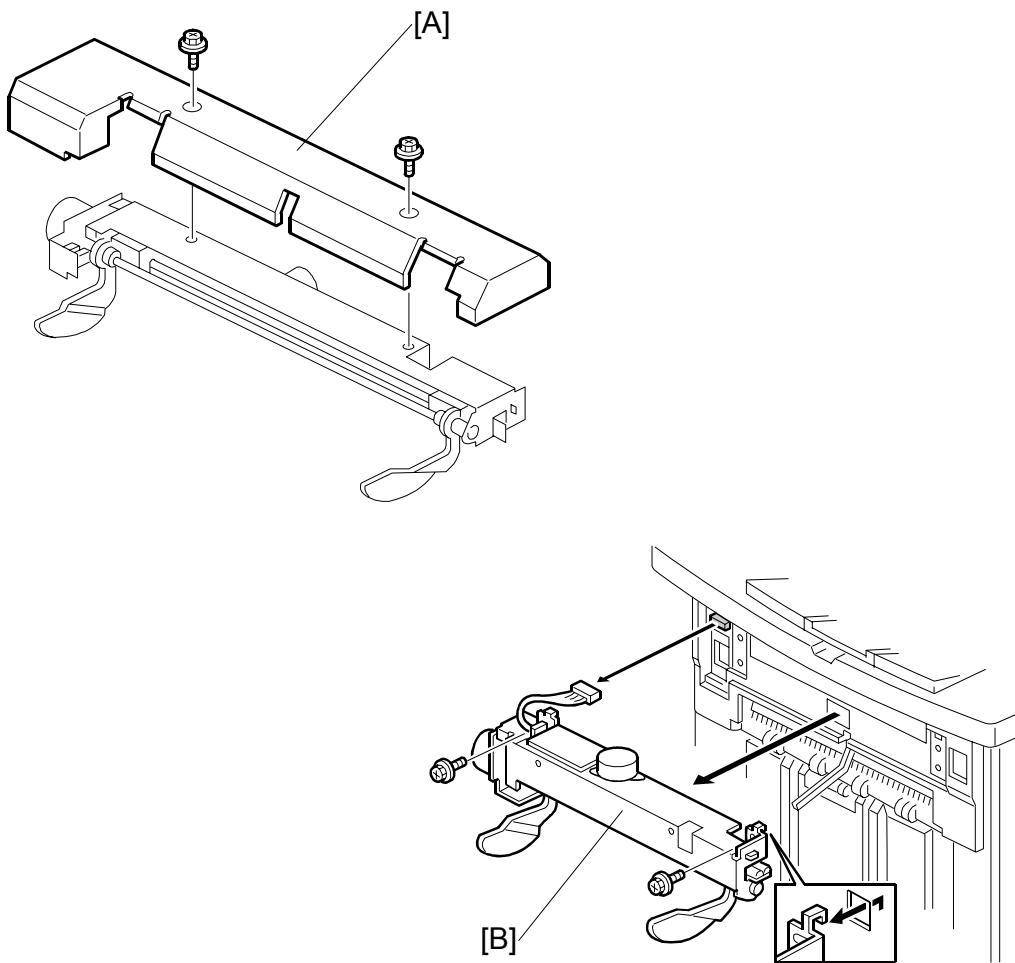
The position of the punched holes can be adjusted right to left in the sub scan direction with SP6-113 Punch Hole Position Adjustment. The position can be adjusted in the range ± 7.5 mm in 0.5 mm steps. The default setting is 0.

Press the **[•/*]** key to toggle the \pm selection. A +VE value shifts the punch holes left toward the edge of the paper, and a -VE value shifts the holes right away from the edge.

REPLACEMENT AND ADJUSTMENT

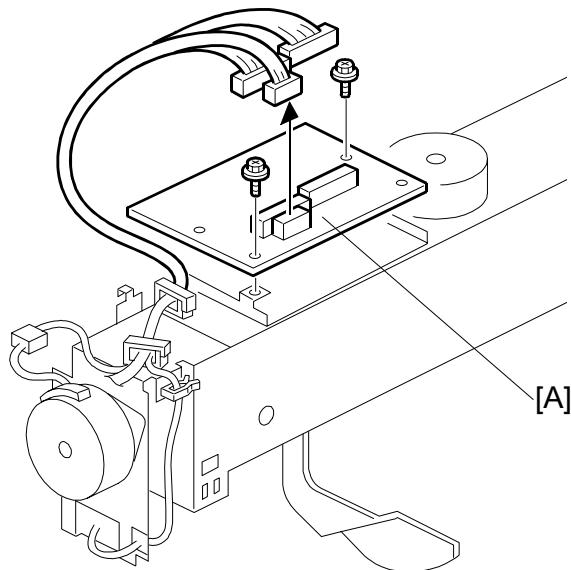
3.9 JOGGER UNIT B513 (OPTION)

3.9.1 JOGGER UNIT



1. Remove the jogger unit cover [A] (\wedge x 2).
2. Remove the jogger unit [B] (\wedge x 2, \square x 1).

3.9.2 JOGGER UNIT PCB

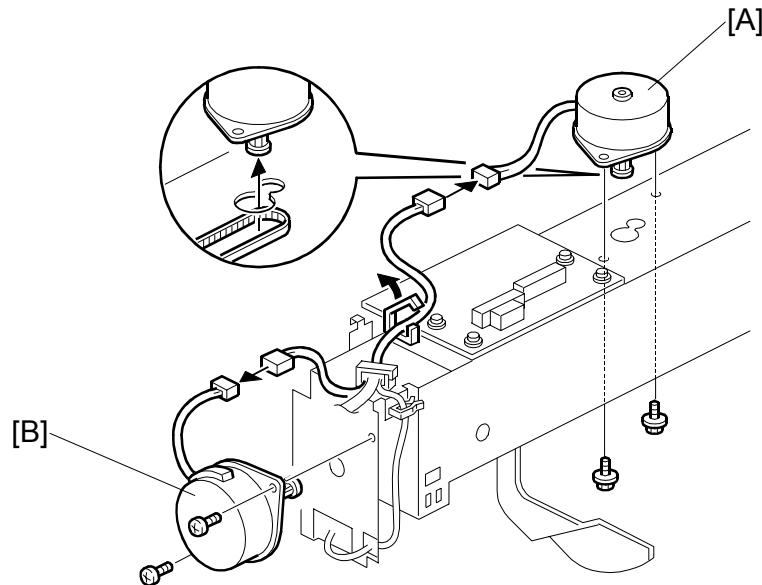


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1. Remove the jogger unit from the finisher. (3.9.1)
2. Remove the jogger unit control PCB [A] ($\wedge \times 2$, $\square \times 3$).

REPLACEMENT AND ADJUSTMENT

3.9.3 JOGGER UNIT MOTOR



1. Remove the jogger unit from the finisher. (参照 3.9.1)
2. Remove the shift jogger motor [A] (\wedge x 2, \square x 1).
3. Remove the shift jogger lift motor [B] (\wedge x 2, \square x 1).

4. TROUBLESHOOTING

If the machine logs an SC code in the display of the operation panel, see “Section 4 Troubleshooting” of the Service Manual. Section 4 contains a complete list of all service codes and how to troubleshoot the problem.

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5. SERVICE TABLES

For details about 3000-Sheet Finisher B478 SP codes, please refer to “5. Service Tables” in the main machine service manual.

5.1 DIP SWITCHES

DPS100				Description
1	2	3	4	
0	0	0	0	Default
0	0	1	0	Free run: A4 LEF, staple mode
0	0	0	1	Free run: staple and tray shift

NOTE: Do not use any other settings.

5.2 TEST POINTS

No.	Label	Monitored Signal
TP100	(5V)	+5 V
TP101	(GND)	Ground
TP102	(RXD)	RXD
TP103	(TXD)	TXD

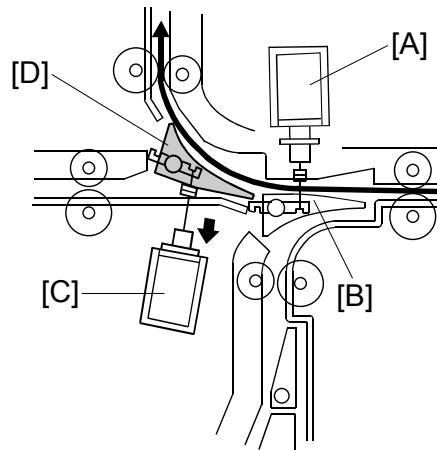
5.3 FUSES

No.	Function
FU100	Protects 24 V.

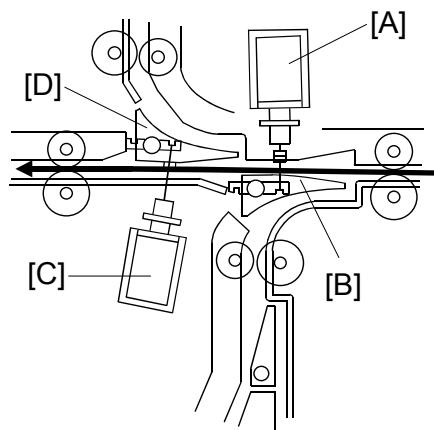
6. DETAILS

6.1 TRAY AND STAPLER JUNCTION GATE

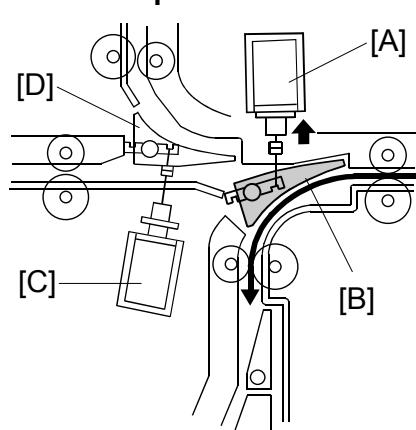
Upper Tray Mode



Sort/Stack Mode



Staple Mode

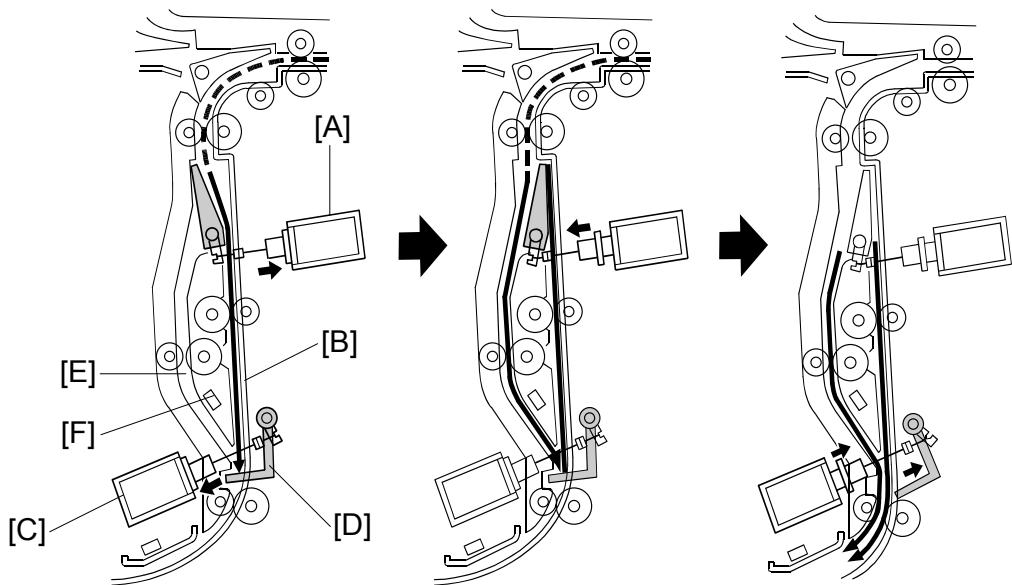


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Depending on the finishing mode, the copies are directed up, straight through, or down by the combinations of open and closed junction gates.

Solenoid/Gate		Selected Operation Mode		
		Upper Tray	Sort/Stack	Staple
[A]	Stapler junction gate solenoid	Off	Off	ON
[B]	Stapler junction gate	Closed	Closed	OPEN
[C]	Tray junction gate solenoid	ON	Off	Off
[D]	Tray junction gate	OPEN	Closed	Closed

6.2 PAPER PRE-STACKING



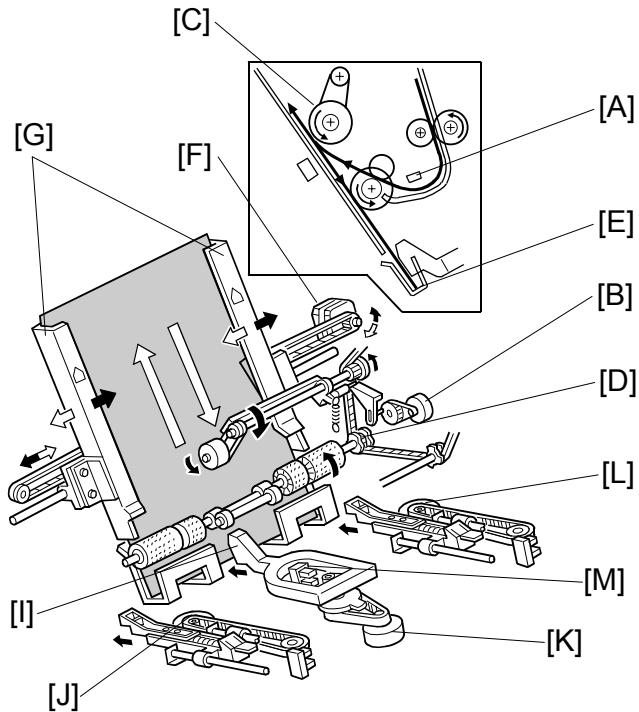
This mechanism improves productivity in staple mode. It is only used when copying on A4, LT, or B5 (all LEF).

During stapling, the copier has to wait. This mechanism reduces the wait by holding the first two sheets of a job while the previous job is still being stapled. It only works during the second and subsequent sets of a multi-set copy job.

The pre-stack junction gate solenoid [A] turns on 120 mm after the 1st sheet of paper turns on the entrance sensor, and this directs the sheet to the pre-stack tray [B]. (This sheet cannot be fed to the stapler yet, because the first set is still being stapled.) The pre-stack paper stopper solenoid [C] turns on 350 mm after the 1st sheet turns on the entrance sensor. The pre-stack paper stopper [D] then stops the paper.

The pre-stack junction gate solenoid turns off 230 mm after the trailing edge of the 1st sheet passes through the entrance sensor, and the 2nd sheet is sent to the paper guide [E]. The pre-stack paper stopper is released about 40 mm after the 2nd sheet turns on the pre-stack stopper sensor [F], and the two sheets of copy paper are sent to the stapler tray. All sheets after the 2nd sheet go to the stapler tray via the paper guide [E].

6.3 JOGGER UNIT PAPER POSITIONING



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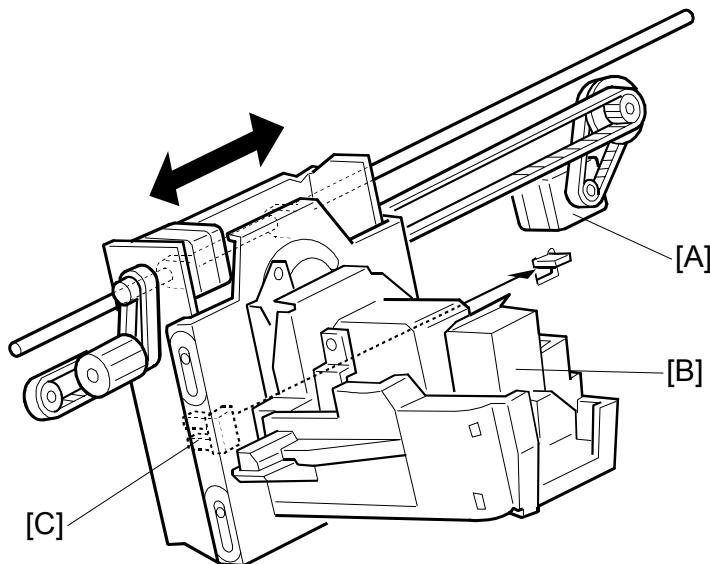
In the staple mode, as every sheet of paper arrives in the jogger unit, it is vertically and horizontally aligned, then the staple edge is pressed flat to ensure the edge of the stack is aligned correctly for stapling.

Vertical Paper Alignment: About 60 ms after the trailing edge of the copy passes the staple tray entrance sensor [A], the positioning roller motor [B] is energized to push the positioning roller [C] into contact with the paper. The positioning roller and alignment brush roller [D] rotate to push the paper back and align the trailing edge of the paper against the stack stopper [E].

Horizontal Paper Alignment: When the print key is pressed, the jogger motor [F] turns on and the jogger fences [G] move to the wait position about 7.2 mm wider than the selected paper size on both sides. When the trailing edge of the paper passes the staple unit entrance sensor, the jogger motor moves the jogger fences 3.7 mm towards the paper. Next, the jogger motor turns on again for 3.5 mm for the horizontal paper alignment then goes back to the wait position.

Paper Stack Correction: After the paper is aligned in the stapler tray, the left [J], center [K], and right [L] stack plate motors switch on briefly and drive the front stack, center stack, and rear stack plates against the edge of the stack to flatten the edge completely against the staple tray for stapling. When the next copy paper turns on the stapler entrance sensor, the stack plate motor turns on and returns to its home position. The home position is detected by stack plate HP sensor [M].

6.4 STAPLER UNIT MOVEMENT



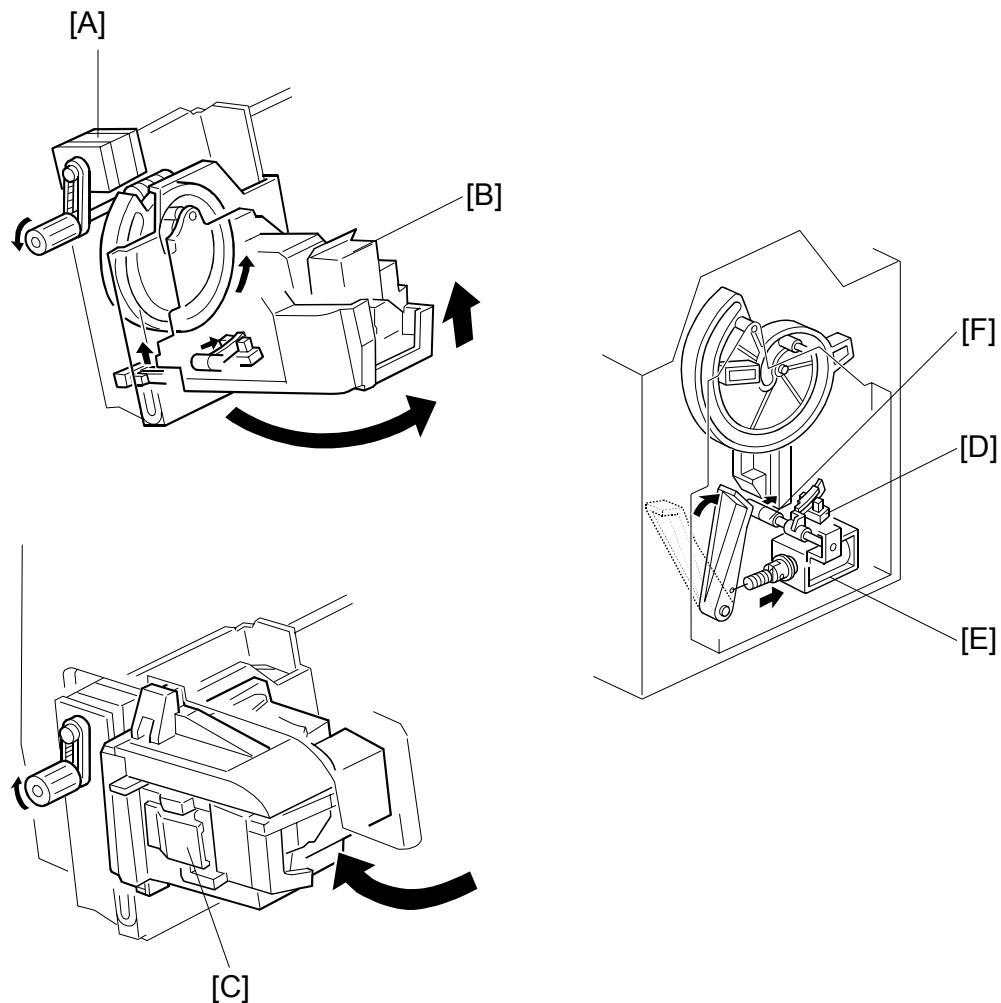
Side-to-Side

The stapler motor [A] moves the stapler [B] from side to side. After the start key is pressed, the stapler moves from its home position to the stapling position.

If two-staple-position mode is selected, for the first stack the stapler moves to the rear stapling position first, staples, moves to the front position, staples and waits at the front. For the second stack, the stapler staples the front corner first, then moves to the rear corner and staples.

NOTE: For continuous stapling jobs, the corners are stapled rear then front for the odd number stacks and stapled front then rear for even number stacks.

After the job is completed, the stapler returns to its home position. This is detected by the stapler HP sensor [C].



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Rotation (1)

In the oblique staple position mode, the stapler rotation motor [A] rotates the stapler units [B] 45° to counterclockwise after it moves to the stapling position.

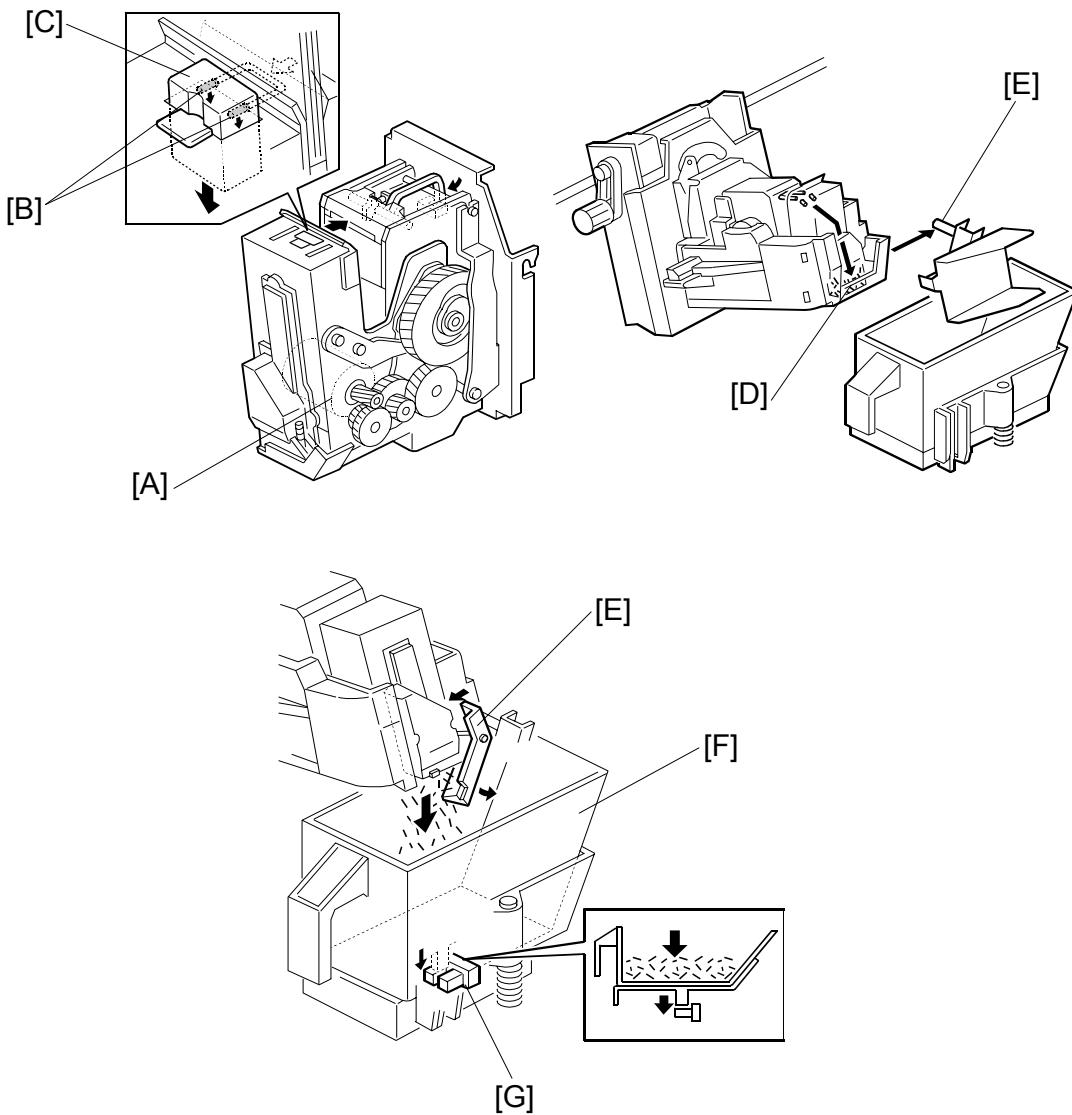
Rotation (2)

When the staple end condition arises, the stapler motor moves the stapler to the front and the stapler rotation motor rotates the stapler unit to clockwise to remove the staple cartridge [C]. This allows the user to add new staples.

Once the staples have been installed, and the front door closed, the stapler unit returns to its home position. As the stapler unit is returning to the home position, the stapler return sensor [D] is activated, the return solenoid [E] turns on and it assists the guide roller [F] to return to its guide (this guide directs the stapler during rotation).

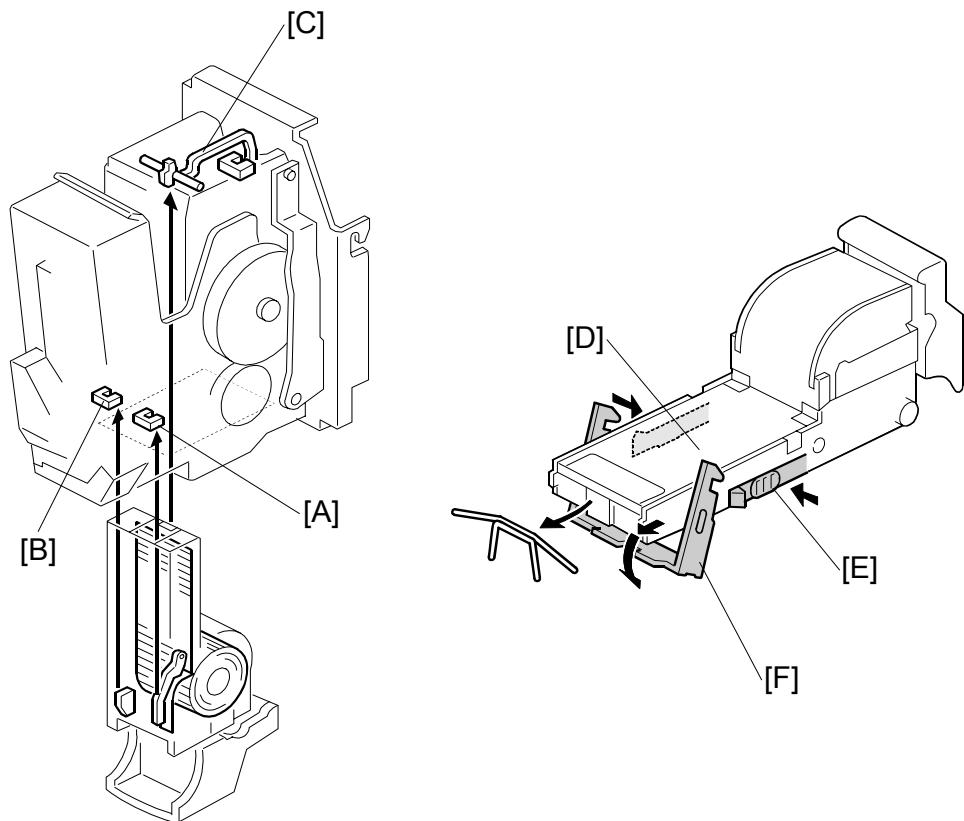
DETAILS

6.5 STAPLER



When the aligned copies are brought to the stapling position by the positioning roller and jogger fences, the staple hammer motor [A] starts stapling.

During stapling, the stapler trims off the excess length [B] of the staples by lowering the cutter [C]. This excess length depends on the number of copies in the set; there will be very little for a stack containing 100 sheets. The staple waste drops into the tray [D] in the stapler. When the stapler unit returns to its home position, the tray hits the shaft [E] and the tray opens. The staple waste drops into the staple waste hopper [F]. When the staple waste hopper is full, the actuator on its base activates the staple waste hopper sensor [G]. An SC737 (Full Finisher Staple Waste Hopper) is displayed.



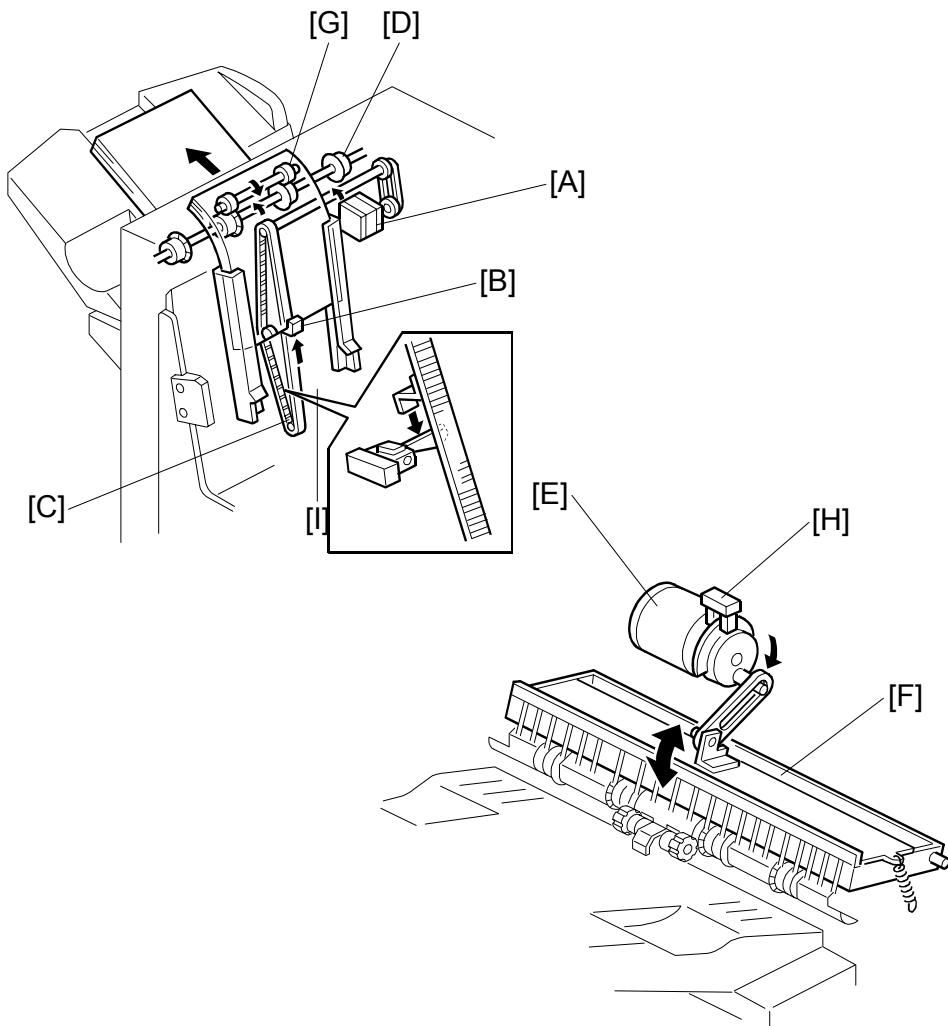
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The stapler has a staple end sensor [A], cartridge set sensor [B] and staple hammer HP sensor [C].

When a staple end or no cartridge condition is detected, a message is displayed advising the operator to install a staple cartridge. If this condition is detected during a copy job, the indication will appear, and the copy job will stop.

The staple cartridge has a clinch area [D] where jammed staples collect. The operator can remove the jammed staples from the clinch area by pressing in the releases [E] on both sides, then lowering the bracket lever [F].

6.6 FEED-OUT

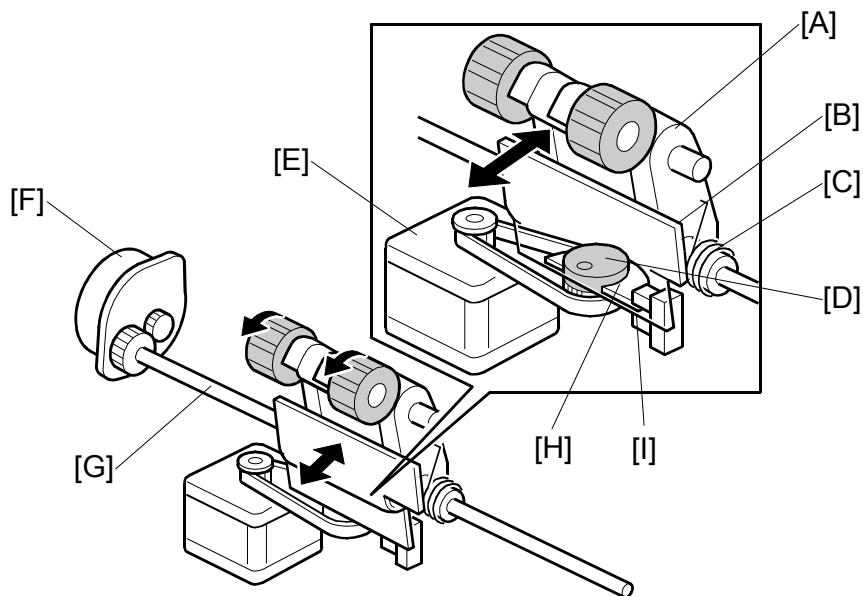


After the copies have been stapled, the stack feed-out motor [A] starts. The pawl [B] on the stack feed-out belt [C] transports the set of stapled copies up and feeds it to the shift tray exit roller [D]. When stapling starts, the exit guide motor [E] opens the upper exit guide [F], which includes the upper shift tray exit roller [G], in order to feed out the leading edge of the copy set smoothly. The exit guide motor turns on again a certain time after stapling is complete, and the upper exit guide plate is lowered. Then the shift tray exit roller takes over the stack feed-out.

The on-off timing of the exit guide motor is detected by the exit guide open sensor [H].

The stack-feed-out motor turns off when the pawl actuates the stack feed-out belt home position sensor [I].

6.7 PAPER EXIT STACKING



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The stacking roller assembly [A] is fastened to a plate [B] on a shaft by a spring [C]. The cam [D], in contact with the bottom of the plate, is connected to the stacking roller drag motor [E] via a timing belt.

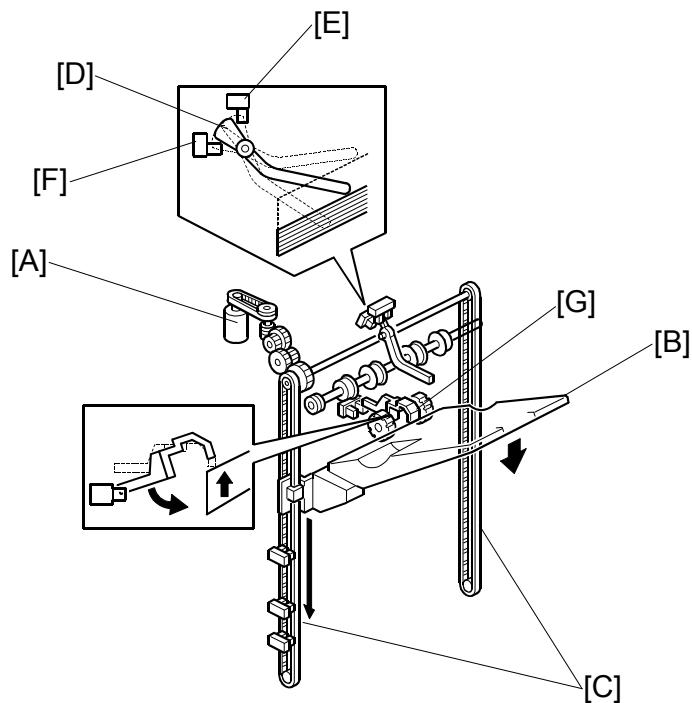
The stacking roller drag motor and timing belt rotate the cam against the bottom of the plate to move the rollers forward and back with each sheet ejected onto the shift tray.

The stacking roller motor [F] drives the shaft [G] that rotates the stacking rollers counter-clockwise as the rollers move back. The simultaneous rotation and backward movement of the roller assembly pulls each sheet back toward the copier to align the edges of the stack on the shift tray.

The actuator [H] is mounted on the cam and rotating with both rotating clockwise) and detects the roller assembly home position when the actuator leaves the gap of the return drive HP sensor [I] and signals the machine that the rollers are at the home position. The machine uses this information to control paper feed timing and confirm that the mechanism is operating correctly. The cam and actuator make one complete rotation for every sheet fed out of the machine onto the shift tray.

6.8 SHIFT TRAY

6.8.1 OVERVIEW



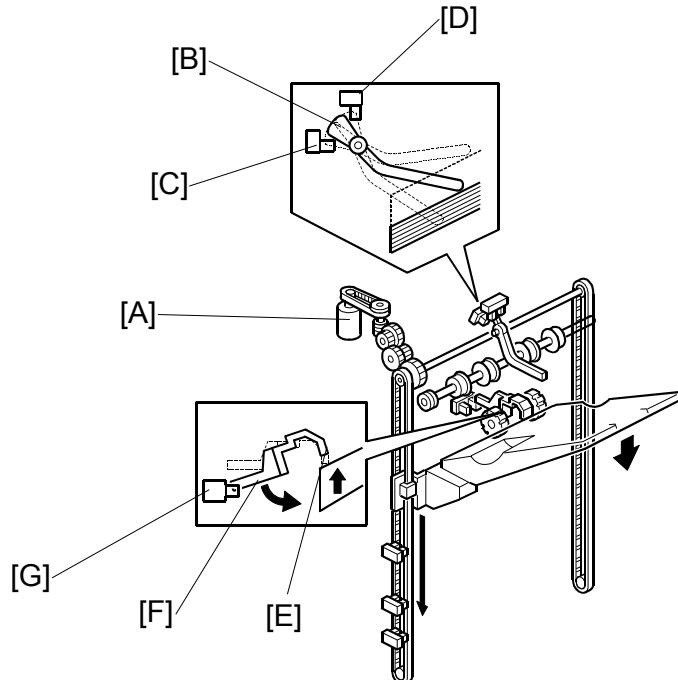
The shift tray lift motor [A] controls the vertical position of the shift tray [B] through gears and timing belts [C].

Stand-by Mode

After the main switch is turned on, or when the stack is removed from the tray, the end of the feeler on the tray falls and its actuator [D] rotates up into staple mode HP sensor 2 [E] (S7) and switches it on. This switches on the lift motor, which raises the tray until the tray pushes the actuator out of the sensor [E]. Then, the lift motor stops the shift tray; this is the home position (the actuator [D] is between the two sensors [E] and [F]).

The shift tray upper limit switch (SW1) prevents the drive gear from being damaged if staple mode HP sensor 2 [E] fails. In case of a failure, when the shift tray pushes up the actuator [G] and positioning rollers, the switch will cut the power to the shift tray lift motor.

6.8.2 SHIFT TRAY UP/DOWN MOVEMENT



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Sort/Stack Mode (Shift Mode)

The shift tray moves to home position, which is when the actuator [F] has just exited the shift mode home position sensor [G] (S12). During feed-out, the tray is lowered automatically at prescribed intervals; sensor [D] (S7) is ignored. When the stack is removed from the tray, the end of the feeler [E] between the arms of the stacking roller falls, and its actuator [F] enters sensor [G] (S12) and switches it on. This switches on the lift motor [A], which raises the tray until the actuator leaves the sensor. Then, the lift motor stops the tray; this is the home position.

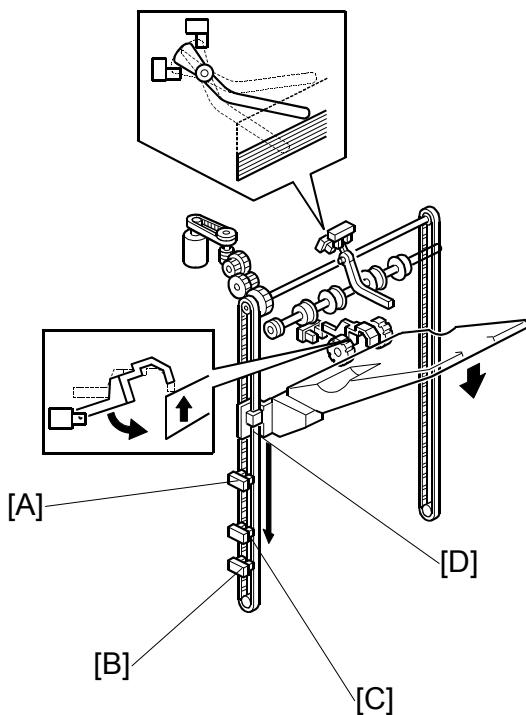
In sort/stack mode, if S12 fails when the tray is being lifted, the shift tray upper limit switch (SW1) prevents the drive gear from being damaged.

Staple Mode

The shift tray moves to home position, which is when the actuator [B] is between the staple mode home position sensors [C] and [D]. During feed-out, the shift tray is lowered automatically at prescribed intervals. When the stack is removed from the tray, the tray returns to the home position for stand-by mode. (☞ 6.8.1)

DETAILS

6.8.3 SHIFT TRAY LOWER LIMIT DETECTION



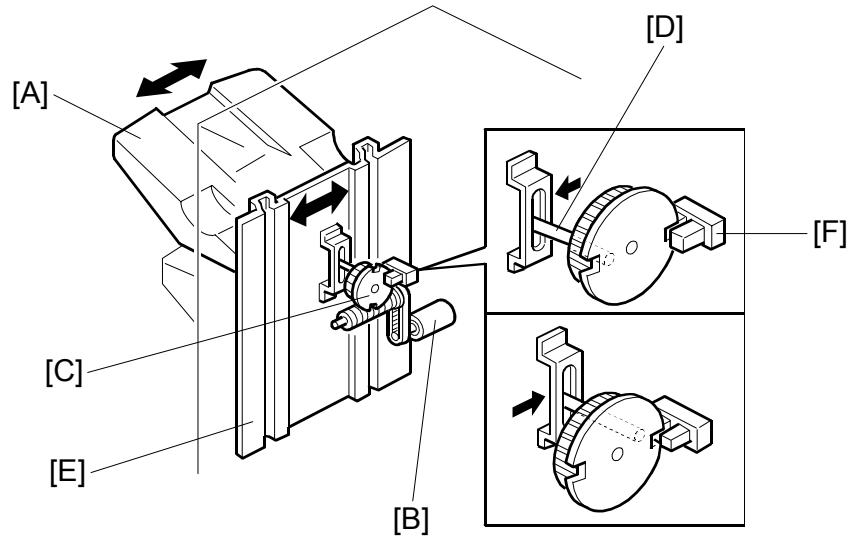
This machine has two shift tray lower limit sensors: shift lower limit sensor [A] (S9) for large paper (B4 and larger) and shift lower limit sensor [B] (S11) for small paper (smaller than B4).

NOTE: Sensor [C] (S10) is not used.

When the actuator [D] enters sensor [A] while using large paper (about 1500 sheets are on the tray), a message will be displayed and copying will stop.

When the actuator [D] enters sensor [B] while using small paper (about 3,000 sheets are on the tray), a message will be displayed and copying will stop.

6.9 SHIFT TRAY SIDE-TO-SIDE MOVEMENT



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In sort/stack mode, the shift tray [A] moves from side to side to separate the sets of copies.

The horizontal position of the shift tray is controlled by the shift motor [B] and shift gear disk [C]. After one set of copies is made and delivered to the shift tray, the shift motor turns on, driving the shift gear disk and the shaft [D]. The end fence [E] is positioned by the shaft, creating the side-to-side movement.

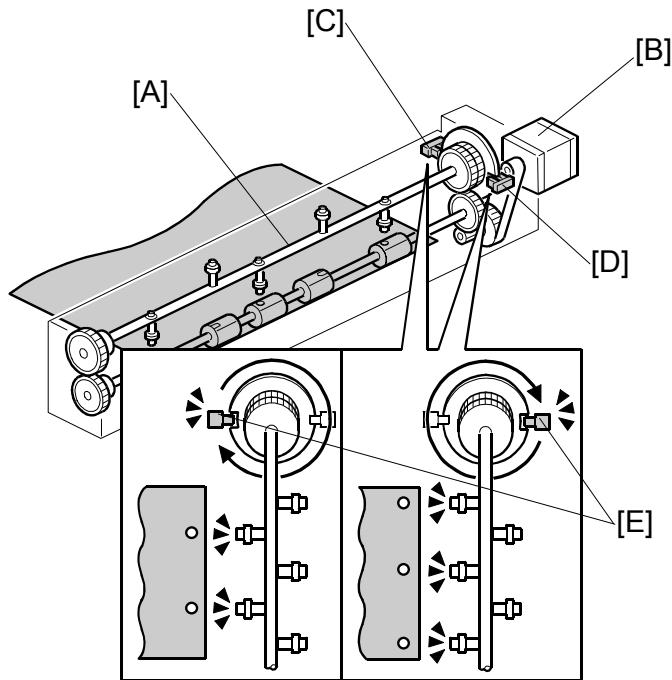
When the shift gear disk has rotated 180 degrees (when the shift tray is fully shifted across), the cut-out in the shift gear disk turns on the shift tray half-turn sensor [F] and the shift motor stops. The next set of copies is then delivered. The motor turns on, repeating the same process and moving the tray back to the previous position.

6.10 JAM CONDITIONS

1. The entrance sensor does not turn on when the copier has fed paper 426 mm after the copier exit sensor turned off.
2. The entrance sensor does not turn off when the upper transport motor has fed paper 1.5 times the paper's length after it turned on.
3. The upper tray exit sensor does not turn on when the upper transport motor has fed paper 574 mm after the entrance sensor turned on.
4. The upper tray exit sensor does not turn off when the upper transport motor has fed paper 1.5 times the paper's length after it turned on.
5. In sort/stack mode, the shift tray exit sensor does not turn on when the upper transport motor has fed paper 733 mm after the entrance sensor turned on.
6. In sort/stack mode, the shift tray exit sensor does not turn off when the upper transport motor has fed paper 1.5 times the paper's length after it turned on.
7. In staple mode, the stapler tray entrance sensor does not turn on when the upper and lower transport motor have fed paper 835 mm after the entrance sensor turned on.
8. In staple mode, the stapler tray entrance sensor does not turn off when the upper transport motor has fed paper 1.5 times the paper's length after it turned on.
9. In staple mode, the stapler tray paper sensor does not turn off within 250 pulses of the stack feed-out motor after it started.
10. In staple mode, the shift tray exit sensor does not turn off within 1,260 ms after the stack feed-out motor started.

6.11 PUNCH UNIT B531 (OPTION)

6.11.1 PUNCH UNIT DRIVE



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The punch unit makes 2 or 3 holes at the trailing edge of the paper. The number of holes depends on a selection made on the operation panel.

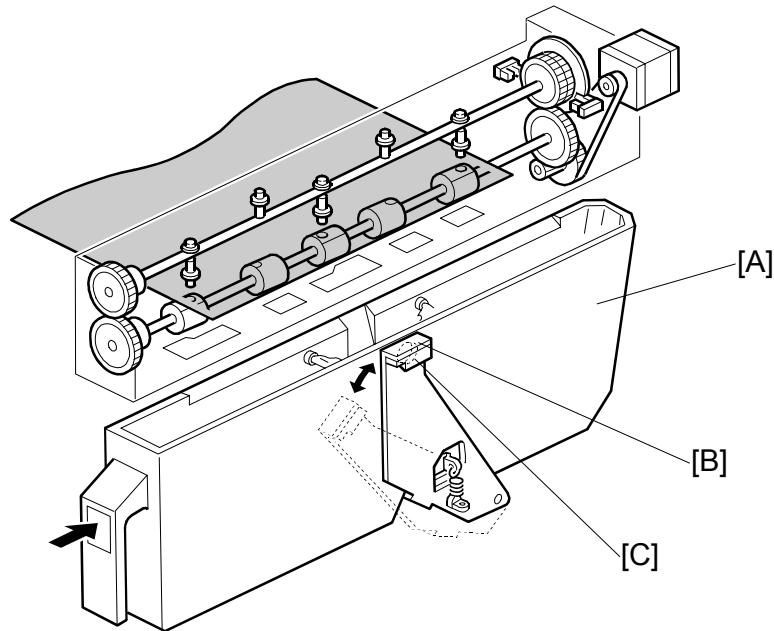
The cam [A] has 2 punches on one side and 3 punches on the other, and is turned by the punch motor [B]. The punch motor turns on immediately after the trailing edge of the paper passes the entrance sensor. The punches on the cam rotate downward and punch holes in the paper.

After punching a sheet of paper, the cam returns to home position and stops. Home position depends on whether 2 holes or 3 holes are being made, so there are two punch HP sensors. Punch HP sensor 1 [C] is used when 2-hole punching is selected, and punch HP sensor 2 [D] is used when 3-hole punching is selected. When the cut-out [E] enters the slot of the punch HP in use (sensor 1 or 2-hole punching or sensor 2 for 3/4-hole punching) the motor stops.

The knob (not shown) on the front end of the punch unit can be turned in either direction to clear paper jammed in the punch unit.

DETAILS

6.11.2 PUNCH WASTE COLLECTION



Punch waste is collected in the punch waste hopper [A] positioned under the punch unit.

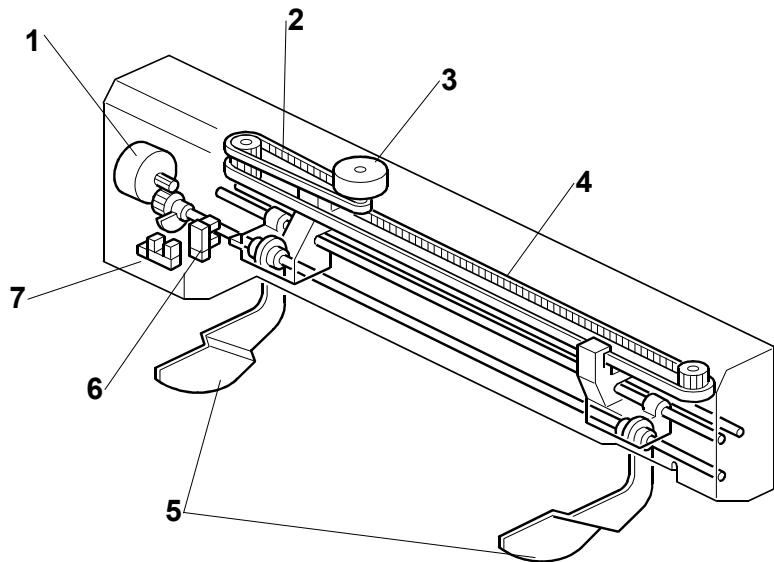
When the level of the punch waste in the hopper rises as far as the hole [B] in the hopper, the punch waste sensor [C] turns on, stops the job, and triggers a message on the operation to indicate that the hopper is full and must be removed and emptied.

The job resumes automatically after the hopper is emptied and returned to the finisher.

The punch waste hopper sensor also functions as the hopper set sensor. When the hopper is not in the finisher, or if it is not inserted completely, the spring loaded sensor arm rotates up and to the right with the punch waste sensor away from the hole in the hopper holder and a message is displayed. The message in this case is the same as the hopper full message.

6.12 JOGGER UNIT B513 (OPTION)

6.12.1 JOGGER UNIT MECHANICAL LAYOUT

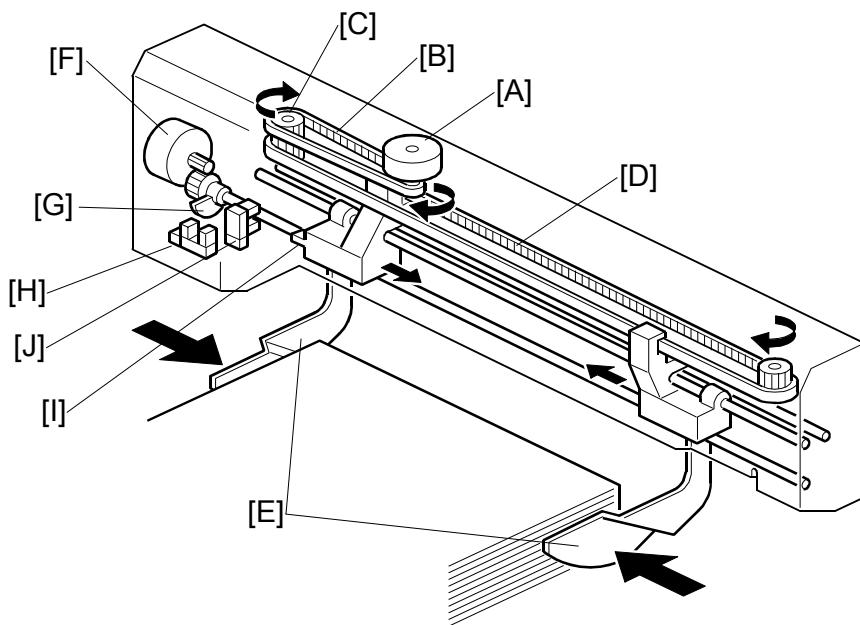


Finisher/
Jogger Unit/
Punch Unit
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1. Shift Jogger Fence Lift Motor
2. Shift Jogger Motor Timing Belt
3. Shift Jogger Motor
4. Shift Jogger Fence Timing Belt
5. Shift Jogger Fences
6. Shift Jogger HP Sensor
7. Shift Jogger Lift HP Sensor

DETAILS

6.12.2 JOGGER UNIT DRIVE



At prescribed intervals, the jogger motor [A] switches on and drives the jogger timing belt [B], gear [C] and jogger fence timing belt [D] which drives the shift jogger fences [E] against the sides of the stack to align its edges.

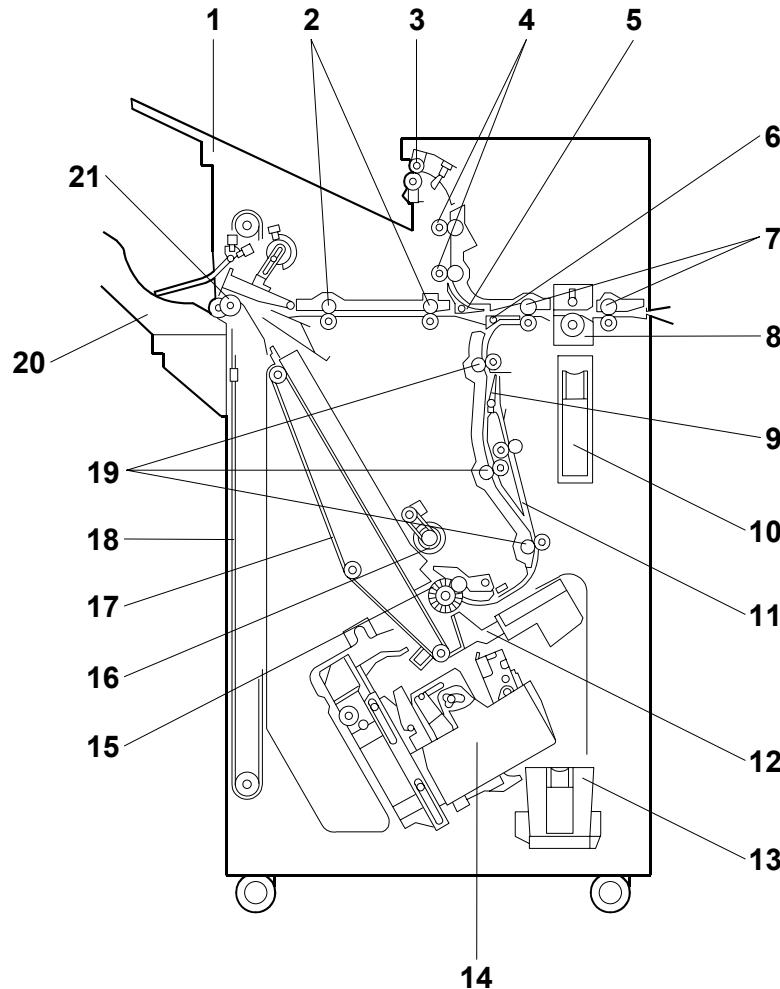
At the end of the job, the jogger fence lift motor [F] switches on and raises the fences until the actuator [G] leaves the slot of the shift jogger fence lift HP sensor [H] and shuts off the shift jogger fence lift motor.

At the same time, the jogger motor reverses and drives the fences away from the sides of the stack until the actuator [I] deactivates the shift jogger fence HP sensor [J] and switches off the jogger motor.

The jogger fences remain up in the standby position until the next job starts.

7. OVERALL MACHINE INFORMATION

7.1 MECHANICAL COMPONENT LAYOUT



Finisher/
Jigger Unit/
Punch Unit
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- | | |
|-----------------------------|-----------------------------|
| 1. Upper Tray | 12. Stack Plate |
| 2. Middle Transport Rollers | 13. Staple Waste Hopper |
| 3. Upper Tray Exit Roller | 14. Stapler |
| 4. Upper Transport Rollers | 15. Alignment Brush Roller |
| 5. Tray Junction Gate | 16. Positioning Roller |
| 6. Stapler Junction Gate | 17. Stack Feed-out Belt |
| 7. Entrance Rollers | 18. Shift Tray Drive Belt |
| 8. Punch Unit | 19. Lower Transport Rollers |
| 9. Pre-stack Junction Gate | 20. Shift Tray |
| 10. Punch Waste Hopper | 21. Shift Tray Exit Roller |
| 11. Pre-stack Tray | |

7.2 ELECTRICAL COMPONENT DESCRIPTION

Symbol	Name	Function
Motors		
M01	Shift Tray Exit	Drives the exit roller for the shift tray.
M02	Shift Tray Lift	Moves the shift tray up or down.
M03	Exit Guide	Opens and closes the upper exit guide.
M04	Lower Transport	Drives the lower transport rollers, the positioning roller and the alignment brush roller
M05	Shift	Moves the shift tray from side to side.
M06	Positioning Roller	Moves the positioning roller into contact with the paper.
M07	Stacking Roller Drag	Moves the stacking roller in and out.
M08	Stacking Roller	Rotates the stacking roller.
M09	Jogger	Moves the jogger fences.
M10	Stack Feed-Out Belt	Drives the stack feed-out belt.
M11	Stack Plate - Center	Presses down the center of the edge for stapling.
M12	Stapler	Moves the staple unit from side to side.
M13	Stack Plate – Front	Presses down the front corner of the edge for stapling.
M14	Stack Plate – Rear	Presses down the rear corner of the edge for stapling.
M15	Stapler Rotation	Rotates the stapler 45 degrees for oblique stapling.
M16	Staple Hammer	Drives the staple hammer.
M17	Punch	Drives the punch shaft and roller. Punch Unit B531 (option).
M18	Upper Transport	Drives the entrance rollers, the middle and upper transport rollers, and upper tray exit roller.
M19	Shift Jogger	Drives the shift jogger fences against the sides of the sheets to align the stack, then reverses to return them to the home position. Jogger Unit B513 (option).
M20	Shift Jogger Lift	Raises the shift jogger fences after aligning the stack, then reverses and lowers them when returning to the home position. Jogger Unit B513 (option).
BOARDS		
PCB	Main	Controls the finisher and communicates with the copier.
PCB	Stapler	Controls the stapler unit.
PCB	Punch	Passes signals between the punch unit and the finisher main board. Punch Unit B531 (option).
PCB	Jogger	Controls the shift/jogger unit B513 (option).
SENSORS		
S01	Entrance	Detects the copy paper entering the finisher and checks for misfeeds.
S02	Upper Tray Exit	Checks for misfeeds at the upper tray.

OVERALL MACHINE INFORMATION

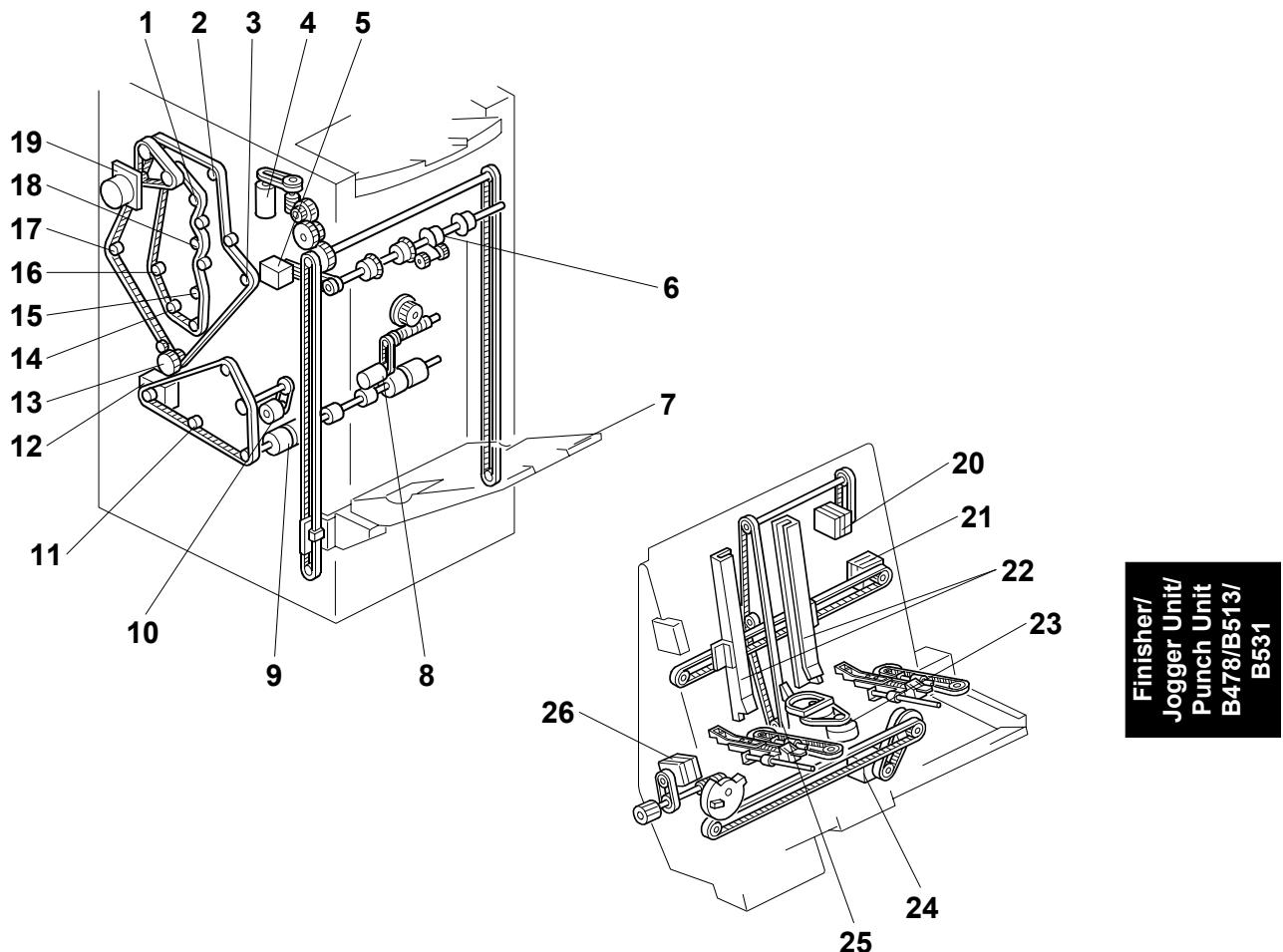
Symbol	Name	Function
S03	Upper Tray Limit	Detects when the paper stack height in the upper tray is at its upper limit.
S04	Shift Tray Exit	Checks for misfeeds at the shift tray exit.
S05	Exit Guide Open	Detects whether the guide plate is opened or not.
S06	Staple Mode HP 1	Detects the shift tray home position for standby mode and for staple mode.
S07	Staple Mode HP 2	Detects the shift tray home position for standby mode and for staple mode.
S09	Shift Lower Limit – Large Paper	Detects the lower limit for the shift tray when large paper sizes are being used
S10	Shift Tray Lower Limit 2	Not used.
S11	Shift Tray Lower Limit 3	Detects when the shift tray is at its lower limit.
S12	Shift Mode HP	Detects the shift tray home position in sort/stack mode.
S13	Stacking Roller HP	Detects when the stacking roller is at home position.
S14	Shift Tray Half-Turn	Detects whether the shift tray is at either the front or home HP.
S15	Pre-Stack Tray Paper	Determines when to turn off the pre-stack paper stopper solenoid.
S16	Stapler Tray Exit	Detects jams at the staple tray exit.
S17	Positioning Roller HP	Detects the home position of the positioning roller.
S18	Stack Feed-Out Belt HP	Detects the home position of the stack feed-out belt.
S19	Stapler Tray Paper	Detects the copy paper in the stapler tray.
S20	Jogger HP	Detects the home position of the shift jogger fences.
S21	Stack Plate - Center HP	Detects the home position of the center stack plate.
S22	Stack Plate – Front	Detects the home position of the front stack plate.
S23	Stack Plate – Rear	Detects the home position of the rear stack plate.
S24	Stapler HP	Detects the home position of the staple unit for side-to-side movement.
S25	Stapler Rotation HP	Detects the home position of the stapler unit for 45-degree rotation.
S26	Stapler Return	Detects the on timing of the stapler return solenoid.
S27	Staple Waste Hopper	Detects when the staple waste hopper is full.
S28	Punch Waste Hopper	Detects when the punch waste hopper is full and detects when the punch tray is set. Punch Unit B531 (option).
S29	Punch HP 1	Detects the cam home position for the 2-hole punch. Punch Unit B531 (option).
S30	Punch HP 2	Detects the cam home position for 3/4 punch. Punch Unit B531 (option).
S31	Shift Jogger HP	Detects the home position of the jogger unit arms during paper alignment. Jogger Unit B513 (option).
S32	Shift Jogger Lift HP	Detects the when both shift jogger fences are at the lowered position and ready to move against the sides of the stack. Jogger Unit B513 (option).

**Finisher/
Jogger Unit/
Punch Unit
B478/B513/
B531**

OVERALL MACHINE INFORMATION

Symbol	Name	Function
SOLENOIDS		
SOL1	(Upper) Tray Junction Gate	Drives the tray junction gate.
SOL2	Stapler Junction Gate	Drives the stapler junction gate.
SOL3	Pre-Stack Junction Gate	Drives the pre-stack junction gate.
SOL4	Pre-stack Paper Stopper	Drives the stopper pawl of the pre-stacking tray.
SOL5	Stapler Return	Positions the stapler correctly on its return from the staple supply point.
SWITCHES		
SW1	Shift Tray Upper Limit	Cuts the power to the shift tray lift motor when the shift tray position is at its upper limit.
SW2	Front Door Safety	Cuts the dc power when the front door is opened.
SW3	Emergency Stop	Switches the current job off and on to allow time for the operator to remove paper from the shift tray.

7.3 DRIVE LAYOUT



- | | |
|-------------------------------|------------------------------|
| 1. Upper Transport Roller 2 | 14. Lower Transport Roller 1 |
| 2. Upper Tray Exit Roller | 15. Transport Roller 1 |
| 3. Lower Transport Roller 2 | 16. Entrance Roller 2 |
| 4. Shift Tray Lift Motor | 17. Entrance Roller |
| 5. Shift Tray Exit Motor | 18. Upper Transport Roller 1 |
| 6. Shift Tray Exit Roller | 19. Upper Transport Motor |
| 7. Shift Tray | 20. Stack Feed-out Motor |
| 8. Shift Motor | 21. Jogger Motor |
| 9. Staple Tray Exit Roller | 22. Jogger Fence |
| 10. Positioning Roller | 23. Stack Plate Motor |
| 11. Lower Transport Roller 3 | 24. Stapler Motor |
| 12. Lower Transport Motor | 25. Stack Feed-out Belt |
| 13. Lower Transport Rollers 2 | 26. Stapler Rotation Motor |



B706
3000-SHEET FINISHER



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1. INSTALLATION

For details about installing the 3000 Sheet Finisher B706, please refer to the instructions you received with the instructions or the “1. Installation” in the main machine service manual.

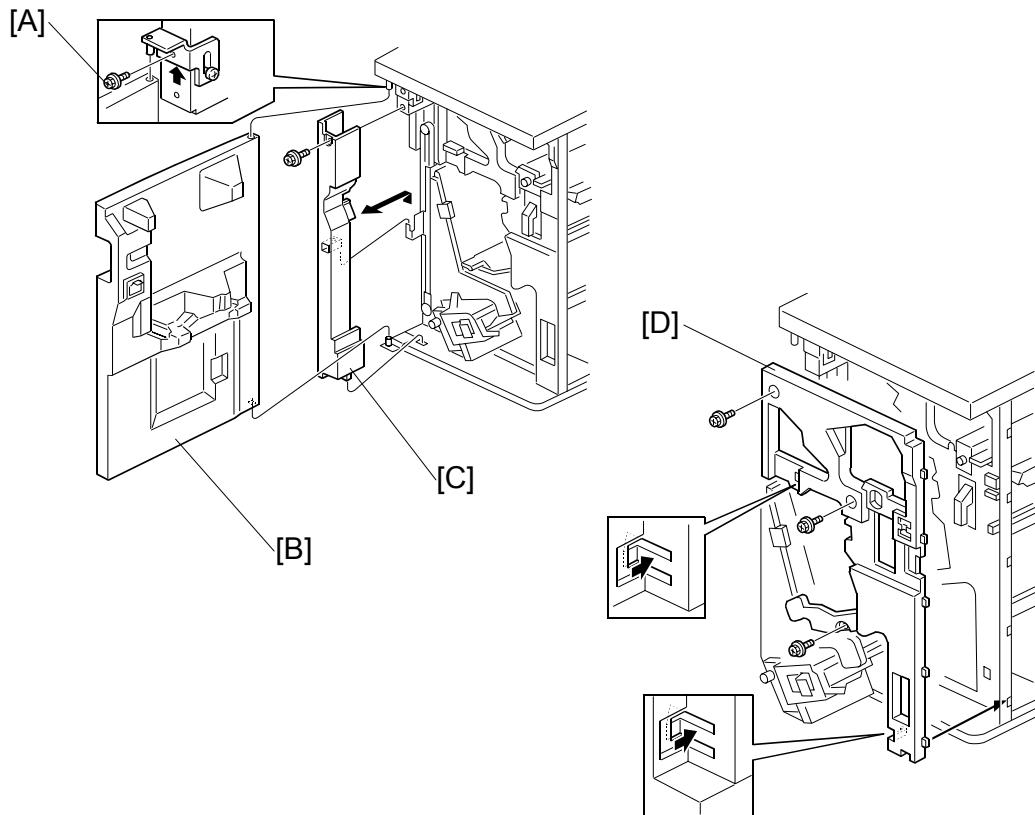


2. PREVENTIVE MAINTENANCE

For details about the 3000 Sheet Finisher B706 PM table, please refer to Section "2. Preventive Maintenance" in the main Service Manual.

3. REPLACEMENT AND ADJUSTMENT

3.1 DOOR AND COVER REPLACEMENT



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Front Door

1. Remove the front door screw [A] (\wedge x 1).
2. Remove the front door [B].

Left Inner Cover

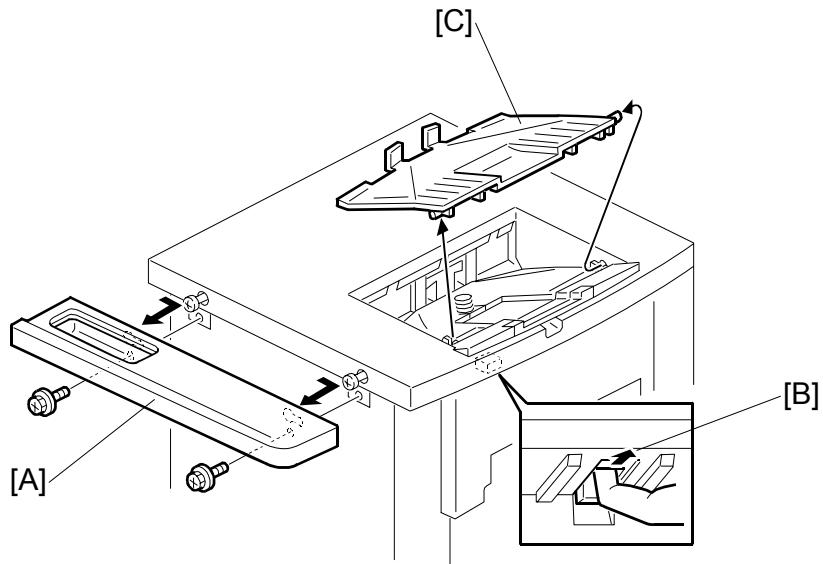
1. Remove the front door.
2. Remove the left inner cover [C] (\wedge x 1).

Inner Cover

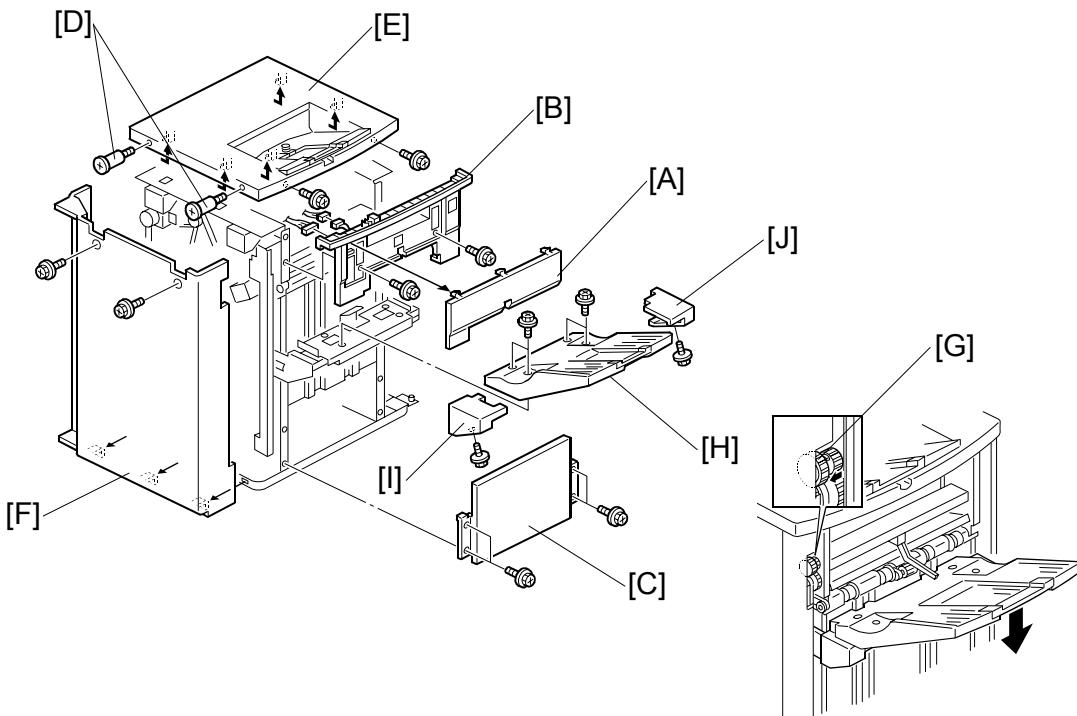
1. Remove the inner cover [D] (\wedge x 3).

REPLACEMENT AND ADJUSTMENT

Side Table and Upper Tray



1. Remove the side table [A] ($\wedge \times 2$). Slide to the right to remove it.
2. Click the release lever [B] and remove the upper tray [C].



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Left Covers

1. Remove the left upper panel [A].
2. Remove the left upper cover [B] (\wedge x 2, \square x 2).
3. Remove the door and left inner cover. (See “Front Door and Left Inner Cover Replacement”.)
4. Remove the rear cover [F] (\wedge x 2).
5. Remove the left lower cover [C] (\wedge x 4).

Rear Cover and Top Cover

1. Remove the upper tray. (See “Side Table and Upper Tray”.)
2. Remove the step screws [D] (\wedge x 2).
3. Remove the top cover [E] (\wedge x 2). Slide to the right to remove.
4. Remove the rear cover [F] (\wedge x 2).

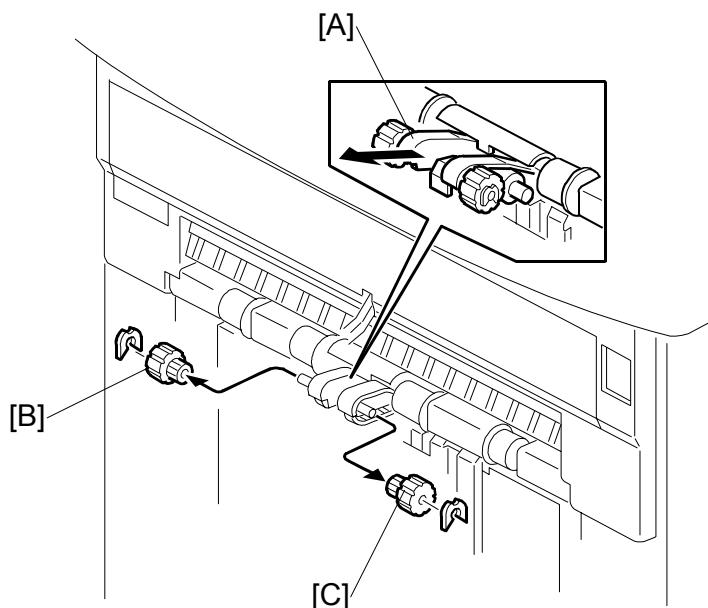
Shift Tray

1. If you need to lower the shift tray, support the bottom of the tray with your hand, then pull the gear toward you [G] to release the tray and lower it.
2. Remove the shift tray [H] (\wedge x 4).
3. Remove the shift tray rear cover [I] and front cover [J] (\wedge x 1 each).

REPLACEMENT AND ADJUSTMENT

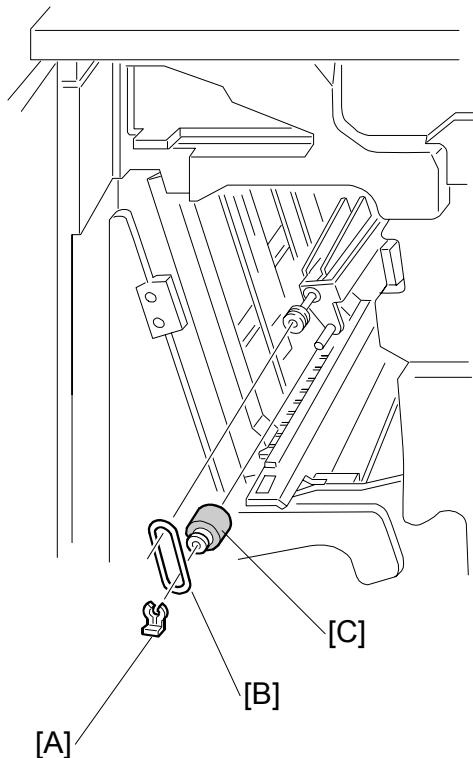
3.2 ROLLERS

3.2.1 SHIFT POSITIONING ROLLER



1. Above the shift tray, pull the roller mount [A] out.
2. Remove the rollers [B] and [C] (\varnothing x 1 each)

3.2.2 POSITIONING ROLLER

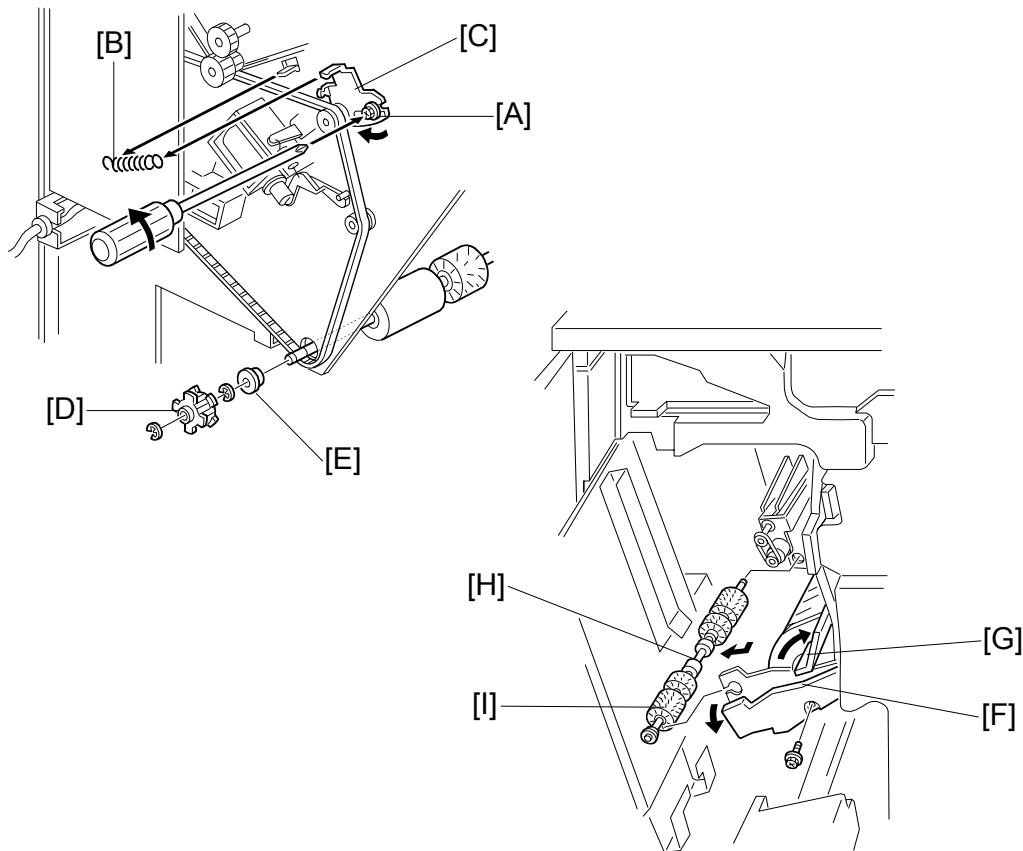


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1. Open the front door.
2. Remove the snap ring [A].
3. Release the rubber belt [B].
4. Replace the positioning roller [C].

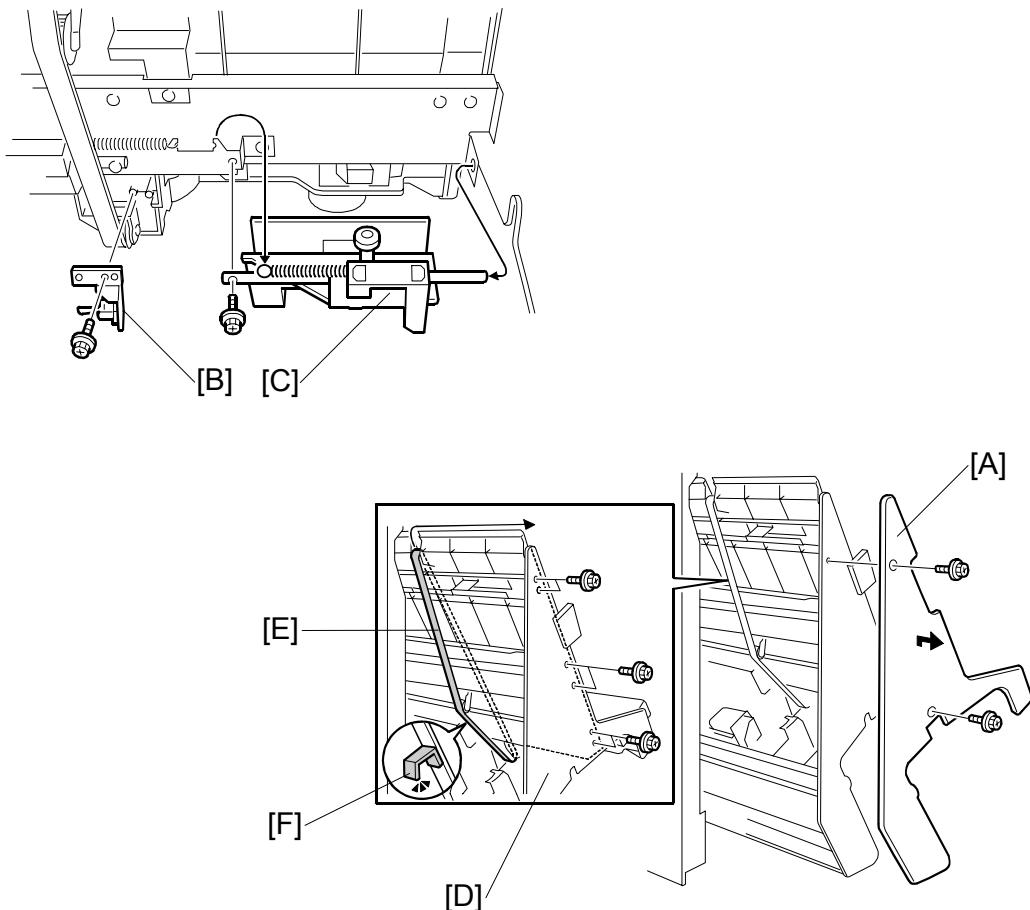
REPLACEMENT AND ADJUSTMENT

3.2.3 ALIGNMENT BRUSH ROLLER



1. Open the front door and pull out the staple unit.
2. Remove the rear cover.
3. Remove the main board and all connectors (\wedge x 8).
4. Remove the screw [A] and tension spring [B] for the tension bracket [C], and release the tension of the timing belt.
5. Remove the pulley [D] and bushing [E] (\odot x 2).
6. Remove the inner cover [F] (\wedge x 1).
7. Open the guide [G], then remove the alignment brush roller assembly [H] (\odot x 1).
8. Remove the alignment brush roller [I] (\odot x 1, bushing x 1 front/back).

3.3 STACK FEED-OUT BELT

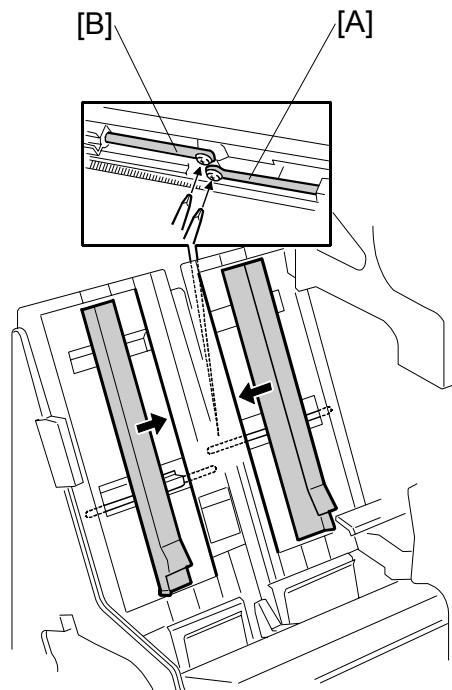


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1. Open the front door.
 2. Pull out the jogger and stapler unit.
 3. Remove the inner cover [A] (\wedge x 2).
 4. Remove the sensor bracket [B] (\wedge x 1, \square x 1, clamp x 1).
 5. Remove the front guide [C] (\wedge x 1, spring x 1).

NOTE: When re-installing, make sure that the flat end of the shaft is against the plate.
 6. Remove the front panel [D] from the stays (\wedge x 6).
 7. Remove the old belt [E] from the bottom, center, then the top.
- NOTE:** 1) Make sure the ribbed side of the new belt and pawl [F] are facing down.
2) Make sure the new belt is engaged at all three rollers.

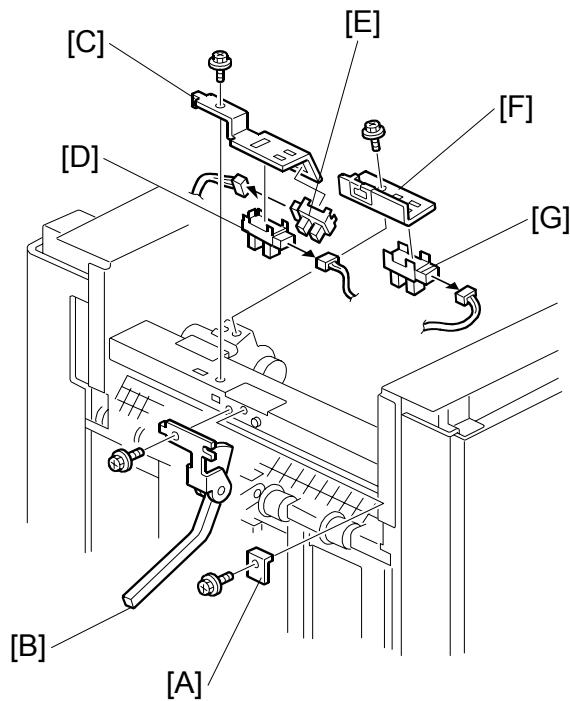
3.4 JOGGER FENCE



1. Open the front door.
 2. Pull out the jogger and stapler unit.
 3. Push both fences to the center.
 4. Remove the left jogger fence [A] (x 1)
 5. Remove the right jogger fence [B] (x 1).
- NOTE:** If the screws are difficult to remove or re-attach, remove the jogger fence belt and spring plate.

3.5 SENSORS

3.5.1 STACK HEIGHT 1, 2 AND EXIT GUIDE OPEN SENSOR



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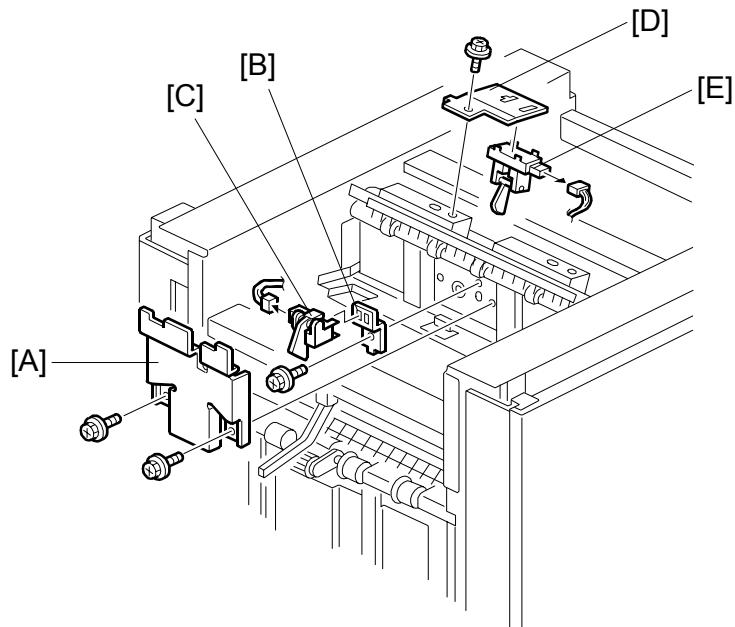
Stack Height Sensors 1 and 2

1. Remove the top cover. (☞ 3.1)
2. Remove the left upper panel and left upper cover (☞ x 2, ☞ x 2).
3. Remove the protector plate [A] (☞ x 1).
4. Remove the sensor feeler [B] (☞ x 1).
5. Remove the sensor bracket [C] (☞ x 1).
6. Replace the stack height sensor 1 [D] (☞ x 1) or 2 [E] (☞ x 1).

Exit Guide Open Sensor

1. Remove the sensor bracket [F] (☞ x 1).
2. Replace the exit guide open sensor [G] (☞ x 1).

3.5.2 UPPER TRAY PAPER LIMIT AND EXIT SENSOR



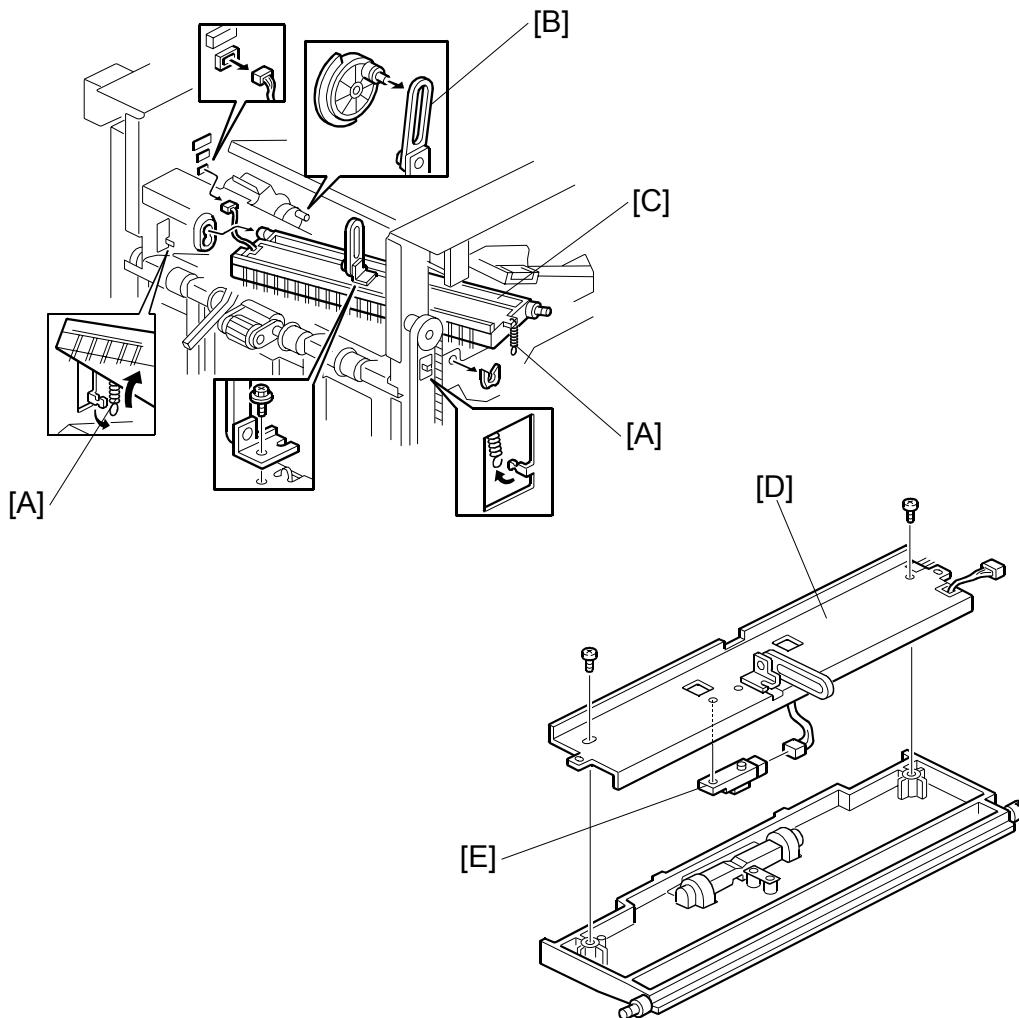
Upper Tray Paper Limit Sensor

1. Remove the top cover.
2. Remove the sensor cover [A] (\wedge x 2).
3. Remove the sensor bracket [B] (\wedge x 1).
4. Replace the upper tray paper limit sensor [C] (\square x 1).

Upper Tray Exit Sensor

5. Remove the sensor bracket [D] (\wedge x 1).
6. Replace the upper tray exit sensor [E] (\square x 1).

3.5.3 SHIFT TRAY EXIT SENSOR

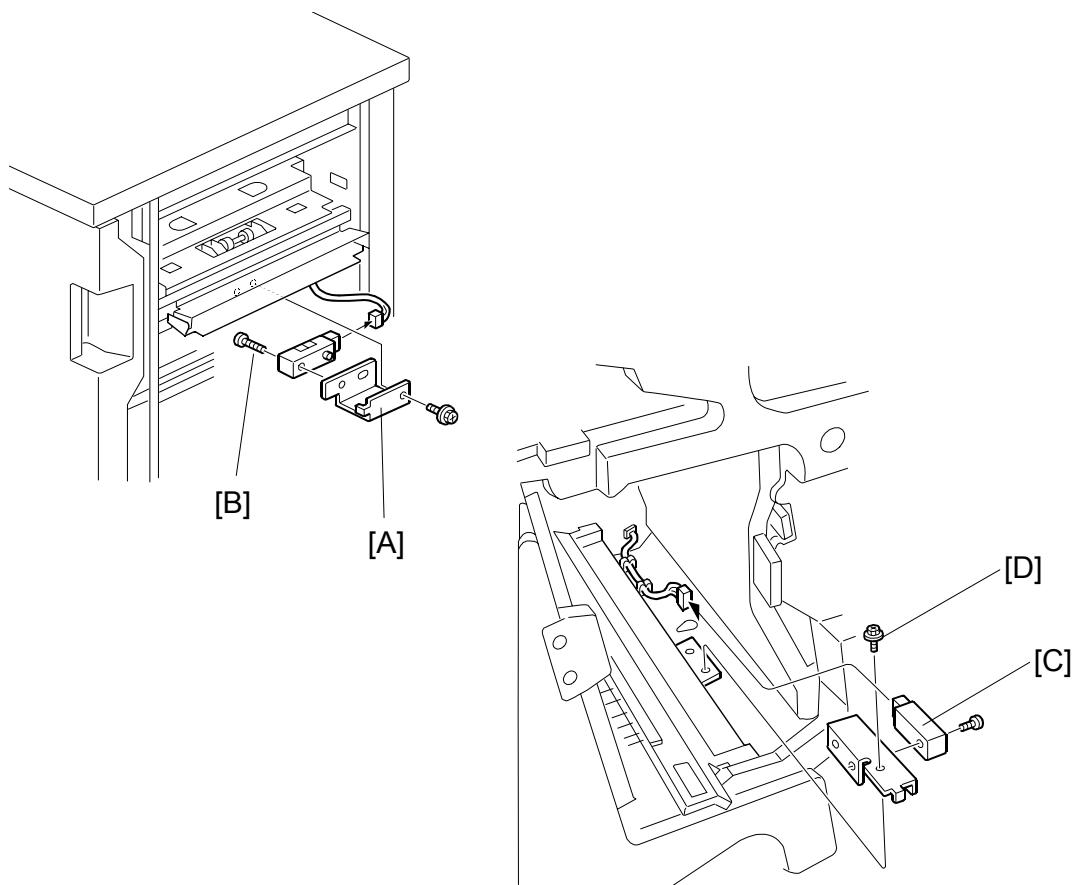


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1. Remove the top cover.
2. Open the front door.
3. Remove the inner cover.
4. Release the upper exit guide springs [A] (x 2).
5. Disconnect the link [B] from the cam (☞ x 1).
6. Remove the upper exit guide [C] (☞ x 1, ☐ x 1).
7. Remove the guide stay [D] (☞ x 2).
8. Replace the shift tray exit sensor [E] (☞ x 1, ☐ x 1).

REPLACEMENT AND ADJUSTMENT

3.5.4 ENTRANCE AND STAPLER TRAY ENTRANCE SENSORS



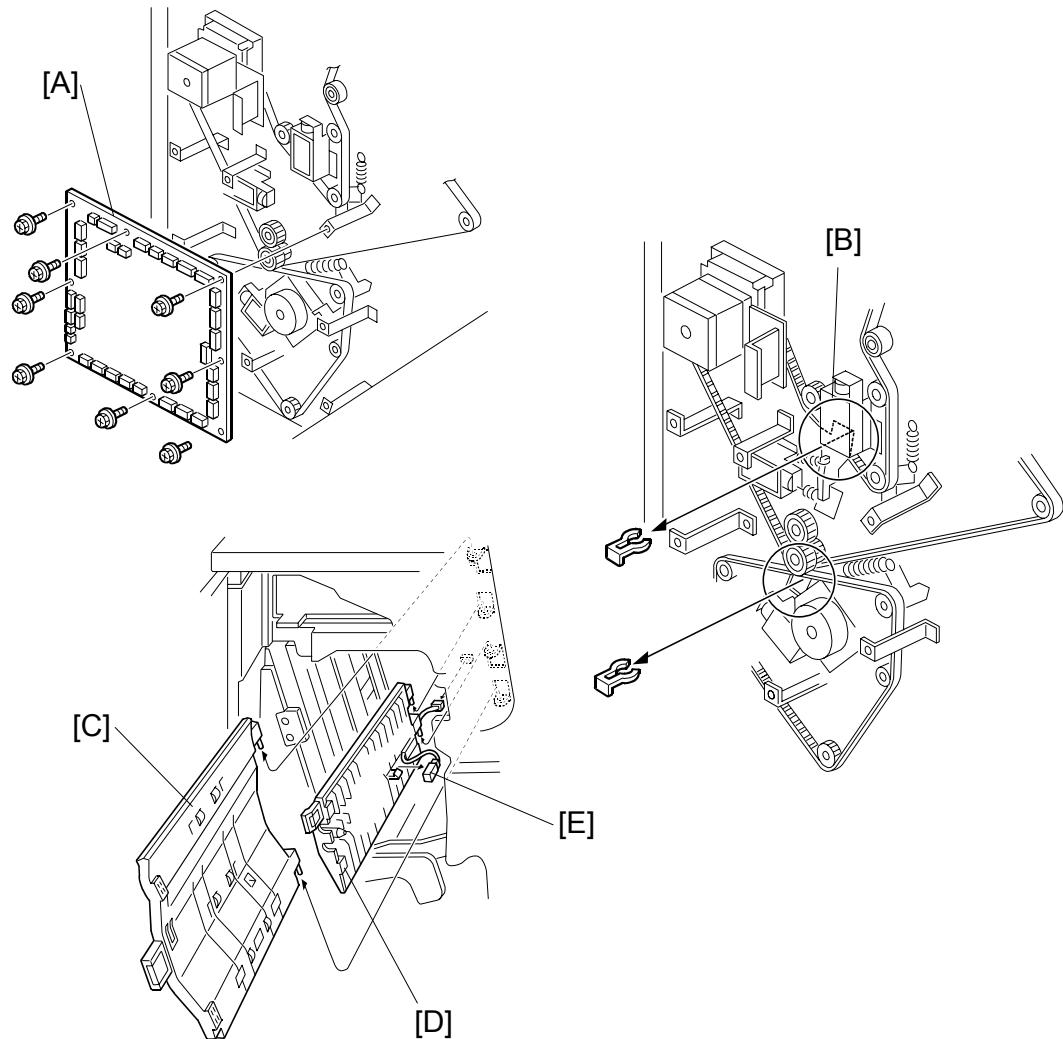
Entrance Sensor

1. Disconnect the finisher from the copier.
2. Remove the sensor bracket [A] (\wedge x 1).
3. Replace the entrance sensor [B] (\wedge x 1, \square x 1).

Stapler Tray Entrance Sensor

1. Open the front door.
2. Remove the sensor bracket [C] (\wedge x 1).
3. Replace the stapler tray entrance sensor [D] (\wedge x 1, \square x 1).

3.5.5 PRE-STACK PAPER SENSOR

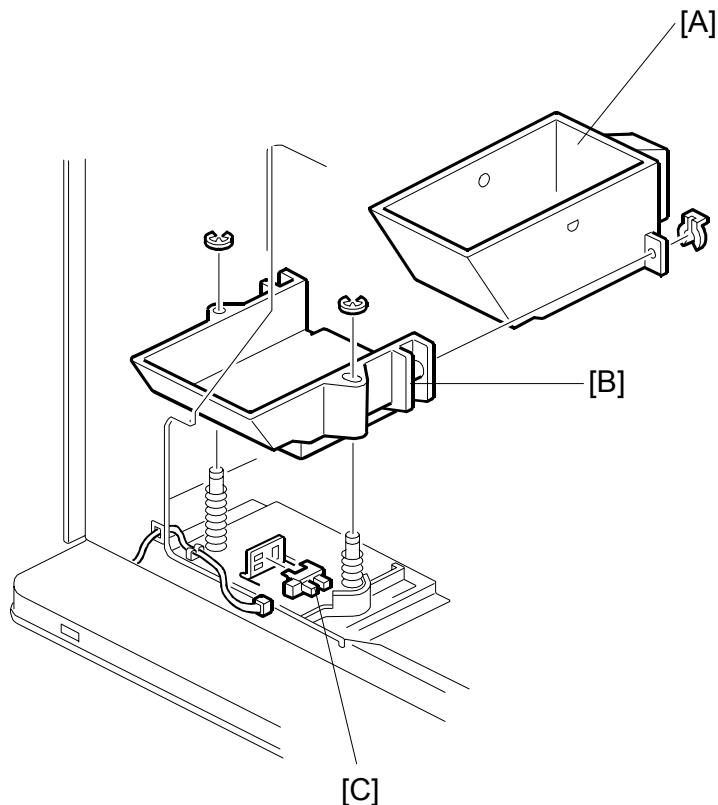


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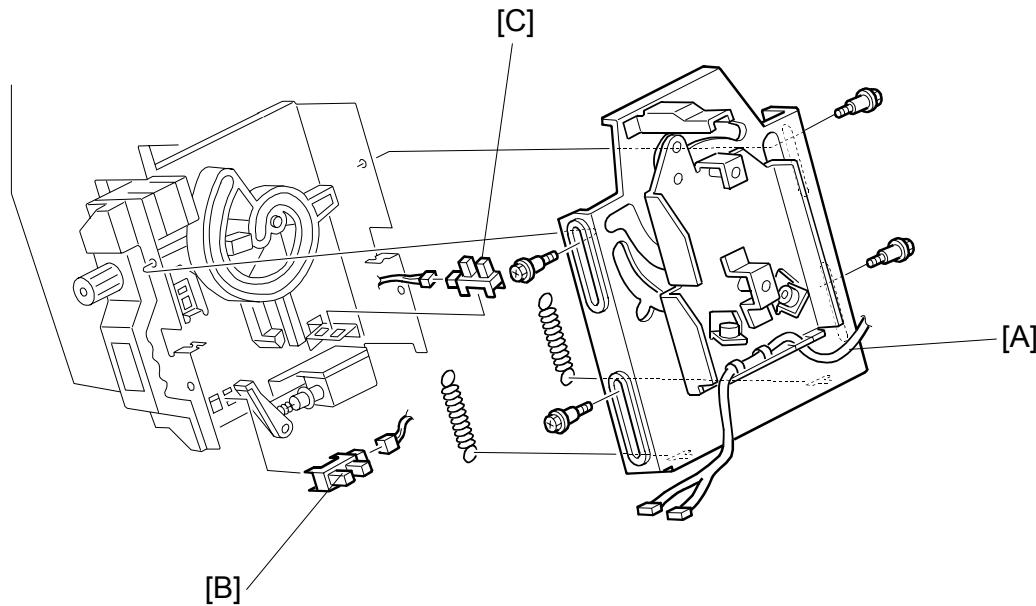
1. Remove the rear cover.
2. Remove the main board [A] (\wedge x 8, \square x all).
3. Release the guide [B] (\circlearrowright x 2).
4. Open the front door.
5. Remove the left vertical transport guide [C].
6. Remove the middle vertical transport guide [D] (\square x 1).
7. Replace the pre-stack paper sensor [E] (\square x 1).

REPLACEMENT AND ADJUSTMENT

3.5.6 STAPLE WASTE HOPPER SENSOR



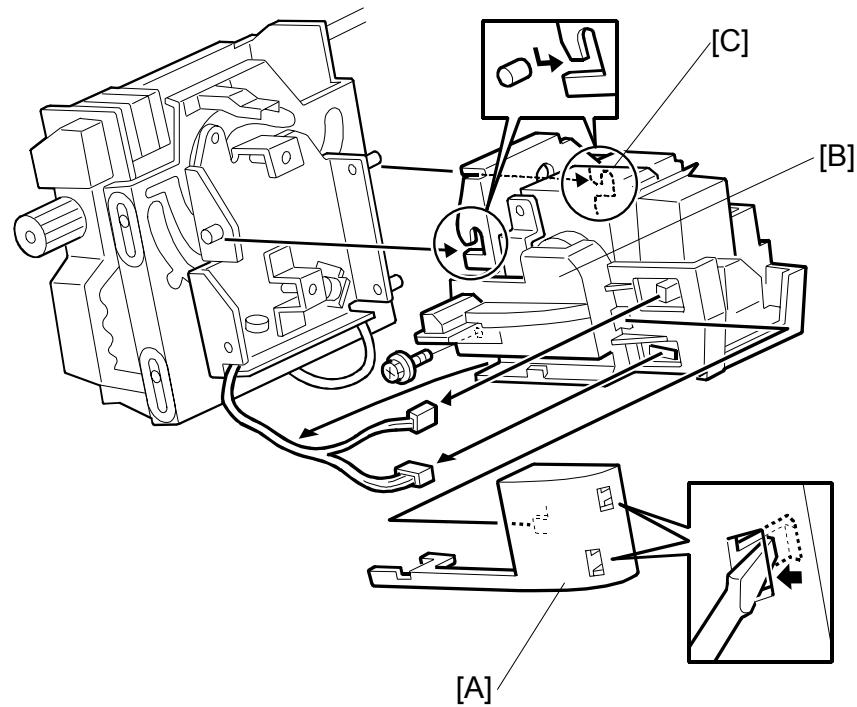
1. Open the front door, pull out the stapler unit, then remove the rear cover.
2. Remove the rear cover (镙 x 2).
3. Remove the staple waste hopper [A] (弔 x 1).
4. Remove the hopper holder [B] (弔 x 2).
5. Replace the staple waste hopper sensor [C] (弔 x 1).

3.5.7 STAPLER ROTATION HP AND STAPLER RETURN SENSORS

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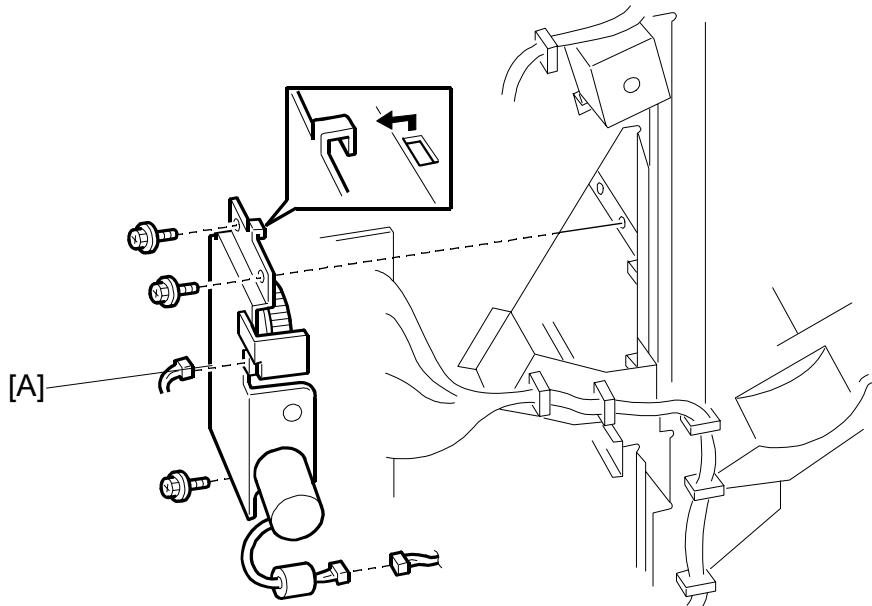
1. Remove the stapler unit. (See next page.)
2. Remove the stapler mount bracket [A] (x 4, springs x 2).
3. Replace the stapler rotation HP sensor [B] (x 1).
4. Replace the stapler return sensor [C] (x 1).

3.6 STAPLER



1. Open the front door and pull out the staple tray.
2. Remove the stapler unit harness cover [A].
3. Remove the stapler cover [B] (\wedge x 1, \square x 2).
4. Lift the stapler off of the pegs [C].

3.7 SHIFT TRAY MOTOR

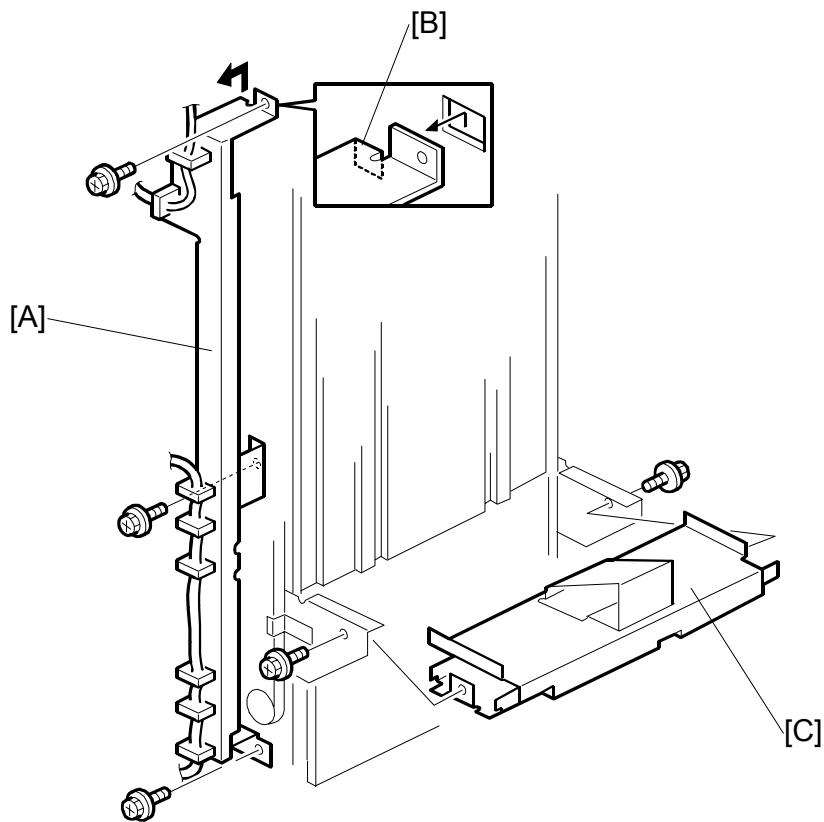


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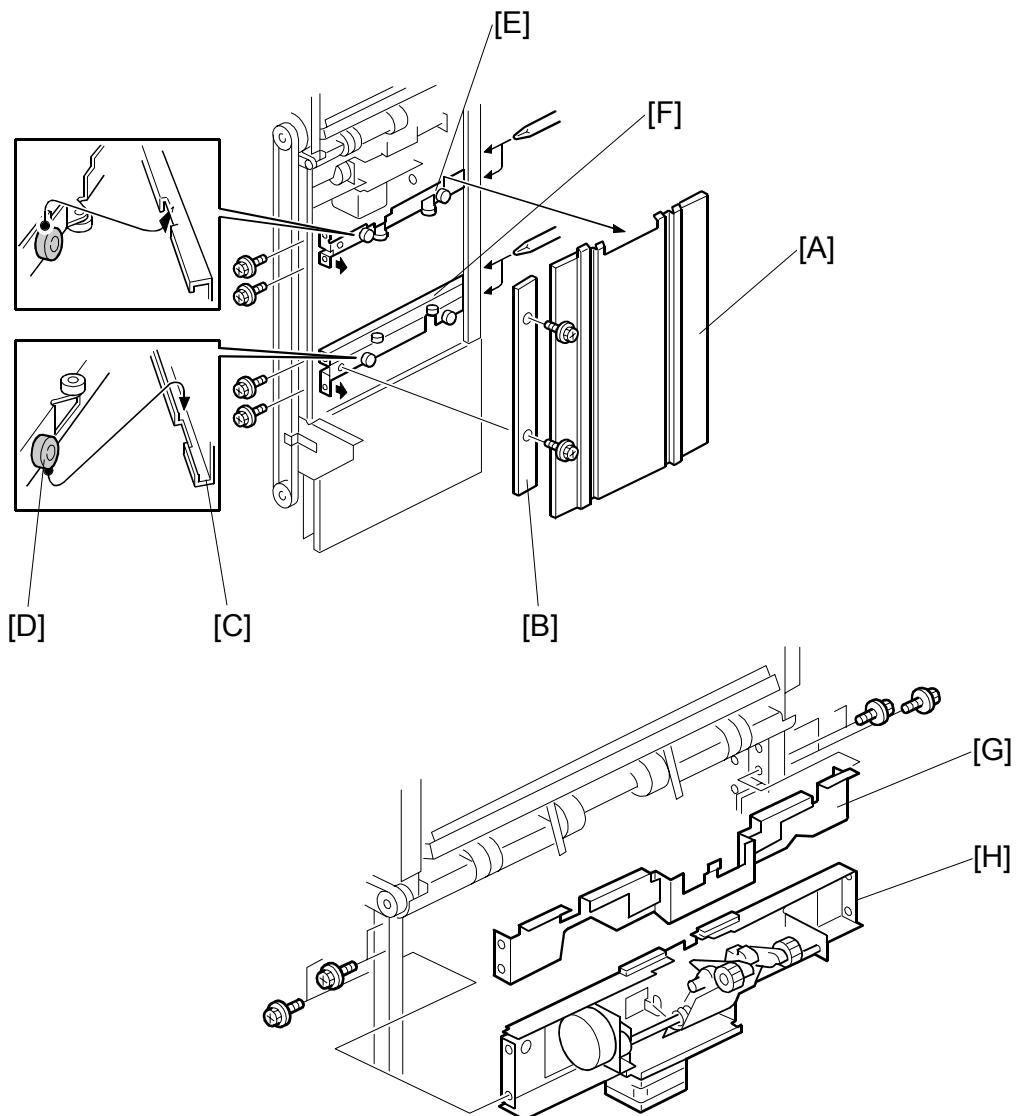
1. Remove the front door and rear cover (参照 3.1).
2. Shift motor [A] (x 2, x 3)

REPLACEMENT AND ADJUSTMENT

3.7.1 STACKING ROLLER/ROLLER DRAG MOTORS, RETURN HP SENSOR



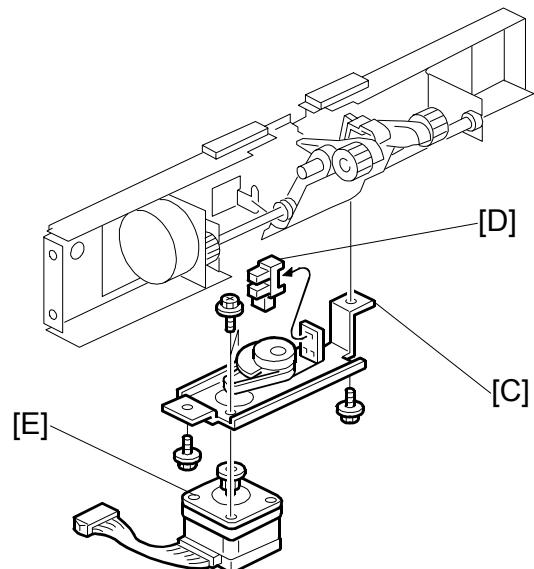
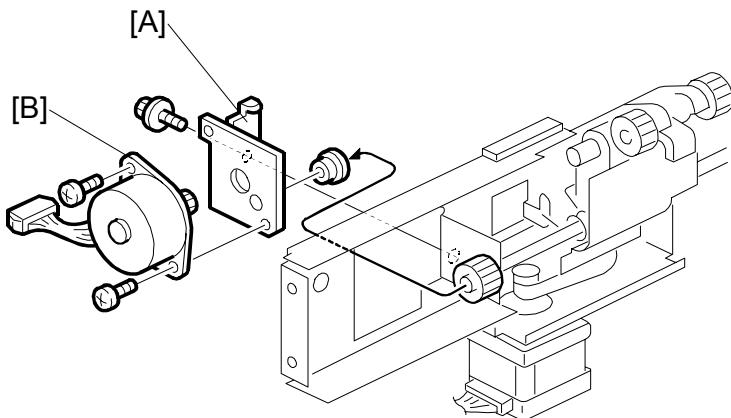
1. Do the procedures to remove the front door and all covers, with the exception of the left lower cover and top cover (labeled [C] and [E]).
NOTE: Be sure to lower the shift tray by pulling the gear toward you. The shift tray must be down.
2. Remove the shift tray motor. (3.7)
3. Remove the left stay [A] (\wedge x 3).
4. Unhook the stay at top [B].
5. Remove the shift tray mounting plate [C] (\wedge x 2).



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6. Remove the end fence [A] and plate [B] ($\frac{1}{4}$ x 2).
 7. Disengage the end fence races [C] from the rollers [D] behind the fence.
 8. Remove the upper stay [E] ($\frac{1}{4}$ x 4).
 9. Remove the lower stay [F] ($\frac{1}{4}$ x 4).
 10. Remove the cover [G] ($\frac{1}{4}$ x 4).
 11. Remove the stacking roller/drag motor stay [H] ($\frac{1}{4}$ x 3, $\frac{1}{4}$ x 4).
- NOTE:** Make sure the motor and sensor connectors are disconnected before removing.

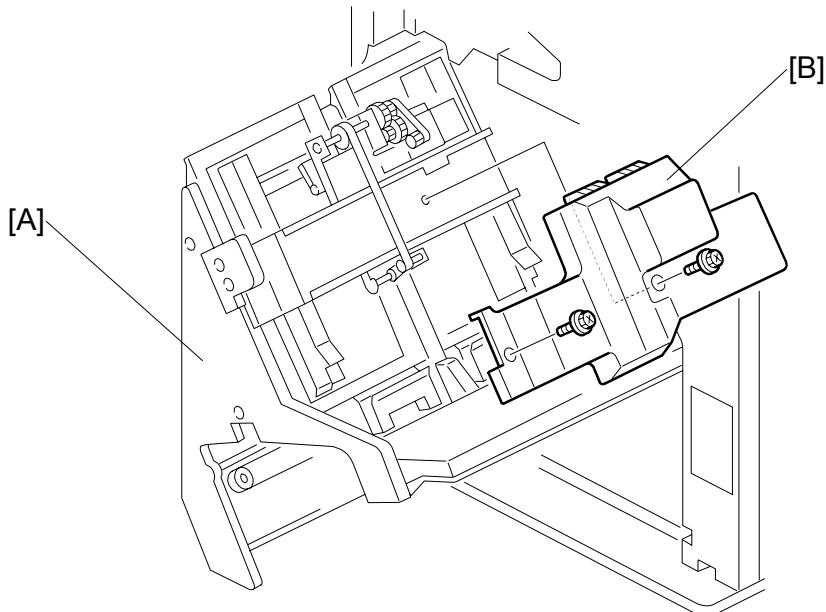
REPLACEMENT AND ADJUSTMENT



12. Remove the stacking motor bracket [A] (bushing x 1, \wedge x 1).
13. Remove the stacking motor [B] (\wedge x 2).
14. Remove the roller drag motor bracket [C] (\wedge x 2).
15. Remove return HP sensor [D].
16. Remove the roller drag motor [E] (\wedge x 1).

3.8 Z-FOLD JOGGER UNIT

3.8.1 Z-FOLD JOGGER UNIT COVER

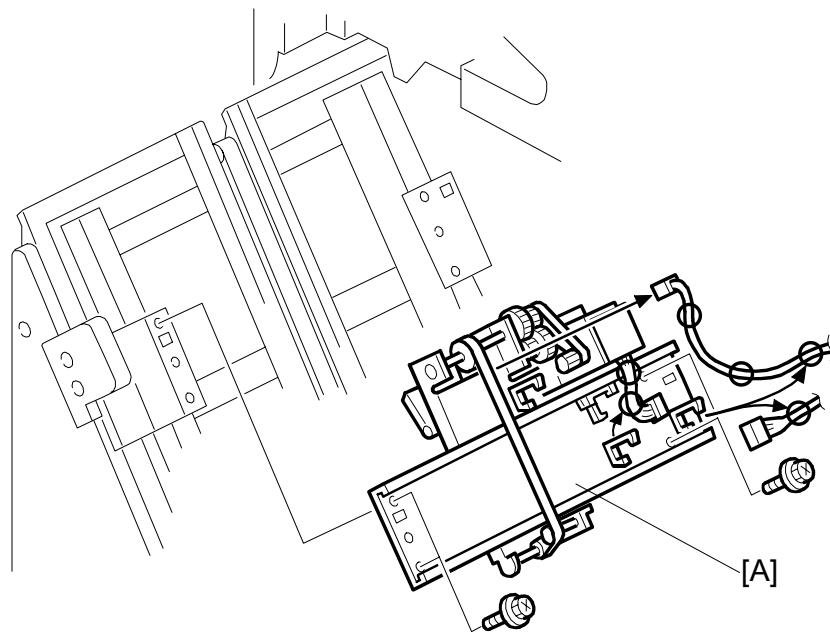


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1. Open the front door.
2. Pull out the stapler tray unit [A].
3. Remove the Z-fold jogger unit cover [B] (\wedge x 2).

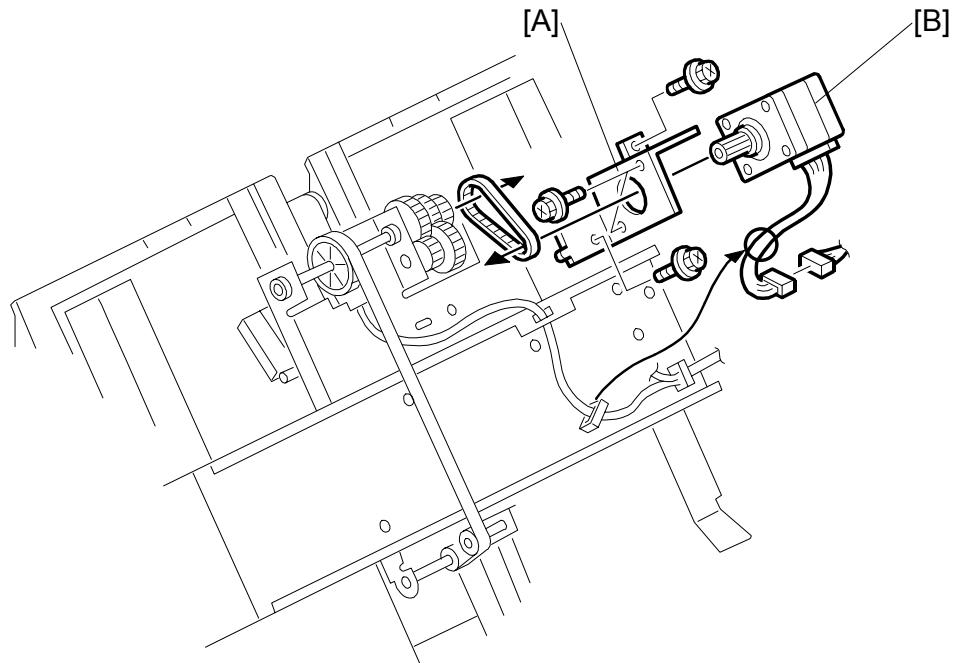
REPLACEMENT AND ADJUSTMENT

3.8.2 Z-FOLD JOGGER UNIT



1. Open the front door and pull out the stapler tray unit.
2. Remove the Z-fold jogger unit cover (x 2).
3. Remove the Z-fold jogger unit [A] (x 4, x 4, x 2).

3.8.3 JOGGER TOP FENCE MOTOR

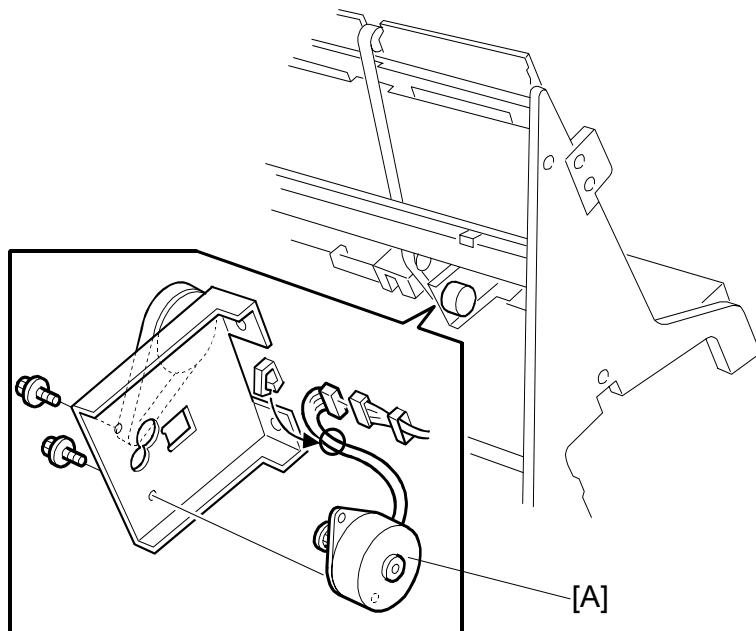


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1. Open the front door and pull out the stapler tray unit.
2. Remove the Z-fold jogger unit cover (x 2).
3. Remove the motor bracket [A] (x 2, timing belt x 1).
4. Remove the jogger top fence motor [B] (x 2, x 1, x 1).

REPLACEMENT AND ADJUSTMENT

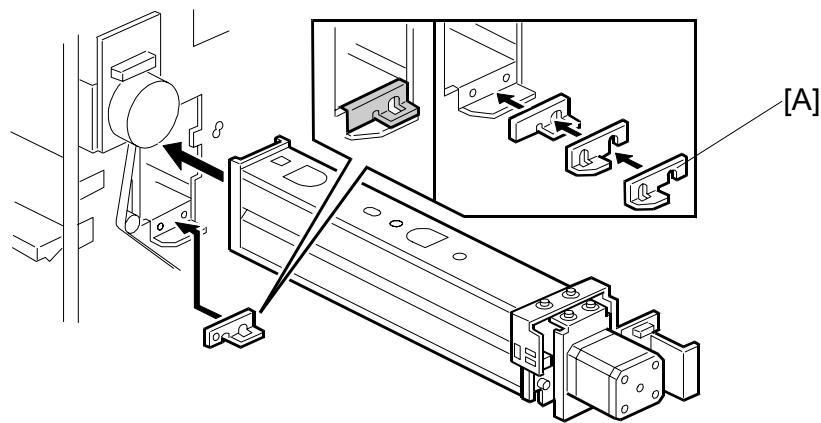
3.8.4 JOGGER BOTTOM FENCE MOTOR



1. Open the front door and pull out the stapler tray unit.
2. Remove the jogger bottom fence motor [A] (x 2, timing belt x 1, x 1, x 1).

3.9 PUNCH UNIT B531 (OPTION)

3.9.1 PUNCH POSITION ADJUSTMENT



The position of the punched holes can be adjusted in two ways.

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Front to Rear Adjustment

Three spacers [A] are provided with the punch unit for manual adjustment of the hole position in the main scan direction:

- 2 mm (x 1)
- 1 mm (x 2)

NOTE: One spacer was installed at installation and the remaining spacers were fastened with a screw to the rear frame of the finisher under the rear cover and slightly above the lock bar.

Right to Left Adjustment

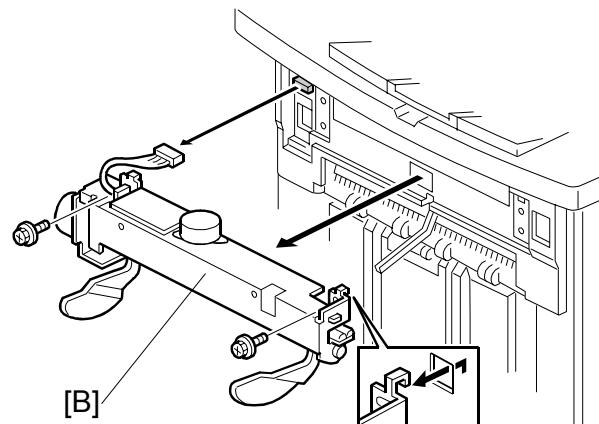
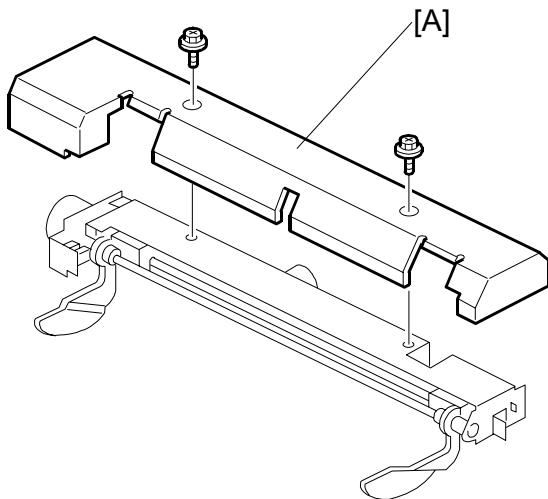
The position of the punched holes can be adjusted right to left in the sub scan direction with SP6-113 Punch Hole Position Adjustment. The position can be adjusted in the range ± 7.5 mm in 0.5 mm steps. The default setting is 0.

Press the **[•/*]** key to toggle the \pm selection. A +VE value shifts the punch holes left toward the edge of the paper, and a -VE value shifts the holes right away from the edge.

REPLACEMENT AND ADJUSTMENT

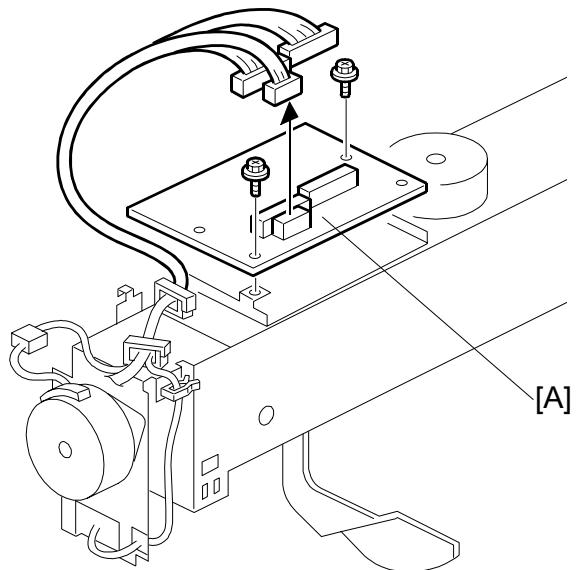
3.10 JOGGER UNIT B513 (OPTION)

3.10.1 JOGGER UNIT



1. Remove the jogger unit cover [A] (\wedge x 2).
2. Remove the jogger unit [B] (\wedge x 2, \square x 1).

3.10.2 JOGGER UNIT PCB

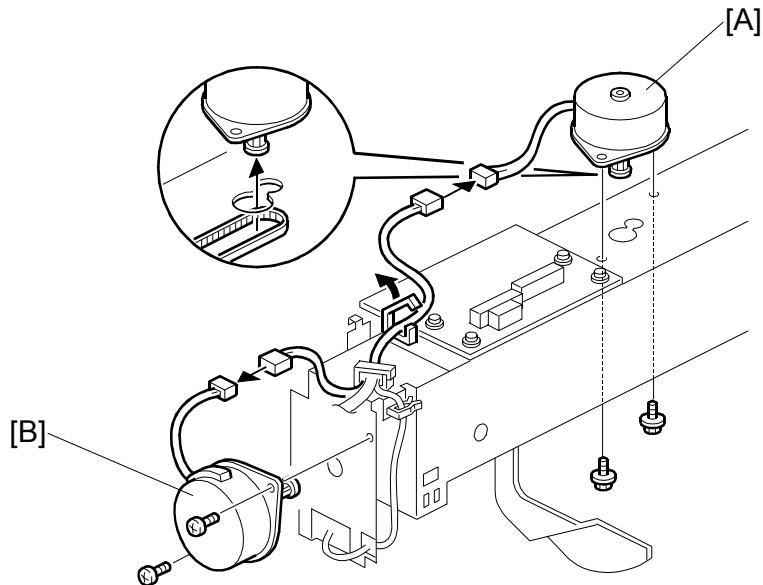


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1. Remove the jogger unit from the finisher. (3.10.1)
2. Remove the jogger unit control PCB [A] (\wedge x 2, \square x 3)

REPLACEMENT AND ADJUSTMENT

3.10.3 JOGGER UNIT MOTOR



1. Remove the jogger unit from the finisher. (参照 3.10.1)
2. Remove the shift jogger motor [A] (\wedge x 2, \square x 1).
3. Remove the shift jogger lift motor [B] (\wedge x 2, \square x 1).

4. TROUBLESHOOTING

If the machine logs an SC code in the display of the operation panel, see “Section 4 Troubleshooting” of the Service Manual. Section 4 contains a complete list of all service codes and how to troubleshoot the problem.



5. SERVICE TABLES

For details about 3000-Sheet Finisher B706 SP codes, please refer to “5. Service Tables” in the main machine service manual.

5.1 DIP SWITCHES

DPS100				Description
1	2	3	4	
0	0	0	0	Default
0	0	1	0	Free run: A4 LEF, staple mode
0	0	0	1	Free run: staple and tray shift

NOTE: Do not use any other settings.

5.2 TEST POINTS

No.	Label	Monitored Signal
TP100	(5V)	+5 V
TP101	(GND)	Ground
TP102	(RXD)	RXD
TP103	(TXD)	TXD

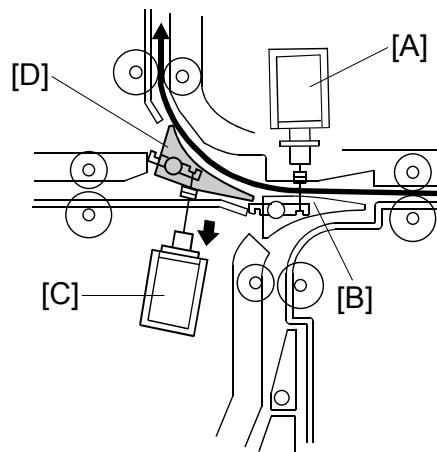
5.3 FUSES

No.	Function
FU100	Protects 24 V.

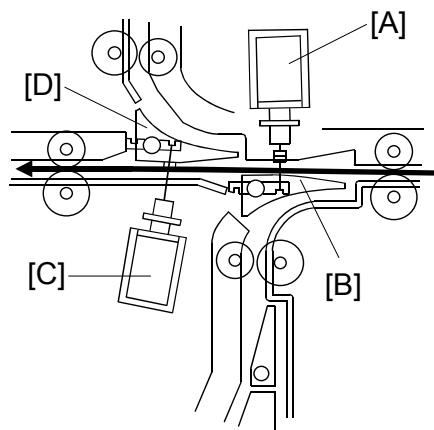
6. DETAILS

6.1 TRAY AND STAPLER JUNCTION GATE

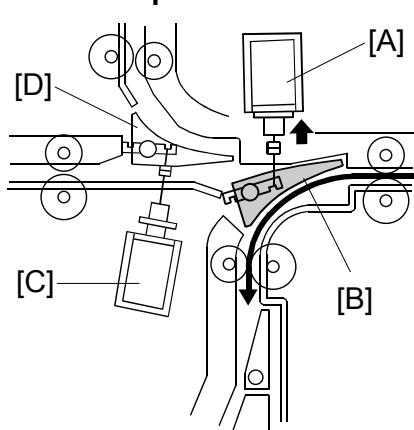
Upper Tray Mode



Sort/Stack Mode



Staple Mode

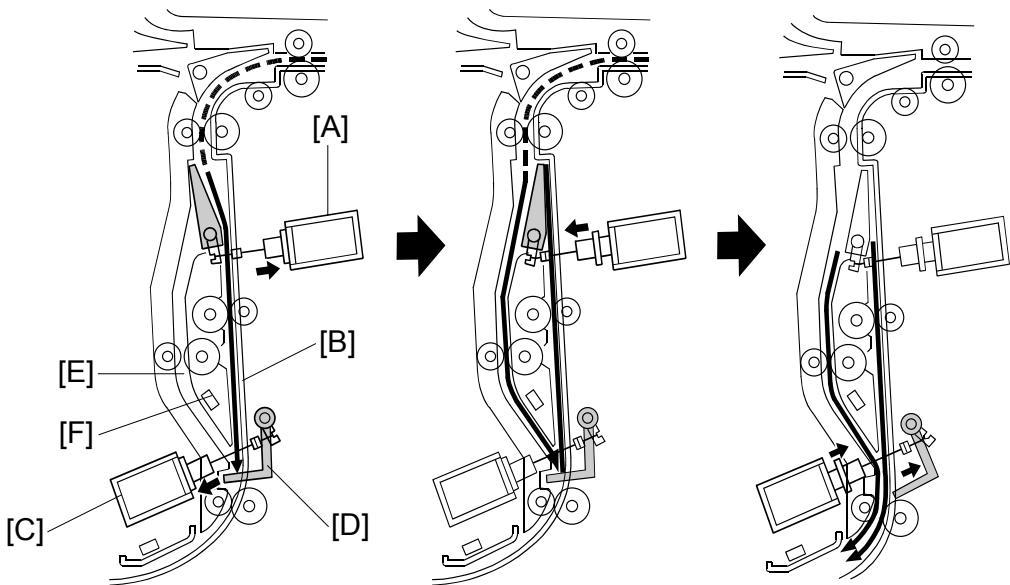


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Depending on the finishing mode, the copies are directed up, straight through, or down by the combinations of open and closed junction gates.

Solenoid/Gate		Selected Operation Mode		
		Upper Tray	Sort/Stack	Staple
[A]	Stapler junction gate solenoid	Off	Off	ON
[B]	Stapler junction gate	Closed	Closed	OPEN
[C]	Tray junction gate solenoid	ON	Off	Off
[D]	Tray junction gate	OPEN	Closed	Closed

6.2 PAPER PRE-STACKING



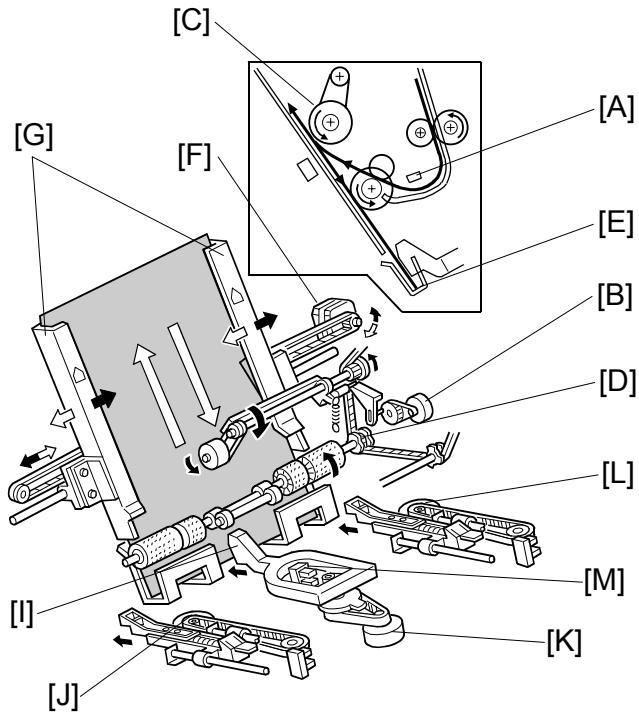
This mechanism improves productivity in staple mode. It is only used when copying on A4, LT, or B5 (all LEF).

During stapling, the copier has to wait. This mechanism reduces the wait by holding the first two sheets of a job while the previous job is still being stapled. It only works during the second and subsequent sets of a multi-set copy job.

The pre-stack junction gate solenoid [A] turns on 120 mm after the 1st sheet of paper turns on the entrance sensor, and this directs the sheet to the pre-stack tray [B]. (This sheet cannot be fed to the stapler yet, because the first set is still being stapled.) The pre-stack paper stopper solenoid [C] turns on 350 mm after the 1st sheet turns on the entrance sensor. The pre-stack paper stopper [D] then stops the paper.

The pre-stack junction gate solenoid turns off 230 mm after the trailing edge of the 1st sheet passes through the entrance sensor, and the 2nd sheet is sent to the paper guide [E]. The pre-stack paper stopper is released about 40 mm after the 2nd sheet turns on the pre-stack stopper sensor [F], and the two sheets of copy paper are sent to the stapler tray. All sheets after the 2nd sheet go to the stapler tray via the paper guide [E].

6.3 JOGGER UNIT PAPER POSITIONING



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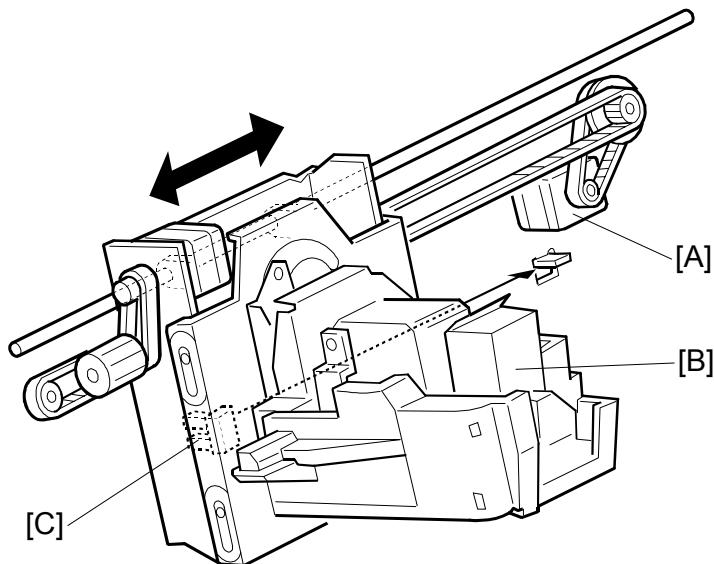
In the staple mode, as every sheet of paper arrives in the jogger unit, it is vertically and horizontally aligned, then the staple edge is pressed flat to ensure the edge of the stack is aligned correctly for stapling.

Vertical Paper Alignment: About 60 ms after the trailing edge of the copy passes the staple tray entrance sensor [A], the positioning roller motor [B] is energized to push the positioning roller [C] into contact with the paper. The positioning roller and alignment brush roller [D] rotate to push the paper back and align the trailing edge of the paper against the stack stopper [E].

Horizontal Paper Alignment: When the print key is pressed, the jogger motor [F] turns on and the jogger fences [G] move to the wait position about 7.2 mm wider than the selected paper size on both sides. When the trailing edge of the paper passes the staple unit entrance sensor, the jogger motor moves the jogger fences 3.7 mm towards the paper. Next, the jogger motor turns on again for 3.5 mm for the horizontal paper alignment then goes back to the wait position.

Paper Stack Correction: After the paper is aligned in the stapler tray, the left [J], center [K], and right [L] stack plate motors switch on briefly and drive the front stack, center stack, and rear stack plates against the edge of the stack to flatten the edge completely against the staple tray for stapling. When the next copy paper turns on the stapler entrance sensor, the stack plate motor turns on and returns to its home position. The home position is detected by stack plate HP sensor [M].

6.4 STAPLER UNIT MOVEMENT



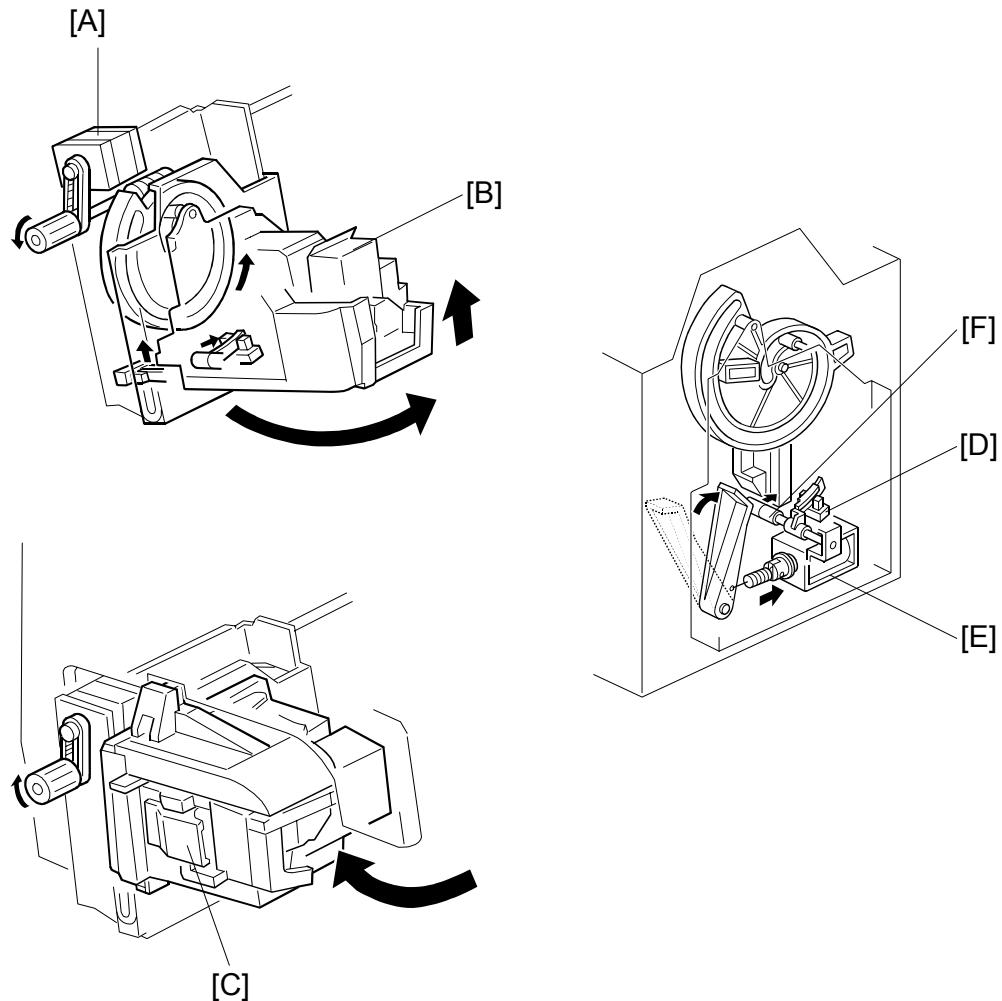
Side-to-Side

The stapler motor [A] moves the stapler [B] from side to side. After the start key is pressed, the stapler moves from its home position to the stapling position.

If two-staple-position mode is selected, for the first stack the stapler moves to the rear stapling position first, staples, moves to the front position, staples and waits at the front. For the second stack, the stapler staples the front corner first, then moves to the rear corner and staples.

NOTE: For continuous stapling jobs, the corners are stapled rear then front for the odd number stacks and stapled front then rear for even number stacks.

After the job is completed, the stapler returns to its home position. This is detected by the stapler HP sensor [C].



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Rotation (1)

In the oblique staple position mode, the stapler rotation motor [A] rotates the stapler units [B] 45° to counterclockwise after it moves to the stapling position.

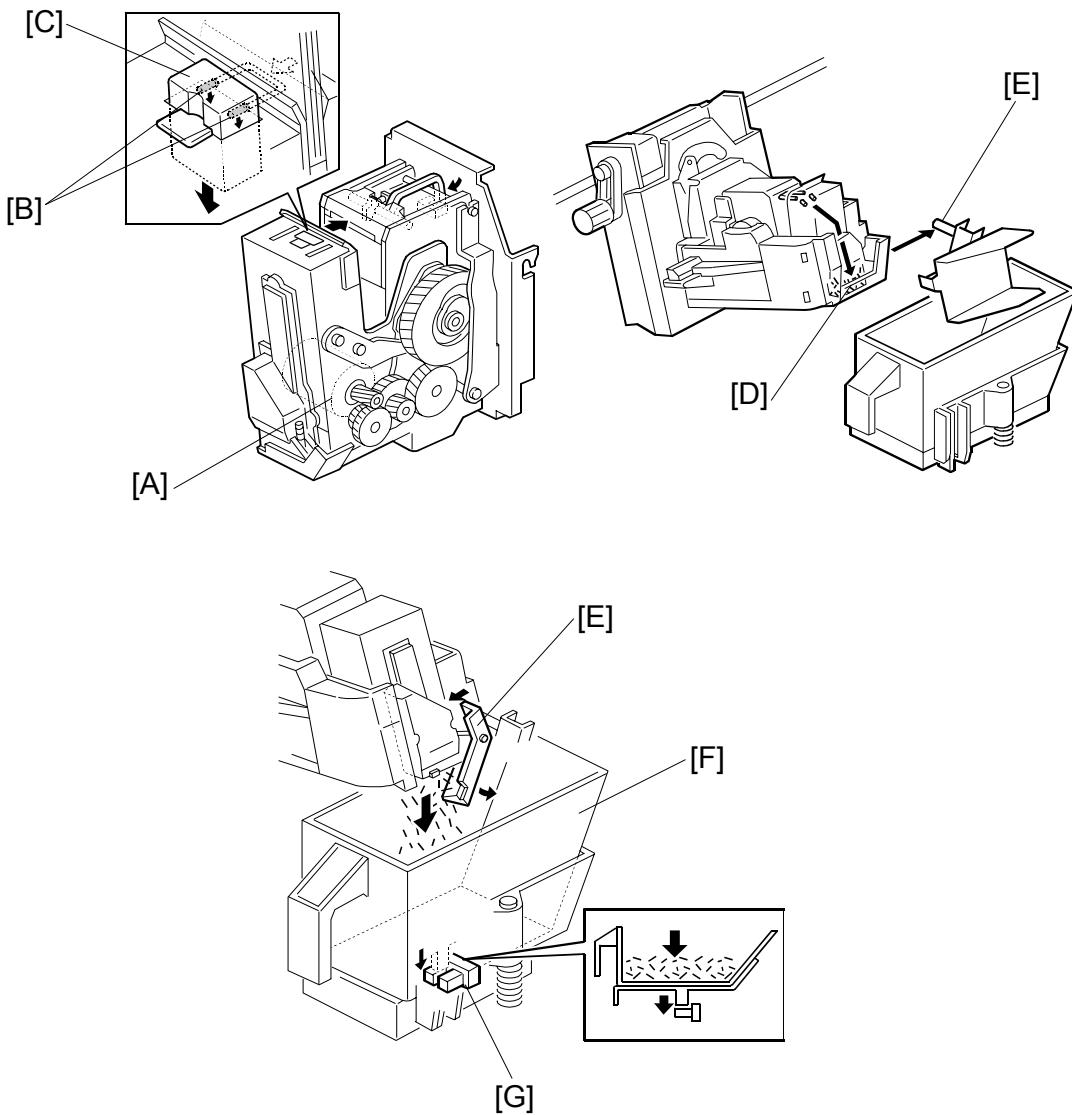
Rotation (2)

When the staple end condition arises, the stapler motor moves the stapler to the front and the stapler rotation motor rotates the stapler unit to clockwise to remove the staple cartridge [C]. This allows the user to add new staples.

Once the staples have been installed, and the front door closed, the stapler unit returns to its home position. As the stapler unit is returning to the home position, the stapler return sensor [D] is activated, the return solenoid [E] turns on and it assists the guide roller [F] to return to its guide (this guide directs the stapler during rotation).

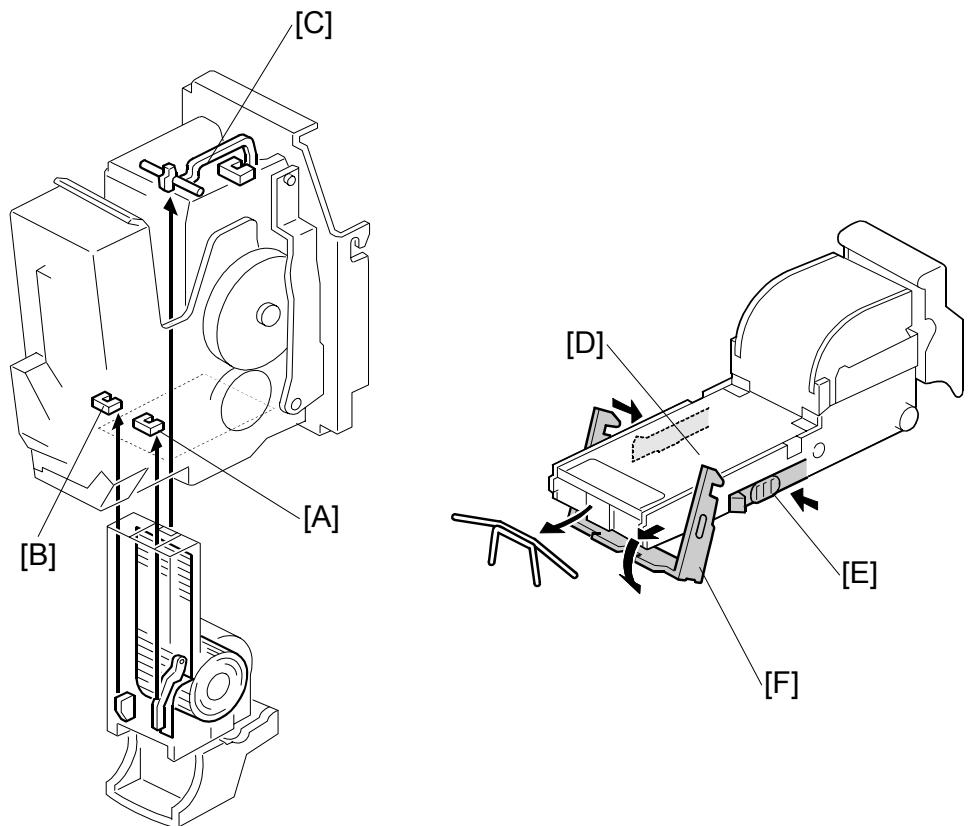
DETAILS

6.5 STAPLER



When the aligned copies are brought to the stapling position by the positioning roller and jogger fences, the staple hammer motor [A] starts stapling.

During stapling, the stapler trims off the excess length [B] of the staples by lowering the cutter [C]. This excess length depends on the number of copies in the set; there will be very little for a stack containing 100 sheets. The staple waste drops into the tray [D] in the stapler. When the stapler unit returns to its home position, the tray hits the shaft [E] and the tray opens. The staple waste drops into the staple waste hopper [F]. When the staple waste hopper is full, the actuator on its base activates the staple waste hopper sensor [G]. An SC737 (Full Finisher Staple Waste Hopper) is displayed.



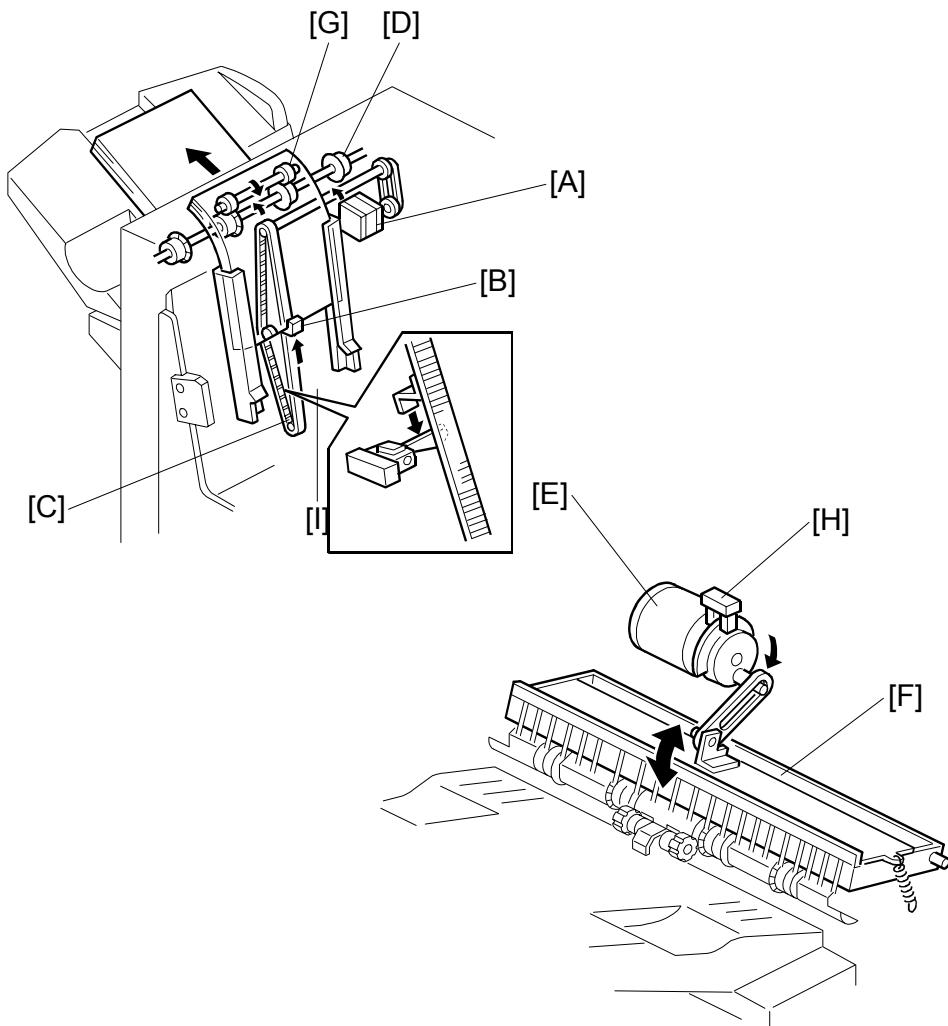
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The stapler has a staple end sensor [A], cartridge set sensor [B] and staple hammer HP sensor [C].

When a staple end or no cartridge condition is detected, a message is displayed advising the operator to install a staple cartridge. If this condition is detected during a copy job, the indication will appear, and the copy job will stop.

The staple cartridge has a clinch area [D] where jammed staples collect. The operator can remove the jammed staples from the clinch area by pressing in the releases [E] on both sides, then lowering the bracket lever [F].

6.6 FEED-OUT

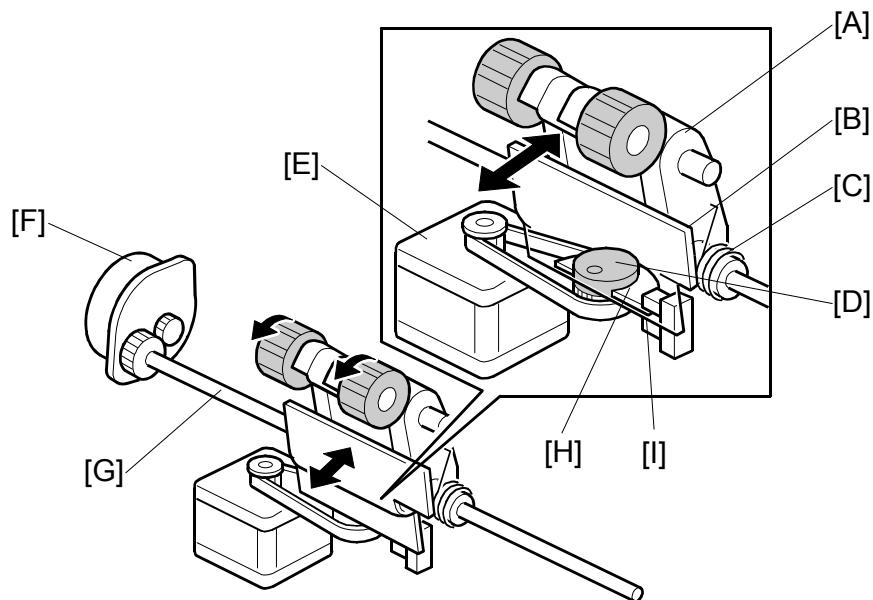


After the copies have been stapled, the stack feed-out motor [A] starts. The pawl [B] on the stack feed-out belt [C] transports the set of stapled copies up and feeds it to the shift tray exit roller [D]. When stapling starts, the exit guide motor [E] opens the upper exit guide [F], which includes the upper shift tray exit roller [G], in order to feed out the leading edge of the copy set smoothly. The exit guide motor turns on again a certain time after stapling is complete, and the upper exit guide plate is lowered. Then the shift tray exit roller takes over the stack feed-out.

The on-off timing of the exit guide motor is detected by the exit guide open sensor [H].

The stack-feed-out motor turns off when the pawl actuates the stack feed-out belt home position sensor [I].

6.7 PAPER EXIT STACKING



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The stacking roller assembly [A] is fastened to a plate [B] on a shaft by a spring [C]. The cam [D], in contact with the bottom of the plate, is connected to the stacking roller drag motor [E] via a timing belt.

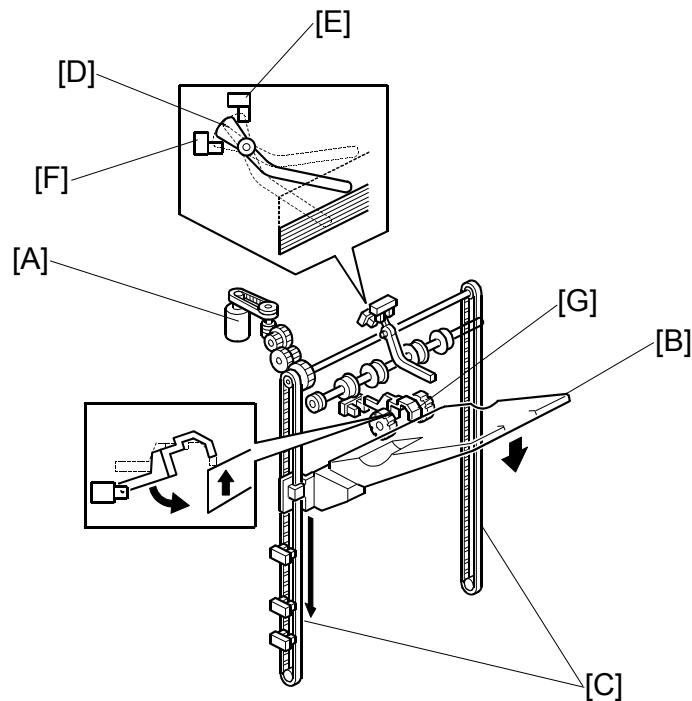
The stacking roller drag motor and timing belt rotate the cam against the bottom of the plate to move the rollers forward and back with each sheet ejected onto the shift tray.

The stacking roller motor [F] drives the shaft [G] that rotates the stacking rollers counter-clockwise as the rollers move back. The simultaneous rotation and backward movement of the roller assembly pulls each sheet back toward the copier to align the edges of the stack on the shift tray.

The actuator [H] is mounted on the cam and rotating with both rotating clockwise) and detects the roller assembly home position when the actuator leaves the gap of the return drive HP sensor [I] and signals the machine that the rollers are at the home position. The machine uses this information to control paper feed timing and confirm that the mechanism is operating correctly. The cam and actuator make one complete rotation for every sheet fed out of the machine onto the shift tray.

6.8 SHIFT TRAY

6.8.1 OVERVIEW



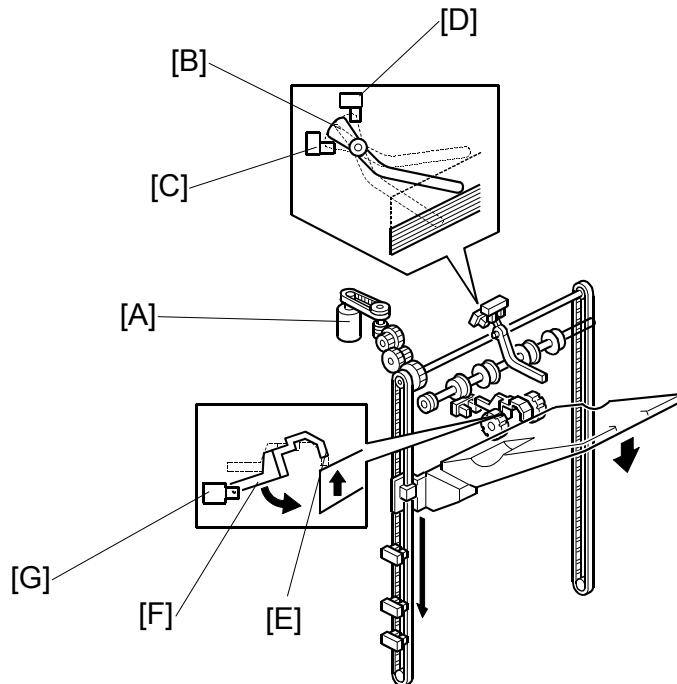
The shift tray lift motor [A] controls the vertical position of the shift tray [B] through gears and timing belts [C].

Stand-by Mode

After the main switch is turned on, or when the stack is removed from the tray, the end of the feeler on the tray falls and its actuator [D] rotates up into staple mode HP sensor 2 [E] (S7) and switches it on. This switches on the lift motor, which raises the tray until the tray pushes the actuator out of the sensor [E]. Then, the lift motor stops the shift tray; this is the home position (the actuator [D] is between the two sensors [E] and [F]).

The shift tray upper limit switch (SW1) prevents the drive gear from being damaged if staple mode HP sensor 2 [E] fails. In case of a failure, when the shift tray pushes up the actuator [G] and positioning rollers, the switch will cut the power to the shift tray lift motor.

6.8.2 SHIFT TRAY UP/DOWN MOVEMENT



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Sort/Stack Mode (Shift Mode)

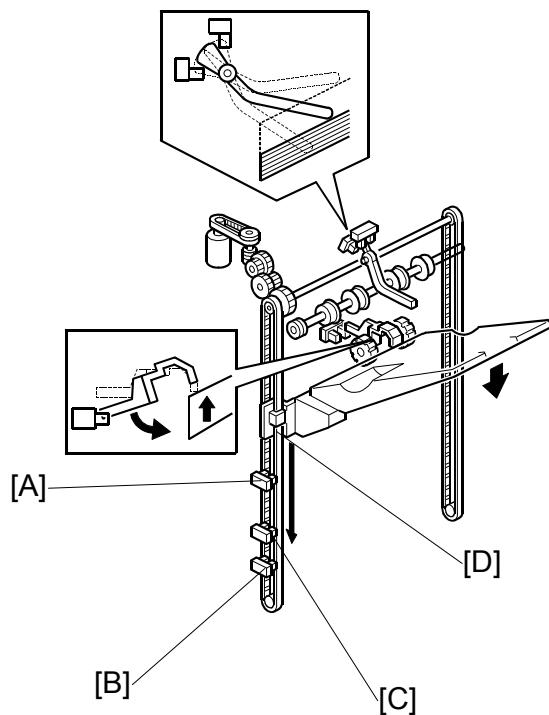
The shift tray moves to home position, which is when the actuator [F] has just exited the shift mode home position sensor [G] (S12). During feed-out, the tray is lowered automatically at prescribed intervals; sensor [D] (S7) is ignored. When the stack is removed from the tray, the end of the feeler [E] between the arms of the stacking roller falls, and its actuator [F] enters sensor [G] (S12) and switches it on. This switches on the lift motor [A], which raises the tray until the actuator leaves the sensor. Then, the lift motor stops the tray; this is the home position.

In sort/stack mode, if S12 fails when the tray is being lifted, the shift tray upper limit switch (SW1) prevents the drive gear from being damaged.

Staple Mode

The shift tray moves to home position, which is when the actuator [B] is between the staple mode home position sensors [C] and [D]. During feed-out, the shift tray is lowered automatically at prescribed intervals. When the stack is removed from the tray, the tray returns to the home position for stand-by mode. (→ 6.8.1)

6.8.3 SHIFT TRAY LOWER LIMIT DETECTION



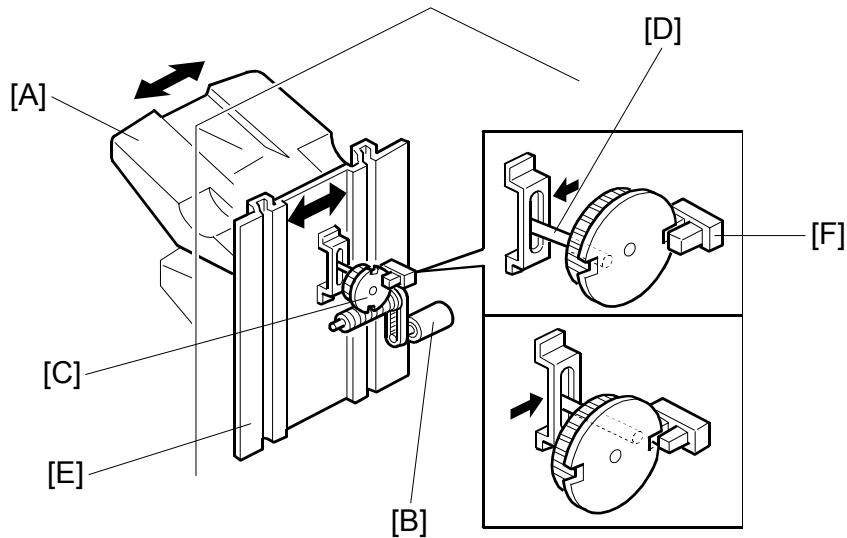
This machine has two shift tray lower limit sensors: shift lower limit sensor [A] (S9) for large paper (B4 and larger) and shift lower limit sensor [B] (S11) for small paper (smaller than B4).

NOTE: Sensor [C] (S10) is not used.

When the actuator [D] enters sensor [A] while using large paper (about 1500 sheets are on the tray), a message will be displayed and copying will stop.

When the actuator [D] enters sensor [B] while using small paper (about 3,000 sheets are on the tray), a message will be displayed and copying will stop.

6.9 SHIFT TRAY SIDE-TO-SIDE MOVEMENT



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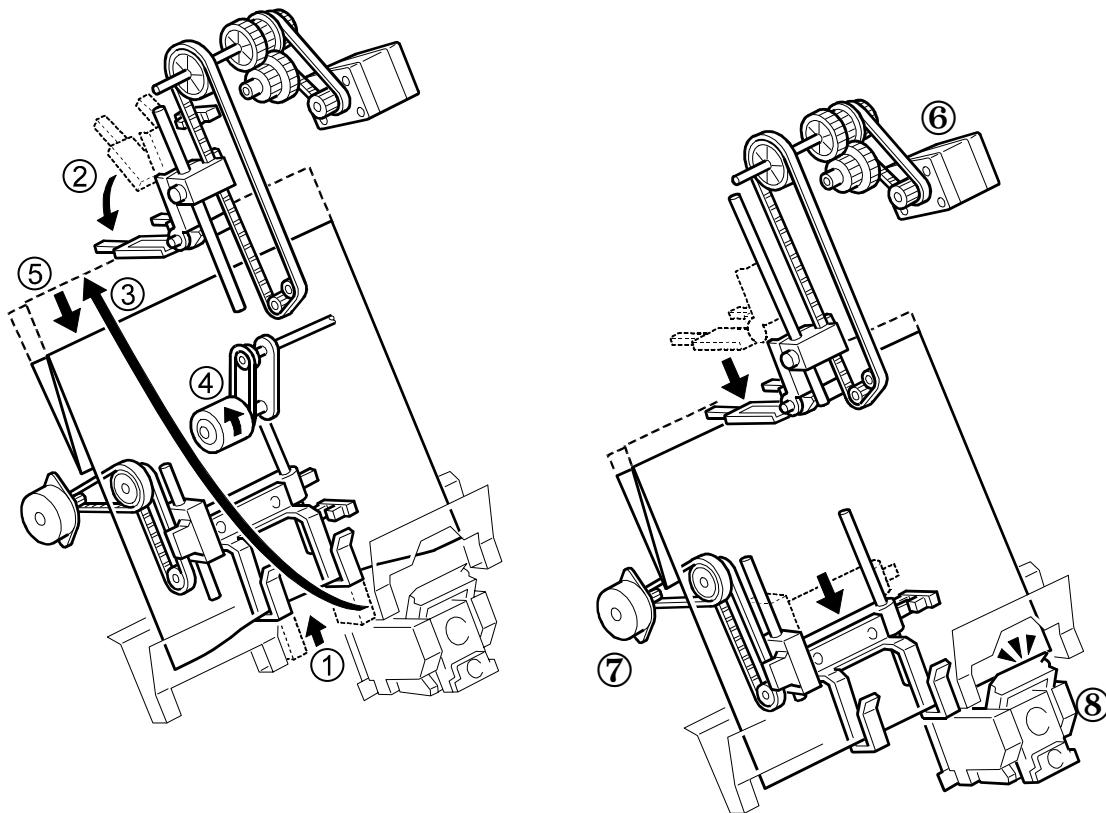
In sort/stack mode, the shift tray [A] moves from side to side to separate the sets of copies.

The horizontal position of the shift tray is controlled by the shift motor [B] and shift gear disk [C]. After one set of copies is made and delivered to the shift tray, the shift motor turns on, driving the shift gear disk and the shaft [D]. The end fence [E] is positioned by the shaft, creating the side-to-side movement.

When the shift gear disk has rotated 180 degrees (when the shift tray is fully shifted across), the cut-out in the shift gear disk turns on the shift tray half-turn sensor [F] and the shift motor stops. The next set of copies is then delivered. The motor turns on, repeating the same process and moving the tray back to the previous position.

DETAILS

6.10 STAPLING Z-FOLDED PAPER



Here is the operation sequence for jogging and stapling Z-folded sheets:

- ① The lower jogger fence lifts to receive the Z-folded sheets.
- ② The top fence moves down, to the horizontal position.
- ③ A sheet of paper goes into the stapler tray.
- ④ The positioning roller turns when each sheet is fed to the stapler tray.
- ⑤ Each sheet is fed down against the lower jogger fence to align the bottom edge.
- ⑥ After the set number of sheets come in, the jogger top-fence motor switches on and lowers the top fence against the top of the stack. This aligns the stack for stapling.
- ⑦ The bottom fence motor lowers the aligned stack to the stapling position.
- ⑧ The stapler staples the stack.

6.11 JAM CONDITIONS

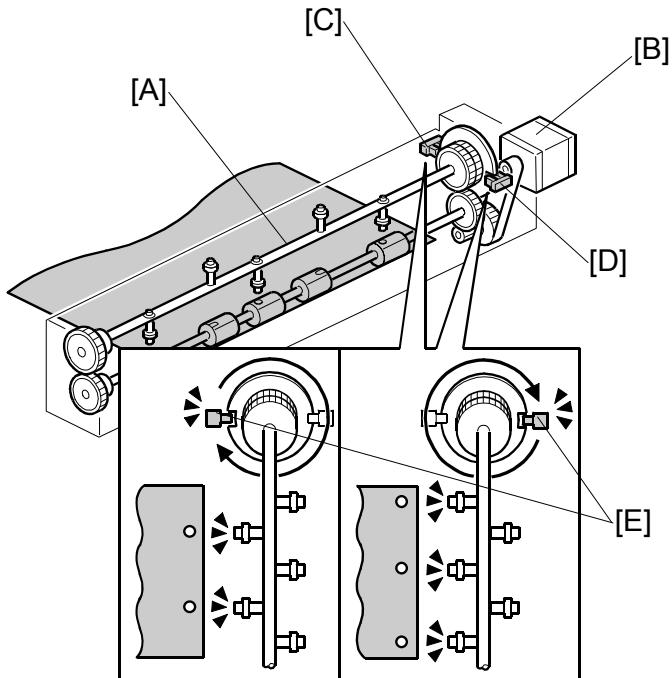
1. The entrance sensor does not turn on when the copier has fed paper 426 mm after the copier exit sensor turned off.
2. The entrance sensor does not turn off when the upper transport motor has fed paper 1.5 times the paper's length after it turned on.
3. The upper tray exit sensor does not turn on when the upper transport motor has fed paper 574 mm after the entrance sensor turned on.
4. The upper tray exit sensor does not turn off when the upper transport motor has fed paper 1.5 times the paper's length after it turned on.
5. In sort/stack mode, the shift tray exit sensor does not turn on when the upper transport motor has fed paper 733 mm after the entrance sensor turned on.
6. In sort/stack mode, the shift tray exit sensor does not turn off when the upper transport motor has fed paper 1.5 times the paper's length after it turned on.
7. In staple mode, the stapler tray entrance sensor does not turn on when the upper and lower transport motor have fed paper 835 mm after the entrance sensor turned on.
8. In staple mode, the stapler tray entrance sensor does not turn off when the upper transport motor has fed paper 1.5 times the paper's length after it turned on.
9. In staple mode, the stapler tray paper sensor does not turn off within 250 pulses of the stack feed-out motor after it started.
10. In staple mode, the shift tray exit sensor does not turn off within 1,260 ms after the stack feed-out motor started.

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6.12 PUNCH UNIT B531 (OPTION)

6.12.1 PUNCH UNIT DRIVE



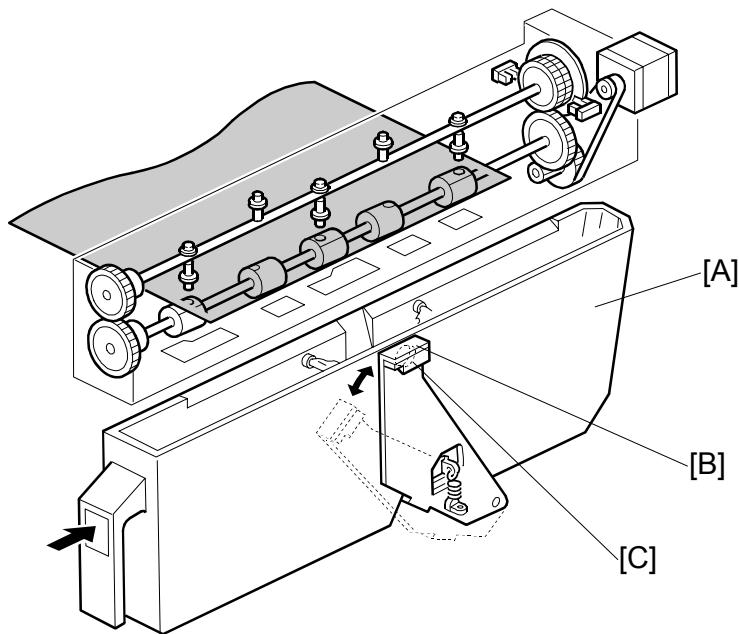
The punch unit makes 2 or 3 holes at the trailing edge of the paper. The number of holes depends on a selection made on the operation panel.

The cam [A] has 2 punches on one side and 3 punches on the other, and is turned by the punch motor [B]. The punch motor turns on immediately after the trailing edge of the paper passes the entrance sensor. The punches on the cam rotate downward and punch holes in the paper.

After punching a sheet of paper, the cam returns to home position and stops. Home position depends on whether 2 holes or 3 holes are being made, so there are two punch HP sensors. Punch HP sensor 1 [C] is used when 2-hole punching is selected, and punch HP sensor 2 [D] is used when 3-hole punching is selected. When the cut-out [E] enters the slot of the punch HP in use (sensor 1 or 2-hole punching or sensor 2 for 3/4-hole punching) the motor stops.

The knob (not shown) on the front end of the punch unit can be turned in either direction to clear paper jammed in the punch unit.

6.12.2 PUNCH WASTE COLLECTION



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Punch waste is collected in the punch waste hopper [A] positioned under the punch unit.

When the level of the punch waste in the hopper rises as far as the hole [B] in the hopper, the punch waste sensor [C] turns on, stops the job, and triggers a message on the operation to indicate that the hopper is full and must be removed and emptied.

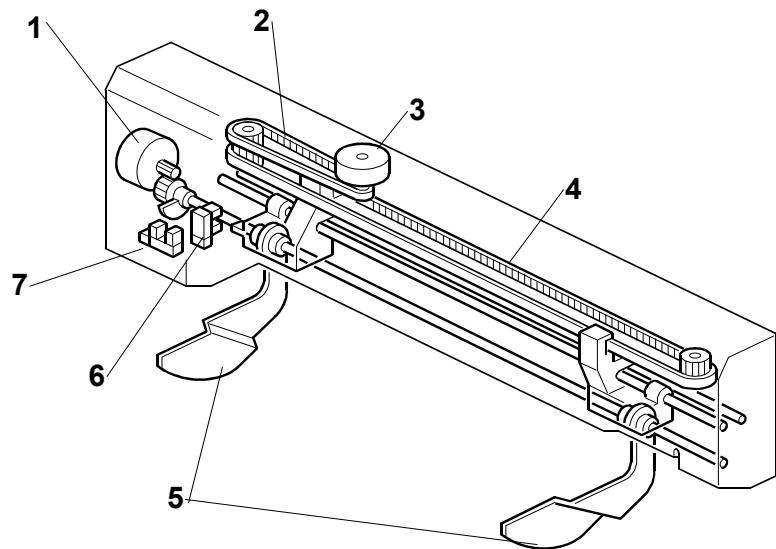
The job resumes automatically after the hopper is emptied and returned to the finisher.

The punch waste hopper sensor also functions as the hopper set sensor. When the hopper is not in the finisher, or if it is not inserted completely, the spring loaded sensor arm rotates up and to the right with the punch waste sensor away from the hole in the hopper holder and a message is displayed. The message in this case is the same as the hopper full message.

DETAILS

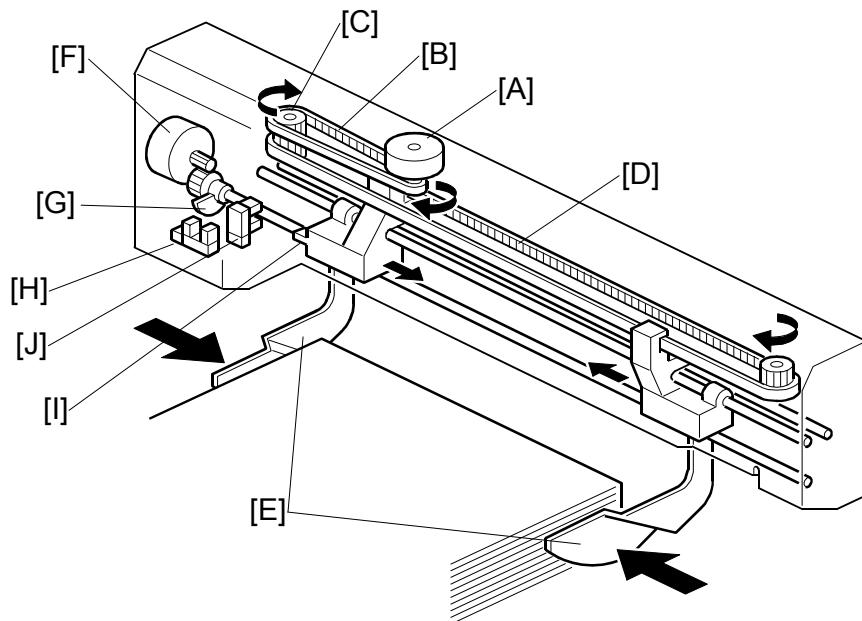
6.13 JOGGER UNIT B513 (OPTION)

6.13.1 JOGGER UNIT MECHANICAL LAYOUT



1. Shift Jogger Fence Lift Motor
2. Shift Jogger Motor Timing Belt
3. Shift Jogger Motor
4. Shift Jogger Fence Timing Belt
5. Shift Jogger Fences
6. Shift Jogger HP Sensor
7. Shift Jogger Lift HP Sensor

6.13.2 JOGGER UNIT DRIVE



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At prescribed intervals, the jogger motor [A] switches on and drives the jogger timing belt [B], gear [C] and jogger fence timing belt [D] which drives the shift jogger fences [E] against the sides of the stack to align its edges.

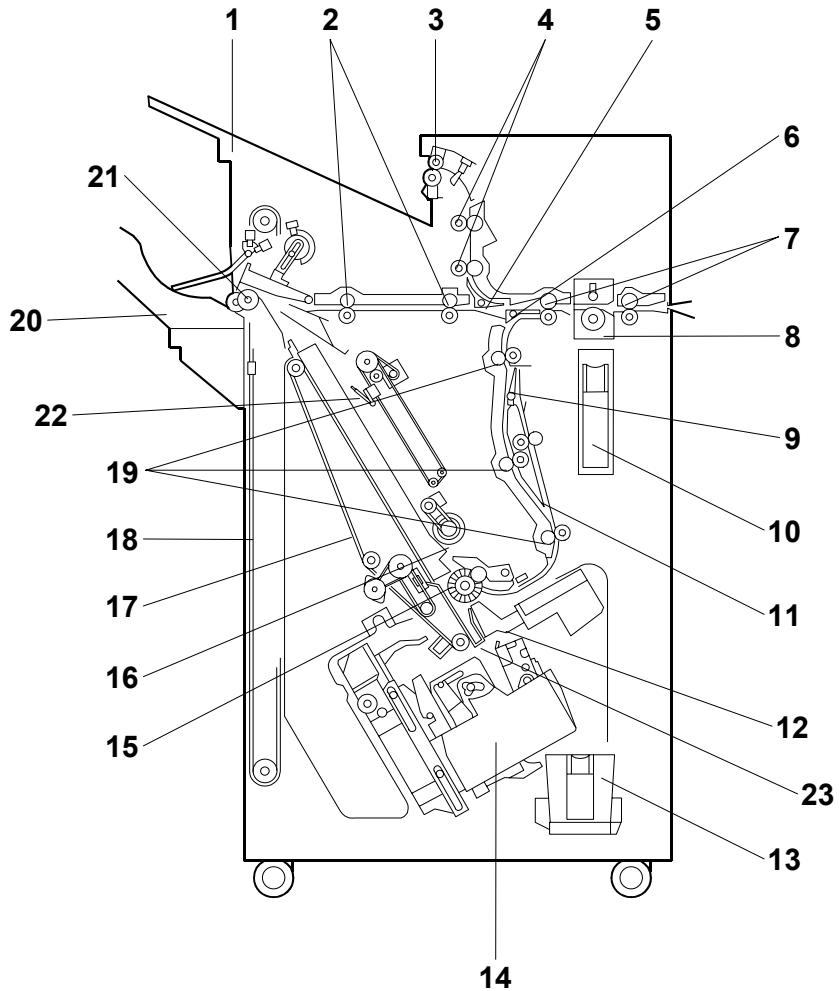
At the end of the job, the jogger fence lift motor [F] switches on and raises the fences until the actuator [G] leaves the slot of the shift jogger fence lift HP sensor [H] and shuts off the shift jogger fence lift motor.

At the same time, the jogger motor reverses and drives the fences away from the sides of the stack until the actuator [I] deactivates the shift jogger fence HP sensor [J] and switches off the jogger motor.

The jogger fences remain up in the standby position until the next job starts.

7. OVERALL MACHINE INFORMATION

7.1 MECHANICAL COMPONENT LAYOUT



- | | |
|-----------------------------|-----------------------------|
| 1. Upper Tray | 12. Stack Plate |
| 2. Middle Transport Rollers | 13. Staple Waste Hopper |
| 3. Upper Tray Exit Roller | 14. Stapler |
| 4. Upper Transport Rollers | 15. Alignment Brush Roller |
| 5. Tray Junction Gate | 16. Positioning Roller |
| 6. Stapler Junction Gate | 17. Stack Feed-out Belt |
| 7. Entrance Rollers | 18. Shift Tray Drive Belt |
| 8. Punch Unit | 19. Lower Transport Rollers |
| 9. Pre-stack Junction Gate | 20. Shift Tray |
| 10. Punch Waste Hopper | 21. Shift Tray Exit Roller |
| 11. Pre-stack Tray | 22. Jogger Top Fence |
| | 23. Jogger Bottom Fence |

7.2 ELECTRICAL COMPONENT DESCRIPTION

Symbol	Name	Function
Motors		
M01	Shift Tray Exit	Drives the exit roller for the shift tray.
M02	Shift Tray Lift	Moves the shift tray up or down.
M03	Exit Guide	Opens and closes the upper exit guide.
M04	Lower Transport	Drives the lower transport rollers, the positioning roller and the alignment brush roller
M05	Shift	Moves the shift tray from side to side.
M06	Positioning Roller	Moves the positioning roller into contact with the paper.
M07	Stacking Roller Drag	Moves the stacking roller in and out.
M08	Stacking Roller	Rotates the stacking roller.
M09	Jogger	Moves the jogger fences.
M10	Stack Feed-Out Belt	Drives the stack feed-out belt.
M11	Stack Plate - Center	Presses down the center of the edge for stapling.
M12	Stapler	Moves the staple unit from side to side.
M13	Stack Plate – Front	Presses down the front corner of the edge for stapling.
M14	Stack Plate – Rear	Presses down the rear corner of the edge for stapling.
M15	Stapler Rotation	Rotates the stapler 45 degrees for oblique stapling.
M16	Staple Hammer	Drives the staple hammer.
M17	Punch	Drives the punch shaft and roller. Punch Unit B531 (option).
M18	Upper Transport	Drives the entrance rollers, the middle and upper transport rollers, and upper tray exit roller.
M19	Shift Jogger	Drives the shift jogger fences against the sides of the sheets to align the stack, then reverses to return them to the home position. Jogger Unit B513 (option).
M20	Shift Jogger Lift	Raises the shift jogger fences after aligning the stack, then reverses and lowers them when returning to the home position. Jogger Unit B513 (option).
M21	Jogger Top Fence	Moves the top jogger fence.
M22	Jogger Bottom Fence	Moves the bottom jogger fence.
BOARDS		
PCB	Main	Controls the finisher and communicates with the copier.
PCB	Stapler	Controls the stapler unit.
PCB	Punch	Passes signals between the punch unit and the finisher main board. Punch Unit B531 (option).
PCB	Jogger	Controls the shift/jogger unit B513 (option).

3000-Sheet
Finisher
B706

OVERALL MACHINE INFORMATION

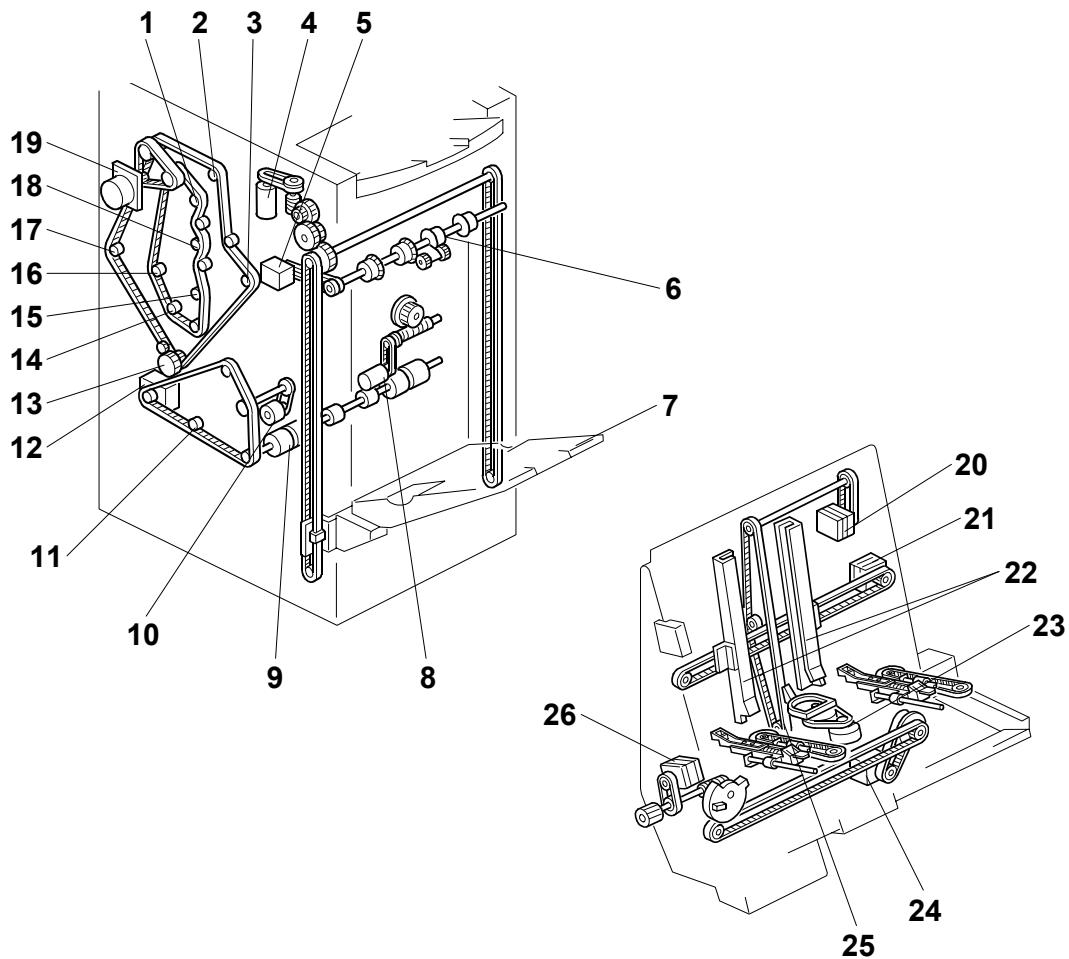
Symbol	Name	Function
SENSORS		
S01	Entrance	Detects the copy paper entering the finisher and checks for misfeeds.
S02	Upper Tray Exit	Checks for misfeeds at the upper tray.
S03	Upper Tray Limit	Detects when the paper stack height in the upper tray is at its upper limit.
S04	Shift Tray Exit	Checks for misfeeds at the shift tray exit.
S05	Exit Guide Open	Detects whether the guide plate is opened or not.
S06	Staple Mode HP 1	Detects the shift tray home position for standby mode and for staple mode.
S07	Staple Mode HP 2	Detects the shift tray home position for standby mode and for staple mode.
S09	Shift Lower Limit – Large Paper	Detects the lower limit for the shift tray when large paper sizes are being used
S10	Shift Tray Lower Limit 2	Not used.
S11	Shift Tray Lower Limit 3	Detects when the shift tray is at its lower limit.
S12	Shift Mode HP	Detects the shift tray home position in sort/stack mode.
S13	Stacking Roller HP	Detects when the stacking roller is at home position.
S14	Shift Tray Half-Turn	Detects whether the shift tray is at either the front or home HP.
S15	Pre-Stack Tray Paper	Determines when to turn off the pre-stack paper stopper solenoid.
S16	Stapler Tray Exit	Detects jams at the staple tray exit.
S17	Positioning Roller HP	Detects the home position of the positioning roller.
S18	Stack Feed-Out Belt HP	Detects the home position of the stack feed-out belt.
S19	Stapler Tray Paper	Detects the copy paper in the stapler tray.
S20	Jogger HP	Detects the home position of the shift jogger fences.
S21	Stack Plate - Center HP	Detects the home position of the center stack plate.
S22	Stack Plate – Front	Detects the home position of the front stack plate.
S23	Stack Plate – Rear	Detects the home position of the rear stack plate.
S24	Stapler HP	Detects the home position of the staple unit for side-to-side movement.
S25	Stapler Rotation HP	Detects the home position of the stapler unit for 45-degree rotation.
S26	Stapler Return	Detects the on timing of the stapler return solenoid.
S27	Staple Waste Hopper	Detects when the staple waste hopper is full.
S28	Punch Waste Hopper	Detects when the punch waste hopper is full and detects when the punch tray is set. Punch Unit B531 (option).
S29	Punch HP 1	Detects the cam home position for the 2-hole punch. Punch Unit B531 (option).
S30	Punch HP 2	Detects the cam home position for 3/4 punch. Punch Unit B531 (option).
S31	Shift Jogger HP	Detects the home position of the jogger unit arms during paper alignment. Jogger Unit B513 (option).

OVERALL MACHINE INFORMATION

Symbol	Name	Function
SENSORS		
S32	Shift Jogger Lift HP	Detects the when both shift jogger fences are at the lowered position and ready to move against the sides of the stack. Jogger Unit B513 (option).
S33	Top Fence HP	Detects the top fence home position for Z-fold paper staple mode.
S34	Bottom Fence HP	Detects the bottom fence home position for Z-fold paper staple mode.
SOLENOIDS		
SOL1	(Upper) Tray Junction Gate	Drives the tray junction gate.
SOL2	Stapler Junction Gate	Drives the stapler junction gate.
SOL3	Pre-Stack Junction Gate	Drives the pre-stack junction gate.
SOL4	Pre-stack Paper Stopper	Drives the stopper pawl of the pre-stacking tray.
SOL5	Stapler Return	Positions the stapler correctly on its return from the staple supply point.
SWITCHES		
SW1	Shift Tray Upper Limit	Cuts the power to the shift tray lift motor when the shift tray position is at its upper limit.
SW2	Front Door Safety	Cuts the dc power when the front door is opened.
SW3	Emergency Stop	Switches the current job off and on to allow time for the operator to remove paper from the shift tray.

3000-Sheet
 Finisher
 B706

7.3 DRIVE LAYOUT



- | | |
|-------------------------------|------------------------------|
| 1. Upper Transport Roller 2 | 14. Lower Transport Roller 1 |
| 2. Upper Tray Exit Roller | 15. Transport Roller 1 |
| 3. Lower Transport Roller 2 | 16. Entrance Roller 2 |
| 4. Shift Tray Lift Motor | 17. Entrance Roller |
| 5. Shift Tray Exit Motor | 18. Upper Transport Roller 1 |
| 6. Shift Tray Exit Roller | 19. Upper Transport Motor |
| 7. Shift Tray | 20. Stack Feed-out Motor |
| 8. Shift Motor | 21. Jogger Motor |
| 9. Staple Tray Exit Roller | 22. Jogger Fence |
| 10. Positioning Roller | 23. Stack Plate Motor |
| 11. Lower Transport Roller 3 | 24. Stapler Motor |
| 12. Lower Transport Motor | 25. Stack Feed-out Belt |
| 13. Lower Transport Rollers 2 | 26. Stapler Rotation Motor |

B660

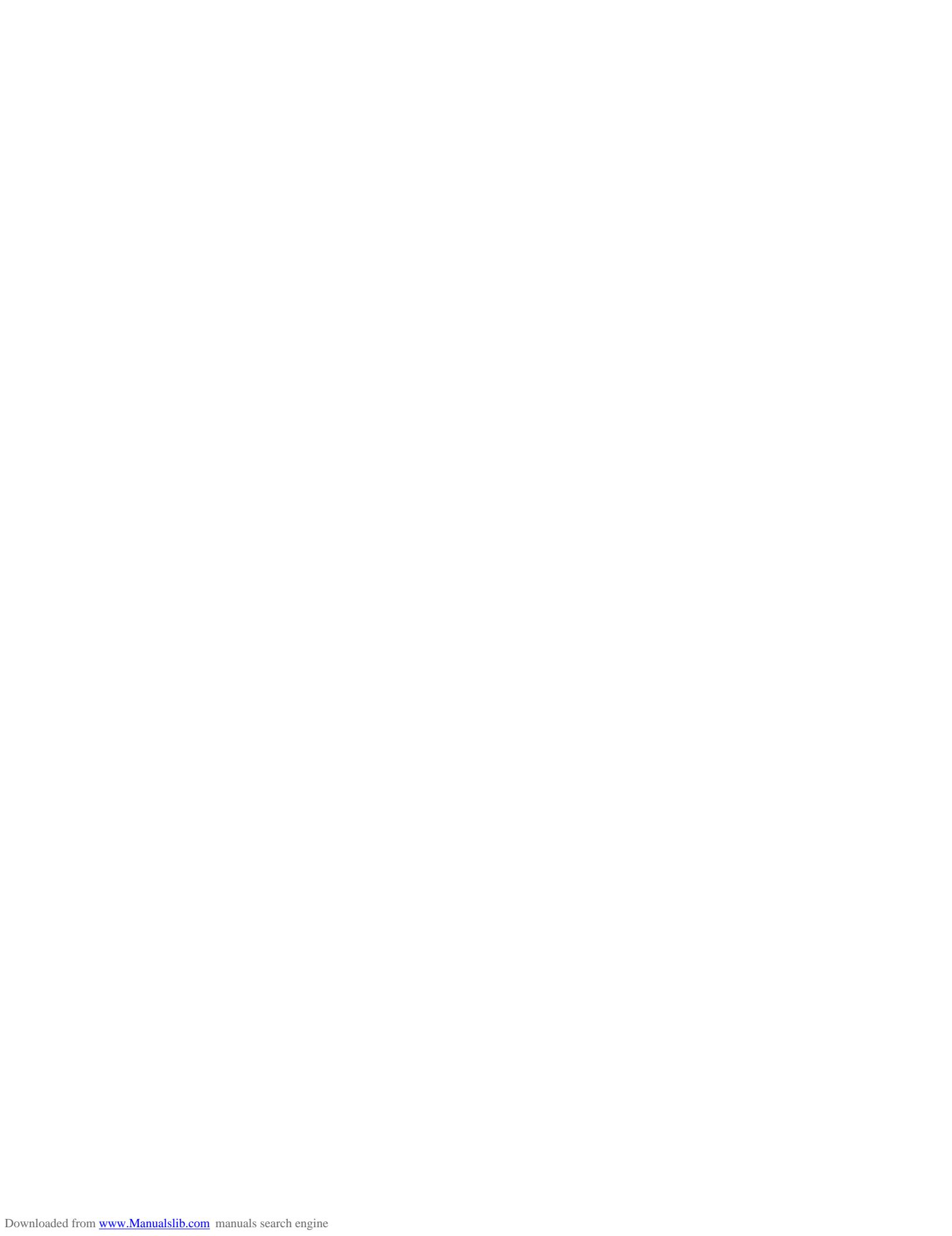
Z-Folding Unit



Z-FOLDING UNIT B660

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1. INSTALLATION

For details about installing the Z-Folding Unit B660, please refer to the instructions you received with the instructions or the “1. Installation” in the main machine service manual.

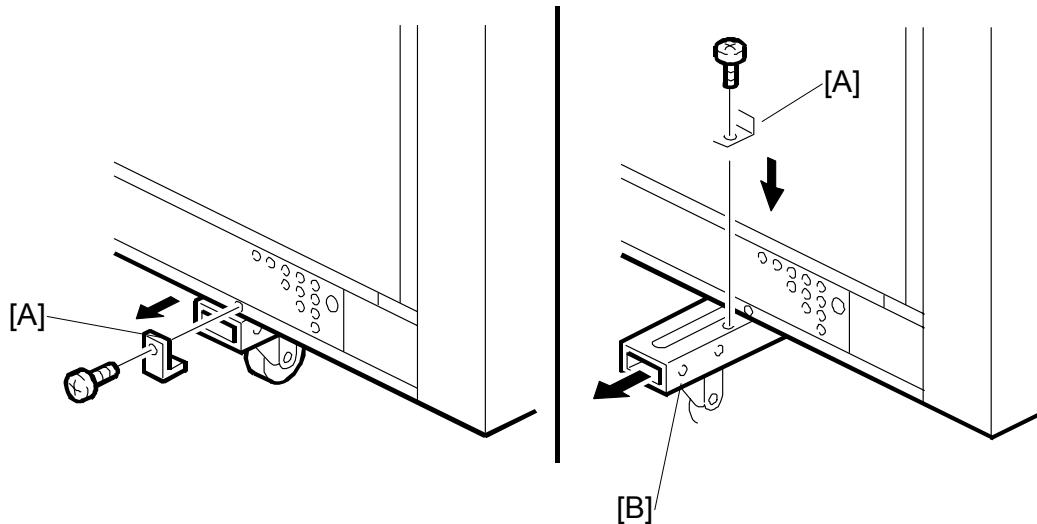


2. PREVENTIVE MAINTENANCE

For details about the Z-Folding Unit B660 PM table, please refer to Section “2. Preventive Maintenance” in the main Service Manual.

3. REPLACEMENT AND ADJUSTMENT

3.1 BEFORE YOU BEGIN



Z-Folding Unit
B660

1. Disengage the Z-folding unit from the machine.
2. Disengage the Z-folding unit from the finisher (or cover sheet feeder).
3. At the bottom on the sides of the Z-folding unit:
 - Remove the lock bracket [A] (x 1).
 - Pull out the foot extension [B].
 - Re-attach the bracket [A] to lock the foot in the open position (x 1).

Reinstallation

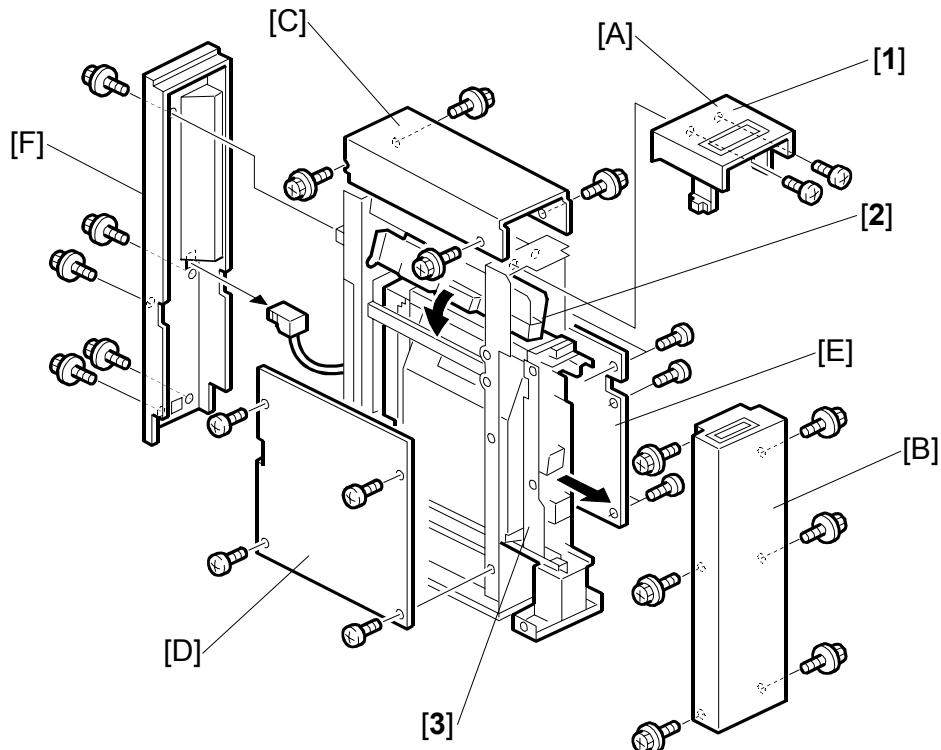
Do this procedure in the opposite sequence to retract and lock the extensions below the Z-folding unit.

CAUTION

The Z-folding unit is not stable, with or without the feet extended. Do your work carefully; do not tilt the unit.

REPLACEMENT AND ADJUSTMENT

3.2 COVERS



[1] Open the front door.

[2] Lift the horizontal transport plate to the left until it locks on the left side.

[3] Pull out the Z-fold mechanism.

[A]: Front door (x 2)

[B]: Front cover (x 6)

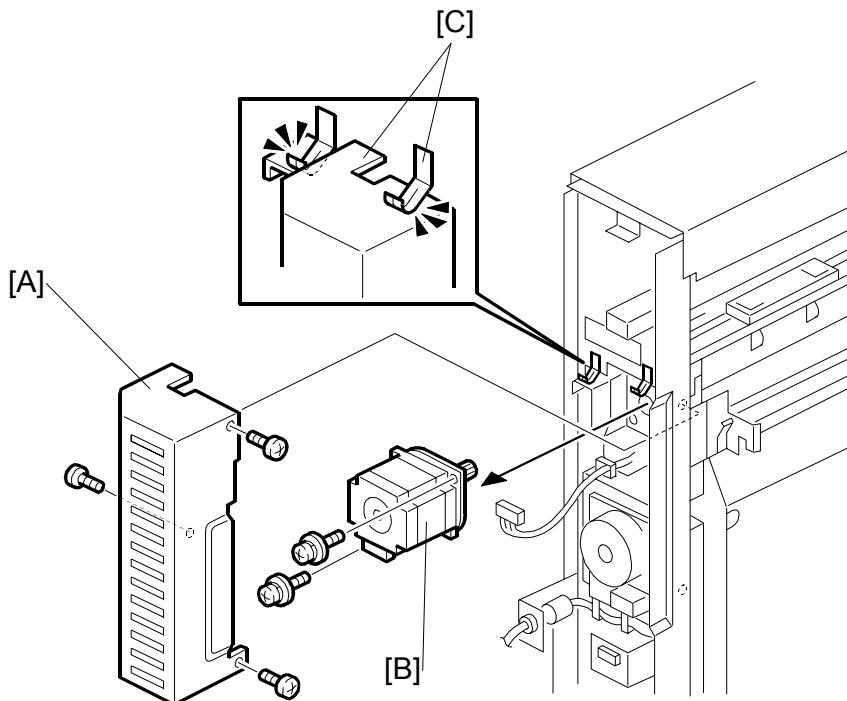
[C]: Top cover (x 4)

[D]: Left cover (x 4)

[E]: Right cover (x 5)

[F]: Back cover (x 5)

3.3 FEED MOTOR



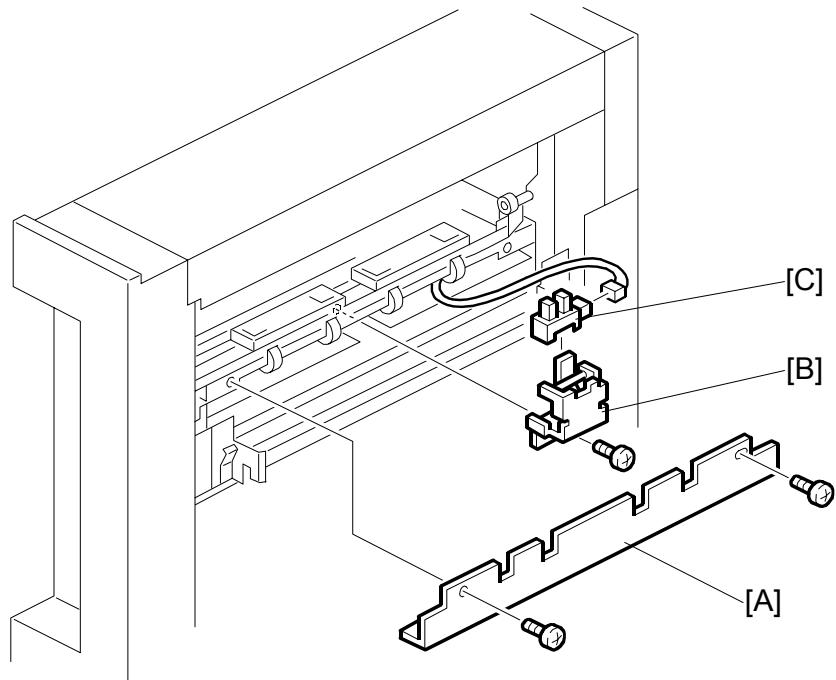
Z-Folding Unit
B660

1. Pull the Z-folding mechanism out of the unit, but not fully.
 2. Remove: (参照 3.2)
 - Left cover
 - Right cover
 - Back cover
- [A]: Motor cover ($\times 3$)
 [B]: Feed Motor ($\times 2$, $\times 1$, timing belt $\times 1$)

Re-installation

Make sure that the motor cover is below the leaf springs [C].

3.4 UPPER EXIT SENSOR



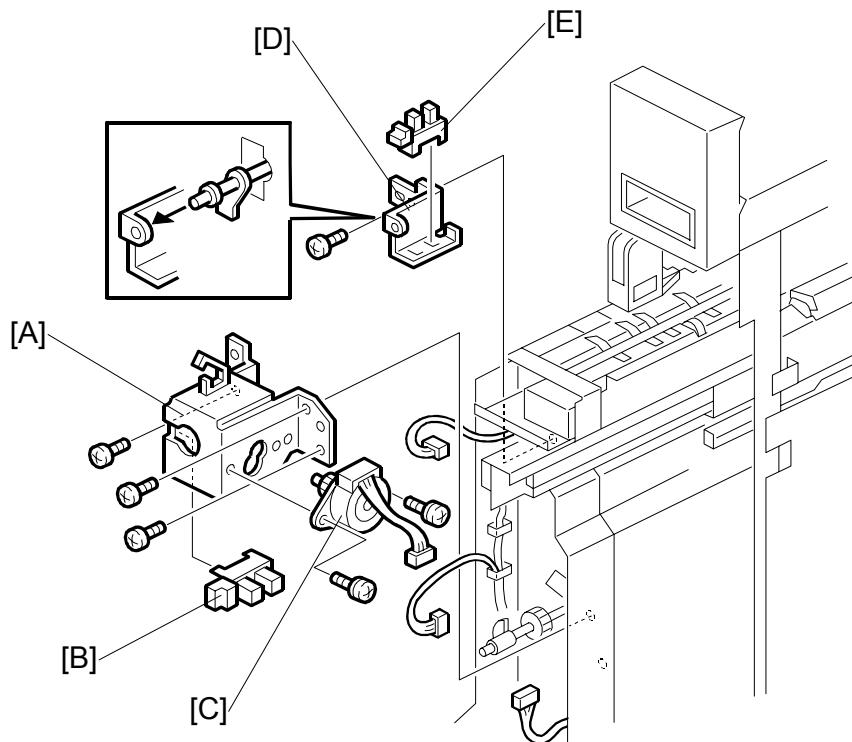
Left cover (☞ 3.2)

[A]: Bracket (☞ x 2)

[B]: Upper exit sensor bracket (☞ x 1, ☞ x 1)

[C]: Upper exit sensor (☞ x 1)

3.5 UPPER STOPPER MOTOR/HP SENSOR, FEED SENSOR

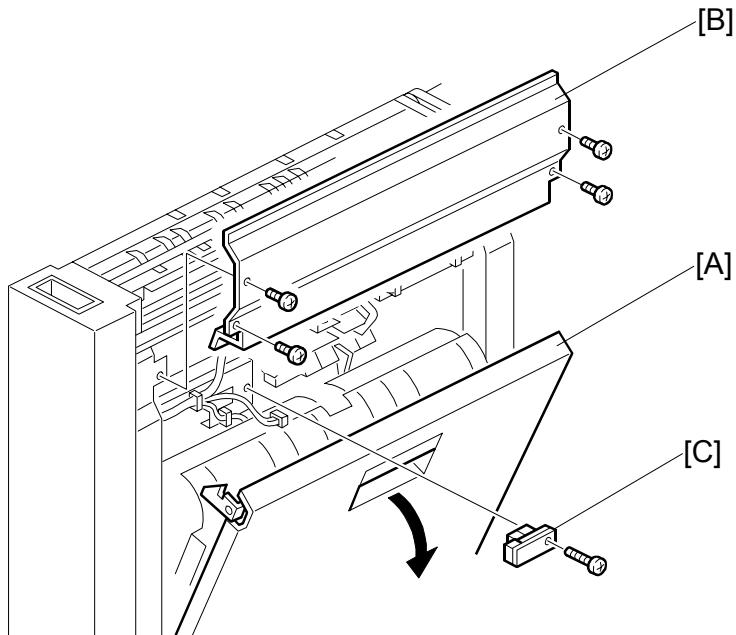


ZFolding Unit
B660

Front cover (☞ 3.2)

- [A]: Upper stopper motor bracket (☞ x 3, ☞ x 2)
- [B]: Upper stopper motor HP sensor (☞ x 1)
- [C]: Upper stopper motor (☞ x 2, ☞ x 1)
- [D]: Feed sensor bracket (☞ x 1)
- [E]: Feed sensor (☞ x 1)

3.6 FOLD TIMING SENSOR



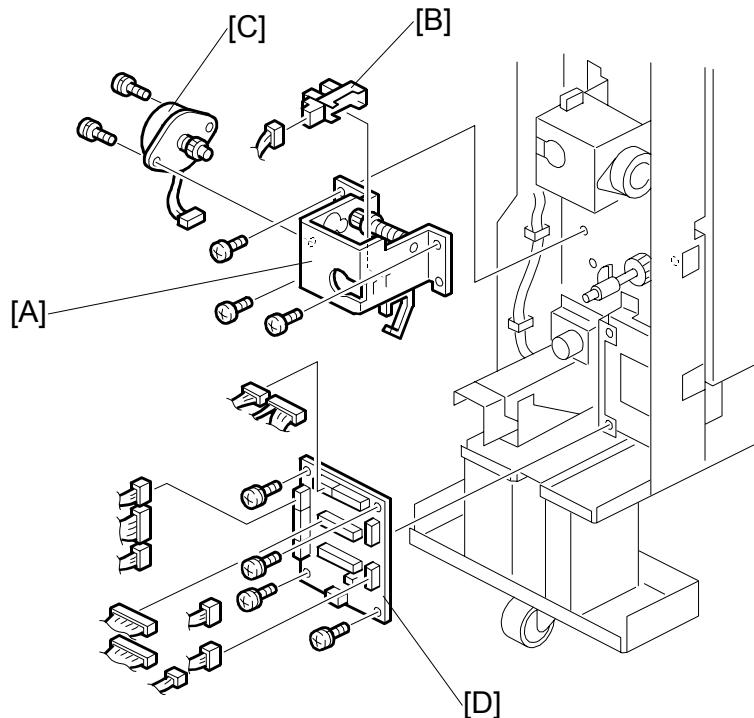
Pull the Z-fold mechanism out of the unit. (☞ 3.2)

[A]: Open the right vertical transport unit cover.

[B]: Plate (☞ x 4)

[C]: Fold timing sensor (☞ x 1, ☞ x 1)

3.7 LOWER STOPPER MOTOR/HP SENSOR, RELAY BOARD

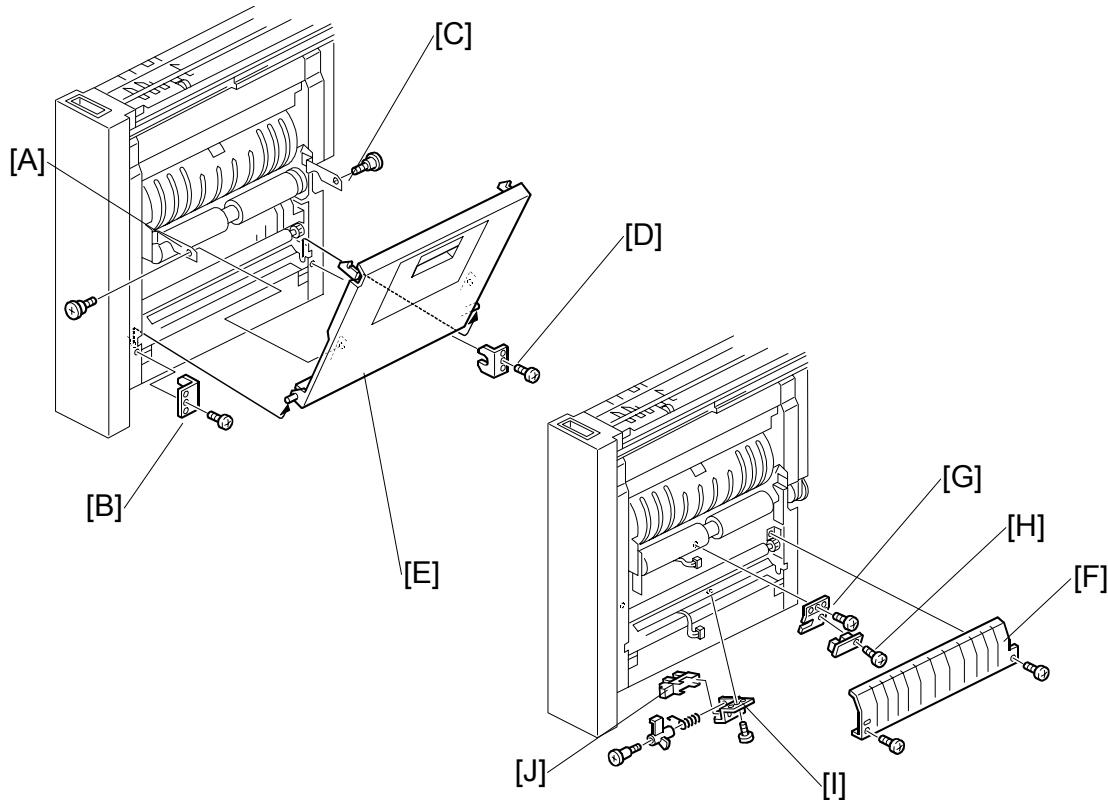


Z-Folding Unit
B660

Front cover (► 3.2)

- [A]: Lower stopper motor bracket (x 3, x 1)
- [B]: Lower stopper HP sensor (x 1)
- [C]: Lower stopper motor (x 2, x 1, x 1)
- [D]: Relay board (x 4, x 3, x 10)

3.8 LEADING EDGE SENSOR, LOWER EXIT SENSOR

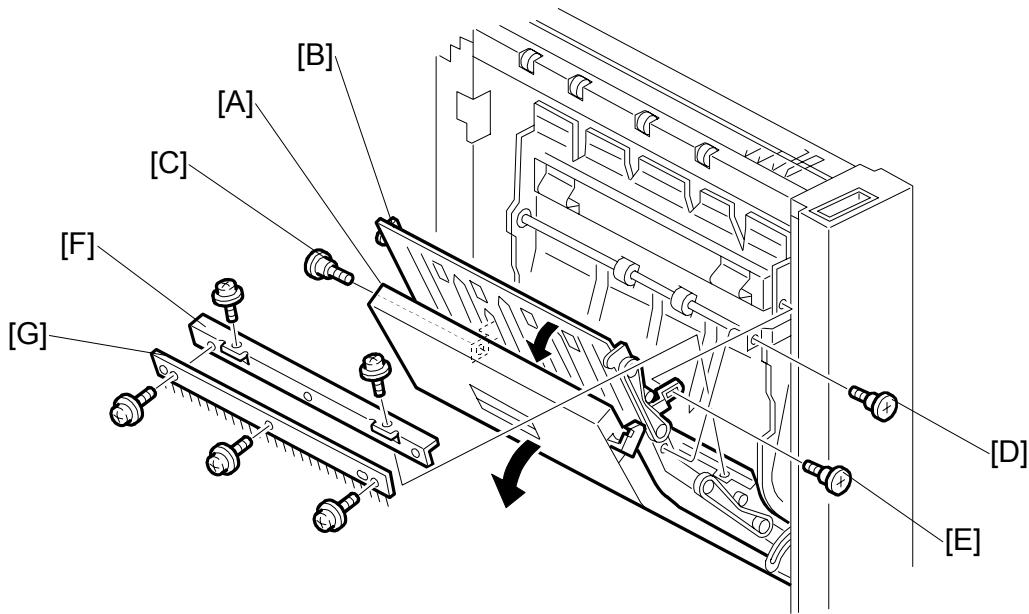


Pull out the Z-folding mechanism. (☞ 3.2)

Open the right vertical transport cover [E].

- [A]: Left link arm (☞ x 1)
- [B]: Left corner bracket (☞ x 1)
- [C]: Right link arm (☞ x 1)
- [D]: Right corner bracket (☞ x 1)
- [E]: Vertical transport cover.
- [F]: Lower fold roller cover (☞ x 2)
- [G]: Leading edge sensor bracket (☞ x 1)
- [H]: Leading edge sensor (☞ x 1, ☞ x 1)
- [I]: Lower exit sensor bracket (☞ x 1)
- [J]: Lower exit sensor (☞ x 1, ☞ x 1)

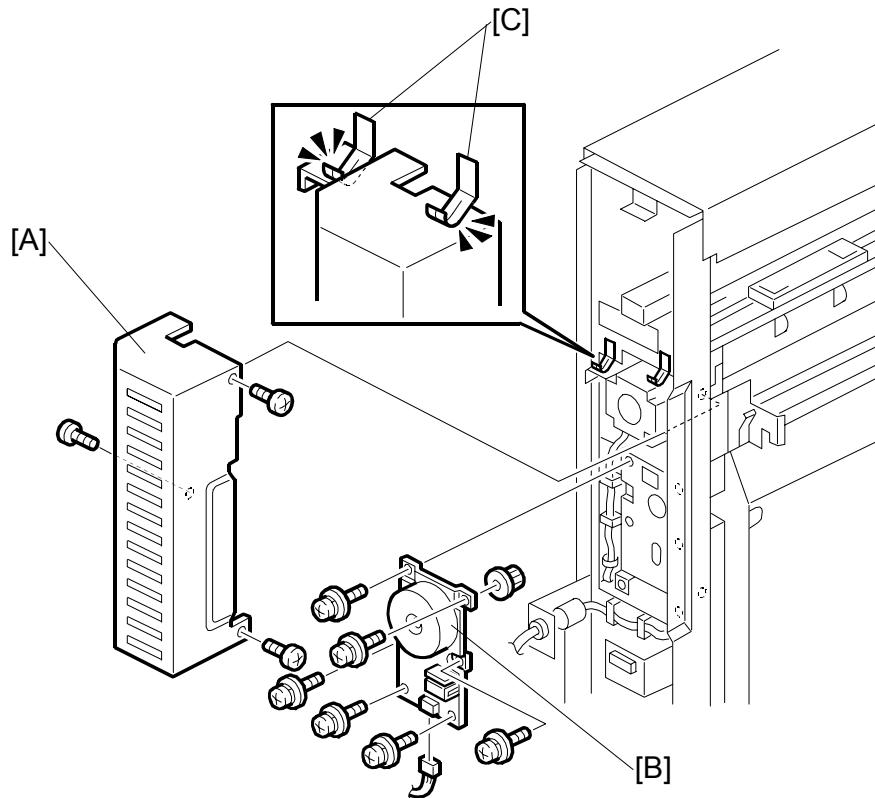
3.9 ANTI-STATIC BRUSH



Z-Folding Unit
B660

1. Pull out the Z-folding mechanism. (☞ 3.2)
2. Open the left vertical transport cover [A].
3. Open the vertical transport assembly [B].
4. Remove the left link screw [C] of the vertical transport assembly.
5. Remove the right link screw [D] of the vertical transport assembly.
6. Remove the link screw [E] between the plates of the vertical transport assembly.
7. Remove the bracket [F].
8. Remove the anti-static brush [G].

3.10 FOLD ROLLER MOTOR



1. Pull the Z-folding mechanism out of the unit, but not fully.
2. Remove: (3.2)
 - Left cover
 - Right cover
 - Back cover

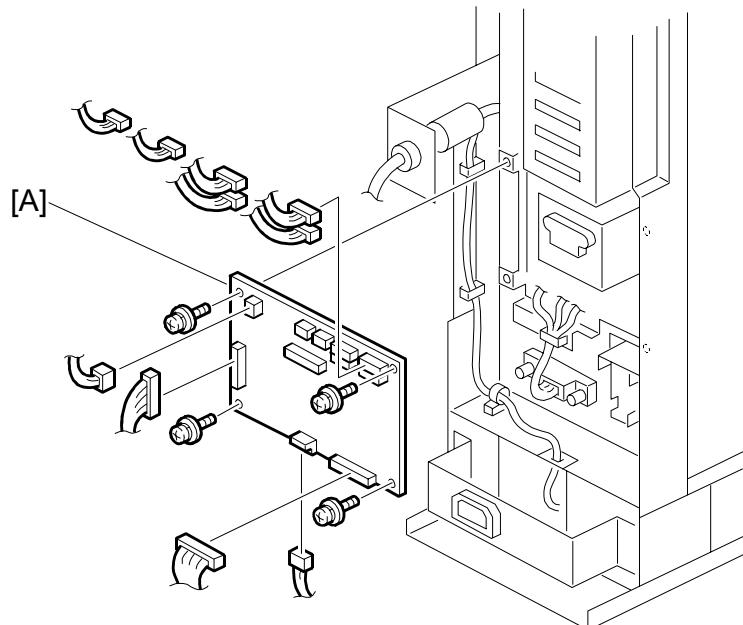
[A]: Motor cover (x 3)

[B]: Fold roller motor (x 6, x 1, timing belt x 1)

Reinstallation

Make sure that the motor cover is below the leaf springs [C].

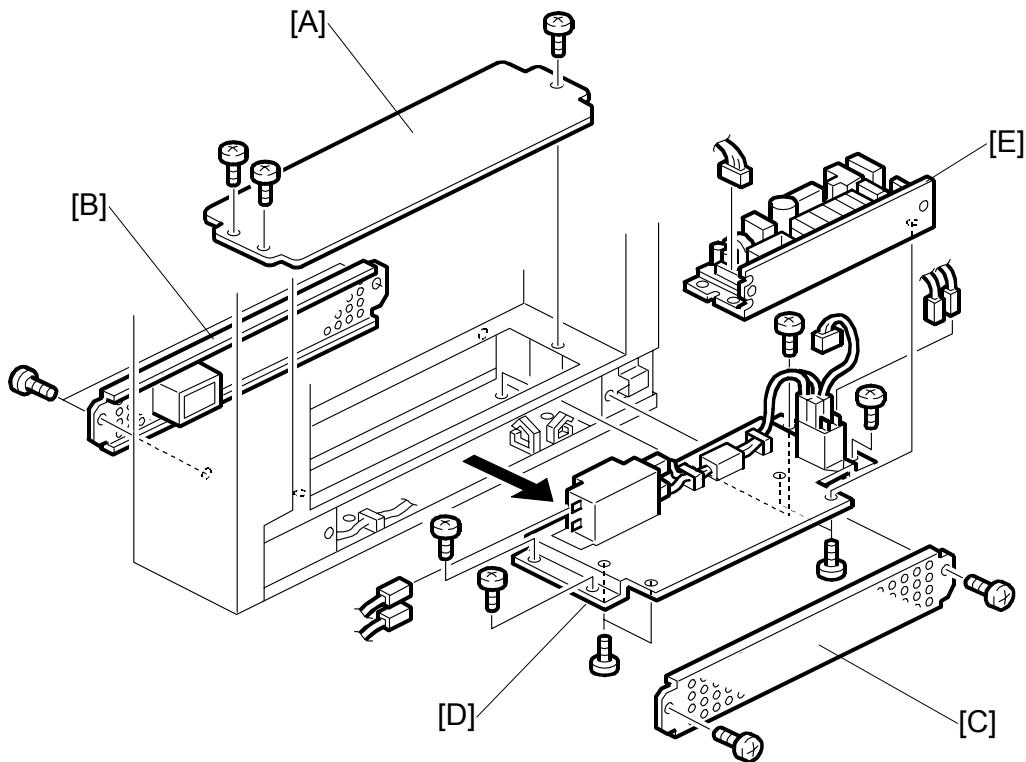
3.11 MAIN CONTROL BOARD



Z-Folding Unit
B660

1. Remove the rear cover. (☞ 3.2)
2. Remove the main control board [A] ($\wedge \times 4$, $\square \times 10$)

3.12 PSU



1. Open the front door. (☞ 3.2)
2. Pull the Z-fold mechanism out of the unit. (☞ 3.2)
3. Remove the left cover and right cover. (☞ 3.2)
4. Remove the base top cover [A] (\wedge x 3).
5. Remove the base left cover [B] (\wedge x 2).
6. Remove the base right cover [C] (\wedge x 2).
7. Make a mark at the positions of the connectors, then disconnect them.
NOTE: These connectors do not have different colors. To help you connect them again correctly, make marks on them.
8. Remove the screws of the power supply unit (PSU) [D] (\wedge x 4).
9. Pull the power supply unit [D] out of the right side of the bottom.
10. Remove the power supply board [E] (\wedge x 4, \square x 5).

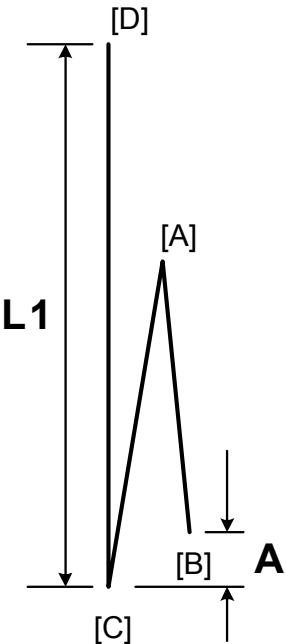
4. TROUBLESHOOTING

For more about troubleshooting (jam removal, etc.), please refer to the Operating Instructions.



5. SERVICE TABLES

Two SP codes have been added for the Z-folding unit.



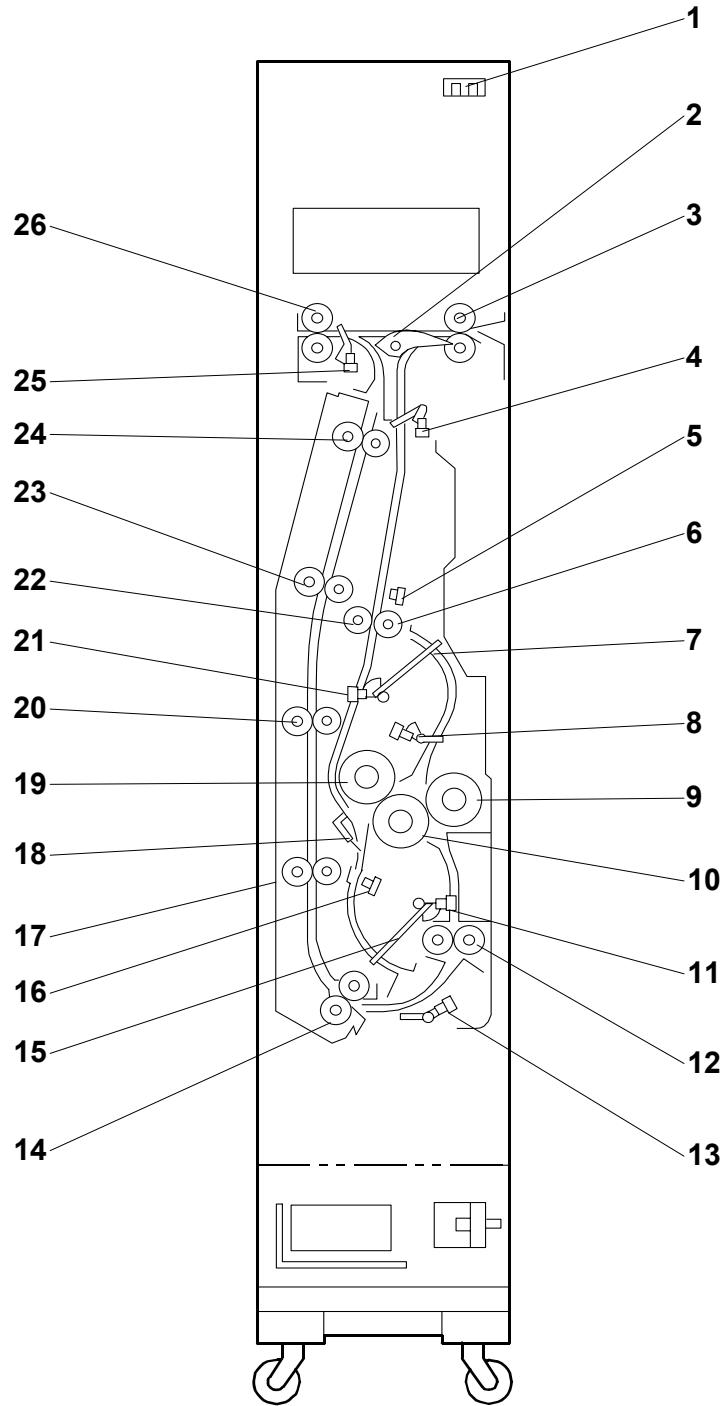
Use these SPs to adjust the locations of the first fold and the second fold.

The illustration shows the position of the sheet while it goes through the lower exit rollers after it has been folded.

SP6122 001-008	Fine Adjustment – 1st Fold Position
	<p>[$-4 \sim +4/0$ / 0.2 mm]</p> <p>Adjusts the position of the first fold [A] to decrease or increase the distance (A) between the leading edge [B] and the crease of the 2nd fold [C].</p>
SP6122 009-016	Fine Adjustment – 2nd Fold Position
	<p>[$-4 \sim +4/0$ / 0.2 mm]</p> <p>Adjusts the position of the 2nd fold [C] to decrease or increase the length (L1) of the sheet between the trailing edge [D] and the 2nd fold.</p>

6. DETAILS

6.1 OVERVIEW



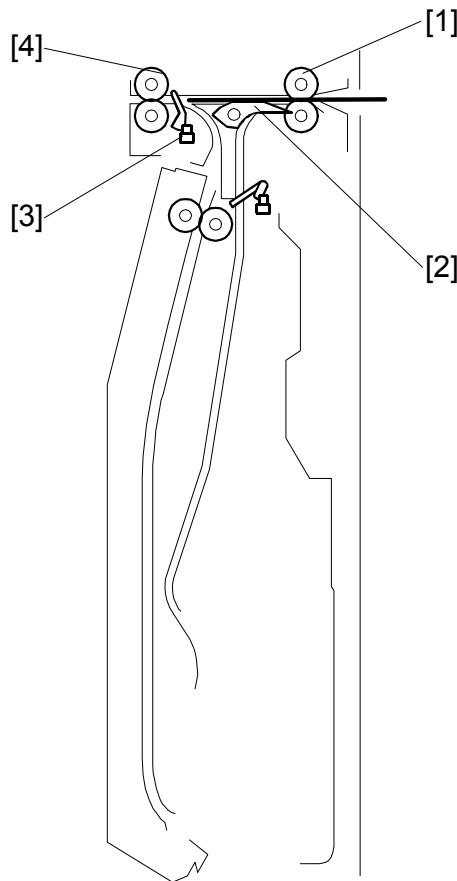
Z-Folding Unit
B660

DETAILS

- | | |
|------------------------------|-------------------------------|
| 1. Front Door Sensor | 14. Grip Rollers |
| 2. Junction Gate | 15. Lower Stopper |
| 3. Feed Rollers | 16. Leading Edge Sensor |
| 4. Feed Sensor | 17. Vertical Feed Rollers – 1 |
| 5. Fold Timing Sensor | 18. Anti-Static Brush |
| 6. Pinch Idle Roller | 19. 1st Fold Roller |
| 7. Upper Stopper | 20. Vertical Feed Rollers – 2 |
| 8. Upper Stopper Path Sensor | 21. Upper Stopper HP Sensor |
| 9. 3rd Fold Roller | 22. Pinch Feed Roller |
| 10. 2nd Fold Roller | 23. Vertical Feed Rollers – 3 |
| 11. Lower Stopper HP Sensor | 24. Vertical Feed Rollers – 4 |
| 12. Lower Exit Rollers | 25. Upper Exit Sensor |
| 13. Lower Exit Sensor | 26. Upper Exit Rollers |

6.2 Z-FOLDING UNIT PAPER PATH

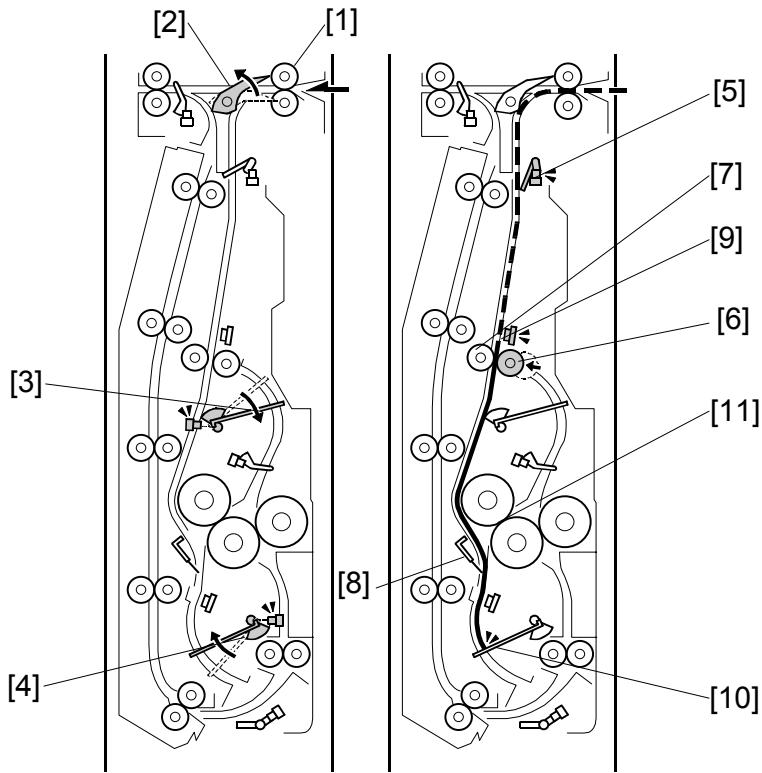
6.2.1 PAPER PATH WITH NO FOLDING



Z-Folding Unit
B660

- The feed rollers [1] feed the paper from the main machine into the Z-folding unit.
If Z-folding was not used for the job, the sheet feeds above the closed junction gate [2].
The upper exit sensor [3] detects the leading and trailing edge of the unfolded sheet.
The upper exit rollers [4] feed the unfolded sheet out of the Z-folding unit and into the finisher.

6.2.2 PAPER PATH WITH Z-FOLDING



The feed rollers [1] feed the paper from the main machine into the Z-folding unit.

The junction gate solenoid energizes and opens the junction gate [2]. The junction gate sends the sheet down into the Z-folding paper path.

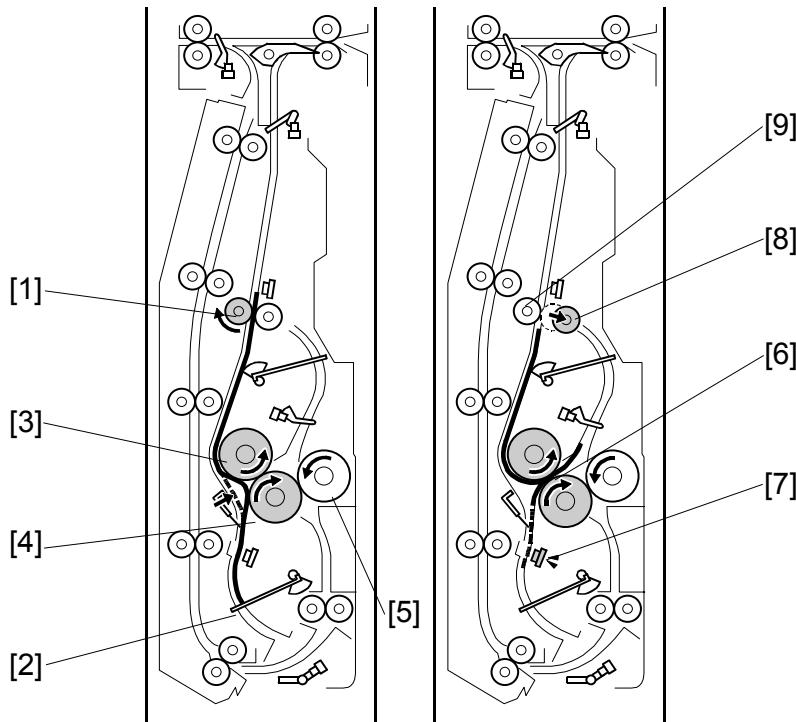
The upper and lower stopper motors move the upper stopper [3] and lower stopper [4] to the positions for the paper size that was used for the job, and for the fold positions that were selected.

The feed sensor [5] detects the leading edge and trailing edge of the sheet. The pinch idle roller solenoid (upper) pulls the pinch idle roller [6] away from the pinch feed roller [7] and the paper can fall between the pinch rollers.

The anti-static brush [8] removes static electricity from the sheet.

When the fold timing sensor [9] detects the trailing edge of the sheet, it energizes the pinch idle roller solenoid (lower). This pushes the pinch idle roller [6] against the opposite pinch feed roller [7].

The lower stopper [10] stops the sheet and buckles it slightly toward the nip [11] of the 1st and 2nd fold rollers.



Z-Folding Unit
B660

The pinch feed roller [1] feeds the sheet down against the lower stopper [2].

At the same time, these rollers turn:

- 1st fold roller [3]
- 2nd fold roller [4]
- 3rd fold roller [5]

The sheet continues to buckle until it feeds into the nip [6] of the 1st and 2nd fold rollers. These two rollers fold the sheet.

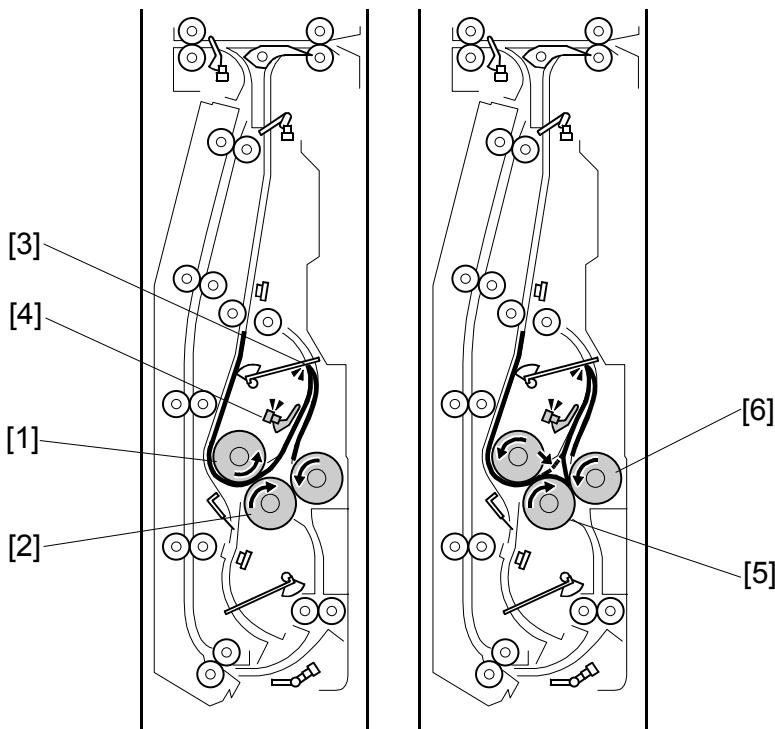
The leading edge sensor [7] detects the leading edge of the sheet:

- When the leading edge goes by while the paper feeds down (to the lower stopper).
- When the leading edge goes by again while the paper feeds up into the nip of the 1st and 2nd fold rollers.

If the leading edge sensor does not detect the leading edge at the correct time, this sensor signals a jam.

At the correct time, the pinch idle roller [8] is pulled away from the pinch feed roller [9] by the pinch idle roller solenoid (upper).

DETAILS



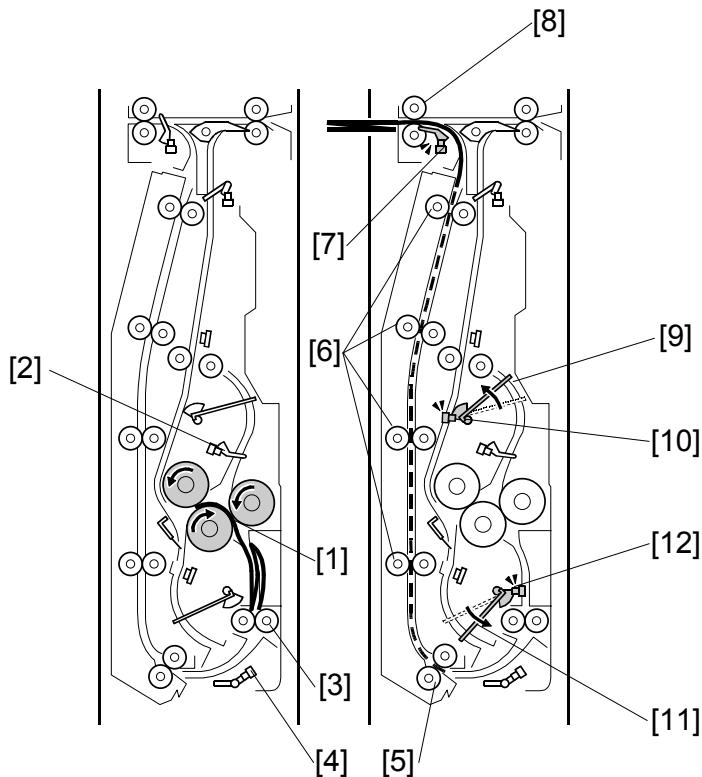
The 1st fold roller [1] and 2nd fold roller [2] continue to turn. This feeds the edge of the 1st fold up until it hits the upper stopper [3].

The sheet lifts the feeler of the upper stopper path sensor [4]. This sensor:

- Detects when the sheet comes to the upper stopper path.
- Detects when the sheet goes out of the upper stopper path.

The upper stopper sensor detects a jam if it does not detect that the sheet comes and goes at the correct times.

When the sheet feeds between the 1st and 2nd fold rollers, this pushes the first fold against the upper stopper. The sheet buckles down into the gap between the 2nd fold roller [5] and 3rd fold roller [6]. The second fold is made when the sheet feeds between the 2nd and 3rd feed rollers.



Z-Folding Unit
B660

The 2nd and 3rd fold rollers [1] continue to turn and feed the sheet down.

The feeler of the upper stopper path sensor [2] falls and the sensor detects that the sheet is gone. The fold rollers feed the folded sheet to the lower exit rollers [3].

The lower exit sensor [4] detects the leading edge and trailing edge of the sheet. If the trailing edge is not detected during the correct time interval, the sensor detects a jam.

The grip rollers [5] feed the folded sheet to the four pairs of vertical feed rollers [6].

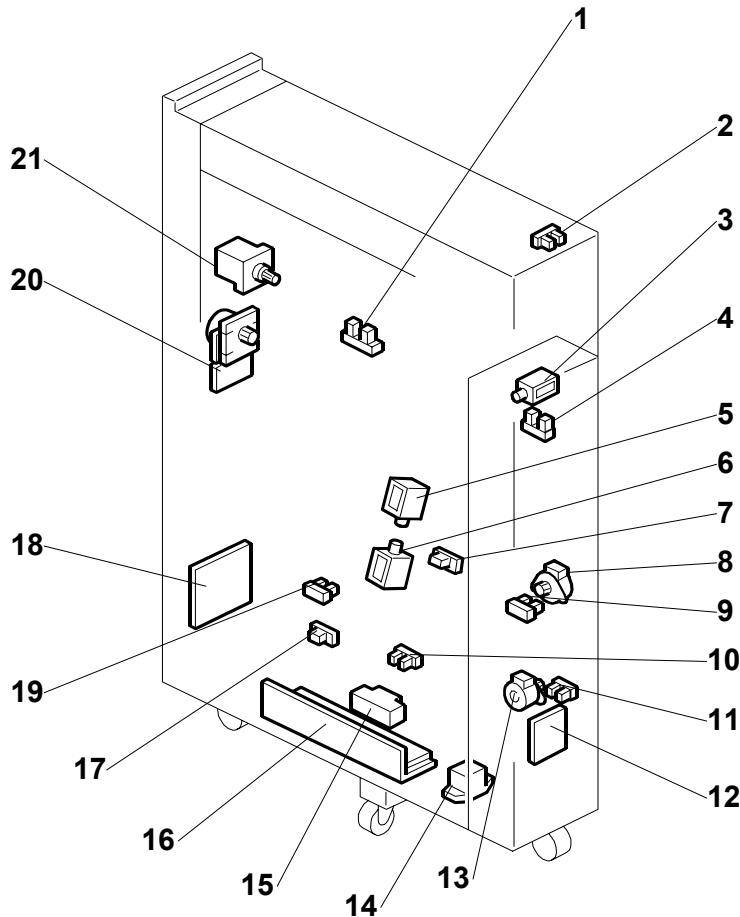
The upper exit sensor [7] detects the leading edge and trailing edge of each folded sheet. If the leading and trailing edge are not detected during the correct time interval, this sensor detects a jam.

The upper exit rollers [8] feed the folded sheet into the finisher.

At the correct time:

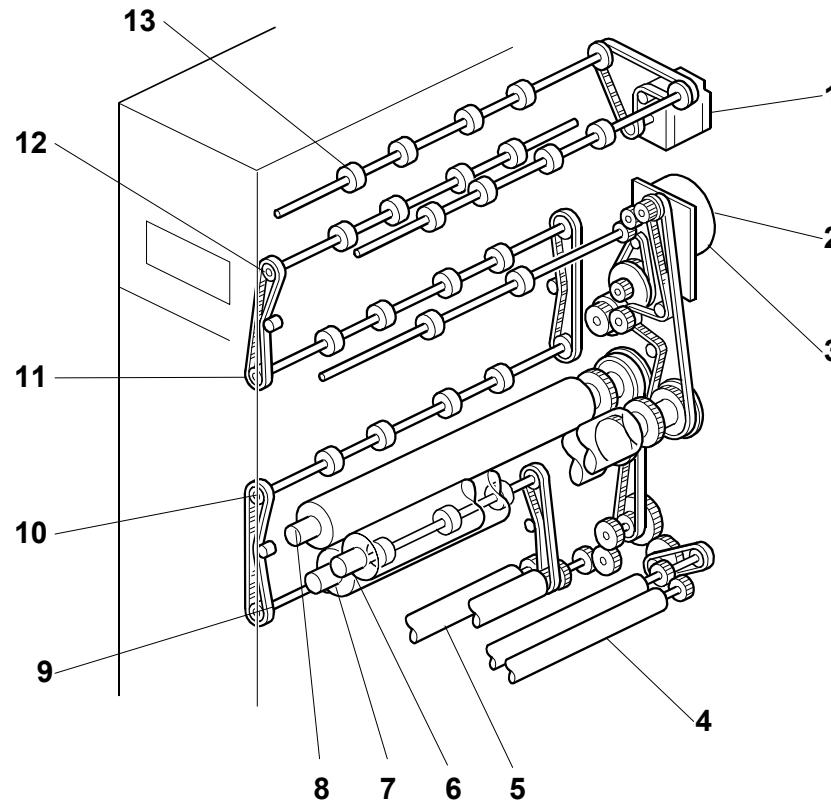
- The upper stopper motor lifts the upper stopper [9] until the upper stopper sensor [10] detects that the upper stopper is at its home position. This stops the motor.
- The lower stopper motor lowers the lower stopper [11] until the lower stopper sensor [12] detects that the lower stopper is at its home position. This stops the motor.

6.3 ELECTRICAL COMPONENTS



- | | |
|---------------------------------------|-------------------------------|
| 1. Upper Exit Sensor | 12. Relay Board |
| 2. Front Door Sensor | 13. Lower Stopper Motor |
| 3. Junction Gate Solenoid | 14. Connector Relay |
| 4. Feed Sensor | 15. Breaker |
| 5. Pinch Idle Roller Solenoid – Upper | 16. Power Supply Unit |
| 6. Pinch Idle Roller Solenoid – Lower | 17. Leading Edge Sensor |
| 7. Fold Timing Sensor | 18. Main Control Board |
| 8. Upper Stopper Motor | 19. Upper Stopper Path Sensor |
| 9. Upper Stopper HP Sensor | 20. Fold Roller Motor |
| 10. Lower Exit Sensor | 21. Feed Motor |
| 11. Lower Stopper HP Sensor | |

6.4 DRIVE LAYOUT



Z-Folding Unit
B660

- | | |
|-----------------------|-------------------------------|
| 1. Feed Motor | 8. 1st Fold Roller |
| 2. Feed Rollers | 9. Vertical Feed Rollers – 1 |
| 3. Fold Roller Motor | 10. Vertical Feed Rollers – 2 |
| 4. Lower Exit Rollers | 11. Vertical Feed Rollers – 3 |
| 5. Grip Rollers | 12. Vertical Feed Rollers – 4 |
| 6. 3rd Fold Roller | |
| 7. 2nd Fold Roller | 13. Upper Exit Rollers |



G338/G339

Scanner Unit/Printer Unit



SCANNER/PRINTER UNIT G338/G339

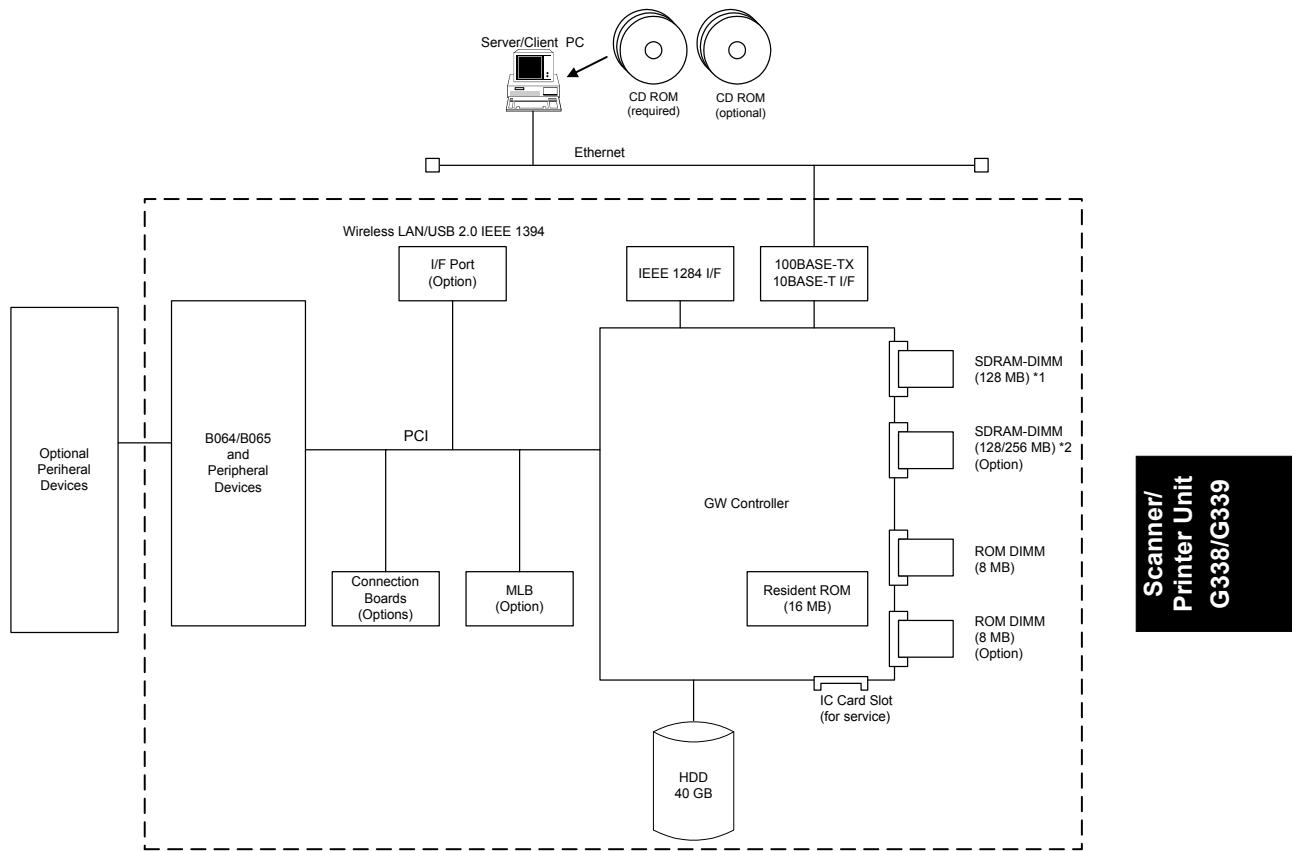
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1. DETAILS

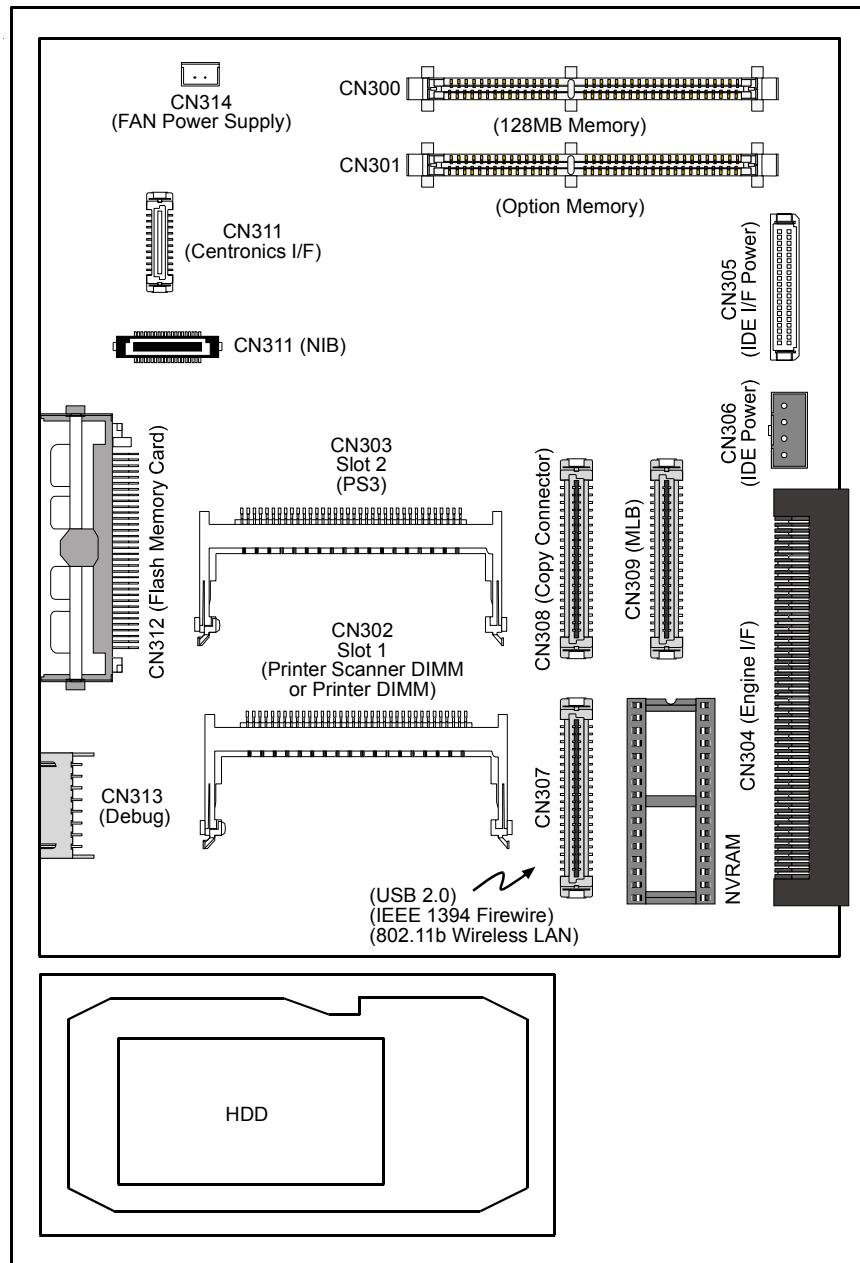
1.1 MACHINE LAYOUT



CONTROLLER BOARD

1.2 CONTROLLER BOARD

1.2.1 CONTROLLER BOARD LAYOUT



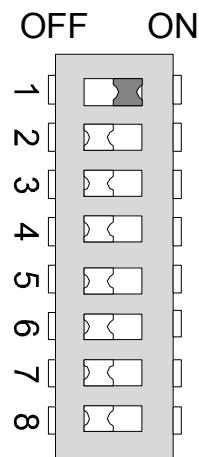
CONTROLLER BOARD

Name	CN	CN Shape	Function
SDRAM DIMM I/F	CN300	144-pin (Straight: SMT)	Standard RAM DIMM
	CN301		Optional RAM DIMM
ROM DIMM I/F	CN302	72-pin (right-angle)	Optional printer/scanner program
	CN303		Optional PS3 emulation program
Engine I/F	CN304	120-pin (right-angle DIP)	Engine I/F (RAPI, CSS, MK1)
IDE I/F	CN305	40-pin (straight DIP)	HDD connection
IDE Power I/F	CN306	4-pin (straight DIP)	HDD power
PCI Option I/F	CN307	80-pin (straight SMT)	PCI I/F options (1394, wireless LAN, USB); only one of these can be installed
IEEE 1284 I/F	CN310	40-pin (straight SMT)	Centronics port
PHY I/F	CN311	40-pin (straight SMT)	Ethernet NIB
IC Card I/F	CN312	68-pin JEIDA V4.0	Flash ROM download
Debug I/F	CN313	8-pin (right-angle DIP)	Debugging
Fan I/F	CN314	2-pin (straight DIP)	Fan power supply

**Scanner/
Printer Unit
G338/G339**

CONTROLLER BOARD

1.2.2 CONTROLLER BOARD DIP SWITCHES



No.	Function		Comments
1	Boot selection	OFF	Switch ON only to boot from an IC card.* ¹
2	DFU	OFF	
3	DFU	OFF	
4	DFU	OFF	
5	Localization setting	OFF	ON for export models, OFF for models for the Japanese market
6	Model Setting	OFF	Currently these switches are not used.
7	Model Setting	OFF	
8	Model Setting	OFF	

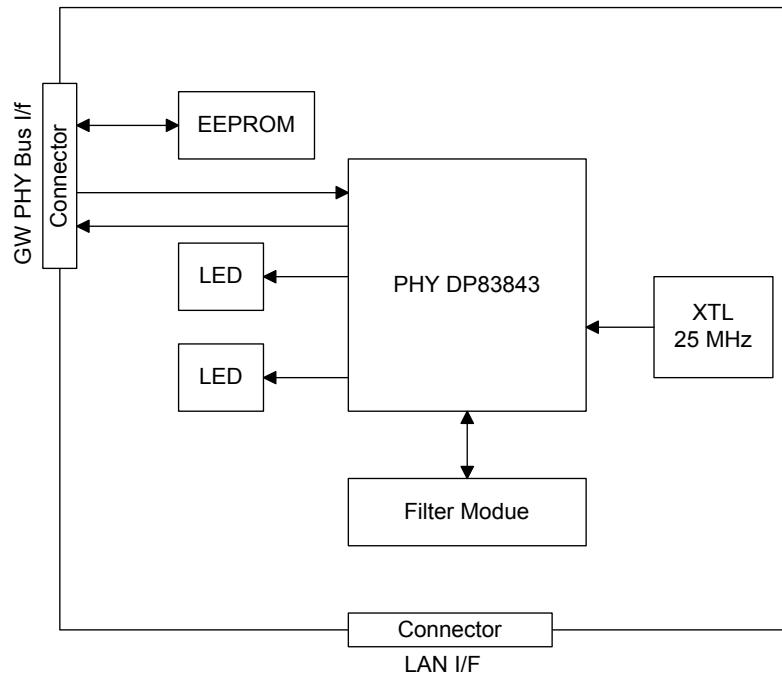
*¹: Set SW1 ON and boot from the IC card only if the normal installation procedure fails. After booting from the card, switch the machine off, set SW1 to OFF, then switch the machine on. SW should always remain set to OFF.

1.2.3 LED INDICATORS

Operation	LED1 (Upper)	LED2 (Lower)
Controller upgrade	Flashes	Flashes
Version upgrade	Off	Off
Version upgrade end	On	On
Controller normal operation	Alternately flash	
Controller non-operation	Alternately light	
Controller stall (SC819 logged)	Off	Off
RAM error (SC818 logged)	Off	Off

1.3 ETHERNET BOARD

1.3.1 ETHERNET BOARD LAYOUT



Scanner/
Printer Unit
G338/G339

The Ethernet board is provided as a standard feature of this machine.

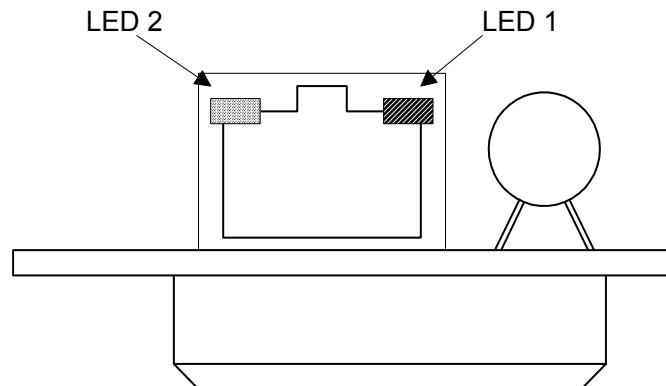
Function Blocks	Description
PHY (Physical Layer Device)	Completely standardized physical layer device for the functions of each device in the network.
EEPROM	Stores the MAC address.

The physical layer device, the lowest layer of the OSI reference model, refers to the physical components of the network: cables, connectors, and so on. OSI, the *Operating Standard Interface*, is a framework upon which networking standards are arranged. It is commonly diagramed as a layered cake.

ETHERNET BOARD

1.3.2 ETHERNET BOARD OPERATION

The NIB is a standard IEEE802.3u type which implements 10/100Mbps auto negotiation. System initialization sets the network for 10Mbps/100Mbps.

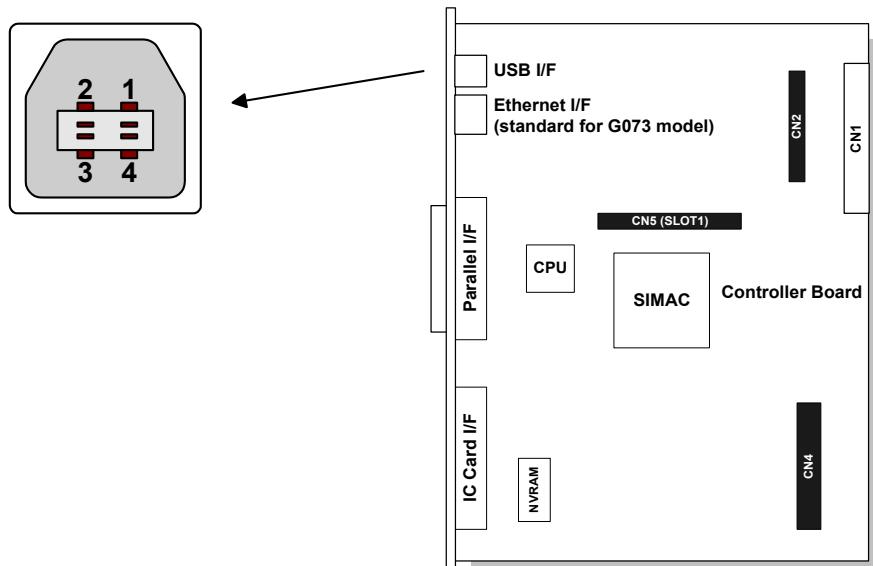


LED 1 (Green)	Indicates the link status: ON Link Safe OFF Link Fail
LED 2 (Orange)	Indicates the operation mode: ON 100 Mbps mode OFF 10 Mbps mode

1.4 USB

1.4.1 PIN ASSIGNMENT

The controller has a type “B” receptacle (CN10).



Scanner/
Printer Unit
G338/G339

Pin No.	Signal Description	Wiring Assignment
1	Power	Red
2	Data –	White
3	Data +	Green
4	Power GND	White

1.4.2 REMARKS ABOUT USB

- The machine does not print reports specifically for USB.
- Only one host computer is allowed for the USB connection.
- After starting a job using USB, do not switch the printer off until the job has been completed. When a user cancels a print job, if data transmitted to the printer has not been printed at the time of cancellation, the job will continue to print up to the page where the print job was cancelled
- When the controller board is replaced, the host computer will recognize the machine as a different device.

Related SP Mode

“USB Settings” in the printer engine service mode. Data rates can be adjusted to full speed fixed (12 Mbps). This switch may be used for troubleshooting if there is a data transfer error using the high speed mode (480Mbps).

Data rates can also be adjusted using the UP mode “USB Setting” in the Host Interface in the System menu. This mode can be accessed only when the “Enter”, “Escape”, then “Menu” keys are pressed to enter the UP mode.

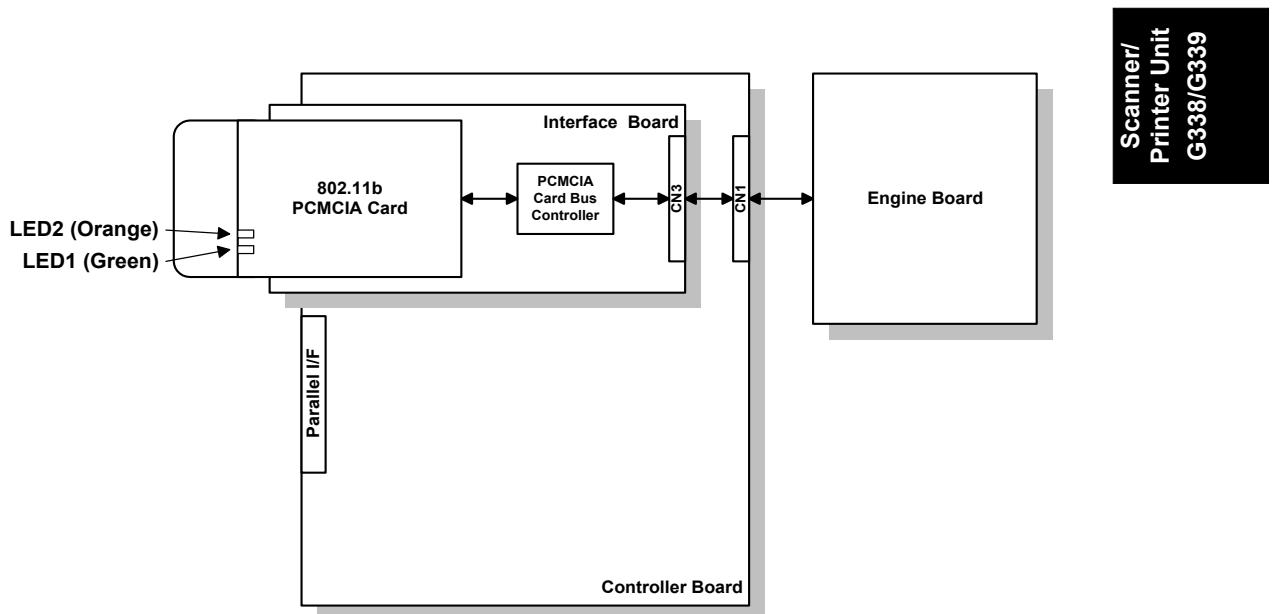
1.5 IEEE802.11B (WIRELESS LAN)

1.5.1 SPECIFICATIONS

Standard applied:	IEEE802.11b	
Data transmission rates:	Speed	Distance
	11 Mbps	140 m (153 yd.)
	5.5 Mbps	200 m (219 yd.)
	2 Mbps	270 m (295 yd.)
	1 Mbps	400 m (437 yd.)
Network protocols:	TCP/IP, Apple Talk, NetBEUI, IPX/SPX	
Bandwidth:	2.4GHz (divided over 14 channels, 2400 to 2497 MHz for each channel)	

NOTE: The wireless LAN cannot be active at the same time as the Ethernet LAN.
The following user tool setting determines which LAN is active: System Settings – Interface Settings – Network - LAN Type.

1.5.2 BLOCK DIAGRAM



LED Indicators

LED	Description	On	Off
LED1 (Green)	Link status	Link success	Link failure
LED2 (Orange)	Power distribution	Power on	Power off

2. SPECIFICATIONS

2.1 SCANNER

Scanning method	Front side main scan	Scanned by CCD.
	Platen (original on exposure glass)	
	Back side main scan	Scanned by CIS.
	Back side sub scan	
Scanning Area	Main scan	Max. 297 mm
	Sub scan	Max. 432 mm
Resolution	Main scan	600 dpi
	Sub scan	600 dpi
Main Scan Line Range of Precision	100 ~ 1200 dpi (digital black and white)	
Grayscale	8-bit graduation or 2-digit per pixel, 2-digit halftone also possible.	
Scanning Speed	0.8 seconds (1 A4 page at 200 dpi in 2-digit black and white with no compression.)	
Interface	Ethernet 100Base-TX/10Base-T	
	IEEE 802.11b Wireless LAN (option)	
	IEEE 1394 with IP Over 1394 only (option)	
Network Protocols	TCP/IP only	
Scan-to-Email	Compatible	
TWAIN driver	Compatible	

The scanner driver and utility software are provided on one CD-ROM.

Scanner Driver	Network TWAIN Driver for Windows 95/98/Me/NT 3.51/2000/XP
Scanner Utilities	Scan Router V2 Lite (Cherry Lite) for Windows 95/98/Me/NT4.0/2000/XP Desk Top Binder V2 Lite (Plumeria Lite) for Windows 95/98/Me/NT4.0/XP

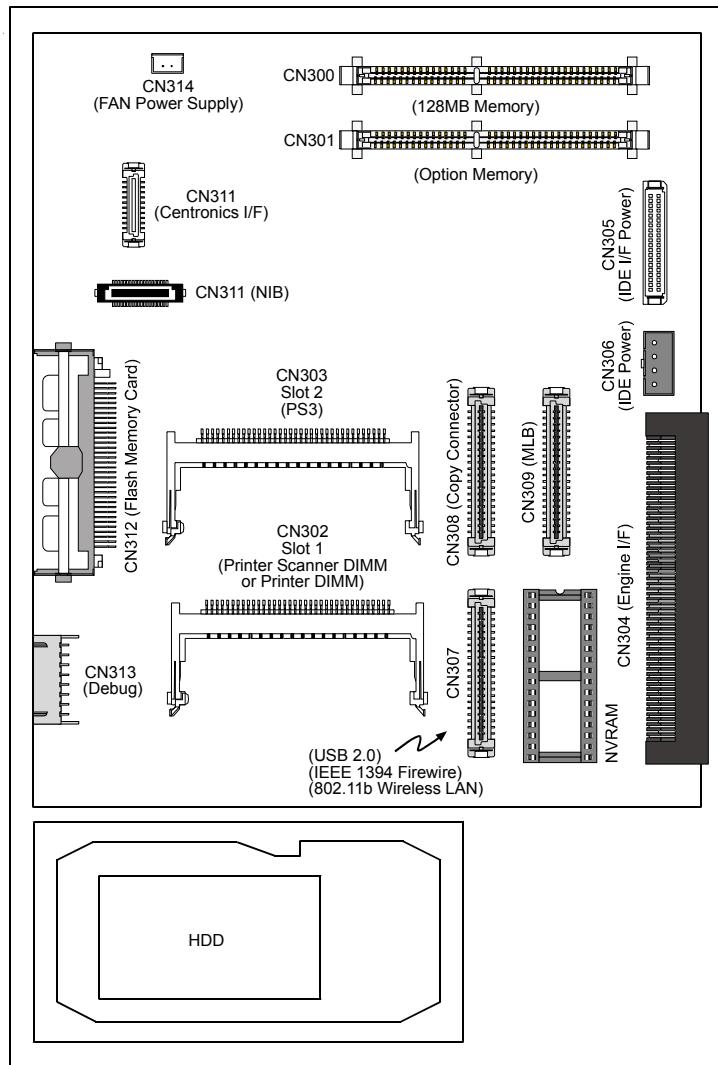
2.2 PRINTER

Printing Speed	B065 model	Max. 75 ppm (A4/LT LEF)
	B064 model	Max. 60 ppm (A4/LT LEF)
Printer Languages	PCL5e/PCL6	
	PostScript 3 (option)	
	RPCS (Refined Printing Command Stream)	
Resolution	1200 dpi (PCL6/PCL5e/PS3/RPCS)	
	600 dpi (PCL 6/PCL5e/PS3/RPCS)	
	300 dpi (PCL5e)	
Resident Fonts	PCL	35 Intellifonts 10 TrueType Fonts
	PS3	136 fonts (24 Type 2 fonts, 112 Type 14 fonts)
Host Interfaces	Bi-directional IEEE 1284 parallel x 1 (standard)	
	Ethernet 100Base-TX/10Base-T	
	IEEE 802.11b Wireless LAN (option)	
	IEEE 1394 with SCSI Print and IP Over 1394 (option)	
	IEEE 802.11b Wireless LAN (Option)	
Network Protocols	TCP/IP, IPX/SPX, NetBEUI, AppleTalk	
Memory	Max. 384 MB (128 MB + 256 MB)	
	(Standard 128 MB + 128 MB/256 MB with optional DIMM's)	

Scanner/
Printer Unit
G338/G339

CONTROLLER BOARD CONFIGURATION

2.3 CONTROLLER BOARD CONFIGURATION



Item	Machine Code	Remarks
Printer/Scanner DIMM	G338	The printer/scanner option includes the Centronics I/F and NIB.
Printer DIMM	G339	The printer option includes the Centronics I/F and NIB.
IEEE 1394	G561	Firewire I/F (option)
USB 2.0	525-01	USB I/F (option)
IEEE 802.11b	G628	Wireless LAN (option)
PS3	G525-08	PostScript 3 (option)
Memory 128MB	G331	Also used with the G071 printer (option).
Memory 256MB	G332	

2.4 SOFTWARE ACCESSORIES

The printer drivers and utility software are provided on one CD-ROM. An auto run installer allows you to select which components to install.

2.4.1 PRINTER

Printer Drivers

Printer language	Windows 9x/me	Windows NT 4.0	Windows 2000/XP	Macintosh
PCL6	Yes	Yes	Yes	No
PCL5e	Yes	Yes	Yes	No
PS3	Yes	Yes	Yes	Yes
RPCS	Yes	Yes	Yes	No

- NOTE:** 1) The printer drivers for Windows NT 4.0 are only for the Intel x86 platform. There is no Windows NT 4.0 printer driver for the PowerPC, Alpha, or MIPS platforms.
 2) The PS3 drivers are all genuine Adobe PS drivers, except Windows 2000/XP, which uses Microsoft PS.

Scanner/
Printer Unit
G338/G339

Printer Utility Software

Software	Description
Agfa Monotype Font Manager 2000 (Windows 95/98/Me, NT4, 2000/XP)	A font management utility with screen fonts for the printer.
Smart Net Monitor for Admin (Windows 95/98/Me, NT4, 2000/XP)	A printer management utility for network administrators. NIB setup utilities are also available.
Smart Net Monitor for Client (Windows 95/98/Me, NT4, 2000/XP)	A printer management utility for client users. Peer-to-peer printing utility and parallel/recovery printing functions are included.
1394 Utility (Windows 2000 with SPI or later and Windows XP)	A utility for remote IEEE 1394 printers.
Printer Utility for Mac	This software provides several convenient functions for printing from Macintosh clients.
USB Printing Support	This utility is for the USB 2.0 Interface Board. Using the USB connection on a computer running Windows 98 SE or Windows Me requires the installation of this utility.

PAPER SIZES SUPPORTED BY THE PRINTER

2.5 PAPER SIZES SUPPORTED BY THE PRINTER

Paper	Size (W x L)	Paper Trays Main Unit/Option		By-pass Tray	LCT	Duplex
		US	Eur/Asia			
A3	297 x 420 mm	Y#/Y#	Y/Y	Y#	N	Y
B4	257 x 364 mm	Y#/Y#	Y#/Y#	Y#	N	Y
A4 SEF	210 x 297 mm	Y/Y	Y/Y	Y#	N	Y
A4 LEF	297 x 210 mm	Y/Y	Y/Y	Y#	Y	Y
B5 SEF	182 x 257 mm	Y#/Y#	Y#/Y#	Y#	N	Y
B5 LEF	257 x 182 mm	Y#/Y#	Y#/Y#	Y#	N	Y
A5 SEF	148 x 210 mm	Y#/Y#	Y/Y	Y#	N	Y
A5 LEF	210 x 148 mm	N	N	Y#	N	N
B6 SEF	128 x 182 mm	N	N	Y ^C	N	N
B6 LEF	182 x 128 mm	N	N	N	N	N
A6 SEF	105 x 148 mm	N	N	Y ^C	N	N
Ledger	11 x 17"	Y/Y	Y#/Y#	Y#	N	Y
Legal	8.5 x 14"	Y/Y	Y#/Y#	Y#	N	Y
Letter SEF	8.5 x 11"	Y/Y	Y/Y	Y#	N	Y
Letter LEF	11 x 8.5"	Y/Y	Y/Y	Y#	Y	Y
Half Letter SEF	5.5 x 8.5"	Y/Y	Y#/Y#	Y#	N	Y
Half Letter LEF	8.5 x 5.5"	N	N	N	N	N
Executive SEF	7.25 x 10.5"	Y#/Y#	Y#/Y#	Y#	N	Y
Executive LEF	10.5 x 7.25"	N	N	Y#	N	Y
F	8 x 13"	Y#/Y#	Y#/Y#	Y#	N	Y
Foolscap	8.5 x 13"	Y#/Y#	Y#/Y#	Y#	N	Y
Folio	8.25 x 13"	Y#/Y#	Y#/Y#	Y#	N	Y
Com10 Env.	4.125 x 9.5"	N	N	N	N	N
Monarch Env.	3.875 x 7.5"	N	N	N	N	N
C6 Env.	114 x 162 mm	N	N	N	N	N
C5 Env.	162 x 229 mm	N	N	N	N	N
DL Env.	110 x 220 mm	N	N	N	N	N
8K	267 x 390 mm	Y#/Y#	Y#/Y#	Y#	N	Y
16K SEF	195 x 267 mm	Y#/Y#	Y#/Y#	Y#	N	Y
16K LEF	267 x 195 mm	Y#/Y#	Y#/Y#	Y#	N	Y
Custom	Minimum: 100 x 297 mm Maximum: 148 x 600 mm	N	N	Y ^C	N	N

Remarks:

Y	Supported. The paper size sensor detects the paper size.
Y#	Supported. The user has to select the correct paper size for the tray.
Y ^C	Supported. The user has to enter the width and length of the paper.
N	Not supported.

2.6 USB SPECIFICATIONS

USB connectivity is provided as an option for this machine.

Interface	USB 1.1, USB 2.0
Data rates	480 Mbps (high speed), 12 Mbps (full speed), 1.5 Mbps (low speed)
High speed mode is only supported by USB 2.0.	

2.7 IEEE 802.11B SPECIFICATIONS

Standard applied	IEEE802.11b	
Data transmission rates	Speed	Distance
	11 Mbps	140 m (153 yd.)
	5.5 Mbps	200 m (219 yd.)
	2 Mbps	270 m (295 yd.)
	1 Mbps	400 m (437 yd.)
Network protocols	TCP/IP, Apple Talk, NetBEUI, IPX/SPX	
Bandwidth	2.4GHz (divided over 14 channels, 2400 to 2497 MHz for each channel)	

Scanner/
Printer Unit
G338/G339



MFP OPTIONS

**B659
Printer/Scanner Unit**

**B581
IEEE1394 Interface Board (Firewire)**

**B596
USB2.0 Interface Board**

**B582
IEEE802.11B Interface Board (WLAN)**

**G377
Bluetooth Interface Unit**

**B609
File Format Converter (MLB)**

**B735
Data Overwrite Security Unit**



MFP OPTIONS

B659/B581/B596/B582/G377/B609/B735

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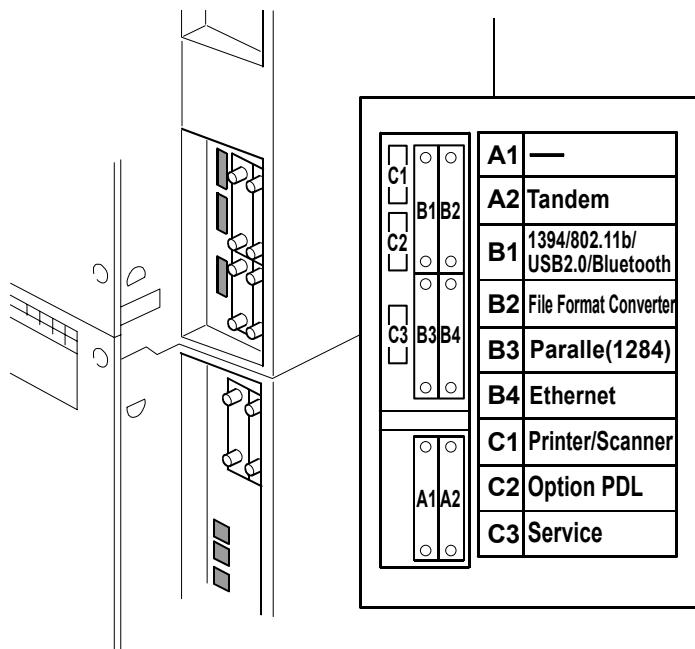
1. DETAILED DESCRIPTIONS

1.1 MFP OPTION SLOT ASSIGNMENT

To make it easy to install MFP options, there are 6 slots (A1, A2, B1 to B4) for boards and 3 slots (C1 to C3) for SD cards on the controller box. Each board or SD card must be put in the correct slot. The correct slots for each option are shown on the decal attached to the controller box cover (shown in the diagram).

NOTE: Only one PCI slot (B1) is available for one of these options. If a card is installed in B1, must be remove it before install above options.

- USB 2.0
- IEEE 802.11b (Wireless LAN)
- IEEE 1394 (FireWire)
- Bluetooth Interface Unit G377



MFP Options
B659/B581/
B596/B582/
G377/B609/
B735

1.2 SOFTWARE ACCESSORIES

The printer drivers and utility software are provided on one CD-ROM. An auto run installer allows you to select which components to install.

1.2.1 PRINTER

Printer Drivers

Printer language	Windows 9x/Me	Windows NT 4.0	Windows 2000/XP/Server 2003	Macintosh
PCL6	Yes	Yes	Yes	No
PCL5e	Yes	Yes	Yes	No
PS3	Yes	Yes	Yes	Yes
RPCS	Yes	Yes	Yes	No

- NOTE:** 1) The printer drivers for Windows NT 4.0 are only for the Intel x86 platform. There is no Windows NT 4.0 printer driver for the PowerPC, Alpha, or MIPS platforms.
 2) The PS3 drivers are all genuine Adobe PS drivers, except Windows 2000/XP/Server 2003, which uses Microsoft PS.

Printer Utility Software

Software	Description
Agfa Monotype Font Manager 2000 (Windows 95/98/Me, NT4, 2000/XP/Server 2003)	A font management utility with screen fonts for the printer.
SmartDeviceMonitor for Admin (Windows 95/98/Me, NT4, 2000/XP/Server 2003)	A printer management utility for network administrators. NIB setup utilities are also available.
SmartDeviceMonitor for Client (Windows 95/98/Me, NT4, 2000/XP/Server 2003)	A printer management utility for client users. Peer-to-peer printing utility and parallel/recovery printing functions are included.
1394 Utility (Windows 2000/XP/Server 2003)	A utility for remote IEEE 1394 printers.
Printer Utility for Mac	This software provides several convenient functions for printing from Macintosh clients.
USB Printing Support	This utility is for the USB 2.0 Interface Board. Using the USB connection on a computer running Windows 98 SE or Windows Me requires the installation of this utility.

PAPER SIZE SUPPORTED BY THE PRINTER

1.3 PAPER SIZE SUPPORTED BY THE PRINTER

Paper		Size (W x L)	Paper Trays Main Unit/Option		By-pass Tray	LCT	Duplex
			US	Eur/Asia			
A3	SEF	297 x 420 mm	Y#/Y#	Y/Y	Y#	N	Y
B4	SEF	257 x 364 mm	Y#/Y#	Y#/Y#	Y#	Option	Y
A4	SEF	210 x 297 mm	Y#/Y#	Y/Y#	Y#	Option	Y
A4	LEF	297 x 210 mm	Y#/Y#	Y/Y#	Y#	Y	Y
B5	SEF	182 x 257 mm	Y#/N	Y#/N	Y#	N	Y
B5	LEF	257 x 182 mm	Y#/N	Y#/N	Y#	N	Y
A5	SEF	148 x 210 mm	Y#/N	Y#/N	Y#	N	Y
A5	LEF	210 x 148 mm	Y#/N	Y#/N	Y#	N	Y
B6	SEF	128 x 182 mm	N	N	Y#	N	N
A6	SEF	105 x 148 mm	N	N	Y#	N	N
Ledger	SEF	11 x 17"	Y/Y	Y#/Y#	Y#	N	Y
Legal	SEF	8.5 x 14"	Y/Y#	Y#/Y#	Y#	Option	Y
Letter	SEF	8.5 x 11"	Y/Y#	Y#/Y#	Y#	Option	Y
Letter	LEF	11 x 8.5"	Y/Y#	Y#/Y#	Y#	Y	Y
Half Letter	SEF	5.5 x 8.5"	Y#/N	Y#/N	Y#	N	Y
Half Letter	LEF	8.5 x 5.5"	Y#/N	Y#/N	N	N	Y
Executive	SEF	7.25 x 10.5"	Y#/Y#	Y#/Y#	Y ^C	N	Y
Executive	LEF	10.5 x 7.25"	N/Y ^C	N/Y ^C	Y ^C	N	Y
F	SEF	8 x 13"	Y#/Y#	Y#/Y#	Y ^C	N	Y
Foolscap	SEF	8.5 x 13"	Y#/Y#	Y#/Y#	Y ^C	N	Y
Folio	SEF	8.25 x 13"	Y#/Y#	Y#/Y#	Y ^C	N	Y
Com10 Env.	SEF	4.125 x 9.5"	N	N	Y ^C	N	N
C6 Env.	SEF	114 x 162 mm	N	N	Y ^C	N	N
C5 Env.	SEF	162 x 229 mm	Y ^C /N	Y ^C /N	Y ^C	N	N
C5 Env.	LEF	229 x 162 mm	Y ^C /N	Y ^C /N	Y ^C	N	N
DL Env.	SEF	110 x 220 mm	N	N	Y ^C	N	N
8K	SEF	267 x 390 mm	Y#/N	Y#/N	Y ^C	N	Y
16K	SEF	195 x 267 mm	Y#/N	Y#/N	Y ^C	N	Y
16K	LEF	267 x 195 mm	N#/N	Y#/N	Y ^C	N	Y
Custom		Minimum: 100 x 297 mm Maximum: 148 x 600 mm	N	N	Y ^C	N	N

Remarks:

Y	Supported. The paper size sensor detects the paper size.
Y#	Supported. The user has to select the correct paper size for the tray.
Y ^C	Supported. The user has to enter the width and length of the paper.
N	Not supported.

MFP Options
B659/B581/
B596/B582/
G377/B609/
B735

1.4 NETWORK INTERFACE BOARD (NIB) (B594)

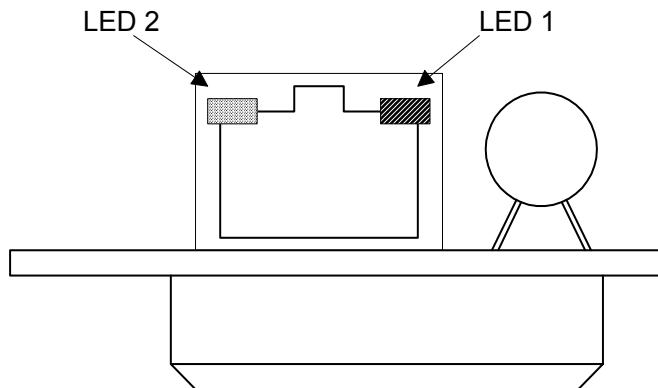
The Ethernet board is provided as a standard feature of this machine.

Function Blocks	Description
PHY (Physical Layer Device)	Completely standardized physical layer device for the functions of each device in the network.
EEPROM	Stores the MAC address.

The physical layer device, the lowest layer of the OSI reference model, refers to the physical components of the network: cables, connectors, and so on. OSI, the *Operating Standard Interface*, is a framework upon which networking standards are arranged. It is commonly diagramed as a layered cake.

Operation

The NIB is a standard IEEE802.3u type which implements 10/100Mbps auto negotiation. System initialization sets the network for 10Mbps/100Mbps.



LED 1 (Green)	Indicates the link status: ON Link Safe OFF Link Fail
LED 2 (Orange)	Indicates the operation mode: ON 100 Mbps mode OFF 10 Mbps mode

1.5 USB 2.0 INTERFACE BOARD (B596)

Remarks about USB

- The machine does not print reports specifically for USB.
- Only one host computer is allowed for the USB connection.
- After starting a job using USB, do not switch the printer off until the job has been completed. When a user cancels a print job, if data transmitted to the printer has not been printed at the time of cancellation, the job will continue to print up to the page where the print job was cancelled
- When the controller board is replaced, the host computer will recognize the machine as a different device.

Related SP Mode

“USB Settings” in the printer engine service mode. Data rates can be adjusted to full speed fixed (12 Mbps). This switch may be used for troubleshooting if there is a data transfer error using the high speed mode (480Mbps).

Data rates can also be adjusted using the UP mode “USB Setting” in the Host Interface in the System menu. This mode can be accessed only when the “Enter”, “Escape”, then “Menu” keys are pressed to enter the UP mode.

MFP Options
B659/B581/
B596/B582/
G377/B609/
B735

1.6 IEEE802.11B INTERFACE BOARD (WIRELESS LAN) (B582)

The IEEE802.11b interface board (Wireless LAN) provides same functions as network interface board's (NIB), and can be used for printing and scanning.

1.6.1 LED INDICATORS

LED	Description	On	Off
LED1 (Green)	Link status	Link success	Link failure
LED2 (Orange)	Power distribution	Power on	Power off

1.6.2 TRANSMISSION MODES

To switch between ad hoc and infrastructure modes, use the following user tool:
Host Interface Menu - IEEE802.11b - Comm Mode.

1.6.3 TROUBLESHOOTING NOTES

Communication Status

Wireless LAN communication status can be checked with the UP mode "W.LAN Signal" in the Maintenance menu. This can also be checked using the Web Status Monitor or Telnet.

The status is described on a simple number scale.

Status Display	Communication Status
Good	76 ~ 100
Fair	41 ~ 75
Poor	21 ~ 40
Unavailable	0 ~ 20

NOTE: Communication status can be measured only when the infrastructure mode is being used.

Troubleshooting Procedure

If there are problems using the wireless LAN, check the following.

- 1) Check the LED indicator on the wireless LAN card.
- 2) Check if "IEEE802.11b" is selected in the following user tool:
System Setting> Interface Setting> IEEE 801.11b
NOTE: The "IEEE 801.11b" tab is available only after the IEEE 801.11b card has been installed.
- 3) Check if the channel settings are correct.
- 4) Check if the SSID and WEP are correctly set.

If infrastructure mode is being used,

- 1) Check if the MAC address is properly set.
- 2) Check the communication status.
If the communication status is poor, bring the machine closer to the access point, or check for any obstructions between the machine and the access point.
If the problem cannot be solved, try changing the channel setting.

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1.7 FILE FORMAT CONVERTER (MLB) (B609)

Copy and print jobs are stored on the document server (on the copier's hard disk) in a Ricoh proprietary file format.

In previous models (such as A-C2, R-C2), DeskTopBinder could retrieve copy and print jobs from the document server and convert them to TIFF. However, this software-based conversion was slow for many users.

So, for the B070/B071, this conversion has been made hardware-based, using the optional Media Link Board. Without the Media Link Board, copy and print jobs cannot be downloaded to a PC from the document server.

Two common target formats are provided for conversion to files that can be viewed on a computer: JPEG and TIFF.

NOTE: If the printer/scanner controller is not installed, the optional standalone NIB must be installed in the copier.

SP5847 (Net File Mag. Rate) is provided for use with this feature. For more details about these settings, see Section "5. Service Tables" in the main Service Manual.

NOTE: These SP commands are enabled for use only after the MLB has been installed. For details about installing the MLB, see Section "1. Installation" of the main Service Manual.

5847	002	Copy : Text	Changes the default settings of image data transferred externally by the Desk Top Binder page reference function via the MLB (Media Link Board).
5847	003	Copy: Others	
5847	005	Print: Binary	
5847	006	Print: Dither(1200 dpi)	Sets the default for dithered image size sent to the Document Server via the MLB (Media Link Board).
5847	021	NetFile Page Quality Default for JPEG	Sets the default for JPEG image quality of image files handled by Desk Top Binder sent via the MLB (Media Link Board).

1.8 DATA OVERWRITE SECURITY UNIT (B735)

1.8.1 AUTO ERASE MEMORY

A document scanned in the copier or scanner mode, or data sent from a printer driver for printing, is stored temporarily on the hard disk of the machine. Even after the copy or print job is completed, it remains in the hard disk as temporary data. Auto Erase Memory erases the temporary data on the hard disk by writing over it.

Types of Data Overwritten and Not Overwritten

The following table shows the types of data that can or cannot be overwritten by Auto Erase Memory.

Data overwritten by Auto Erase Memory	Copier	Copy jobs
	Printer	1) Print jobs 2) Sample Print/Locked Print jobs(*1) 3) Spool Printing jobs
	Scanner(*2)	1) Scanned files sent by e-mail 2) Files sent by Scan to Folder 3) Documents sent or retrieved by using Web Image Monitor, Desk Top Binder, Scan Router
	Document Server	Temporary data that still remains in the Document Server even after user erases the data in the Document Server.
Data not overwritten by Auto Erase Memory	1) Documents stored by the user in the Document Server using the Copier, Printer or Scanner functions 2) Information registered in the Address Book (*3) 3) Counters stored under each user code 4) Network setting	

NOTE: *1: A Sample Print or Locked Print job can only be overwritten after it has been executed.

*2: Temporary data via TWAIN scanner function are not originally stored in HDD, so TWAIN scanner functions can be used together with DOS unit.

*3: Data stored in the Address Book can be encrypted for security.

Overwrite timing

Overwriting starts automatically once a copy, print and scanner job is completed. Copier, printer and scanner functions take priority over the Data Overwrite function. If a copier, printer or scanner job comes while a previous job is being overwritten, the overwrite process is automatically interrupted until the next job is completed.

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1.8.2 ERASE ALL MEMORY

Users can erase all the data on the hard disk by writing over it. This is useful before you remove or dispose of the machine. The following items can be erased with this function.

- Documents stored by the user in the Document Server with the Copier, Printer or Scanner function
- Information registered in the Address Book
- User codes and the counters under each user code
- Network settings
- User stamps
- Printer fonts downloaded by the user

1.8.3 OVERWRITE METHOD

In the DOS option, customers can select one of the three overwrite methods for “Auto Erase Memory” and “Erase All Memory”:

- ***NSA (National Security Agency, U.S.A) Standard (Default)***
Temporary data is overwritten twice with random numbers and once with zeros.
- ***DoD (Department of Defense, U.S.A) Standard***
Temporary data is overwritten with a fixed value, the complement of the fixed value, and random numbers, followed by verification.
- ***Random Data Overwrite***
Temporary data is overwritten multiple times with random numbers. The number of overwrites can be set in the range from 1 to 9 times. The default is three times.

2. SPECIFICATIONS

2.1 CONTROLLER BOARD

CPU:	Duron 800 MHz
BIOS ROM:	1 MB (512 K x 2)
OS Copy Flash ROM:	16 MB
NVRAM:	128 KB
SDRAM:	128 MB
DDR-SDRAM:	Slot #1 (Standard): BASIC 128 MB Slot #2 (Option): 256 MB
PCI Option:	4 Slots (B1 to B4)
SD Card:	3 Slots (C1 to C3)
R API Option:	2 Slots (A1, A2)
Power Supply Voltage:	DC 5VE ± 3% DC 12VE ± 5%

2.2 PRINTER/SCANNER UNIT (B659)

Printer

Printing Speed	B140/B142 model	Max. 60 ppm (A4/LT LEF)
	B141/B143 model	Max. 75 ppm (A4/LT LEF)
	B163/B228 model	Max. 51 ppm (A4/LT LEF)
Printer Languages	PCL5e/PCL6	
	PostScript 3 (option)	
	RPCS (Refined Printing Command Stream)	
Resolution	1200 dpi (PCL6/PCL5e/PS3/RPCS)	
	600 dpi (PCL 6/PCL5e/PS3/RPCS)	
	300 dpi (PCL5e)	
Resident Fonts	PCL	35 Intellifonts
		10 TrueType Fonts
		1 bitmap font
	PS3	136 fonts (24 Type 2 fonts, 112 Type 14 fonts)
Host Interfaces	Standard	IEEE 1284 parallel x 1
		Ethernet 100Base-TX/10Base-T
	Option	IEEE 802.11b Wireless LAN
		IEEE 1394 with SCSI Print and IP Over 1394
		Bluetooth
		USB 2.0
Network Protocols	TCP/IP, IPX/SPX, NetBEUI, AppleTalk, SMB (Auto Switching)	
Memory	384 MB (Standard 128 MB + Option 256 MB)	

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Scanner

Scanning method	Front side main scan	Scanned by CCD.
	Platen (original on exposure glass)	
	Back side main scan	Scanned by CIS.
	Back side sub scan	
Scanning Area	Main scan	Max. 297 mm
	Sub scan	Max. 432 mm
Resolution	Main scan	600 dpi
	Sub scan	600 dpi
Main Scan Line Range of Precision	100 ~ 1200 dpi (digital black and white)	
Grayscale	8-bit graduation or 2-digit per pixel, 2-digit halftone also possible.	
Scanning Speed	0.8 seconds (1 A4 page at 200 dpi in 2-digit black and white with no compression.)	
Interface	Ethernet 100Base-TX/10Base-T	
	IEEE 802.11b Wireless LAN (option)	
	IEEE 1394 with IP Over 1394 only (option)	
Network Protocols	TCP/IP only	
Scan-to-Email	Compatible	
TWAIN driver	Compatible	

The scanner driver and utility software are provided on one CD-ROM.

Scanner Driver	Network TWAIN Driver for Windows 95/98/Me/NT 4.0/2000/XP
Scanner Utilities	Scan Router V2 Lite (Cherry Lite) for Windows 95/98/Me/NT4.0/2000/XP Desk Top Binder V2 Lite (Plumeria Lite) for Windows 95/98/Me/NT4.0/XP

2.3 IEEE1394 INTERFACE BOARD (B581)

Hardware Specification

Number of ports	2 ports (6 pin)
Data Transmission speed	400Mbps / 200Mbps / 100Mbps
Bundled cables	1 x 6pin-4pin cable 1 x 6pin-6pin cable Length of cable; 2.0m (78.74inch).

System requirement

Connectable devices	PCs 2. IEEE1394 Repeaters
Number of Hops	16 hops (Max.)
Length of cable	4.5m between devices (Max.)

2.4 USB 2.0 INTERFACE BOARD (B596)

Number of ports	1 ports (B connector)
Data Transmission speed	High Speed: 480 MB bps Full Speed: 12 MB bps
Supported OS	WinXP/Win2000/WinMe/Win98SE MacOS9.x and X Classic mode

- NOTE:** 1) Microsoft “USB printer support” is required for Win98SE. In that case, transmission speed is Full Speed.
 2) Macintosh supports only the standard USB port.
 3) When printing from Macintosh, PDL emulation is not switched automatically. Please change the setting of PDL emulation of mainframe.
 4) Low Speed 1.5Mbps is not supported.

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2.5 IEEE802.11B INTERFACE BOARD (B582)

Data transmission rates:	Speed	Distance
	11 Mbps	140 m (153 yd.)
	5.5 Mbps	200 m (219 yd.)
	2 Mbps	270 m (295 yd.)
Channel	1 Mbps	400 m (437 yd.)
	For NA (FCC): 1 ~ 11 For EU (ETSI): 1 ~ 13 (Default: 11channel)*	
Network protocols:	TCP/IP, Apple Talk, NetBEUI, IPX/SPX	
Bandwidth:	2.4GHz (divided over 14 channels, 2400 to 2497 MHz for each channel)	

NOTE: The wireless LAN cannot be active at the same time as the Ethernet LAN.

The following user tool setting determines which LAN is active: System Settings – Interface Settings – Network - LAN Type.

2.6 BLUETOOTH INTERFACE UNIT (G377)

System requirement

Supported OS	Win XP, 2000, 98 SE, Me (It will also depend upon the support OS of the Bluetooth Card)
Connectable PCs	- Host PC with PCMCIA card slots “3COM Wireless Bluetooth PC Card 3CRWB6096” or “3COM Wireless Bluetooth USB Adaptor 3CREB96” is required. - Toshiba PC with Bluetooth Software Ver1.02.18 or later

Hardware Specifications

Transmission spec	Based on Bluetooth V1.1
Data Transfer Speed	1Mbps
Profile	Hardcopy Cable Replacement Profile (HCRP) Serial Port Profile (SPP) Basic Imaging Profile (BIP)
Distance between devices	10 m The above is the max distance when using in the open air, and these depend on office environment.

2.7 MFP OPTION CONFIGURATION

Item	Machine Code	Remarks
Printer/Scanner unit Type 2075	B659	The printer/scanner unit includes the Centronics I/F, NIB and 256 MB memory DIMM.
IEEE 1394 Interface Board Type B	B581	Firewire
USB 2.0 Interface Board Type B	B596	
IEEE 802.11b Interface Board Type C	B582	Wireless LAN
Bluetooth Interface Unit Type 2238	G377	
File Format Converter Type B	B609	Media Link Board (MLB)
Network Interface Board Type 2105	B594	NIB
PS3 Type 2075	B525	PostScript 3
Memory Unit Type D (256MB)	B585	256 MB memory DIMM.
Data Overwrite Security Unit Type C	B735	SD Card

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