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B064 SERIES/B140 SERIES /B246 SERIES/D052 SERIES SERVICE MANUAL

(Book 1 of 2) 002711MIU

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Ricoh Americas 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
B246	Dsm755	LD255	Aficio MP 5500	8055
B248	Dsm765	LD265	Aficio MP 6500	8065
B249	Dsm775	LD275	Aficio 7500	8075
B250	Dsm755 SP	LD255 SP	Aficio MP 5500SP	8055 SP
B252	Dsm765 SP	LD265 SP	Aficio MP 6500SP	8065 SP
B253	Dsm775 SP	LD275 SP	Aficio MP 7500SP	8075 SP
D052	MP 6000/SP	LD260/SP	Aficio MP 6000/SP	8060/SP
D053	MP 7000/SP	LD270/SP	Aficio MP 7000/SP	8070/SP
D054	MP 8000/SP	LD280/SP	Aficio MP 8000/SP	8080/SP

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B064 SERIES/B140 SERIES /B246 SERIES/D052 SERIES

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SEE B064/B140/B246 SERIES SERVICE MANUAL BOOK 2 OF 2 FOR ACCESSORIES:

LARGE CAPACITY TRAY (B473)

SEE SECTION B473 FOR DETAILED TABLE OF CONTENTS

A3/DLT TRAY KIT (B475)

SEE SECTION B475 FOR DETAILED TABLE OF CONTENTS

3000-SHEET FINISHER (B468/B469/B674)

SEE SECTION B468/B469/B674 FOR DETAILED TABLE OF CONTENTS

PUNCH UNIT (B377)

SEE SECTION B377 FOR DETAILED TABLE OF CONTENTS

COVER INTERPOSER TRAY (B470)

SEE SECTION B470 FOR DETAILED TABLE OF CONTENTS

9-BIN MAILBOX (B471)

SEE SECTION B471 FOR DETAILED TABLE OF CONTENTS

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

SEE SECTION B478/B513/B531 FOR DETAILED TABLE OF CONTENTS

3000-SHEET FINISHER (B706)

SEE SECTION B706 FOR DETAILED TABLE OF CONTENTS

Z-FOLDING UNIT (B660)

SEE SECTION B660 FOR DETAILED TABLE OF CONTENTS

SCANNER UNIT/PRINTER UNIT (G338/G339)

SEE SECTION G338/G339 FOR DETAILED TABLE OF CONTENTS

MFP OPTIONS (B659/B581/B596/B582/G377/B609/B735)

SEE SECTION B659/B581/B596/B582/G377/B609/B735 FOR DETAILED TABLE OF CONTENTS

2000/3000-SHEET FINISHER (B700/B701)

SEE SECTION B700/B701 FOR DETAILED TABLE OF CONTENTS

FAX OPTION/G3 INTERFACE OPTION 7500 (B819/B820)

SEE SECTION B819/B820 FOR DETAILED TABLE OF CONTENTS

⚠IMPORTANT SAFETY NOTICES

PREVENTION OF PHYSICAL INJURY

1. Before disassembling or assembling parts of the copier and peripherals, make sure that the copier power cord is unplugged.
2. The wall outlet should be near the copier and easily accessible.
3. Note that some components of the copier and the paper tray unit are supplied with electrical voltage even if the main power switch is turned off.
4. If any adjustment or operation check has to be made with exterior covers off or open while the main switch is turned on, keep hands away from electrified or mechanically driven components.
5. If the Start key is pressed before the copier completes the warm-up period (the Start key starts blinking red and green alternatively), keep hands away from the mechanical and the electrical components as the copier starts making copies as soon as the warm-up period is completed.
6. The inside and the metal parts of the fusing unit become extremely hot while the copier is operating. Be careful to avoid touching those components with your bare hands.

HEALTH SAFETY CONDITIONS

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

OBSERVANCE OF ELECTRICAL SAFETY STANDARDS

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

SAFETY AND ECOLOGICAL NOTES FOR DISPOSAL

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

LASER SAFETY

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

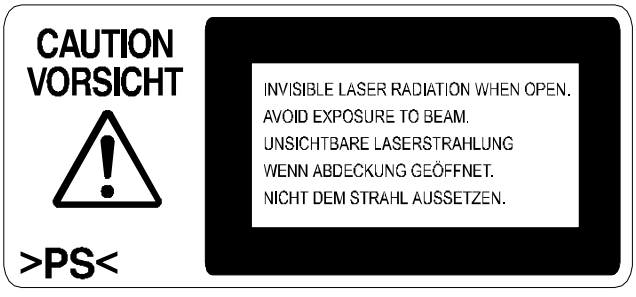
⚠WARNING

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

⚠WARNING

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

CAUTION MARKING:



What This Manual Contains

This preliminary manual describes the installation procedures for the
⇒ B064/B065/B246/D052 Series Copiers and their peripheral devices:

Conventions in this Manual

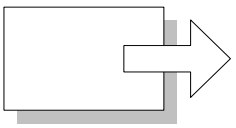
This manual describes more than one machine.

Unless otherwise specifically noted, the following short notations are used in text to refer to the following machines.

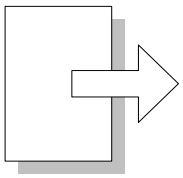
Short Notations	What They Mean
B064 Series	B064/B065
B140 Series	B140/B141/B142/B143/B163/B228
B246 Series	B246/B248/B249/B250/B252/B253
⇒ **D052 Series**	D052/D053/D054

This manual uses several symbols.

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



Short Edge Feed (SEF)



Long Edge Feed (LEF)

INSTALLATION

PREVENTIVE MAINTENANCE

REPLACEMENT AND ADJUSTMENT

B473 LARGE CAPACITY TRAY

TROUBLESHOOTING

B468/B469/B674 3000-SHEET FINISHER

B377 PUNCH UNIT

B471 9-BIN MAILBOX

B478 3000-SHEET FINISHER/B513 JOGGER UNIT/B531 PUNCH UNIT

B706 3000-SHEET FINISHER

B660 Z-FOLDING UNIT

B700/B701 2000/3000 SHEET FINISHER

G338/G339 SCANNER /PRINTER UNIT

TAB POSITION 1

TAB POSITION 2

TAB POSITION 3

TAB POSITION 4

Tab index continued on next page…

Tab index continued…

SERVICE TABLES

DETAILED DESCRIPTIONS

SPECIFICATIONS

B475 A3/DLT TRAY KIT

B470 COVER INTERPOSER TRAY

B659/B581/B596/B582/G377/B609/B735 MFP OPTIONS

TAB POSITION 5

TAB POSITION 6

TAB POSITION 7

TAB POSITION 8

INSTALLATION

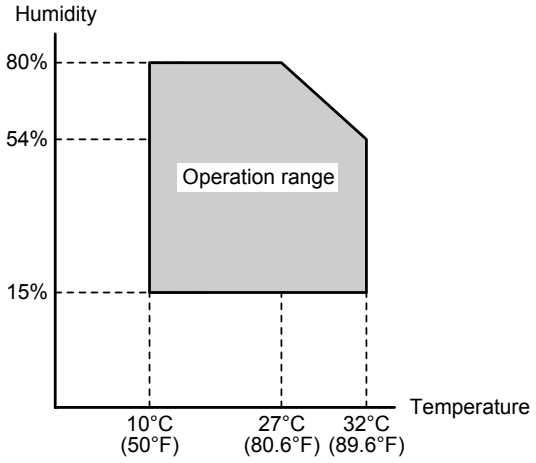
REVISION HISTORY		
Page	**Date**	**Added/Updated/New**
1	04/18/2008	New Information – Section updated to support D052 Series
8 ~ 9	12/08/2008	Updated Information – Installation Requirements
131	05/20/2008	Updated Information – Corrected Copy Connector Illustration
155 ~ 224	10/02/2008	New Information – Added MFP Options (Pages dated 09/2008)
156	08/07/2007	Updated Information – MFP Options B140/B246 Series
170	03/14/2007	Updated Information – File Format Converter
176	03/23/2007	Updated Information – Corrected MFP Options for B246 Series
199	03/22/2007	Updated Information – VM Card Type C
202 ~ 215	01/12/2007	New Information – Fax Option Type 7500
216 ~ 223	01/12/2007	New Information – G3 Interface Type 7500
224 ~ 236	01/12/2007	New page numbers only

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/m^3



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

7. Do not place the machine where it will be exposed to corrosive gases.
8. Do not install the machine at any location over 2,000 m (6,500 feet) above sea level.
9. Place the copier on a strong and level base 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 an electromagnetic field which could interfere with radio or television reception.

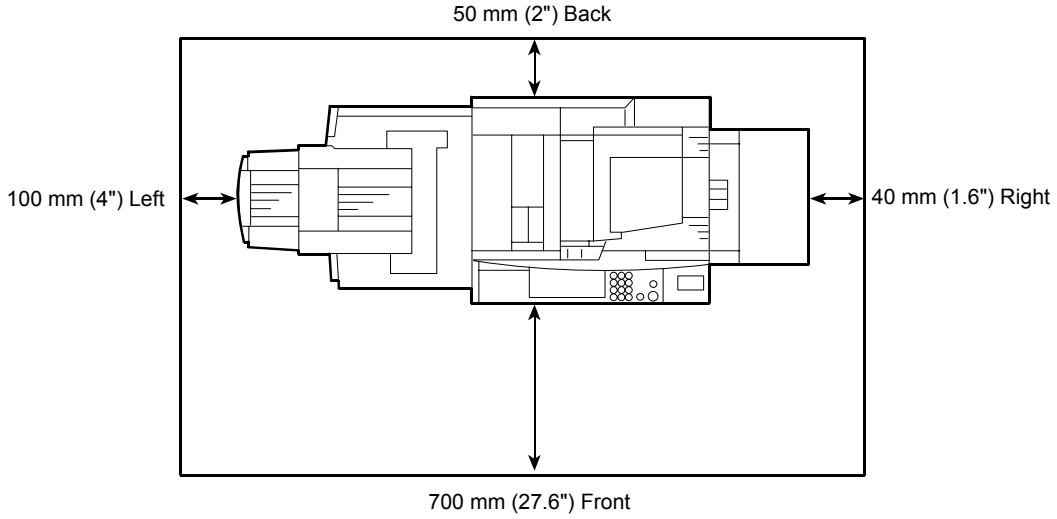
1.1.2 MACHINE LEVEL

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.

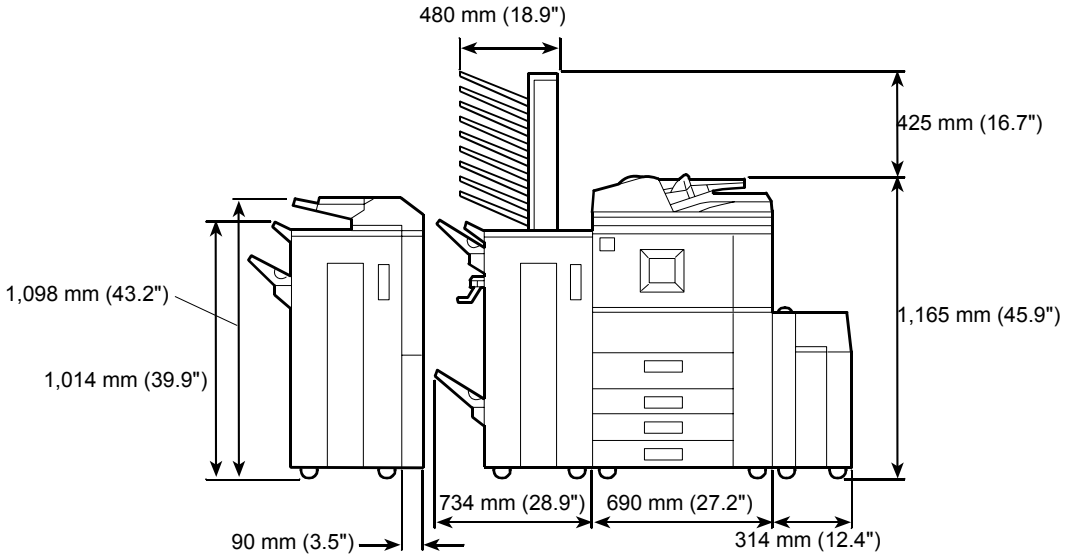
1.1.3 MINIMUM SPACE REQUIREMENTS

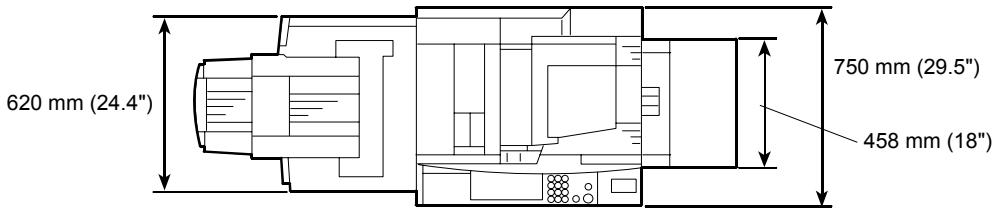
Place the copier near the power source, providing minimum clearance as shown below. The same amount of clearance is necessary when optional peripheral devices are installed.



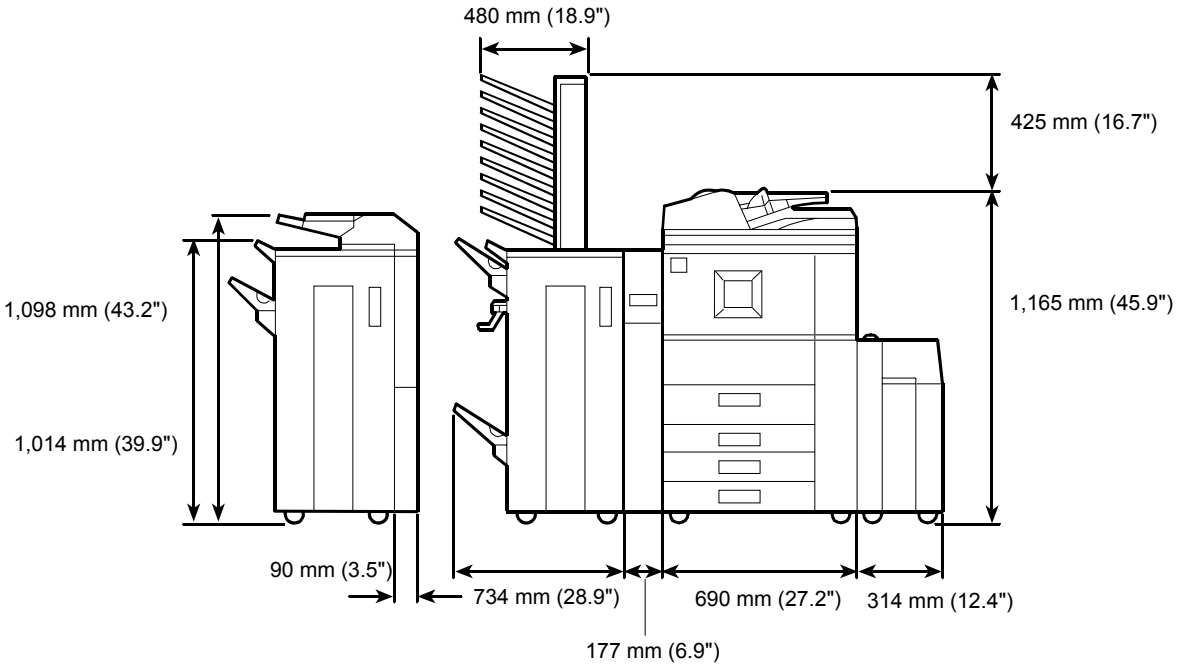
1.1.4 DIMENSIONS

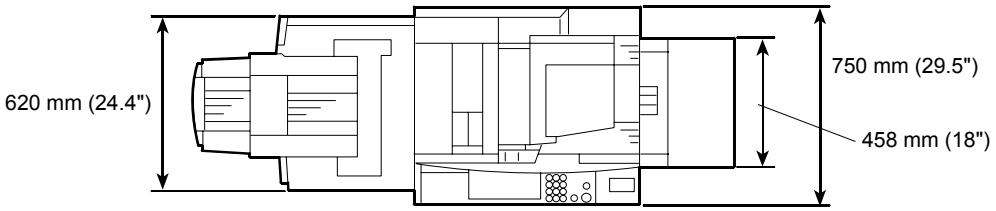
B064 Series



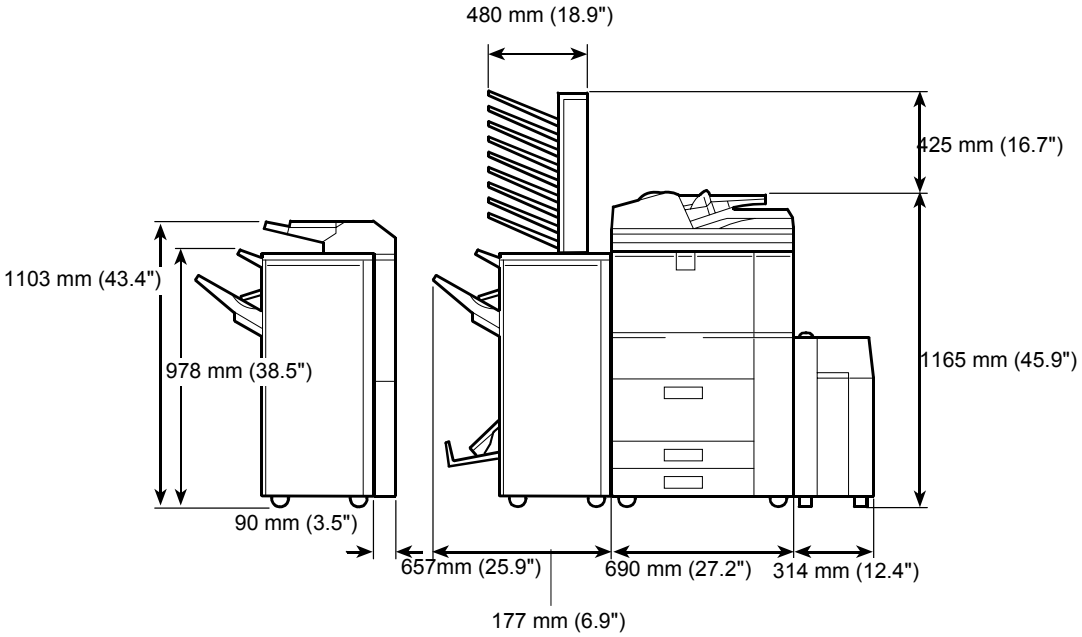


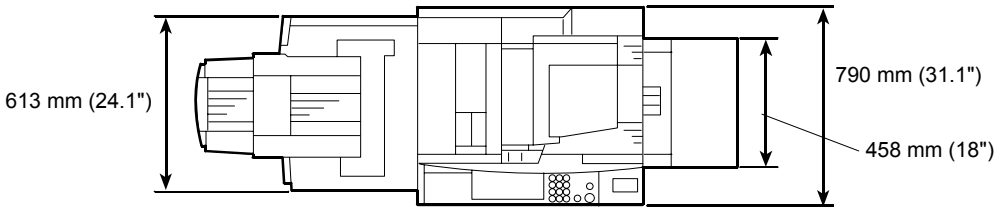
B140 Series


480 mm (18.9")
425 mm (16.7")
1,165 mm (45.9")
1,098 mm (43.2")
1,014 mm (39.9")
90 mm (3.5")
734 mm (28.9")
690 mm (27.2")
314 mm (12.4")
177 mm (6.9")


620 mm (24.4")
750 mm (29.5")
458 mm (18")

B246 Series


480 mm (18.9")
425 mm (16.7")
1103 mm (43.4")
978 mm (38.5")
1165 mm (45.9")
90 mm (3.5")
657mm (25.9")
690 mm (27.2")
314 mm (12.4")
177 mm (6.9")


613 mm (24.1")
790 mm (31.1")
458 mm (18")

1.1.5 PERIPHERAL/OPTION SUMMARY TABLE

The table below summarizes all the peripheral devices and controller options that can be installed with the B064, B140, and B246 Series machines. O: YES, X: NO

Bnnn	Name	Series			Class*[1]	Comment
		B064	B140	B246		
B328	Copy Connector Kit Type 2105	X	O	X	1	Links two mainframes.
B377	Punch Unit Type 1045	O	O	X	2	Installed in B468, B469, B674
B452	Key Counter Bracket Type 1027	O	O	O	1	Common option.
B468	Booklet Finisher	O	X	X	1	Punching, sorting, shifting, corner/booklet stapling.
B469	Booklet Finisher SR850	O	O	X	1	Punching, sorting, shifting, corner stapling only.
B470	Cover Interposer Tray	O	O	X	2	Installed on B468, B469, B674, or B478, B706
B471	9-Bin Mailbox	O	O	X	2	Installed on the B468, B469, or B674.
B473	LCIT RT43	O	O	O	1	Paper bank for LT/A4 paper
B474	81/2"x 14" Paper Size Tray Type 1075	O	O	O	1	Paper bank for LG paper
B475	A3/11"x17" Tray Unit Type 1075	O	O	O	2	Installed in Tray 1 (Tandem Tray)
B476	Copy Tray Type 1075	O	X	X	2	Small output tray for mainframe
B478	3000 Sheet Finisher	O	X	X	1	Punching, sorting, shifting, corner stapling only.
B498	Card Reader Bracket	O	O	O	1	Connected directly to mainframe.
B499	Tab Sheet Holder Type 3260	O	O	O	2	Installed in Tray 1 (Tandem Tray)
B513	Output Jogger Unit Type 1075	X	O	O	2	Installed in B478 or B706
B515	IEEE 801.11b	O	X	X	3	Board
B519	File Format Converter	O	X	X	3	Board
B525-08	Postscript 3 Type 1075	O	X	X	1	DIMM
B525-15	Postscript 3 Type 2075	X	O	X	1	SD card
B525-44	Postscript 3 Type 7500	X	X	O	3	SD card
B525-01	USB 2.0	O	O	O	3	Board
B531-27	Punch Unit Type 1075 EU 2/4	O	O	O	2	Installed in B478 or B706.
B531-17	Punch Unit Type 1075 NA 3/2	O	O	O	2	Installed in B478 or B706.
B581	IEEE 1394 Interface Board Type B	X	X	O	3	Board
B585	Memory Unit Type D 2075 256MB	X	O	X	3	Memory
B594	Network Interface Board Type 2105	X	O	X	3	Board
B596-01	USB 2.0 Interface Board Type B	X	O	X	3	Board
B609-04	File Format Converter Type C	X	X	O	3	Board

Bnnn	Name	Series			Class*1	Comment
		B064	B140	B246		
B609-01	File Format Converter Type B	X	O	X	3	Board
B659	Printer/Scanner Kit Type 2075	X	O	X	3	SD card
⇒ B660-17	Z-folding Unit Type 2105	X	O	X	1	Installed with B674, or B706.
⇒ B660-57	Z-folding Unit ZF 4000	X	X	O	1	Installed with B700, B701, or B706.
B674	Booklet Finisher	X	O	X	1	Punching, sorting, shifting, corner/booklet stapling.
B679	IEEE1284 Interface Board Type A	X	X	O	3	Board
B700	SR 4000	X	X	O	1	Punching, sorting, shifting, corner/booklet stapling.
B701	SR970	X	X	O	1	Punching, sorting, shifting, corner stapling only.
B702-27	Punch Unit Type 3260 EU 2/4	X	X	O	2	Installed in B700 or B701
B702-17	Punch Unit Type 3260 NA 2/3	X	X	O	2	Installed in B700 or B701
B702-28	Punch Unit Type 3260 SC	X	X	O	2	Installed in B700 or B701
B703	Output Jogger Unit Type 3260	X	X	O	2	Installed on B700 or B701
B704	Cover Interposer Type 3260	X	X	O	2	Installed on the B700, B702, B706.
B706	SR841	X	O	O	1	Punching, sorting, shifting, corner stapling only.
B735	Data Overwrite Security Unit C	X	O	O	3	SD card
B736	Bluetooth Interface Unit Type 3245	X	O	X	3	Board
B756	Copy Tray Type 2075	X	O	O	1	Small output tray for mainframe
B762	Mail Box CS391	X	X	O	2	Installed on B700 or B701
B782	VM Card Type B	X	O	X	3	SD card
B812	Punch Unit Type 850 SC	O	O	O	2	Installed in B478/B706.
B818	Remote Communication Gate Type CM1	X	X	O	3	Board
B825	USB Host Interface Unit Type A	X	X	O	3	Board
B826	Bluetooth Unit Type 3245	X	X	O	3	Board
B828	Browser Unit Type B	X	X	O	3	SD card
B829	Copy Data Security Unit Type C	X	X	O	3	IPU Board
B841	Printer/Scanner Unit Type 7500	X	X	O	3	SD Card
D406	Printer/Scanner Unit Type 8000	X	X	O	3	SD Card (D052/D053/D054)
B842	Copy Connector Type MP 7500	X	O	O	1	Links two mainframes
B861	VM Card Type C	X	X	O	3	SD card
G336	IEEE 1394	O	X	X	3	Board
G338	Printer/Scanner Kit	O	X	X	3	DIMM
G377	Bluetooth Interface Unit	X	O	X	3	Board

Bnnn	Name	Series			Class*1	Comment
		B064	B140	B246		
G381	Gigabit Ethernet Type 7300	X	X	O	3	Board
B819	Fax Option Type 7500	X	X	O	3	Board
B820	G3 Interface Unit Type 7500	X	X	O	3	Board
G813	IEEE 802.11b Interface Board	X	O	O	3	Board

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

1.1.6 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 (⏻) 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/B246 SERIES/D052 SERIES)

1.2.1 ACCESSORY CHECK

Check the accessories and their quantities against this list:

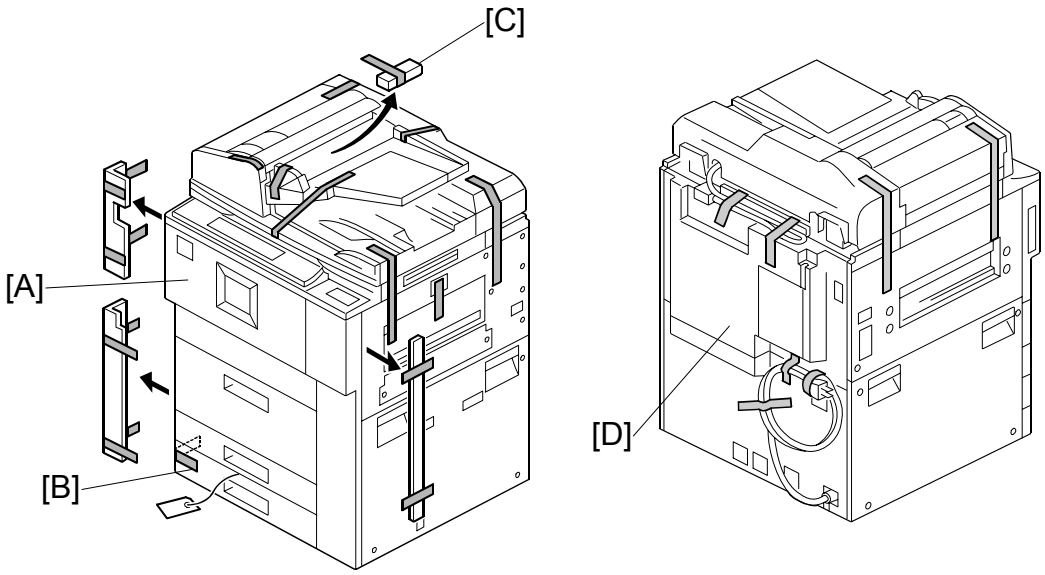
Description	Q'ty
1. Model Name Decal (-29 Only)	1
2. Operation Instructions (-17, -19, -29, -69 Only)	2
3. NECR with Envelope (-17 Only)	1
4. Decal – Paper Size	1
5. Decal: Caution Chart: Paper Set: Direction	1
6. Stand Holder	1
7. Operating Instructions Holder	2
8. Decal – Original Table (Face Up)	1
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

1.2.2 INSTALLATION PROCEDURE

Removing Tapes and Retainers

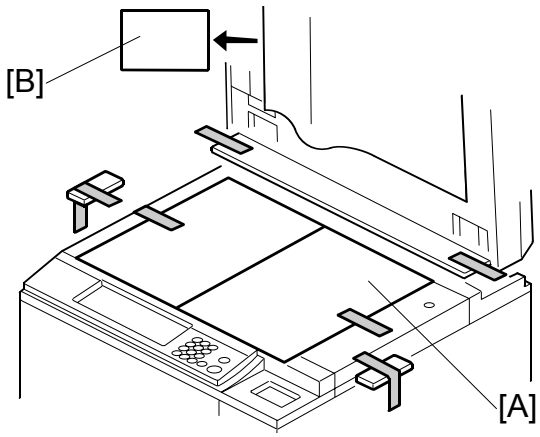
⚠CAUTION

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

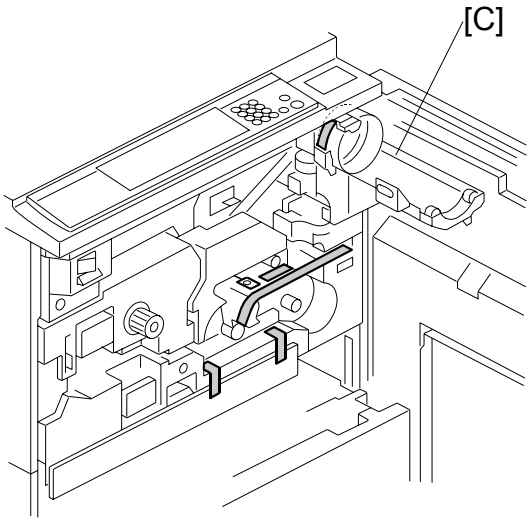


1. Unpack the machine and remove all the wrapping.
2. Remove all filament tape from the front [A] of the machine.
3. Open the lower tray [B] and remove the operating instructions holder and foot risers.
4. Open the ADF feed cover and remove the tape and retainer [C].
5. Remove the tape from the back [D] of the machine.
   NOTE: Save the filament tape and shipping retainers to prepare the machine for shipping in the future.

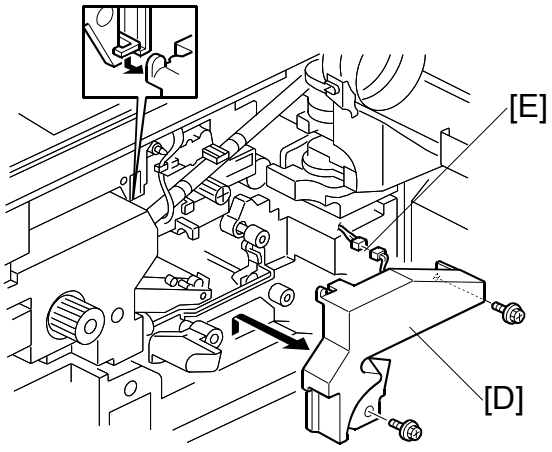
6. Raise the ADF and remove all the tape and shipping retainers around the exposure glass [A] and operation panel.
7. Remove the shipping retaining sheet [B] under the white pad.



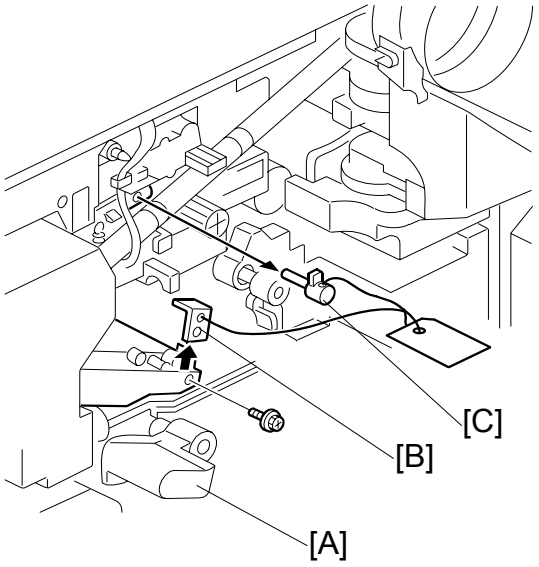
8. Open the front door, open the toner bottle holder [C], then remove all tape and shipping retainers.



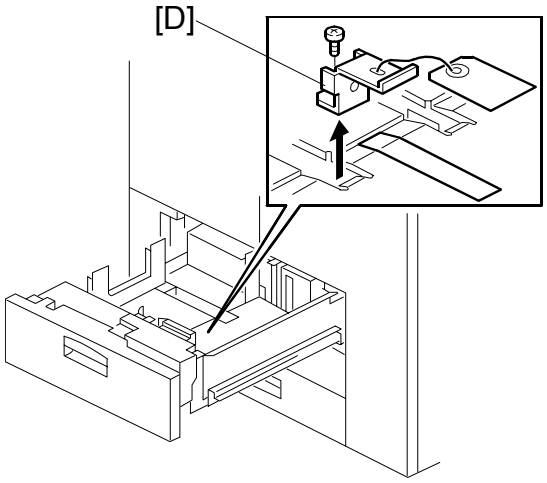
9. Remove the PCU inner cover [D] (🔩 x 2) and disconnect the fan motor [E] (🖐 x 1).



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

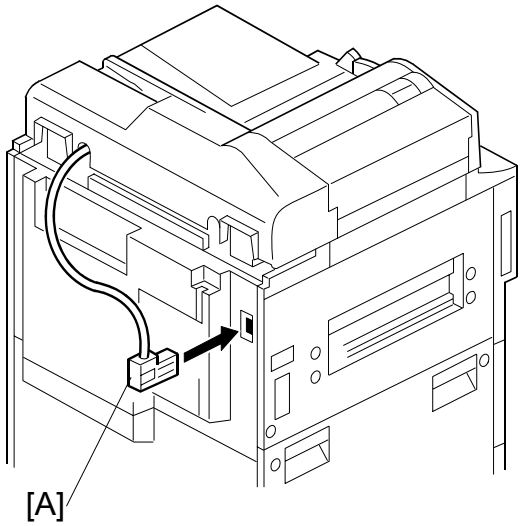


13. Open the tandem tray (top paper tray) and remove the metal retainer bracket [D] (x 1), wire, and red tag.



Connecting the ADF

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

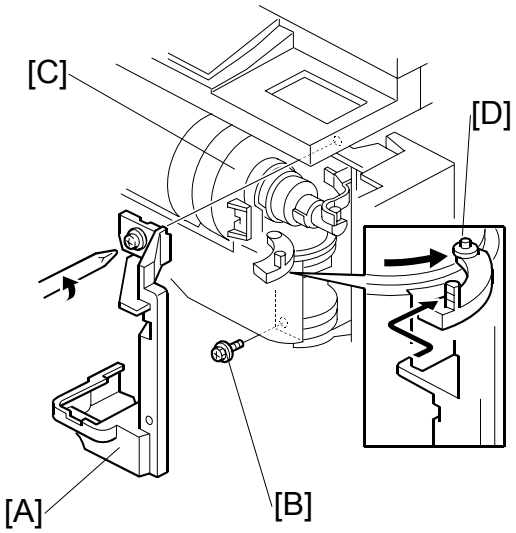


Removing and Filling the Development Unit

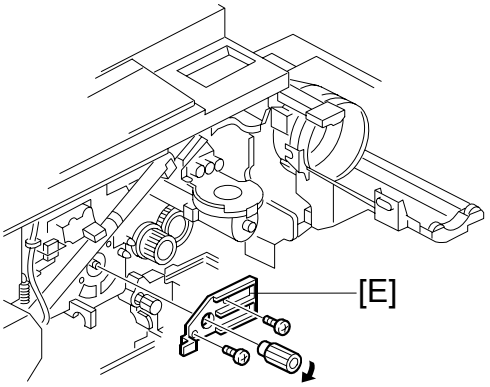
Important!

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

1. Remove the shutter cover [A] (x 1).
2. Remove the lock screw [B].
3. Remove any remaining shipping tape [C].
4. Pull the toner bottle holder [D] and swing it to the right.

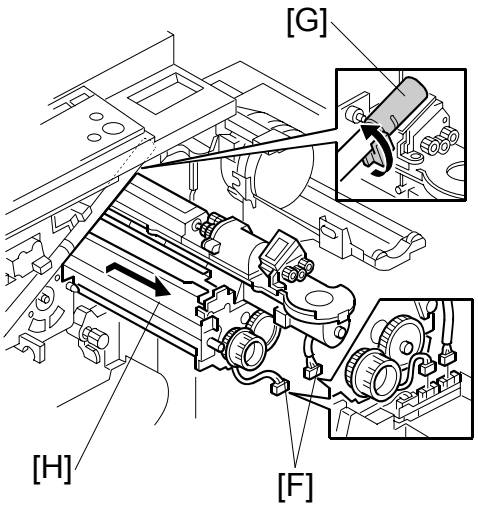


5. Remove the face plate [E] of the development unit (knob x 1, x 2).



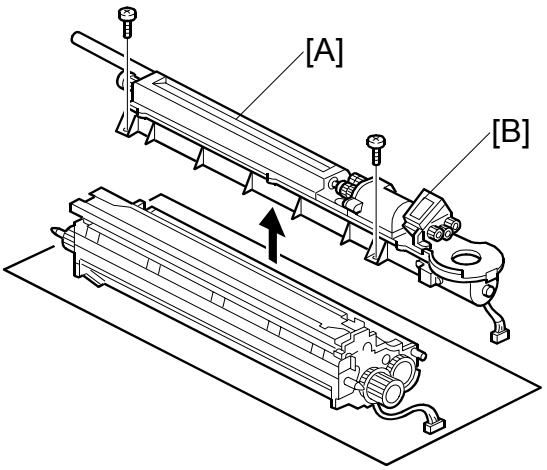
6. Disconnect the development unit [F] (x 2).

   NOTE: If the LCT is installed, disconnect it. This lets the front door open far enough for development unit removal.
7. Close the supply pipe shutter [G].
8. While allowing the development unit [H] to slip to the right, slowly pull it out of the machine.



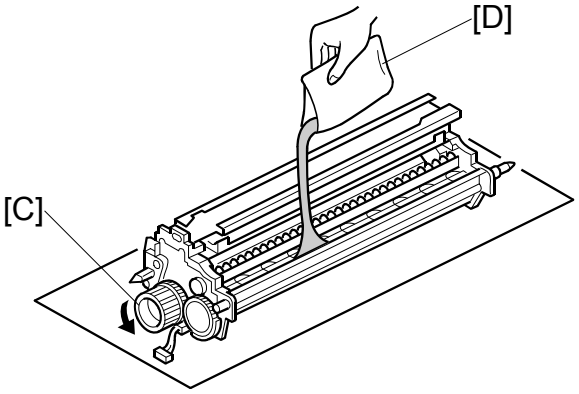
9. Remove the toner hopper [A] (☞ x 2).

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

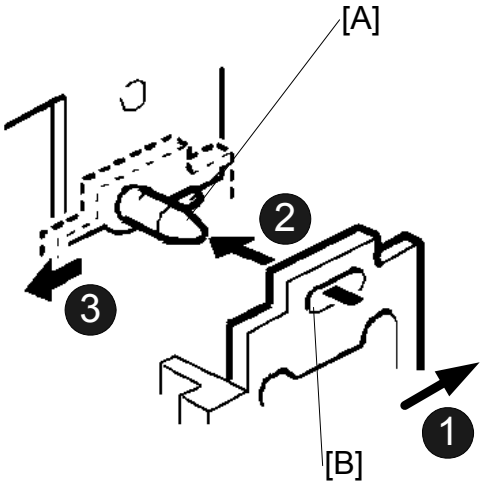


11. While turning the knob [C] slowly, pour in one pack of developer [D] from one end of the development unit to the other.
12. Make sure that the developer is evenly distributed. Note the developer lot number printed on the top edge of the bag. You will need the lot number when you execute SP2963 (Installation Mode).
13. Assembly the developer unit then re-install it in the machine.
14. Follow the instructions printed on the inside of the front door to install the toner bottle.

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



⟹ *Re-installing the Development Unit*



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

Correct!

Incorrect!

NOTE: If you cannot move the development unit plate behind the horizontal pin, turn the front gear of the unit to the left and try again.

6. Make sure the pipeline shutter is rotated down to the open position.
7. Reattach all removed parts.

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 ①⓪⑦.
   - Hold down Clear/Stop Ⓒ/⊘ for more than 3 seconds.
   - Press “Copy SP” on the touch-panel.
   - Press ②⑨⑥③.
   - 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. (☛ 3.7.1)

Initializing the Drum Settings (B140/B246/D052 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 107.
   - Hold down Clear/Stop ⓒ/© for more than 3 seconds.
5. Close the front door.
6. Do SP2963.
   - On the operation panel keypad, push 107.
   - 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

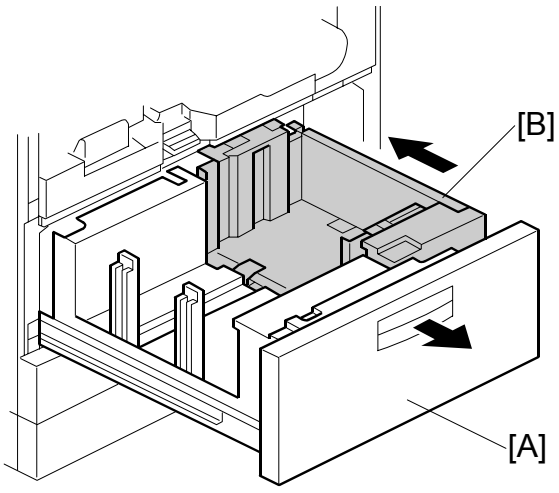
   - At installation, use SP2963 to enter the lot number, initialize the developer, and to force toner supply to the toner hopper.
   - After you replace developer in a machine that has been already installed, do not use SP2963; use SP2801 (TD Sensor Initial Setting) instead to enter the lot number and initialize the TD sensor. (☛ 3.7.1)

Tandem Tray

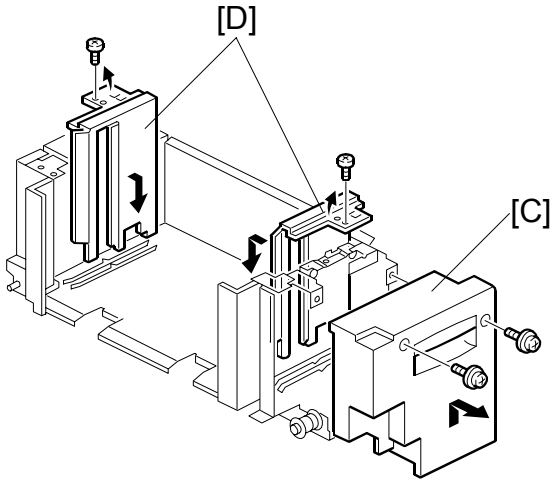
Before shipping the machine, the tandem tray is set for A4 or LT LEF and must be adjusted if the customer wants to use the tandem tray for another paper size.

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

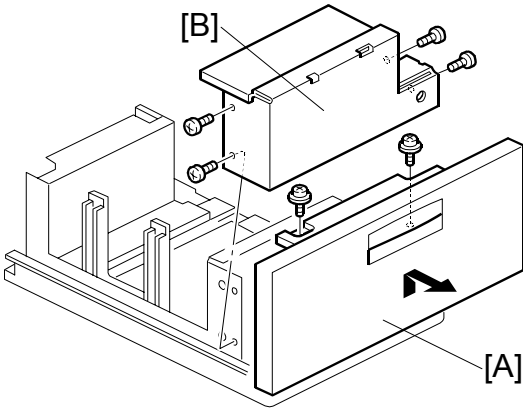
1. Open the front cover.
2. Completely pull out the tandem feed tray [A] so that the right tandem tray [B] separates from the left tandem tray.



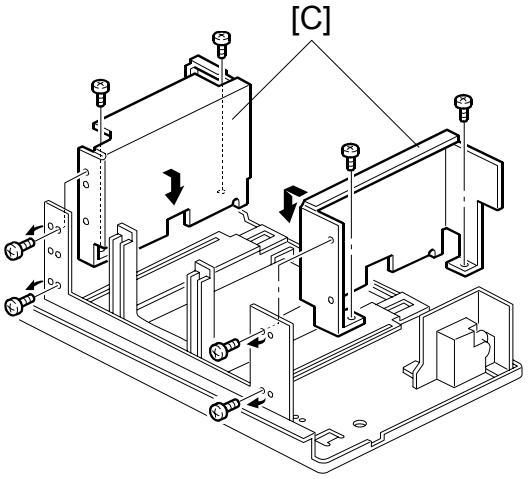
3. Remove the right tandem inner cover [C].
4. Re-position the side fences [D] (🔩 x 2). The outer slot position is used when loading A4 size paper.
5. Re-install the right tandem inner cover [C].



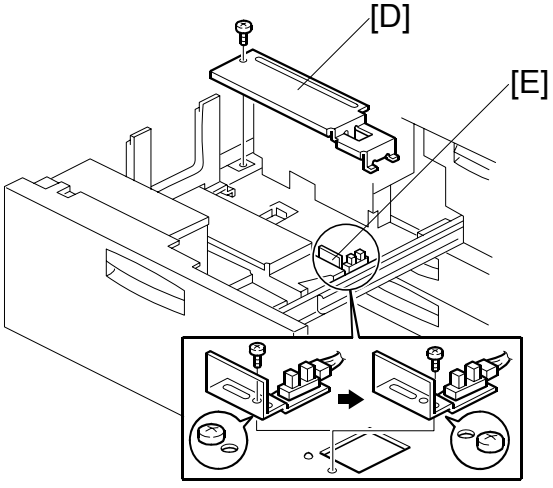
6. Remove the tray cover [A] (☞ x 2).
7. Remove the motor cover [B] (☞ x 4).



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

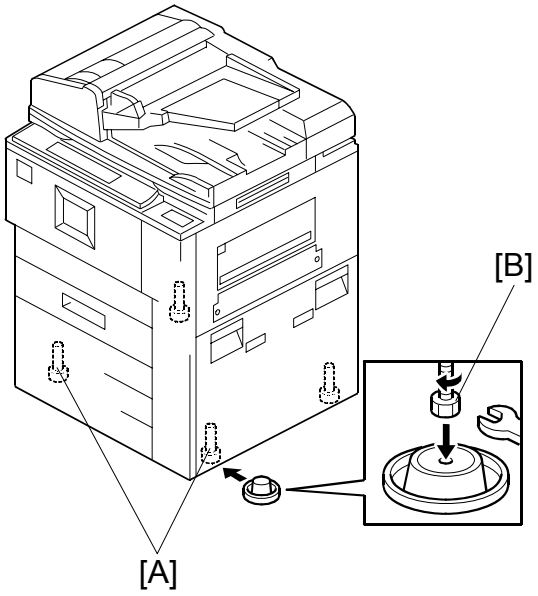


10. Remove the rear bottom plate [D] (☞ x 1).
11. Re-position the return position sensor bracket [E] (☞ x 1). To use the paper tray for A4 size, put the screw in the left hole as shown. (For LT size, the screw should be placed on the right.)
12. Re-install the rear bottom plate.
13. Change the paper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



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

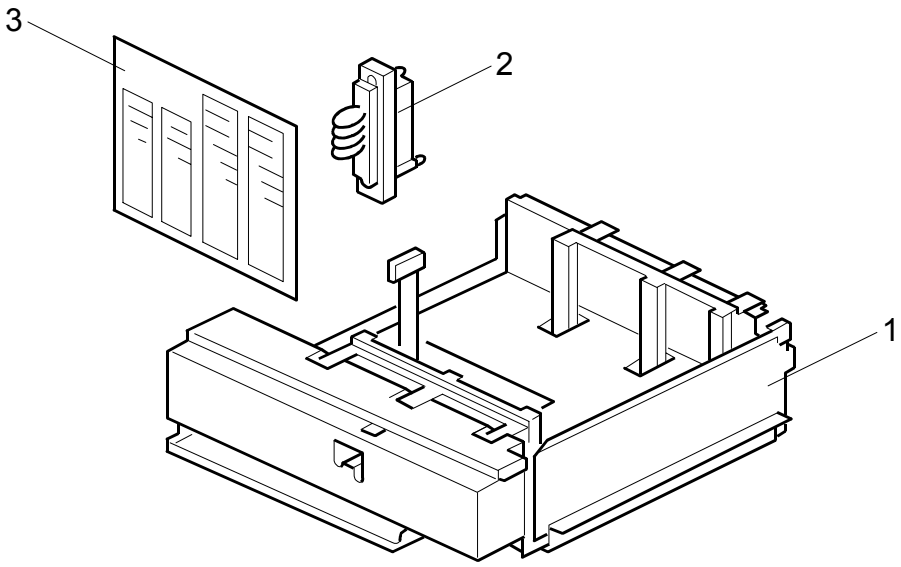
SP5812-001~002	Service Telephone Number Settings	Execute this SP and enter the contact numbers of the custom engineer. These are the numbers displayed when a service call is issued.
SP5841-001	Supply Name Setting – Toner Name Setting: Black	This name appears when the user presses the Inquiry on the User Tools screen.
⇒ SP5853	Stamp Data Download	Do SP 5853 to copy stamp data to the hard disk, then turn the power off/on.
SP7825 (**B064 Series Only**)	Total Counter Reset	Execute after installation and after making all test copies to reset the electronic counter total.

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

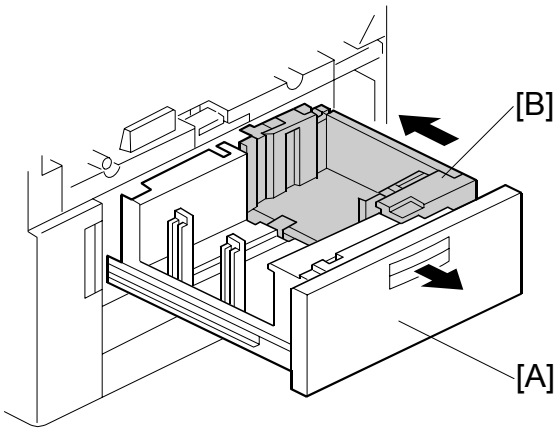


INSTALLATION PROCEDURE

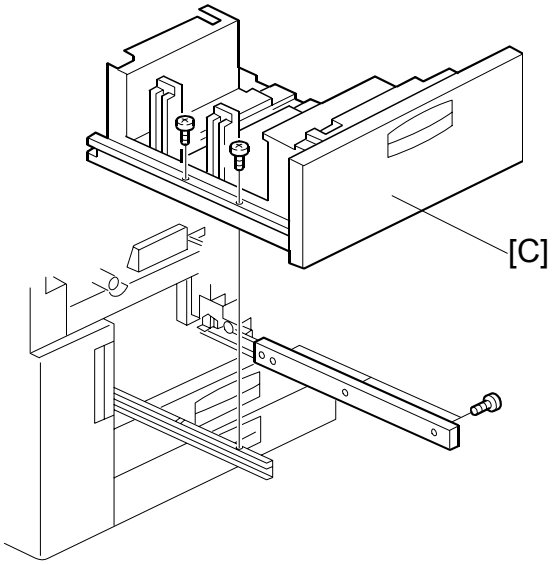
⚠CAUTION

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

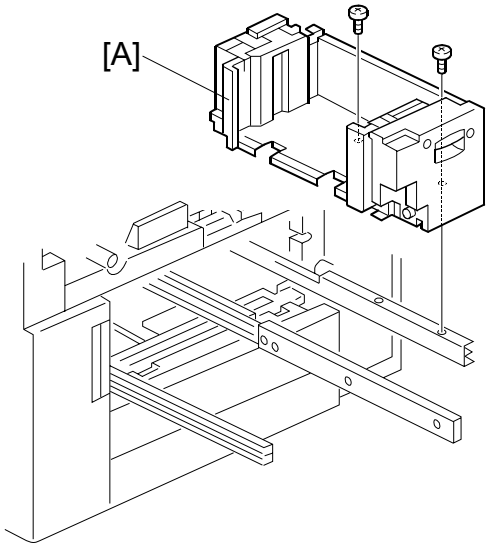
1. Draw out the tandem tray completely to separate the left and right sides of the tray, then remove the front cover [A] (🔩 x 2).
2. Push in the right tandem tray [B].



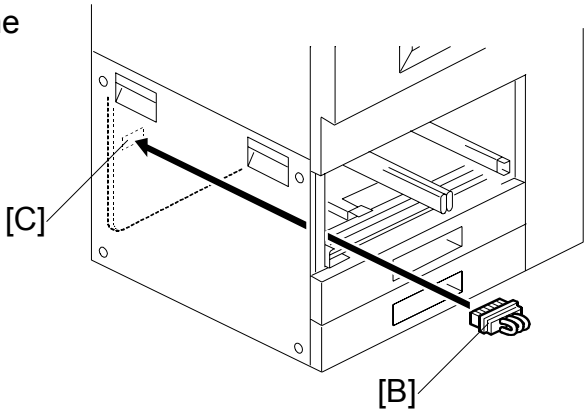
3. Remove the left tandem tray [C] (🔩 x 5). Save these screws.



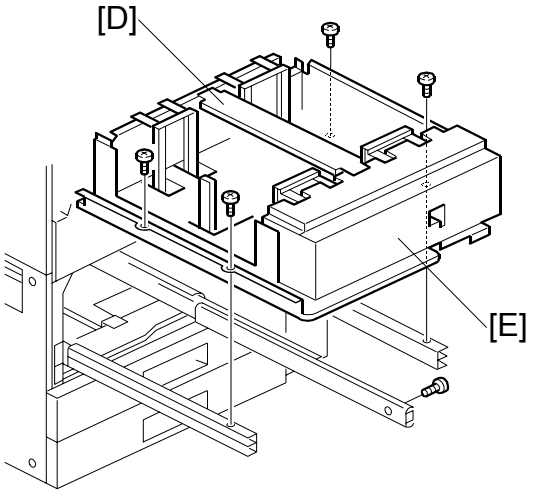
4. Remove the right tandem tray [A] (☞ x 2). Save these screws.



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



6. Remove the stay [D] (☞ 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)

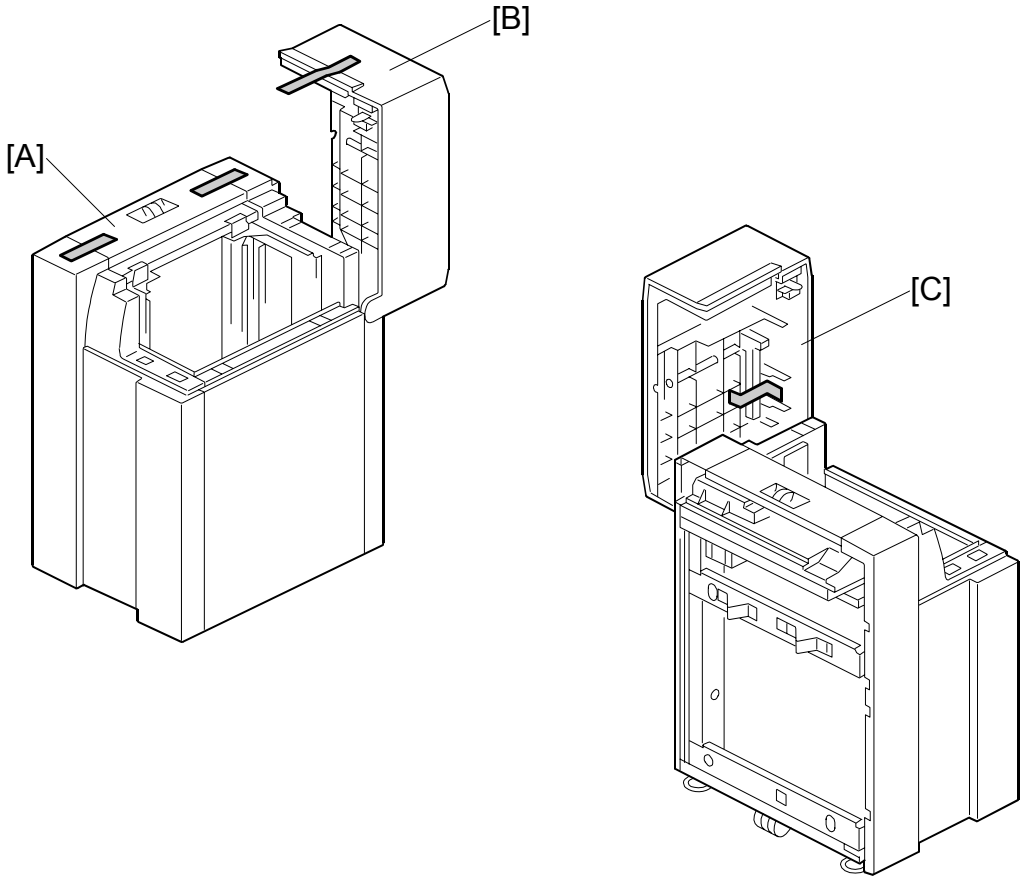
1.4.1 ACCESSORY CHECK

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



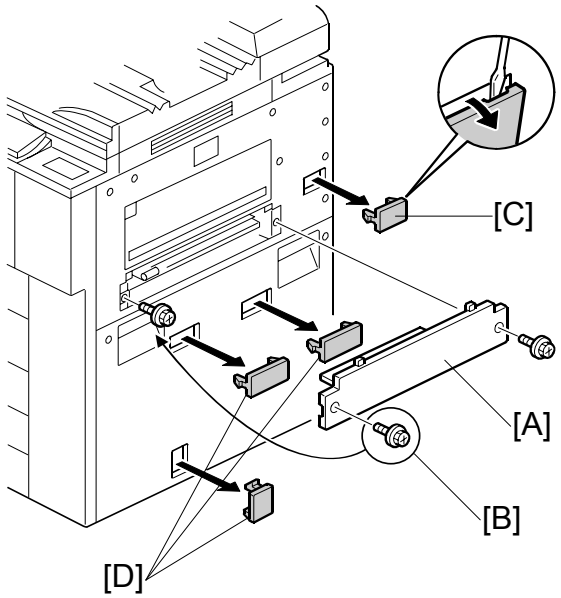
1. Remove the filament tape from the body [A] and top cover [B] of the LCT.
2. Remove the tape under the lid [C] of the LCT.

Preparing the Main Machine

⚠CAUTION

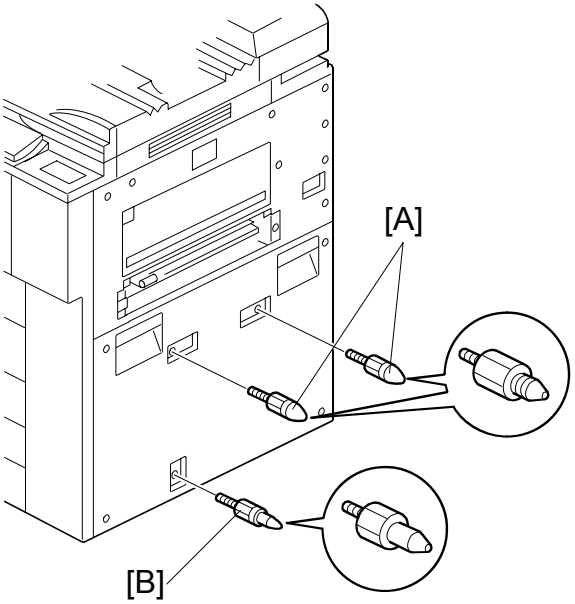
Switch the machine off and unplug the machine before starting the following procedure.

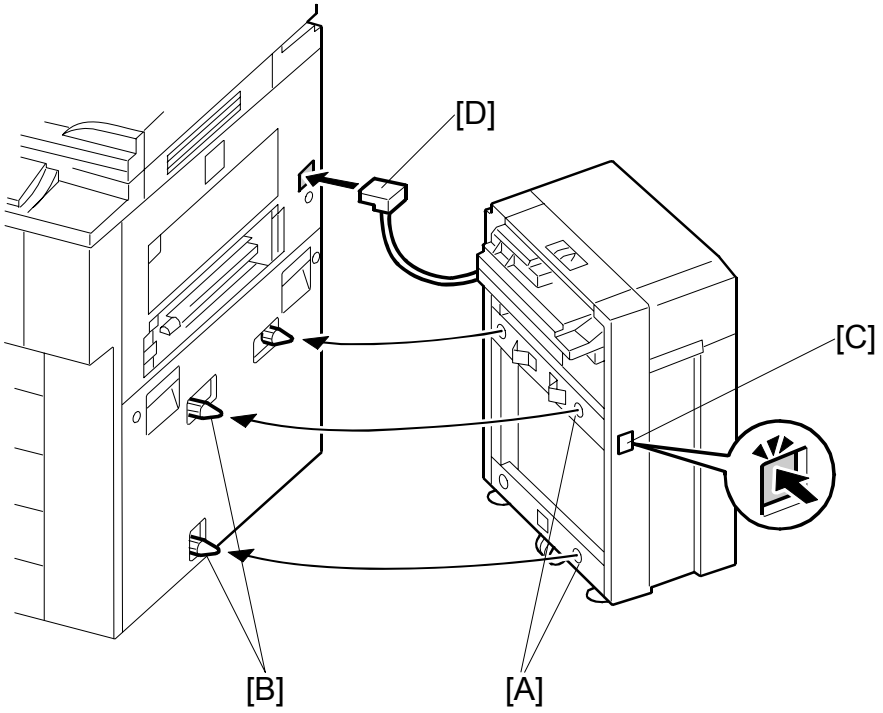
1. Remove the LCT installation cover [A] from the right side of the machine. (🖉 x 2).
2. Save the screw on the left [B]. You will need it to install the LCT.
3. Remove the LCT connector cover [C] (x 1) and the covers over the holes for the docking pins [D]. (x 3)



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.

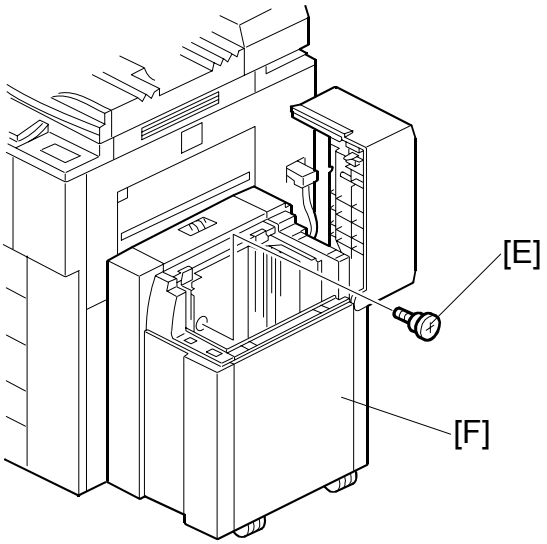
   NOTE: The release button [C] is used to unlock the LCT so it can be disconnected from the machine.

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."

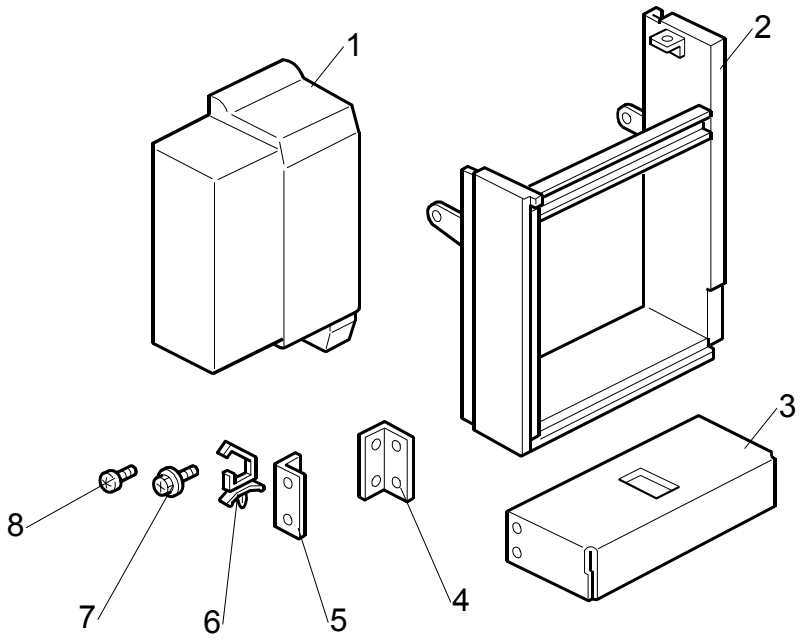


1.5 LG/B4 FEEDER KIT (B474)

1.5.1 ACCESSORY CHECK

Check the accessories and their quantities against this list:

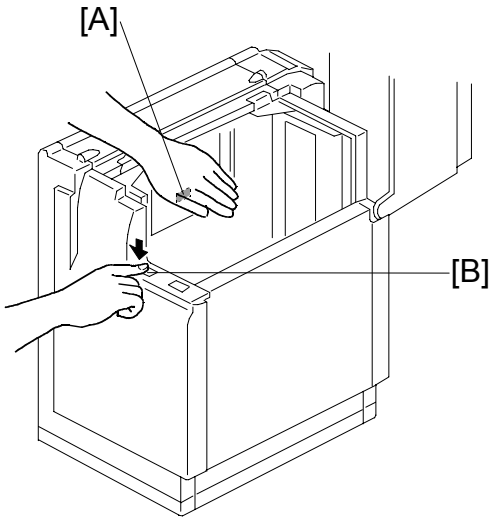
	Description	Q'ty
⇒	1. Cover	1
	2. B4/LG frame	1
	3. Bottom plate extension	1
	4. Rear bracket	1
	5. Front bracket	1
	6. Harness clamp	1
	7. Tapping hex screws - M4 x 8	6
	8. Tapping screws - M4 x 8	4



1.5.2 INSTALLATION PROCEDURE

If the LCT is connected to the machine

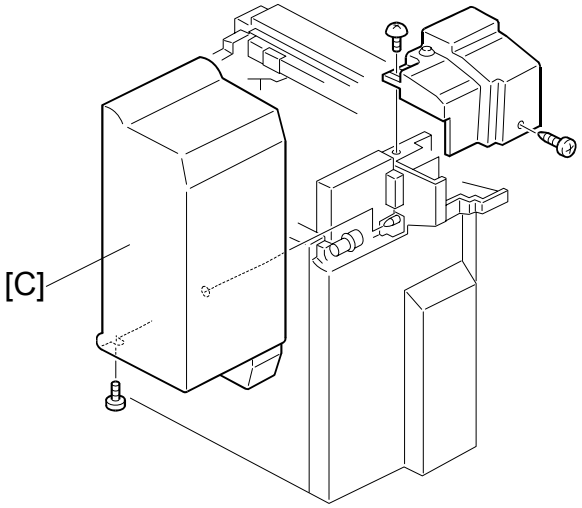
1. Open the cover and remove the paper.
2. Lower the LCT tray. Cover the near end sensor [A], then press the tray down button [B] to lower the tray bottom plate.



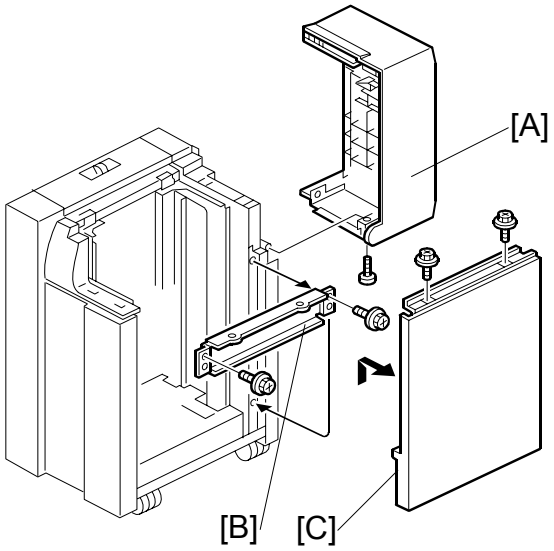
⚠CAUTION

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

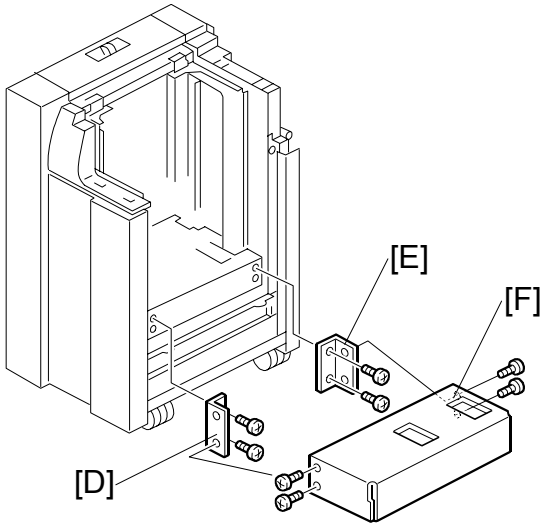
3. Disconnect the LCT from the machine.
4. Remove the LCT upper cover [C].



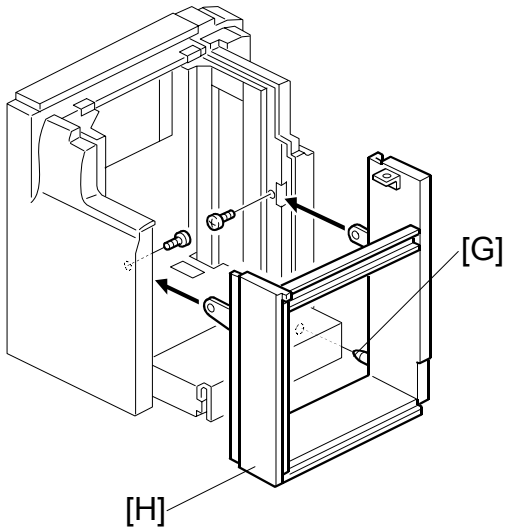
5. Remove the LCT cover [A] (☞ x 1).
6. Remove the right stay [B] and re-attach it below (☞ x 2).
7. Remove the right cover [C] (☞ x 2).



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

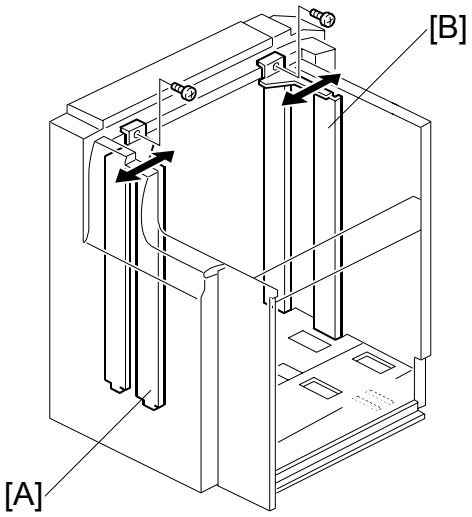


11. Align the positioning pin [G].
12. Attach the B4/LG frame [H] with the hex nuts (☞ x 2).

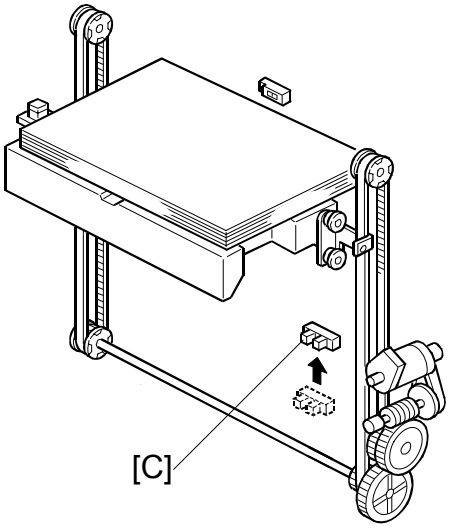


The kit is set for B4. If you need to change the paper size to LG, proceed to step 13 and 14. Otherwise, proceed to step 15.

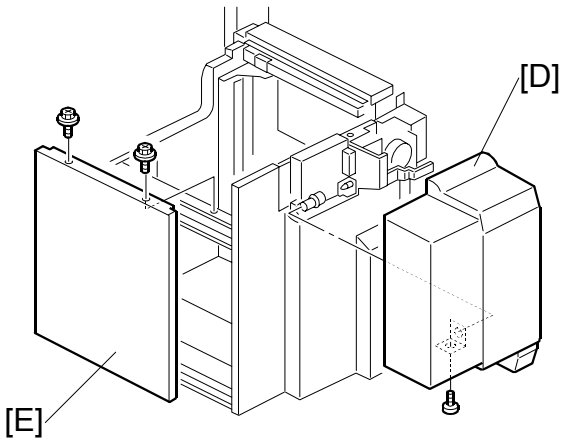
13. Move the front side fence [A] to the LG position and fasten (🔩 x 1).
14. Move the rear side fence [B] to the LG position and fasten (🔩 x 1).



15. Change the position of the lower limit sensor [C] (🔩 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 (🔩 x 1).
18. Re-attach the right cover [E] (🔩 x 2).
19. Connect the LCT to the machine (☛ 0).
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”.

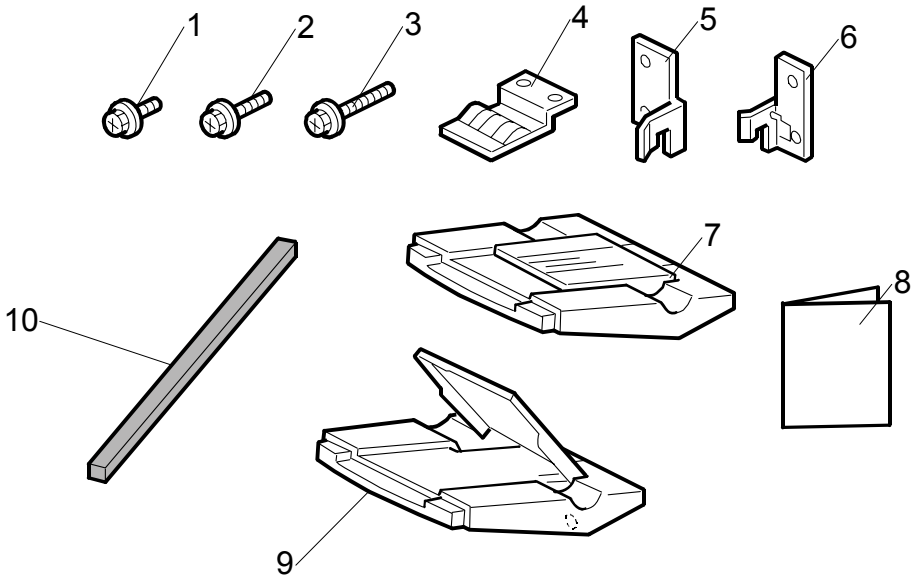


1.6 3000-SHEET FINISHERS (B468/B469/B674)

1.6.1 ACCESSORY CHECK

Check the accessories and their quantities against this list:

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



1.6.2 INSTALLATION PROCEDURE

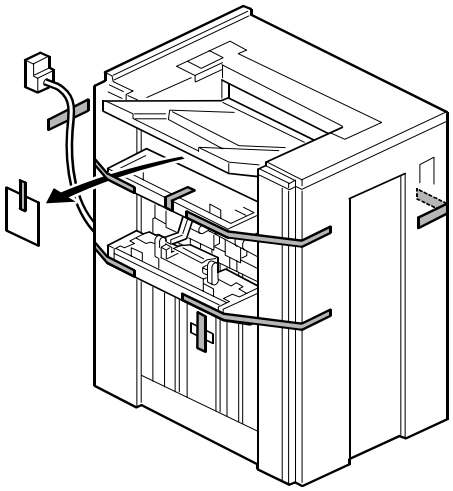
This section describes the common installation instructions for these finishers:

- **B468 Booklet Finisher**. Does punching, shifting, corner stapling, and booklet (saddle-stitch) stapling. *The booklet finisher can be installed and used with the B064 Series only. This finisher cannot be used with a B140 Series/B246 Series machine.*
- **B469 Finisher**. Does punching, shifting, and corner stapling. Does not do booklet (saddle-stitch) stapling. *This finisher can be installed and used only with the B064 Series or B140 Series. This finisher cannot be used with a B246 Series machine.*
- **B674 Booklet Finisher.** Does punching, shifting, stapling, and booklet (saddle-stitch) stapling . *The booklet finisher can be installed and used only with the B140 Series. This finisher cannot be used with a B064 Series or B246 Series machine.*

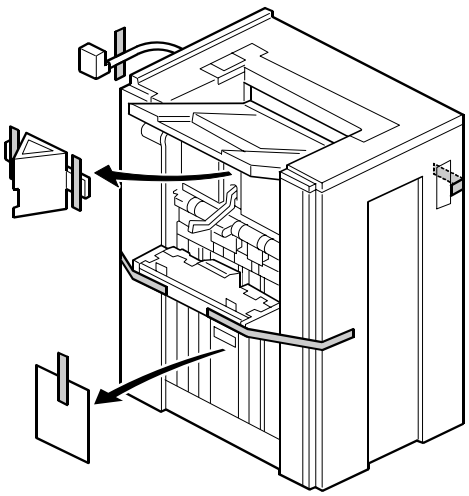
Important! Differences in installation procedures are denoted "**B468"**, "**B469**" or "**B674**".

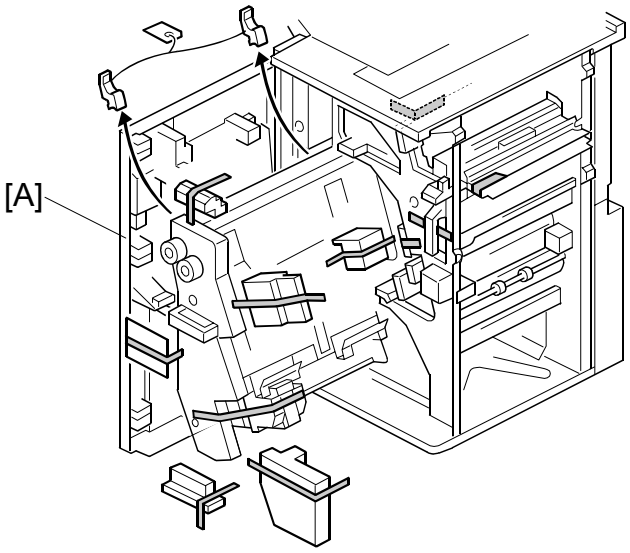
Removing Tapes and Retainers

B468 (B064 Series)
B674 (B140 Series)



B469



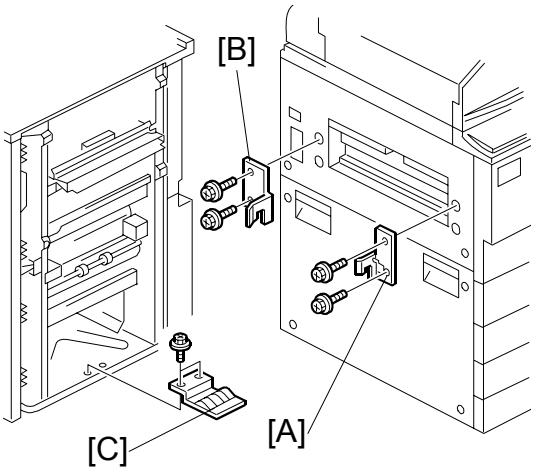


1. Unpack the machine and remove all the wrapping.
2. Remove all filament tape and shipping retainers from the front of the finisher.
3. Open the front door [A] and remove all the tape and shipping retainers from inside the finisher.

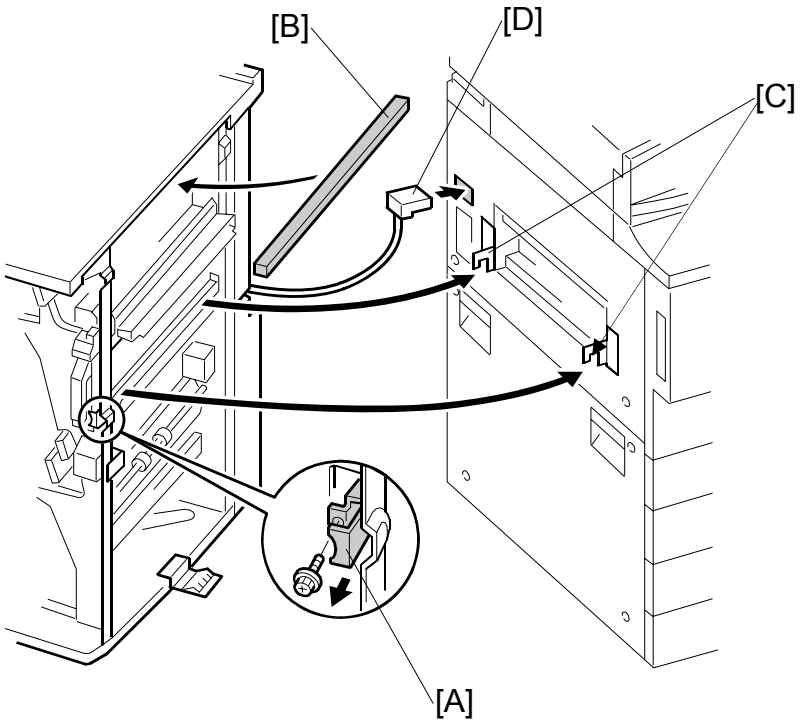
Installation

⚠CAUTION

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



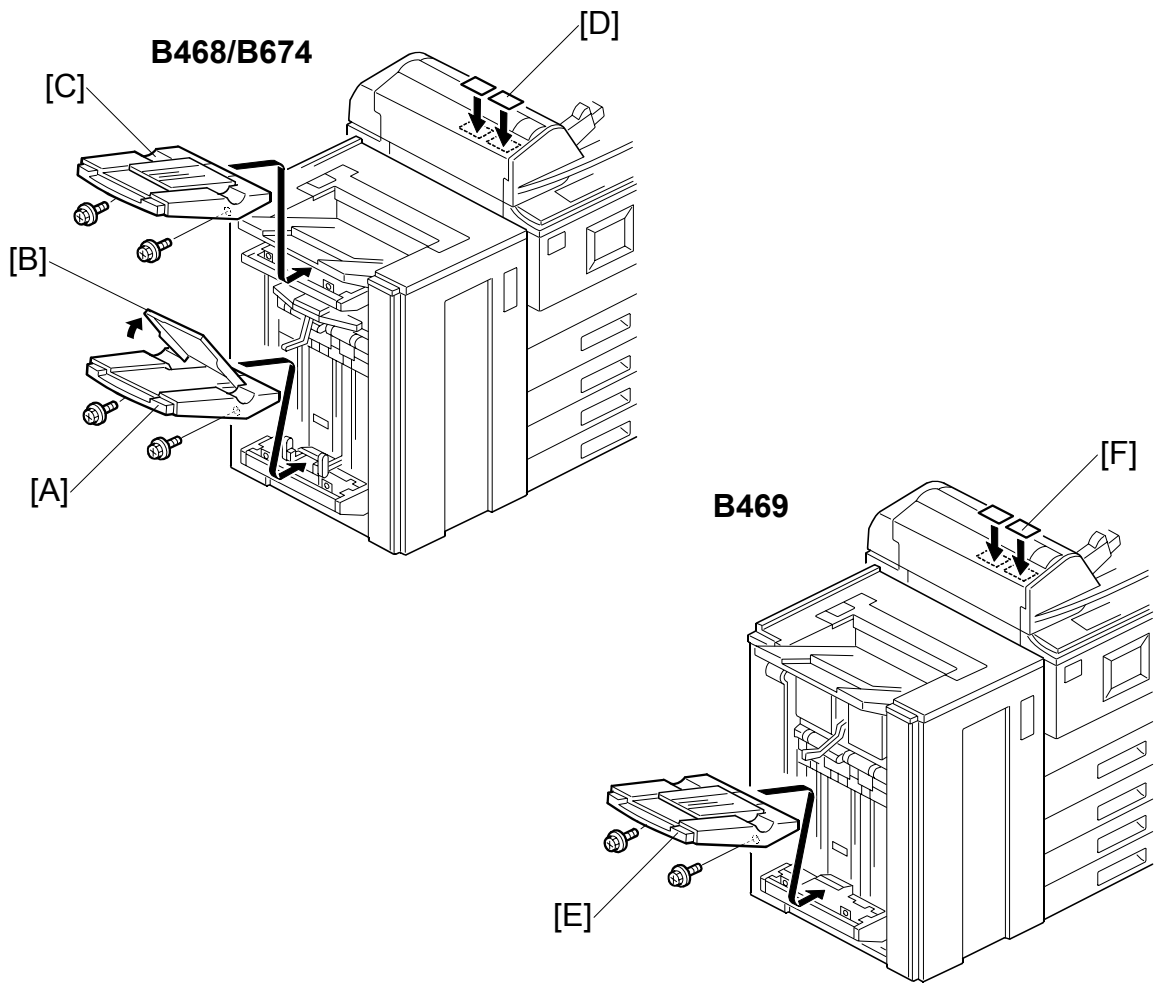
1. Install the front [A] and rear [B] joint brackets (🔩 x 2 each, M4x 14).
2. Install the ground plate [C] (🔩 x 2, M3 x 6).



3. Remove the screw of the lock lever [A] and pull the lever out. Keep the screw.
4. Peel the cover tape from the sponge cushion [B], 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.
5. Align the brackets [C] with the slots in the finisher.
6. To avoid bending the entrance guide plates of the finisher, slowly push the finisher against the side of the machine until the brackets enter the slots.
7. Fasten the lock lever [A] (🔩 x 1) with the screw removed in Step 3. This locks the finisher against the side of the mainframe.
8. Connect the plug [D] 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.



B468 (B064 Series)

B674 (B140 Series)

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

B469 (B064 Series/B140 Series)

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

Selecting the Staple Supply Name

Access the SP mode and enter the following information.

5841*	Supply Name Setting		These names appear when the user presses the Inquiry button on the initial User Tools screen.
	005	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	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. Select "Copier/Document Server Features".
3. Select the "Input/Output" tab, then access "Select Stapling Position".
4. Select any "Stapling Position" button then select the center stapling symbol.
5. Exit the User Tools mode. Specify the number of copies, select 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".

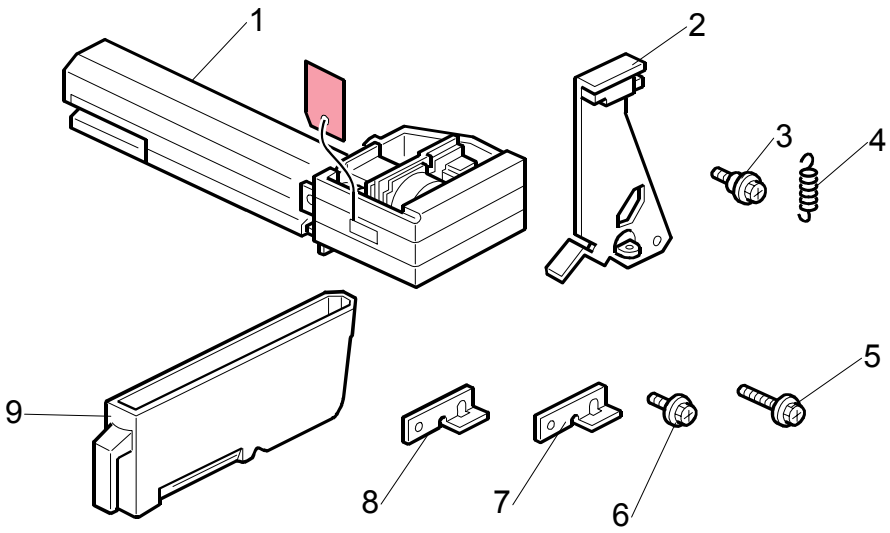
1.7 PUNCH UNIT (B377)

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

1.7.1 ACCESSORY CHECK

Check the accessories and their quantities against this list:

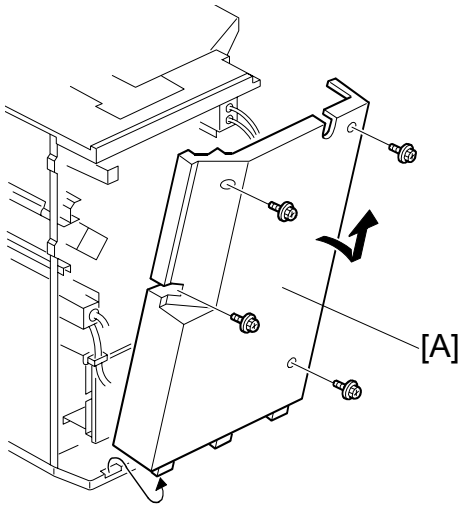
⇒ Description	Q'ty
1. Punch unit	1
2. Sensor arm	1
3. Step screw	1
4. Spring	1
5. Tapping screw - M3x 10	2
6. Tapping screw - M3 x 8	1
7. Spacer (2 mm)	1
8. Spacer (1 mm)	1
9. Hopper	1



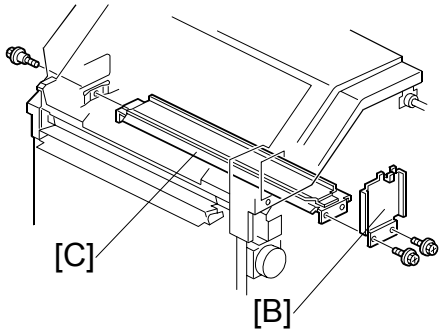
⇒1.7.2 INSTALLATION PROCEDURE

⚠CAUTION
Switch off the main machine and unplug its power cord.

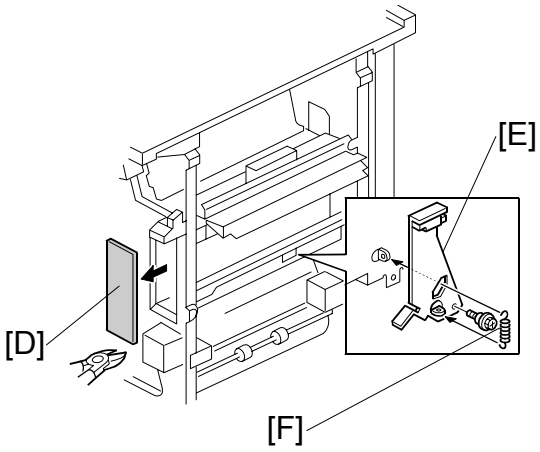
1. If the finisher is connected to the machine, disconnect it.
2. Unpack the punch unit and remove all tapes and shipping retainers.
3. Open the front door and remove the rear cover [A] (🔩 x 4).



4. Remove the bracket [B] (🔩 x 2) and paper guide [C] (🔩 x 1).

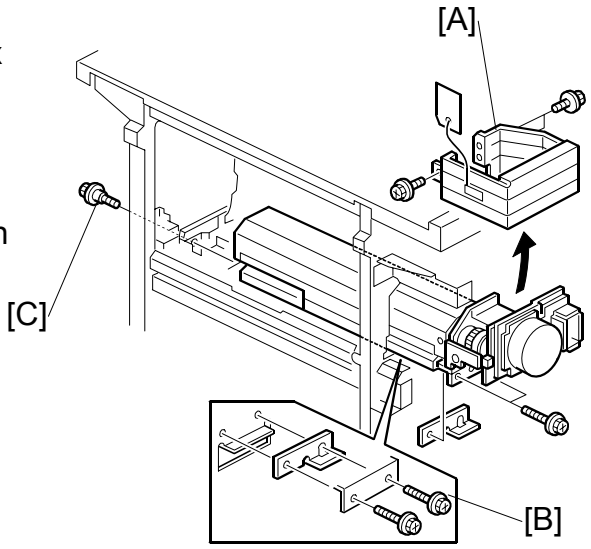


5. Remove the plastic knockout [D].
6. Install the sensor arm [E] (🔩 x 1).
7. Install the spring [F].



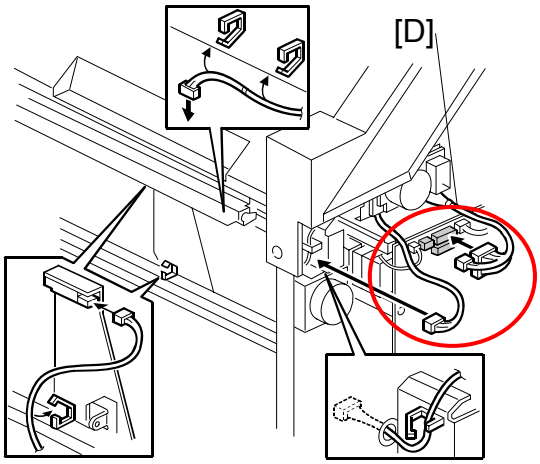
⇒

1. Remove the shipping bracket [A] (☞ x 2).
2. Position the 2 mm spacer [B] and secure the punch unit (☞ x 2).
3. Secure the punch unit at the front with the shoulder screw [C] (☞ x 1).



4. Connect the harnesses [D] and clamp them as shown.

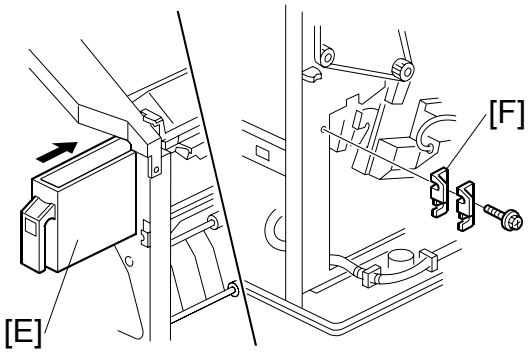
   NOTE: No special DIP switch settings are required for this punch unit. The punch unit sends an identification signal to the machine, so it knows what type of punch unit has been installed.



5. Slide the hopper [E] into the machine.
6. 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.

7. Reassemble the finisher and check the punch operation.



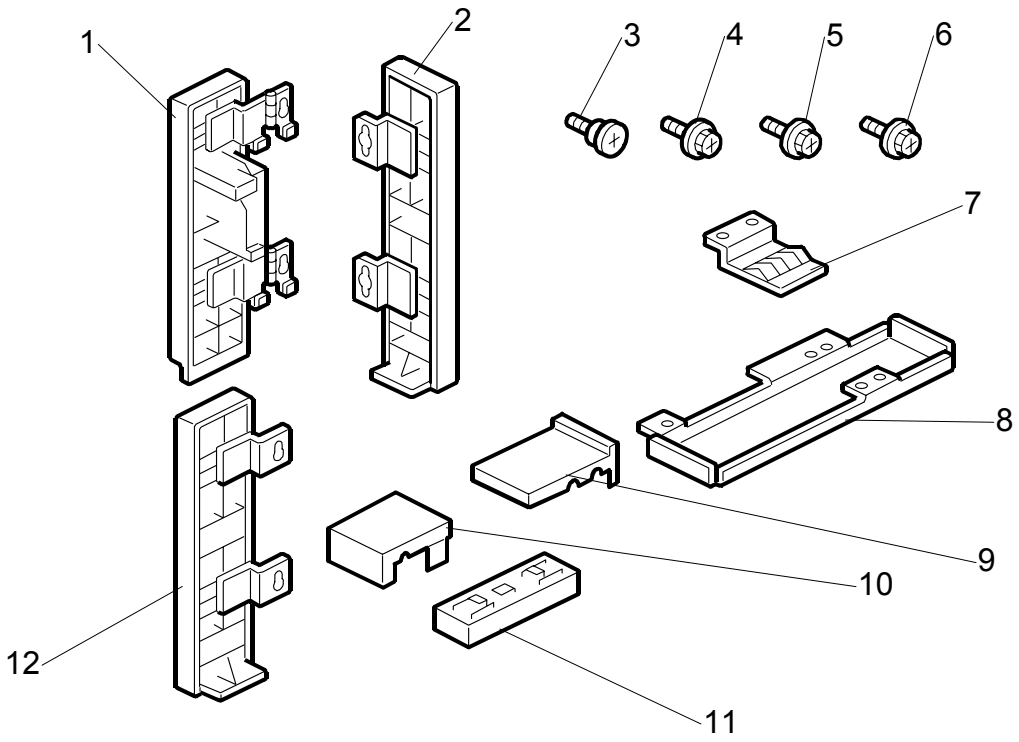
F

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:

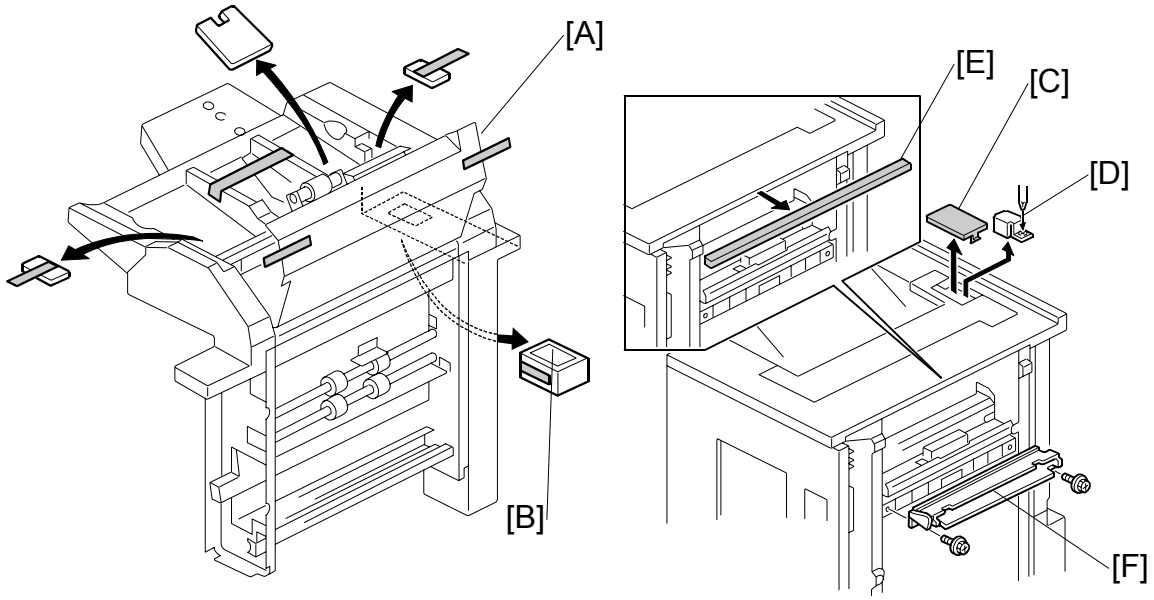
- 3000-sheet Finisher (Booklet Finisher) B468/B674
- 3000-sheet Finisher B469
- 3000-sheet Finisher B478/B706.

Important! The Cover Interposer Tray B470 can be installed and used only on the B064 Series or B140 Series machines. only

NOTE

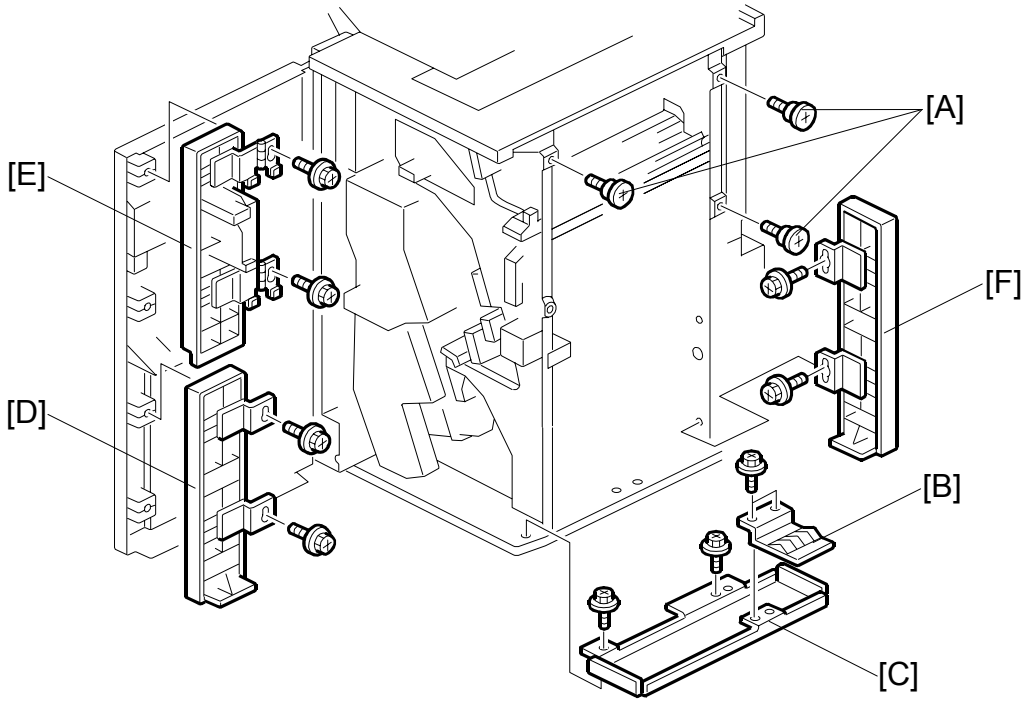
- The B468/B469/B674 Finishers require installation of the front spacer only.
- The B478/B706 requires installation of corner plates.

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] (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

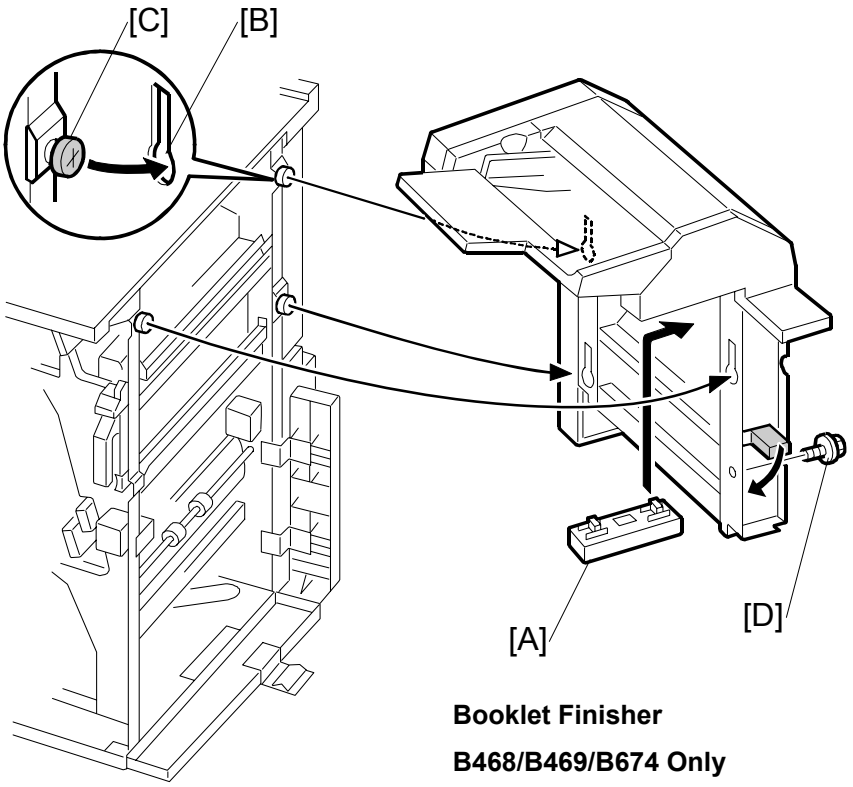


⚠CAUTION

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

Attaching the Interposer Tray



Booklet Finisher

B468/B469/B674 Only

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] (🔩 x 1, M3 x 6).

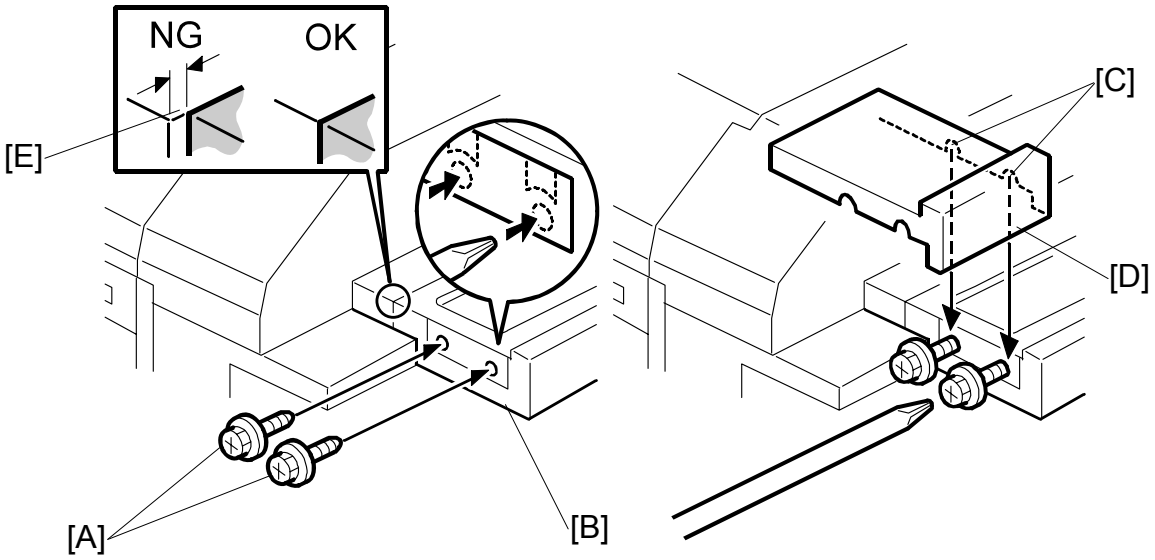
Important

- 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 1-50.
- 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 1-50.

Attaching the Corner Plates for the B478/B706

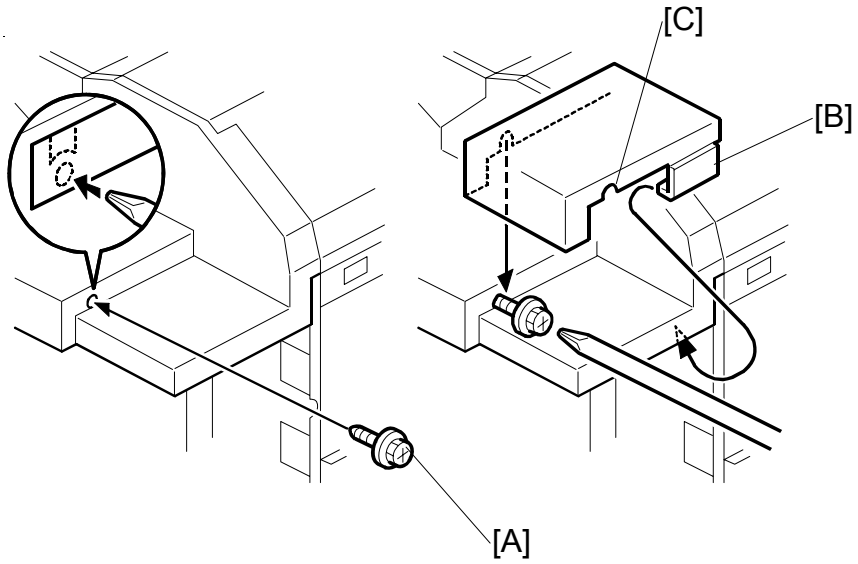
The corner plates are installed on the B478/B706 only. Attach the cover interposer tray to the finisher before you attach the corner plates.

Right Rear Corner Plate (B478/B706 only)



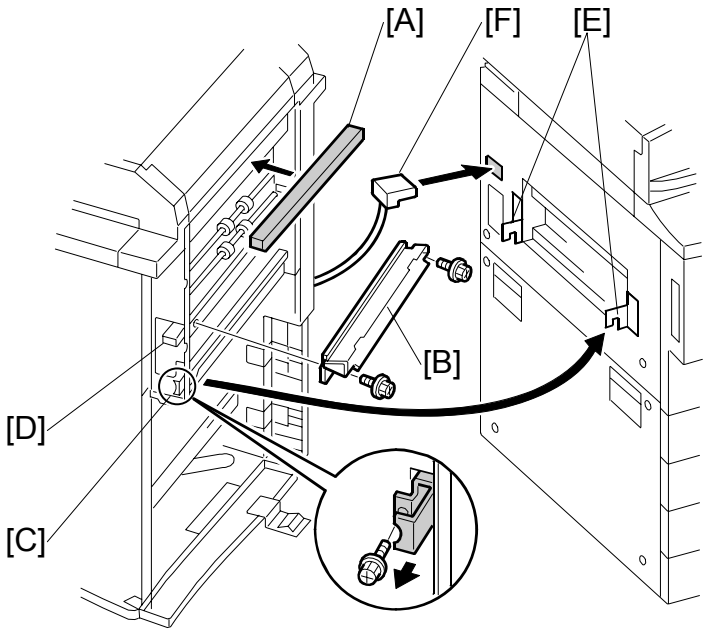
1. Temporarily set the screws [A] (with approximately two turns) at the right end of the finisher extension table [B] (🔩 x 2, tapping M4 x 8)
   NOTE: You cannot see the holes, because there is tape on them. Punch the screws through the holes.
2. Align the notches [C] in the right rear corner plate [D] 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)



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 (🖉 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] (🖉 x 1).
4. Lower the transport guide plate [D].

   Important: **Perform the following carefully. Do not bend the entrance guide plates. Bent guide plates could cause a blockage for paper transport between the finisher and copier.**
5. Slowly push the finisher against the side of the machine until the brackets [E] go into the slots.
6. Attach the lock lever [C] (🖉 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.

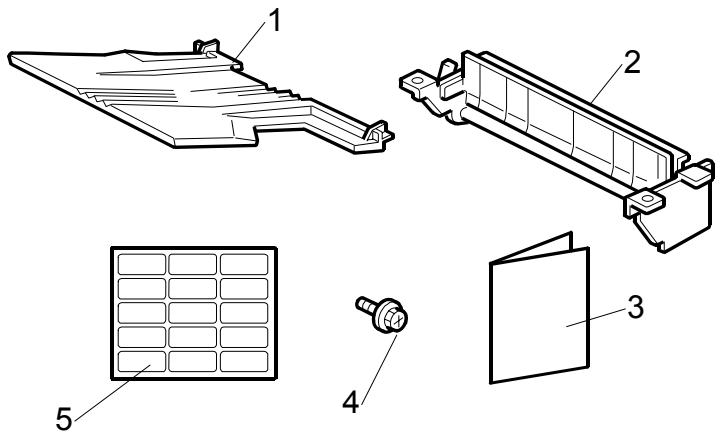
Machine	Correct SP Code
B064 series	SP5959-006
B140 series	SP5158-001 to 008

⇒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. Installation Instructions	1
4. Tapping screws - M3 x 8	6
5. Decals (bin display)	1

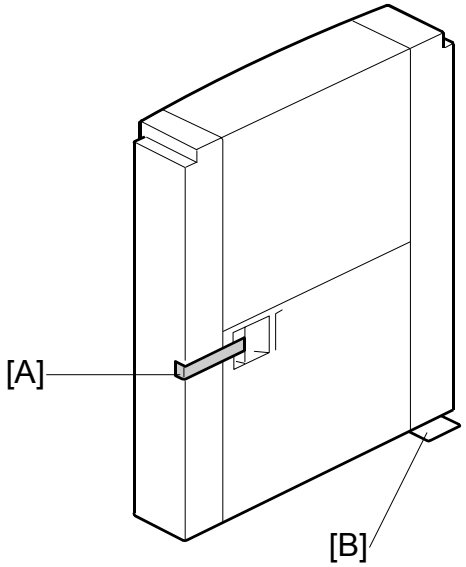


1.9.2 INSTALLATION PROCEDURE

Important! The 9-Bin Mailbox B471 can be installed and used only with a B064 Series or B140 Series machine. The B471 cannot be installed on a B246 machine.

Removing Tapes and Retainers

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

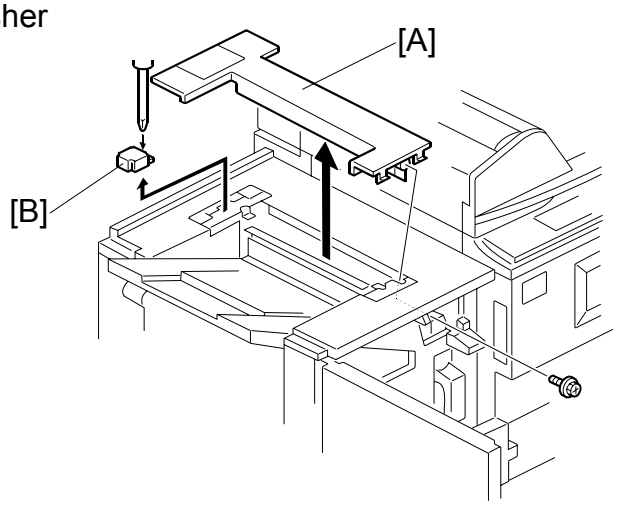


Installation

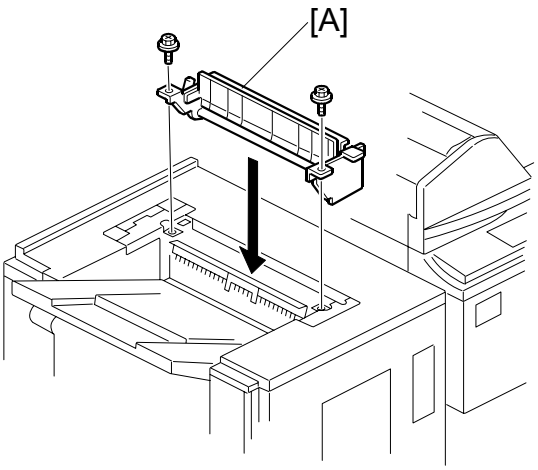
⚠CAUTION
Switch the machine off and unplug the machine before starting the following procedure.

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.

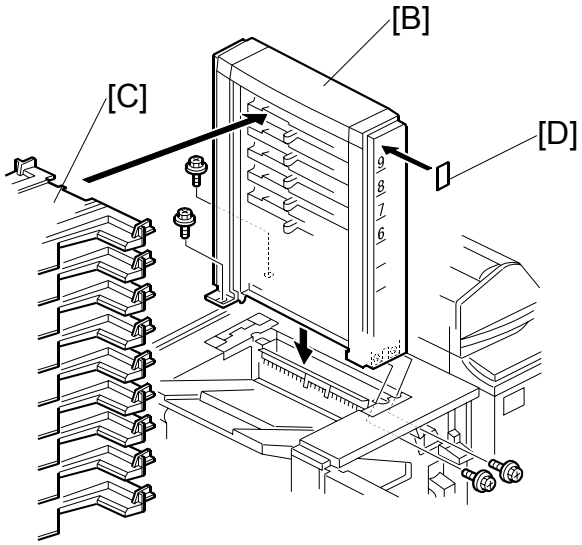
1. Remove the top cover [A] of the finisher (🖉 x 1).
2. Remove the bracket [B] (🖉 x 1).
   NOTE: Loosen the screw. Do not remove it.



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



4. Attach the mailbox [B] to the top of the finisher (🔩 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.

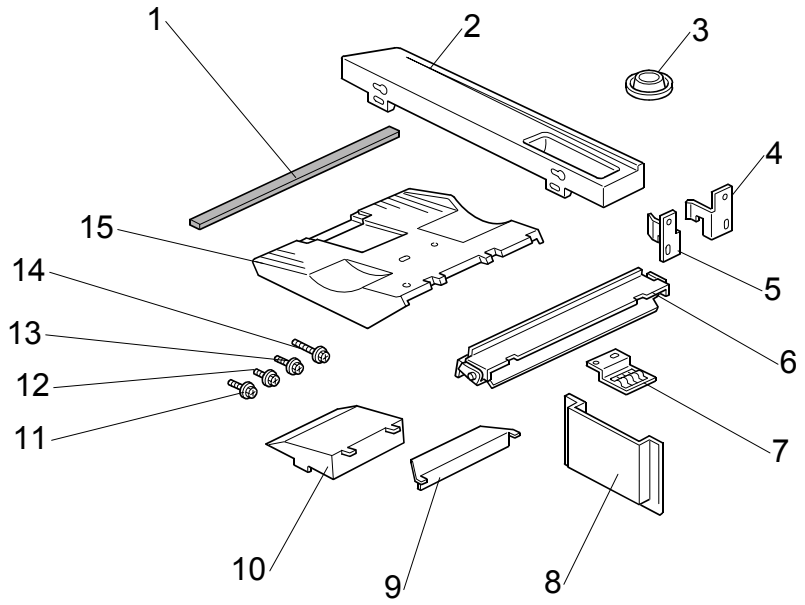


1.10 3000 SHEET FINISHER (B478/B706)

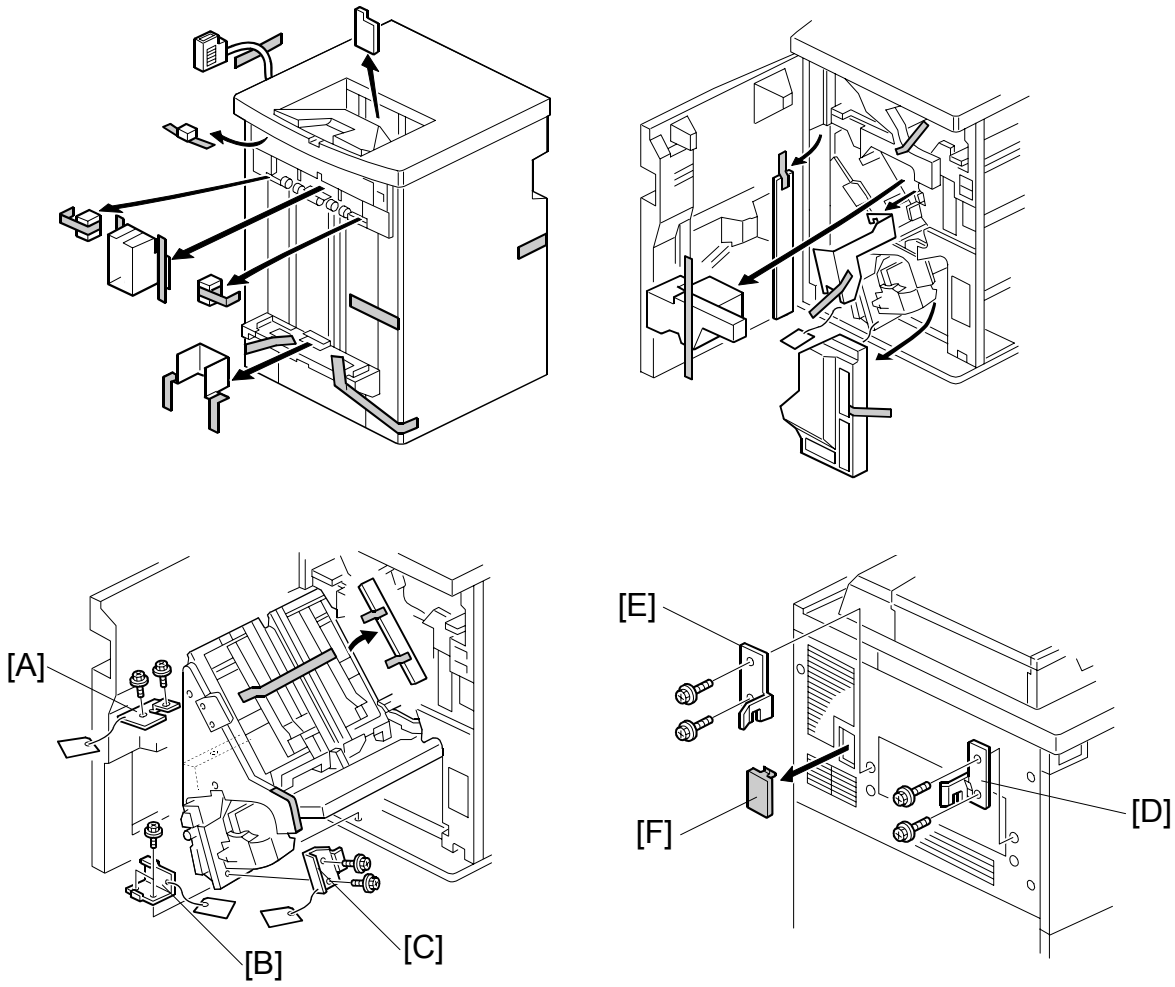
1.10.1 ACCESSORY CHECK

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



1.10.2 INSTALLATION

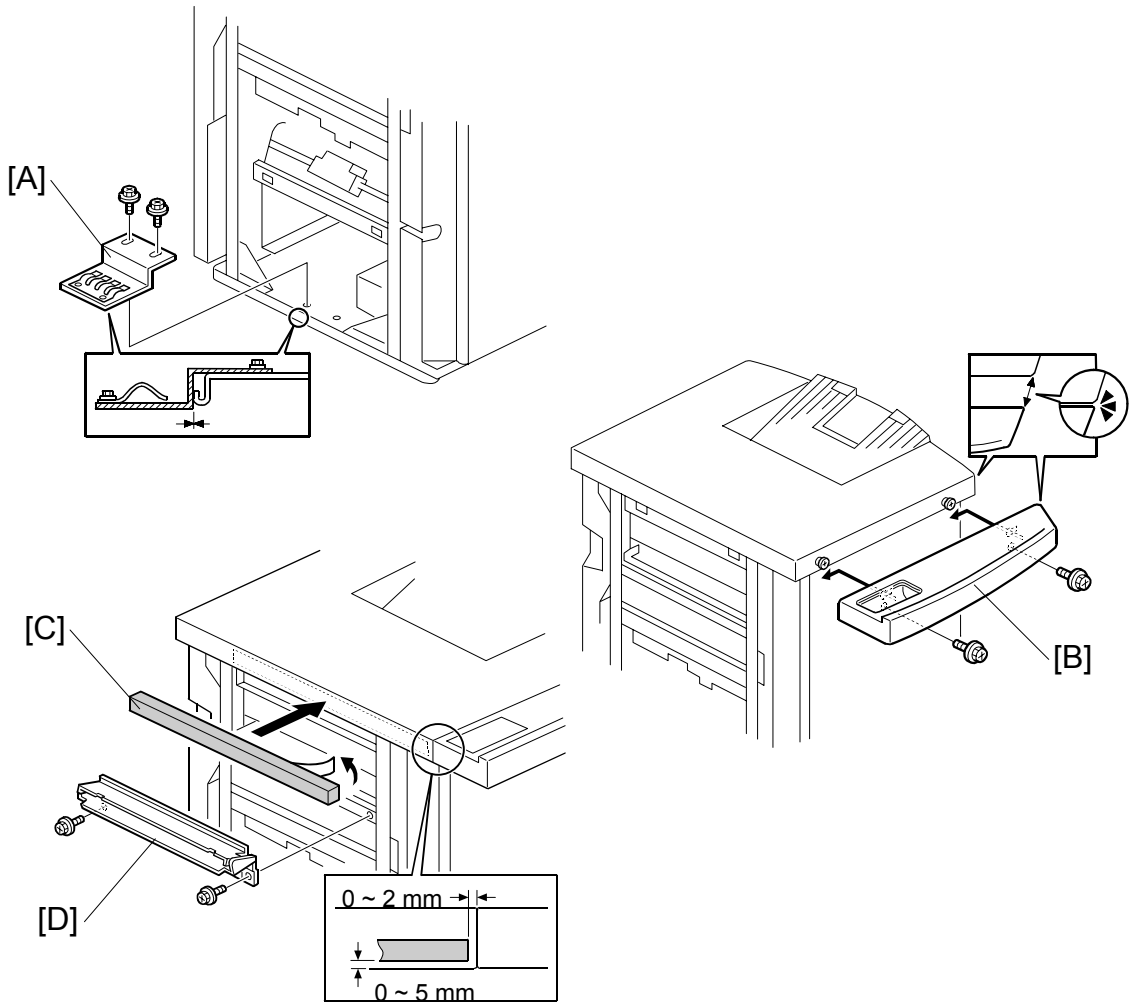


Important!

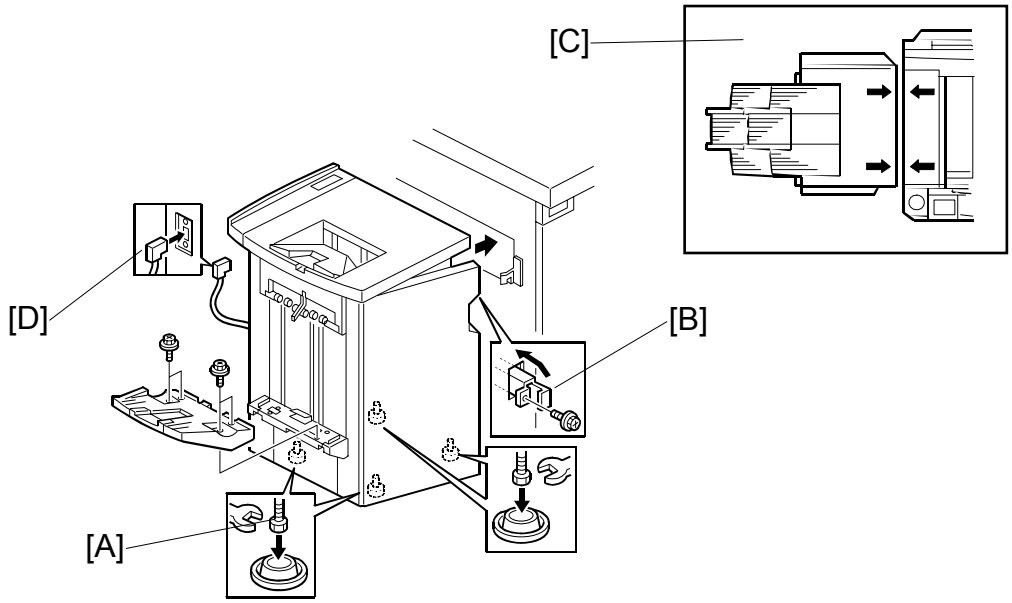
- The 3000-Sheet Finisher B478 can be installed and used only on a B064 Series machine.
- ⟹ The 3000-Sheet Finisher B706 can be installed and used only on a B140, B246 or D052 Series machine.

⚠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] (🔩 x 2 each).
3. Install the front joint bracket [D] and rear joint bracket [E] (🔩 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] (☞ x 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 (☞ x 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] (☞ x 2) (M3 x 6).



9. Attach the shift tray [A] (☞ 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] (☞ 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.

1.10.3 MOVING THE FINISHER TO A NEW LOCATION

Before you move the finisher, do SP6107-003. This moves all the finisher 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.

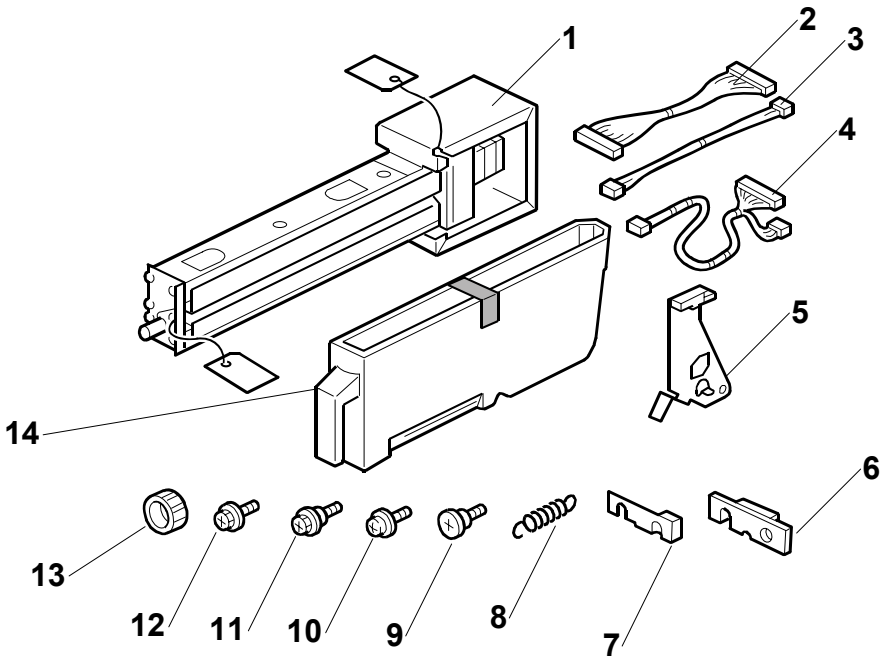
1.11 PUNCH UNIT (B531/B812)

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

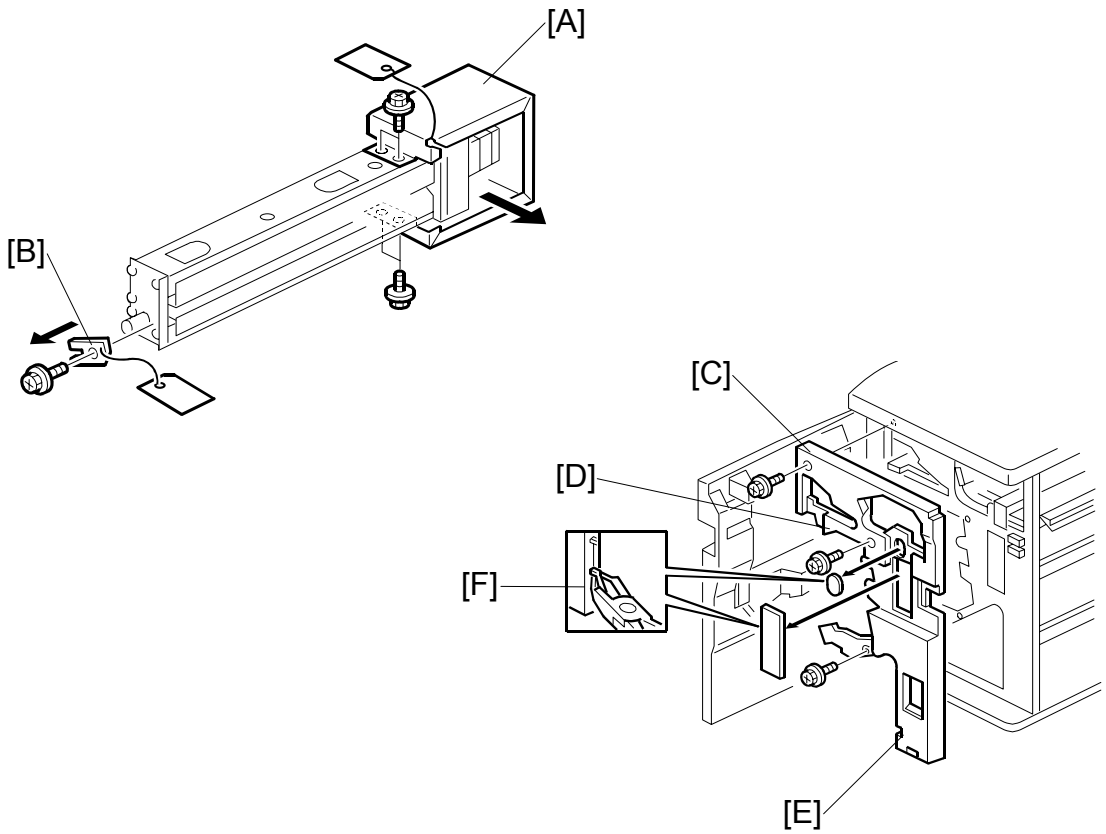
1.11.1 ACCESSORY CHECK

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



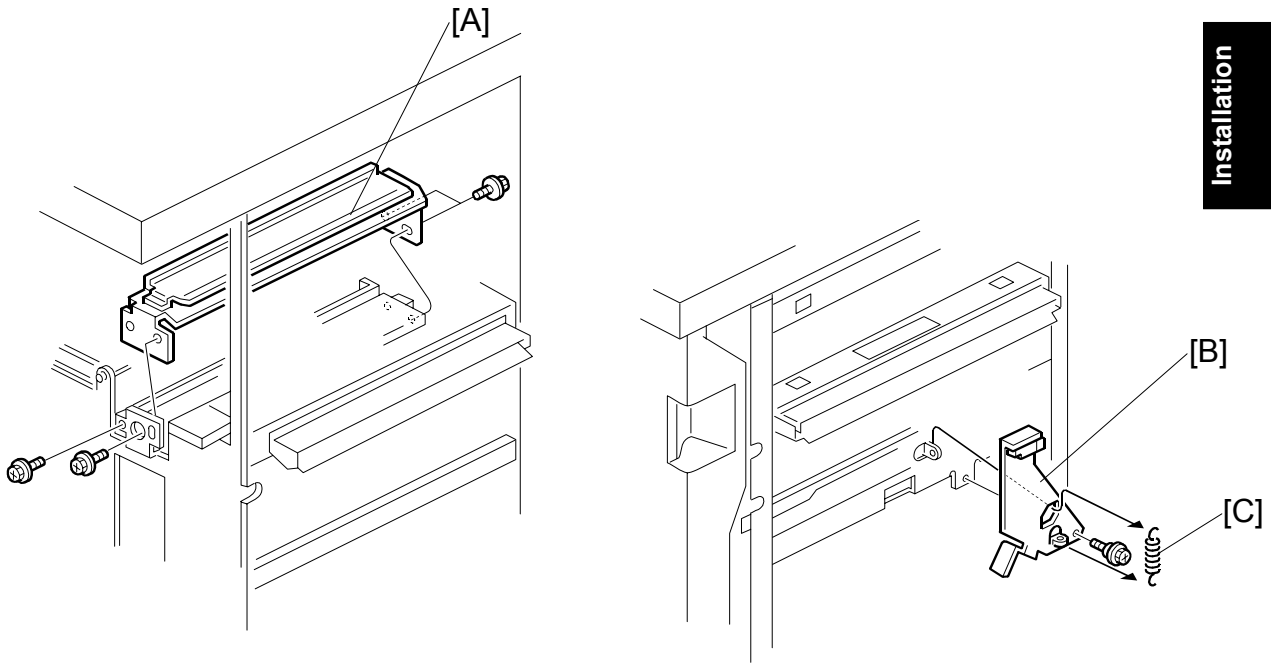
1.11.2 INSTALLATION



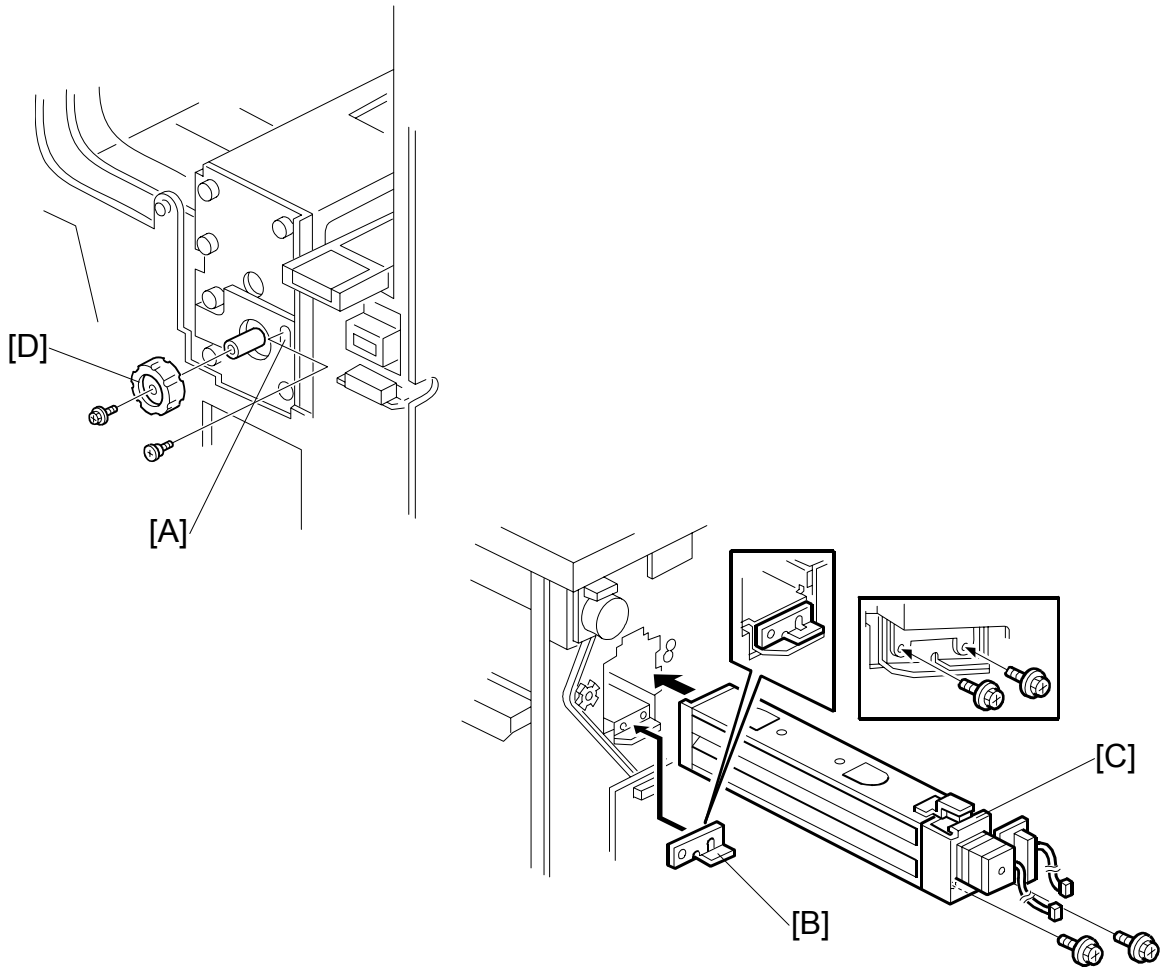
⚠CAUTION

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

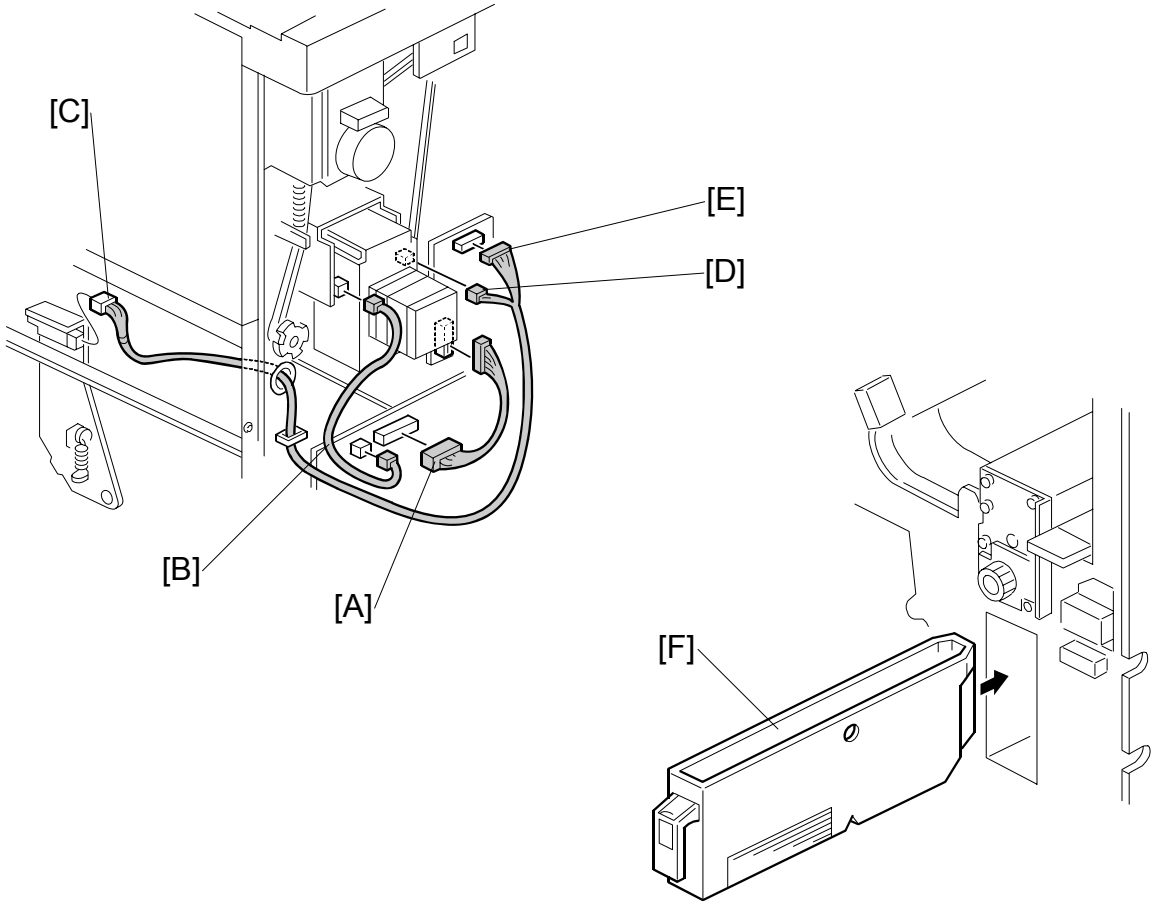
1. If the finisher is connected to the machine, disconnect it.
2. Open the front door and remove the rear cover (🔩 x 2).
3. Unpack the punch unit and remove the motor protector plate [A] (🔩 x 4) and the cam lock plate [B] (🔩 x 1).
4. Remove the inner cover [C] (🔩 x 3).
5. Behind the inner cover at [D] 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] (x 4).
8. Install the sensor arm [B] (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].



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

1.12 JOGGER UNIT (B513)

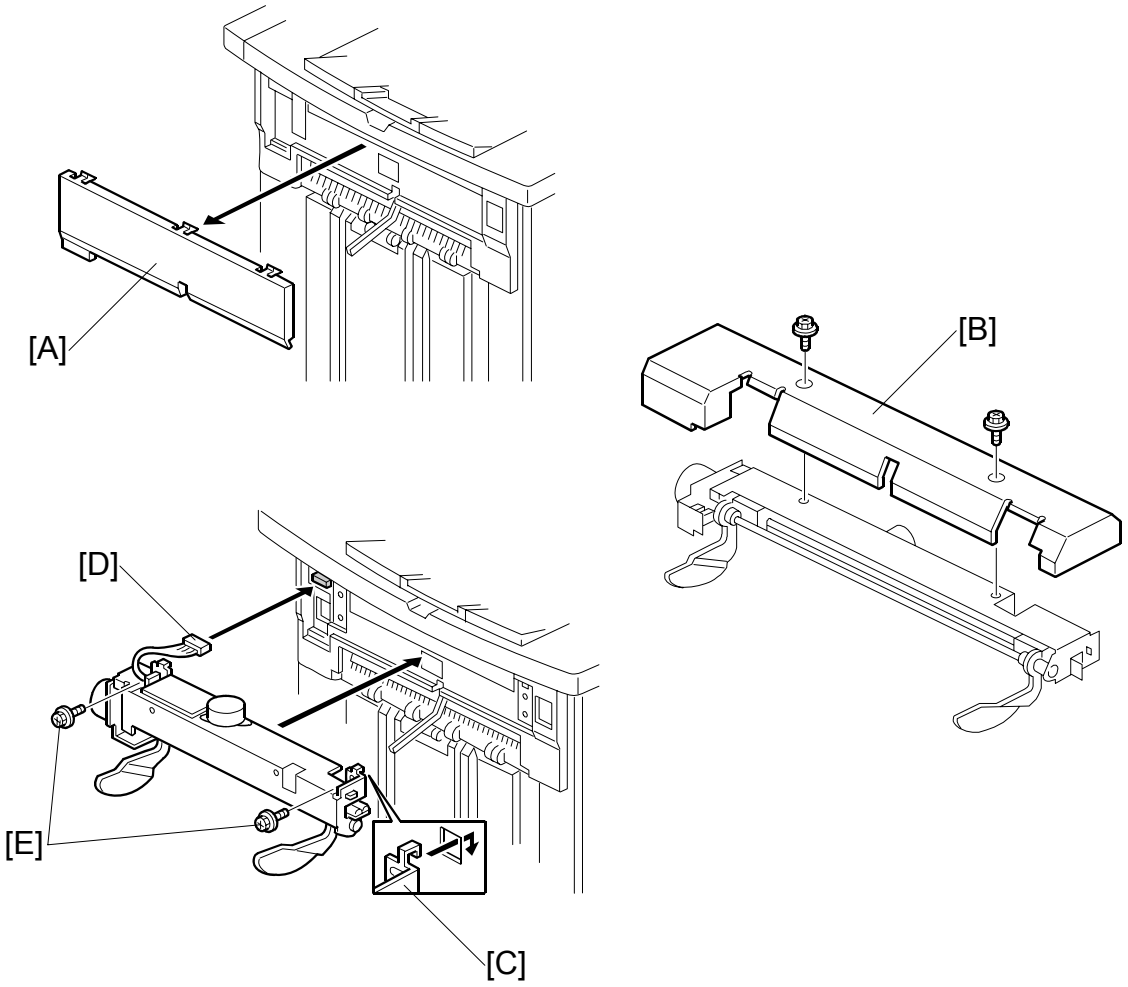
The Jogger Unit B531 can be installed only on the 3000-Sheet Finisher B478/B706.

1.12.1 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

1.12.2 INSTALLATION PROCEDURE



1. Turn the main machine switch off and disconnect the finisher from the main frame.
2. Use the flat head of a screwdriver 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).

1.13 Z-FOLDING UNIT (B660)

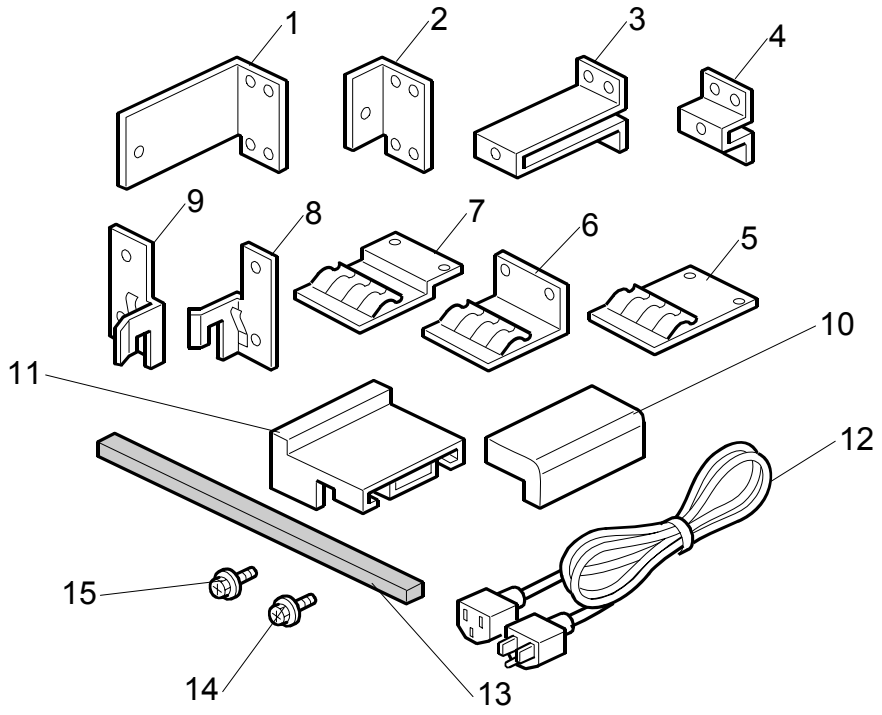
1.13.1 ACCESSORY CHECK

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)**



1.13.2 INSTALLATION PROCEDURE

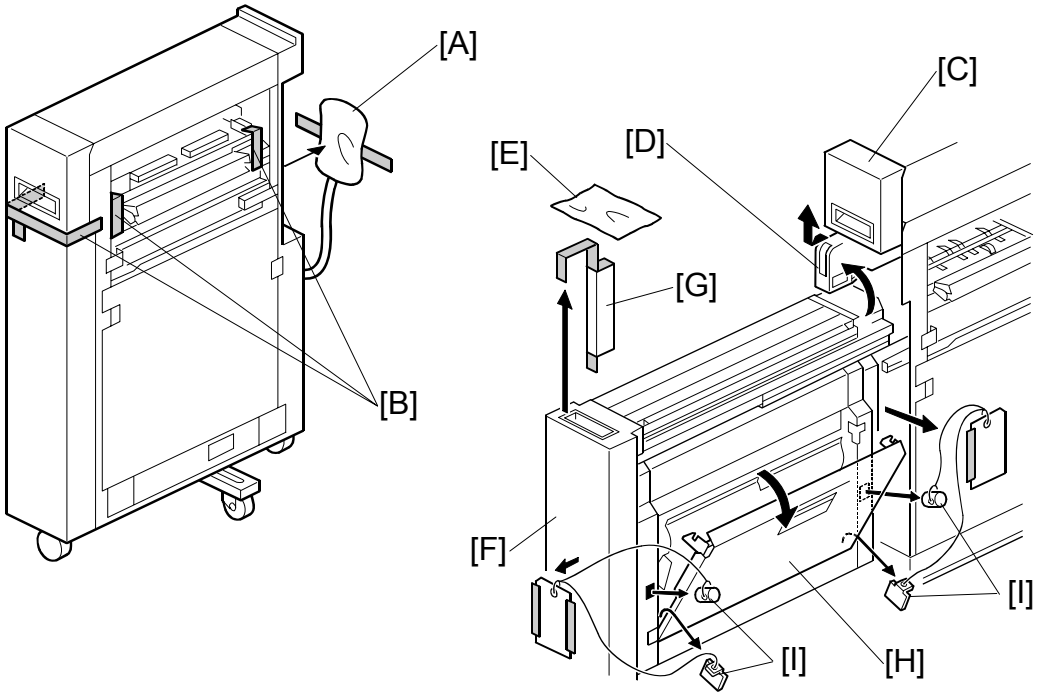
Important!

⇒ • The Z-Folding Unit B660-17, -26, -27 can be installed and used only on the B674 Finisher (B140 series).
• The Z-Folding Unit B660-57, -66, -67 can be installed and used only on the B700 or B701 Finisher (B246 series).

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.)
- Be cautious when installing the Z-Fold Unit B660. The unit may not be fully stable until attached to the finisher. Be Careful not to tilt the Z-Fold Unit as you perform the following procedures.

Unpacking

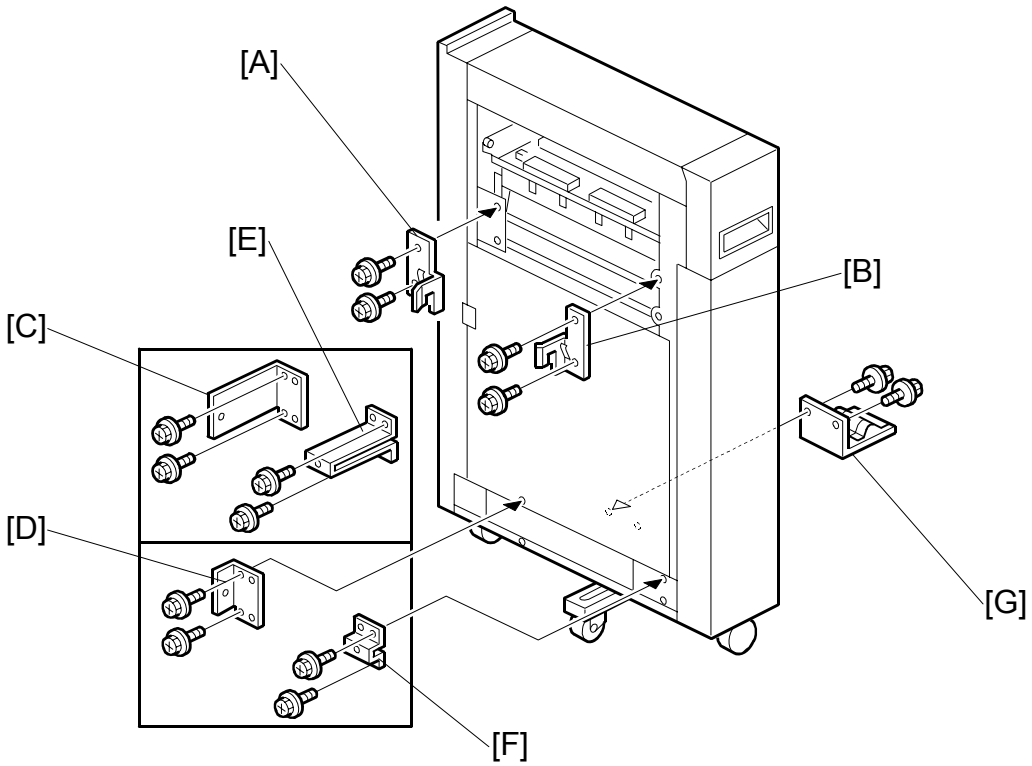


⚠CAUTION

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

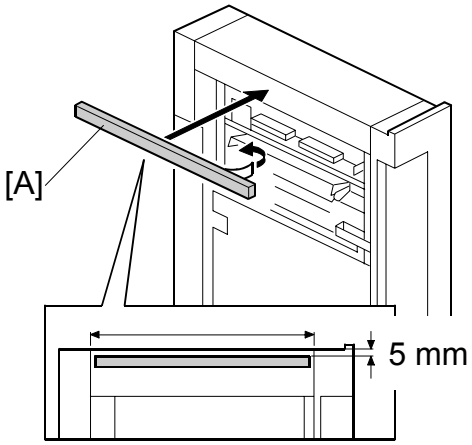
1. Detach the head of the I/F connector [A].
2. Remove all tape [B] from unit.
3. Open the front door [C].
4. Raise the horizontal transport plate [D] and remove the cushion [E].
5. Pull out the Z-folding mechanism [F] and remove the cushion [G].
6. Open the right vertical transport cover [H].
7. Remove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

Docking to the Finisher

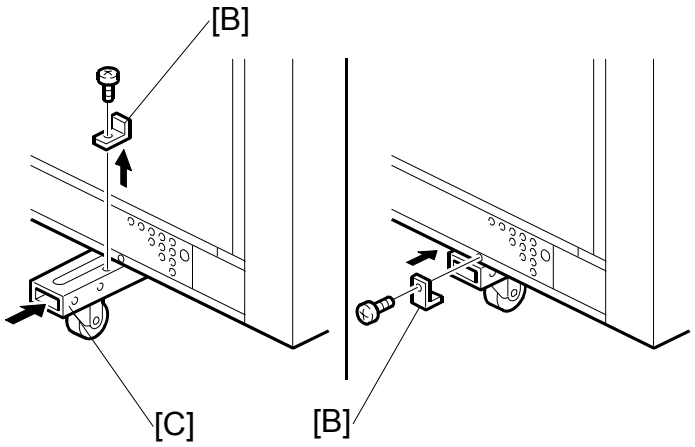


1. Remove the back cover of the finisher (🔩 x 2).
2. Attach the left docking bracket [A] to the Z-folding unit (🔩 x 2) (Bracket provided with the finisher).
3. Attach the right docking bracket [B] to the Z-folding unit (🔩 x 2). (Bracket provided with the finisher).
4. Attach the rear locking bracket (🔩 x 2).
   - Attach rear bracket [C] if the cover interposer tray is installed.
   - Attach rear bracket [D] if cover interposer tray is <u>not</u> installed.
5. Attach the front locking bracket (🔩 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 <u>not</u> installed.
6. Attach the ground plate [G] to the Z-folding unit (🔩 x 2).

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

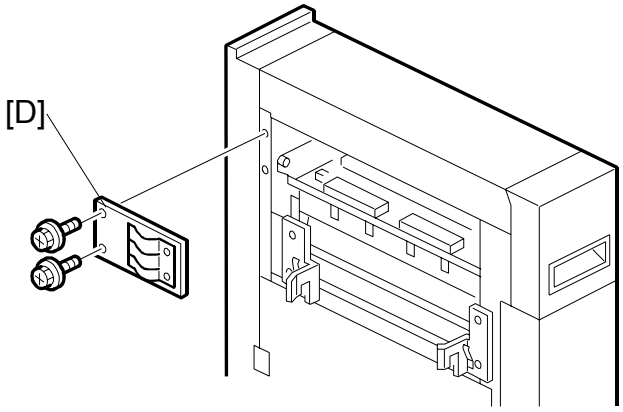


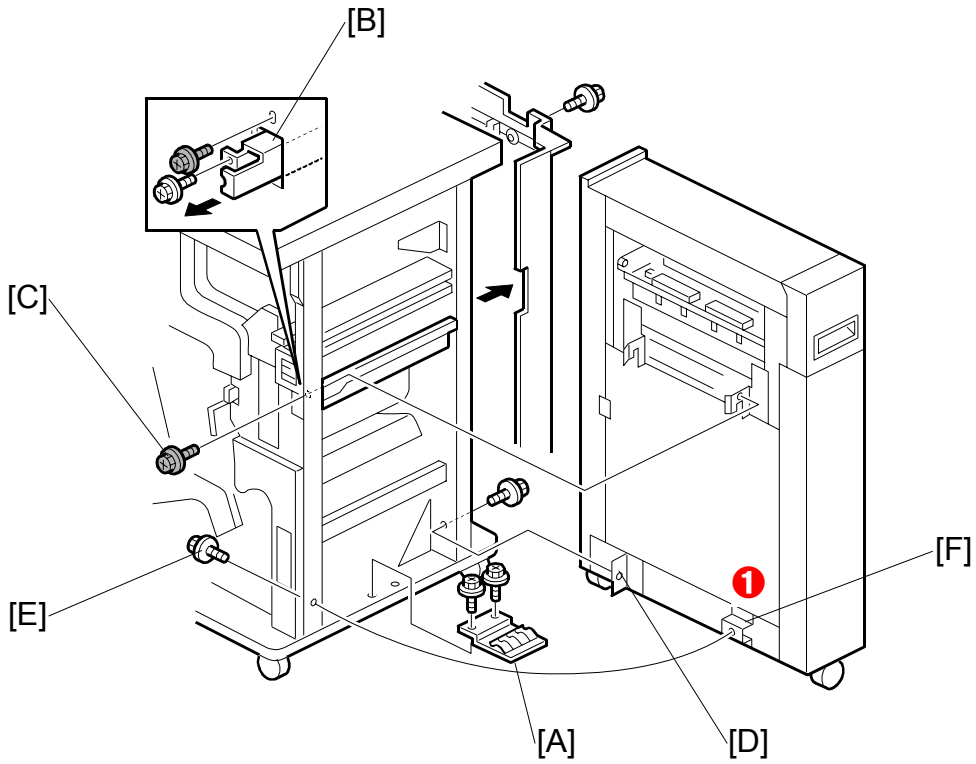
2. At the left bottom edge of the Z-folding unit, remove the bracket [B] (🔩 x 1).
3. Push in the support [C].
4. Reattach the bracket [B] (🔩 x 1).



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

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





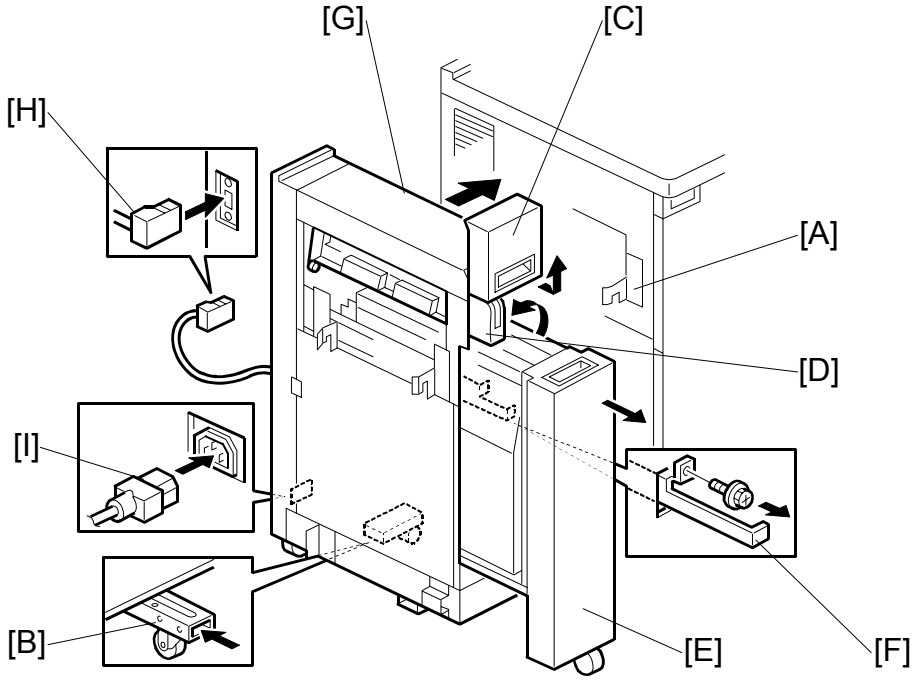
6. Attach the ground plate [A] (🔩 x 2) to the finisher (or the cover interposer tray).
   NOTE: This is the ground with the flat plate attached with 2 vertical screws.
7. Open the front door of the finisher.
8. Pull out the lock lever [B] of the finisher (🔩 x 1).

   -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] (🔩 x 1).
11. Fasten screw [E] to front lock bracket [F].

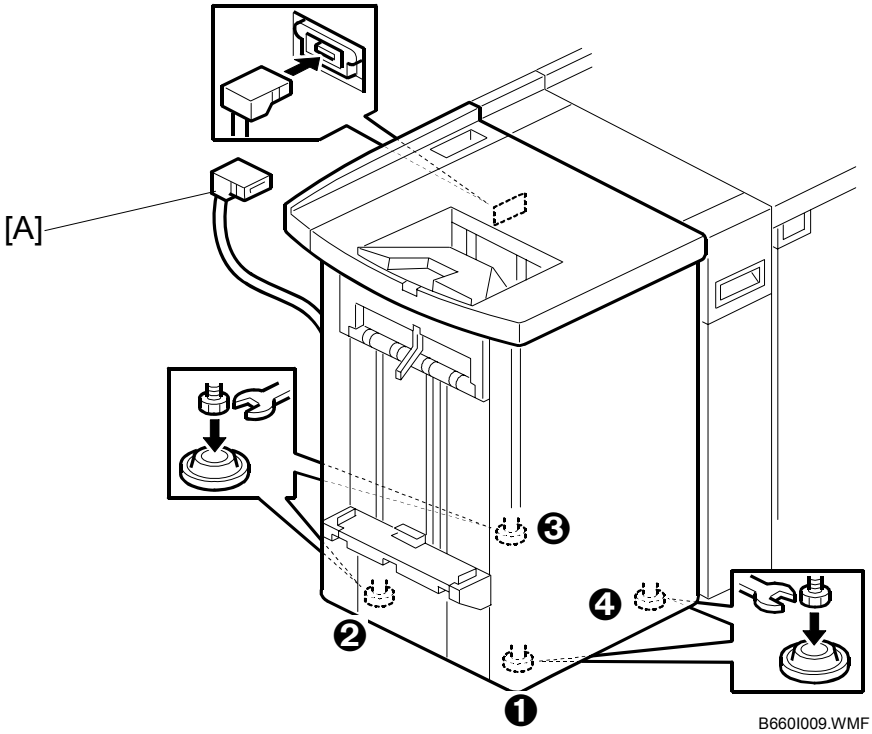
    NOTE:
    - Screw [E] is not needed if the Z-folder will be installed with a B246 Series machine and the SR4000 B700 or SR970 B701.
    - However, both brackets are required. Do not remove bracket ❶.
12. Fasten the rear lock bracket [D] (🔩 x 1).

Docking to the Main Frame



1. Fasten the two docking brackets [A] (provided with the Z-folding unit) to the main machine (🔩 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] (🔩 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 (🔩 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.

⇒



13. Reattach the finisher rear cover (🖉 x 2).
14. Connect the I/F cable [A] of the finisher to the Z-folding unit.
15. Raise or lower the nuts ❶,❷,❸,❹to level the machine.

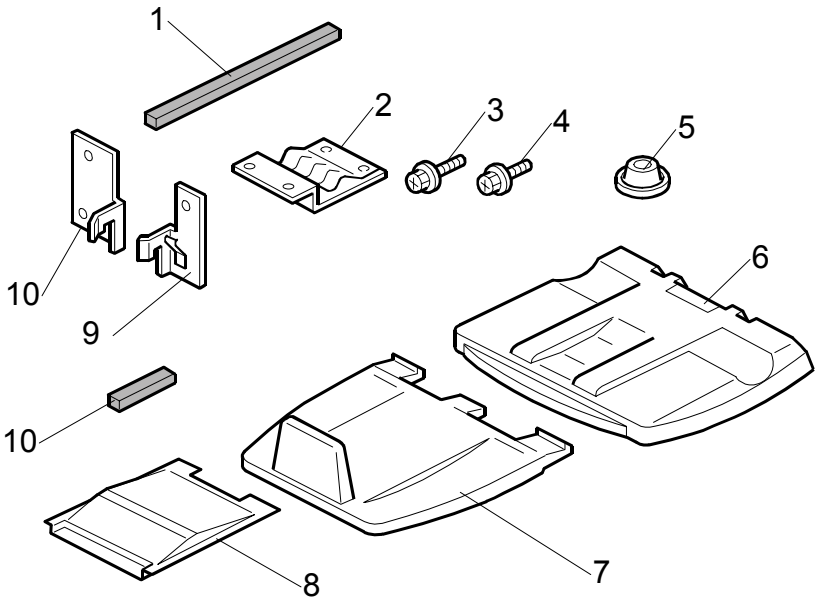
1.14 2000/3000 SHEET FINISHERS (B700/B701)

1.14.1 ACCESSORIES

Check the accessories from the box against the following list.

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

*1 3 screws M3x6 are provided for the B700.



1.14.2 INSTALLATION PROCEDURE

This section describes the common installation instructions for two peripheral devices:

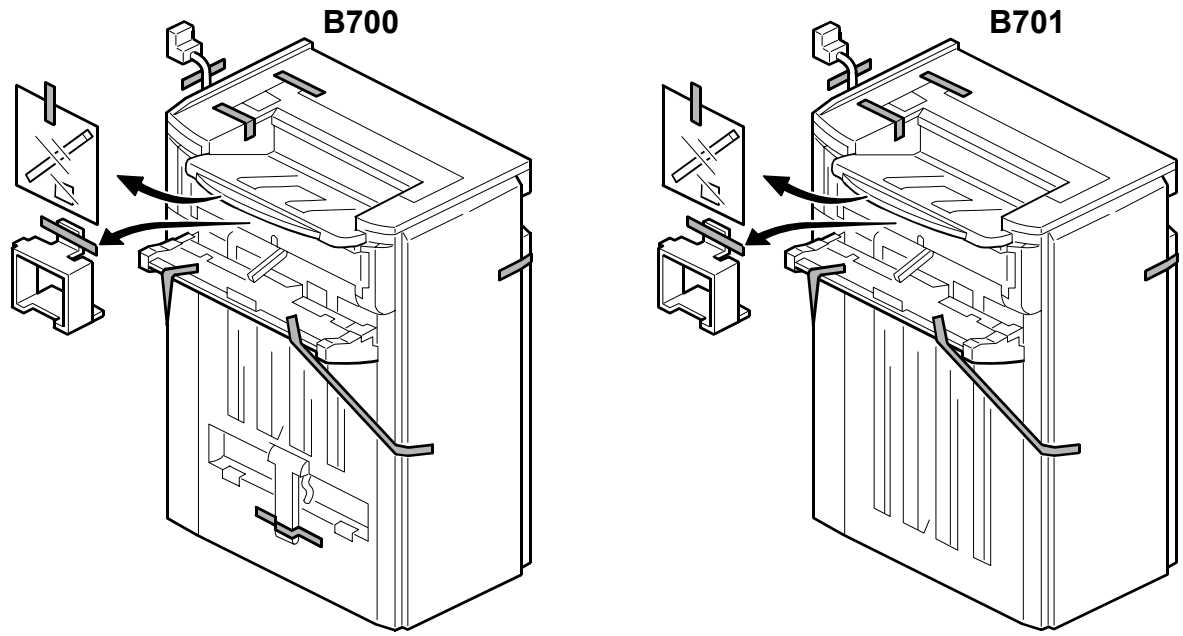
- **B700 Booklet Finisher.** Does punching, shifting, corner stapling, and booklet (saddle-stitch) stapling.
- **B701 Finisher**. Does punching, shifting, and corner stapling but no booklet (saddle-stitch) stapling unit.

Important!

⇒
- The 2000-Sheet Finisher B700 can be installed only on a B246/D052 Series machine.
- The 2000-Sheet Finisher B701 can be installed only on a B246/D052 Series machine.

NOTE: Differences in the installation procedures are noted as "**B700**" or "**B701**".

Removing Tapes and Retainers

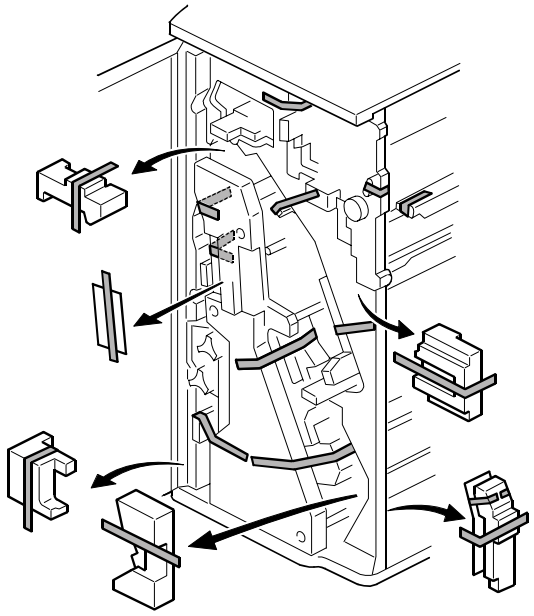


⚠WARNING!

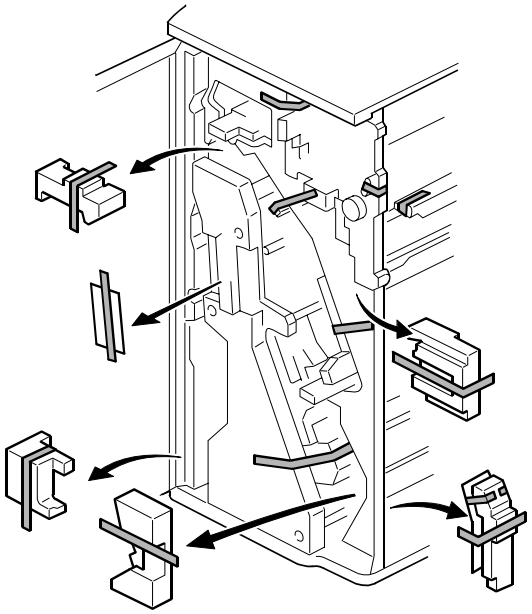
Always turn the machine off and unplug the machine before doing any of the following procedures.

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

B700

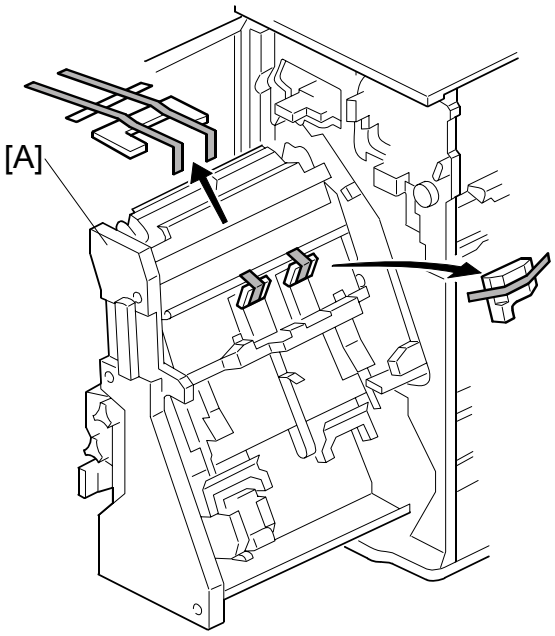


B701

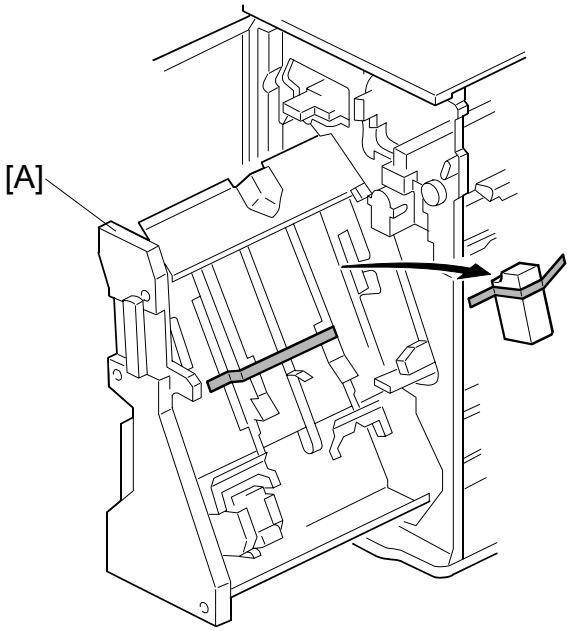


3. Open the front door.
4. Remove all tapes and shipping retainers inside the finisher.

B700

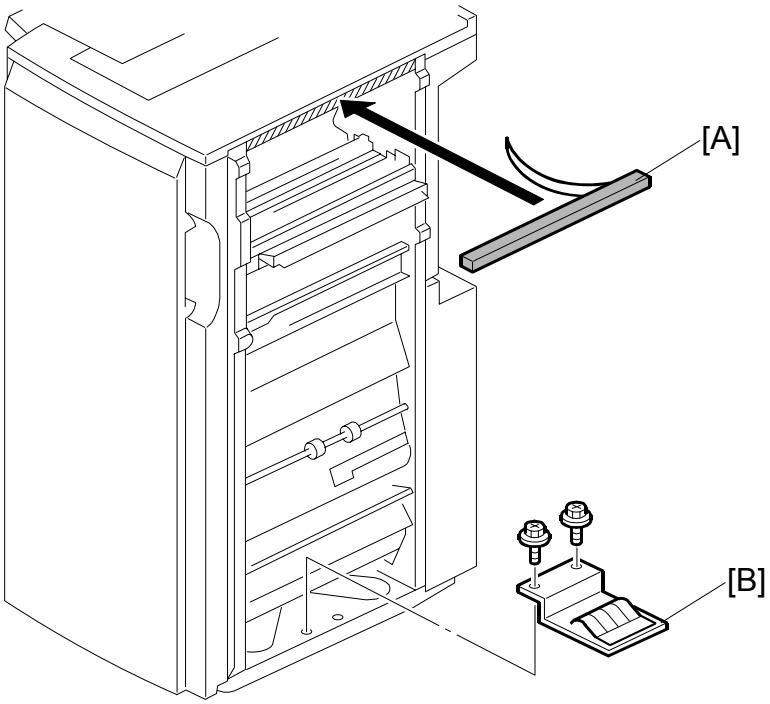


B701

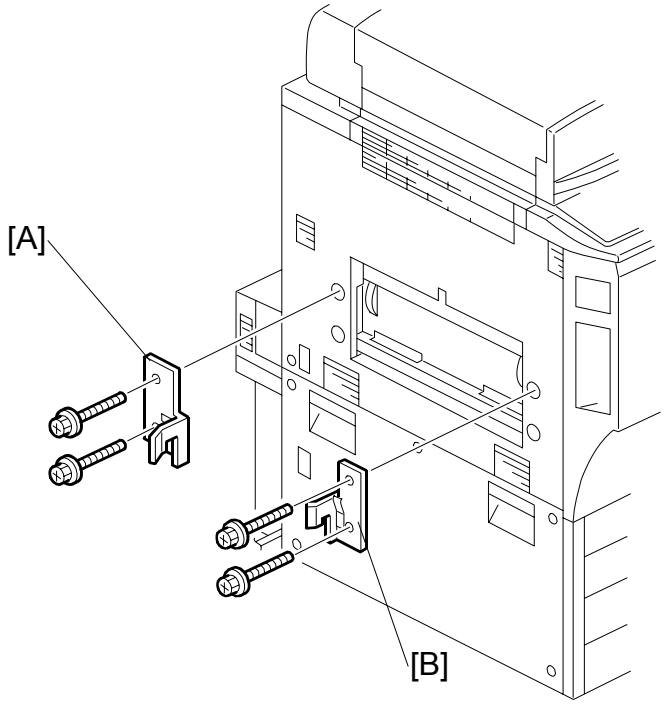


5. Pull out the jogger unit [A].
6. Remove the tapes and retainers.

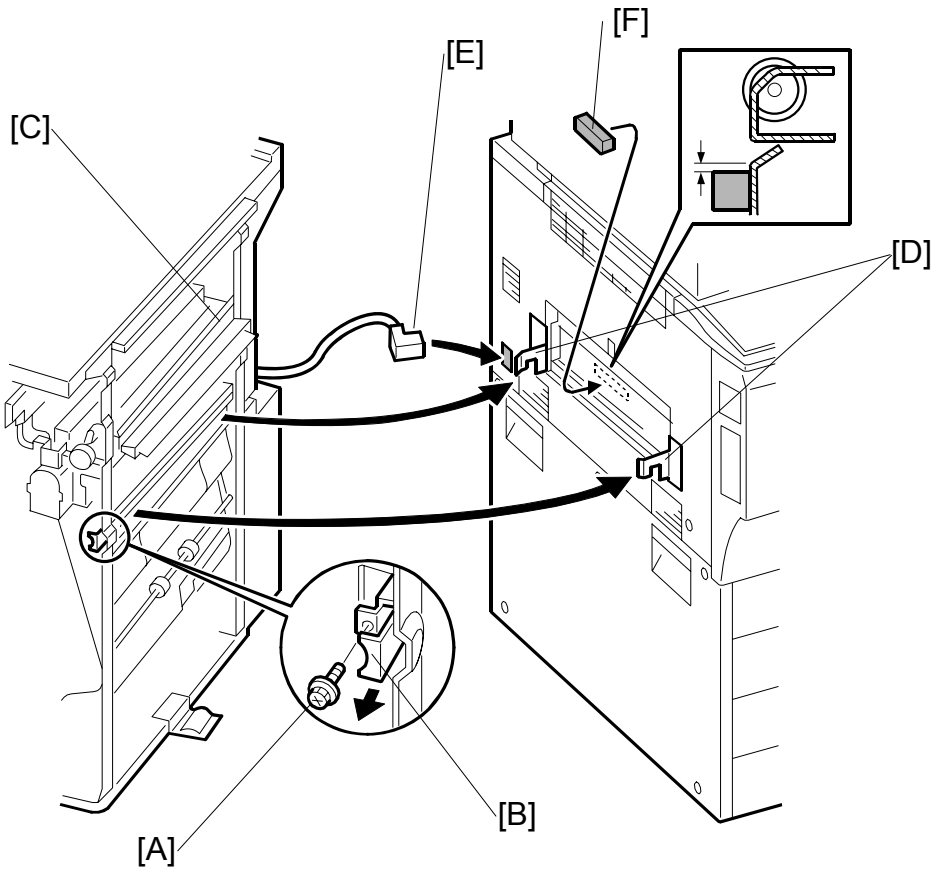
Docking the Finisher



7. If you are not installing the Cover Interposer B704, peel the strip from the sponge cushion [A] and attach it to the finisher then go to the next step.
   If you are installing the Cover Interposer B704:
   - Do not attach the sponge cushion to the finisher. It must be attached to the cover interposer.
   - Do not attach the grounding plate [B] to the finisher. It must be attached to the cover interposer.
   - Install the interposer now. The cover interposer must be installed before you dock the finisher to the copier.
9. Use a short screwdriver to attach the grounding plate [B] (🔩 x 2, M3 x 6).



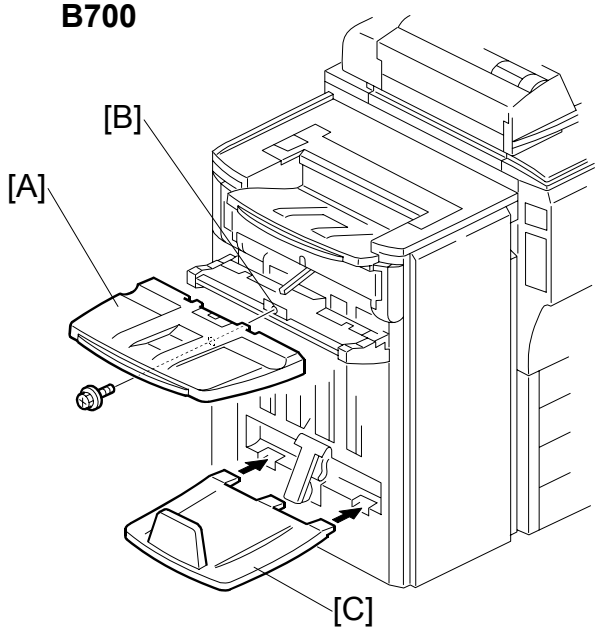
10. Attach the rear bracket [A] (☞ x 2, M4 x 14).
11. Attach the front bracket [B] (☞ x 2, M4 x 14).



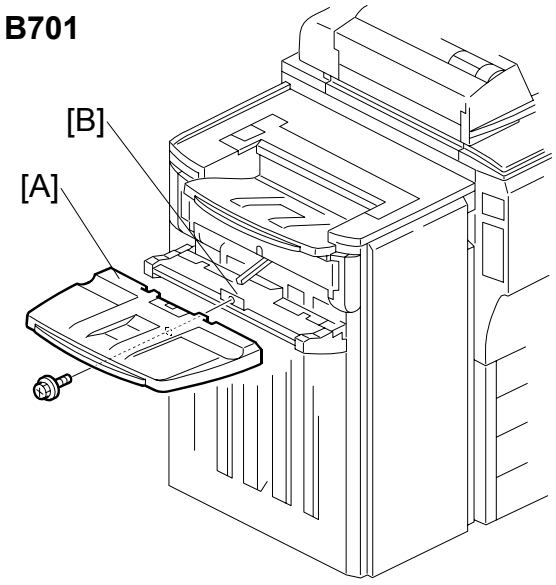
12. Remove the screw [A] to release the lock lever [B] (x 1).
13. To avoid bending and damaging the paper entrance guide plates [C], slowly push the finisher against the side of the machine until the brackets [D] enter their slots.
14. Attach and tighten the screw removed in Step 11.
15. Connect connector [E] to the main frame.
16. Attach the gasket seal [F] as shown.

Attaching the Trays

B700

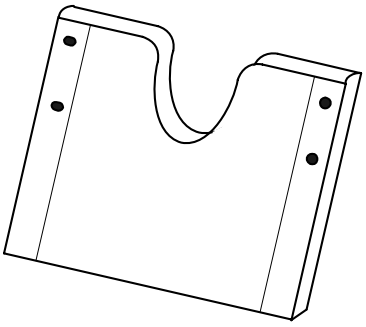


B701



B700

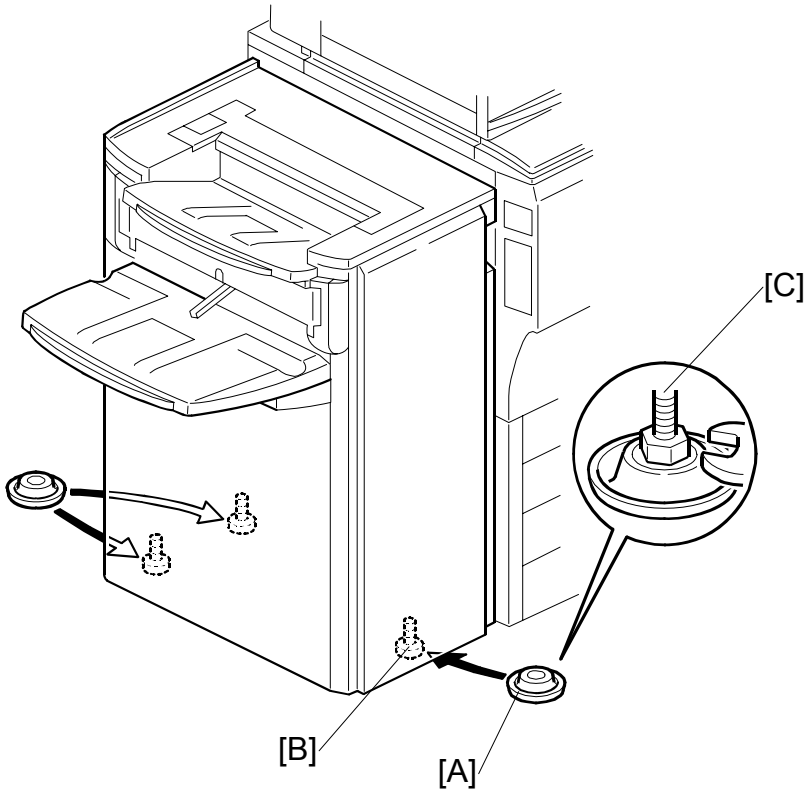
1. Attach the upper output tray [A] (🔩 x 1, M3 x 8).
   NOTE: Make sure the metal plate [B] overlaps the tray.
2. Attach the lower output tray [C].
3. Use the round-head rivet (provided accessory) to fasten the auxiliary tray storage pocket to rear cover of the finisher.
4. Place the auxiliary trays for the shift tray and proof tray in the pocket.



B701

1. Attach the output tray [A].
   NOTE: Make sure the metal plate [B] overlaps the tray.

Leveling the Finisher



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

Selecting the Staple Supply Name

Enter the SP mode and execute the following information.

5841*	Supply Name Setting	These names appear when the user prints the Inquiry List Press the Counter key, then press 'Print Inquiry List'. Press the Inquiry button on the initial User Tools screen.
013*	Staple Std	Enter the name of the staples in use for normal stapling (not booklet stapling). This setting should be done for both the B700 and B701.
022	Staple Bind	Enter the name of the staples in use for booklet stapling (saddle-stitching). This setting is required only for the B700.

Enabling Booklet Binding (B700 Only)

To enable booklet binding (saddle-stitching) for the B700, you must select the center stapling position.

1. Press the User Tools key.
2. Select "Copier/Document Server Features".
3. Select the "Input/Output" tab.
4. Select any "Stapling Position" button then select the center (saddle-stitch) stapling symbol.
5. Exit the User Tools mode. Specify the number of copies, select the center stapling symbol on the operation panel, then start the print job.

Auxiliary Trays

The auxiliary trays are stored in the auxiliary tray storage pocket mounted on the back cover of the finisher.

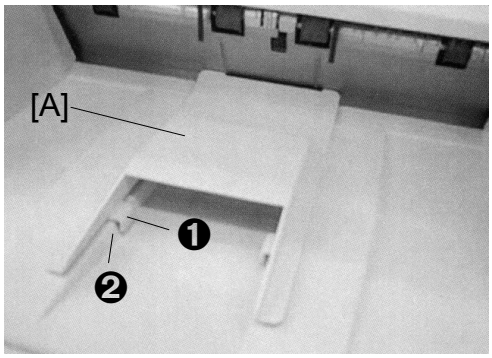
Make sure that the customer understands the following points about these auxiliary trays:

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

Proof Exit Auxiliary Tray

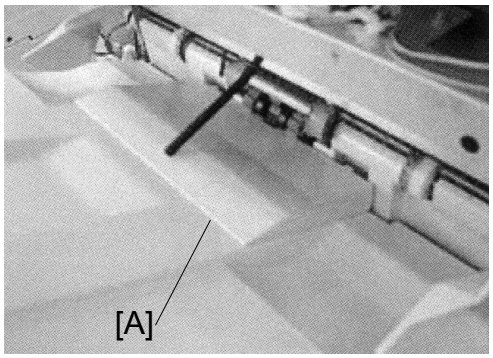
Follow the procedures below to install the auxiliary tray for the proof tray.

1. First, remove the paper form the paper feed tray, turn it upside down, and continue printing. This may solve the problem.
2. If the "Exit Tray Full" alerts continue, set the proof auxiliary tray [A] on the proof tray on the top of the finisher.
3. Make sure that the arms ❶ of the auxiliary tray fit tightly over the ridges ❷ of the proof tray below.



Shift Auxiliary Tray

1. Open and close the front door of the finisher.
   This initializes the finisher and moves the shift tray to the standby position.
2. Open the front door again and leave it open.
3. Set the shift auxiliary tray [A] on the shift tray as shown.
4. Close the front door.
   This initializes the finisher again and moves the shift tray to the new standby position with the auxiliary tray installed.
5. After the Z-folding job is finished, remove the tray and store it in the auxiliary tray storage pocket on the back of the finisher.
6. Open and close the front door to re-initialize the finisher and reset the standby position of the shift tray.



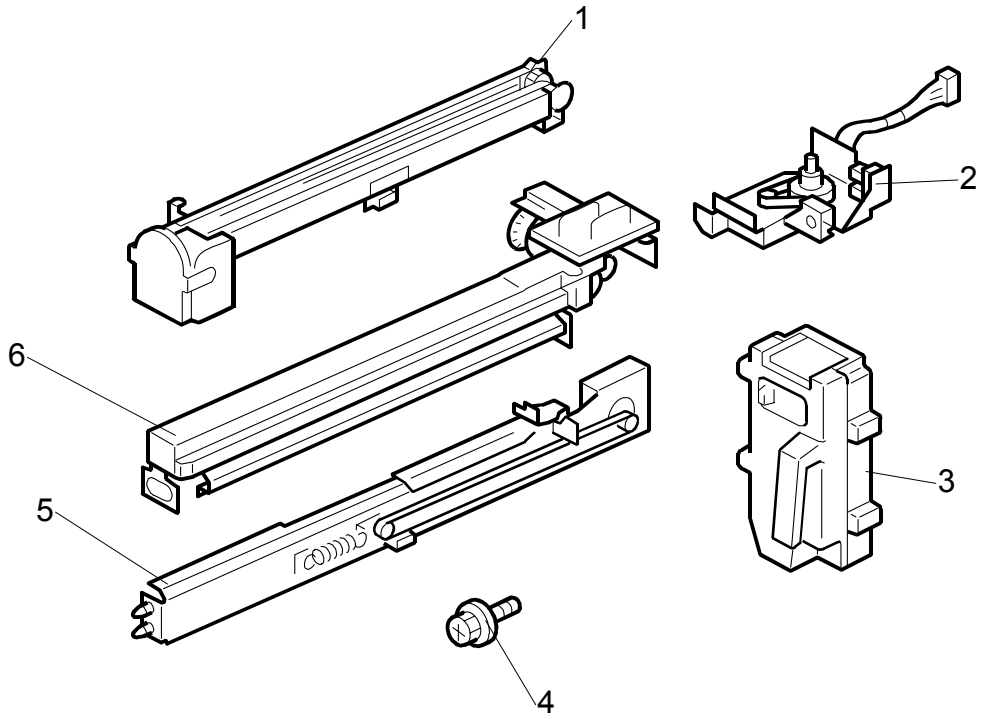
1.15 PUNCH UNIT (B702)

The Punch Unit B702 can be installed only in the 2000/3000-Sheet Finisher B700/B701.

1.15.1 ACCESSORIES

Check the accessories and their quantities against the following list.

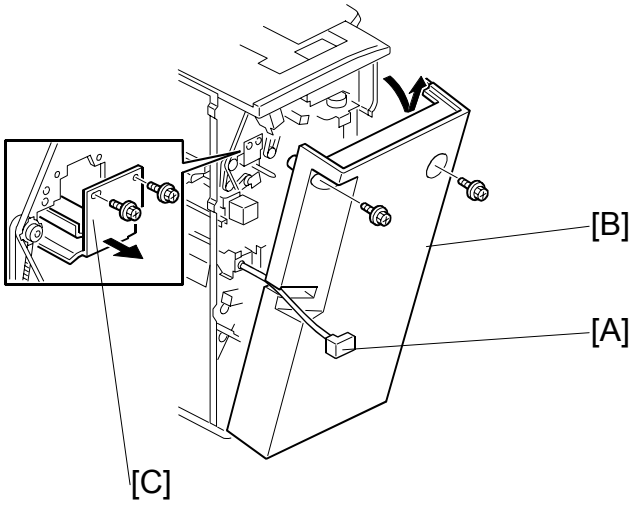
Description	Q'ty
Punchout Waste Unit	1
Slide Drive Unit	1
Punch Waste Hopper	1
Screws (M3 x 6)	5
Side-to-Side Detection Unit	1
Punching Unit	1

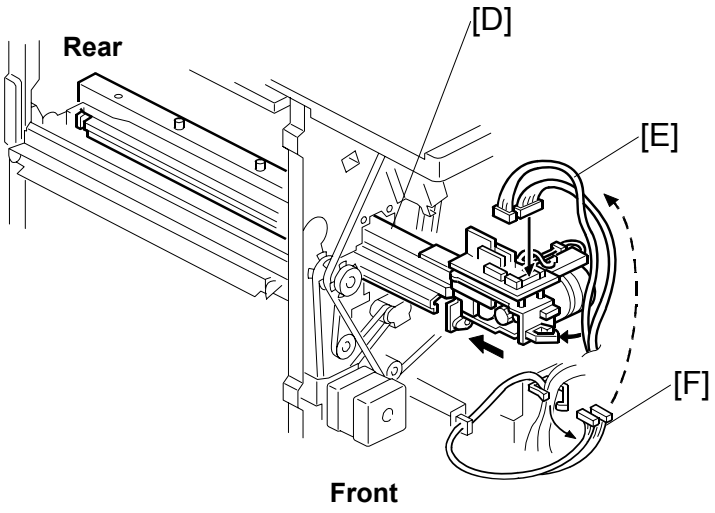


⚠WARNING!

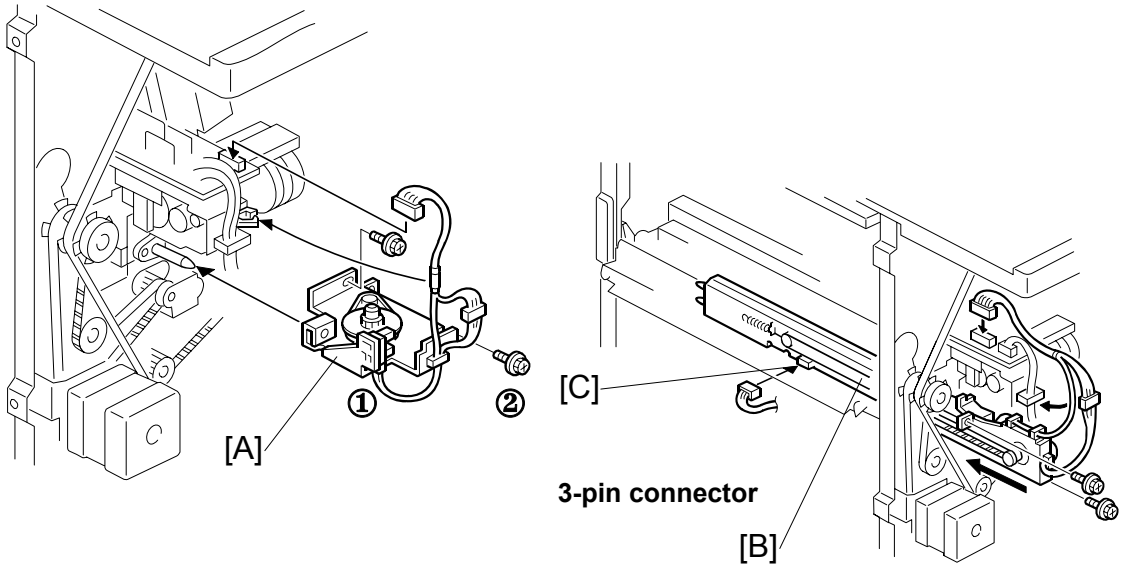
Always turn the machine off and unplug the machine before doing any of the following procedures.

1.15.2 INSTALLATION PROCEDURE

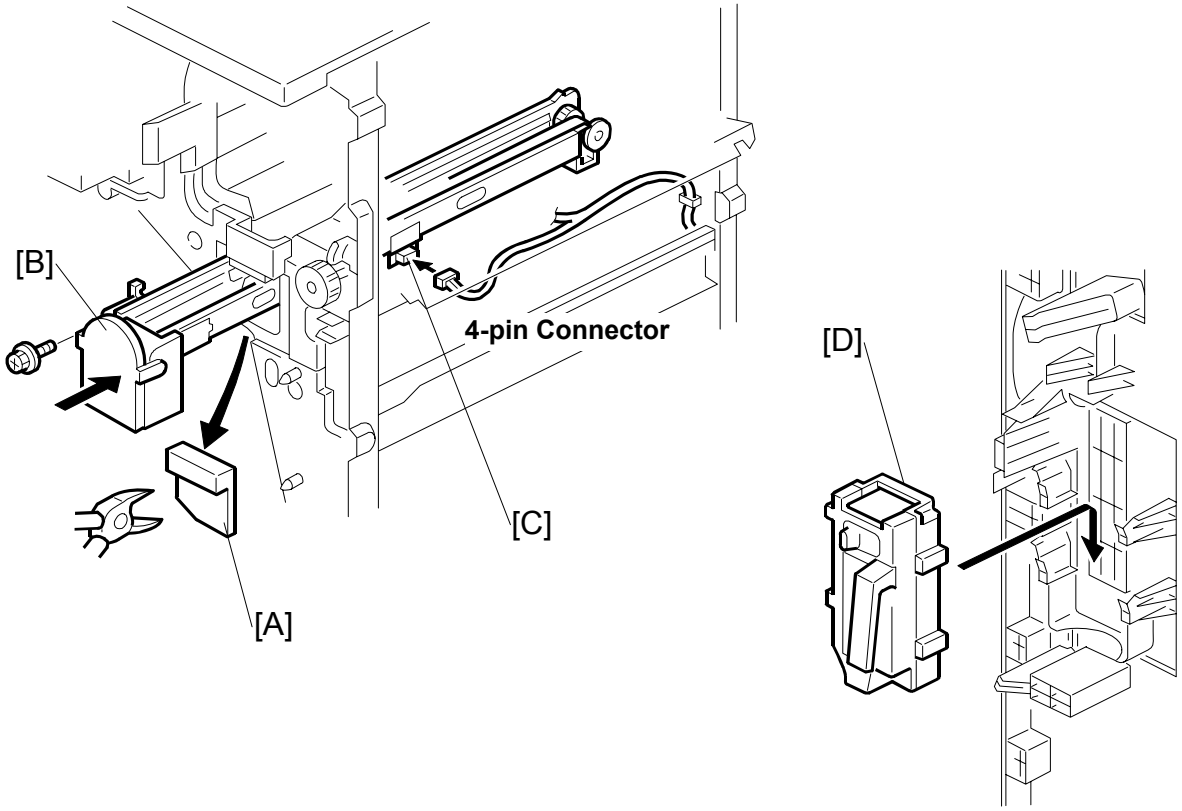




1. If the finisher is connected to the copier, disconnect the power connector [A] and separate the finisher from the copier.
2. Remove the rear cover [B] (x 2) and open the front door.
   NOTE: At the base of the back cover, be sure to disconnect the tabs that fasten the cover to the frame.
3. Remove the guide plate [C] (x 2).
4. Slide the punch unit [D] along its rails into the finisher. Make sure that pin engages correctly at the front and rear.
5. Connect and fasten the punch unit [E] (x 2, x 1).
   NOTE: The connectors are coiled and tied above the PCB on the right.



6. Fasten the slide drive unit [A] to finisher and connect it to the punch unit (x 2, x 1). Press in on the slide drive unit at ① when you attach screw ②.
7. Make sure that the punch unit moves freely and is not blocked by the screws.
8. Insert the side-to-side detection unit [B]. Make sure that the two pins are engaged correctly at the front.
9. Confirm that the side-to-side detection slides smoothly on its rails. If it does not, make sure that the rails are aligned with their grooves.
10. Fasten the side-to-side detection unit and connect it at the rear (x 2, x 1, x 1).
11. Pull the short connector out of the connector [C] then connector it (x 1).
    NOTE: This is the 3-pin connector.



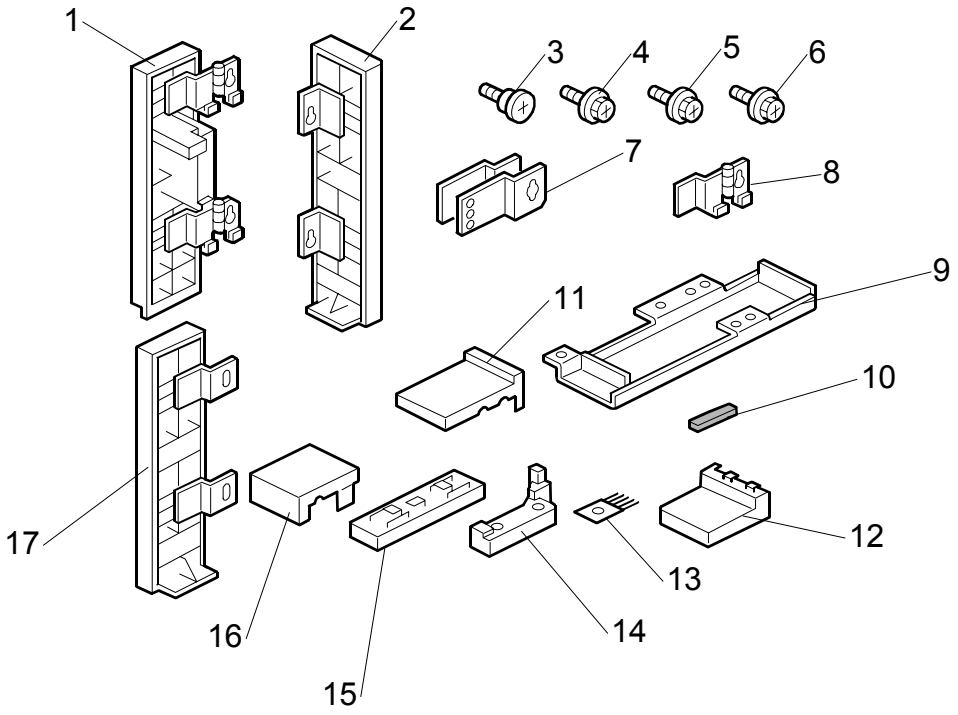
12. At the front, use a pair of nippers to remove the knockout [A]
13. Insert the punch waste transport unit [B] into the finisher.
    NOTE: Make sure that the punch waste transport unit slides smoothly on its rails. If it does not, make sure that the rails are aligned with the grooves.
14. Remove the short connector from the connector [C].
    NOTE: This is the 4-pin connector.
15. Connect connector and fasten the punch waste transport unit. (x 1, x 1, x 1).
16. Set the hopper [D] in its holder.

1.16 COVER INTERPOSER TRAY (B704)

1.16.1 ACCESSORIES

Check the accessories and their quantities against the following 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	9
5. Tapping screws – M3 x 8	2
6. Tapping screws – M3 x 6	5
7. Adjuster plates	2
8. Hinge Bracket	1
9. Plate Extension (bottom)	1
10. Gasket Seals	2
11. Right Rear Cover Plate (B706 only)	1
12. Spacer	1
13. Anti-Static Brush	1
14. Spacer (B706 only)	1
15. Spacer (Not used)	1
16. Right front corner plate (for B706 only)	2
17. Front door extension (bottom)	1

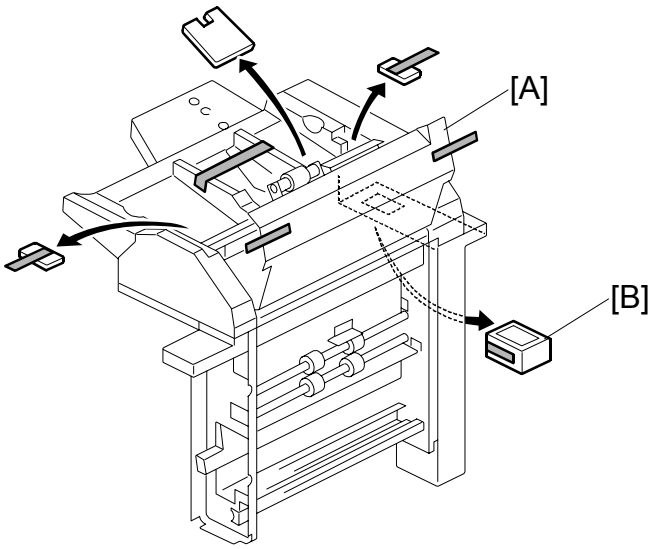


1.16.2 INSTALLATION PROCEDURE

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

- 2000-Sheet Booklet Finisher B700
- 3000-Sheet Finisher B701
- 3000-Sheet Finisher B706

Removing Tape and Retainers

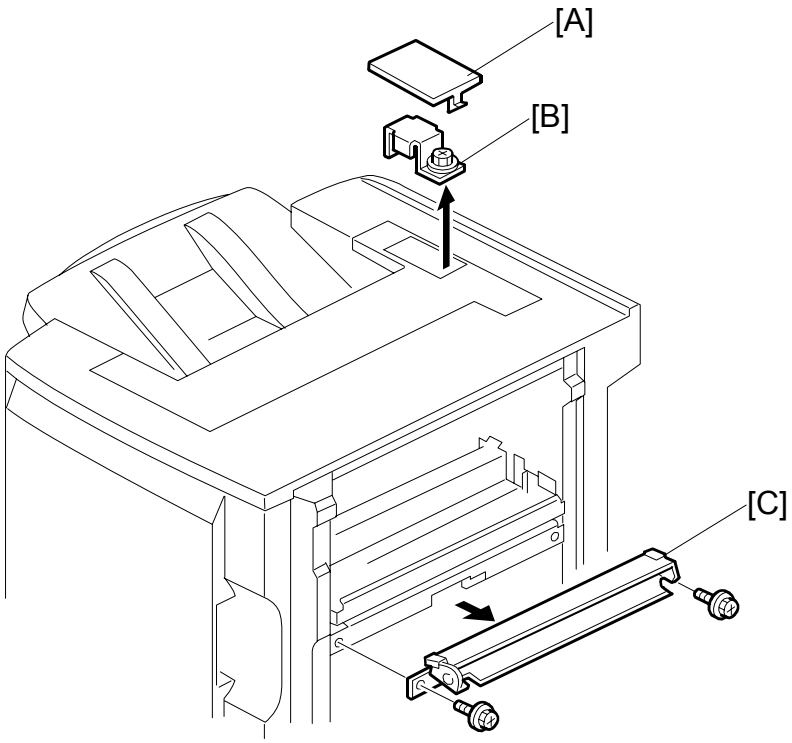


⚠WARNING!

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

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

Preparing the Finisher (B700/B701/B706)



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

   Important: If you are installing the cover interposer tray with a previously installed finisher B700/B701/B706, remove the sponge strip from the finisher and save it for re-attachment to the interposer tray.
4. If you are installing the B700/B701, attach the extensions to the finisher without modification. Go to "Attaching the Extensions for the B700/B701" on page 1-96.

   -or-

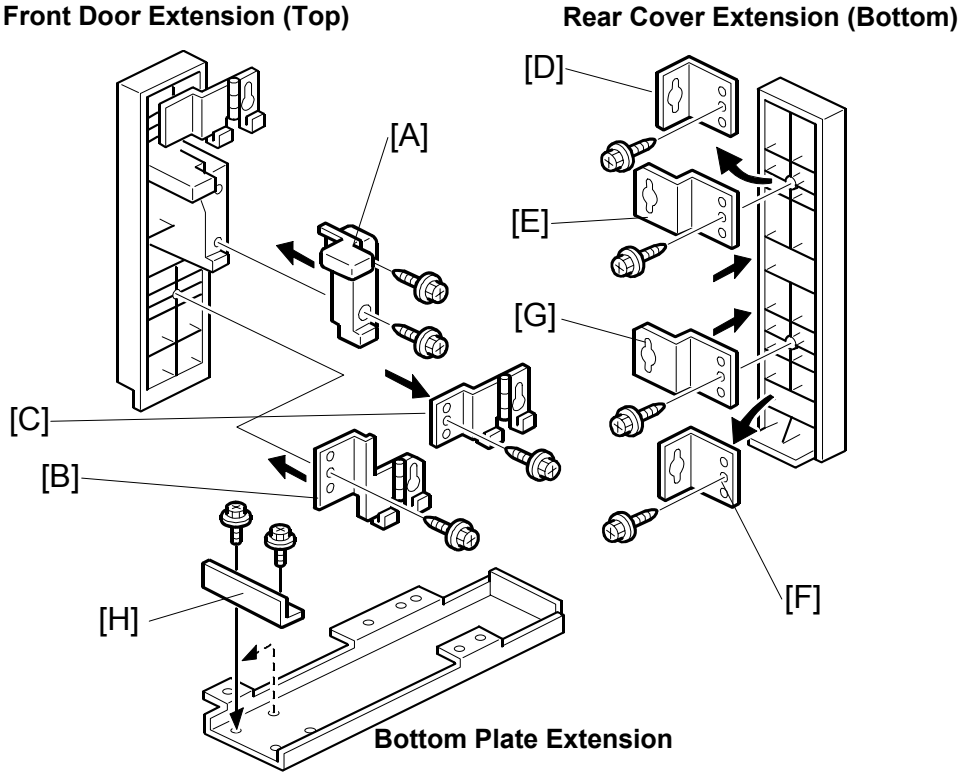
   If you are installing the B706, modify the extensions and attach them to the finisher. Go to "Attaching the Extensions for the B706" on page 1-93.

Attaching the Extensions for the B706

Important!

- The procedures in this section are for installation of the cover interposer with the B706 only.
- If you are installing the cover interposer with the B700/B701, go to the next section.

Modify the Attachments for the B706



Front Door Extension:

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

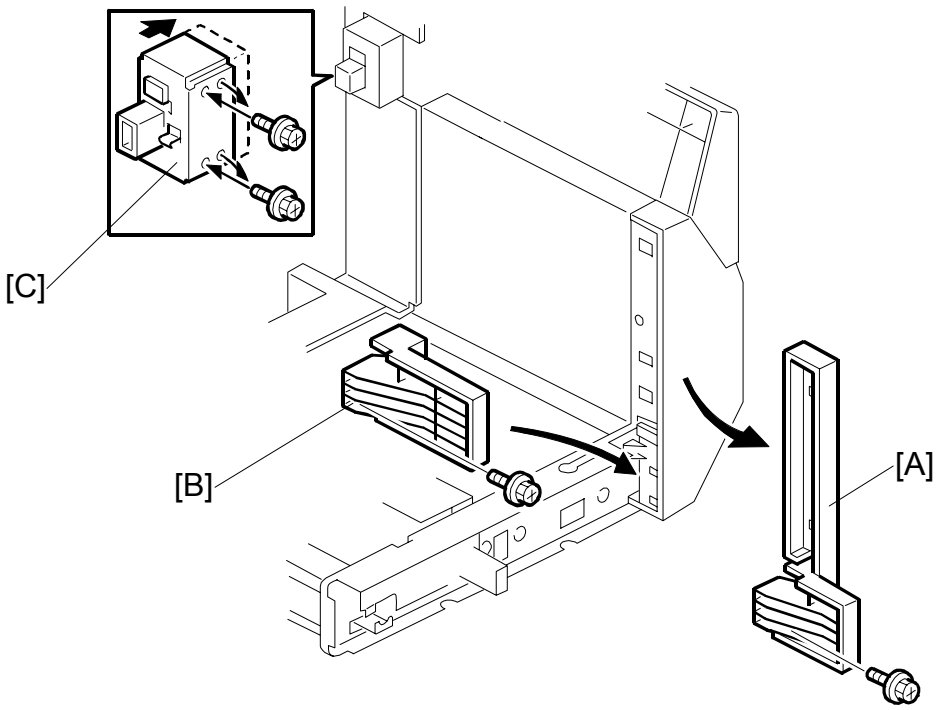
Rear Cover Extension (Bottom):

3. Remove [D] and replace it with [E] (☞ x 1).
4. Remove [F] and replace it with [G] (☞ x 1).

Plate Extension (Bottom):

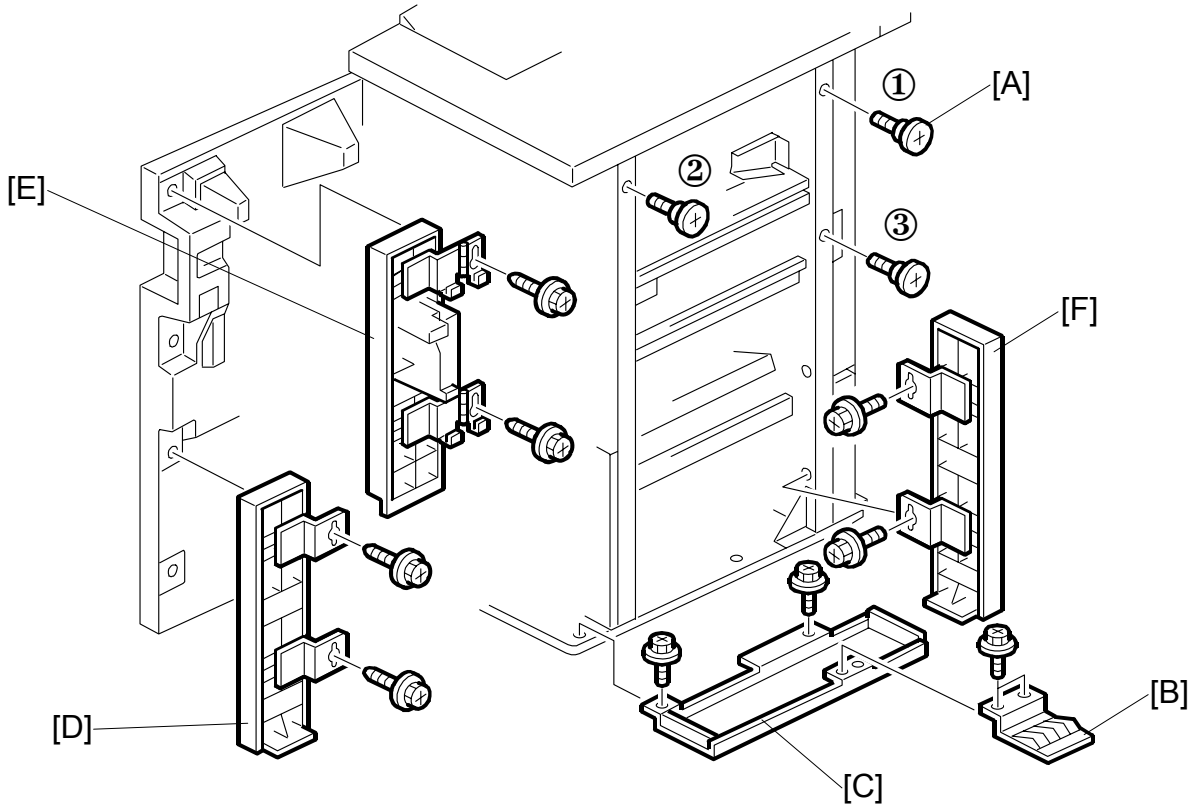
5. Remove bracket [H] and attach it to the end of the bottom plate extension (☞ x 2).

Prepare the Cover Interposer for the B706



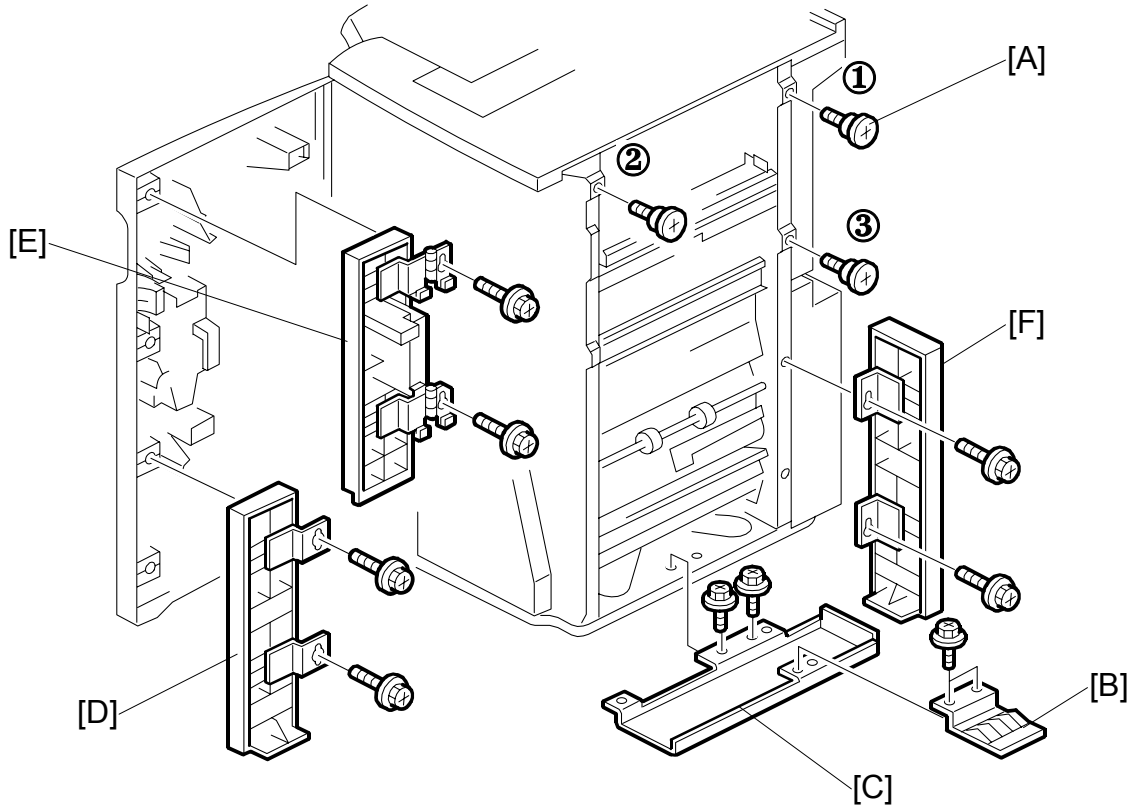
1. Remove spacer [A] (x1).
2. Attach spacer [B] (x1).
3. Remove the screws from the connector case [C] (x2).
4. Push the connector case in the direction of the arrow until the second set of holes are aligned with the holes below, then attach the screws.

Attach the Extensions to the B706



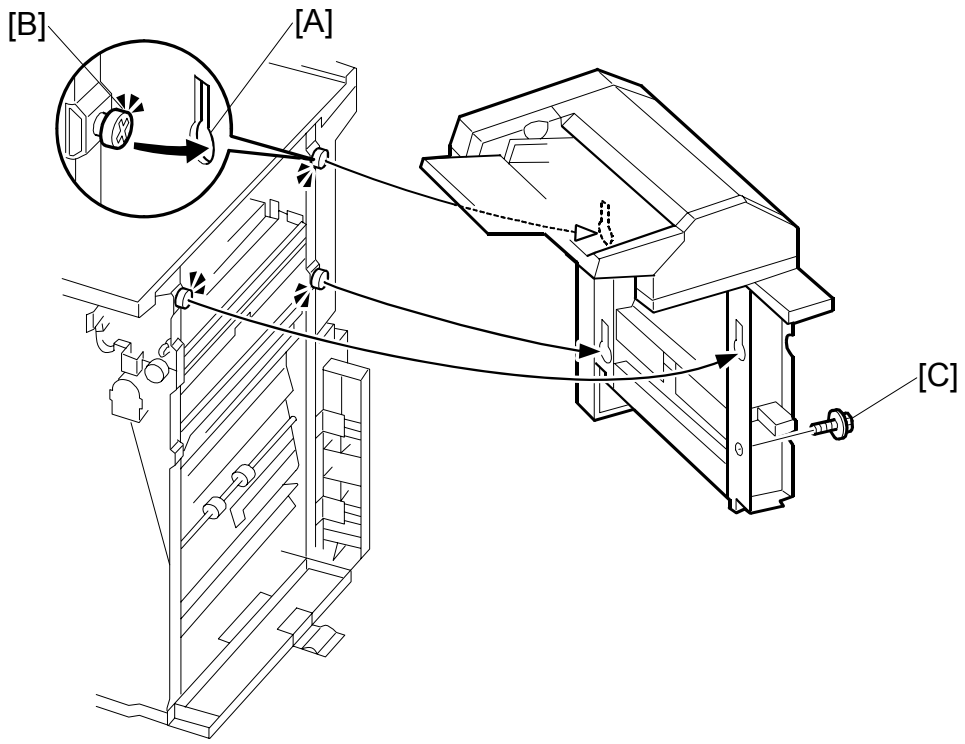
1. Attach the three shoulder screws [A] ①②③ (🔩 x 3).
2. If the finisher has been previously installed, remove the ground plate [B] from the finisher and keep the screws.
3. Attach the bottom plate [C] (🔩 x 2, M3 x 6).
4. Attach the ground plate to the bottom plate (🔩 x 2).
5. Attach the bottom front cover extension [D] (🔩 x 2, M4 x 8).
   NOTE: Attach this cover first.
6. Attach the top front cover extension [E] (🔩 x 2, M4 x 8).
7. Set two screws into the holes provided for the rear cover extension [F] (🔩 x 2, M3 x 6).
8. Set the keyholes of the rear cover extension over of the heads of the screws.
9. Press up on the bottom of the rear cover extension to close the gap at the top of the cover, then tighten the screws.

Attaching the Extensions for the B700/B701



1. Attach the three shoulder screws [A] ①②③ (☞ x 3).
2. If the finisher has been previously installed, remove the ground plate [B] from the finisher and save the screws.
3. Attach the bottom plate [C] (☞ x 2, M3 x 6) then attach the ground plate to the bottom plate (☞ x 2).
4. Attach the bottom front cover extension [D] (☞ x 2, M4 x 8).
5. Attach the top front cover extension [E] (☞ x 2, M4 x 8).
6. Attach the rear cover extension [F] (☞ x 2, M3 x 6).

Attaching the Interposer Tray (B700/B701/ B706)



1. Pick up the cover interposer tray, align the keyholes [A] with the shoulder screws [B], then slide the cover interposer down onto the screws.
2. Secure the cover interposer with the screw [C] (🔩 x 1, M3 x 6).
3. If you are installing the cover interposer tray on the B700/B701, skip the next section and go directly to “Docking the Finisher and Interposer to the Machine” on page 1-100.

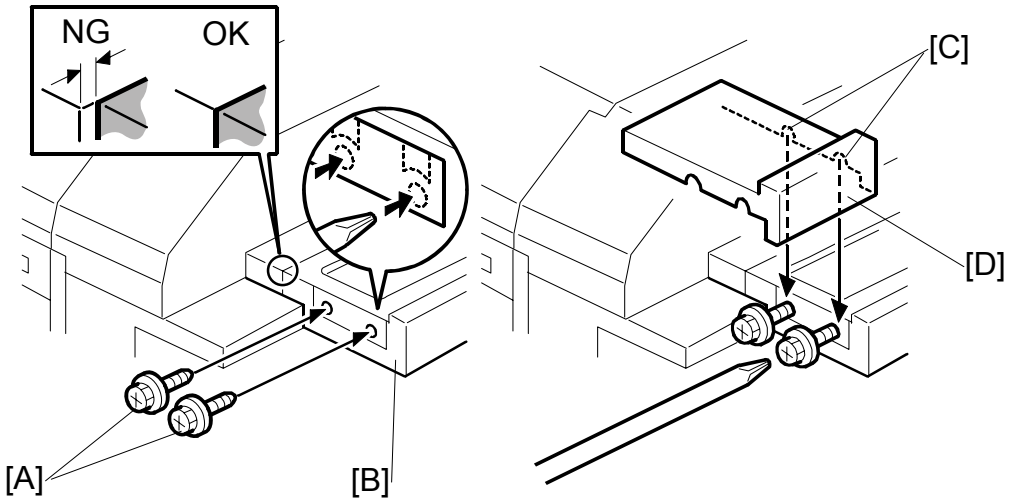
   -or-

   If you are installing the cover interposer tray on the B706, go to the next section, install the corner plates on the B706, then go to “Docking the Finisher and Interposer to the Machine” on page 1-100.

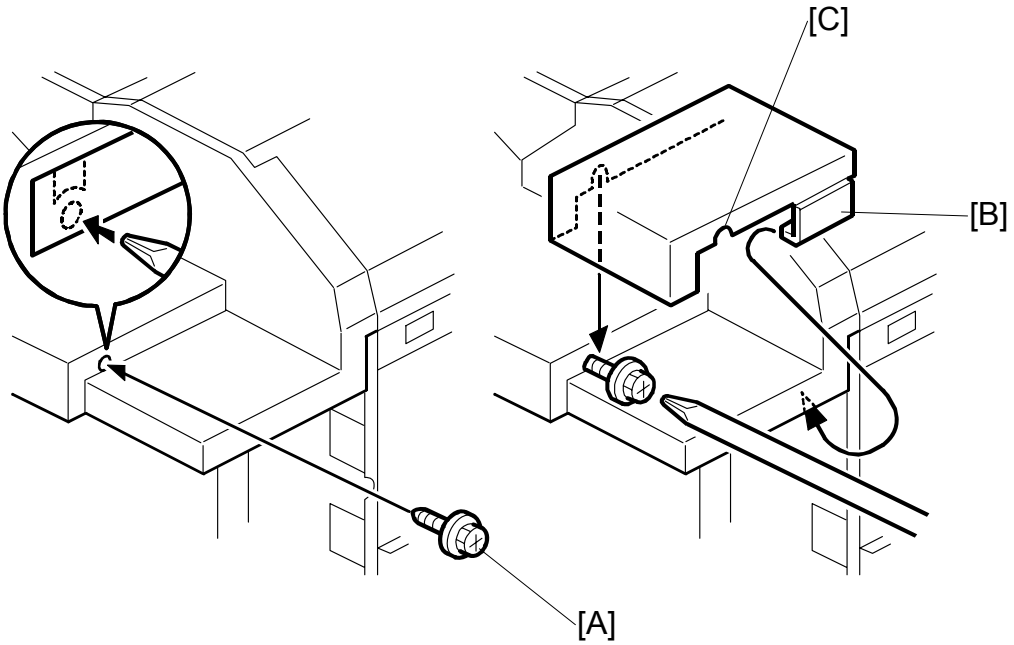
Attaching the Corner Plates for the B706

Important!: The corner plates are installed on the B706 only.

Right Rear Corner Plate (B706 only)

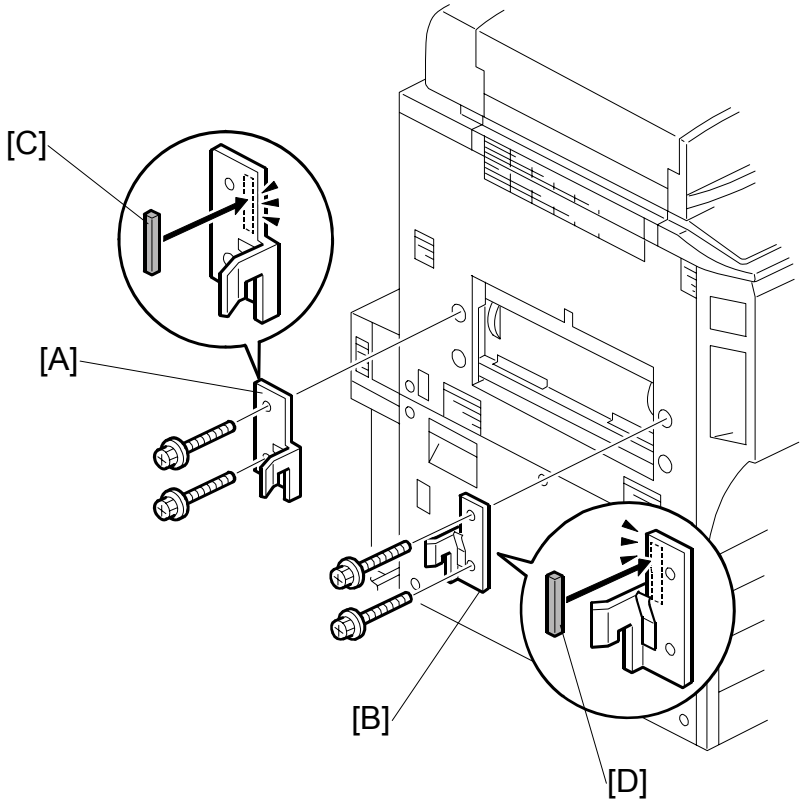


1. Temporarily attach the screws [A] (with about two turns) to the right end of the finisher extension table [B] (🔩 x 2, tapping M4 x 8).
   NOTE: The holes are not visible because they are covered with tape. Just punch the screws through the holes.
2. Align the cutouts [C] of the right rear corner plate [D] with the screws and attach the plate.
3. With a long screw driver inserted through the cutouts in the right rear corner plate [D], tighten the screws to fasten the right rear corner plate to the table extension [B].

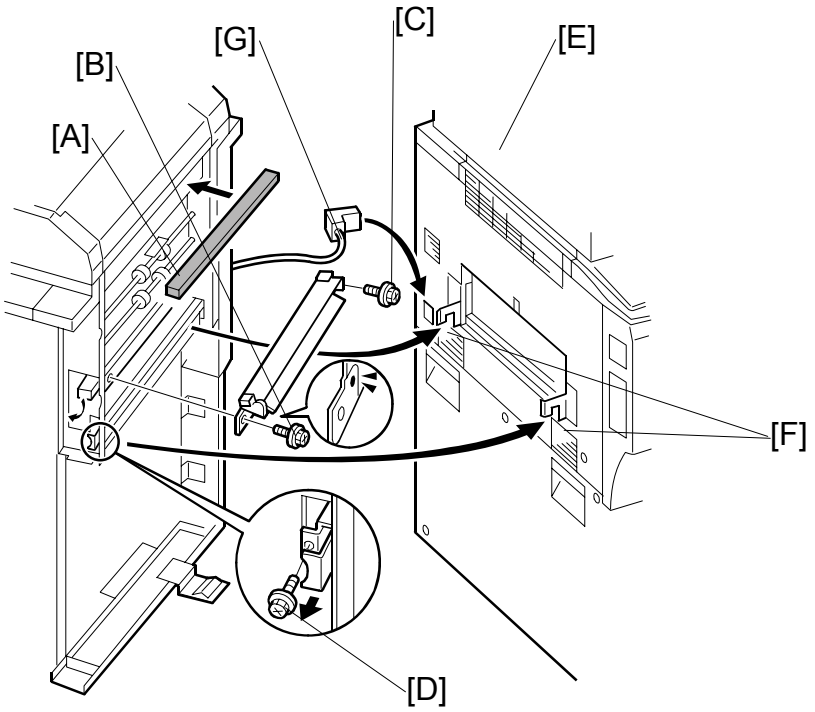


4. Temporarily attach the screw [A] (M4 x 8) with about two turns to fasten to the panel at the right front corner.
   NOTE: The hole is not visible because it is covered with tape. Just punch the screw through the hole.
5. With the clamp [B] under the edge of the corner, align the cutout [C] in the right front corner plate with the screw, then snap it into position.
6. With a long screwdriver inserted into the plate cutout [C], tighten the screw to fasten the right front corner plate.

Docking the Finisher and Interposer to the Machine (B700/B701/B706)



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



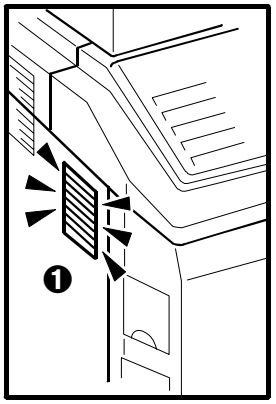
4. Attach the sponge strip [A] that is supplied with the finisher.
5. Attach the guide plate (removed from the finisher) to the cover interposer.
   - Attach the front end [B] of the plate (🖉 x 1).
   - Attach the rear end of the plate with the anti-static brush [C] (🖉 x 1).

   Important: Use the two small tapping screws that are supplied, not the machine screws removed from the finisher guide plate.
6. Release the lock lever [D] (🖉 x 1).
7. Attach the pad [E]. (This pad is provided with the finisher.)
8. Slowly push the finisher against the side of the machine until the brackets [F] go into the slots.

⚠WARNING!
Move the finisher carefully, or you will bend the entrance guide plates.

9. Attach the lock lever [D] (🖉 x 1).
10. Connect the connector [G] to the copier.

    Important!
    - Check the duct ① on the left side of the machine.
    - Make sure that the sponge does not prevent air flow through this duct.
    - **Note**: (B246/D054 Only) If the correct paper sizes are not detected by the cover interposer after install, manually put in the correct sizes via SP6107.



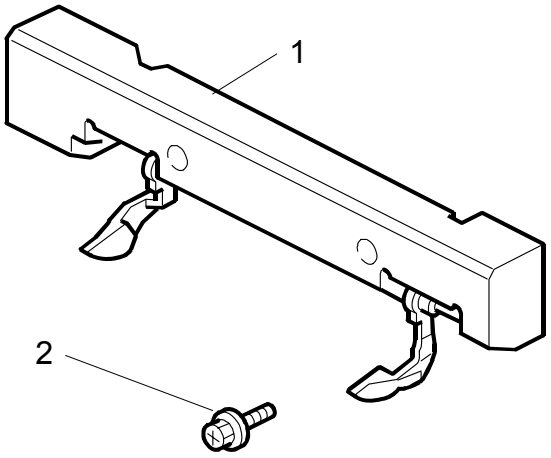
- **Note**: (B064/B140) If the correct paper sizes are not detected, see “Cover Interposer Tray B470 “ Service Manual , sections 2.1.3.

1.17 OUTPUT JOGGER UNIT (B703)

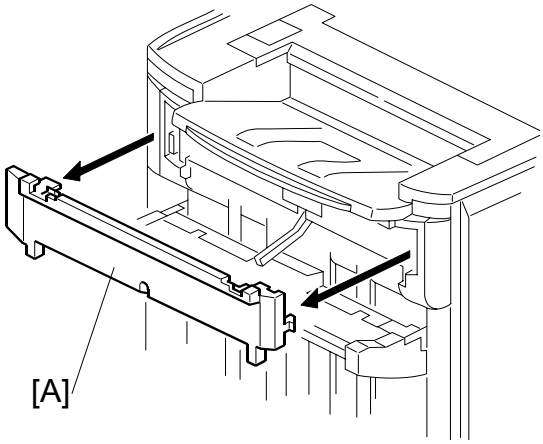
1.17.1 ACCESSORIES

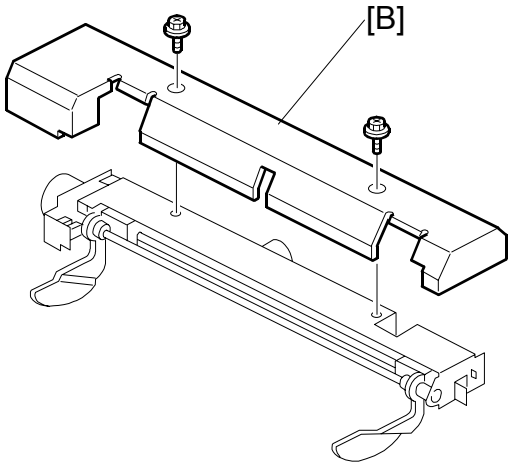
Check the accessories and their quantities against the following list.

Description	Q'ty
1. Jogger Unit	1
2. Tapping Screws - M3 x 6	2



1.17.2 INSTALLATION PROCEDURE



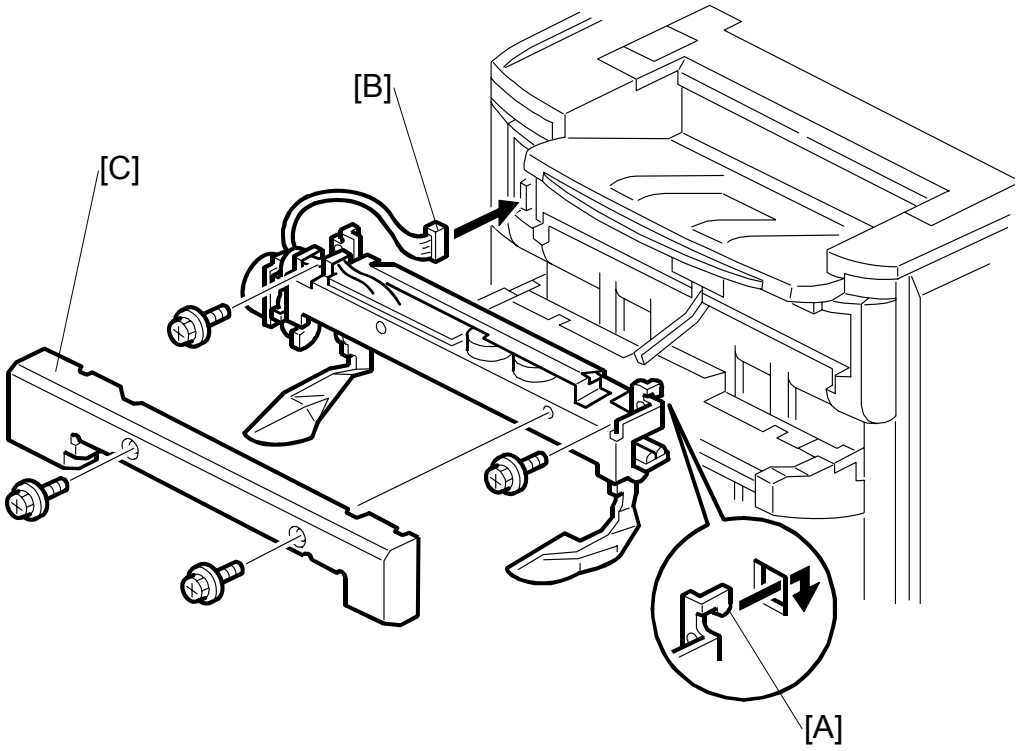


Important! The Output Jogger Unit B703 can be installed only on the 2000/3000-Sheet Finisher B700/B701.

⚠WARNING!

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

1. Turn the main machine switch off.
2. Disconnect the finisher from the main frame.
3. Use the flat head of a screwdriver to remove the left upper cover [A].
4. Remove the cover plate [B] (🔩 x 2). Save the screws.



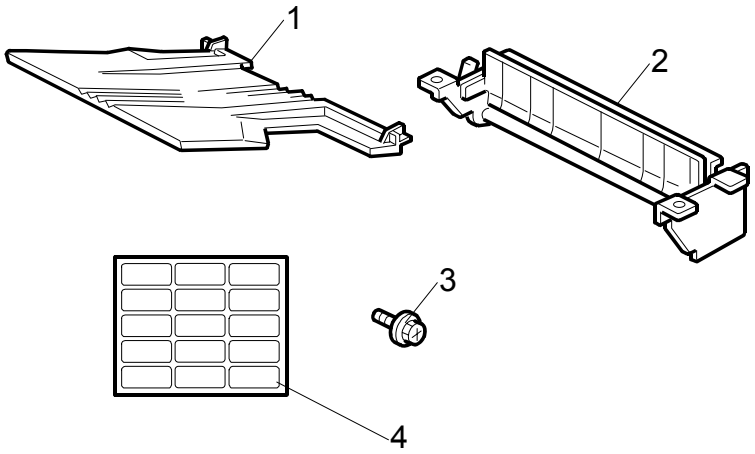
5. While you hold the jogger unit with the connector on the left, put the hooks of the frame of the jogger unit [A] into the holes in the left and right side of the finisher frame.
6. Fasten connector [B] to the socket (☞ x 1).
7. Attach the jogger unit to the finisher (☞ x 2).
8. Reattach the jogger unit cover [C] to the jogger unit (☞ x 2).
9. Enter Service Mode (5.1.1) and change SP6118 to “1”

1.18 MAIL BOX (B762)

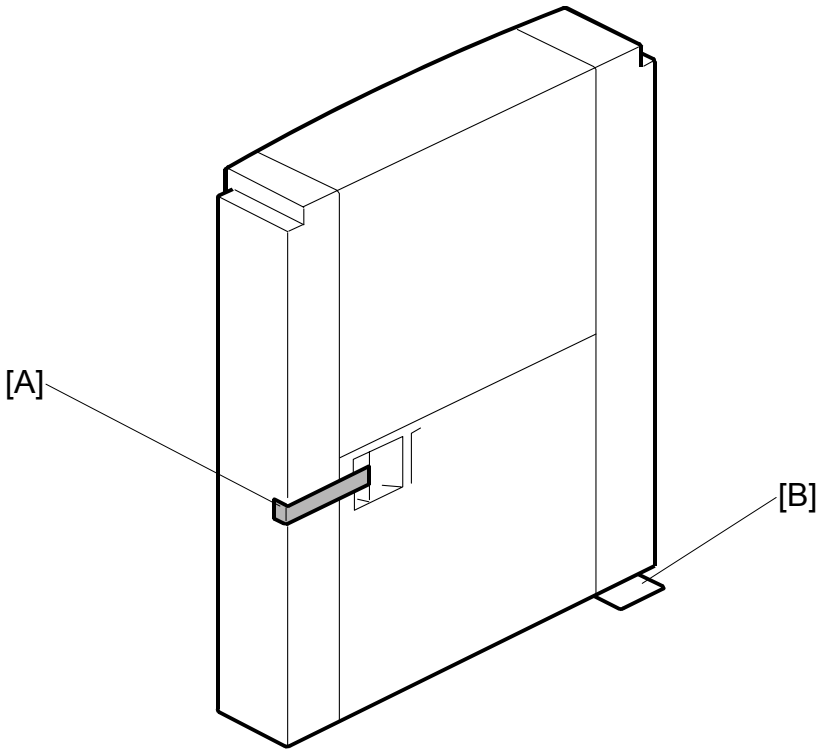
1.18.1 ACCESSORY CHECK

Check the accessories and their quantities against the following list.

⇒	Description	Q'ty
1.	Trays	9
2.	Guide plate	1
3.	Tapping screws - M3x8	6
4.	Decals (bin display)	1



1.18.2 INSTALLATION PROCEDURE



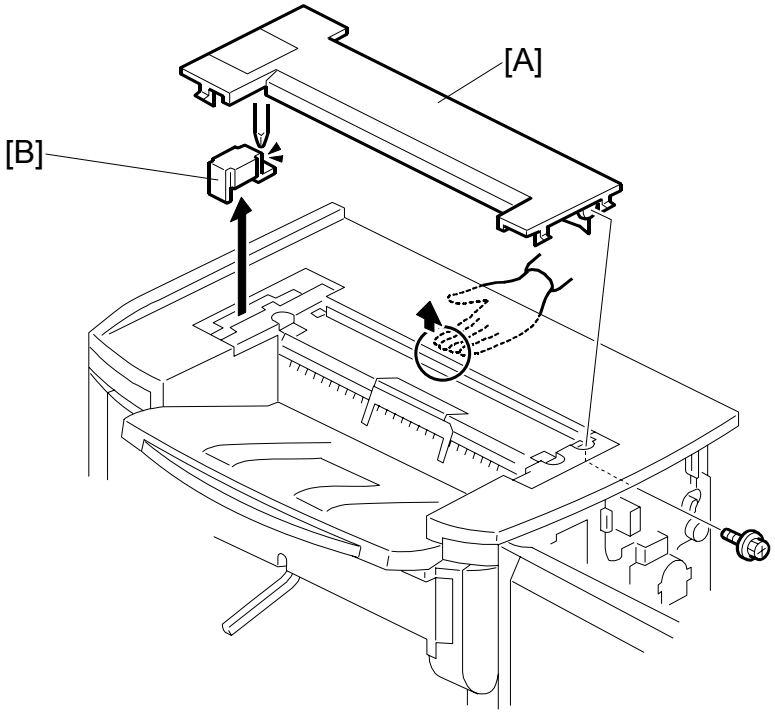
Important! The Mail Box B762 can be installed only in the 2000/3000-Sheet Finisher B700/B701.

⚠CAUTION

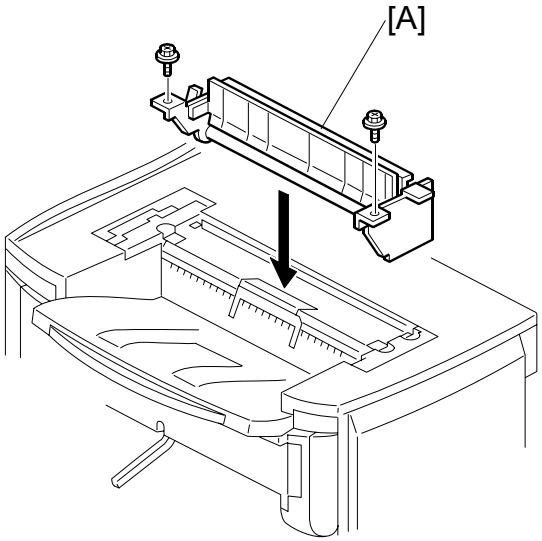
Switch the machine off and unplug the machine before starting the following procedure.

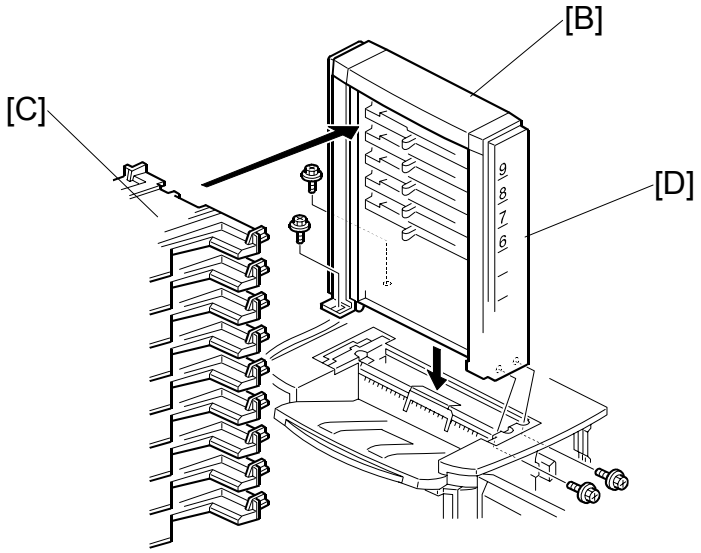
1. Remove the filament tape [A].

   Important: Handle the mailbox carefully. The corner leaf [B] can be damaged easily.



2. If the Cover Interposer Tray B704 is installed on the B700/B701, remove it.
   NOTE: The cover interposer tray and mailbox cannot be installed on the finisher at the same time.
3. Remove the top cover [A] of the finisher (x 1).
4. Remove the bracket [B] (x 1).





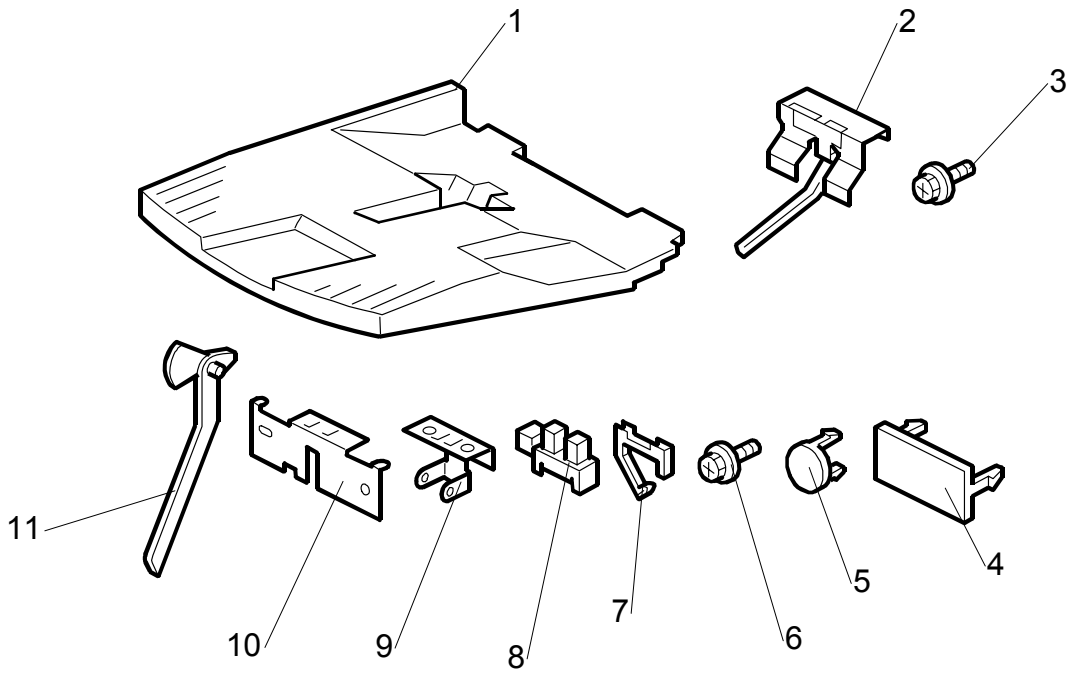
5. Attach the guide plate [A] to the top of the finisher (🔩 x 2, M3x8).
6. Attach the mailbox [B] to the top of the finisher (🔩 x 4, M3x8).
7. Attach the 9 trays [C] to the mailbox.
8. Give the decals [D] to the customer for notation and attaching at the correct location.

1.19 COPY TRAY (B756)

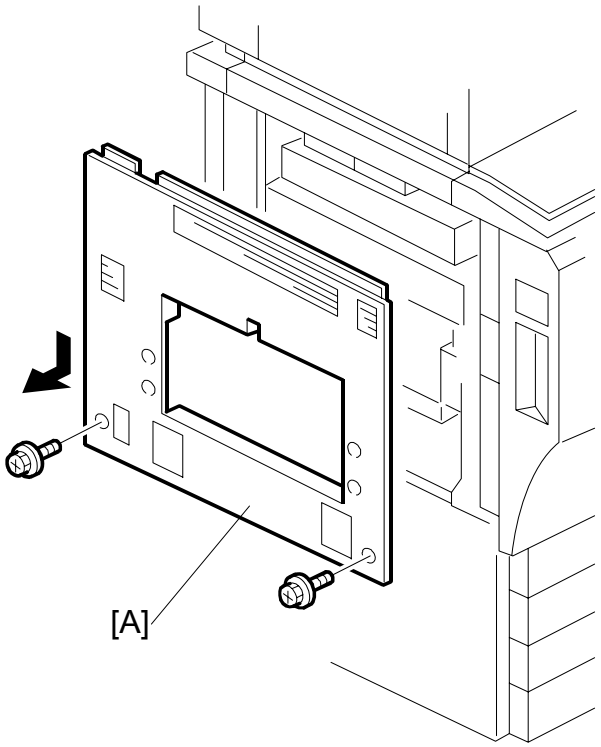
1.19.1 ACCESSORIES

Check the accessories and their quantities against the following list.

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

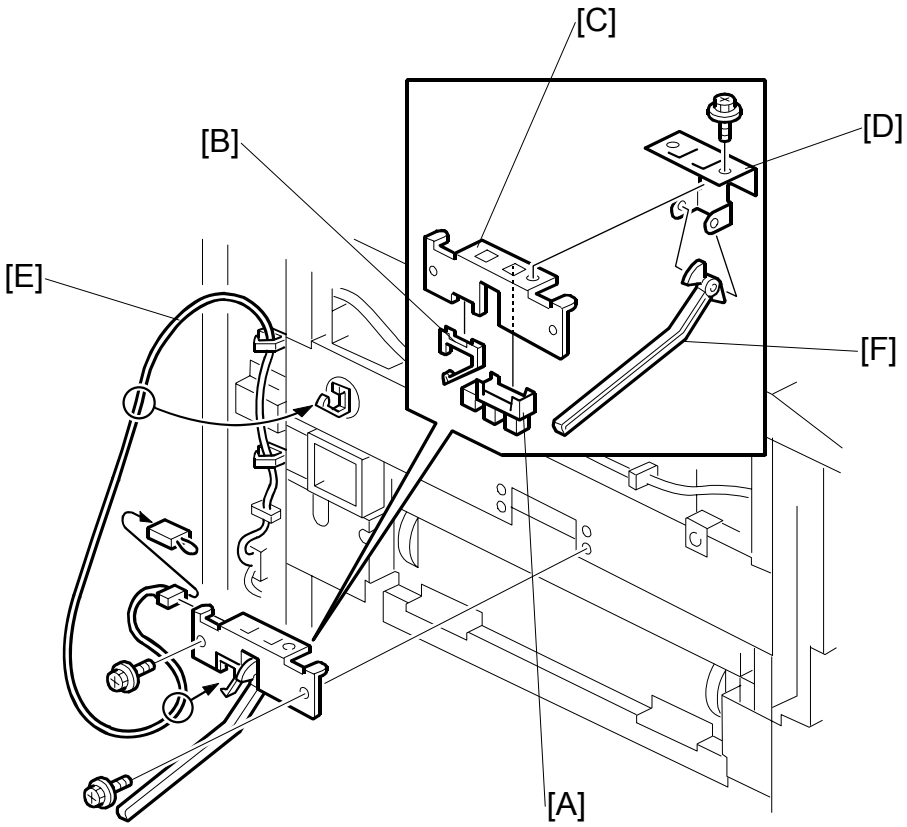


1.19.2 INSTALLATION

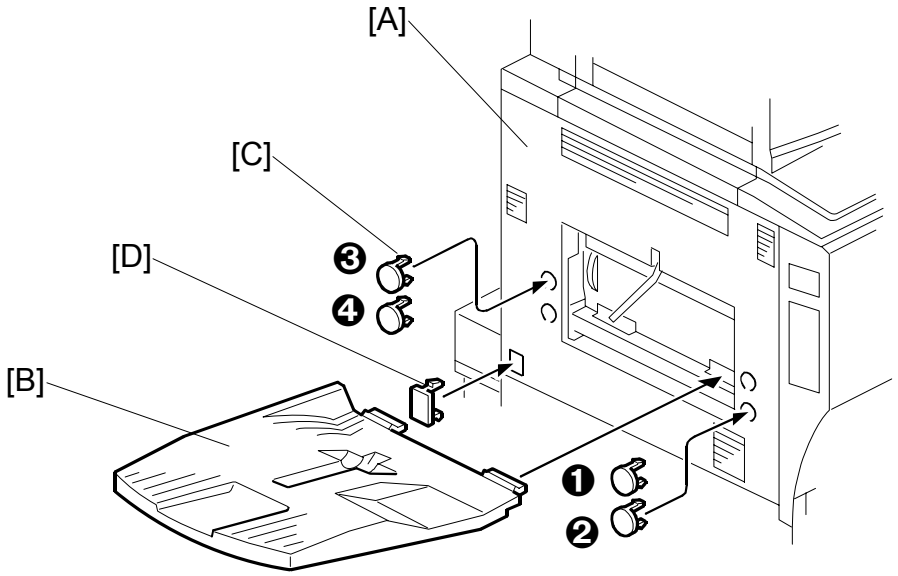


Important! The Copy Tray B756 can be installed only on a B140 Series machine or a B246 Series machine.

1. Remove the left upper cover [A] (☞ x 2).



2. Attach the paper height sensor [A] and harness clamp [B] to the sensor bracket [C].
3. Attach the sensor bracket and actuator arm bracket [D] to the copier (x 3).
4. Attach the sensor harness [E] (x 1, x 4).
5. Attach the actuator [F] to the arms of the actuator arm bracket.



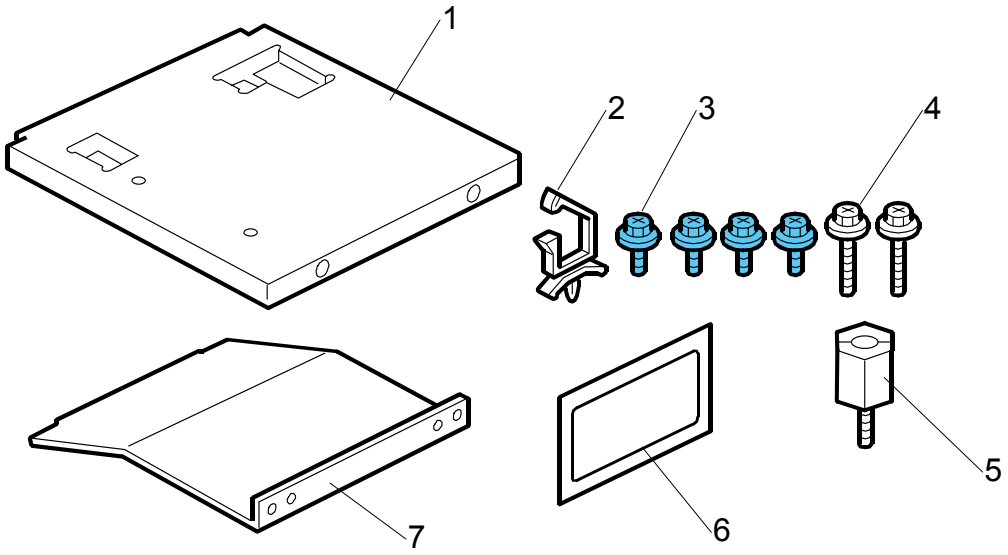
6. Reattach the left upper cover [A] (🖉 x 2).
7. Attach the tray [B].
8. Attach the small caps [C] to the holes ①, ②, ③, ④.
9. Attach the large cap [D] to cover the finisher power connection point.

1.20 KEY CARD BRACKET (B498), KEY COUNTER BRACKET (B452)

1.20.1 KEY CARD BRACKET B498 ACCESSORIES

Check the accessories and their quantities against this list.

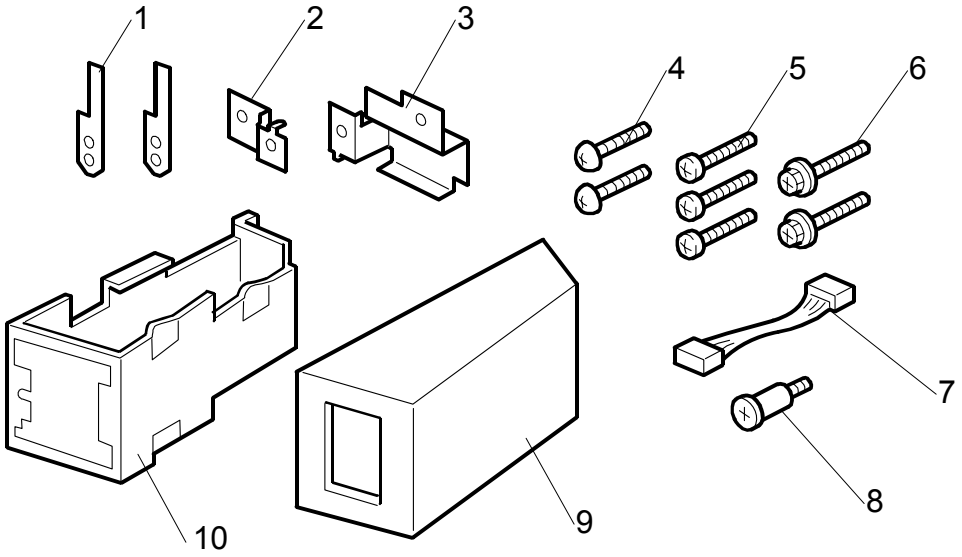
Description	Qty
1. Key Card Table	1
2. Harness Clamp	1
3. Tapping Screws (M3 x 8)	4
4. Tapping Screws (M4 x 14)	2
5. Stud	1
6. Decal	1
7. Key Card Table Support	1



1.20.2 KEY COUNTER BRACKET B452 ACCESSORIES

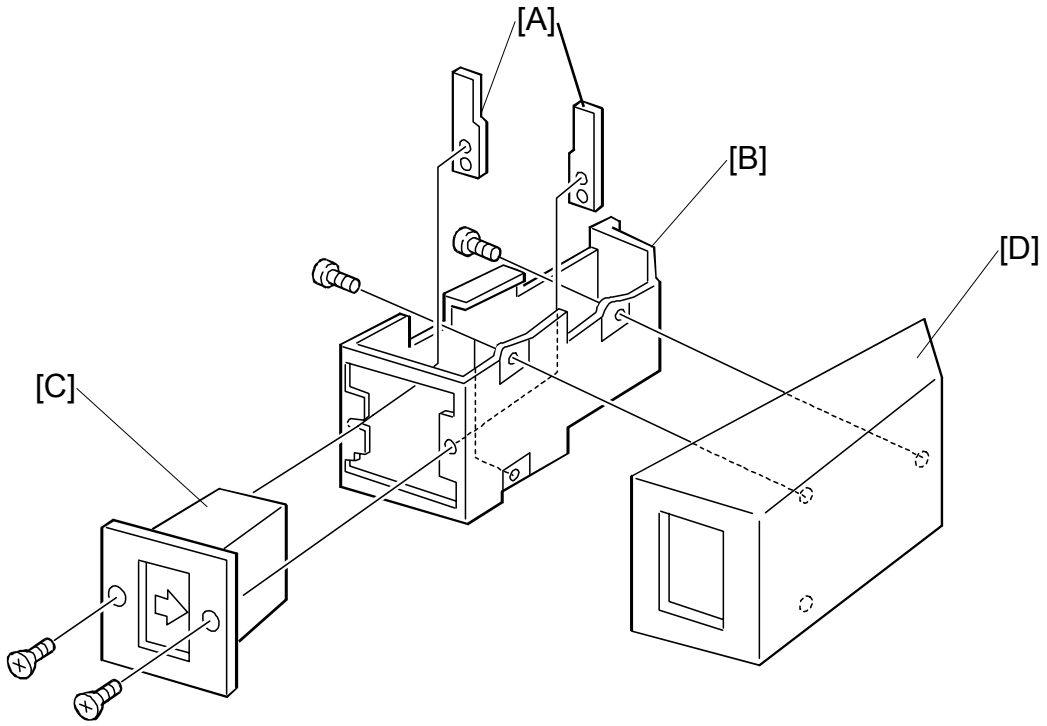
Check the accessories and their quantities against this list.

Description	Qty
1. Plate nuts	2
2. Rear Bracket	1
3. Front Bracket	1
4. Tapping Screws (M3 x 6)	2
5. Tapping Screws (M4 x 8)	3
6. Tapping Screws (M4 x 16)	2
7. Harness	1
8. Shoulder Screw	1
9. Key Counter Bracket Cover	1
10. Key Counter Bracket	1



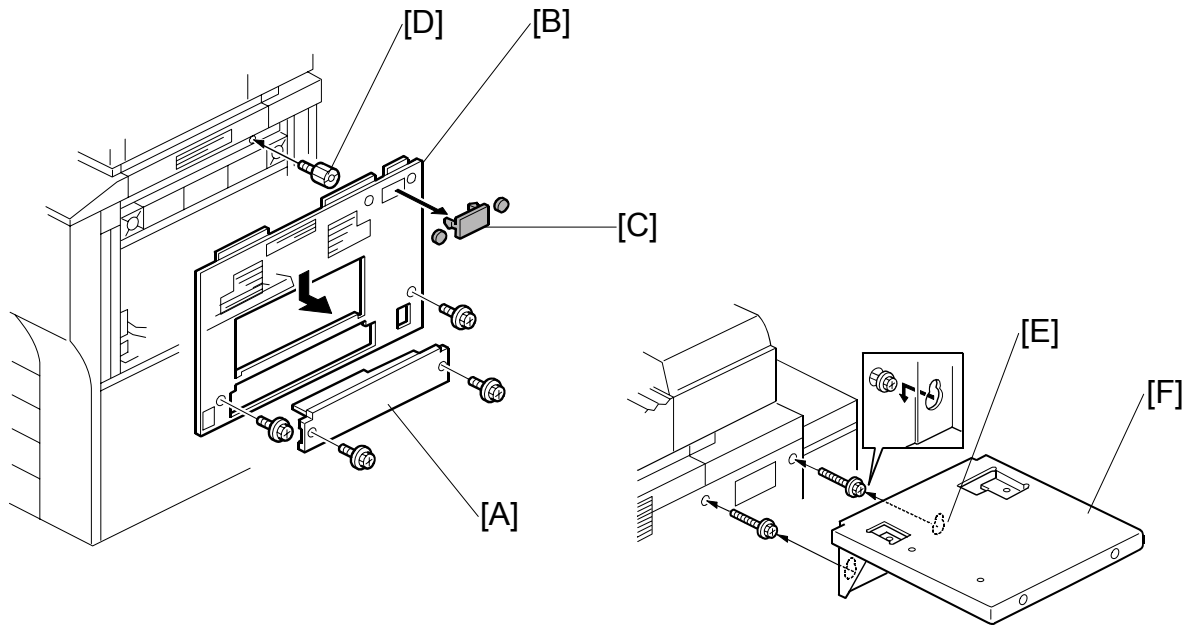
1.20.3 INSTALLATION

Assemble the Key Counter Bracket



1. Hold the key counter plate nuts [A] on the inner surface of the key counter bracket [B].
2. Attach the key counter holder [C] to the key counter bracket (☞ x2).
3. Attach the key counter bracket cover [D] (☞ x2).

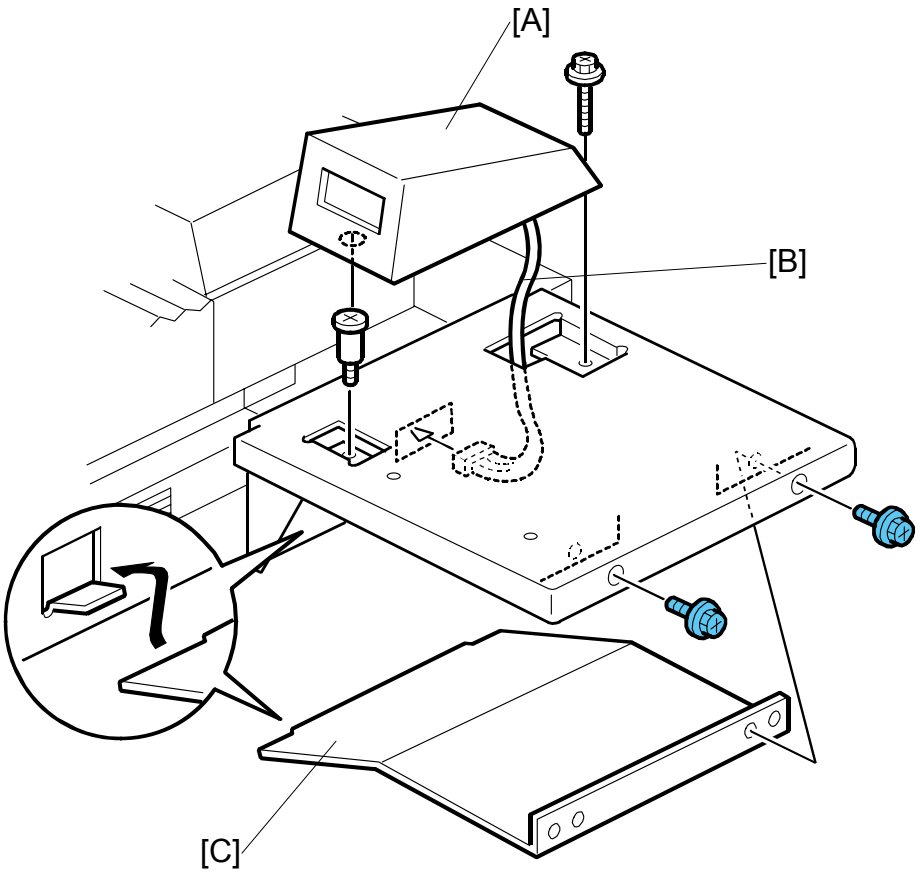
Install the Key Card Bracket and Assembled Key Counter



⚠WARNING!

Always turn the machine off and disconnect the machine power cord before you do this procedure.

1. Remove the cover [A] (☞ x2).
2. Remove the right upper cover [B] (☞ x2).
3. Remove the three caps [C].
4. Attach the stud [D].
5. Put the keyholes [E] of the key card table [F] over the heads of the shoulder screws, as shown above. Then tighten the screws to attach the table (M4 x 14, ☞ x2).



6. Attach the key counter bracket [A] (☞ x 2).
7. Attach the harness [B] to the key counter bracket and the machine (☞ x 1).
8. Attach the bracket support [C] to the side of the copier (☞ x 2).

1.21 COPY CONNECTOR KITS

1.21.1 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)
GW Controller: System	B5254108	5.07
GW 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)	

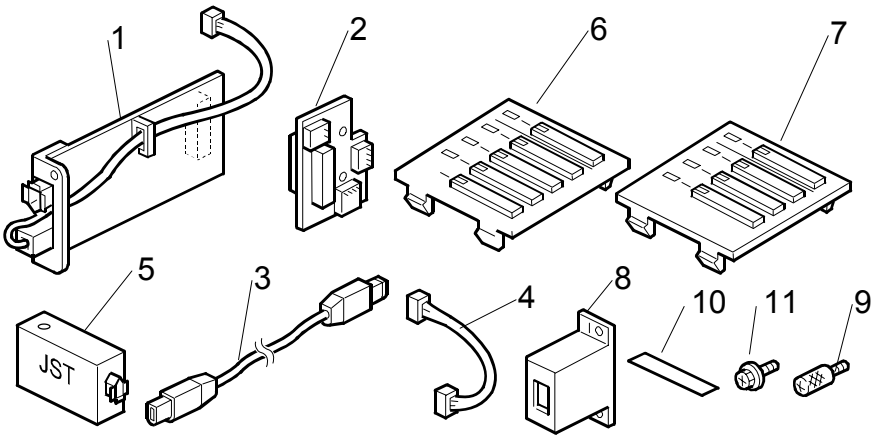
2. With the Copy Connector/MLB modifications, the machine firmware has been divided up into 2 main groups:
   1) The Copy Connector/MLB group (beginning with the versions listed above).
   2) The usual firmware used up to the present, i.e. for machines without the Copy Connector or MLB options.

   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 GW controller firmware for the Copy Connector/MLB group has been divided into GW System and GW Copy, as the increased size has exceeded the card's storage capacity.

ACCESSORY 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. Key Top – Printer	2
8. Anti-static Cap	2
9. Knob Screw	4
10. Decal – Copy Connector	4
11. Tapping Screw – M3 x 8	4



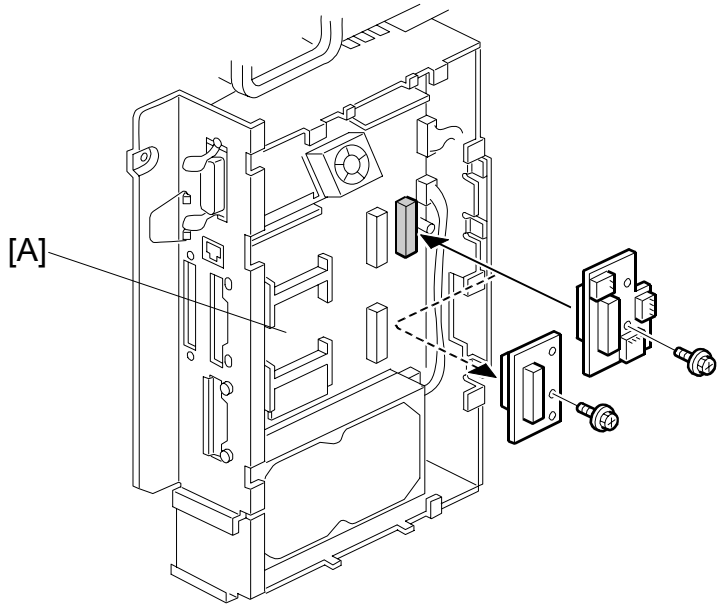
Installation

⚠CAUTION

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

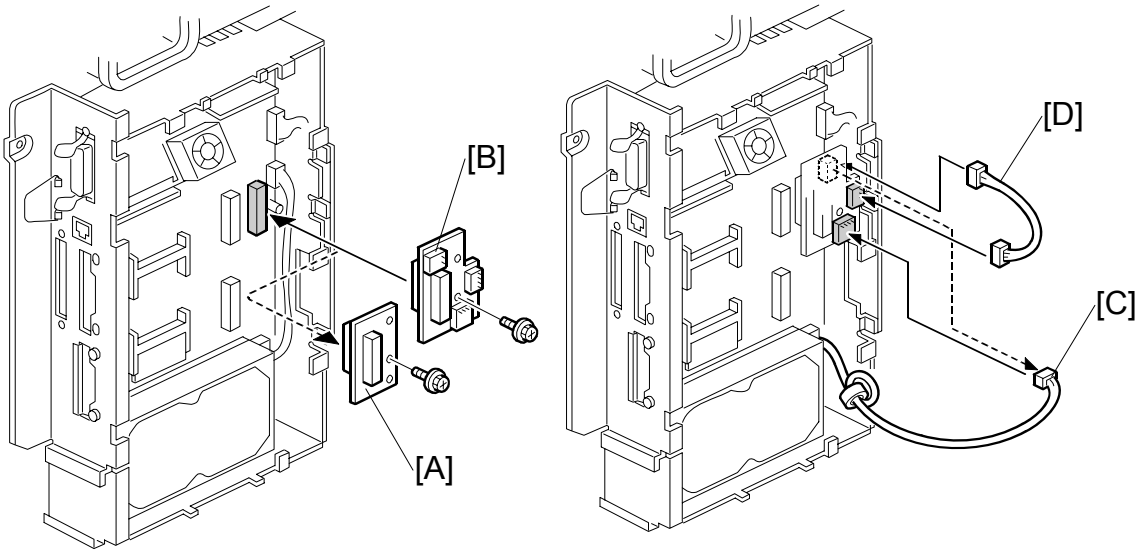
Perform the following procedures for both the main and sub copiers.

Installing the Firmware: (B064 Series)



1. Remove the rear cover (🔩 x 2).
2. Remove the controller cover (🔩 x 10).
3. Turn on DIP SW2-1 on the controller board [A].
4. Install the following firmware.
   - GW 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 (B064 Series)

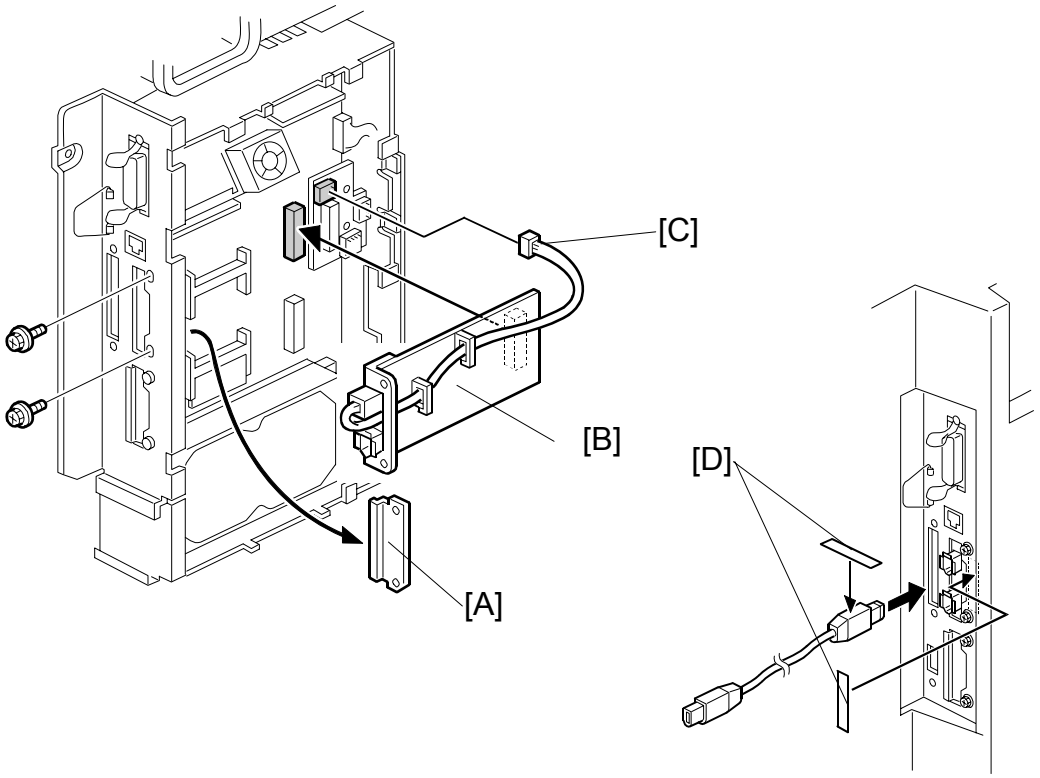


1. Replace the interface board [A] with the MLB Interface Board [B].

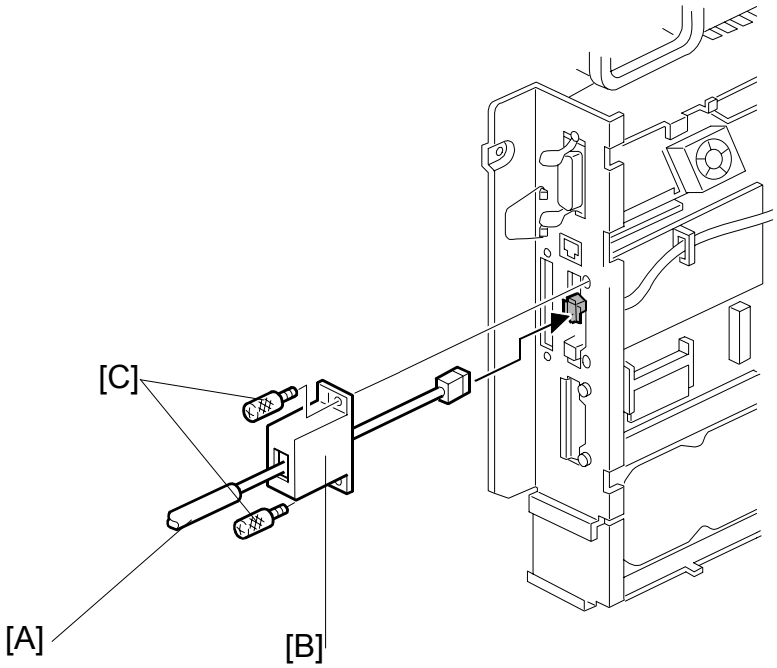
   NOTE: This step is not necessary from the following Serial Numbers:

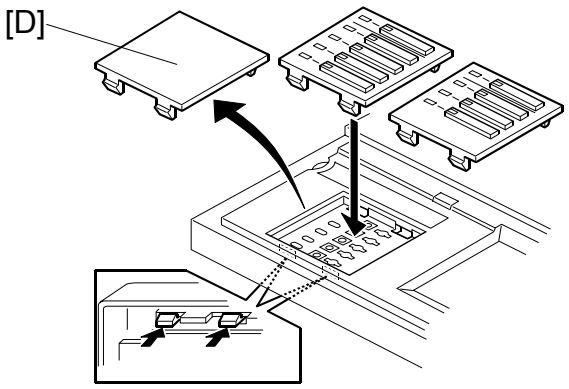
Part Number	Serial Number	Part Number	Serial Number
B06417	J4235300054	B06517	J4335300191
B06419	J42304XXXXX	B06519	J43304XXXXX
B06422	J42304XXXXX	B06522	J43304XXXXX
B06424	L1283040001	B06524	L1293040001
B06426	7P10430001	B06526	7P20430001
B06427	J4230300409	B06527	J43304XXXXX
B06428	J42304XXXXX	B06528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



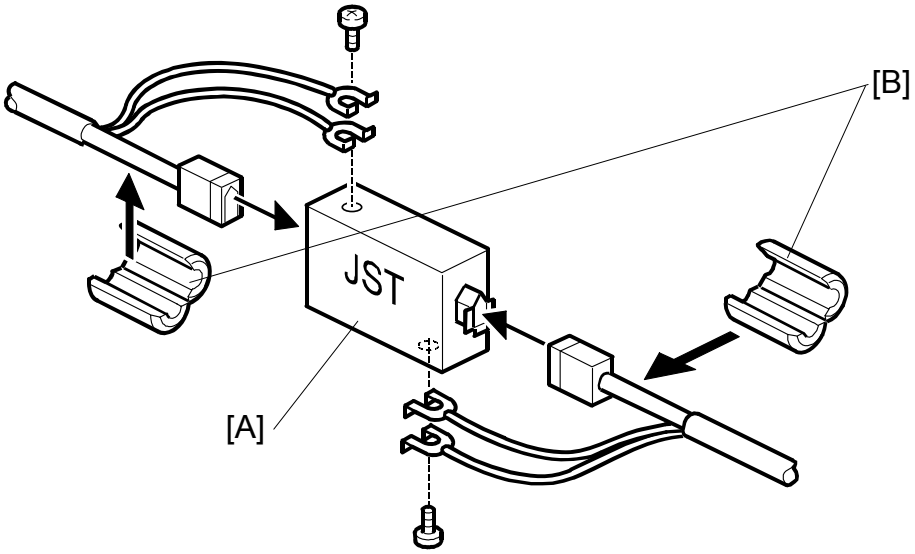
4. Remove the connector cover [A] (☞ x 2).
5. Install the CCK interface board [B] as shown.
6. Connect the harness [C] to CN315 on the MLB Board.
7. Attach the decals [D] as shown.





8. Lead the interface cable [AI] through the anti-static cap [BJ], 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.

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

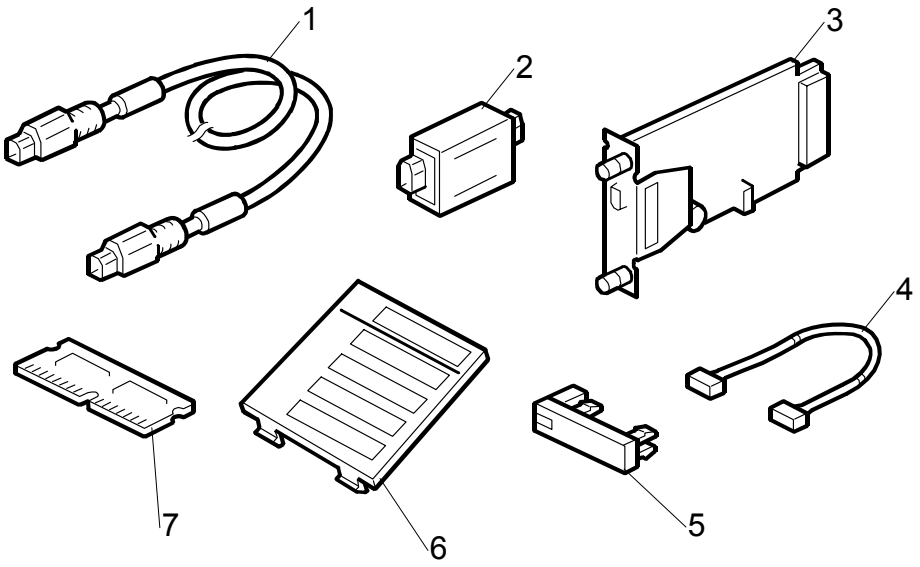


13. Use the Hubs [A] to connect the interface cables.
    NOTE: When connected in this way, the maximum length possible is 13.5m (3 interface cables).
14. Attach the ferrite cores [B] as shown.

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

ACCESSORY CHECK

Check the accessories and their quantities against this list:



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
9. CD-ROM (Operating Instructions for EU)	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.

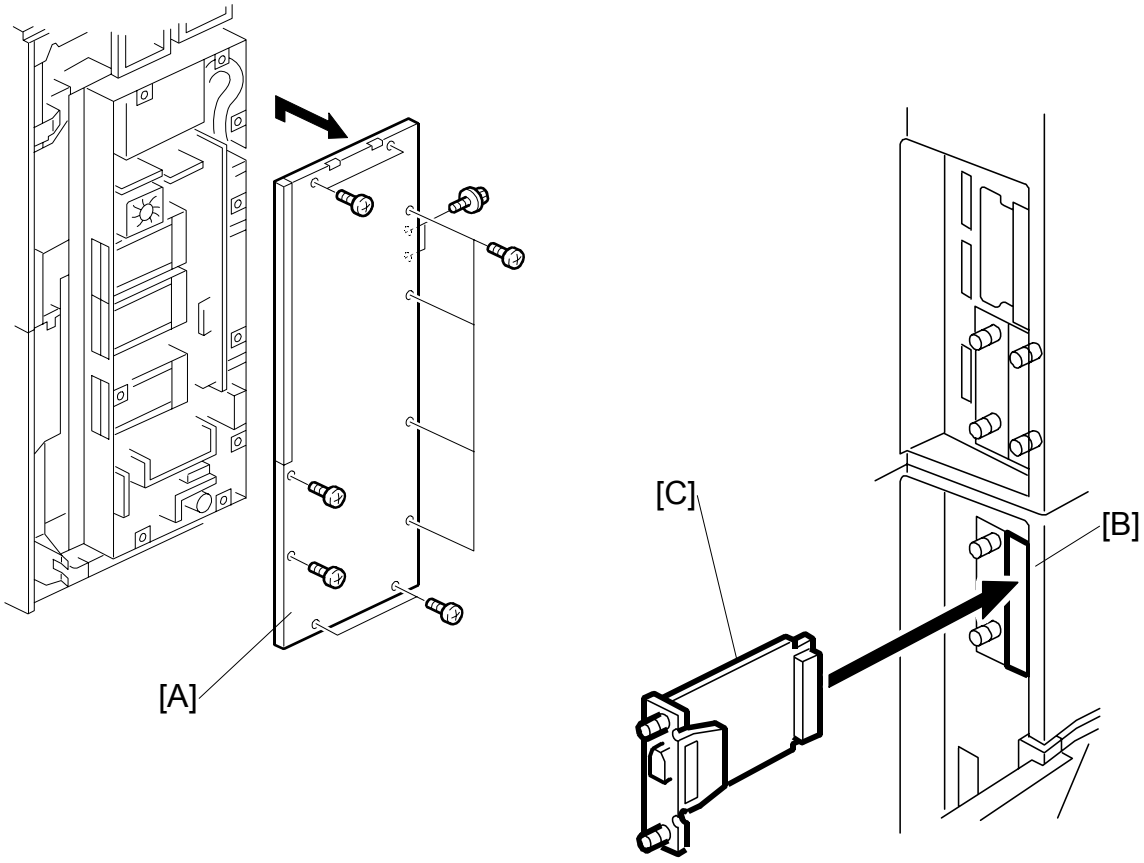
Measure the distance between the machines. Then check the number of cables and repeater hubs that are necessary.

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

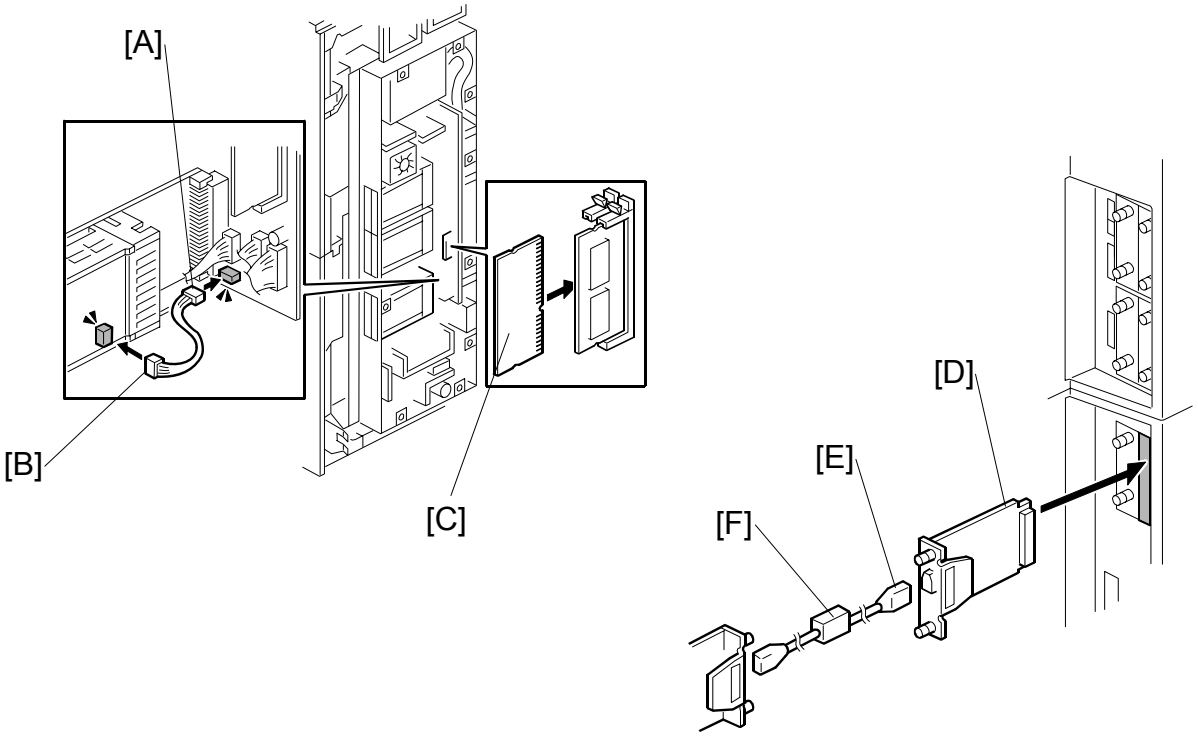
Three sets of key-tops (2 per set, 1 for NA, 1 for EU) are included for each machine, but you must install only one key-top on each machine.

- 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 (B140 Series)



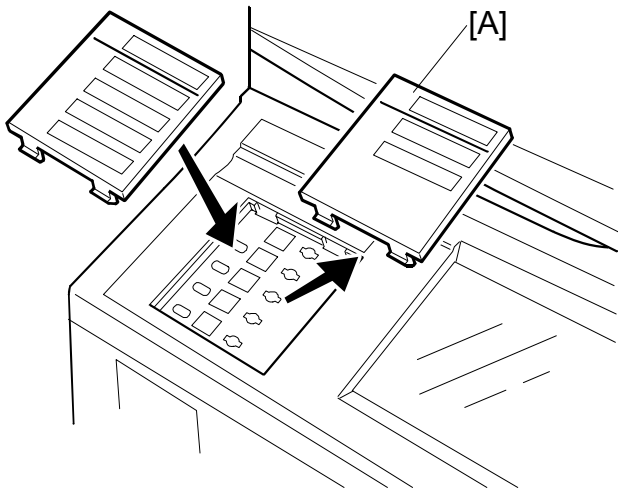
1. Remove the rear cover.
2. Remove the controller box cover [A] (🔩 x 12).
3. Remove the cover from Slot A2 [B] (🔩 x 2).
4. Put the Copy Connector Kit board [C] in Slot A2 and tighten the knob screws (x 2).



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].



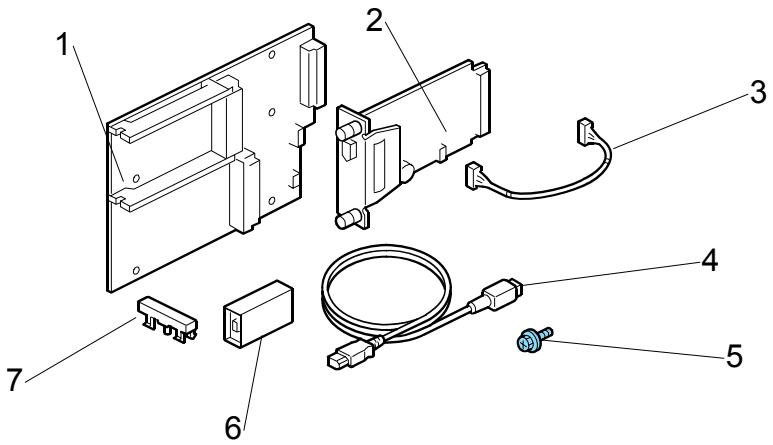
15. Replace the key tops [A].
16. Repeat the firmware and hardware procedures above for the other copier.

1.21.3 COPY CONNECTOR (B842) FOR B246/D052 SERIES

Accessories

Description	Q'ty
1. Tandem/FCU Mount	2
2. Copy Connector Board B842	2
3. Power Repeater Cable	2
4. Coupling Interface Cable 1394	3
5. Screws	3
6. Repeater Hub 1394	2
7. Keytops	2

⇒



Preparation

Before you begin the installation procedure:

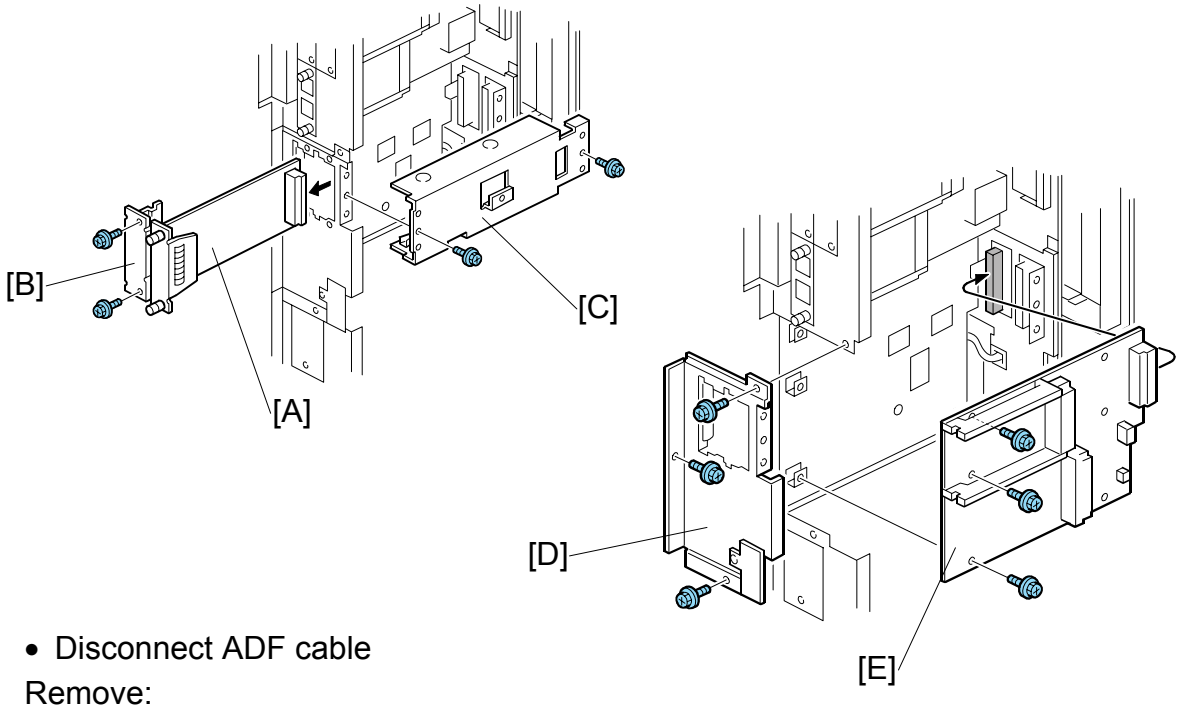
- Measure the distance between the machines to be connected.
- Confirm that the printer/scanner option is installed on the machines.

Determine the number of cables and repeater hubs that are necessary based on the distance measured between the machine.

DISTANCE	POWER REPEATER HUBS REQUIRED	INTERFACE CABLES REQUIRED
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

- 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 (B246 Series)

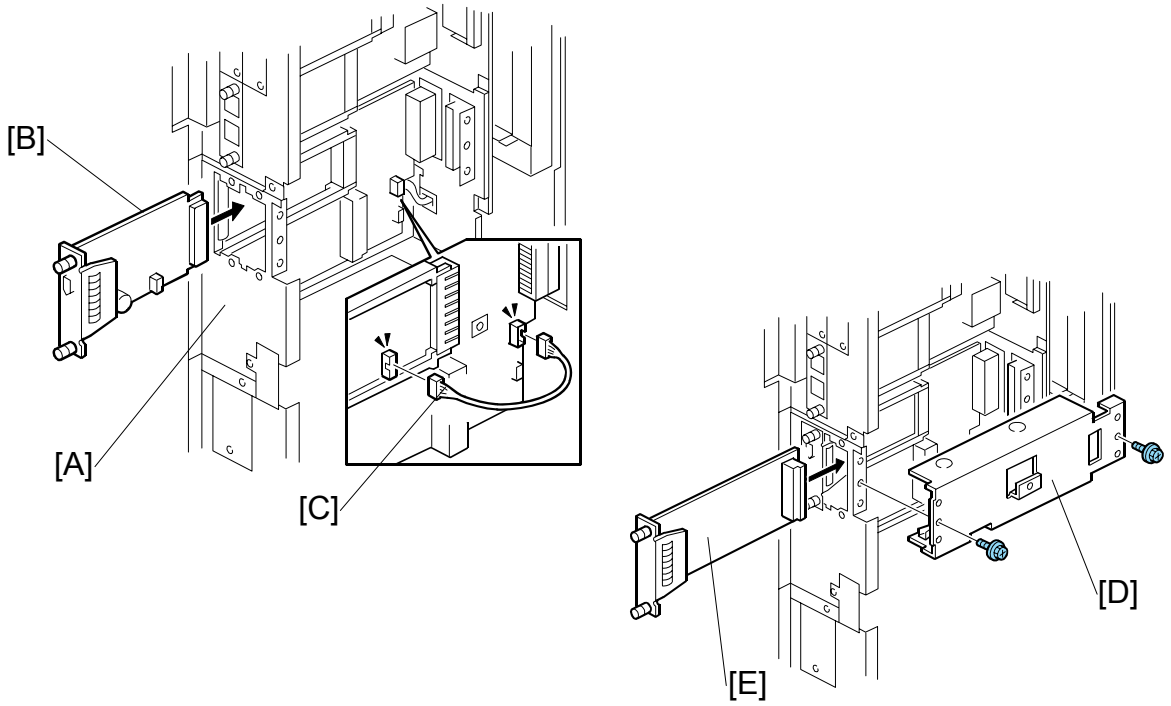


- Disconnect ADF cable

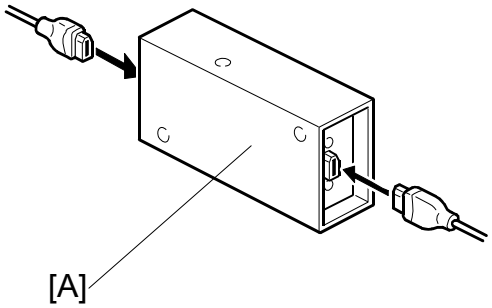
Remove:

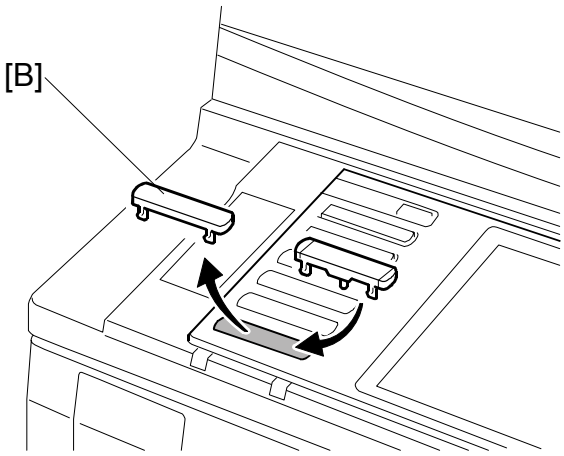
- Rear upper cover (☞ x2) (☛3.3.5)
- Rear lower cover (☞ x2) (☛3.3.5)
- Controller box cover (☞ x13)

1. If a file format converter board [A] is installed in slot **A2**, remove it (Knob ☞ x2).
2. Remove the slot cover [B] of slot **A1 (**☞ x2).
3. Remove the file format converter mount [C] (☞ x2).
4. Remove the lower board slot face plate [D] (☞ x3).
5. Insert the Tandem/FCU mount [E] and fasten it (☞ x3).
   - Confirm that the edge connector fastened to the mother board before you fasten the screws.



6. Reattach the slot face plate [A] (☞ x3).
7. Insert the copy connector board [B] and fasten it (Knob ☞ x2)
8. Connect the power repeater cable [C] to the copy connector board and the Tandem/FCU mount (☜ x2).
9. Reattach the file format converter mount [D] (☞ x2)
10. If the file format converter [E] was removed from slot **A2**, reinstall it (Knob ☞ x2)





11. Do Steps 1-10 to install the PCBs in the other machine.
12. Connect the machines with the coupling interface cable.

    -or-

    If the distance between the machines is more than 4.5 m (14.8 ft.), use two cables by connecting them with a connector hub [A].
13. Replace the keytops [B] on both machines.

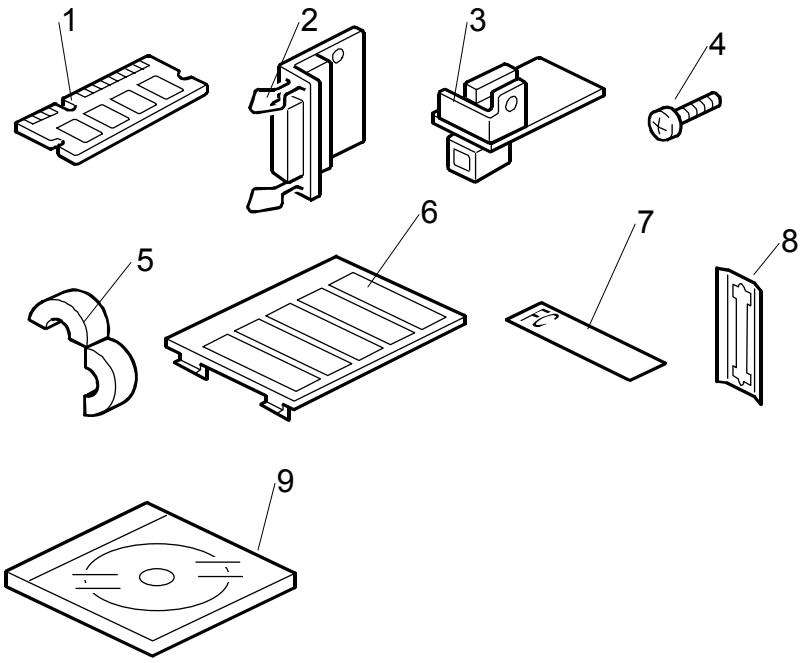
1.22 MFP OPTIONS: B064 SERIES

1.22.1 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. Keytop Plate Sheet	1
8. Shading Plate	1
9. CD-ROM	2



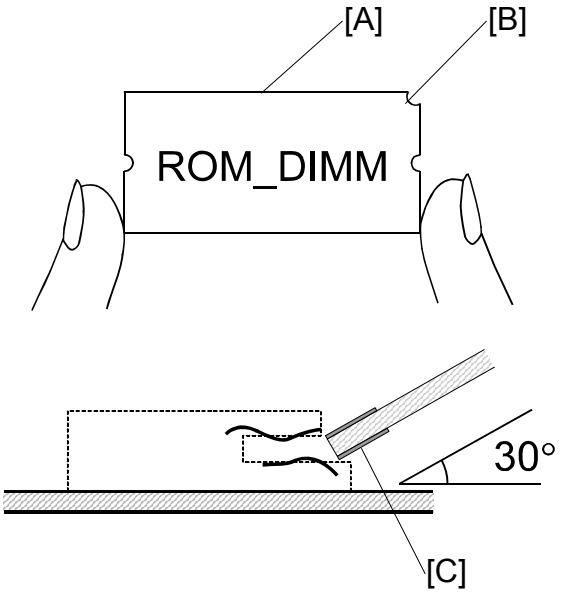
1.22.2 INSTALLATION PROCEDURE

Inserting DIMMs

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

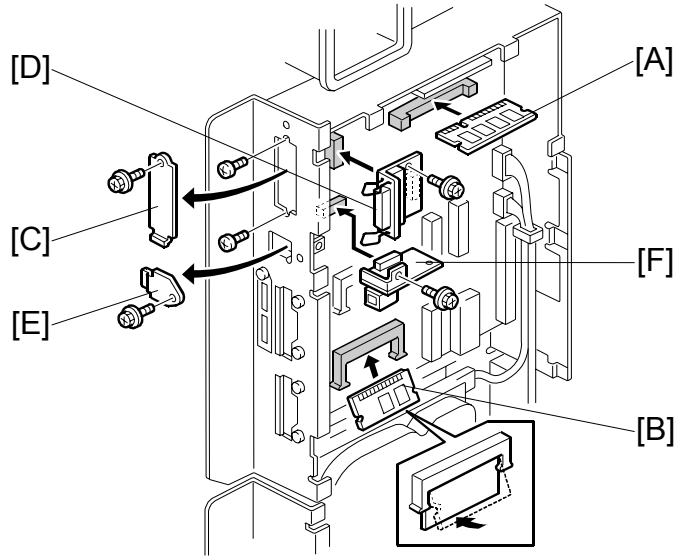
⚠CAUTION

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.

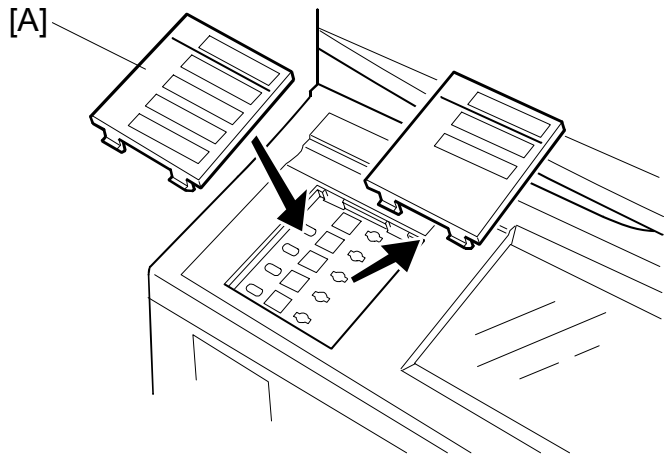
NOTE: The printer/scanner unit requires at least 128 MB of memory (more is recommended). Memory chips are not packaged with this unit.

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

⚠CAUTION
Make sure that the DIMMs are inserted correctly. (☛ 0)

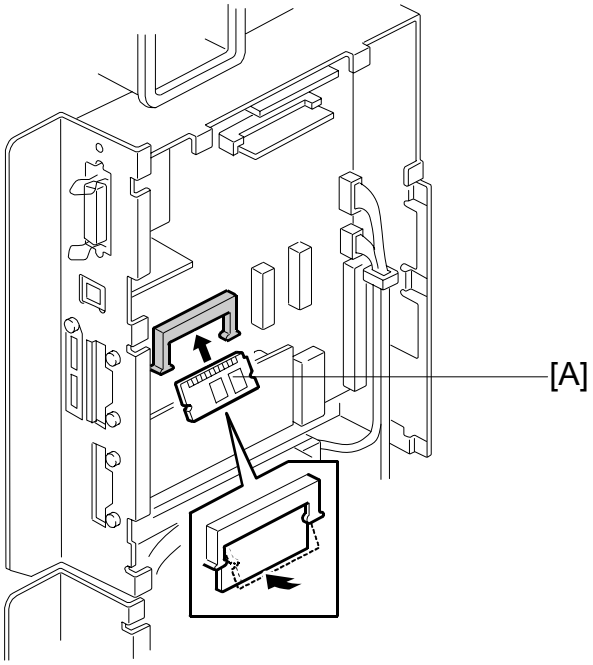
4. Insert the SDRAM DIMM (expansion memory 128 MB or 256 MB) [A] into PC133 on the controller.
5. Insert the ROM DIMM [B] (printer/scanner) board into Slot 1.
6. Remove the Centronics connector cover [C] and insert the Centronics connector [D] into CN310 and fasten with the provided screws (🖉 x 2).

   Rating voltage of interface connectors: Max. DC 5V
7. Remove the slot covers [E] (🖉 x 2).
8. Install the NIB [F] into CN311 (🖉 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].

1.22.3 PS3 (B525-08)



1. Remove the rear upper cover (🔩 x 2).
2. Remove the controller cover (🔩 x 9).
3. Insert the PS3 module [A] into Slot 2.

⚠CAUTION
Make sure that the DIMM is inserted correctly.(☛1.22.2)

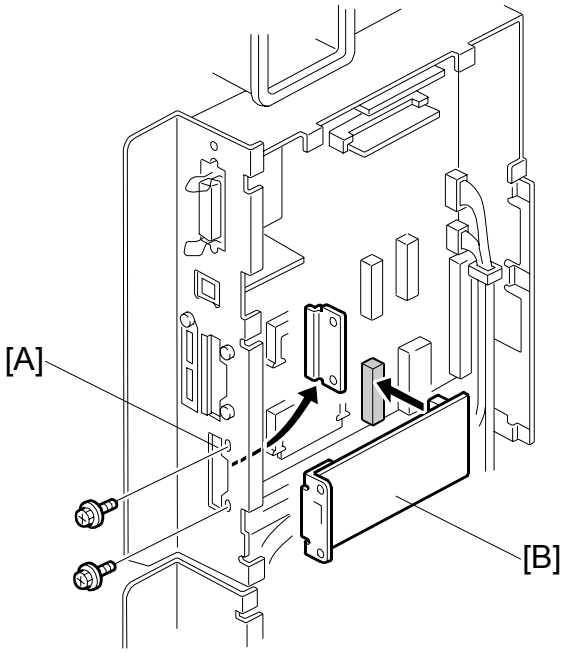
1.22.4 USB 2.0 (B525-01)

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 10).
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.

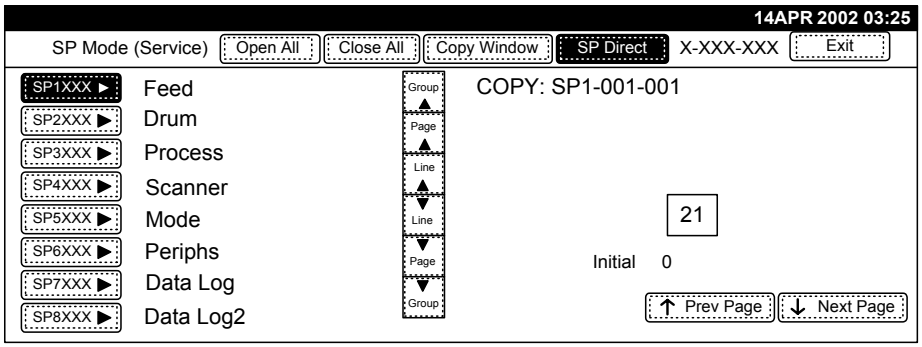
USB SP Settings

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 1 0 7.
3. Hold down Clear/Stop C/⊘ for more than 3 seconds.
4. Press “Copy SP” on the touch-panel to open the SP command selection screen.



5. Enter 5 8 4 4.

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**	

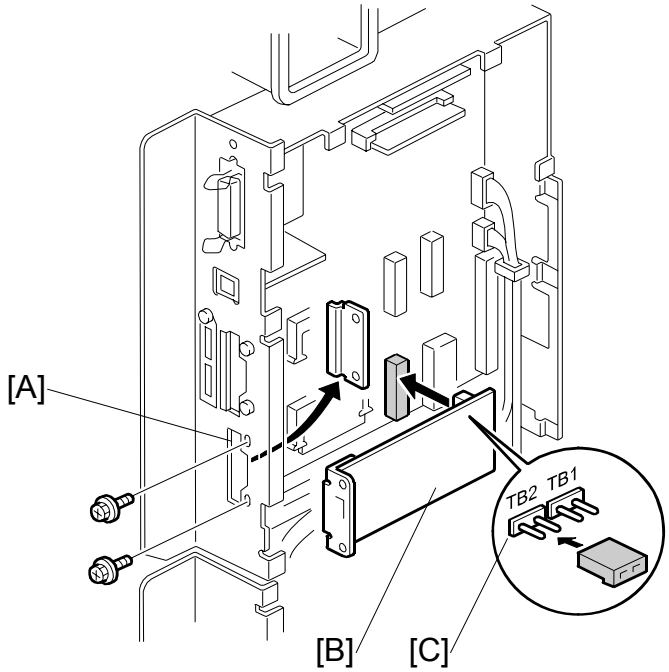
1.22.5 IEEE1394 (G561) FIREWIRE INTERFACE

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



⚠CAUTION

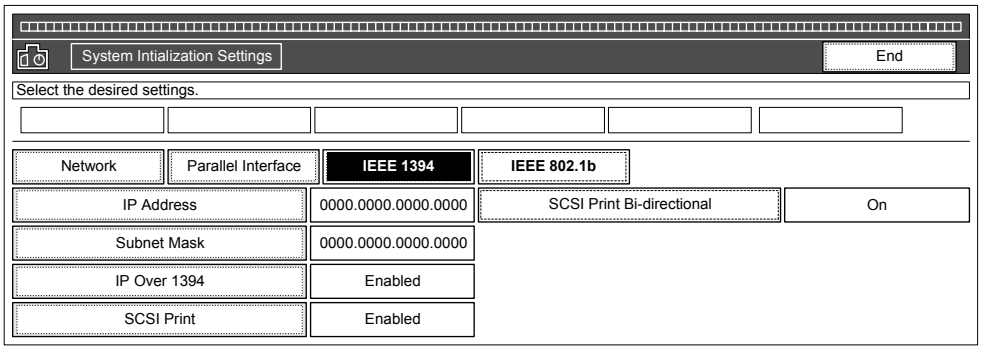
Switch the machine off and unplug the machine before starting the following procedure.

1. Remove the rear upper cover (☞ x 2).
2. Remove the controller cover (☞ x 9).
3. Remove the slot cover [A] (☞ x 2).
4. 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.



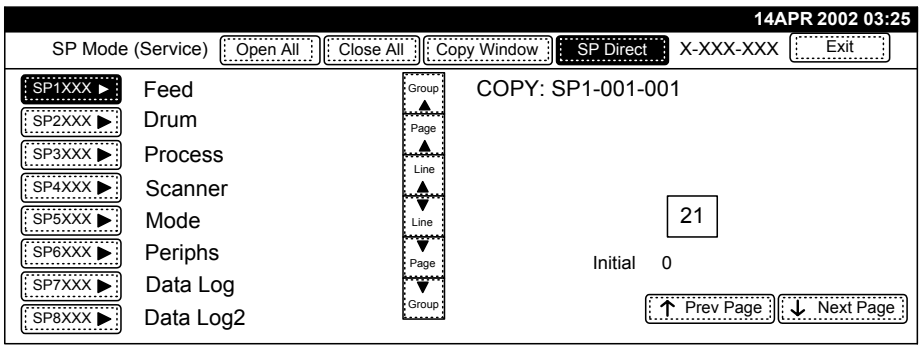
4. Press the key and enter the following settings:
   - IP Address
   - Subnet Mask
   - IP Over 1394. Enable or disable this setting as required. This setting enables IP Over 1394 as the default setting for the printing method.
   - SCSI Print. Enable or disable this setting as required. This setting 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 1 0 7.
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 5 8 3 9.

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_Unique_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.

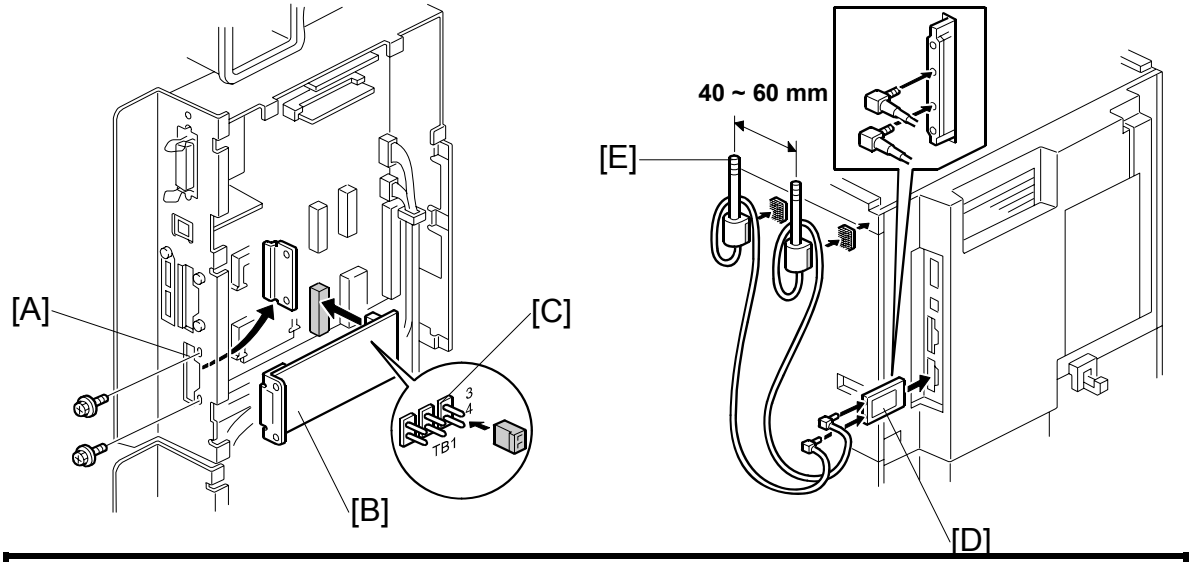
1.22.6 IEEE802.11B WIRELESS LAN (G628)

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



⚠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 wireless LAN board [B] into the PCI Slot 1.
5. Fasten the slot cover to the wireless LAN board (🔩 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.

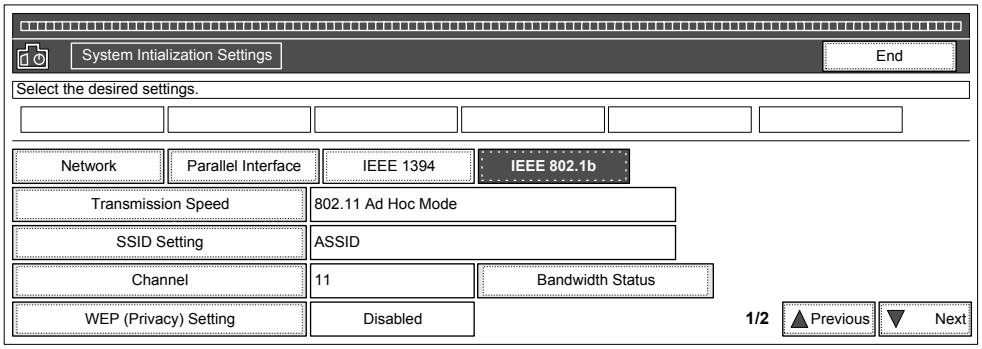
9. Print a system settings list and confirm that the machine correctly recognizes the interface.

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 Settting
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.

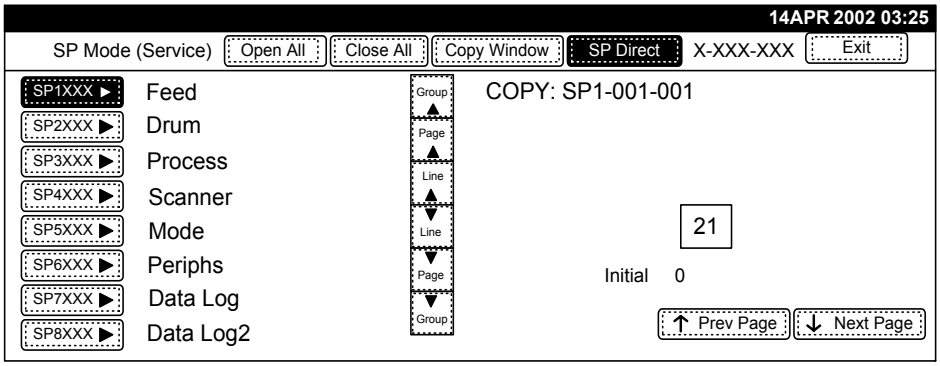
11 Mbps	140 m (153 yd.)
5.5 Mbps	200 m (219 yd.)
2 Mbps	270 m (295 yd.)
1 Mbps	400 m (437 yd.)

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 1 0 7.
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 "5840".

SP No.	Name	Function
5840-006	Channel MAX	Sets the maximum range of the channel settings for the country.
5840-007	Channel MIN	Sets the minimum range of the channels settings allowed for your country.
5840-011	WEP Key Select	Used to select the WEP key (Default: 00).

1.22.7 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)
GW Controller: System	B5254108	5.07
GW 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 GW controller firmware for the Copy Connector/MLB group is divided into GW System and GW 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

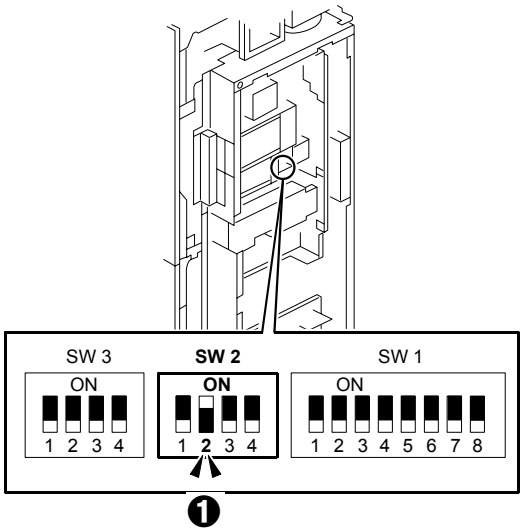
⚠CAUTION

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

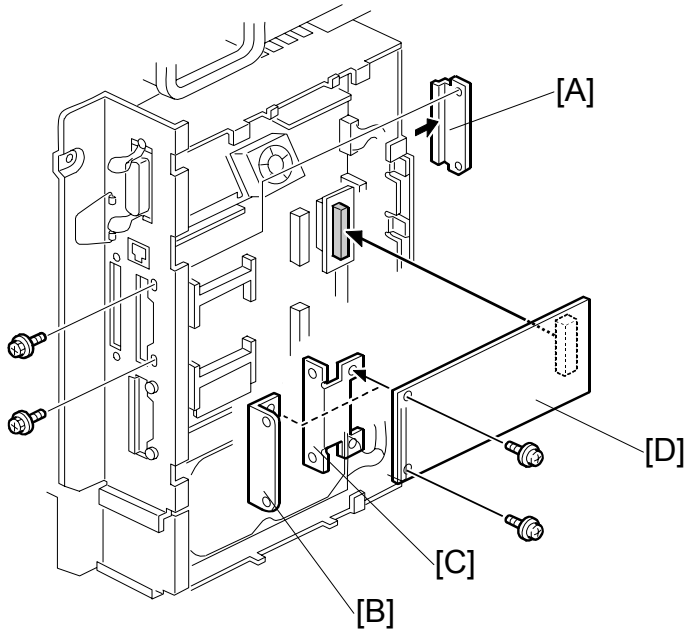
Installing the Firmware

⇒ 1. Remove the rear cover (🔩 x 2).

2. Remove the controller cover (🔩 x 10).
3. Push DIP SW2-1 ❶ on the controller board to the UP position (ON).
4. Install these firmware modules.
   - GW 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



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		

⇒1.23 MFP OPTIONS: B140 SERIES

1.23.1 MERGING APPLICATIONS ON ONE SD CARD

IMPORTANT:

- These instructions and procedures apply to the B140 Series only.

Merging Applications

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

1. Turn off the copier.
2. Remove the SD card slot cover (☞ x2).
3. Insert the Source SD card into the source SD card slot on the left side of the controller box. This card contains the application that you want to copy.

Series	Source SD Card Slot
B140 Series	**C3**

NOTE: The PS SD card cannot be the source card (it cannot be copied).

4. Check the target SD card and confirm that its write-protect switch is OFF.
5. Insert the Target SD card into the target SD card slot.

Series	Target SD Card Slot
B140 Series	**C1**

6. Turn the copier on.
7. Do **SP5873 001**.
8. Select "Execute".
9. Obey the instructions on the display and select "Execute" to start copying.
10. When the display tells you copying is completed, touch "Exit".
11. Turn the copier off.
12. Remove the Source SD card from **C3**. Leave the target SD card in **C1)**.
13. Turn the copier on.
14. Go into the User Tools mode and check that all the applications on the SD card in Slot 1 are enabled:

    User Tools> System Settings> Administrator Tools> Firmware Version

15. Turn the copier off again, then:
    - Reattach the SD card slot cover.
    - Attach the rear cover of the machine.

Storing Copied SD Cards On Site

Important!

- The original card can be used to perform an undo procedure (SP 5873 002).
- Before you store an SD card, label it carefully so it can be identified easily if you need to do the undo procedure (see below).

Undo Exec

Do this procedure if you moved an option from the original SD card to another card by mistake and you need to restore the original SD card.

1. Turn the main switch OFF.
2. Put the SD cards into the SD card slots as follows:

SD Card	B140 Series
Source (with copied appli.)	C1
Target (now blank)	C3

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 Source SD card (from C1 of B140 Series).
8. Remove the option Target SD card from C3.
9. Insert restored SD card (the target) into the SD card slot.

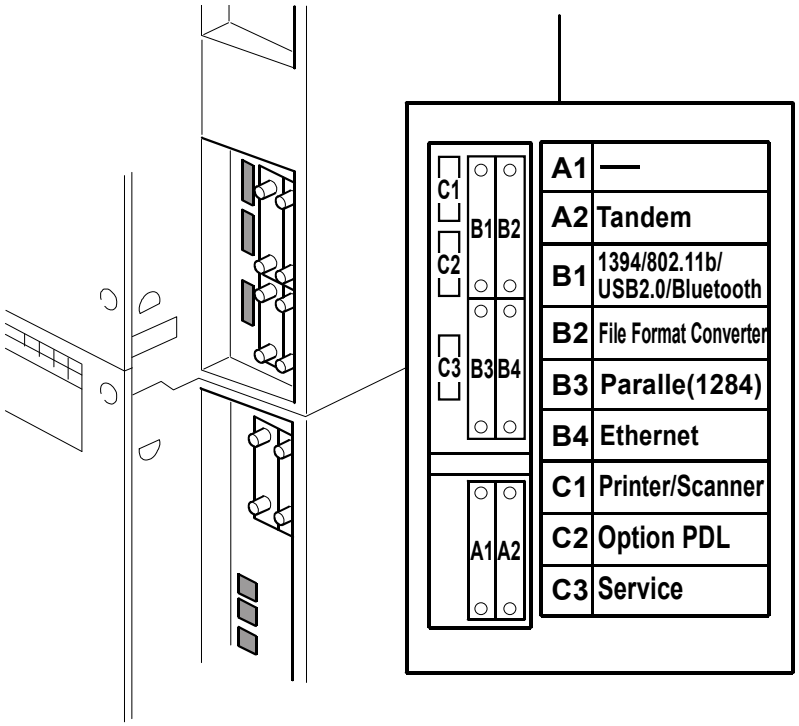
B140 Series	C1

10. Turn the main switch ON.
11. Do **SP5990-005** (Loading Program) and make sure the program runs correctly.
12. Turn the main switch OFF.
13. Remove the SD card.

1.23.2 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



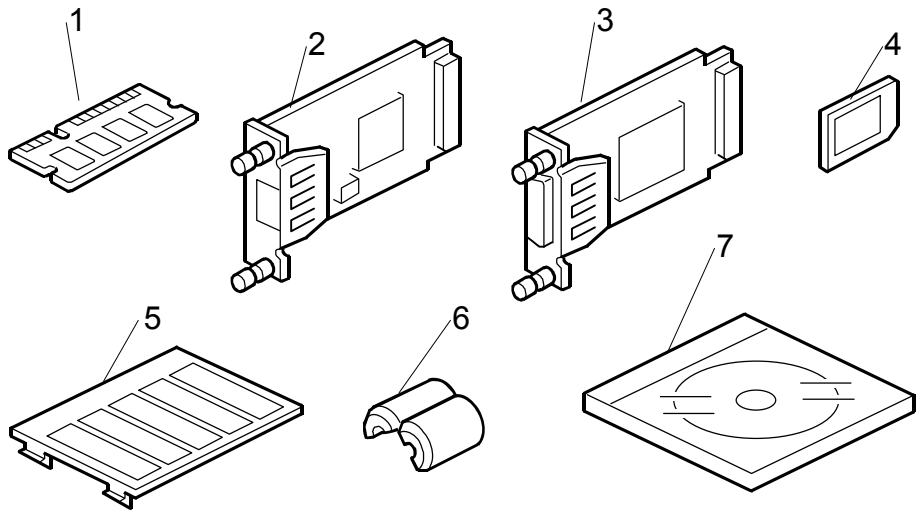
⇒1.23.3 PRINTER/SCANNER KIT (B659)

ACCESSORY CHECK

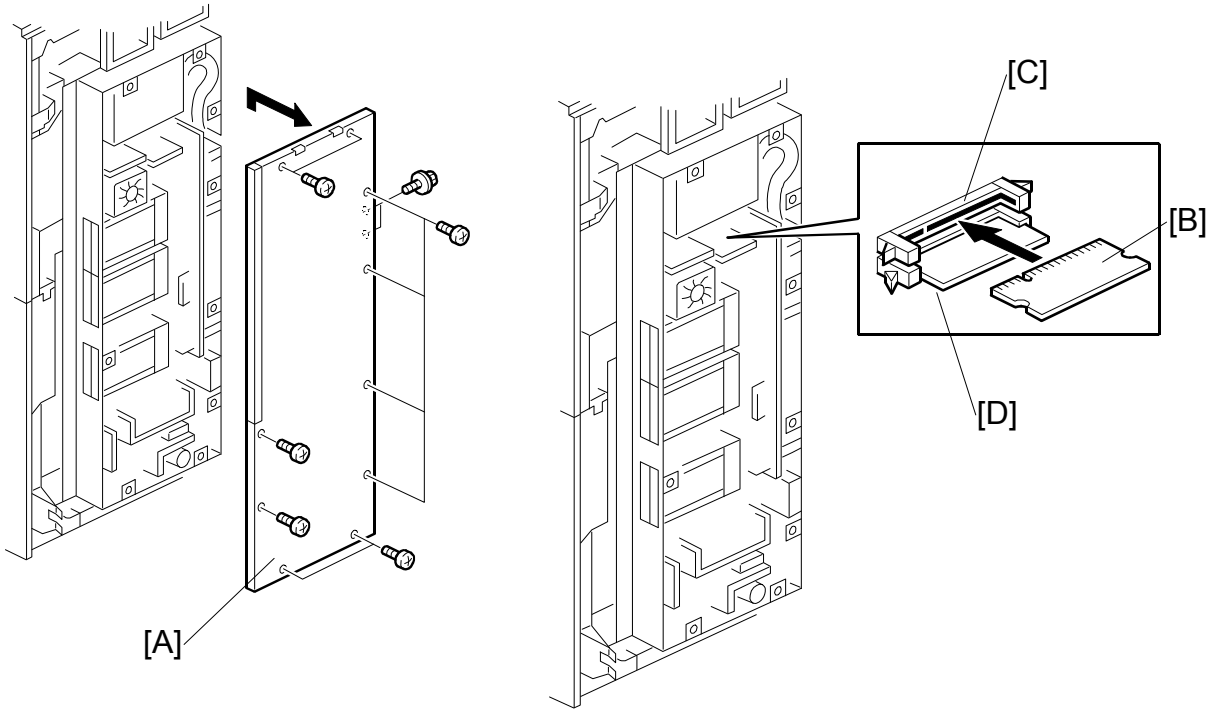
Check the accessories and their quantities against this list:

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. Keytop	1
6. Ferrite Core	1
7. CD-ROM	2

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



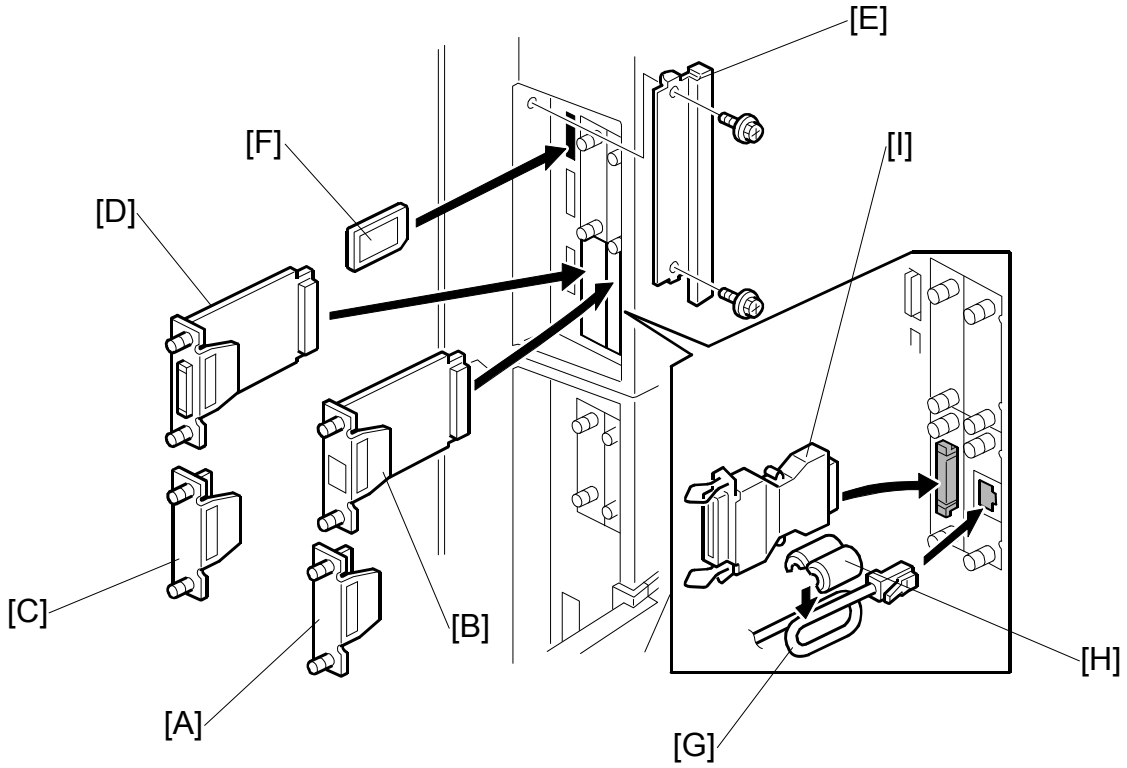
Installation



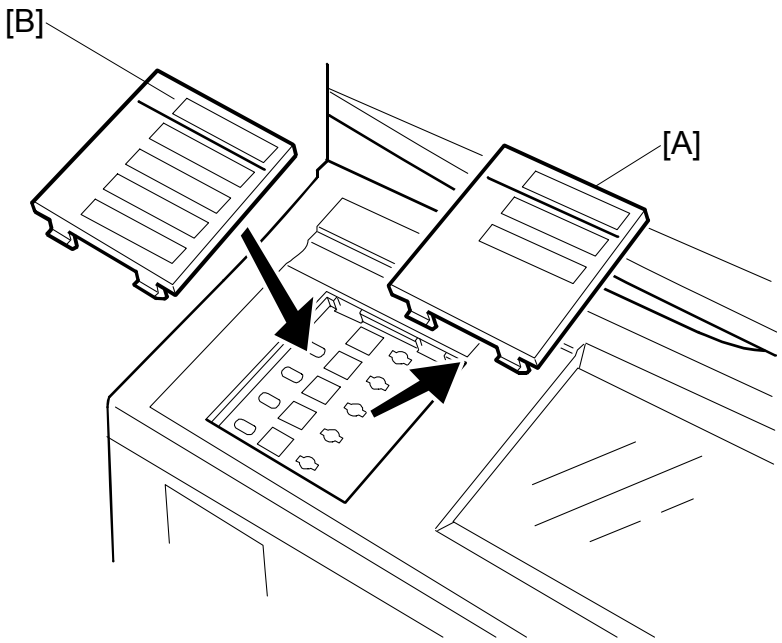
⚠CAUTION

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

1. Remove the rear covers.
2. Remove the controller box cover [A] (🔩 x 12).
3. Hold the 256 MB memory DIMM [B] as shown.
4. Install the DIMM in slot [C] above the other memory DIMM [D].
   NOTE: To remove the memory DIMM, pull out the spring-loaded clips on one of the two ends of the DIMM.
5. Attach the controller box cover.



6. Remove the cover [A] of Slot B4 (x 2).
7. Install the NIB board [B] in Slot B4 and secure it with the screws.
8. Remove the cover [C] of Slot B3 (x 2).
9. Install the Centronics board [D] in Slot B3 and secure it with the screws.
10. Remove the slot cover [E] (x 2).
11. 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.
12. Wind the cable [G] one full turn around the ferrite core [H], then close the core to lock it.
13. Connect the adapter [I] to the NIB board.



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

1.23.4 PS3 (B525-15)

ACCESSORY CHECK

Check the accessories and their quantities against this list:

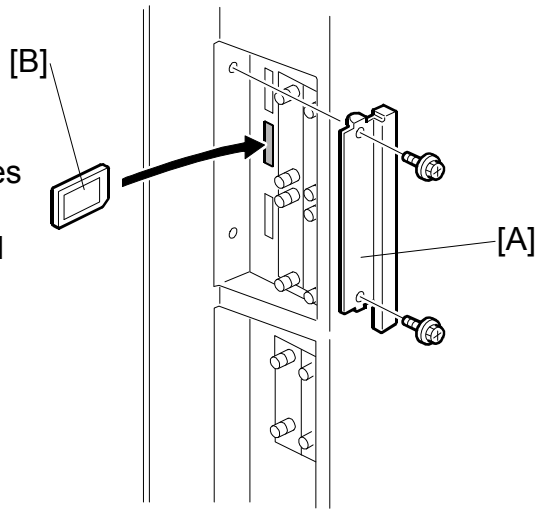
Description	Q'ty
1. PostScript3 Emulation SD Card	1

Installation

B140 Series

- The PS3 SD card can be used only with the P/S kit SD card in the machine.
- Insert the printer/scanner kit SD card in Slot C1 and the PS3 SD card in Slot C2.

1. Turn the machine off.
2. Remove the slot cover [A] (x 2).
3. Install the PS3 SD Card [B] in Slot C2.
   - 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.



F

1.23.5 USB 2.0 INTERFACE BOARD (B596-01)

ACCESSORY CHECK

Check the accessories and their quantities against this list:

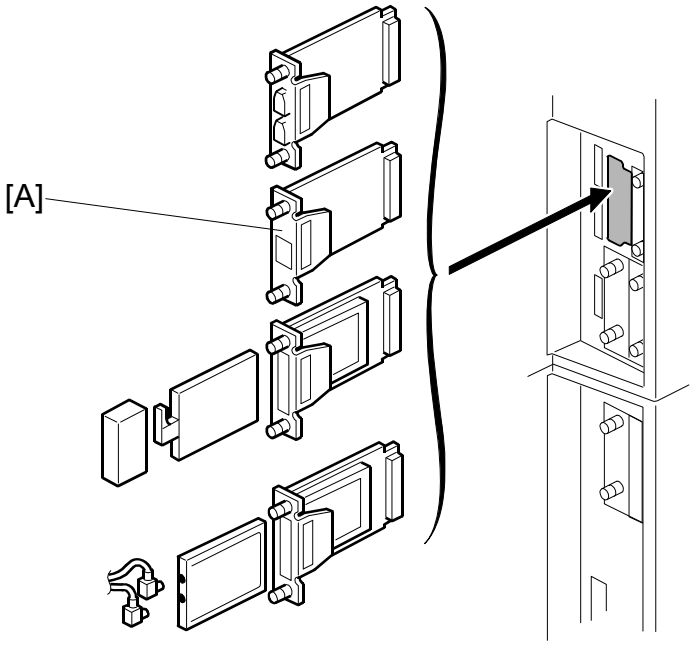
Description	Q'ty
1. USB 2.0 Interface Board	1

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

1.23.6 IEEE 1394 INTERFACE BOARD (B581-01)

ACCESSORY CHECK

Check the accessories and their quantities against this list:

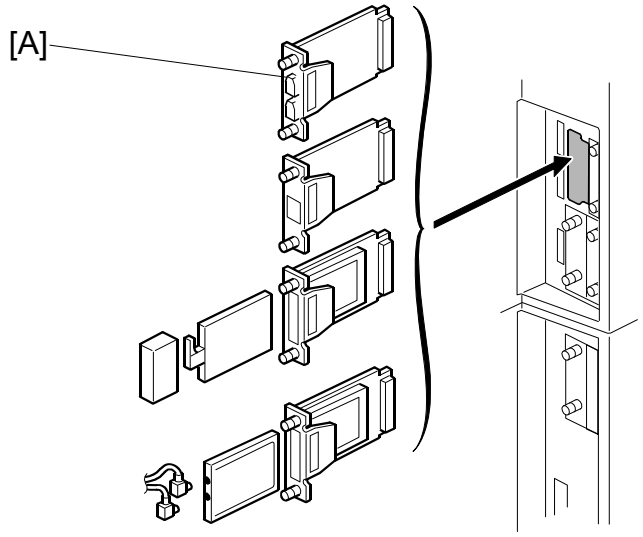
Description	Q'ty
1. IEEE 1394 Interface Board	1
2. 4-Pin Cable	1
3. 6-Pin Cable	1

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

1.23.7 IEEE 802.11B INTERFACE BOARD (G813)

ACCESSORY CHECK

Check the accessories and their quantities against this list:

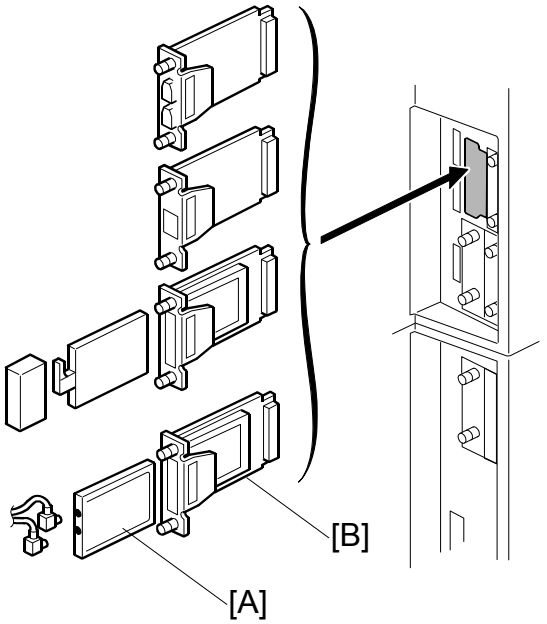
Description	Q'ty
1. IEEE 802.11b Interface Board	1
2. WLAN PIC Card	1
3. Antennas	2
4. Velcro pads	2
5. Antenna Cap	1

Installation

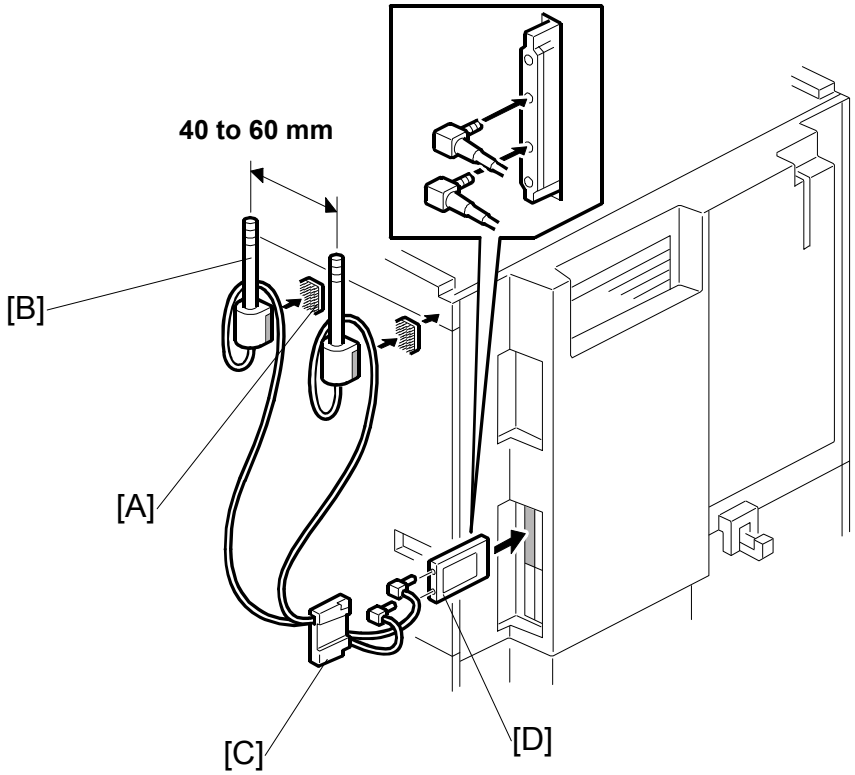
You can only install one of these cards, because only one PCI slot (B1) is available for these options:

- 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 from the PCI card.
4. Insert the PCI card [A] into the wireless LAN board.
5. Install the wireless LAN board [B] 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. 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) You should attach the antennas as specified above for optimal results. However if you place one or both antennas in a different location, 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 nearer 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

1.23.8 BLUETOOTH INTERFACE UNIT (G377)

ACCESSORY CHECK

Check the accessories and their quantities against this list:

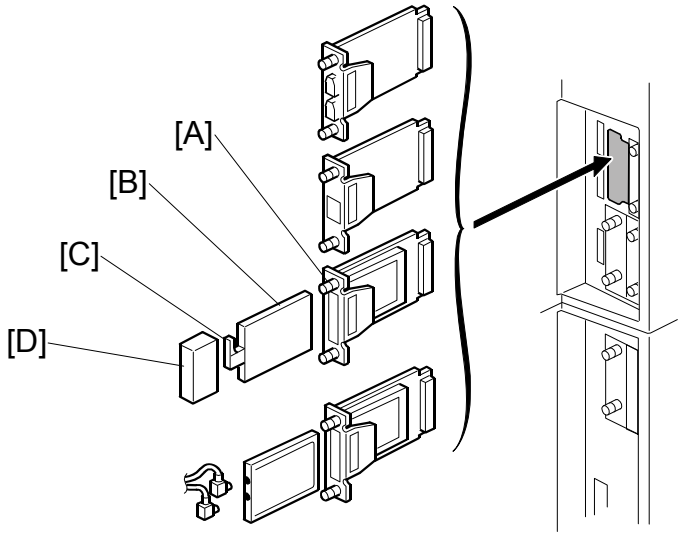
Description	Q'ty
1. Bluetooth Board	1
2. Bluetooth Card	1
3. Antenna Cap	2
4. Velcro pads	2

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].

1.23.9 FILE FORMAT CONVERTER (B609)

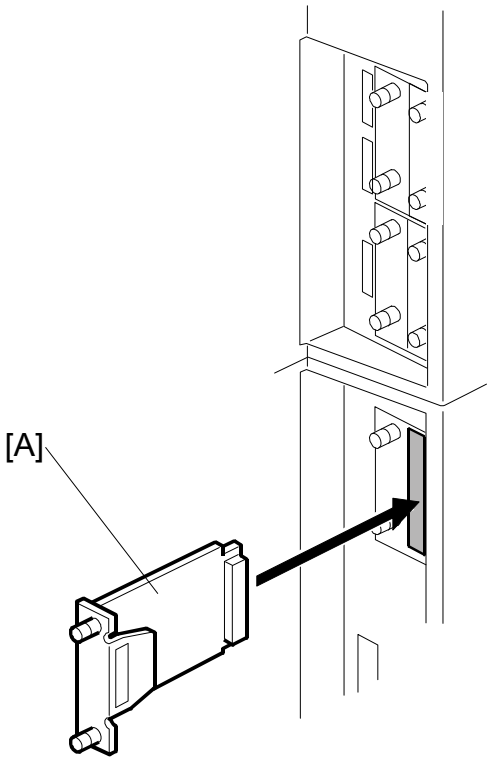
ACCESSORY CHECK

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.

1.23.10 DATA OVERWRITE SECURITY UNIT (B735)

ACCESSORY CHECK

Check the accessories and their quantities against this list:

Description	Q'ty
1. SD Card	1

Before You Begin…

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

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

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

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

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

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

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

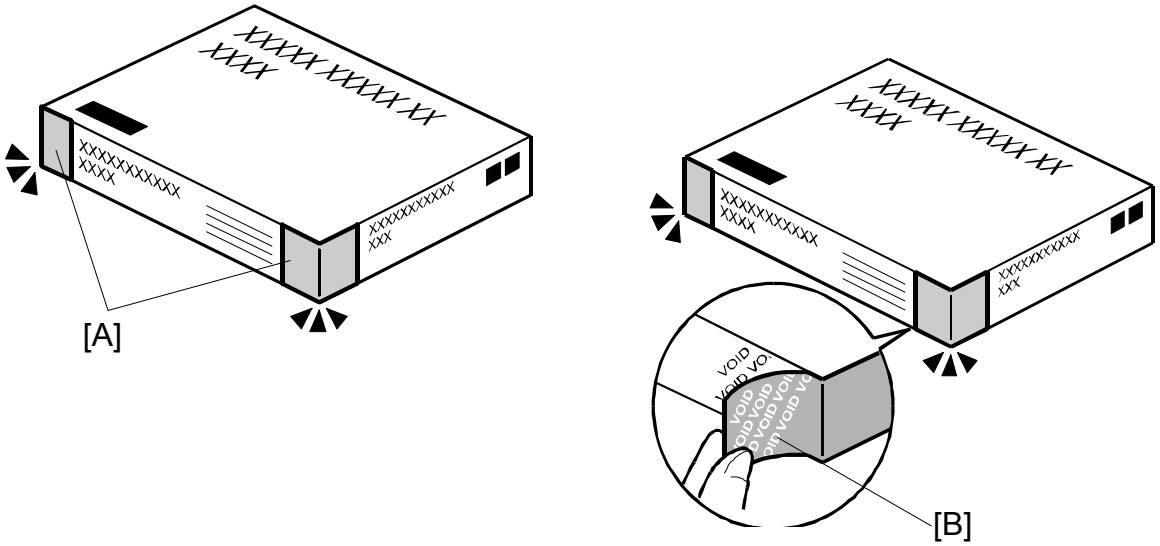
4. Confirm that "Administrator Tools" is selected and enabled:

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

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

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

Seal Check And Removal



⚠CAUTION

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

1. Check the box seals [A] on each corner of the box.
   - Make sure that a tape is attached to each corner.
   - The surfaces of the tapes should be blank.

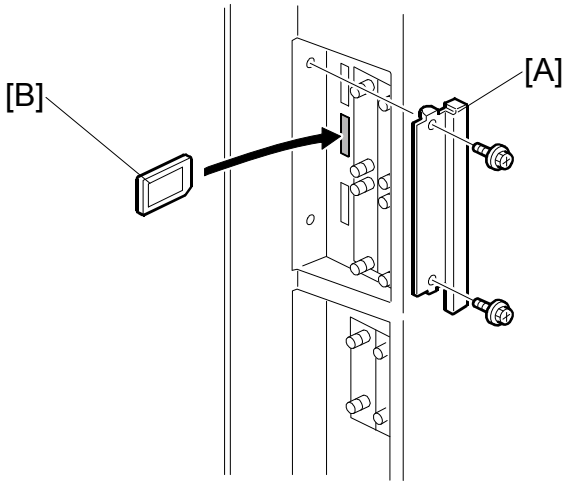
   Important: If you see “VOID” on the tapes, do not install the components in the box. Stop the procedure and contact your Sales Division.
2. If the surfaces of the tapes do not show “VOID”, remove them from the corners of the box.
3. After you remove each seal, the “VOID” marks [B] appear. This is normal.

Installation Procedure

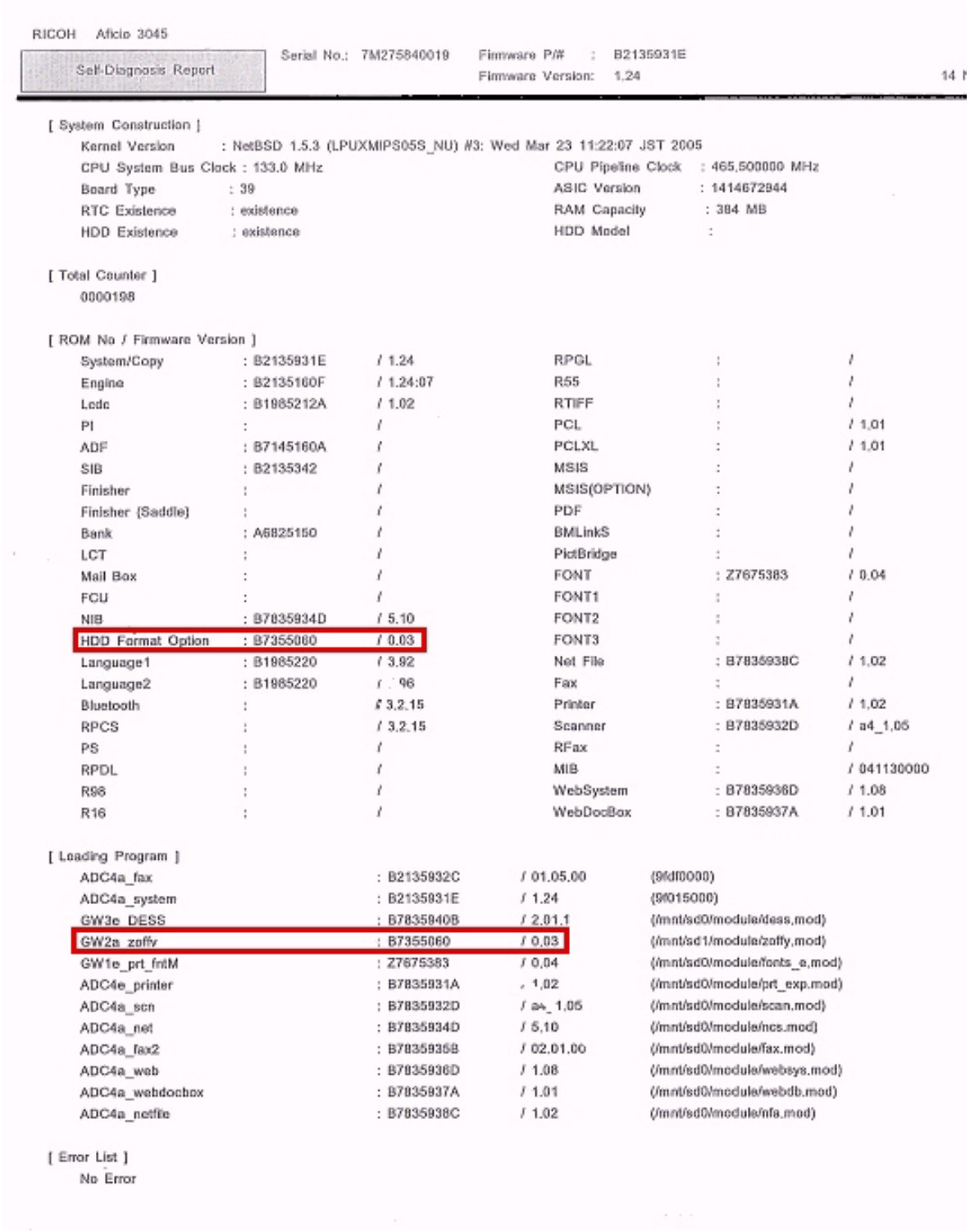
⚠CAUTION

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

1. If the machine is on, turn off the main power switch.
2. Disconnect the network cable if the NIB is installed,.



3. Remove the slot cover [A] (☞ x 2).
4. Install the SD Card [B].
5. Connect the network cable if the NIB is installed.
6. Turn the main power switch on.
7. Do SP5878 (Option Setup).
8. Exit SP mode.
9. Turn the operation switch off, then turn the main power switch off.
10. Turn the main power switch on again.
11. Do SP5990-005 (SP print mode Diagnostic Report).



RICOH Aficio 3045

Self-Diagnosis Report

Serial No.: 7M275840019 Firmware P/# : B2135931E

Firmware Version: 1.24

[System Construction]

Kernel Version	: NetBSD 1.5.3 (LPUXMIPS05S_NU) #3: Wed Mar 23 11:22:07 JST 2005		
CPU System Bus Clock	: 133.0 MHz	CPU Pipeline Clock	: 465.500000 MHz
Board Type	: 39	ASIC Version	: 1414672944
RTC Existence	: existence	RAM Capacity	: 384 MB
HDD Existence	: existence	HDD Model	:

[Total Counter]

0000198

[ROM No / Firmware Version]

System/Copy	: B2135931E	/ 1.24	RPGL	:	/
Engine	: B2135160F	/ 1.24:07	R55	:	/
Ledc	: B1985212A	/ 1.02	RTIFF	:	/
PI	:	/	PCL	:	/ 1.01
ADF	: B7145160A	/	PCLXL	:	/ 1.01
SIB	: B2135342	/	MSIS	:	/
Finisher	:	/	MSIS(OPTION)	:	/
Finisher (Saddle)	:	/	PDF	:	/
Bank	: A6825150	/	BMLinkS	:	/
LCT	:	/	PictBridge	:	/
Mail Box	:	/	FONT	: Z7675383	/ 0.04
FCU	:	/	FONT1	:	/
NIB	: B7835934D	/ 5.10	FONT2	:	/
HDD Format Option	: B7355060	/ 0.03	FONT3	:	/
Language1	: B1985220	/ 3.92	Net File	: B7835938C	/ 1.02
Language2	: B1985220	/ 96	Fax	:	/
Bluetooth	:	/ 3.2.15	Printer	: B7835931A	/ 1.02
RPCS	:	/ 3.2.15	Scanner	: B7835932D	/ a4_1.05
PS	:	/	RFax	:	/
RPDL	:	/	MIB	:	/ 041130000
R98	:	/	WebSystem	: B7835936D	/ 1.08
R16	:	/	WebDocBox	: B7835937A	/ 1.01

[Loading Program]

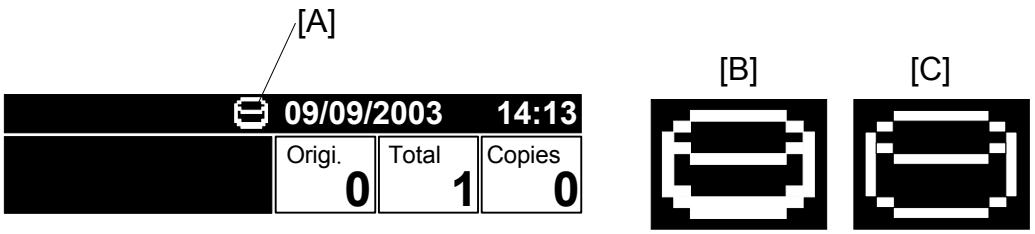
ADC4a_fax	: B2135932C	/ 01.05.00	(9fdf0000)
ADC4a_system	: B2135931E	/ 1.24	(9f015000)
GW3e_DESS	: B7835940B	/ 2.01.1	(/mnt/sd0/module/dess.mod)
GW2a_zoffy	: B7355060	/ 0.03	(/mnt/sd1/module/zoffy.mod)
GW1e_prt_fntM	: Z7675383	/ 0.04	(/mnt/sd0/module/fonts_a.mod)
ADC4e_printer	: B7835931A	/ 1.02	(/mnt/sd0/module/prt_exp.mod)
ADC4a_scn	: B7835932D	/ a4_1.05	(/mnt/sd0/module/scan.mod)
ADC4a_net	: B7835934D	/ 5.10	(/mnt/sd0/module/ncs.mod)
ADC4a_fax2	: B7835935B	/ 02.01.00	(/mnt/sd0/module/fax.mod)
ADC4a_web	: B7835936D	/ 1.08	(/mnt/sd0/module/websys.mod)
ADC4a_webdocbox	: B7835937A	/ 1.01	(/mnt/sd0/module/webdb.mod)
ADC4a_netfile	: B7835938C	/ 1.02	(/mnt/sd0/module/nfa.mod)

[Error List]

No Error

12. Make sure the ROM number and firmware version [A] in the diagnostic report are the as the ROM and version number of [B].

13. Turn "Auto Erase Memory Setting" on:
    [User Tools]> System Settings> Administrator Tools> Auto Erase Memory Setting> ON
14. Exit User Tools.



15. Check the display and make sure that the overwrite erase icon [A] is displayed.
    NOTE: If it is not displayed, repeat the procedure from Step 7 again.
16. Make a Sample Copy.
17. Check the overwrite erase icon.
    - The bottom of the icon becomes thicker [B].
    - “Next Copy” is shown for a short time under the icon.
    - The icon goes back to its usual shape [C].

⇒

⇒

1.24 MFP OPTIONS: B246/D052 SERIES

1.24.1 OVERVIEW

The machine has three SD card slots:

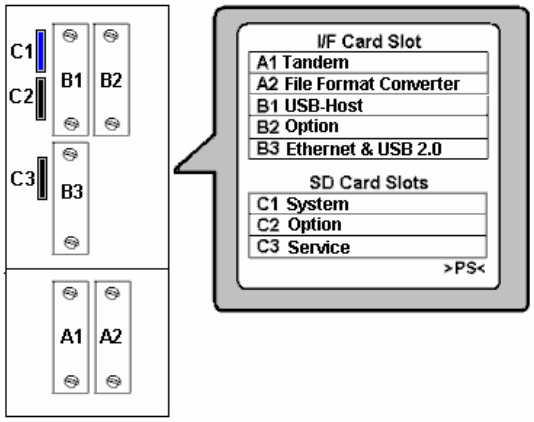
- For the B246/D052 Series, slot 1 (C1) is used for the system card **(Never remove the system SD card from Slot 1)**. (B140 Series machines do not employ a system card.)
- Slot 2 (C2) is used for application programs
- Slot 3 (C3) is used for servicing (firmware updates)

NOTE: Only one SD card slot (C2) is available for SD card applications with the B246/D052 machines. If the customer wants to use more than one application, the applications must be copied onto the same SD card.

Important

- The data necessary for authentication is transferred with the application program to the target SD card.
- Do not use an SD card if it was used with a computer before this time. Correct operation is not guaranteed if this type of SD card is used.
- The SD card is the only evidence that the customer is licensed to use the application program. Also, the service technician may occasionally need to check the SD card and its data to solve problems. For these reasons SD cards must be stored with the machine. (☛ Storing Copied SD Cards on Site)
- A licensing agreement prohibits copying of the PostScript SD card. However, you can copy any application from another SD card to the PS3 SD card.
- Once an SD card has been used to combine applications on that card, that SD card cannot be used for a different function.
- Never remove the System SD Card from Slot 1.
- Before uploading to an SD card, always make sure that the write-protect switch is OFF. (It is very easy to accidentally turn on the write-protect switch when inserting or removing an SD card.)

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



Below is a list of the controller options that can be installed on a B246 Series machine.

Slot	No.	Name	Section
---	B829-03	Copy Data Security Unit Type C (IPU Option)	☛1.24.13
A2	B609-04	File Format Converter Type C	☛1.24.8
B1	B825	USB Host Interface Unit Type A	☛1.24.11
B2*[1]	826	Bluetooth Interface Unit	☛1.24.7
B2	B581-01	IEEE 1394 Interface Board	☛1.24.5
B2	B582-01, 02	IEEE 802.11b	☛1.24.6
B2	B679	IEEE1284 B679	☛1.24.15
B2	B818	Remote Communication Gate Type CM1	☛1.24.10
B3	G381	Gigabit Ethernet G381	☛1.24.16
C1	System	System Slot (Holds the system software. Never remove this SD card!)	---
C2*[2]	B735	Data Overwrite Security Unit Type C	☛1.24.9
C3	B861	Java VM Card	☛1.24.14
C2	B659/D406	Printer/Scanner Kit	☛1.24.3
C2	B525-15	PS3	☛1.24.4
C3	B828	Browser Unit Type B	☛1.24.12
C3	Service	SD card for machine firmware update by the customer engineer. Also for Browser Unit B828	

*[1] Only one of these boards can be inserted at a time.
*[2] This is the only SD card slot available for applications. If more than one application is to be used, the applications must be merged onto one SD card. (☛ Merging Applications)

Merging Applications

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

1. Turn off the copier.
2. Remove the SD card slot cover (☞ x2).
3. Insert the **Source** SD card into the source SD card slot on the left side of the controller box. This card contains the application that you want to copy.

Series	Source SD Card Slot
B246/D052 Series	**C3**

NOTE: The PS SD card cannot be the source card (it cannot be copied).

4. Check the Target SD card and confirm that its write-protect switch is OFF.
5. Insert the **Target** SD card into the target SD card slot.

Series	Target SD Card Slot
B246/D052 Series	**C2**

6. Turn the copier on.
7. Do **SP5873 001**.
8. Select "Execute".
9. Obey the instructions on the display and select "Execute" to start copying.
10. When the display tells you copying is completed, touch "Exit".
11. Turn the copier off.
12. Remove the Source SD card from **C3**. Leave the target SD card in **C2**.
13. Turn the copier on.
14. Go into the User Tools mode and check that all the applications on the SD card in Slot 2 are enabled:

    User Tools> System Settings> Administrator Tools> Firmware Version

15. Turn the copier off again, then:
    - Reattach the SD card slot cover.
    - Attach the rear cover of the machine.
    - Store the SD cards that were copied. Copied SD cards cannot be used. However, they nonetheless must be stored at the site to serve as proof of purchase by the customer.

Important!

- The original card can be used to perform an undo procedure (SP 5873 002).
- Before you store an SD card, label it carefully so it can be identified easily if you need to do the undo procedure (see below).

Undo Exec

Do this procedure if you moved an option from the original SD card to another card by mistake and you need to restore the original SD card.

1. Turn the main switch OFF.
2. Put the SD cards into the SD card slots as follows:

SD Card	B246/D052 Series
Source (with copied appli.)	C2
Target (now blank)	C3

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 Source SD card (from C1 of B140 Series, C2 of B246/D052 Series).
8. Remove the option Target SD card from C3.
9. Insert restored SD card (the target) into the SD card slot.

B246/D052 Series	C2

10. Turn the main switch ON.
11. Do **SP5990-005** (Loading Program) and make sure the program runs correctly.
12. Turn the main switch OFF.
13. Remove the SD card.

1.24.2 COMMON PROCEDURES

Inserting SD Cards

Insert SD cards with the notched corner down.

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

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

Storing Copied SD Cards

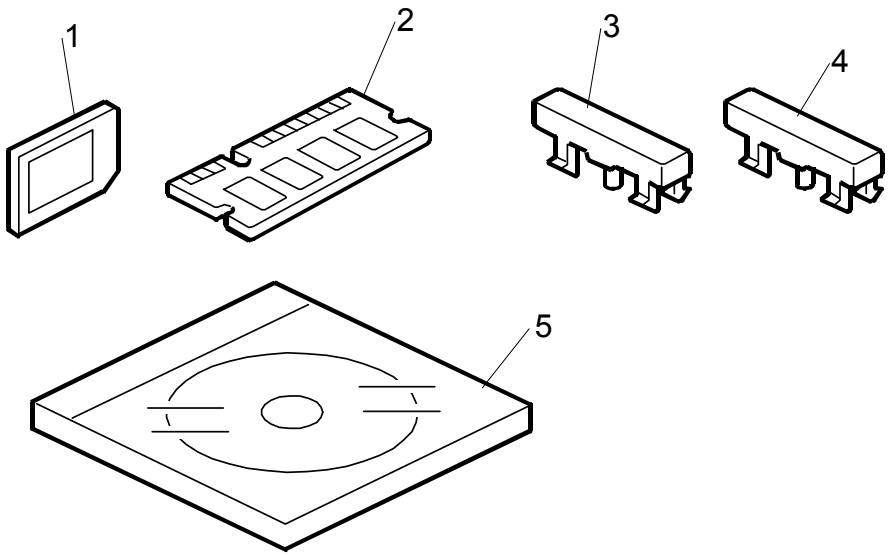
Copied SD cards cannot be used. However, they nonetheless must be stored at the site to serve as proof of purchase by the customer.

1.24.3 PRINTER SCANNER KIT (B841/D406)
B841: B246/B248/B249, D406: D052/D053/D054

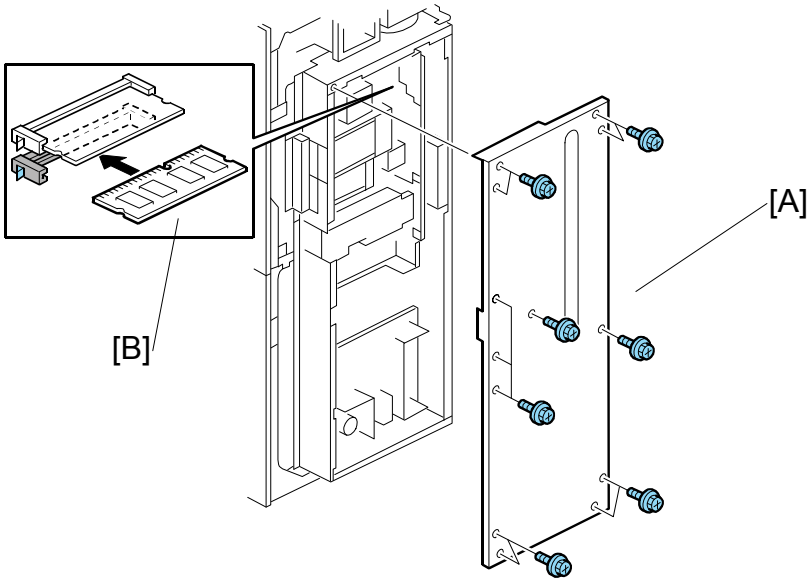
ACCESSORY CHECK

Check the accessories and their quantities against this list:

Description	Q'ty
1. Printer/Scanner SD Card	1
2. 256 MB Memory DIMM	1
3. Keytop Printer	1
4. Keytop Scanner	1
5. CD-ROM	2



Installation

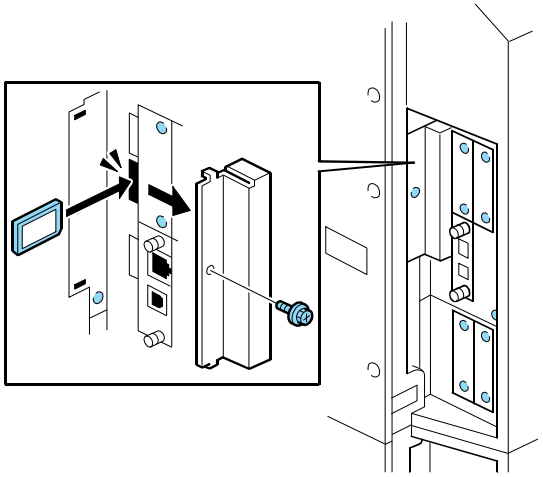


⚠CAUTION

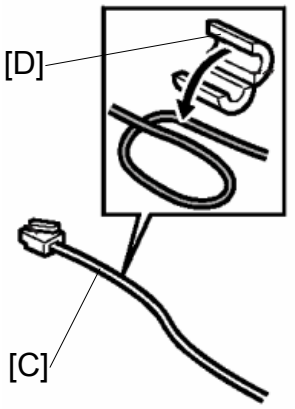
Before you start this procedure, turn the machine off and disconnect the power plug from the power source.

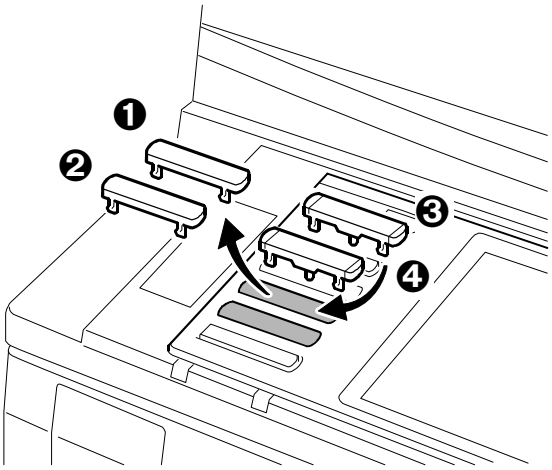
1. Remove the rear upper and lower covers (🔩 x 2 ea.) (☛3.3.2)
2. Remove the controller box cover [A] (🔩 x 13).
3. Insert the 256 MB memory DIMM [B] into the empty slot.
4. Reattach the controller box cover.

5. Remove the SD card slot cover [A] (x1)
6. Hold the SD Card [B] with its label turned as shown above, then install it in Slot **C2**.



7. Wind the cable [C] one full turn around the ferrite core [D], then close the core to lock it.
8. Connect the adapter to the network board in Slot **B3**.
   NOTE: The USB/Ethernet Board is pre-installed in Slot **B3**.





9. Attach the decal near the machine name on the copier.
10. Obey the procedures in the operating instructions to do the user settings.
11. Remove the dummy keytops ❶, ❷ and discard them.
12. Attach the new keytops ❸ Printer , ❹ Scanner.
13. Make sure that these SP commands are set correctly:
    - **SP5985 001**: Device Setting - On Board NIC (Set to "1" Enable)
    - **SP5985 002**: Device Setting – On Board USB (Set to "1" Enable)
    - **SP5811** – Machine No. Setting
    - **SP5907** – Plug & Play

    NOTE: After you change SP 5985 001 and 002, you must then turn the main power switch off and on.

1.24.4 POSTSCRIPT3 (B525-44)

Accessories

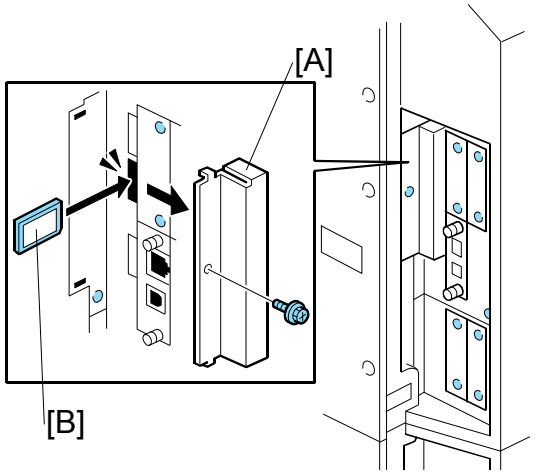
Description	Q'ty
1. PostScript3 Emulation SD Card	1
2. Decal	1

Important

⇒
- The system card must be in Slot C1 at all times.
- Only one SD card slot (C2) is available for applications. Therefore, the contents of the printer/scanner SD card must be copied to the PS3 SD card.

Installation

1. Switch the machine OFF.
2. Remove the SD card slot cover [A] (☞ x 1).
3. Insert the PS3 SD Card [B] into Slot **C2**.
4. Switch the machine ON.



1.24.5 IEEE1394 INTERFACE BOARD (B581)

Accessories

Description	Q'ty
1. IEEE 1394 Board	1
2. 4-Pin Cable	1
3. 5-Pin Cable	1

Installation

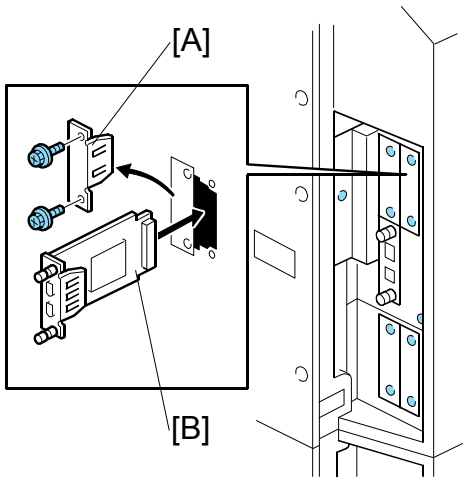
One PCI slot (**B2**) is available for use with one of these options:

- Centronics 1284
- IEEE 1394 (FireWire)
- IEEE 801.11b (Wireless LAN)
- Bluetooth Interface Unit B826
- @Remote Network Interface B818

Important

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

1. Switch the machine off.
2. Remove the cover [A] of Slot **B2** (☞ x 2).
3. Insert the IEEE 1394 board [B] into Slot **B2** and fasten it with the screws.



4. Switch the machine on and print a configuration page to confirm that the machine recognizes the installed board:
   User Tools> Printer Features> List/Test Print> Configuration Page

1.24.6 WIRELESS LAN G813 (802.11B)

Accessories

Description **Q'ty**

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

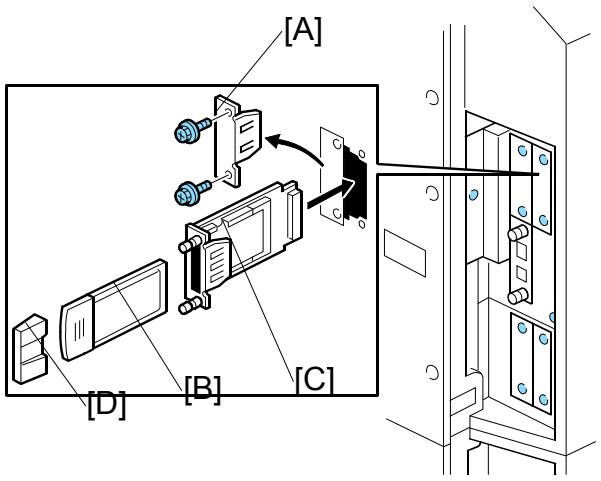
Installation

One PCI slot (**B2**) is available for use with one of these options:

- Centronics 1284
- IEEE 1394 (FireWire)
- IEEE 801.11b (Wireless LAN)
- Bluetooth Interface Unit B826
- @Remote Network Interface B818

Important

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



1. Switch the machine off.
2. Remove the cover [A] of Slot **B2** (☞ x 2).
3. Insert the PCI card [B] into the wireless LAN board [C].
4. Insert the wireless LAN board [C] into Slot **B2** and fasten it with the screws.
5. Attach the cap [D].
6. Switch the machine on and print a configuration page to confirm that the machine recognizes the installed board:
   User Tools> Printer Features> List/Test Print> Configuration Page

1.24.7 BLUETOOTH INTERFACE UNIT TYPE C B826

Accessories

Check the quantity and condition of the accessories.

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

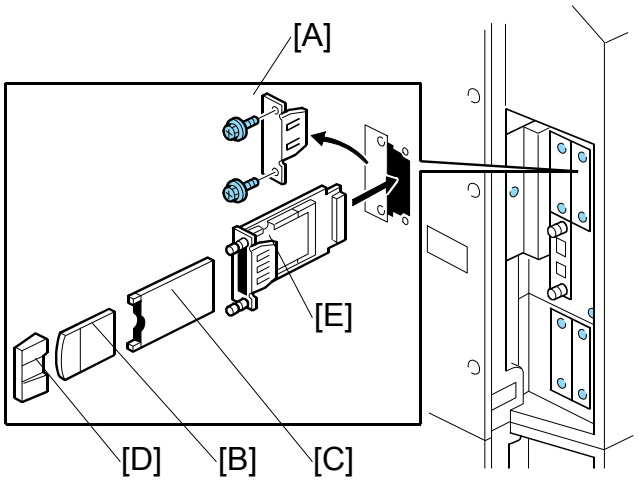
Installation

One PCI slot (**B2**) is available for use with one of these options:

- Centronics 1284
- IEEE 1394 (FireWire)
- IEEE 801.11b (Wireless LAN)
- Bluetooth Interface Unit B826
- @Remote Network Interface B818

Important

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



1. Switch the machine off.
2. Remove the I/F cover slot [A] of Slot **B2** (🔩 x2).
3. Touch a metal surface to remove static charge from your hands before you touch the interface card.
4. With both labels facing up, insert the Bluetooth card [B] into the adapter [C].
5. With the labels facing down, insert the adapter [C] into the Bluetooth board [D].
6. Insert the interface board (with card and adapter inserted) into Slot **B2**.
7. Attach the card cover [E] (used to prevent static electricity).
8. Confirm that Bluetooth is installed correctly:

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

1.24.8 FILE FORMAT CONVERTER TYPE C B609

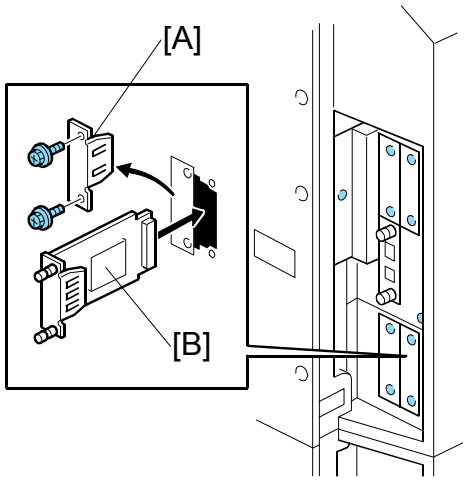
ACCESSORY CHECK

Check the accessories and their quantities against this list:

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

Installation

1. Turn the machine off.
2. Remove the cover of Slot **A2** [A] (☞ x 2).
3. Install the file format converter board [B] in Slot **A2** and attach it with the screws.



⇒ 1.24.9 DATA OVERWRITE SECURITY UNIT TYPE C B735

Before You Begin The Procedure

1. Make sure that the following settings are **not at their factory default values:**
   - Supervisor login password
   - Administrator login name
   - Administrator login password

If any of these settings is at a factory default value, tell the customer these settings must be changed before you do the installation procedure.

⚠ IMPORTANT NOTE

If the Customer forgets the Supervisor login password after changing it from the default setting, a service call is required and the NVRAM must be replaced to reset the Supervisor login and password.

2. Make sure that "Admin. Authentication" – "Machine Management" is **ON.**
   [System Settings] – [Administrator Tools] – [Administrator Authentication Management] - [Machine Management]

If this setting is OFF, tell the customer this setting must be ON before you do the installation procedure.

3. Make sure that under Machine Management "Administrator Tools" is **enabled** (selected).
   [System Settings] – [Administrator Tools] – [Administrator Authentication Management] – [Machine Management] - [Available Settings]

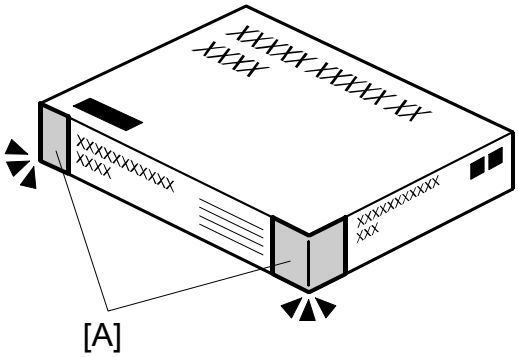
If this setting is disabled (not selected), tell the customer this setting must be enabled (selected) before you do the installation procedure.

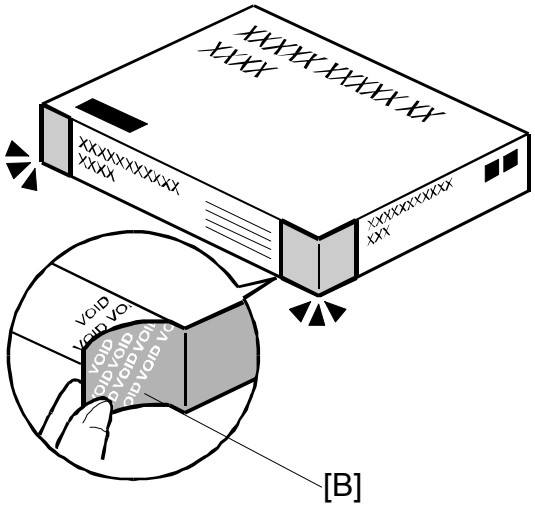
Accessory Check

The B246/D052 series uses a **Type C** Data Overwrite Security Unit. Check the accessories and their quantities against this list:

Description	Q'ty
1. SD Card	1

Seal Check and Removal





1. Ensure a customer witness is present when opening the DOSS option.
2. 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" <u>on the surface of the tape</u>, DO NOT install the components in the box. Stop this procedure and contact the Technical Hotline via the e-Lert form on the TSC Website. Retain the box and its contents. Any tampering of the DOSS option will need to be investigated.

4. 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.
5. The procedures outline in this bulletin needs to be followed if the DOSS option is replaced due to a failure.

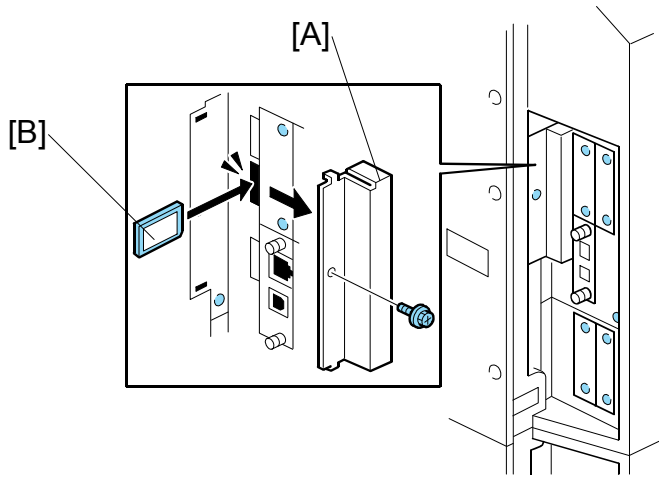
CAUTION
Before you begin any procedure, always turn OFF the machine main power switch and unplug the power cord.

Installation Procedure

⚠CAUTION

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

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



3. Remove the slot cover [A] (☞ x 1).
4. Install the SD Card [B].
5. Connect the network cable if the NIB is installed.
6. Turn the main power switch ON.
7. Do SP5878 (Option Setup).
8. Exit SP mode.
9. Turn the operation switch OFF, then turn the main power switch OFF.
10. Turn the main power switch ON again.
11. Do SP5990-005 (SP print mode Diagnostic Report).

12. Make sure the ROM number and firmware version on the diagnostic report are the same as those in the chart below:
    - **[A]:** "ROM Number/Firmware Version" – "HDD Format Option"
    - **[B]:** "Loading Program" – "GW1a_zoffy" (Data Overwrite Security Unit **Type C)**

	Diagnostic Report:	"ROM No. / Firmware Version" **[A]**	"Loading Program" **[B]**
⇒	Data Overwrite Security Unit **Type C**	HDD Format Option: B7355050 / 0.04	GW1a_zoffy: B7355050 / 0.04

Important: The ROM number and firmware version number change when the firmware is upgraded.

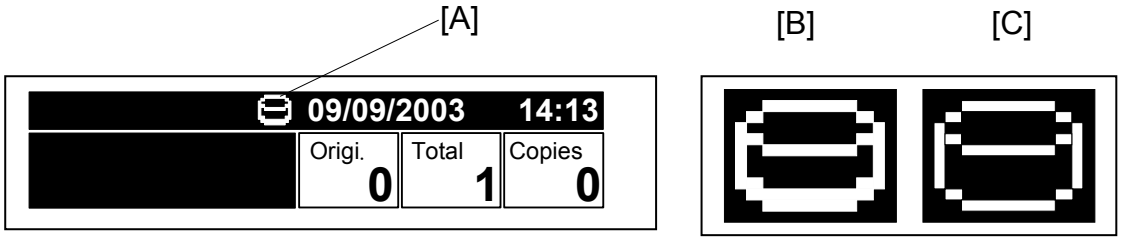
- If the ROM numbers are not the same, or the version numbers are not the same, this means the unit was not installed correctly.
  If this happens:
  - Make sure the MFP model and unit type match (Type C).

⇒ **The B246/D052 series uses a Data Overwrite Security Unit Type C.**

  - If they do not match:
    1) Do the installation procedure again, from Step 1.
    2) Replace the "Data Overwrite Security Unit" (SD card) with the correct type. Redo installation procedure.
    3) Replace the NV-RAM. Redo installation procedure.

13. Turn "Auto Erase Memory Setting" ON:
    User Tools >> System Settings >> Administrator Tools >> Auto Erase Memory Setting >> ON
    - If the customer has enabled Administrator Authentication Management - Machine Management they will have to log in to change this User Tool setting.
14. Exit User Tools.

15. Power the machine OFF/ON.



16. Make sure the overwrite erase icon [A] is displayed on the operation panel. If it is not displayed, do Step 7 again.
17. Make a sample copy.
18. 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].

1.24.10 REMOTE COMMUNICATION GATE TYPE CM1 (B818)

Accessories

Description **Q'ty**

1. @Remote Network Interface Unit 1

Installation

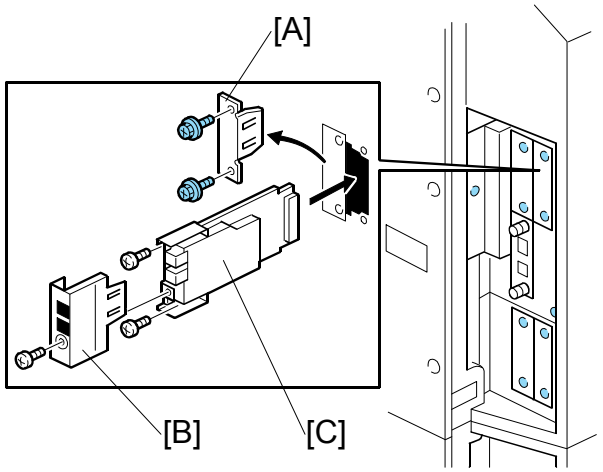
One PCI slot (**B2**) is available for use with one of these options:

- Centronics 1284
- IEEE 1394 (FireWire)
- IEEE 801.11b (Wireless LAN)
- Bluetooth Interface Unit B826
- @Remote Network Interface B818

Important

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

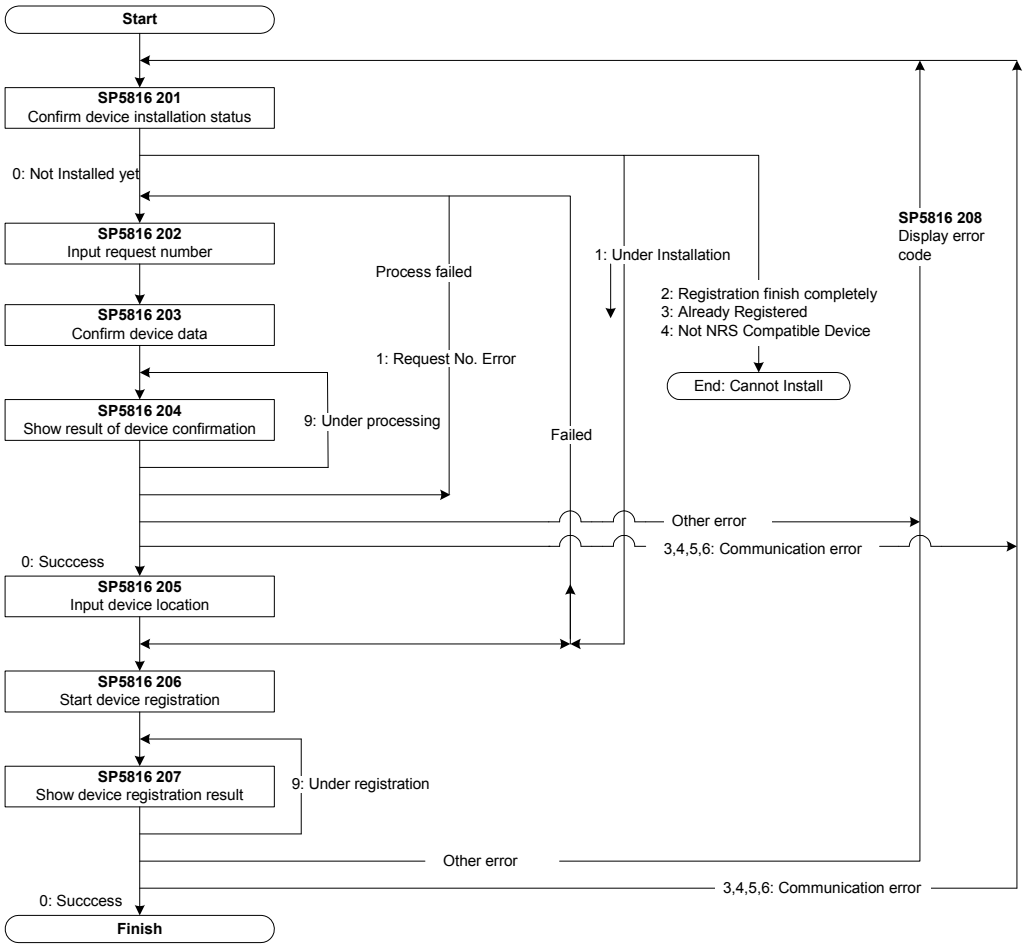
1. Switch the machine off.
2. Remove the cover [A] of Slot **B2** (☞ x 2).
3. Attach the connector plate [B] (☞ x 1).
4. Insert the @Remote Network Interface board [C] into Slot **B2** and fasten it with the screws (☞ x 1).



5. Enter the SP mode and note the settings of the following SP codes:

SP5816	Remote Service	Note Setting
150	Selection Country	
153	Selection: Dial/Push	
154	Outside Line/Outgoing Number	
161	Telephone Number	

6. Follow the flow chart below to do the SP settings for @Remote Network Interface B818.



7. Confirm that the @Remote Network Interface B818 modem is installed correctly:

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

Here is a list of error codes that may appear during @Remote installation.

Error Code	Cause
Illegal Modem Parameter Error	
-11001	Chat parameter error
-11002	Chat execution error
-11003	Unexpected error
Procedure or Setting Errors	
-12002	@Remote Network Interface B818 device attempted to register itself at Remote Center without reference to @Remote Network Interface B818 registration at Remote Center
-12003	Registration attempted without certification.
-12004	Installation attempted by inputting machine number with illegal certification or illegal ID2 illegal (05A).
-12005	Notification or registration done when transmission with the Remote Center is disabled or with @Remote Network Interface B818 set in illegal status.
-12006	Reference execution with Box registration completed.
-12007	Final registration executed with a number different from the request number.
-12008	Certification update failed because a job was in progress or for some other reason.
Errors Caused by GW Controller Response	
-2385	When installation was attempted outside Japan, the Box Tel No included a domestic (Japan) dial up reference not applicable overseas.
-2387	Not supported at Remote Center.
-2389	Database corrupted
-2390	Program corrupted
-2391	Device registration duplicated
-2392	Parameter error
-2393	Basil unit not registered
-2394	Device not registered
-2395	Basil Box ID illegal
-2396	Basil Device ID illegal
-2397	ID2 format incompatible
-2398	Format of request number incompatible.

1.24.11 USB HOST INTERFACE UNIT TYPE A (B825)

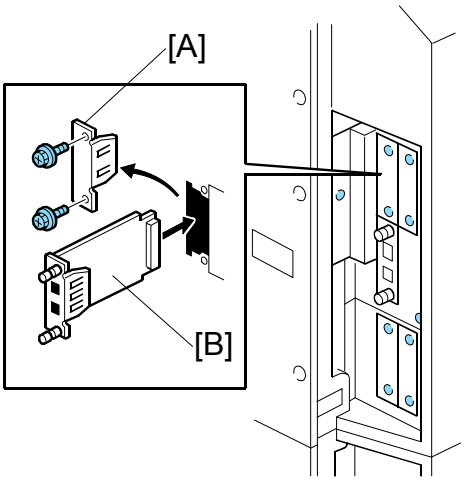
Accessory Check

Check the accessories and their quantities against this list:

Description	Q'ty
USB Host Interface Type A	1

Installation

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

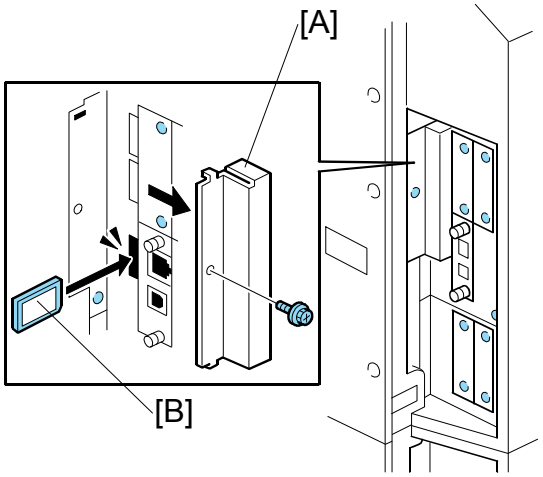


1.24.12 BROWSER UNIT TYPE B (B828)

Accessories

Description	Q'ty
Browser Unit B828 SD Card	1

Installation



1. Switch the machine off.
2. Remove the SD card slot cover [A] (x1).
3. Push the SD card [B] into Slot **C3**.
4. Turn the machine on.
5. Push [User Tools].
6. Push [Login/Logout] on the operation panel
7. Login with the administrator user name and password.
8. Select "Extended Feature Settings".
9. Select "Extended Feature Settings" again.
10. Select "SD Card".
11. Select the "Browser" line.
12. Under "Install to:" select Machine HDD" and select "Next."
13. When you see "Ready to Install" check the information on the screen to confirm your previous selection.
14. Select "OK". You will see "Installing…" then "Completed".
15. Select "Exit" twice to return to the copy screen.
16. Remove the SD card from the machine

1.24.13 COPY DATA SECURITY UNIT TYPE C (B829)

Accessories

Description	Q'ty
PCB IPU Option	1

Installation

If the present IPU board does not contain this application, it must be replaced with an IPU board that does.

⇒

1. Disconnect ADF cable
2. Remove:

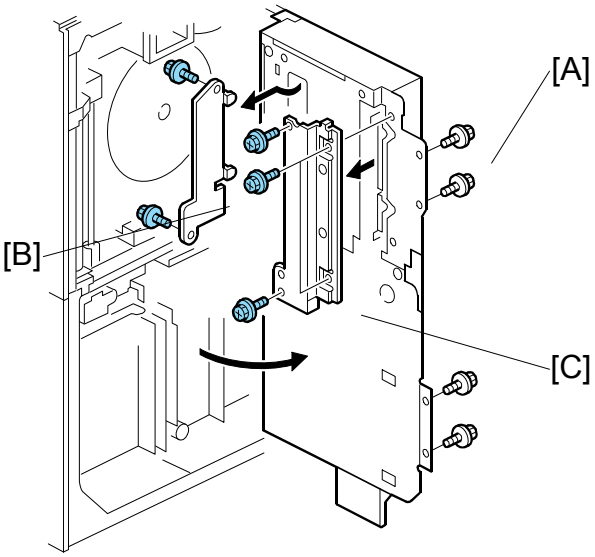
- Rear upper cover (☞ x2) (☛3.3.5)
- Rear lower cover (☞ x2) (☛3.3.5)

3. Remove:

Screws [A] (☞ x4) and swing open the controller box

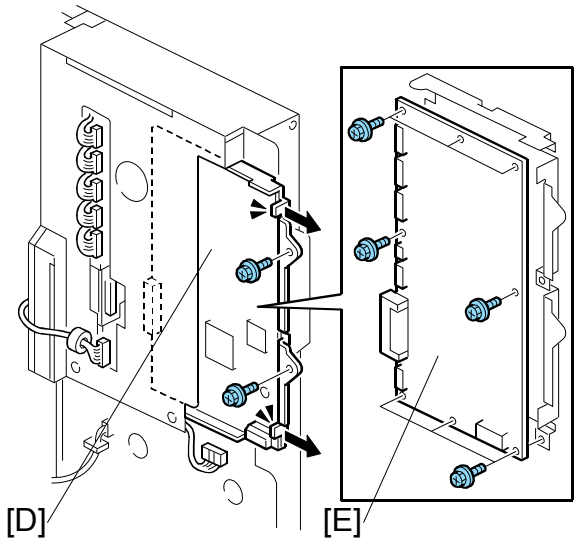
Left connector shield [B] (☞ x2).

Right connector [C] shield (☞ x4).



IPU board unit [D] (✋ x7, ☞ x2).

4. Slowly slide the IPU board and bracket out of the controller box.
5. Remove the [E] IPU (☞ x8



After Replacing the IPU Board

1. Switch the machine on.
2. Login in as the System Administrator.
3. Press [User Tools].
4. Select "System Settings".
5. Select "Administrator Tools".
6. Select next 2 or 3 times until you see "Data Security for Copying".
7. Select "ON".
8. Select "OK" to enable the setting.

1.24.14 VM CARD TYPE C (B861)

Accessories

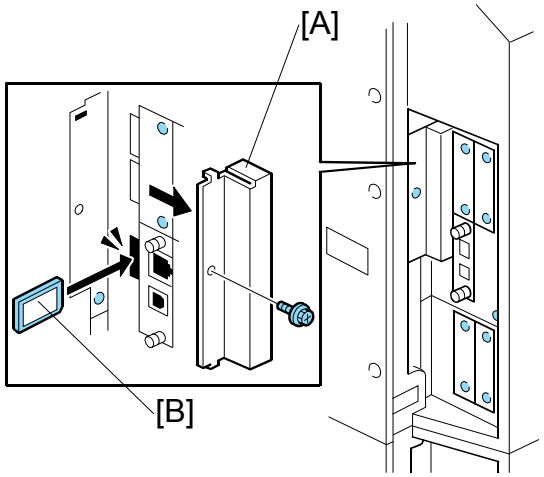
Description	Q'ty
1. VM Card B861 SD Card	1
2. Decal	1

CAUTION: Unplug the main machine power cord before you do the following procedure.

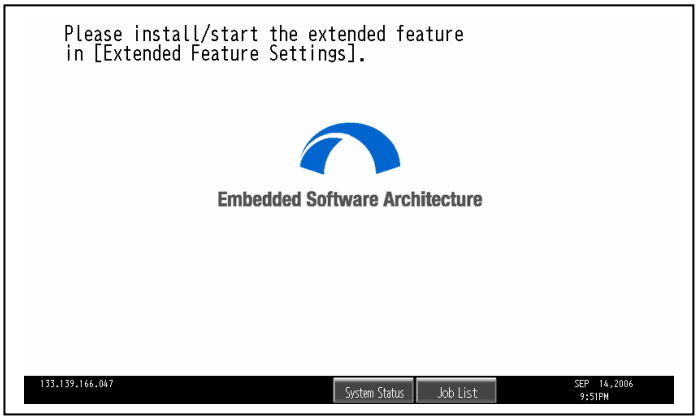
IMPORTANT: Do not remove the SD card from slot 3 after installing the platform.

Installation

1. With the power OFF and the machine unplugged, remove the slot cover [A] from SD card slot 3 (🔩 x 1).
2. Insert the VM-Card Type C [B] label face to the rear of the machine. Then push it slowly into slot 3 until you hear a click.
3. Replace the sixth key-slot cover with the "Other function" key (part number B2381576).
4. Plug in and turn ON the main power switch. The installation of the Java VM platform will start automatically.
   IMPORTANT: DO NOT turn the main power OFF. Also, do not open any of the covers or do any machine operations. This will damage the SD card. A damaged SD card cannot be repaired.



5. Wait five minutes, and then press the "Other function" key. You will hear two beeps.
   - If the screen does not change, this means the installation is not finished yet. Wait a few more minutes and then press the "Other function" key again.
   - When the installation is finished, the following will be displayed:



6. Set the heap size and stack size for the application. (In User Tools/Extended Features setting, see the Administrator Tools tab.)
7. Install the application using the installation procedure provided with the application.

1.24.15 IEEE1284 B679

Accessories

Description	Q'ty
IEEE 1284 Centronics Board	1

NOTE 1:

Only one PCI slot (**B2**) is available for use with one of these options:

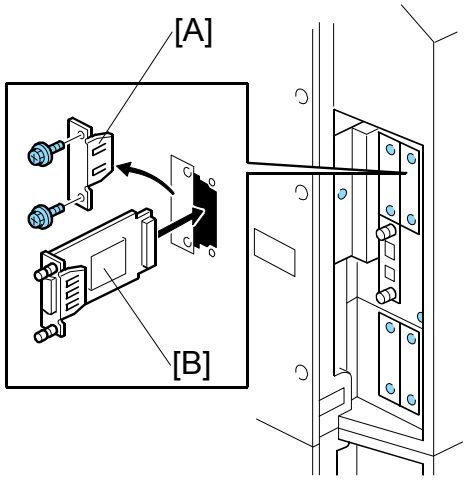
- Centronics 1284
- IEEE 1394 (FireWire)
- IEEE 801.11b (Wireless LAN)
- Bluetooth Interface Unit B826
- @Remote Network Interface B818

NOTE 2:

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

Installation

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



1.24.16 GIGABIT ETHERNET G381

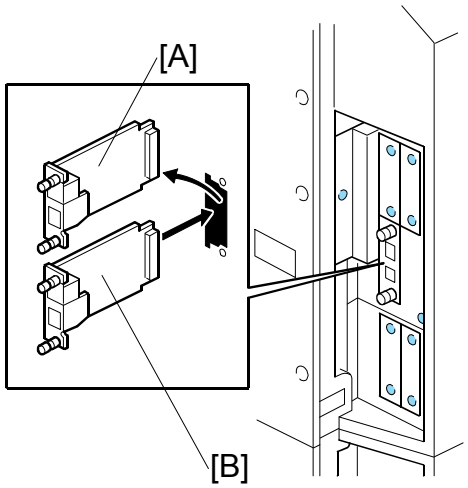
Accessories

Description **Q'ty**

8. Gigabit Ethernet B381.....1
9. Ferrite Core (not used for B234/B235/B236) 1

Installation

1. Switch the machine off.
2. If the Ethernet & USB 2.0 card [A] is installed in **B3**, remove it (🔩 x 2).
3. Insert the Gigabit Ethernet Board [B] into Slot **B3** and fasten it with the screws.



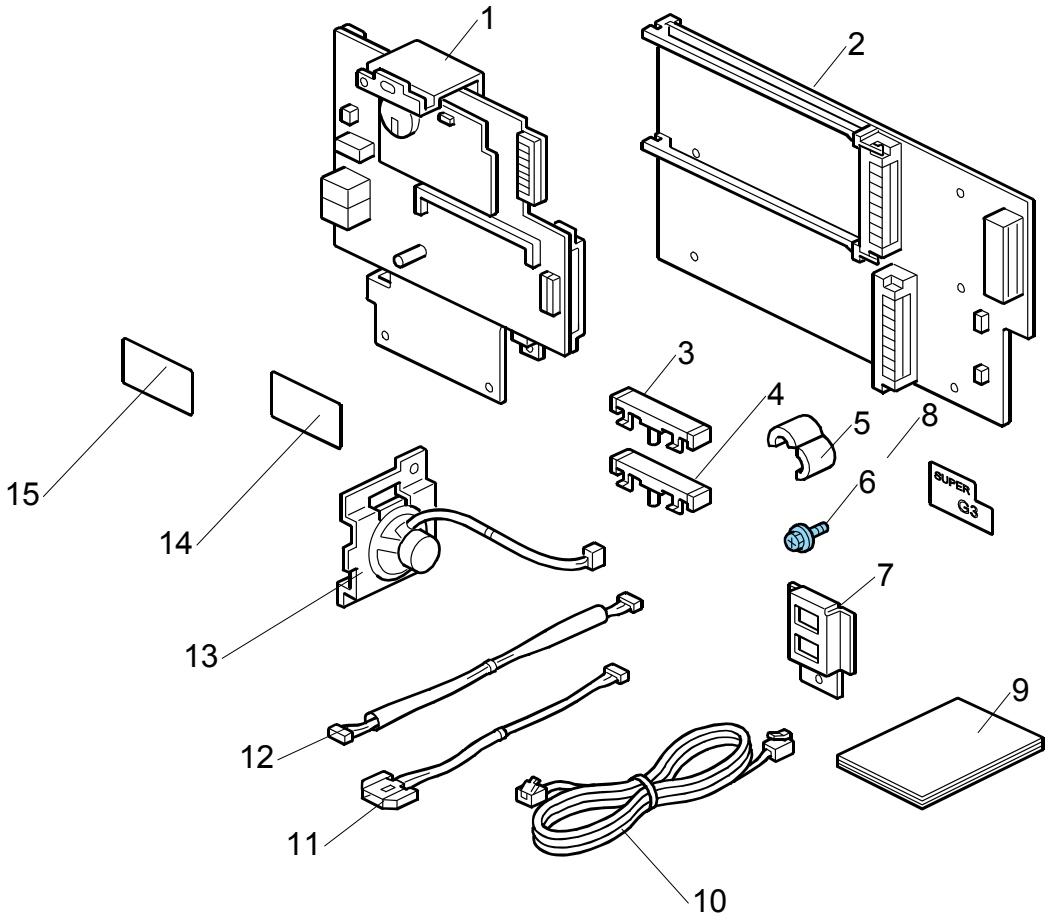
4. Print a configuration page to confirm that the machine recognizes the board.
   User Tools > Printer Features > List/Test Print > Configuration Page

1.24.17 FAX OPTION TYPE 7500 (B819)

Component Check

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

No.	Description	Q'ty
1.	FCU	1
2.	Interface Board	1
3.	Keytop (NA)	1
4.	Keytops (Symbol)	1
5.	Ferrite Core	1
6.	Screws (Blue M3 x 6)	9
7.	Fax Connector Bracket	1
8.	Super G3 Decal	1
9.	Instructions	1
10.	Telephone Cable (NA only)	1
11.	FCU Power Harness	1
12.	FCU Power Relay Harness (insulated)	1
13.	Speaker	1
14.	FCC Decal (NA Only)	1
15.	Serial Number Decal	1



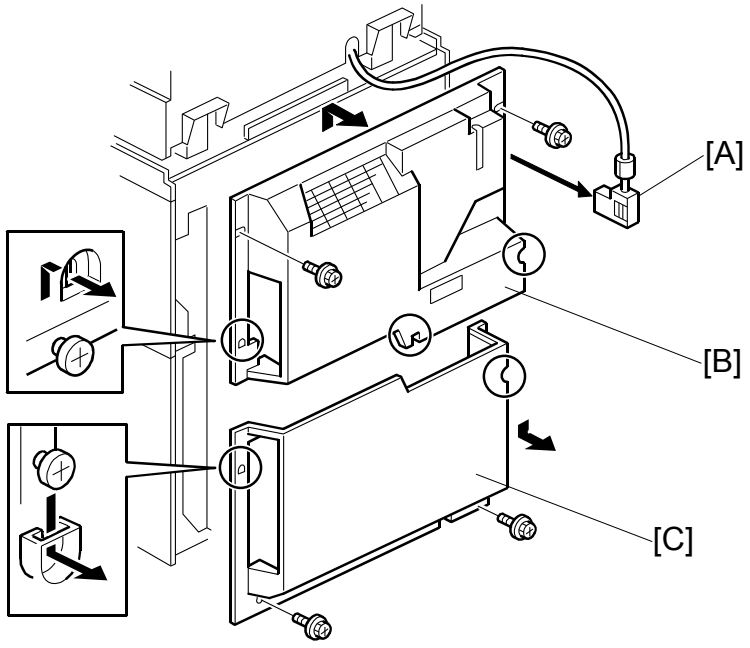
Installation Procedure

FCU Installation

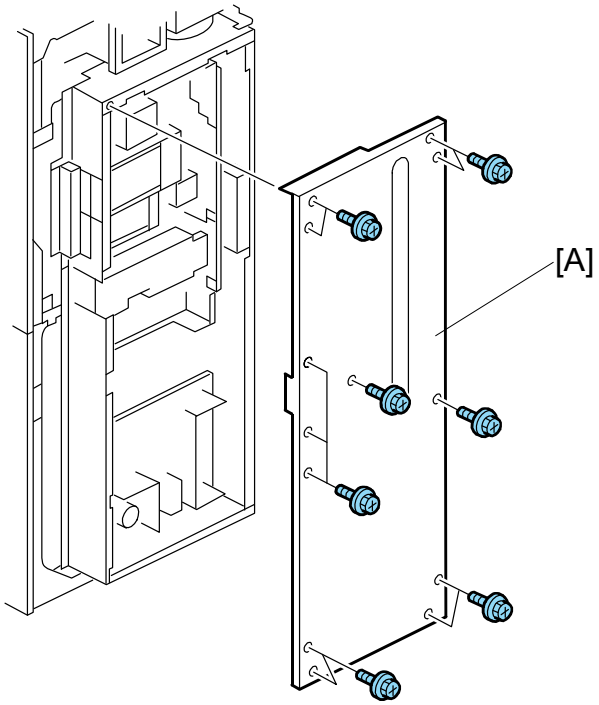
⚠CAUTION

Before installing this fax unit:

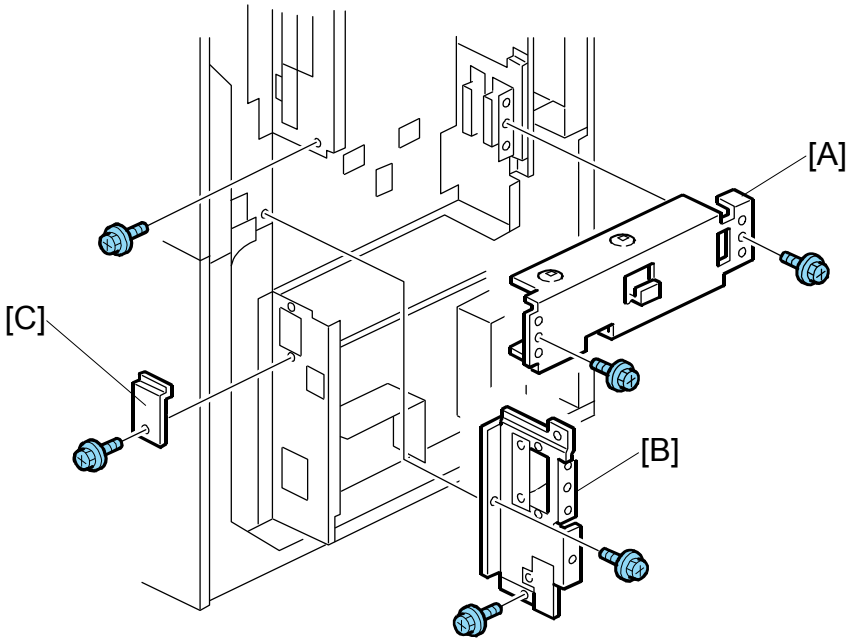
1) Print out all data in the printer buffer.
2) Turn off the main power switch and disconnect the power cord and the network cable.



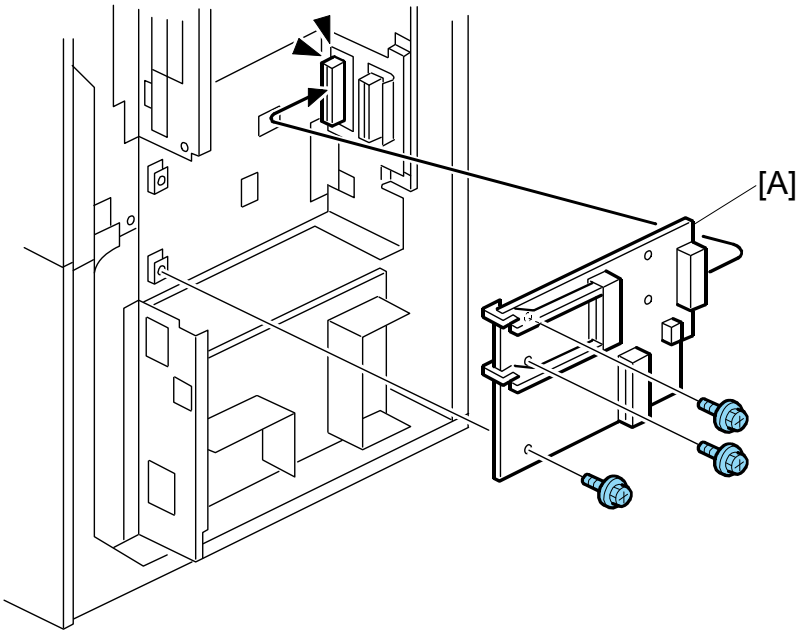
1. Disconnect the ADF connector [A].
2. Remove the rear upper cover [B] (☞ x 2)
   Slide down to remove.
   When re-attaching, before tightening the screws make sure that the tabs on the cover are engaged with the shoulder screws.
3. Remove the rear lower cover [C] (☞ x 2)
   When re-attaching, before tightening the screws make sure that the tabs on the cover are engaged with the shoulder screws.



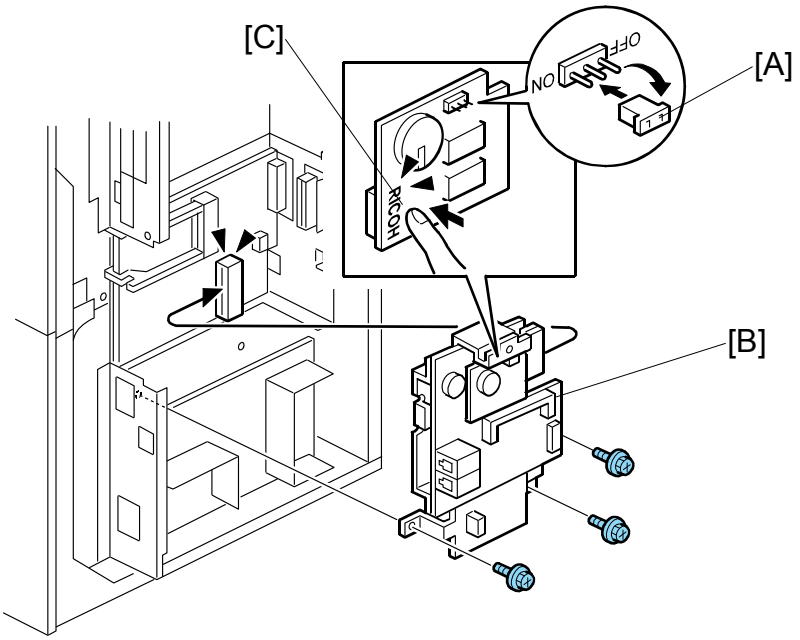
4. Remove the controller box cover [A] (x13).



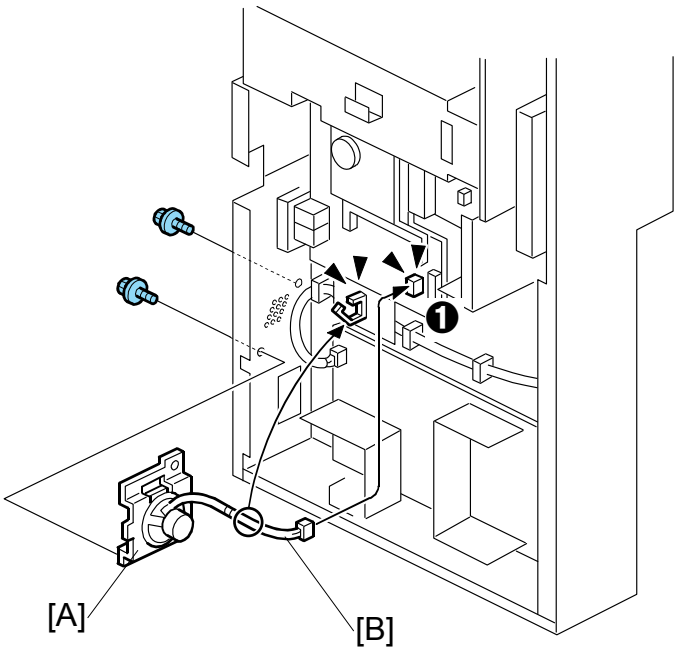
5. Remove the option board cover [A] (x2).
6. Remove the option faceplate [C] (x3).
7. Remove the cover plate [D] (x1).



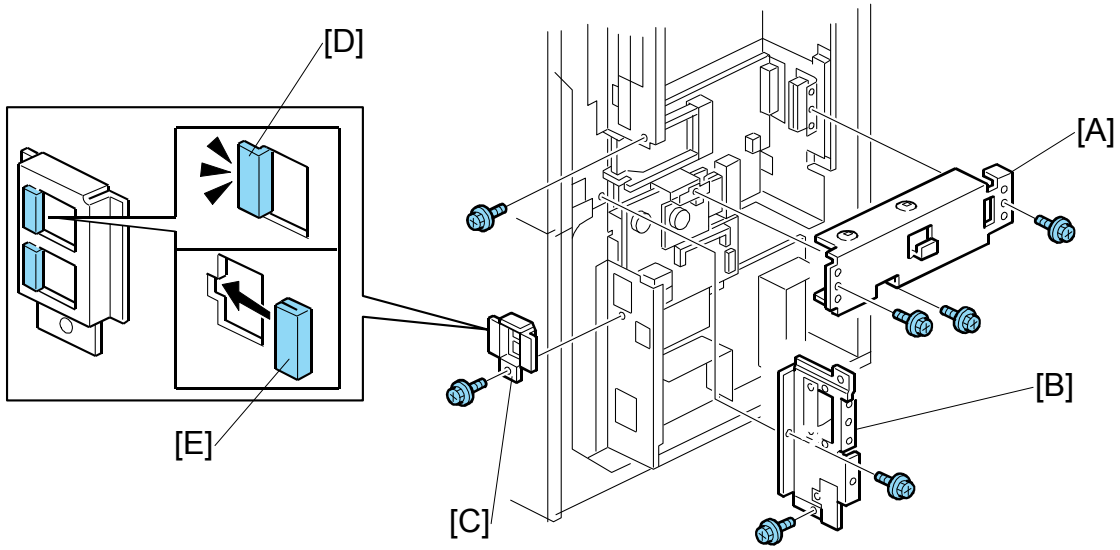
8. Attach the interface board [A] (x3).



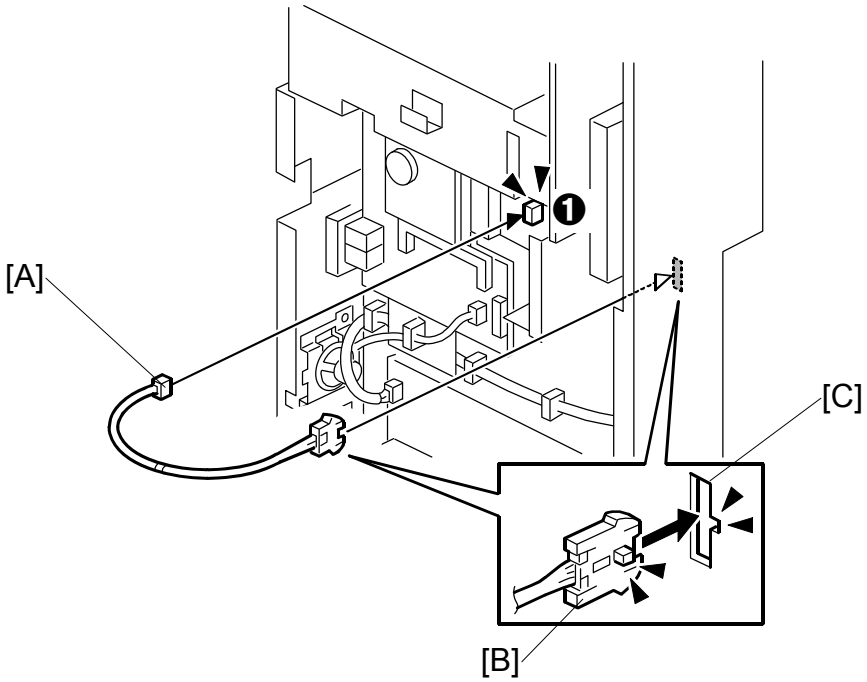
9. Remove the jumper [A] on the MBU and set it to the ON position.
   Important: If the jumper remains at the OFF position this will cause SC672 (Controller Startup Error) to appear.
10. Attach the FCU [B] to the interface board (x4).
11. Press on the "RICOH" logo at [C] to confirm that the MBU is securely mounted on the FCU.



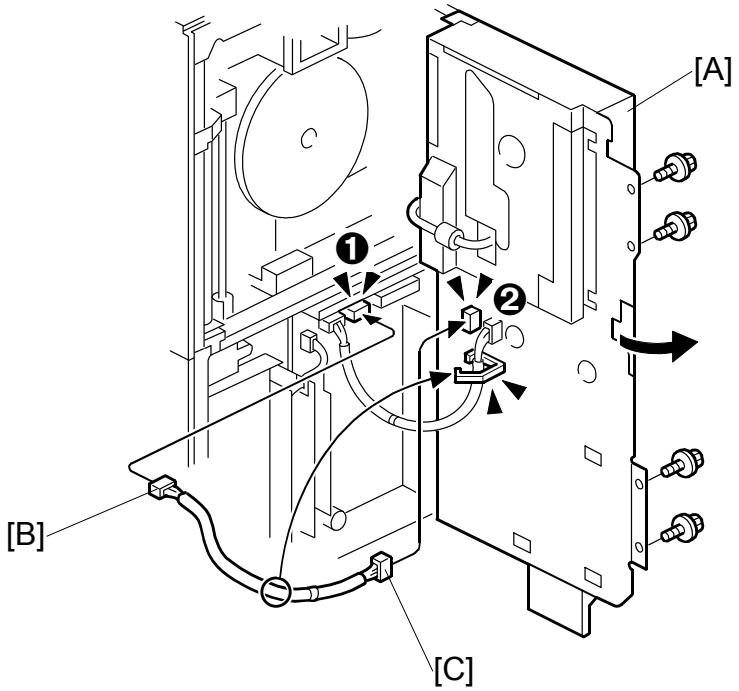
12. Attach the speaker [A] to the side of the controller box (x2).
13. Connect the speaker harness [B] to **CN605 ❶** on the FCU (x1, x2).



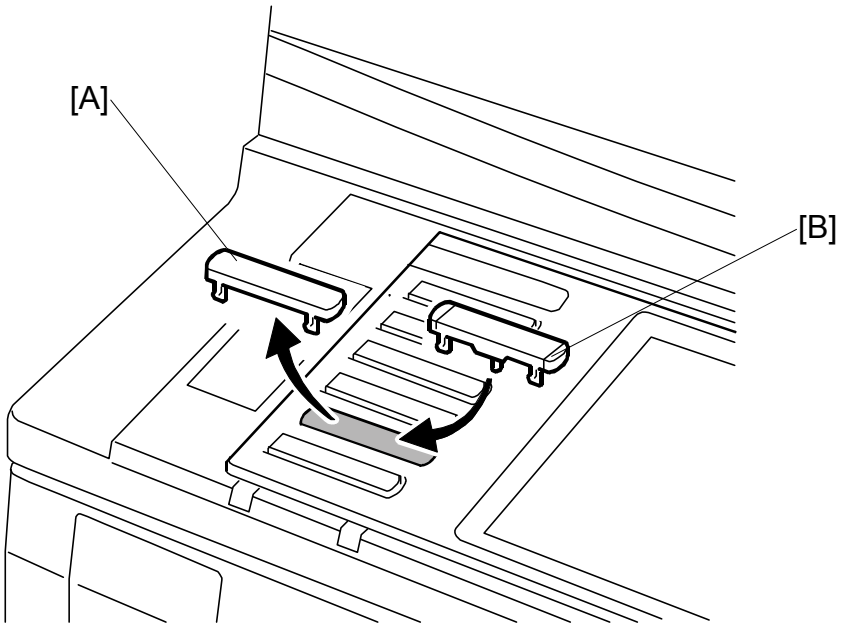
14. Reattach the option board cover [A] removed in Step 5 (x2).
15. Reattach the option faceplate [B] removed in Step 6 (x3).
16. Attach the fax connector bracket [C] (x1).
    NOTE: Make sure that the protective sleeves [D] and [E] are attached properly.



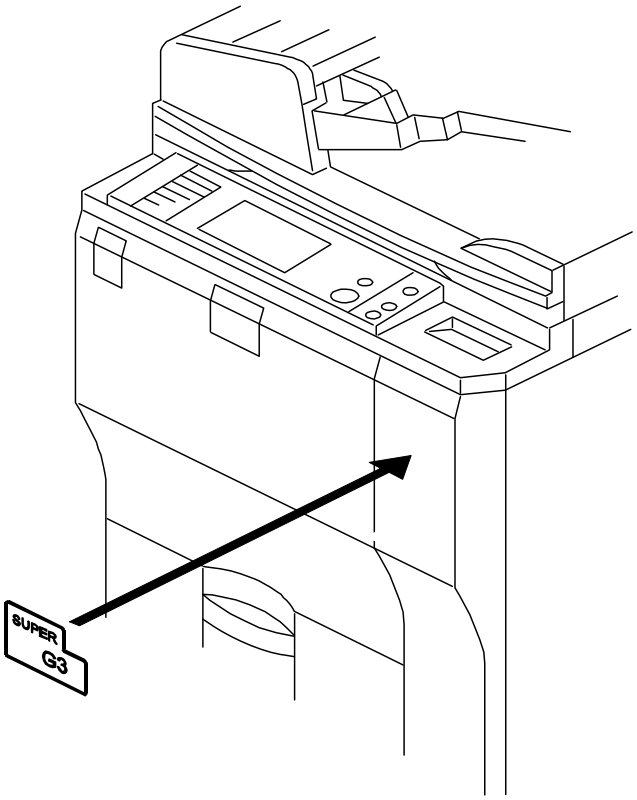
17. Connect the small end of the FCU power harness [A] to **CN323 ❶**.
18. Set the large end of the harness [B] into the vertical cutout [C].



19. Remove the screws of the controller box [A] then open it (🔩 x4).
20. Connect one end of the FCU power relay harness [B] to **CN121** on the PSU ❶ (🖐 x1).
21. Connect the other end of the FCU power relay harness [C] to the harness connector set in the vertical cutout at ❷ (the connector set in Step 18) (🖐 x1, 🖐 x1).

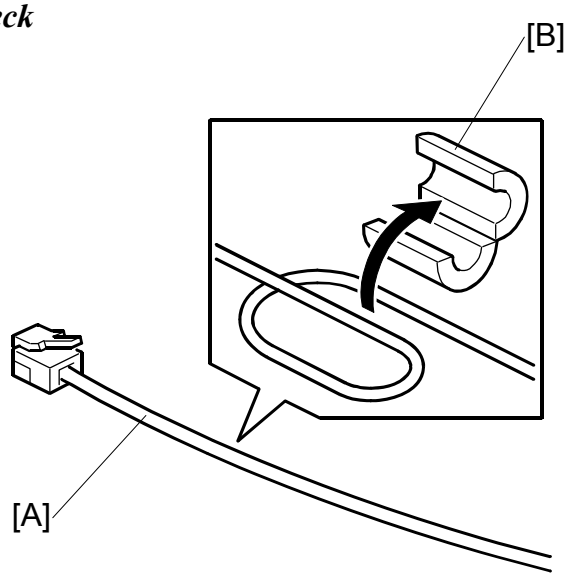


22. Remove the blank keytop [A] (5th from the top) and replace it with one of the keytops provided [B] (either the "Facsimile" keytop or the fax symbol keytop).

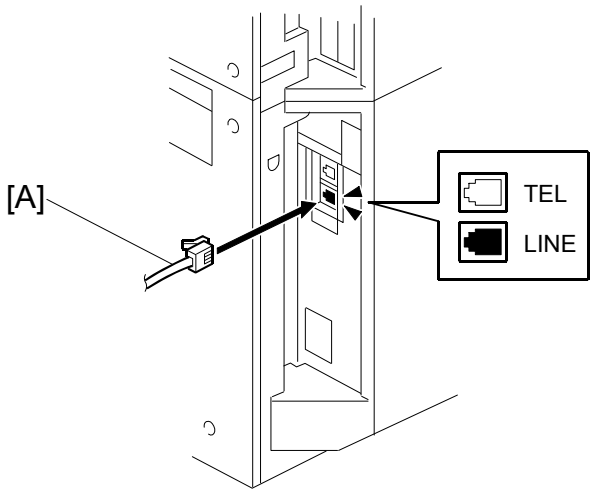


23. Attach the "Super G3" decal to the front door.
24. Attach the FCC and serial number decals to the rear cover of the machine..
    NOTE: The FCC decal is for the U.S. and Canada only.

Line Connection and Check



1. Loop one end of the telephone cable [A] once, then enclose it with the ferrite core [B] as shown.
   NOTE: Attach the ferrite core at least 9 cm (3.5 in.) from the connector.



2. Insert the end of the telephone cable [A] with the ferrite core into the "LINE" RJ-11 connector.
3. Reattach all covers and the ADF cable.
4. Connect the machine power cord to the power supply, then switch the main power switch.

5. Go into the SP mode and confirm that the fax SP codes are enabled.
   Push [Reset], enter "107", then hold down "Clear/Reset" for at least 3 sec.
   At the initial screen, confirm that "Fax SP" is displayed. This indicates that the machine recognizes the fax unit.
6. Confirm that the date and time setting are correct.
   Push [User Tools] then touch "System Settings"> "Timer Settings"> "Set Date" and "Set Time".

IMPORTANT: To enable Fax Option Type 7500, the following firmware must be installed:
System firmware (v2.04 or later)
Fax firmware (v3.00 or later) and
LCDC firmware (v1.19 or later).

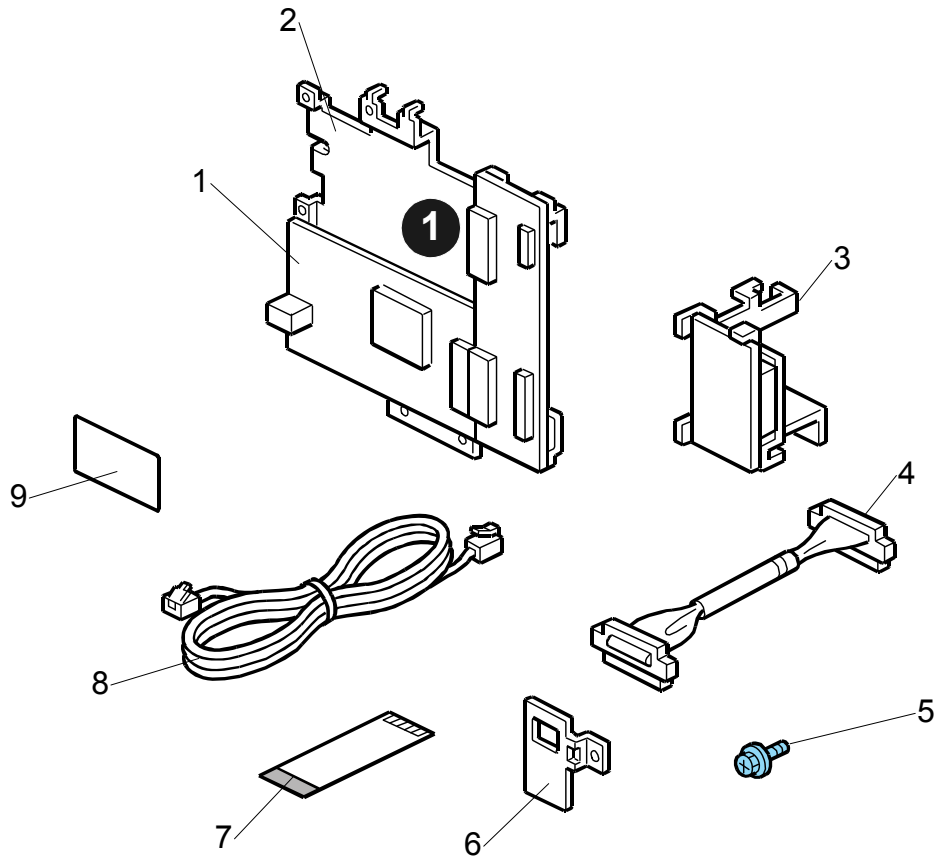
1.24.18 G3 INTERFACE UNIT TYPE 7500 (B820)

Component check

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

No.	Description	Q'ty
1.	G3 Interface Board (attached)	
2.	G3 Interface Unit*1	1
3.	CCU Drive Board	1
4.	CCUIF Harness	1
5.	Screws (Blue M3 x 6)	5
6.	G3 Connector Bracket	1
7.	FFC (Flat Film Connector)	1
8.	Telephone Cable (NA Only)	1
9.	FCC Decal (NA Only)	1

*1 One additional G3 interface unit (ordered separately) can be mounted in the open slot of the G3 interface board.



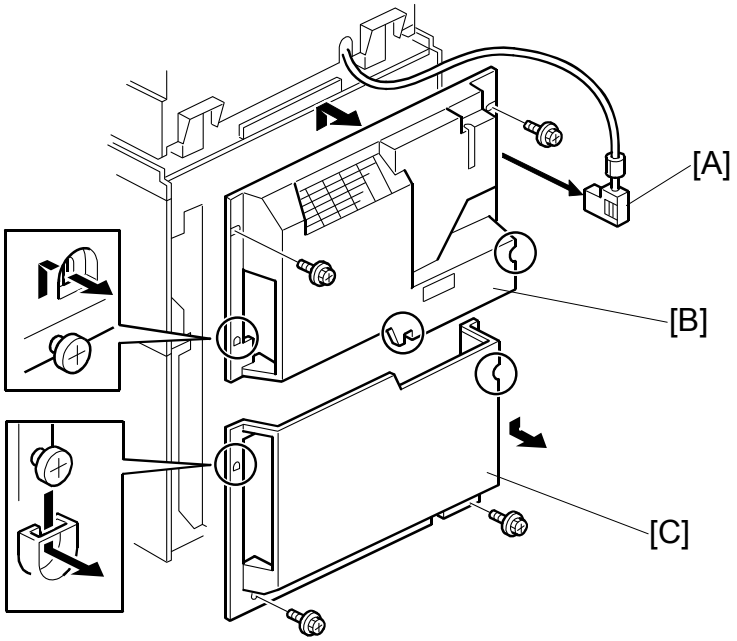
Installation Procedure

G3 Board Installation

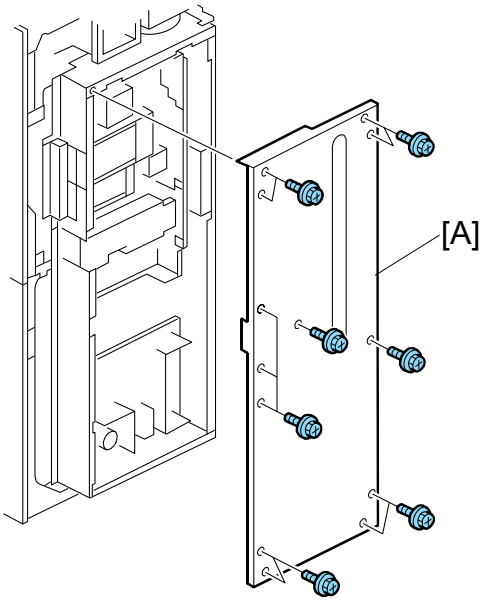
⚠CAUTION

Before installing this optional unit,

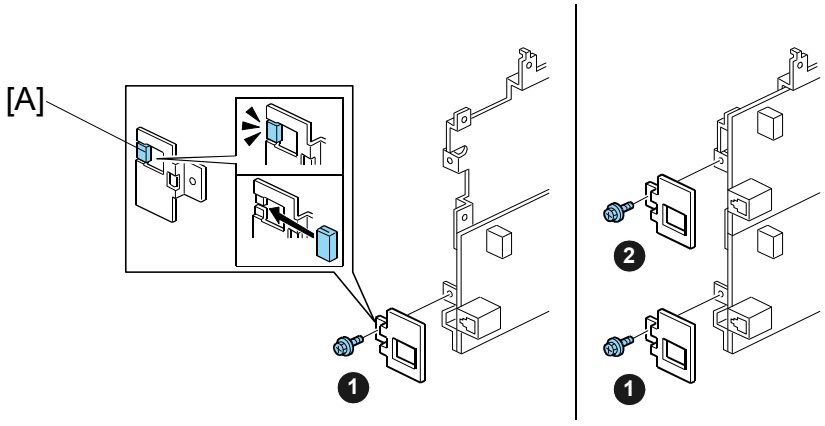
1) Print out all data in the printer buffer.
2) Turn off the main switch and disconnect the power cord and the network cable.



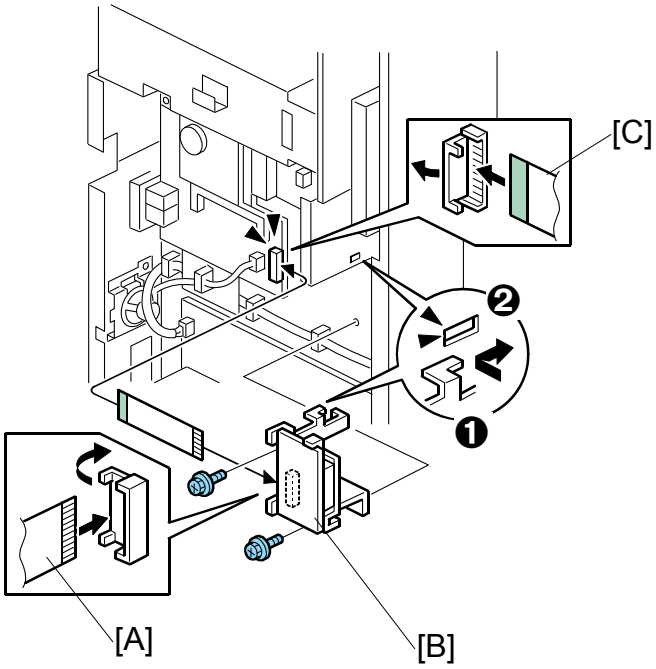
1. Disconnect the ADF connector [A].
2. Remove the rear upper cover [B] (☞ x 2)
   Slide down to remove.
   When re-attaching, before tightening the screws make sure that the tabs on the cover are engaged with the shoulder screws.
3. Remove the rear lower cover [C] (☞ x 2)
   When re-attaching, before tightening the screws make sure that the tabs on the cover are engaged with the shoulder screws.



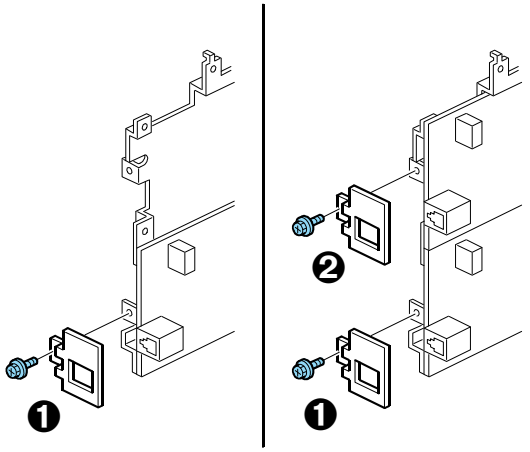
4. Remove the controller box cover [A] (x13).



5. If installing single-line G3, remove only one blind cover ❶.
   -or-
   If installing dual-line G3, remove two blind covers ❶ and ❷.
   NOTE: Make sure the protective sleeve [A] is attached properly.



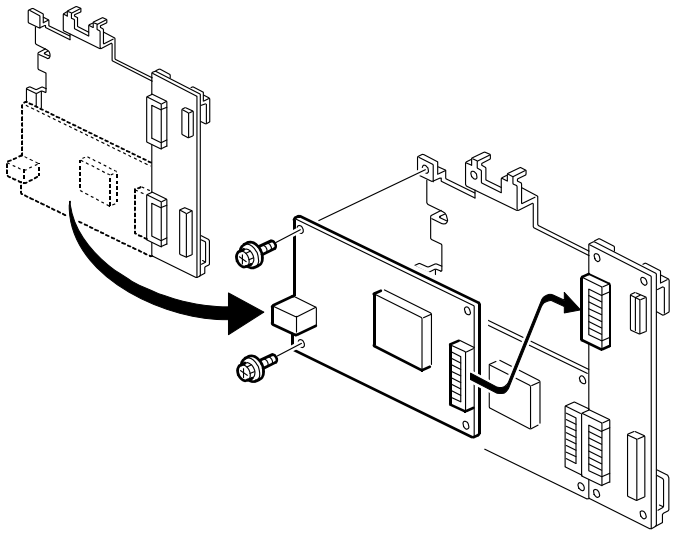
6. Connect the FFC [A] (Flat Film Connector) to the CCU drive board [B].
   Important: Connect the FFC with the green, insulated side visible and the bare connector strip down so it touches the connector strip of the board.
7. Attach the CCU drive board [B] to the machine
   Set the hook ❶ of the bracket into the slot ❷ in the frame.
   Fasten the CCU drive board with the screws (🔩 x2).
8. Connect the other end of the FFC [C] to the FCU.
   Important: Connect the FFC with the green, insulated visible and the bare connector strip down so it touches the connector strip of the board.



9. Attach the connector bracket to the G3 expansion board (x1).
10. If one G3 line is being installed, attach the connector bracket ❶ as shown on the left..

    -or-

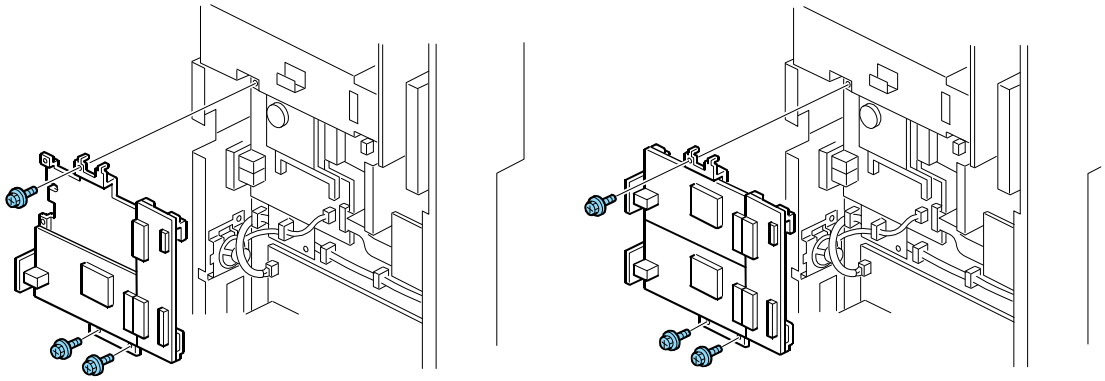
    If two G3 lines are being installed, attach the connector brackets ❶, ❷ as shown on the right.



11. If only one G3 line is being installed, go to the next step.

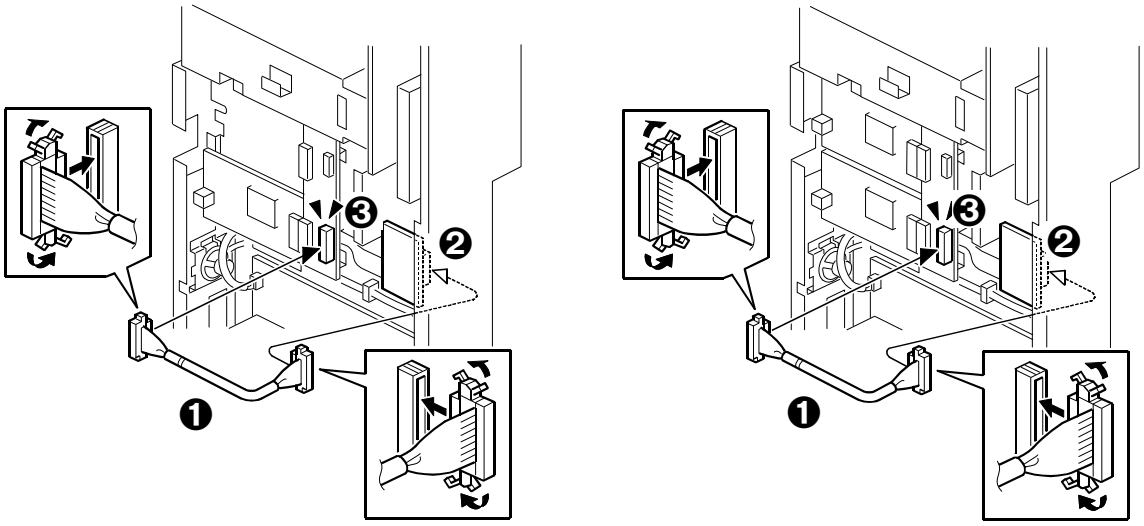
    -or-

    If two lines are being installed, insert the 2nd G3 board [A] into the empty slot of the interface unit and fasten it (x2).



12. Attach the G3 interface unit (x3)

    NOTE: The illustration on the left shows the single G3 board installation and the illustration on the right shows the dual G3 board installation.



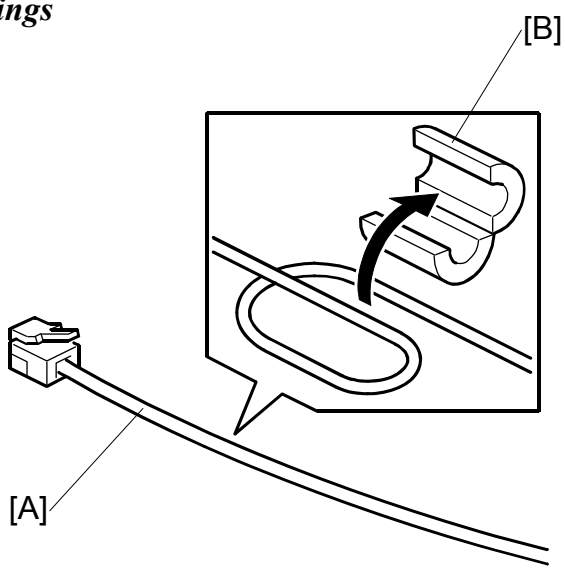
13. Connect the CCUIF harness ❶ to the CCU drive board ❷ and CCU I/F ❸.

    NOTE: The illustration on the left shows the single G3 board installation and the illustration on the right shows the dual G3 board installation.

14. Reinstall all covers and reconnect the ADF cable.

15. Attach the FCC decal to the rear cover of the machine.

Line Connection and Settings



1. Loop one end of the telephone cable [A] once, then enclose it with the ferrite core [B] as shown.

   NOTE:

   Attach the ferrite core at least 9 cm (3.5 in.) from the connector.
   Attach a ferrite core to the 2nd G3 line if two G3 boards are installed.

2. Connect the telephone cable to "LINE 2" jack.

   -or-

   If dual G3 boards are installed connect the cables to "LINE 2" and "LINE 3" jacks.

3. Connect the machine power cord to the power supply, then switch on the main power switch.

4. Enter the Service Mode.
   Push [Reset], enter "107", then hold down "Clear/Reset" for at least 3 sec.
   Touch "Fax SP"

5. Do these communication switch settings:

SP1104-23 (Switch 16)	Set Bit 1 "1".
	Set Bit 3 "1" if two G3 boards are installed.

6. Exit the Service Mode and cycle the machine off/on with the main power switch.
7. Do SP5990-001 to print the system parameter list, then confirm that "G3" is listed as an option.
8. Enter the Service Mode and set the items required for PSTN communication.
   If one G3 line is installed, use SP3103 (PSTN-1 Port Settings) to do the PSTN settings.
   If two G3 lines are installed, use SP3103 (PSTN-1 Port Settings) and SP3104 (PSTN-2 Port Settings) to do the PSTN settings for the first and second G3 line.

PREVENTIVE MAINTENANCE

REVISION HISTORY		
Page	**Date**	**Added/Updated/New**
1	04/18/2008	New Information – Section updated to support D052 Series

2. PREVENTIVE MAINTENANCE

2.1 PM TABLES

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

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

⚠WARNING

Turn OFF the 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

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. Perform 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		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	See **NOTE** below this table.
By-pass Pick-up Rollers		R		R		450K	
By-pass Separation Rollers		R		R		450K	

PAPER FEED B140/B246 Series							
	EM	300K	450K	600K	900K	Expected K	Note
Feed Rollers					R	1000K	See **NOTE** below this table.
Pick-up Rollers					R	1000K	
Separation Rollers					R	1000K	
By-pass Feed Rollers					R	1000K	See **NOTE** below this table.
By-pass Pick-up Rollers					R	1000K	
By-pass Separation Rollers					R	1000K	

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. **NOTE**: The expected service life of the transfer belt is 750K. However, replacement is recommended where more paper dust is present due to low quality paper.
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				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			600	
Hot Roller Bearings		R	R		1000	
Hot Roller Strippers		R		R	600	
Pressure Cleaning Roller		R		R		Replace as a set.
Pressure Cleaning Roller Bearings		R	I	R		
Pressure Cleaning Roller Spring Plate		I		I		
Pressure Roller		R	R		600	**B140/B246/D052 Series**: “R” at 300K **B064 Series**: “R” at 500K Always replace pressure roller and bearings together.
Pressure Roller Bearings		R	R		600	
Thermistors x2		R	I			**B140/B246/D052 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

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. Replace these items together.
Separation Roller	C	R	R	R		
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		

2.1.2 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.

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

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.

Note: The circuit breaker on the Z-Folding Unit B660 should be tested every 2,400K. However, since this interval exceeds the expected life of the machine, it is unlikely you will ever have to test this circuit breaker.

2000/3000-Sheet Booklet Finisher B700/B701

	300K	2400K	3000K	4000K	EM	Note
FINISHER						
Covers					I,C	Alcohol or water, dry cloth
Drive Rollers					C	Damp cloth, dry cloth
Idle Rollers					C	Damp cloth, dry cloth
Anti-Static Brush					C	Dry cloth
Sensors					C	Blower brush
Corner Stapler				R		Print an SMC report with **SP5990**. Replace the unit if the staple count is 500K.
Booklet Stapler				R		Print an SMC report with **SP5990**. Replace the unit if the staple count is 200K.

Punch B702

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

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.

Ensure that you reset the PM counter via SP7804 at the completion of each PM

REPLACEMENT AND ADJUSTMENT

REVISION HISTORY		
Page	**Date**	**Added/Updated/New**
1	04/18/2008	New Information – Section updated to support D052 Series
67	06/02/2009	Updated Information – Web Unit Disassembly

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. If the drum surface is touched with bare hands 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 the drum unit, or the drum itself is 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).

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 or corruption would be the worst case scenario).
3. To prevent drum scratches, remove the development unit before removing the drum unit.

3.1.3 TRANSFER BELT UNIT

1. Never touch the transfer belt surface with bare hands.
2. Take care not to scratch the transfer belt, as the surface is easily damaged.
3. Before installing the new transfer belt, clean all of 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 will throw the LD unit out of adjustment.
2. Do not adjust the variable resistors on the LD unit. They are adjusted in the factory and cannot be accurately reset in the field.
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, perform the laser beam pitch adjustment. Failure to do so will result in an SC code being 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 positioned 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 only (not with a dry cloth).
8. Do not touch the charge grid plate with bare hands. Also, do not bend the charge grid plate or make any dent in it. Doing so may cause uneven charge.

3.1.7 DEVELOPMENT

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

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.
3. Never throw toner into an open flame. Toner dust is flammable and may ignite.

3.2 SPECIAL TOOLS AND LUBRICANTS

3.2.1 SPECIAL TOOLS

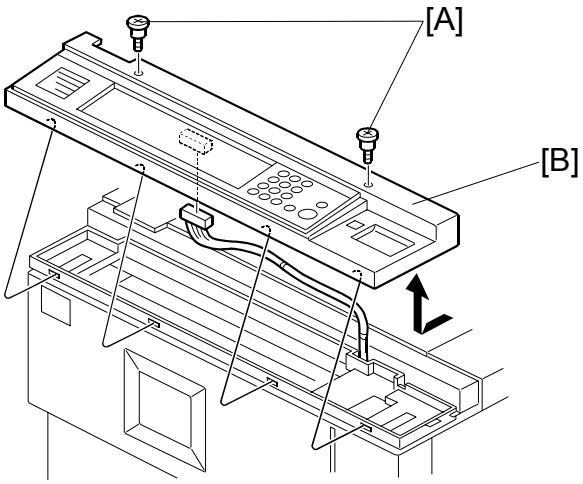
Part No.	Description
A0069104	Scanner Positioning Pin (4 pcs./set)
A2929500	Test Chart – S5S (10 pcs./set)
VSSM9000	Digital Multimeter – FLUKE 187
VSST9500	Test Chart – S5S – DF (10 Sheets/Set)
N8036701	Flash Memory Card – 4 MB (B064)
G0219350	Loop Back Connector
B6455090	SD (Secure Digital) Card – 64 MB (B140/B246/D052)
B6456700	PCMCIA Card Adapter
B6456800	USB Reader/Writer

3.2.2 LUBRICANTS

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

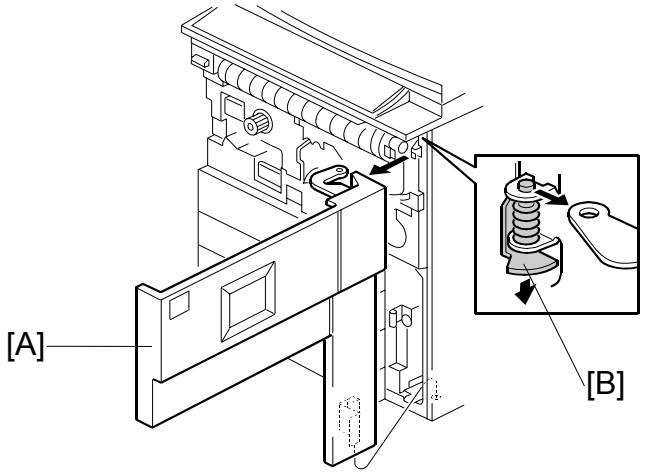
3.3 OPERATION PANEL AND EXTERNAL COVERS

3.3.1 OPERATION PANEL



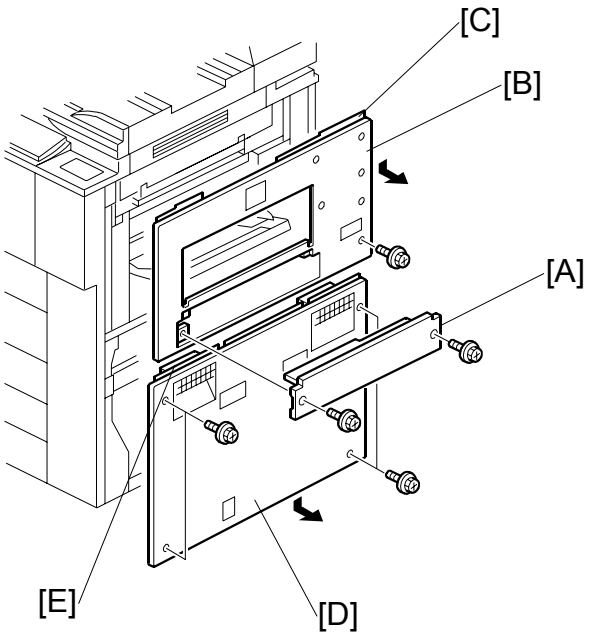
[A]: Shoulder screws (x 2)
[B]: Operation panel (x 1)

3.3.2 FRONT DOOR



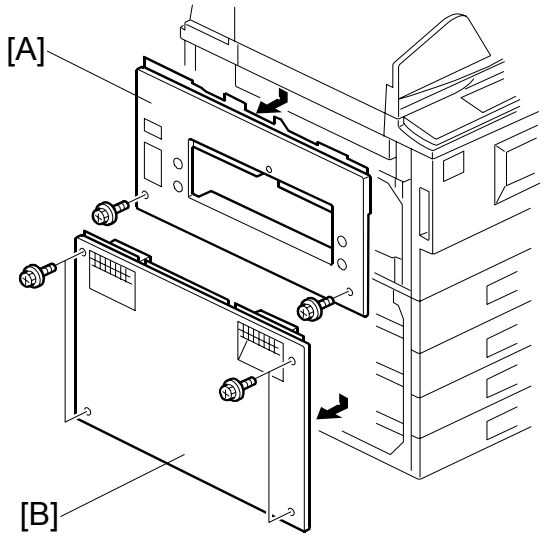
While supporting the front door [A] with one hand, press down on the hinge bracket [B] then raise the door slightly to remove it.

3.3.3 RIGHT COVERS



1. LCT entrance guide cover [A] (☞ x 2)
2. Right upper cover [B] (☞ 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] (☞ 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.

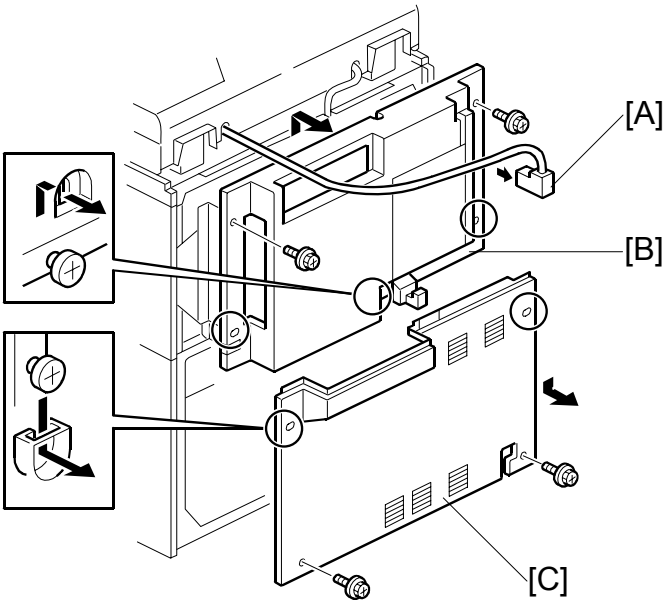
3.3.4 LEFT COVERS



[A]: Left upper cover (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 (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



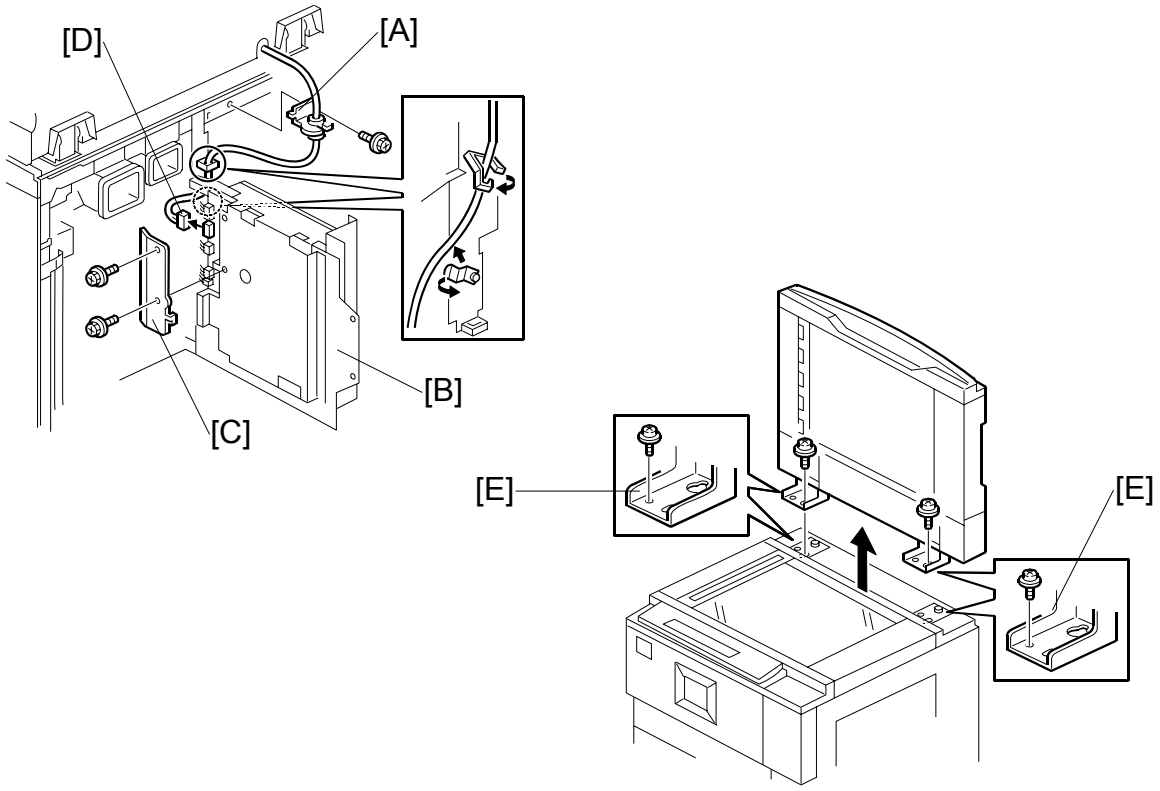
[A]: Disconnect the ADF plug.
[B]: Rear upper cover (☞ x 2)
- Slide down to remove.
- When re-attaching, before tightening the screws make sure that the tabs on the cover are engaged with the shoulder screws.

[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.

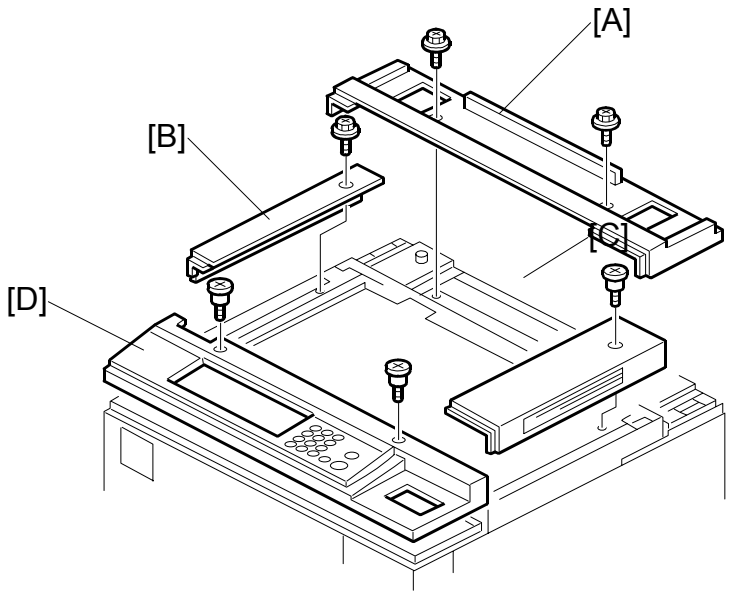
[C]: Connector cover (🔩 x 2)

[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.

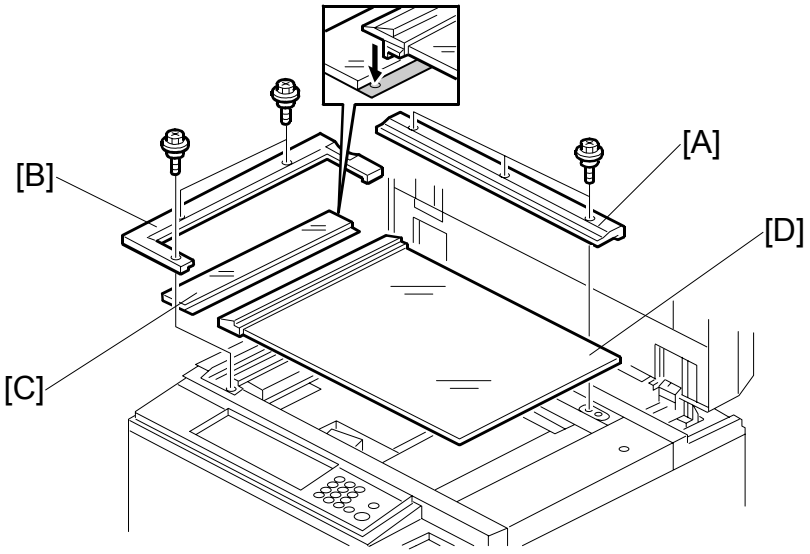
Top Covers



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



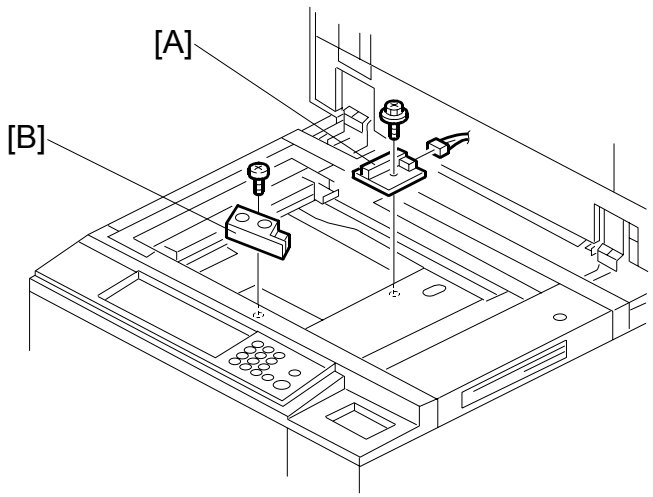
[A]: Rear scale (☞ x 3)
[B]: Left cover (☞ x 3)
[C]: ADF exposure glass
[D]: Exposure glass

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 (white) 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

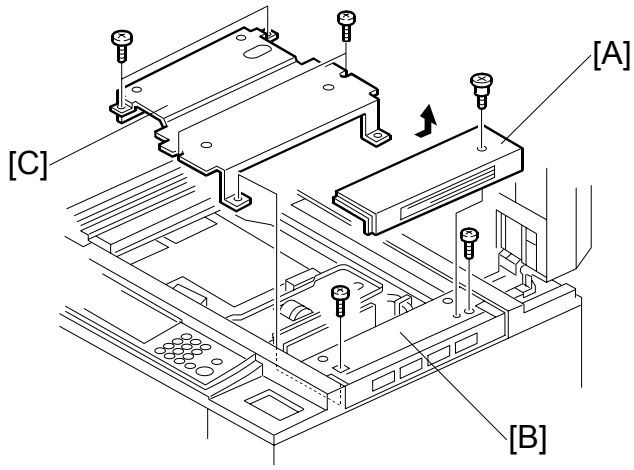


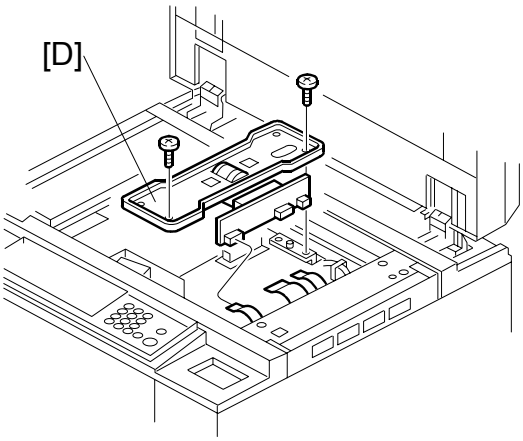
Exposure glass (☛ 3.4.2)

[A]: Original length sensor (🔩 x 1, ✋ x 1)
NOTE: In North America, two length sensors are provided.

[B]: Original width sensor (🔩 x 1, ✋ x 1)

3.4.4 LENS BLOCK





Exposure glass (☛ 3.4.2)

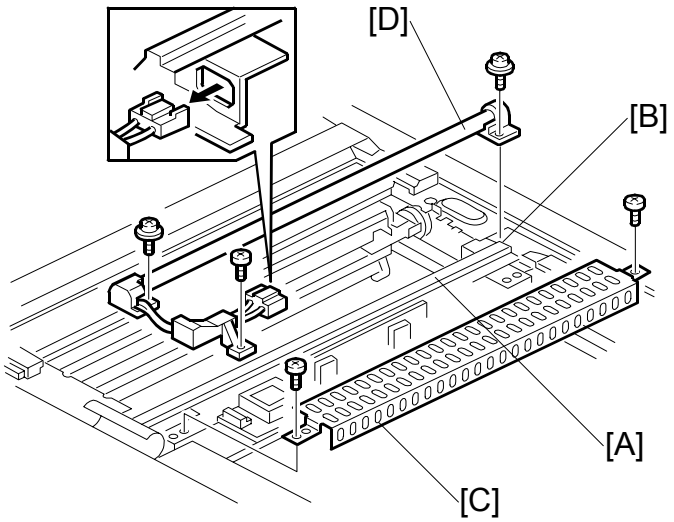
Operation panel (🔩 x 1) (☛ 3.3.1)

[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



Exposure glass (☛ 3.4.2)

Operation panel (☛ 3.3.1)

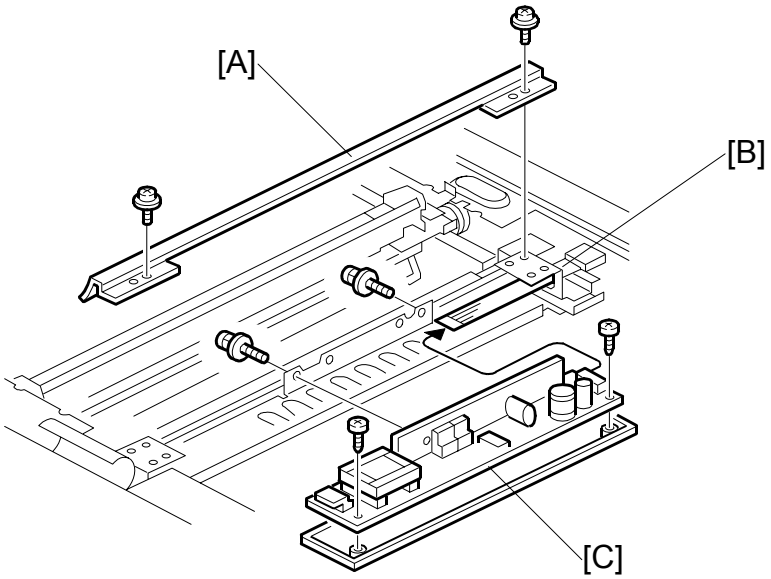
Push the 1st scanner [A] to the cutout [B] in the scanner frame.

[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



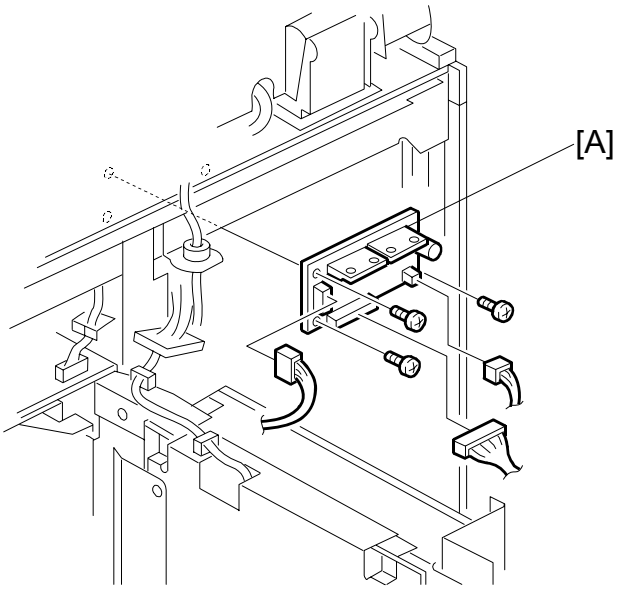
Operation panel (☛ 3.3.1)

Exposure glass (☛ 3.4.2)

Exposure lamp cover and exposure lamp (☛ 3.4.5)

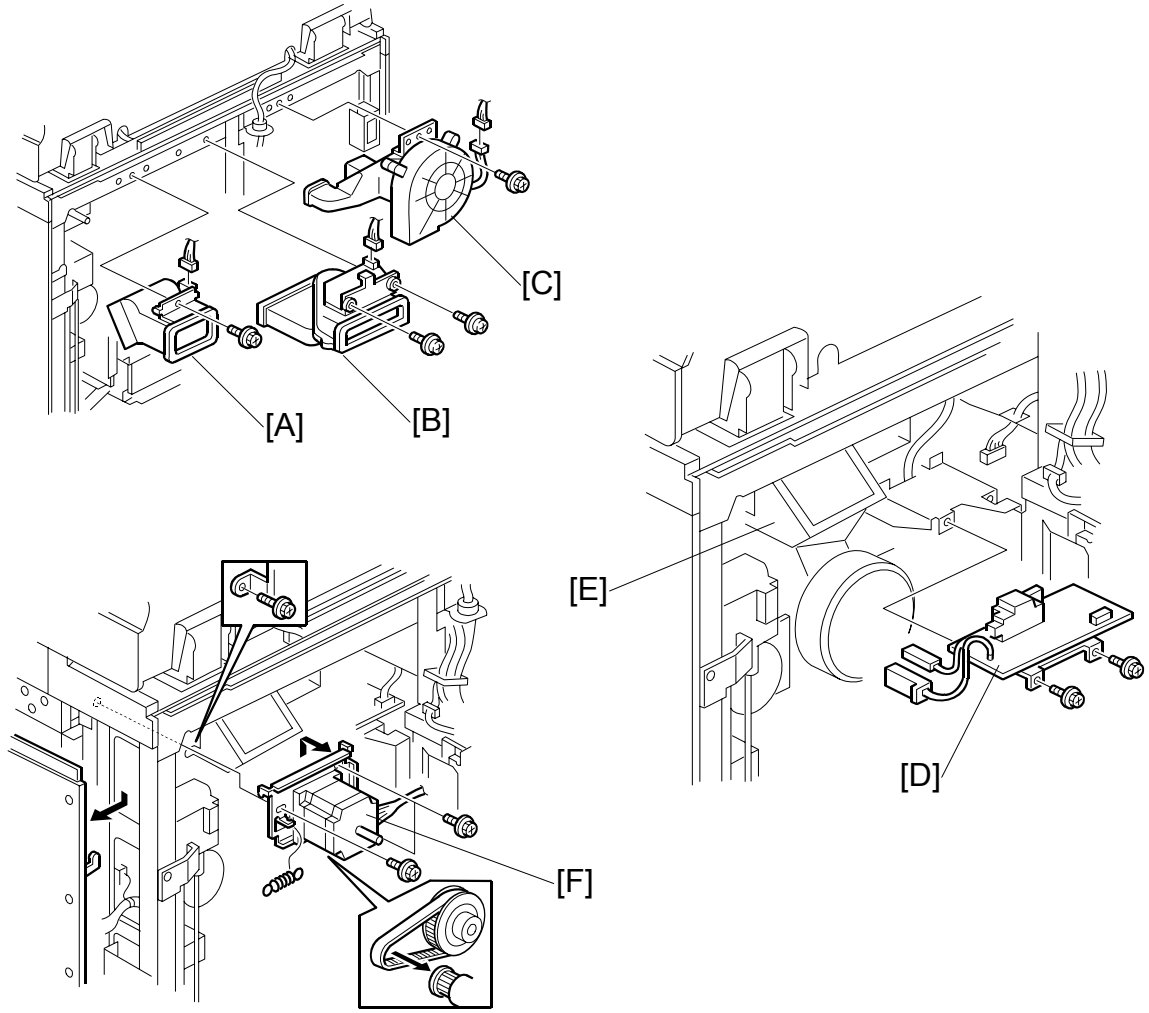
[A]: Metal strip reflector
NOTE: Avoid touching the surface of the reflector and do not bend it.
[B]: Lamp regulator ribbon connector
[C]: Lamp regulator (x 4, x 1)

3.4.7 SCANNER MOTOR DRIVE BOARD (SDRB)



Rear upper cover (☛ 3.3.5)
[A]: Scanner motor drive board (x 3, x 3)

3.4.8 SCANNER MOTOR



Right upper cover (☛ 3.3.3)

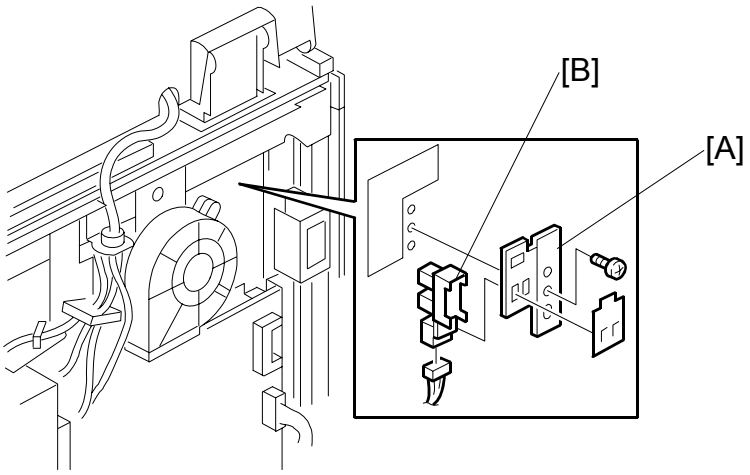
Controller/IPU panel door

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)

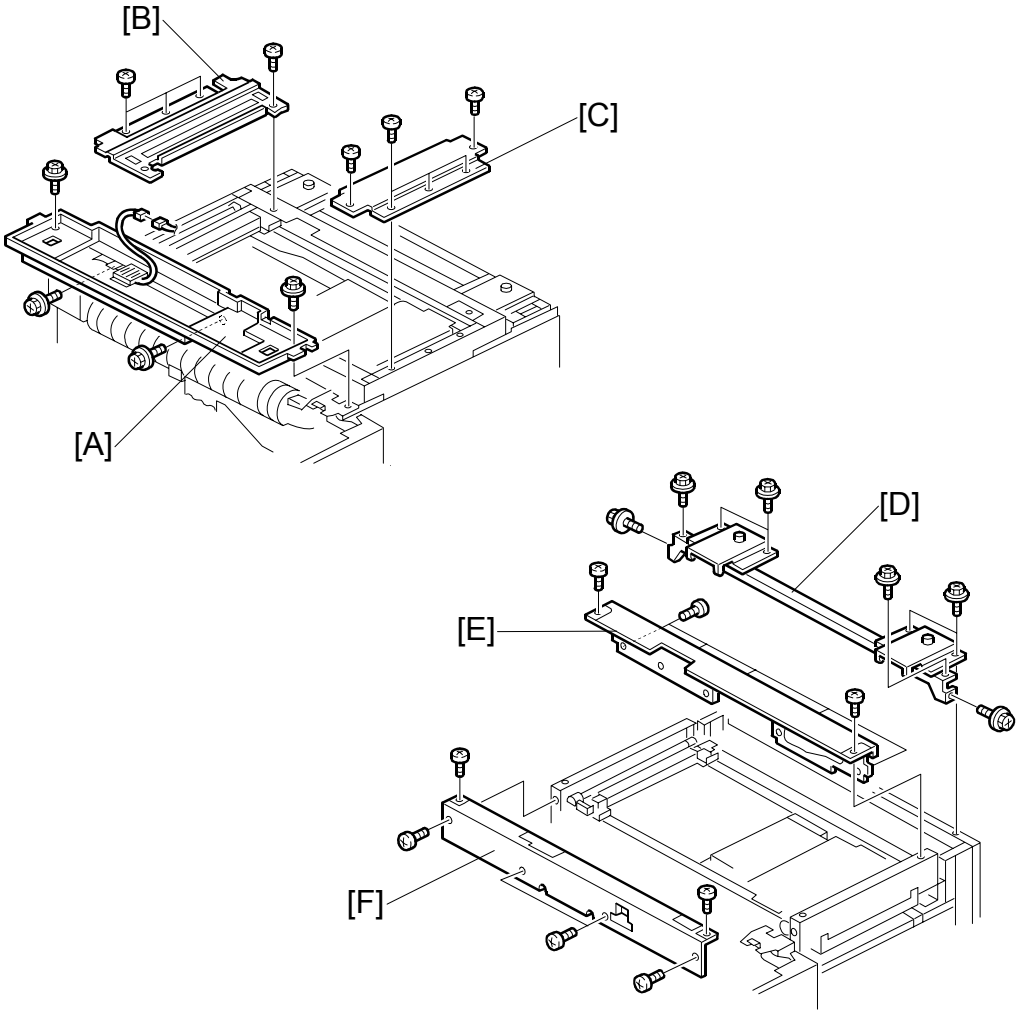
3.4.9 SCANNER HP SENSOR



Rear upper cover (☛ 3.3.5)
[A]: Sensor bracket and leaf (🔩 x 1)
[B]: Scanner HP sensor (🖑 x 1)

3.4.10 SCANNER WIRE REPLACEMENT

Preparation for Removal

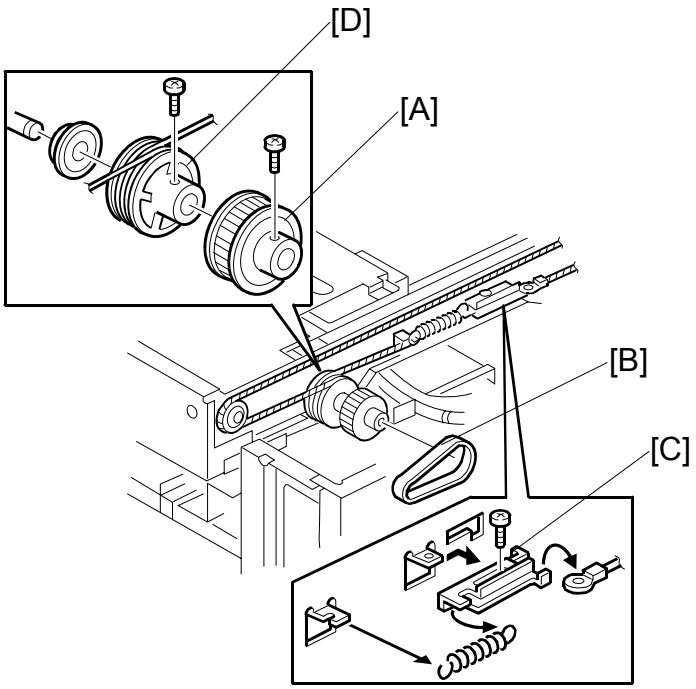


ADF and top covers (☛ 3.4.1)

Operation panel (🔩 x 1) (☛ 3.3.1)

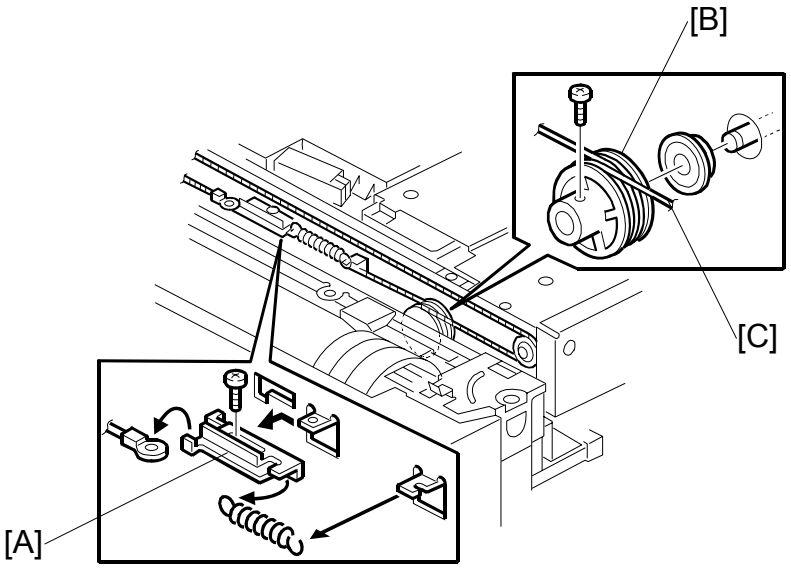
[A]: Scanner unit external cover (🔩 x 4, 🖐 x 1)
[B]: Left stay (🔩 x 5)
[C]: Right stay (🔩 x 5)
[D]: ADF upper support frame (🔩 x 8)
[E]: Lower support frame (🔩 x 6)
[F]: Scanner unit front panel (🔩 x 6)

Wire Removal: Back



[A]: Drive pulley (☞ x 1)
[B]: Timing belt
[C]: Tension bracket (☞ x 1, spring x 1)
[D]: Rear wire pulley (☞ x 1) and rear scanner wire

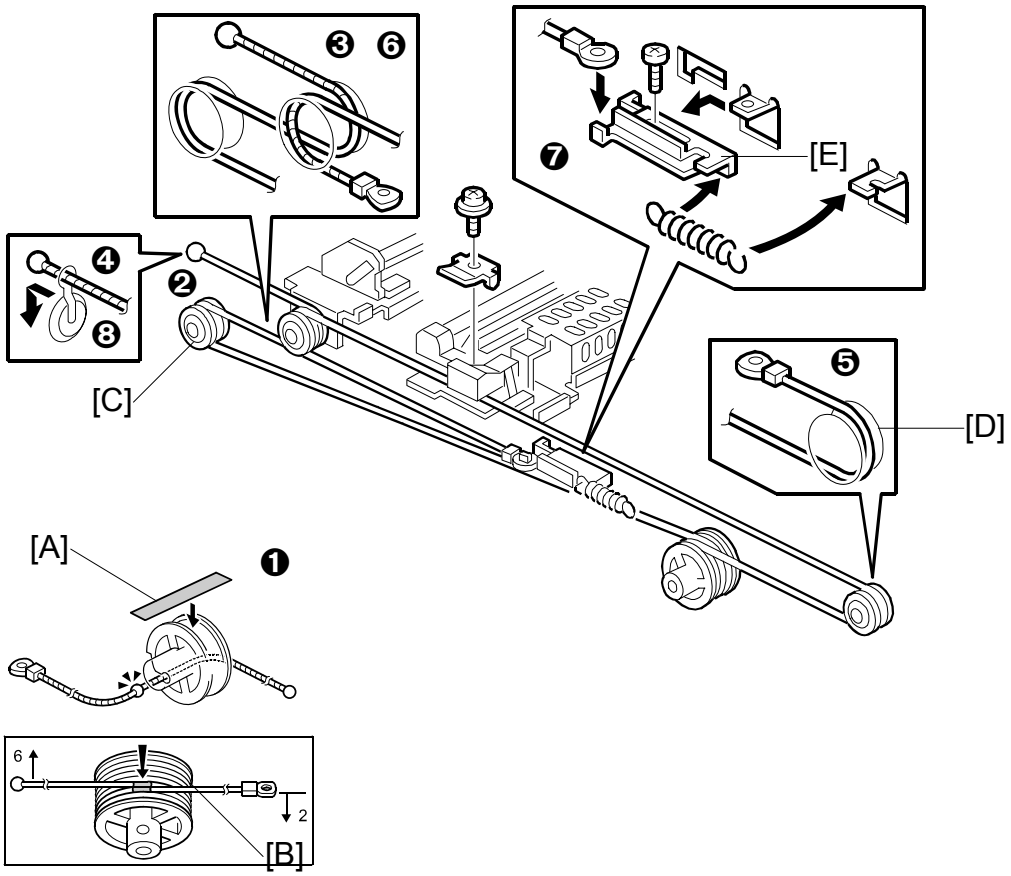
Wire Removal: Front



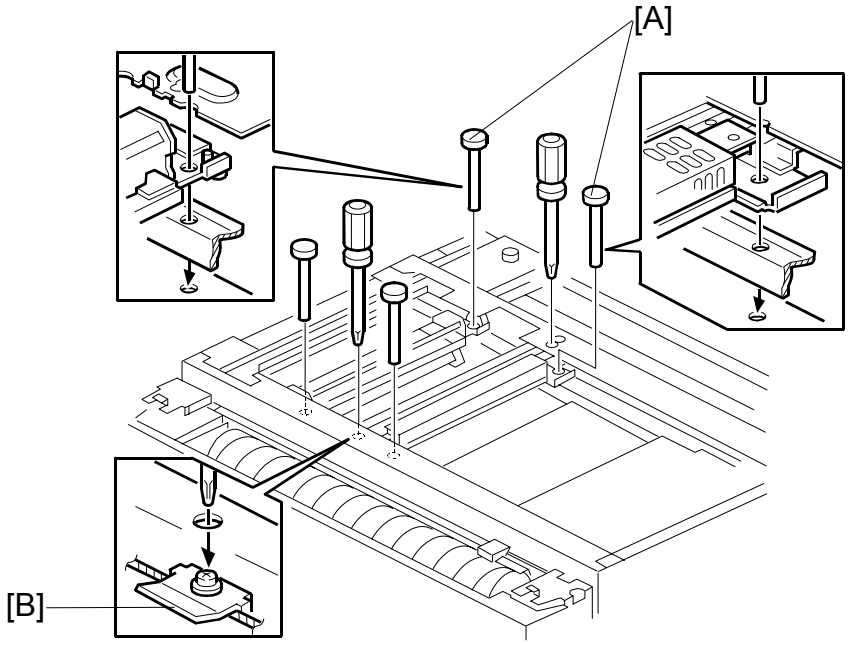
[A]: Tension bracket (🔩 x 1, spring x 1)
[B]: Front wire pulley (🔩 x 1)
- Remove the screw. While pulling back on the drive shaft, remove the pulley shaft.

[C]: Scanner wire

Attaching the New Wire

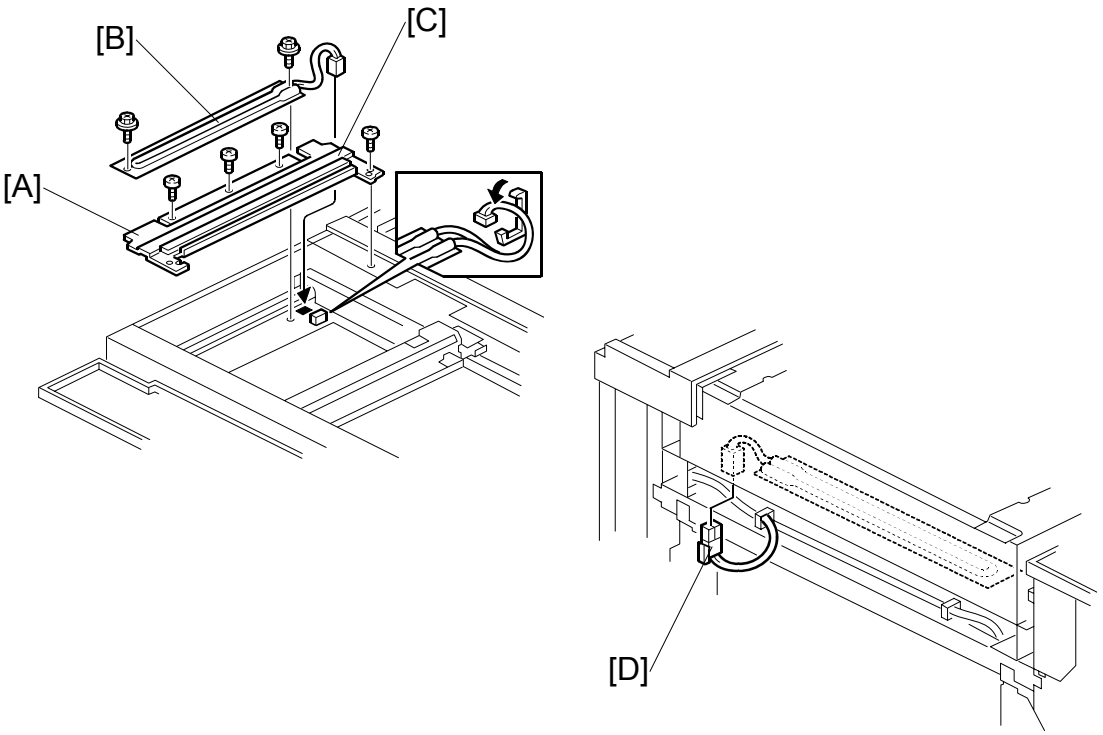


1. While paying attention to the direction of the wire (the leading bead), thread the wire [A] through the pulley, wrap the wire on the pulley, then apply tape to hold it in place.
   - Wind the wire on the bead side [B] clockwise 6 times, and the ring side 2 times as shown (❶).
2. Set the pulley with 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 (❺❻❼).



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



Exposure glass (☛ 3.4.2)

Operation panel (☛ 3.3.1)

[A]: Scanning glass plate (🔩 x 4).
[B]: Scanner heater (🔩 x 2).
[C]: Fasten the cable with the harness clamp.
[D]: Fasten the connector on the left side of the machine (✋ x 1).

3.5 LASER UNIT

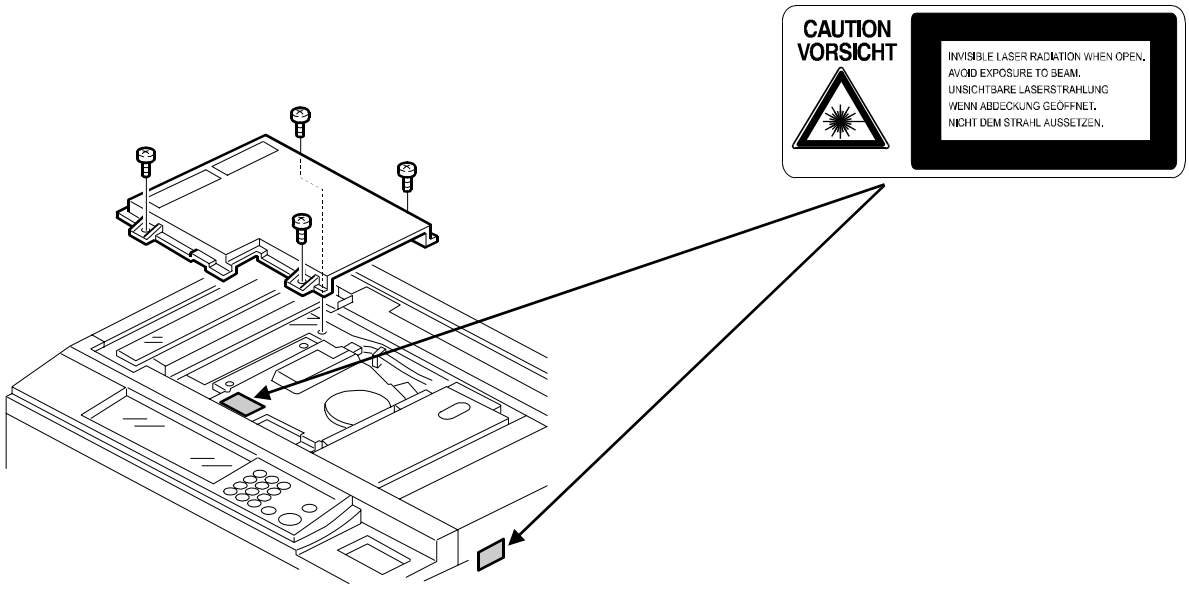
⚠WARNING

Turn off the main power switch and unplug the machine before performing any procedure in this section. Laser beams can cause serious damage to 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 (13.2 mW for the B246 Series). 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.**

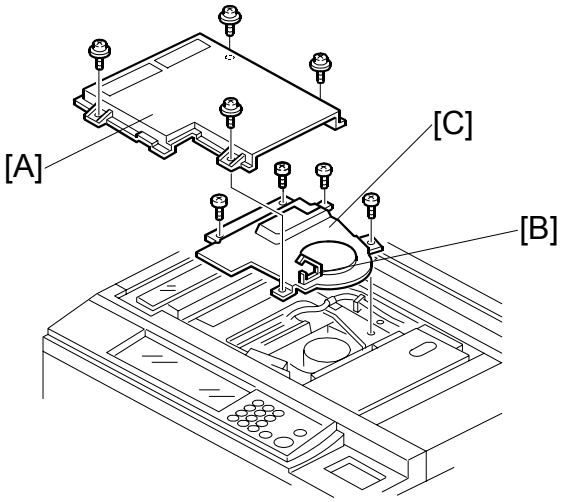
3.5.1 CAUTION DECALS



Two caution decals are provided for the laser section.

3.5.2 LD UNIT AND POLYGON MOTOR

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

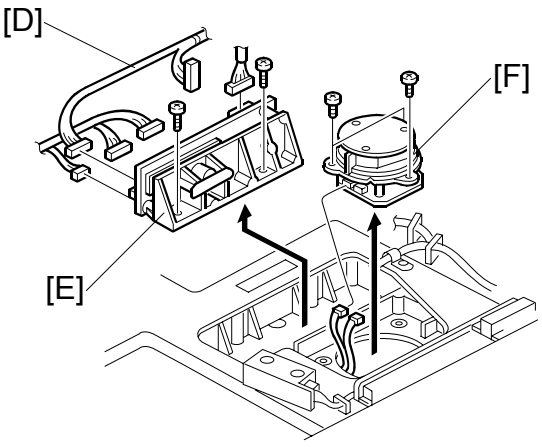


⚠CAUTION

- **Any 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 (☞ x 6)
[E]: LD unit (☞ x 2)
[F]: Polygon motor (☞ x 3, ☞ x 2)

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

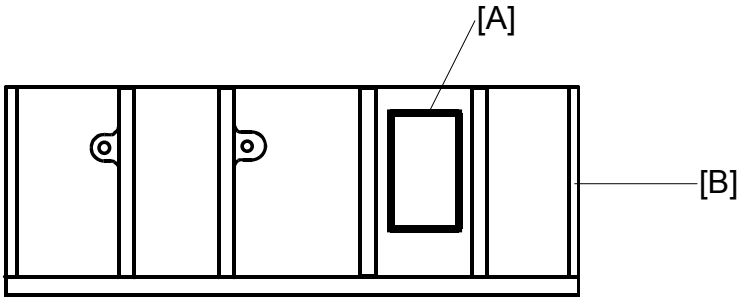


⚠CAUTION

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

SP Adjustments

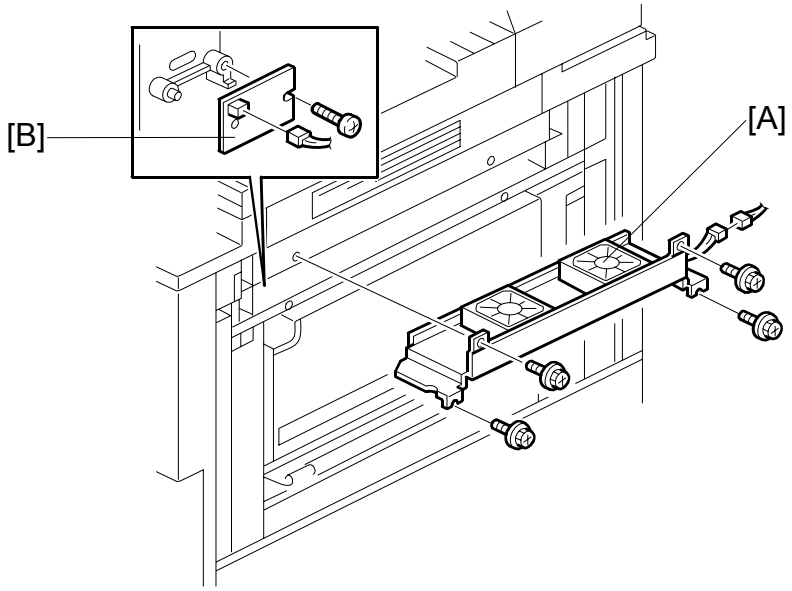
1. Execute SP2962 (Automatic Adjustment of Drum Conditions) after replacing the LD unit, but only if SP3901 – Auto Process Control – is on.
2. Read the label [A] attached to the LD unit [B]. Execute SP2115 (Main Scan Beam Pitch Adjustment) and enter the numbers printed on the label.



- 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



Remove the right side cover (☞ x 2)

NOTE: If the optional LCT is installed, disconnect it (☞ x 1).

[A]: Development unit fans (☞ x 4, 🖐 x 1)
[B]: Synchronization detector (☞ x 1, 🖐 x 1)

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

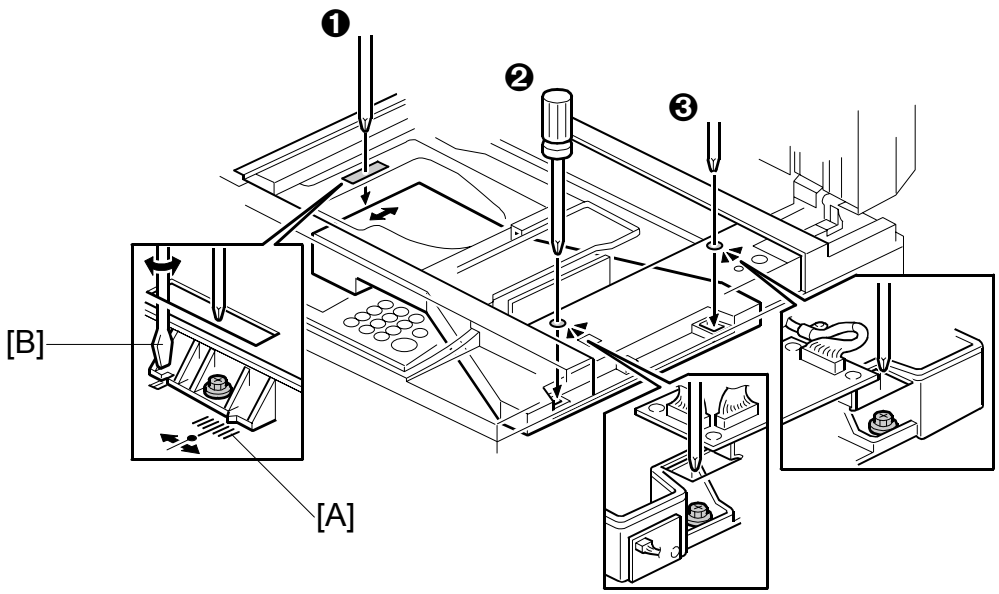
3.5.4 LASER UNIT ALIGNMENT

⚠WARNING

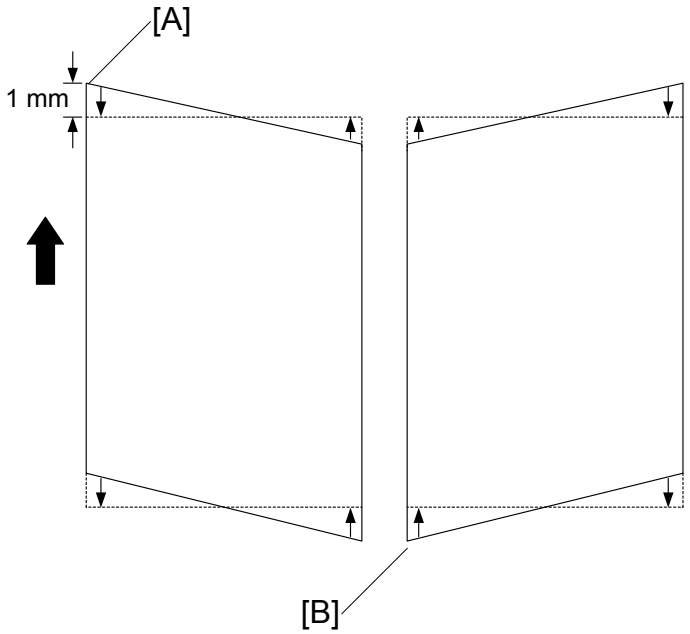
If you have just disassembled the LD unit, to avoid serious damage to the eyes from accidental exposure to laser beams you must confirm that the machine has been re-assembled completely before operation.

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 ❶❷❸ (🔩 x 3).



6. While watching the scale [A], use a flathead screwdriver [B] to move the laser exposure unit left or right to adjust the position of the unit.



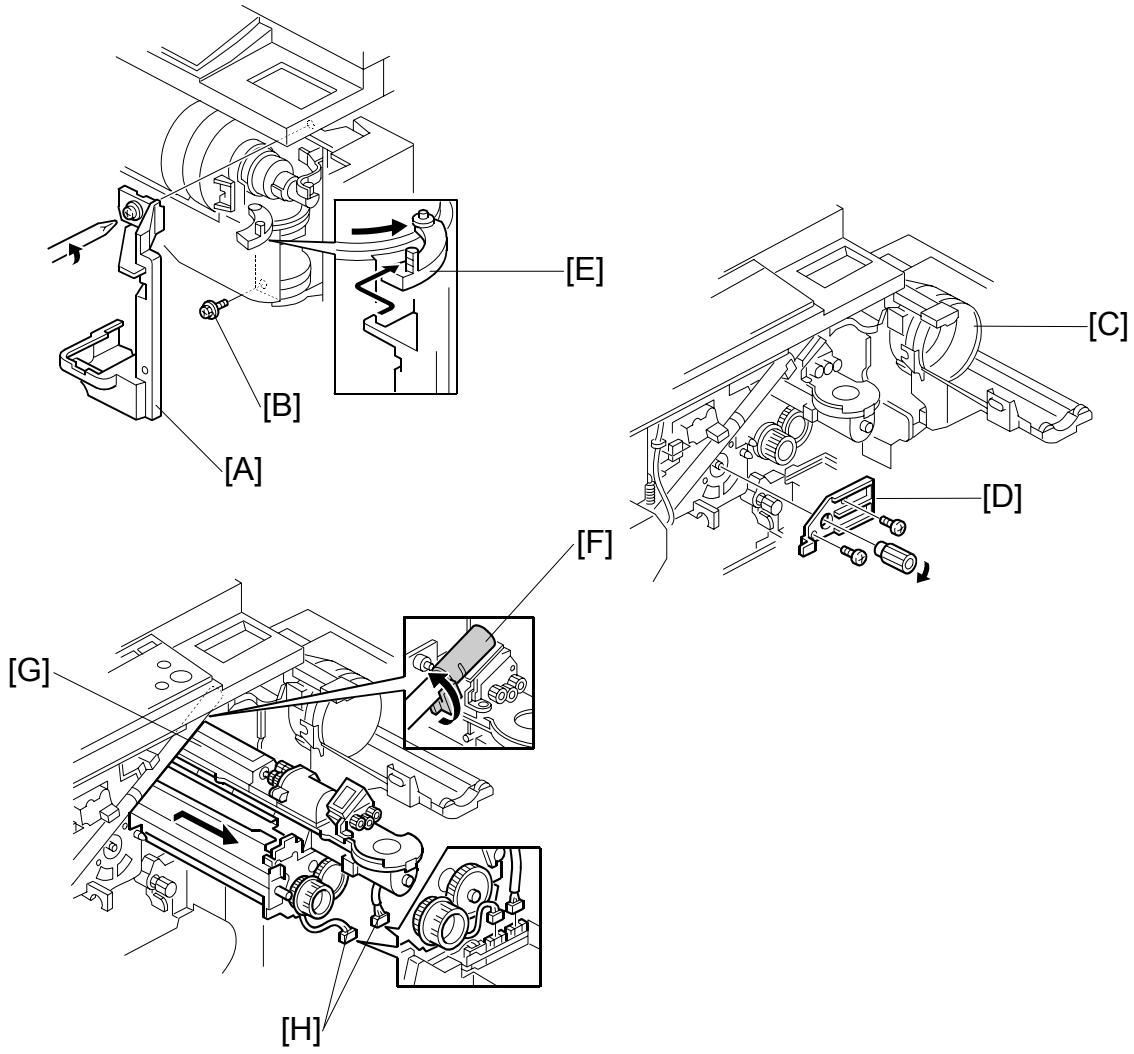
7. Adjust the position of the laser exposure unit.
   - If the pattern is skewed at the corner of the leading edge [A], move the unit so it moves the pointer on the scale toward the back.
   - If the pattern is skewed at the lower left corner of the trailing edge [B], move the unit so it moves the pointer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

3.6 DRUM UNIT

3.6.1 DEVELOPMENT UNIT REMOVAL

Removal



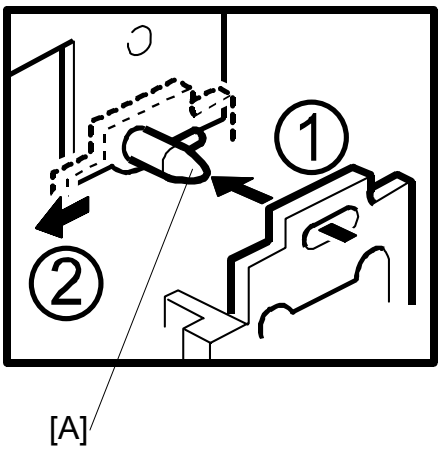
[A]: Shutter cover (🔩 x 1).
[B]: Lock screw
[C]: Toner bottle.
- Pull the toner bottle holder out and swing the toner bottle holder to the right.

[D]: Face plate (knob x 1, 🔩 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 (✋ 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

When re-inserting the development unit, engage the plate ① on the front of the development unit with the silver pin [A] inside the machine, then slide it to the left ② toward the drum.



If the unit is installed correctly, you should see the pin above the plate, and the plate should be flat against the front of the development unit.

If the development unit will not move past the pin, the couplings are not aligned correctly at the back of the machine. Turn the gear on the front of the developer unit until the couplings engage at the rear of the machine.

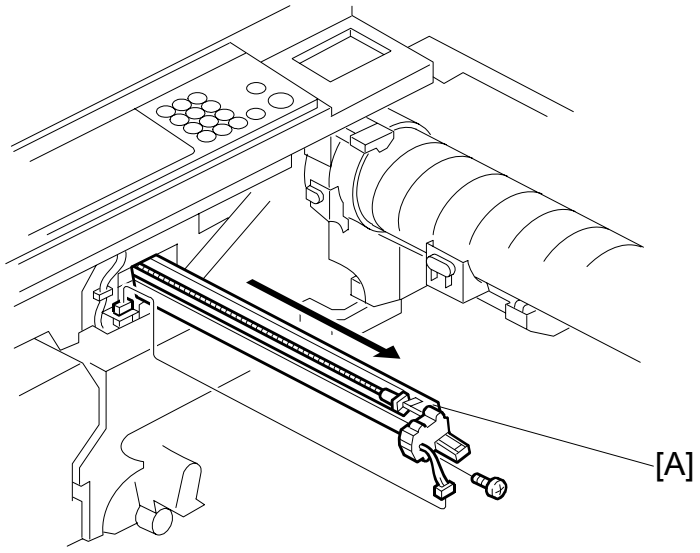
Before closing the front door, make sure that the pipe line shutter is rotated down to the open position.

Replacement with a used Development Unit

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

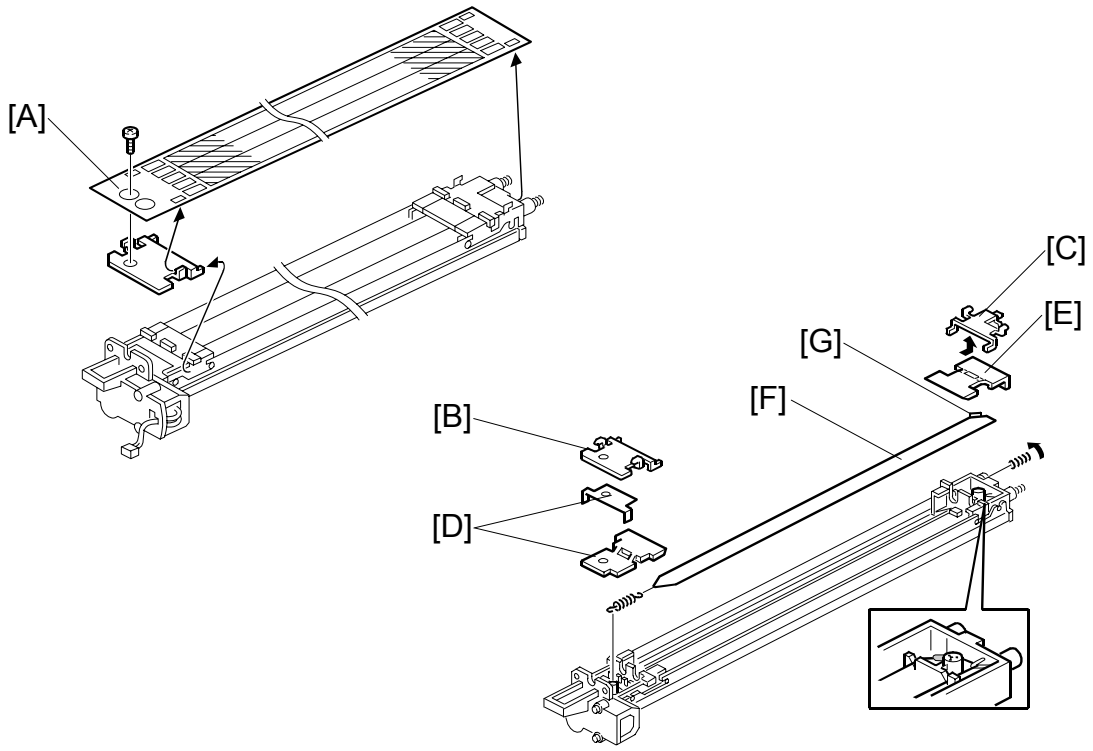
1. Check the value of SP2220 (Vref Manual Setting) in both the machine containing the test unit and the machine that you are going to move it to.
2. Install the test development unit, then input the V_{REF} for this unit into SP2220.
3. After the test, reinstall the old development unit, and change SP2220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

3.6.2 CHARGE CORONA UNIT



Development unit (☛ 3.6.1)
[A]: Charge corona unit (🔩 x 1, ✋ x 1)

3.6.3 CHARGE CORONA WIRE AND GRID

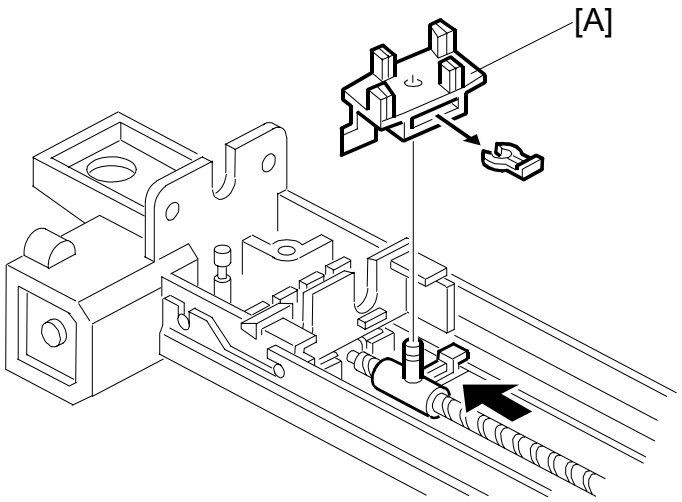


Charge corona unit (☛ 3.6.1)

[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 Roller Bias Adjustment – Applied Voltage for Image Processing) to the default.

3.6.4 CHARGE CORONA WIRE CLEANING PADS

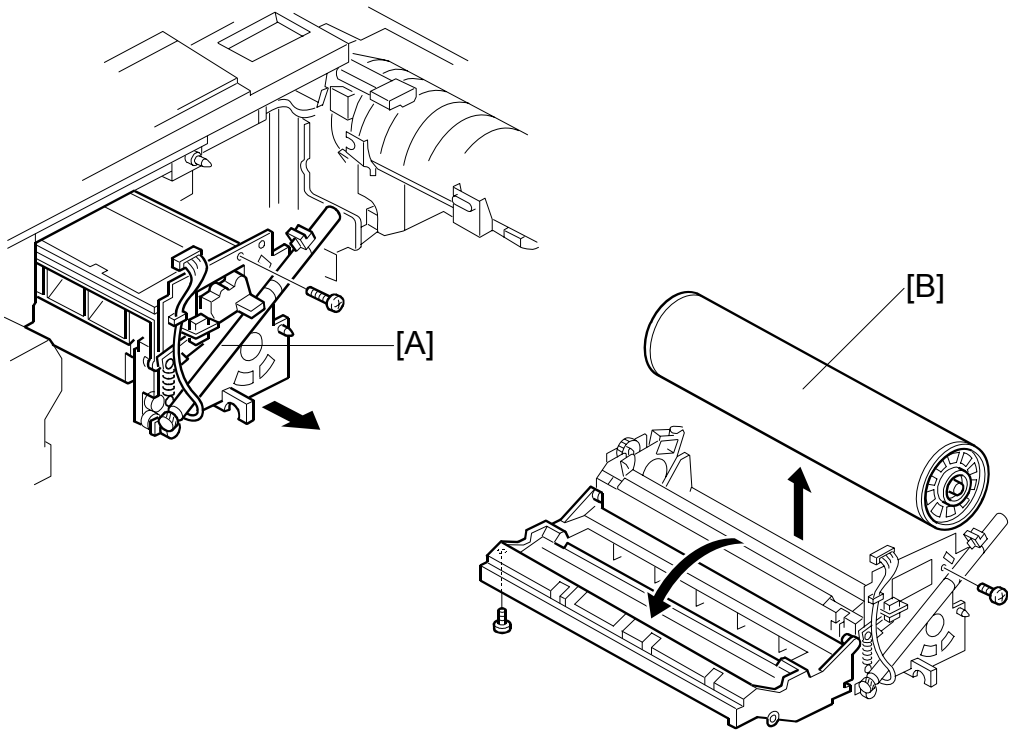


Charge corona unit (☛ 3.6.2)

Charge corona wire and grid (☛ 3.6.3)

[A]: Cleaning pad (x 1)

3.6.5 OPC DRUM REMOVAL



Development unit (☛ 3.6.1)

Charge corona unit (☛ 3.6.2)

[A]: Drum unit (🔩 x 1, 🖐 x 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:

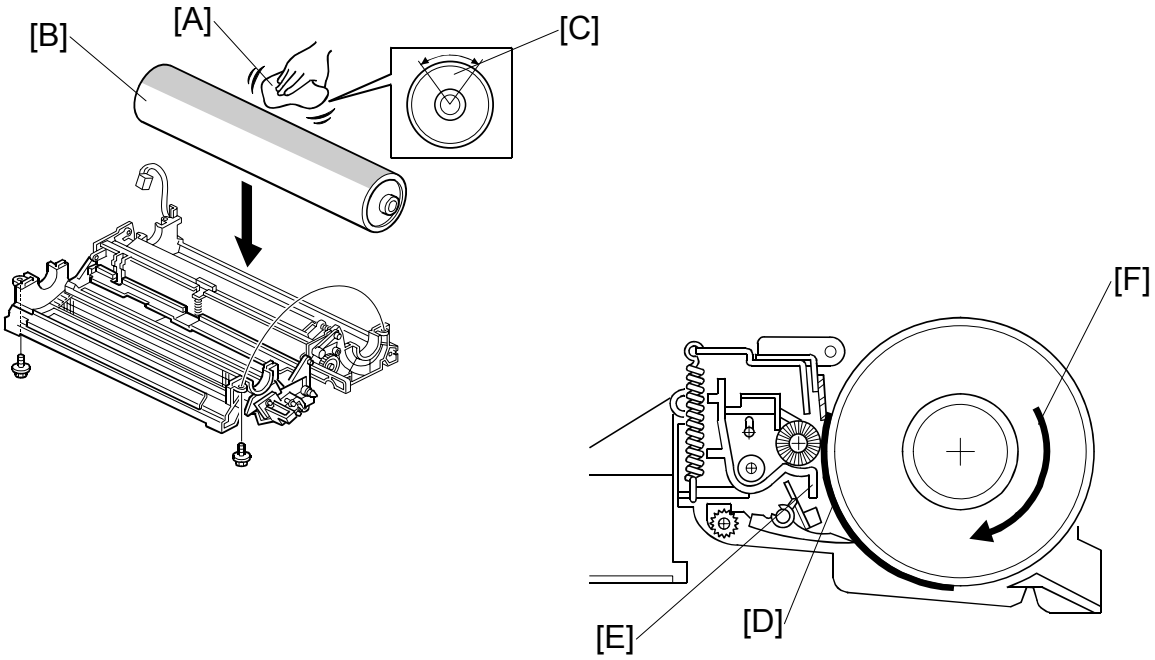
- Set SP2001-001 (Charge Corona Bias Adjustment – Applied Voltage for Image Processing) to the default setting.
- SP2962 (Adjustment of Drum Conditions), only if SP3901 (Auto Process Control) is on.

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

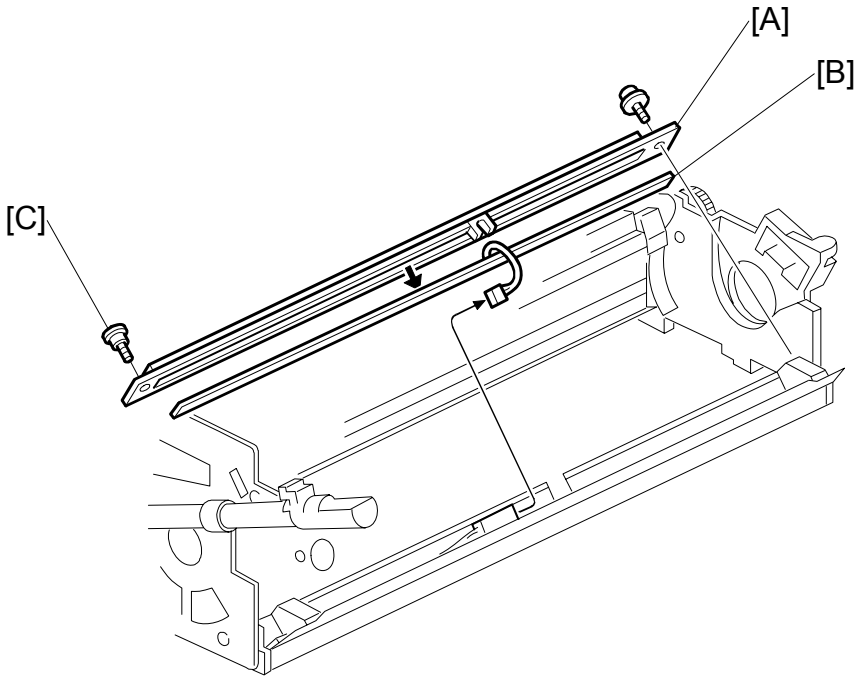
The surface of the drum is less smooth, so you must apply Drum Setting Powder (P/N: 54429101) to the drum surface before installation.

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. Be aware, however, that this could cause dirty background on the first few 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 counter-clockwise.

3.6.6 PTL (B140/B246/D052 SERIES ONLY)

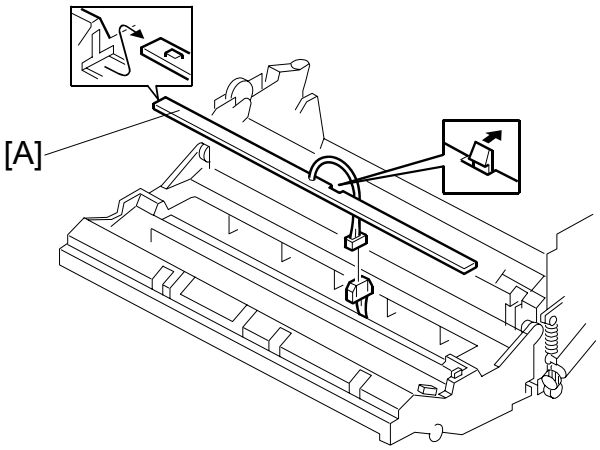


OPC drum (☛ 3.6.5)
[A]: PTL bracket (☞ x 2)
[B]: PTL (☜ x 1)

Reinstallation

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

3.6.7 QUENCHING LAMP



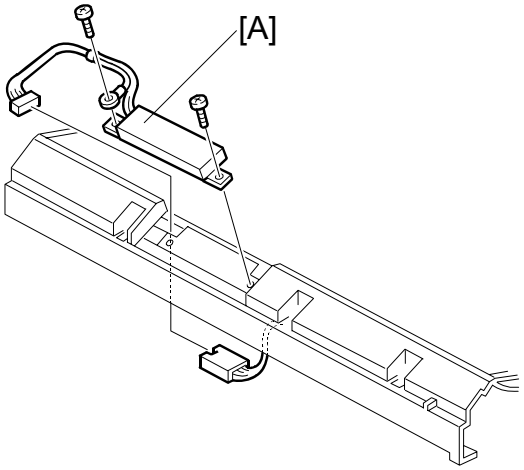
OPC drum (☛ 3.6.5)

[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

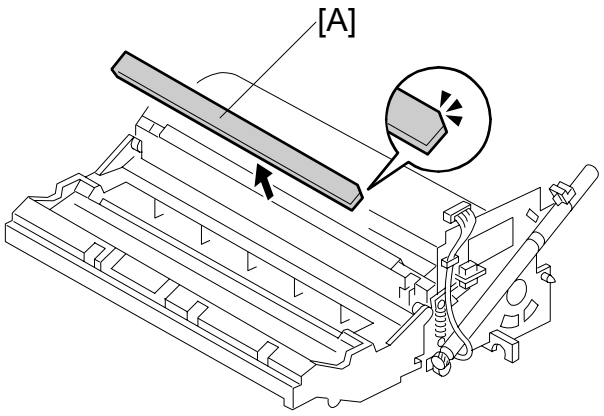


OPC drum (☛ 3.6.5)

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

NOTE: If Auto Process Control is set to “on” (SP3901), perform SP2962 (Adjustment of Drum Conditions) after replacing the drum potential sensor.

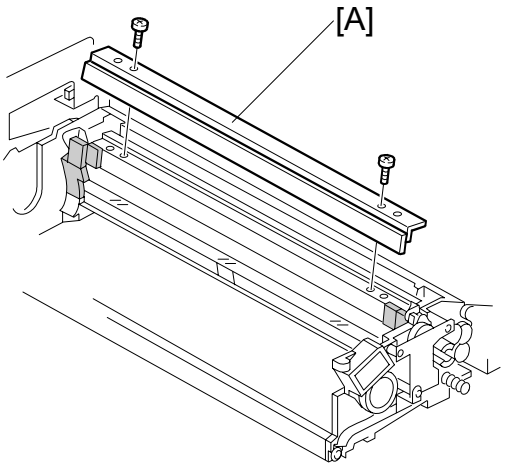
3.6.9 CLEANING FILTER



OPC drum (☛ 3.6.5)

[A]: Cleaning filter

3.6.10 CLEANING BLADE

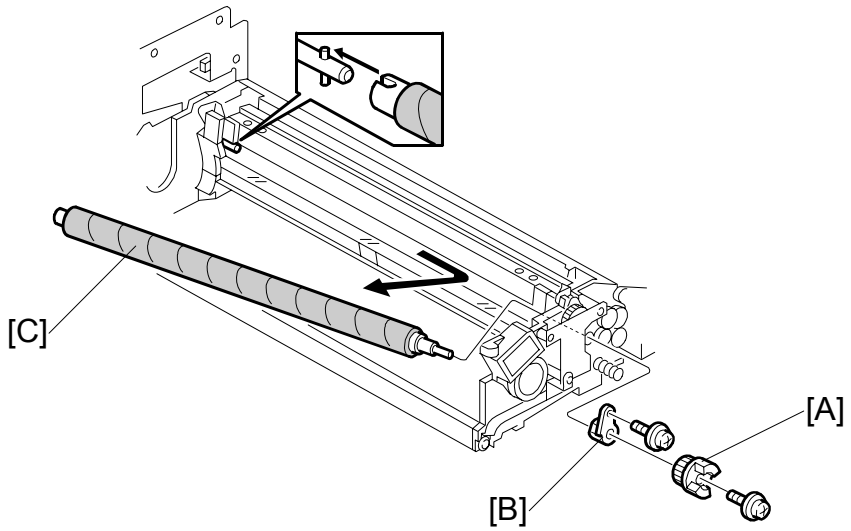


OPC drum (☛ 3.6.5)

[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



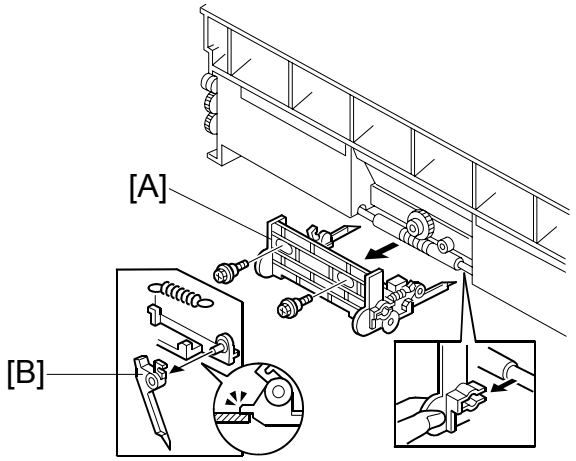
OPC drum (☛ 3.6.5)

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.

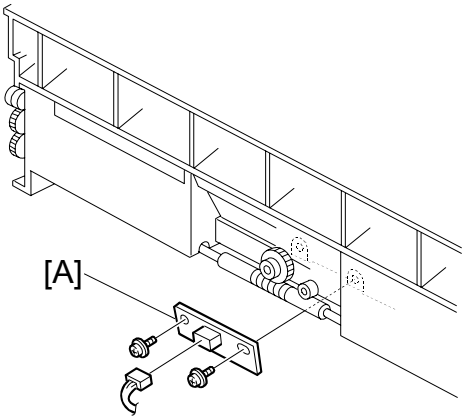
3.6.12 PICK-OFF PAWLS



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)

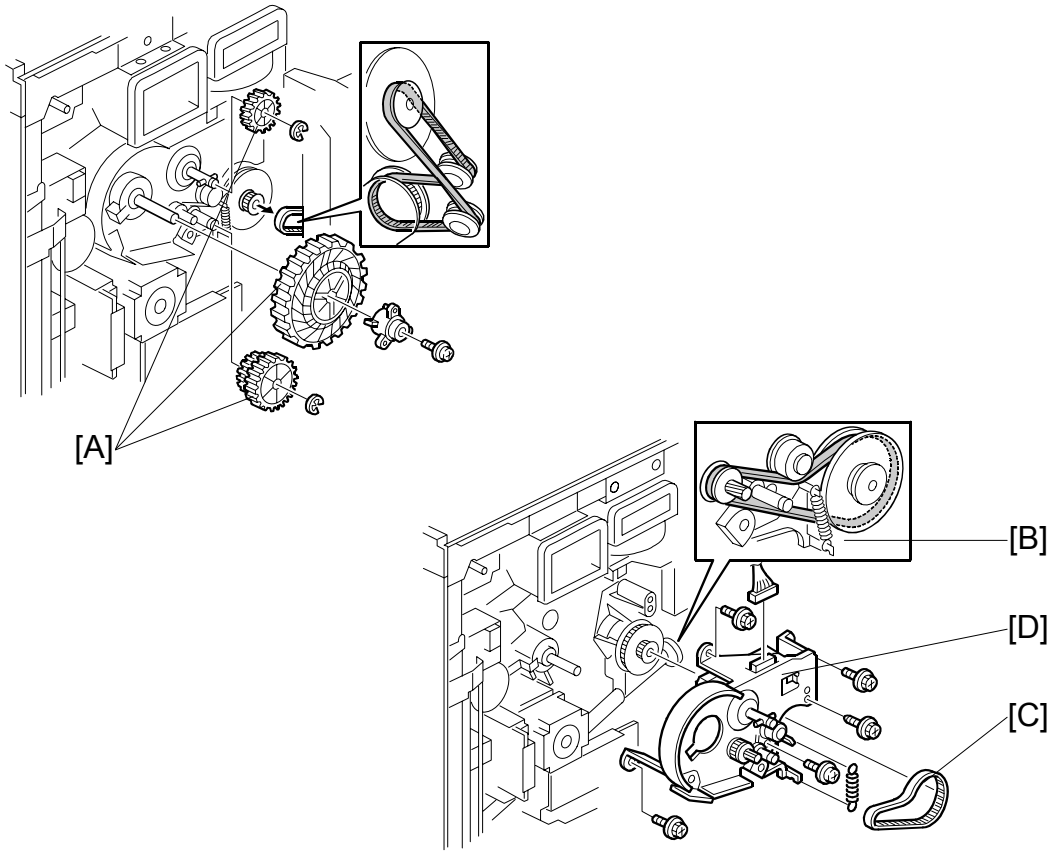
Pick-off pawls (☛ 3.6.12)

[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).

3.6.14 DRUM MOTOR



Rear covers (☛ 3.3.5)

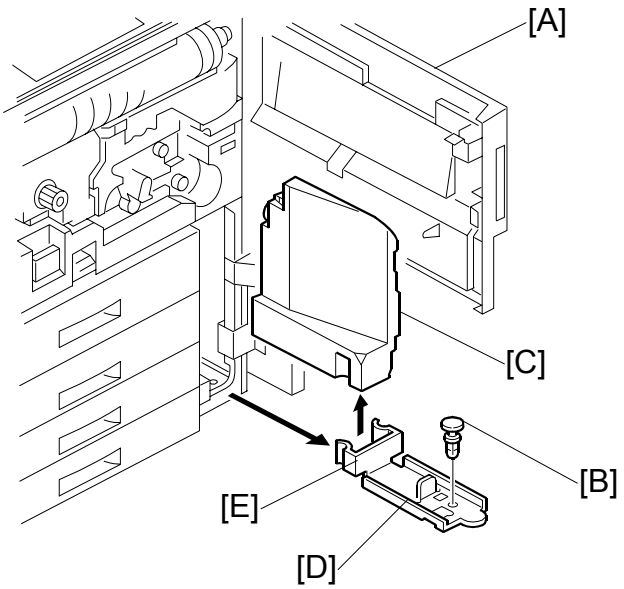
Controller/IPU panel (x 2) (not shown)

- The panel swings open like a door. You do not need to remove it.

Flywheel (x 3) (not shown)

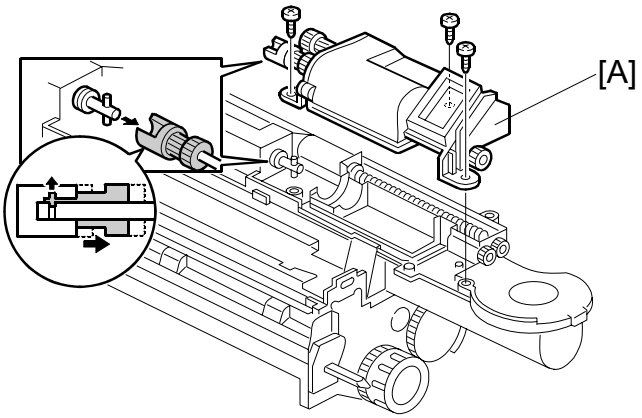
[A]: Three gears (x 1, x 2, Timing belt x 1)
[B]: Spring
[C]: Timing belt
[D]: Drum motor (x 1, x 5)

3.6.15 TONER COLLECTION BOTTLE



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



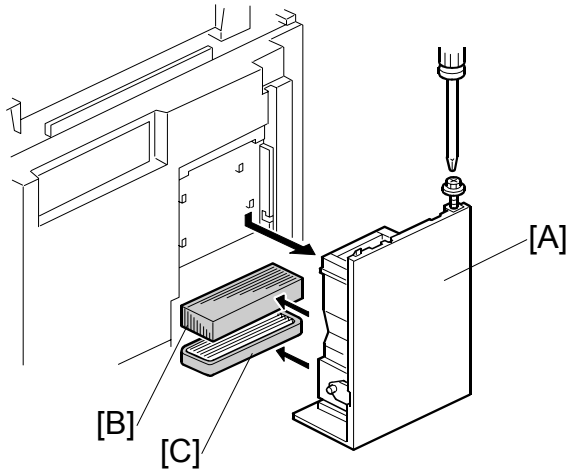
Development unit (☛ 3.6.1)

[A]: Toner separation unit (🖉 x 3)

3.6.17 OZONE FILTERS

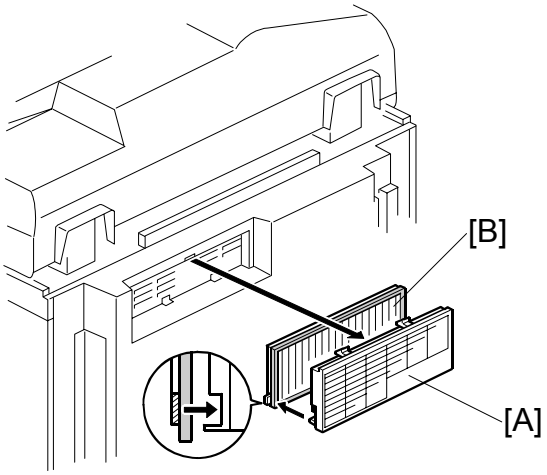
[A]: Filter cover (x 1)
- The filter cover is on the back of the machine.

[B]: Ozone filter (top)
[C]: Ozone filter (bottom)



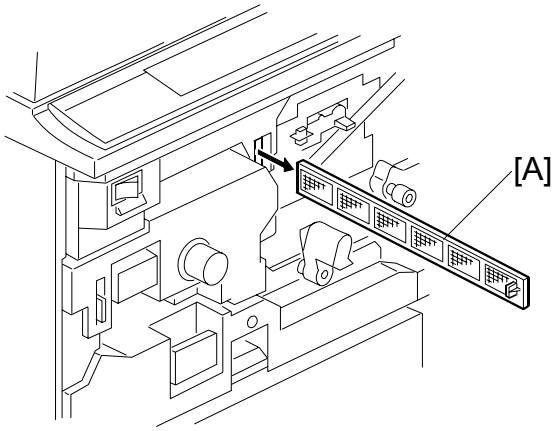
3.6.18 OPTICS DUST FILTER

[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].

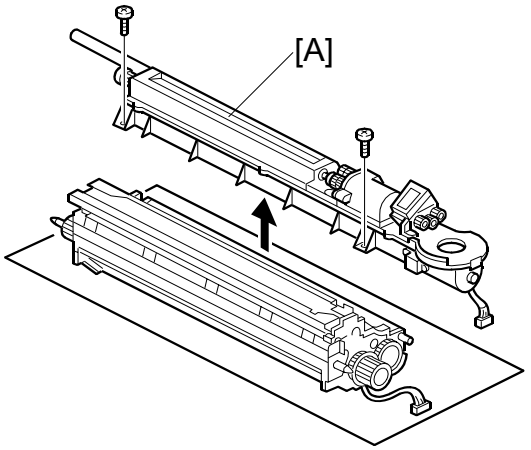


3.7 DEVELOPMENT UNIT

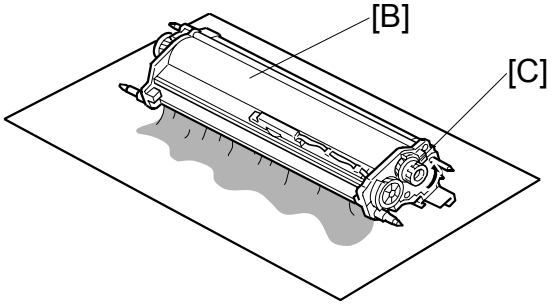
3.7.1 DEVELOPER REPLACEMENT

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.

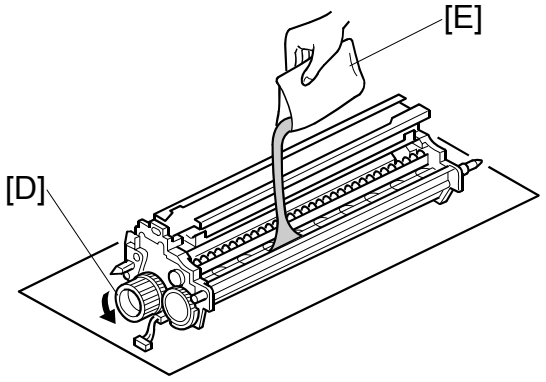


3. Hold the development [B] unit over a large sheet of paper, then slowly turn it upside down to empty the developer.
4. Turn the knob [C] through several complete rotations to empty all the developer in the development unit.
5. Clean the development sleeve and its side seals.
6. Turn the unit over and 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.

   NOTE: Continue to turn the knob several times to prevent clumping in the developer.



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

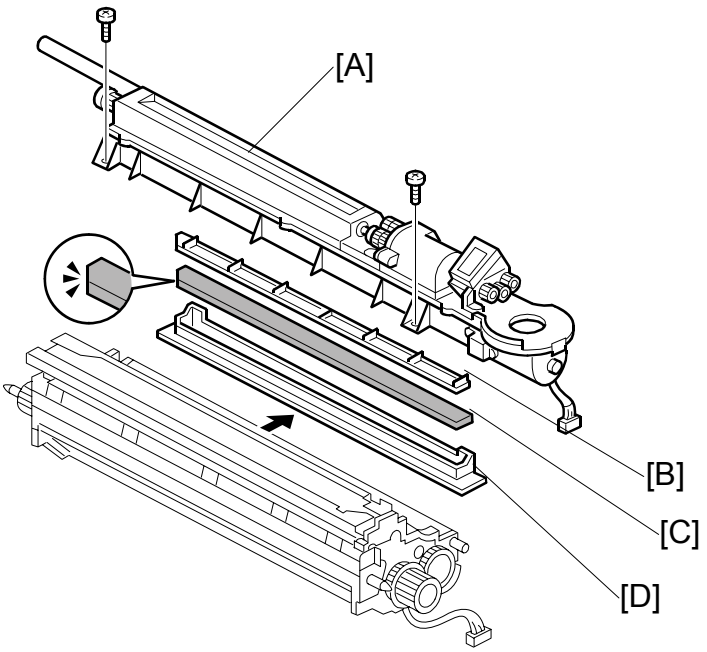
- Switch the machine on.
- Press Clear Modes
- On the operation panel keypad, press 1 0 7.
- Hold down Clear/Stop for more than 3 seconds.
- Press “Copy SP” on the touch-panel.
- Press 2 8 0 1.
- Read the lot number from the package, enter the number, then press #.
- Press Execute.

B140/B246 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 1 0 7.
- Hold down Clear/Stop for more than 3 seconds.
- Push “Copy SP” on the touch-panel.
- Push 2 8 0 1.
- Read the lot number from the pack of developer, input the number, then push #.
- Push Execute.

3.7.2 DEVELOPMENT FILTER

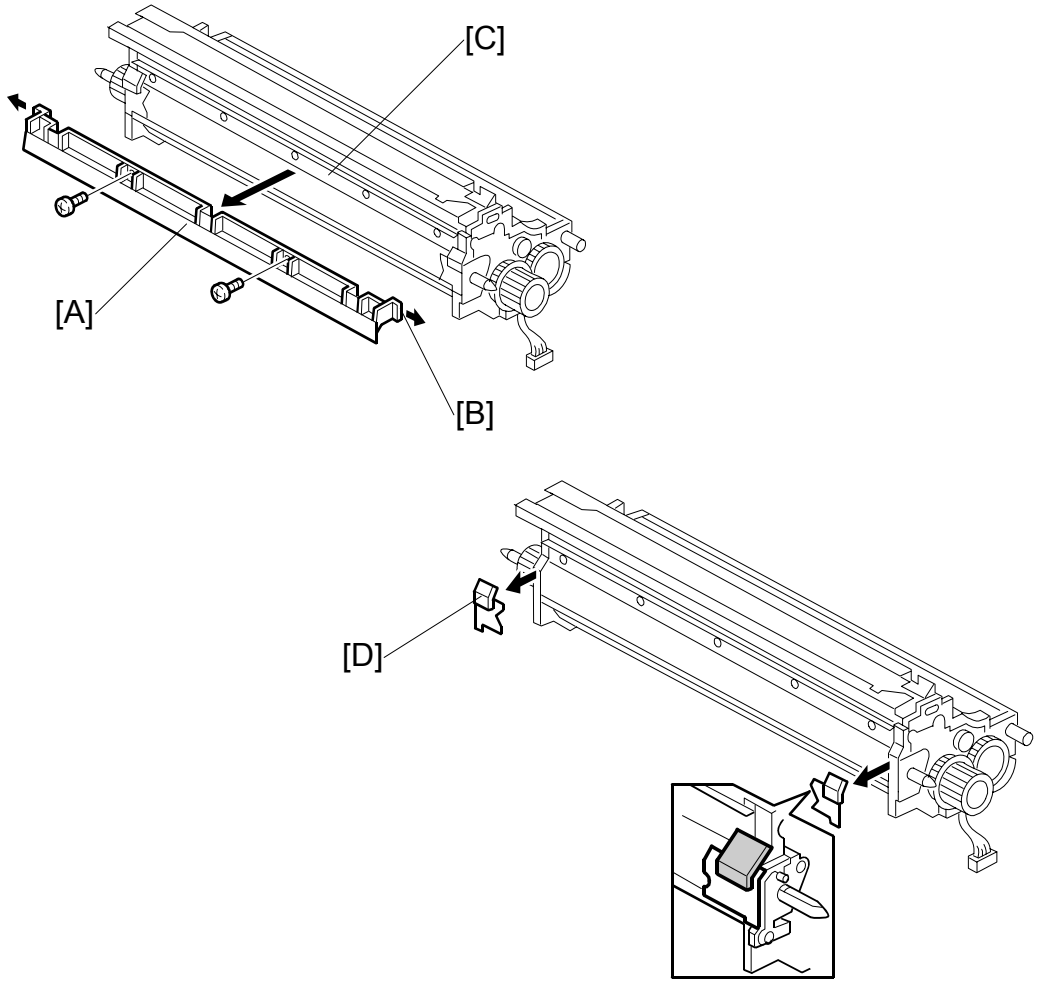


Development unit (☛ 3.6.1)

[C]: Toner hopper
[D]: Filter bracket top
[E]: Filter bracket
[F]: Development filter

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

3.7.3 ENTRANCE SEAL AND SIDE SEALS

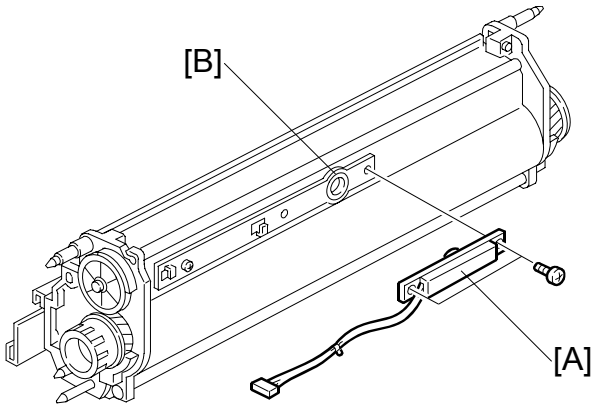


Development unit (☛ 3.6.1)

[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

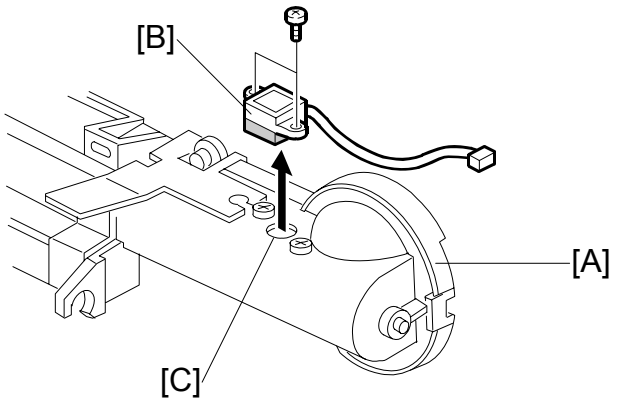


Development unit (☛ 3.6.1)

[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



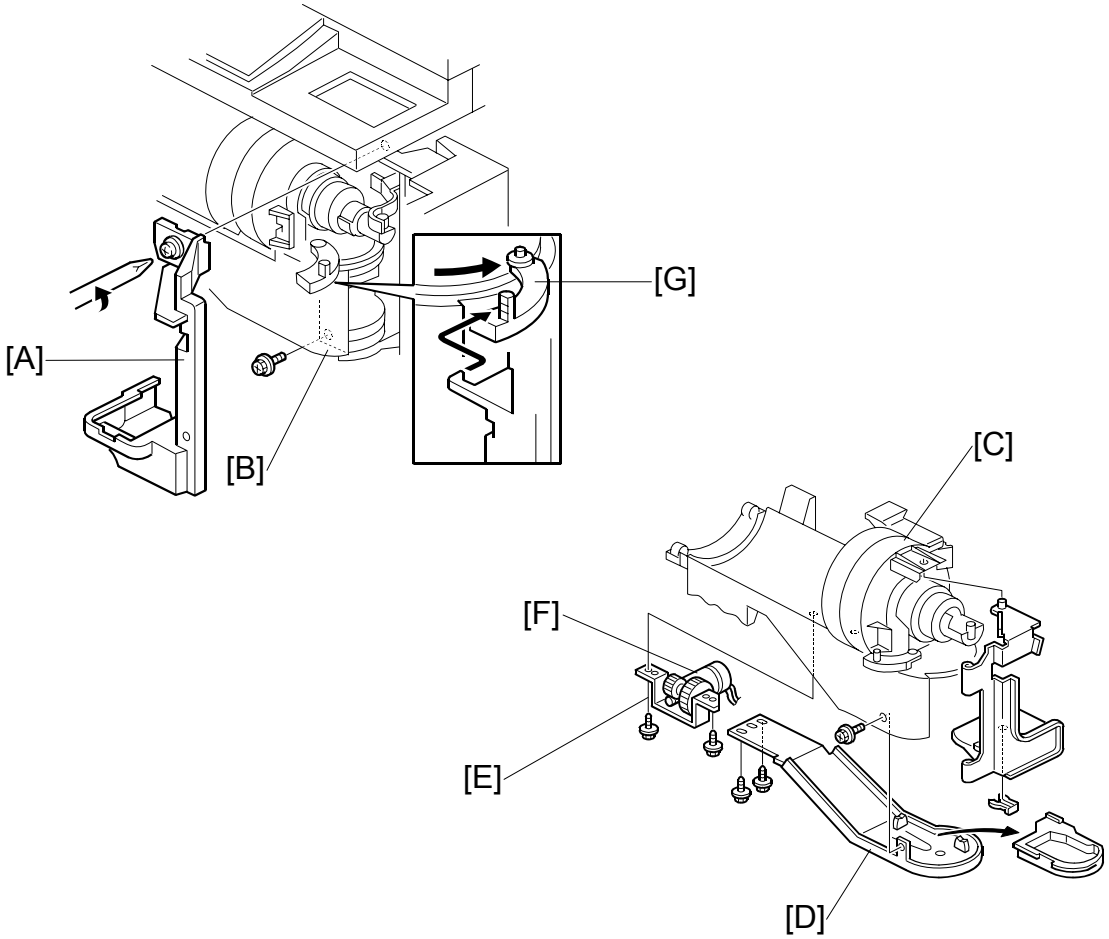
Development unit (☛ 3.6.1)

[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.

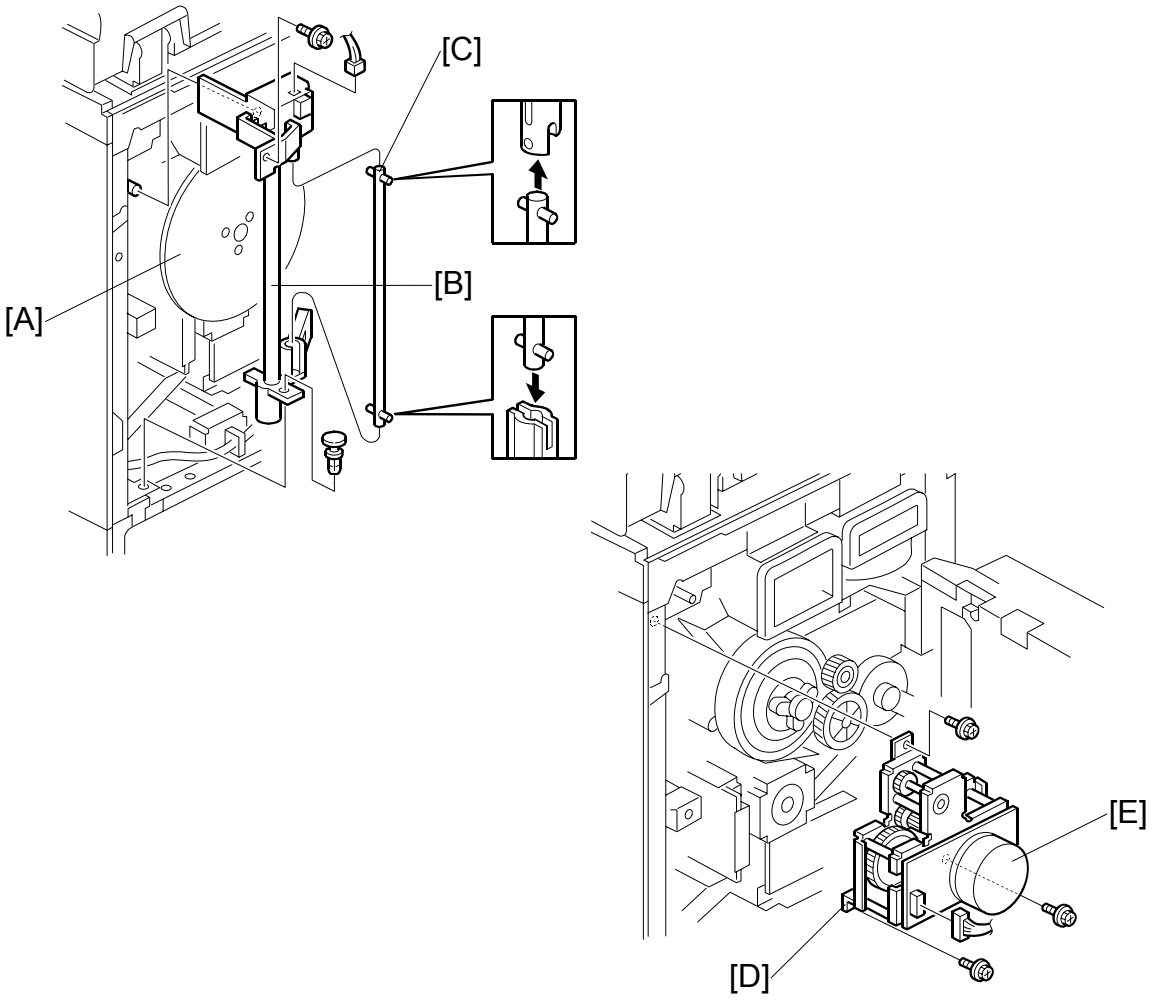
[A]: Bracket (x 1)
[B]: Lock plate (x 1)
[C]: Toner bottle unit (x 1, harness x 1, x 1)
- The c-clamp is under the toner unit.
- Lift the toner bottle unit off the pegs and lay it on a piece of newspaper to avoid toner spill.

[D]: Bottom plate (x 3, harnesses x 2)
- 2 screws on the bottom, 1 screw on the side.

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

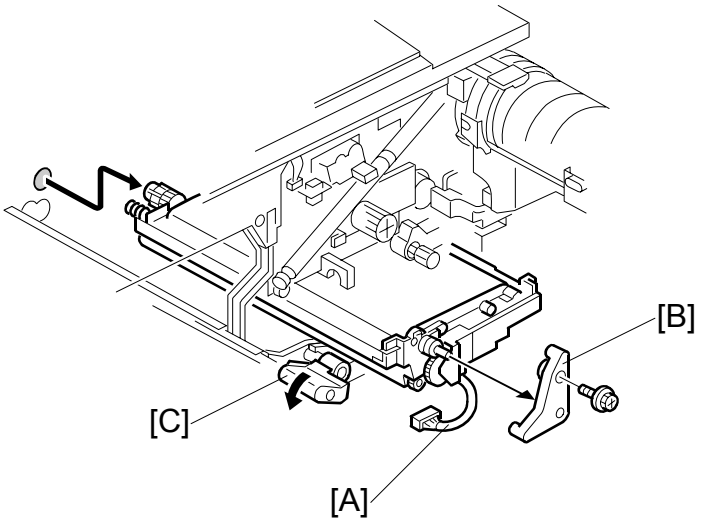


[A]: Flywheel (☞ x 3)
[B]: Waste toner pump tube (☞ x 1, ☞ x 1)
[C]: Drive rod
- Lift the toner pump tube to disengage the drive rod, pull out the rod, and push the rubber tube aside.

[D]: Development motor bracket (☞ x 3, ☞ x 1)
[E]: Development motor (☞ x 4)

3.8 TRANSFER BELT UNIT

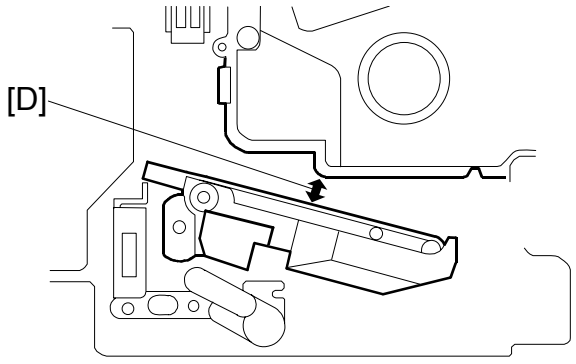
3.8.1 TRANSFER BELT UNIT



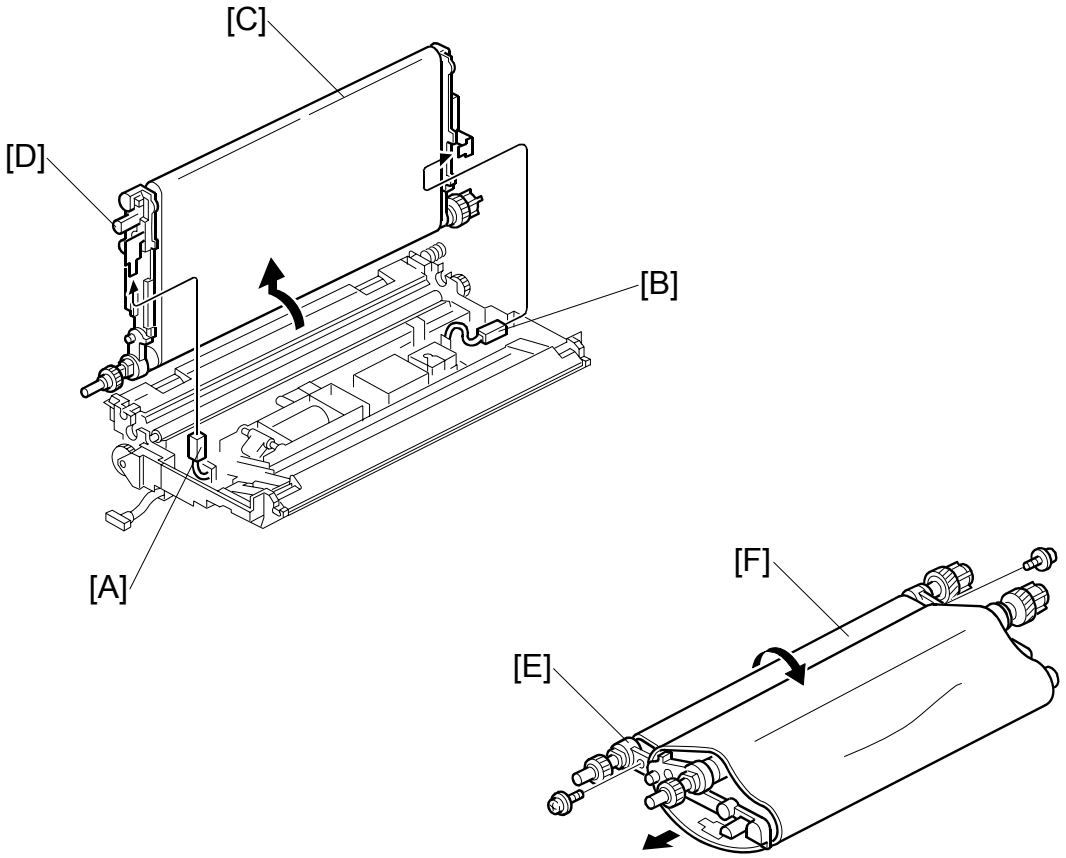
NOTE: Before you begin, spread a mat or some clean paper on the floor where you intend to set the transfer belt unit.

1. Remove the OPC drum unit (☛ 3.6.5).
2. Disconnect the transfer belt unit [A] (x 1).
3. Remove the transfer belt unit stay [B] (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.

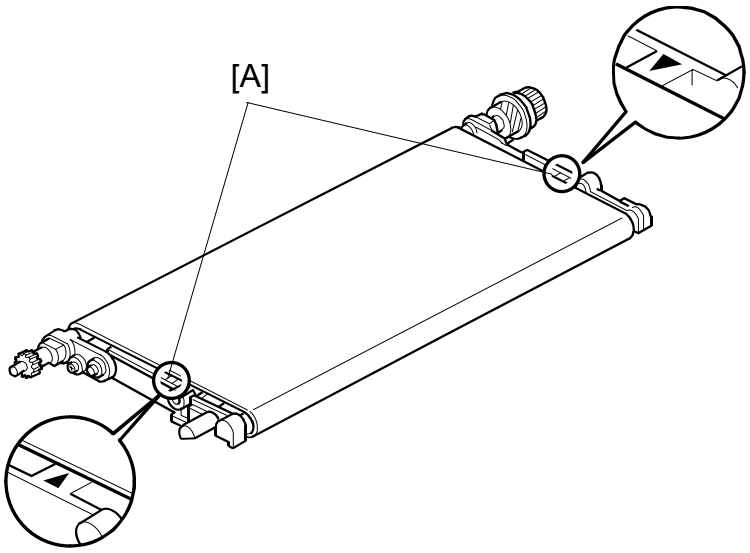
NOTE: The transfer belt unit can be removed without removing the OPC drum unit. However, the transfer belt unit must be removed carefully to avoid scratching the surface of the transfer belt on the OPC drum unit [D] above. Avoid touching the belt with bare hands.



3.8.2 TRANSFER BELT



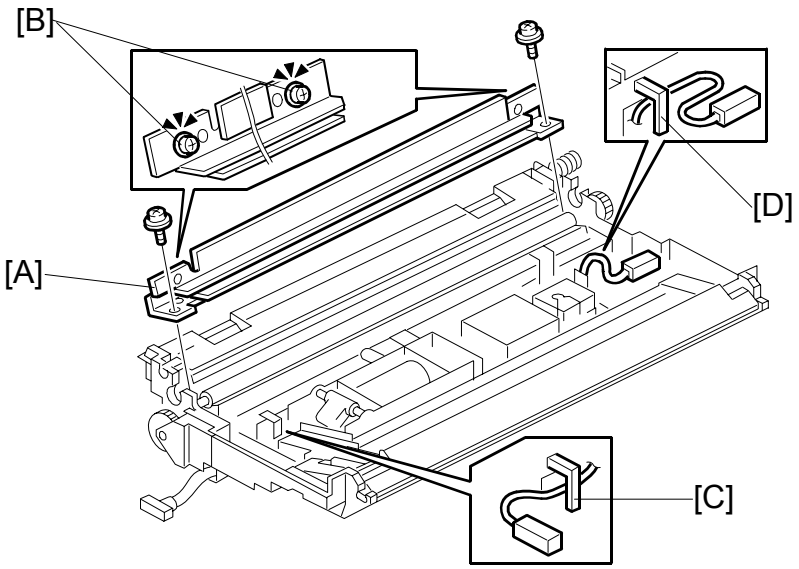
1. Remove the transfer belt unit. (☛ 3.8.1)
2. Disconnect the earth terminal [A] and transfer current terminal [B] (✋ x 2). While doing this, hold the transfer belt unit [C] by its knobs [D].
3. Raise and stand the belt perpendicular to the unit and remove it.
   NOTE: To avoid scratching the belt on the guide, never rotate the belt unit farther than 90 degrees.
4. Release the drive roller [E] (☞ x 2).
5. Press in on the drive roller to collapse the unit into a “U” shape [F].
6. Remove the belt and replace it.



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



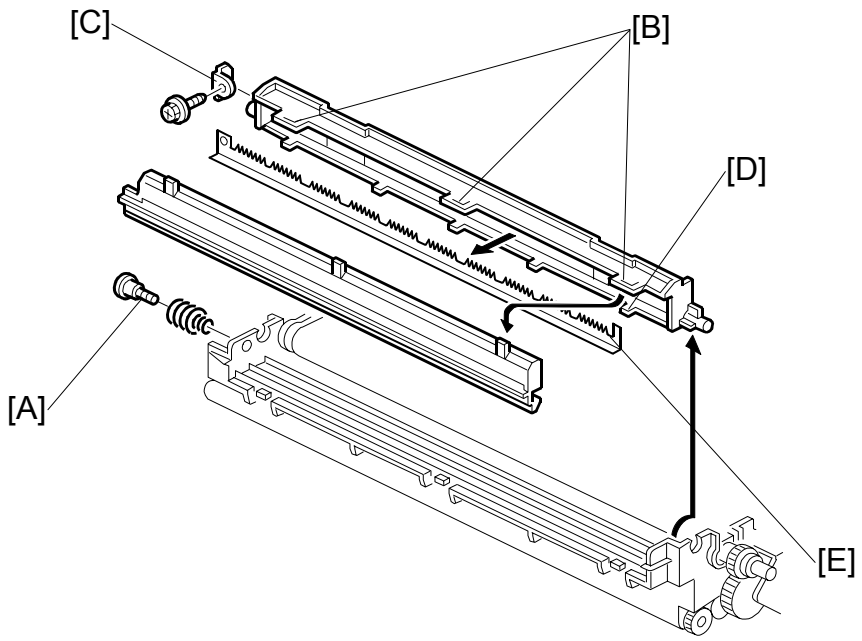
Transfer belt unit (☛ 3.8.1)

Disassemble the transfer belt unit (☛ 3.8.1)

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

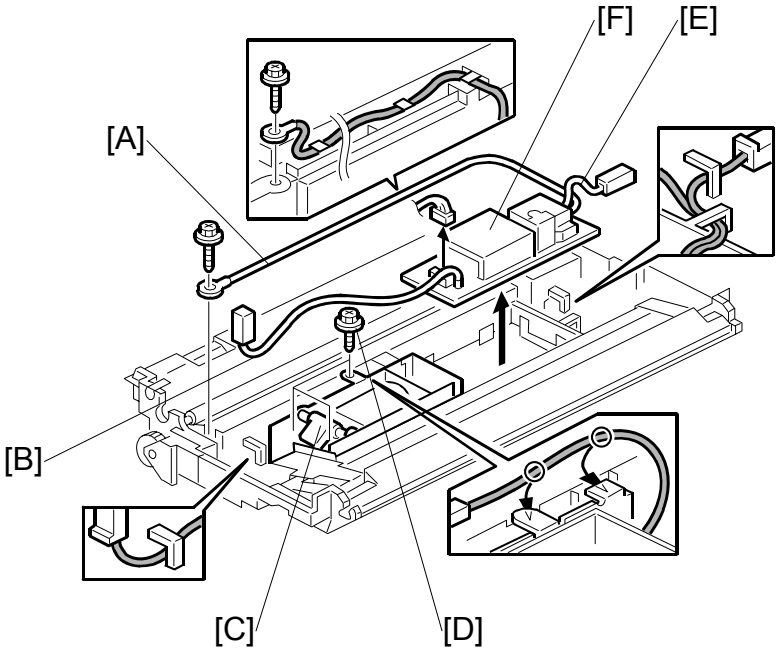
NOTE: 1) Never remove the inner lock screws [B] of the transfer roller cleaning blade. When re-assembling, make sure that the clamps [C] and [D] are arranged as shown above to avoid contact with the release lever.
2) The transfer roller cleaning blade should always be replaced when the transfer belt 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.

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] (🔩 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



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.

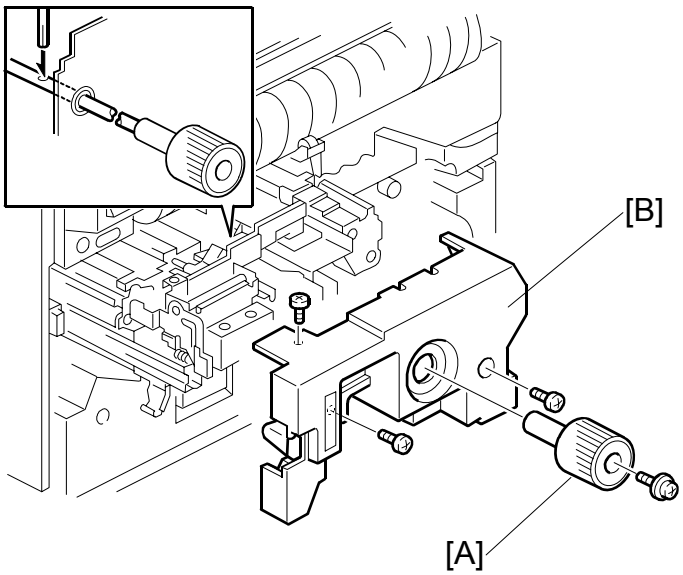
3.9 FUSING UNIT

⚠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.



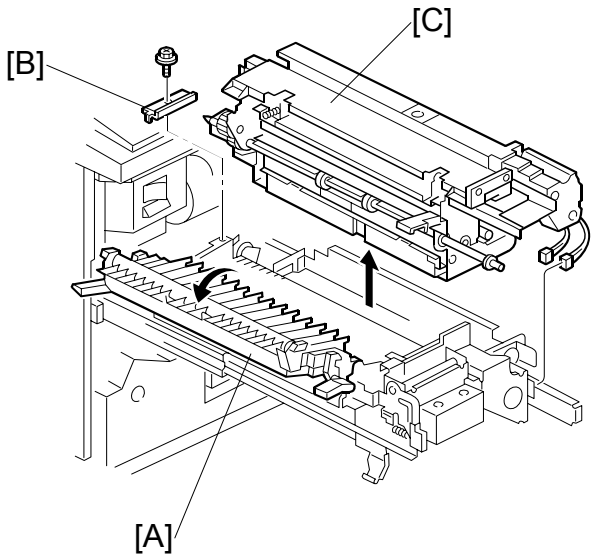
Open the front door.

Pull out the transfer unit.

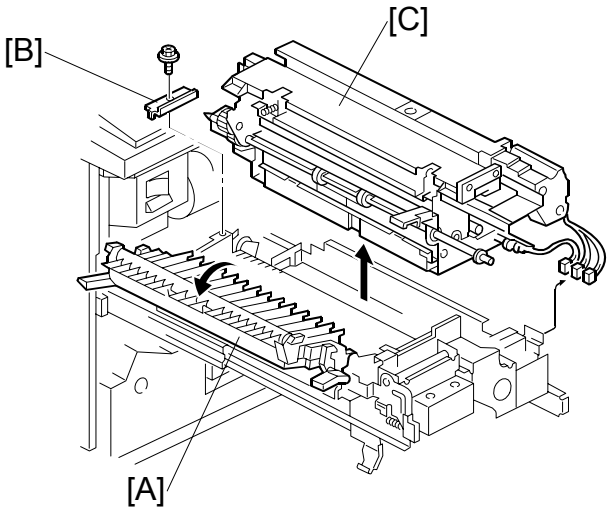
[A]: Knob (🔩 x 1)
- Open D3 and D4 until you can see the hole in the shaft.
- Insert the tip of a screwdriver into the hole of the shaft to hold it in position as the knob is turned to remove or install it.

[B]: Inner cover (🔩 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.

B064 Series



B140/B246/D052 Series

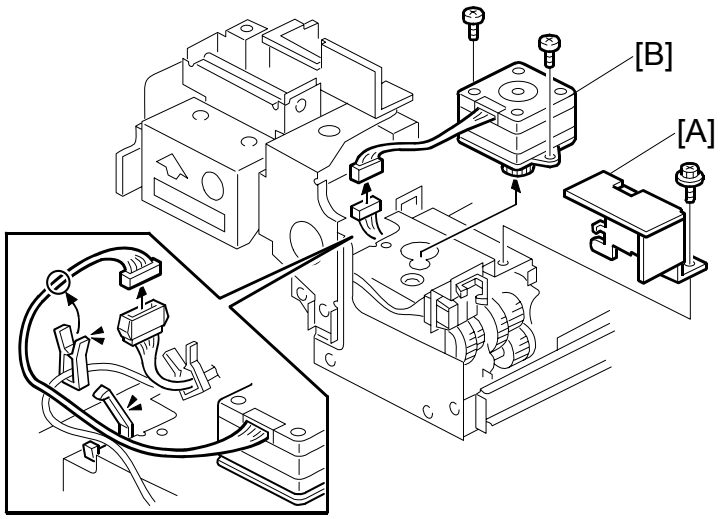


[A]: Open the exit separation pawl assembly.
[B]: Stopper bracket (x 1)
[C]: Fusing unit (B064 Series: x 2, B140 Series: x 3)

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/B246/D052 SERIES)

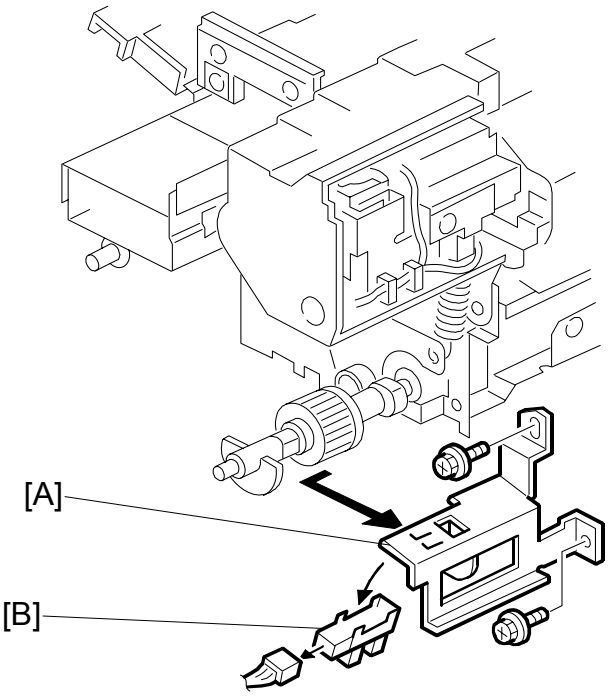


Fusing unit (☛ 3.9.1)

[A]: Bracket (🔩 x 1)

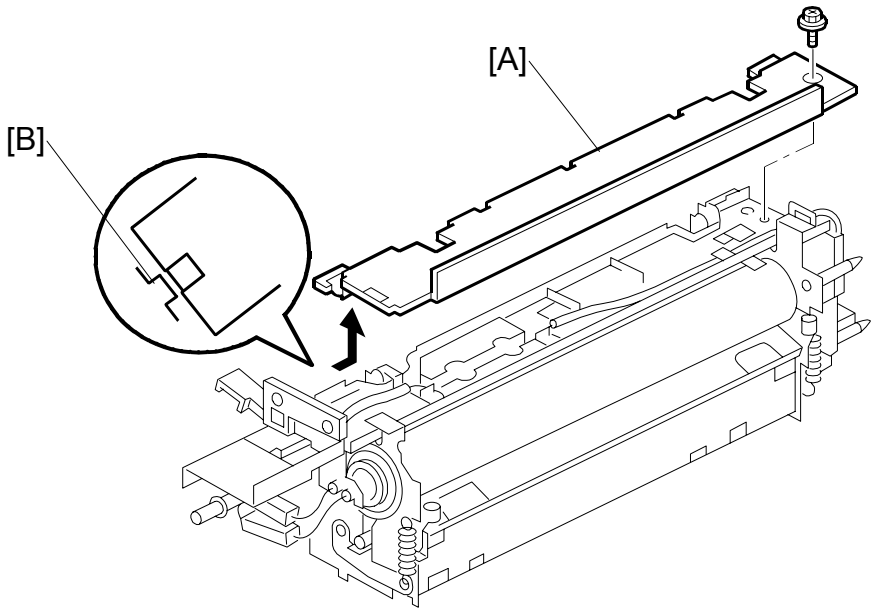
[B]: Motor (🔌 x 2, 🔌 x 1, 🔩 x 2)

3.9.3 FUSING PRESSURE RELEASE HP SENSOR (B140/B246/D052 SERIES)



Fusing unit (☛ 3.9.1)
[A]: Bracket (🔩 x 2)
[B]: HP sensor (pawls x 4)

3.9.4 FUSING UNIT THERMISTORS AND THERMOSTATS

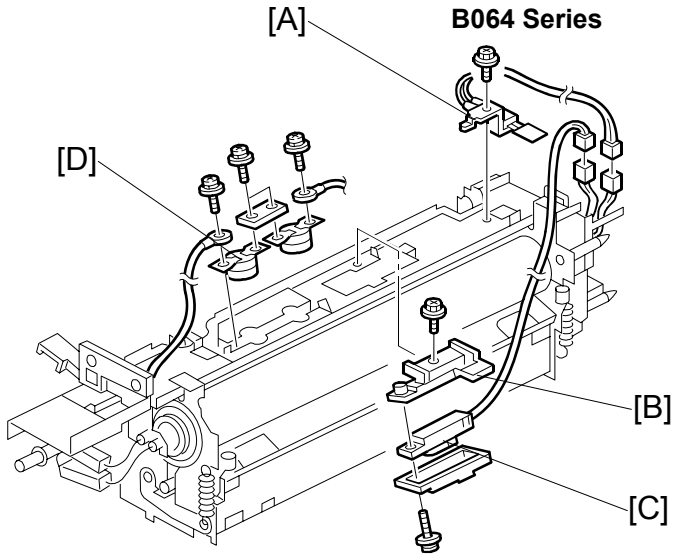


Fusing unit (☛ 3.9.1)

[A]: Upper cover (☞ x 1)

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

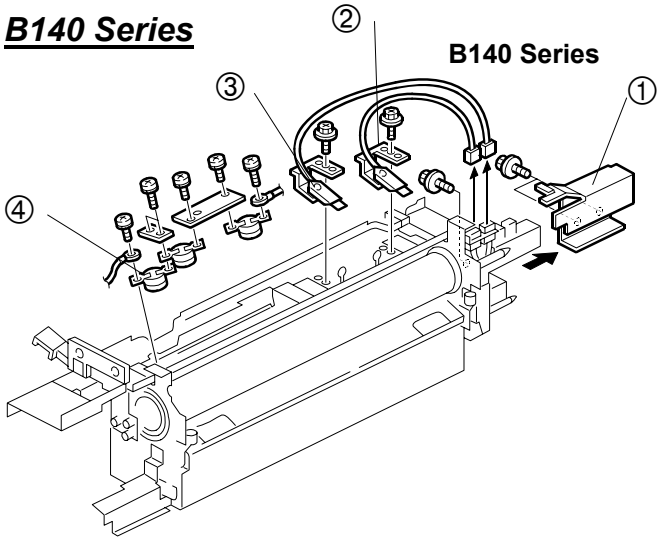
Important: Make sure that the pawls [B] engage correctly when you install the unit again.



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, ☞ x 1, metal clamps)
③: Center thermistor bracket and thermistor (☞ x 1, ☞ x 1, metal clamps)
④: Three thermostats (☞ x 5)

B246/D052 Series

The thermistor-thermostats are replaced as one unit. This disassembly procedure is not required.

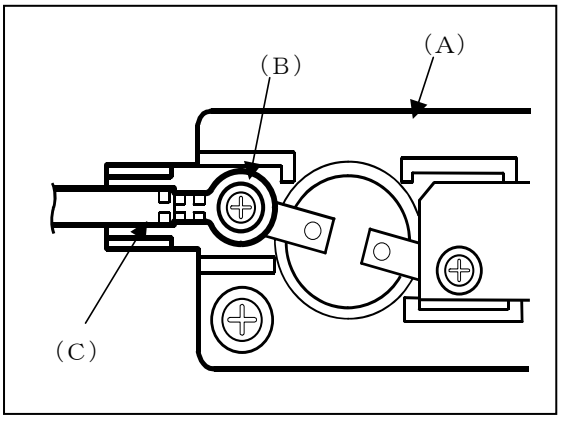
Reinstallation

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

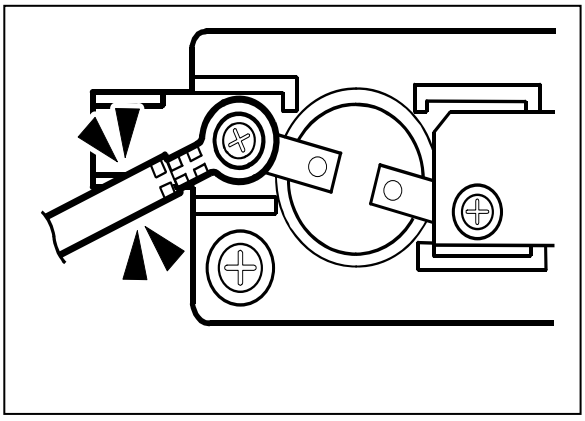
Important

- If the harness is not positioned between the between the bracket ribs (as shown under “Incorrect" below), this could cause a machine fault (SC542 or SC545).

Correct

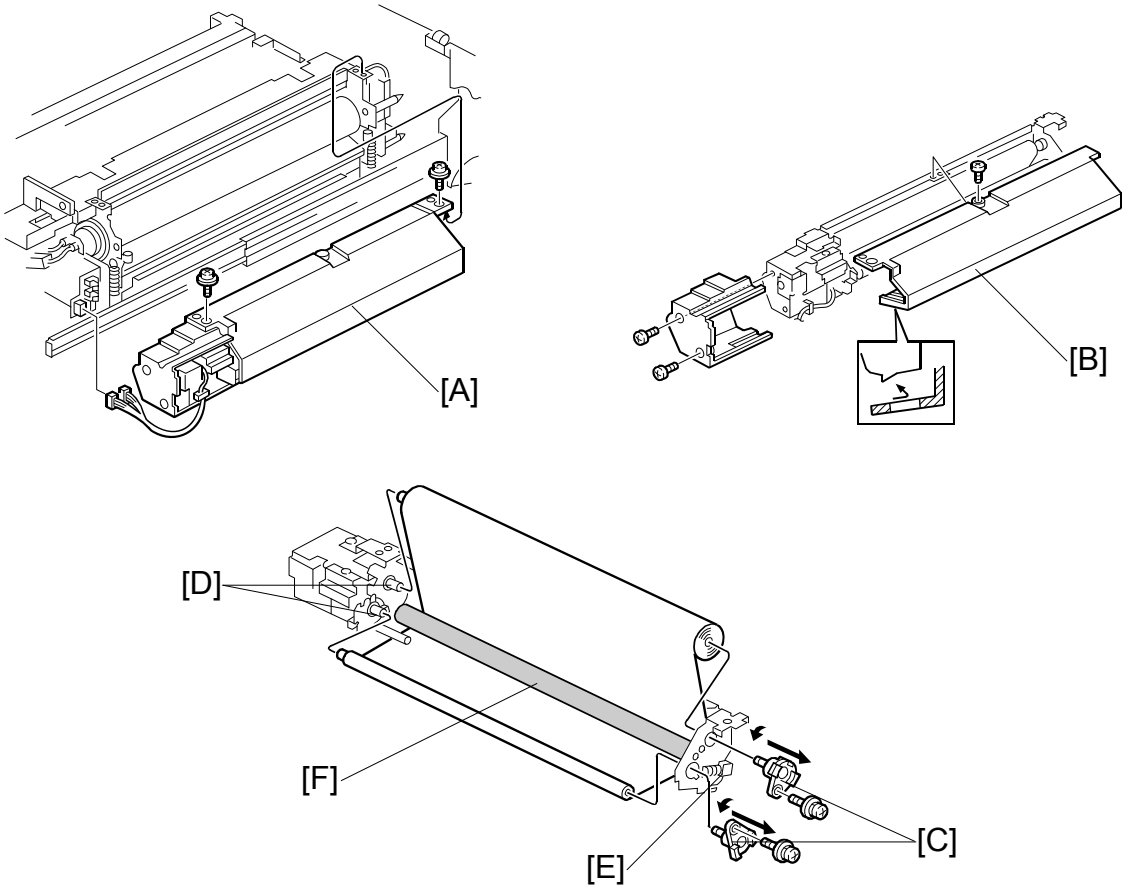


Incorrect



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 (x 2, x 2)
- The web unit can be removed without removing the fusing unit from the machine.

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

[C]: Web shafts (x 2)

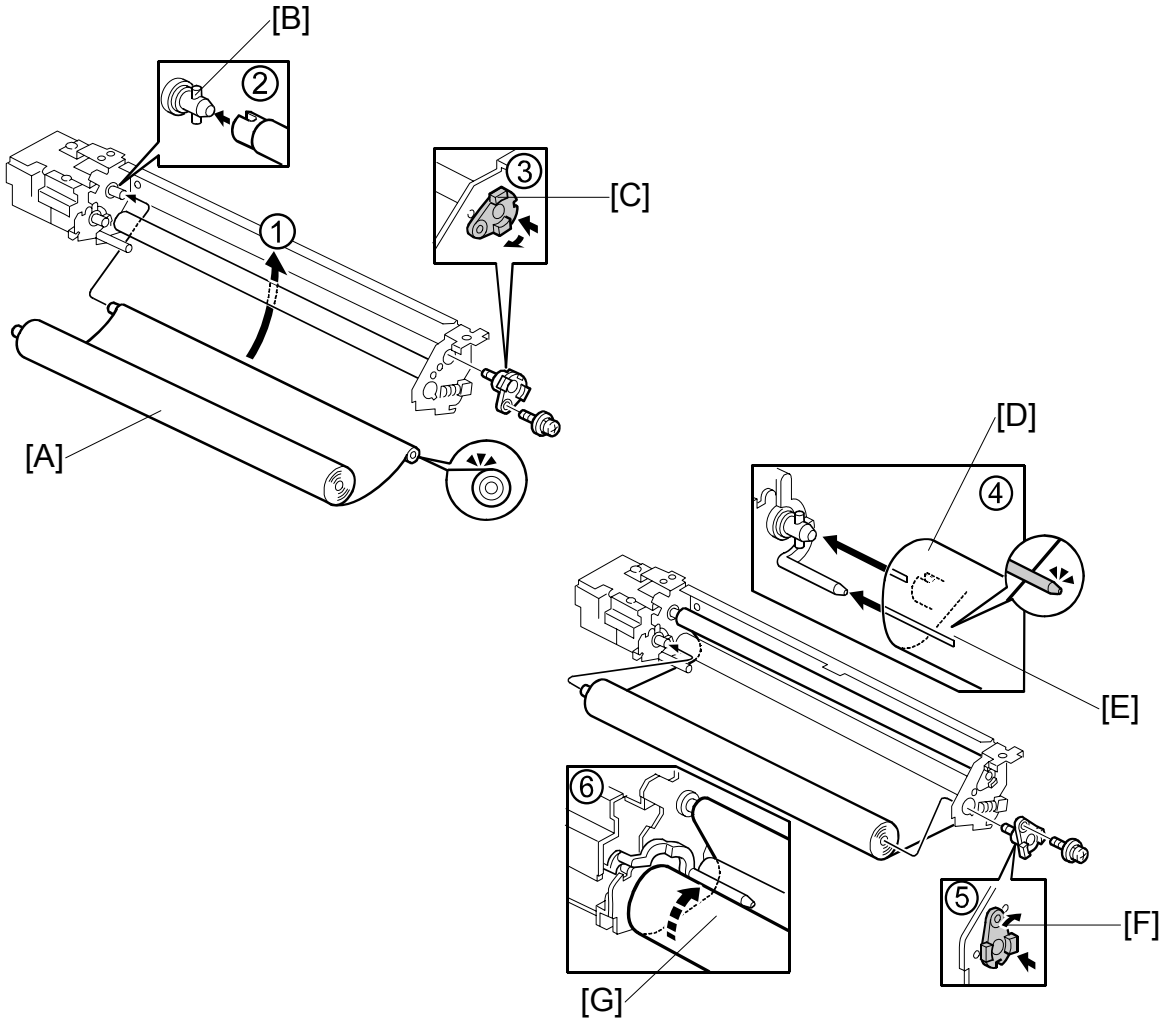
[D]: Remove the web cleaning rollers from the shaft driver pins.

[E]: Web bushing (spring x 1)

[F]: Cleaning roller

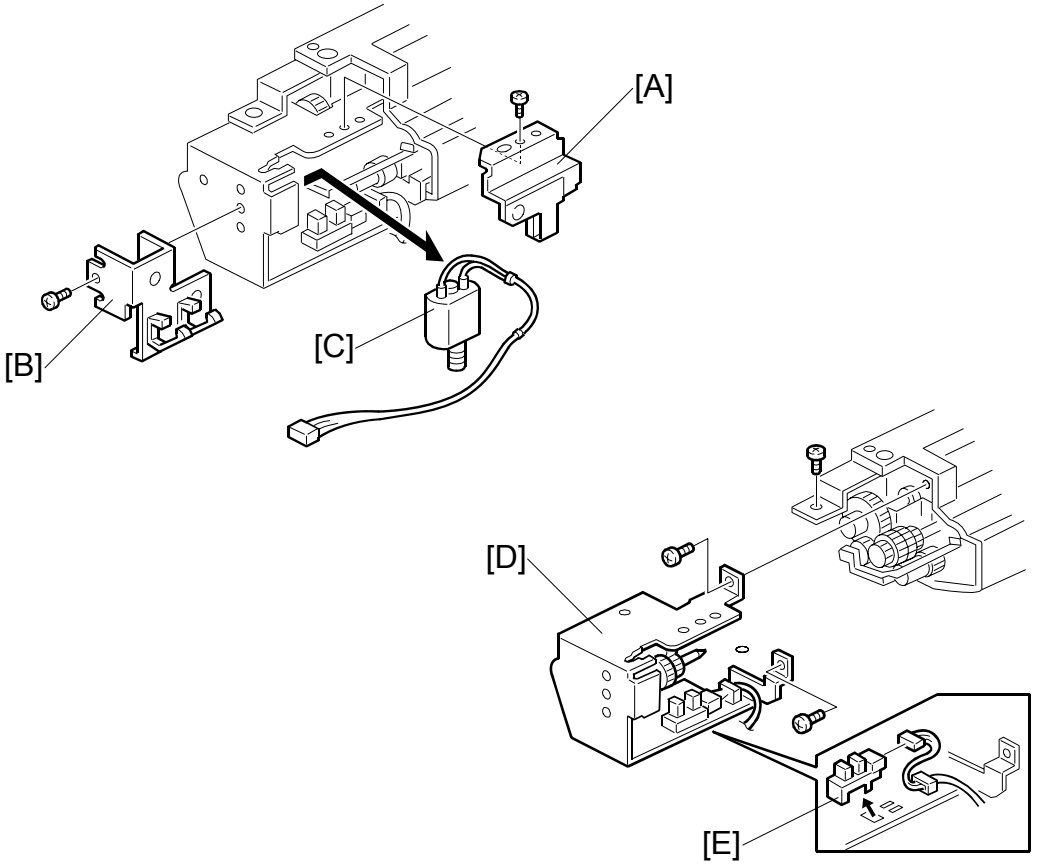
⇒ **NOTE:** After replacing the web with a new one, you must execute SP1902-001 (Fusing Web Used Area Display/Setting) to reset the web consumption count to zero. This SP code must be executed to reset SC550.

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



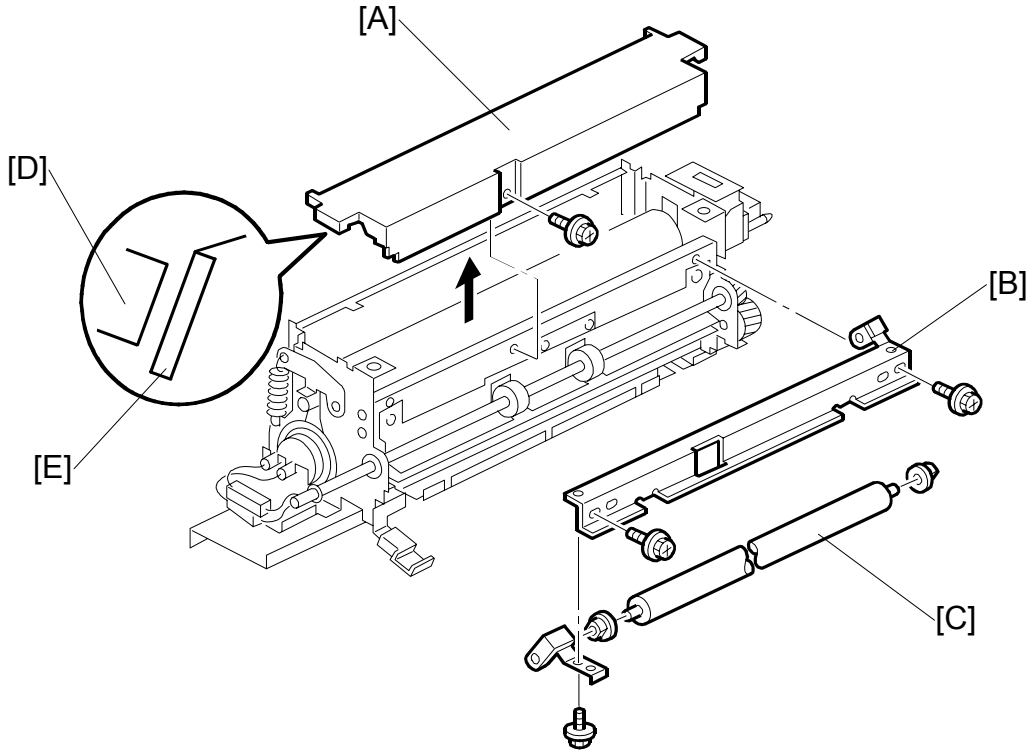
Web unit and end cover (☛ 3.9.5)

[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

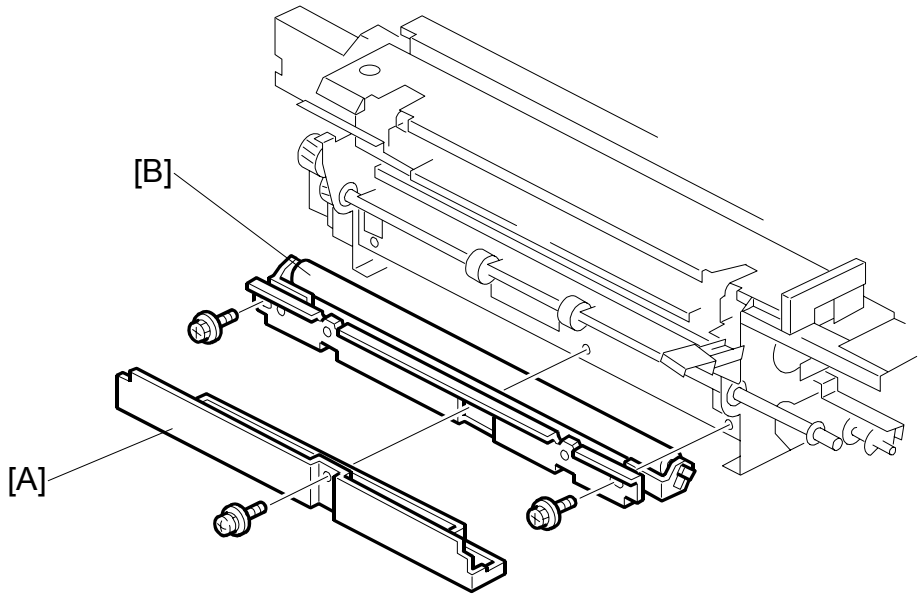


Fusing unit (☛ 3.9.1)

[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/B246/D052 Series

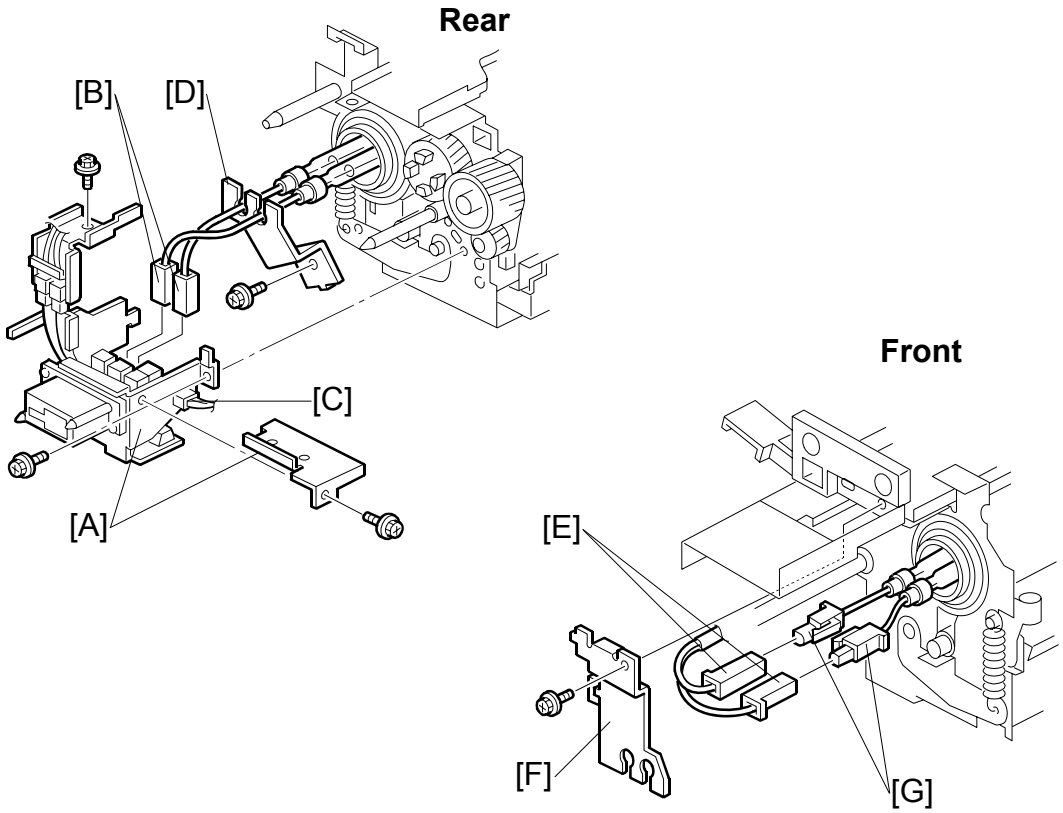


Fusing unit (☛ 3.9.1)
[A]: Cover (🔩 x 1)
[B]: Pressure cleaning roller (🔩 x 2)

3.9.8 FUSING LAMPS, HOT ROLLER, AND PRESSURE ROLLER

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

B064 Series: Fusing Lamps



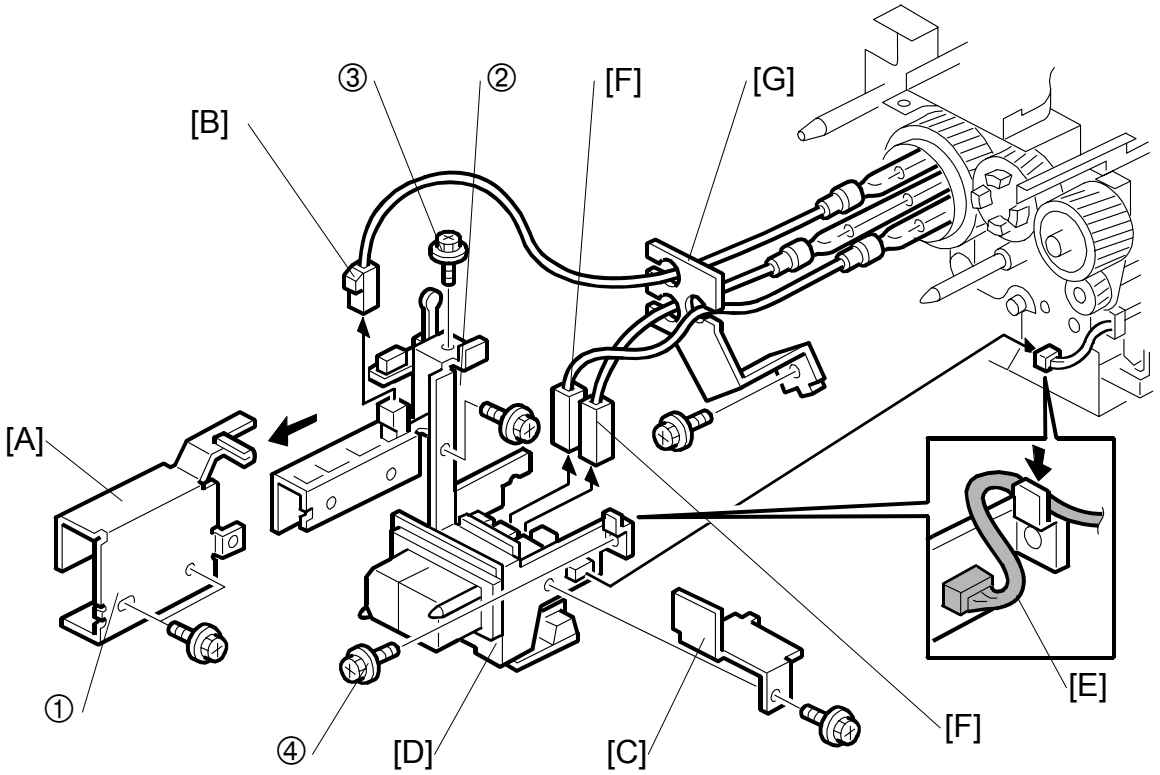
Fusing unit (☛ 3.9.1)

[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/B246/D052 Series: Fusing Lamps*

B140/B246/D052 Series

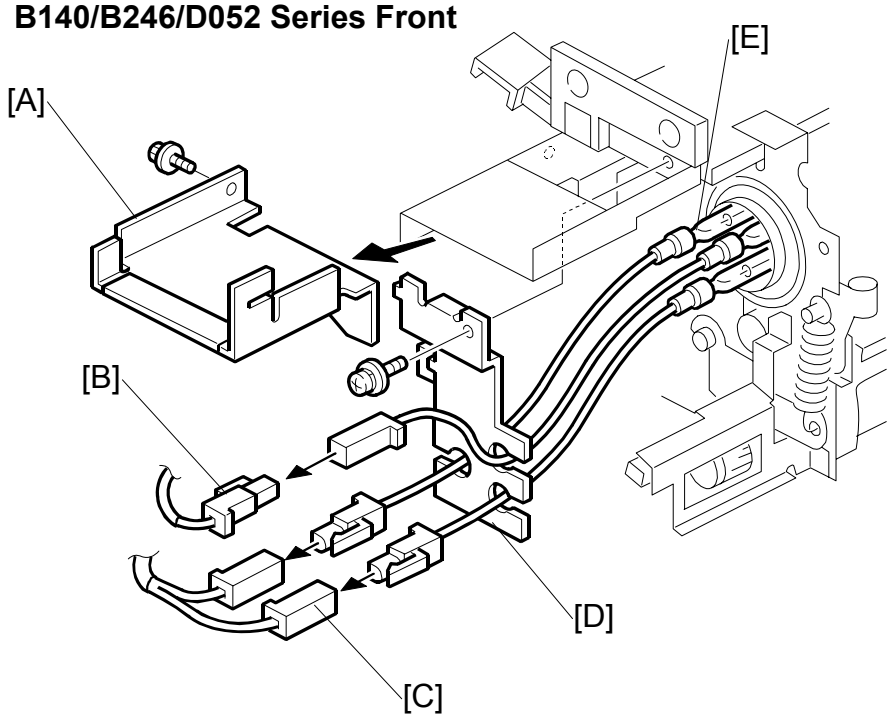


Fusing unit (☛ 3.9.1)

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

⇒ **NOTE:** The D054 model (of the D052 Series) does not incorporate three fusing lamps. The fusing lamp used to provide side heat has been removed.

B140/B246/D052 Series Front

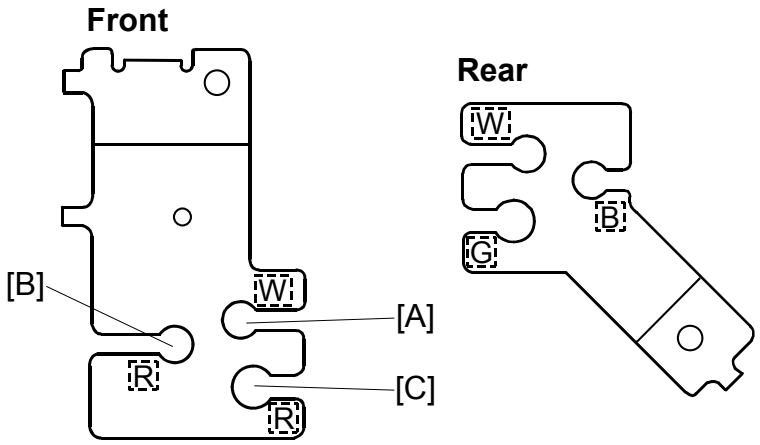


[A]: Plate (x 1)
[B]: White connector (x 1)
[C]: Red connectors (x 2)
[D]: Front fusing lamp holder (x 1)
[E]: Fusing lamps (x 3)

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

⇒**NOTE:** The D054 model only incorporates two fusing lamps.

Reinstallation: B140/B246/D052 Series Fusing Lamps

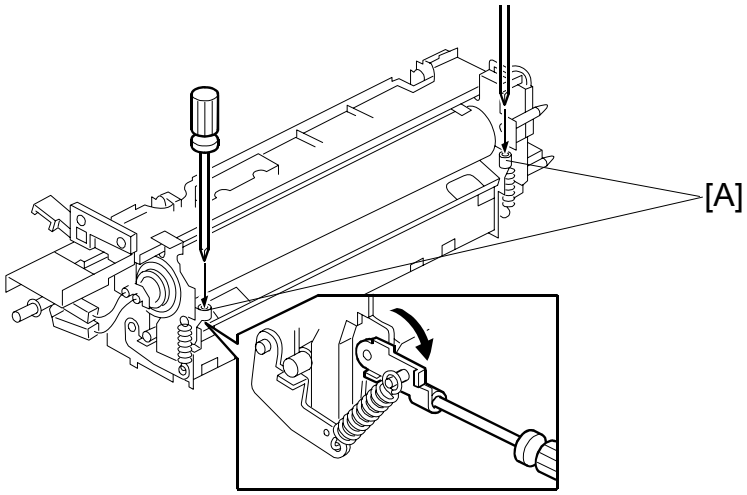


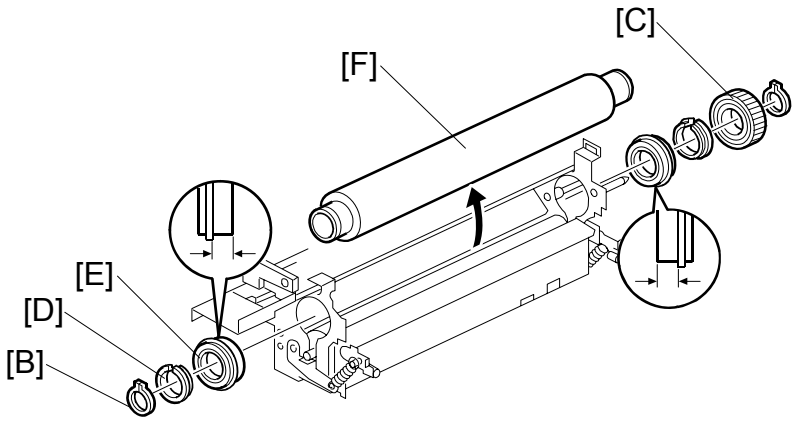
1. Attach the rear fusing holder first.
2. Put in the lamps from the front.
3. Use the color coding of the connectors to set the lamps in the correct opening in the rear fusing lamp holder.
   NOTE: The openings in the rear holder have marks W (White), B (Blue), and G (Green). These colors must agree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

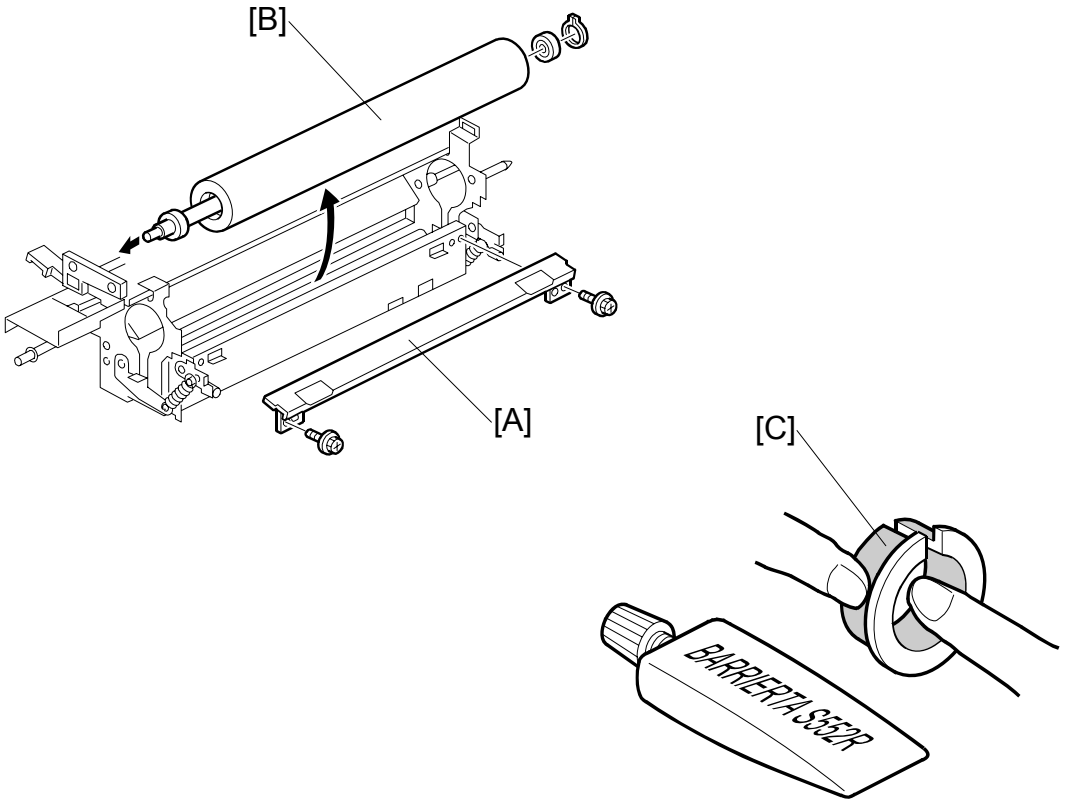




Web unit (☛ 3.9.5)

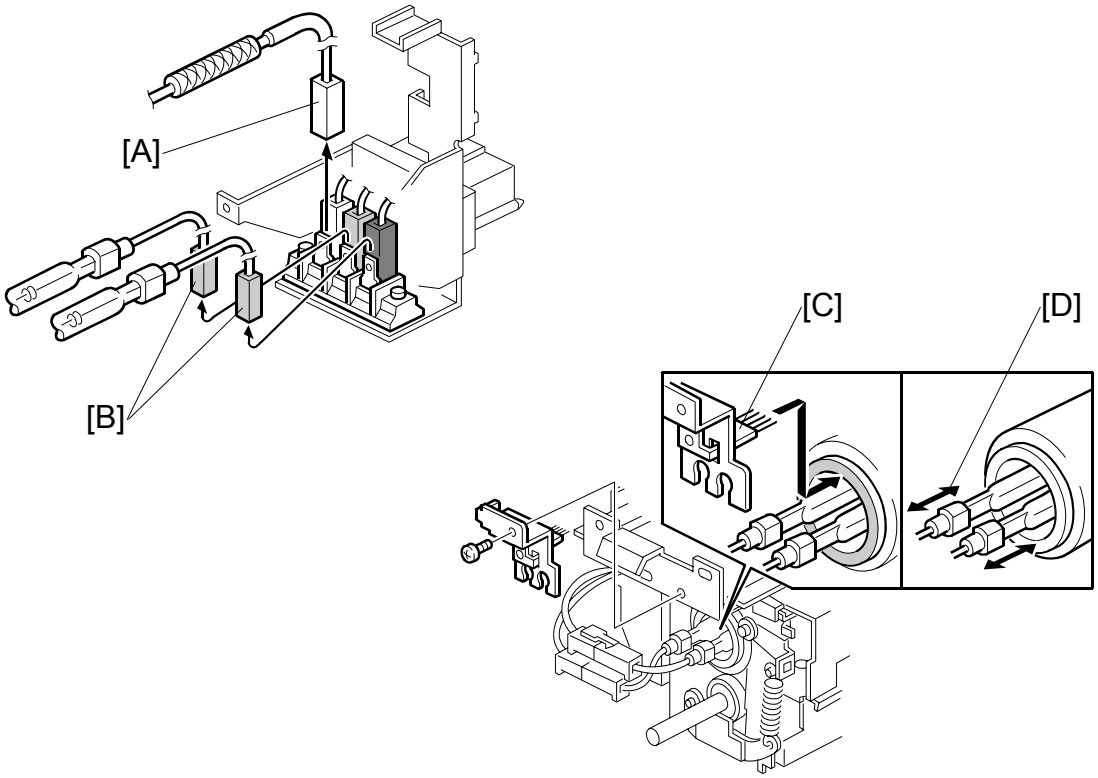
[A]: Pressure arm
- Insert the tips of two screwdrivers and press down to release.

[B]: C-clamps (both ends)
[C]: Drive gear
[D]: Bushings (both ends)
[E]: Bearings
[F]: Hot roller



[A]: Entrance guide plate (☞ x 2)
[B]: Pressure roller (ℂ 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)

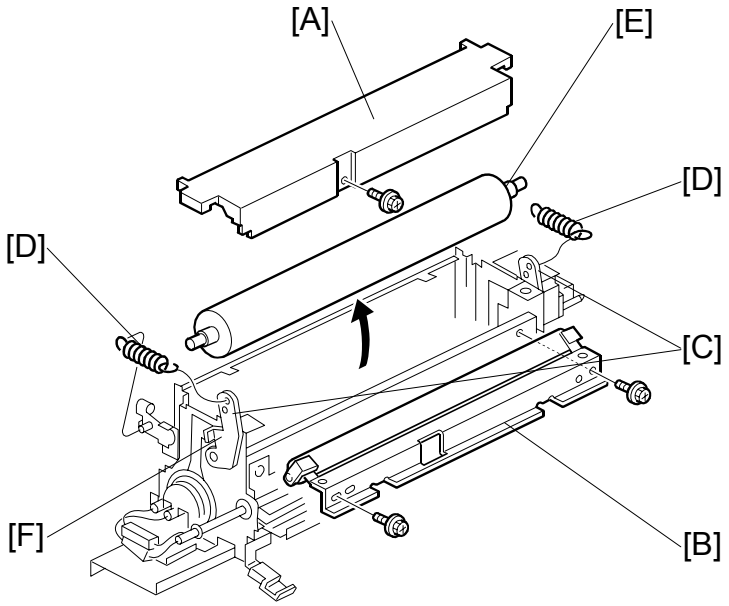


Follow these important guidelines when re-assembling the fusing unit:

- 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.



Fusing unit (☛ 3.9.1)

Turn the fusing unit upside down.

[A]: Lower cover (☞ x 1)
[B]: Pressure roller cleaning unit (☞ 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.

[D]: 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.

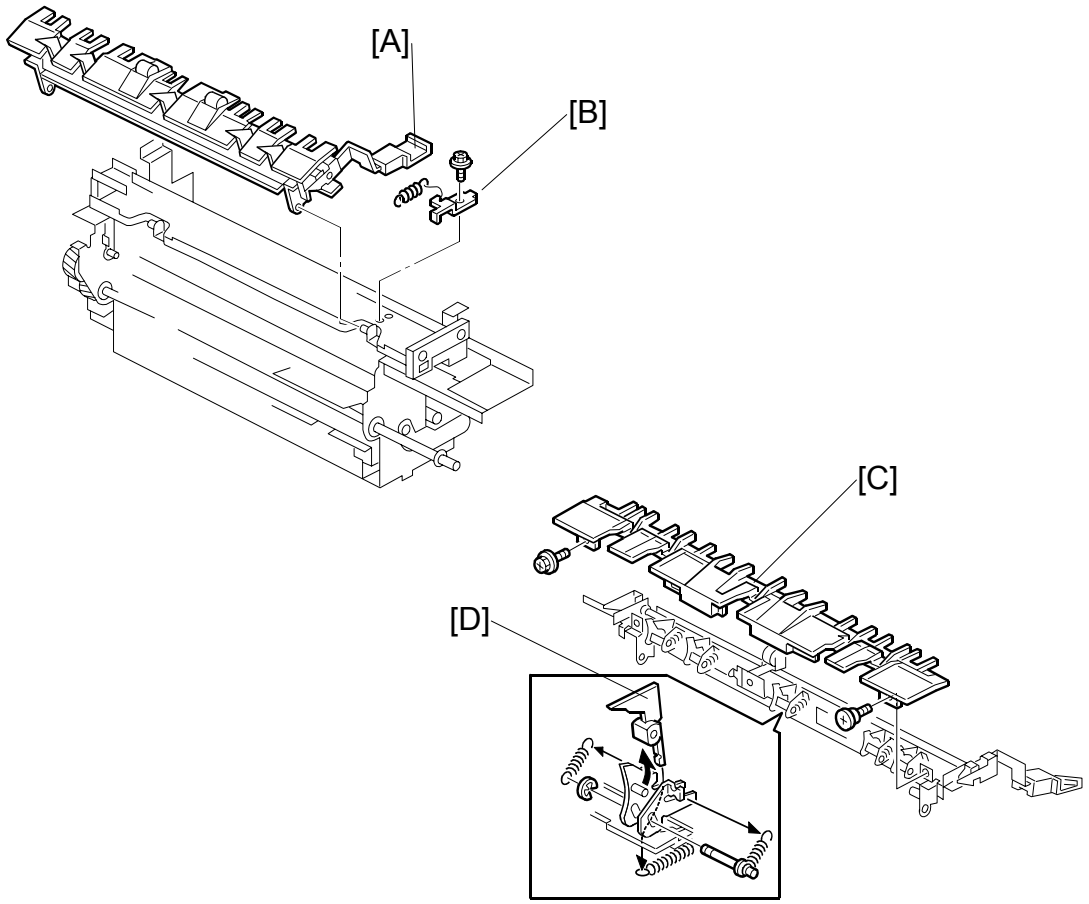
Spring Adjustment

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.

3.9.10 STRIPPER PAWLS

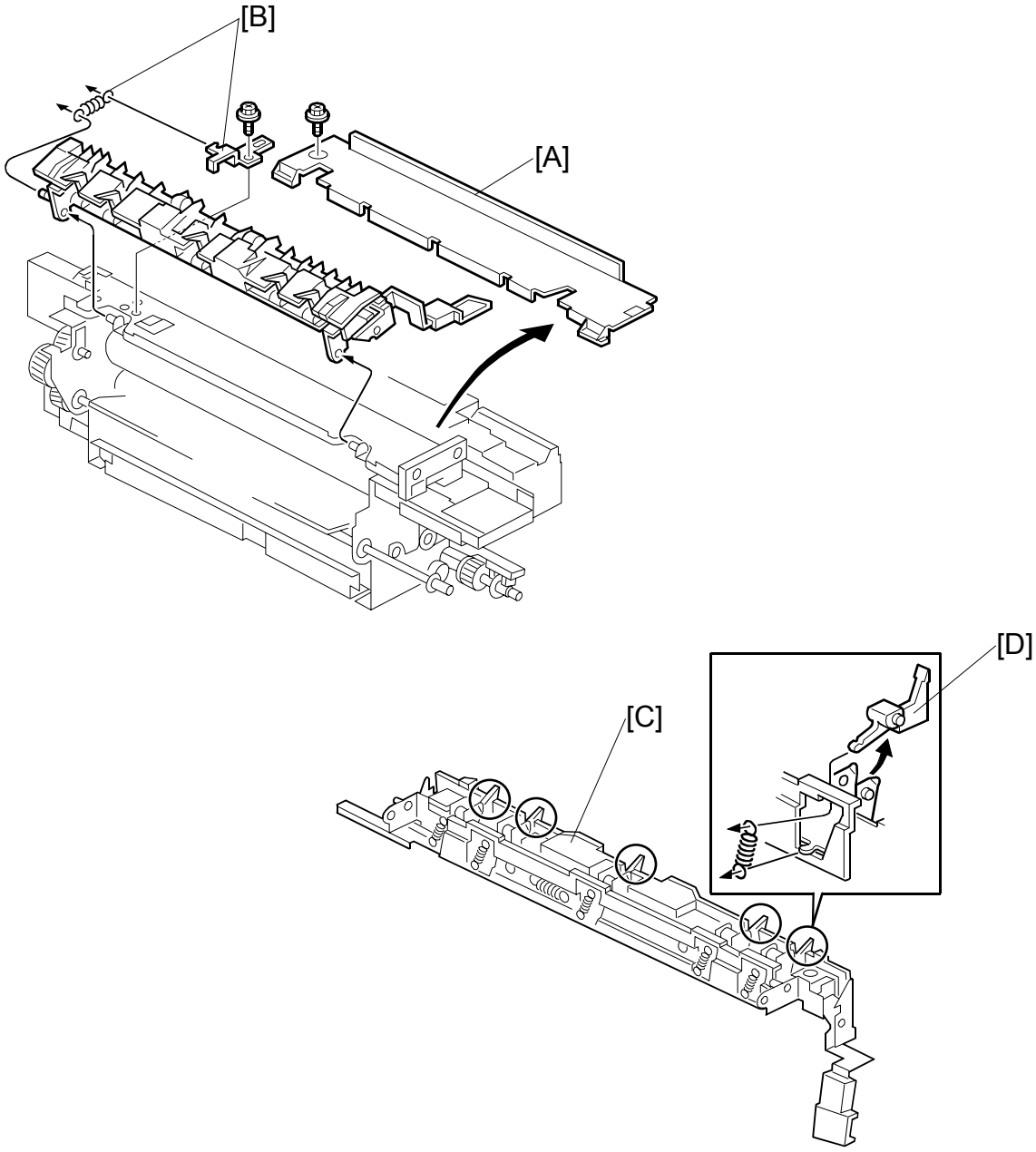
B064 Series



Remove the fusing unit (☛ 3.9.1)

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

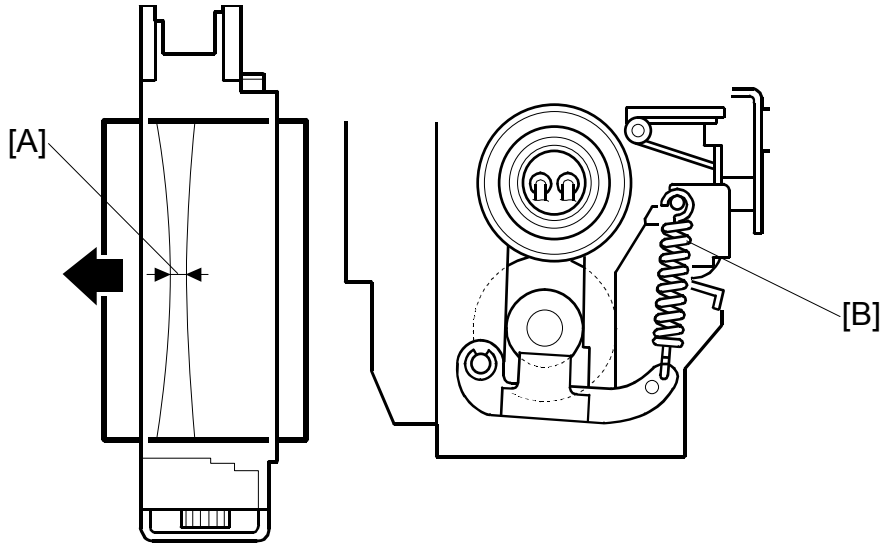
B140/B246/D052 Series



Remove the fusing unit (☛ 3.9.1)

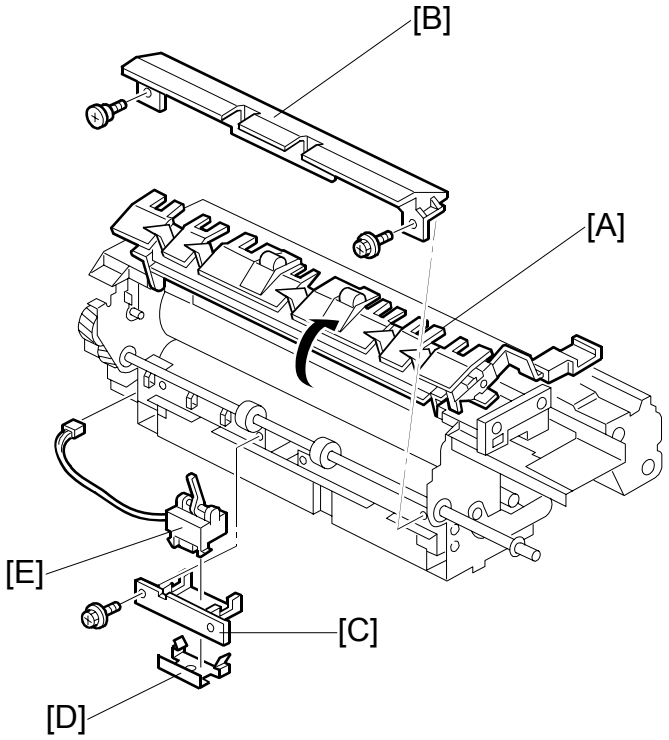
[A]: Top cover (🔩 x 1)
[B]: Bracket (🔩 x 1, spring x 1)
[C]: Inner cover
[D]: Stripper pawl (spring x 1). Open the arms to release the stripper pawl, and remove it.

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.(OHP= Over Head Projector or transparency
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.

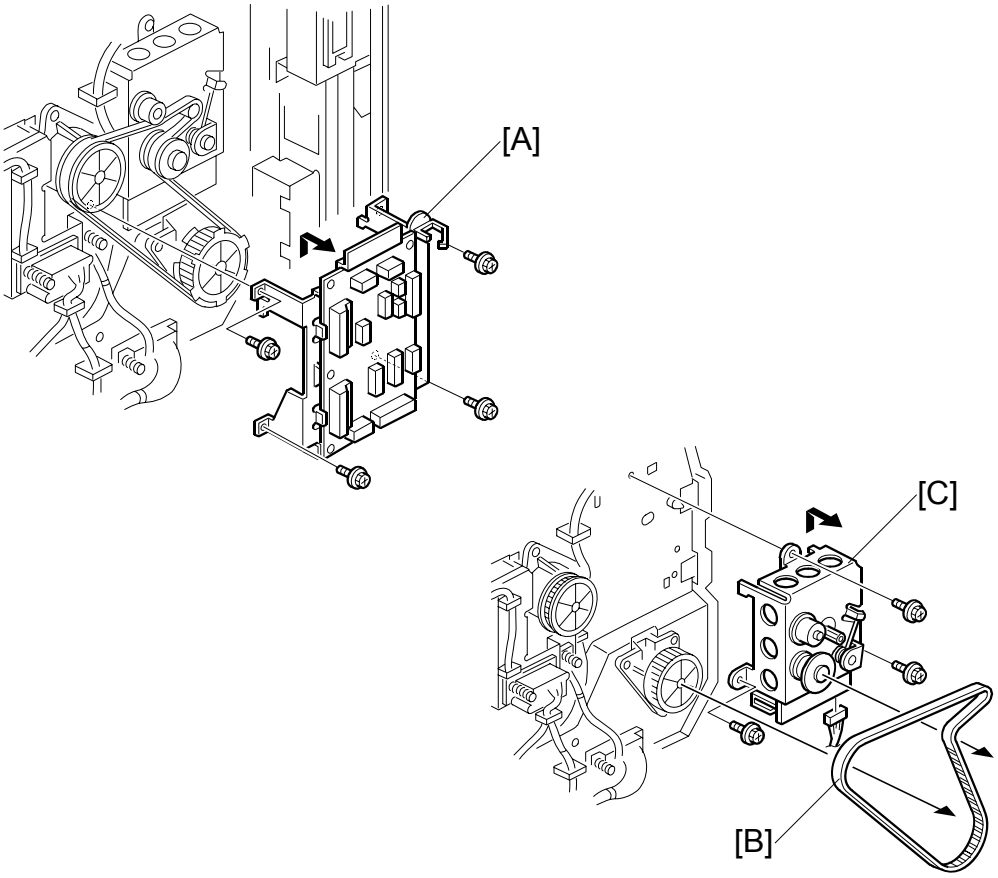
3.9.12 FUSING UNIT EXIT SENSOR



Fusing unit (☛ 3.9.1)

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

3.9.13 FUSING/EXIT MOTOR



Rear upper cover (☛ 3.3.5)

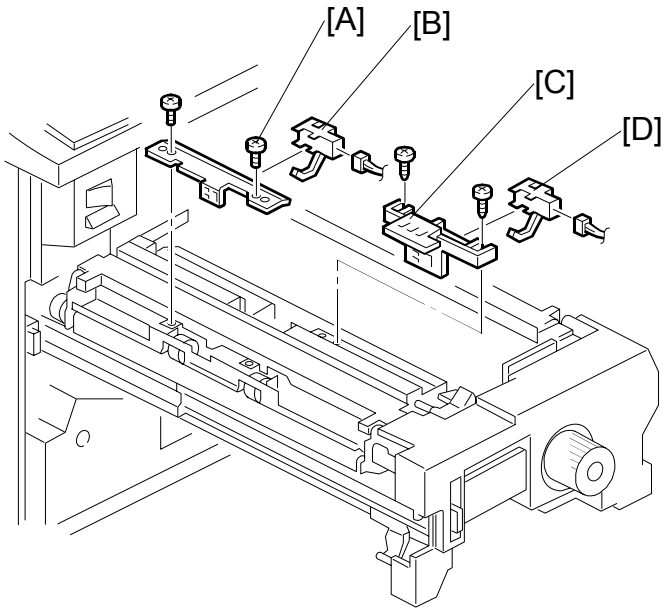
Open the I/O board (🔩 x 2)

[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

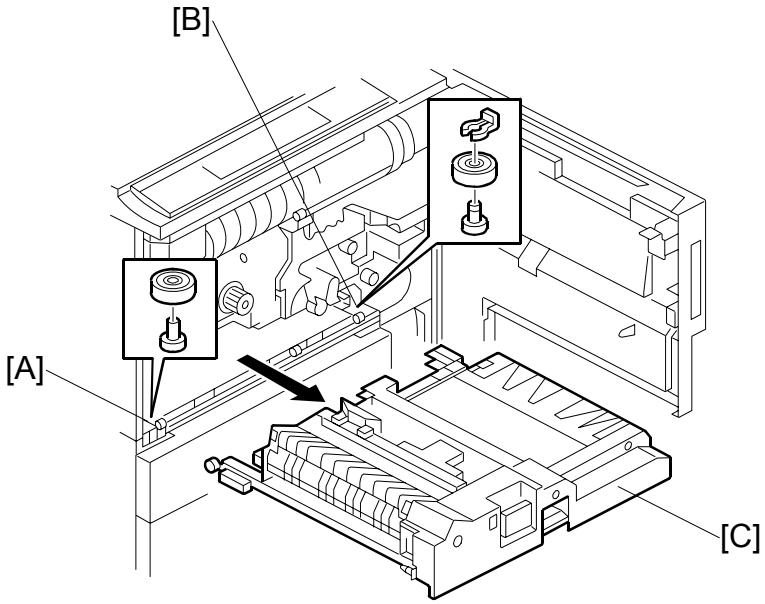


Open the front door and pull out the exit/inverter unit.

[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

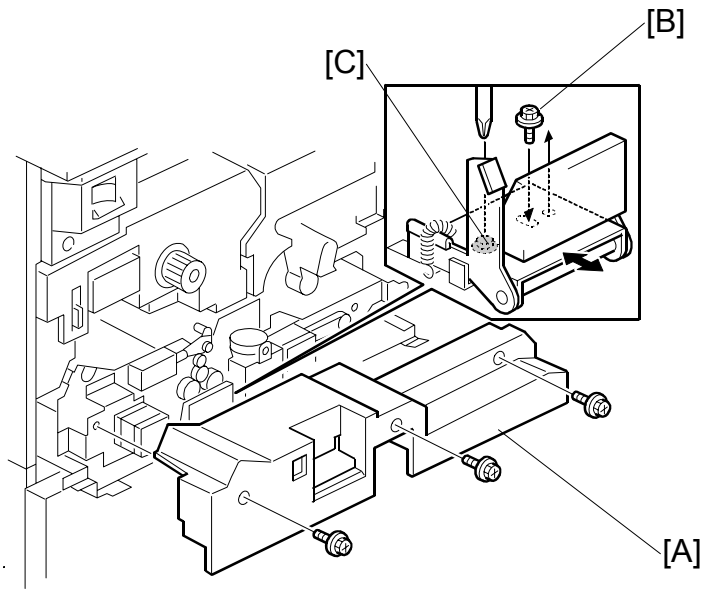
3.10.1 DUPLEX UNIT REMOVAL



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



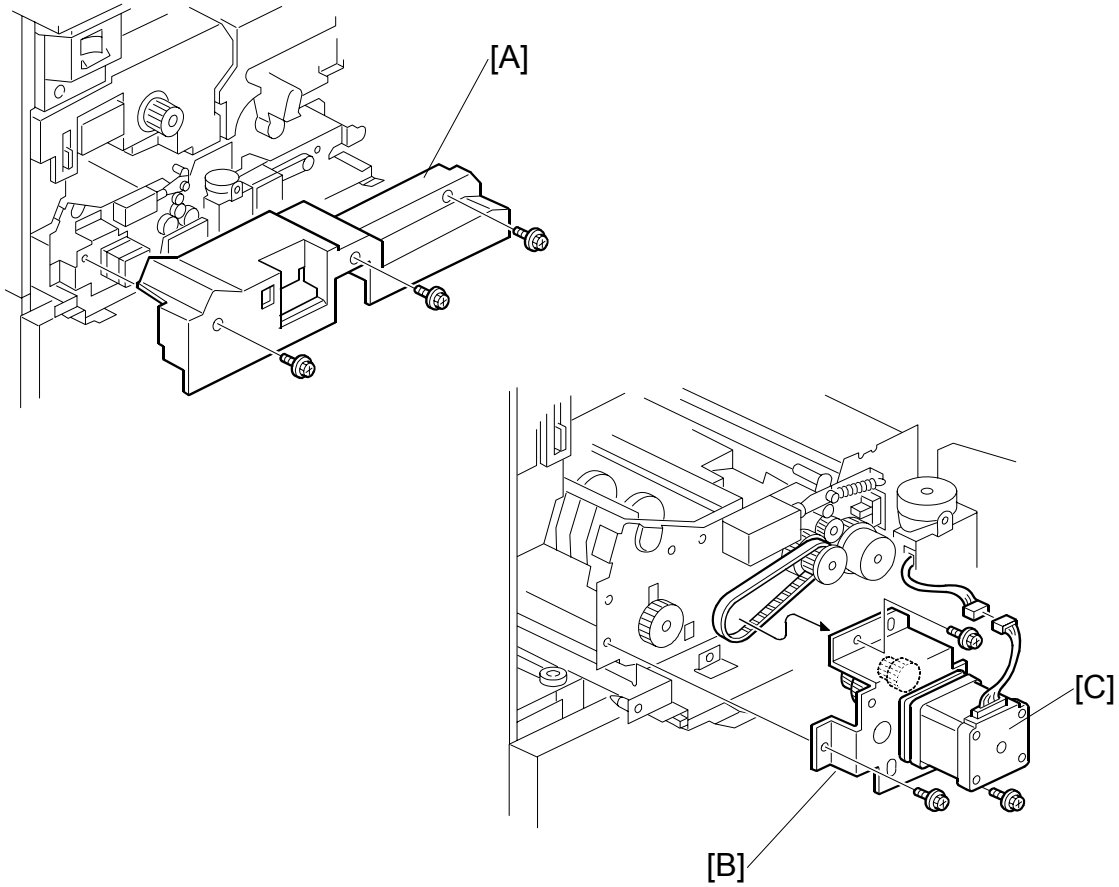
1. Remove the inner cover [A] (☞ x 3).
2. Move the handle lock screw [B] from the right to the center.
3. Loosen the left lock screw [C], then adjust the position of the duplex unit.

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”.

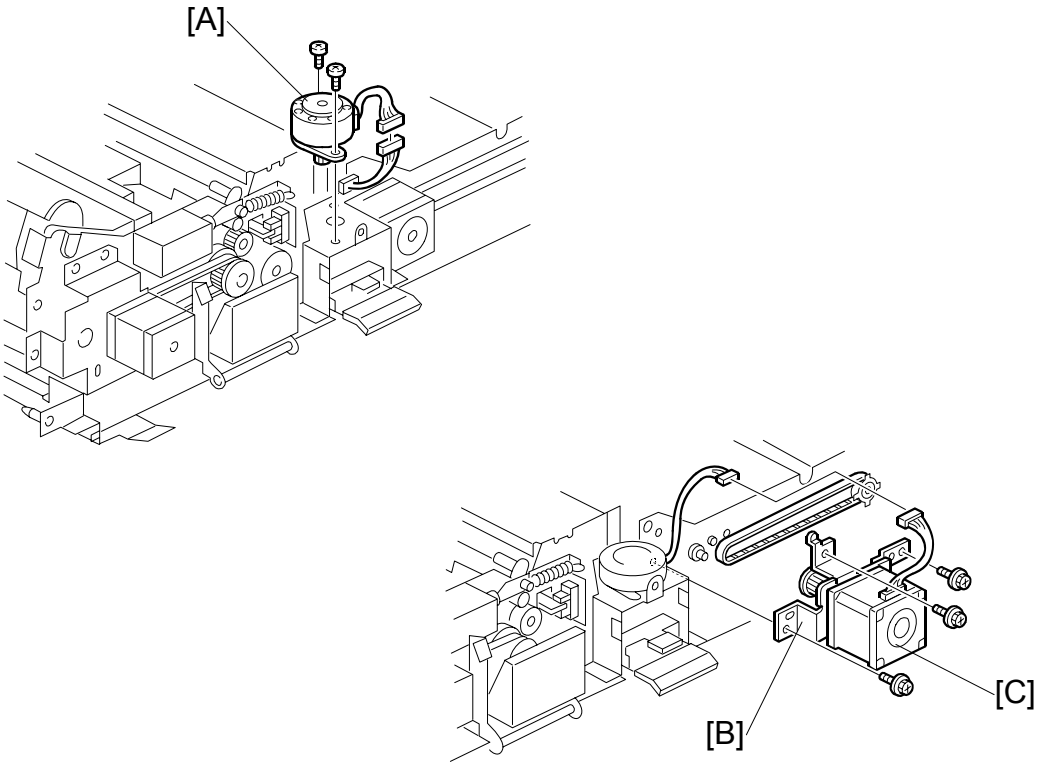
3.10.4 DUPLEX MOTORS

Duplex Inverter Motor



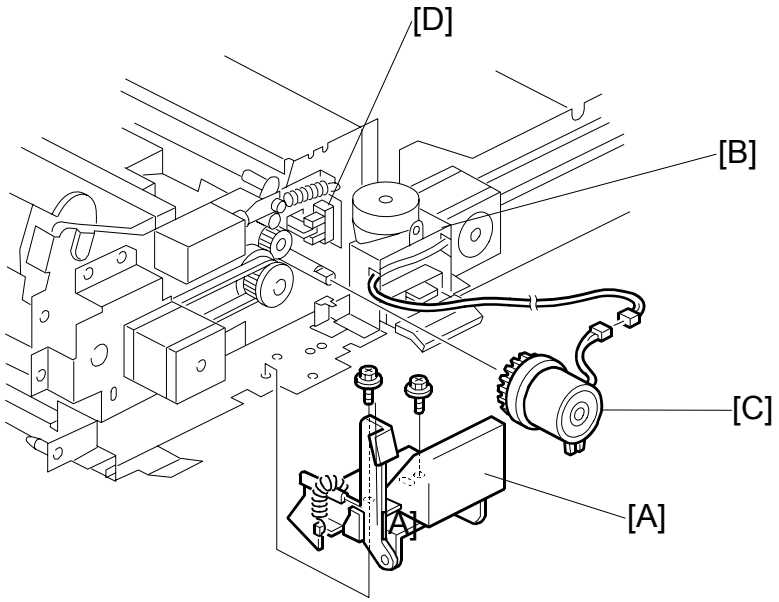
[A]: Remove the cover (x 3).
[B]: Inverter motor bracket (x 3).
[C]: Inverter motor (harness x 1, x 1, x 2, timing belt x 1).

Duplex Jogger and Transport Motors



[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)

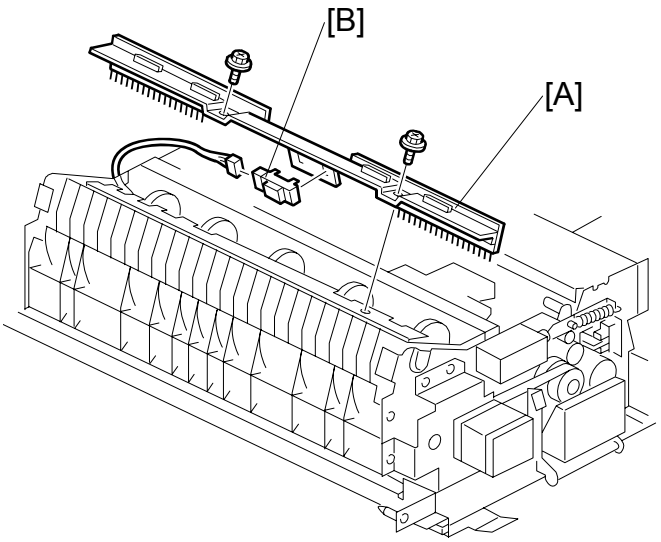
3.10.5 DUPLEX TRANSPORT CLUTCH/JOGGER HP SENSOR



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

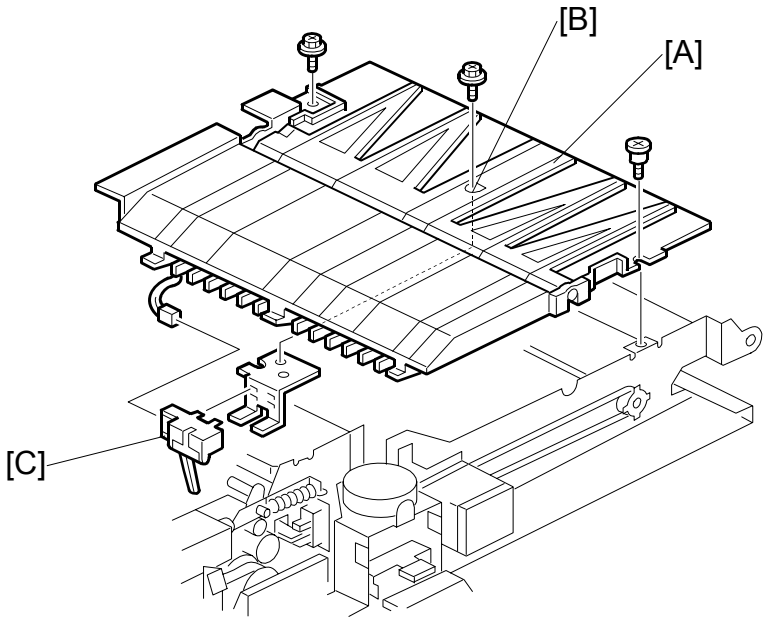
[D]: Jogger HP sensor (spring x 1, x 2, x 1)

3.10.6 DUPLEX ENTRANCE SENSOR



[A]: Bracket (x 2)
[B]: Duplex entrance sensor (x 1)

3.10.7 DUPLEX TRANSPORT SENSOR 3

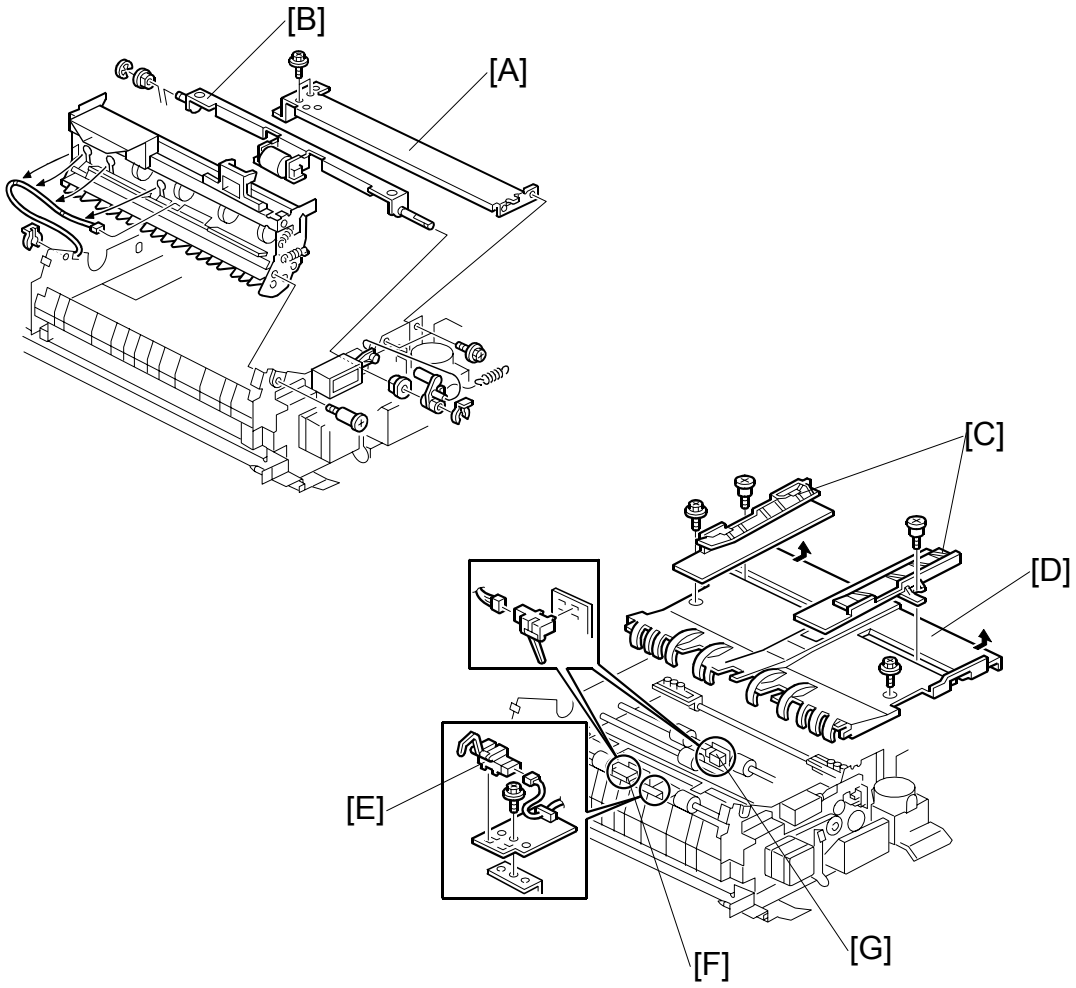


[A]: Right half of table (x 2, x 1)
- The front screw is a shoulder screw. Insert the screws in the correct holes when re-attaching.

[B]: Remove the screw in the center of the table to release the sensor bracket below.

[C]: Transport sensor 3 (x 1)

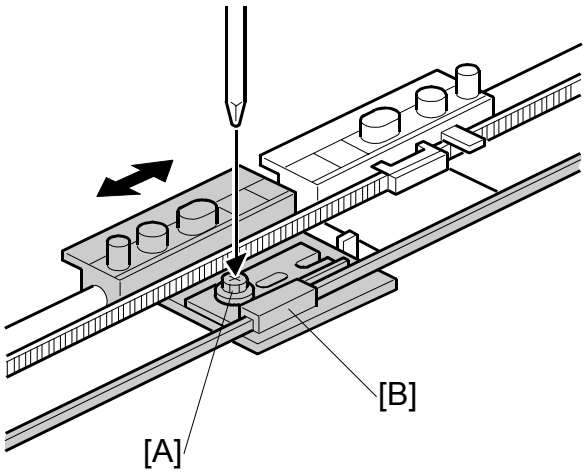
3.10.8 INVERTER EXIT SENSOR, TRANSPORT SENSORS 1 & 2



[A]: Cross-stay (🔩 x 4)
[B]: Reverse trigger roller shaft
[C]: Jogger fences (🔩 x 1 each)
[D]: Left half of table (🔩 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 (🔩 x 1, harness x 1, 🔌 x 1)
[F]: Transport sensor 1 (harness x 1, 🔌 x 1)
[G]: Transport sensor 2 (harness x 1, 🔌 x 1)

3.10.9 DUPLEX JOGGER BELT ADJUSTMENT

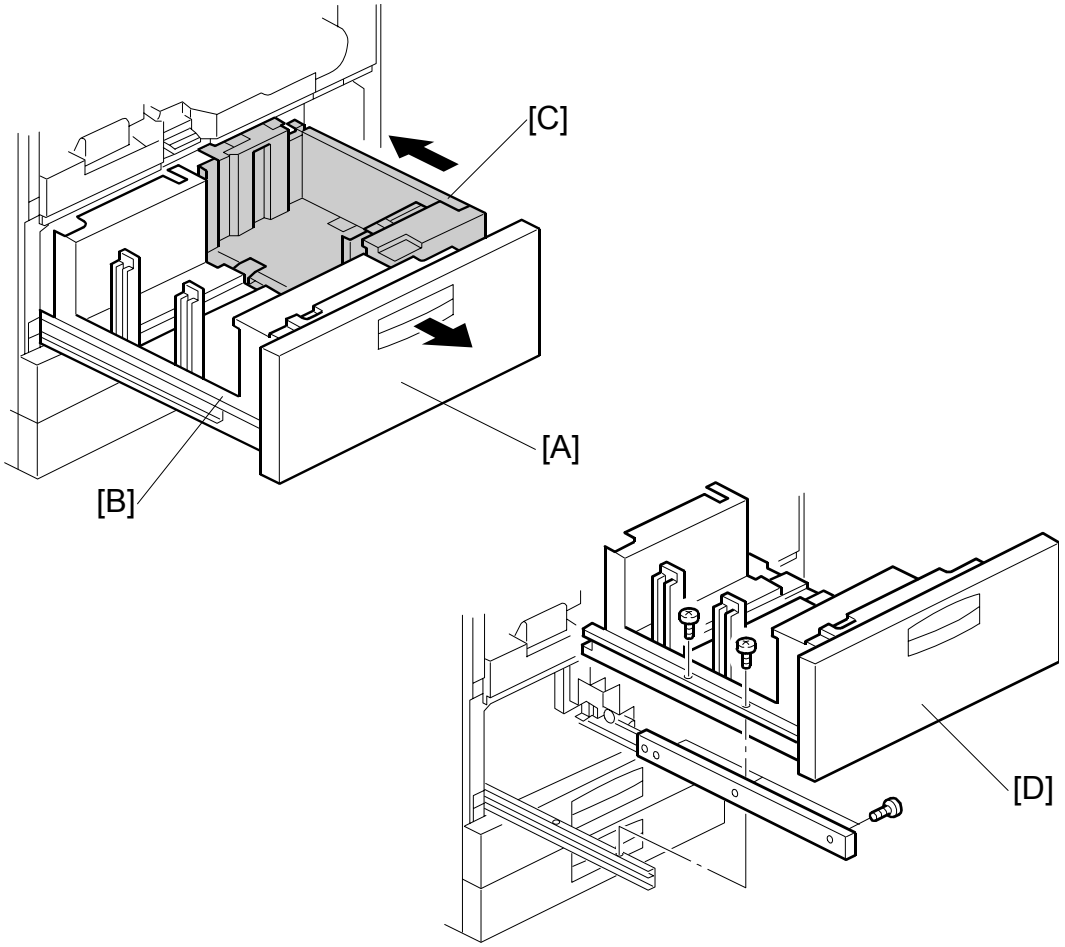


1. Cross stay (☛ 3.10.8)
2. Reverse trigger roller shaft (☛3.10.8)
3. Left half of the table (☛3.10.8)
4. Jogger motor bracket (☛ 3.10.5)
   - Slip the one end of the belt around the gear below the jogger motor.
   - Slip the other end of the belt around the gear at the other side of the duplex unit.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

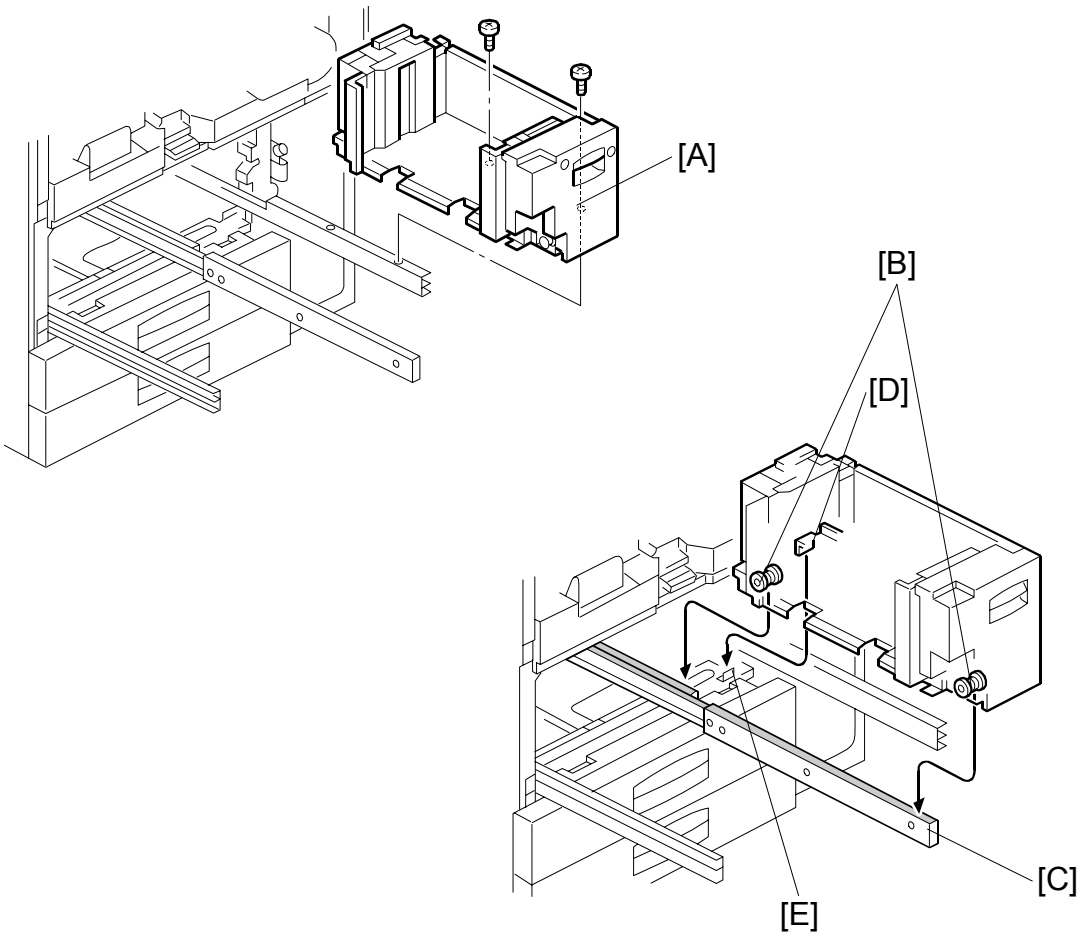
   If you are adjusting the belt, loosen the screw and slide the plastic piece [B] on the belt to the left or right to adjust the position of the front fence, then tighten the screw.

3.11 PAPER FEED

3.11.1 PAPER TRAY REMOVAL



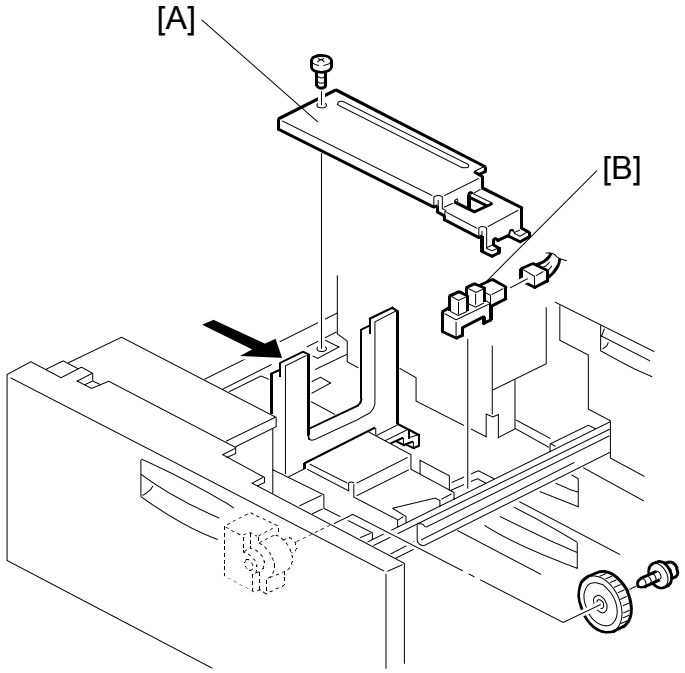
1. Open the front door.
2. Pull out the tandem tray drawer [A] completely to separate the left [B] and right [C] sides of the tandem tray.
3. Remove the left tandem tray [D] (☞ x 5).



[A]: Right tandem tray (🔩 x 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

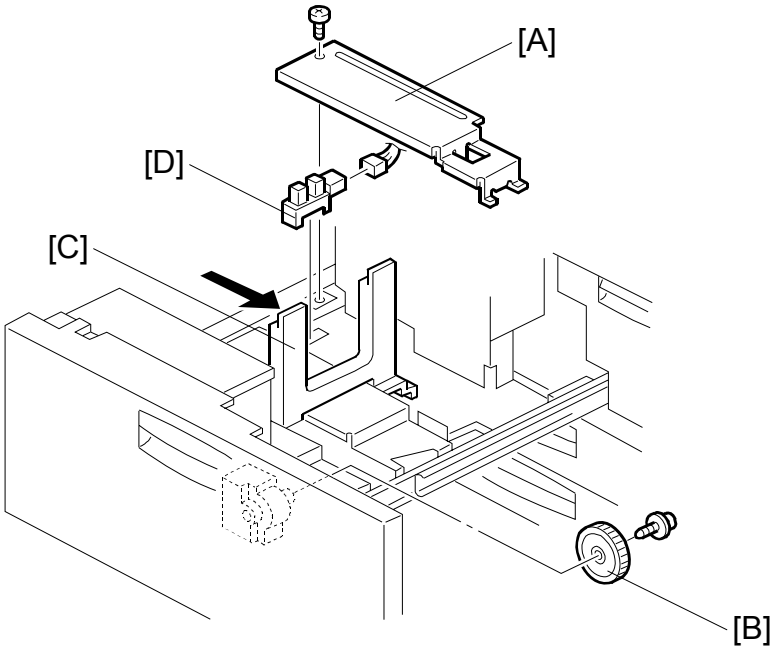


Turn off the main switch.

Pull out the tandem feed tray.

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

3.11.3 REAR FENCE HP SENSOR REPLACEMENT

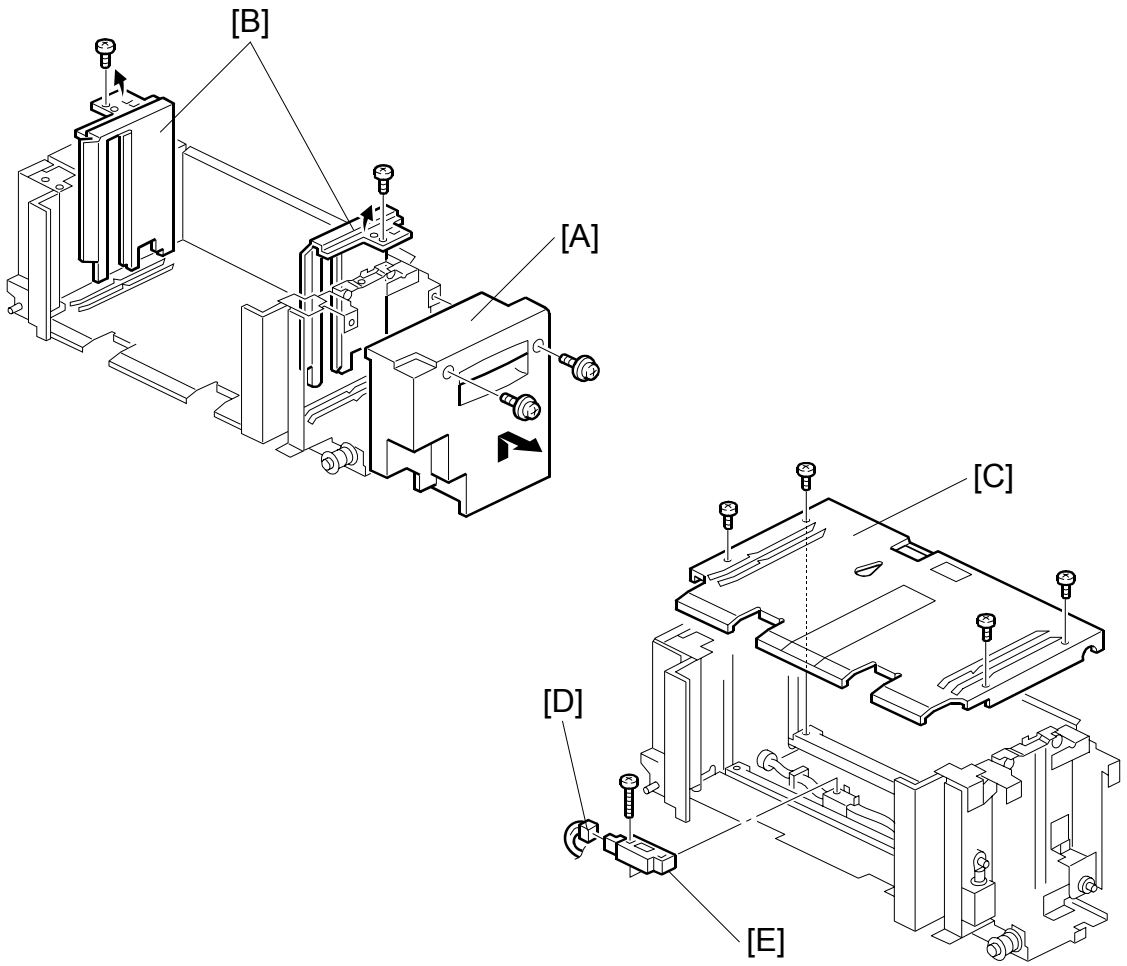


Turn off the main switch.

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



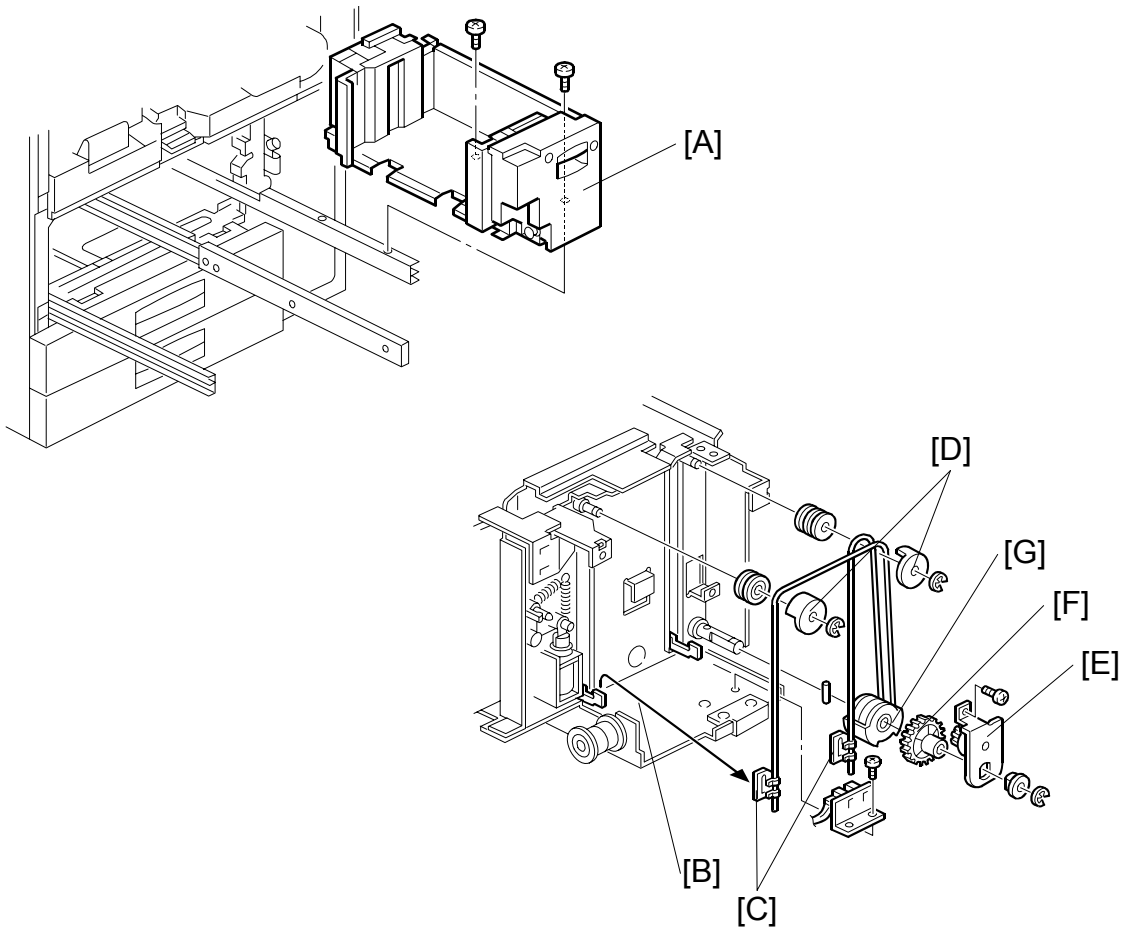
Turn off the main switch.

Remove the right tandem tray (☛ 3.11.1).

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

3.11.5 BOTTOM PLATE LIFT WIRE REPLACEMENT

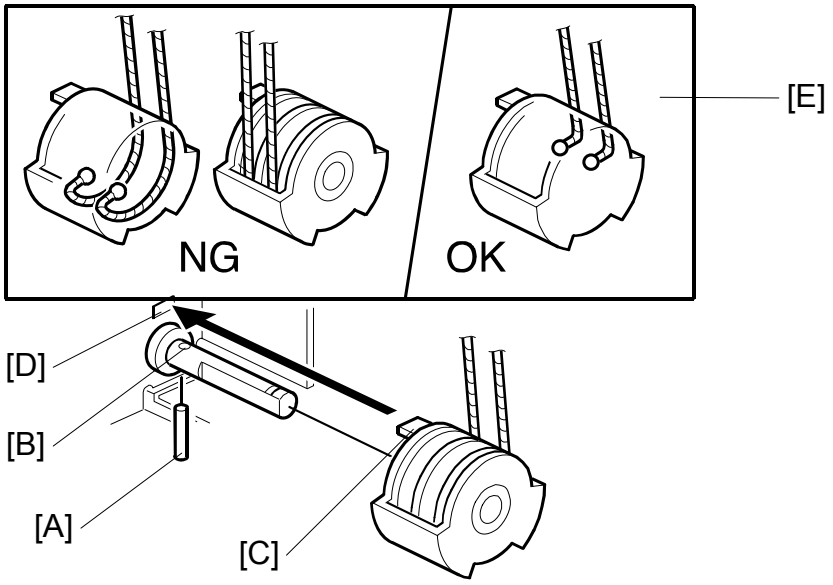
NOTE: Before replacing the rear bottom plate lift wire, remove the front bottom plate lift wire. It is necessary to remove the shaft for replacing the rear bottom plate lift wire.



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

[A]: Remove the inner cover (☞ x 2)
[B]: Remove the left stay.
[C]: Wire stoppers
- Slightly lift the front bottom plate and unhook.

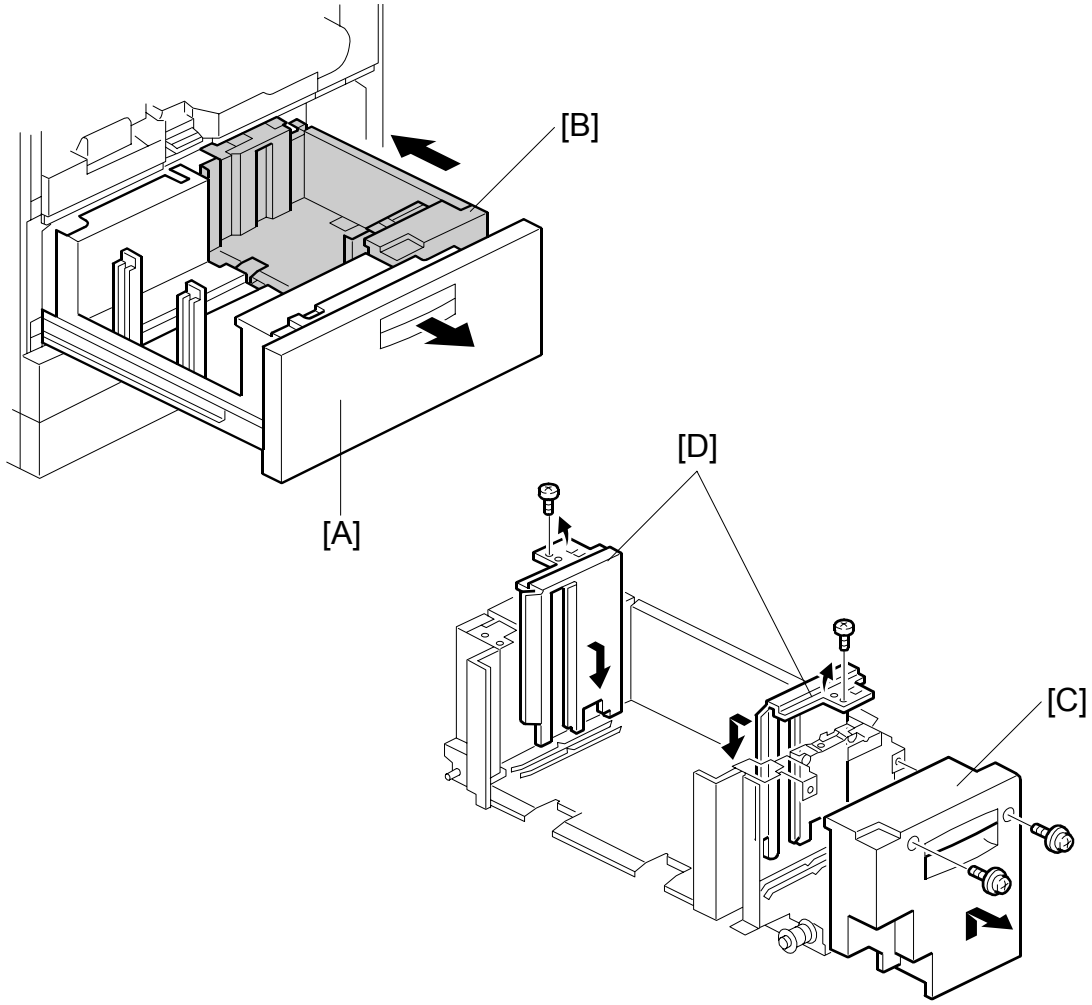
[D]: Wire covers (ℂ x 1 each)
[E]: Bracket (☞ x 1, ℂ x 1, bushing x 1)
[F]: Gear
[G]: Bottom plate lift wire



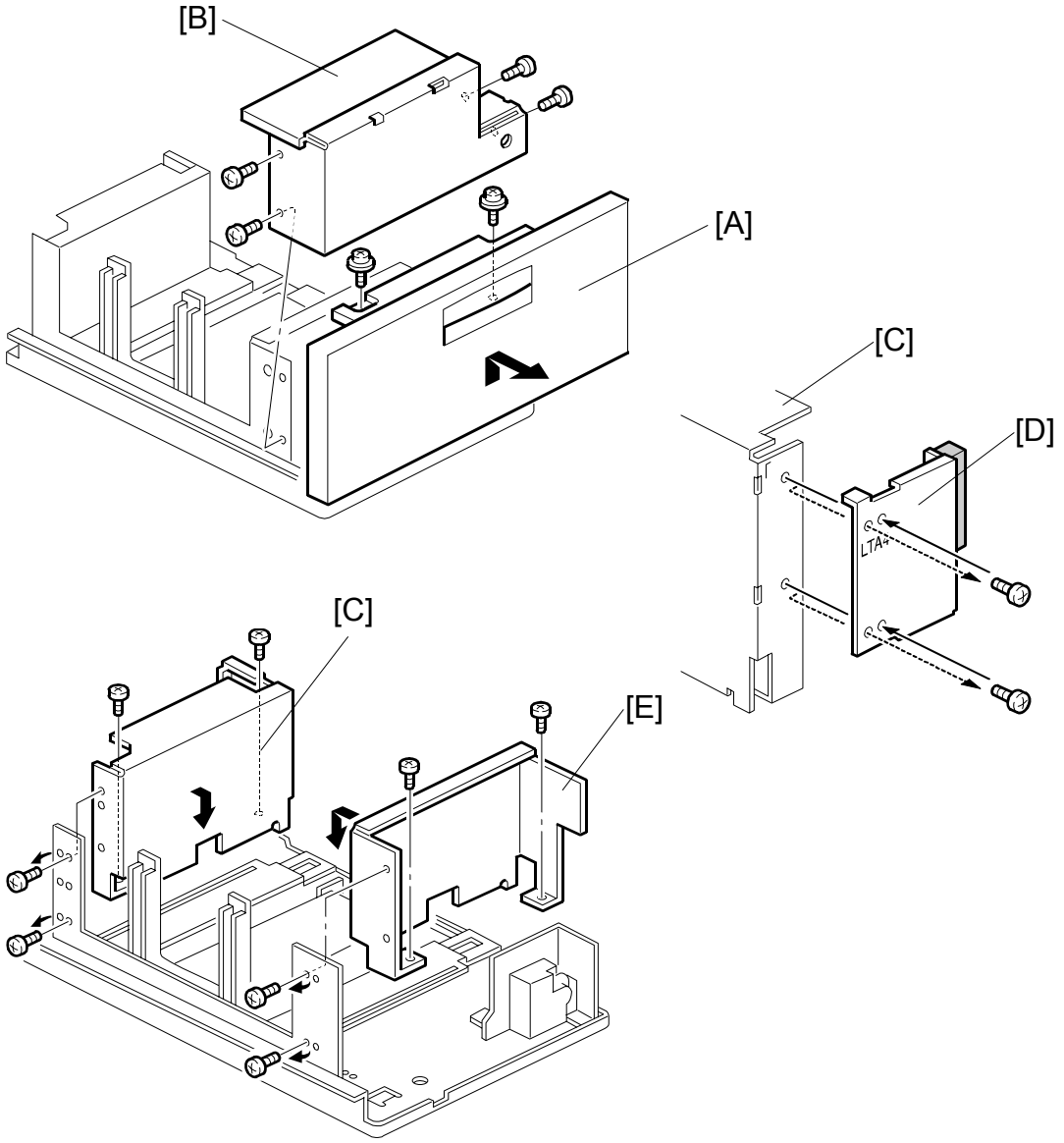
NOTE: When re-installing the bottom plate lift wire:
1) Set the positioning pin [A] in the hole [B], and set the projection [C] in the hole [D].
2) Position the wire as shown [E].
3) Do not cross the wires.

3.11.6 TANDEM TRAY PAPER SIZE CHANGE

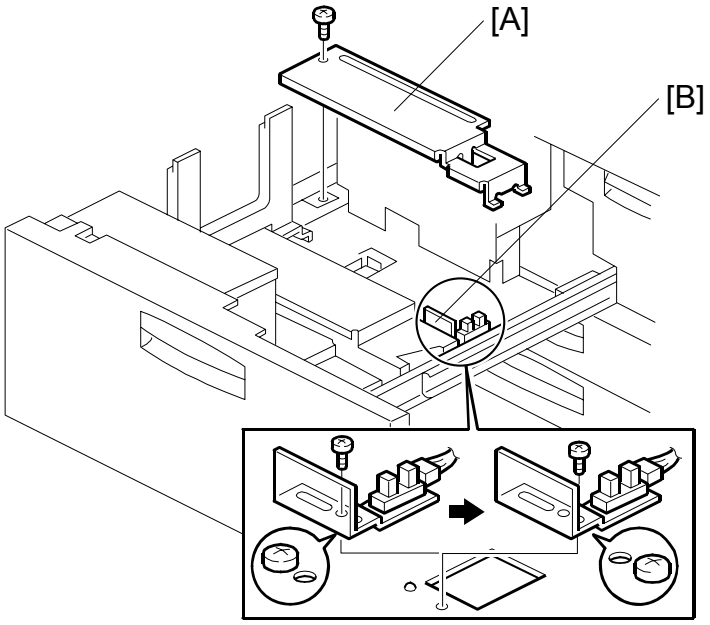
NOTE: At the factory, this tray is set up for A4 or LT LEF. Only A4 or LT LEF paper can be used for tandem feed.



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

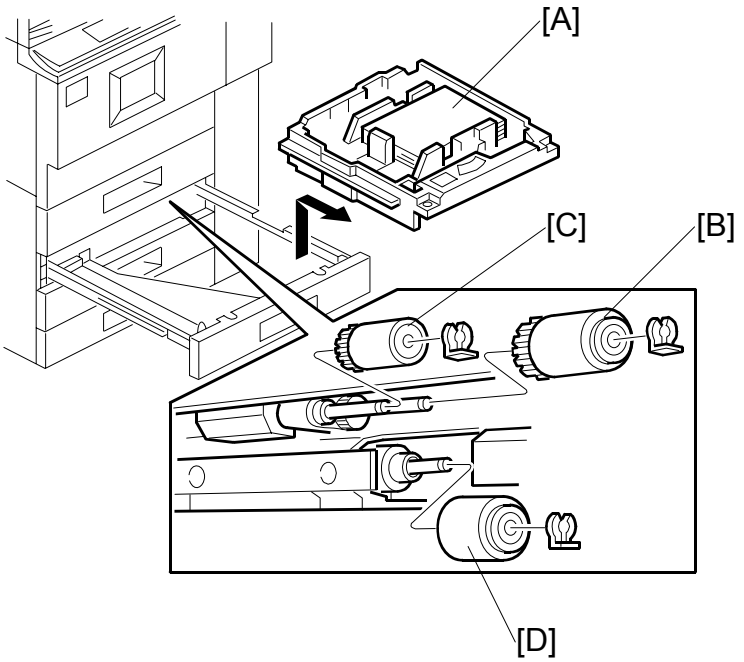


6. Remove the tray cover [A] (☞ x 2).
7. Remove the DC motor cover [B] (☞ x 4).
8. Remove the rear side fence [C] (☞ x 4) and re-position the rear cover [D] (☞ x 2).
9. Re-position the side fences [C] [E] (☞ x 4).
   A4: Outer slot position
   LT: Inner slot position
10. Re-install the DC motor cover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



11. Remove the rear bottom plate [A] (☞ x 1).
12. Re-position the return position sensor bracket [B] (☞ 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. (☛ 3.14)

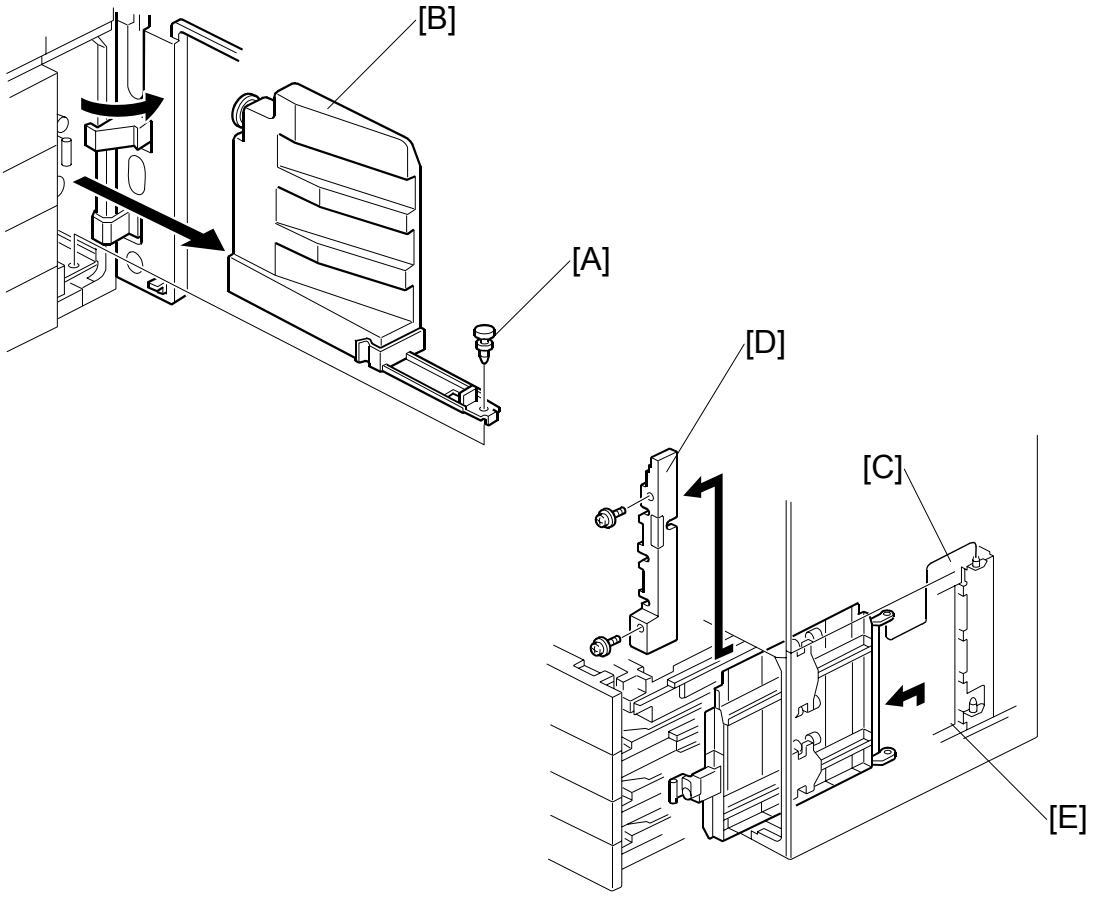
3.11.7 PICK-UP, FEED, SEPARATION ROLLER REPLACEMENT



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

NOTE: 1) The operation of the FRR mechanisms 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)

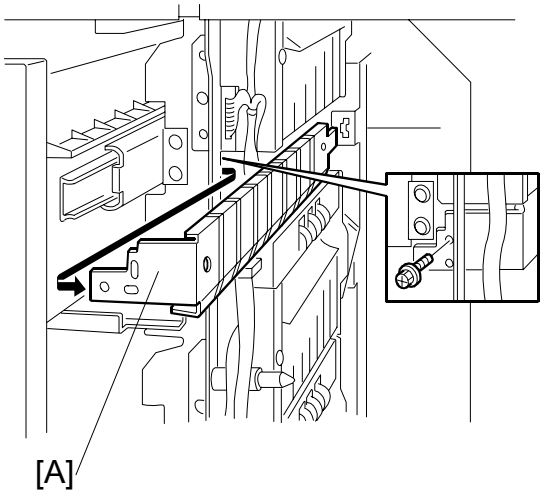
LCT entrance guide cover and right lower cover (☛ 3.3.3)

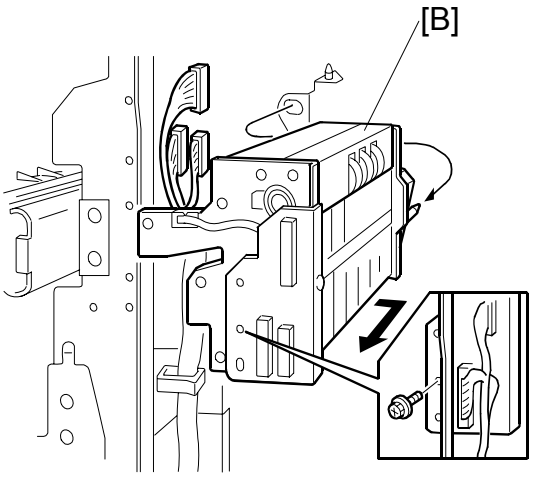
- If the LCT is connected, disconnect it and pull it away from the machine.

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)





[A]: Guide plate (🔩 x 1)
- 1st feed unit only.

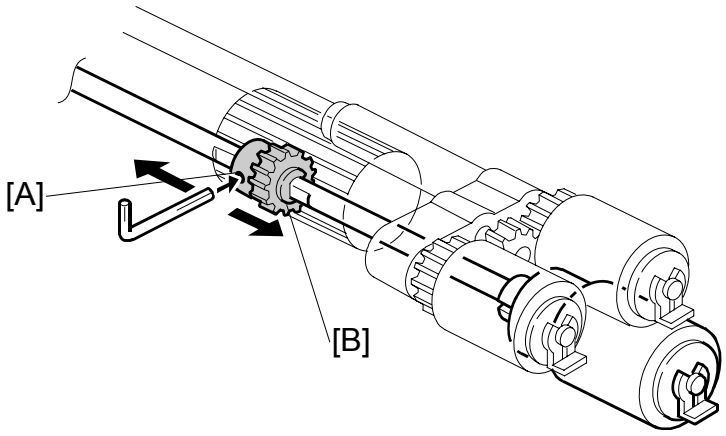
[B]: Feed unit (🔩 x 1, ✋ x 3)
- Insert your hand from the right and pull the feed unit forward.

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

3.11.9 SEPARATION ROLLER PRESSURE ADJUSTMENT

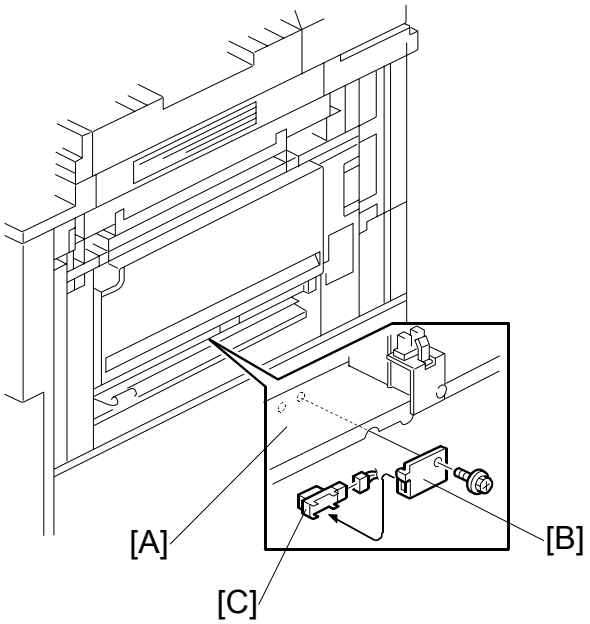
The position of the drive gear for the separation roller can be changed in order to change the amount of pressure exerted by the separation roller. This adjustment can be done:

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



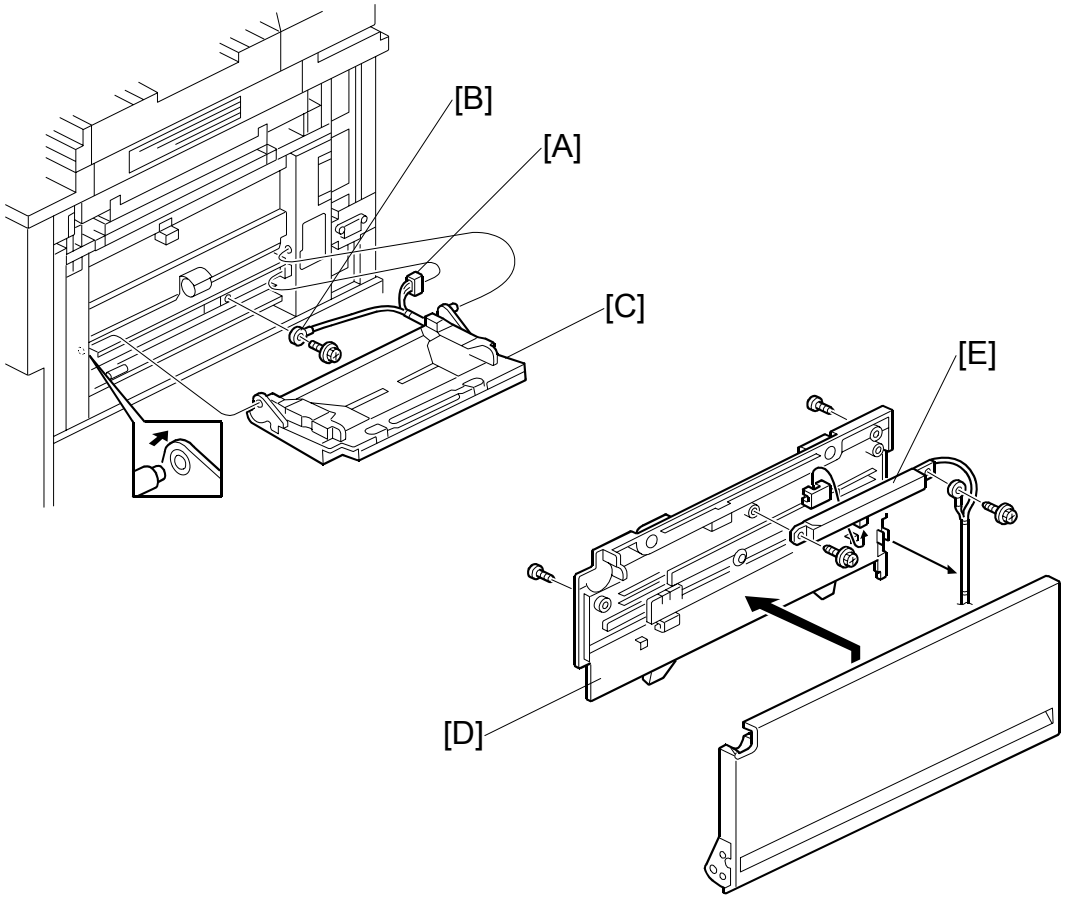
1. Remove the feed unit (☛ 3.11.8).
2. Loosen the hex screw [A].
   NOTE: The separation roller gear [B] is positioned at the groove before shipping.
3. To adjust for thick paper, move the separation roller gear [B] to the left to decrease the pressure.
   –or-
   To correct misfeeds, move the separation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

3.11.10 RELAY SENSOR



[A]: Remove the LCT entrance guide cover.
[B]: Relay sensor bracket (🔩 x 1)
[C]: Relay sensor (✋ x 1)

3.11.11 BY-PASS PAPER SIZE DETECTION BOARD



Registration inner cover (☞ x 2)

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

[A]: Connector (☞ x 1)
[B]: Ground wire (☞ x 1)
[C]: By-pass tray

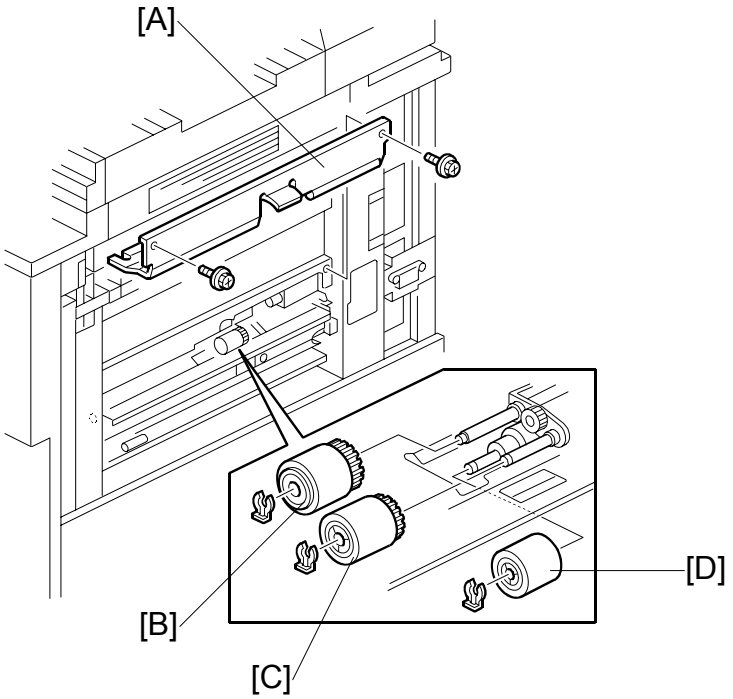
- Disconnect the by-pass tray from the pins on both sides.

[D]: By-pass table (☞ x 2)
[E]: By-pass paper size detection board (☞ 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



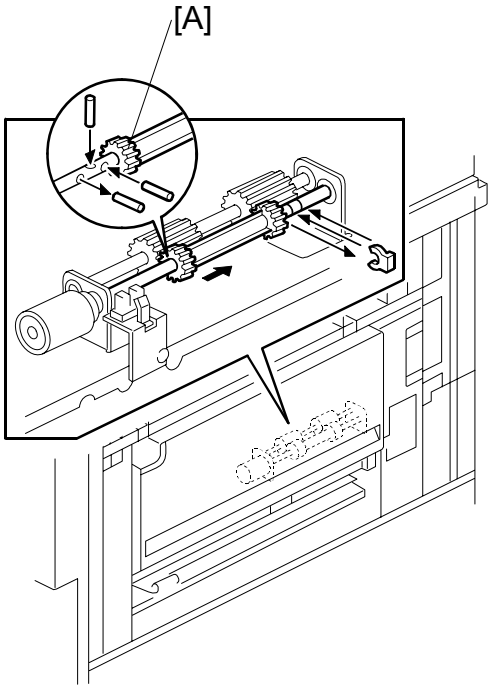
Right covers (☛ 3.3.3)

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 mechanisms for the tandem tray (Tray 1), universal trays (Tray 2, Tray 3) by-pass tray and ADF are similar, the only rollers that are interchangeable are the tandem and universal trays (Trays 1, 2, 3).
2) Do not touch the surface of new rollers during replacement.

3.11.13 BY-PASS SEPARATION ROLLER PRESSURE ADJUSTMENT



1. Loosen the separation roller gear [A].

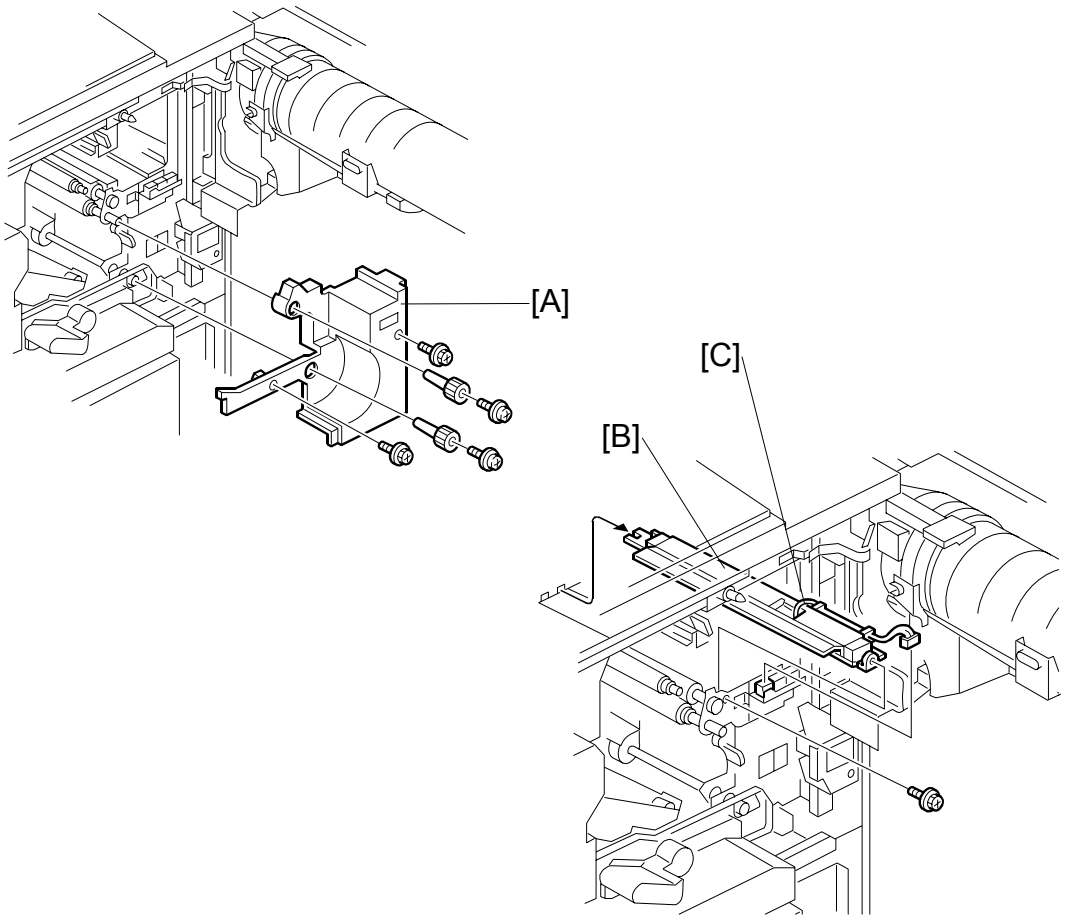
   The position of the drive gear for the separation roller can be changed in order to change the amount of pressure exerted by the separation roller. This adjustment can be done:

   - 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



[A]: Inner cover (x 4)

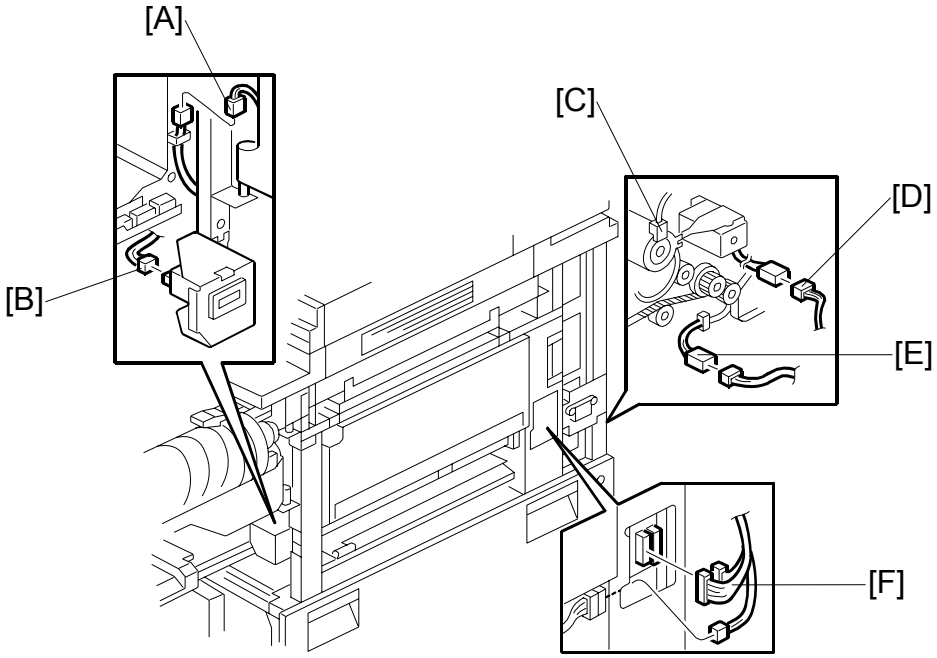
Development unit (☛ 3.6.1)

Charge corona unit (☛ 3.6.2)

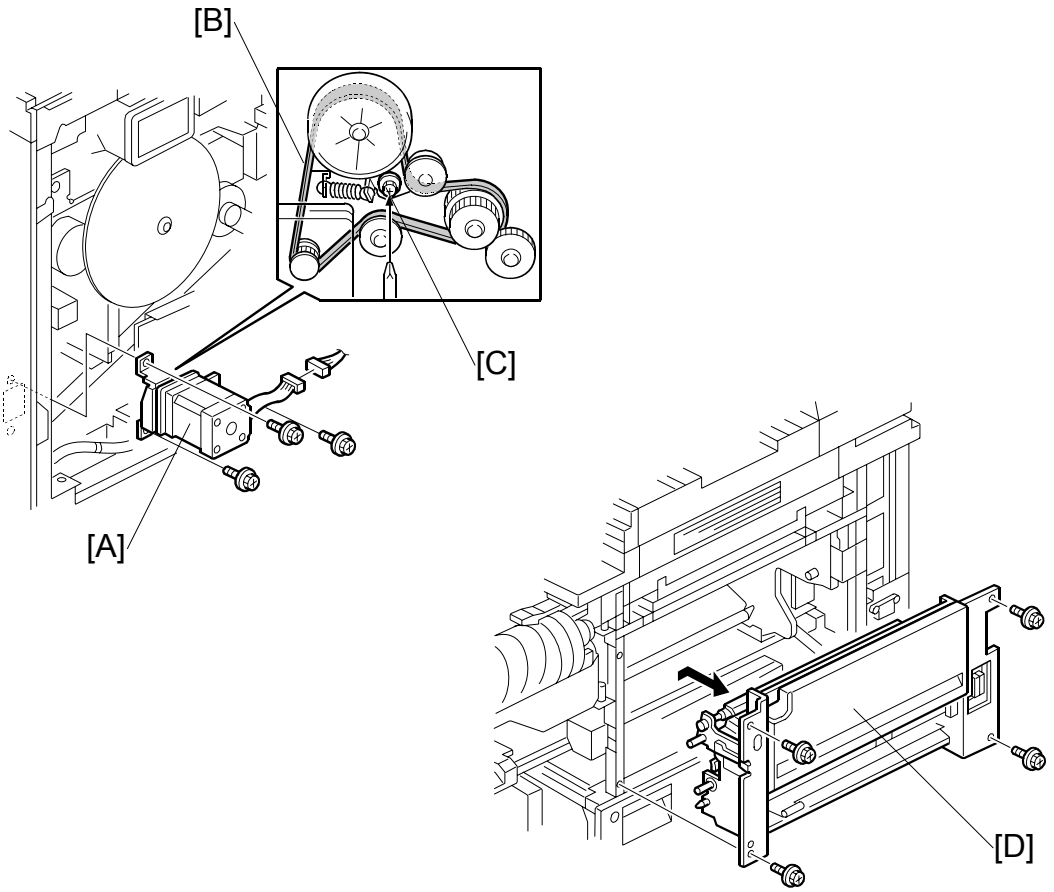
OPC drum unit (☛ 3.6.5)

[B]: Paper dust removal unit (x 1, 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] (x 3, 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] (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.

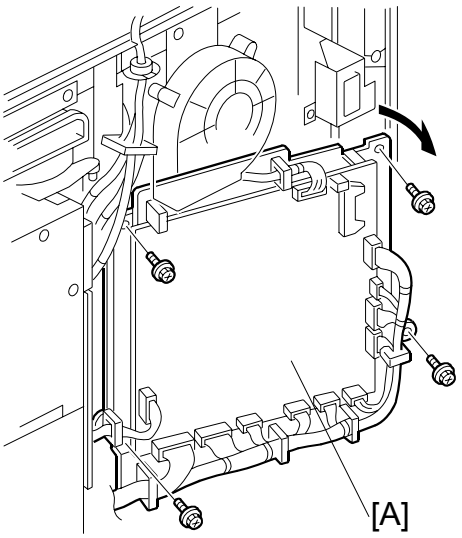
3.12 PCBS AND HDD

3.12.1 BCU BOARD (BASE ENGINE CONTROL UNIT)

BCU: B064, B140 Series

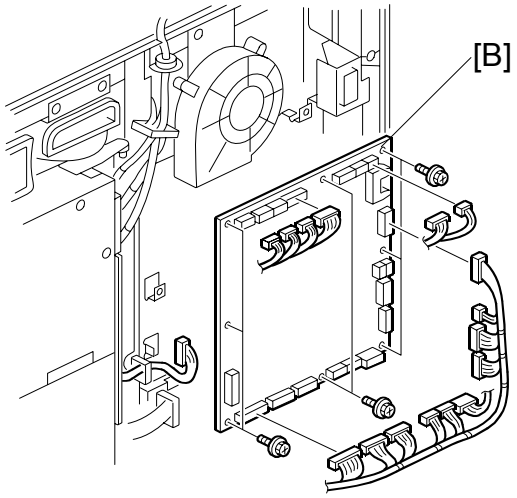
Rear upper cover (☛ 3.3.5)

[A]: BCU board bracket (🔩 x 4)

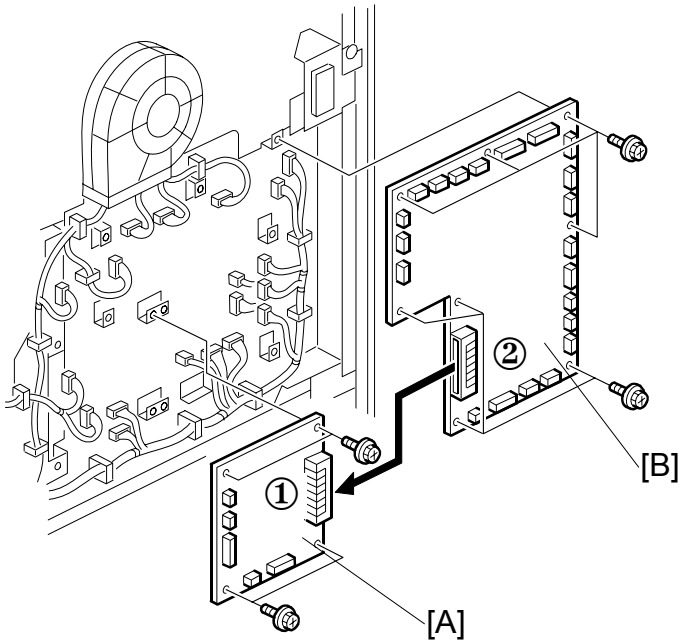


[B]: BCU board (🔩 x 4, 🖑 x 17)

1. Remove IC31 (EEPROM) from the old BCU board.
2. Attach the EEPROM to the new board.
3. Make sure that the DIP switch settings on the new board and identical to the DIP switch settings of the old board.
4. After replacing this board, execute SP3001-002 (ID Sensor Initialization).



BCU, IOB: B246/D052 Series



- Disconnect ADF cable.

Remove:

- Rear upper cover (x2) (☛3.3.5)
- Rear lower cover (x2) (☛3.3.5)

[A] BCU screws, connectors (x1, x4, x4)

[B] IOB screws, connectors (x6, x16, x8)

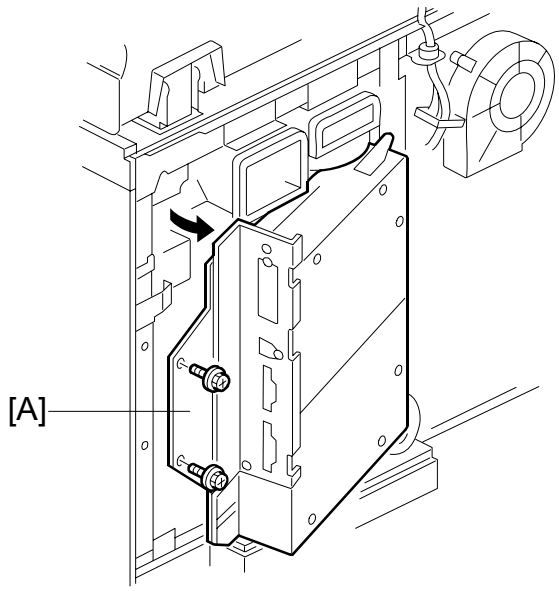
- Separate the BCU ①, IOB ② at the edge connector.

3.12.2 CONTROLLER BOARD

B064 Series: Controller Board

Rear upper cover (☛ 3.3.5)

[A]: Swing-out the PCB unit (🔩 x 2).



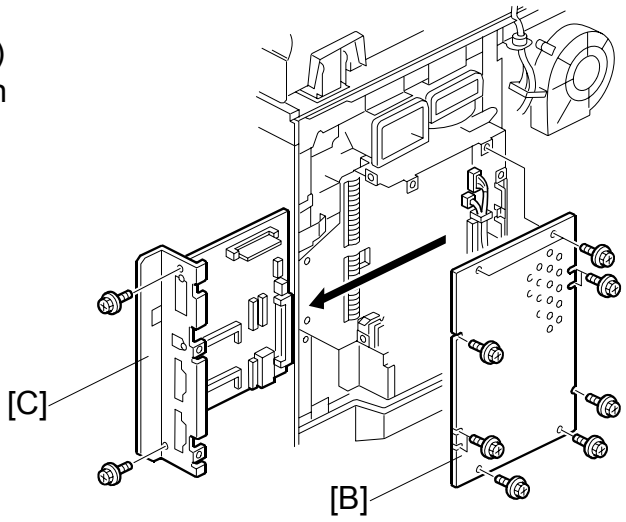
[B]: Controller cover (🔩 x 9)

[C]: Controller board (🔩 x 2, 🔌 x 2)

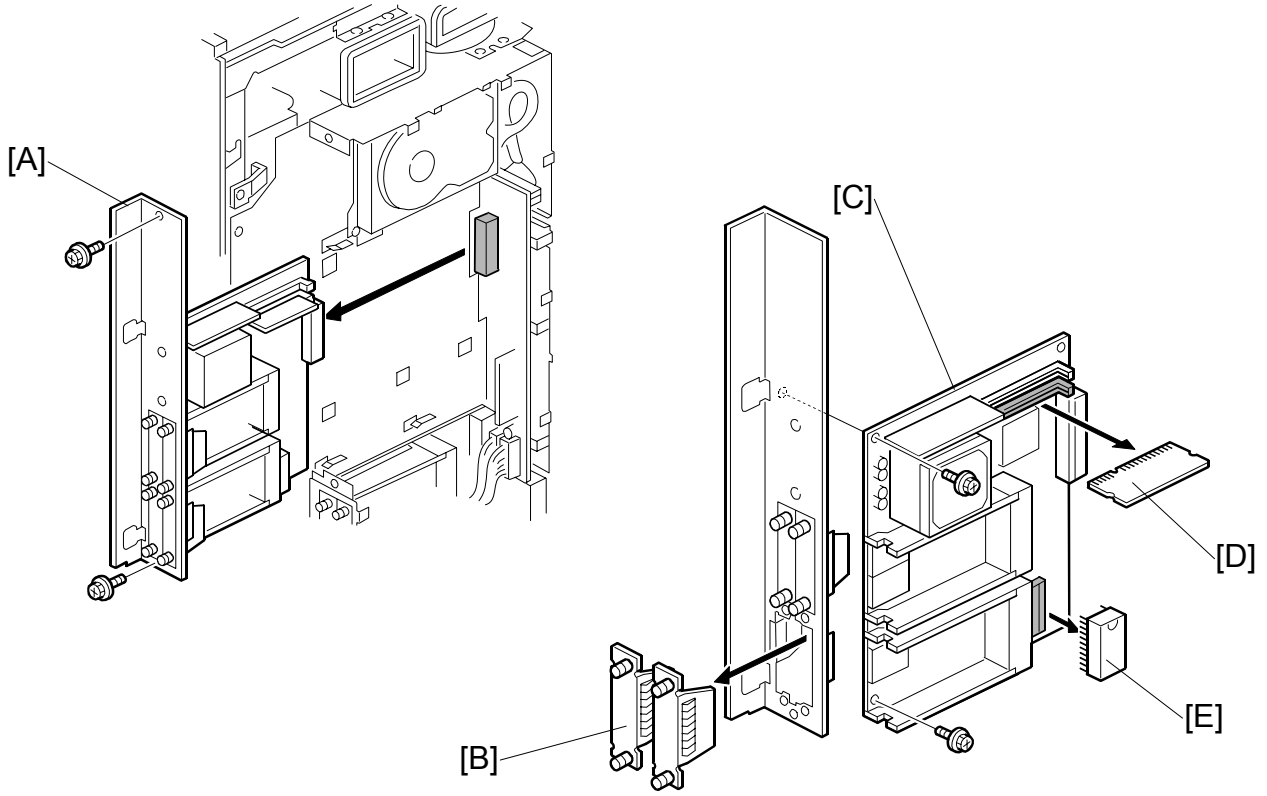
- Pull the controller board out in the direction of the arrow.

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.

B246/D052 Series: Controller Board

- Disconnect ADF cable

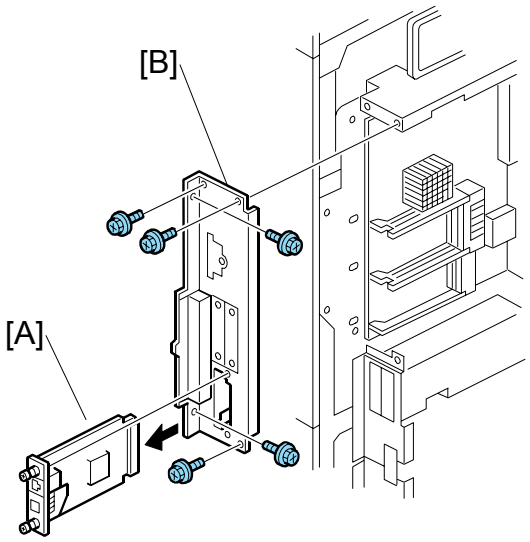
Remove:

- Rear upper cover (🖉 x2) (☛3.3.5)
- Rear lower cover (🖉 x2) (☛3.3.5)
- Controller box cover (🖉 x13)
- All SD cards and SD card slot cover (🖉 x1)

Remove:

[A] Network interface board and all other installed boards (Knob 🖉 x2 ea.)

[B] Controller box faceplate (🖉 x5)



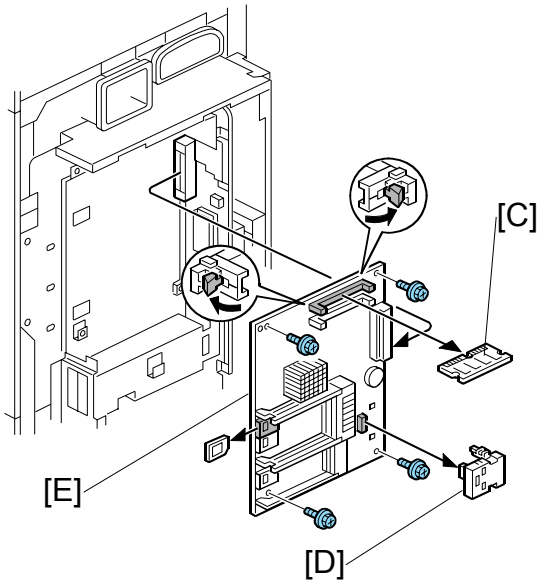
[C] Memory DIMM

[D] NVRAM

[E] Controller board (🖉 x4)

Reinstallation

- Make sure the system SD card is reinstalled in SD card slot **C1** (top slot).
- The machine will not operate if the system SD card is missing from SD card slot **C1**.
- Reinstall all the option boards in their proper slots if any were removed.

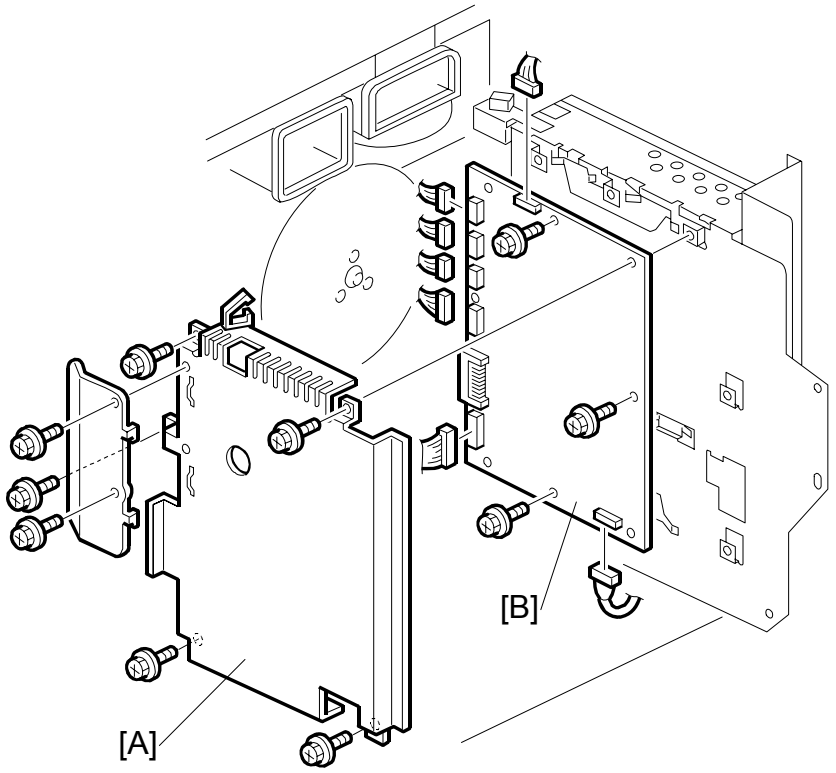


⟹ **Important:**

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

3.12.3 IPU BOARD

B064 Series: IPU Board



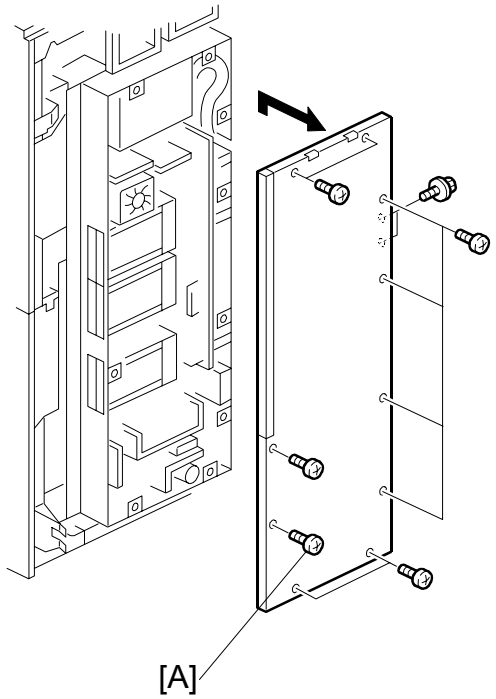
Rear upper cover (☛ 3.3.5)

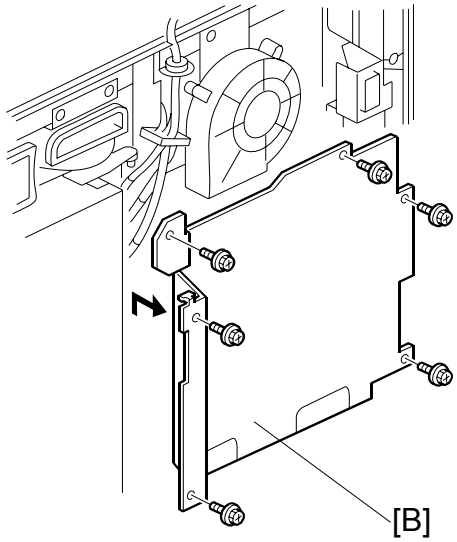
Swing-out the PCB unit (☛3.12.2).

[A]: PCB unit cover (🔩 x 7)

[B]: IPU board (🔩 x 3, 🖐 x 7)

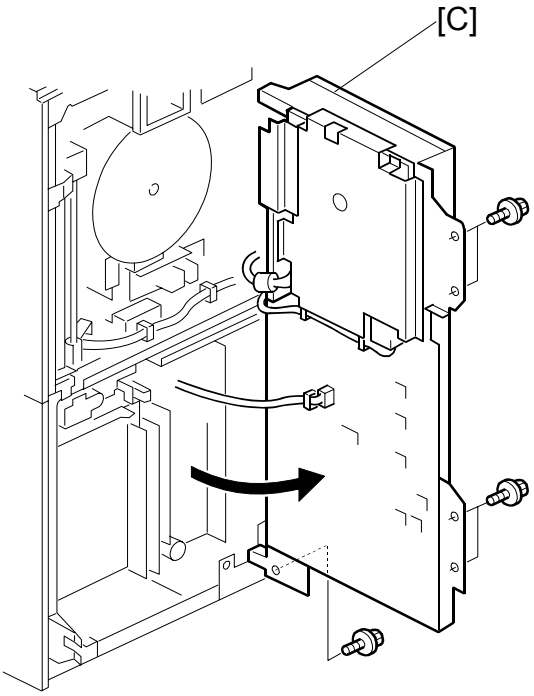
B140 Series: IPU, Mother Board

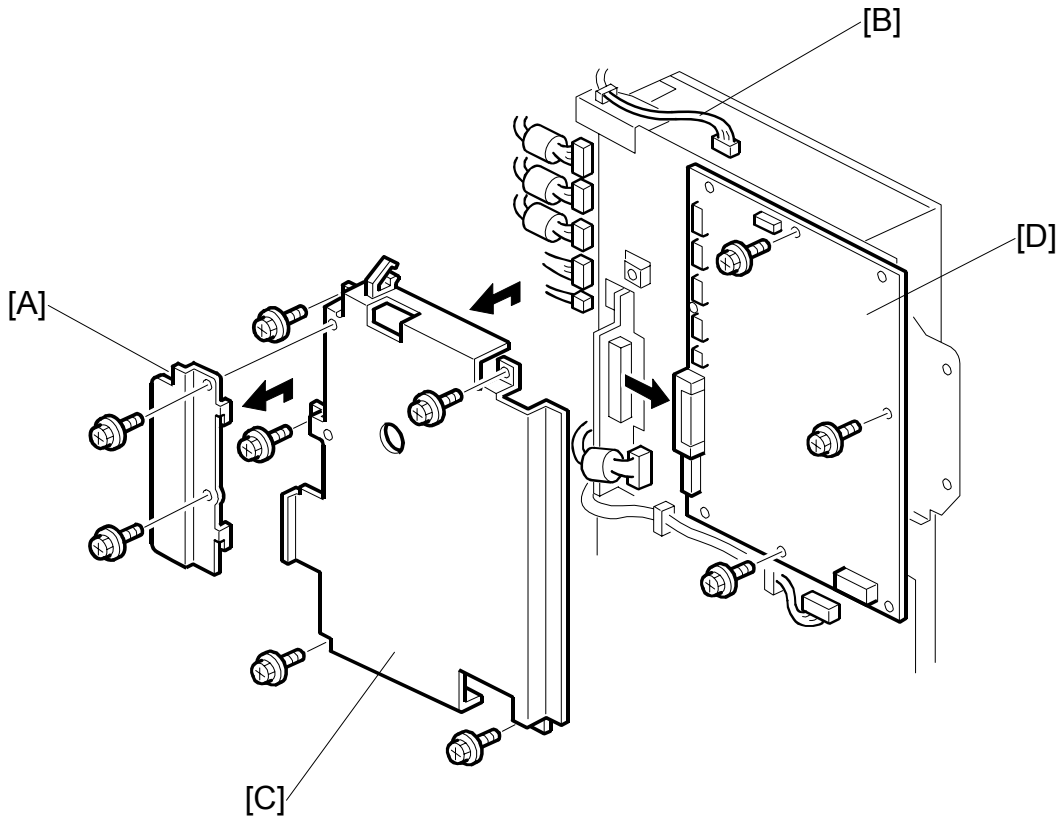




Rear covers (☛3.3.5)

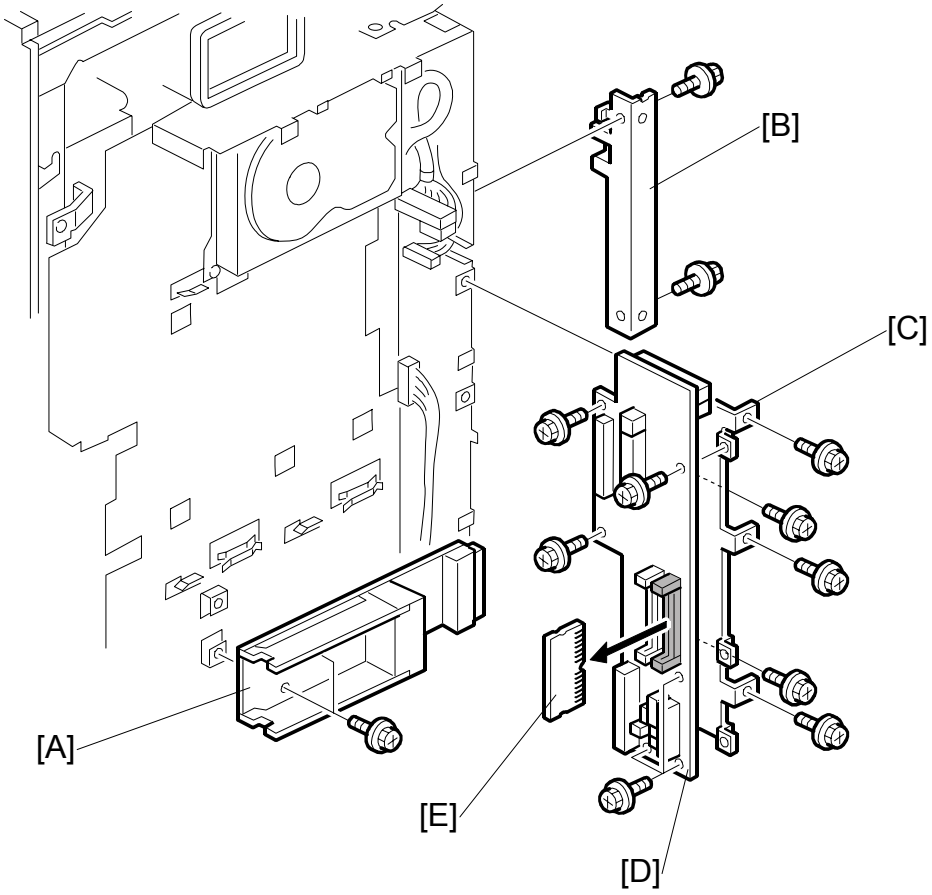
[A]: Controller box cover (🔩 x 12)
[B]: BCU cover plate (🔩 x 6)
[C]: Controller box door (🔩 x 5)





[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.



[A]: A1, A2 connector slots assembly (☞ x 1)
[B]: Connector cover (☞ x 2)
[C]: Mother board support plate (☞ x 5)
[D]: Mother board (☞ x 1)
[E]: Mother board DIMM

B246/D052 Series: IPU

- Disconnect ADF cable

Remove:

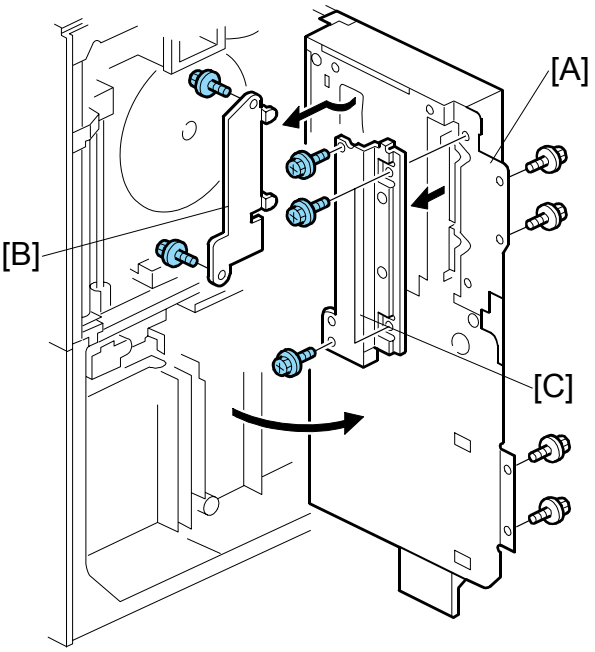
- Rear upper cover (☞ x2) (☛3.3.5)
- Rear lower cover (☞ x2) (☛3.3.5)

Remove:

[A] Screws and swing open the controller box (☞ x4).

[B] Left connector shield (☞ x2)

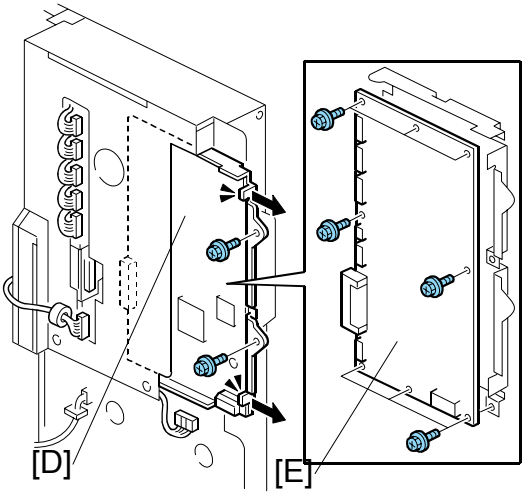
[C] Right connector shield (☞ x4)



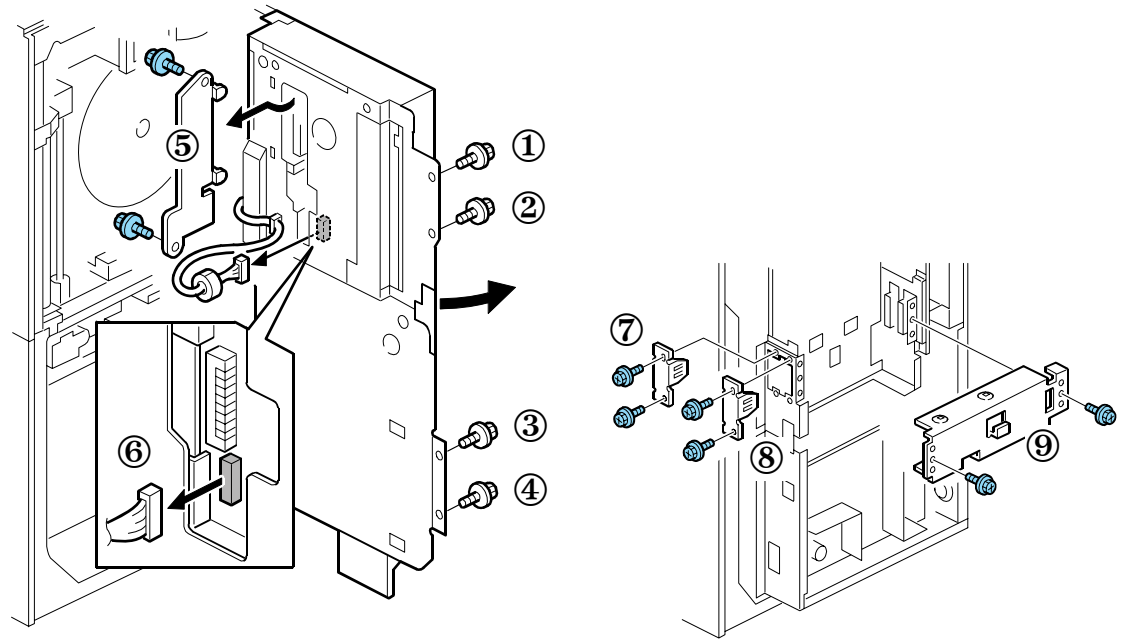
[D] IPU board unit (✋ x7, ☞ x2)

- Slowly slide the IPU board and bracket out of the controller box.

[E] IPU (☞ x8

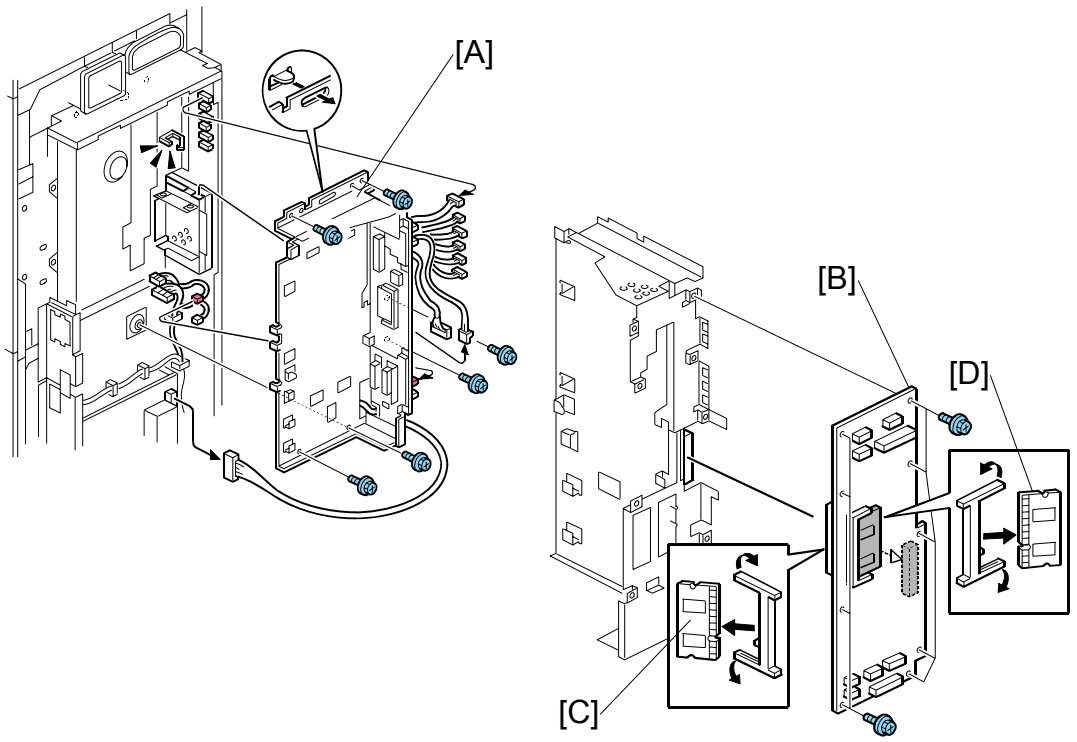


B246/D052 Series Motherboard



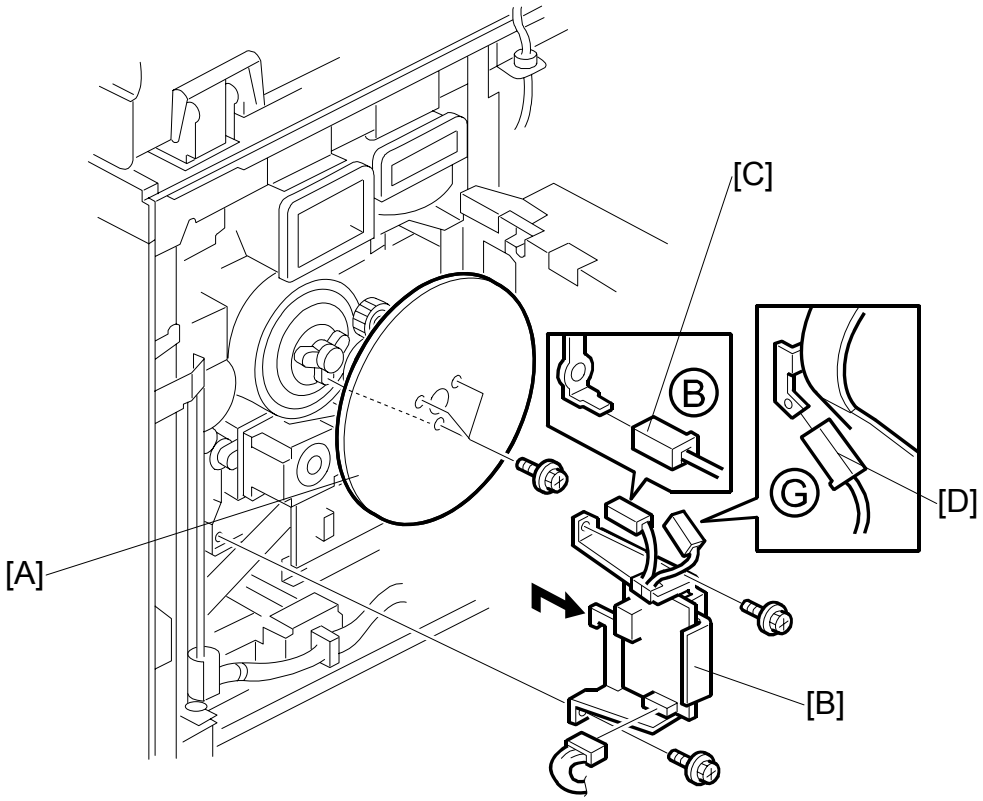
- Disconnect ADF cable

1. Remove:
   - Rear upper cover (x2) (☛3.3.5)
   - Rear lower cover (x2) (☛3.3.5)
   - Controller box cover (x13)
   - Controller board (☛See page 3-120)
2. Remove screws ① to ④ and swing open the controller box (x4).
3. Remove the left IPU connector shield ⑤ (x2).
4. Disconnect connectors ⑥ and ⑦ (x2).
5. Remove brackets ⑦, ⑧, ⑨ (x2 ea.).



6. Remove the controller board mounting bracket [A] (x13, x6).
7. Remove the controller board [B] from the side of the mounting bracket (x9).
8. Remove DIMMs [C] and [D].

3.12.4 DEVELOPMENT POWER PACK



- Remove 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

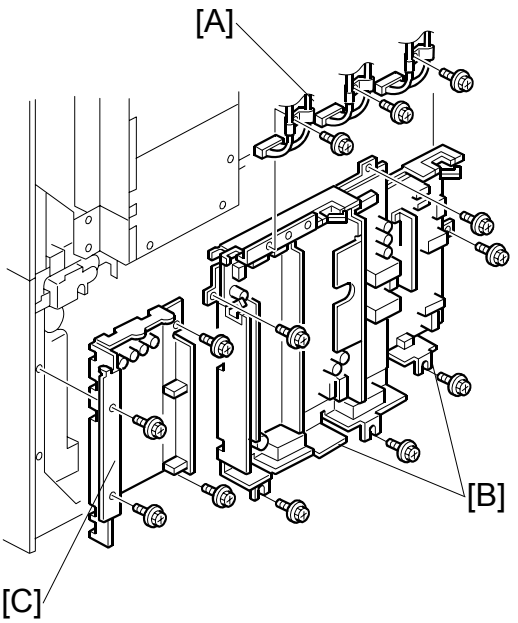
Rear lower cover (☛ 3.3.5)

[A]: Harness clamps (🔩 x 3)

[B]: PSU (🔩 x 6, 🖐 x 13)

- The PSU consists of two PCB's.

[C]: PFC (🔩 x 4, 🖐 x 14)

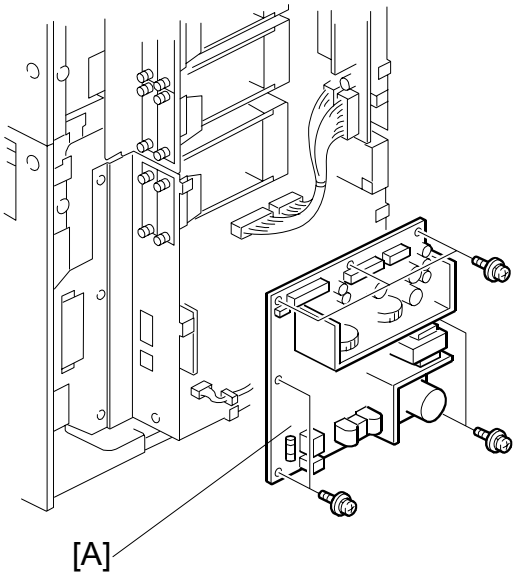


B140 Series PSU

Rear covers (☛3.3.5)

Controller box cover (🔩 x 12)

[A]: PSU (🖐 x 5, 🔩 x 7)

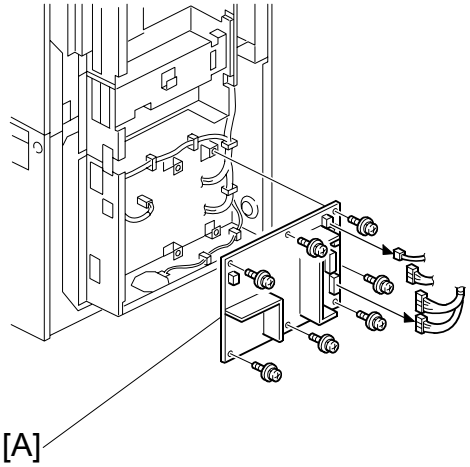


B246/D052 Series PSU

- Rear upper cover (🔩 x2) (☛3.3.5)
- Rear lower cover (🔩 x2) (☛3.3.5)
- Controller box cover (🔩 x13)

Remove:

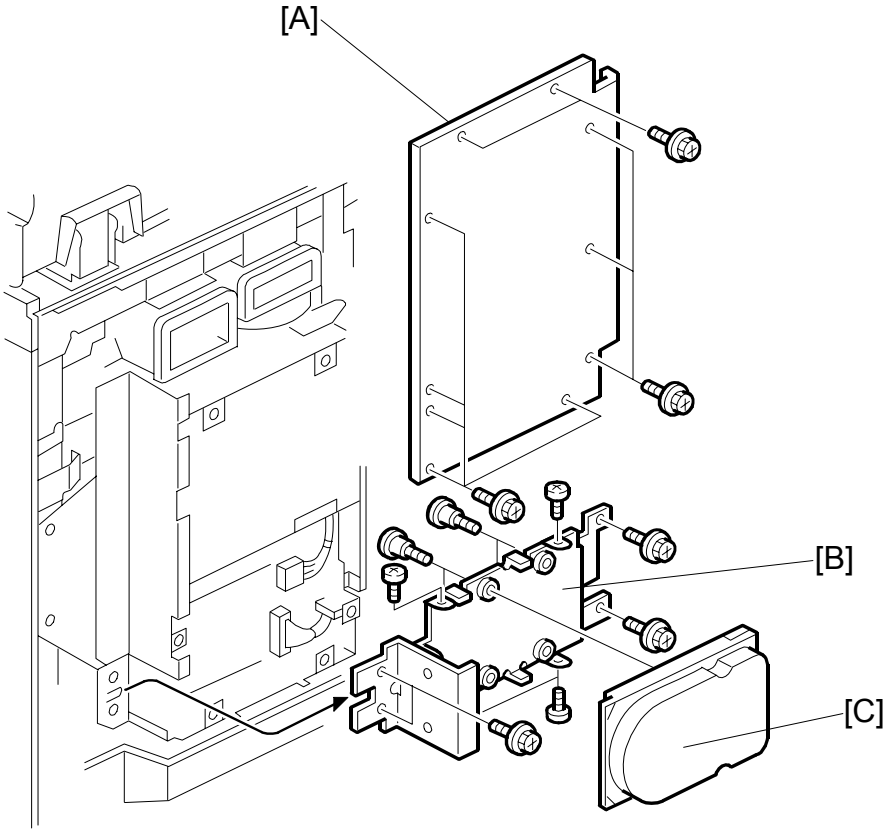
[A] PSU (🔌 x4, 🔩 x7)



3.12.6 HDD

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

B064 Series HDD

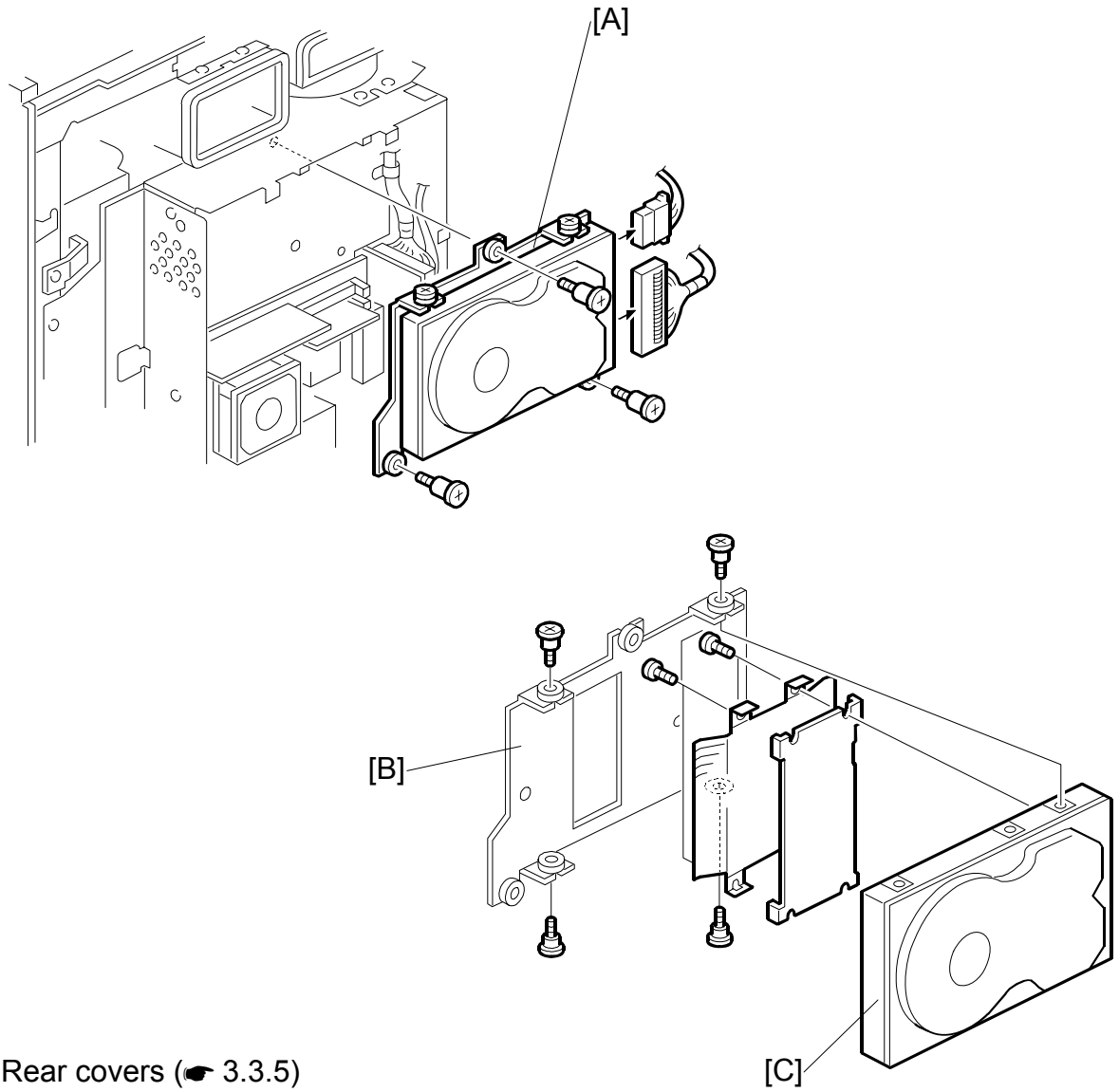


Rear upper cover (☛ 3.3.5)

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

- Format the HDD with SP5832 001. Formatting is not necessary but is strongly recommended.
- Download the stamp data with SP5853.

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)

- Format the HDD with SP5832 001. Formatting is not necessary but is strongly recommended.
- Down load the stamp data with SP5853.

B246/D052 Series HDD

- Disconnect ADF cable

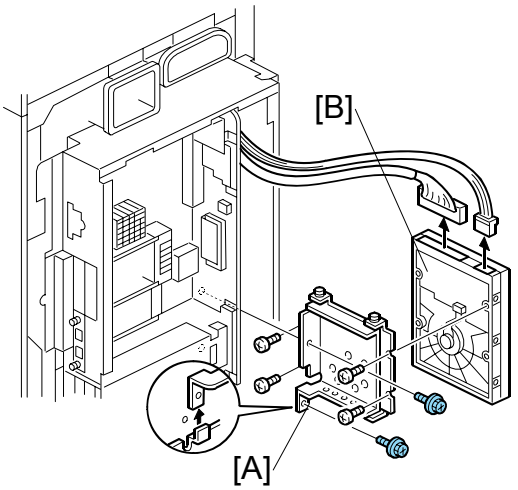
Remove:

- Rear upper cover (☞ x2) (☛3.3.5)
- Rear lower cover (☞ x2) (☛3.3.5)
- Controller box cover (☞ x13)

[A] HDD unit (☞ x2, ☜ x2)

[B] HDD (☞ x4)

- Format the HDD with SP5832 001. Formatting is not necessary but is strongly recommended.
- Down load the stamp data with SP5853.

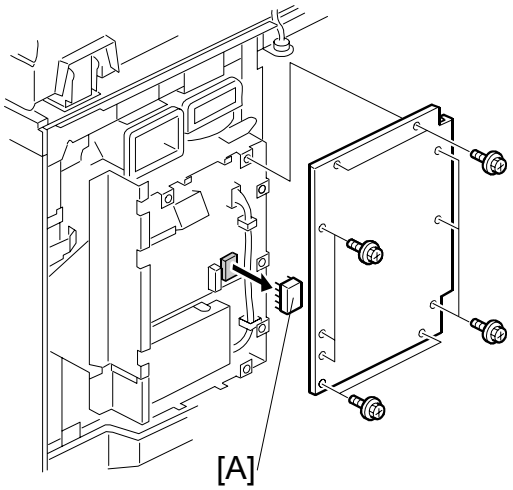


3.12.7 NVRAM

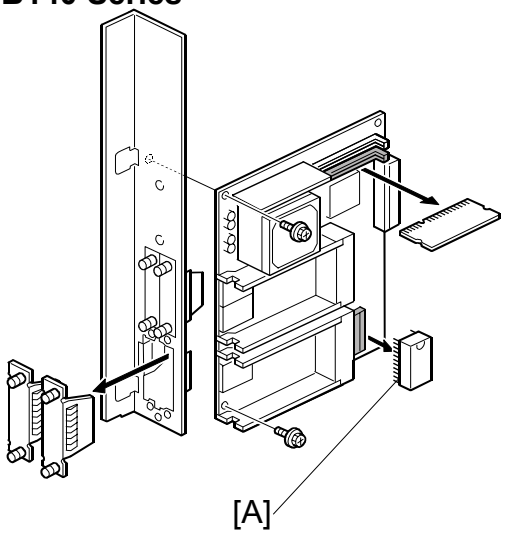
This machine has an electronic counting device that uses software to monitor the number of copies. In addition to the electronic counter of the NVRAM on the controller board, the machine is also equipped with a mechanical counter.

NVRAM: B064 Series, B140 Series

B064 Series



B140 Series



1. Enter the SP mode and print the SMC report.
   - Press Clear Modes ⌧
   - On the operation panel keypad, press ①⓪⑦.
   - 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 or SD 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”.

NVRAM: B246/D052 Series

Before Removing the NVRAM

1. Enter the SP mode and print the SMC report.
   - Press Clear Modes
   - On the operation panel keypad, press 1 0 7.
   - 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 SD card in Slot **C3**.
4. Execute SP5824 (NVRAM Data Upload) to upload the data to the SD card.
5. Switch the machine off and disconnect the power cord.

Removing the NVRAM

Important

- Touch a metal surface to discharge any static build up on your hands or tools before you touch the controller board.
- Work carefully when removing the NVRAM to avoid damaging other components on the controller board or short circuiting the pins of other chips.
- Disconnect ADF cable.

Remove:

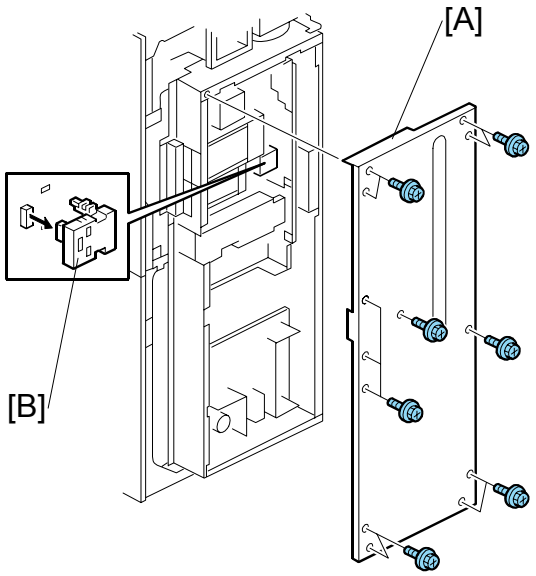
- Rear upper cover (x2) (☛3.3.5)
- Rear lower cover (x2) (☛3.3.5)
- Controller box cover

Remove:

[A] Controller box cover (x13)

[B] NVRAM

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



After Installing the New NVRAM

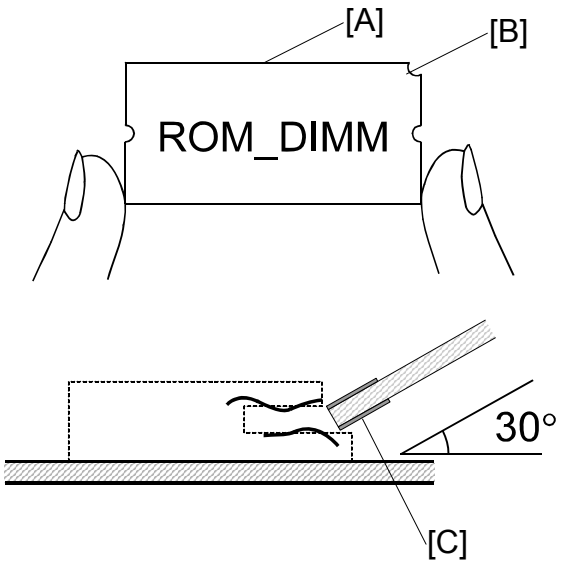
1. Connect the power cord and switch the machine on.
2. Enter the SP mode and execute SP5801 (Memory All Clear).
3. Execute SP5825 (NVRAM Download) to download the data uploaded onto the SD card in SD card slot **C3**.
4. Switch the machine off and on.
5. Execute SP5990 to print another SMC report. Confirm that all the SP settings have been initialized.
6. Execute SP3001-002 (ID Sensor Initialization) to initialize the ID sensor.
7. Execute SP5907 (Plug & Play) and enter the brand and model name of the machine for Windows Plug & Play capability.
8. Also set SP1902 001 (Amount of Fusing Unit Web used so far) to the most recent setting (See the SMC List).
9. For details about SP initial settings, see “Section 5 Service Tables”.

3.12.8 DIMMS

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

⚠CAUTION

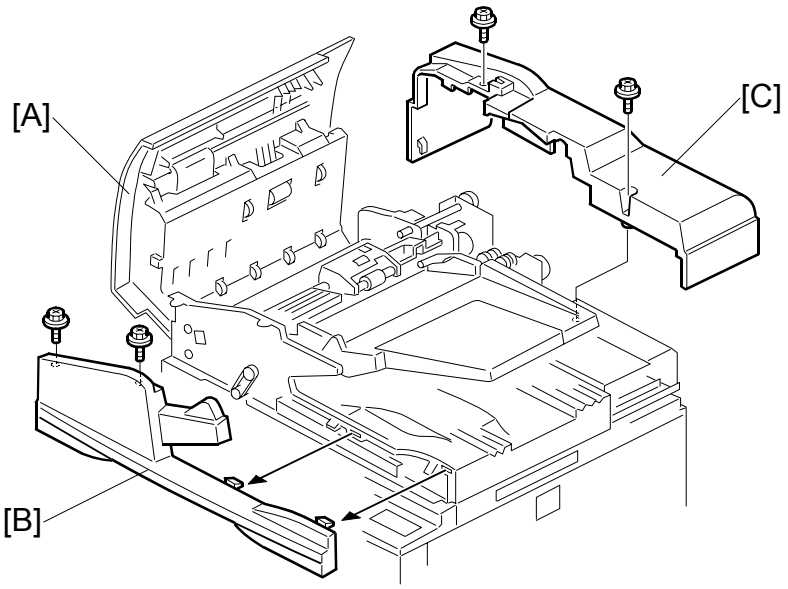
Follow the procedure below to connect the DIMMs to the controller board. Incorrect insertion can damage the controller board or cause a bad connection between the DIMM and controller contacts. If the upper contact is pressed in and bent, the resulting poor connection could cause the entire system to 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.

3.13 ADF

3.13.1 ADF COVERS

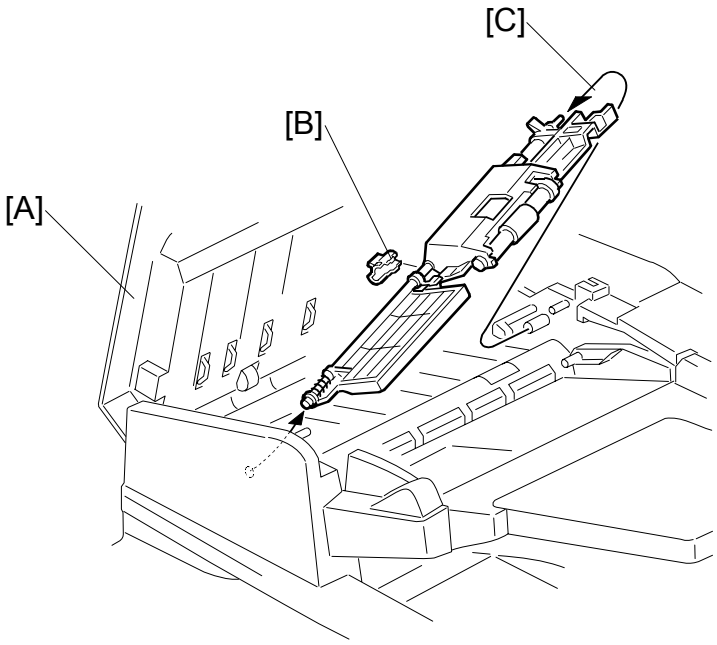


Open the feed cover [A] (🔩 x 1, ✋ x 2, ground wire x 1).

[B]: Front cover (🔩 x 2)
- Press down on the tabs to remove.

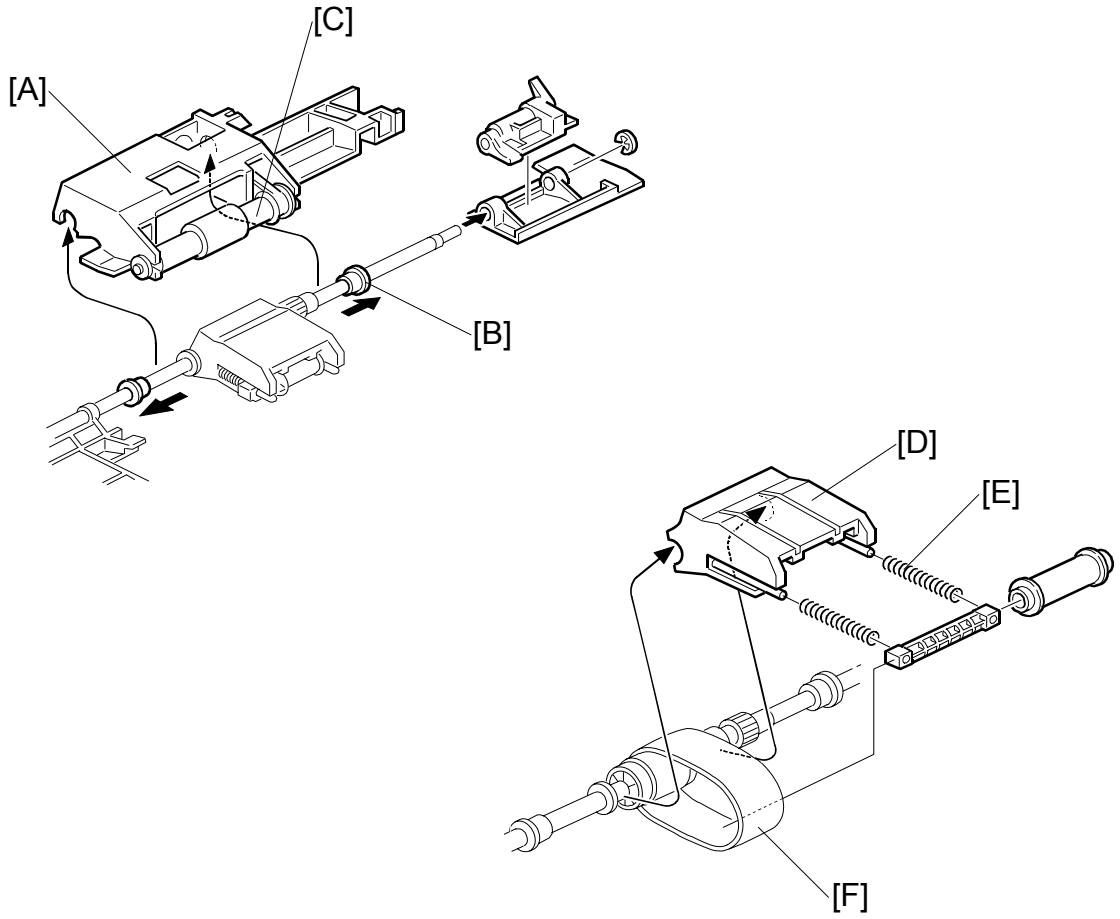
[C]: Rear cover (🔩 x 2)
- Press down on the tabs to remove.

3.13.2 FEED UNIT



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.

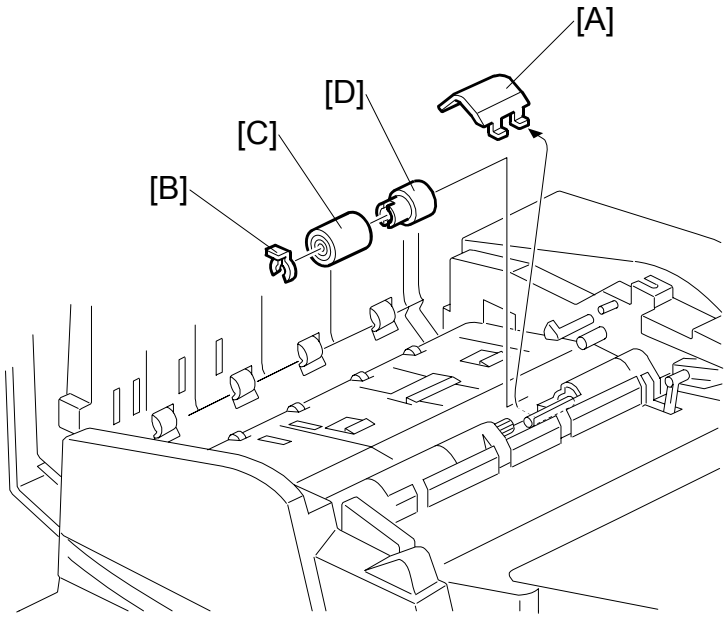
3.13.3 FEED BELT AND PICK-UP ROLLER



1. Remove the feed unit (☛ 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



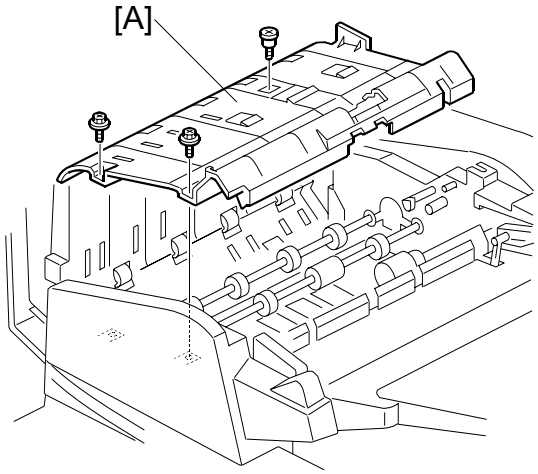
Open the feed cover.

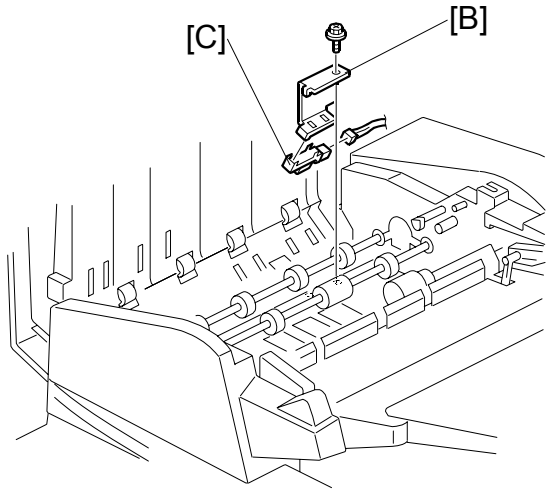
Feed unit (☛ 3.11.8)

[A]: Separation roller cover
- Use the tip of a screwdriver to push up the cover.

[B]: C-Clamp (x 1)
[C]: Separation roller
[D]: Torque limiter clutch

3.13.5 REGISTRATION SENSOR



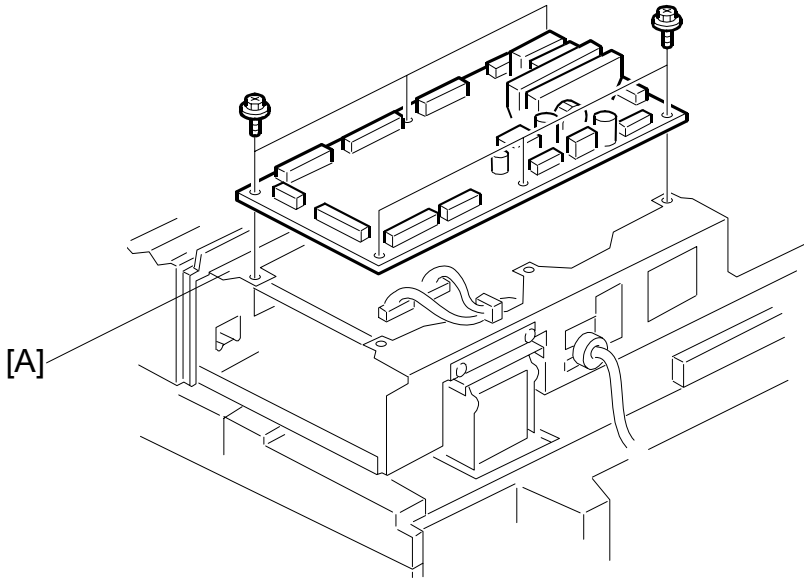


Open the feed cover.

Feed unit (☛3.11.8)

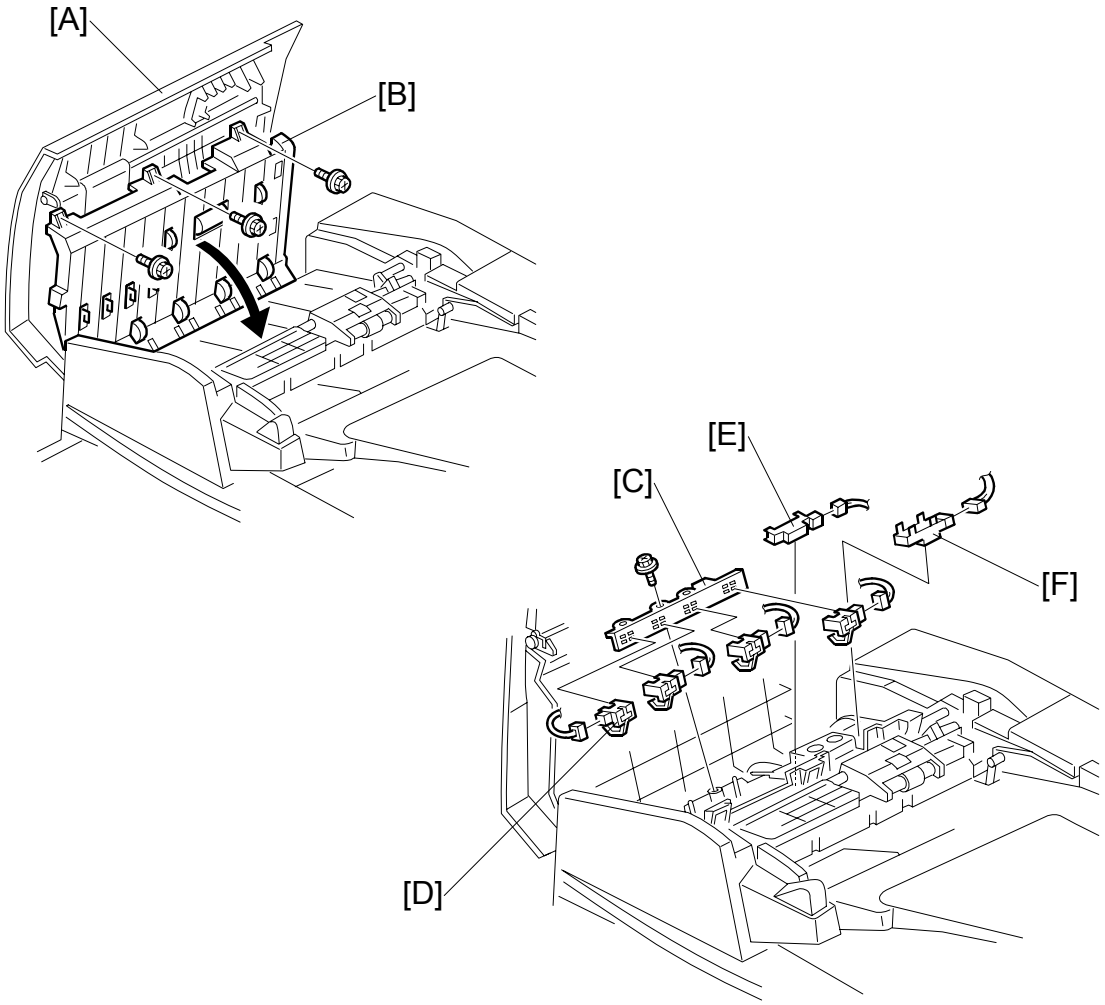
[A]: Guide plate (🔩 x 3)
[B]: Registration sensor bracket (🔩 x 1)
[C]: Registration sensor (✋ x 1)

3.13.6 ADF CONTROL BOARD



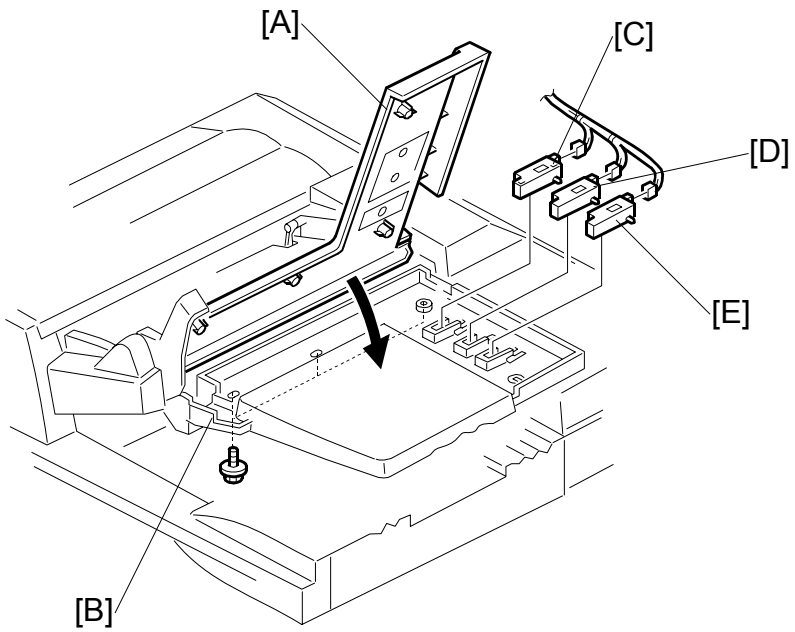
ADF rear cover (☛ 3.13.1)
[A]: ADF board (x 2, x 14)

3.13.7 ORIGINAL WIDTH, INTERVAL, AND SKEW CORRECTION SENSORS



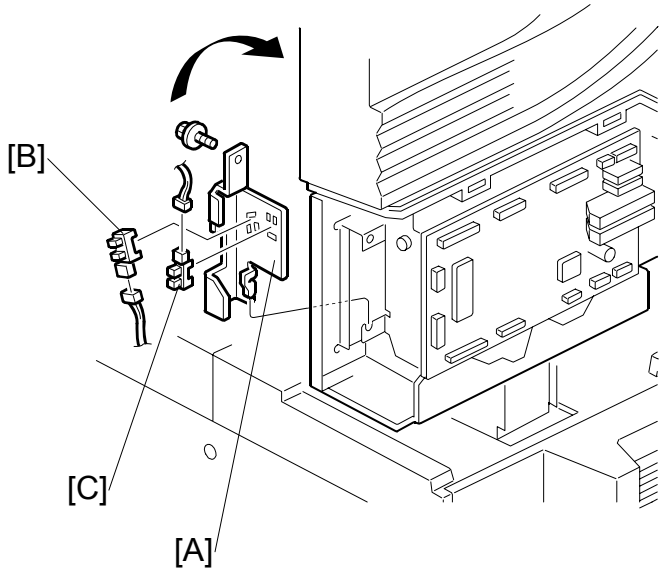
[A]: Open the feed cover.
[B]: Guide plate (x 3)
[C]: Width sensor guide plate (x 1)
[D]: Original width sensors (x 4)
[E]: Interval sensor (x 1)
[F]: Skew correction sensor (x 1)

3.13.8 ORIGINAL LENGTH SENSORS



[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

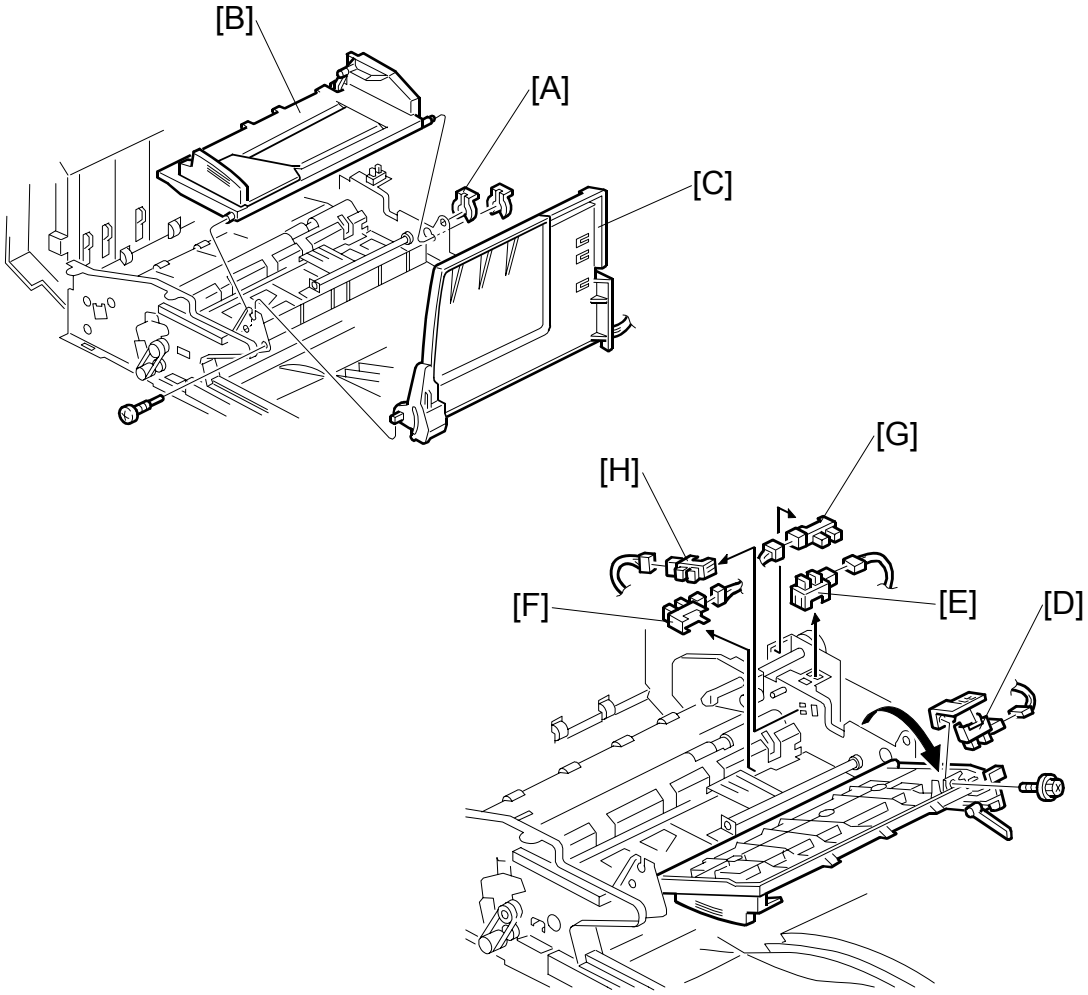


Open the ADF.

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

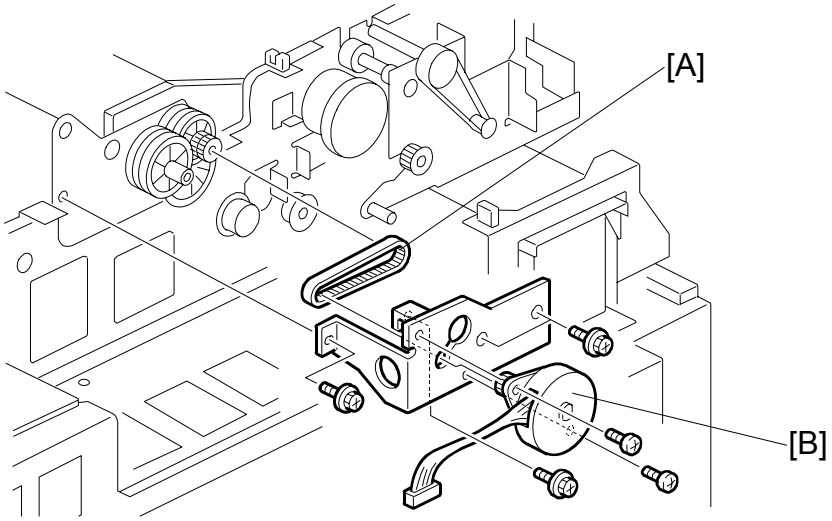


Open the feed cover.

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

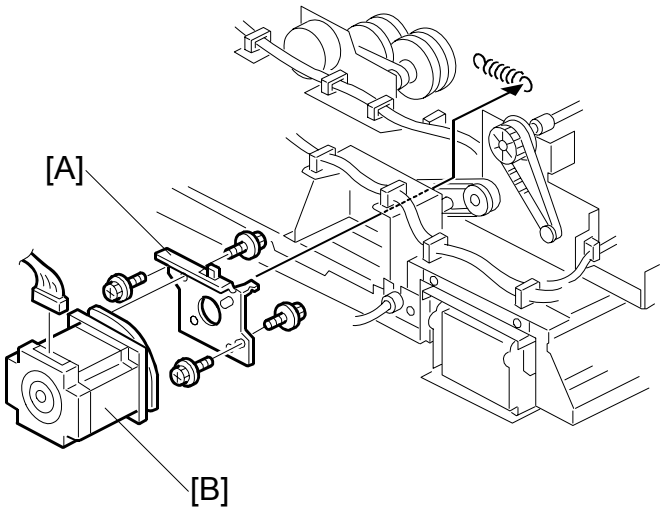


Open the feed cover.

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)

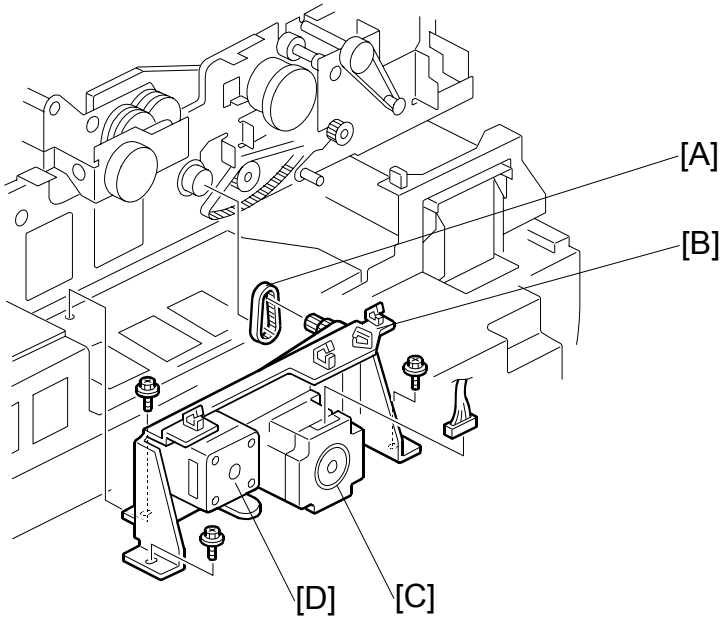
3.13.12 FEED MOTOR



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



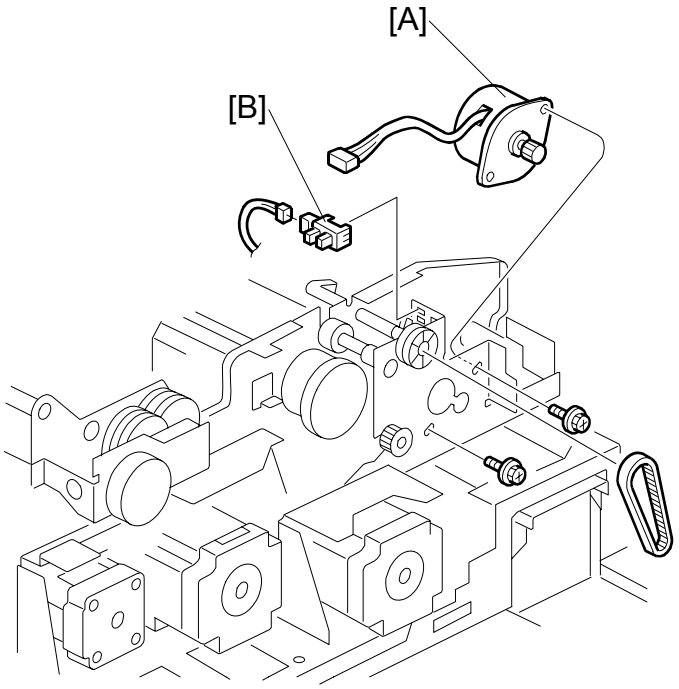
Open the feed cover.

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



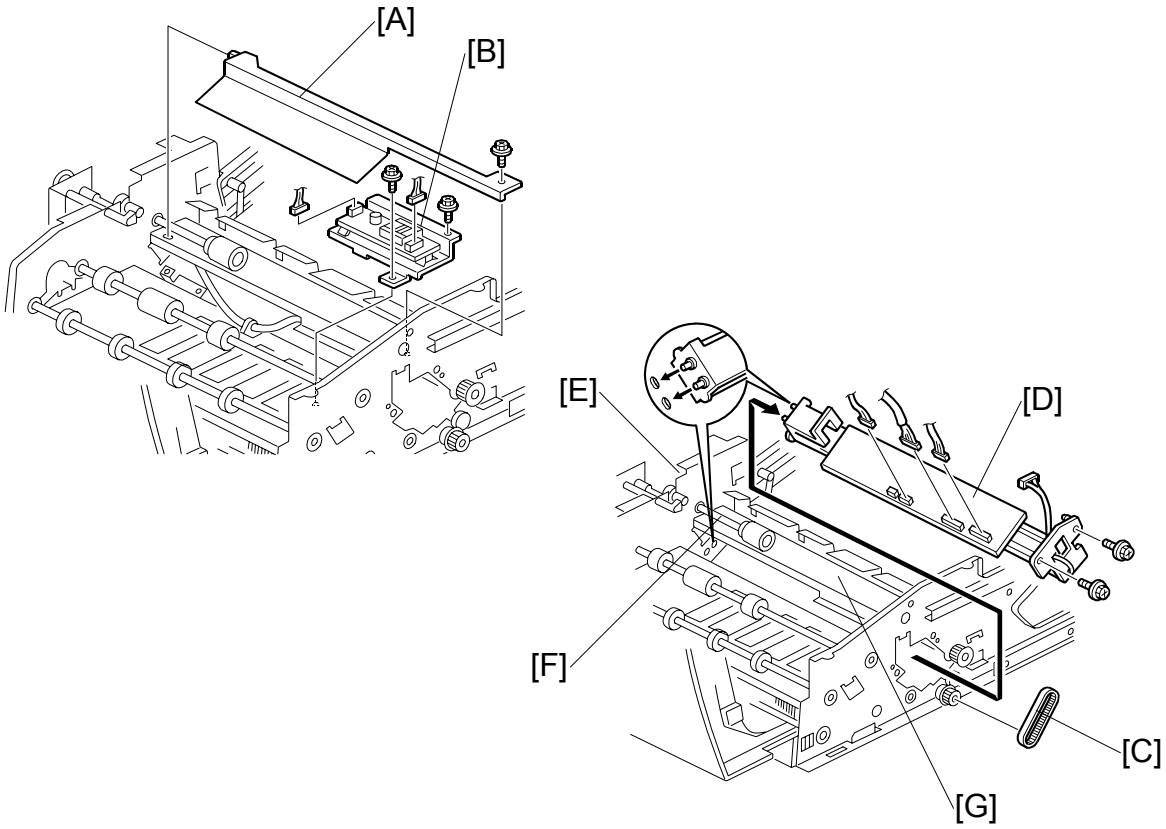
Open the feed cover.

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.

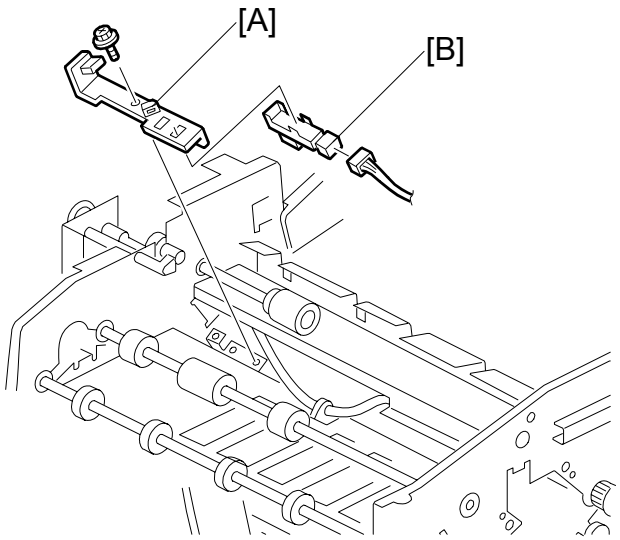
Open the feed cover.
Feed unit (☛ 3.11.8)
Guide plate (☛3.11.15)

NOTE: To avoid an accidental static discharge which could damage the circuits of the CIS power supply board, touch a metal surface before touching the board.

[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

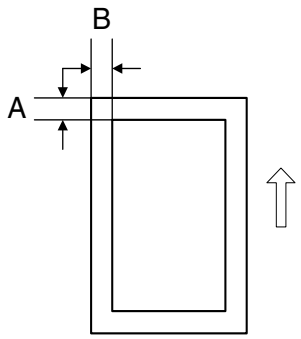
3.14.1 PRINTING

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 ± 2mm.
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	**Japan Only**
By-pass Tray	SP1002-005	0±1.5
LCT	SP1002-006	0±1.5
Duplex Tray	SP1002-007	0±1.5



Blank Margin

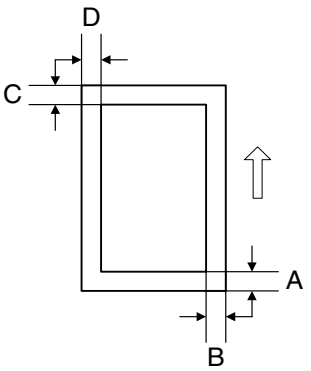
NOTE: If the leading edge/side-to-side registration cannot be adjusted within specifications, adjust the leading/left side edge blank margin.

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)

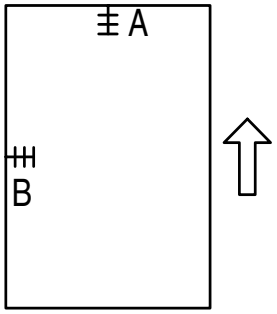
3.14.2 SCANNING

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

NOTE: 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

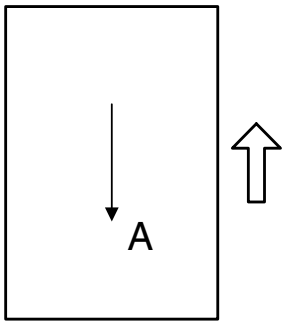
SP No.	Name	Initial	Comment
SP4010	Scanner Leading Edge Registration	0	A positive value shifts the image away from the leading edge, a negative value shifts it toward the leading edge.
SP4011	Scanner Side-to-Side Registration	0	A positive value shifts the image toward the right edge, a negative value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

Magnification

Use an S-5-S 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: ±2%.



A: Main scan magnification

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: ±0.9%.

3.14.3 ADF SCANNING ADJUSTMENTS

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).

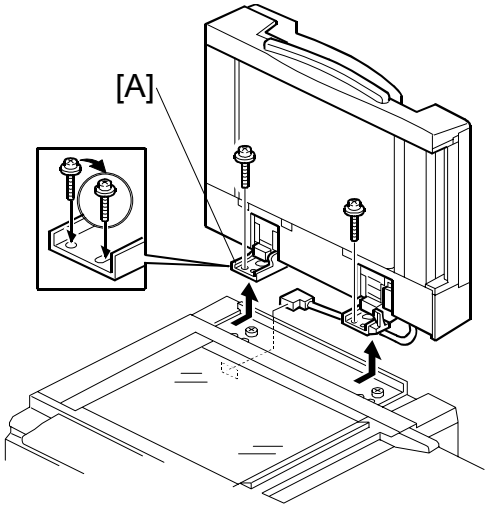
1. Adjust the scanner stopping position with SP4018-003 (just input a new value).
2. Store this value in the machine with SP4018-004.
3. Adjust the ADF registration for the front side scan with SP6006-003.
4. Make a test copy to check that the problem has been solved.

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

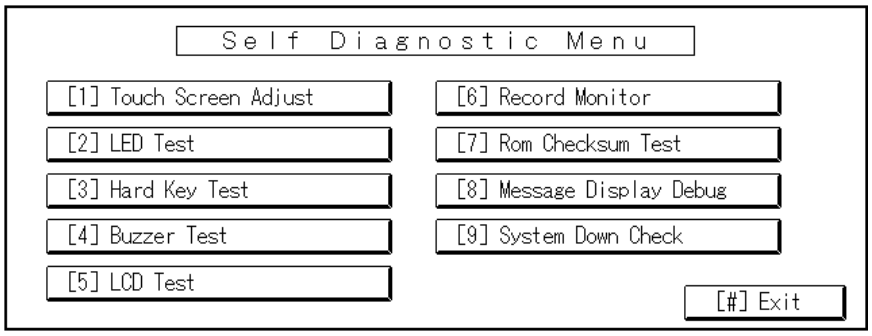
NOTE: Normally, the interval sensor detects the leading edge of small originals (B6, A5, HLT), or originals for duplex copying, and delays the start of the scanning roller for the prescribed number of pulses to buckle the paper and correct skew. This feature can be switched on for all paper sizes with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

3.15 TOUCH SCREEN CALIBRATION

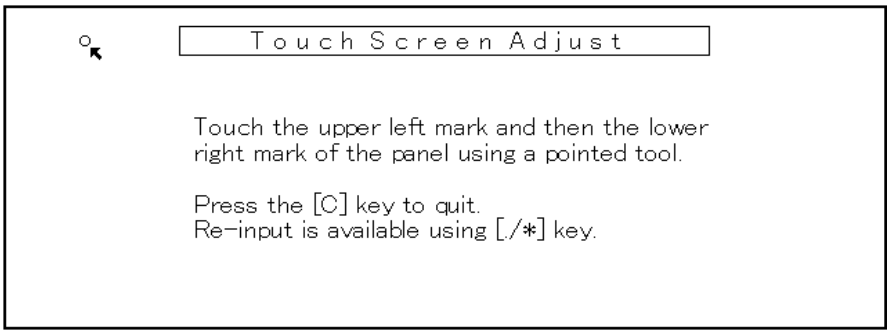
After clearing the memory, or if the touch screen detection function is not working correctly, follow this procedure to calibrate the touch screen.

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 ①⑨⑨③, and then press C/⊘ 5 times to open the Self-Diagnostics menu.



2. On the touch screen press “Touch Screen Adjust” (or press ①).



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

TROUBLESHOOTING

REVISION HISTORY		
Page	**Date**	**Added/Updated/New**
1	04/18/2008	New Information – Section updated to support D052 Series
71 ~ 72	02/05/2007	Updated Information – SP876
75	02/05/2007	Updated Information – SP876 More Information

4. TROUBLESHOOTING

4.1 OVERVIEW

This section contains the troubleshooting procedures for the B064 Series, B140 Series, and B246 Series machines.

A full list of SC codes is given for each series. When you do troubleshooting on a machine, refer to the correct table:

- B064 Series SC Code Table: **Section 4.2**
- B140/B246/D052 Series SC Code Table: **Section 4.3**

Important:

The general information in this “Overview” section applies to the B064 Series, B140 Series, and B246 Series machines.

- “Other Problems (B064/B140/B246/D052 Series)” also applies to all the machines of these three Series.

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

4.1.2 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 Section "5. Service Tables".
SP5804	Output Check	Switches electrical components one by one for testing. Refer to the detailed tables in Section "5. Service Tables".
SP5990	SMC Printout	Prints the SMC Report. Some SC codes (logged SPs) are shown only in the SMC Report and do not show on the operation panel display.
SP7801	ROM Version Display.	Displays the version number of the main machine and connected peripherals.
SP7832	Self-Diagnostic Result Display	Execute this SP to display a list of error codes. No errors have occurred if nothing is displayed.
SP7911 (B064) SP7801 (B140/B246)	Firmware Version	Displays the current numbers of all versions of the firmware in the system.
SP7990 (B064) SP7403 (B140/B246)	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

	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.	• Use the correct card
02	Download Error E02 Power off/on	Controller ROM update error 2. Error occurs during ROM update program initialization.	• 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.	• 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)	• 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.	• 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.	• Turn the machine power off/on. • Set controller DIPSW-1 to ON to force the machine to write to ROM. • If you cannot force the machine to write, replace the controller board.
19	Download Error E19 Power off/on	Controller ROM update error 7 Schedule data is unclear.	• Software defective
20	Down Error E20 Power Off/On	System error 1 (+SC991) The physical address cannot be mapped. Software/hardware is defective	• 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.	• Cycle the machine off/on and re-try. • Replace RAM • Replace the controller board

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

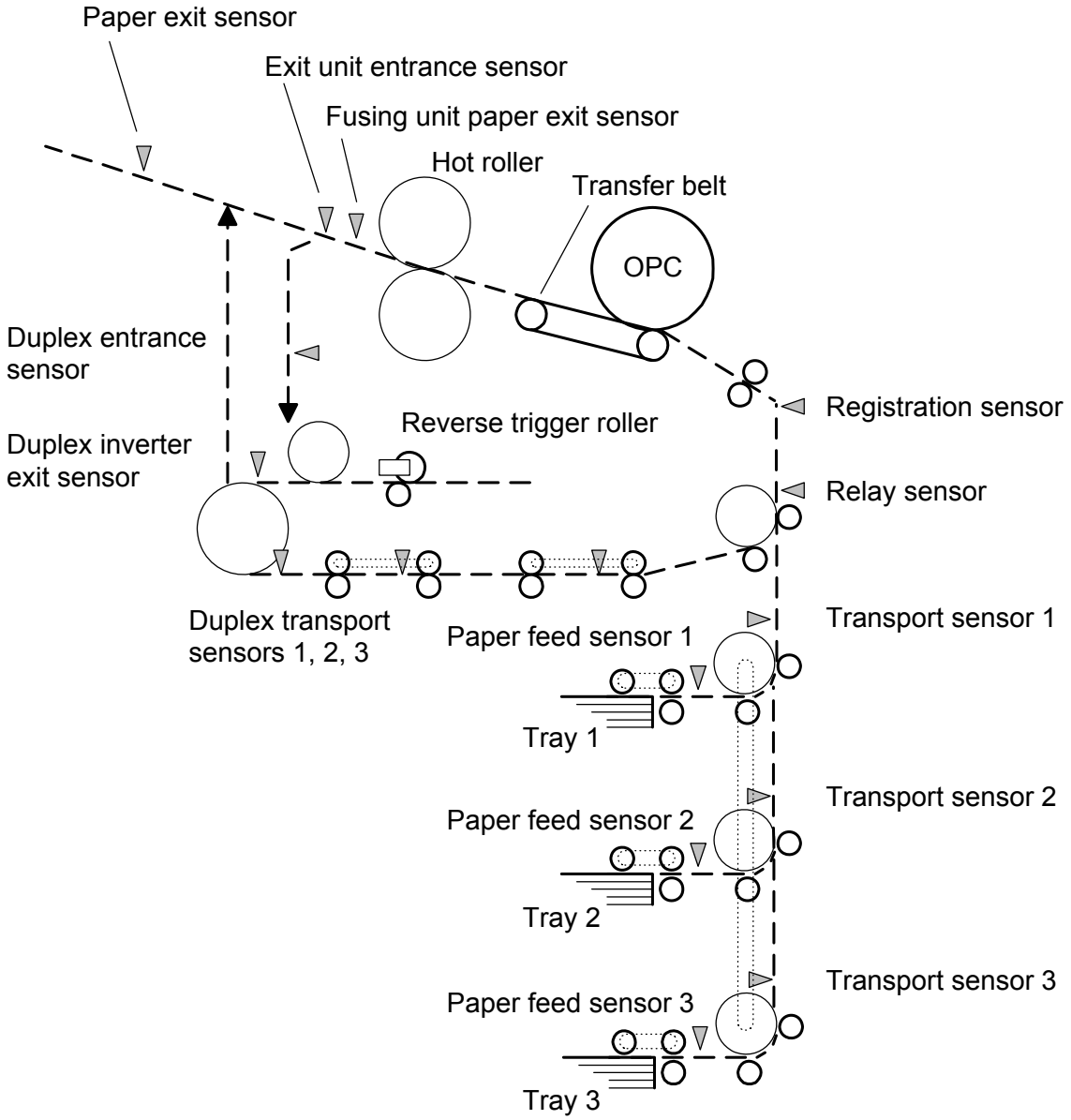
	Display	Details	Recovery
42	Download Error E42 Module ID Card No. xx/xx	Download result failure 3 Operation panel or language download failed. For this error, sometimes the message may not be displayed.	• Cycle the machine off/on and re-try
43	Download Error E43 Module ID Card No. xx/xx	Download result 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.	• Turn the machine power off/on. • Set controller DIPSW-1 to ON to force the machine to write • If you cannot force the machine to write, replace the controller board.
50	No Valid Data E50	Download invalid The source data for the update could not be authenticated.	• Use the correct SD card.
51	(no display)	Remote ROM update failure 1 The source data for the ROM update is corrupted because the machine is operating and an SC code has been issued.	• Turn the machine power off/on and try again.
52	(no display)	Remote ROM update failure 2 The source data received for the ROM update is corrupted; it failed a SUM check due to its abnormal length.	• Try again with the correct data.
53	(no display)	Download result failure 6 The previous download in progress was cancelled.	• Do the download procedure again.

4.1.4 JAM DETECTION

SENSOR LOCATIONS

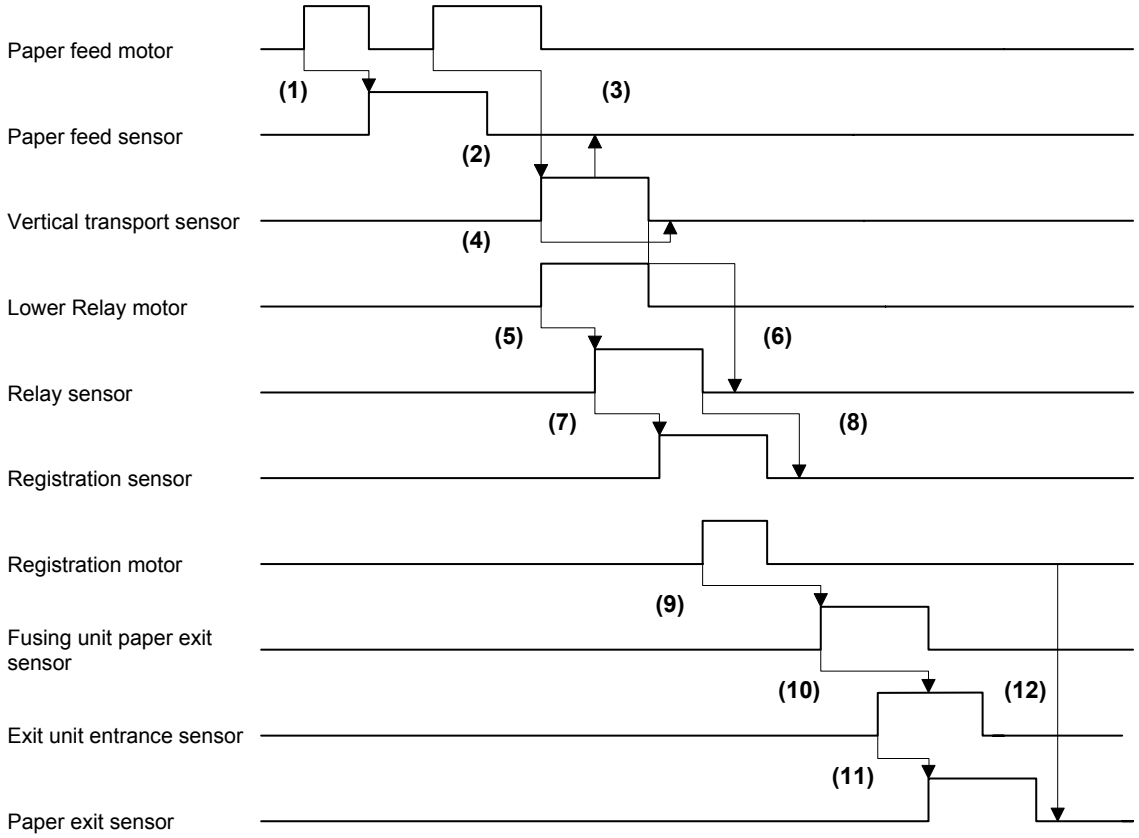
The flashing portion of the jam position display on the operation panel indicates the location of the paper jam, then lights if any paper remains after jam removal. However, paper may remain in the paper path at locations other than where the jam was removed.

The illustration below shows the locations of the jam sensors.



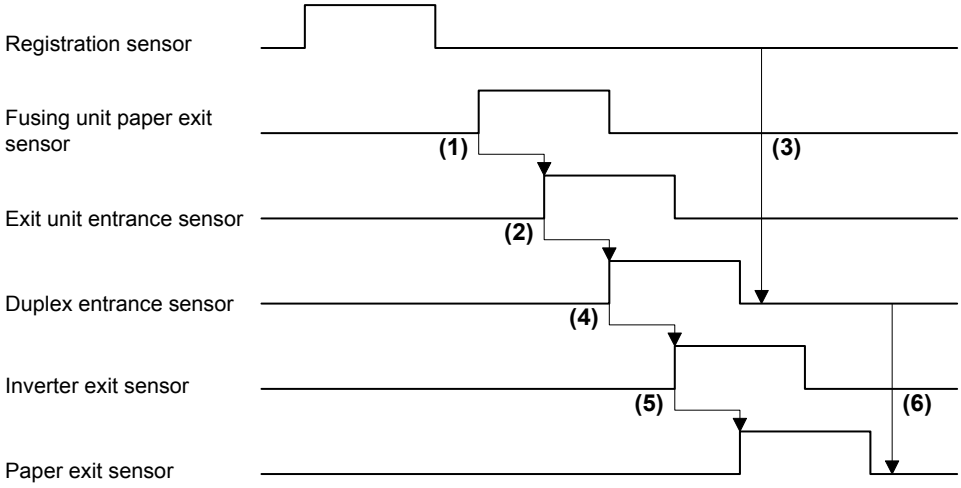
4.1.5 TIMING CHARTS

Feed, Transport, Feed Out: Face-up



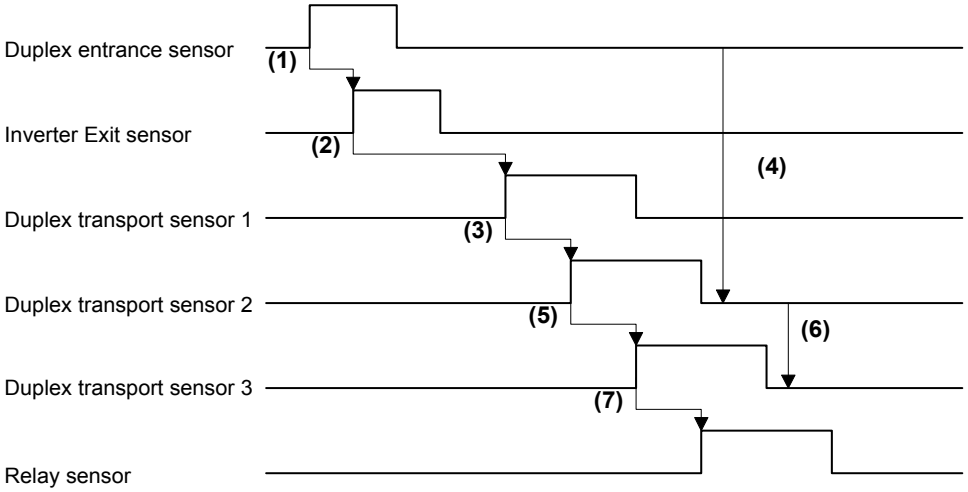
(1): Paper feed motor ON → Paper feed sensor does not switch ON at the correct time.
(2): Paper feed motor ON → Vertical transport sensor does not switch ON at the correct time.
(3): Vertical transport sensor ON → Paper feed sensor does not switch OFF at the correct time.
(4): Vertical transport sensor ON → Vertical transport sensor does not switch OFF at the correct time.
(5): Lower relay motor ON → Relay sensor does not switch ON at the correct time.
(6): Vertical transport sensor OFF → Relay sensor does not switch OFF at the correct time.
(7): Relay sensor ON → Registration sensor does not switch ON at the correct time.
(8): Relay sensor OFF → Registration sensor does not switch OFF at the correct time.
(9): Registration motor ON → Fusing unit paper exit sensor does not switch ON at the correct time.
(10): Fusing unit paper exit sensor ON → Exit unit entrance sensor does not switch ON at the correct time.
(11): Exit unit entrance sensor ON → Paper exit sensor does not switch ON at the correct time.
(12): Registration motor OFF → Paper exit sensor does not switch OFF at the correct time.

Transport, Inverter, Feed Out: Face-down



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

Duplex Transport



(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.

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 GW controller software. If downloading this software is interrupted, the program stored in the machine may be corrupted. Because of this, it may not be possible to restart the downloading program. (In addition, if the GW controller software cannot be downloaded, other software on other 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.

4.2.2 B064 SERIES SC CODE DESCRIPTIONS

SC100: Scanning System

SC No.		Symptom	Possible Cause
101	D	Exposure Lamp Error	
		At trigger on, the lamp was not detected on.	• 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	Scanner home position error 1	
		The scanner HP sensor does not detect the on condition during initialization or copying.	• 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	Scanner home position error 2	
		The scanner HP sensor does not detect the off condition during initialization or copying.	• 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	Scanner home position error 3	
		The scanner home position sensor does not detect the on condition during original scanning.	• 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	Scanner home position error 4	
		The scanner home position sensor does not detect the off condition during original scanning.	• 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	SBU auto adjust error	
		Automatic adjustment of the SBU fails when the machine is switched on.	• 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	SBU transmission error	
		After the SBU switches on, the BCU detects one of the following conditions on the SBU: • 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.	• 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

SC No.		Symptom	Possible Cause
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.)	• 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
183	D	CIS auto adjust error	
		Automatic adjustment of the CIS unit failed.	• CIS unit defective. • CIS exposure glass dirty. • White roller dirty or installed incorrectly. • PSU power supply (+5V, –12V) is abnormal. • IPU defective
184	D	CIS transmission error	
		When the CIS is powered on, the ADF detects one of the following abnormal conditions on the CIS unit: • 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.	• 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.	• 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.	• 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: • 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.	• 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.	• 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.

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.	• 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.	• Potential sensor defective • Potential sensor harness disconnected • Potential sensor connector defective or disconnected • BCU defective • OPC connector defective • Development power pack defective

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±10 + VL + 130V)	• Potential sensor defective • Potential sensor harness disconnected • Potential sensor connector defective or disconnected • BCU defective • OPC connector defective • Development power pack defective • Charge corona unit worn out, dirty
314	C	Potential sensor calibration error 4	
		During drum potential sensor calibration when adjusting the drum potential (VH) for LD power adjustment, the first time the VH pattern is made, the drum potential sensor detects that VH is more than 500V: VH > |–500 + VL + 130| V	• Potential sensor defective • Potential sensor harness disconnected • Potential sensor connector defective or disconnected • BCU defective • OPC connector defective • LD defective
315	C	Potential sensor calibration error 5	
		During drum potential sensor calibration, when –100V is applied to the drum, the output value is out of the prescribed range.	• Potential sensor defective • Potential sensor harness disconnected • Potential sensor connector defective or disconnected • BCU defective • OPC connector defective • Development power pack defective
316	C	Potential sensor calibration error 6	
		During drum potential sensor calibration, when –800V is applied to the drum, the output value is out of the prescribed range.	• Potential sensor defective • Potential sensor harness disconnected • Potential sensor connector defective or disconnected • BCU defective • OPC connector defective • Development power pack defective
317	C	Potential sensor calibration error 7	
		During drum potential sensor calibration, when VL is adjusted, the pattern surface potential VL pattern is not within range 0V ~ –400V. (VL is the potential after exposing a white pattern.)	• Potential sensor defective • Potential sensor harness disconnected • Potential sensor connector defective or disconnected • BCU defective • OPC connector defective • Charge corona power pack defective • Development power pack defective
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.	• 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.	• 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.	• 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.	• 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.	• 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 (Vt), measured during each copy cycle, is detected 10 times at one of the following levels: Vt = 0.5 volts or lower Vt = 4.0 volts or higher	• TD sensor defective • TD sensor harness disconnected • TD sensor connector disconnected or defective • BCU defective • Toner bottle motor defective **Note:** When the TD sensor is defective, the toner supply is controlled using pixel count and the ID sensor.

SC No.		Symptom	Possible Cause
341	C	TD sensor adjustment error 1	
		During the TD sensor auto adjustment, the TD sensor output voltage (Vt) is 2.5 volts or higher even though the control voltage is set to the minimum value (PWM = 0) When this error occurs, SP2-906-1 reads 0.00V. Note: This SC is released only after correct adjustment of the TD sensor has been achieved. Switching the machine off and on will cancel the SC display, but does not release ID sensor toner supply.	• TD sensor defective • TD sensor harness disconnected • TD sensor connector disconnected or defective • BCU defective • Toner bottle motor defective **Note**: When the TD sensor is defective, the toner supply is controlled using pixel count and the ID sensor.
342	C	TD sensor adjustment error 2	
		During the TD sensor auto adjustment, the TD sensor output voltage (Vt) does not enter the target range (3.0 ± 0.1V) within 20 s. When this error occurs, the 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.	• TD sensor defective • TD sensor harness disconnected • TD sensor connector disconnected or defective • BCU defective
345	D	Development output abnormal	
		The high voltage applied to the development unit is detected 10 times higher than the upper limit (45%) of PWM.	• Development power pack defective • Development bias connection defective • Development bias connector disconnected or defective
350	C	ID sensor error 1	
		One of the following ID sensor output voltages was detected twice consecutively when checking the ID sensor pattern. Vsp ≥ 2.5V Vsg < 2.5 Vsp = 0V Vsg = 0	• 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	ID sensor error 2	
		The ID sensor output voltage is 5.0V and the PWM signal input to the ID sensor is 0 when checking the ID sensor pattern.	• ID sensor defective • ID sensor harness disconnected • ID sensor connector defective • BCU defective • Defect during ID sensor pattern writing • Charge power pack defective • ID sensor dirty

SC No.		Symptom	Possible Cause
352	C	ID sensor error 3	
		For 2 s during the ID sensor pattern check, the ID sensor pattern edge voltage is not 2.5V or the pattern edge is not detected within 800 ms.	• ID sensor defective • ID sensor harness disconnected • ID sensor connector defective • BCU defective • Defect during ID sensor pattern writing • 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. • Vsg < 4.0V when the maximum PWM input (255) is applied to the ID sensor. • Vsg ≥ 4.0V when the minimum PWM input (0) is applied to the ID sensor.	• 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	ID sensor error 5	
		20 s after the start of automatic adjustment, Vsg cannot be adjusted to target (4.0 ± 0.2V).	• 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	ID sensor pattern voltage error	
		Drum potential sensor output is out of the target range (-100 - -400V) when reading the drum voltage for the ID sensor pattern.	• 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

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.	• 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.	• 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.	• 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.	• 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.	• 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.	• 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.	• 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.	• 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.	• Toner collection motor defective • Motor connector disconnected

SC500: Feed, Transport, Duplexing, and Fusing Systems

SC No.		Symptom	Possible Cause
501	B	Tray 1 lift malfunction	
		• The lift sensor is not activated within 10 seconds after the tray lift motor starts lifting the bottom plate. • Paper height sensor actuator does not move away from the sensor for 4 counts.	• 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	Tray 2 lift malfunction	
		• 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.	• 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	Tray 3 lift malfunction	
		• 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.	• Tray lift motor defective or poor connection • Lift sensor defective or poor connection
504	B	Tray 4 lift malfunction	
		Japan only.	
507	B	LCT feed motor malfunction	
		One of the following conditions is detected: • The LD signal from the feed motor is detected abnormal for 50 ms after the motor switches on. • At power on, the motor is detected loose or disconnected.	• Feed motor defective • Feed motor connector disconnected • Obstacle interfering with operation of motor
510	B	LCT tray malfunction	
		One of the following conditions is detected: • When the bottom plate is lifted, the upper limit sensor does not come on for 18 s. • When the bottom plate is lowered, the lower limit sensor does not come on for 18 s. • After lift begins, the upper limit sensor does not switch on before the pick-up solenoid switches on. • The paper end sensor switches on during lift and the upper limit sensor does not switch on for 2.5 s, and a message prompts user to reset paper.	• Tray lift motor defective or connector disconnected • Lift sensor defective or disconnected • Pick-up solenoid defective or disconnected • Paper end sensor defective

SC No.		Symptom	Possible Cause
515	B	Tandem rear fence motor error	
		One of the conditions is detected: • 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.	• Rear fence motor defective or poor connection • Paper or other obstacle trapped between tray and motor • Motor mechanical overload • Return sensor or HP sensor defective or dirty
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.	• Side fence motor defective or poor connection • Motor mechanical overload • Side fence positioning sensor defective or dirty
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.	• Paper or other obstacle has jammed mechanism • Sensor connector disconnected or defective • Sensor defective
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.	• Paper or other obstacle has jammed mechanism • Sensor connector disconnected or defective • Sensor defective
541	A	Fusing thermistor open	
		• The fusing temperature detected by the thermistor is below 7°C for 35 seconds. • The center thermistor (non-contact) abnormal.	• Thermistor open • Thermistor connector defective • Thermistor damaged or warped • Fusing temperature –15% less than the standard input voltage
542	A	Fusing temperature warm-up error	
		• 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.	• Fusing lamp disconnected • Thermistor warped or installed incorrectly • Thermostat operating
543	A	Fusing lamp overheat error 1 (software)	
		• 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.	• PSU defective • BCU defective
544	A	Fusing lamp overheat error 1 (hardware)	
		The BCU detects an overheat error even if the protection in the software does not work.	• PSU defective • BCU defective

SC No.		Symptom	Possible Cause
545	A	Fusing lamp overheat error 2	
		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).	• Fusing thermistor out of position
547	D	Zero cross signal malfunction	
		One of the following conditions is detected 10 times: • When the main switch is on, the frequency measured by the number of zero cross signals for 500 ms is larger than 66Hz or smaller than 45 Hz. • The interval between one zero cross signal and the next is 7.5 ms or shorter 3 times consecutively for 500 ms.	• Noise on the ac power line
550	A	Fusing Web End	
		Web end detected 5 times within 500 ms and web motor continues to rotate 40 s. If web end is detected for another 400 ms, then the SC is logged.	• Web end (requires replacement) • Web end sensor defective **Note:** After replacing the web with a new one, reset SP1902 001 to 0 to release SC550.
590	D	Toner collection motor error	
		The toner collection motor sensor output does not change for 3 seconds while the toner collection motor is on.	• Toner collection motor defective • Motor drive defective • Toner collection motor sensor connector defective • Motor overload
599	D	1-bin Exit Motor Error (**should only occur in Japanese models**)	
		The transport lock sensor output does not change within 300 ms after the motor switches on.	• Motor overload • Motor drive defective

SC600: Data Communication

SC No.		Symptom	Possible Cause
601	D	Communication error between BCU and scanner unit	
		• 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.	• Serial line connection unstable • External noise on the line
610	D	BCU ↔ 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.	• Serial line connection unstable • External noise on the line
611	D	BCU ↔ ADF communication/break reception abnormal	
		During communication a break (Low) signal was received from the ADF.	• Serial line connection unstable • Harness disconnected or defective
612	D	BCU ↔ ADF communication/command abnormal	
		An command that cannot be executed was sent from the main machine to the ADF.	• A software error, result of an abnormal procedure.
620	D	BCU ↔ 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.	• Serial line connection unstable • External noise on the line
621	D	BCU ↔ Finisher communication/break error	
		During communication with the finisher MBX, the BCU received a break (Low) signal from the finisher.	• Serial line connection unstable • External noise on the line
623	D	BCU ↔ Tray 1~3 communication/timeout error	
		After 1 data frame is sent to the trays, an ACK signal is not received within 100 ms, and is not received after 3 retries.	• Serial line connection unstable • External noise on the line
624	D	BCU ↔ Tray 1~3 communication/break reception error	
		During communication with the finisher trays, the BCU received a break (Low) signal.	• Serial line connection unstable • External noise on the line
626	D	BCU ↔ LCT communication/timeout error	
		After 1 data frame is sent to the LCT, an ACK signal is not received within 100 ms, and is not received after 3 retries.	• Serial line connection unstable • External noise on the line
627	D	BCU ↔ LCT communication/break reception error	
		During communication with the LCT, the BCU received a break (Low) signal.	• 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.	• The serial line from the device to the copier is unstable, disconnected, or defective.
633	B	Key/card counter device error 2	
		During communication with the device, the BCU received a break (Low) signal.	• The serial line from the device to the copier is unstable, disconnected, or defective.
634	B	Key/card counter device error 3	
		After installation of the device, a message alerts user to a backup RAM error.	• Device control board defective • Device control board backup battery defective
635	B	Key/card counter device error 4	
		After installation of the device a message alerts user to a battery voltage abnormal error.	• Device control board defective • Device control board backup battery defective
640	C	BCU ↔ Controller data transfer error 1	
		Data is sent from the BCU to the controller, but the transmission causes a checksum error.	• The error is logged but the machine can continue to operate.
641	C	BCU ↔ Controller data transfer error 2	
		Data is sent from the BCU to the controller, but the transmission causes a frame error.	• The error is logged but the machine can continue to operate.
670	D	Engine startup error	
		• Engine does not respond within 30 s after power on. • Engine down detected suddenly during power on and warmup.	• BCU installation incorrect • BCU defective • Sudden communication reset occurred between the BCU and the controller.
672	D	Controller startup error	
		• 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.	• Controller stalled • Controller installed incorrectly • Controller board defective • Operation panel harness disconnected or defective
690	D	GAVD Block I2 bus error	
		The register for this block is set for an error.	• IPU defective
691	D	GAVD FCI Block I2 bus error	
		The register for this block is set for an error.	• IPU defective
692	D	CDIC GAVD Block I2 bus error	
		The register for this block is set for an error.	• IPU defective

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.	• 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	
		• 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.	• 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.	• Finisher transport motor defective • Transport motor harness disconnected, or defective • Finisher main board defective
722	B	Finisher jogger motor error	
		• The finisher jogger HP sensor remains de-activated for more 1,000 pulses when returning to home position. • The finisher jogger HP sensor remains activated for more than 1,000 pulses when moving away from home position.	• Jogger HP sensor defective • Jogger mechanism overload • Jogger motor defective (not rotating) • Finisher main board defective • Harness disconnected or defective
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.	• 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.	• 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.	• 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	Finisher stapler rotation motor error	
		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.	• Stapler rotation motor defective • Poor stapler rotation motor connection • Stapler rotation sensor defective • Finisher main board defective • Rotation motor overload
729	D	Finisher punch motor error	
		The punch HP sensor does not activate within the prescribed time the punch motor turns on.	• Punch HP sensor defective • Sensor harness disconnected, defective • Punch motor defective • Finisher main board defective • Poor punch motor overload
730	B	Finisher stapler movement motor error	
		The stapler HP sensor does 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.	• Stapler HP sensor defective • Sensor harness disconnected, defective • Stapler movement motor defective • Finisher main board defective • Stapler movement motor overload
732	B	Finisher shift roller motor error	
		The shift roller HP sensor does not activate within the prescribed time after the shift roller motor turns on. After 2 counts, the SC is logged as a jam.	• Shift roller HP sensor defective • Sensor harness disconnected, defective • Shift roller motor defective • Finisher main board defective • Shift roller motor overload
733	D	Finisher lower tray lift motor error	
		After the lift motor switches on to lift the tray, paper height sensor 2 does not detect the top of the paper stack, or after the motor reverses to lower the stack the top of the stack remains detected (the status of paper height sensor 1 does not change). After 2 counts, the SC is logged as a jam.	• Paper height sensor 1 or 2 defective • Sensor harness disconnected, defective • Tray lift motor defective • Finisher main board defective • Tray lift motor overload
735	B	Finisher pre-stack motor error	
		• The pre-stack motor starts but does not return to the home position within 400 pulses. After 2 counts, the SC is logged as a jam. • Motor does not return to the home position within 280 pulses immediately before or after pre-stacking. After 2 counts, the SC is logged as a jam.	• Jogger HP sensor defective • Sensor harnesses disconnected, defective • Pre-stack motor defective • Finisher main board defective • Pre-stack motor overload
736	B	Finisher paper exit guide plate motor error	
		The paper exit guide plate motor starts but the paper exit guide plate HP sensor does not activate within 750 ms. After 2 counts, the SC is logged as a jam.	• Guide plate HP sensor defective • Sensor harness disconnected, defective • Paper exit guide plate motor defective • Finisher main board defective • Guide plate motor overload.

SC No.		Symptom	Possible Cause
737	B	Trimmed staple waste hopper full	
		The hopper that holds the waste from staple trimming is full.	• Staple waste hopper full • Staple waste sensor defective
738	B	Finisher pressure plate motor error	
		The pressure plate motor switches on but does not return to the home position within the prescribed time after 2 counts.	• HP sensor defective • Harness disconnected, defective • Motor defective • Finisher main board defective • Motor overload
739	B	Finisher folder plate motor error	
		The folder plate motor turns on but the plate does not return to the home position within the prescribed time for 2 counts.	• Plate HP sensor defective • Harness disconnected, defective • Folder plate motor defective • Finisher main board defective • Folder plate motor overload
740	B	Finisher front saddle-stitch stapler motor error	
		Saddle-stitch stapler motor fails to operate within 450 ms within 2 counts..	• HP sensor defective • Harness disconnected, defective • Stapler motor defective • Finisher main board defective • Stapler motor overload
741	B	Finisher rear saddle-stitch stapler motor error	
		Saddle-stitch stapler motor fails to operate within 450 ms within 2 counts..	• 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 to not return to the home position within 340 pulses for 2 counts.	• HP sensors defective • Harness disconnected, defective • Motor defective • Finisher main board defective • Motor overload
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.	• Jogger lift sensor or jogger fence sensor connectors disconnected, loose, or damaged. • Jogger lift sensor or jogger fence sensor is defective. • Main harness connection loose or broken. • Shift jogger motor or shift jogger lift motor defective. Finisher main board defective.
750	B	Cover interposer bottom plate motor error	
		• 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.	• Bottom plate position sensor defective • Bottom plate HP sensor defective • Bottom plate motor defective • Cover sheet feeder main board defective • Harnesses disconnected, defective

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.	• 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.	• Controller board defective
818	C	Watchdog error	
		Control error	• System program defective • Controller board defective • Optional board defective
819	C	Fatal kernel error	
		Software defective	• Software defective
820	C	Self-diagnostic error: CPU	
		Unexpected external error or interrupt occurred.	• 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.	• Controller board defective
822	C	Self-diagnostic error: HDD	
		Check performed when HDD is installed: • 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.	• HDD defective • HDD harness disconnected, defective • Controller board defective
823	C	Self-diagnostic error: NIB	
		• 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.	• NIB board defective • Controller board defective
824	C	Self-diagnostic error: NVRAM	
		NVRAM device does not exist, or NVRAM device is damaged.	• NVRAM defective • Controller board defective
825	C	Self-diagnostic error: NVRAM (option)	
		Optional NVRAM is installed, but a write/verify error occurred.	• Incorrect NVRAM installed.

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.	• NVRAM defective • NVRAM installed incorrectly
827	C	Self-diagnostic error: RAM	
		The write/verify check for the RAM mounted on the board resulted in an error.	• Controller board defective • RAM defective
828	C	Self-diagnostic error: ROM	
		• Measuring the CRC for the boot monitor and operating system program results in an error. • A check of the CRC value for ROMFS of the entire ROM area results in an error.	• Software defective • Controller board defective • ROM defective
829	C	Self-diagnostic error: RAM (option)	
		• 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. **Note**: RAM is not in use so the result is not displayed on the operation panel.	• Controller board defective • RAM defective
835	C	Self-diagnostic error: Centronic device	
		• 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.	• Controller board defective • Centronic loopback connector not connected correctly • Centronic loopback connector defective
836	C	Self-diagnostic error: Font ROM	
		A device exists in the font area but it contains corrupted data.	• Font device defective
837	C	Self-diagnostic error: Font ROM (option)	
		A device exists in the font area but it contains corrupted data.	• Font device defective
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.	• Controller board defective
850	B	Net I/F error	
		• Duplicate IP addresses. • Illegal IP address. • Driver unstable and cannot be used on the network.	• 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.	• 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.	• USB connection incorrect • Controller board defective
860	B	HDD startup error at main power on	
		• HDD is connected but a driver error is detected. • The driver does not respond with the status of the HDD within 30 s.	• HDD is not initialized • Level data is corrupted • HDD is defective
861	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.	• 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.	• 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.	• HDD defective • **Note**: If the bad sectors are generated at the image partition, the bad sector information is written to NVRAM, and the next time the HDD is accessed, these bad sectors will not be accessed for read/write operation.
864	D	HDD data CRC error	
		During HDD operation, the HDD cannot respond to an CRC error query.	• Data transfer did not execute normally while data was being written to the HDD.
865	D	HDD access error	
		HDD responded to an error during operation for a condition other than those for SC863, 864.	• HDD defective.
⇒ 876	D	Log Data Error	
		The log data has been corrupted at power on, while the machine was operating, or when the machine was powered off during a print or copy cycle. The machine should never be switched off while it is printing or copying.	
876-1		Log data file was corrupted at power on or while the machine was operating.	Format the HDD with SP5832-004.

Trouble-shooting

SC No.		Symptom	Possible Cause
876-2		The log was set for encryption without the encryption module installed: At power on While the machine was operating When the log encryption setting was changed.	Install or replace and set the encryption module. Enable the log encryption setting.
876-3		At power on the log encryption key was disabled, causing an NVRAM malfunction.	Format the disk with SP5832-004.
876-4		At power on the machine attempted log data encryption with the log encryption setting disabled (NVRAM malfunction). -or- At power on log encryption was attempted with the log encryption setting disabled (NVRAM malfunction).	Format the disk with SP5832-004.
876-5		Error occurred at power on. Only the NVRAM was replaced with an NVRAM from another machine. -or- Only the HDD was replaced with an HDD unit from another machine.	Replace NVRAM with original NVRAM. Replace HDD with original HDD. If the error persists, format the HDD with SP5832-004.
876-99		Cause unknown. The error occurred at power on or while the machine was operating.	Contact Ricoh design section.

SC900: Miscellaneous

SC No.		Symptom	Possible Cause
900	D	Electrical total counter error	
		The total counter contains something that is not a number.	• NVRAM defective
901	D	Mechanical total counter error	
		The mechanical counter is not connected.	• 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.	• 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.	• 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

SC No.		Symptom	Possible Cause
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 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 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.	• Controller board defective • BICU defective • BICU, controller disconnected
990	D	Software performance error	
		The software performs an unexpected function and the program cannot continue.	• Software defective, re-boot[*1]
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.	• Software defective, re-boot[*1]

[*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.	• Software defective • An error undetectable by any other SC code occurred
997	D	Cannot select application function	
		Application does not start after pressing the appropriate key on the operation panel.	• Software bug • A RAM or DIMM option required by the application is not installed or not installed correctly.

SC No.		Symptom	Possible Cause
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.	• Software bug • A RAM or DIMM option required by the application is not installed or not installed correctly.
999	D	Program download error	
		The program download from the IC card does not execute normally. This SC is not logged.	• Card installed incorrectly • BICU defective • IC card defective • NVRAM defective • Power down during program downloading

4.2.3 ADDITIONAL SC CODES PRINTED IN SMC REPORT

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

SC No.		Symptom	Possible Cause
820	0702	Command cache error	• CPU cache defective • Controller board defective • Memory error (insufficient speed)
820	0709	Data cache error	• CPU device error • Boot mode setting for CPU error • Controller defective • Insufficient memory
820	070A	Data cache clear error	
820	0801	TLB virtual address error	• CPU device defective (controller board defective)
820	0804	TLB global error	
820	0807	UTLB miss error	
820	0808	TLB read miss error	
820	0809	TLB write miss error	
820	080A	TLB mode file error	
820	4002	Single-precision calculation error	• CPU error (controller board defective)
820	4003	Double-precision calculation error	
820	4004	Exception error	
820	4005	Exception mask error	
822	3003	HDD timeout	• HDD defective • HDD connector disconnected, defective • ASIC device error (controller board defective)
822	3004	Self-diagnostic command error	• HDD defective
823	6101	MAC address SUM error	• NIB (PHY) board defective • Controller board defective
823	6104	PHY chip ID illegal	
823	6105	PHY loopback error	
824	1401	NVRAM verify error	• NVRAM defective
826	1501	Clock error	• Optional NVRAM defective
826	15FF	RTC non-detection error	• Incompatible NVRAM installed • NVRAM battery defective
826	0201	Resident memory verify error	• Memory on controller board defective • RAM DIMM defective
828	0101	Boost trap code (CODE) error	• Software storage error (re-install software) • Controller board defective
828	0104	ROM FS error	• ROM device error
828	0105	Forgery prevention error	• Forgery prevention chip defective • Forgery prevention chip error • Replace the controller, ROM, or RAM DIMM
829	0301	Option memory 0 verify error	• Controller board internal memory error • RAM DIMM defective
829	0302	Option memory 0 configuration information error	
835	1102	Verify error	• Loopback connector error (controller board defective)
835	110C	DMA verify error	• Loopback connector error • Controller board defective
835	1120	Loopback connector non-detection	• Loopback connector not set • Loopback connector error • Controller board defective
836	1601	Font ROM 0 error	
837	1602	Font ROM 1 error	
838	2701	Verify error	

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).	• Data corruption • Defective hard disk • Defective software
920	D	Printer error	
		The printer program cannot be continued.	• Defective hardware • Data corruption • Defective software
925	D	Net file error	
		The management file for net files is corrupted; net files are not normally read. Netfiles: Jobs to be printed from the document server using a PC and the DeskTopBinder software	• Defective hardware • Data corruption • Defective software
992	C	Other system SCs	
		The controller received an unknown SC code from the engine.	• Contact your product specialist.
993	D	Network error	
		The ASIC program of GW controller cannot be continued.	• Defective ASIC • Defective GW controller

4.3 B140/B246/D052 SERIES 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 makes sure 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/B246/D052 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.

4.3.3 B140/B246/D052 SERIES 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.

How to Read These Tables

Most of the SC codes in these tables apply to both the B140 Series and B246/D052 Series machines. However, there are some differences. These differences are annotated:

- If an SC code applies to the B140 Series machine only, this SC will be marked "B140" to the right of the number.
- If an SC code applies to the B246/D052 Series machine only, this SC will be marked "B246/D052".
- If there is neither a "**B140**" nor "**B246**" notation, the SC code applies to both machines.
- Pay special attention to the "**B140/B246** Duplicated Number" notation. The same number SC codes exist in both machines but the meaning is different.

SC100: Scanning System

SC No.		Symptom	Possible Cause
101	D	Exposure Lamp Error	
		At trigger on, the lamp was not detected on.	• 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.	• 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.	• 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	Scanner home position error 3	
		The scanner home position sensor does not detect the on condition during original scanning.	• 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	Scanner home position error 4	
		The scanner home position sensor does not detect the off condition during original scanning.	• 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	SBU auto adjust error	
		Automatic adjustment of the SBU fails when the machine is switched on.	• 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	SBU transmission error	
		After the SBU switches on, the BCU detects one of the following conditions on the SBU: • 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.	• SBU defective • VIB defective • Harness (40-pin shielded) between the SBU, VIB is disconnected • Harness (shielded cable) between the VIB, BCU is disconnected
165		Copy data security unit error B828	**B246/D052**
		The copy data security option is installed by not operating correctly.	• Copy data security card corrupted • The board is not installed or the board is defective • IPU board defective

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.)	• 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.	• 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: • 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.	• CIS unit defective • Harness between the CIS, ADF is disconnected

SC200: Exposure

202		Polygon mirror motor error 1: Timeout at ON	**B246/D052**
		The polygon mirror motor unit did not enter "Ready" status within 20 sec. after the motor was turned on, or within 20 sec. after the speed of rotation was changed.	• The polygon mirror motor PCB connector is loose, broken, or defective • Polygon mirror motor PCB defective • Polygon mirror motor defective • IPU defective
203		Polygon mirror motor error 2: Timeout at OFF	**B246/D052**
		The polygon mirror motor did not leave "Ready" within 3 sec. after the motor was switched off. (The XSCRDY signal did not go HIGH (inactive) within 3 sec.)	• The polygon mirror motor PCB connector is loose, broken, or defective • Polygon mirror motor PCB defective • Polygon mirror motor defective • IPU defective
204		Polygon mirror motor error 3: XSCRDY signal error	**B246/D052**
		The polygon mirror motor "Ready" signal went inactive (HIGH) while the motor was operating at normal speed, even though the motor was neither switched off nor was there a request for a change in speed.	• Electrical oise interference on the line with the motor signals • Polygon mirror motor PCB connector loose, broken, defective • Polygon mirror motor PCB defective • Polygon mirror motor defective
205		Polygon mirror motor error 4: Unstable timeout	**B246/D052**
		The "Ready" signal (XSCRDY) was detected as unstable for more than 20 sec. while the polygon mirror motor was operating at normal speed.	• Electrical noise on the line with the motor signals • Polygon mirror motor PCB connector loose, broken, defective • Polygon mirror motor PCB defective • IPU defective
220		Laser synchronization detection error	**B246/D052**
		The 1st laser synchronization detection unit could not detect the line synchronization signal (DETP0) within 500 ms while the polygon mirror motor was operating at normal speed. **NOTE**: The unit polls for the signal every 50 ms. This SC is issued after the 10th attempt fails to detect the signal.	• Laser synchronization board connector loose, broken, defective • Laser synchronization detection board is not installed correctly (out of alignment) • Laser synchronization board defective • 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.	• Charge corona power pack defective • Charge corona harness disconnected • Poor charge corona unit connection
303	C	Charge corona grid leak	
		When the high voltage is output to the corona grid, feedback voltage exceeds the prescribed value 9 times.	• Charge corona power pack defective • Charge corona harness disconnected • Poor charge corona unit connection
304	D	Charge grid circuit open	
		When high voltage goes to the corona grid, feedback voltage is more than the set value 9 times. This feedback voltage is used to update PWM for output control.	• Charge corona unit defective or disconnected • Charge corona harness defective • Charge corona power pack is defective.
305	D	Charge corona wire cleaner error 1	
		The charge cleaner pad does not arrive at the home position: • Motor locked within 4 s after switching on, or does not lock within 30 s. • Motor locked within 10 s after reversing, or does not lock within 30 s.	• Charge corona wire cleaner motor defective • Motor driver defective
306	C	Charge corona wire cleaner error 2	
		Charge coronal motor is disconnected. (The current at the charge corona motor is detected less than 83 mA.)	• Charge corona wire cleaner motor connector is defective, connected.

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

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.	• Potential sensor defective • Potential sensor harness disconnected • Potential sensor connector defective or disconnected • IOB defective • OPC connector defective • Development power pack defective

311	C	Potential sensor calibration error 2	
		During drum potential sensor calibration, the drum potential sensor output voltage does not meet specification when test voltages (–100V, –800V) are applied to the drum.	• Potential sensor defective • Potential sensor harness disconnected • Potential sensor connector defective or disconnected • IOB defective • OPC connector defective • Development power pack defective
312	C	Potential sensor calibration error 3	
		During drum potential sensor calibration when adjusting the drum potential (VD), the drum potential sensor detects VD higher than VG (grid voltage). -or- When adjusting VD (drum surface potential of black areas after exposure), even after 5 adjustments of VG (charge corona grid potential), VD could not be set in the target range (–800±10 + VL + 130V)	• Potential sensor defective • Potential sensor harness disconnected • Potential sensor connector defective or disconnected • IOB defective • OPC connector defective • Development power pack defective • Charge corona unit worn out, dirty
314	C	Potential sensor calibration error 4	
		During drum potential sensor calibration when adjusting the drum potential (VH) for LD power adjustment, the first time the VH pattern is made, the drum potential sensor detects that VH is more than 500V: VH > |–500 + VL + 130| V	• Potential sensor defective • Potential sensor harness disconnected • Potential sensor connector defective or disconnected • IOB defective • OPC connector defective • LD defective
315	C	Potential sensor calibration error 5	
		During drum potential sensor calibration, when –100V is applied to the drum, the output value is out of the prescribed range.	• Potential sensor defective • Potential sensor harness disconnected • Potential sensor connector defective or disconnected • IOB defective • OPC connector defective • Development power pack defective
316	C	Potential sensor calibration error 6	
		During drum potential sensor calibration, when –800V is applied to the drum, the output value is out of the prescribed range.	• Potential sensor defective • Potential sensor harness disconnected • Potential sensor connector defective or disconnected • IOB defective • OPC connector defective • Development power pack defective

317	C	Potential sensor calibration error 7	
		During drum potential sensor calibration, when VL is adjusted, the pattern surface potential VL pattern is not within range 0V ~ –400V. (VL is the potential after exposing a white pattern.)	• Potential sensor defective • Potential sensor harness disconnected • Potential sensor connector defective or disconnected • IOB defective • OPC connector defective • Charge corona power pack defective • Development power pack defective
321	D	F-GATE error	**B140 Only**
		The laser writing signal (F-GATE) for the IPU does not go LOW within 60 s.	• BICU board defective • PCI bus between controller board, BICU board defective
322	D	Laser synchronization detector error	**B140 Only**
		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.	• Harness between detector and I/F disconnected or damaged • Detector is installed incorrectly • Detector board is defective • IPU board defective
335	D	Polygon mirror motor error 1	**B140 Only**
		The ready signal does not go low within 20 s after the polygon mirror motor turns on or changes speed.	• Harness between I/F and polygon motor disconnected or defective • Polygon motor or polygon motor driver defective • IPU board defective
336	D	Polygon mirror motor error 2	**B140 Only**
		The ready signal does not go high within 20 s after the polygonal mirror motor turns off.	• 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	**B140 Only**
		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.	• Noise on the line where the polygon ready signal (XSCRDY) is transmitted. • Harness between the polygon motor and I/F disconnected or defective. • Polygon motor or polygon motor driver defective
338	D	Polygonal mirror motor error 4	**B140 Only**
		While the polygon motor is rotating, the XSCRDY signal goes high during exposure.	• Noise on the linef where the polygon ready signal (XSCRDY) is transmitted. • Harness between the polygon motor and I/F disconnected or defective. • Polygon motor or polygon motor driver defective • IPU board defective

340	C	TD sensor output error	
		TD sensor output voltage (Vt), measured during each copy cycle, is detected 10 times at one of the following levels: Vt = 0.5 volts or lower Vt = 4.0 volts or higher	• TD sensor defective • TD sensor harness disconnected • TD sensor connector disconnected or defective • IOB defective • Toner bottle motor defective **NOTE**: When the TD sensor is defective, the toner supply is controlled using pixel count and the ID sensor.
341	D	TD sensor adjustment error 1	
		During the TD sensor auto adjustment, the TD sensor output voltage (Vt) is 2.5 volts or higher even though the control voltage is set to the minimum value (PWM = 0). When this error occurs, SP2-906-1 reads 0.00V. **Note**: This SC is released only after correct adjustment of the TD sensor has been achieved. Switching the machine off and on will cancel the SC display, but does not release ID sensor toner supply.	• TD sensor defective • TD sensor harness disconnected • TD sensor connector disconnected or defective • IOB defective • Toner bottle motor defective **NOTE**: When the TD sensor is defective, the toner supply is controlled using pixel count and the ID sensor.
342	D	TD sensor adjustment error 2	
		During the TD sensor auto adjustment, the TD sensor output voltage (Vt) does not enter the target range (3.0 ± 0.1V) within 20 s. When this error occurs, the display of SP2-906-1 reads 0.00V. **Note**: This SC is released only after correct adjustment of the TD sensor has been achieved. Switching the machine off and on will cancel the SC display, but does not release ID sensor toner supply.	• TD sensor defective • TD sensor harness disconnected • TD sensor connector disconnected or defective • IOB defective
345	D	Development output abnormal	
		The high voltage applied to the development unit is detected 10 times higher than the upper limit (45%) of PWM.	• Development power pack defective • Development bias leak due to poor connection, defective connector
350	C	ID sensor error 1	
		One of the following ID sensor output voltages was detected twice consecutively when checking the ID sensor pattern. Vsp ≥ 2.5V Vsg < 2.5 Vsp = 0V Vsg = 0	• ID sensor defective • ID sensor harness disconnected • ID sensor connector defective • IOB defective • ID sensor pattern not written correctly • Incorrect image density • Charge power pack defective • ID sensor dirty

351	C	ID sensor error 2	
		The ID sensor output voltage is 5.0V and the PWM signal input to the ID sensor is 0 when checking the ID sensor pattern.	• ID sensor defective • ID sensor harness disconnected • ID sensor connector defective • IOB defective • ID sensor pattern not written correctly • Incorrect image density • Charge power pack defective • ID sensor dirty
352	C	ID sensor error 3	
		For 2 s during the ID sensor pattern check, the ID sensor pattern edge voltage is not 2.5V or the pattern edge is not detected within 800 ms.	• ID sensor defective • ID sensor harness disconnected • ID sensor connector defective • IOB defective • ID sensor pattern not written correctly • Incorrect image density • Charge power pack defective • ID sensor dirty
353	C	ID sensor error 4	
		One of the following ID sensor output voltages is detected at ID sensor initialization. • Vsg < 4.0V when the maximum PWM input (255) is applied to the ID sensor. • Vsg ≥ 4.0V when the minimum PWM input (0) is applied to the ID sensor.	• 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	
		Vsg falls out of the adjustment target (4.0 ± 0.2V) during Vsg checking.	• ID sensor defective • ID sensor harness disconnected • ID sensor connector defective • IOB defective • ID sensor pattern not written correctly • Incorrect image density • Charge power pack defective • ID sensor dirty
355	C	ID sensor error 6	
		The Vp value, which measures the reflectivity of the ID sensor pattern, was not in the range of –70V to –400V.	• Potential sensor defective • Potential sensor harness defective • Potential sensor disconnected • IOB defective • OPC unit connector defective • Charge corona power pack defective • Charge corona wire dirty, broken

SC400: Image Development 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.	• Transfer power pack defective • Transfer current terminal, transfer power pack disconnected, damaged connector
402	D	Transfer output abnormal release detection	
		When the transfer is output, there is hardly any feedback voltage within 60 ms even with application of 24% PWM.	• Transfer power pack defective • Transfer unit harness disconnected • Transfer connector loose, defective
430	C	Quenching lamp error	
		At the completion of auto process control initialization, the potential of the drum surface detected by the potential sensor is more than –400V, the prescribed value.	• Quenching lamp defective • Quenching lamp harness disconnected • Quenching lamp connector loose, defective
440	D	Main motor lock	
		The main motor lock signal remains low for 2 seconds while the main motor is on.	• Drive mechanism overloaded • Motor driver board defective
441	D	Development motor lock	
		The development motor lock signal remains high for 2 seconds while the development motor is on.	• Drive mechanism overloaded due to toner clumping in the wasted toner path • Motor driver board defective
		If this SC is returned on a machine in the field, inspect the toner supply unit coil. If the gear is not damaged replace the coil. If the gear is damaged, the gear shaft is probably deformed, so replace the entire unit.	
490	D	Main fan error	
		The main fan motor lock signal goes high for 5 s while the fan is on.	• Fan motor overloaded due to obstruction • Fan connector disconnected
495	D	Toner recycling unit error	
		Encoder pulse does not change for 3 s after the main motor switches on.	• Waste toner transport has stopped due to motor overload • Toner end sensor detective, disconnected
496	D	Toner collection bottle error	
		The toner collection bottle set switch remains off when the front door is closed.	• No toner collection bottle set • Poor connection of the switch connector
497	D	Toner collection motor error	
		The toner collection motor connector set signal remains off for 1 s.	• Toner pump motor defective • Motor connector loose, disconnected

SC500: Feed, Transport, Duplexing, and Fusing Systems

SC No.		Symptom	Possible Cause
501	B	Tray 1 lift malfunction	
		• The lift sensor is not activated within 10 seconds after the tray lift motor starts lifting the bottom plate. • When the tray lowers, the tray lift sensor does not go off within 1.5 sec. • Tray overload detected when the tray is set. • The lower limit sensor of the LCT does not detect the lower limit within 10 sec.	• Tray lift motor defective, disconnected • Paper or other obstacle trapped between tray and motor • Pick-up solenoid disconnected, blocked by an obstacle • Too much paper loaded in tray **NOTE (B246/D052)** • At first, the machine displays a message asking the operator to reset the tray. • This SC will not display until the operator has pulled the tray out and pushed it in 3 times. • If the operator cycles the machine off/on before the 3rd opening and closing of the tray, the 3-count is reset.
502	B	Tray 2 lift malfunction	
		• The lift sensor is not activated within 10 seconds after the tray lift motor starts lifting the bottom plate. • When the tray lowers, the tray lift sensor does not go off within 1.5 sec. • Tray overload detected when the tray is set.	• Tray lift motor defective or disconnected • Paper or other obstacle trapped between tray and motor • Pick-up solenoid disconnected or blocked by an obstacle • Too much paper loaded in tray **NOTE (B246/D052)** • At first, the machine displays a message asking the operator to reset the tray. • This SC will not display until the operator has pulled the tray out and pushed it in 3 times. • If the operator cycles the machine off/on before the 3rd opening and closing of the tray, the 3-count is reset.
503	B	Tray 3 lift malfunction	
		• The lift sensor is not activated within 10 seconds after the tray lift motor starts lifting the bottom plate. • When the tray lowers, the tray lift sensor does not go off within 1.5 sec. • Tray overload detected when the tray is set.	• Tray lift motor defective or disconnected • Paper or other obstacle trapped between tray and motor • Pick-up solenoid disconnected or blocked by an obstacle • Too much paper loaded in tray **NOTE (B246/D052)** • At first, the machine displays a message asking the operator to reset the tray. • This SC will not display until the operator has pulled the tray out and pushed it in 3 times. • If the operator cycles the machine off/on before the 3rd opening and closing of the tray, the 3-count is reset.

504	B	Tray 4 lift malfunction	
		• The lift sensor is not activated within 10 seconds after the tray lift motor starts lifting the bottom plate. • When the tray lowers, the tray lift sensor does not go off within 1.5 sec. • Tray overload detected when the tray is set.	• Tray lift motor defective or disconnected • Paper or other obstacle trapped between tray and motor • Pick-up solenoid disconnected or blocked by an obstacle • Too much paper loaded in tray **NOTE (B246/D052)** • At first, the machine displays a message asking the operator to reset the tray. • This SC will not display until the operator has pulled the tray out and pushed it in 3 times. • If the operator cycles the machine off/on before the 3rd opening and closing of the tray, the 3-count is reset.
507	B	LCT feed motor malfunction	
		One of the following conditions is detected: • The LD signal from the feed motor is detected abnormal for 50 ms after the motor switches on. • At power on, the motor is detected loose or disconnected.	• Feed motor defective • Feed motor connector disconnected • Obstacle interfering with mechanical movement of motor.
510	B	LCT tray malfunction	
		One of the following conditions is detected: • When the bottom plate is lifted, the upper limit sensor does not come on for 18 s. • When the bottom plate is lowered, the lower limit sensor does not come on for 18 s. • After lift begins, the upper limit sensor does not switch on before the pick-up solenoid switches on. • The paper end sensor switches on during lift and the upper limit sensor does not switch on for 2.5 s, and a message prompts user to reset paper.	• Tray lift motor defective or connector disconnected • Lift sensor defective or disconnected • Pick-up solenoid defective or disconnected • Paper end sensor defective

515	B	Tandem rear fence motor error	
		One of the conditions is detected: • The return sensor does not switch on within 10 sec. after the rear fence motor switches on. • The HP sensor does not switch on 10 sec. after the rear fence motor switches on. • The HP sensor and return sensor switch on at the same time.	• Rear fence motor defective or poor connection • Paper or other obstacle interfering with operation of the sensors • Paper or other obstacle trapped between tray and motor • Motor mechanical overload due to obstruction • Return sensor or HP sensor defective or dirty **NOTE (B246/D052)** • This problem will not issue the SC code on the operation panel. • The machine will prompt the operator to reset tray by opening and closing it. • If the problem persists, the machine will display again and the tray cannot be used.
520	C	Duplex jogger motor error 1	
		When the jogger fence moves to the home position, the jogger HP sensor does not turn on even if the jogger fence motor has moved the jogger fence 153.5 mm.	• Paper or other obstacle has jammed mechanism • Sensor connector disconnected or defective • Sensor defective
521	C	Duplex jogger motor error 2	
		When the jogger fence moves from the home position, the jogger fence HP sensor does not turn off even if the jogger motor has moved the jogger fence 153.5 mm.	• Paper or other obstacle has jammed mechanism • Sensor connector disconnected or defective • Sensor defective
531	D	Fusing exit motor error	
		The PLL lock signal was low for 2 seconds during motor operation.	• Motor lock caused by physical overload • Motor drive PCB defective
541	A	Fusing thermistor open	
		The fusing temperature detected by the center thermistor was below 0°C for 7 sec.	• Thermistor open • Thermistor connector defective • Thermistor damaged, or out of position • Fusing temperature –15% less than the standard input voltage
542	A	Fusing temperature warm-up error	
		One of the following occurred: • After power on, or after closing the front door, the hot roller does not reach the 100°C control temperature within 25 s. • 5 sec. after temperature rise started, temperature remained below 21°C after 5 samplings. • Fusing unit did not attain reload temperature within 48 sec. of the start of fusing temperature control.	• Fusing lamp disconnected • Thermistor warped, out of position • Thermostat not operating

543	A	Fusing lamp overheat error 1 (software)	
		Central thermistor detected a temperature of 240°C at the center of the hot roller. Fusing temperature control software error	• PSU defective • IOB defective • BICU defective
544	A	Fusing lamp overheat error 1 (hardware)	
		The central thermistor or an end thermistor detected a temperature of 250°C on the hot roller.	• PSU defective • IOB defective • BICU defective
545	A	Fusing lamp overheat error 2	
		After hot roller reaches warmup temperature, the fusing lamps remained on at full capacity for 11 samplings (1.8 sec. duration) while the hot roller was not rotating.	• Thermistor damaged, or out of position • Fusing lamp disconnected
547	D	Zero cross signal malfunction	
		One of the following conditions is detected 10 times: • When the main switch is on, the frequency measured by the number of zero cross signals for 500 ms is larger than 66Hz or smaller than 45 Hz. • The interval between one zero cross signal and the next is 7.5 ms or shorter 3 times consecutively for 500 ms.	• Noise on the ac power line
550	A	Fusing Web End	
		Web end detected 5 times within 500 ms and web motor continues to rotate 40 s. If web end is detected for another 500 ms, then the SC is logged.	• Web end (requires replacement) • Web end sensor defective **NOTE:** After replacing the web with a new one, reset **SP1902 001** to "0" to release SC550.
551	A	Fusing thermistor error 1	
		The end thermistor (contact type) was less than 0C (32F) for more than 7 seconds.	• Thermistor disconnected • Thermistor connector defective
552	A	Fusing thermistor error 2	
		The end thermistor (contact type) could not detect: • 100°C 25 seconds after the start of the warmup cycle. • A change in temperature more than than 16 degrees for 5 seconds. • The reload temperature with 56 seconds after the start of the fusing temperature control cycle.	• Fusing lamp disconnected • Thermistor bent, damaged • Thermistor position incorrect

553	A	Fusing thermistor error 3	
		The end thermistor (contact type) was at 240°C (464°F) for more than 1 second. The temperature is read 10 times every sec. (at 0.1 sec. intervals).	• PSU defective • IOB control board defective • BICU control board defective
555	A	Fusing lamp error	
		After the start of the warmup cycle, a fusing lamp was at full power for 1.8 seconds but the hot roller did not turn.	• Thermistor bent, out of position • Fusing lamp disconnected • Circuit breaker opened
557		Zero cross signal error	**B246/D052**
		High frequency noise was detected on the power line.	• No action required. The SC code is logged and the operation of the machine is not affected.
559	A	Fusing jam: 3 counts	**B246/D052**
		At the fusing exit sensor the paper was detected late for three pulse counts (lag error), and SP1159 was on.	• ?????????? NIA Query!
569	D	Fusing pressure release motor error	
		During copying, the HP sensor could not detect the actuator, tried again 3 times and could not detect.	• Motor lock because of too much load • Motor driver defective • HP sensor defective, disconnected, connector defective, harness damaged
590	D	Toner collection motor error	
		The toner collection motor sensor output does not change for 3 seconds while the toner collection motor is on.	• Motor lock due to obstruction • Motor driver board defective • Motor connection loose, defective • Toner collection motor sensor disconnected, sensor defective • Rotational transmission shaft (ϕ6 x 30) missing
599	D	1-bin Exit Motor Error (**Japan Only**)	
		The transport lock sensor output does not change within 300 ms after the motor switches on.	• Motor overload • Motor driver defective

SC600: Data Communication

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.	• 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.	• 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.	• 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.	• 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.	• Serial line connection unstable • External noise on the line
623	D	BICU ⇔ Tray 1~4 communication/timeout error	
		After 1 data frame is sent to the trays, an ACK signal is not received within 100 ms, and is not received after 3 retries.	• Serial line connection unstable • External noise on the line
624	D	BICU ⇔ Tray 1~4 communication/break reception error	
		During communication with the finisher trays, the BICU received a break (Low) signal.	• Serial line connection unstable • External noise on the line
626	D	BICU ⇔ LCT communication/timeout error	
		After 1 data frame is sent to the LCT, an ACK signal is not received within 100 ms, and is not received after 3 retries.	• Serial line connection unstable • External noise on the line
627	D	BICU ⇔ LCT communication/break reception error	
		During communication with the LCT, the BICU received a break (Low) signal.	• Serial line connection unstable • External noise on the line

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

NOTE: For more details about this SC code error, execute **SP5990** to print an SMC report so you can read the error code. The error code is not displayed on the operation panel. Here is a list of error codes:

Error	Problem	Solution
1	Failure to certify dial-up	In the User Tools, check the dial-up user and dial-up password settings
4	Illegal modem setting	Check the setting of **SP5816 160** to determine whether the setting for the AT command is correct. If this SP setting is correct, then the problem is a bug in the software.
5	Poor connection due to low power supply on the line.	The problem is on the external power supply line, so there is no corrective action on the machine.
11	Data in the NVRAM became corrupted when the network enable switch and Cumin-M were enabled at the same time.	Use **SP5985 1** and set the NIC to "0" (Disable) to disable the network board.
12	The modem board could not enable the NIB.	Replace the modem board.

SC No.		Symptom	Possible Cause
651		Illegal Remote Service Dial-up	
		An expected error occurred when Cumin-M dialed up the NRS Center.	• Software bug • No action is required because only the count is logged
670	D	Engine startup error	
		The machine engine, controlled by the BICU (Base Image Control Unit), was operating incorrectly when the machine was switched on or returned to normal operation from the energy save mode.	• Check the connections between BICU and controller • BICU defective • Controller board defective • PSU defective
672	B	Controller startup error	
		• After power on, the line between the controller and the operation panel did not open for normal operation. • After normal startup, communication with the controller stopped.	• Controller stalled • Controller installed incorrectly • Controller board defective • Operation panel harness disconnected or defective

SC700: Peripherals

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.	• 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	
		• 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.	• 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 finisher transport motor does not change state (high/low) within 600 ms and does not change after 2 retries.	• Finisher transport motor defective • Transport motor harness disconnected, or defective • Finisher main board defective
721	B	Finisher jogger motor error	
		• The finisher jogger HP sensor remains de-activated for more 1,000 pulses when returning to home position. • The finisher jogger HP sensor remains activated for more than 1,000 pulses when moving away from home position.	• Jogger HP sensor defective • Jogger mechanism overload • Jogger motor defective (not rotating) • Finisher main board defective • Harness disconnected or defective
723		Feed-Out Belt Motor (B478)	**B246/D052**
		The pawl of the feed-out belt did not return to the home position during the prescribed time after 2 attempts to detect.	• Stack feed-out belt HP sensor loose, broken, defective • Feed-out belt motor defective • Finisher control board defective
724	B	Finisher staple hammer motor error (B478)	
		The staple hammer motor did not return to the home position within the prescribed time (340 ms).	• Staple hammer HP sensor loose, broken, defective • Electrical overload on the stapler drive PCB elect • Staple hammer motor defective • Finisher main board defective

B140/B246/D052 Duplicated Number (See last bullet on page 4.3.3 for explanation)

725	B	Finisher stack feed-out motor error	**B140**
		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.	• Stack feed-out HP sensor defective • Harness disconnected or defective • Stack feed-out motor defective • Finisher main board defective • Motor overload
725		Exit guide motor	**B246/D052**
		The status of the exit guide sensor did not change at the prescribed time during operation of the exit guide.	• Exit guide open sensor loose, broken, defective. • Exit guide motor defective • Finisher main board defective

B140/B246/D052 Duplicated Number (See last bullet on page 4.3.3 for explanation)

726	B	Finisher upper tray lift motor error	**B140**
		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.	• Upper tray paper height sensor defective • Sensor harness disconnected, defective • Tray lift motor defective • Finisher main board defective • Tray lift motor overload
726		Front shift jogger motor error (B703)	**B246/D052**
		The sides fences do not retract within the prescribed time after the shift jogger motor switches on. The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.	• Shift jogger motor disconnected, defective • Shift jogger motor overloaded due to obstruction • Shift jogger HP sensor disconnected, defective

B140/B246 Duplicated Number (See last bullet on page 4.3.3 for explanation)

727	B	Finisher stapler rotation motor error	**B140**
		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.	• Stapler rotation motor defective • Poor stapler rotation motor connection • Stapler rotation sensor defective • Finisher main board defective • Rotation motor overload
727	B	Rear shift jogger motor (B703)	**B246**
		The side fences do not retract within the prescribed time after the shift jogger motor switches on. The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.	• Motor harness disconnected, loose, defective • Motor defective • Motor overload • HP defective

728	**B**	Shift jogger retraction motor error (B703)	**B246/D052**
		The side fences do not retract within the prescribed time after the retraction motor switches on. The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.	• Motor harness disconnected, loose, defective • Motor defective • Motor overload • HP defective
729	D	Finisher punch motor error	**B140**
		The punch HP sensor does not activate within the prescribed time after the punch motor turns on.	• Punch HP sensor defective • Sensor harness disconnected, defective • Punch motor defective • Finisher main board defective • Poor punch motor overload

B140/B246/D052 Duplicated Number (See last bullet on page 4.3.3 for explanation)

730	B	Finisher stapler movement motor error	**B140**
		The stapler HP sensor does 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.	• Stapler HP sensor defective • Sensor harness disconnected, defective • Stapler movement motor defective • Finisher main board defective • Stapler movement motor overload
730	**B**	Finisher Tray 1 shift motor error	**B246/D052**
		The shift roller HP sensor of the upper tray does not activate within the prescribed time after the shift tray starts to move toward or away from the home position. The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.	• Shift tray HP sensor of the upper tray disconnected, defective • Shift tray motor of the upper tray is disconnected, defective • Shift tray motor of the upper tray overloaded due to obstruction

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

735	B	Finisher pre-stack motor error	
		• The pre-stack motor starts but does not return to the home position within 400 pulses. After 2 counts, the SC is logged as a jam. • Motor does not return to the home position within 280 pulses immediately before or after pre-stacking. After 2 counts, the SC is logged as a jam.	• Jogger HP sensor defective • Sensor harnesses disconnected, defective • Pre-stack motor defective • Finisher main board defective • Pre-stack motor overload
736	B	Finisher paper exit guide plate motor error	
		The paper exit guide plate motor starts but the paper exit guide plate HP sensor does not activate within 750 ms. After 2 counts, the SC is logged as a jam.	• Guide plate HP sensor defective • Sensor harness disconnected, defective • Paper exit guide plate motor defective • Finisher main board defective • Guide plate motor overload.
737	B	Trimmed staple waste hopper full	
		The hopper that holds the waste from staple trimming is full.	• Staple waste hopper full • Staple waste sensor defective
738	B	Finisher pressure plate motor error	
		The pressure plate motor switches on but does not return to the home position within the prescribed time after 2 counts.	• HP sensor defective • Harness disconnected, defective • Motor defective • Finisher main board defective • Motor overload
739	B	Finisher folder plate motor error	
		The folder plate motor turns on but the plate does not return to the home position within the prescribed time for 2 counts.	• Plate HP sensor defective • Harness disconnected, defective • Folder plate motor defective • Finisher main board defective • Folder plate motor overload

B140/B246/D052 Duplicated Number (See last bullet on page 4.3.3 for explanation)

740	B	Finisher front saddle-stitch stapler motor error	**B140**
		Saddle-stitch stapler motor fails to operate within 450 ms within 2 counts..	• HP sensor defective • Harness disconnected, defective • Stapler motor defective • Finisher main board defective • Stapler motor overload
740	B	Finisher corner stapler motor error	**B246/D052**
		The stapler motor does not switch off within the prescribed time after operating. The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.	• Staple jam • Number of sheets in the stack exceeds the limit for stapling • Stapler motor disconnected, defective

B140/B246/D052 Duplicated Number (See last bullet on page 4.3.3 for explanation)

741	B	Finisher rear saddle-stitch stapler motor error	**B140**
		Saddle-stitch stapler motor fails to operate within 450 ms within 2 counts..	• HP sensor defective • Harness disconnected, defective • Stapler motor defective • Finisher main board defective • Stapler motor overload
741	B	Finisher corner stapler rotation motor error	**B246/D052**
		The stapler does not return to its home position within the specified time after stapling. The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.	• Stapler rotation motor disconnected, defective • Stapler rotation motor overloaded due to obstruction • Stapler rotation HP sensor disconnected, defective

B140/B246/D052 Duplicated Number (See last bullet on page 4.3.3 for explanation)

742	B	Finisher jogger side fence motor error	**B140**
		The jogger motor turns on but the side fences to not return to the home position within 340 pulses for 2 counts.	• HP sensors defective • Harness disconnected, defective • Motor defective • Finisher main board defective • Motor overload
742	B	Finisher stapler movement motor error	**B246/D052**
		The stapler HP sensor is not activated within the specified time after the stapler motor turned on. The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.	• Stapler movement motor disconnected, defective • Stapler movement motor overloaded due to obstruction • Stapler HP sensor disconnected, defective

B140/B246/D052 Duplicated Number (See last bullet on page 4.3.3 for explanation)

743	B	Finisher shift motor errors	**B140**
		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.	• 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
743	B	Booklet stapler motor error 1	**B246/D052**
		The front stapler unit saddle-stitch motor does not start operation within the specified time. The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.	• Front motor disconnected, defective • Front motor overloaded due to obstruction

744	B	Booklet stapler motor error 2	**B246/D052**
		The rear stapler unit saddle-stitch motor does not start operation within the specified time. The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.	• Rear motor disconnected, defective • Rear motor overloaded due to obstruction

B140/B246/D052 Duplicated Number (See last bullet on page 4.3.3 for explanation)

750	B	Cover interposer bottom plate motor error	**B140**
		• 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.	• Bottom plate position sensor defective • Bottom plate HP sensor defective • Bottom plate motor defective • Cover sheet feeder main board defective • Harnesses disconnected, defective
750	B	Finisher tray 1 (upper tray lift) motor error	**B246/D052**
		The upper tray paper height sensor does not change its status with the specified time after the tray raises or lowers. The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.	• Tray lift motor disconnected, defective • Upper tray paper height sensor disconnected, defective • Finisher main board connection to motor loose • Finisher main board defective

B140/B246 Duplicated Number (See last bullet on page 4.3.3 for explanation)

753	B	Z-Folding unit error 3	**B140**
		The HP sensor of the upper stopper motor does not go off after the stopper moved 128.7 mm.	• Upper stopper motor defective • Upper stopper motor disconnected, connector defective • Upper stopper motor HP sensor disconnected, defective • Z-Fold main control board defective
753	B	Return roller motor error	**B246/D052**
		Occurs during the operation of the lower tray pressure motor.	• Motor harness disconnected, loose, defective • Motor overloaded • Home position sensor harness disconnected, loose, defective • Home position defective

B140/B246/D052 Duplicated Number (See last bullet on page 4.3.3 for explanation)

754	D	Z-Folding unit error 4	**B140**
		2000 ms after the fan motor switched on, the lock signal did not release.	• Fan motor defective • Fan motor disconnected • Fan motor locked because of too much load • Z-Fold main control board defective
754		Z-Fold Unit Fan Motor Error	**B246/D052**
		The motor lock signal failed to release within 2 sec. after the Z-fold unit fan motor turned on.	• Fan motor connected loose, broken, defective • Fan motor defective • Fan blocked by an obstruction

755	B	Z-Folding unit error 5	**B140**
		The fold timing sensor does not operate correctly.	• Paper dust on the sensor • Sensor disconnected, defective • Reflector plate dirty, or out of position • Z-Fold main control board defective
756	B	Z-Folding unit error 6	**B140**
		The leading edge sensor does not operate correctly.	• Paper dust on the sensor • Sensor disconnected, defective • Reflector plate dirty, or out of position • Z-Fold main control board defective
757	B	Z-Folding unit error 7	**B140**
		The machine could not write to the EEPROM two times (one after the other).	• EEPROM defective, replace Z-Fold main control board
760	D	Finisher punch motor error	**B246/D052**
		The punch HP sensor is not activated within the specified time after the punch motor turned on. The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.	• Punch HP sensor disconnected, defective • Punch motor disconnected, defective • Punch motor overload due to obstruction
761	B	Finisher folder plate motor error	**B246/D052**
		The folder plate moves but is not detected at the home position within the specified time. The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.	• Folder plate HP sensor disconnected, defective • Folder plate motor disconnected, defective • Folder plate motor overloaded due to obstruction.
762	B	Finisher pressure plate motor error	**B246/D052**
		Pressure plate motor operating but the plate is not detected at the home position within the specified time. The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.	• Pressure plate HP sensor disconnected, defective • Pressure plate motor disconnected, defective • Pressure plate motor overloaded due to obstruction

763	D	Punch movement motor error	**B246/D052**
		Occurs during operation of the punch unit. The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.	• Motor harness disconnected, loose, defective • Motor defective
764	D	Paper position sensor slide motor error	**B246/D052**
		Occurs during operation of the punch unit. The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.	• Motor harness disconnected, loose, defective • Motor defective
765	B	Folding unit bottom fence lift motor	**B246/D052**
		The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.	• Motor harness disconnected, loose, defective • Motor defective
766	B	Clamp roller retraction motor error	**B246/D052**
		The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.	• Motor harness disconnected, loose, defective • Motor defective
767	B	Stack junction gate motor error	**B246/D052**
		Occurs during operation of the punch unit. The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.	• Motor harness disconnected, loose, defective • Motor overload • Motor defective
770	B	Cover interposer tray bottom plate motor error	**B246/D052**
		• After the motor starts to raise the bottom plate, the bottom plate position sensor does not detect the plate at the specified time (3 s). • After the motor starts to lower the bottom plate, the bottom plate HP sensor does not detect the bottom plate.	• Bottom plate position sensor, disconnected, defective • Bottom plate HP sensor disconnected, defective
780	B	Z-Fold feed motor error	**B246/D052**
		The feed motor does not attain the prescribed speed within the specified time.	• Feed motor disconnected, defective • Feed motor overloaded due to obstruction • Feed motor lock
781	B	Z-Fold lower stopper motor	**B246/D052**
		The lower stopper motor does not attain the prescribed speed within the specified time.	• Lower stopper motor disconnected, defective • Lower stopper motor overloaded due to obstruction • Lower stopper HP sensor disconnected, defective
782	B	Z-Fold upper stopper motor	**B246/D052**
		The upper stopper was not detected at the home position after the motor remained on long enough to move it 128.7 mm.	• Upper stopper motor disconnected, defective • Upper stopper motor overloaded due to obstruction • Upper stopper HP sensor disconnected, defective

784		Z-fold timing unit fold timing sensor adjustment error	**B246/D052**
		The A/D (Digital/Analog) input value did not change even after the D/A (Digital/Analog) output value changed.	• Fold timing sensor connector loose, broken, defective • Fold timing sensor defective • Fold timing sensor, mylar covered with paper dust • Mylar disconnected.
785		Z-fold leading edge sensor adjustment error	**B246/D052**
		The A/D input value did not change even after the D/A output value changed.	• Leading edge sensor connector loose, broken, defective • Leading edge sensor defective • Leading edge sensor, mylar covered with paper dust • Mylar disconnected.
786		Z-fold EEPROM error	**B246/D052**
		The write operation to the Z-folding EEPROM failed after 2 attempts	• EEPROM defective
790	B	Finisher staple trimming hopper full	**B246/D052**
		The staple waste hopper is full of cut staples.	• If the hopper is full, empty the hopper • If the hopper is not full, the hopper full sensor is disconnected, defective

SC800: Overall System

SC No.		Symptom	Possible Cause
817	**B**	Monitor Error	
		This is a file detection and electronic file signature check error when the boot loader attempts to read the self-diagnostic module, system kernel, or root system files from the OS Flash ROM, or the items on the SD card in the controller slot are false or corrupted.	• OS Flash ROM data defective; change the controller firmware • SD card data defective; use another SD card

Error Codes

Code	Meaning
0x0000 0000	BIOS boot error
0x0000 0001	Primary boot start load error
0x0000 0002	Secondary boot load error (Boot3.Elf)
0x0000 0003	Self-diagnostic module error (Diag.Elf
0x0000 0004	Kernel start error (Netbsd)
0x0000 0005	Root file system file read error (Rootfs)
0xffff ffff	Other error

Example: Data in the self-diagnostic module, system kernel, or root system files are corrupted or do not exist in OS flash ROM or on the SD card
Files in the self-diagnostic module, kernel, or root file system on the SD card have been falsified or altered

- Before discarding the SD card, try to update the data on the card. If the error occurs again, the card may be defective.
- Be sure to use an SD card that contains the correct electronic signature.

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.		• System program defective; switch off/on, or change the controller firmware if the problem cannot be solved • Controller board defective • Controller option malfunction
819	D	Fatal kernel error		
		Due to a control error, a RAM overflow occurred during system processing. One of the following messages was displayed on the operation panel.		• System program defective • Controller board defective • Optional board defective • Replace controller firmware
		0x696e	init died	
		0x766d	vm_pageout: VM is full	
		4361	Cache Error	
		Other		

NOTE: For more details about this SC code error, execute SP5990 to print an SMC report so you can read the error code. The error code is not displayed on the operation panel.

SC No.		Symptom		Possible Cause
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.	• ASIC (controller board defective)
		0B06	ASIC not detected	• ASIC defective • Poor connection between North Bridge and PCI I/F • Replace controller board
		0B10	Failed to initialize or could not read connection bus. Data in SHM register incorrect.	• 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.

SC No.		Symptom		Possible Cause
822	B	Self-diagnostic error 3: HDD		
		3003	Check performed when HDD is installed: • HDD device busy for over 31 s. • After a diagnostic command is set for Sthe HDD, but the device remains busy for over 6 s. A diagnostic command is issued to the HDD device but the result is an erro	• HDD defective • HDD harness disconnected, defective • Controller board defective
		3004	No response to the self-diagnostic command from the ASIC to the HDDs	• HDD defective
		3013	Mandolin does not respond, the HDD device remains BUSY for more than 31 s, or the BUSY signal does not drop within 6 s after the diagnostic command is issued to the HDDs.	• HDD defective • HDD connector loose or defective • Controller defective

SC No.		Symptom		Possible Cause
		3014	Error returned from HDD in response to the self-diagnostic command, Mandolin could not be located due to a read/write error at the HDD register.	• HDD defective
824	D	Self-diagnostic error 4: NVRAM		
		NVRAM device does not exist, NVRAM device is damaged, NVRAM socket damaged		• 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.	• NVRAM defective • NVRAM installed incorrectly
		15FE	Backup battery error. Battery is exhausted or not within rated specification.	• The battery is attached permanently to the controller board. Replace the controller board.
828	D	Self-diagnostic error 7: ROM		
		• Measuring the CRC for the boot monitor and operating system program results in an error. • A check of the CRC value for ROMFS of the entire ROM area results in an error.		• Software defective • Controller board defective • ROM defective

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.

SC No.		Symptom	Possible Cause
833	D	Self-diagnostic error 8: Engine I/F ASIC	
0F30 0F31		ASIC (Mandolin) for system control could not be detected. After the PCI configuration, the device ID for the ASIC could not be checked.	• ASCI (Mandolin) for system control is defective • Interface between North Bridge and AGPI is defective • Replace the mother board
0F41		The read/write check done for resident RAM on the mother board could not be done correctly.	• Memory device defective • Replace the mother board
50B1		Could not initialize or read the bus connection.	• Bus connection defective, loose • SSCG defective • Replace the mother board
50B2		Value of the SSCG register is incorrect.	• Bus connection loose, defective • SSCG defective • Replace the mother board
834	D	Self-diagnostic error 9: Optional Memory RAM DIMM	
5101		The write/verify check for the optional RAM chip on the engine mother board gave an error.	• Controller defective • Mother board defective
850	B	Net I/F error	

SC No.		Symptom	Possible Cause
		• Duplicate IP addresses. • Illegal IP address. • Driver unstable and cannot be used on the network.	• 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.	• 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).	• 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).	• 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).	• 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).	• 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.	• Bad USB card connection • Replace the controller board
860	B	HDD startup error at main power on	
		• HDD is connected but a driver error is detected. • The driver does not respond with the status of the HDD within 30 s.	• HDD is not initialized • Level data is corrupted • HDD is defective
861	D	HDD re-try failure	
		At power on with the HDD detected, power supply to the HDD is interrupted, after the HDD is awakened from the sleep mode, the HDD is not ready within 30 s.	• Harness between HDD and board disconnected, defective • HDD power connector disconnected • HDD defective • Controller board defective

SC No.		Symptom	Possible Cause
863	D	HDD data read failure	
		The data written to the HDD cannot be read normally, due to bad sectors generated during operation.	• HDD defective **NOTE**: If the bad sectors are generated at the image partition, the bad sector information is written to NVRAM, and the next time the HDD is accessed, these bad sectors will not be accessed for read/write operation.
864	D	HDD data CRC error	
		During HDD operation, the HDD cannot respond to an CRC error query. Data transfer did not execute normally while data was being written to the HDD.	• HDD defective
865	D	HDD access error	
		HDD responded to an error during operation for a condition other than those for SC863, 864.	• HDD defective.
866	B	SC card error 1: Confirmation	
		The machine detects an electronic license error in the application on the SD card in the controller slot immediately after the machine is turned on. The program on the SD card contains electronic confirmation license data. If the program does not contain this license data, or if the result of the check shows that the license data in the program on the SD card is incorrect, then the checked program cannot execute and this SC code is displayed.	• Program missing from the SD card • Download the correct program for the machine to the SD card
867	D	SD card error 2: SD card removed	
		The SD card in the boot slot when the machine was turned on was removed while the machine was on.	• Insert the SD card, then turn the machine off and on.
868	D	SD card error 3: SC card access	
		An error occurred while an SD card was used.	• SD card not inserted correctly • SD card defective • Controller board defective **NOTE**: If you want to try to reformat the SC card, use SD Formatter Ver 1.1.

870	B	Address book data error	
		Address book data on the hard disk was detected as abnormal when it was accessed from either the 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.	• Software defective. Turn the machine off/on. If this is not the solution for the problem, then replace the controller firmware. • HDD defective.
		More Details • Do SP5846 050 (UCS Settings – Initialize all Directory Info.) to reset all address book data. • Reset the user information with SP5832 006 (HDD Formatting– User Information). • Replace the HDDs. • Boot the machine from the SD card.	
873	B	HDD mail send data error	
		An error was detected on the HDD immediately after the machine was turned on, or power was turned off while the machine used the HDD.	• Do SP5832-007 (Format HDD – Mail TX Data) to initialize the HDD. • Replace the HDD
874	D	Delete All error 1: HDD	
		A data error was detected for the HDD/NVRAM after the Delete All option was used. **NOTE**: The source of this error is the Data Overwrite Security Unit B660 running from an SD card.	• Turn the main switch off/on and try the operation again. • Install the Data Overwrite Security Unit again. For more, see section "1. Installation". • HDD defective
875	D	Delete All error 2: Data area	
		An error occurred while the machine deleted data from the HDD. **NOTE**: The source of this error is the Data Overwrite Security Unit B660 running from an SD card.	• Turn the main switch off/on and try the operation again.
⟹ 876	D	Log Data Error ☛ SC876 More Information on page 4-75	
		The log data has been corrupted at power on, while the machine was operating, or when the machine was powered off during a print or copy cycle. The machine should never be switched off while it is printing or copying.	
876-1		Log data file was corrupted at power on or while the machine was operating.	• Format the HDD with SP5832-004.
876-2		The log was set for encryption without the encryption module installed: • At power on • While the machine was operating • When the log encryption setting was changed.	• Install or replace and set the encryption module. • Enable the log encryption setting.
876-3		At power on the log encryption key was disabled, causing an NVRAM malfunction.	• Format the disk with SP5832-004.

… continued

876-4	D	At power on the machine attempted log data encryption with the log encryption setting disabled (NVRAM malfunction). -or- At power on log encryption was attempted with the log encryption setting disabled (NVRAM malfunction).	• Format the disk with SP5832-004.
876-5		Error occurred at power on. Only the NVRAM was replaced with an NVRAM from another machine. -or- Only the HDD was replaced with an HDD unit from another machine.	• Replace NVRAM with original NVRAM. • Replace HDD with original HDD. • If the error persists, format the HDD with SP5832-004.
876-99		Cause unknown. The error occurred at power on or while the machine was operating.	• Format the HDD with SP5832-004.
880	D	File Format Converter (MLB) error	
		A request to get access to the MLB was not answered within the specified time.	• MLB defective, replace the MLB

SC900: Miscellaneous

SC No.		Symptom	Possible Cause
900	D	Electrical total counter error	**B140**
		The total counter contains something that is not a number.	• 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.	• Mechanical total counter defective • Mechanical total counter connector not connected
910	**D**	External Controller Error 1	**B140/B246**
911	**D**	External Controller Error 2	
912	**D**	External Controller Error 3	
913	**D**	External Controller Error 4	
914	**D**	External Controller Error 5	
		The external controller alerted the machine about an error.	• Please refer to the instructions for the external controller.
919	**B**	External Controller Error 6 **B140/B246**	
		While EAC (External Application Converter), the conversion module, was operating normally, the receipt of a power line interrupt signal from the FLUTE serial driver was detected, or BREAK signal from the other station was detected.	• Power outage at the EFI controller • EFI controller was rebooted • Connection to EFI controller loose
920	B	Printer error 1	**B140**
		An internal application error was detected and operation cannot continue.	• Software defective; turn the machine off/on, or change the controller firmware • Insufficient memory
921	B	Printer error 2	**B140**
		When the application started, the necessary font was not on the SD card.	• Font not on the SC card

Trouble-shooting

SC No.		Symptom	Possible Cause
925	B	NetFile Function Error	
		• The NetFile file management on the HDD cannot be used, or a NetFile management file is corrupted and operation cannot continue. • The HDDs are defective and they cannot be debugged or partitioned, so the Scan Router functions (delivery of received faxes, document capture, etc.), Fabric services, and other network functions cannot be used.(HDD status codes displayed on the debug console are described below.)	• HDD defective • Power supply to machine cut occurred while writing data to HDD • Software error • Please refer to the detailed descriptions below for recovery procedures.

HDD Status Codes Displayed on Debug Console

Display	Meaning
(-1)	HDD not connected
(-2)	HDD not ready
(-3)	No level
(-4)	Partition type incorrect
(-5)	Error returned during level read or check
(-6)	Error returned during level read or check
(-7)	“filesystem” repair failed
(-8)	“filesystem” mount failed
(-9)	Drive does not answer command
(-10)	Internal kernel error
(-11)	Size of drive is too small
(-12)	Specified partition does not exist
(-13)	Device file does not exist

Recovery Procedure 1

If the machine returns SC codes for HDD errors (SC860 ~ SC865), please follow the recovery procedures described for these SC codes.

Recovery Procedure 2

If the machine does not return one of the five HDD errors (SC860 ~ SC865), cycle the machine off and on. If this does not solve the problem, then initialize the NetFile partition on the HDD with **SP5832 011** (HDD Formatting – Ridoc I/F).

NetFiles: Jobs printed from the document server using a PC and DeskTopBinder

Before initializing the NetFile partition on the HDD please inform the client that:

1. Received faxes on the delivery server will be lost
2. All captured documents will be lost
3. DeskTopBinder/Print Job Manager/Desk Top Editor job history will be cleared
4. Documents stored on the document server, included scanned documents, will not be lost.
5. The first time the network accesses the machine, the management information must be reconfigured (this will require a significant amount of time).

Before initializing the Netfile partition with **SP5823 011**, do the following:

6. Enter the User Tools mode and execute “Delivery Settings” to print all received fax documents scheduled for delivery and delete them.
7. In the User Tools mode, execute Document Management> Batch Delete Transfer Documents.
8. Execute **SP5832 011** then cycle the machine off and on.

Recovery Procedure 3

If “Procedure 2” does not solve the problem, execute **SP5832 001** (HDD Formatting – All), then cycle the machine off and on.

Executing **SP5832 001** erases all document and address book data stored on the hard disks. Be sure to consult with the customer before executing this SP code.

Recovery Procedure 4

If “Recovery Procedures 1 to 3” fail to correct the problem, replace the HDD.

SC No.		Symptom	Possible Cause
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

SC No.		Symptom	Possible Cause
990	D	Software error 2	**B140**
		The software performs an unexpected function and the program cannot continue.	• Software defective, re-boot[*1]
991	C	Software error 3	**B140**
		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:

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	D	Software error 4: Undefined	**B140**
		An error not controlled by the system occurred (the error does not come under any other SC code).	• Software defective • Turn the machine power OFF/ON. The machine cannot be used until this error is cleared.
SC994	**C**	Operation Panel Management Records Exceeded	**B246**
		An error occurred because the number of records exceeded the limit for images managed in the service layer of the firmware. This can occur if there if there are too many application screens open on the operation panel.	• No action required because this SC does not interfere with operation of the machine.
997	B	Cannot select application function	**B140**
		An application does not start after the user pushed the correct key on the operation panel.	• Software bug • A RAM or DIMM option necessary for the application is not installed or not installed correctly.
998	D	Application cannot start	**B140**
		Register processing does not operate for an application within 60 s after the machine power is turned on. Applications do not start correctly, all end abnormally.	• Software bug • A RAM or DIMM option necessary for the application is not installed or not installed correctly.

SC876 More Information

⇒ If the error persists after doing the procedure described in the table above, do this procedure.

1. Switch the machine OFF, remove the HDD, and then switch the machine ON.
2. Do SP5801-019, then switch the machine OFF.
3. Install the HDD again and switch the machine ON.
4. Do SP5832-004.
5. Cycle the machine OFF/ON.
6. Do SP9730-002 and set to "1" (ON).
7. Do SP9730-003 and set to "1" (ON).
8. Do SP9730-004 and set to "1" (ON).
9. Cycle the machine OFF/ON.

4.3.4 JAM CODES

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

Main Unit: Paper Jam Errors

No.	Check-In Failure (Paper Does Not Arrive)	No.	Check-Out Failure (Paper Remains)
1	Initial Jam (Power On)		
3	Tray 1 feed sensor	53	Tray 1 feed sensor
4	Tray 2 feed sensor	54	Tray 2 feed sensor
5	Tray 3 feed sensor	55	Tray 3 feed sensor
6	Tray 4 feed sensor (**Japan Only**)	56	Tray 4 feed sensor (**Japan Only**)
7	LCT feed sensor	57	LCT feed sensor
8	Transport sensor 1	58	Transport sensor 1
9	Transport sensor 2	59	Transport sensor 2
10	Transport sensor 3	60	Transport sensor 3
11	Transport sensor 4 (**Japan Only)**	61	Transport sensor 4 (**Japan Only)**
12	Relay sensor	62	Relay sensor
13	Registration sensor	63	Registration sensor
14	Fusing exit sensor		
15	Exit unit entrance sensor		
16	Exit unit	66	Exit unit
19	Exit unit entrance sensor	69	Exit unit entrance sensor
20	Duplex transport sensor 1		
21	Duplex transport sensor 2	71	Duplex transport sensor 2
22	Duplex transport sensor 3	72	Duplex transport sensor 3
23	Duplex inverter sensor	73	Duplex inverter sensor
24	1-Bin tray (**Japan Only**)	74	1-Bin tray (**Japan Only**)
34	Bypass paper end sensor		

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

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	---

4.3.5 ADDITIONAL SC CODES PRINTED IN SMC REPORT

These codes are also used in the SMC report.

Codes that have the same number in this series are identified by an additional 4-digit hexadecimal number.

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

SC No.		Symptom	Possible Cause
820	0702	Command cache error	• CPU cache defective • Controller board defective • Memory error (insufficient speed)
820	0709	Data cache error	• CPU device error • Boot mode setting for CPU error • Controller defective • Insufficient memory
820	070A	Data cache clear error	
820	0801	TLB virtual address error	• CPU device defective (controller board defective)
820	0804	TLB global error	
820	0807	UTLB miss error	
820	0808	TLB read miss error	
820	0809	TLB write miss error	
820	080A	TLB mode file error	
820	4002	Single-precision calculation error	• CPU error (controller board defective)
820	4003	Double-precision calculation error	
820	4004	Exception error	
820	4005	Exception mask error	
822	3003	HDD timeout	• HDD defective • HDD connector disconnected, defective • ASIC device error (controller board defective)
822	3004	Self-diagnostic command error	• HDD defective
823	6101	MAC address SUM error	• NIB (PHY) board defective • Controller board defective
823	6104	PHY chip ID illegal	
823	6105	PHY loopback error	
824	1401	NVRAM verify error	• NVRAM defective
826	1501	Clock error	• Optional NVRAM defective
826	15FF	RTC non-detection error	• Incompatible NVRAM installed • NVRAM battery defective
826	0201	Resident memory verify error	• Memory on controller board defective • RAM DIMM defective
828	0101	Boost trap code (CODE) error	• Software storage error (re-install software) • Controller board defective
828	0104	ROM FS error	• ROM device error
828	0105	Forgery prevention error	• Forgery prevention chip defective • Forgery prevention chip error • Replace the controller, ROM, or RAM DIMM
829	0301	Option memory 0 verify error	• Controller board internal memory error • RAM DIMM defective
829	0302	Option memory 0 configuration information error	
835	1102	Verify error	• Loopback connector error (controller board defective)
835	110C	DMA verify error	• Loopback connector error • Controller board defective
835	1120	Loopback connector non-detection	• Loopback connector not set • Loopback connector error • Controller board defective
836	1601	Font ROM 0 error	
837	1602	Font ROM 1 error	
838	2701	Verify error	

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).	• Data corruption • Defective hard disk • Defective software
920	D	Printer error	
		The printer program cannot be continued.	• Defective hardware • Data corruption • Defective software
925	D	Net file error	
		The management file for net files is corrupted; net files are not normally read. Netfiles: Jobs to be printed from the document server using a PC and the DeskTopBinder software	• Defective hardware • Data corruption • Defective software
992	C	Other system SCs	
		The controller received an unknown SC code from the engine.	• Contact your product specialist.
993	D	Network error	
		The ASIC program of GW controller cannot be continued.	• Defective ASIC • Defective GW controller

4.4 OTHER PROBLEMS (B064/B140/B246/D052 SERIES)

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	SC510 is displayed.
FU104	6.3A/125V	6.3A/250V	Nothing displayed on LCD.
FU105	6.3A/125V	6.3A/250V	“Door Open” is displayed.
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	SC510 is displayed.
FU111	6.3A/125V	6.3A/250V	Nothing is displayed on LCD.

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

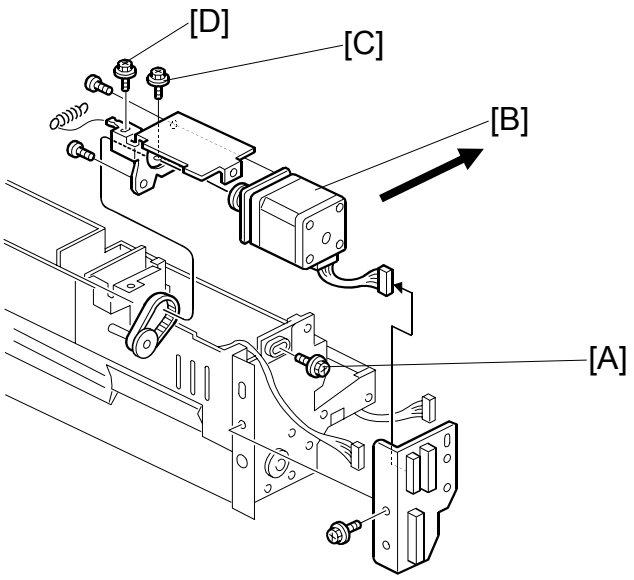
If there are frequent paper jams, check SP7504 in section “5. Service Tables”. If these locations have frequent jams, do the procedures described below.

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



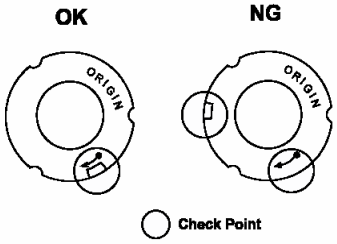
1. Remove the paper feed unit. For details, see 3. Replace and Adjustment, “3.11.8 Paper Feed Unit.”
2. Loosen screw [A].
3. Push the motor [B] toward the tray side, then tighten the screw [A].
4. Loosen screws [C] and [D], let the spring move the unit to the correct position, then tighten the screws.

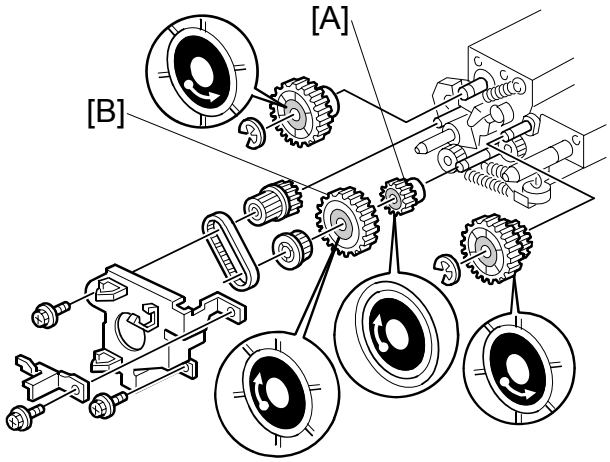
Symptom 3: Other

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.





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

REVISION HISTORY		
Page	**Date**	**Added/Updated/New**
1	04/18/2008	New Information – Section updated to support D052 Series
23 ~ 24	07/10/2009	Updated Information – NVRAM Data Upload/Download
31	07/17/2007	Updated Information – Corrected SP1104 (Fusing Control) Default
82	07/10/2009	Updated Information – SP5801
92	07/10/2009	Updated Information – SP5824
178 ~ 185	05/11/2009	Updated Information – Printer Bit Switches SP1-1001

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.

⚠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.

Service Mode Lock/Unlock

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

NOTE: This function is not used on 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.

To Enter and Exit the Service Mode

1. Press “Clear Modes ⌧.”
2. On the operation panel keypad, press ①⓪⑦.
3. Hold down “Clear/Stop Ⓒ/⊘” for more than 3 seconds.
   The Copy SP or PM Counter items are displayed. If the printer or scanner/printer option is installed, the Printer SP and Scanner SP items are also available.

   To enter normal Copy SP mode, press “Copy SP”.
4. When you are finished, press “Exit” to exit the SP mode, then press again to return to the Copier Window.

To Enter and Exit the Super SP Mode

5. Press “Clear Modes ⌧.”
6. On the operation panel keypad, press ①⓪⑦.
7. Hold down “Clear/Stop Ⓒ/⊘” for more than 3 seconds.
   The Copy SP or PM Counter items are displayed. If the printer or scanner/printer option is installed, the Printer SP and Scanner SP items are also available.
8. Press "Copy SP" and the [#] on the operation panel together.
9. When you are finished, press “Exit” to exit the Super SP mode, then press "Exit" again to return to the Copier Window.

To Switch to the Copy Window for Test Printing

1. In the SP mode display, press “Copy Window” to switch to the copy operation screen when you need to select paper for a test print.
2. Use the copy window (copier mode) to select the appropriate settings (paper size, etc.) for the test print.
3. Press “Start ◇” 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

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

1. Press 5 8 3 1.
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".

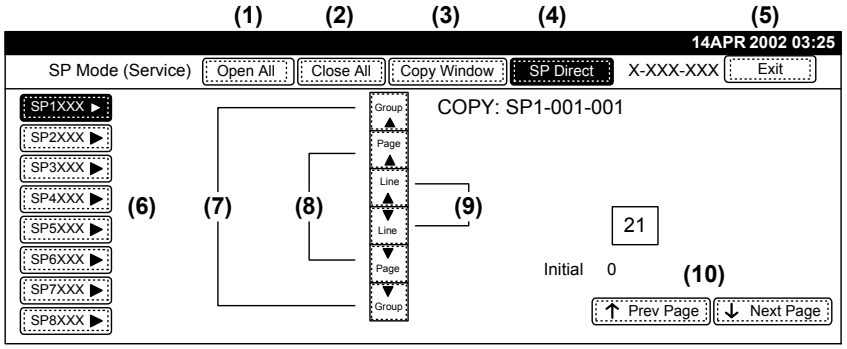
However, if you do not know all the numbers, enter only the first four numbers of the seven-digit SP and press "Enter #". The display goes immediately to the first SP of that group. Then you can use the buttons to browse to the desired selection.

Button Selection Entry

1. Refer to the SP Mode Tables at the end of this section to find the SP that you want to adjust.
2. Press the Group number on the left side SP Mode window that contains the SP that you want to adjust.
3. Use the scrolling buttons in the center of the SP mode window to display the SP number that you want to open, then press that number to expand the list.
4. Use the center touch-panel buttons to scroll to the number and title of the item that you want to set, and press #. The small entry box on the right is activated and displays the default or the current setting below.
5. To enter a setting
   - Press •/* 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 ◇" 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.

SP Mode Button Summary

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 and history. 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) SP8381 (B140)	Electrical total counter value
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. (See the next few pages for series-specific items tables)
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

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.

B246/D052 Series

5801	Memory Clear (**B246/D052**)	
	Resets NVRAM data to the default settings. Before executing any of these SP codes, print an SMC Report.	
001	All Clear	Initializes items 2 ~ 15 below.
002	Engine Clear	Initializes all registration settings for the engine and copy process settings.
003	SCS	Initializes default system settings, SCS (System Control Service) settings, operation display coordinates, and ROM update information.
004	IMH Memory Clear	Initializes the image file system. (IMH: Image Memory Handler)
005	MCS	Initializes the automatic delete time setting for stored documents. (MCS: Memory Control Service)
006	Copier application	Initializes all copier application settings.
007	Fax application	Initializes the fax reset time, job login ID, all TX/RX settings, local storage file numbers, and off-hook timer.
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)
012	R-FAX	Initializes the job login ID, SmartNetMonitor for Admin, job history, and local storage file numbers.
014	Clear DCS Setting	Initializes the DCS (Delivery Control Service) settings.
015	Clear UCS Setting	Initializes the UCS (User Information Control Service) settings.
016	MIRS Setting	Initializes the MIRS (Machine Information Report Service) settings.
017	CCS	Initializes the CCS (Certification and Charge-control Service) settings.
018	SRM Clear	Initializes the SRM (System Resource Manager) settings.
019	LCS Clear	Initializes the LCS (Log Count Service) settings.

5.2.2 SOFTWARE AND SETTING RESET

Software Reset

The software can be rebooted when the machine hangs up. To reboot the software, perform 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 (User Program) 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, so they are also useful for diagnosing if an image defect is the result of a faulty IPU.

NOTE: Do not operate the machine until the test pattern is printed out completely. Otherwise, an SC code 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 on the next page.)
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.

Test Pattern Table

The following patterns can be selected in 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 scanned 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 on the next page).
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.
   NOTE: Patterns 6, 8, 9, and 11 are the best choices for testing and confirming the operation of the IPU.

Test Pattern Table

The following 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.

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/B246/D052 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/B246/D052 SERIES

SD cards are used with the B140/B246 Series to update the software and to back up important data. Here is a list of the firmware modules that can be updated or restored from an SD card:

- GW controller software
- BCU software
- LCDC (operation panel) software
- Network Sys (network) software
- Web Sys (Web Image Monitor)
- Document Server software
- NFA (Net File) software
- Printer application software
- Scanner application software
- DESS (encryption module) software

Important:

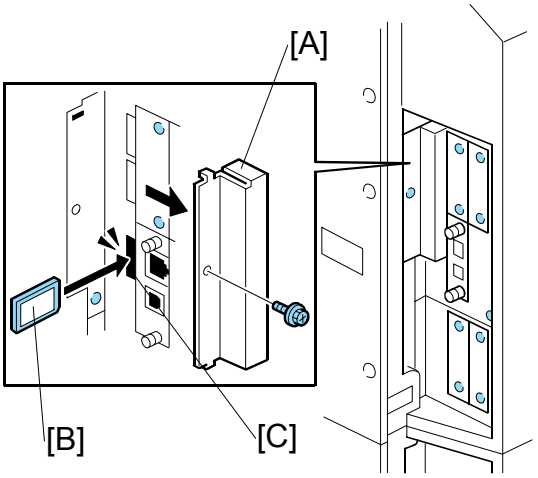
Here are some important points to remember when you use IC cards or SD cards.

- Never connect or remove an IC card or SD card with the machine power turned on.
- Never turn the power off while the machine is downloading data from an IC card or SD card.
- The IC cards and SD card are precision items. Use them carefully.
- Never store IC cards or SD cards in a location where they are exposed to high temperature, high humidity, or direct sunlight.
- Never bend an IC card or SD card, scratch it, or expose it to strong vibration.
- Before uploading data to an SD card, always confirm that its write-protect switch is off.

Doing the Software Update Procedure

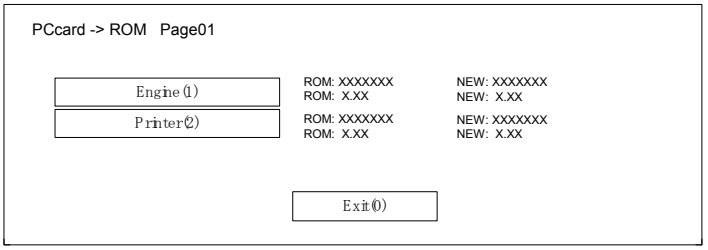
An SD card with the software downloaded to it is necessary for this procedure.

1. Turn the main switch off.
2. Remove the SD card slot cover [A].
3. Hold the SD card [B] (the surface with printing must be away from the front of the machine), and install the SD card in Slot **C3** [C].
4. Turn the main power switch on.



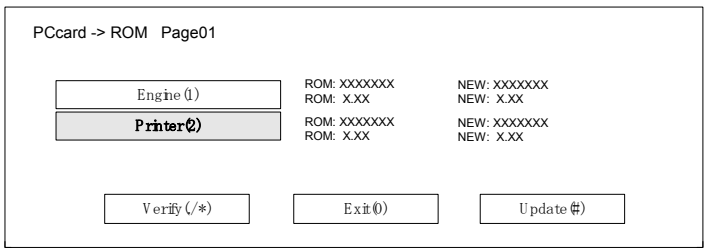
B246S902.WMF

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”.



B246S903.WMF

6. To select the item for upgrade, press 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.

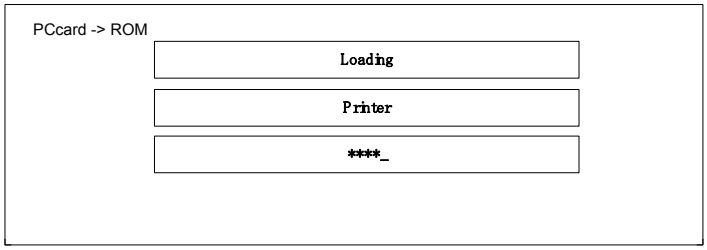


B246S904.WMF

- 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]:

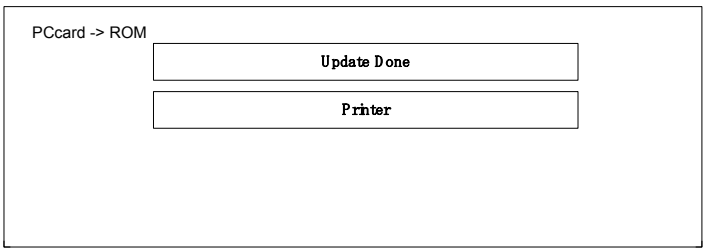


B246S905.WMF

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.

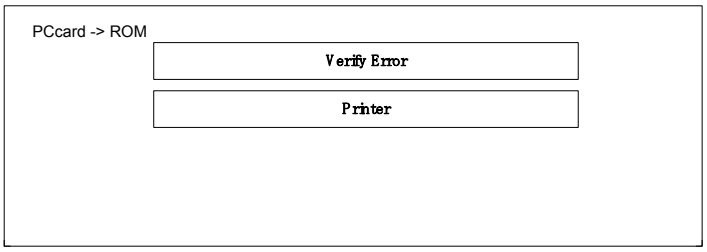


B246S906.WMF

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.

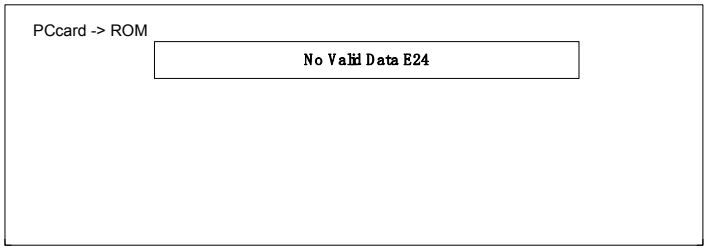


B246S907.WMF

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.

Errors During Firmware Update



B246S908.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 tray again, or replace the controller board.
50	Electronic confirmation check failed	SD update data is not correct. The data on the SD card is for a different machine. Get the correct data then install again.

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.

SD Card Boot (Forced Boot)

Use this procedure to boot up the machine if the boot area of the controller board becomes corrupt In most cases, this procedure needs to be performed only once. After that, the machine should be able to boot without the Boot SD Card If the Machine still will not boot normally, even after performing this procedure, investigate other potential failures (failed controller board, etc.).

1. Turn the main power off.
2. Insert the boot SD card into the C1 slot.
3. Set controller board DIP SW4 **#5OFF**, **#6ON** and **#7 OFF**.
4. Turn the main power **ON**
   NOTE: After the machine boots up, it will install the firmware stored on the boot SD Card.
5. Turn the main power **OFF**

6. Remove the boot SD Card from the C1 slot.
7. Return the DIP SW4 #6 to the OFF position.
8. Install all of the latest machine firmware posted on the TSC Web Site at http://www.tscweb.net

NVRAM Data Upload/Download

The content of the NVRAM can be uploaded to and downloaded from an SD card.

⇒ **IMPORTANT NOTE:**

The following data stored in the NVRAM will not be saved on the SD Card when performing an NVRAM Data Upload (SP5824):

- Total count categories (SP7-003-*** Copy Counter)
- C/O, P/O Counter (SP7-006-*** C/O, P/O Count Display)
- Dupelx, A3/DLT/Over 420 mm, Stapler and Scanner application scanning counters (system settings).
- Engine SP Data

Therefore, whenever an NVRAM Upload/Download is performed, make sure to print out the SP Data List efore performing SP5801-001 (Memory Clear: All Clear) or SP5801-002 (Memory Clear: Engine).

NVRAM Upload/Download Procedure:

1) Print out the SP Data list from SP5990-002.
2) Perform the NVRAM Data Upload (to the SD Card) according to the procedure below.
3) Perform the Memory Clear (SP5801-001 or 002).
4) Perform the NVRAM Data Download (from the SD Card) according to the procedure below.
5) Manually input the data listed above.

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 coped 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.

Service Tables

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 second attempt 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:

- This procedure also downloads the C/O, P/O Count data to the NVRAM:
- 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.

5.4.2 SOFTWARE UPDATE PROCEDURE: B064 SERIES

IC (PCMCIA/CIA) 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
- GW controller software
- LCDC (operation panel) software
- Language software
- Scanner (DIMM) software
- PHY: NCS (NIB) software
- PHY: NFA (NetFile) software
- Stamp data
- NVRAM software

First, install the BCU software, then the GW controller software, then the others can be upgraded in any order.

Important:

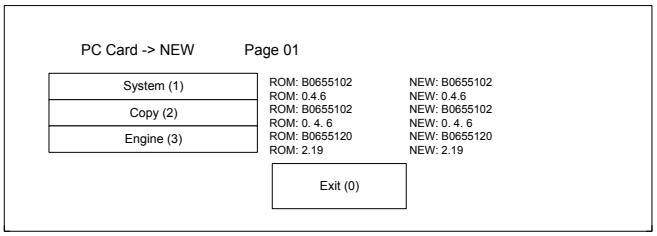
Here are some important points to keep in mind when handling and using IC cards.

- 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).

GW Controller/BCU Update

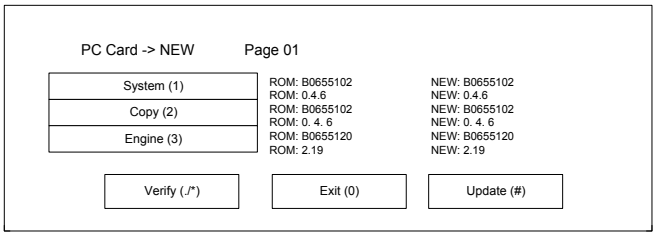
1. Switch the main power switch off.
2. Disconnect the ADF plug, remove the rear upper cover (☞ x 2), then remove the IC card slot cover (☞ x 1).
3. With it's a side facing up, insert the IC card into the slot.
4. Switch the machine on.
5. Wait for the update screen to open.



B246S909.WMF

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 GW 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.



B246S910.WMF

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 (x 2), then remove the IC card slot cover (x 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.

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.

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

- GW 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 GW 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 GW controller firmware Ver. 3x or later.
- When updating GW controller firmware Ver. 3x or later, use BCU firmware Ver. 4.x or later.

5.5 SERVICE PROGRAM MODE TABLES

5.5.1 SERVICE TABLE KEY

Notation	What it means
(B064)	An SP for the B064/B065 only. *1
(B140)	An SP for the B140 Series only. *1
(B140/B246/D052)	An SP for both the B140 Series and the B246/D052 Series.
(B246/D052)	An SP for the B246/D052 Series only.
[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, B140, and B246 Series are 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
NIA	No Information Available

*1: SP titles without these notations apply to machines of every series (B064, B140, B246/D052).

5.5.2 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	[–9~+9/0.1 mm]
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

1104*	Fusing Temperature Control **(B064)**
	Selects the fusing temperature control mode. [0~1/**0**] 0: On/Off control 1: Phase control If power supply to the machine is unstable, select Phase Control. The machine must be switched off and on after this setting is changed for the new setting to take effect. *Phase control could interfere with radio or TV reception.*

1105*	Fusing 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)**	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)**	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)**	Fusing temperature during printing: B140: [180~205/1 degree C]
007	Normal Paper (Center Thermistor) **(B140)**	Fusing temperature during printing: B140: [150~230/1 degree C]
008	Normal Paper (End Thermistor) **(B140)**	Fusing temperature during printing: B140: [180~205/1 degree C]
009	Small Size – Normal Paper (Center)	Fusing temperature at center of hot roller when printing on normal paper: B246: [180~205/1 degree C]
010	Small Size – Thick Paper (Center)	Fusing temperature at center of hot roller when printing on thick paper: B246: [180~205/1 degree C]

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.

1107	Start Fusing Temperature Adjustment (**B246**)	
	This SP allows you to set when to start the fusing temperature adjustment for the center and end heating lamps.	
001	Center Lamp Temperature	[180~205/**205**/1 deg C]
002	End Lamp Temperature	
003	Center Lamp Actual Time	[0~120/**60**/1 sec.]
004	End Lamp Actual Time	
005	Center Lamp Temp (Small Size Paper)	[190~205/**205**/1 deg C]
006	End Lamp Actual Time (Small Size Paper)	[0~120/**60**/1 sec.]
007	Center Lamp Temp (Thick Paper)	[190~205/**205**/1 deg C]
008	End Lamp Actual Time (Thick Paper)	[0~120/**60**/1 sec.]

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]

1103*	Fusing Idling **(B064)**
	This setting controls the length of time that the hot roller turns freely with no paper in the fusing unit. This increases the temperature of the hot roller. Adjusts the fusing idling time: [0~900/1 s] Increase this value when fusing on the 1st and 2nd copies is not completed because of low room temperature.

1104*	Fusing Temperature Control **(B064)**
	Selects the fusing temperature control mode. [0~1/1] 0: On/Off control 1: Phase control If power supply to the machine is unstable, select Phase Control. The machine must be switched off and on after this setting is changed for the new setting to take effect. *Phase control could interfere with radio or TV reception.*

1105*	Fusing 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)**	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)**	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)**	Fusing temperature during printing: B140: [180~205/1 degree C]
007	Normal Paper (Center Thermistor) **(B140)**	Fusing temperature during printing: B140/B246: [150~230/1 degree C]
008	Normal Paper (End Thermistor) **(B140)**	Fusing temperature during printing: B140/B246: [180~205/1 degree C]
009	Small Size – Normal Paper (Center)	Fusing temperature at center of hot roller when printing on normal paper: B246: [180~205/1 degree C]
010	Small Size – Thick Paper (Center)	Fusing temperature at center of hot roller when printing on thick paper: B246: [180~205/1 degree C]

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.

1107	Start Fusing Temperature Adjustment (**B246**)	
	This SP allows you to set when to start the fusing temperature adjustment for the center and end heating lamps.	
001	Center Lamp Temperature	[180~205/**205**/1 deg C]
002	End Lamp Temperature	
003	Center Lamp Actual Time	[0~120/**60**/1 sec.]
004	End Lamp Actual Time	
005	Center Lamp Temp (Small Size Paper)	[190~205/**205**/1 deg C]
006	End Lamp Actual Time (Small Size Paper)	[0~120/**60**/1 sec.]
007	Center Lamp Temp (Thick Paper)	[190~205/**205**/1 deg C]
008	End Lamp Actual Time (Thick Paper)	[0~120/**60**/1 sec.]

1112	Auto Process Control	
	Sets the temperature of the hot roller for auto process control to start. [70°~150°/1°C] **DFU**	

1159	Fusing Jam: SC Setting
	This SP determines what the machine does if paper jams occur in the fusing unit for three consecutive sheets of paper. 0: (default): A jam alert is shown on the screen. The customer can remove the jam and the machine works normally after that. 1: SC559 occurs. The technician must remove the jam.

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1300	GBC Punch	
	Enables GBC Punch	

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]

1903*	Web Job End
001	Yes/No
	This determines whether the web motor is driven at the end of a job. [0~1/1] 0: Off 1: On Enable when too much paper dust is causing copies to blacken.
002	Job End Condition (Continuous PPC Time)
	At the end of a job, the web motor is driven if the job lasted longer than the value of this SP mode. Only valid if SP1903-001 is set to 'On'. [1~99/1s]
003	Job End Frequency
	If the web motor is driven at the end of a job, this SP determines how many times the web motor operation is executed. [1~5/1]

1904	By-pass Tray Paper Size Correction
001	Minimum Size
	Calibrates the minimum paper width position of the sensor (100 mm). Move the side fences to the 100 mm position then press Execute.
002	Maximum Size
	Calibrates the maximum paper width position of the sensor (A3). Move the side fences to the A3 position then press Execute.

1905*	Thick Paper – By-pass Tray
	Adjusts the by-pass feed clutch operation for thick paper. [0~1/1] 1: On: 30 ms 0: Off: 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.

1906	Temperature/Humidity Sensor **DFU**
001	Temperature Sensor
002	Humidity Sensor

1907	Pre-Fusing Idling On/Off **(B140)**
	Pre-fusing idling: The hot roller turns freely to increase its temperature before thick paper or OHP goes through the fusing unit. [0~1/1] 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.

1910	Not Used
1911	Not Used
1912	Not Used
1920	Not Used

SP2xxx Drum

2001*	Charge Corona 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]

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	

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 *Unevenness may appear in dot patterns or narrowly spaced horizontal lines, i.e. some areas may appear lighter or darker than others.*
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]

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 [-900 to –100/10 V] *Adjust as a temporary measure to compensate for an aging drum until the old drum can be replaced.*
002	ID Sensor Pattern
	Adjusts the development bias used to create the ID sensor pattern. **DFU** [[-900 to –100/10 V] *This SP and SP2201-004 must be changed together by the same amount.*
003	OHP
	Adjusts the development bias for copying with OHP sheets. [-900 to –100/10 V]
004	ID Sensor Pattern Dev. Potential
	Adjusts the development potential to create the ID sensor pattern. **DFU** [-380 to -140/10 V] *This SP and SP2201-002 must be changed together by the same amount.*
005	Vb Scale Voltage Setting
	Sets the Vb target development bias voltage (Vb). **DFU** [-900 to -100/10 V]

2207*	Forced Toner Supply
	Rotates the toner bottle to supply toner to the toner supply unit. Press Execute to force toner supply. *Use to determine if toner supply is operating correctly. If forcing toner supply with this SP does not darken the image, then toner supply is not operating correctly.*

2208*	Toner Supply Mode
	Selects the toner supply mode: Sensor Control or Image Pixel Count. [0~1/1] 0: Sensor Control 1: Pixel Count Select Image Pixel Count only if the TD sensor has failed and cannot be replaced immediately, so that the customer can use the machine. Return the setting to Sensor Control after replacing the sensor.

2209*	Toner Supply Rate
	Adjusts the toner supply rate. [50~995/5 mg per sec] Increasing this value reduces the time the toner supply clutch remains on. Use a lower value if the user tends to make many copies that have large areas of black.

2210*	ID Sensor Pattern Interval
	Adjusts the time interval between making ID sensor patterns onto the drum for Vsp/Vsg detection. [-~200/1] Reduce the interval for copies that contain a high proportion of black.

2220*	Vref Manual Setting
	Adjusts the TD sensor reference voltage (Vref) manually. [1.00~4.00/0.11 V] Change this value after replacing the development unit with another one that already contains toner. For example, when using a development unit from another machine for test purposes, do the following: 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. [0~5.0 V]

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	Front	[10~200/1 μA]
002	Back	[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	

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	[10~200/1 µA]
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	[10~200/1 µA]
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	[10~200/1 µA]
006	Image Trailing Edge: Thick Paper	
007	Image Leading Edge: OHP	[10~200/1 µA]
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.]

2507*	ID Sen. Patt. During Job
001	Operation Setting
	Determines whether an ID sensor pattern is created during copy jobs. [0~1/1] 0: Off 1: On
002	No. of Copies
	Selects the interval (number of copies) between ID sensor patterns when 1 is selected for SP2507-001 [0~10,000/1]

2602	PTL Setting (1st /2nd Copy Side) **(B140)**	
	Turns the PTL off and on. The PTL (Pre-Transfer Lamp) decreases the charge on the drum to make better separation of the paper from the drum, and prevents stripper pawl marks on the leading edges of copies. **Note**: • The PTL operates only when copying with plain paper or translucent paper. It does not operate when copying with OHP, index sheets, or thick paper. • If blurring occurs in images at the leading edges of copies, switch SP2602-001 off (set to "0").	
001	ON/OFF Setting (1st Copy Side)	Turns the PTL lamp on/off during transfer to the front side of the paper at normal speed. This setting is always off when thick paper or OHPs are fed. [0~1/1] 0: Off 1: On The timing can be adjusted with SP2602-002.
002	OFF Timing (1st Copy Side)	Adjusts the length of the space from the leading edge where PTL quenching is applied to the front side at normal speed. For example, if you select +3, then quenching will be done 3 mm from the leading edge on the front side. [-5~10/0.1]
003	ON/OFF Setting (2nd Copy Side)	Turns the PTL lamp on/off during transfer to the front side of the paper at normal speed. [0~1/1] 0: Off 1: On
004	OFF Timing (2nd Copy Side)	Adjusts the length of the space from the leading edge where PTL quenching is applied to the back side at normal speed. For example, if you select +3, then quenching will be done 3 mm from the leading edge on the back side. [-5~10/0.1]

2801*	TD Sensor Initial Setting
	Press the Execute button to do the TD sensor initial setting. This SP mode controls the voltage applied to the TD sensor to make the TD sensor output about 3.0 V. When SP2967 is on, the TD sensor output is set to about 2.5 V. **Note**: Execute this SP only after replacing the TD sensor or developer.

2803	Charge Cleaner Start Time
	Press Start to clean the charge corona wire manually. When copy density across the paper is uneven, clean the wire with this mode.

2804	Charge Cleaner
001	Operation Mode
	Determines whether the charge corona wire is cleaned at regular intervals. [0~1/1] 0: No 1: Yes The time interval between cleaning is set with SP2804-002.
002	Number of Sheets
	Sets the interval (number of sheets printed) between charge corona wire cleanings. [100~10,000/100]

2813	Exposure Gamma Table **DFU**
	Is the gamma table is used when the printing test pattern is done with SP2902 003. [0~1/1] 0: Gamma table used in the printing test pattern. 1: Forces test pattern output with SP2902 003 (Printing Test Pattern). The write exposure gamma table is not applied. Current image mode selection or other settings are ignored.

2902	Test Pattern
001	IPU Test Pattern: Front Side
	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)
002	IPU Test Pattern: Back Side
	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)
003	Printing Test Pattern
	Produces the printer test patterns. (☛ 5.3.1) [0~27/1]
004	IPU Printing Test Pattern
	Produces test patterns in place of scan image data. (☛ 5.3.3) [0~5/1]

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] *To calculate the actual time of reverse rotation, multiply the selected value by the 15 ms.*
002	Rotation Interval
	Determines the frequency of drum reverse rotation for blade cleaning. [0~6/1 min.]

2913*	Temperature & 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

2930*	Transfer Idle Cleaning
	When resolution changes from 400 to 600 dpi, the LD writes a pattern on the drum. Toner is applied, and this must be cleaned off the belt. This SP mode determines whether bias is applied to the transfer belt cleaning bias roller at this time. **DFU** [0~1/1] 0: Off 1: On Switching this function on adds 3 s to the job time.

2931*	Transfer Current On/Off Timing (LCT)		
001	La1		Adjusts on transfer current ON timing for front side copying. [–30~+30/1 mm]
002	La1f	**DFU**	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 from the LCT. [–30~+30/1 mm]
010	La3f		Adjusts the transfer current OFF timing for copying thick paper from the LCT. [–30~+30/1 mm]
011	Lc3r		Adjusts the transfer current ON timing for copying with thick paper from the LCT [–30~+20/1 mm]
012	Lc3		Adjusts the transfer current OFF timing for copying with thick paper from the LCT. [–30~+30/1 mm]

2932*	Transfer Current 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 rear 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 from Tray 1. [–30~+30/1 mm]
010	La3f		Adjusts the transfer current OFF timing for the leading edge length when with copying thick paper from the bypass tray. [–30~+20/1 mm]
011	Lc3r		Adjusts the transfer current ON timing for the trailing edge length when copying with thick paper from Tray 1. [0~+20/1 mm]
012	Lc3		Adjusts the transfer current OFF timing for copying with thick paper from Tray 1. [–30~+30/1 mm]

2933*	Transfer Current On/Off Timing (Tray 2)		
001	La1		Adjusts on transfer current ON timing for front side copying. [–30~+30/1 mm]
002	La1f		Adjusts the area where transfer current is applied for the leading edge during front side copying. [0~+20/1 mm]
003	Lc1r		Adjusts the area where transfer current is applied for the trailing edge during front side copying. [0~+20/1 mm]
004	Lc1		Adjusts the transfer current OFF timing for front side copying. [–30~+30/1 mm]
005	La2		Adjusts on transfer current ON timing for back side copying. [–30~+30/1 mm]
006	La2f	**DFU**	Adjusts the area where transfer current is applied for the leading edge during rear 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 from Tray 2. [–30~+30/1 mm]
010	La3f		Adjusts the transfer current OFF timing for the leading edge length when copying thick paper from Tray 2. [0~20/1 mm]
011	Lc3r		Adjusts the transfer current ON timing for the trailing edge length when copying with thick paper from Tray 2. [0~20/1 mm]
012	Lc3		Adjusts the transfer current OFF timing for copying with thick paper from Tray 2. [–30~+30/1 mm]

2934*	Transfer Current 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 rear 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 from Tray 3. [–30~+30/1 mm]
010	La3f		Adjusts the transfer current OFF timing for the leading edge length when copying thick paper from Tray 3. [0~20/1 mm]
011	Lc3r		Adjusts the transfer current ON timing for the trailing edge length when copying with thick paper from Tray 3. [0~20/1 mm]
012	Lc3		Adjusts the transfer current OFF timing for copying with thick paper from Tray 3. [–30~+30/1 mm]

2935*	Transfer Current 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 rear 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 from Tray 4. [–30~+30/1 mm]
010	La3f		Adjusts the transfer current OFF timing for the leading edge length when copying thick paper from Tray 4. [0~20/1 mm]
011	Lc3r		Adjusts the transfer current ON timing for the trailing edge length when copying with thick paper from Tray 4. [0~20/1 mm]
012	Lc3		Adjusts the transfer current OFF timing for copying with thick paper from Tray 4. [–30~+30/1 mm]

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		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]
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]

2940*	Reface Mode
	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] *Increase the setting if the rotation of the drum is not smooth, that is, when drum rotation is making noise.*

2950	Vh Pattern Creation Setting **(B140) DFU**	
001	Exposure Level	[0~15/1]
002	Offset Light Amount	[-45 ~-100/1]

2961	Developer Adjust Mode **DFU**

2962	Automatic Adjustment of Drum Conditions
	Touch [Execute] to execute the process control cycle manually. Note: This SP executes only if SP3901 is enabled.

2963	Installation Mode
	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.

2964*	Transfer Cleaning Blade Forming
001	Pattern Interval Setting
	Selects the interval for application of a strip of toner across drum and transfer belt to prevent the drum cleaning blade and belt cleaning blade from sticking and bending against the drum or belt. [0~200/1 copy] **DFU** *If set to zero, then no pattern is created.*
002	Pattern Light Amount Setting
	Adjusts the intensity of light that is used to create the blade protection pattern. [0~4/1] **DFU**
003	Transfer Current On/Off Setting
	Determines whether transfer current is switched on or off while the blade protection pattern is created. **DFU** Sets Off, toner is applied to the entire cleaning area and drum cleaning blade. [0~1/1] 0: Off 1: On

2965*	Toner Pump System Adjustment **DFU (B064)**	
	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: Toner Consumed (g) = Pixel Count x Target Toner Amount	
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/B246 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]

2966*	Drum Conditions: Periodic Adjustment (**B140/B246 Series**)
	Sets the time interval between automatic adjustments. [1~24/1 hour]

2967*	Developer Density Adjustment Mode
	Determines whether the amount of toner is checked during auto process control with only the TD sensor. With this feature on, the machine uses the TD sensor only. [0~1/1] 0: Off 1: On *During auto process control execution after the main switch is turned on, the toner amount in the development unit is normally checked and adjusted using the ID sensor. However, in some environments, such as where there could be traces ammonia in the air, copies could appear dirty or too dark because the ID sensor reading is not reliable.*

2968	Toner Exit Mode
	Press Execute to force used toner into the toner collection bottle. The moving components of the cleaning and toner collection areas will rotate for about 60 sec. with the transfer belt released.

2969*	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	Used to check the number of toner bottle rotations.

2970*	Transfer Belt Resistance: Disp. Current Value (**B140)**
	Displays the resistance of the bare transfer belt at the interval between the leading edge of a sheet and the trailing edge of the sheet ahead of it in the paper path. The displayed value is (MΩ). **DFU**

2971*	Trans. Interval 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. *Switch on in an extremely hot environment to prevent the toner from overheating and clumping.*

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 ± 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

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.

3902*	Drum Condition Display
001	Auto Process Control On/Off
	Displays whether auto process control is switched on or off (0:Off, 1:**On**) When auto processing control is set on, displays only when the potential sensor is calibrated correctly. Auto process control is not executed when this SP is switched off. [0~1/1] 0: Off 1: On
002	Vd
	Displays drum dark potential, the standard potential, electrical potential of the black areas after exposure.
003	Vh
	Displays standard halftone drum potential, used for laser power adjustment.
004	Vg
	Displays the charge grid voltage resulting from the latest Vd adjustment.
005	LD Level
	Displays the LD power correction value as a result of the latest Vh adjustment.
006	ID Sensor Pattern Potential
	Displays Vid, the latest drum surface voltage measured on the ID sensor pattern.
007	Vql
	Displays the drum potential after quenching.
008	Vl
	Shows the standard electrical potential of white areas on the drum after exposure.

3903*	Drum Rotation Time Extension On/Off (**B064Series**)
	Turn this setting on to decrease out-of-focus copy images when the machine is used immediately after power-on. [0~1/1] 0: Off 1: On *If On is selected, after auto process control, the drum continues to rotate until the fusing unit gets to its operation temperature.*

3903*	Drum Rotation Time Extension Mode **(B140/B246 Series)**
001	(0:OFF/1:ON)
	Turns on the drum rotation mode. This increases the time that the drum turns freely after the machine is turned on. After this function is turned on with this SP, it will be enabled only when SP3904 001 is set to "2". If SP3904 001 is set to "0" or "1", the extra drum rotation mode will not be enabled. [0~1/1] 0: Extra drum rotation mode is off. 1: After auto process control, the drum continues to turn until the fusing unit gets to its operation temperature. Use this setting to decrease out-of-focus copy images when the machine is used immediately after power-on.
002	Drum Rotation Time
	Sets the amount of time the drum turns in the drum rotation mode before the first copy after the machine is turned on. SP3903-001 must be on or this setting has no effect. [120~600/1]

3904	Warm Up Short Mode **(B140/B246 Series)**
	Controls when corona wire cleaning is done to adjust the length of time that is necessary for startup. [0~2/1] 0: Charge corona wire not cleaned when the machine is turned on. Warmup Time: 30 sec. (Short Process Control is done) 1: Charge corona wire cleaned only when the machine is turned on. Warmup Time: 30 sec. + 40 sec. (for cleaning) = 70 sec. (Short Process Control is done) 2: Normal startup procedure at power on: Warmup Time: 240 sec. (Full Process Control is done; same as B064) • 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)

SP4xxx Scanner

4008*	Scanner Sub Scan Magnification
	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 %] *Setting a lower value reduces the speed of the motor and lengthens the image in the sub scan direction (direction of paper feed).* *Setting a higher value increases the speed of the motor speed and shortens the image in the sub scan direction.*

4010*	Scanner Leading Edge Registration
	Adjust the registration of the leading edge for scanning in the sub scan direction. [–0.9~+0.9/0.1 %] *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.* *Setting a larger value shifts the image away from the leading edge, and a smaller value shifts the image toward the leading edge.*

4011*	Scanner Side-to-Side Registration
	Adjusts the side-to-side registration for scanning in the main scan direction across the page. [–0.3~+0.3/0.1 %] *Setting a negative value shifts the image toward the left edge, and setting a positive value shifts the image toward the right edge.*

4012*	Scanner Erase Margin	
	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.	
001	Leading Edge	[0~0.9/0.1 mm]
002	Trailing Edge	
003	Right	
004	Left	

4013	Scanner Free Run	
	Switches on/off a scanner free run. The scanning area is A3. Press “On” or “Off”.	
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.

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
	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 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.

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	Check On/Off Change (0:OFF/1:ON)
	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. [0~1/1] 0: Off. No dust warning. 1: On. Dust warning. This warning does not stop the job. **Note**: Before switching this setting on, clean the ADF scanning glass and the white plate above the scanning glass.
002	Detect Level
	Adjusts the sensitivity for dust detection on the ADF scanning glass. This SP is available only after SP4020-001 is switched on. [0~8/1] • 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	Rejection Level
	Sets the level for vertical line correction (the black vertical lines caused by dust on the ADF exposure glass). [0~7/1] 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.

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*	APS A5 Size Detection
	Selects whether or not the copier determines that the original is A5/HLT size when the APS sensor does not detect the size. [0~1/1] 0: Not detected 1: A5 SEF (5 1/2" x 8 1/2") 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.

The following SP codes are for the B246/D052 Series.

4550	Scanner:Text/***	
4551	Scanner: Text	
4553	Scanner: Text/Photo	
4554	Scanner: Photo	
4565	Scanner: Grayscale	
4580	Fax: Text/***	
4581	Fax: Text	
4582	Fax: Text/Photo	
4583	Fax: Photo	
4584	Fax: Original 1	
4585	Fax: Original 2	
001	MTF Filter Level: Main Scan: 0-15	Sets the MTF level (Modulation Transfer Function) coefficient designed to improve image contrast. Set higher for stronger effect, lower for weaker effect. [0~15/1]
003	MTF Filter Strength: Main Scan: 0-7	Sets the strength of the coefficient selected for 001. [0~7/1] Note: Set 001 before adjusting the strength with 002.
006	Smoothing Filter:0-7	Use to remove "jaggies" if they appear. Set higher for smoother. [0~7/1]
007	Brightness:1-255	Set higher for darker, set lower for lighter. [1~255/1]
008	Contrast:1-255	Set higher for more contrast, set lower for less contrast. [1~255/1]
009	Isolated Dot Removal:0-7	This SP sets the level for removing dots when a color original is scanned with a scanner software application. The higher the setting, the greater the effect applied for removing background dots. [0~7/**0**/1]

4600*	Read SBU ASIC ID
	Displays the SBU ID code confirmed by reading the SBU after the SBU adjusts automatically at power on. [0~FFFFh/1]

4601*	SBU PLL Adjustment
	Adjusts the PLL bandwidth. **DFU** [0~FFFFh/1]

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	**DFU**
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	

4700*	Read CIS ASIC ID
	Reads and displays the ID of the CIS board at power.

4701*	Frequency Adjust	**DFU**
4702*	Periodic Adjustment Setting	

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	

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] 0: Softest 3: Print Original Mode 6: Sharpest
006	Photo Mode Dithering (55.5~75.0%	
007	Photo Mode Dithering (75.5%~160%)	
008	Photo Mode Dithering (160.5~400.0%)	
	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] 0: Softest 1: Normal (Default) 6: Sharpest
010	Photo Mode Error Diffusion (55.5~75.0%	
011	Photo Mode Error Diffusion (75.5%~160%)	
012	Photo Mode Error Diffusion (160.5~400.0%)	
	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] 0: Softest 1: Photo Priority 5: Normal (Default) 9: Text Priority 10: Sharpest
014	Text/Photo Mode (55.5~75.0%	
015	Text/Photo Mode (75.5%~160%)	
016	Text/Photo Mode (160.5~400.0%)	
	Pale Mode	
	Adjusts the sharpness and texture of images processed in Pale mode.	
017	Pale Mode (25.0~55%)	[0~10/1] 0: Softest 1: Soft 5: Normal (Default) 9; Sharp 10: Sharpest
018	Pale Mode (55.5~75.0%	
019	Pale Mode (75.5%~160%)	
020	Pale Mode (160.5~400.0%)	
	Generation Mode	
	Adjusts the sharpness and texture of images processed in Generation mode.	
021	Generation Mode (25.0~55%)	[0~10/1] 0: Softest 1: Soft 5: Normal (Default) 9: Sharp 10: Sharpest
022	Generation Mode (55.5~75.0%	
023	Generation Mode (75.5%~160%)	
024	Generation Mode (160.5~400.0%)	

	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

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	Turns line correction on/off for each mode. [0~1/1] 0: No processing 1: Makes thin lines more thick.
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]

SP5xxx Mode

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 *This status lamp requires special ordering and installation for this machine.*

5045	Accounting Counter
	Selects the counting method if the meter charge mode is enabled with SP5-930-001. Note: You can change the setting only one time. [0 to 1/ 1] 0: Development counter. Shows the total counts for color (Y,M,C) and black (K). 1: Paper counter. Shows the total page counts for: Color Total, Black Total, Color Copies, Black Copies, Color Prints, Black Prints.

5047	Reverse Display	
001	Reverse Paper Display	Determines whether the tray loaded with paper printed on one side is displayed on the operation panel. [0~1/0/1] 0: Not displayed 1: Displayed
002	Punched Paper	Determines whether the tray loaded with punched paper is displayed on the operation panel. [0~1/1/1] 0: Disable 1: Enable

5051	Toner Refill Detection Display **Japan Only**

5055	Display IP Address (**B246**)
	Switches the banner display of MFP device display on and off. [OFF] ON

5057	Assign Eye-Catch Icons
	Determines whether the eye-catch icons are displayed in the color mode for copying and scanning. [0~1/0/1] 0: Display off 1: Display on

5104	A3/DLT Double Count
	Specifies whether the counter is doubled for A3/DLT. “Yes” counts except from the bypass tray. When “Yes” is selected, A3 and DLT paper are counted twice, that is A4 x2 and LT x2 respectively.

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 (countdown type) 3: Pre-paid card 4: Coin Lock 5: MF key card 11: Exp Key Card (Add) 12: Exp Key Card (Deduct)
002	External Optional Counter Type
	Enables the SDK (Software Development Kit) application. This lets you select a number for the external device for user access control. [0~3/1] 0: No external devices. 1: External device 1 – key card 2: External device 2 – key card (countdown type) 3: External device 3 – pre-paid card

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

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 Only) 1: NA (North America) 2: EU (Europe) After changing the value, turn the main power switch off and on.

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	[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 x 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”.
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	

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. *With this SP selected on, paper jams are not detected in the paper path.*

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.

5158	Cover Feeder Size Change (**B140)**	
	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/B246/D052)**
	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

5167	Fax Printing Mode at Optional Counter Off (**B246/D052**)

5169	CE Login **(B140/B246/D052)**
	If you will change the printer bit switches, you must 'log in' to service mode with this SP before you go into the printer SP mode. [0~1/1] 0: Off. Printer bit switches cannot be adjusted. 1: On. Printer bit switches can be adjusted.

5187	PM Counter Print Out in UP (**B246/D052**)
	This setting determines whether parts without standard counts print in addition to the normal counter list [0~1/**0**/1] 0: No 1: Yes

5227	Page Numbering (**B246/D052**)
200	Change Page No. Display
	This SP code determines whether the page number adjustment display is on or off. [0~1/0/1] 0: Display off 1: Display on
201	Allow Page No. Entry
	This SP specifies the number of digits to display for the entry of the starting page number. [2~9/9/1]
202	Zero Surplus Setting
	This setting determines whether page numbers are prefixed with excess zeros when the number is smaller than the number of assigned digits. For example, with this setting on and 3 digits have been specified, the number "3" appears as "003". With this setting off, the number "3" will appear as a "3" without the zeros. [0~1/0/1] 0: No excess zeros 1: Excess zeros displayed

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 **DFU**
	Sets the time clock for the local time. This setting is done at the factory before delivery. The setting is GMT expressed in minutes. [–1440~1440/1 min.] JA: +540 (Tokyo) NA: -300 (NY) EU: +6- (Paris) CH: +480 (Peking) TW: +480 (Taipei) AS: +480 (Hong Kong)

5305	Auto Off Function Release Setting
	This SP prevents the user from easily disabling the auto off timer. This is done to conform with international Energy Star standards that specifically state that the user shall not be able to easily switch off the auto off feature. 0: On (Auto Off cannot be released 1: Off (Auto Off can be released)

5307*	Summer Time	
	Lets you set the machine to adjust its date and time automatically with the change to Daylight Savings time in the spring and back to normal time in the fall. This SP lets you set these items: - Day and time to go forward automatically in April. - Day and time to go back automatically in October. - Set the length of time to go forward and back automatically. The settings for 002 and 003 are done with 8-digit numbers:	
	Digits	**Meaning**
	1st, 2nd	Month. 4: April, 10: October (for months 1 to 9, the first digit of 0 cannot be input, so the eight-digit setting for 002 or 003 becomes a seven-digit setting)
	3rd	Day of the week. 0: Sunday, 1: Monday
	4th	The number of the week for the day selected at the 3rd digit. If "0" is selected for "Sunday", for example, and the selected Sunday is the start of the 2nd week, then input a "2" for this digit.
	5th, 6th	The time when the change occurs (24-hour as hex code). Example: 00:00 (Midnight) = 00, 01:00 (1 a.m.) = 01, and so on.
	7th	The number of hours to change the time. 1 hour: 1
	8th	If the time change is not a whole number (1.5 hours for example), digit 8 should be 3 (30 minutes).
001	Setting	Enables/disables the settings for 002 and 003. [0~1/1] 0: Disable 1: Enable
002	Rule Set (Start)	The start of summer time.
003	Rule Set (End)	The end of summer time.

5401	Access Control **DFU**		
	This SP stores the settings that limit uses access to SDK application data.		
006	User Recognition – Copier	This SP codes are provided for future customization of the access control feature. This is to be done at the factory, not in the field. **DFU**	
016	Use Recognition – Document Server		
026	User Recognition – Fax		
036	User Recognition – Scanner		
046	User Recognition – Printer		
076	User Recogntion – Expanded Function 1		
086	User Recogntion – Expanded Function 2		
096	User Recogntion – Expanded Function 2		
⇒ 103	Default Document ACL Used to assign the default access privileges of users to their own documents on the Document Server. **0**:Read only (default) 1:edit 2:edit/delete 3:full control **NOTE**: Available only when using Windows / LDAP / Integration Server Authentication. Applies to new users only, it will not affect existing users.		
200	SDK1 Unique ID	"SDK" is the "Software Development Kit". This data can be converted from SAS (VAS) when installed or uninstalled. **DFU**	
201	SDK1 Certification Method		
210	SDK2 Unique ID		
211	SDK2 Certification Method		
220	SDK3 Unique ID		
221	SDK3 Certification Method		

5404	User Code Count Clear (**B140/B246**)
	Clears the counts for the user codes assigned by the key operator to restrict the use of the machine. Press [Execute] to clear.

5501	PM Alarm **(B140/B246)**
001	PM Alarm Interval
	Sets the PM interval. *The value stored in this SP is used when the value of SP55012 is "1".* [0 ~ 255 / **0** / 1 k copies/step]
002	Original Count Alarm **DFU**
	Selects whether the PM alarm for the number of scans is enabled or not. *If this is "1", the PM alarm function is enabled.* [0 = **No** / 1 = Yes]

5504	Jam Alarm (**B246**) **Japan Only**
	Sets the alarm to sound for the specified jam level (document misfeeds are not included). **RSS use only** [0~3 / **3** / 1 step] 0:Zero (Off) 1:Low (2.5K jams) 2:Medium (3K jams) 3:High (6K jams)

5505	Error Alarm (**B246**)
	Sets the error alarm level. **Japan only DFU** [0~255 / **50** / 100 copies per step]

5507	Supply Alarm	
001	Paper Supply Alarm (0:Off 1:On)	Switches the control call on/off for the paper supply. **DFU** **0: Off**, 1: On 0: No alarm. 1: Sets the alarm to sound for the specified number transfer sheets for each paper size (A3, A4, B4, B5, DLT, LG, LT, HLT)
002	Staple Supply Alarm (0:Off 1:On)	Switches the control call on/off for the stapler installed in the finisher. **DFU** **0: Off**, 1: On 0: No alarm 1: Alarm goes off for every 1K of staples used.
003	Toner Supply Alarm (0:Off 1:On)	Switches the control call on/off for the toner end. **DFU** **0: Off**, 1: On If you select "1" the alarm will sound when the copier detects toner end.
128*	interval: Others	The "Paper Supply Call Level: nn" SPs specify the paper control call interval for the referenced paper sizes. **DFU** [00250 ~ 10000 / **1000** / 1 Step]
132*	Interval: A3	
133*	Interval: A4	
134*	Interval: A5	
141*	Interval: B4	
142*	Interval: B5	
160*	Interval: DLT	
164*	Interval: LG	
166*	Interval: LT	
172*	Interval: HLT	

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

5513	Parts Alarm Level Count **Japan Only**
1	Normal
	Sets the parts replacement alarm counter to sound for the number of copies. [1~9999 / **350** / 1]
2	DF
	Sets the parts replacement alarm counter to sound for the number of scanned originals. [1~9999 / **350** / 1]

5514	Parts Alarm Level **Japan Only**	
001	Normal	[0~1 / **1** / 1]
002	DF	[0~1 / **0** / 1]

5515	SC/Alarm Setting	
	With NRS (New Remote Service) in use, these SP codes can be set to issue an SC call when an SC error occurs. If this SP is switched off, the SC call is not issued when an SC error occurs.	
001	SC Call	[0~1/**1**/1] 0: Off 1: On
002	Near End Call	
003	End Call	
004	User Call	
005	Not Used	[0~1/**1**/1]
006	TX Test	
007	Device Information	
008	Alarm	
009	Illegal Toner	
010	Auto Order Supplies	[0~1/**0**/1]
011	Supply Management Report	
012	Jam/Door Open	[0~1/**1**/1]

5801	Memory Clear (B064/B140 Series)	
	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)
017	CCS	Initializes the CCS (Certification and Charge-control Service) settings. (B140)

5801	Memory Clear (**B246/D052**) (Refer to **IMPORTANT NOTE** in *NVRAM Data Upload/Download*)	
	Resets NVRAM data to the default settings. Before executing any of these SP codes, print an SMC Report.	
001	All Clear	Initializes items 2 ~ 15 below.
002	Engine Clear	Initializes all registration settings for the engine and copy process settings.
003	SCS	Initializes default system settings, SCS (System Control Service) settings, operation display coordinates, and ROM update information.
004	IMH Memory Clear	Initializes the image file system. (IMH: Image Memory Handler)
005	MCS	Initializes the automatic delete time setting for stored documents. (MCS: Memory Control Service)
006	Copier application	Initializes all copier application settings.
007	Fax application	Initializes the fax reset time, job login ID, all TX/RX settings, local storage file numbers, and off-hook timer.
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)
012	R-FAX	Initializes the job login ID, SmartNetMonitor for Admin, job history, and local storage file numbers.
014	Clear DCS Setting	Initializes the DCS (Delivery Control Service) settings.
015	Clear UCS Setting	Initializes the UCS (User Information Control Service) settings.
016	MIRS Setting	Initializes the MIRS (Machine Information Report Service) settings.
017	CCS	Initializes the CCS (Certification and Charge-control Service) settings.
018	SRM Clear	Initializes the SRM (System Resource Manager) settings.
019	LCS Clear	Initializes the LCS (Log Count Service) settings.

5802*	Printer Free Run
	Makes a base engine free run [0~1/1] 0: Disable: Release free run mode 1: Enable: Enable free run mode Return this setting to off (0) after testing is completed.

5803	Input Check
	Displays signals received from sensors and switches. (☛ 5.6.1)

5804	Output Check
	Turns on the electrical components individually for testing. (☛ 5.6.2)

5807	Option Connection Check	
001	ADF (1:Connect)	Displays a 1 or 0 to indicate the status of the device. (002: Bank – Japan) [0~1/1] 1: Connected 0: Not connected
002	Bank (1:Connect)	
003	LCT (1:Connect)	
004	Finisher (1:Connect)	

5811	Machine No. Setting
	This SP presents the screen used to enter the 11-digit number of the machine. The allowed entries are "A" to "Z" and "0" to "9". The setting is done at the factory, and should not be changed in the field. **DFU**
001	Code Set
	This SP code is used to enter the machine serial number at the factory before shipping (11 digits numbers 0-9 and letters A-Z). **DFU**
003	ID Code Display
	Not used

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
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.
007	SSL Disable
	Controls if RCG (Remote Communication Gate) confirmation is done by SSL during an RCG send for the NRS over a network interface. [0~1/1] 0: Yes. SSL not used. 1: No. SSL used.
008	RCG Connect Timeout
	Sets the length of time (seconds) for the time-out when the RCG (Remote Communication Gate) connects during a call via the NRS network. [1~90/1 sec.]
009	RCG Write to Timeout
	Sets the length of time (seconds) for the time-out when sent data is written to the RCG during a call over the NRS network. [0~100/1 sec.]
010	RCG Read Timeout
	Sets the length of time (seconds) for the timeout when sent data is written from the RCG during a call over the NRS network. [0~100/1 sec.]
011	Port 80 Enable
	Controls if permission is given to get access to the SOAP method over Port 80 on the NRS network. [0~1/1] 0: No. Access denied 1: Yes. Access granted.
021	RCG – C Registered
	This SP displays the Cumin installation end flag. 1: Installation completed 2: Installation not completed
022	RCG – C Registered Detail
	This SP displays the Cumin installation status. 0: Basil not registered 1: Basil registered 2: Device registered

023	Connect Type (N/M)
	This SP displays and selects the Cumin connection method. **0**: Internet connection 1: Dial-up connection
061	Cert. Expire Timing **DFU**
	Proximity of the expiration of the certification.
062	Use Proxy
	This SP setting determines if the proxy server is used when the machine communicates with the service center.
063	HTTP Proxy Host
	This SP sets the address of the proxy server used for communication between Cumin-N and the gateway. Use this SP to set up or display the customer proxy server address. The address is necessary to set up Cumin-N. **Note**: • The address display is limited to 127 characters. Characters beyond the 127th character are ignored. • This address is customer information and is not printed in the SMC report.
064	HTTP Proxy Port Number
	This SP sets the port number of the proxy server used for communication between Cumin-N and the gateway. This setting is necessary to set up Cumin-N. **Note**: This port number is customer information and is not printed in the SMC report.
065	HTTP Proxy Certification User Name
	This SP sets the HTTP proxy certification user name. **Note**: • The length of the name is limited to 31 characters. Any character beyond the 31st character is ignored. • This name is customer information and is not printed in the SMC report.
066	HTTP Proxy Certification Password
	This SP sets the HTTP proxy certification password. **Note**: • The length of the password is limited to 31 characters. Any character beyond the 31st character is ignored. • This name is customer information and is not printed in the SMC report.

067	CERT: Up State	
	Displays the status of the certification update.	
	0	The certification used by Cumin is set correctly.
	1	The certification request (setAuthKey) for update has been received from the GW URL and certification is presently being updated.
	2	The certification update is completed and the GW URL is being notified of the successful update.
	3	The certification update failed, and the GW URL is being notified of the failed update.
	4	The period of the certification has expired and new request for an update is being sent to the GW URL.
	11	A rescue update for certification has been issued and a rescue certification setting is in progress for the rescue GW connection.
	12	The rescue certification setting is completed and the GW URL is being notified of the certification update request.
	13	The notification of the request for certification update has completed successfully, and the system is waiting for the certification update request from the rescue GW URL.
	14	The notification of the certification request has been received from the rescue GW controller, and the certification is being stored.
	15	The certification has been stored, and the GW URL is being notified of the successful completion of this event.
	16	The storing of the certification has failed, and the GW URL is being notified of the failure of this event.
	17	The certification update request has been received from the GW URL, the GW URL was notified of the results of the update after it was completed, but an certification error has been received, and the rescue certification is being recorded.
	18	The rescue certification of No. 17 has been recorded, and the GW URL is being notified of the failure of the certification update.
068	CERT: Error	
	Displays a number code that describes the reason for the request for update of the certification.	
	0	Normal. There is no request for certification update in progress.
	1	Request for certification update in progress. The current certification has expired.
	2	An SSL error notification has been issued. Issued after the certification has expired.
	3	Notification of shift from a common authentication to an individual certification.
	4	Notification of a common certification without ID2.
	5	Notification that no certification was issued.
	6	Notification that GW URL does not exist.
069	CERT: Up ID	
	The ID of the request for certification.	
083	Firmware Up Status	
	Displays the status of the firmware update.	
084	Non-HDD Firm Up	
	This setting determines if the firmware can be updated, even without the HDD installed.	

085	Firm Up User Check	
	This SP setting determines if the operator can confirm the previous version of the firmware before the firmware update execution. If the option to confirm the previous version is selected, a notification is sent to the system manager and the firmware update is done with the firmware files from the URL.	
086	Firmware Size	
	Allows the service technician to confirm the size of the firmware data files during the firmware update execution.	
087	CERT: Macro Version	
	Displays the macro version of the NRS certification	
088	CERT: PAC Version	
	Displays the PAC version of the NRS certification.	
089	CERT: ID2 Code	
	Displays ID2 for the NRS certification. Spaces are displayed as underscores (_). Asteriskes () indicate that no NRS certification exists.	
090	CERT: Subject	
	Displays the common name of the NRS certification subject. CN = the following 17 bytes. Spaces are displayed as underscores (_). Asterisks () indicate that no DESS exists.	
091	CERT: Serial Number	
	Displays serial number for the NRS certification. Asterisks () indicate that no DESS exists.	
092	CERT: Issuer	
	Displays the common name of the issuer of the NRS certification. CN = the following 30 bytes. Asteriskes () indicate that no DESS exists.	
093	CERT: Valid Start	
	Displays the start time of the period for which the current NRS certification is enabled.	
094	CERT: Valid End	
	Displays the end time of the period for which the current NRS certification is enabled.	
200	Manual Polling	
	No information is available at this time.	
150	Selection Country	
	Select from the list the name of the country where Cumin-M is installed in the machine. After selecting the country, you must also set the following SP codes for Cumin-M: • SP5816-153 • SP5816-154 • SP5816-161	
	0: Japan	6: Italy
	1: USA	7: Netherlands
	2: Canada	8: Belgium
	3: UK	9: Luxembourg
	4: Germany	10: Spain
	5: France	

151	Line Type Authentication Judgment
	Touch [Execute]. Setting this SP classifies the telephone line where Cumin-M is connected as either dial-up or push type, so Cumin-M can automatically distinguish the number that connects to the outside line. • The current progress, success, or failure of this execution can be displayed with SP5816 152. • If the execution succeeded, SP5816 153 will display the result for confirmation and SP5816 154 will display the telephone number for the connection to the outside line.
152	Line Type Judgment Result
	Displays a number to show the result of the execution of SP5816 151. Here is a list of what the numbers mean.
	0: Success
	1: In progress (no result yet). Please wait.
	2: Line abnormal
	3: Cannot detect dial tone automatically
	4: Line is disconnected
	5: Insufficient electrical power supply
	6: Line classification not supported
	7: Error because fax transmission in progress – ioctl() occurred.
	8: Other error occurred
	9: Line classification still in progress. Please wait.
153	Selection Dial/Push
	This SP displays the classification (tone or pulse) of the telephone line to the access point for Cumin-M. The numbered displayed (0 or 1) is the result of the execution of SP5816 151. However, this setting can also be changed manually. [0~1/**0**/1] 0: Tone Dialing Phone 1: Pulse Dialing Phone Inside Japan "2" may also be displayed: 0: Tone Dialing Phone 1: Pulse Dialing Phone 10PPS 2: Pulse Dialing Phone 20PPS
154	Outside Line/Outgoing Number
	The SP sets the number that switches to PSTN for the outside connection for Cumin-M in a system that employs a PBX (internal line). • If the execution of SP5816 151 has succeeded and Cumin-M has connected to the external line, this SP display is completely blank. • If Cumin-M has connected to an internal line, then the number of the connection to the external line is displayed. • If Cumin-M has connected to an external line, a comma is displayed with the number. The comma is inserted for a 2 sec. pause. • The number setting for the external line can be entered manually (including commas).
155	Remove Service: PPP Recognition Timeout
	Sets the length of the timeout for the Cumin-M connection to its access point. The timeout is the time from when the modem sends the ATD to when it receives the result code. [1~65536/**60**/1]

156	Dial Up User Name
	Use this SP to set a user name for access to remote dial up. Follow these rules when setting a user name: • Name length: Up to 32 characters • Spaces and # allowed but the entire entry must be enclosed by double quotation marks (").
157	Dial Up Password
	Use this SP to set a password for access to remote dial up. Follow these rules when setting a user name: • Name length: Up to 32 characters • Spaces and # allowed but the entire entry must be enclosed by double quotation marks (").
159	Remote Service: Carrier Send Level
	This SP sets the level of the carrier signal for Cumin-M data transmissions. [0~15/**3**/1]
160	Remote Service: AT command
	This SP allows you to add an AT command to the initialization of the Cumin-M modem. This SP sets the AT command for both initialization and wait time of and outgoing call. It also includes the NULL instruction. Default: 0, up to 8 characters allowed.
161	Local Phone Number
	Use this SP to set the telephone number of the line where Cumin-M is connected. This number is transmitted to and used by the Call Center to return calls. Limit: 24 numbers (numbers)
162	Connection Timing Adjustment: Incoming
	When the Call Center calls out to a Cumin-M modem, it sends a repeating ID tone (*#1#). This SP sets the line remains open to send these ID tones after the number of the Cumin-M modem is dialed up and connected. [0~24/1/1] The actual amount of time is this setting x 2 sec. For example, if you set "2" the line will remain open for 4 sec.
163	Access Point
	This is the number of the dial-up access point for Cumin-M. If no setting is done for this SP code, then a preset value (determined by the country selected) is used. Default: 0 Allowed: Up to 16 alphanumeric characters
164	Line Connecting
	This SP sets the connection conditions for the customer. This setting dedicates the line to Cumin-M only, or sets the line for sharing between Cumin-M and a fax unit. [0~1/**0**/1] 0: Line shared by Cumin-M/Fax 1: Line dedicated to Cumin-M only **Note**: • If this setting is changed, the copier must be cycled off and on. • SP5816 187 determines whether the off-hook button can be used to interrupt a Cumin-M transmission in progress to open the line for fax transaction.

173	Modem Serial Number	
	This SP displays the serial number registered for the Cumin-M.	
174	Retransmission Limit	
	Normally, it is best to allow unlimited time for certification and ID2 update requests, and for the notification that the certification has been completed. However, Cumin-M generates charges based on transmission time for the customer, so a limit is placed upon the time allowed for these transactions. If these transactions cannot be completed within the allowed time, do this SP to cancel the time restriction.	
187	FAX/TX Priority	
	This SP determines whether pushing the off-hook button will interrupt a Cumin-M transmission in progress to open the line for fax transaction. This SP can be used only if SP5816 164 is set to "0". [0~1/**0**/1] 0:Disable. Setting the fax unit off-hook does not interrupt a fax transaction in progress. If the off-hook button is pushed during a Cumin-M transmission, the button must be pushed again to set the fax unit on-hook after the Cumin-M transmission has completed. 1:Enable. When Cumin-M shares a line with a fax unit, setting the fax unit off-hook will interrupt a Cumin-M transmission in progress and open the line for a fax transaction.	
201	Regist: Status	
	Displays a number that indicates the status of the NRS service device.	
	0	Neither the NRS device nor Cumin device are set.
	1	The Cumin device is being set. Only Box registration is completed. In this status the Basil unit cannot answer a polling request.
	2	The Cumin device is set. In this status the Basil unit cannot answer a polling request.
	3	The NRS device is being set. In this status the Cumin device cannot be set.
	4	The NRS module has not started.
202	Letter Number	
	Allows entry of the number of the request needed for the Cumin device.	
203	Confirm Execute	
	Executes the inquiry request to the NRS GW URL.	
204	Confirm Result	
	Displays a number that indicates the result of the inquiry executed with SP5816 203.	
	0	Succeeded
	1	Inquiry number error
	2	Registration in progress
	3	Proxy error (proxy enabled)
	4	Proxy error (proxy disabled)
	5	Proxy error (Illegal user name or password)
	6	Communication error
	7	Certification update error
	8	Other error
	9	Inquiry executing

205	Confirm Place		
	Displays the result of the notification sent to the device from the GW URL in answer to the inquiry request. Displayed only when the result is registered at the GW URL.		
206	Register Execute		
	Executes Cumin Registration.		
207	Register Result		
	Displays a number that indicates the registration result.		
	0	Succeeded	
	2	Registration in progress	
	3	Proxy error (proxy enabled)	
	4	Proxy error (proxy disabled)	
	5	Proxy error (Illegal user name or password)	
	6	Communication error	
	7	Certification update error	
	8	Other error	
	9	Registration executing	
208	Error Code		
	Displays a number that describes the error code that was issued when either SP5816 204 or SP5816 207 was executed.		
	Cause	**Code**	**Meaning**
	Illegal Modem Parameter	-11001	Chat parameter error
		-11002	Chat execution error
		-11003	Unexpected error
	Operation Error, Incorrect Setting	-12002	Inquiry, registration attempted without acquiring device status.
		-12003	Attempted registration without execution of an inquiry and no previous registration.
		-12004	Attempted setting with illegal entries for certification and ID2.
	Error Caused by Response from GW URL	-2385	Attempted dial up overseas without the correct international prefix for the telephone number.
		-2387	Not supported at the Service Center
		-2389	Database out of service
		-2390	Program out of service
		-2391	Two registrations for same device
		-2392	Parameter error
		-2393	Basil not managed
		-2394	Device not managed
		-2395	Box ID for Basil is illegal
		-2396	Device ID for Basil is illegal
		-2397	Incorrect ID2 format
		-2398	Incorrect request number format
209	Remote Setting Clear		
	Releases a machine from its Cumin setup.		
250	CommLog Print		
	Prints the communication log.		

5821	Remote Service Address **Japan 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~FFFFFFFFh/1]

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5824	NVRAM Data Upload (**B246/D052** Refer to **IMPORTANT NOTE** in *NVRAM Data Upload/Download*)
	Uploads the UP and SP mode data (except for counters and the serial number) from NVRAM on the control board to an SD card. **NOTE**: While using this SP mode, always keep the front cover open. This prevents a software module accessing the NVRAM during the upload.

5825	NVRAM Data Download
	Downloads data from an SD card to the NVRAM in the machine. After downloading is completed, remove the SD card and turn the machine power off and on.

5828	Network Setting **(B064)**	
012	Device Name	
	Use these SPs to perform the network settings.	
075	DNS Server From DHCP	**(B064)**
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
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

5828	Network Setting (**B140/B246/D052**)				
050	1284 Compatibility (Centro)	Enables and disables bi-directional communication on the parallel connection between the machine and a computer. [0~1/1] 0:Off 1: On			
052	ECP (Centro)	Disables and enables the ECP feature (1284 Mode) for data transfer. [0~1/1] 0: Disabled 1: Enabled			
065	Job Spool Setting	Switches job spooling spooling on and off. 0: No spooling 1: Spooling enabled			
066	Job Spool Clear	This SP determines whether the job interrupted at power off is resumed at the next power on. This SP operates only when SP5828 065 is set to 1. 1: Resumes printing spooled jog. 0: Clears spooled job.			
069	Job Spool Protocol	This SP determines whether job spooling is enabled or disabled for each protocol. This is a 8-bit setting.			
		0	LPR	4	BMLinks (Japan Only)
		1	FTP (Not Used)	5	DIPRINT
		2	IPP	6	Reserved (Not Used)
		3	SMB	7	Reserved (Not Used)
077	IPv4 DNS Server 2	Sets the IPv4 address for a DNS server. This address can be used among devices that have IPv4 devices (Ethernet, IPv4 Over 1394, IEEE 802.11b, etc.)			
078	IPv4 DNS Server 3				
079	Domain Name (Ethernet)				
084	Setting List PrintPrint Settings List	Prints a list of the NCS parameter settings.			
090	TELNET Operation SettingsTELNET (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 Operation Web (0:OFF 1:ON)	Disables or enables the Web operation. [0~1/1] 0: Disable 1: Enable			
092	Primary WINS Server IPv4 Address	This SP is used to set and later refer to the WINS IPv4 primary address used by the Ethernet or the wireless LAN (802.11b). The current address is displayed and printed in the SMC report as aaa.bbb.ccc.ddd and is entered as 8-bit data. For example, if the number "192.168.000.001" is entered, it is recorded as "0C0A80001h".			

096	Rendezvous Operation	This SP disables/enables Rendezvous operation. This is a set of protocols that allows a device on an IP network to automatically recognize and connect with other devices (such as a printer) on a network. Once a new device is connected to the network, it can be used immediately by every computer on the network. No special setup procedures or configuration settings are required 1: Enable 0: Disable
145	Operation IPv6 Link Local Address	This is the IPv6 local address link referenced on the Ethernet or wireless LAN (802.11b) in the format: "Link Local Address" + "Prefix Length" The IPv6 address consists of a total 128 bits configured in 8 blocks of 16 bits each.
147	Operation IPv6 Status Address 1	These SPs are the IPv6 status addresses (1 to 5) referenced on the Ethernet or wireless LAN (802.11b) in the format: "Status Address" + "Prefix Length" The IPv6 address consists of a total 128 bits configured in 8 blocks of 16 bits each.
149	Operation IPv6 Status Address 2	
151	Operation IPv6 Status Address 3	
153	Operation IPv6 Status Address 4	
155	Operation IPv6 Status Address 5	
156	IPv6 Manual Setting Address	This SP is the IPv6 manually set address referenced on the Ethernet or wireless LAN (802.11b) in the format: "Manual Set Address" + "Prefix Length" The IPv6 address consists of a total 128 bits configured in 8 blocks of 16 bits each.
157	Operation IPv6 Manual Setting Address	This SP is the operation IPv6 manually set address referenced on the Ethernet or wireless LAN (802.11b) in the format: "Operation Set Address" + "Prefix Length" The IPv6 address consists of a total 128 bits configured in 8 blocks of 16 bits each.
158	IPv6 Gateway Address	This SP is the IPv6 gateway address referenced on the Ethernet or wireless LAN (802.11b). The IPv6 address consists of a total 128 bits configured in 8 blocks of 16 bits each.
159	Operation IPv6 Gateway Address	This SP is the IPv6 operation gateway address referenced on the Ethernet or wireless LAN (802.11b). The IPv6 address consists of a total 128 bits configured in 8 blocks of 16 bits each.
162	IPv6 Access Control Display	This SP enables the display for access control of the IPv6 addresses.

5831	Initial Setting Clear
	Press Execute to initialize all User Tool settings and restore them to their factory settings.

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	HDD Formatting (Data for a Design)
009	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

5836*	Capture (**B064**)
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. *Enabled only when optional File Format Converter (MLB:Media Link Board) is installed.* [0~1/1] 0: Disable 1: Enable

061	Captured File Resend **(B064)**	
	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**
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. *Enabled only when optional File Format Converter (MLB: Media Link Board) is installed.*	
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)**	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: ½x 2: 1/3 x 3: ¼x
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)**	Removes the ghost images that are copied from the back sides of two-sided originals. [0~1/1] 0: Disable 1: Enable

5836	Capture Setting (**B140/B246/D052 Series**)	
001	Capture Function (0:Off 1:On)	
	With this function disabled, the settings related to the capture feature cannot be initialized, displayed, or selected. [0~1/1] 0: Disable 1: Enable	
002	Panel Setting	
	Determines whether each capture related setting can be selected or updated from the initial system screen. [0~1/1] 0: Disable 1: Enable The setting for SP5836-001 has priority.	
003	Print Back-up Function	
	Determines whether the print back-up function setting can be changed. [0~1/**0**/1] 0: Disable 1: Enable	
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 **DFU**	[0~3/1] 0: JFIF/JPEG, 1: TIFF/MMR, 2: TIFF/MH, 3: TIFF/MR
082	Format for Copy B&W Text	[0~3/1] 0: JFIF/JPEG, 1: TIFF/MMR, 2: TIFF/MH, 3: TIFF/MR
083	Format Copy B&W Other	[0~3/1] 0: JFIF/JPEG, 1: TIFF/MMR, 2: TIFF/MH, 3: TIFF/MR
084	Format for Printer Color **DFU**	[0~3/1] 0: JFIF/JPEG, 1: TIFF/MMR, 2: TIFF/MH, 3: TIFF/MR
085	Format for Printer B&W	[0~3/1] 0: JFIF/JPEG, 1: TIFF/MMR, 2: TIFF/MH, 3: TIFF/MR
086	Format for Printer B&W HQ	[0~3/1] 0: JFIF/JPEG, 1: TIFF/MMR, 2: TIFF/MH, 3: TIFF/MR
091	Default for JPEG	[5~95/1]
	Sets the JPEG format default for documents sent to the document management server with the MLB, with JPEG selected as the format. *Enabled only when optional File Format Converter (MLB: Media Link Board) is installed.*	
092	Capture Setting: Page Quality for JPEG (High Quality)	
	Determines the quality level of JPEG images for high quality sent to the Document Server via the MLB (Media Link Board). [5~95/**60**/1]	
093	Capture Setting: Page Quality for JPEG (Low Quality)	
	Determines the quality level of JPEG images for low quality sent to the Document Server via the MLB (Media Link Board). [5~95/**40**/1]	
094	Default Format for Backup Files	
	Sets the format for backup files created when the print backup function is used. [0~4/**0**/1] 0: TIFF 1: JPEG 2: J2K 3: PDF Single 4: PDF Multi	
095	Default Resolution for Backup Files	
	Sets the resolution for backup files (JPEG, TIFF) when the print backup function is used. This SP can be used only after JPEG or TIFF is selected for SP583f6 094. [0~6/**2**/1] 0: 1/1 1: 1/2 3: 1/4 6: 2/3 (Unavailable for some models)	

096	Default User Name for Backup Files
	Sets the user name when the print backup function is used. Limit: 8 alphanumeric characters.
097	Default Compression for Backup Files
	This SP sets the compression rate for JPEG backup files when the print backup function is used. This SP operates only after SP5826 0094 has been set for "1" (JPEG). [0~2/**0**/1]
098	Capture Setting: Gamma SW for Backup File
	Removes the ghost images transferred from the back sides of double-sided originals. **1**: Enable 0: Disable

5839	IEEE 1394
	This SP is displayed only when an IEEE 1394 (firewire) card is installed.
007	Cycle Master
	Enables or disables the cycle master function for the 1394 bus standard. [0~1/1] 0: Disable (Off) 1: Enable (On)
008	BCR Mode
	Determines how BCR (Broadcast Channel Register) operates on the 1394 standard bus when the independent node is in any mode other than IRM. (NVRAM: 2-bits) [Always Effective]
009	IRM 1394a Check
	Conducts a 1394a check of IRM when the independent node is in any mode other than IRM. [0~1/1] 0: Checks whether IRM conforms to 1394a 1: After IRM is checked, if IRM does not conform then independent node switches to IRM.
010	Unique ID
	Lists the ID (Node_Unique_ID) assigned to the device by the system administrator. Bit0: Off Bit1: On OFM: 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 OFM: 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 OFM: Disables. The exclusive login (LOGIN ORB exclusive it) is ignored. ON: Enables. Exclusive login is in effect.
013	Login MAX
	Sets the maximum number of logins from the initiator (6-bits) [0~63/1] 0: Reserved 63: Reserved

5840	IEEE 802.11b
006	Channel MAX
	Sets the maximum range of the bandwidth for the wireless LAN. This bandwidth setting varies for different countries. [1~14/1]
007	Channel MIN
	Sets the minimum range of the bandwidth for operation of the wireless LAN. This bandwidth setting varies for different countries. [1~14/1]
011	WEP Key Select
	Determines how the initiator (SBP-2) handles subsequent login requests. [0~1/1] 0: If the initiator receives another login request while logging in, the request is refused. 1: If the initiator receives another login request while logging in, the request is refused and the initiator logs out. Note: Displayed only when the wireless LAN card is installed.

5841*	Supply Name Setting	
	Press the User Tools key. These names appear when the user presses the Inquiry button on the User Tools screen.	
001	Toner Name Setting: Black	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

5842	GWWS Analysis Mode Setting (**B246**) **DFU**
	This settings select the output mode for debugging information as each network file is processed.
001	Setting 1
002	Setting 2

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 (**B064**)
These are delivery server settings.	
001	FTP Port No.
	[0~65535/1]
002	IP Address
	Use this SP to set the Scan Router Server address. The IP address under the transfer tab can be used with the initial system setting. [0~FFFFFFFF/1]
003	Retry Interval
	Sets the time interval before the machine tries again when it goes back to standby after an error occurs during an image transfer with the delivery scanner or SMTP server. [60~900/1]
004	Number of Retries
	Sets the number of times the machine tries again before it returns to standby after an error occurs during an image transfer with the delivery or SMTP server. [0~99/1]
005	Capture Server IP Address
	Sets the capture server IP address for the capture feature. [0~0xFFFFFFF]
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
	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.
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.

5845	Delivery Server (**B140/B246/D052**)
	These are delivery server settings.
001	FTP Port No.
	[0~65535/1]
002	IP Address
	Use this SP to set the Scan Router Server address. The IP address under the transfer tab can be used with the initial system setting. [0~FFFFFFFF/1]
005	Capture Server IP Address
	Sets the IP address that is assigned to the PC that the capture server (eCabinet or ScanRouter) operates. This IP address is set remotely when the delivery server (Scan Router) IO device is registered. This SP only enables the IP address permit access to the DNS browser names.
006	Delivery Error Display Time
	Use this setting to set the length of time that the message is shown when a test error occurs during document transfer with the NetFile application and an external device. [0~999/1]
008	IP Address (Secondary)
	Sets the IP address that is given to the computer that is the secondary delivery server for Scan Router. This SP lets you set only the IP address, and does not refer to the DNS setting.
009	Delivery Server Model
	Lets you change the model of the delivery server that is registered by the I/O device. [0~4/1] 0: Unknown 1: SG1 Provided 2: SG1 Package 3: SG2 Provided 4: SG2 Package
010	Delivery Svr. Capability
	Changes the functions that the registered I/O device can do. [0~255/1] Bit7 = 1 Comment information exits Bit6 = 1 Direct specification of mail address possible Bit5 = 1 Mail RX confirmation setting possible Bit4 = 1 Address book automatic update function exists Bit3 = 1 Fax RX delivery function exists Bit2 = 1 Sender password function exists Bit1 = 1 Function to link MK-1 user and Sender exists Bit0 = 1 Sender specification required (if set to 1, Bit6 is set to “0”)
011	Delivery Svr.Capability (Ext)
	These settings are for future use. They will let you increase the number of registered devices (in addition to those registered for SP5845 010). There are eight bits (Bit 0 to Bit 7). All are unused at this time.
013	Delivery Server Scheme (Primary)
	NIA 12.14

014	Delivery Server Port Number (Primary)
	NIA 12.14
015	Delivery Server URL Path (Primary)
	NIA 12.14
016	Delivery Server Scheme (Secondary)
	NIA 12.14
017	Delivery Server Port Number (Secondary)
	NIA 12.14
018	Delivery Server URL Path (Secondary)
	NIA 12.14
019	Capture Server Scheme
	NIA 12.14
020	Capture Server Port Number
	NIA 12.14
021	Capture Server URL Path
	NIA 12.14

5846	UCS Setting
001	Machine ID (for 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-byle 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.
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]
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
	Sets the length of the time-out for the search of the LDAP server. [1~255/1]
040	Addr Book Migration (SD -> HDD)
	This SP moves the address book data from an SD card to the HDD. You must cycle the machine off and on after executing this SP. 1. Turn the machine off. 2. Install the HDD. 3. Insert the SD card with the address book data in SD card Slot ???. 4. Turn the machine on. 5. Do SP5846 040. 6. Turn the machine off. 7. Remove the SD card from SD card Slot ???. 8. Turn the machine on. Notes: • Executing this SP overwrites any address book data already on the HDD with the data from the SD card. • We recommend that you back up all directory information to an SD card with SP5846 051 before you execute this SP. • After the address book data is copied to HDD, all the address book data is deleted from the source SD card. If the operation fails, the data is not erased from the SD card.
041	Fill Addr Acl Info.
	This SP must be executed immediately after installation of an HDD unit in a basic machine that previously had no HDD. The first time the machine is powered on with the new HDD installed, the system automatically takes the address book from the NVRAM and writes it onto the new HDD. However, the new address book on the HDD can be accessed only by the system administrator at this stage. Executing this SP by the service technician immediately after power on grants full address book access to all users. Procedure 1. Turn the machine off. 2. Install the new HDD. 3. Turn the machine on. 4. The address book and its initial data are created on the HDD automatically. However, at this point the address book can be accessed by only the system administrator or key operator. 5. Enter the SP mode and do SP5846 041. After this SP executes successfully, any user can access the address book.

046	Initialize All Settings & Address Book
	The SP clears all the setting information managed in UCS and address book information (local, delivery, LDAP) and restores these settings to their default values. Use this SP to initial the account information (user codes and passwords) for system managers and users as well. **Note**: • Be sure to cycle the machine off and on after you execute this SP code. • Once this SP has been executed, a message on the screens of applications that use the address book will prompt users that the address book is being updated. This prevents the machine from issuing SC870. • The machine initializes to determine if the address book is stored on the HDD or on an SD card. In order for the machine to determine whether to recognize an address book on the HDD or the SD card, the machine must be cycled off and on once more to determine whether the machine should recognize the address book on the HDD or the SD card.
047	Initialize Local Address Book
	Clears all of the address information from the local address book of a machine managed with UCS.
048	Initialize Delivery Addr Book
	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 Addr Book
	Push [Execute] to delete all items (this does not include user codes) in the LDAP address book that is controlled by UCS.
050	Initialize All Addr Book
	Clears everything (including users codes) in the directory information managed by UCS. However, the accounts and passwords of the system administrators are not deleted.
051	Backup All Addr Book
	Uploads all directory information to the SD card.
052	Restore All Addr Book
	Downloads all directory information from the SD card.
053	Clear Backup Info.
	Deletes the address book uploaded from the SD card in the slot. Deletes only the files uploaded for that machine. This feature does not work if the card is write-protected. Note: After you do this SP, go out of the SP mode, turn the power off. Do not remove the SD card until the Power LED stops flashing.
060	Search Option
	This SP uses bit switches to set up the fuzzy search options for the UCS local address book.

Bit	Meaning
0	Checks both upper/lower case characters
1	Japan Only
2	
3	
4	--- Not Used ---
5	--- Not Used ---
6	--- Not Used ---
7	--- Not Used ---

062	Complexity Option 1
	Use this SP to set the conditions for password entry to access the local address book. Specifically, this SP limits the password entry to upper case and sets the length of the password. [0~32/1] Note: • This SP does not normally require adjustment. • This SP is enabled only after the system administrator has set up a group password policy to control access to the address book.
063	Complexity Option 2
	Use this SP to set the conditions for password entry to access the local address book. Specifically, this SP limits the password entry to lower case and defines the length of the password. [0~32/1] Note: • This SP does not normally require adjustment. • This SP is enabled only after the system administrator has set up a group password policy to control access to the address book.
064	Complexity Option 3
	Use this SP to set the conditions for password entry to access the local address book. Specifically, this SP limits the password entry to numbers and defines the length of the password. [0~32/1] Note: • This SP does not normally require adjustment. • This SP is enabled only after the system administrator has set up a group password policy to control access to the address book.
065	Complexity Option 4
	Use this SP to set the conditions for password entry to access the local address book. Specifically, this SP limits the password entry to symbols and defines the length of the password. [0~32/1] Note: • This SP does not normally require adjustment. • This SP is enabled only after the system administrator has set up a group password policy to control access to the address book.
090	Plain Data Forbidden
	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 Start
	Shows the status of the encryption function of the address book on the LDAP server. [0~255/1] No default

5847*	Net File Resolution Reduction (**B064**)	
	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	[0~4 /1] 0: 1x 1: 1/2x 2: 1/3x 3: 1/4x
003	Rate for Copy B&W Other	
005	Rate for Printer B&W	
006	Rate for Printer B&W HQ	
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]	

5847	Repository Resolution Reduction (**B140/B246/D052 Series**)		
	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. "Repository" refers to jobs to be printed from the document server with a PC and the DeskTopBinder software.		
			0: 1x 1: 1/2x 2: 1/3x 3: 1/4x 4: 1/6x 5: 1/8x 6: 2/3x[1] [1]: "6: 2/3x" applies to 003, 005, 006 only.
002	Rate for Copy B&W Text	[0~6/1]	
003	Rate for Copy B&W Other	[0~6/1]	
005	Rate for Printer B&W	[0~6/1]	
006	Rate for Printer B&W HQ	[0~6/1]	
021	Network Quality Default for JPEG		
	Sets the default value for the quality of JPEG images sent as NetFile pages. This function is available only with the MLB (Media Link Board) option installed. [5~95/1]		

5848	Web Service	
	5847 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	Access Control. : NetFile (Lower 4 Bits)	
	Bit switch settings. 0000: No access control 0001: Denies access to Desk Top Binder. Access and deliveries from Scan Router have no effect on capture.	
002	Acc. Ctrl.: Repository (only Lower 4 Bits)	0000: No access control 0001: Denies access to DeskTop Binder.
003	Acc. Ctrl.: Doc. Svr. Print (Lower 4 Bits)	Switches access control on and off. 0000: OFF, 0001: ON
004	Acc. Ctrl.: User Directory (Lower 4 Bits)	
005	Acc. Ctrl.: Delivery Input (Lower 4 Bits)	
007	Acc. Ctrl Comm. Log Fax (Lower 4 Bits)	
009	Acc. Ctrl.: Job Control (Lower 4 Bits)	
011	Acc. Ctrl: Device Management (Lower 4 Bits)	
013	Acc. Ctrl: Fax (Lower 4 Bits)	
021	Acc. Ctrl: Delivery (Lower 4 Bits)	
022	Acc. Ctrl: User Administration (Lower 4 Bits)	
041	Acc. Ctrl: Security Setting (Lower 4 Bits)	
100	Repository: Download Image Max. Size	[1~1024/1 K]
201	Access Ctrl: Regular Trans	
	No information is available at this time. **0**: Not allowed 1: Allowed	
210	Setting: Log Type: Job 1	
	No information is available at this time.	
211	Setting: Log Type: Job 2	
	No information is available at this time.	
212	Setting: Log Type: Access	
	No information is available at this time.	
213	Setting: Primary Srv	
	No information is available at this time.	
214	Setting: Secondary Srv	
	No information is available at this time.	
215	Setting: Start Time	
	No information is available at this time.	
216	Setting: Interval Time	
	No information is available at this time.	
217	Setting: Timing	
	No information is available at this time.	

5849*	Installation Date	
	Displays or prints the installation date of the machine.	
001	Display	The “Counter Clear Day” has been changed to “Installation Date” or “Inst. Date”.
002	Switch to Print	Determines whether the installation date is printed on the printout for the total counter. [0~1/1] 0: No Print 1: Print

5850*	Address Book Function **(B064)**	
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

5851	Bluetooth Mode
	Sets the operation mode for the Bluetooth Unit. Press either key. [0:Public] [1: Private]

5852	SMTP **(B064)**	
	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

5857	Save Debug Log (**B140)**
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. (☛5.8.1)
006	Save to SD Card
	Specifies the decimal key number of the log to be written to the SD Card. (☛5.8.1)
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) *A unique file name is generated to avoid overwriting existing file names on the SD Card. Up to 4MB can be copied to an SD Card. 4 MB segments can be copied one by one to each SD Card.*
010	Copy HDD to SD Card Latest 4 MB Any Key)
	Takes the log of the specified key from the log on the hard disk and copies it to the SD Card. (☛5.8.2) *A unique file name is generated to avoid overwriting existing file names on the SD Card. Up to 4 MB can be copied to an SD Card. 4 MB segments can be copied one by one to each SD Card. This SP does not execute if there is no log on the HDD with no key specified.*
011	Erase HDD Debug Data
	Erases all debug logs on the HDD
012	Erase SD Card Debug Data
	Erases all debug logs on the SD Card. If the card contains only debugging files generated by an event specified by SP5858, the files are erased when SP5857 010 or 011 is executed. *To enable this SP, the machine must be cycled off and on.*
013	Free Space on SD Card
	Displays the amount of space available on the SD card.

014	Copy SD to SD (Latest 4MB)
	Copies the last 4MB of the log (written directly to the card from shared memory) onto an SD card.
015	Copy SD to SD (Latest 4MB Any Key)
	This SP copies the log on an SD card (the file that contains the information written directly from shared memory) to a log specified by key number. (☛ 5.7.4)
016	Make HDD Debug
	This SP creates a 32 MB file to store a log on the HDD. (☛ 5.7.4)
017	Make SD Debug
	This SP creates a 4 MB file to store a log on an SD card. (☛ 5.7.4)

5858*	Debug Save When (**B140/B246/D052)**	
	These SPs select the content of the debugging information to be saved to the destination selected by SP5857 002. SP5858 3 stores one SC specified by number. *Refer to Section 4 for a list of SC error codes.*	
001	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 GW 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/B246/D052)**	
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. (☛5.8.1) [-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	

5860*	SMTP/POP3/IMAP4 **(B140/B246/D052)**
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 Sending
	Occasionally, all SMTP certifications may fail with SP5860 006 set to "2" to enable encryption during SMTP certification for the SMTP server. This can occur if the SMTP server does not meet RFC standards. In such cases you can use this SP to set the SMTP certification method directly. However, this SP can be used only after SP5860 003 has been set to "1" (On). Bit0: LOGIN Bit1: PLAIN Bit2: CRAM_MD5 Bit3: DIGEST_MD5 Bit4 to Bit 7: Not Used

5863	SMP/FTP/NCP Settings (**B246/D052**)
001	SMB Default User Name
	This SP sets the default user name used for SMB sending.
002	SMB Default Password
	This SP sets the default password used for SMB sending.
003	FTP Default User Name
	This SP sets the default user name used for FTP sending.
004	FTP Default Password
	This SP sets the default password for FTP sending.
006	NCP Default User Name
	This SP sets the default user name used for NCP sending.
007	NCP Default Password
	This SP sets the default password for NCP sending.

5864	Mail Text Clear (**B246/D052)**
	This SP clears mail text information. When this SP is called at the request to write the SP mode data, the mail text information stored on the DCS server is reset to its default value. This is used as a trigger to clear mail text information when the system is initialized with the User Tools.

5865	Clear Mail Account Information **(B246/D052)**
	Clears the mail account parameters.

5866	Enable E-Mail Notification
	This SP enables the e-mail notification function. **(B246/D052)** [0~1/**0**/1] 0: Disable 1: Enable

5870	Common Key Info Writing (**B140/B246**)	
	Writes to flash ROM the common proof for validating the device for NRS specifications.	
001	Writing	Note: These SPs are for future use and currently are not used.
003	Initialize	

5871	HDD Function Disable (**B140)**	
	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”.	

5873	SD Card Apli. **(B140/B246/D052)**	
	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 **(B140/B246/D052)**	
	This SP determines whether the machine reboots automatically when an SC error occurs. **Note**: The reboot does not occur for Type A SC codes.	
001	Reboot Setting	[0~1/*/1] 0: On, 1: Off *DOM: (Japan Only) default: 0 (Reboots automatically) The machine reboots automatically when the machine issues an SC error and logs the SC error code. If the same SC occurs again, the machine does not reboot. *EXP (Outside Japan) default: 1 (Does not reboot automatically. Changing this setting to "0" sets the machine to reboot automatically after an SC occurs.
002	Reboot Type	This setting determines how the machine reboots after an SC code is issued. [0~1/*/1] 0: Allows manual reboot, 1: Automatic reboot *DOM (Japan Only) default: 1 Automatic reboot *EXP (Outside Japan) default: 0 Manual reboot

5878	Option Setup
	This SP enables the DOS application (Data Overwrite Security). Do this SP after installing Data Overwrite Security Unit C B735.

5885	Document Svr Access Control **DFU**		
020	This SP is a bit switch setting.		
	Bit	**Meaning**	
	0	Forbid all document server access (1)	
	1	Forbid user mode access (1)	
	2	Forbid print function (1)	
	3	Forbid fax TX (1)	
	4	Forbid scan sending (1)	
	5	Forbid downloading (1)	
	6	Forbid delete (1)	
	7	Reserved	

5886	Permit ROM Update **DFU**
	This SP determines whether the ROM can be updated. [0-1/**0**/1] 0: On 1: Off

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 This SP prescribes the time interval to expire before the machine shifts to another application when another application currently holds access control for the standby mode while there is no key input. [0~1/**1**/1]

5914*	Application Counter Display **(B064)**	
	Selects the total counts that will be displayed in the UP mode.	
001	Print Counter	[0~1/1] 0: Not displayed 1: Displayed
003	Copier Counter	

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).

5921	Key Card Setting **Japan Only (B064)**
	Enables operation with a key card device. [0~1/1] 0: No key card operation 1: Key card operation

5952	Fact Adjust Mode **DFU**

5959*	Paper Size **(B064)**
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:

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”.

5959*	Paper Size **(B140/B246/D052 Series)**	
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: 8 1/2 x 11 (LT) 2:A3 3:B4 4:A4R (A4 SEF) 5:11 x 17	6: 8 1/2 x 14 R (LG SEF) 7: 8 1/2 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 1:8 1/2 x 11 2:B5 3:A4 R (A4 SEF)	4: 8 1/2 x 14 R (LG SEF) 5: B4 R (B4 SEF) 6: 8 1/2 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
	Enables and disables the document server. This is a security measure that prevents image data from being left in the temporary area of the HDD. After changing this setting, you must switch the main switch off and on to enable the new setting.[0~1/1] 0: ON 1: OFF

5974	Cherry Server
	Selects which version of the Scan Router application program, “Light” or “Full (Professional)”, is installed. [0 ~ 1 / 0 / 1 /step] 0: Light version (supplied with this machine) 1: Full version (optional)

5985	Device Setting (**B140/B246/D052**)	
	The NIC and USB support features are built into the GW controller. Use this SP to enable and disable these features. In order to use the NIC and USB functions built into the controller board, these SP codes must be set to "1".	
001	On Board NIC	**0: Disable** 1: Enable
002	On Board USB	

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

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 ~+30/1 mm] -30 = -5.1 mm +30 = +5.1 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~+12/0.25 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~+8/0.25 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~+20/0.5 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~+20/0.5 mm] -20 = -10 mm +20 = +10 mm

6007	ADF Input Check
Displays signals received from sensors and switches in the ADF. (☛ 5.6.3)	
001	Group 1
002	Group 2
003	Group 3

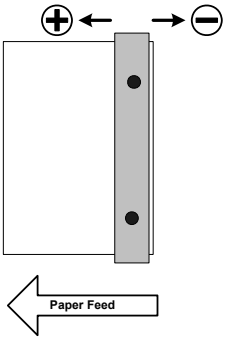
6008	ADF Output Check
	Turns on the ADF electrical components individually for testing. (☛ 5.6.4)
001	Feed Motor: Forward
002	Feed Motor: Reverse
003	Transport Motor: Forward
004	Exit Motor: Forward
005	Pick-up Motor: Reverse
006	Bottom Plate Motor: Forward
007	Bottom Plate Motor: Reverse

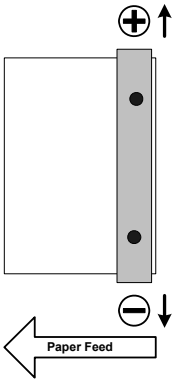
6009	DF Free Run	Performs an ADF free run in duplex original mode.

6016	Original Size Determination Priority
	Allows selection of alternate settings for automatic original size detection. (☛6.4.8)

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)

6101	Punch Position Adjustment	
	Adjusts the punch hole positions in the direction of paper feed. NA: North America DOM: Japan EU: Europe SCAN: Scandinavia	
001	2-Hole:DOM	[-75~+75/0.5 mm] + Value: Shifts punch unit in the direction of feed. - Value: Shift punch unit against direction of feed.  B132S921.WMF
002	3-Hole:NA	
003	4-Hole:EU	
004	4-Hole:SCAN	
005	2-Hole:NA	

6102	Punch Position Adjustment	
	Adjusts the punch position perpendicular to the direction of feed. [-20~+20/0.4 mm] + Value: Shifts punch unit toward back of the finisher. - Value: Shift punch unit toward front of the finisher.	
001	2-Hole:DOM	 B132S922.WMF
002	3-Hole:NA	
003	4-Hole:EU	
004	4-Hole:SCAN	
005	2-Hole:NA	

6105*	Staple Position Adjustment (**B064/B140**)
	Adjusts the stapling position in the main scan direction. [–3.5~+3.5/0.5 mm] *A larger value shifts the stapling position outward.*

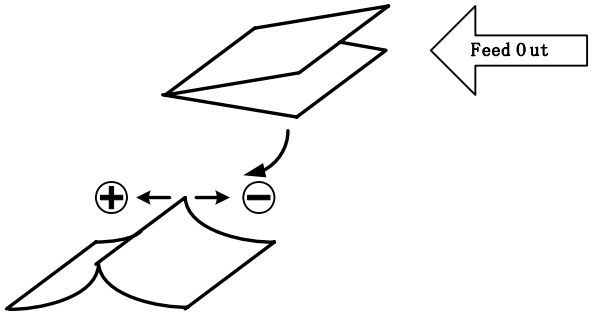
6105	Jogger Fence Fine Adjust (**B246/D052**)	
	This SP adjusts the distance between the jogger fences and the sides of the stack on the finisher stapling tray. The adjustment is done perpendicular to the direction of paper feed.	
001	A3 SEF	[-1.5 to +1.5/**0**/0.5 mm] + Value: Increases distance between jogger fences and the sides of the stack. - Value: Decreases the distance between the jogger fences and the sides of the stack.
002	B4 SEF	
003	A4 SEF	
004	A4 LEF	
005	B5 SEF	
006	B5 LEF	
007	DLT SEF	
008	LG SEF	
009	LT SEF	
010	LT LEF	
011	Custom Size	

6106	Adjust Output Jog Position **(B246/D052**)	
	Use this SP code to adjust the positions of the jogger fences when the pages are aligned (jogged) horizontally in the stapling tray for stapling in the booklet finisher. The jogger fences close in on the sides of the stack on the paper tray. These side fences move in and out perpendicular to the direction of paper feed. [-3 to +3 / 0 / 0.1 mm] • The higher the setting, the narrower the jogger span and the smaller the gaps between the fences and the edges of the paper. Stacking is tighter. • The lower the setting, the wider the jogger span and the wider the gaps between the fences and the edges of the paper. Stacking is not as tight.	
001	A3 SEF	The settings are done for each paper size. SEF denotes "Short Edge Feed". LEF denotes "Long Edge Feed".
002	B4 SEF	
003	A4 SEF	
004	A4 LEF	
005	B5 LEF	
006	A5 LEF	
007	DLT SEF	
008	LG SEF	
009	LT SEF	
010	LT LEF	
011	HLT LEF	
012	Other	

6107	Cover Feeder Size Change (**B246/D052**)	
	This SP sets the priority paper size setting for the cover interposer tray (B704).	
001	Priority (All)	0: A3 1: 12"x18"
002	EU/CH	0: 8½" x 13" 1: 8½" x 13" 2: 8¼" x 13"
003	NA	0: 8½" x 14" 1: 8½" x 13"
004	NA	0: LT LEF 1: 10½" x 7¼"
005	NA	0: LT SEF 1: 8" x 10"
006	EU/CH	0: Taiwan 8-Kai 1: DLT
007	EU/CH	0: Taiwan 16-Kai 1: LT SEF
008	EU/CH	0: Taiwan 16-Kai 1: LT LEF

6109	Staple Position Adjustment
	Use this SP to shift the position of the stapling done by the corner stapler of the finisher. This SP shifts the staple position forward and back across the direction of paper feed. • Use the "•" key to toggle between + and –. • A larger value shifts the stapling position to shift forward. • A smaller value shifts the stapling position backward. The settings are done for each paper size. [-2 to +2 / **0** / 0.5 mm]

6113*	Punch Hole Adjustment (**B064/B140**)
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] A larger value shifts the punch holes towards the edge of the paper.
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] A larger value shifts the punch holes towards the edge of the paper.

6113	Folder Position Adjustment (**B246/D052**)	
	This SP corrects the folding position when paper is stapled and folded in the Booklet Finisher.	
001	A3 SEF	[-3~+3/**0**/0.2 mm] + Value: Shifts staple position toward the crease. - Value: Shifts staple position away from the crease. 
002	B4 SEF	
003	A4 SEF	
004	B5 SEF	
005	DLT SEF	
006	LG SEF	
007	LT SEF	
008	Custom Size	

6114	Folding Number
	This SP sets the number of times the folding rollers are driven forward and reverse to sharpen the crease of a folded booklet before it exits the folding unit of the Booklet Finisher. When set at the default (0): • The folding blade pushes the center of the stack into the nip of the folding roller. • The folding rollers rotate ccw to crease the booklet, reverse cw, then rotate ccw again to crease the booklet fold twice before feeding to the folding unit exit rollers. [1~6/**0**/1] 0:2, 1:5, 2:10, 3:15, 4:20, 5:25, 6:30 passes

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. (☛ 5.6.5)
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. (☛ 5.6.6)

6118	Jogger Off/On
	This SP switches the jogging operation of the output jogger attached to the side of the finisher off and on. [0~1/1] 0: Off, 1: On **Note**: After installation of the Output Jogger Unit B703, this SP must be set to "1" for the jogging motor to operate the jogging fences.

6119*	Punch Function Enabled (Thick Paper)
	Allows punching heavier paper, including tab sheets. [0~1/1] 0: Punching thick paper prohibited 1: Punching thick paper allowed

6120*	Finisher Free Run (B478/B706) (**B064/B140**)		
	Selects the free run mode during testing.		
001	Free Run 1	Stapling Mode	Stapling only
002	Free Run 2	All Mode	All finisher operation is tested
003	Free Run 3	Packing Mode	Before you move the finisher to a new location, do this SP. When you switch on the machine after you moved it, the finisher automatically goes to the ready condition.
004	Free Run 4	Shift Mode	Tests the shift mode

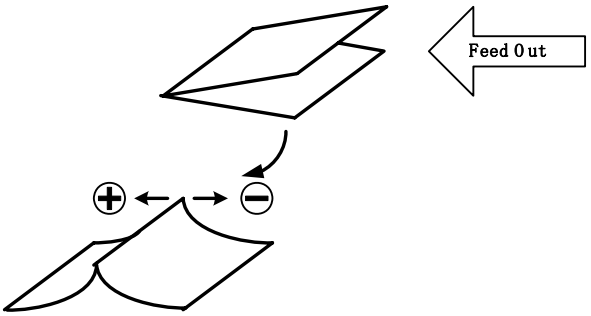
6120*	Staple Jogger Adjustment (**B246/D052**)	
	Horizontal folding skew can occur when the distance between the jogger fences and paper edges is not within 0 to 0.5 mm. This SP allows the jogger fences to be moved away from or closer to the edges of the stack to achieve this target distance.	
001	A3	[-1.5~+1.5/0.5 mm] A higher value moves the fence away from the paper, while a lower value brings the fences closer in.
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	

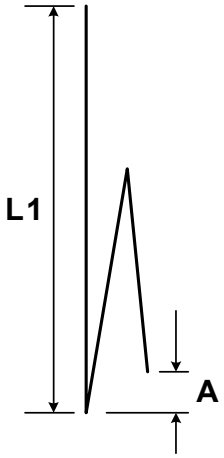
6121	Finisher Input Check: Finisher 1	Displays the signals received from sensors and switches of the finisher. (☛5.6.7)

6122	Finisher Input Check: Finisher 2	Displays the signals received from sensors and switches of the finisher. (☛5.6.9)

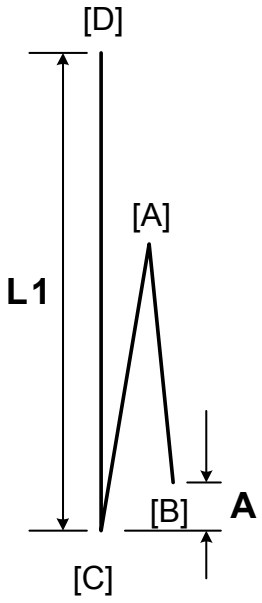
6124	Finisher Output Check: Finisher 1	Turn on the electrical components of the finisher individually for test purposes. (☛ 5.6.8

6125	Finisher Output Check: Finisher 2	Turn on the electrical components of the finisher individually for test purposes. (☛ 5.6.10

6126	Fold Position Setting	
	This SP corrects the folding position when paper is stapled and folded in the Booklet Finisher.	
001	A3 SEF	[-3~+3/**0**/0.2 mm] + Value: Shifts staple position toward the crease. - Value: Shifts staple position away from the crease. 
002	B4 SEF	
003	A4 SEF	
004	B5 SEF	
005	12"x18" SEF	
006	DLT SEF	
007	LG SEF	
008	LT SEF	
009	Custom Size	

6128	Fine Adj Z-Fold 1	
	Use this SP code to adjust the position of the first fold [A]. This adjustment decreases or increases the distance (**A**) between the leading edge [B] and the crease of the 2nd fold [C]. [-2 to +4/**0**/ 0.2 mm]	
001	1st Fold: A3 SEF	
002	1st Fold: B4 SEF	
003	1st Fold: A4 SEF	
004	1st Fold: DLT SEF	
005	1st Fold: LG SEF	
006	1st Fold: LT SEF	
007	1st Fold: Other	
008	2nd Fold: A3 SEF	
009	2nd Fold: B4 SEF	
010	2nd Fold: A4 SEF	
011	2nd Fold: DLT SEF	
012	2nd Fold: LG SEF	
013	2nd Fold: LT SEF	
014	2nd Fold: Other	
016	2nd Fold: A3 SEF	

6122	Z-Fold Position Adjust **(B140)**	
	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	[-4~+4/0.2 mm] 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].
002	B4	
003	A4 SEF	
004	DLT	
005	LG	
006	LT SEF	
007	12 x 18	
008	1st Fold: Other	
	2nd Fold	
009	A3	[-4~+4/0.2 mm] 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.
010	B4	
011	A4 SEF	
012	DLT	
013	LG	
014	LT SEF	
015	12 x 18	
016	Other	



6900*	ADF Bottom Plate 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)**: • 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		[–3.5~+3.5/0.5 mm]
002	B4		
003	A4T (SEF)		
004	B5T (SEF)	**(B140)**	
005	DLT		
006	LG		
007	LTT (SEF)		
008	Others		

6903*	Fold Position Adjustment (1 Sheet) **(B140)**	
	Adjusts the fold position for single sheet booklet copies to minimize vertical folding 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	[-7.5~+7.5/0.5 mm] A higher value brings the fold closer to the trailing edge; a lower value moves it away from the trailing edge.
002	B4	
003	A4T (SEF)	
004	B5T (SEF)	
005	DLT	
006	LG	
007	LTT (SEF)	
008	Others	

6904	Punch Function Enabled (Z-Fold) **(B140)**
	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

SP7xxx Data Logs

7001*	Main Motor Operation Time	Displays the total drum rotation time.

7002*	Original Counter **(B064)**	
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)**	
	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)**	
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)**	
001	Duplex Counter	Displays the count total for the selected item.
002	A3/DLT Counter	
003	Staple Counter	
004	Scan Counter	

7101*	Print Count – Paper Size **(B064)**	
	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)**	
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. Display range: 0~9999999
002	Recycled	
003	Special	
004	Color 1	
005	Color 2	
006	Letterhead	
007	Label	
008	Thick	
009	OHP	
010	Used	
011	Index (Tab Sheets)	
012	Tracing	
255	Others	

7201*	Total Scan Counter	**(B064)**
	Displays the total number of scanned originals.	

7204*	Print Counter – Paper Trays **(B064)**	
	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

7205*	ADF Counter **(B064)**
	Displays the total number of originals fed by the ADF.

7206*	Staple Counter **(B064)**		Displays the total number of staples used.
	001	Normal	
	002	Booklet	

7209*	Punch Counter **(B064)**
	Displays the total number of times the punch has been used.

7301*	Number of Copies by Reproduction Ratio **(B064)**	
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	

7304*	Copy: Number of Copies by Mode **(B064)**
	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

7305	Copy: Display Jobs by Continuous **(B064)**
	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

7306	Copy: Display Jobs by Mode **(B064)**
	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.

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

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 1: SR4000 (Corner Stapling Only – No Booklet Stapling) **(B246/D052)**
101	Finisher 101. Finisher Entrance Sensor
	When the paper fails to activate the entrance sensor at the precise time or remains at the entrance sensor for longer than the prescribed time.
102	Finisher 102. Proof Tray Exit
	When the paper fails to activate the proof tray exit sensor at the precise time after activating the entrance sensor or remains at the proof tray exit sensor for longer than the prescribed time.
103	Finisher 103. Finisher Exit
	When the paper fails to activate the exit sensor at the precise time after activating the entrance sensor or remains at the exit sensor for longer than the prescribed time.
104	Finisher 104. Staple Tray
	The paper failed to arrive at or leave the stapling tray,.
105	Finisher 105. Jogging Tray
	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. Corner Stapler
	One or both staplers failed to send any signals while stapling.
109	Finisher 109. Tray Motor Jam
	A jam has occurred and locked one or more of these motors that operate the staple tray and pre-stack tray: lower transport motor, positioning roller motor, jogger fence motor, stack junction gate motor
110	Finisher 110. Jogger Fences
	When the status of the jogger fence HP sensor does not change at the precise time during jogger fence motor rotation. Returns SC722.
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
	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
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	SR4000 (Corner Stapling, Booklet Stapling) (**B246/D052**)
121	Finisher 121. Finisher Entrance Sensor
	When the paper fails to activate the entrance sensor at the precise time or remains at the entrance sensor for longer than the prescribed time.
122	Finisher 122. Proof Tray Exit
	When the paper fails to activate the proof tray exit sensor at the precise time after activating the entrance sensor or remains at the proof tray exit sensor for longer than the prescribed time.
123	Finisher 123. Finisher Exit
	When the paper fails to activate the exit sensor at the precise time after activating the entrance sensor or remains at the exit sensor for longer than the prescribed time.
124	Finisher 124. Staple Tray
	When the paper fails to activate the staple entrance sensor at the precise time after activating the entrance sensor or remains at the staple entrance sensor for longer than the prescribed time.
125	Finisher 125. Jogging Tray
	When the paper from jogger unit fails to activate the exit sensor at the precise time or remains at the exit sensor for longer than the prescribed time.
126	Finisher 126. Corner Stapler
	When the stapler unit fails to send any signals while stapling.
127	Finisher 127. Booklet Stapler
	Finisher : When the booklet stapler fails to send any signals during stapling.
128	Finisher 128. Fold Unit
	When the status of the paper position does not change at the precise time during paper folding.
129	Finisher 129. Shift Tray
	When the status of the upper tray limit sensor does not change at the precise time while lifting the upper exit tray, the status of the upper tray full sensor does not change at the precise time while lowering the upper exit tray, or the status of the lower tray encoder sensor does not change at the precise time while moving the lower tray. Returns SC733, SC726
130	Finisher 130. Jogger Fences
	When the status of the jogger fence HP sensor does not change at the precise time during jogger fence motor rotation. Returns SC722
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

	Not logged. Returns SC724, SC740, SC741
134	Finisher 134. Folder Plate Jam
	When the status of the folder plate HP sensor does not change at the precise time during folder plate motor rotation. Returns SC739
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
162	Mail Box 162. Vertical Transport Sensor 2
163	Mail Box 163. Vertical Transport Sensor 3
164	Mail Box 164. Vertical Transport Sensor 4
165	Mail Box 165. Vertical Transport Sensor 5
	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,

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.

7505*	Original Jam Detection	
001	At power on	Displays the total number of original jams by paper size. Nip-in sensor: Interval sensor
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	
	Displays the total number of jams by paper size.	
005	A4 LEF	Displays the total number of jams by paper size.
006	A5 LEF	
014	B5 LEF	
038	LT LEF	
044	HLT LEF	
128	Other LEF	
132	A3	
133	A4 SEF	
134	A5 SEF	
141	B4 SEF	
142	B5 SEF	
160	DLT SEF	
164	LG SEF	
166	LT SEF	
172	HLT SEF	
255	Other SEF	

7507*	Plotter Jam History	
001	Copy Latest	Displays the copy jam history (the most recent 10 jams) Sample Display: CODE:007 SIZE:05h TOTAL:0000334 DATE:Mon Mar 15 11:44:50 2000 where: **CODE** is the SP7504-* number (see above. **SIZE** is the ASAP paper size code in hex. **TOTAL** is the total jam error count (SP7003) **DATE** is the date the jams occurred.
002	Latest 1	
003	Latest 2	
004	Latest 3	
005	Latest 4	
006	Latest 5	
007	Latest 6	
008	Latest 7	
009	Latest 8	
010	Latest 9	

Size	Code	Size	Code	Size	Code
A4 (S)	05	A3 (L)	84	DLT (L)	A0
A5 (S)	06	A4 (L)	85	LG (L)	A4
B5 (S)	0E	A5 (L)	86	LT (L)	A6
LT (S)	26	B4 (L)	8D	HLT (L)	AC
HLT (S)	2C	B5 (L)	8E	Others	FF

7508	Original Jam HistoryOriginal Jam History	
	Displays the original jam history of the transfer unit in groups of 10, starting with the most recent 10 jams. Display contents are as follows: **CODE** is the SP7-505-*** number. **SIZE** is the paper size code in hex. (See “Paper Size Hex Codes” below.) **TOTAL** is the total jam error count (SP7-003) **DATE** is the date the previous jam occurred	
001	Latest	Sample Display: CODE: 007 SIZE: 05h TOTAL: 0000334 DATE: Mon Mar 15 11:44:50 2000
002	Latest 1	
003	Latest 2	
004	Latest 3	
005	Latest 4	
006	Latest 5	
007	Latest 6	
008	Latest 7	
009	Latest 8	
010	Latest 9	

Paper Size Hex Codes

These codes are displayed by SP7507 and SP7508.

Paper Size	Code (hex)	Paper Size	Code (hex)
A4 LEF	05	B4 SEF	8D
A5 LEF	06	B5 SEF	8E
B5 LEF	0E	DLT SEF	A0
LT LEF	26	LG SEF	A4
HLT LEF	2C	LT SEF	A6
A3 SEF	84	HLT SEF	AC
A4 SEF	85	Others	FF
A5 SEF	86		

7617	Parts PM Counter Display	
001	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.

7618	Parts PM Counter Reset (**B140/B246/D052**)	
001	Copy Paper Standard	Clears the counter of SP7617- 001. **Japan Only**
002	Copy Paper Standard	Clears the counter of SP7617- 002 **Japan Only**

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)**	Pressing the # key will reset all counters, except for the following: • 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)**	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)**
	Clears the original total display, displayed with SP7002-***. To clear, press ①.

7816*	Copy Counter Reset **(B064)**	
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)**	Resets the counters of SP7205
7822	Copy Counter Rest – Magnification **(B064)**	Resets all counters of SP7301.

7825	Total Counter Reset **(B064)**
	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)	

7836	Total Memory Size
	Displays the contents of the memory on the controller board.
7837	Copy Clear: Pages by Mode **(B064)**
	Press Execute to clear counter SP7304 (Copy Num – Copies by Mode)
7838	Copy Clear: Jobs by Count Continuous **(B064)**
	Press Execute to clear counter SP7305 (Copy: Display Jobs by Mode)
7839	Copy Clear: Jobs by Mode **(B064)**
	Press Execute to clear counter SP7306 (Copy: Display Jobs by Mode).
7840	LS Clear: Stored Image Logins **(B064)**
	Press Execute to clear counter SP7320 (Doc. Svr. – Scan Count.
7841	LS Clear: Originals by Size **(B064)**
	Press Execute to clear counter SP7321 (Doc. Svr. – Original Size Display)

7842	LS Clear: Prints by Size **(B064)**
	Press Execute to clear counter SP7323 (Doc. Svr – Print Size Display).
7843	LS Clear: Print Job Logins **(B064)**
	Press Execute to clear counter SP7324 (Doc. Svr. – Print Job Counter).
7844	LS Clear: Print to Page Distr. **(B064)**
	Press Execute to clear SP7325 (Doc. Svr. – Job Count (Page No.).
7845	LS Clear: Print Job File Distr. **(B064)**
	Press Execute to clear SP7326 (Doc. Svr – Job Count (File No.)
7846	LS Clear: Print Job Copies Distr. **(B064)**
	Press Execute to clear SP7327 (Doc. Svr. – Job Count (Set No.
7847	LS Clear: Number of Pages by Mode **(B064)**
	Press Execute to clear SP7328 (Doc. Svr – Job Count (Print Mode).
7848	Copy: All Clear **(B064)**
	Press Execute to clear the following SP codes: SP7301, SP7304, SP7305, SP7306, SP7320, SP7321, SP7323, SP7324, SP7325, SP7326, SP7327, SP7328.

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7852	ADF Scan Glass **(B246)**	
	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.

7901	Assert Info.	
001	Filename	Used for debugging. **DFU**
002	Line No.	
003	Value	

7911	Firmware Version (B064)	Displays the version numbers of all firmware in the system.
7990	Status of Issued SC (B064)	Displays the following information about the most recently issued SC: 1) Source file name, 2) SC number, 3) Result

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

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

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.

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.

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	

- 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.

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.

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.

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 . [0~9999999/1] The L: counter counts the number of pages stored from within the document server mode screen at the operation panel, and with the Store File button from within the Copy mode screen
8212	C:Scan PGS/LS	
8215	S:Scan PGS/LS	
8216	L:Scan PGS/LS	

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

8221	ADF Org Feeds	[0~9999999/1]
	These SPs count the number of pages fed through the ADF for front and back side scanning.	
001	Front	Number of front sides fed for scanning: With an ADF that can scan both sides simultaneously, the Front side count is the same as the number of pages fed for either simplex or duplex scanning. With an ADF that cannot scan both sides simultaneously, the Front side count is the same as the number of pages fed for duplex front side scanning. (The front side is determined by which side the user loads face up.)
002	Back	Number of rear sides fed for scanning: With an ADF that can scan both sides simultaneously, the Back count is the same as the number of pages fed for duplex scanning. With an ADF that cannot scan both sides simultaneously, the Back count is the same as the number of pages fed for duplex rear-side scanning.

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

8231	Scan PGS/Mode	[0~9999999/1]
	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.

- If the scan mode is changed during the job, for example, if the user switches from ADF to Platen mode, the count is done for the last selected mode.
- If the user selects “Mixed Sizes” for copying in the platen mode, the Mixed Size count is enabled.
- In the SADF mode if the user copies 1 page in platen mode and then copies 2 pages with SADF, the Platen count is 1 and the SADF count is 3.

8241	T:Scan PGS/Org	[0~9999999/1]
	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
002: Text/Photo	Yes	Yes	Yes	Yes	Yes	Yes
003: Photo	Yes	Yes	Yes	Yes	Yes	Yes
004: GenCopy, Pale	Yes	Yes	No	Yes	Yes	Yes
005: Map	Yes	Yes	No	Yes	Yes	Yes
006: Normal/Detail	Yes	No	Yes	No	No	No
007: Fine/Super Fine	Yes	No	Yes	No	No	No
008: Binary	Yes	No	No	Yes	No	No
009: Grayscale	Yes	No	No	Yes	No	No
011 Other	Yes	No	Yes	No	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.

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: • 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] The L: counter counts the number of pages stored from within the document server mode screen at the operation panel, and with the Store File button from within the Copy mode screen
8295	S:Scan PGS/Stamp	
8296	L:Scan PGS/Stamp	

8301	T:Scan PGS/Size	[0~9999999/1]	
	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	

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.

8381	T:Total PrtPGS	These SPs count the number of pages printed by the customer. The counter for the application used for storing the pages increments. [0~9999999/1] The L: counter counts the number of pages stored from within the document server mode screen at the operation panel. Pages stored with the Store File button from within the Copy mode screen go to the C: counter.
8382	C:Total PrtPGS	
8384	P:Total PrtPGS	
8385	S:Total PrtPGS	
8386	L:Total PrtPGS	
8387	O:Total PrtPGS	

- When the A3/DLT double count function is switched on with SP5104, 1 A3/DLT page is counted as 2.
- When several documents are merged for a print job, the number of pages stored are counted for the application that stored them.
- These counters are used primarily to calculate charges on use of the machine, so the following pages are not counted as printed pages:
  - Blank pages in a duplex printing job.
  - Blank pages inserted as document covers, chapter title sheets, and slip sheets.
  - Reports printed to confirm counts.
  - All reports done in the service mode (service summaries, engine maintenance reports, etc.)
  - Test prints for machine image adjustment.
  - Error notification reports.
  - Partially printed pages as the result of a copier jam.

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	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]
8402	C:PrtPGS/LS	
8404	P:PrtPGS/LS	
8405	S:PrtPGS/LS	
8406	L:PrtPGS/LS	

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

8411	Prints/Duplex	This SP counts the amount of paper (front/back counted as 1 page) used for duplex printing. Last pages printed only on one side are not counted. [0~9999999/1]

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

- These counts (SP8421 to SP8427) are especially useful for customers who need to improve their compliance with ISO standards for the reduction of paper consumption.
- Pages that are only partially printed with the n-Up functions are counted as 1 page.

Here is a summary of how the counters work for Booklet and Magazine modes:

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.

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

- These counters do not distinguish between LEF and SEF.

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. • 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	

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.

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.

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.

8531	Staples	This SP counts the amount of staples used by the machine. [0~9999999/1]

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.	

NOTE: 1) The B/W and Color counts are done after the document is stored on the HDD of the Scan Router server.
2) If the job is canceled before storage on the Scan Router server finishes, the counts are not done.
3) The count is executed even if regardless of confirmation of the arrival at the Scan Router server.

8671	T:Deliv PGS/PC	[0~9999999/1]
	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	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.
8692	C:TX PGS/LS	
8694	P:TX PGS/LS	
8695	S:TX PGS/LS	
8696	L:TX PGS/LS	

NOTE: 1) Print jobs done with Web Image Monitor and Desk Top Binder are added to the count.
~~2)~~ If several documents are merged for sending, the number of pages stored are counted for the application that stored them.

8701	TX PGS/Port	
	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	

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.	

8791	LS Memory Remain	This SP displays the percent of space available on the document server for storing documents. [0~100/1]

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:** • This precise method of measuring remaining toner supply (1% steps) is better than other machines in the market that can only measure in increments of 10 (10% steps). • This SP is expanded for color MFP and color LP machines. For this machine, the count is done for black only.	

8941	Machine Status	[0~9999999/1]
	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.

8951	AddBook Register		
	These SPs count the number of events when the machine manages data registration.		
001	User Code	User code registrations.	[0~9999999/1]
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.	

5.5.3 PRINTER SERVICE TABLE

1001	Bit Switch			
001	Bit Switch 1		0	1
	bit 0	DFU	-	-
	bit 1	DFU	-	-
	bit 2	DFU	-	-
	bit 3	**No I/O Timeout**	0: Disable	1: Enable
		Enable: The MFP I/O Timeout setting will have no effect. I/O Timeouts will never occur.		
	bit 4	**SD Card Save Mode**	0: Disable	1: Enable
		Enable: Print jobs will be saved to an SD Card in the GW SD slot (☛ "Card Save Function" in "System Maintenance Reference" section of the Field Service Manual).		
	bit 5	DFU	-	-
	bit 6	DFU	-	-
	bit 7	**[RPCS,PCL]: Printable area frame border**	0: Disable	1: Enable
		Enable: The machine prints all RPCS and PCL jobs with a border on the edges of the printable area.		

1001	Bit Switch			
002	Bit Switch 2		0	1
	bit 0	DFU	-	-
	bit 1	DFU	-	-
	bit 2	**Applying a collation Type**	Shift Collate	Normal Collate
		A collation type (shift or normal) will be applied to all jobs that do not already have a 'Collate Type' configured. Note ▪ If #5-0 is enabled, this Bit Switch has no effect.		
	bit 3	**[PCL5e/c,PS]: PDL Auto Switching**	0: Enable	1: Disable
		Disable: The MFPs ability to change the PDL processor mid-job. Some host systems submit jobs that contain both PS and PCL5e/c. If Auto PDL switching is disabled, these jobs will not be printed properly.		
	bit 4	DFU	-	-
	bit 5	DFU	-	-
	bit 6	DFU	-	-
	bit 7	DFU	-	-

1001	Bit Switch			
003	Bit Switch 3		0	1
	bit 0	DFU	-	-
	bit 1	DFU	-	-
	bit 2	**[PCL5e/c]: Legacy HP compatibility**	0: Disable	1: Enable
		Enable: Uses the same left margin as older HP models such as HP4000/HP8000. In other words, the left margin defined in the job (usually "<ESC>*r0A") will be changed to "<ESC>*r1A"		
	bit 3	DFU	-	-
	bit 4	DFU	-	-
	bit 5	DFU	-	-

	bit 6	DFU	-	-
	bit 7	DFU	-	-

⇒

1001	Bit Switch		
004	Bit Switch 4 **DFU**	-	-

⇒

1001	Bit Switch		
005	Bit Switch 5	0	1
	bit 0	**Show "Collate Type", "Staple Type" and "Punch Type" buttons on the operation panel.**	Disable	Enable
		If enabled, users will be able to configure a Collate Type, Staple Type, and Punch Type from the operation panel. The available types will depend on the device and configured options. After enabling the function, the settings will appear under: "User Tools > Printer Features > System"		
	bit 1	DFU	-	-
	bit 2	DFU	-	-
	bit 3	**[PS] PS Criteria**	Pattern3	Pattern1
		Change the number of PS criterion used by the PS interpreter to determine whether a job is PS data or not. Pattern3: includes most PS commands. Pattern1: A small number of PS tags and headers		
	bit 4	**Increase max number of the stored jobs to 1000 jobs.**	Disable (100)	Enable (1000)
		Enable: Changes the maximum number of jobs that can be stored on the HDD via Job Type settings to 1000. The default is 100.		
	bit 5	DFU	-	-
	bit 6	DFU	-	-
	bit 7	DFU	-	-

⇒

1001	Bit Switch		
006	Bit Switch 6 **DFU**	-	-

⇒

1001	Bit Switch		
007	Bit Switch 7 **DFU**	-	-

⇒

1001	Bit Switch		
008	Bit Switch 8	0	1
	bit 0	DFU	-	-
	bit 1	DFU	-	-
	bit 2	DFU	-	-
	bit 3	**[PCL,PS]: Allow BW jobs to print without requiring User Code**	Disable	Enable
		Enable: BW jobs submitted without a user code will be printed even if usercode authentication is enabled. Note ▪ Color jobs will not be printed without a valid user code.		
	bit 4	DFU	-	-
	bit 5	DFU	-	-
	bit 6	[PS]: Orientation Auto Detect Function	Disable	Enable
		Automatically chooses page orientations of PostScript jobs (Landscape		

Service Tables

		or Portrait) based on the content. Note Applied to PS firmware ver 1.01		
	bit 7	DFU	-	-

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	
002		Prints the printer summary sheet.

1005	Display Version	Displays the version of the printer firmware.

1006	Sample/Proof Print
	This SP disables/enables use of the document server. [0~1/0/1] 0: Enabled. Document server can be used. 1: Disabled. Document server cannot be used.

7910	PDL Number Information
	Returns the character string for the PDL version.

7911	PDL Version Information
	Returns the character string for the PDL version.

5.5.4 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		Changes the FTP port number. *After changing this value, do the following:* *4.* Run *the Registry Editor* *5. Access /HKEY_LOCAL_MACHINE/SOFTWARE/ Ricoh/NetworkScanner*

		6. *Change the value of 'PortNo' to this SP mode's value* [0~65535/1]
1004*	Compression Type	Selects the compression type for binary picture processing. [1~3/1] 1: MH 2: MR 3: MMR
1005*	Erase Margin	Creates an erase margin for all edges of the scanned image. *If the machine has scanned the edge of the original, create a margin.* [0~5/1 mm]
1006*	Auto Reset Timer	Adjusts the auto reset timer for the scanner function. *If this is "0", the auto reset function is disabled.* [0,10~99/1 s]
1009*	Remote Scan Disable	Enables/Disables the TWAIN scanner driver. [0~1/1] 0: Disabled 1: Enabled (**B140)**

2002	Text Mode		
	001*	MTF Filter Coefficient (Text/Binary/Main scan)	Selects the MTF filter coefficient in the main scan direction for Text mode. *Select a higher number for a stronger filter.* *If this is "0", the MTF filter is not applied.* [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. *Select a higher number for a stronger filter.* [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. *A larger value could cause moiré to appear in the image.* [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]
	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)**
	031	Notch No. 1 (Darker): Contrast: 1-255	[1~255/1] **(B140)**

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]

	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)**
	029	Notch No. 1: Brightness: 1-255	[1~255/1] **(B140)**
	030	Notch No. 1: Threshold: 1-255	[1~255/1] **(B140)**
	031	Notch No. 1: Contrast: 1-255	[1~255/1] **(B140)**

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]
	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	[1~255/1] **(B140)**
	030	Notch No. 1 (Darker): Contrast: 1-255	[1~255/1] **(B140)**
	031	Notch No. 1 (Darker): Threshold: 1-255	[1~255/1] **(B140)**

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]

	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]

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)**
	007	Smoothing Filter	[1~7/1] **(B140)**
	008	Scanner Gamma	[0~3/1] **(B140)**
	011	Notch No. 7 (Lighter) Brightness: 1-255	[1~255/1] **(B140)**
	012	Notch No. 7 (Lighter) Brightness: 1-255	[1~255/1] **(B140)**
	013	Notch No. 7 (Lighter) Threshold: 1-255	[1~255/1] **(B140)**
	014	Notch No. 6: Brightness: 1-255	[1~255/1] **(B140)**
	015	Notch No. 6: Contrast: 1-255	[1~255/1] **(B140)**
	016	Notch No. 6: Threshold: 1-255	[1~255/1] **(B140)**
	017	Notch No. 5: Brightness: 1-255	[1~255/1] **(B140)**
	018	Notch No. 5: Contrast: 1-255	[1~255/1] **(B140)**
	019	Notch No. 5: Threshold: 1-255	[1~255/1] **(B140)**
	020	Notch No. 4 (Middle): Brightness: 1-255	[1~255/1] **(B140)**
	021	Notch No. 4 (Middle): Contrast: 1-255	[1~255/1] **(B140)**
	022	Notch No. 4 (Middle): Threshold: 1-255	[1~255/1] **(B140)**
	023	Notch No. 3: Brightness: 1-255	[1~255/1] **(B140)**

	024	Notch No. 3: Contrast: 1-255	[1~255/1] **(B140)**
	025	Notch No. 3: Threshold: 1-255	[1~255/1] **(B140)**
	026	Notch No. 2: Brightness: 1-255	[1~255/1] **(B140)**
	027	Notch No. 2: Contrast: 1-255	[1~255/1] **(B140)**
	028	Notch No. 2: Threshold: 1-255	[1~255/1] **(B140)**
	029	Notch No. 1 (Darker): Brightness 1-255	[1~255/1] **(B140)**
	030	Notch No. 1 (Darker): Contrast 1-255	[1~255/1] **(B140)**
	031	Notch No. 1 (Darker): Threshold 1-255	[1~255/1] **(B140)**

2021	Compression Ratio of Grayscale (**B140)**		
	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]

5.6 INPUT/OUTPUT CHECK

5.6.1 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			
Bit	**Description**	**Reading**	
		0	**1**
7	Rear Side Fence Close Sensor	Activated	Deactivated
6	Rear Side Fence Open Sensor	Activated	Deactivated
5	Front Side Fence Close Sensor	Activated	Deactivated
4	Front Side Fence Open Sensor	Activated	Deactivated
3	Near End Sensor	(see tables below)	
2	Paper Height 1 Sensor		
1	Paper Height 2 Sensor		
0	Paper Height 3 Sensor		

2. Paper Feed 2			
Bit	**Description**	**Reading**	
		0	**0**
7	2nd Paper Size Switch	See Paper Size Tables Below	
6	2nd Paper Size Switch		
5	2nd Paper Size Switch		
4	2nd Paper Size Switch		
3	2nd Paper Size Switch		
2	Not used		
1	Not used		
0	Not used		

	1500 sheets	1000 sheets			400 sheets			70 sheets
bit-3	0	0	0	0	0	0	1	1
bit-2	0	0	0	1	1	1	1	0
bit-1	0	0	1	1	1	0	0	0
bit-0	0	1	1	0	0	0	0	0

3. Paper Feed 3			
Bit	**Description**	**Reading**	
		0	**0**
7	3rd Paper Size Switch	See Paper Size Tables Below.	
6	3rd Paper Size Switch		
5	3rd Paper Size Switch		
4	3rd Paper Size Switch		
3	3rd Paper Size Switch		
2	Not used		
1	Not used		
0	Not used		

Universal Tray Size Detection – N.A. models only

Paper Size	Switch Setting (LOW = pressed)					Panel Display
11" x 17"	LOW	HIGH	HIGH	HIGH	HIGH	11" x 17" SEF
81/2" x 14"	LOW	LOW	HIGH	HIGH	HIGH	81/2" x 14" SEF
81/2" x 11"	HIGH	LOW	LOW	HIGH	HIGH	81/2" x 11" SEF
11" x 8 ½"	LOW	HIGH	LOW	LOW	HIGH	81/2" x 11" LEF
51/2" x 81/2"	LOW	LOW	HIGH	LOW	LOW	51/2" x 81/2" SEF
81/2" x 51/2"	LOW	LOW	LOW	HIGH	LOW	81/2" x 51/2" LEF
8" x 101/2"	LOW	LOW	LOW	LOW	HIGH	8" x 101/2" SEF
7¼" x 101/2"	HIGH	LOW	LOW	LOW	LOW	71/4" x 101/2" SEF
8" x 13"	HIGH	HIGH	LOW	LOW	LOW	8" x 13" SEF
*	HIGH	HIGH	HIGH	HIGH	LOW	(size set in User Tools)

Universal Tray Size Detection – EU/ASIA models

Paper Size	Switch Setting (LOW = pressed)					Panel Display
A3 SEF	LOW	HIGH	HIGH	HIGH	HIGH	A3 SEF
81/4" x 13"	LOW	LOW	HIGH	HIGH	HIGH	81/4" x 13" SEF
A4 SEF	HIGH	LOW	LOW	HIGH	HIGH	A4 SEF
A4 LEF	LOW	HIGH	LOW	LOW	HIGH	A4 LEF
81/2" x 13"	LOW	LOW	HIGH	LOW	LOW	81/2" x 13" SEF
A5 SEF	LOW	LOW	LOW	HIGH	LOW	A5 SEF
A5 LEF	LOW	LOW	LOW	LOW	HIGH	A5 LEF
*	HIGH	HIGH	HIGH	HIGH	LOW	(Size set in User Tools)

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	**Japan Only**		
6			
5			
4			
3			
2	Right Tray Paper Sensor	Present	Not Present
1	Tray Type	3 trays	4 trays
0	Not used		

6. Paper Feed 6			
Bit	**Description**	**Reading**	
		0	**1**
7	Left Tandem Tray Set	Set	Not set
6	Japan only		
5	Japan only		
4	Rear Fence HP Sensor	Deactivated	Activated
3	Japan only		
2	Rear Fence Return Sensor	Deactivated	Activated
1	Left Tray Paper Sensor	Paper present	Paper not present
0	Right Tandem Tray Set	Set	Not set

7. Paper Feed 7			
Bit	**Item**	**0**	**1**
7	1st Paper Feed Sensor	Present	Not present
6	**Japan Only**	---	---
5	2nd Paper Feed Sensor	Present	Not present
4	3rd Paper Feed Sensor	Present	Not present
3	1st Vertical Transport Sensor	Present	Not present
2	**Japan Only**	---	---
1	2nd Vertical Transport Sensor	Present	Not present
0	3rd Vertical Transport Sensor	Present	Not present

8. Paper Feed 8			
Bit	**Item**	**0**	**1**
7	1st Tray Lift Sensor	Off	On
6	**Japan Only**	Off	On
5	2nd Tray Lift Sensor	Off	On
4	3rd Tray Lift Sensor	Off	On
3	1st Paper End Sensor	Paper	No Paper
2	**Japan Only**	Paper	No Paper
1	2nd Paper End Sensor	Paper	No Paper
0	3rd Paper End Sensor	Paper	No Paper

9. Paper Feed 9			
Bit	**Description**	**Reading**	
		0	**1**
7	Not used		
6	Not used		
5	Toner Overflow SW	Switch not pressed	Switch pressed
4	Toner Collection Bottle Set SW	Switch pressed	Switch not pressed
3	Not used		
2	Not used		
1	Not used		
0	Not used		

10. Paper Feed 10 DFU

11. Paper Feed 11 DFU

12. DIP Switches DFU

13. Exit			
Bit	Description	Reading	
		0	1
7	Toner Collection Motor Sensor	Deactivated	Activated
6	Toner End Sensor	Toner end	Not toner end
5	Toner Collection Coil Sensor	Deactivated	Activated
4	Not used		
3	Exit Unit Set	Set	Not set
2	Paper Exit Sensor	Paper present	Paper not present
1	Exit Unit Entrance Sensor	Paper present	Paper not present
0	Web End Sensor	Not web end	Web end

14. Duplex			
Bit	Description	Reading	
		0	1
7	Not used		
6	Duplex Unit Set	Set	Not set
5	Duplex Transport 3 Sensor	Paper present	Paper not present
4	Duplex Transport 2 Sensor	Paper present	Paper not present
3	Duplex Transport 1 Sensor	Paper present	Paper not present
2	Duplex Jogger HP Sensor	Deactivated	Activated
1	Duplex Inverter Sensor	Paper not present	Paper present
0	Duplex Entrance Sensor	Paper not present	Paper present

15. Lock Detection 1			
Bit	Description	Reading	
		0	1
7	Key Card Set	Set	Not set
6	Development Motor Lock	Not locked	Locked
5	Fusing/Exit Motor Lock	Locked	Not locked
4	Drum Motor Lock	Not locked	Locked
3	CPM	60 CPM	75 CPM
2	Not used		
1	Not used		
0	Not used		

16. Lock Detection 2			
Bit	**Description**	**Reading**	
		0	**1**
7	Charge Corona Leak	Leaked	Not leaked
6	Not used		
5	Toner Collection Motor Lock	Locked	Not locked
4	Exhaust Fan Lock	Locked	Not locked
3	Not used		
2	Not used		
1	Not used		
0	Not used		

17. Registration Sensor			
Bit	**Description**	**Reading**	
		0	**1**
7	Not used		
6	Not used		
5	Front Door Open	Open	Closed
4	Copy Tray Full Sensor	Not full	Full
3	Guide Plate Position Sensor	Closed	Open
2	Relay Sensor	Paper present	Paper not present
1	By-pass Paper End Sensor	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

5.6.2 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 (B064 only)
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
75	Duplex Unit Fan
76	Main Ventilation Fan
77	Main Suction Fan
78	Main Vacuum Fan
79	OPC Fan
80	FIN Junction SOL
81	FIN Junction SOL (Stapler)
82	FIN End Roller SOL
84	Total Counter
85	FIN Main Motor 1
86	FIN Main Motor 2
87	FIN Exit Motor
88	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

5.6.3 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

5.6.4 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

5.6.5 FINISHER INPUT CHECK: SP6117 (B478/B704)

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	Not home position	Home position

Class 3 No.	Bit No.	Description	Reading	
			0	1
6	7	Not Used		
	6	Shift Tray Full Sensor – Z-folding	Not full	Full
	5	Bottom Fence HP Sensor	Not home position	Home position
	4	Top Fence HP Sensor	Not home position	Home position
	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

5.6.6 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)

5.6.7 FINISHER 1 INPUT CHECK: 6121

6121	Finisher Input Check: Finisher 1		
	These are the input checks for the 2000-Sheet/3000-Sheet Finishers B700/B701.		
001	Entrance Sensor	026	Punch Chad Full Sensor
002	Proof Exit Sensor	027	Punch HP Sensor
003	Proof Full Detection Sensor	028	Punch Selection DIP SW1
004	Trailing Edge Detection: Shift	029	Punch Selection DIP SW2
005	Shift Exit Sensor	030	Stack Junction Open/Close Sensor
006	Shift HP Sensor	031	Leading Edge Detection Sensor
007	Shift Exit Sensor	032	Drum Roller HP Sensor
008	Exit Guide Plate HP Sensor	033	Arrival Sensor
009	Paper Detection Sensor: Staple	034	Rear Edge HP Sensor
010	Paper Detection Sensor: Shift	035	Folder Cam HP Sensor
011	Paper Full Sensor: 2000-Sheet	036	Folder Plate HP Sensor
012	Oscillating Back Roller HP Sensor	037	Folder Pass Sensor
013	Jogger HP Sensor	038	Saddle-Stitch Full Sensor: Front
014	Exit Junction Gate HP Sensor	039	Saddle-Stitch Full Sensor: Rear
015	Staple Tray Paper Sensor	040	Saddle-Stitch Stapler 1 Rotation: Front
016	Stapler Main HP Sensor	041	Saddle-Stitch Detection: Front
017	Skew HP Sensor	042	Saddle-Stitch Leading Edge Detection
018	Limit Switch	043	Saddle-Stitch Stapler 1 Rotation: Rear
019	Door Switch	044	Saddle-Stitch Detection: Rear
020	Stapler 1 Rotation	045	Saddle-Stitch Leading Edge Detection
021	Staple Detection	046	Full Sensor: 3000-Sheet
022	Staple Leading Edge Detection	047	Exit Jogger HP Sensor: Front
023	Punch Moving HP Sensor	048	Exit Jogger HP Sensor: Rear
024	Punch Registration Sensor	049	Exit Jogger HP Sensor: Upper
025	Punch Registration Detection		

5.6.8 FINISHER 1 OUTPUT CHECK: 6124

6124	Finisher Output Check: Finisher 1		
	These are the output checks for the 2000-Sheet/3000-Sheet Finishers B700/B701.		
001	Entrance Motor	017	Knock (Positioning Roller) Solenoid
002	Upper Feed Motor	018	Trailing Edge Hold Sensor
003	Lower Feed Motor	019	Saddle-Stitch Hold Sensor
004	Exit Motor	020	Stack Junction Gate Motor
005	Knock (Positioning) Roller Motor	021	Trailing Edge Fence Main Motor
006	Shift Motor	022	Saddle-Stitch Stapler Motor: Front
007	Exit Guide Plate Motor	023	Saddle-Stitch Stapler Motor: Rear
008	Tray Lift Motor	024	Folder Plate Motor
009	Oscillating Back Roller Motor	025	Folder Roller Motor
010	Jogger Motor	026	Drive Roller Oscillating (Clamp) Motor
011	Stack Feed Out Motor	027	Punch Motor
012	Stapler Moving Motor	028	Punch Moving Motor
013	Staple Skew (Rotation) Motor	029	Punch Registration Detection Motor
014	End Stapler Motor	030	Exit Jogger Motor: Front
015	Upper Junction Gate Solenoid	031	Exit Jogger Motor: Rear
016	Lower Junction Gate Solenoid	032	Exit Jogger Release Motor

5.6.9 FINISHER 2 INPUT CHECK: 6122

6122	Finisher Input Check Finisher 2		
	These are the input checks for the 3000-Sheet Finisher B706.		
001	Entrance Sensor	021	Proof Full Sensor
002	Proof Exit Sensor	022	Stapler Moving HP Sensor
003	Shift Exit Sensor	023	Staple Waste Hopper Sensor
004	Staple Exit Sensor	024	Pre-Stack Tray HP Sensor
005	Tray Lower Sensor	025	Hold HP Sensor
006	Tray Near Lower Sensor	026	Exit Guide HP Sensor
007	Stack Feed Out HP Sensor	027	Stapler Reverse Sensor
008	Jogger HP Sensor	028	Stapler Sensor
009	Shift HP Sensor	029	Front Hold HP Sensor
010	Stapler Moving HP Sensor	030	Rear Hold HP Sensor
011	Staple HP Sensor	031	Knock Hold HP Sensor
012	Staple Cartridge Sensor	032	Reverse Drive HP Sensor
013	Staple Tray Paper Sensor	033	Paper Sensor
014	Door Sensor	034	Tray Lower Sensor
015	Punch Unit Sensor	035	Punch HP2 Sensor
016	Punch HP Sensor	036	Shift Jogger Sensor
017	Punch Chad Full Sensor	037	Shift Jogger HP Sensor
018	Paper Detection Sensor: Staple	038	Shift Jogger Release HP Sensor
019	Paper Detection Sensor: Shift	039	Front Door Safety Switch
020	Staple Cartridge Set Sensor		

5.6.10 FINISHER 2 OUTPUT CHECK: 6125

6125	Finisher Output Check: Finisher 2		
	These are the input checks for the 3000-Sheet Finisher B706.		
001	Job Cancel	014	Staple Lift Motor
002	Main Motor	015	Staple Exit Motor
003	Shift Tray Exit Motor	016	Exit Motor
004	Proof Junction Gate Solenoid	017	Hold (Fold Plate) Motor
005	Shift Relay Motor	018	Pre-Stack Solenoid
006	Jogger Motor	019	Guide (Junction Gate) Solenoid
007	Stapler Main Motor	020	Staple Release Solenoid
008	Stapler Motor	021	Front Hold (Fold) Motor
009	Punch Motor	022	Rear Hold Motor
010	Stapler Solenoid	023	Reverse Drive Motor
011	Knock (Staple Hammer) Motor	024	Reverse Feed Motor
012	Stack Feed Out Motor	025	Exit Jogger Motor
013	Shift Motor	026	Exit Jogger Release Motor

5.7 USING THE DEBUG LOG (B140/B246)

This machine provides a Save Debug Log feature that allows the Customer Engineer to save and retrieve error information for analysis.

Every time an error occurs, debug information is recorded in volatile memory but this information is lost when the machine is switched off and on.

To capture this debug information, the Save Debug Log feature provides two main features:

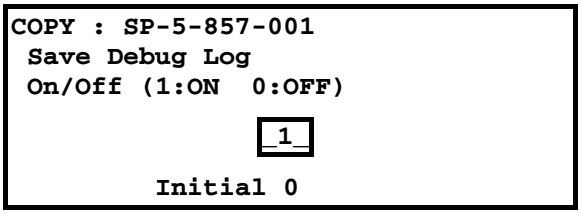
- Switching on the debug feature so error information is saved directly to the HDD for later retrieval.
- Copying the error information from the HDD to an SD card.

When a user is experiencing problems with the machine, follow the procedure below to set up the machine so the error information is saved automatically to the HDD. Then ask the user to reproduce the problem.

5.7.1 SWITCHING ON AND SETTING UP SAVE DEBUG LOG

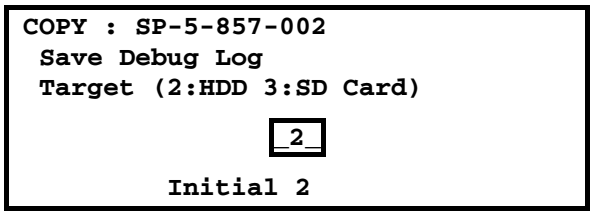
The debug information cannot be saved the until the “Save Debug Log” function has been switched on and a target has been selected.

1. Enter the SP mode and switch the Save Debug Log feature on.
   - Press [ ] then use the 10-key pad to enter 1 0 7.
   - Press and hold down [C/⊘] for more than 3 seconds.
   - Touch “Copy SP”.
   - On the LCD panel, open SP5857.
2. Under “5857 Save Debug Log”, touch “1 On/Off”.



3. On the control panel keypad, press “1” then press #. This switches the Save Debug Log feature on.
   NOTE: The default setting is “0” (OFF). This feature must be switched on in order for the debug information to be saved.

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.

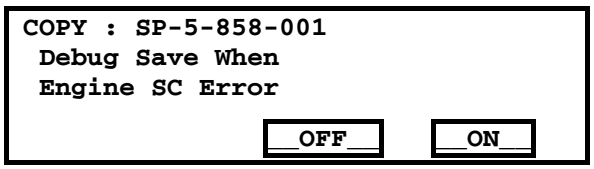
5. Now touch “5858” and specify the events that you want to record in the debug log. SP5858 (Debug Save When) provides the following items for selection.

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.

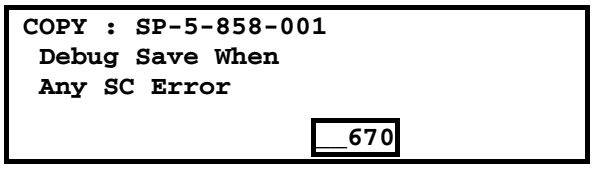
Example 1: To Select Items 1, 2, 4

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”).

Key to Acronyms

Acronym	Meaning	Acronym	Meaning
ECS	Engine Control Service	NFA	Net File Application
GPS	GW Print Service	PDL	Printer Design Language
GSP-PM	GW Print Service – Print Module	PTS	Print Server
IMH	Image Memory Handler	SCS	System Control Service
MCS	Memory Control Service	SRM	System Resource Management
NCS	Network Control Service	WebDB	Web Document Box (Document Server)

The machine is now set to record the debugging information automatically on the HDD (the target selected with SP5857-002) for the events that you selected SP5858 and the memory modules selected with SP5859.

Please keep the following important points in mind when you are doing this setting:

- Note that the number entries for Keys 1 to 5 are the same for the Copy, Printer, Scanner, and Web memory modules.
- The initial settings are all zero.
- These settings remain in effect until you change them. Be sure to check all the settings, especially the settings for Keys 6 to 10. To switch off a key setting, enter a zero for that key.
- You can select any number of keys from 1 to 10 (or all) by entering the corresponding 4-digit numbers from the table.
- You cannot mix settings for the groups (COPY, PRINTER, etc.) for 006~010. For example, if you want to create a PRINTER debug log you must select the settings from the 9 available selections for the “PRINTER” column only.
- One area of the disk is reserved to store the debug log. The size of this area is limited to 4 MB.

5.7.2 RETRIEVING THE DEBUG LOG FROM THE HDD

Retrieve the debug log by copying it from the hard disk to an SD card.

1. Insert the SD card into the service slot of the copier.
2. Enter the SP mode and execute SP5857-009 (Copy HDD to SD Card (Latest 4 MB)) to write the debugging data to the SD card.
3. Use a card reader to copy the file and send it for analysis to your local Ricoh representative by email, or just send the SD card by mail.

5.7.3 RECORDING ERRORS MANUALLY

Since only SC errors and jams are recorded to the debug log automatically, for any other errors that occur while the customer engineer is not on site, please instruct customers to perform the following immediately after occurrence to save the debug data. Such problems would include a controller or panel freeze.

NOTE: In order to use this feature, the customer engineer must have previously switched on the Save Debug Feature (SP5857-001) and selected the hard disk as the save destination (SP5857-002).

1. When the error occurs, on the operation panel, press

(Clear Modes).

2. On the control panel, enter “01” then hold down

for at least 3 sec. until the machine beeps then release. This saves the debug log to the hard disk for later retrieval with an SD card by the service representatives.

3. Switch the machine off and on to resume operation.

   The debug information for the error is saved on the hard disk so the service representatives can retrieve it on their next visit by copying it from the HDD to an SD card.

5.7.4 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).

5.8 USER TOOLS

5.8.1 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.

5.8.2 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)

B140/B246/D052 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

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

5.8.3 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

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

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

5.8.4 INQUIRY

B064 Series INQUIRY

Machine Repair
Telephone No.
Machine Serial No.
Sales Representative
Telephone Number
Consumables
Toner
Staple

B140/B246/D052 Series INQUIRY

Machine Repair
Telephone No.
Machine Serial No.
Sales Representative
Telephone Number

5.8.5 COUNTER

Total Counter
Print Counter List

5.9 DIP SWITCH TABLES

5.9.1 BCU (BASE ENGINE CONTROL UNIT)

BCU Base Board DIP SW101

No.	Function	Default	Comments
1	MT-C2a 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 NA (115V): 6, 7, 8/ ON, OFF, OFF EU (220/240V): 6, 7, 8/ OFF, ON, OFF
7	Region Selection	-	
8	Region Selection	-	

DFU: Design, Factory Use only. Do not change these settings.

5.9.2 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 SD Card 1 Boot: 5, 6, 7/ OFF, ON, OFF SD Card 2 Boot: 5, 6, 7/ ON, ON, OFF SD Card 3 Boot: 5, 6, 7/ OFF, OFF, ON
6	Boot Selection	OFF	
7	Boot Selection	OFF	
8	Not Used	OFF	

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.

Controller Board DIP SW 6

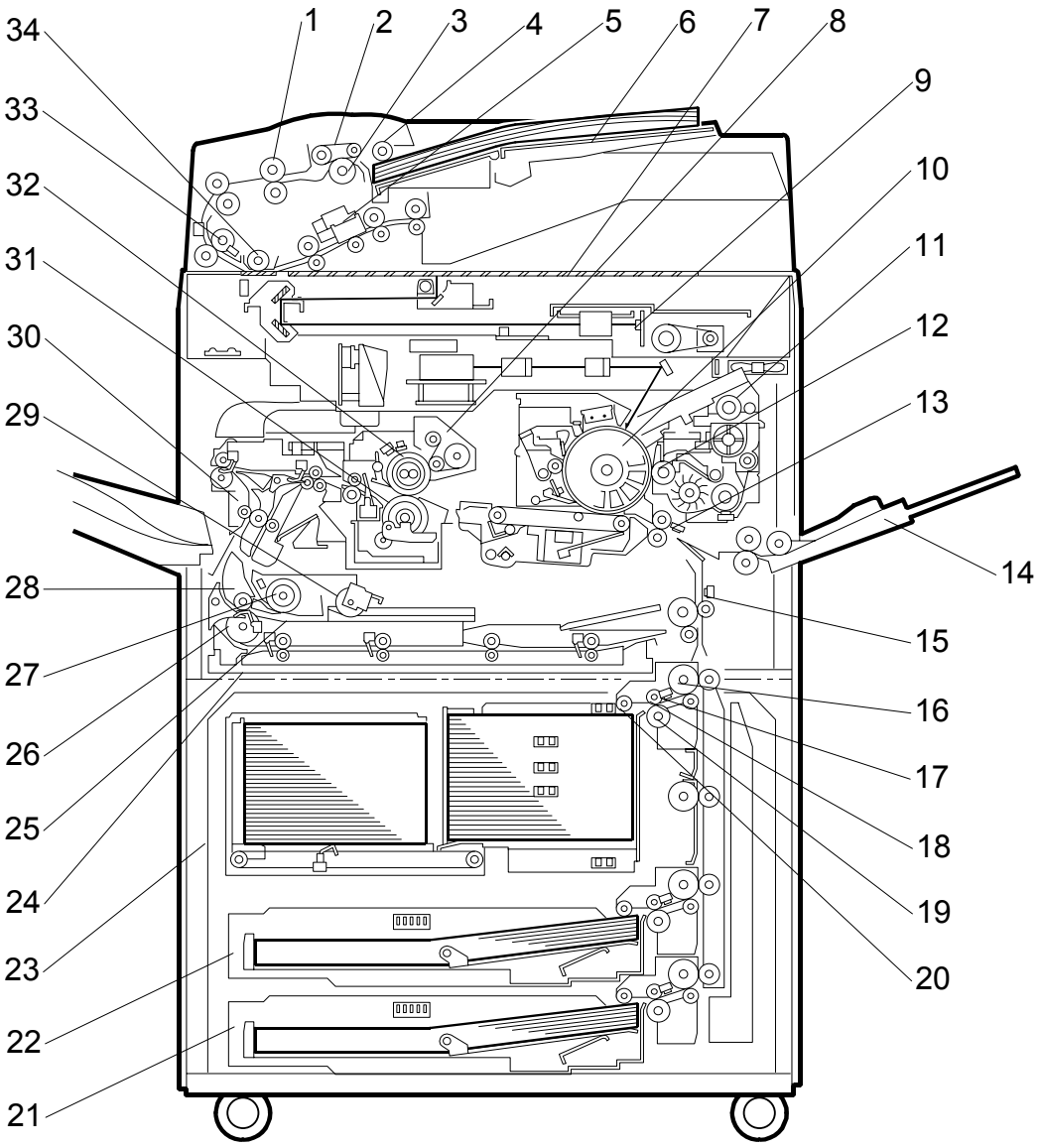
No.	Function	Default	Comments
1	Not Used	OFF	
2	Not Used	OFF	
3	Not Used	OFF	
4	Not Used	OFF	

DETAILED DESCRIPTIONS

REVISION HISTORY		
Page	**Date**	**Added/Updated/New**
1	04/18/2008	New Information – Section updated to support D052 Series
62	09/08/2006	Updated Information – Process Control

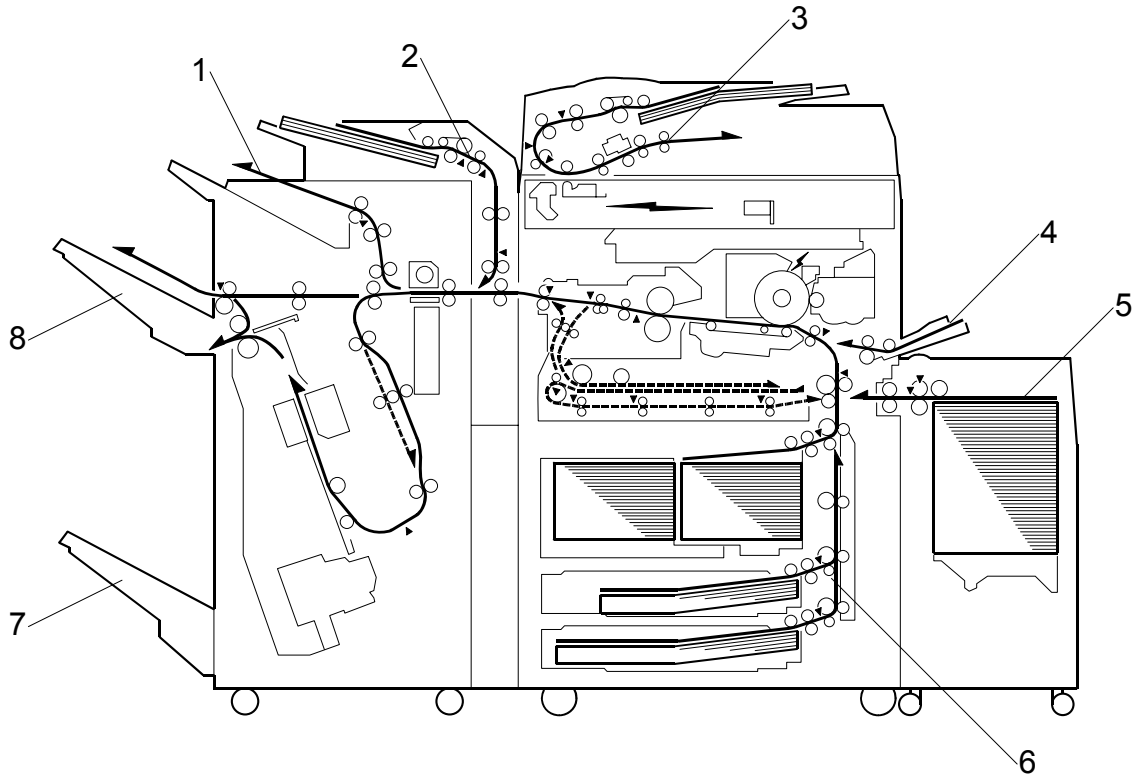
6. DETAILED DESCRIPTIONS

6.1 OVERVIEW



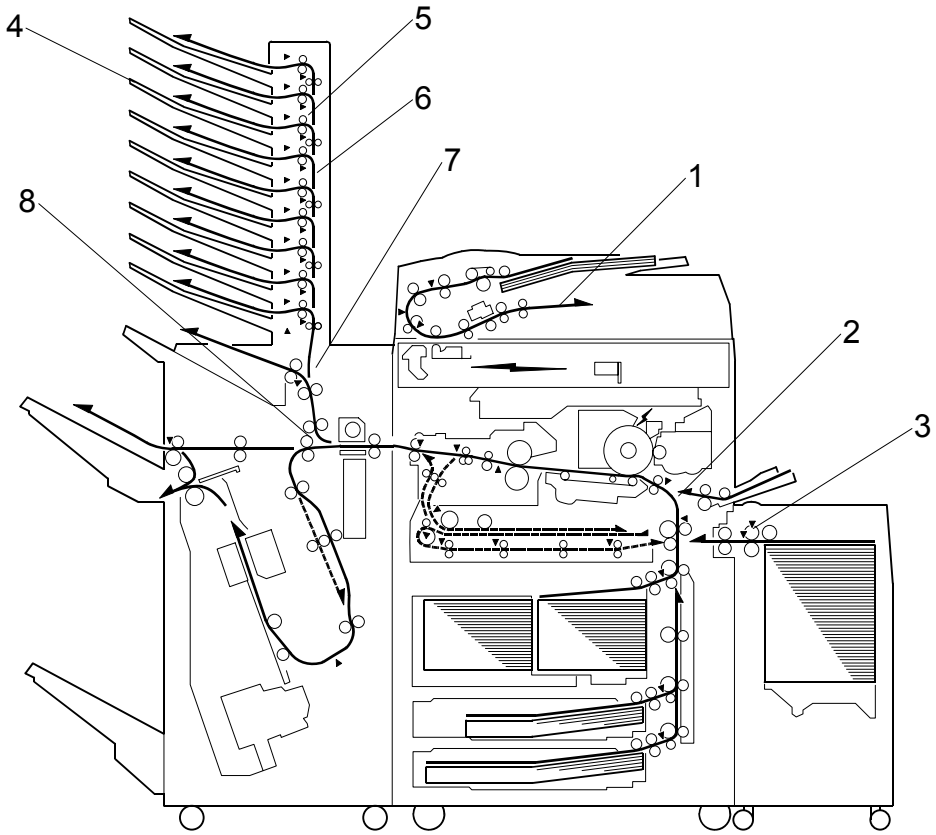
1. Entrance Roller (ADF)
2. Feed Belt (ADF)
3. Separation Roller (ADF)
4. Pick-up Roller (ADF)
5. CIS (Contact Image Sensor)
6. Original Feed-in Tray
7. Exposure Glass
8. Fusing Unit
9. CCD
10. OPC Drum
11. Development Unit
12. Development Roller
13. Registration Sensor
14. By-pass Tray
15. Relay Sensor
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)



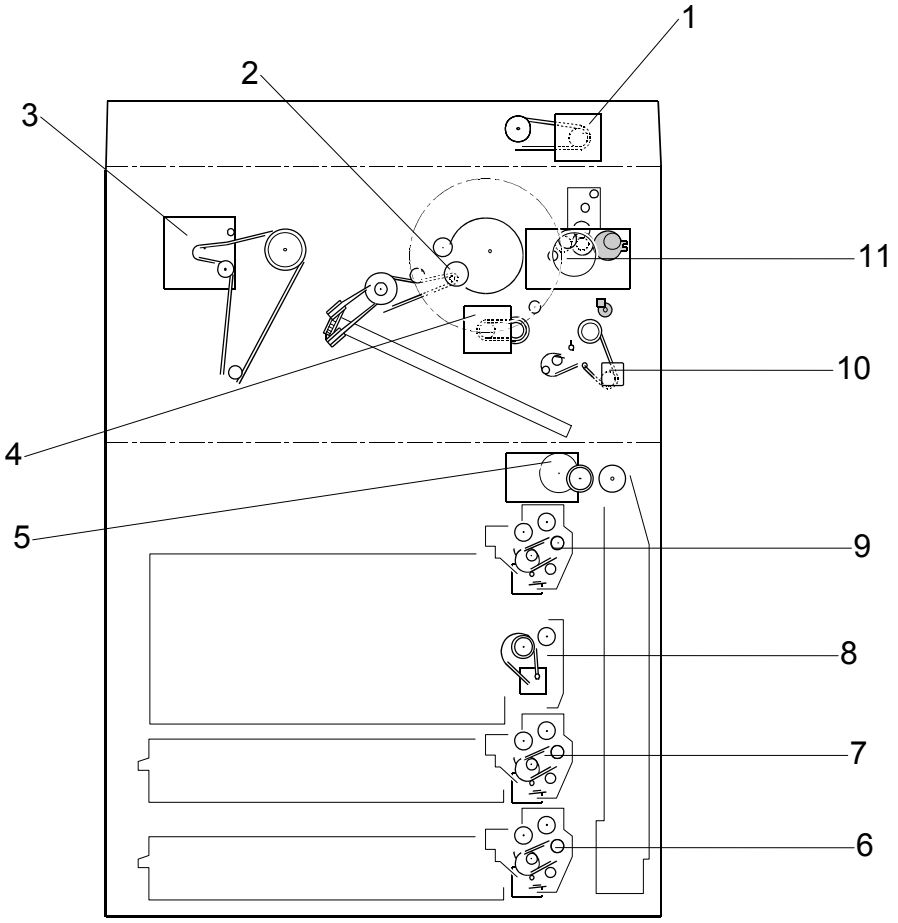
1. Proof Exit Tray
2. Cover Sheet Path
3. Original Path
4. By-pass Tray
5. LCT Feed
6. Vertical Transport Path
7. Finisher Exit Tray 2
8. Finisher Exit Tray 1

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)

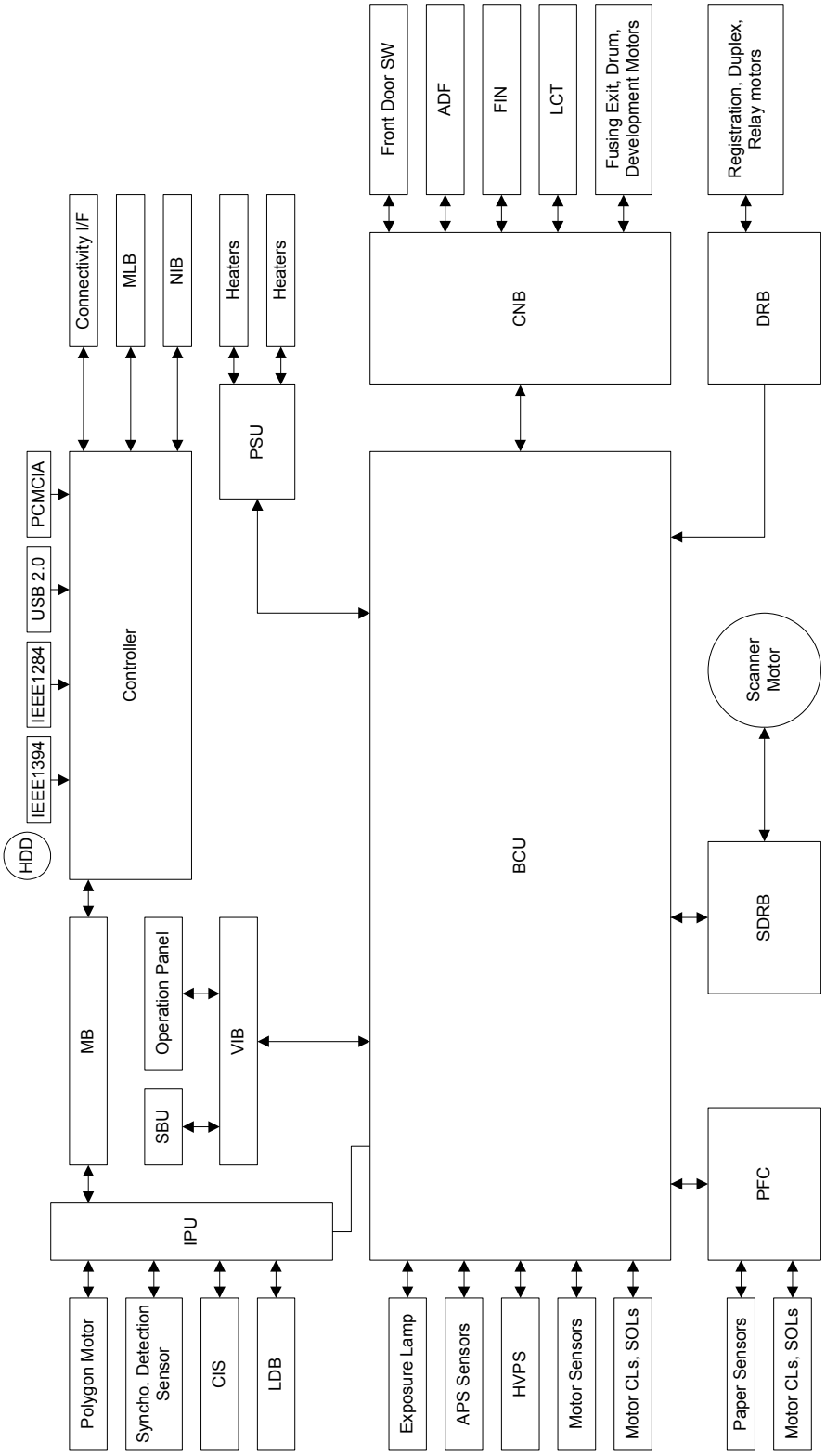
6.1.3 DRIVE LAYOUT



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

6.2 BOARD STRUCTURE

6.2.1 BLOCK DIAGRAM



6.2.2 COMPONENT DESCRIPTIONS

This machine employs Ricoh GW (Grand Work) architecture. (You may also hear this referred to as “RA2K” technology in the U.S.)

Below 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 board 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.

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.

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.

NOTE: The HDD for the B246/D052 Series has 80 GB capacity.

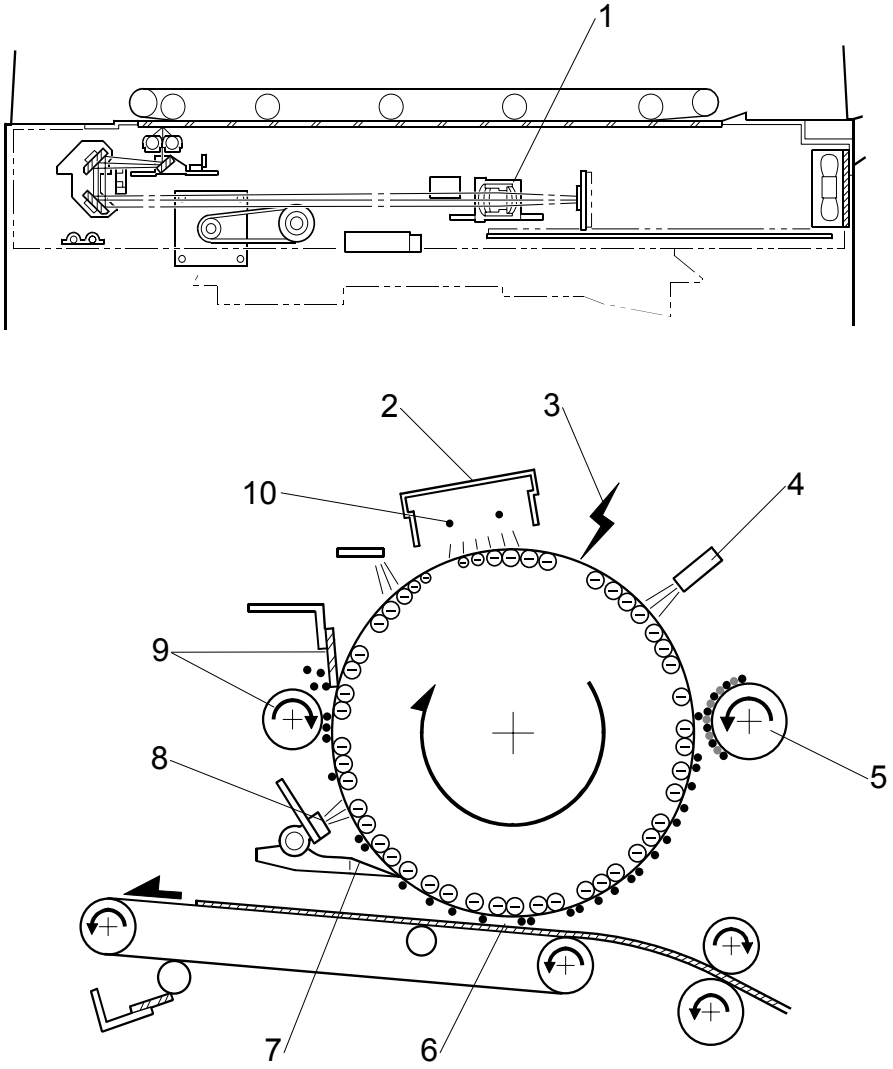
Area	Power Off	Capacity	Control		Comment
For image storage	Store	37124 MB	Copy conversion 1735		Copy server, local storage
For temporary images	Delete		Copy Allocated copies Printer Scanner	500 100 200 500	Electronic sort, test printing, confidential printing
FileSystem1	Store	500 MB			Print font download, 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 malfunctioning 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. 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.

6.3 COPY PROCESS OVERVIEW



1. EXPOSURE

A xenon lamp exposes the original. Light reflected from the original passes to the CCD, where it is converted into an analog data signal. This data is converted to a digital signal, processed, and stored in the memory. At the time of printing, the data is retrieved and sent to the laser diode. 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 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 (Vg or Vgrid)
- Laser diode power
- Development bias voltage (Vb)

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 (B246/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 (Vsp) to the CPU. The Vsp output signal is one of the factors used for toner supply control.

9. CLEANING

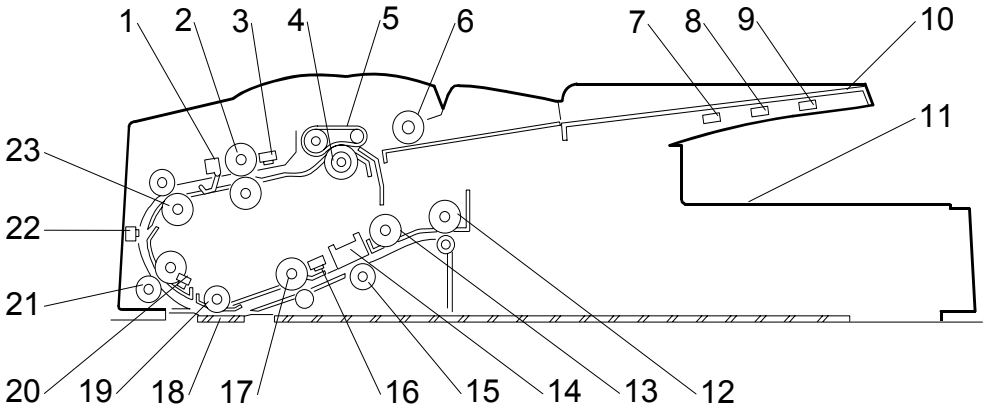
The cleaning brush removes toner remaining on the drum after image transfer and the cleaning blade scrapes off all remaining toner.

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.

6.4 ADF

6.4.1 OVERVIEW



1. Original Width Sensors (x 4)
2. Entrance Roller
3. Skew Correction Sensor
4. Separation Roller
5. Feed Belt
6. Pick-up Roller
7. Original Length Sensor 1
8. Original Length Sensor 2
9. Original Length Sensor 3
10. Original Tray
11. Exit Tray
12. Exit Roller
13. 3rd Transport Roller
14. CIS (Contact Image Sensor)
15. White Platen Roller
16. Exit Sensor
17. 2nd Transport Roller
18. ADF Exposure Glass
19. Scanning Roller
20. Registration Sensor
21. Pre-scanning Roller
22. Interval sensor
23. 1st Transport Roller

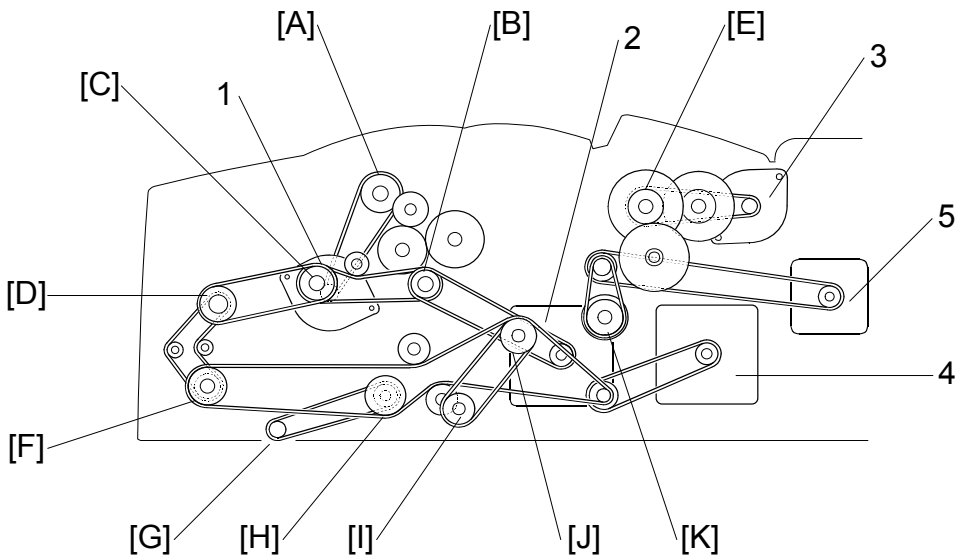
Some sensors are not shown, but the callouts indicate their approximate locations.

Original Separation and Feed. The standard FRR system for paper separation and feed. (CT 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. (CT 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]

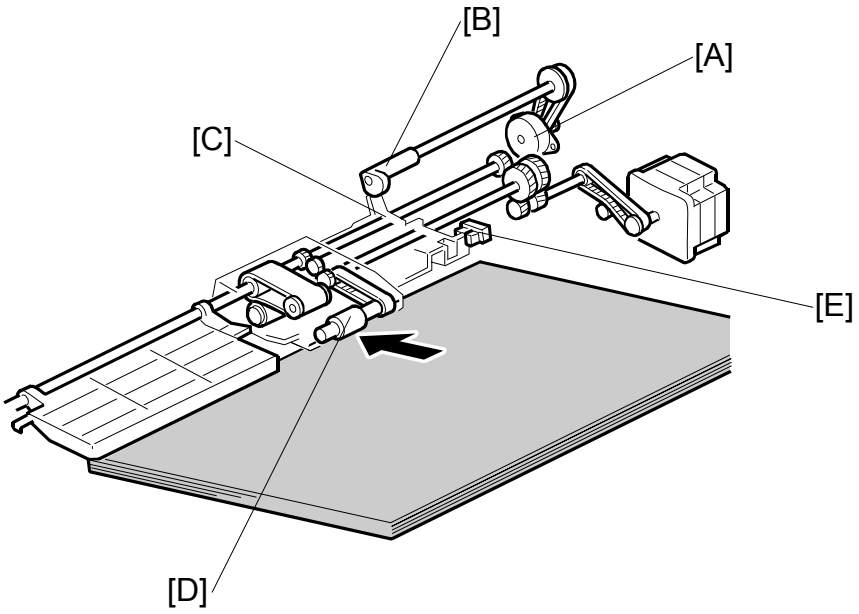
Bottom plate motor: Drives the bottom plate lift mechanism through gear [E].

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].

6.4.3 PICK-UP ROLLER LIFT

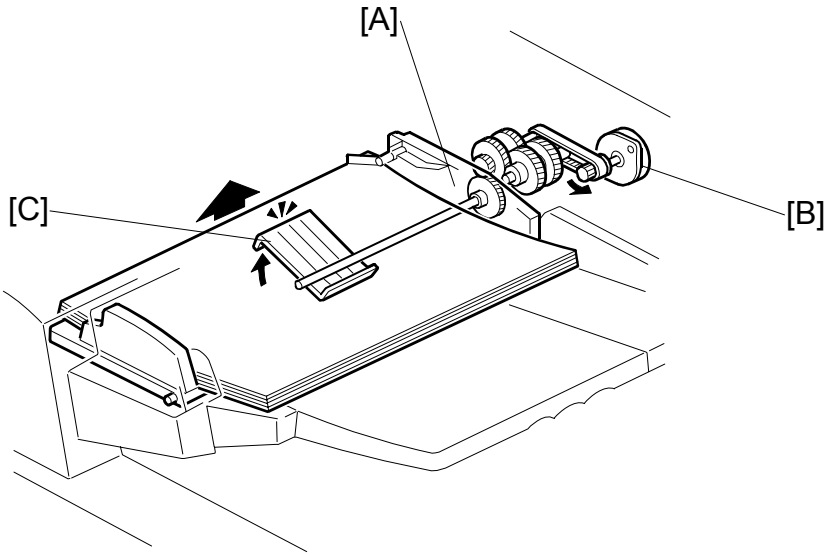


[A]: Pick-up roller lift motor
[B]: Cam
[C]: Pick-up roller release lever
[D]: Pick-up roller
[E]: Pick-up roller HP sensor

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



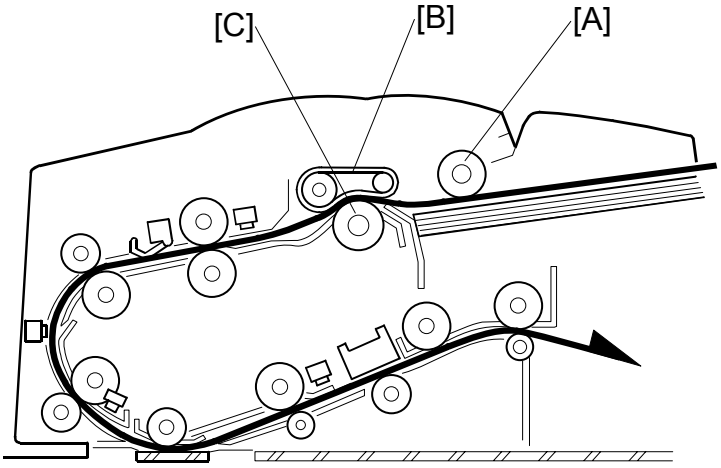
[A]: Bottom plate sensor
[B]: Bottom plate motor
[C]: Lift lever

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.

6.4.5 ORIGINAL SEPARATION

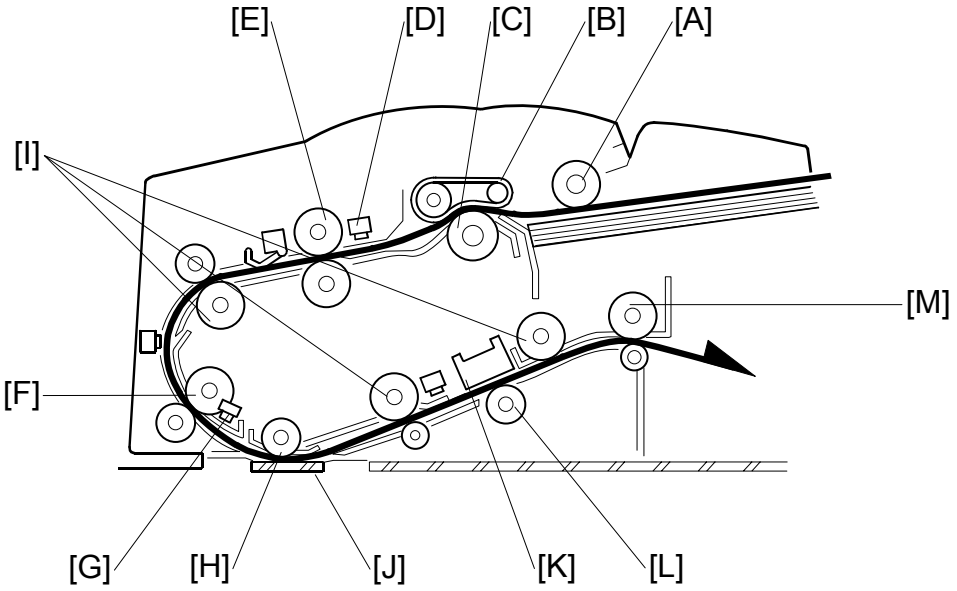


[A]: Pick-up roller
[B]: Feed belt
[C]: Separation roller

This mechanism prevents feeding more than one sheet at a time.

(CT Handling Paper> Handling Originals> Document Feed> **FRR with Feed Belt)**

6.4.6 ORIGINAL TRANSPORT



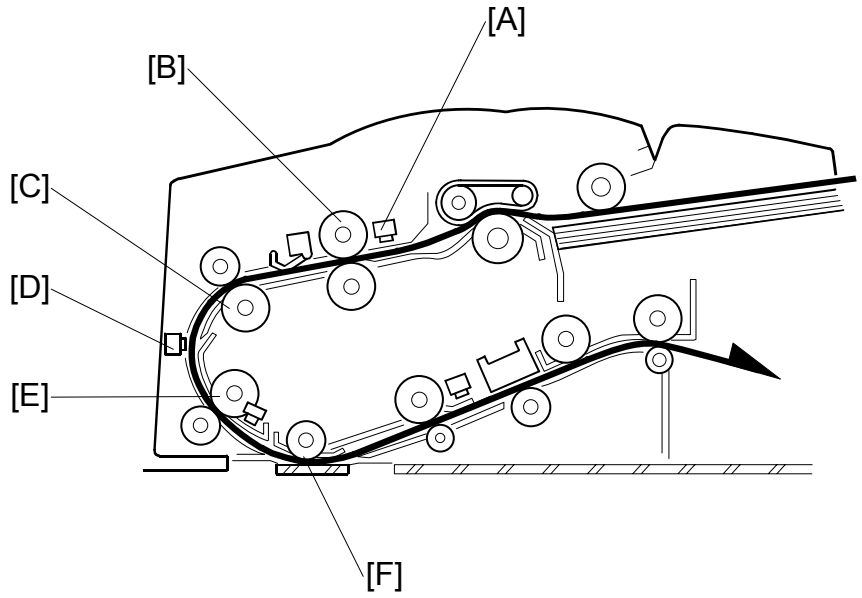
The pick-up roller [A] feeds the original to the feed belt [B] and separation roller [C]. Skew is corrected at the skew correction sensor [D] and entrance roller [E]. (☛ 6.4.7)

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.

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

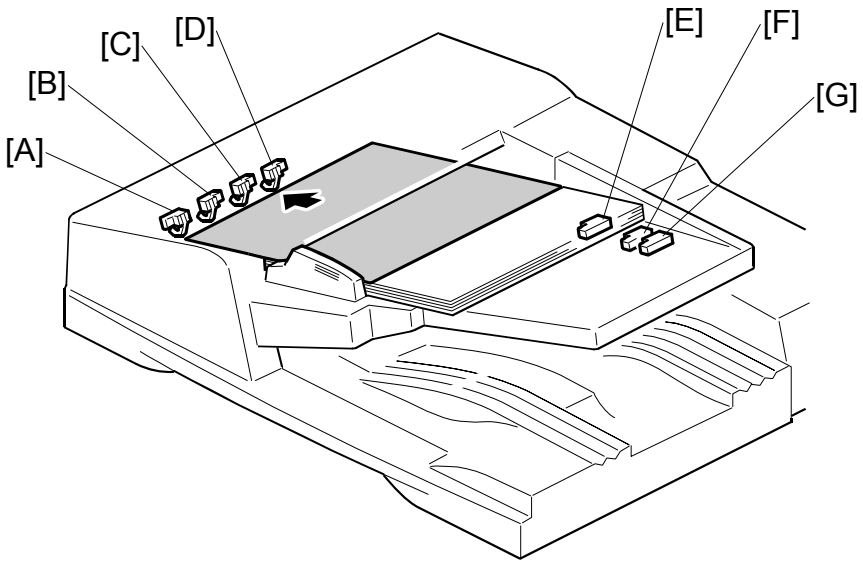
	B6, A5, HLT	Larger Than A5
Duplex Scanning	Yes	Yes
Simplex Scanning	Yes	No

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

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.

Changing the Default Selection with SP6016 and SP5126

Here is a list of paper sizes that can be set to 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**	*11" x 15"*	4	**8 K**	*DL SEF*
32	**LT LEF**	*Exec LEF*	2	**16 K SEF**	*LT SEF*
16	**LT SEF**	*8" x 10" SEF*	1	**16 K LEF**	*LT LEF*
8	**LG SEF**	*Set by SP 5126*			

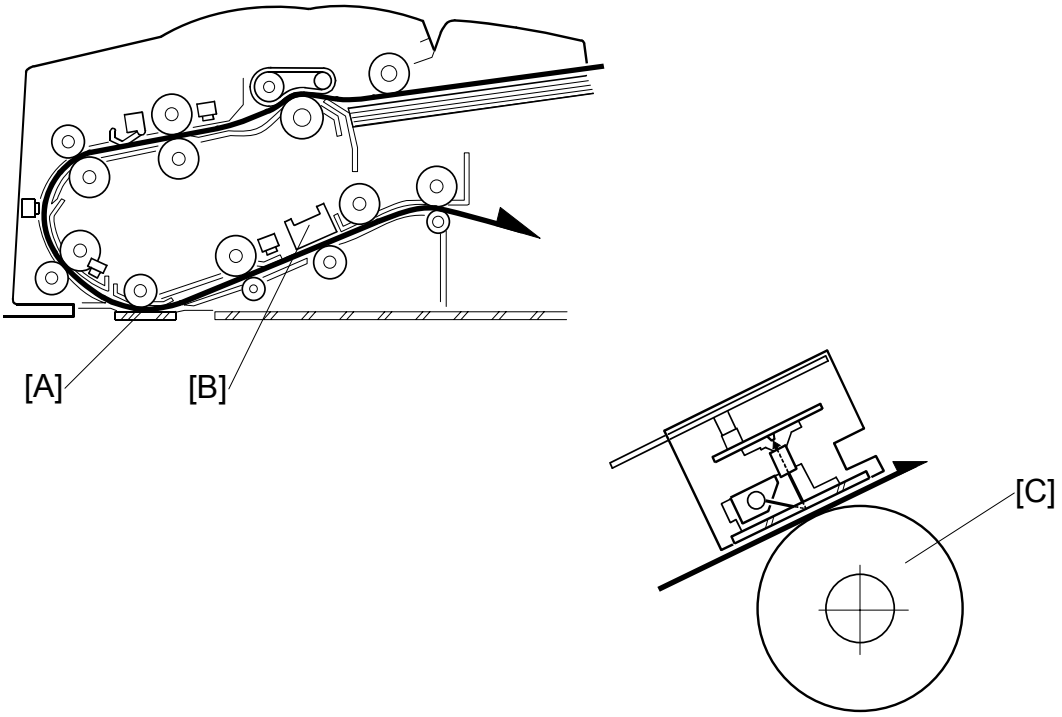
To change the default settings:

1. Enter the SP mode.
2. Select SP6016.
3. Replace the default settings with these 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

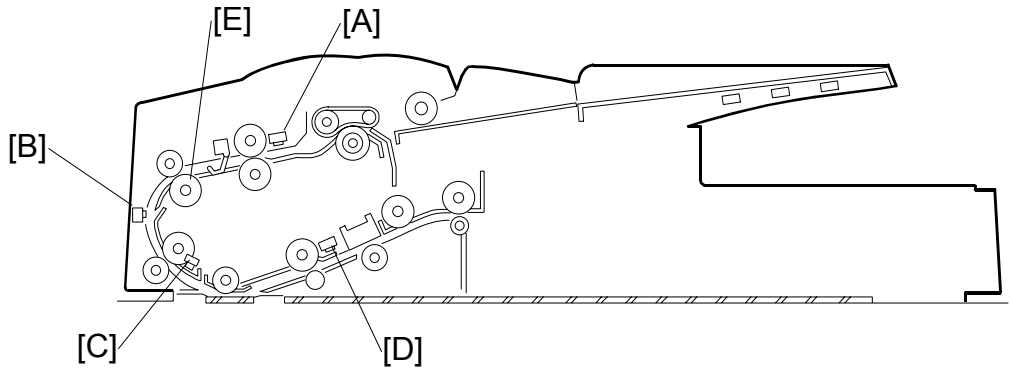
The CIS can scan a line 306 mm (12") wide at 600 dpi. To increase the scanning speed, the sensors are divided into 13 parallel blocks.

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

6.4.10 JAM DETECTION



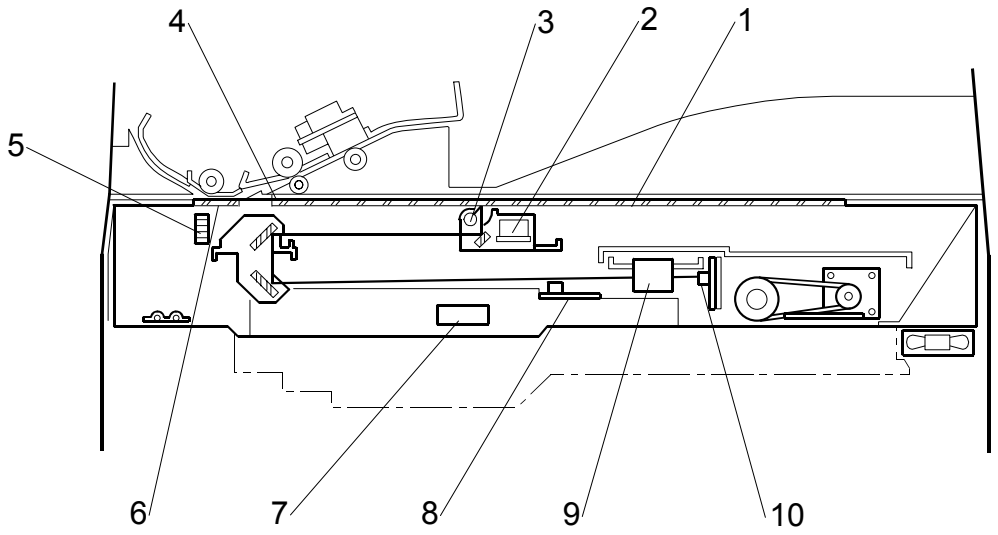
Four sensors, the skew correction sensor [A], interval sensor [B], registration sensor [C], and exit sensor [D] detect jams in the paper path. The conditions that trigger a jam detection are listed below.

Jam Type		Cause
Skew correction sensor	Check in failure	Remains off after enough time for the original to feed twice the distance from the original setting position to the skew correction sensor.
Interval sensor	Check in failure	Remains off after enough time for the original to feed twice the distance from roller [E] to the interval sensor.
Registration sensor	Check in failure	Remains off after enough time for the original to feed twice the distance from the skew correction sensor to the registration sensor.
Exit sensor	Check in failure	Remains off after enough time for the original to feed twice the distance from the registration sensor to the exit sensor.
Skew correction sensor	Check out failure	Remains on after enough time for a 610 mm (24") original to feed (except when the user is feeding custom-sized originals, which can be up to 1260 mm).
Interval sensor	Check out failure	Remains on after enough time for the original to feed twice the distance from the interval sensor to the skew correction sensor.
Registration sensor	Check out failure	Remains on after enough time for the original to feed twice the distance from the skew correction sensor to the registration sensor.
Exit sensor	Check out failure	Remains on after enough time for the original to feed twice the distance from the registration sensor to the exit sensor.

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

6.5.1 OVERVIEW



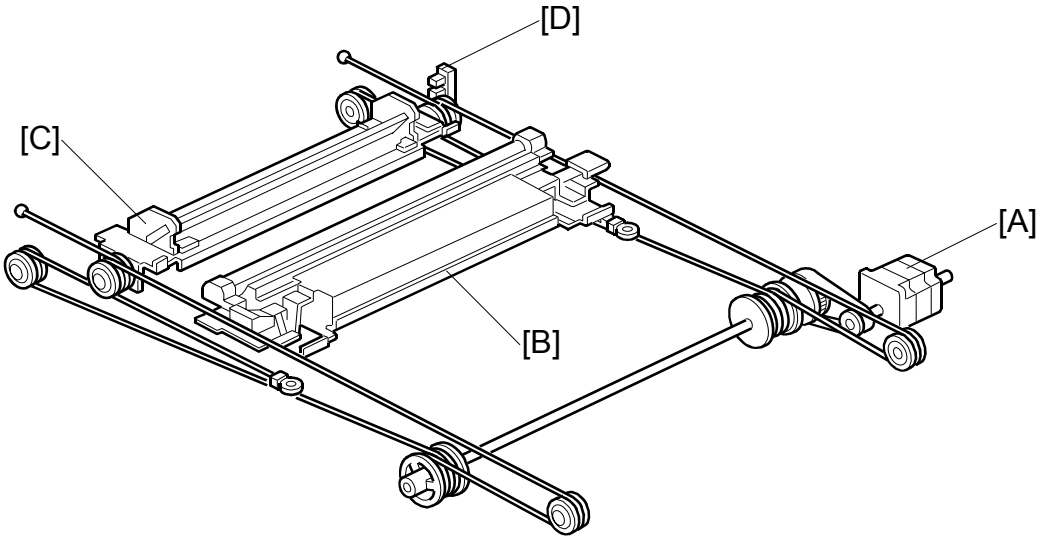
1. Exposure Glass
2. Lamp Regulator
3. Exposure Lamp (Xenon)
4. White Plate
5. Scanner HP Sensor
6. Exposure Glass (ADF)
7. Original Width Sensor
8. Original Length Sensors 1, 2
9. Scanner Lens Block
10. CCD (Charge Coupled Device)

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.

6.5.2 SCANNER DRIVE



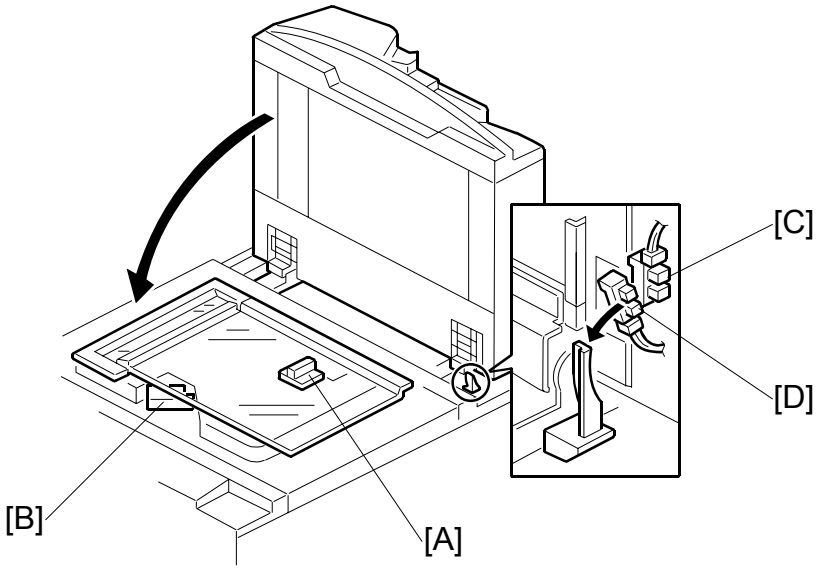
The scanner motor [A] (a dc stepper motor) drives the first scanner [B] and second scanner [C] through drive wires and pulleys.

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

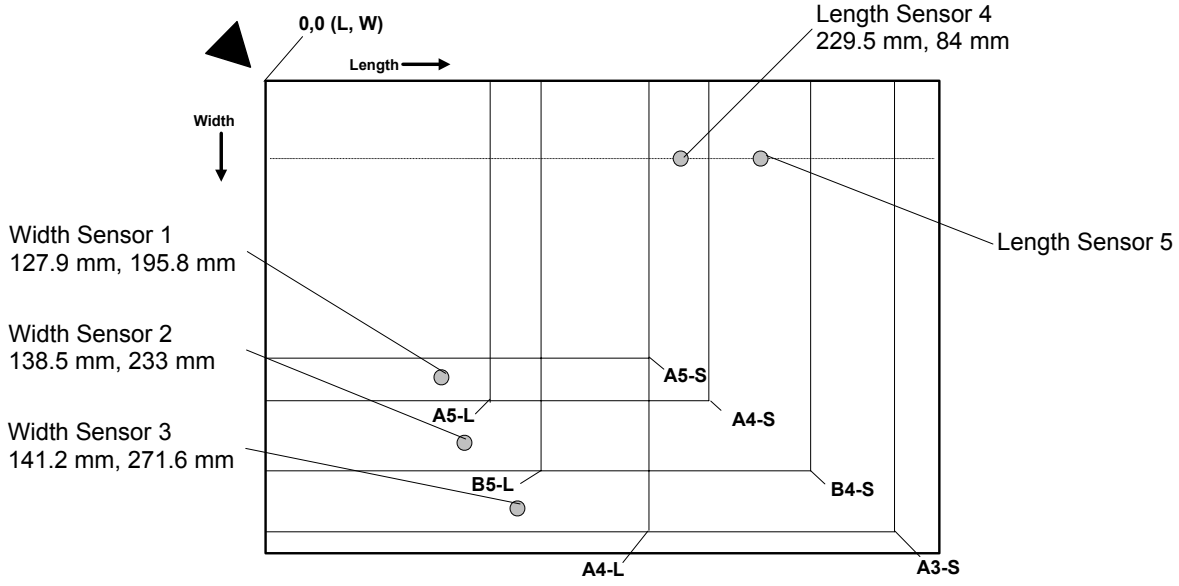


Original length sensor [A] and Original width sensor [B] (reflective sensors) detect the width and length of the original on the exposure glass.

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.



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. (CT 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.

6.5.5 AUTO IMAGE DENSITY (ADS)

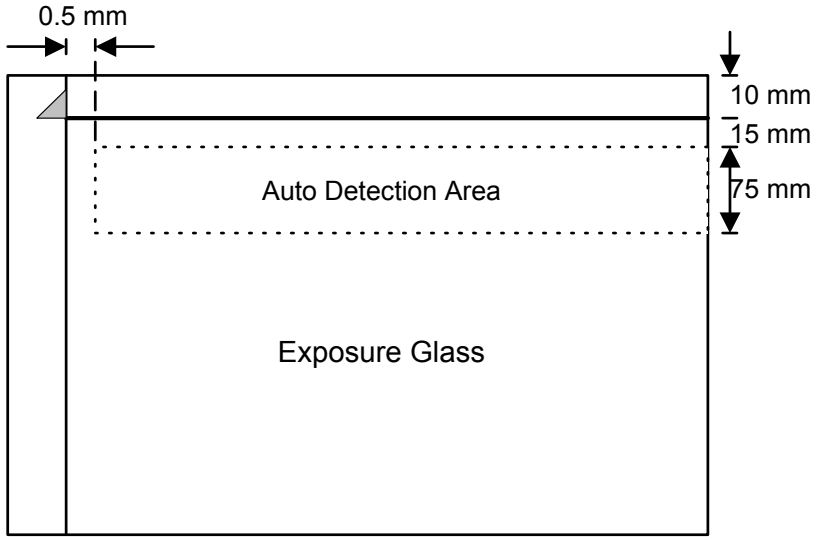
Auto Image Density (ADS), also called *original background correction*, corrects for variation in background density down the page to prevent the background of an original from appearing in copies. This machine uses rear scale peak sampling (the area sampled, which must contain no data, is near the rear 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.

(CT Digital Processes> Image Processing> Black and White CCD Systems> Analog Signal Processing> **Automatic Image Density**)



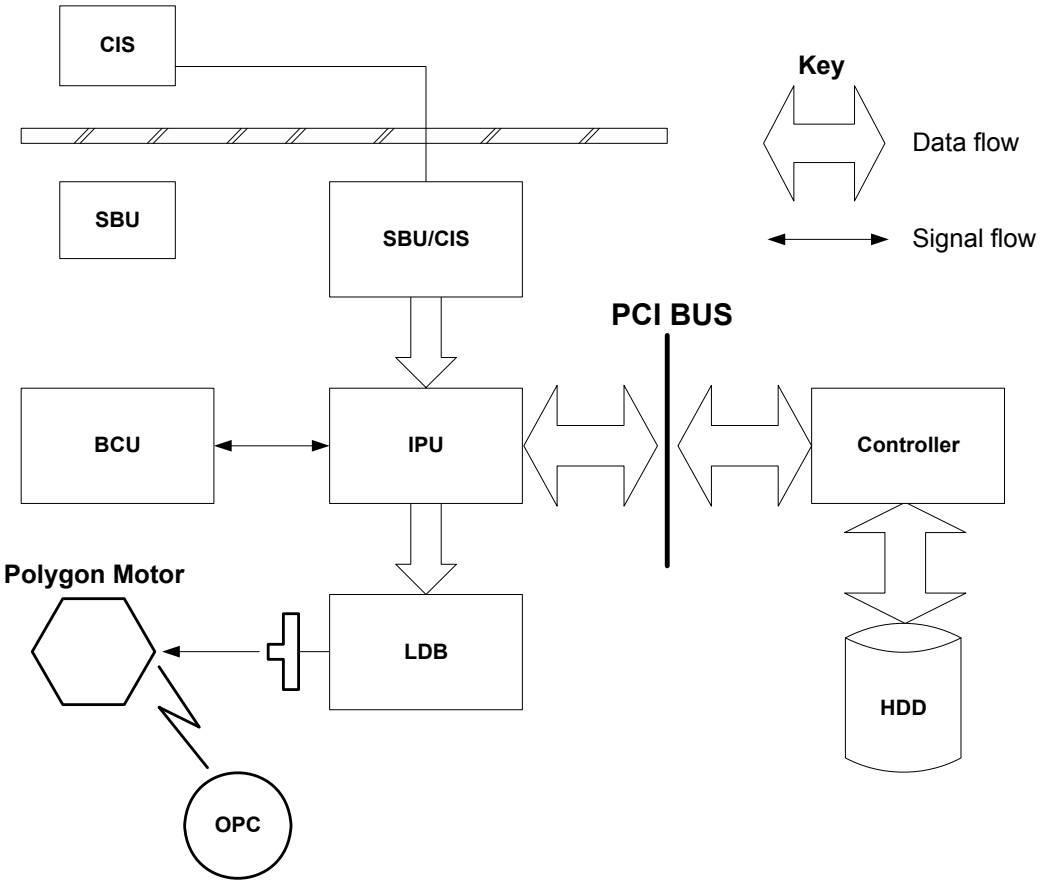
CIS ADS

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.



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

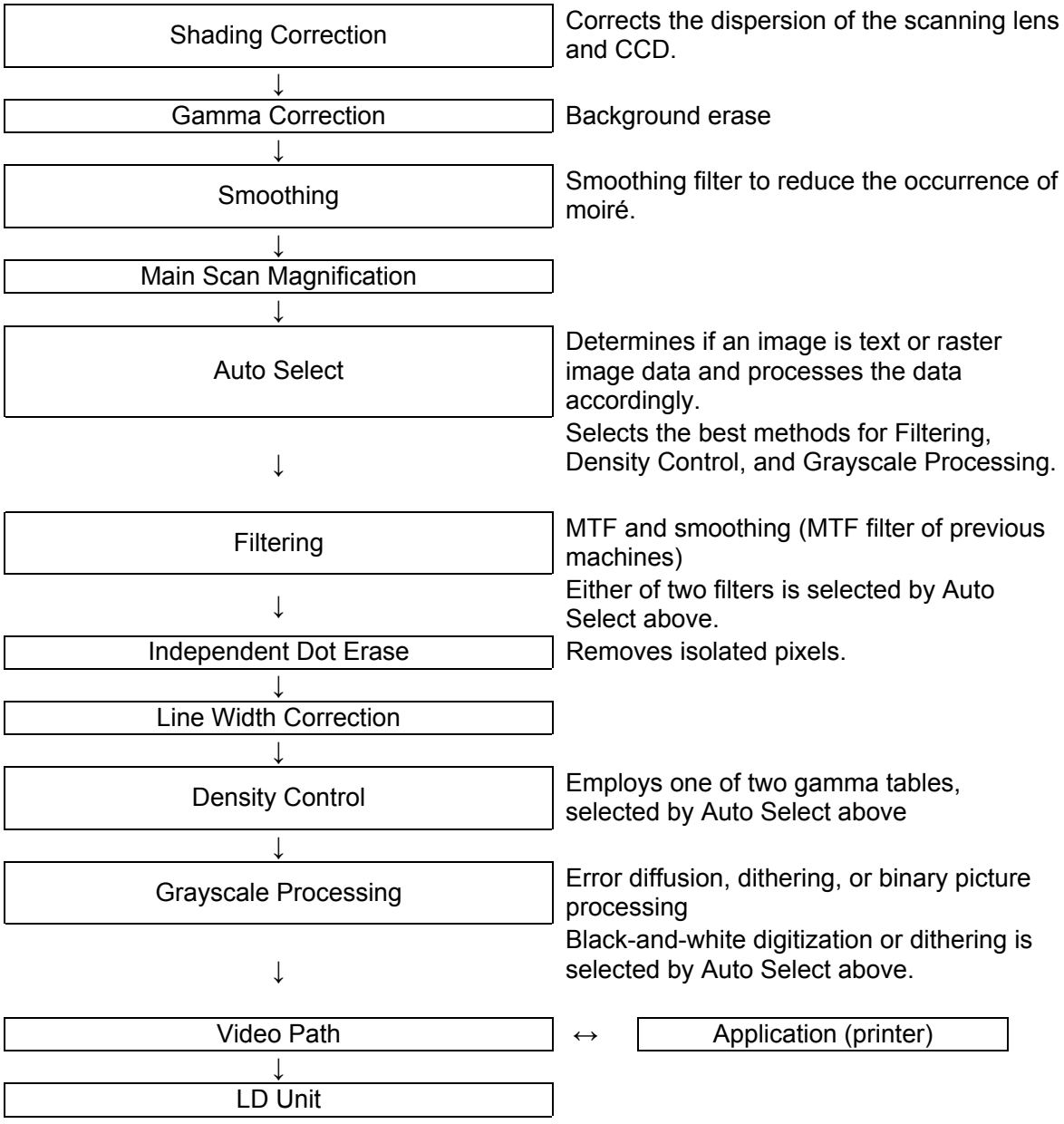
LDB: 4-beam laser exposure, digital-to-grayscale conversion, synchronization detection

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.
Tex/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 achieved best reproduction of “copies of copies” by smoothing the image.
	Sharp	Used to emphasize lines and text stronger than Normal for better image quality.
	Custom Setting	Stores SP command settings.

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	5 Normal	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	3 Print Photo	SP4903-005
	55.5~75%			SP4903-006
	75.5~160%			SP4903-007
	160.5~400%			SP4903-008

Used for coarse, dithered tone photographs such as newsprint.

If the value is increased, the photo becomes sharper, but blurring could occur in the sub scan direction. If the value is decreased, blurring in the sub scan direction is less obvious but outlines become fuzzy.

Custom Setting: Photo Mode (Error Diffusion) Image Quality

Item		Range	Default	SP No.
Photo	25~55%	0~6	1 Normal	SP4903-009
	55.5~75%			SP4903-010
	75.5~160%			SP4903-011
	160.5~400%			SP4903-012

Used for printed materials (magazines, etc.) with 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	5 Normal	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	5 Normal	SP4903-017
	55.5~75%			SP4903-018
	75.5~160%			SP4903-019
	160.5~400%			SP4903-020

If the value is increased, low density areas become sharper, but the background could become dirtier. If the value is decreased, the background disappears but the density of low density areas becomes low.

Custom Setting: Generation Mode Image Quality

Item		Range	Default	SP No.
Generation	25~55%	0~10	5 Normal	SP4903-021
	55.5~75%			SP4903-022
	75.5~160%			SP4903-023
	160.5~400%			SP4903-024

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	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	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.

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.

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 is 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			Sharper	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				Glossy Photo	Sharper	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

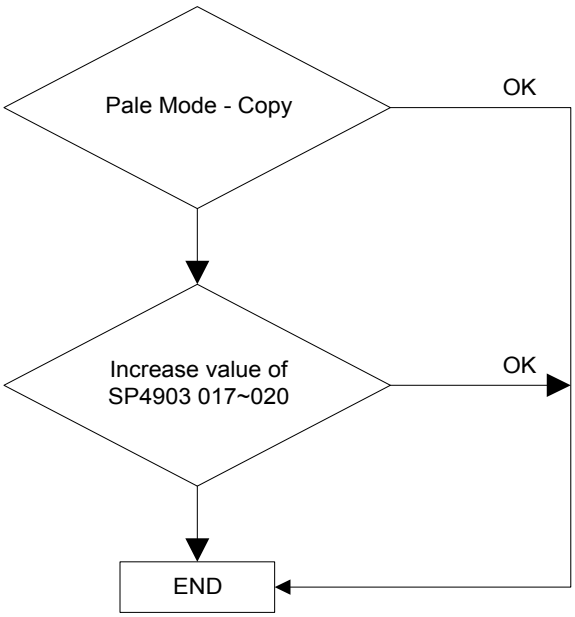
Generation Copy

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

6.6.6 IMAGE PROCESSING TROUBLESHOOTING

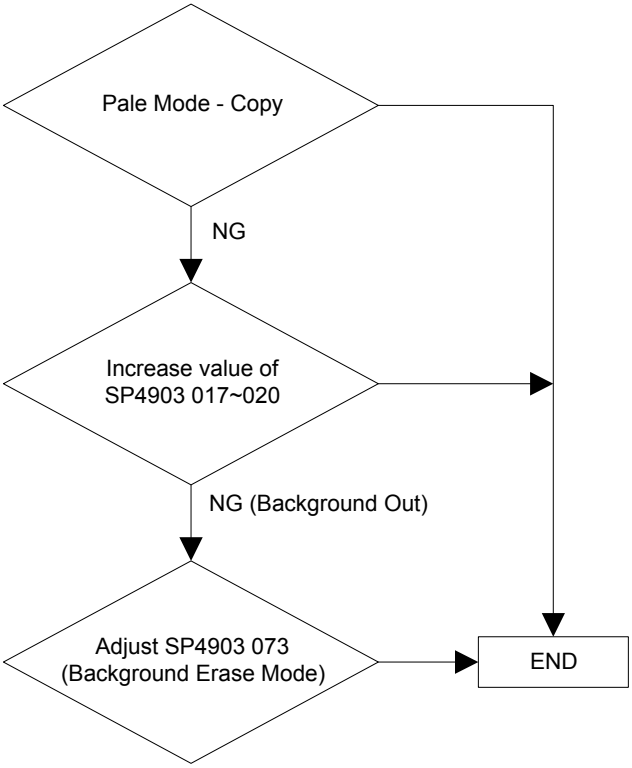
Removing Background from Coarse Paper

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

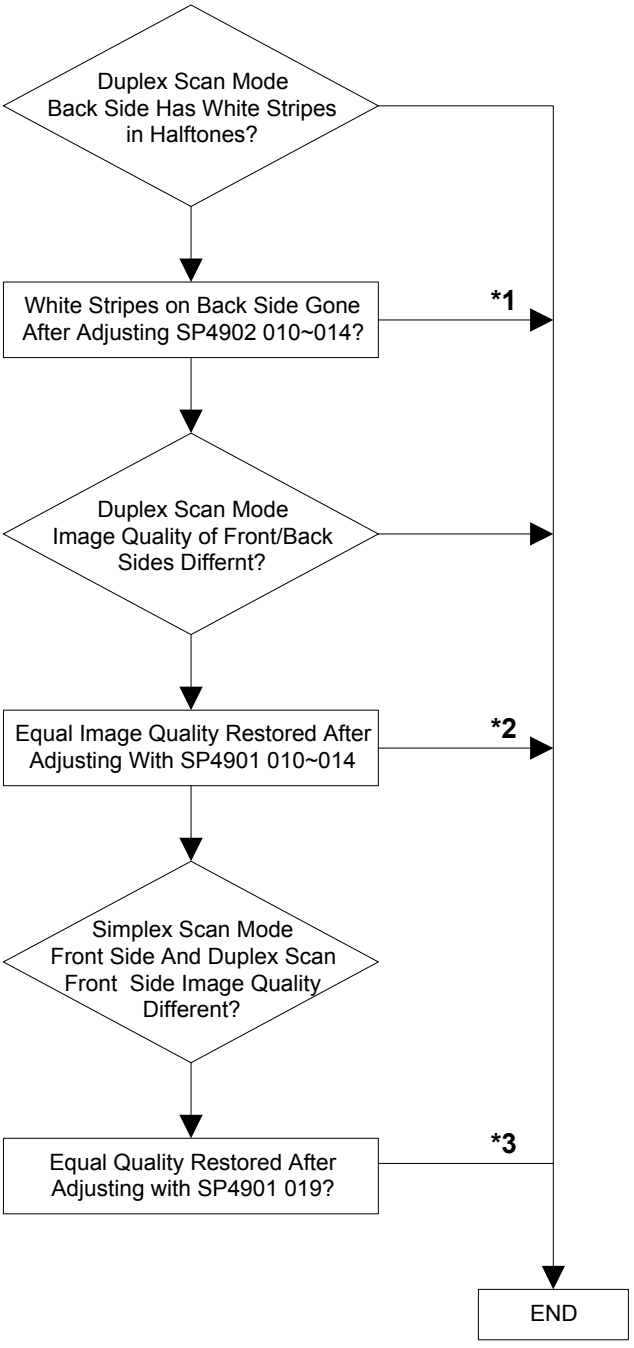
NOTE: If text fades, adjust SP4903 089~091 (Pale Mode – Select Thick Lines for Line Width Correction).



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).

(CT Digital Processes> Printing> Laser Printing> Image Processing)

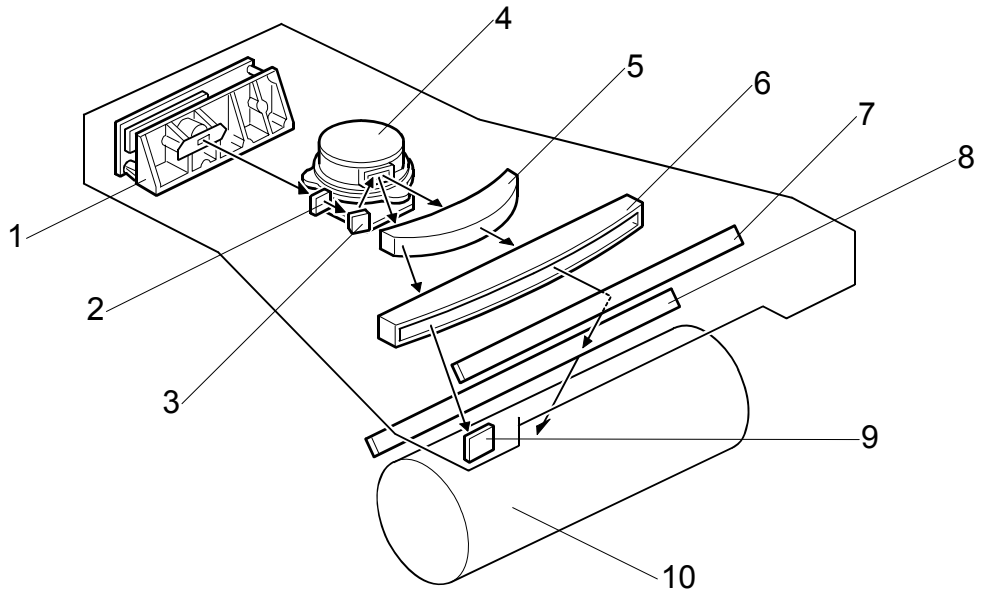
The strength of each beam is 10 mW/channel at a wavelength of 788 nm.

Specifications

LD Unit	Semi-conductor laser encased in an aluminum die-cast bracket.
	Wavelength: 788 nm
	Output: 10 mW/channel (13.3 mW/channel for B246 Series)
	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: 1) A new ceramic shaft increases the durability of the polygon motor.
3) This machine uses APC (Auto Power Control), so no adjustments are required when the LD unit is replaced.

6.7.2 OPTICAL PATH

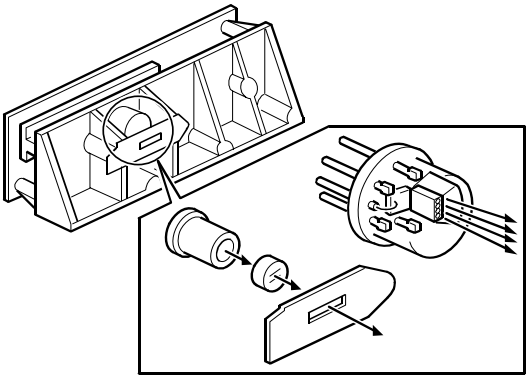


1. LD Unit
2. Cylindrical Lens
3. 1st Mirror
4. Polygonal Mirror Motor
5. Fθ Lens
6. WTL
7. 2nd Mirror
8. Toner Shield Glass
9. Laser Synchronizing Detector
10. OPC Drum

The optical path is a standard arrangement, starting at the LD unit and ending with the creation of the latent image on the OPC drum. (CT Digital Processes> Printing> Laser Printing> Image Processing> Optical Components)

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.

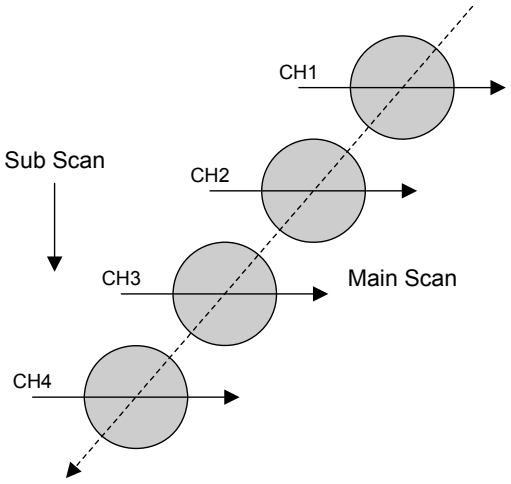


The diagonal arrangement of the four beams achieves 1200 dpi.

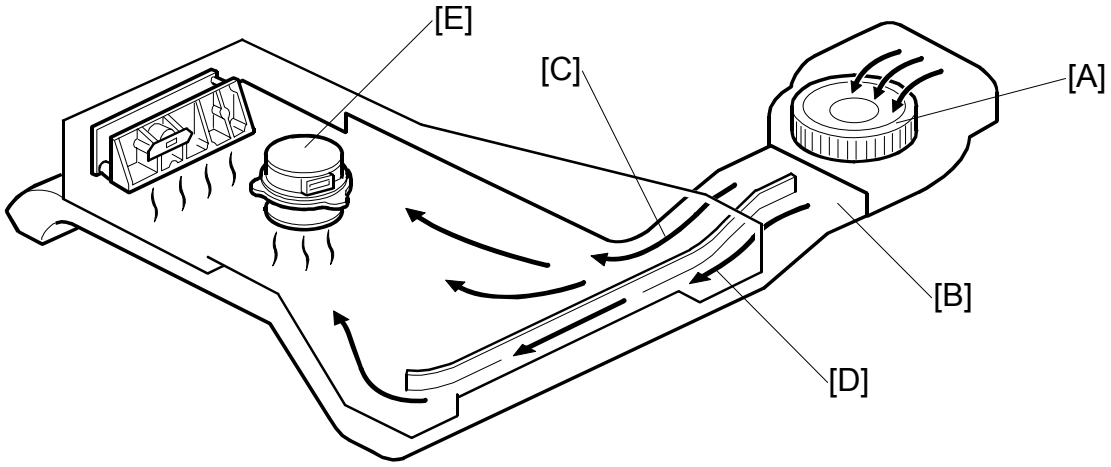
600 dpi 8-bit scanner data is converted to 1200 dpi 1-bit digital data during image processing.

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.



6.7.4 COOLING FAN



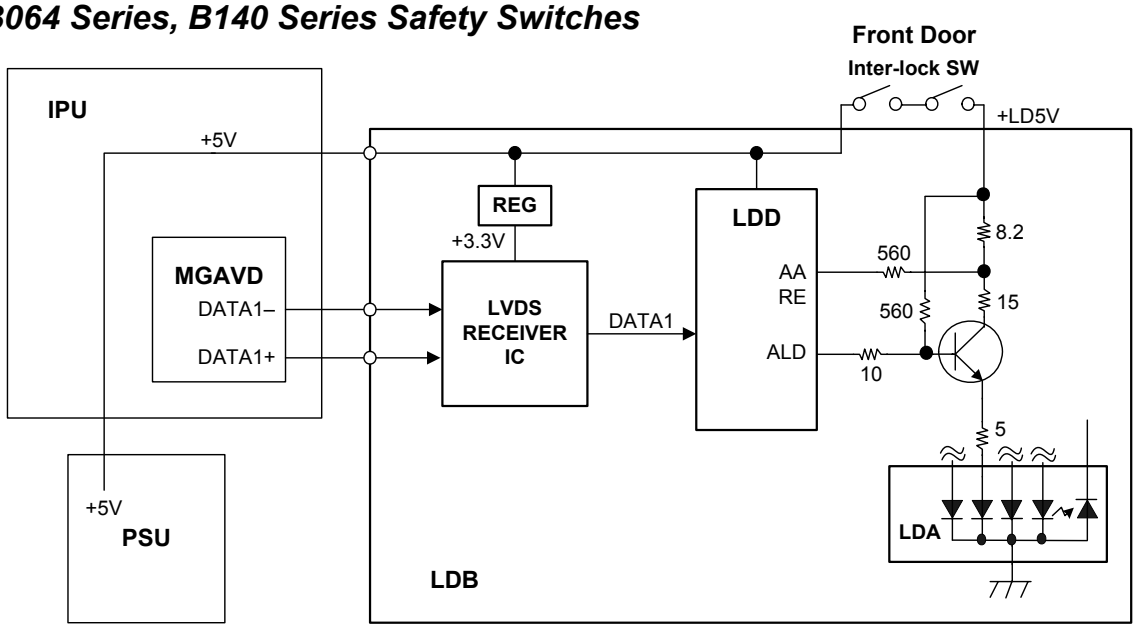
The cooling fan [A] at the back of the machine blows air through the duct [B] and sends it above and below the laser exposure unit. The fan switches on and off with the polygon motor.

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

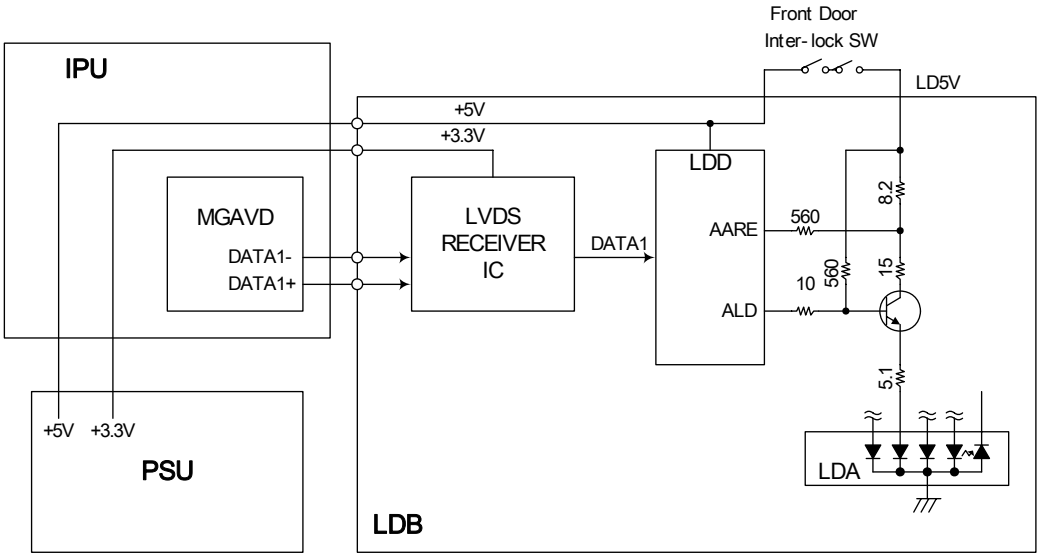
B064 Series, B140 Series Safety Switches



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.

B246/D052 Series Safety Switches

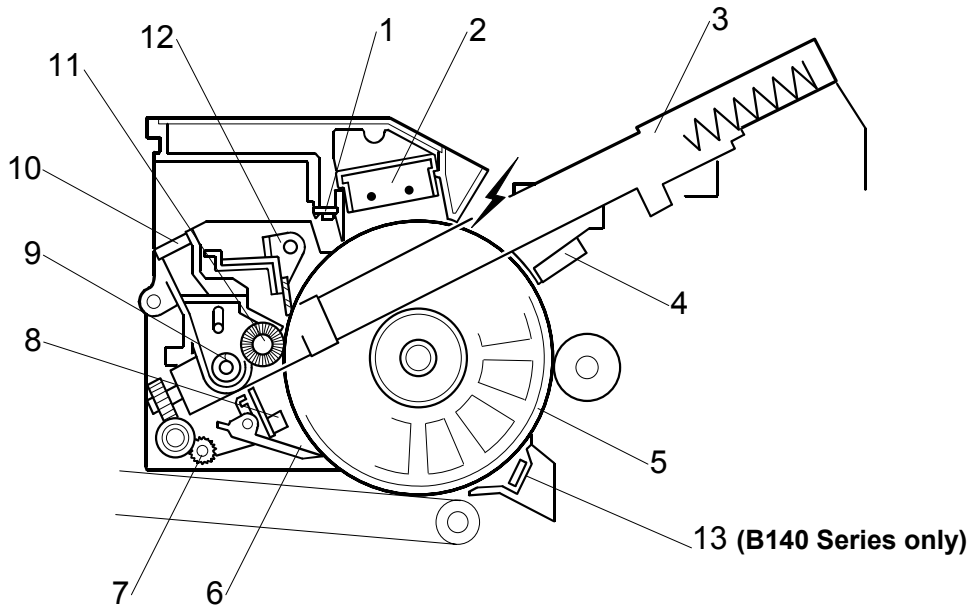


To ensure the safety of customers and customer engineers, two switches inside the cover prevent the laser beams from switching on accidentally.

When the front cover is open, the line connecting each LD driver on the LD control board is disconnected.

6.8 DRUM UNIT

6.8.1 OVERVIEW



1. Quenching Lamp
2. Charge Corona Unit
3. Toner Recycling Pipe
4. Drum Potential Sensor
5. OPC Drum
6. Pick-off Pawls
7. Pick-off Pawl Spurs
8. ID Sensor
9. Toner Collection Coil
10. Pressure Release Filter
11. Cleaning Brush
12. Cleaning Blade
13. PTL (Pre-Transfer Lamp)

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.

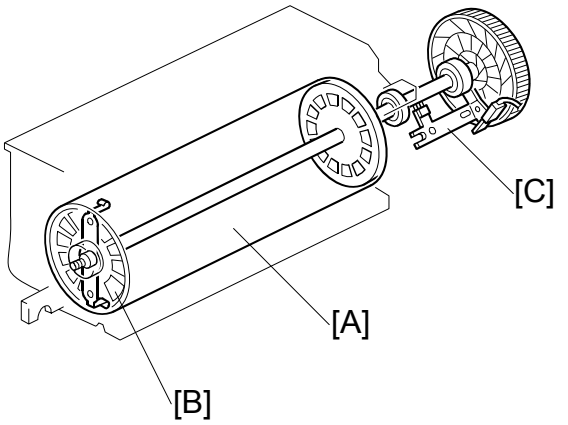
B140 Series

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.

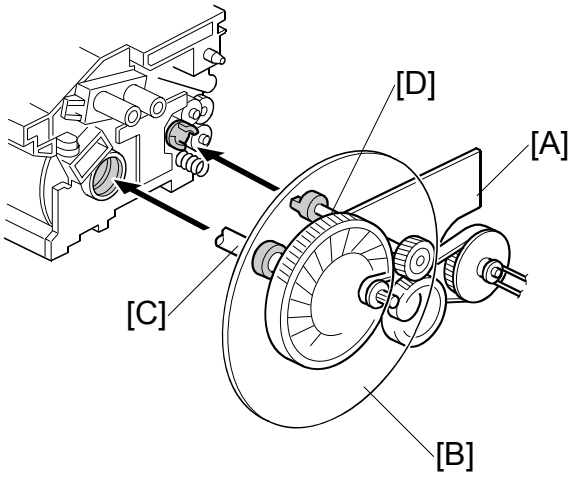


6.8.3 DRUM DRIVE

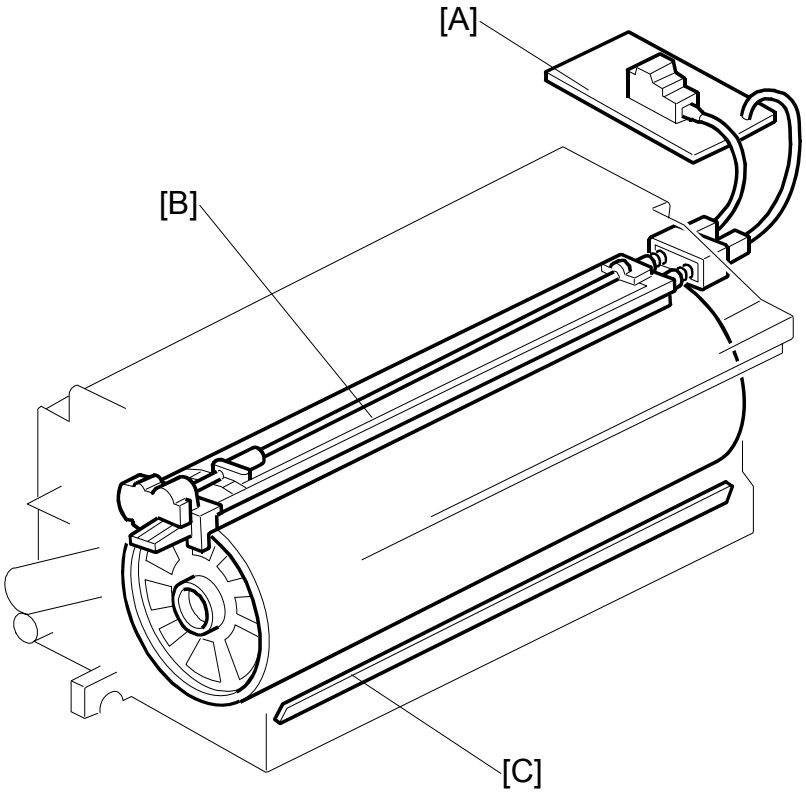
The drum motor [A] drives both the OPC drum and the cleaning unit.

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.



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].

(CT Photocopying Process> Charge> Corona Charge> **Scorotron Method**)

B140 Series

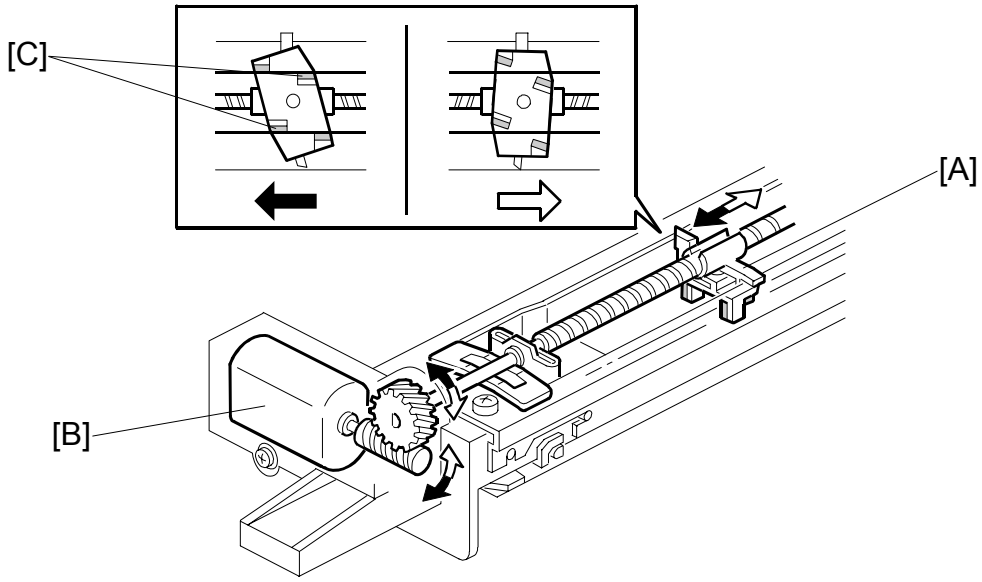
The PTL [C] makes better paper separation from the drum, and stops pick-off pawl marks on the leading edges of copies. The PTL removes the charge at the leading edge when copying on plain paper or translucent paper.

(CT 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.

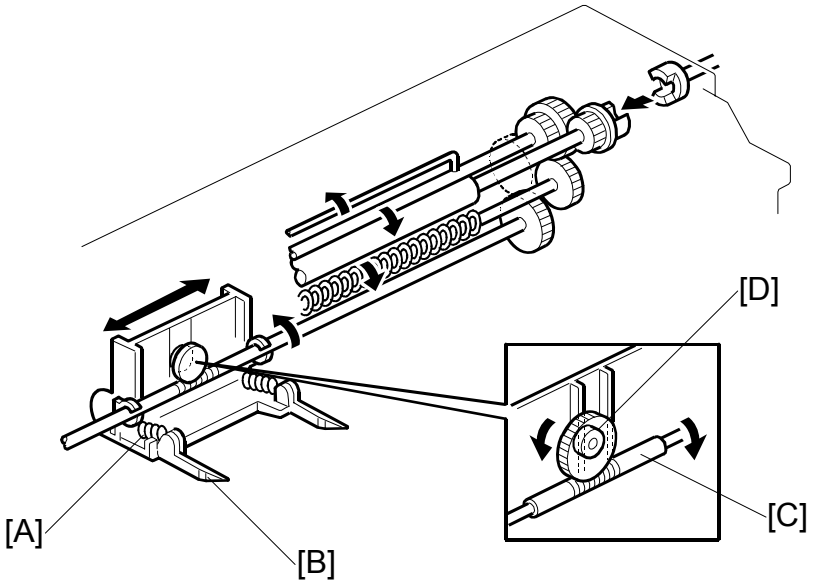
The wire cleaner [A] normally remains at the home position at the front end.

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.

6.8.6 DRUM PICK-OFF MECHANISM

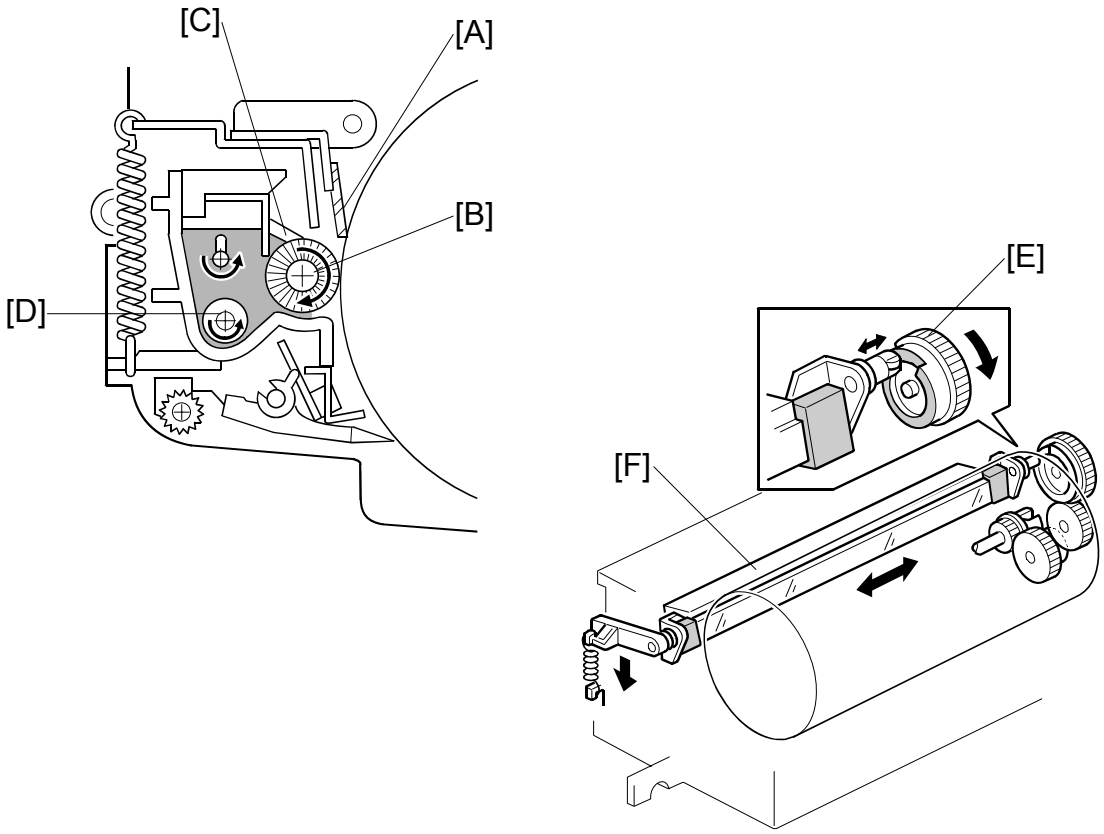


Pick-off pawls ride along the surface of the drum to peel off paper that has not separated from the drum.

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.

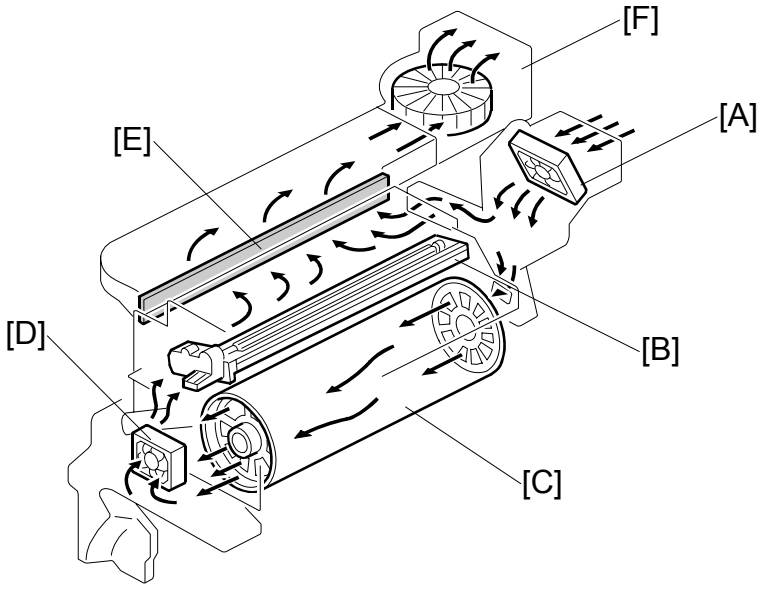
The mylar [C] scrapes toner from the cleaning brush.

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.

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].

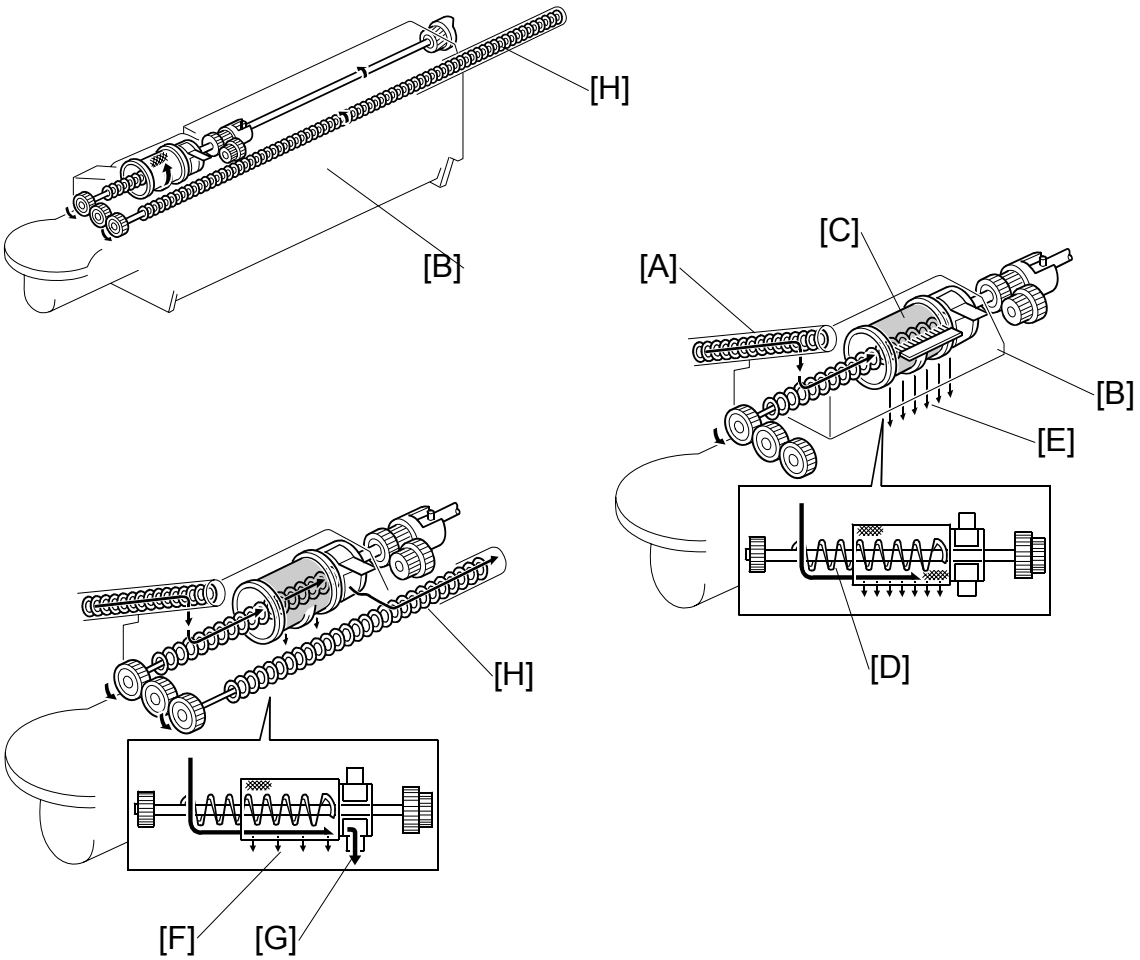
The PCU cooling fan [D] cools the drum and charge corona unit from the other end.

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



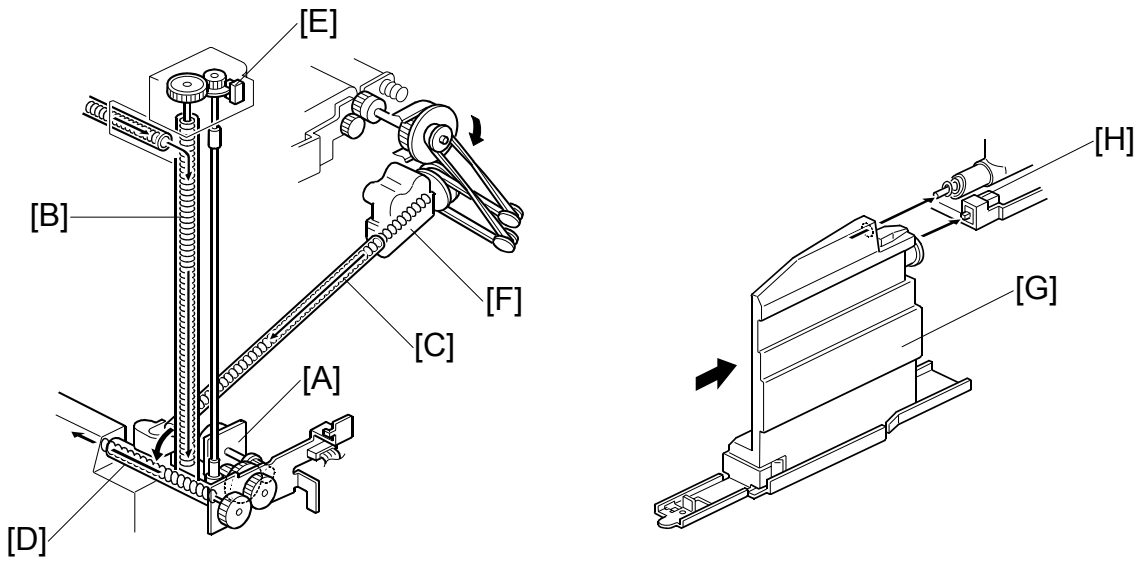
The toner collection coil inside the toner recycling pipe [A] carries toner collected from the drum cleaning unit into the toner separation unit [B] (above the toner hopper).

Re-usable toner is separated here from waste toner. Sieve [C] sifts the toner, and brush [D] inside the sieve moves the toner forward.

- 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 scanning optics (lenses, mirrors), dirty 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, immediately after power ON, or this will not work.

1. Potential sensor is calibrated.
2. Drum starts first rotation after fusing temperature reaches 140°C.
3. Readout from the potential sensor is used to adjust:
   - Development bias (Vb)
   - Grid voltage (Vg)
   - Laser diode (LD) power.

   NOTE: This step occurs only if process control is enabled with SP3901 (Auto Process Control On/Off Setting). If this SP is disabled, then:
   - Development bias is set to the value stored in SP 2201 001
   - Grid voltage is set to the value stored in SP 2001 001
   - Laser power is set to a fixed value
4. ID sensor is calibrated (Vsg).
5. TD sensor is calibrated (Vref).

   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.

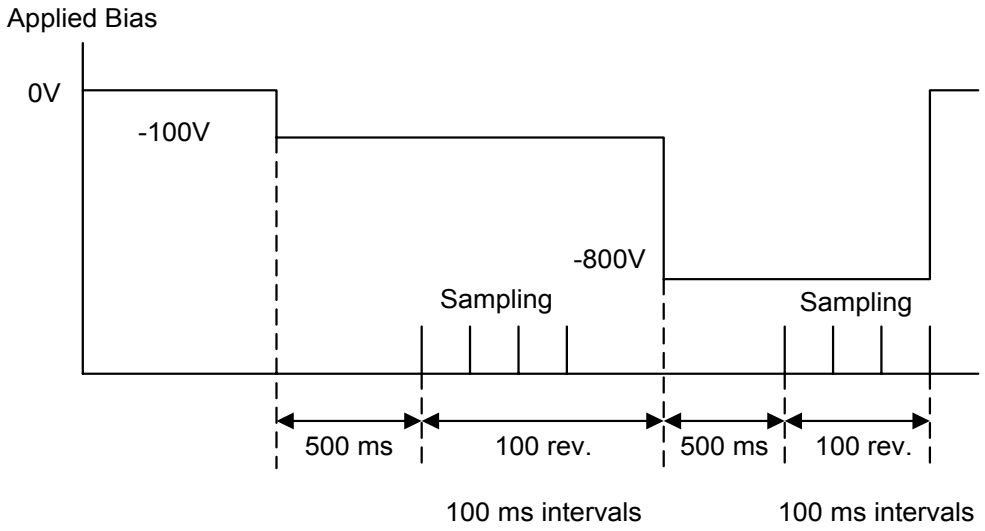
Any SC codes that are generated during auto process control are logged in the memory and do not appear. The machine will continue to operate.

B140 series: Steps 2, 4, and 5 are not done if SP3904 is set to 0 (default) or 1.

Drum Potential Sensor Calibration

The potential sensor output is affected by the distance of the sensor from the OPC, paper dust or other matter on the surface of the sensor, and environmental conditions. For these reasons, the potential sensor is calibrated often, as described below.

1. 100 samples are taken at –100V and at –800V, and the readings are averaged.



2. If the readings are within the normal range, then these readings are used to calibrate the potential sensor.

   If the variations in the readings exceed the specified range, then an SC is logged (Sensor Calibration Error, SC310 to SC317) and automatic process control halts. The charge grid voltage Vg, development bias, and LD power are set as follows.

   - Development bias is set to the value stored in SP2201-001
   - Grid voltage is set to the value stored in SP2001-001
   - Laser power is set to a fixed value

Development Bias, Bias Grid, and LD Adjustment

Development Bias (Vb)

First, the development bias that will be used for copying (Vb) is determined by measuring the potential of a pattern made on the drum using a fixed grid voltage, development bias, and laser power.

1. The drum motor starts.
2. The grid voltage, development bias, and laser power are set to the default values that would be used if process control was disabled. These are as follows:
   - Development bias is set to the value stored in SP2201-001
   - Grid voltage is set to the value stored in SP2001-001
   - Laser power is set to a fixed value
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 ± 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.

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, Vh, from this pattern.
   Vh: Standard halftone drum potential
3. Vh should be –300 ± 20 V. If it is within this range, the current value of the laser power will be used for copying.
   - If it is not, the laser power changes by 3 units, and the process starts again from step 1.
   - The laser power cannot be changed by more than ± 60 units.
4. If Vh cannot be adjusted to this standard within 25 attempts, LD power is set to the most recent value and SC314 (Potential Sensor Calibration Error 4) is logged.

ID Sensor Calibration (Vsg)

After power-on, Vsg (the ID sensor output from reading the bare drum) is set to 4.00±0.2 V by changing the intensity of the light from the sensor shining on the drum. This can also be done at any time with SP3001-002 (ID Initial Setting – Vsg).

The calibrated ID sensor output will be used for calibrating the TD sensor (described below).

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:

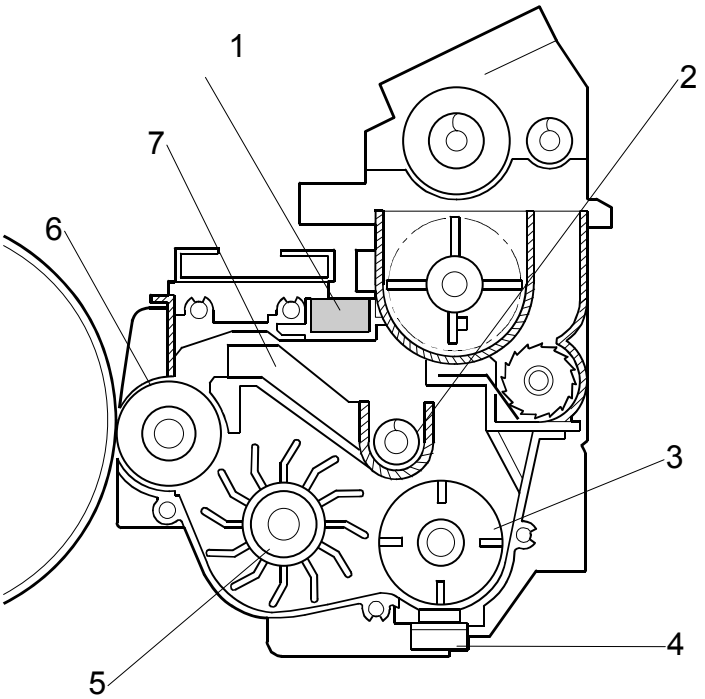
- Vsp/Vsg
  Vsp: ID sensor output when checking the ID sensor pattern.
  Vsg: ID sensor output when checking the bare drum.
- Vref-Vt:
  Vref is the TD sensor reference voltage
  Vt is the current output voltage of the TD sensor.

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).

6.9 DEVELOPMENT AND TONER SUPPLY

6.9.1 OVERVIEW

Development Unit



1. Development Filter
2. Toner Auger
3. Developer Agitator
4. TD Sensor
5. Paddle Roller
6. Development Roller Sleeve
7. Separator

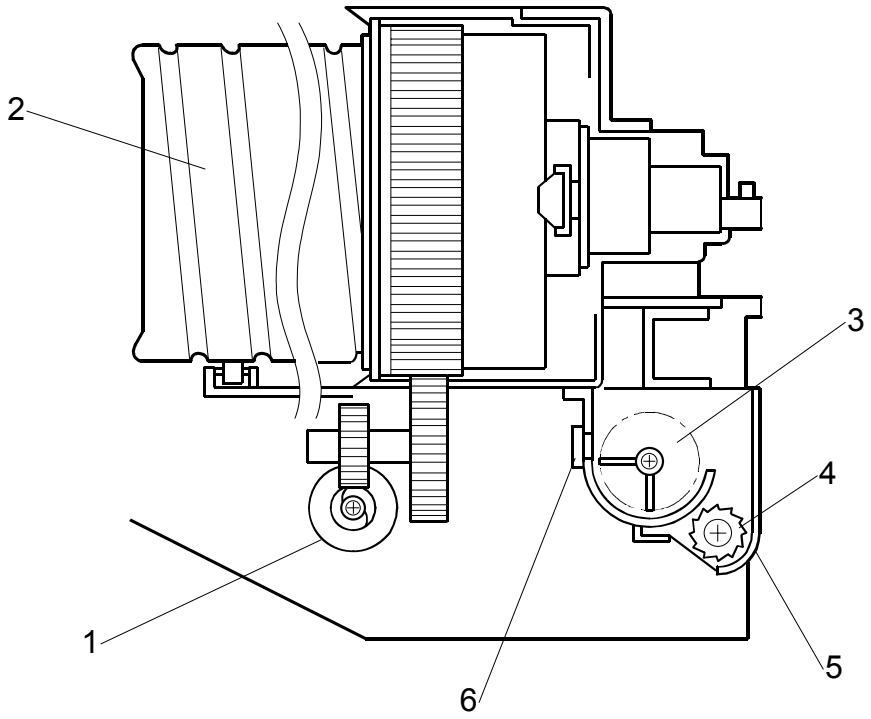
This machine uses dual-component development.

The development unit has its own motor.

The toner concentration is monitored with the ID sensor and TD sensors.

The toner auger, separator, developer agitator, and paddle roller mix and transport the developer and toner. The development power pack applies development bias to the development roller.

Toner Supply



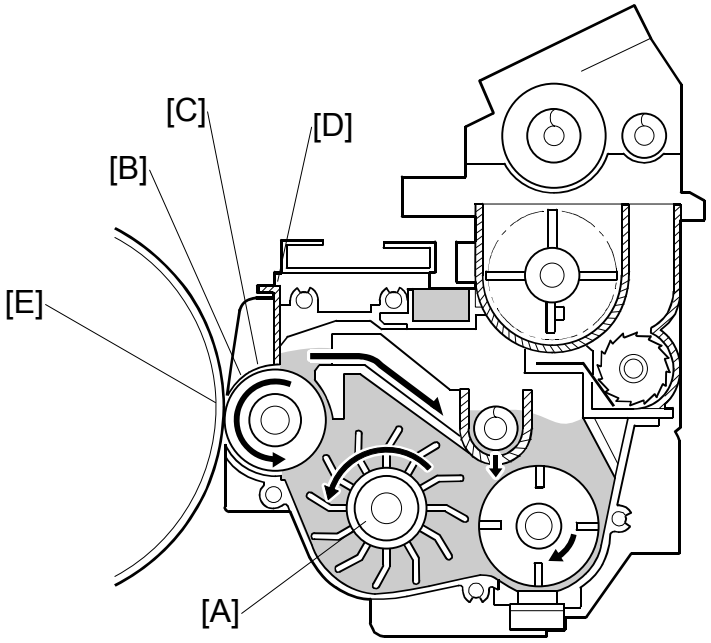
1. Toner Supply Motor
2. Toner Bottle
3. Toner Agitator
4. Toner Supply Roller
5. Toner Hopper
6. Toner End Sensor

The toner supply roller carries toner from front to back in the hopper and into the development unit.

The toner supply motor rotates the toner bottle to supply toner. The cap of the bottle seals itself immediately when the toner bottle is removed from its holder.

A toner recycling system separates 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.

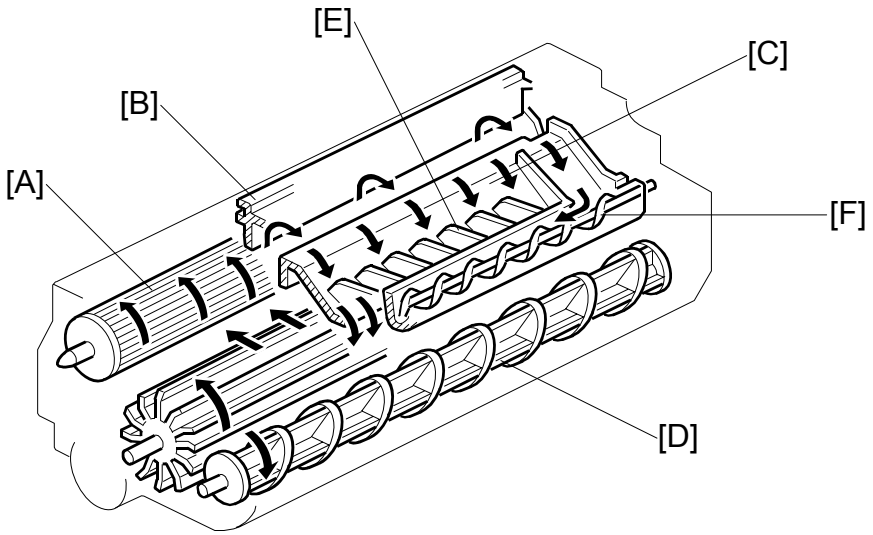
6.9.2 DEVELOPMENT UNIT



[H]: Paddle roller
[I]: Development roller
[J]: Development roller sleeve
[K]: Doctor blade
[L]: OPC drum

(CT Photocopying Process> Development> Dual-component Development)

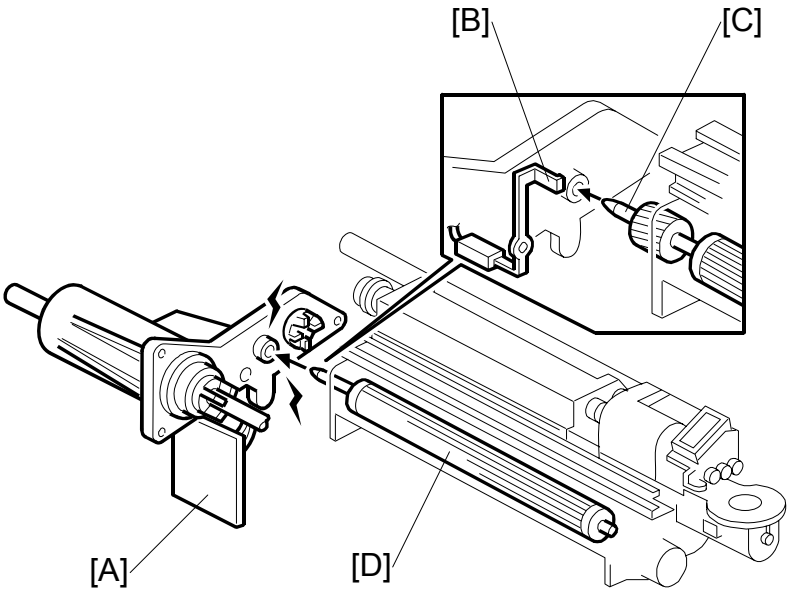
6.9.3 DEVELOPER/TONER MIXING (AGITATION)



[M]: Development roller
[N]: Doctor blade
[O]: Backspill plate
[P]: Agitator
[Q]: Mixing vanes
[R]: Auger

(CT Photocopying Process> Development> Crossmixing)

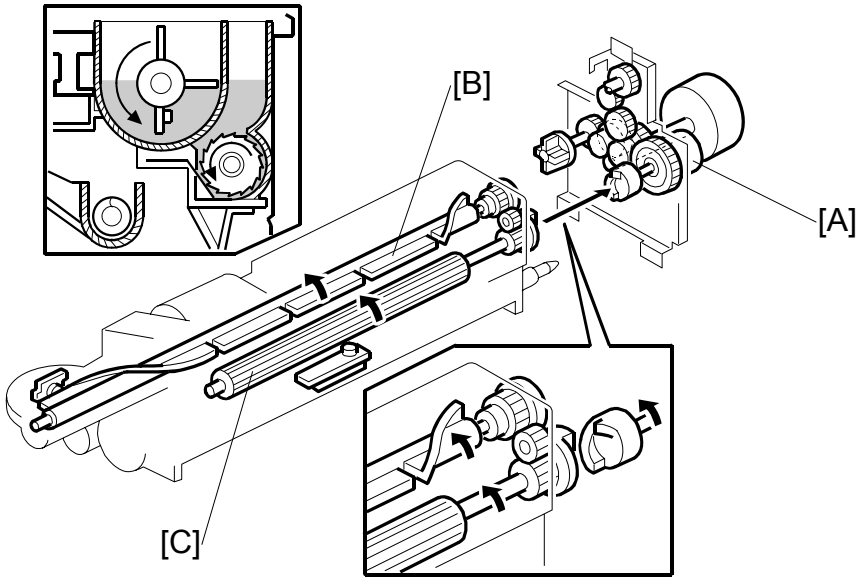
6.9.4 DEVELOPMENT BIAS



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

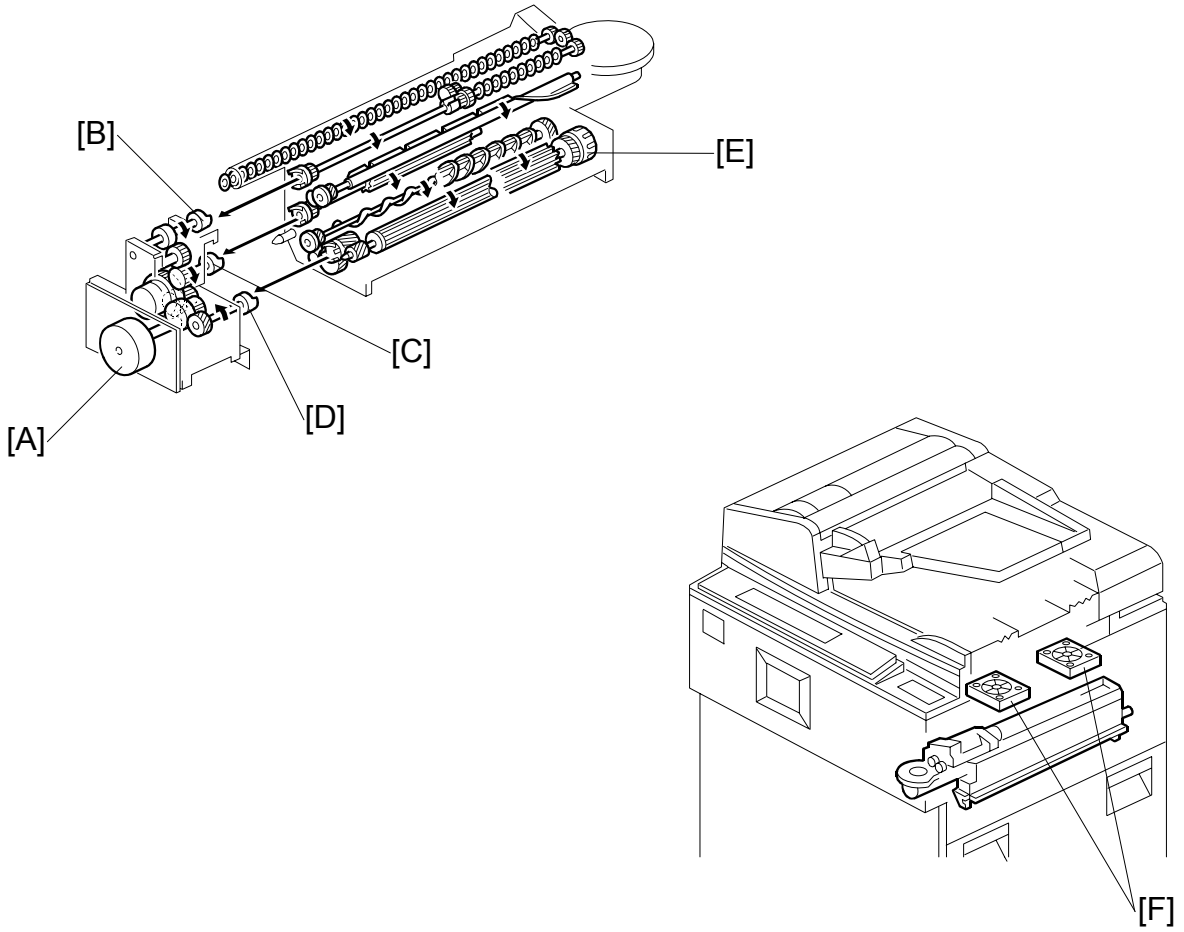


The ID sensor and TD sensor control toner density. The output of these two sensors determines when to switch the toner supply clutch [A] on. The clutch transfers drive from the development motor to the toner supply mechanism.

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.

6.9.6 DEVELOPMENT UNIT DRIVE AND VENTILATION

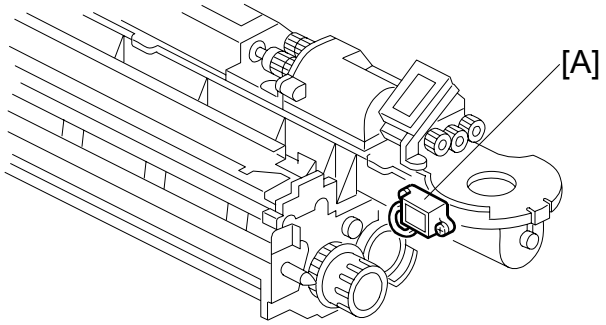


The development motor [A] (a dc motor) drives the following units through three drive shafts: toner separation unit [B], toner supply unit [C], and development unit [D].

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.

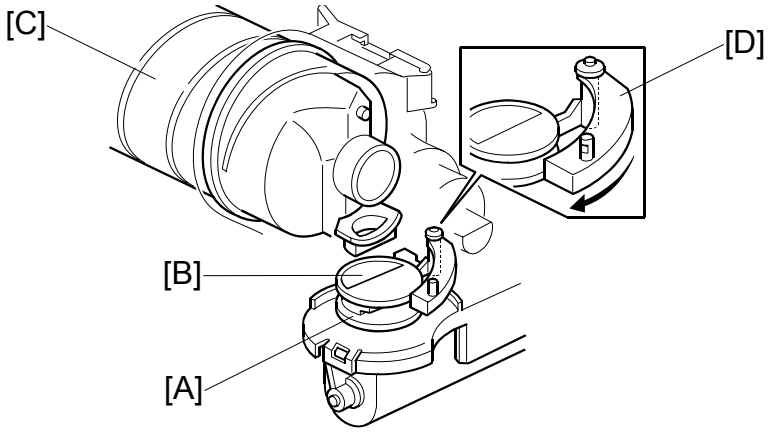
Two cooling fans [F] above the bypass tray draw in air to cool the development unit. Both fans switch on when the drum motor switches on, then both switch off 110 seconds after the drum motor switches off.

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

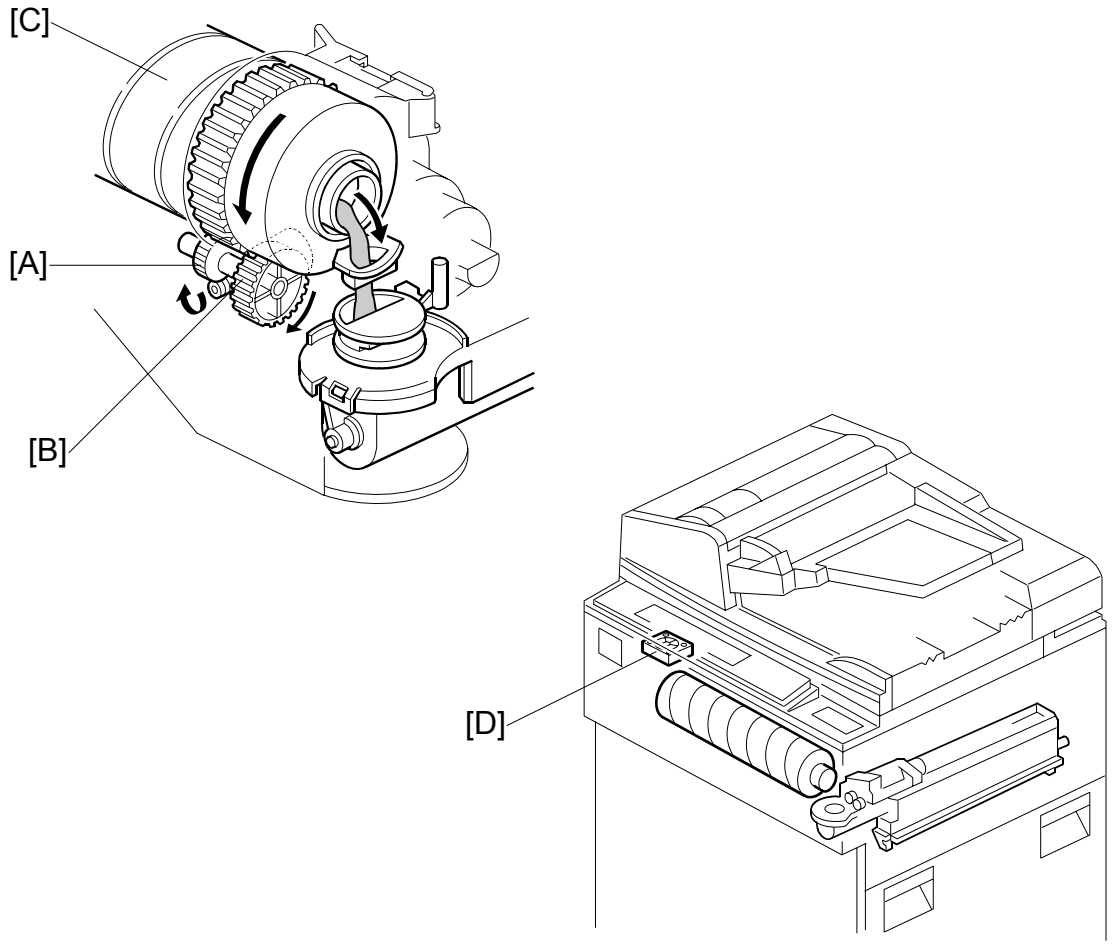


When the toner bottle holder is opened, a self-sealing shutter prevents toner spill.

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 Vt. The current Vt value can be displayed with SP2223-001 (Vt display).
2. For every copy, Vt (TD sensor output) is subtracted from Vref (the targeted control reference voltage for the TD sensor) to set the value of 'GAIN' (0, 1, 2, 3, or 4).
3. The following equation is used to calculate how long the toner supply clutch switches on.

$$\frac{\text{GAIN x Image Pixel Count x Target Density}}{\text{Toner Supply Rate}} + \text{Clutch Startup Time}$$

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.

If we substitute the default settings, then:

$$\frac{\text{GAIN x Image Pixel Count x 0.7 mg/cm}^2}{\text{850 mg/s}} + \text{16 ms}$$

But if GAIN is 0, the '+16 ms' part of the equation is not used, and the time interval that the clutch is turned on becomes zero.

At the end of the job, if Vref has not been updated for 10 copies or more, the following occurs:

1. Vref is updated, as follows (also done just after the machine is switched on):
   - The charge corona and laser diode write the ID sensor pattern on the drum.
   - The ID sensor reads the reflectivity of the ID sensor pattern and outputs this reading as Vsp.
   - The ID sensor also reads the reflectivity of the bare surface of the drum and outputs this reading as Vsg.

   NOTE: 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±0.1V. Then, after setting the control voltage, Vt is sampled 100 times, these samplings are averaged, then the average is used to set the standard value for Vt.

NOTE: 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 Vsp and Vsg as explained in the Process Control section of the manual.

ID sensor pattern creation parameters depend on whether automatic process control is switched on or off with SP3901-001 (Auto Process Control).

If automatic process control is switched on:

- Charge corona grid voltage: Set automatically for the existing conditions around the drum.
- LD power: The value Vh is used to adjust the laser power. The laser diode writes the Vh halftone pattern on the drum. The reading from this pattern is Vh.
- Development bias: The potential sensor checks the bias voltage when the ID sensor pattern is created (target voltage: -230V) and boosts the voltage by –280, the voltage set for SP2201-004 (ID Sensor Pattern Development Potential), to bring the bias to the target voltage of –510.

If automatic process control is switched off:

- Charge corona grid voltage: Set to –800V, the default setting for SP2001-002 (ID Sensor Pattern: Adj. to Applied Voltage).
- LD power: 185 μW (target drum potential –130V)
- Development bias: -360V, default for SP2201 002 (ID Sensor Pattern: Adj. to Applied Voltage).

Toner Supply without ID Sensor and TD Sensors

Toner supply can continue even if either or both sensors fails:

Failed Sensor	Toner Supply Method
TD sensor	ID sensor + Image Pixel Count
ID sensor	TD sensor (but Vref is nor updated)
TD and ID sensors	Image Pixel Count

Abnormal TD Sensor Output

If this occurs, toner supply is controlled using pixel count and Vsp/Vsg.

Abnormal output detected during initialization of the developer: An SC is logged and SP2906 (TD Sensor Control Voltage & Check) will display 0.00V.

- During the TD sensor auto adjustment, the TD sensor output voltage (Vt) is 2.5 volts or higher even though the control voltage is set to the minimum value (PWM = 0). The machine logs SC341 TD Sensor Adjustment Error 1.
- During the TD sensor auto adjustment, the TD sensor output voltage (Vt) does not come in the target range (3.0 ± 0.1V) within 20 seconds. The machine logs SC342.

Abnormal output detected during copying: If one of the following conditions is detected more than 10 times consecutively:

- Vt = 0.5 volts or lower
- Vt = 4.0 volts or higher

Then SC340 (TD Sensor Output Error) is logged.

Abnormal ID Sensor Output

Abnormal output detected during process control at power-on: SC353 or SC354 is issued. Toner supply during copying will then be controlled using the TD sensor only, until the machine is repaired.

Abnormal output detected when updating Vref: SC350, 351, or 352 is issued, and Vref is not updated (the machine uses the current value).

Toner End Detection

The toner end sensor is checked every copy.

- **Toner near end**. When the toner end sensor remains on for two consecutive pages, the toner supply motor turns on for 1.1 s. If the toner supply motor has turned on more than 30 times during the last 100 prints, the “Toner Near End” warning is issued. The warning is cleared if the toner end sensor turns off.
- **Toner end**. If the toner end sensor remains on for about 1,000 copies (A4 size with 6% coverage), the "Toner End” warning is issued. If the toner end sensor switches off twice consecutively, the toner end sensor copy counter is reset to zero.

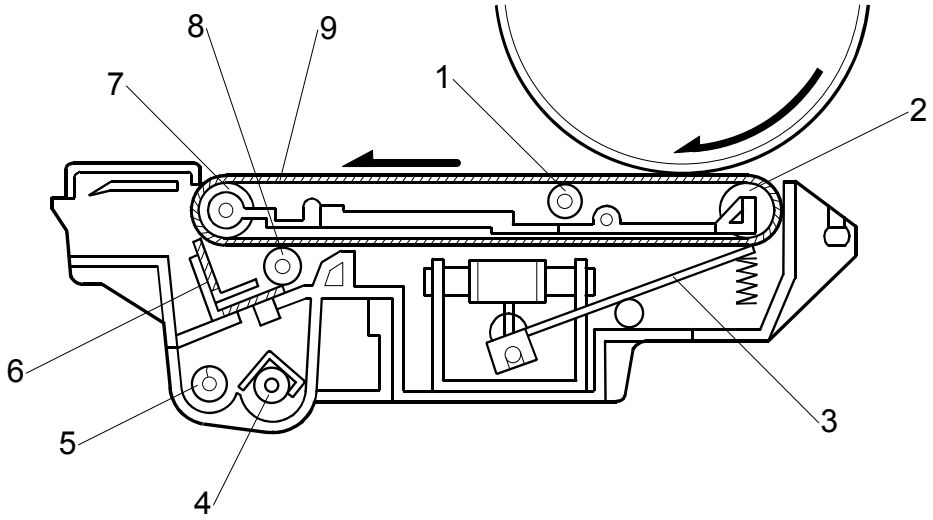
Toner End Recovery

If the front door is opened and closed while a toner near end or toner end condition exists, the machine attempts to recover using measurements from the toner end sensor and TD sensor, based on the possibility that the toner bottle has been replaced.

1. The drum development motor, charge grid, and development bias switch on.
2. The toner supply motor switches on for 1.1 s, the toner supply clutch switches on for 1 s, and the CPU checks the toner end sensor output.
3. If the toner end sensor is OFF, i.e. there is toner in the hopper, the CPU compares Vt and Vref.
   - If Vt is less than or equal to Vref, there is sufficient toner in the development unit. The CPU waits 20 s for the toner in the developer to mix evenly, the above components switch off, and the machine is released from the toner end or toner near end status.
   - If Vt is more than Vref, the CPU turns on the toner supply clutch for 1 s again until Vt becomes less than or equal to Vref.
   - If the toner end sensor output remains on even after seven attempts of the above procedure, the components switch off and the machine remains in the “Toner End” status.

6.10 IMAGE TRANSFER AND PAPER SEPARATION

6.10.1 OVERVIEW



1. Transfer Roller
2. Transfer Belt Drive Roller
3. Belt Lift Lever
4. Waste Toner Agitator
5. Waste Toner Collection Coil
6. Cleaning Blade
7. Drive Roller
8. Cleaning Roller
9. Transfer Belt

A transfer belt system transfers the image from the OPC drum to paper.

A solenoid lifts the belt against the OPC drum at the correct time.

The transfer belt system is driven by the drum motor, through a shaft and a gear.

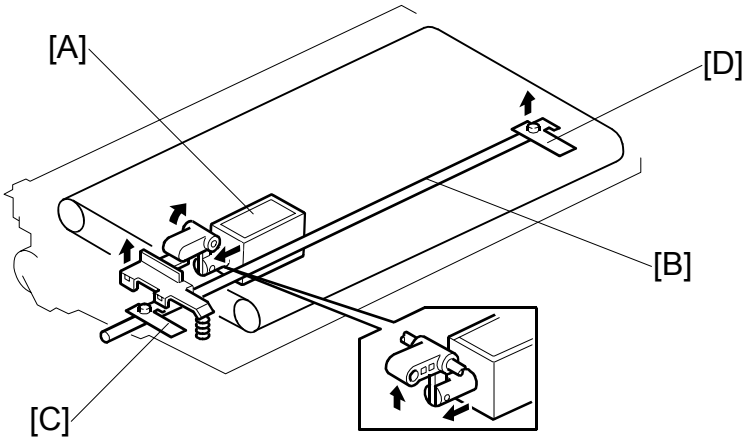
A cleaning blade and a cleaning roller clean the surface of the transfer belt.

Easy access to the transfer belt from behind the front door allows quick removal of paper jams.

A heater near the transfer belt unit ensures that the area around the belt is always dry.

6.10.2 TRANSFER BELT LIFT

Mechanism



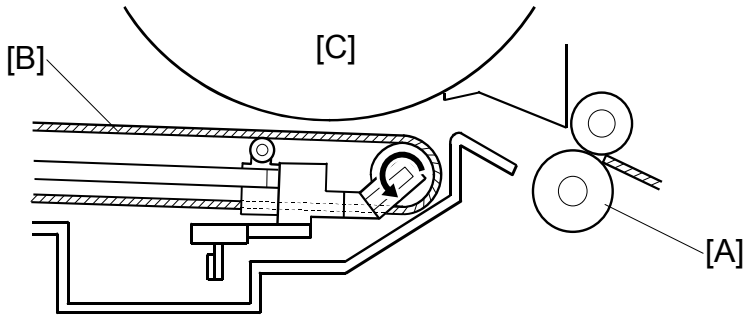
The transfer belt lift solenoid [A] lifts the belt into contact with the drum using the link [B], which is connected to the front [C] and rear [D] belt lift levers.

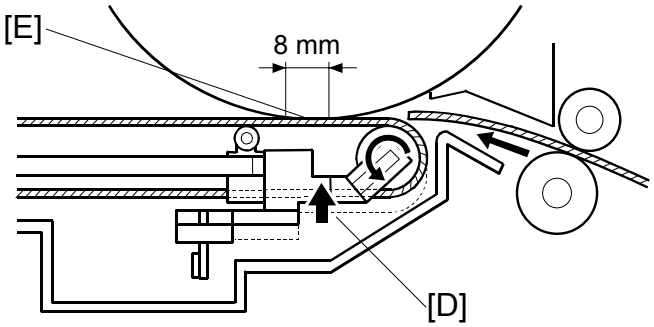
Springs attached to the front of the solenoid reduce the load on the solenoid as it lifts the drum.

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.

Timing



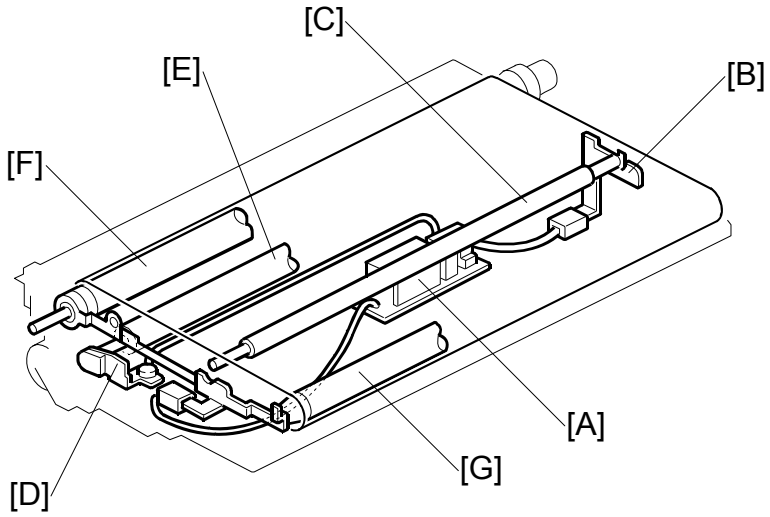


[S]: Registration roller
[T]: Transfer belt
[U]: OPC drum
[V]: Front and back levers
[W]: Nip width (about 8 mm)

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.

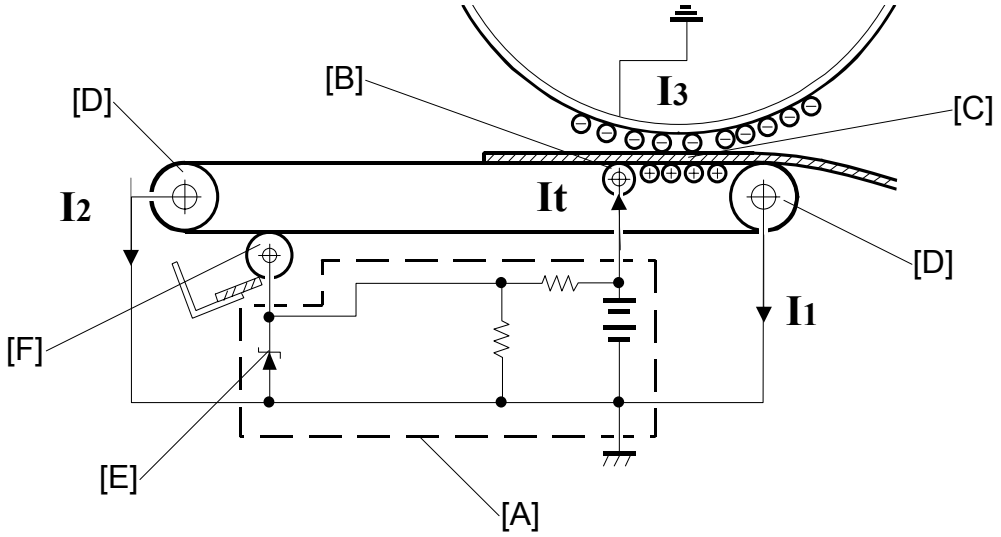
6.10.4 TRANSFER CURRENT SETTINGS

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



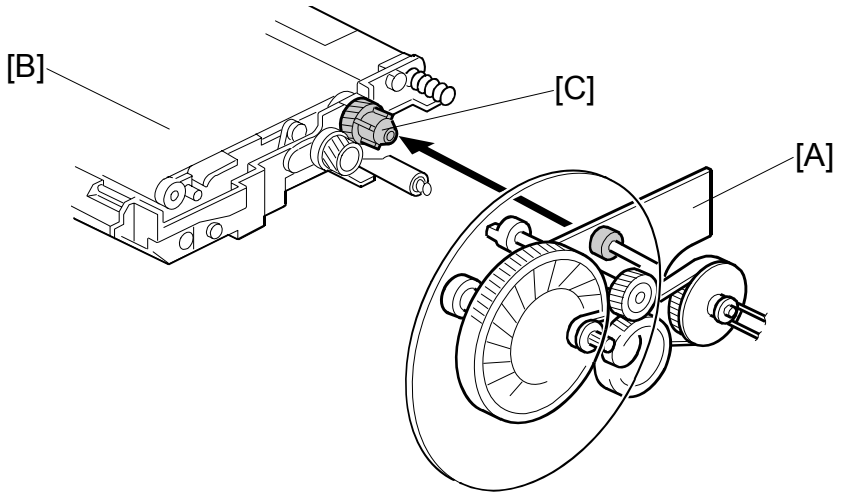
[A]: Transfer power pack
[B]: Transfer roller
[C]: Nip between drum and transfer belt
[D]: Drive rollers

The transfer power pack does the following:

- Monitors the currents I_1 and I_2
- Adjusts its output (It) 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].

6.10.6 TRANSFER BELT DRIVE AND PAPER TRANSPORT

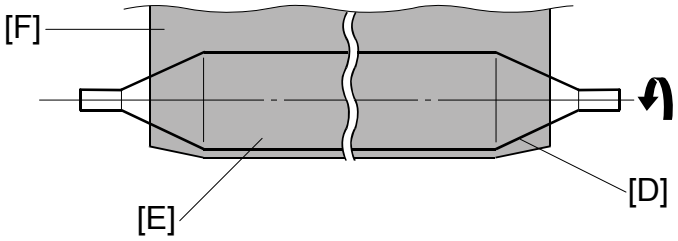


The drum motor [A] drives the transfer belt [B] through belts and gears.

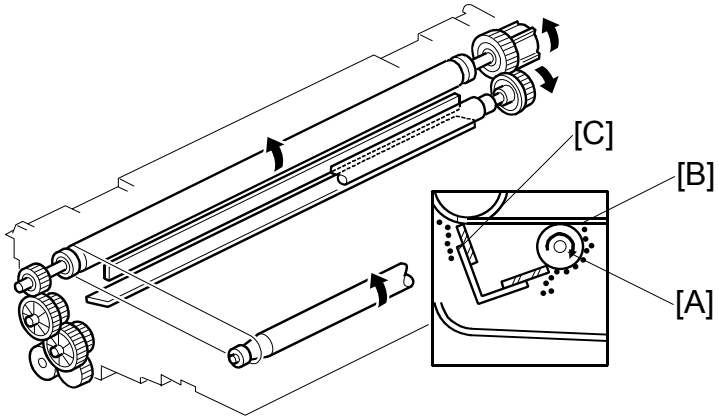
The transfer belt by its electrostatic charge attracts the paper [B], so a transport fan is not required.

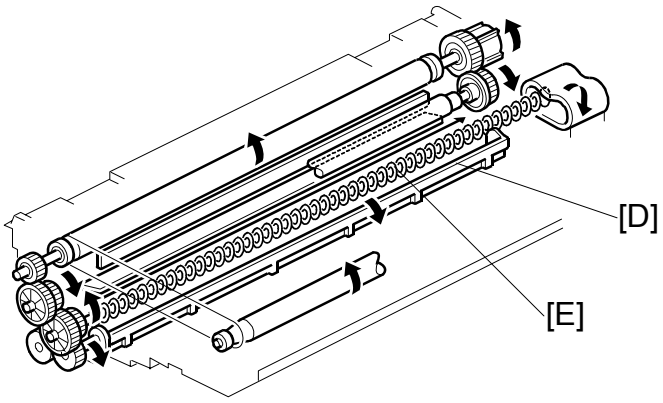
At the turn in the transfer belt, the transfer belt drive roller [C] discharges the belt to reduce paper attraction, and the paper separates from the belt as a result of its own stiffness.

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





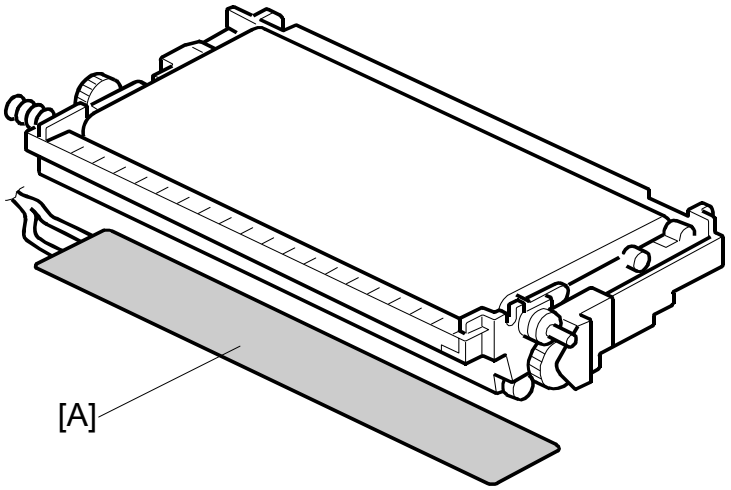
Toner collects on the transfer belt in the following cases. This toner causes streaking on the reverse sides of copies.

- As a result of a paper jam
- If the by-pass feed tray side fences are set in the wrong position

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



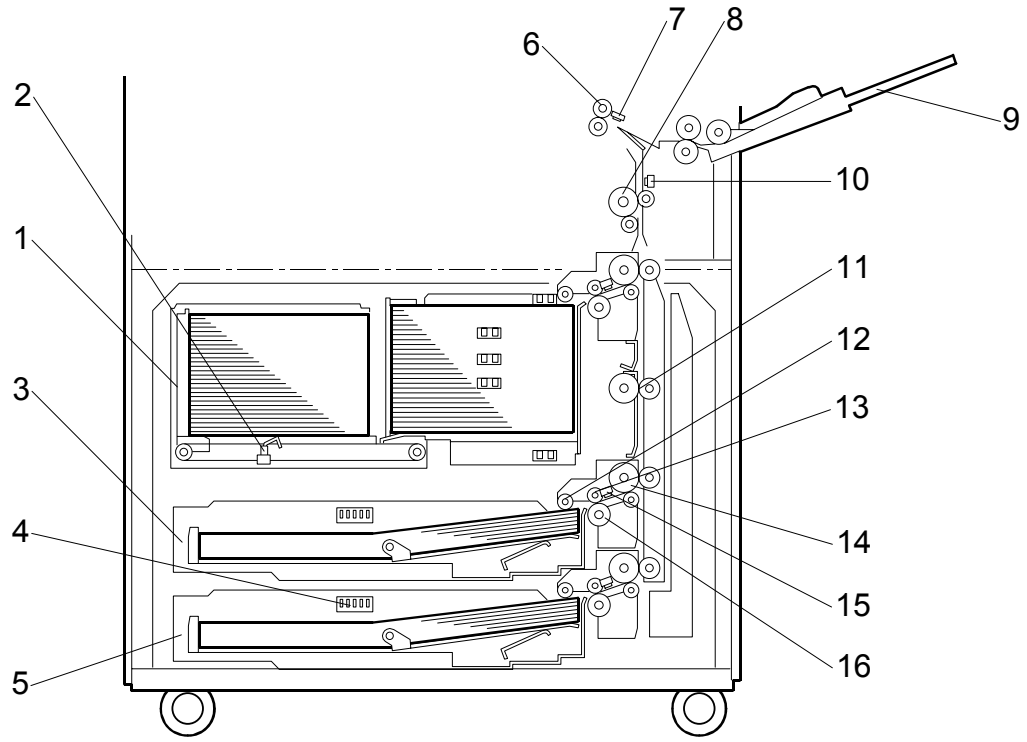
The anti-condensation heater [A] is directly below the transfer belt drive roller.

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)
2. Left Tray Paper Sensor
3. Universal Tray (Tray 2)
4. 3rd Paper Size Switch
5. Universal Tray (Tray 3)
6. Registration Roller
7. Registration Sensor
8. Upper Relay Roller
9. By-pass Tray
10. Relay Sensor
11. Lower Relay Roller
12. Pick Up Roller
13. Feed Roller
14. Grip Roller
15. Paper Feed Sensor
16. Separation Roller

NOTE: Items (12)~(16) comprise the standard FRR feed system, which is used for Trays 1, 2, and 3. This machine uses motor on/off time (not clutches) to control paper feed.

Tray Capacities

The machine has three built-in paper trays:

- Tandem LCT (Tray 1). 1550 + 1550 sheets
- Universal Tray (Tray 2) 550 sheets
- Universal Tray (Tray 3) 550 sheets

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.
  GT 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.

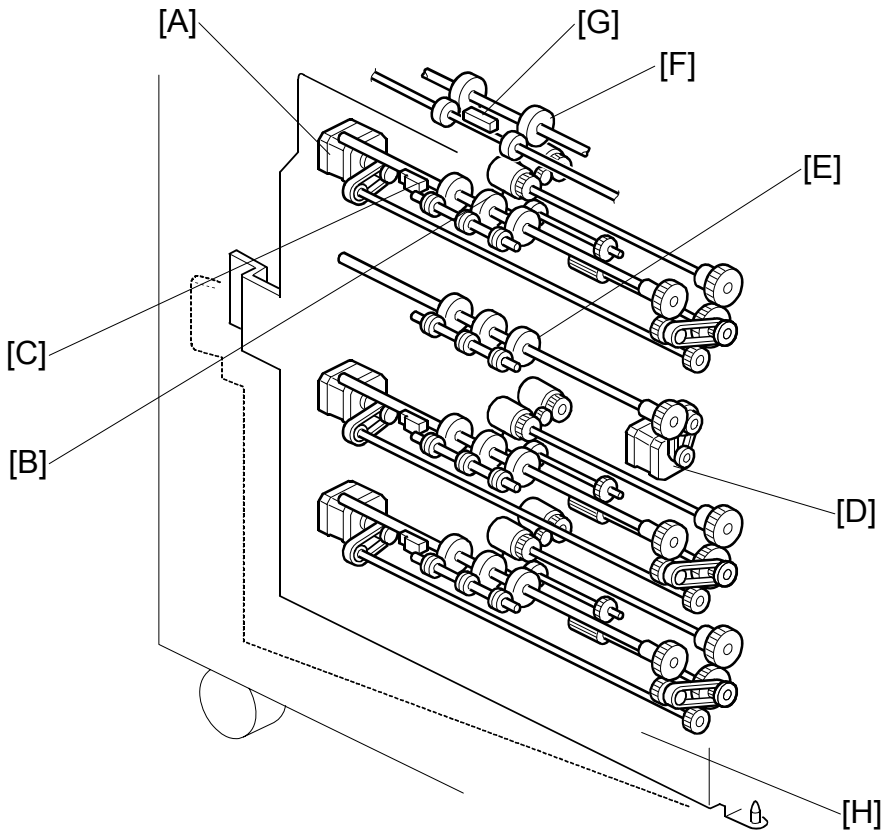
Paper Registration

- 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.

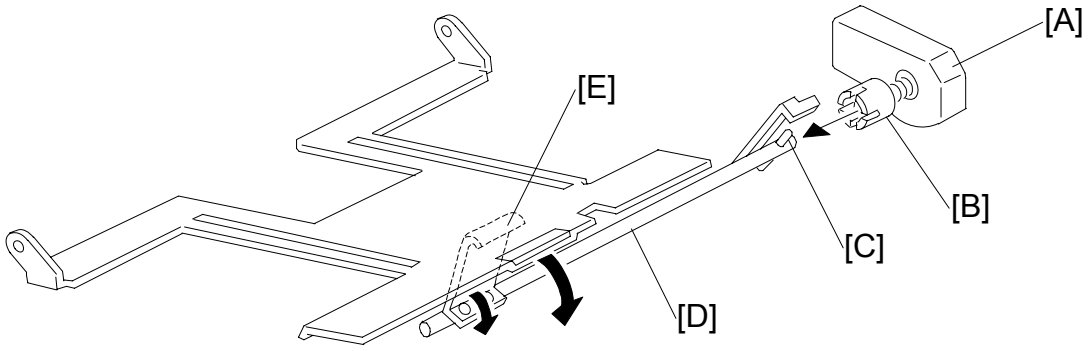
The upper relay roller [F] feeds each sheet to the registration roller. The by-pass feed motor (not shown here) drives the upper relay roller [F].

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.

6.11.3 TRAY AND PAPER LIFT MECHANISM – TRAY 2,3

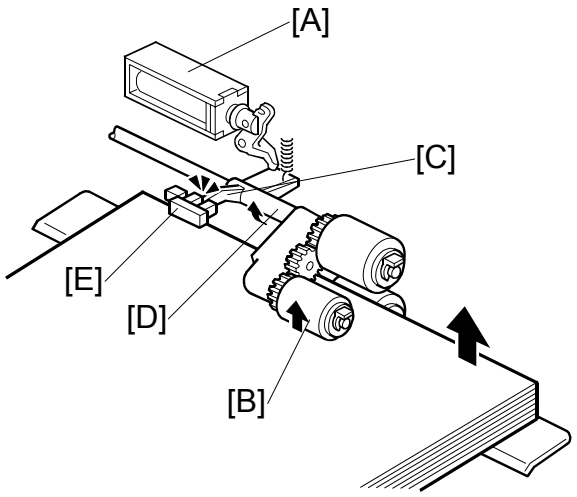
Bottom Plate Lift

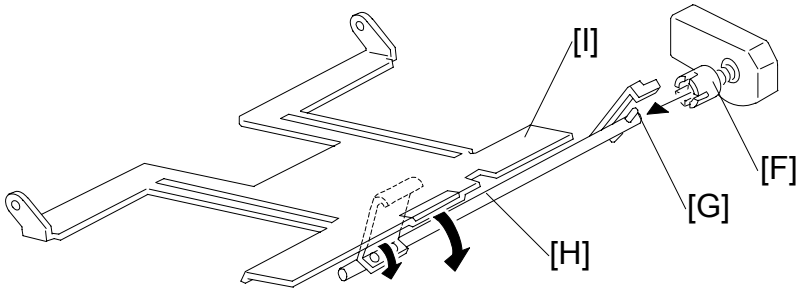


Tray lift motor [A] ➔ Coupling [B] ➔ Pin [C] ➔ Shaft [D] ➔ Lift arm [E] (under the bottom plate).

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.

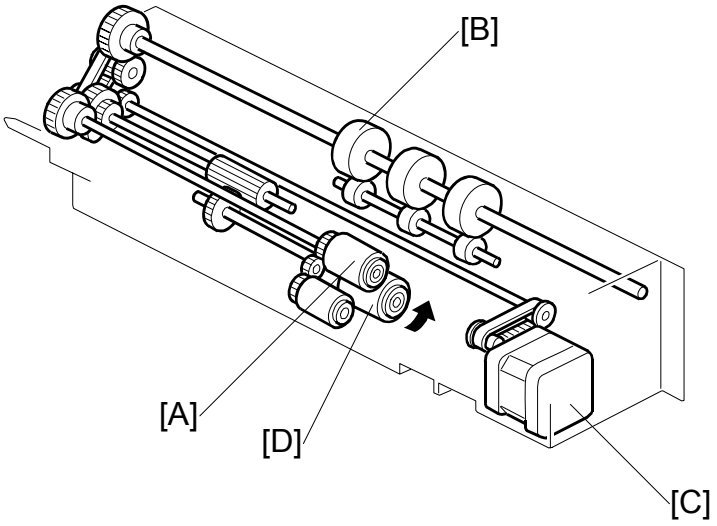
When the top sheet of paper reaches the proper paper feed level, actuator [C] on the pick-up roller support [D] activates the tray lift sensor [E], and the lift motor stops.

After several paper feeds, the paper level gradually lowers and the lift sensor is de-activated. 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.

6.11.4 PAPER FEED AND SEPARATION MECHANISM

Paper Feed and Separation: No Paper Present

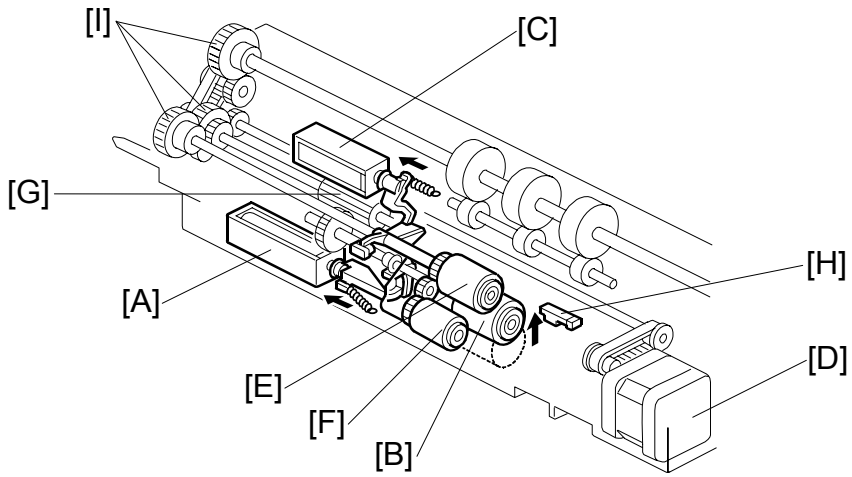


While waiting for the first sheet to feed and between sheets, the feed roller [A] must not rotate. However, the grip roller [B] must turn, so that any paper coming up the vertical transport path continues to feed. To do this, the paper feed motor [C] rotates in reverse. The separation roller [D] is free 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:

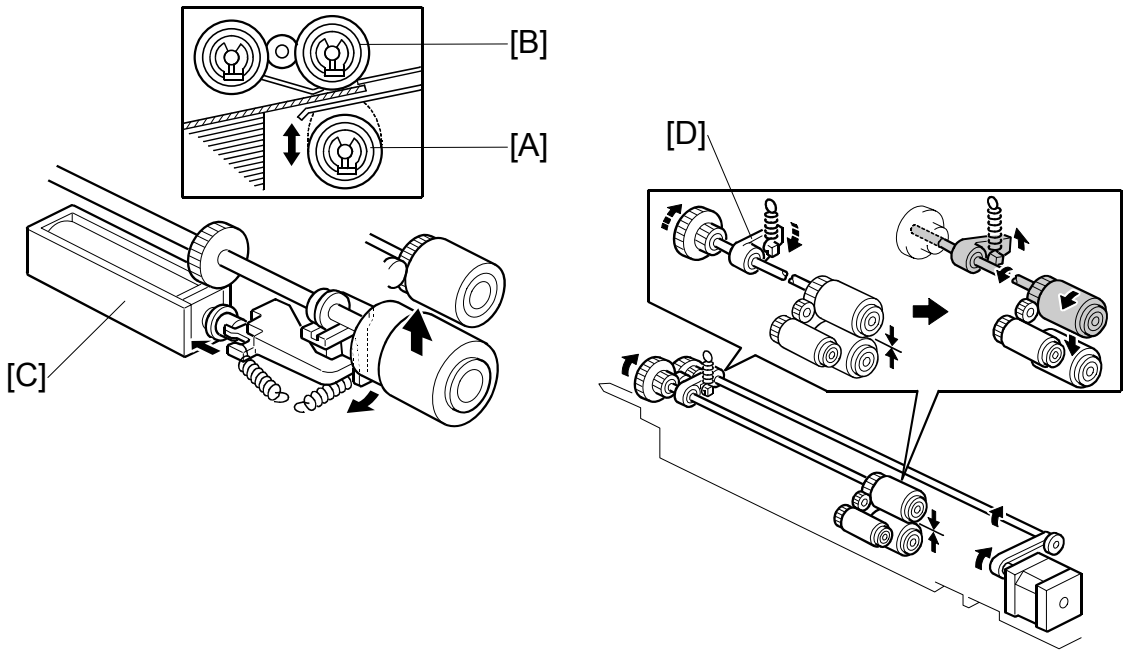
- Pick-up solenoid [C] switches off, and pick-up roller [F] lifts.
- The feed roller [E] then feeds the sheet to the registration roller.

Note the three one-way clutches [I]: One for the grip roller, one for the feed roller, and one for the separation roller.

When the feed motor rotates forward:

Feed roller	→	Rotates
Separation roller	→	Rotates in accordance with the FRR principle CT Handling Paper> Paper Feed Methods> **Forward and Reverse Roller (FRR)**
Grip roller	→	Rotates

Separation Roller Release Mechanism



Normally, the separation roller [A] and feed roller [B] are not in contact. However, when the feed station is selected, the separation roller solenoid [C] pushes the separation roller against the feed roller.

This mechanism has these advantages:

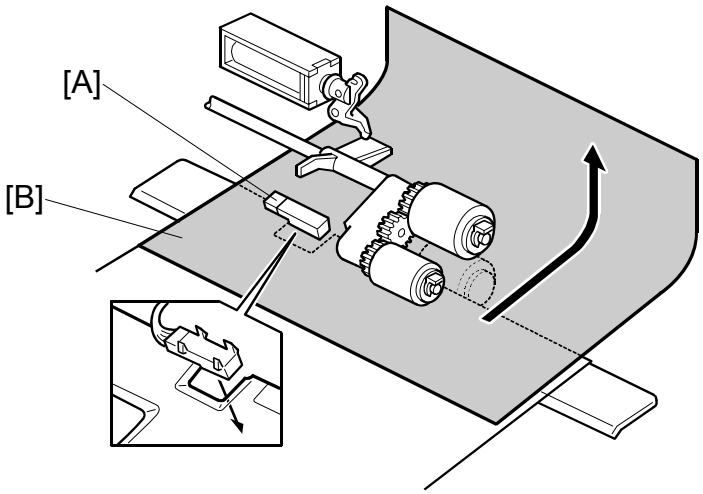
- When the paper feed motor turns on, the separation roller rotates. If the separation roller is away from the feed roller, it reduces the load on the paper feed motor and drive mechanism, and it also reduces wear to the rubber surface of the separation roller caused by friction between the separation roller and the feed roller.
- After a job, paper sometimes remains between the feed and separation rollers. If the paper tray is pulled out of the machine, this paper might be torn if the two rollers do not separate.
- The user can easily pull out jammed paper between the feed and separation rollers if the separation roller is away from the feed roller.

Normally, the feed and separation roller separate when the separation roller solenoid switches off.

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.

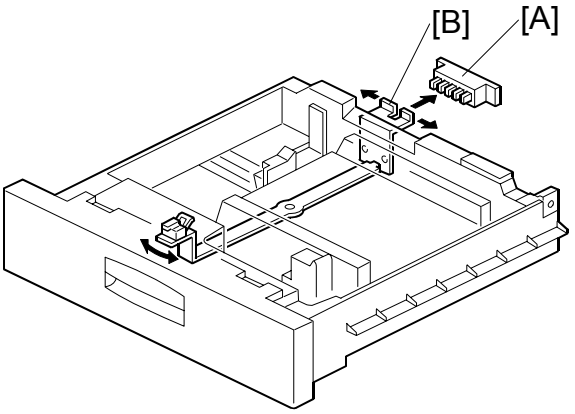
6.11.6 PAPER SIZE DETECTION

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.

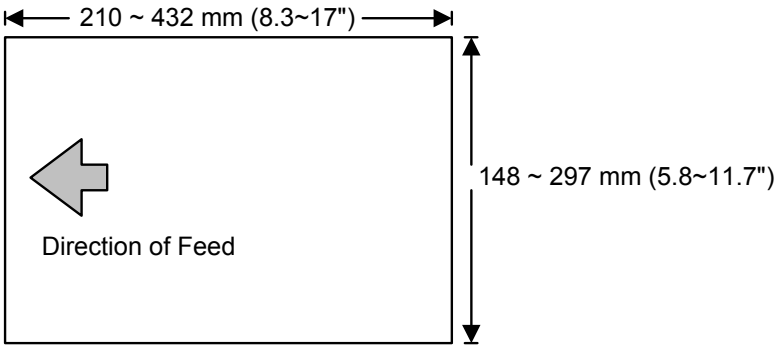
Sensor Outputs	A4/A3 Version	LT/DLT Version
01111	A3 SEF	11" x 17" SEF
00111	8 1/4" x 13" SEF	8 1/2" x 14" SEF
10011	A4 SEF	8 1/2" x 11" SEF
01001	A4 LEF	8 1/2" x 11" LEF
00100	8 1/2" x 13" SEF	5 1/2" x 8 1/2" SEF
00010	A5 SEF	5 1/2" x 8 1/2" LEF
00001	A5 LEF	8" x 10 1/2" SEF
10000	—	7 1/4" x 10" SEF
11000	—	Set by SP 5129
11100	—	Not used
11110	*	*

0: Actuated 1: Deactuated

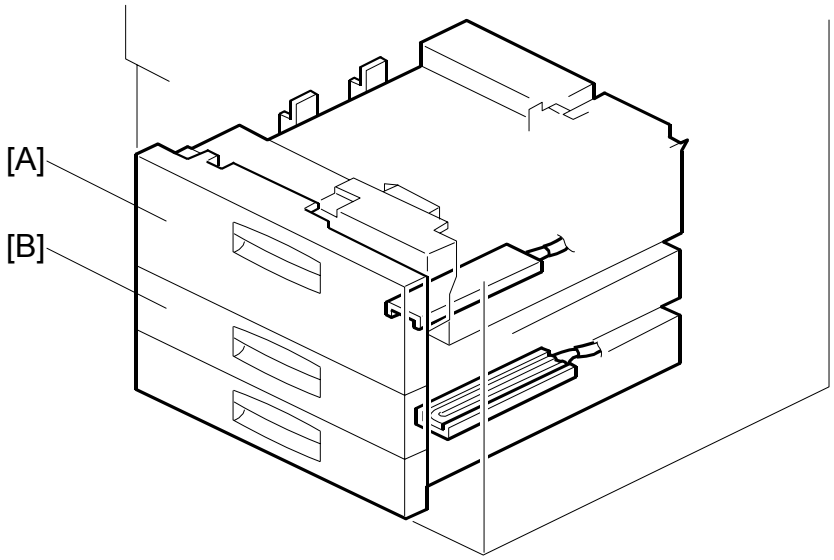
SP5129: The machine can detect 8" x 13" (default), 8½" x 13", or 8¼" x 13".

If the switch is set to the asterisk (*), a range of paper sizes (illustrated below) can be selected, but the size must be entered with a UP mode.

Special Size Setting Range



6.11.7 ANTI-CONDENSATION HEATERS



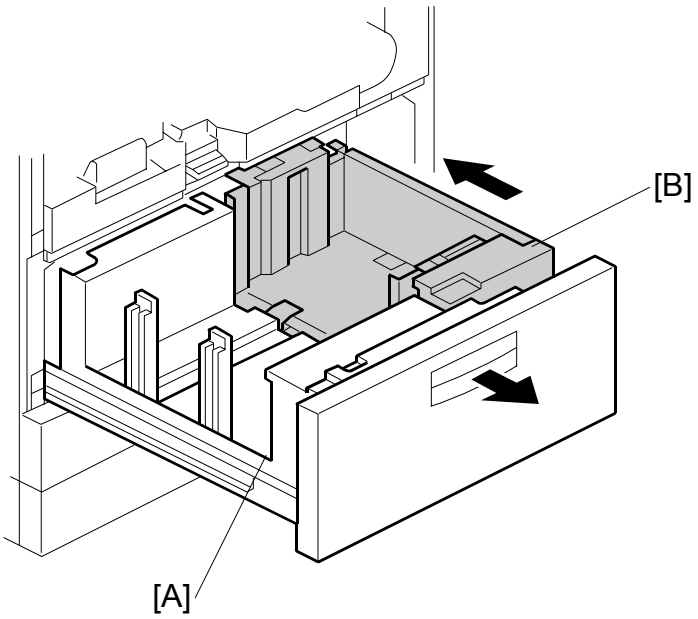
Two heaters, one below the tandem tray [A] and one below the bottom tray [B], prevent condensation around the feed rollers and keep paper dry.

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

6.11.8 TANDEM TRAY – TRAY 1

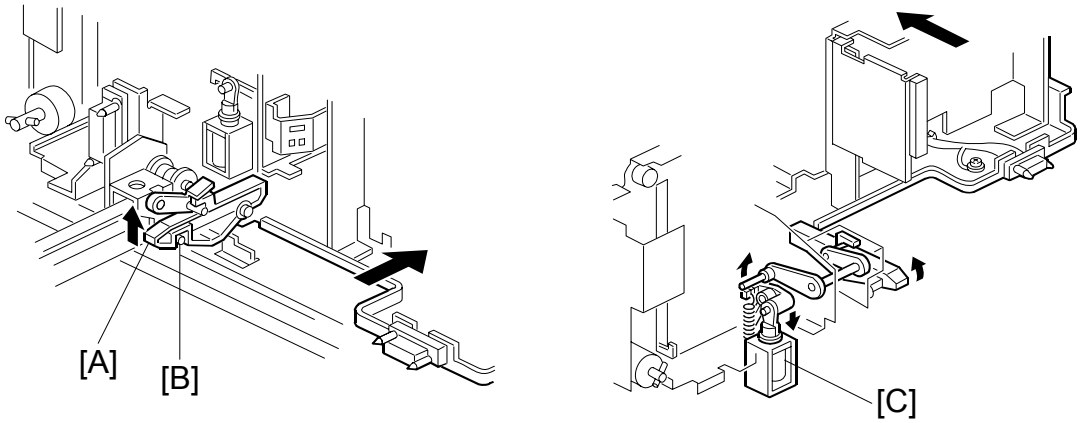
Overview

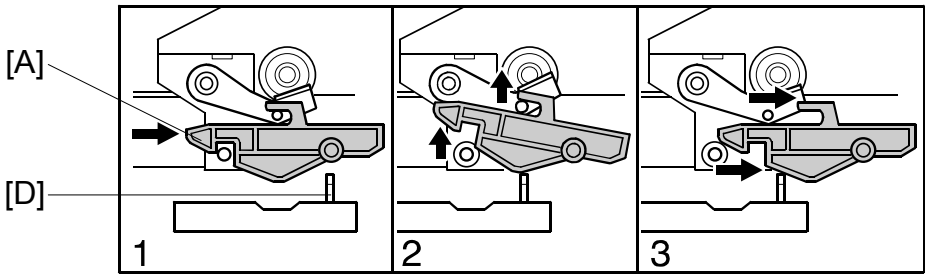


1,550 sheets of paper can be set in each of the left [A] and right trays [B]. Paper is fed from the right tray. When the paper in the right tray runs out, the paper in the left tray automatically transfers to the right tray. After the paper transfers to the right tray, paper feeding resumes.

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:

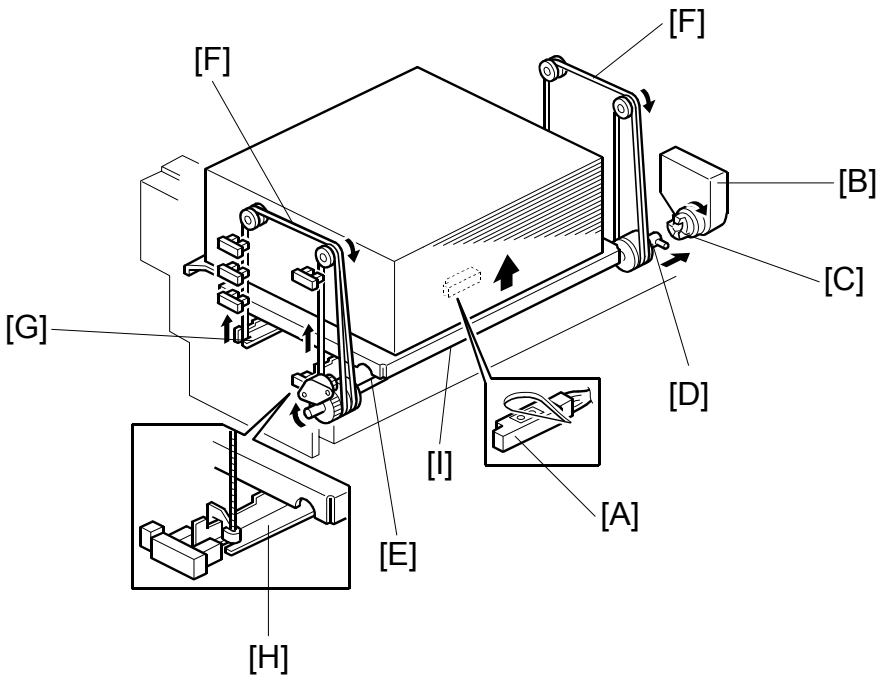
- Right tray lock solenoid [C] turns on, which releases lock lever [A].
- The left tray can now be pulled out to load paper, even while paper is being fed into the machine from the right tray.

When the tandem tray is drawn out fully:

- Projection [D] pushes up lock lever [A] so that both trays separate. This makes paper loading easier.

Paper Lift/Remaining Paper Detection

The machine detects when the 1st tray has been placed in the machine by monitoring the tray set signal through the connector.



When the machine detects that the tray is in the machine, the right tray paper sensor [A] (under the tray) checks whether there is paper in the right tandem tray.

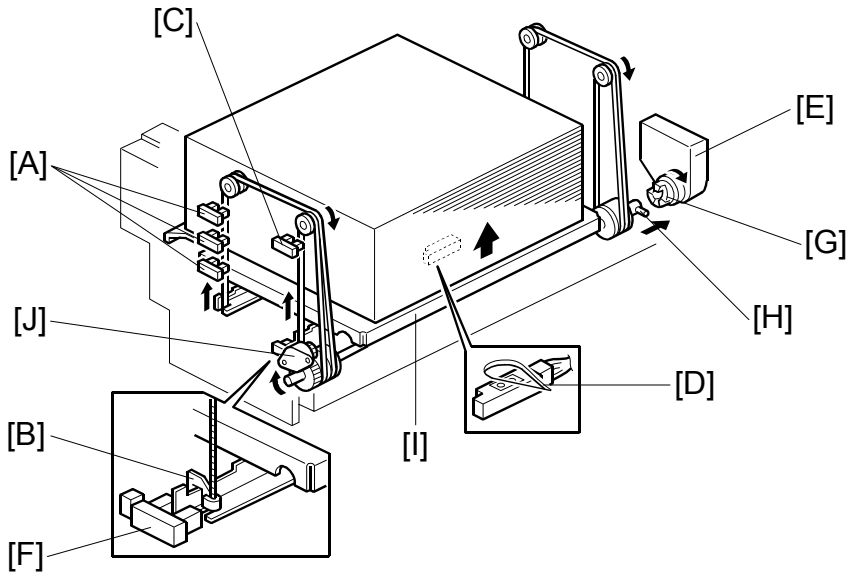
NOTE: If sensor [A] was not present and the tray was empty, the bottom plate would have to lift until the 1st tray lift paper end sensor (at the top of the tray) detected that there was no paper, and this would waste several seconds.

If paper is detected, the lift mechanism starts:

- 1st tray Lift motor [B] → Coupling gear [C] → Pin [D] on the lift shaft [E] → Wires [F] → Slots at the ends of the tray support rods [G, H] → Tray bottom plate [I].

The tray goes up until both of the following occur:

- The paper pushes up the pick-up roller and the lift sensor is activated
- The paper end sensor at the top of the tray is deactivated.



Paper remaining: The amount of paper remaining in the tray is detected by which combination of the three paper height sensors [A] are actuated by the actuator on the left rail as the bottom plate rises.

- With the actuator below paper height sensor 1 (the bottom sensor), no sensor is actuated and the display indicates the tray is full.
- When the actuator passes paper height sensor, the display indicates 50% of the paper supply remaining.
- When the actuator passes paper height sensor 2 (the middle sensor), the display indicates 30% of the paper supply remaining.
- When the actuator passes paper height sensor 3 (the top sensor), the display does not change. This prevents the signal from returning to the off state, which would indicate 100% of the paper remaining (the same state as when the sensor is below paper sensor 1.

Paper near-end: Detected when the actuator [B] on the right rail activates the paper near end sensor [C]. When the actuator passes this sensor, the display indicates 10% of the paper supply remaining.

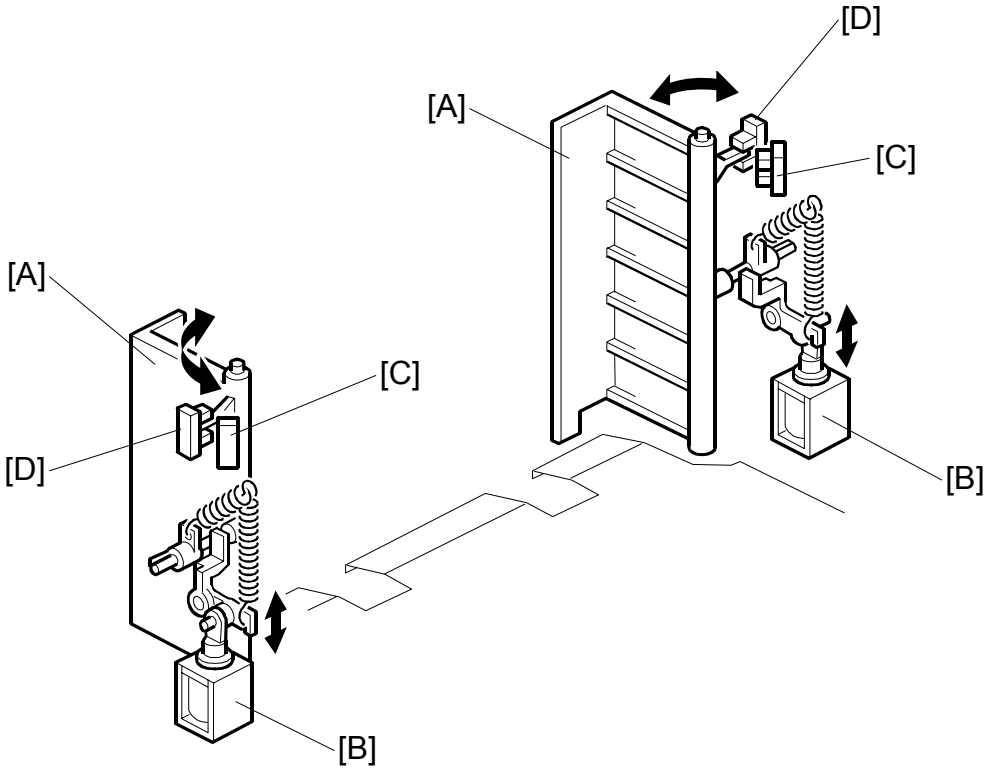
Paper end: After the last sheet feeds, the right tray paper sensor [D] below the bottom of the tray actuates and signals paper end.

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.

Fence Drive

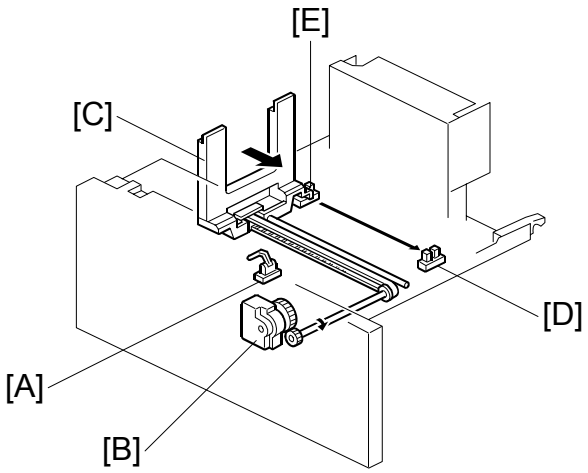


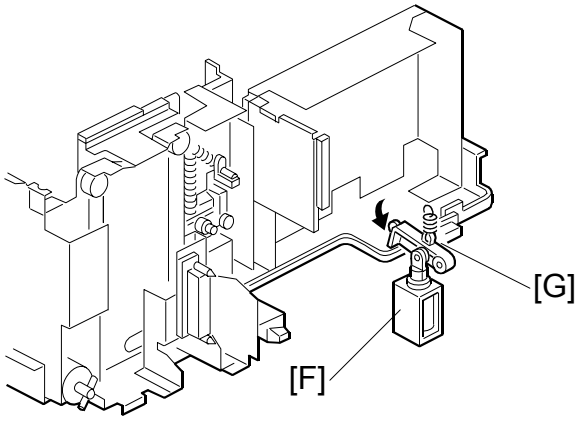
The side fences [A] of the right tray open only when paper in the left tray goes to the right tray.

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



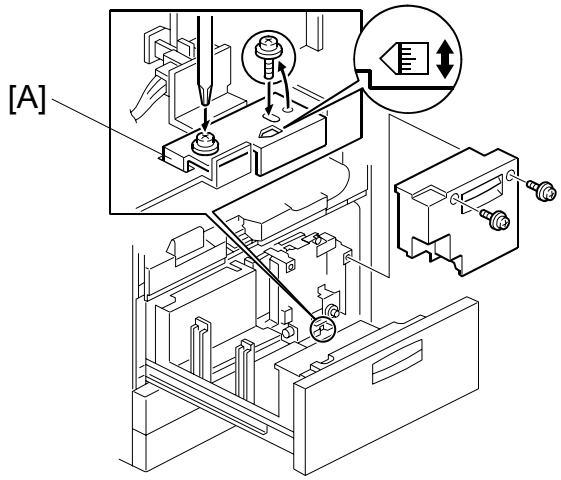


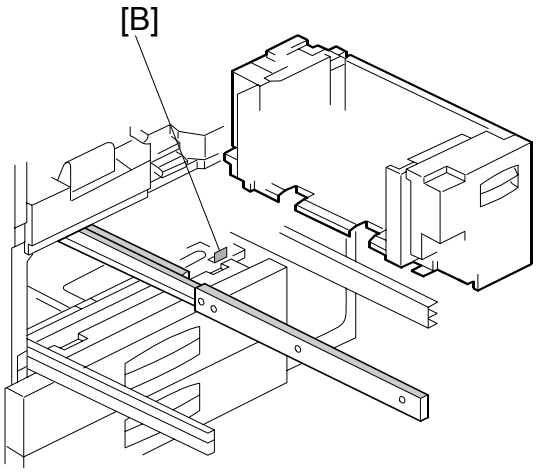
When the left tray paper sensor [A] detects paper but the right tray paper sensor does not, the following happens.

- 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.

While the rear fence is moving, the left tray lock solenoid [F] turns on and the lock lever [G] locks the left tray.

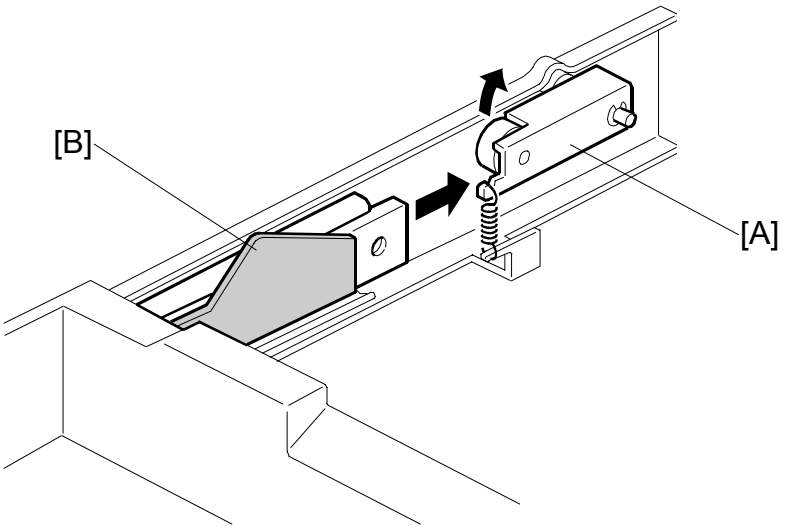
Tray Side-to-side Positioning





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.

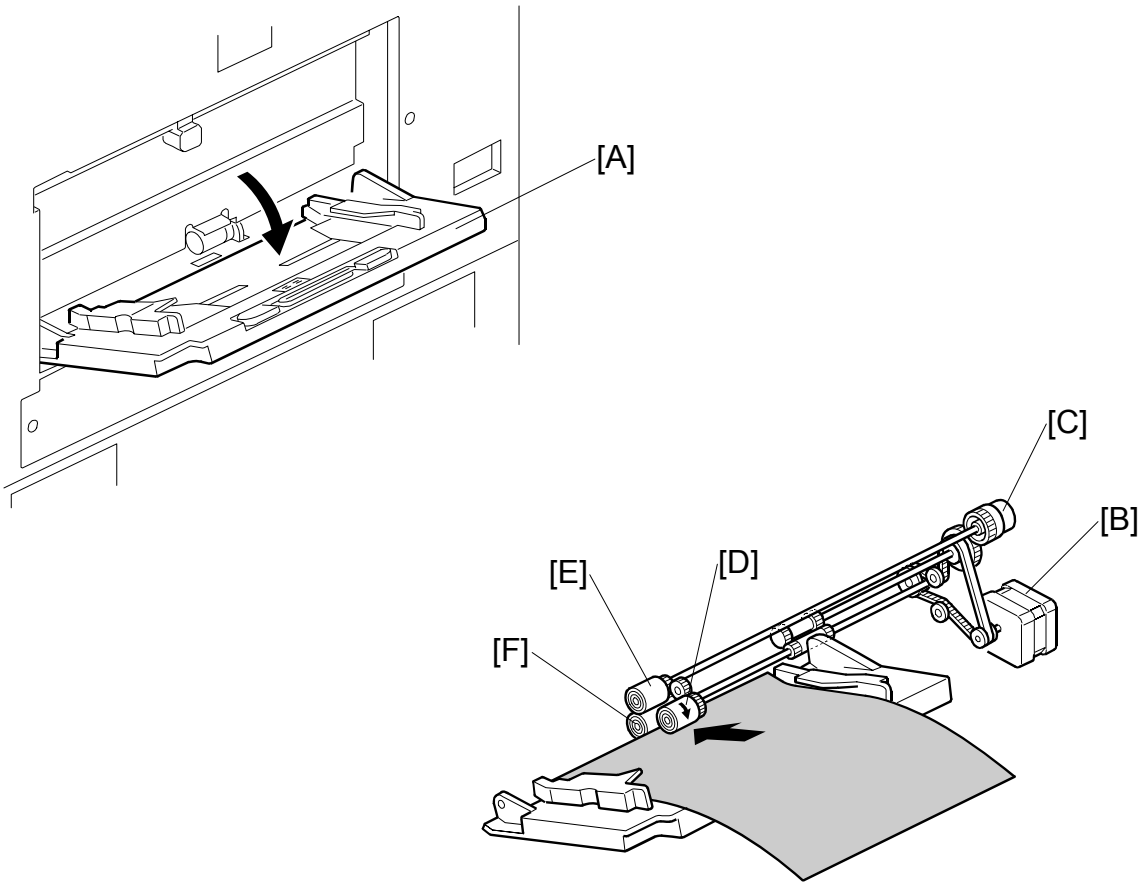
6.11.9 TRAY POSITIONING MECHANISM – TRAYS 1 TO 3



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.

6.11.10 BY-PASS TRAY

By-pass Feed and Separation



The by-pass tray [A] opens from the right side of the machine.

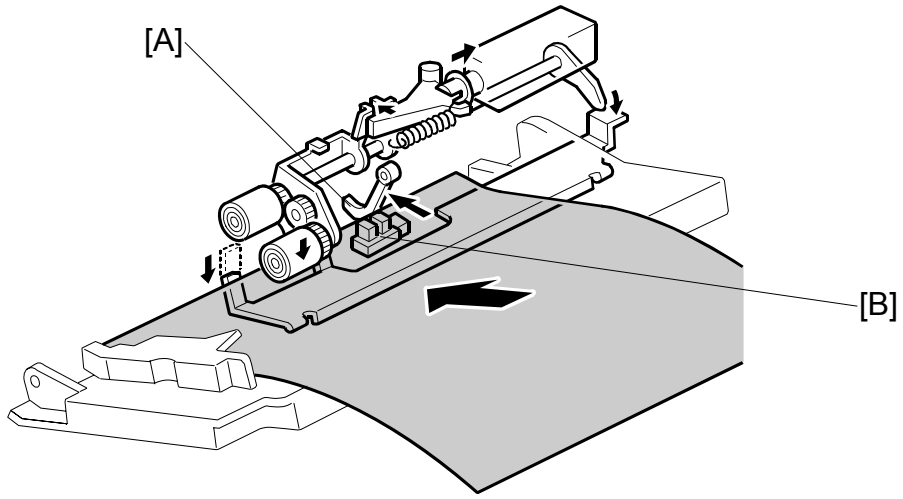
By-pass feed motor [B] → By-pass feed clutch [C] → Pick-up roller [D] (pick-up solenoid – see the next page) → Feed roller [E] and separation roller [F]

The by-pass tray uses a standard FRR feed system.

(CT Handling Paper> Paper Feed Methods> **Forward and Reverse Roller (FRR)** or **By-pass Feed Tray**)

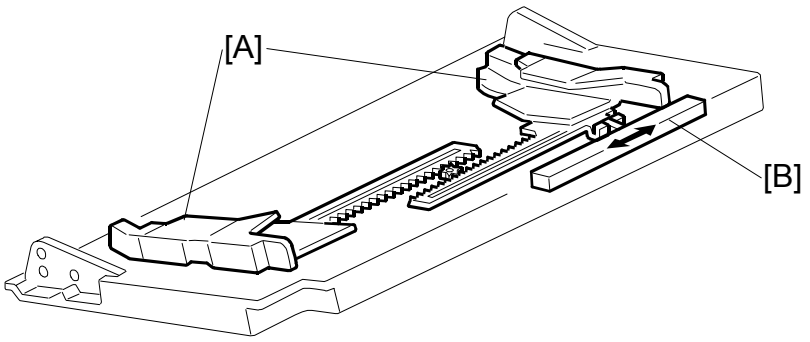
NOTE: The direction of feed in the by-pass tray is opposite from that of the other paper trays, so their parts (with the exception of the separation roller) are not interchangeable.

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].

By-pass Paper Size Detection



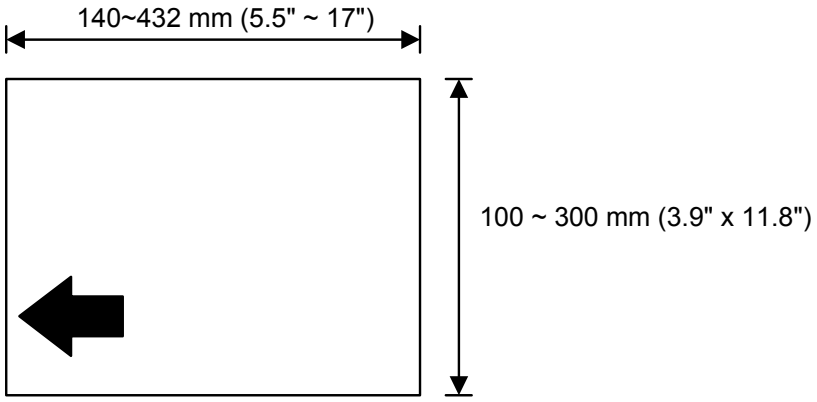
The positions of the side fences [A], connected to the by-pass paper size sensor [B] determine the paper width.

Paper length is determined with pulse counts read from the registration sensor.

(CT 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.

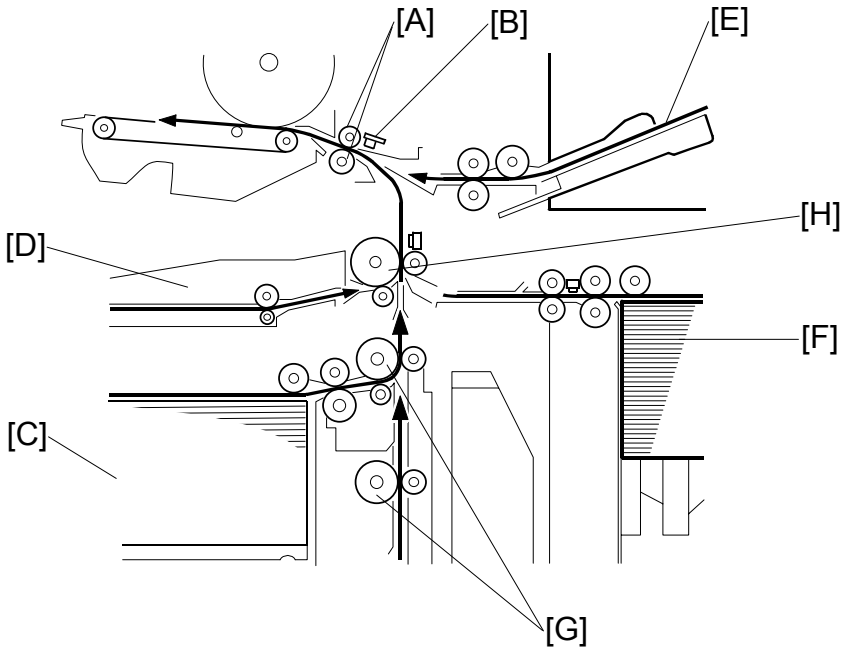
The user can specify non-standard paper sizes for feeding from the by-pass tray. The size must be within the range shown in the illustration.



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:

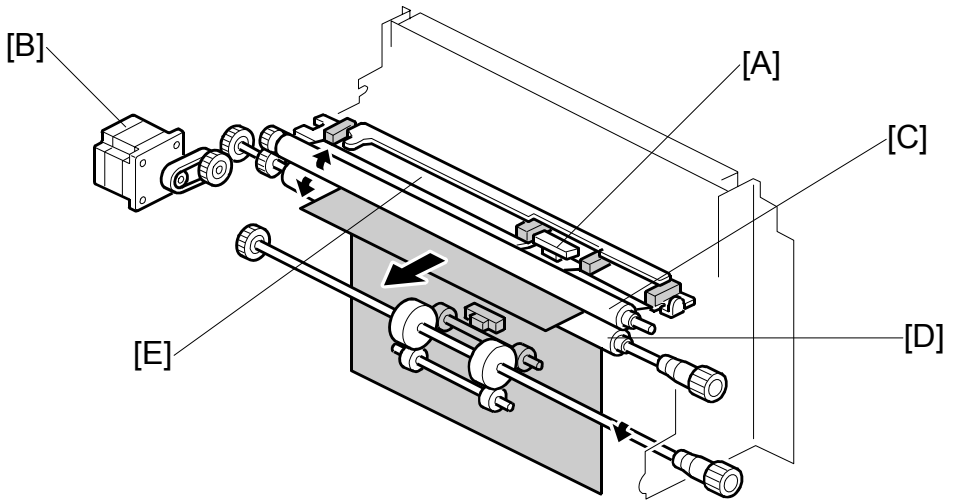
- Tandem tray and universal trays below [C]
- Duplex unit [D]
- By-pass tray [E]
- Optional LCT [F]

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.

Paper Registration Drive

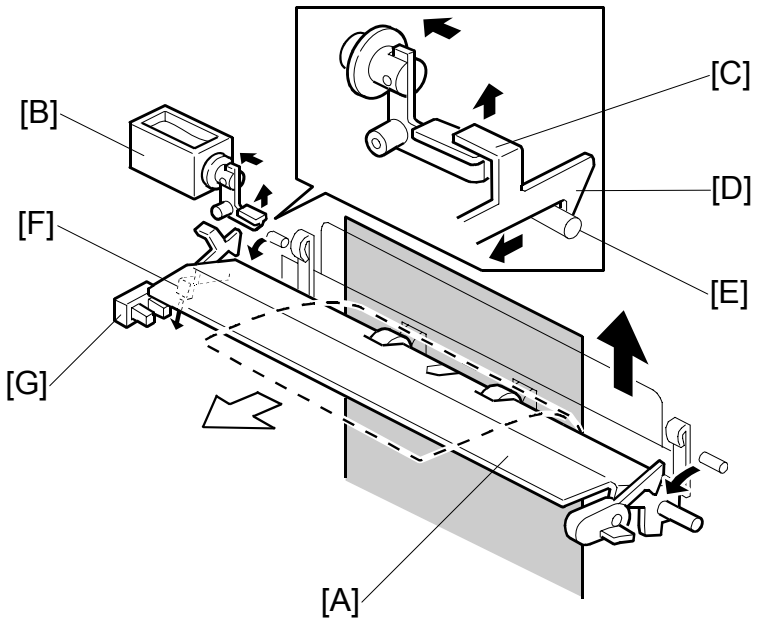


When the registration sensor [A] detects the leading edge of the paper, the registration motor [B] stops the paper at the registration rollers [C, D] for a short while to correct the skew in the paper.

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.

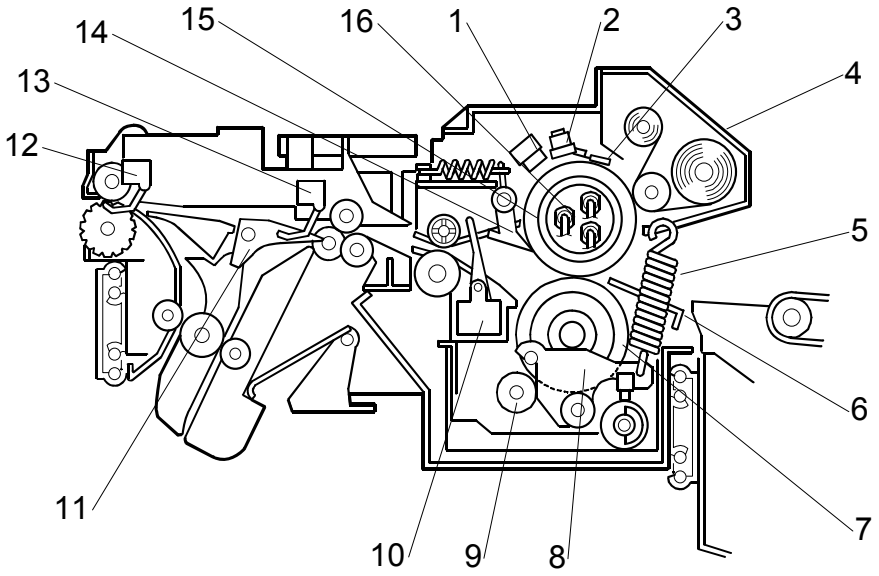
Actuator [F] on the guide plate activates the guide plate position sensor [G] when the guide plate opens.

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.

6.12 IMAGE FUSING AND PAPER EXIT

6.12.1 OVERVIEW



1. Thermistor (Center) *1
2. Thermostats *2
3. Thermistors *3
4. Web Cleaning Unit
5. Pressure Spring
6. Entrance Guide Plate
7. Pressure Roller
8. Pressure Arm
9. Pressure Roller Cleaning Roller
10. Fusing Exit Sensor
11. Exit Junction Gate
12. Paper Exit Sensor
13. Exit Unit Entrance Sensor
14. Hot Roller Strippers
15. Hot Roller
16. Fusing Lamps *4*5

***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
***5** The D054 model only utilizes two fusing lamps.

The fusing unit is a hot roller/pressure roller system.

B064 Series

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.

Both Series

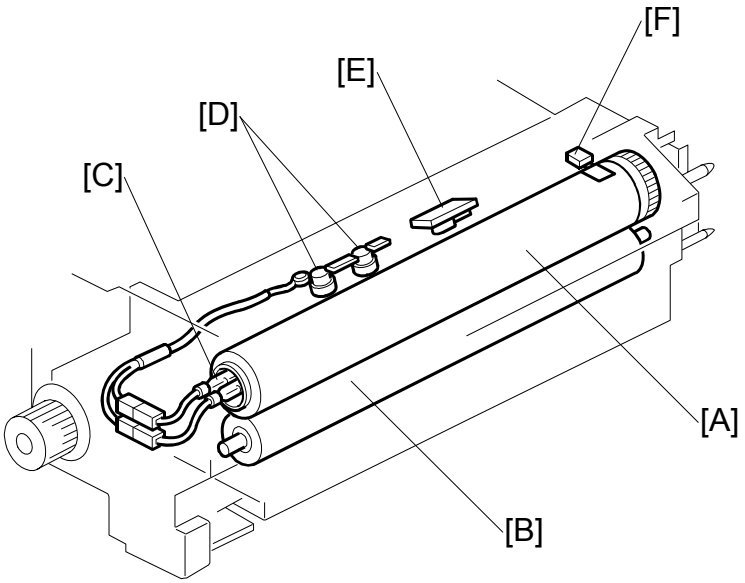
The web cleaning unit (web roller, cleaning roller, and take up roller) applies a light coat of silicone oil to the hot roller to prevent toner and paper dust from sticking to the hot roller.

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.

6.12.2 FUSING MECHANISM

B064 Series



The hot roller [A] and pressure roller [B] fuse the toner to the paper.

Two fusing lamps [C] (550 W) are inside the hot roller.

Two thermostats [D] are positioned above the hot roller near the center.

One thermistor [E] is also positioned above the hot roller near the center.

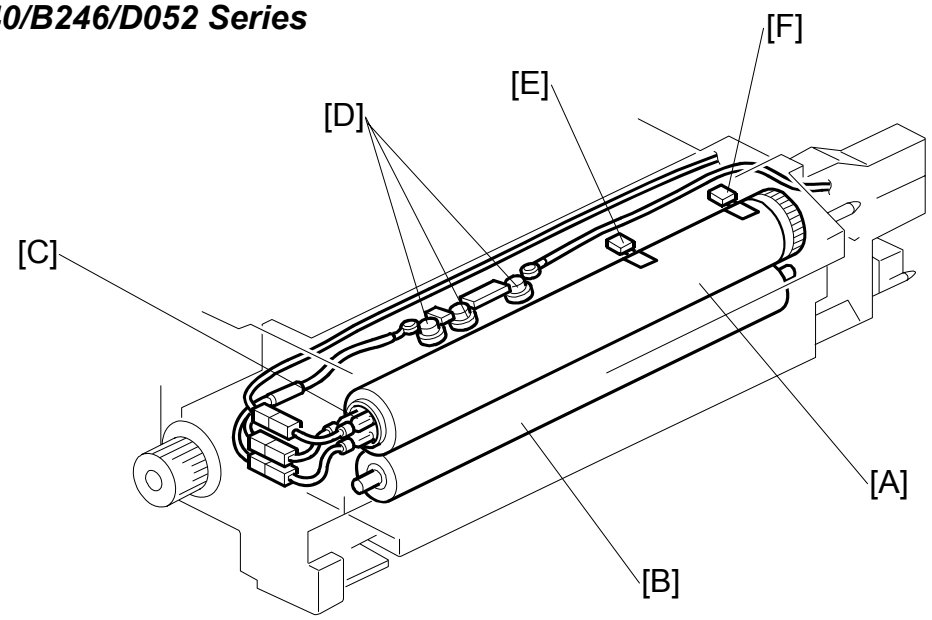
Another thermistor [F] is in contact with the end of the hot roller.

Thermistors	
Center (non-contact) thermistor	Temperature control
End (contact) thermistor	Overheating protection
Thermostats[*1]	
Center (non-contact) thermostats	Overheating protection

[*1] If the thermostats trigger an alert, the thermostat requires replacement.

A fusing exit sensor, located between the hot roller and paper exit roller, detects paper jams inside the fusing unit.

B140/B246/D052 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.

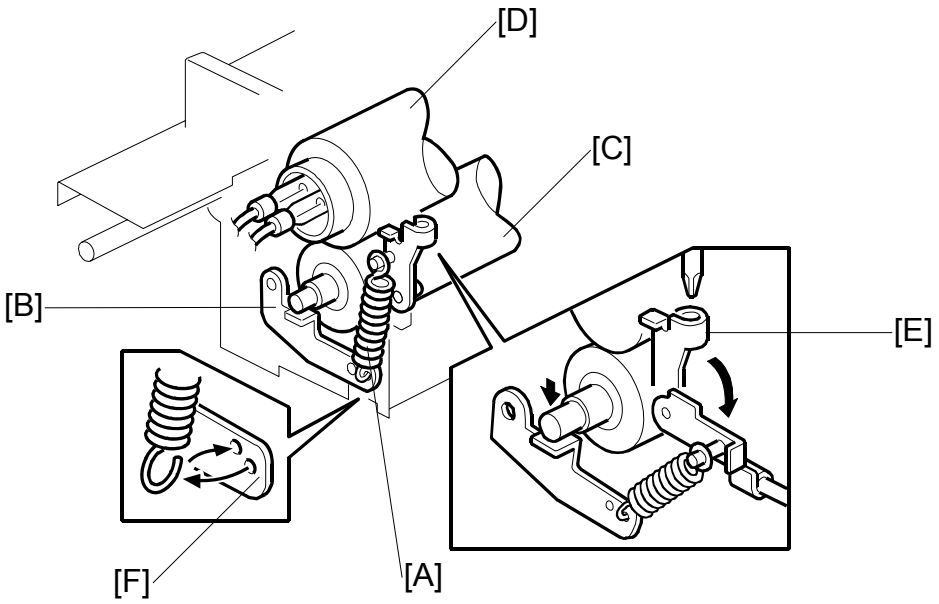
Another thermistor [F] touches the end of the hot roller.

Thermistors	
Center (contact) thermistor	Temperature control
End (contact) thermistor	Temperature control
Thermostats[*1]	
Center (non-contact) thermostats	Overheating protection

[*1] If the thermostats trigger an alert, the thermostats must be replaced.

6.12.3 PRESSURE ROLLER

B064 Series



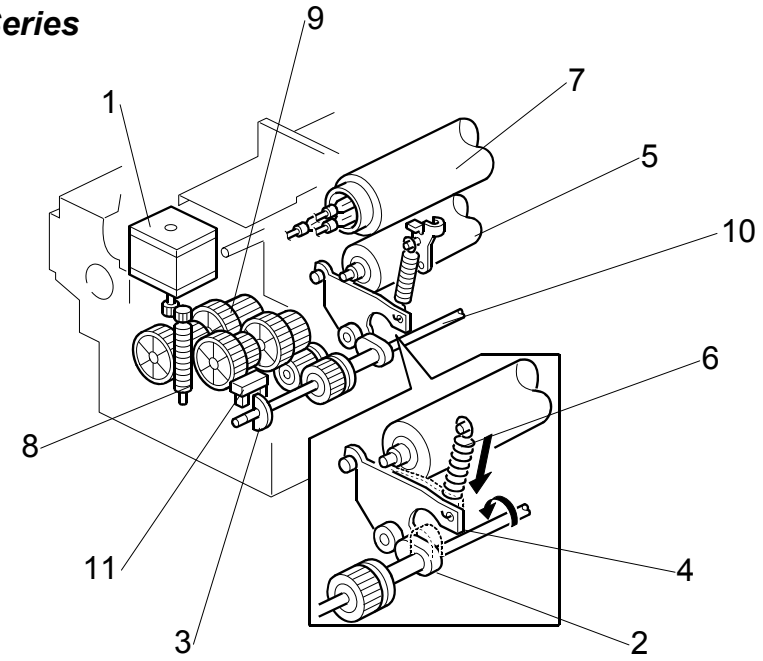
Heavy springs [A], attached to pressure arms [B] below both ends of the pressure roller [C], keep the roller pressed against the hot roller [D] above.

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/B246/D052 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.

When the job ends and the machine goes back to the ready condition:

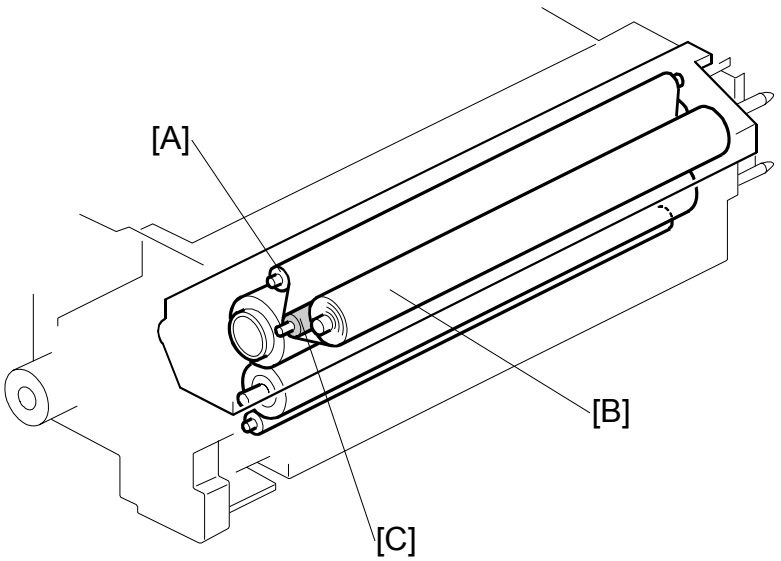
- The pressure release motor comes on again and turns the cams to the ‘down’ position. This pulls the pressure roller away from the hot roller.
- When the cams are in the 'down' position again, and the actuator goes out of the gap, the sensor turns the motor off.

At paper jam or SC error:

- The pressure roller is again pulled away from the hot roller.

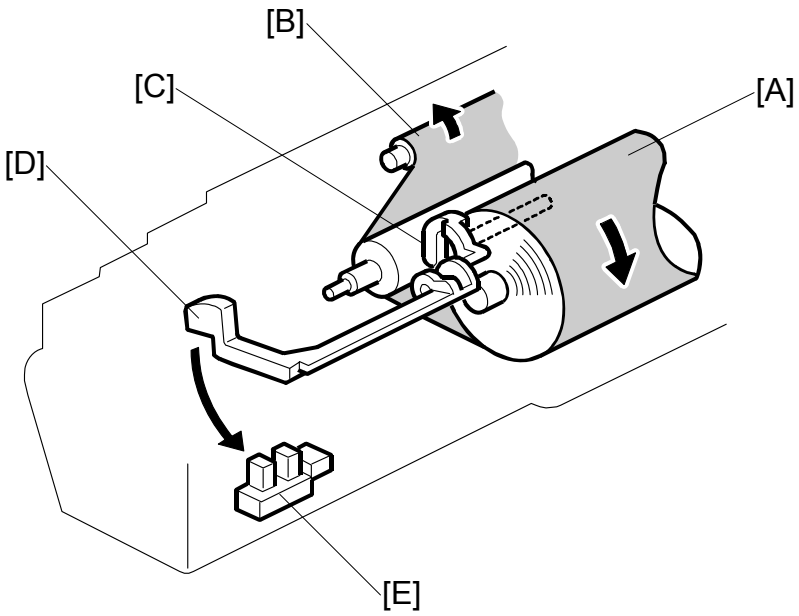
6.12.4 HOT ROLLER CLEANING

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

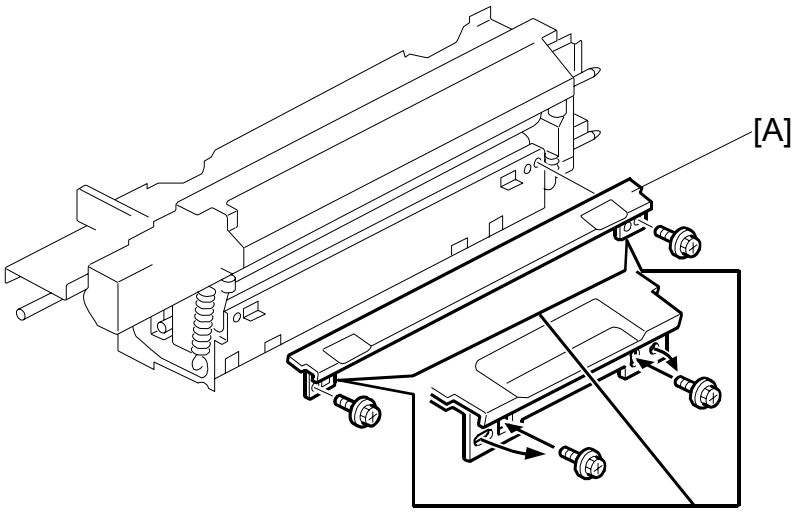
The machine monitors how much of the roll has been fed since it was installed. The setting of SP1902-004 (Fusing Web Motor Control) determines the amount of web remaining on the web roll when the near end alert is issued. (The default setting is after 80% of the web has been used, which is about 266K A4 LEF.)

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

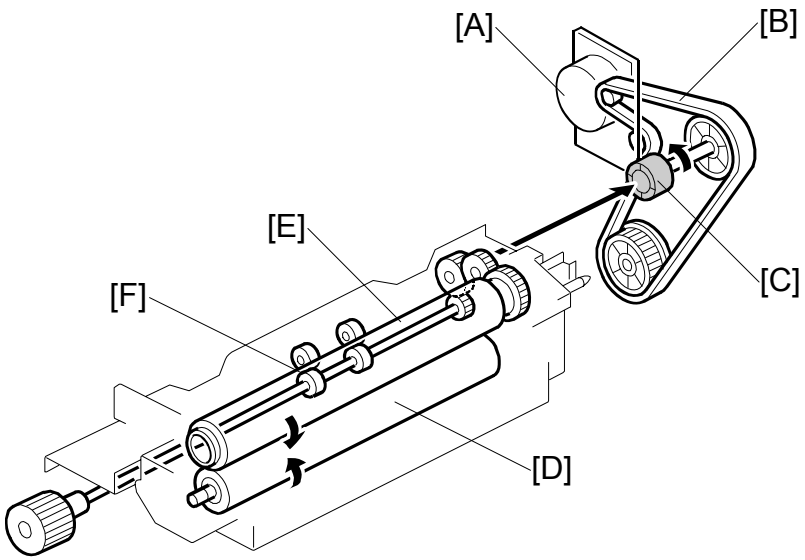


The height of the entrance guide [A] can be adjusted.

- **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: 2) Before shipping, the screws are set in the outer holes.
3) 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.

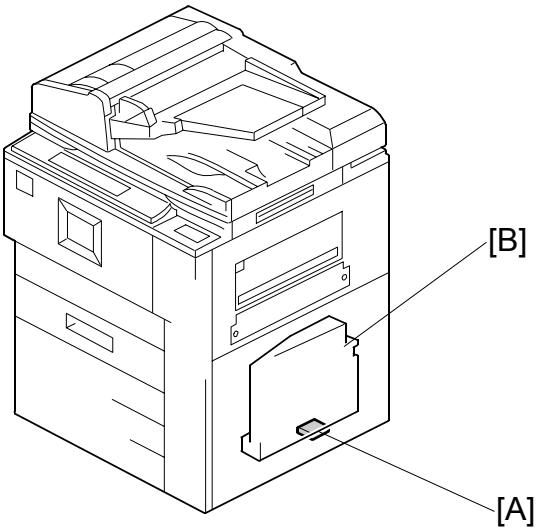
6.12.7 CPM DOWN MODE

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).

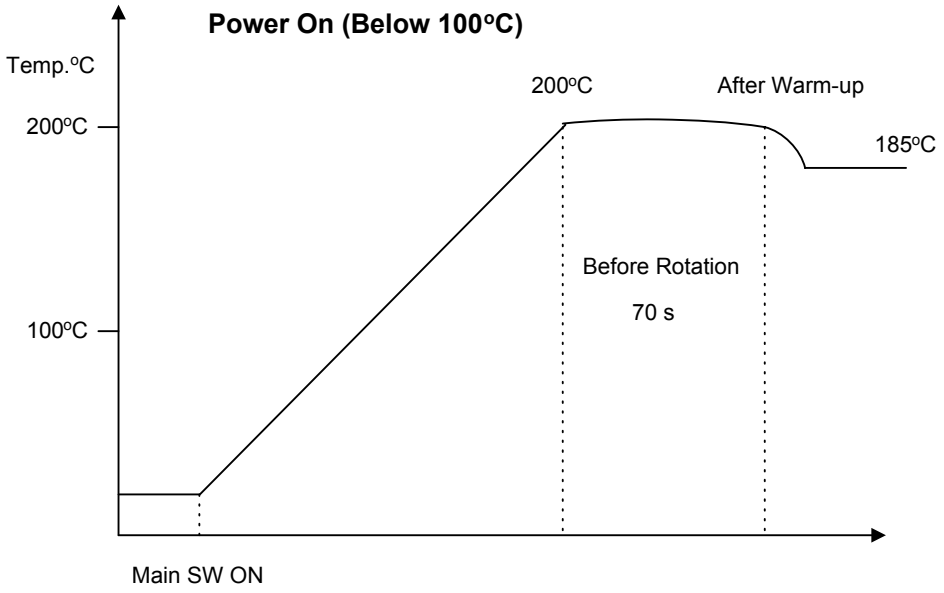
The thermistor contacting the center of the hot roller surface monitors the temperature of the hot roller. The CPU turns the fusing lamps on and off to keep the hot roller surface at the target temperature. The target temperature depends on the paper type.

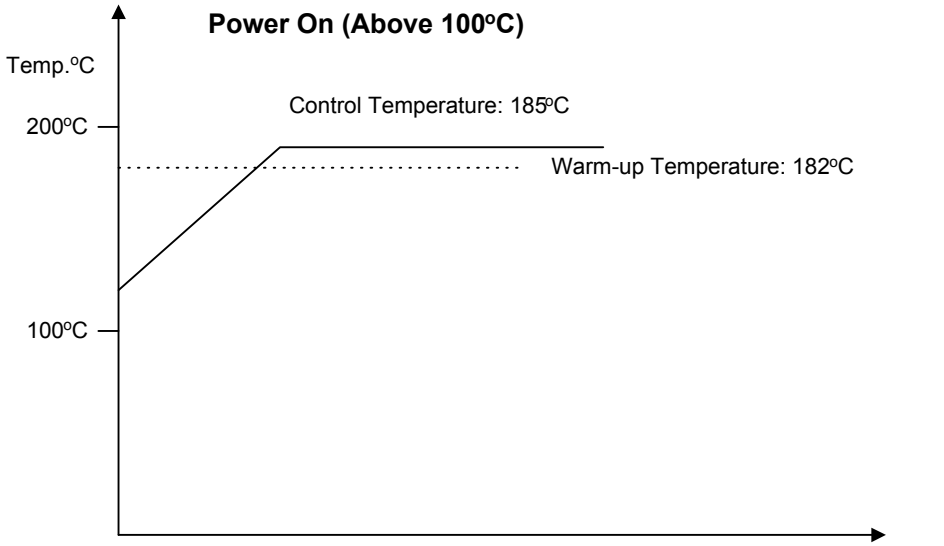
Paper	B064 Series	B140/B246 Series	Adjust With
Normal	185°C±5 (365°F±9	195°C±5 (383°F±9	SP1105-001, 002, 007, 008
OHP	165°C (329°F)	165°C (329°F)	SP1105-003, 004
Thick Paper	190°C (374°F)	200°C (392°F)	SP1105-005, 006

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.



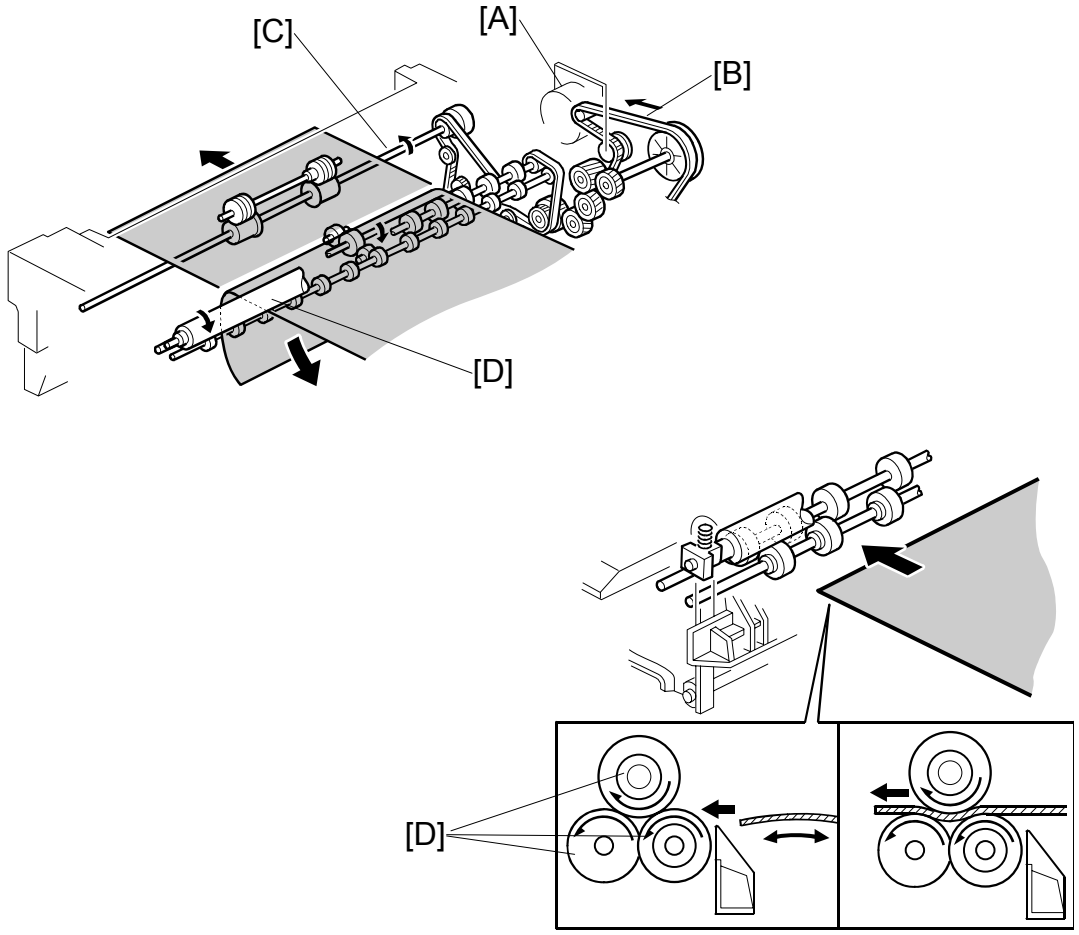


Here is a list of SC codes issued if a fusing unit error occurs. For details, see "Troubleshooting".

SC541	Fusing thermistor open
SC542	Fusing temperature warm-up error
SC543	Fusing lamp overheat error 1 (software)
SC544	Fusing lamp overheat error 1 (hardware)
SC545	Fusing lamp overheat error 2

NOTE: To release the machine after one of these SC codes is issued, just enter the SP mode.

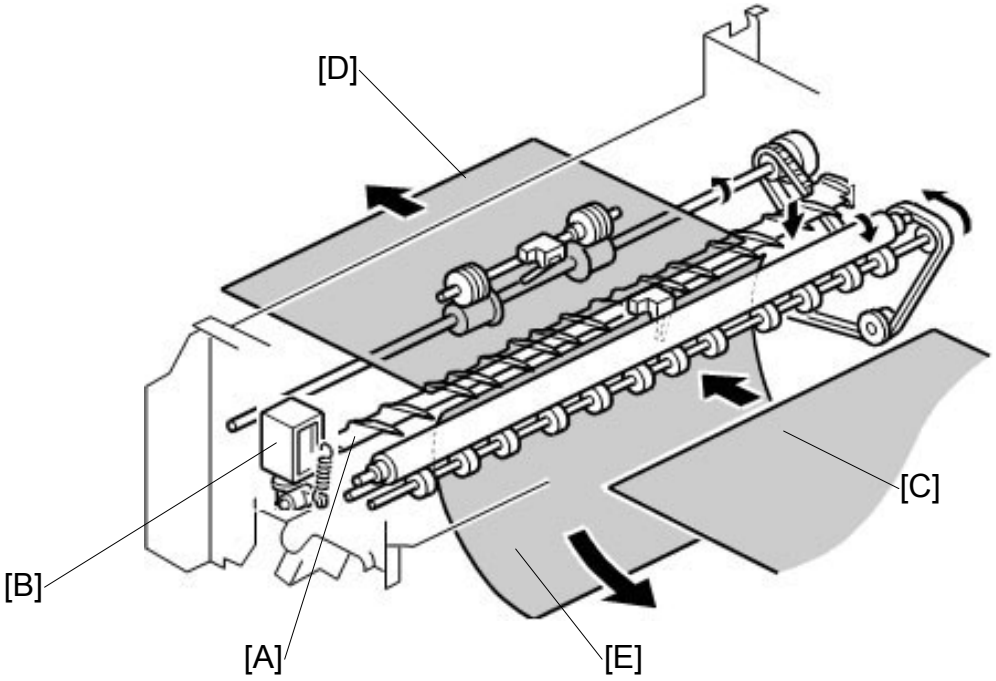
6.12.9 EXIT



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.

6.12.10 EXIT JUNCTION GATE

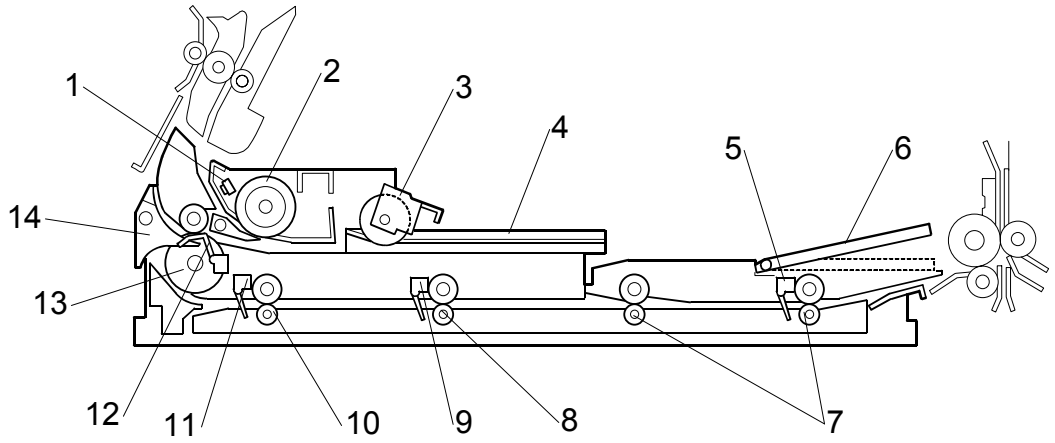


The exit junction gate [A] is controlled by the exit junction gate solenoid [B].

- 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



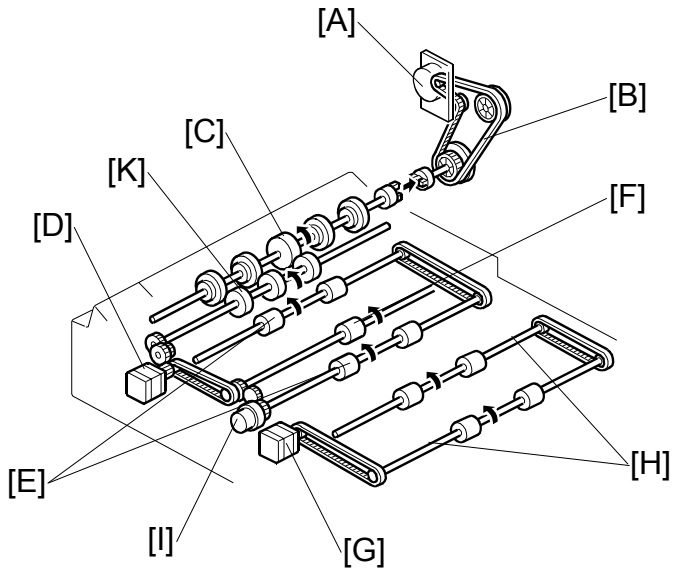
1. Duplex Entrance Sensor
2. Inverter Entrance Roller
3. Reverse Trigger Roller
4. Jogger Fences
5. Duplex Transport Sensor 3
6. Trailing Edge Guide Plate
7. Duplex Transport Rollers 3, 4
8. Transport Roller 2
9. Duplex Transport Sensor 2
10. Transport Roller 1
11. Duplex Transport Sensor 1
12. Duplex Inverter Sensor
13. Inverter Exit Roller
14. Duplex Junction Gate

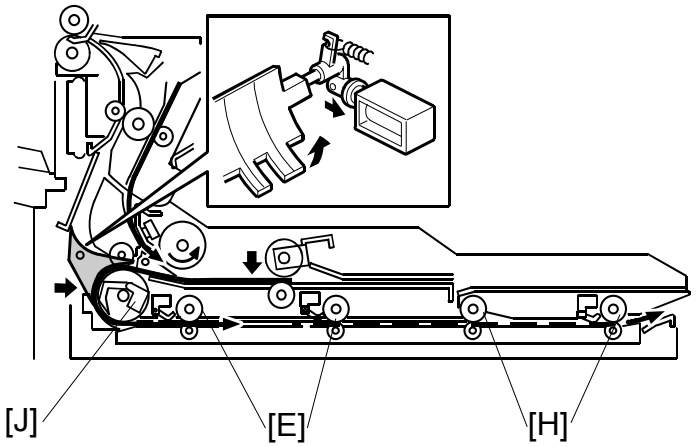
Normally the page is fed out directly face-up to the output tray. If the user selected face-down output, the exit junction gate sends the page to the inverter. The inverter inverts the page for face-down output.

If the user selected duplex mode, after the inverter inverts the page, the duplex junction gate directs the page into the duplex unit, then the duplex unit feeds the page back to the machine for printing the second side.

NOTE: When the duplex unit is removed, the trailing edge guide plate (6) drops to the horizontal position to make it easier to remove.

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]

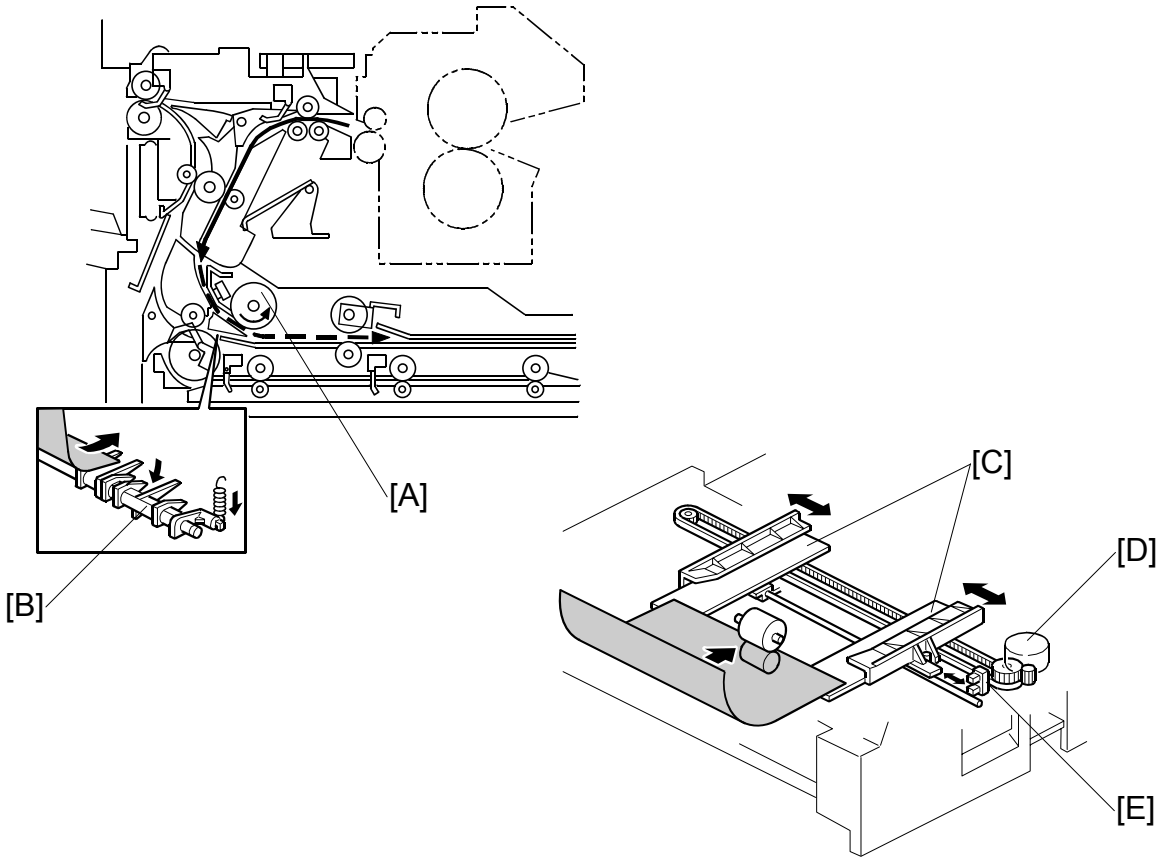
Duplex transport motor [G] → Timing belt → transport rollers 3, 4 [H]

Duplex transport clutch (B064)/ gear (B140, B246) [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]).

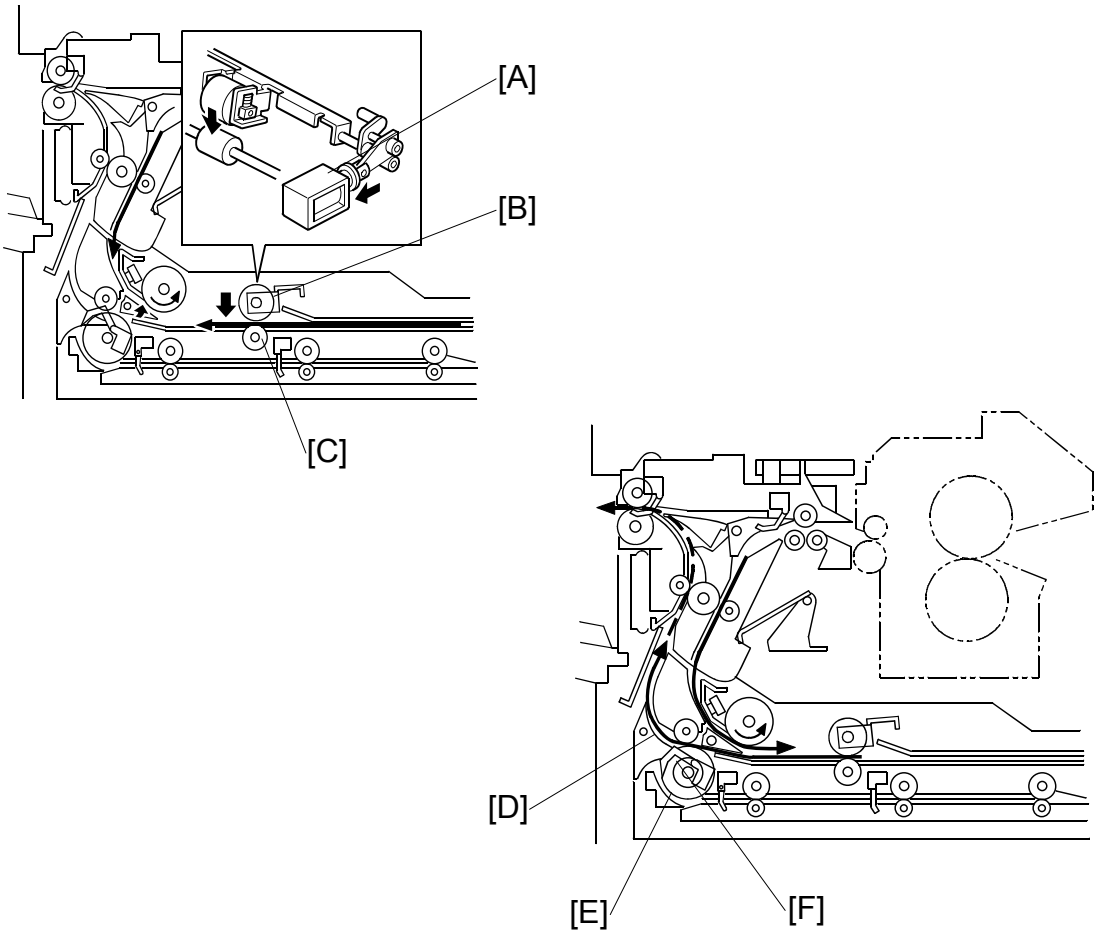
When the Start key is pressed:

- 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



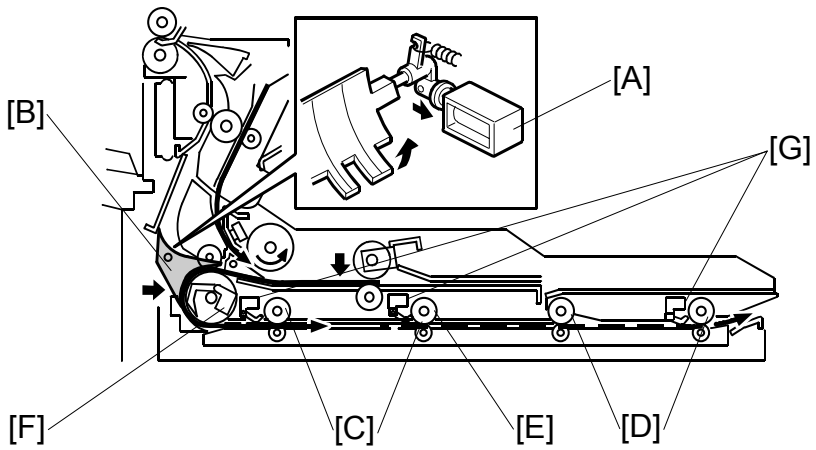
[X]: Reverse trigger roller solenoid
[Y]: Reverse trigger roller
[Z]: Reverse roller
[AA]: Paper
[BB]: Inverter exit roller
[CC]: Duplex inverter sensor

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.

6.13.5 DUPLEX INTERLEAVE FEED

The number of sheets that can be processed at a time depends on the size of the paper.

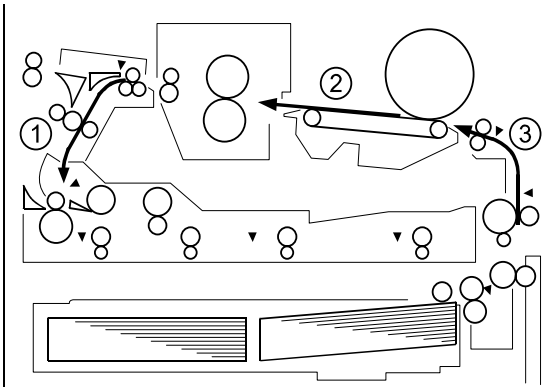
The table below shows the order of page processing for a 14-page job. Odd numbers are the front sides of the pages, even numbers are the back sides.

	Order of Page Processing ➜													
Scanning Order	1	2	3	4	5	6	7	8	9	10	11	12	13	14
A4/LT LEF or smaller *1	1	3	5	2	7	4	9	6	11	8	13	10	12	14
Longer than A4/LT(LEF) *2	1	3	2	5	4	7	6	9	8	11	10	13	12	14

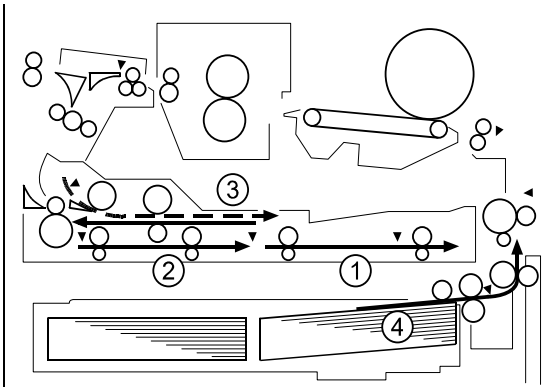
*1: 3 pages can be interleave processed at once.
*2: Only 2 pages can be interleave processed at once.

The following diagrams show where the 7 sheets are located at every step during a 14-page duplex print job with A4/LT LEF paper (three pages can be in the feed path at once).

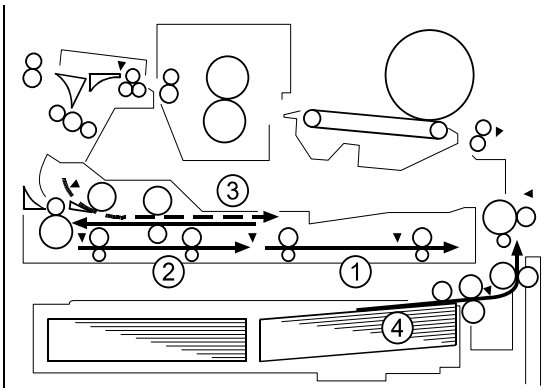
1. First 3 sheets ①②③ fed.
   1) 1st sheet, front page printed (pg. 1)
   2) 2nd sheet, front page printed (pg. 3)
   3) 3rd sheet, front page printed (pg. 5)



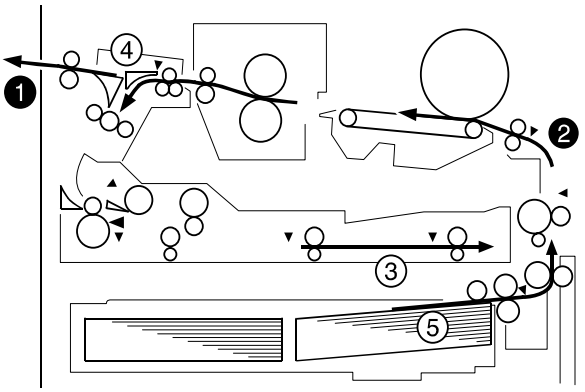
2. 1st, 2nd, 3rd sheet fed to duplex tray and inverter table.
3. 4th sheet feeds.



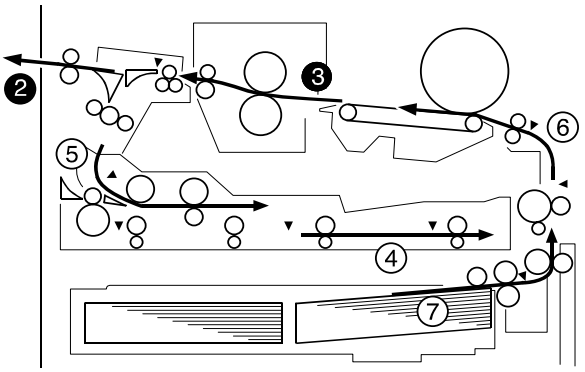
4. 1st sheet, back page printed (pg. 2)



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.

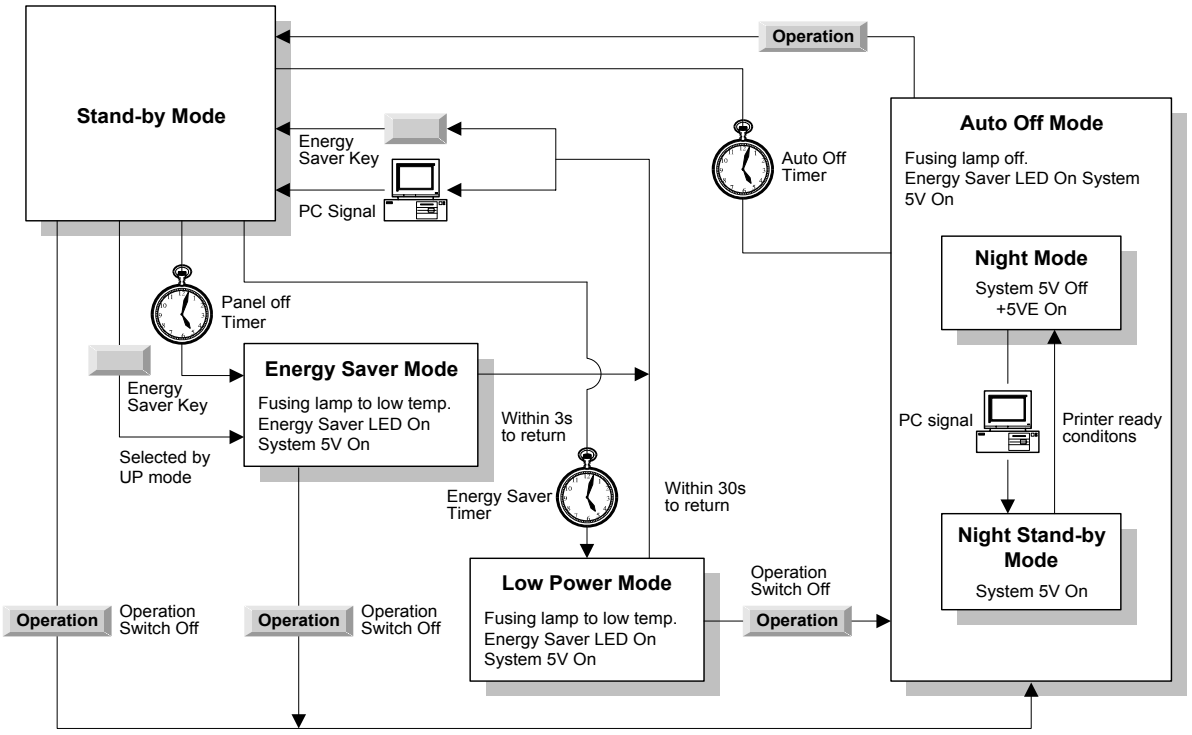


10. 2nd sheet exits.
11. 5th sheet, back page printed (pg. 9), feeds to duplex tray.
12. 3rd sheet, back page printed (pg. 6)
13. 6th sheet, front page printed (pg. 11)
14. 4th sheet, back page, (pg. 8), 7th sheet front page (pg. 13) copied in order, the process above repeats.



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

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”).

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.

6.14.6 ENERGY SAVER CHANGES FOR B140 AND B246/D052 SERIES

- The three timers all have default settings of 1 minute. Because of this, 1 minute after the end of a job, the machine will go to Auto Off Mode. The other 2 modes will not be used.
- The recovery times are different from B064 (they are, for the three timers, < 3 seconds, about 10 seconds, and about 30 seconds).

⇒6.15 DIFFERENCES BETWEEN THE D052 AND B246

Overview

The D052 series (D052/D053/D054) is basically the B246 series with some minor changes applied. The mechanical parts, controller, and machine layout are the same. There are only four differences, which are listed below:

CPM

Each version of the D052 series is five copies/minute faster than its (B246 series) predecessor. This was achieved not by increasing the printing speed, but by reducing the paper interval (accomplished with a firmware modification).

The following table shows the paper intervals for when continuously printing A4/LT-LEF sheets on each model, along with their printing speeds:

	B246 Series			D052 Series		
	CPM	Printing speed	Paper interval (A4/LT)	CPM	Printing speed	Paper interval (A4/LT)
Type a	55	270mm/sec	81.9/75.9mm	60	270mm/sec	57.8/57.5mm
Type b	65	362mm/sec	121.6/115.6mm	70	362mm/sec	98.1/92.1mm
Type c	75	362mm/sec	77.7/71.7mm	80	362mm/sec	59.8/53.8mm

Cleaning brush rotation speed

The number of rotations is the same on the D052/D053, however on the D054, the rotation speed was increased by 50%. This was done in order to prevent blurred images caused by OPC filming. As a result, the brush can more easily wipe foreign particles off the drum surface. The increase in speed was achieved by modifying the mainframe gears.

NOTE: The differences between the mainframe gears on the D052/D053 and D054 are indicated by changing the color of the gears:
- B246 series, D052/D053: Black
- D054: White

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Elimination of the fusing lamp for side heating

The lamp for side heating was eliminated on the D054. This is because the warm-up time on this model (60 sec.) is 30 seconds slower than on the B246 series (30 sec.), and as a result, there is no need to provide additional heat to the roller tips. It has been confirmed that eliminating this lamp does not affect image quality. This change will make it easier to replace/install fusing rollers in the field.

Firmware modifications

It is possible to use the same firmware on both B246 series and D052 series models, **except for the Engine firmware.** (The B246 series and D052 series both use their own unique Engine firmware.)

SPECIFICATIONS

REVISION HISTORY		
Page	**Date**	**Added/Updated/New**
1	04/18/2008	New Information – Section updated to support D052 Series
3	11/08/2006	Updated Information - Specifications

⇒7. SPECIFICATIONS

7.1 GENERAL SPECIFICATIONS

7.1.1 COPIER

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: 148 - 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)		
	B246/250	55 cpm (A4/11" x 8.5" LEF)		
	B064/B140/B142/D052	60 cpm (A4/11" x 8.5" LEF)		
	B248/B251	65 cpm (A4/11" x 8.5" LEF)		
	D053	70 cpm (A4/11" x 8.5" LEF)		
	B065/B141/B143/B249/B252	75 cpm (A4/11" x 8.5" LEF)		
	D054	80 cpm (A4/11" x 8.5" LEF)		
First Copy Time	B064/B065 B141/B143 B248/B249 B251/B252 D053/D054	3.5 s (1st Tray, A4/11" x 8.5" LEF Face-up mode)		
	B140/B142 B163/B228 B246/B250 D052	4.2 s (1st Tray, A4/11" x 8.5" LEF Face-up mode)		
	B064/B065 B141/B143 B248/B249 B251/B252	5.3 s (1st Tray, A4/11" x 8.5" LEF Face-down mode)		
	B140/B142 B163/B228 B246/B250	6.3 s (1st Tray, A4/11" x 8.5" LEF Face-down mode)		

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Warm-up Time (under 20°C room temp.)	B064/B065	Less than 300 s from Off mode
		Less than 25 s from low power mode
	B140/B141/B163/B142/B143 /B228B246/B248/B249/B250/ B252/B253/D052/D053	Less than 30 s
	D054	Less than 60 s
Continuous Copy	1 ~ 999 (Operation panel entry)	
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	A4/8 1/2" x 11" and smaller	500 sheets
	B4 and larger	250 sheets
Power Source	North America	120 V / 60 Hz 20 A or more
	Europe/Asia	220 ~ 240 V / 50/60 Hz 8 A or more
	Taiwan	110 V / 60 Hz 20 A or more
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")
	B246/B248/B249/ B250/B252/B253 D052/D053/D054	690 x 790 x 1165 mm (27.2" x 31.1" x 45.9")
Weight	B064/B065	Approx. 200 kg (440.9 lb.)
	B140/B141/B142 B143/B163/B228	Approx. 203 kg (447.6 lb.)
	B246/B248/B249/ B250/B252/B253 D052/D053/D054	Approx. 206 kg (453.w lb.)
Resolution	1200 dpi (printing) 600 dpi (scanning)	
Gradation	256 levels (scanning and printing)	
Original Archive	10,000 A4/8 1/2" x 11" pages for document server	
Toner Replenishment	Cartridge exchange (1100 g)	
Total Counter	Electric Counter	

7.1.2 ADF

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.)	

7.1.3 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

⟹ B246/B248/B249/D052/D053/D054 Copier (120V Model)

Item	B246/D052		B248/D053		B249/D054	
	Basic	MFP	Basic	MFP	Basic	MFP
Copying	1.66/1.75KW	1.66/1.75KW	1.66/1.75KW	1.66/1.75KW	1.66/1.78KW	1.68/1.78KW
Warm-up	1.66/1.70KW	1.66/1.72KW	1.66/170KW	1.66/172KW	1.67/173KW	1.68/174KW
Standby	304/341W	317/346W	304/341W	317/346W	304/341W	317/346W
10 sec. Recovery	202/214W	217/227W	202/214W	217/227W	202/214W	217/227W
Off/Sleep Recovery	3.3/3.3W	28.1/28.1W	3.3/3.3W	28.1/28.1W	3.3/3.3W	28.1/28.1W
Energy Save Mode	3.3/3.3W	28.1/28.1W	3.3/3.3W	28.1/28.1W	3.3/3.3W	28.1/28.1W

⟹ B246/B248/B249/D052/D053/D054 Copier (220V to 240V Model)

Item	B246/D052 (Basic)	B248/D053 (Basic)	B249/D054 (Basic)
Copying	1.43/1.53 KW	1.44/1.56 KW	1.44/1.56 KW
Warm-up	1.77/1.81 KW	1.78/1.82 KW	1.78/183 KW
Standby	299/346 W	299/346 W	299/346 W
10 sec. Recovery	196/223 W	196/223 W	196/223 W
Off/Sleep Recovery	4.9/4.9 W	4.9/4.9 W	4.9/4.9 W
Energy Save Mode	4.9/4.9 W	4.9/4.9 W	4.9/4.9 W

Noise Emission: Sound Power Level

	B064 (60 CPM)	B065 (75 CPM)
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 CPM)
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)

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	B246/B250 D052 (55/60 CPM)	B248/B252 D053 (65/70 CPM)	B249/B253 D054 (75/80 CPM)
Mainframe Only			
Standby	Less than 35/50 dB (A)	Less than 35/50 dB (A)	Less than 35/50 dB (A)
Copying	Less than 68 dB (A)	Less than 69 dB (A)	Less than 70 dB (A)
Complete System			
Standby	Less than 35/50 dB (A)	Less than 35/50 dB (A)	Less than 35/50 dB (A)
Copying	Less than 74 dB (A)	Less than 75 dB (A)	Less than 75 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)

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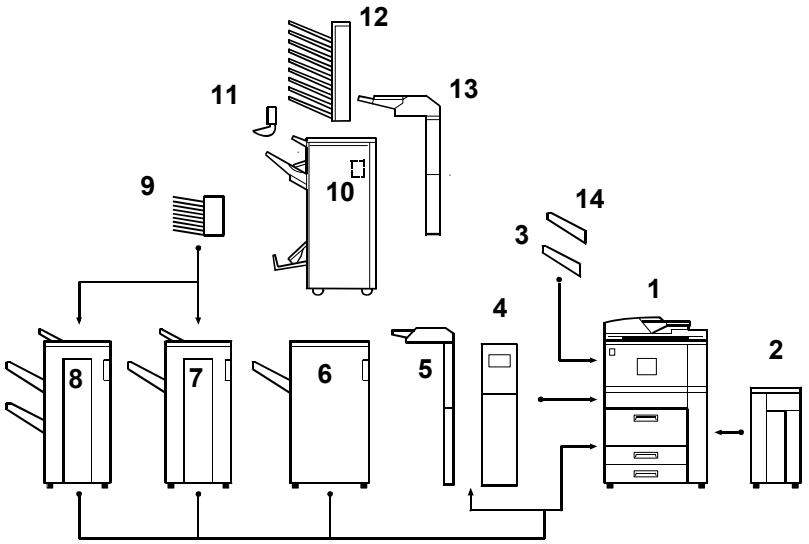
	B246/B250 D052 (55/60 CPM)	B248/B252 D053 (65/70 CPM)	B249/B253 D054 (75/80 CPM)
Mainframe Only			
Standby	Less than 21/32 dB (A)	Less than 21/32 dB (A)	Less than 21/32 dB (A)
Copying	Less than 53 dB (A)	Less than 57 dB (A)	Less than 57 dB (A)
Complete System			
Standby	Less than 21/32 dB (A)	Less than 21/32 dB (A)	Less than 21/32 dB (A)
Copying	Less than 63 dB (A)	Less than 63 dB (A)	Less than 63 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.

⇒7.2 MACHINE CONFIGURATION



Item	Machine code				Number
Mainframe		B065 B064	B140 B141 B163	B246 B248 B249 D052 D053 D054	1
A3/DLT Kit	B475	○	○	○	Inside mainframe
Tab Sheet Kit	B499	○	○	○	
LCT (Large Capacity Tray)	B473	○	○	○	2
LG/B4 Kit	B474	○	○	○	Inside LCT
Copy Tray	B476	○	○		3
Z-Folding Unit	B660		○	○	4
Cover Interposer Tray	B470	○	○		5
Finisher with 100-sheet stapler	B478	○			6
	B706		○	○	6
Finisher with 50-sheet Stapler	B469	○	○		7
Finisher with saddle-stitching and 50-sheet Stapler	B468	○			8
Finisher with 50-sheet Stapler for Z-folding	B674		○		8
9-Bin Mailbox	B471	○	○		9
Punch Unit for 50-staple Finisher	B377	○	○		Inside Finisher No. 7 or 8
Punch Unit for 100-staple Finisher (NA 3/2, EU 2/4)	B531	○	○	○	Inside Finisher No. 6
Punch Unit for 100-staple Finisher (SC)	B812	○	○	○	Inside Finisher No. 6
Jogger Unit	B513	○	○	○	Inside Finisher No. 6
Copy Connector Kit	B525	○		○	Inside mainframe
	B328		○		Inside mainframe
File Format Converter	B519	○			Inside mainframe
	B609		○	○	Inside mainframe
SR4000/SR970	B700/ B701			○	10
Output Jogger Unit	B703			○	11 or 12 (not both)
Mailbox CS391	B762			○	12 or 11 (not both)
Cover Initerposer	B704			○	13
Copy Tray	B756			○	14

7.3 OPTIONAL EQUIPMENT

7.3.1 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)

7.3.2 LCT (LARGE CAPACITY TRAY) (B473)

Paper capacity	4,000 sheets3
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.

7.3.3 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, 8 1/2" x 11") 250 sheets (A3, B4, 12" x 18", 11" x 17") 100 sheets (A5 SEF, A6 SEF, B6 SEF, 5 1/2" x 8 1/2")		
	Stapled	Max docs.	Total sheets	Size
		50 docs.	500 sheets	A4 LEF, 8 1/2" x 11" LEF
		25 docs.	250 sheets	A3, A4 SEF, B4, B5, 12" x 18", 11" x 17", 8 1/2" x 11"
Paper Size		A3 ~ A5, A6 SEF, B6 SEF, 12" x 18", 11" x 17" ~ 5 1/2" x 8 1/2"		
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 8 1/2" 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, 8 1/2" x 11" LEF) 500 sheets (A5 LEF) 100 sheets (A5 SEF, A6 SEF, B6 SEF, 5 1/2" x 8 1/2")		
	Stapled	Max docs.	Total sheets	Size
		50 docs.	2,500 sheets	A4 LEF, 8 1/2" x 11" LEF
		50 docs.	1,250 sheets	A4 SEF, B5, 8 1/2" 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" ~ 5 1/2" x 8 1/2"		
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 8 1/2" x 11" LEF (Max: 50 docs, Max sheets: 30 sheets or less)		

Proof Tray

Tray Capacity	250 sheets (A4, 8 1/2" x 11" or smaller) 50 sheets (B4, 8 1/2" 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, 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	

7.3.4 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, 8$\frac{1}{2}$" x 11" LEF
		50 docs.	1,500 sheets	A4 SEF, B5, 8$\frac{1}{2}$" 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" ~ 5$\frac{1}{2}$" x 8$\frac{1}{2}$"		
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 8$\frac{1}{2}$" x 11" LEF (Max: 50 docs, Max sheets: 30 sheets or less)		

Proof Tray

Tray Capacity	250 sheets (A4, 8$\frac{1}{2}$" x 11" or smaller) 50 sheets (B4, 8$\frac{1}{2}$" 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, 8$\frac{1}{2}$" x 11" or smaller) 30 sheets (B4, 8$\frac{1}{2}$" x 14" or larger)
	Mixed Size	30 sheets (A3 and A4 LEF, B4 and B5 LEF, 11" x 17" and 8$\frac{1}{2}$" x 11" LEF)
Paper Size		A3 ~ B5, 11" x 17" ~ 8$\frac{1}{2}$" 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

7.3.5 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

<table>
<tr><td rowspan="4">Tray Capacity (80 g/m^2)</td><td>Unstapled</td><td colspan="3">500 sheets (A4, A5 LEF, B5, 8 1/2" x 11")
250 sheets (A3 SEF, B4 SEF, 12" x 18", 11" x 17" SEF)
100 sheets (A5 SEF, B6 SEF, 5 1/2" x 8 1/2")</td></tr>
<tr><td rowspan="3">Stapled</td><td>Max docs.</td><td>Total sheets</td><td>Size</td></tr>
<tr><td>50 docs.</td><td>500 sheets</td><td>A4 LEF, 8 1/2" x 11" LEF</td></tr>
<tr><td>25 docs.</td><td>250 sheets</td><td>A3, A4 SEF, B4, B5, 12" x 18", 11" x 17", 8 1/2" x 11"</td></tr>
<tr><td colspan="2">Paper Size</td><td colspan="3">A3 ~ A5, A6 SEF, B6 SEF, 12" x 18", 11" x 17" ~ 5 1/2" x 8 1/2"</td></tr>
<tr><td colspan="2">Paper Weight</td><td colspan="3">52 g/m^2 ~ 216 g/m^2 (14 ~ 58 lb)</td></tr>
<tr><td colspan="2">Mixed Sizes</td><td colspan="3">A3 and A4 LEF, B4 and B5 LEF, 11" x 17" and 8 1/2" x 11" LEF
(Max: 16 docs, Max sheets: 30 sheets or less)</td></tr>
<tr><td colspan="5">Note: Z-folded paper cannot be output to the upper tray.</td></tr>
</table>

Lower Tray

<table>
<tr><td rowspan="6">Tray Capacity
(80 g/m^2 20 lb)</td><td>Unstapled</td><td colspan="3">No Z-folded paper
2,500 sheets (A4 LEF, 8 1/2" x 11" LEF)
1,250 sheets (A3 SEF, A4 SEF, B4 SEF, B5, 11" x 17" SEF, 8 1/2" x 14" SEF, 8 1/2" x 11" SEF)
100 sheets (A5 SEF, B6 SEF, B6 SEF, 5 1/2" x 8 1/2")
Z-folded sheets only
30 sheets
20 sheets</td></tr>
<tr><td rowspan="4">Stapled</td><td>Max docs</td><td>Total sheets</td><td>Size</td></tr>
<tr><td>50 docs.</td><td>2,500 sheets</td><td>A4 LEF, 8 1/2" x 11" LEF</td></tr>
<tr><td>50 docs.</td><td>1,250 sheets</td><td>A4 SEF, B5, 8 1/2" x 11" SEF</td></tr>
<tr><td>30 docs.</td><td>1,250 sheets</td><td>A3, B4, 12" x 18", 11" x 17"</td></tr>
<tr><td>Stapled and Z-folded</td><td>5 docs</td><td>30 sheets</td><td>A3 (Z) and A4 LEF
B4 (Z) and B5 LEF,
11" x 17" (Z) and 8 1/2" x 11" LEF</td></tr>
<tr><td colspan="2" rowspan="2">Paper Size</td><td>No Z-folded</td><td colspan="2">A3 ~ A5, A6 SEF, B6 SEF, 12" x 18"
11" x 17" ~ 5 1/2" x 8 1/2"</td></tr>
<tr><td>Z-folded</td><td colspan="2">A3 SEF ~ A4 SEF
11" x 17" SEF ~ 5 1/2" x 8 1/2" SEF</td></tr>
<tr><td colspan="2" rowspan="2">Paper Weight</td><td>No Z-folded</td><td colspan="2">52 g/m^2 ~ 216 g/m^2 (14 ~ 58 lb)</td></tr>
<tr><td>Z-folded</td><td colspan="2">64 g/m^2 ~ 80 g/m^2 (17 ~ 20 lb)</td></tr>
<tr><td colspan="2" rowspan="2">Mixed Sizes</td><td>No Z-folded</td><td colspan="2">A3 and A4 LEF, B4 and B5 LEF
11" x 17" and 8 1/2" x 11" LEF
(Max: 50 docs, Max sheets: 30 sheets or less)</td></tr>
<tr><td>Z-folded</td><td colspan="2">A3 (Z) and A4 LEF, B4 (Z) and B5 LEF
11" x 17" (Z) and 8 1/2" x 11" LEF
(Max: 6 docs, Max sheets: 30 sheets or less)</td></tr>
</table>

Proof Tray

Tray Capacity	No Z- folded	250 sheets (A4, 8 1/2" x 11" or smaller) 50 sheets (B4, 8 1/2" x 14" or larger)
	Z-folded	20 sheets (A4, 8 1/2" x 11" or smaller) 30 sheets (B4, 8 1/2" x 14" or larger)
	Mixed	250 sheets (A4, 8 1/2" x 11" or smaller) 50 sheets (B4, 8 1/2" 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)

Staple Specifications

<table>
<tr><td rowspan="3">Binding Capacity (80 g/m^2, 20 lb)</td><td>Same Size</td><td colspan="2">50 sheets (A4, 8 1/2" x 11" or smaller)
30 sheets (B4, 8 1/2" x 14" or larger)</td></tr>
<tr><td>Mixed size</td><td colspan="2">30 sheets (A3 and A4 LEF, B4 and B5 LEF, 11" x 17" and 8 1/2" x 11" LEF)</td></tr>
<tr><td>Z-folded</td><td colspan="2"><table><tr><th>Z-folded Sheets</th><th>No Z-folded Sheets</th></tr><tr><td>5</td><td>0</td></tr><tr><td>4</td><td>0 ~ 10</td></tr><tr><td>3</td><td>0 ~ 20</td></tr><tr><td>2</td><td>0 ~ 30</td></tr><tr><td>1</td><td>0 ~ 40</td></tr></table>One Z-folded sheet is counted as 10 unfolded sheets.</td></tr>
<tr><td colspan="2">Paper Size</td><td>No Z- folded</td><td>A3-B5, 11" x 17" ~ 8 1/2" x 11"</td></tr>
<tr><td colspan="2"></td><td>Z-folded</td><td>A3SEF, B4SEF, 11" x 17" SEF</td></tr>
<tr><td colspan="2">Paper Weight</td><td>No Z- folded</td><td>64 g/m^2 ~ 90 g/m^2 (17 ~ 24 lb)</td></tr>
<tr><td colspan="2"></td><td>Z-folded</td><td>64 g/m^2 ~ 80 g/m^2 (17 ~ 20 lb)</td></tr>
<tr><td colspan="2">Stapling Position</td><td colspan="2">Front (1), Back (1), Back (1: diagonal), Duplex Binding</td></tr>
<tr><td colspan="2">Stapling Capacity</td><td colspan="2">5,000 staples/Cartridge</td></tr>
</table>

Saddle-Stitch Staple Specifications

<table>
<tr><td>Binding Capacity (80 g/m^2)</td><td colspan="3">15 sheets</td></tr>
<tr><td>Paper Size</td><td colspan="3">A3, B4, A4 SEF, 11" x 17", 8 1/2" x 11" SEF</td></tr>
<tr><td>Paper Weight</td><td colspan="3">64 g/m^2 ~ 90 g/m^2 (17 ~ 24 lb)</td></tr>
<tr><td>Stapling Position</td><td colspan="3">Center, 2 locations</td></tr>
<tr><td>Staple Capacity</td><td colspan="3">2,000 staples/Cartridge</td></tr>
<tr><td>Fold Position</td><td colspan="3">Center, half-folding</td></tr>
<tr><td rowspan="7">Saddle-Stitch Capacity</td><td>Max docs.</td><td>Total sheets</td><td>Size</td></tr>
<tr><td>25 docs.</td><td>2 ~ 5 sheets</td><td rowspan="3">A4 SEF, 8 1/2" x 11" SEF</td></tr>
<tr><td>15 docs.</td><td>6 ~ 10 sheets</td></tr>
<tr><td>10 docs.</td><td>11 ~ 15 sheets</td></tr>
<tr><td>30 docs.</td><td>2 ~ 5 sheets</td><td rowspan="3">A3, B4, 11" x 17"</td></tr>
<tr><td>20 docs.</td><td>6 ~ 10 sheets</td></tr>
<tr><td>10 docs.</td><td>11 ~ 15 sheets</td></tr>
</table>

7.3.6 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" ~ 5 1/2" x 8 1/2"	
		LEF	A4 ~ A5, 8 1/2" x 11", 5 1/2" x 8 1/2"	
	2 holes (NA)	SEF	A3 ~ A5, 11" x 17" ~ 5 1/2" x 8 1/2"	
		LEF	A4 ~ A5, 8 1/2" x 11", 5 1/2" x 8 1/2"	
	3 holes (NA)	SEF	A3, B4, 11" x 17"	
		LEF	A4, B5, 8 1/2" x 11"	
	4 holes (E)	SEF	A3, B4, 8 1/2" x 11"	
		LEF	A4, B5, 8 1/2" x 11"	
	4 holes (NE)	SEF	A3 ~ A5, 11" x 17" ~ 5 1/2" x 8 1/2"	
		LEF	A3 ~ A5, 8 1/2" x 11", 5 1/2" x 8 1/2"	
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			

7.3.7 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" ~ 5 1/2" x 8 1/2"
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.)

7.3.8 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 Stapes: 2 locations		
Staple Capacity	5000 staples/cartridge		
Staple Supply	Cartridge or Staple Replacement		
Stapled Stack Size	**Sheets**	**Sets**	**Sizes**
	10 ~ 100	200 ~ 30	A4 SEF, B5 SEF, 8 1/2" x 11" SEF A4 LEF, B5 LEF, 8 1/2" x 11" LEF
	2 ~ 9	150	
	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)		

7.3.9 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" x11" 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

7.3.10 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" ~ 8 1/2" x 11" SEF A5 ~ A4 LEF, 8 1/2" x 11" 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, 11" x 17" LEF
4-Hole (North Europe)	B5 ~ A3 SEF, 8 1/2" x 11" ~ 11" x 17" SEF A5 ~ A4 LEF, 8 1/2" x 11" LEF, 5 1/2" x 8 1/2" 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

7.3.11 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

7.3.12 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.)

7.3.13 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)

7.3.14 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	

7.3.15 3000-SHEET FINISHER B701

This finisher provides corner stapling only.

Finisher			
Dimension (w x d x h)		657 x 613 x 960 mm	
Weight		Less than 54 kg Less than 56 kg with Punch Unit	
Power Consumption		Less than 96 W	
Noise		Less than 75 db	
Configuration		Console type attached base-unit	
Power Source		From base-unit	
Proof Tray	Stack Capacity*	250 sheets A4, 8 1/2”x11” or smaller 50 sheets B4, 8 1/2”x14 or larger	
	Paper Size	A5-A3 SEF, A6 SEF, A6 SEF 5 1/2”x8 1/2”-11”x17”SEF, 12”x18” SEF	
	Paper Weight	52 g/m²-163 g/m² 14 lb Bond- 43 lb Bond / 90 lb Index / 60 lb Cover	
Shift Tray	Stack Capacity*	3,000 sheets	A4 LEF, ½" x11” LEF "
		1,500 sheets	A3 SEF, A4 SEF, B4 SEF, B5, 11”x17” SEF, 8½” x14” SEF, 8½” x 11” SEF, 12”x18” SEF
		500 sheets	A5 LEF**
		100 sheets	A5 SEF, B6 SEF, A6 SEF, 5½” x 8½”,SEF
	Paper Size	A5 - A3 SEF, A6 SEF, B6 SEF, 5½” x 8½”- 11”x17” SEF, 12” x 18” SEF	
	Paper Weight	52 g/m²-256 g/m² 14 lb Bond- 68 lb Bond / 140 lb Index / 90 lb Cover	
Staples			
Paper Size		B5-A3 8 1/2”x11”-11”x17”, 12”x18”	
Paper Weight		64 g/m²-90 g/m² 17 lb Bond-28 lb Bond	
Staple Position		Top, Bottom, 2 Staple, Top-slant	
Stapling Capacity	Same Paper Size	50 sheets	A4, ½" x11” or smaller
		30 sheets	B4, ½" x14" or larger
	Mixed Paper Size	30 sheets	A4 LEF + A3 SEF, B5 LEF + B4 SEF, 8½" x11” LEF + 11” x17” SEF

Staple Replenishment	Cartridge exchange / 5000 pins per cartridge		
Stapled Stack Capacity (same size)	Paper Size	Pages/Set	Sets
	A4 LEF, 8 1/2”x11” LEF	20-50 pages	150-60 sets
		2-19 pages	150 sets
	A4 SEF, B5, 8 /12”x11” SEF	15-50 pages	100-30 sets
		2-14 pages	100 sets
	Others	15-30 pages	100-33 sets
		2-14 pages	100 sets
Stapled Stack Capacity (mixed sizes)	A4 LEF & A3 SEF, B5 LEF & B4 SEF, 8 1/2”x11” LEF & 11” x17” SEF	2-30 pages	50 set

7.3.16 2000-SHEET FINISHER B700

This finisher provides booklet as well as corner stapling. Equipped with two trays, the upper tray holds stapled and shifted copies, and the lower tray holds booklet stapled and folded copies.

Finisher			
Dimension W x D x H		657 x 613 x 960 mm (25.9 x 24.1 x 37.8")	
Weight		Less than 63 kg (138.6 lb.) (no punch unit) Less than 65 kg (143 lb.) (with punch unit)	
Power Consumption		Less than 96 W	
Noise		Less than 75 db	
Configuration		Console type attached base-unit	
Power Source		From base-unit	
Proof Tray	Stack Capacity*	250 sheets A4, 8 1/2”x11” or smaller 50 sheets B4, 8 1/2”x14 or larger	
	Paper Size	A5-A3 SEF, A6 SEF, A6 LEF 5½" x8½" to11” x 17” SEF, 12”x18” SEF	
	Paper Weight	52 g/m²-163 g/m² 14 lb Bond- 43 lb Bond / 90 lb Index / 60 lb Cover	
Shift Tray	Stack Capacity*	2,000 sheets	A4 LEF, 8 1/2”x11” LEF
		1,000 sheets	A3 SEF, A4 SEF, B4 SEF, B5 11”x17” SEF, 8½" x14” SEF, 8½" x 11” SEF, 12”x18” SEF
		500 sheets	A5 LEF
		100 sheets	A5 SEF, B6 SEF, A6 SEF, 5½" x8½" SEF
	Paper Size	A5 - A3 SEF, A6 SEF, B6 SEF 5½" x8½" to 11” x 17” SEF, 12” x 18” SEF	
	Paper Weight	52 g/m²-256 g/m² 14 lb Bond- 68 lb Bond / 140 lb Index / 90 lb Cover	
Staple			
Paper Size		B5-A3, 8 1/2”x11”-11”x17”, 12”x18”	
Paper Weight		64 g/m²-90 g/m², 17 lb Bond-28 lb Bond	
Staple Position		Top, Bottom, 2 Staple, Top-slant	
Staples Capacity*	Same Paper Size	50 sheets	A4, 8½" x 11” or smaller
		30 sheets	B4, 8½" x 14” or larger
	Mixed Paper Size	30 sheets	A4 LEF & A3 SEF, B5 LEF & B4 SEF, 8½"x11” LEF & 11” x17” SEF
	Booklet Stapling	15 sheets	A4 SEF, A3 SEF, B5 SEF, B4 SEF, 8 1/2”x11” SEF, 8 1/2”x14” SEF, 11”x17” SEF, 12”x18” SEF

Staple Replenishment		Corner staple	5,000 staples per cartridge
		Booklet staple	2,000 staples per cartridge
Corner Staple Capacity	Same Size	A4 LEF, 8 1/2”x11” LEF	13-50 pages
			2-12 pages
		A4 SEF, B5, 8 /12”x11” SEF	10-50 pages
			2-9 pages
		Others	10-30 pages
			2-9 pages
	Mixed Size	A4 LEF + A3 SEF B5 LEF + B4 SEF 8 1/2”x11” LEF + 11” x17” SEF	2-30 pages
Booklet Staple Capacity	A4 SEF, A3 SEF, B5 SEF, B4 SEF 8 1/2”x11” SEF, 8 1/2”x14” SEF, 11”x17” SEF 12”x18” SEF		2-5 pages
			6-10 pages
			11-15 pages

B700/B701 Paper Specifications

Paper Size	Plain Paper			Paper Type	
	Copier PPC	Used Paper	Recycled Paper	Colored Paper	Translucent Blueprint
A3 SEF	●	—	●	●	▲
B4 SEF	●	▲	●	●	▲
A4 SEF	●	▲	●	●	▲
A4 LEF	✇	▲	✇	✇	▲
B5 SEF	●	▲	●	●	▲
B5 LEF	✇	▲	✇	✇	▲
A5 SEF	❍	—	—	—	—
A5 LEF	❍	—	—	—	—
B6 SEF	▲	—	—	—	—
B6 LEF	▲	—	—	—	—
12" x 18" SEF	●	—	●	●	—
11" x 17" SEF	●	—	●	●	▲
8½" x 14"	●	—	●	●	▲
8½" x 11" SEF	●	—	●	●	▲
8½" x 11" LEF	✇	—	✇	✇	▲
5½" x 8½"	❍	—	—	❍	—
5½" x 8½"	❍	—	—	❍	—

✇ Corner stapling, Shift, YES
● Booklet stapling/folding, Shift, YES
❍ Shift ONLY
▲ Shift NO
— Not available

LARGE CAPACITY TRAY
B473

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LARGE CAPACITY TRAY B473

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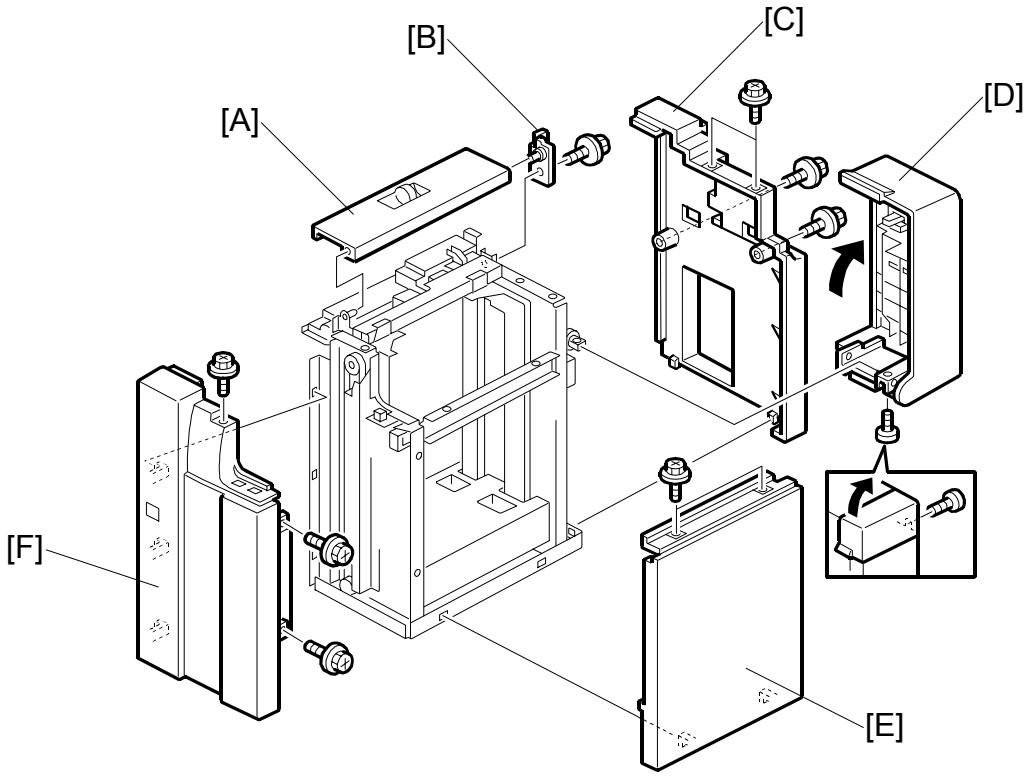
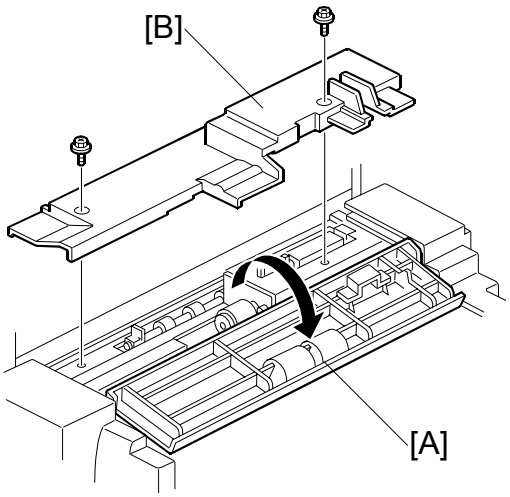
1. REPLACEMENT AND ADJUSTMENT

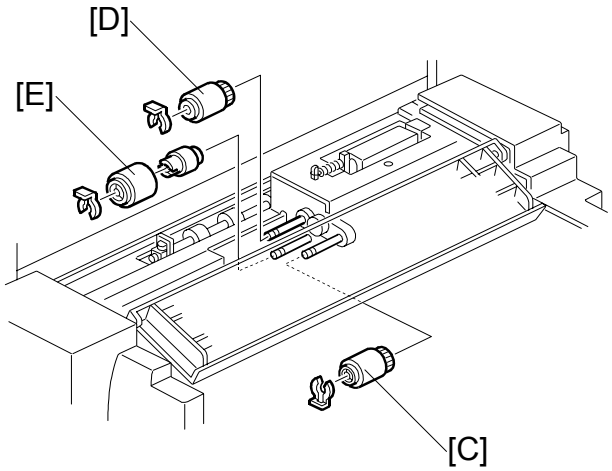
1.1 EXTERNAL COVERS



[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)

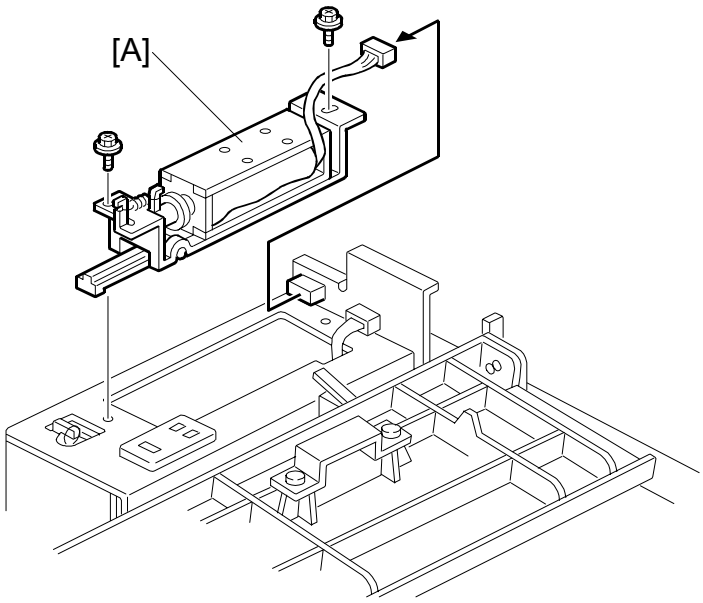
1.2 PICK-UP/FEED/SEPARATION ROLLERS





[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



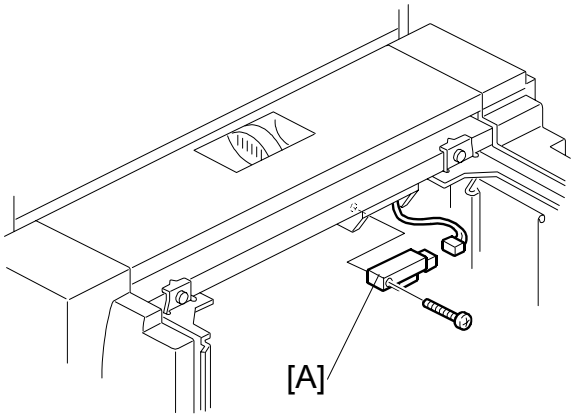
Rear cover (x 4)

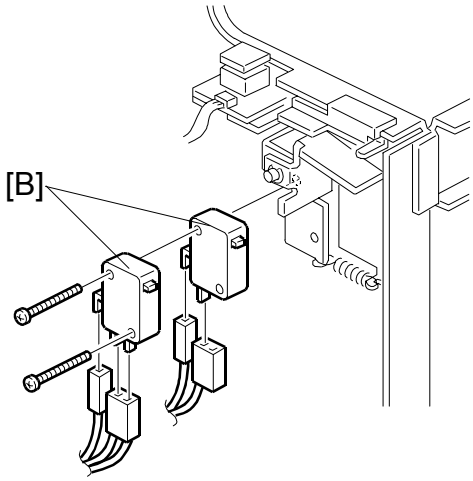
Open the transport cover (☛ 1.2)

Bracket cover (☛ 1.2)

[A]: Pick-up solenoid (x 2, x 1)

1.4 PAPER END SENSOR, UPPER COVER SWITCHES





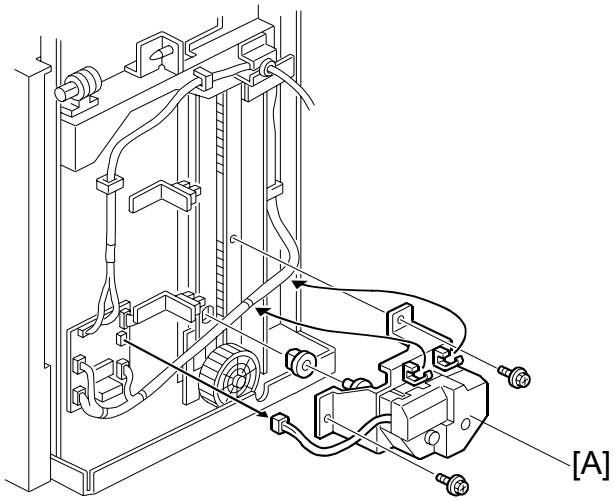
Open the top cover.

Right cover (☛ 1.1)

[A]: Paper end sensor (☞ x 1)

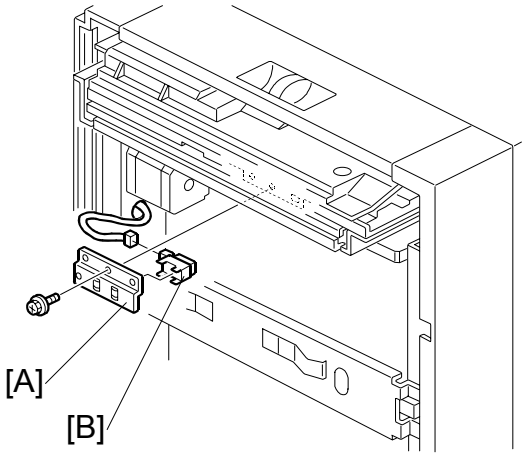
[B]: Upper cover switches 1, 2 (☞ x 2)

1.5 TRAY MOTOR



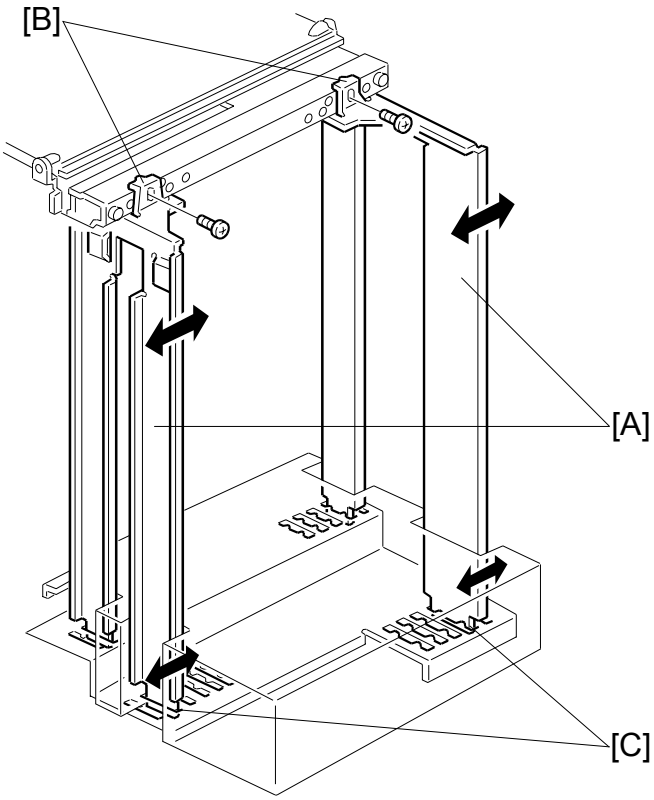
Rear cover (☛ 1.1)
[A]: Tray motor (🔩 x 2, 🖐 x 1)

1.6 PAPER STACK SENSOR



Disconnect the LCT from the machine
[A]: Sensor cover (🔩 x 1)
[B]: Paper stack sensor (🖐 x 1)

1.7 PAPER SIZE ADJUSTMENT



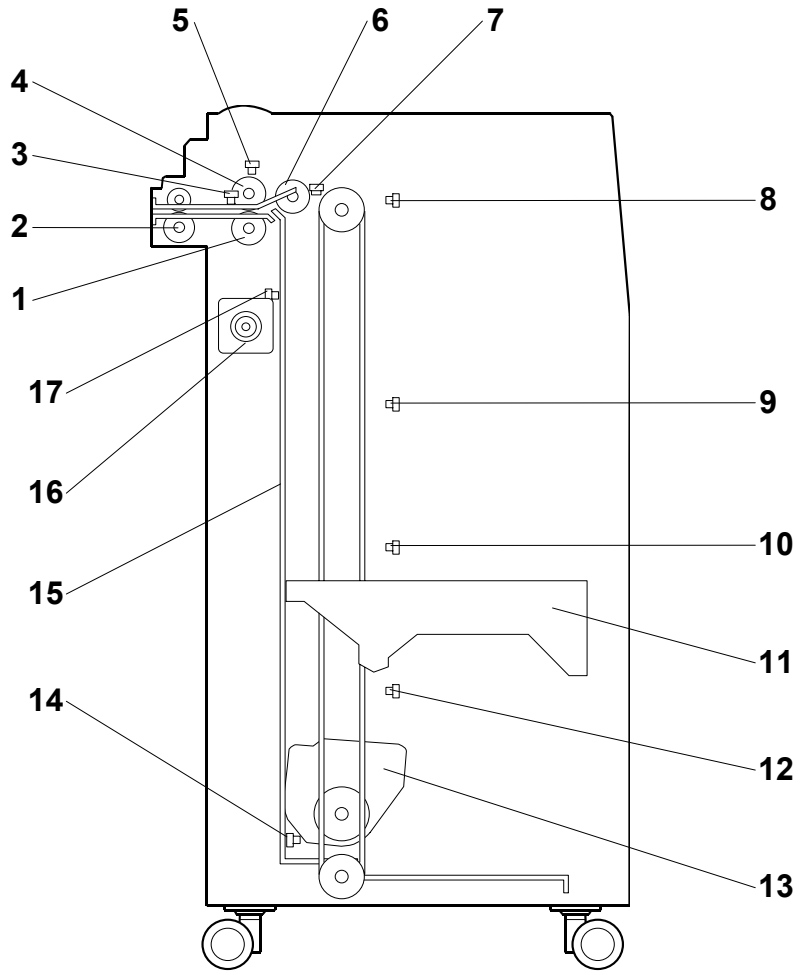
The side fences [A] can be adjusted for A4 Sideways, B5 Sideways, or LT sideways at the top [B] and bottom brackets [C].

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



1. Separation Roller
2. Transport Roller
3. Feed Sensor
4. Feed Roller
5. Lift Sensor
6. Pick-up Roller
7. Paper End Sensor
8. Paper Near End Sensor
9. Paper Height Sensor 1
10. Paper Height Sensor 2
11. Paper Tray
12. Paper Height Sensor 3
13. Paper Tray Motor
14. Low Limit Sensor
15. Tray Drive Belt
16. Feed Motor
17. Stack Sensor

Pick-up, Separation, Feed. Non-contact, maintenance free FRR sysem. (CT Handling Paper> Paper Feed Methods> **Forward and Reverse Roller (FRR)**)

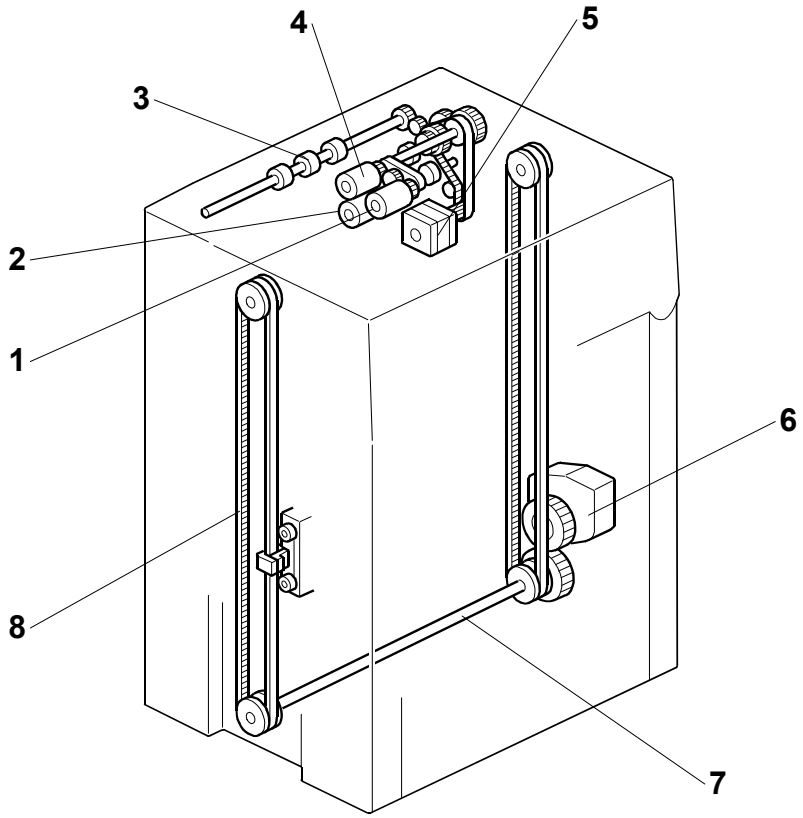
Tray Lift. Tray lift motor and timing belt raise and lower the paper tray.

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

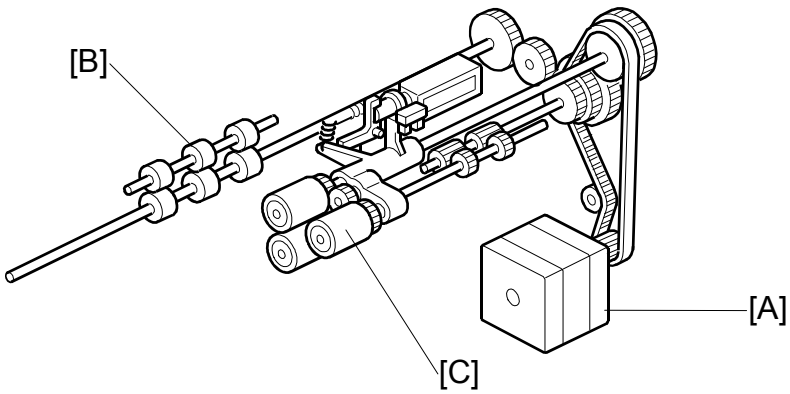


1. Pick-up Roller
2. Separation Roller
3. Transport Rollers
4. Feed Roller
5. Feed Motor
6. Tray Motor
7. Tray Lift Shaft
8. Tray Drive Belt

2.2 PAPER FEED AND SEPARATION

A standard FRR system is used. It consists of the pick-up, feed, and separation rollers.

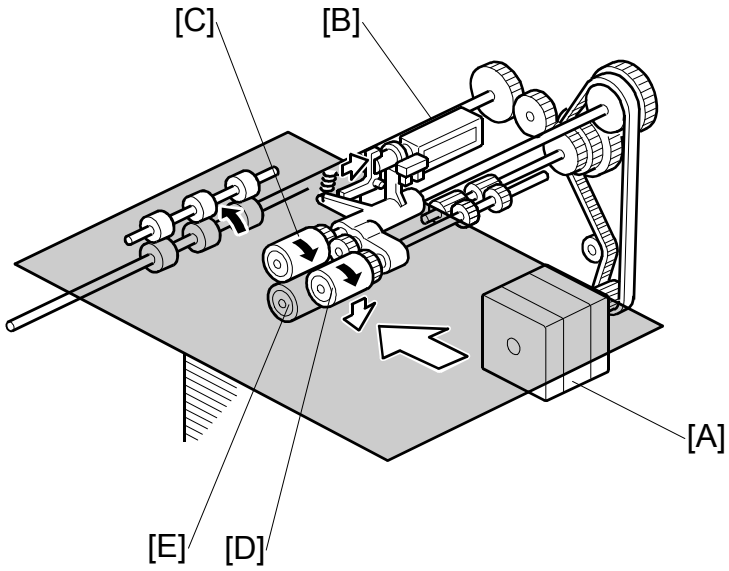
2.2.1 STARTING PAPER FEED



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



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].

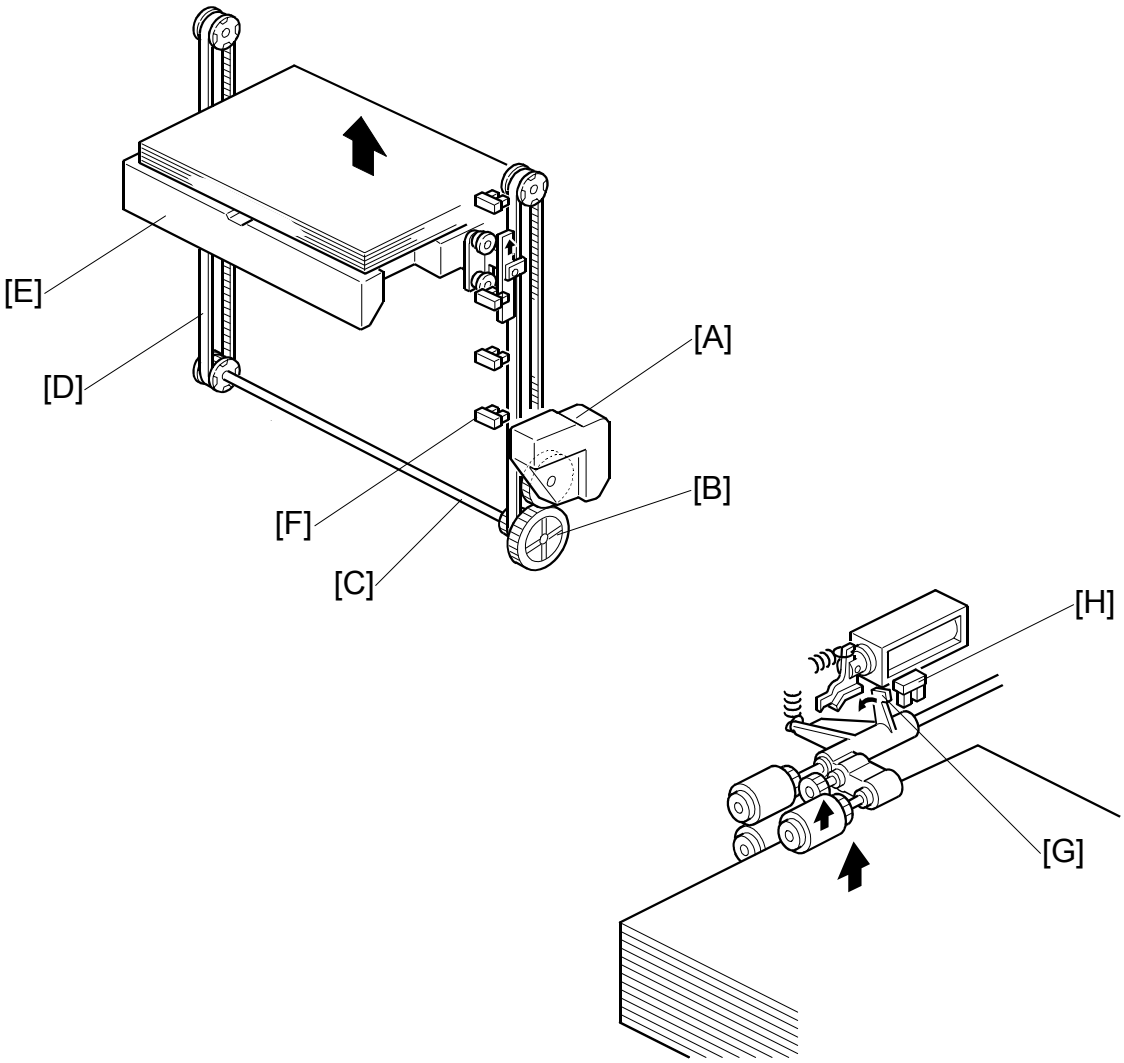
The rotating pick-up roller lowers and feeds the first sheet when it contacts the top of the stack.

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.

2.3 PAPER LIFT

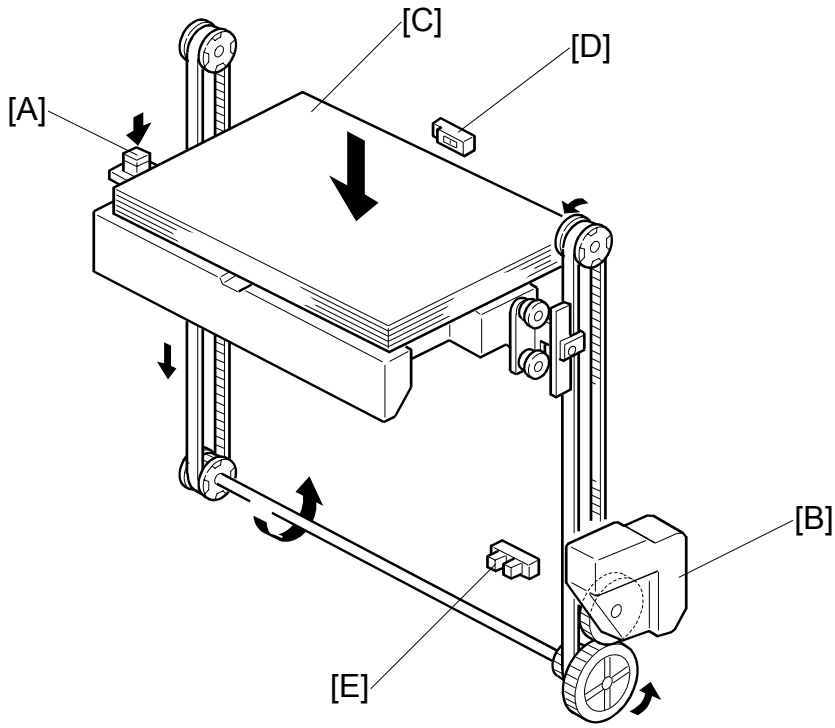


Tray motor [A] → Gear [B] → Shaft [C] → Tray belts [D] raise and lower the paper tray [E].

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.



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

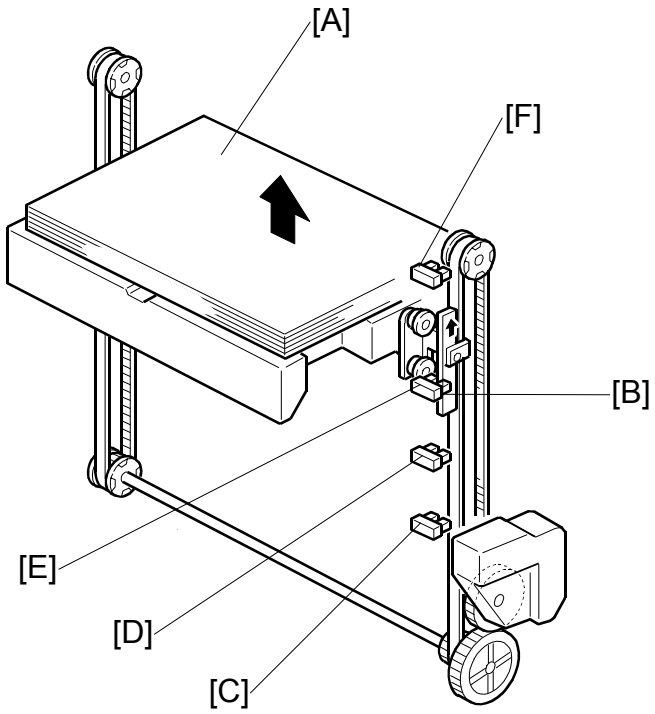
The tray raises when:

- 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.

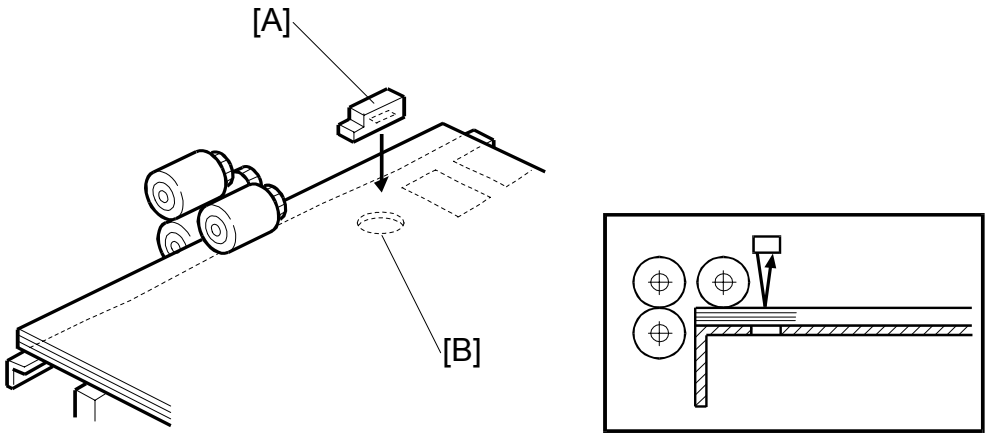
The table summarizes the relation between sensor detection and the number of sheets remaining in the stack.

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.

A3/DLT TRAY KIT
B475

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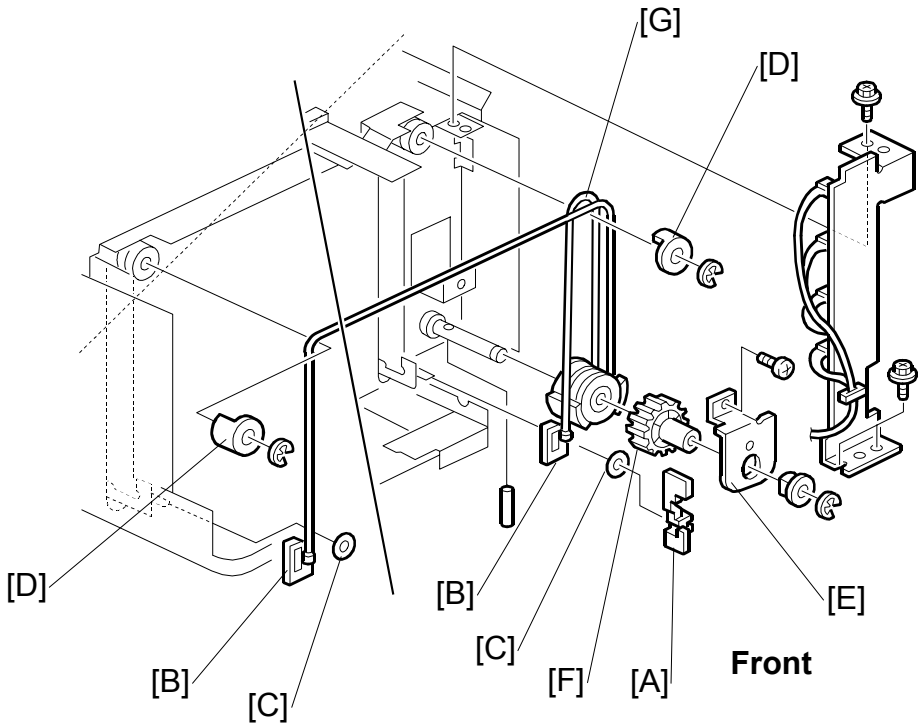
1. REPLACEMENT AND ADJUSTMENT

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.

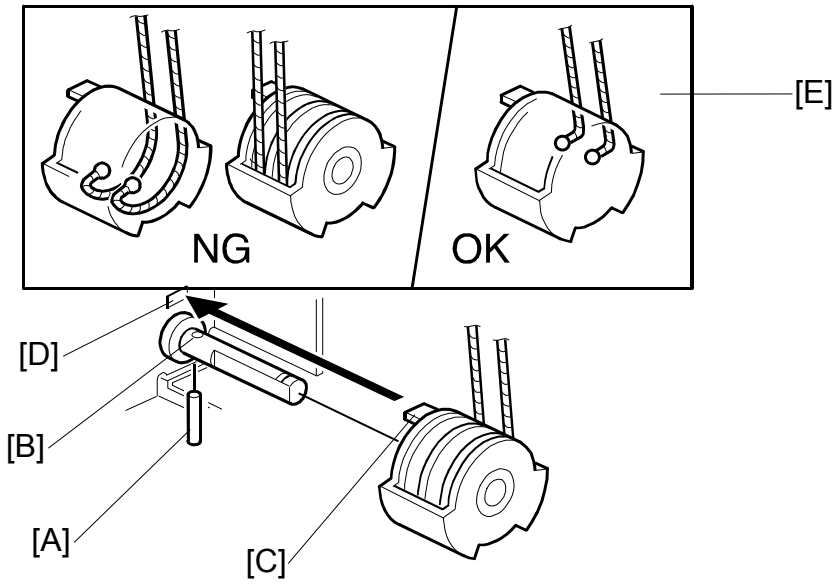


Remove the A3/DLT tray from the machine.

Inner cover (☞ x 2)

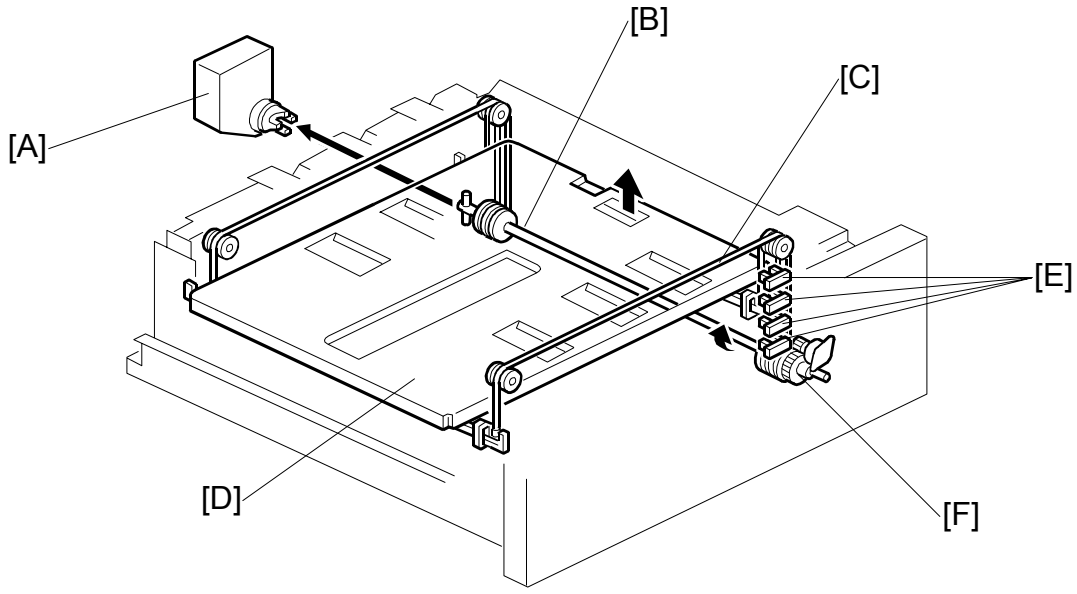
[A]: Sensor bracket (☞ x 1)
[B]: Wire stoppers
[C]: Wire stopper rings
[D]: Wire covers x 2 (ℂ x 1 each)
[E]: Bracket (☞ x 1, ℂ x 1, Bushing x 1)
[F]: Gear
[G]: Bottom plate lift wire

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.

3000-SHEET FINISHER
B468/B469/B674

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What This Manual Contains

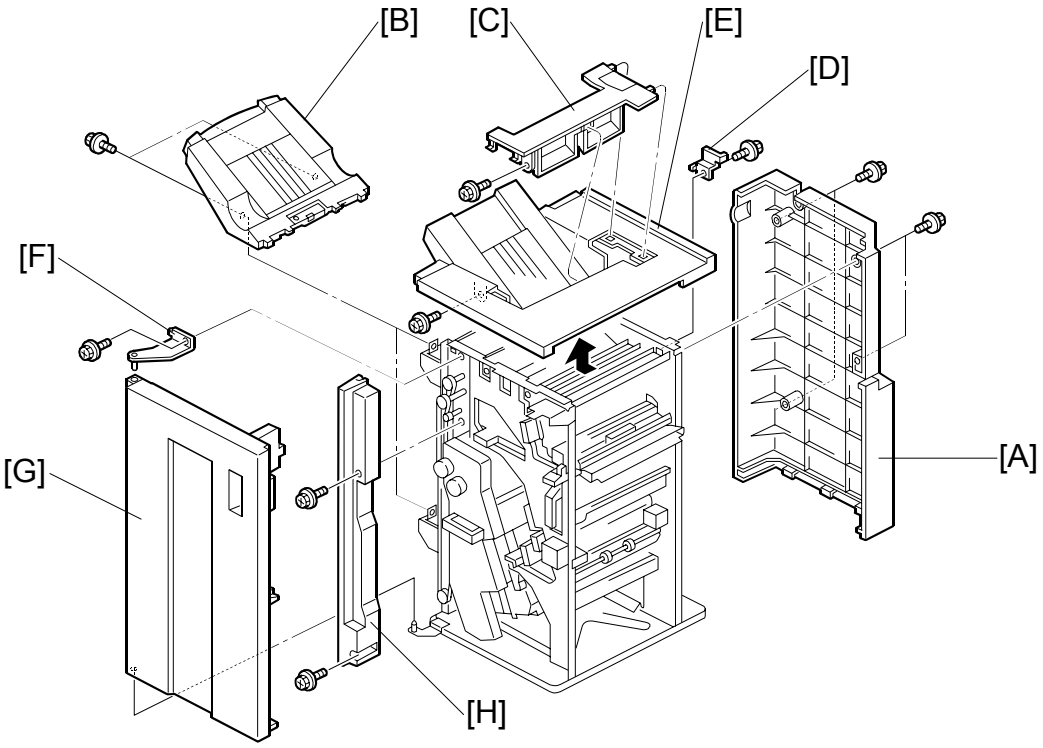
This manual describes three 3000-sheet finishers:

- 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.

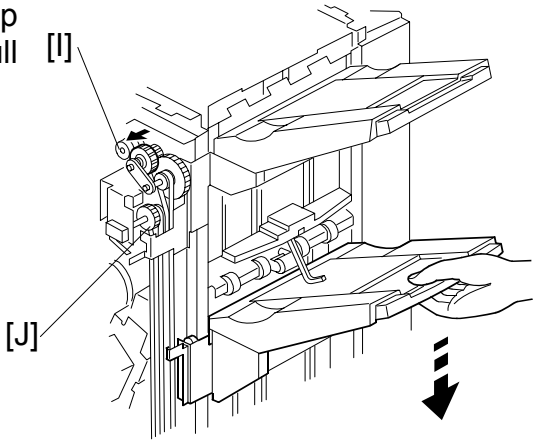
1. REPLACEMENT AND ADJUSTMENT

1.1 EXTERNAL COVERS



[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)

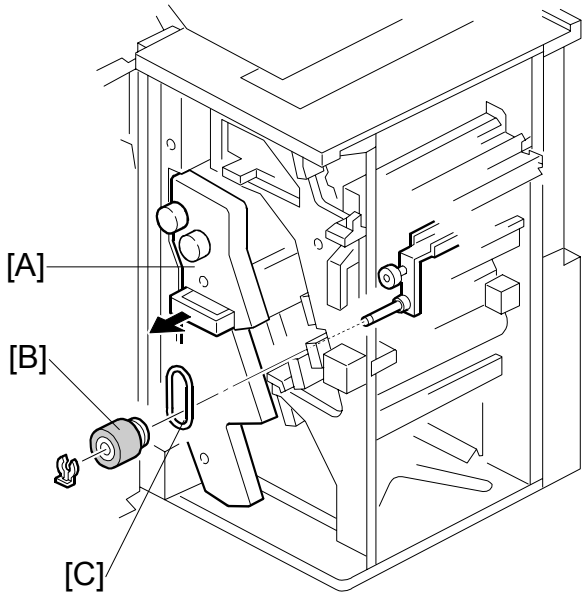
The trays may be difficult to remove at the up position. Support the tray with your hand, pull out the gear [I] (for the lower tray) or [J] (for the upper tray) to release the tray and lower it slowly.



1.2 POSITIONING ROLLER

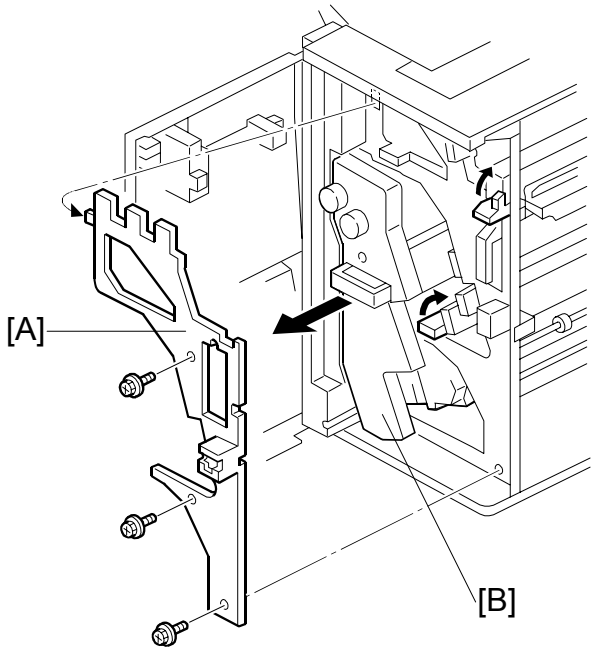
Open the front door.

[A]: Pull out the jogger unit.
[B]: Positioning roller (x 1)
[C]: Positioning roller drive belt

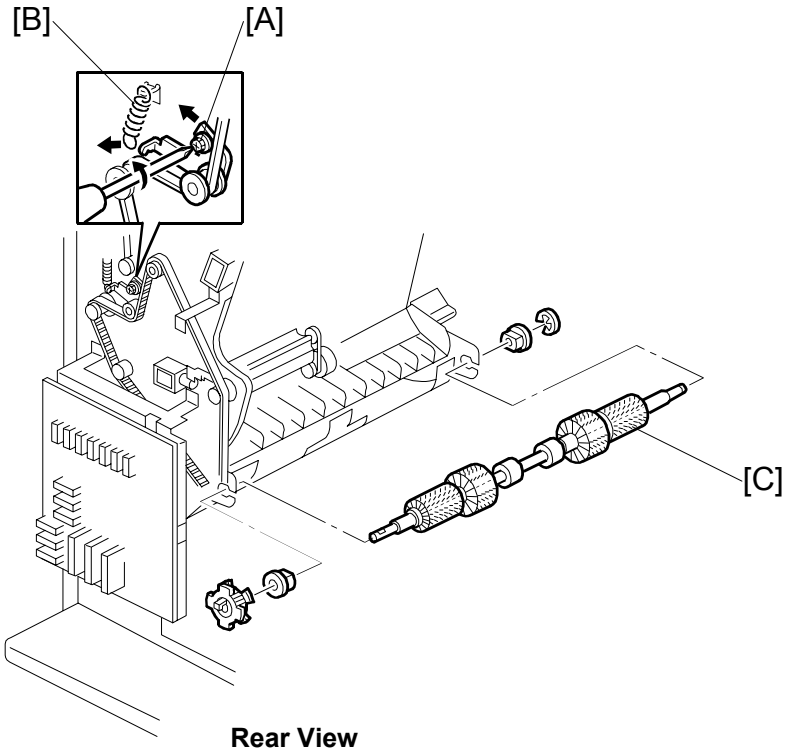


1.3 INNER COVER

[A]: Inner cover (x 3)
[B]: Pull out the jogger unit.



1.4 BRUSH ROLLER



Rear View

Open the front door.

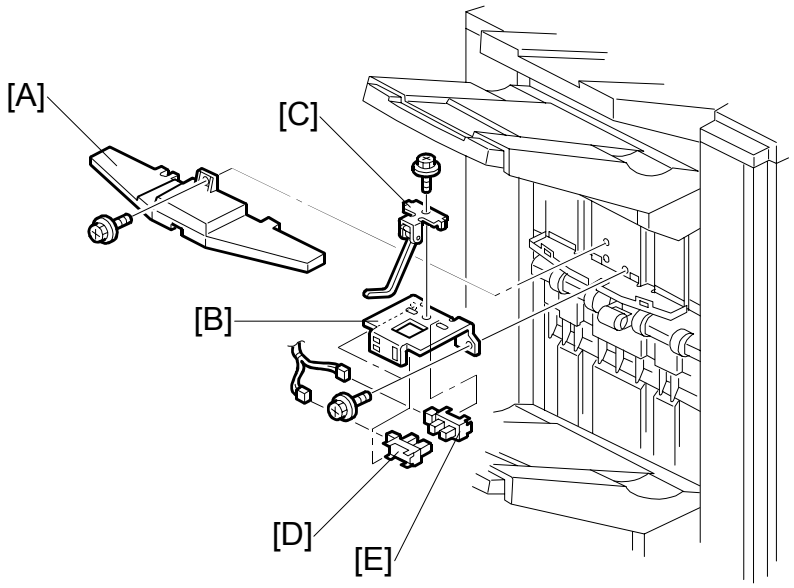
Pull out the jogger unit.

Rear cover (☛ 1.1)

[A]: Loosen tension bracket (🔩 x 1)
[B]: Spring
[C]: Brush roller assy (ℂ x 1, bushing x 3)

- Remove the e-ring and bushing at [C] before removing the bushings on the back end of the shaft.

1.5 LOWER TRAY PAPER HEIGHT SENSORS 1, 2

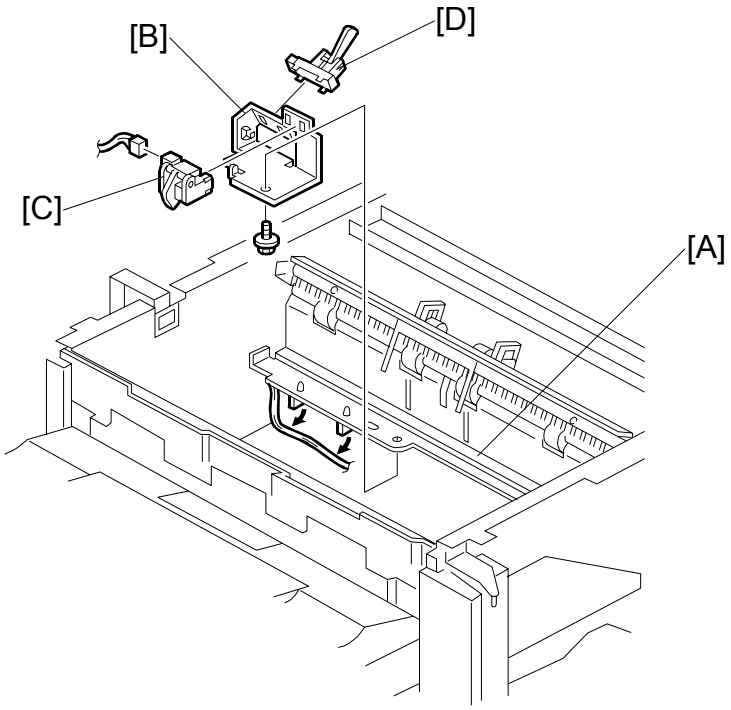


[A]: Paper height sensor cover (x 1)
- Lift the back edge of the cover up. Then pull it toward you slowly to disengage the tabs under the front edge of the cover and remove it.

[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

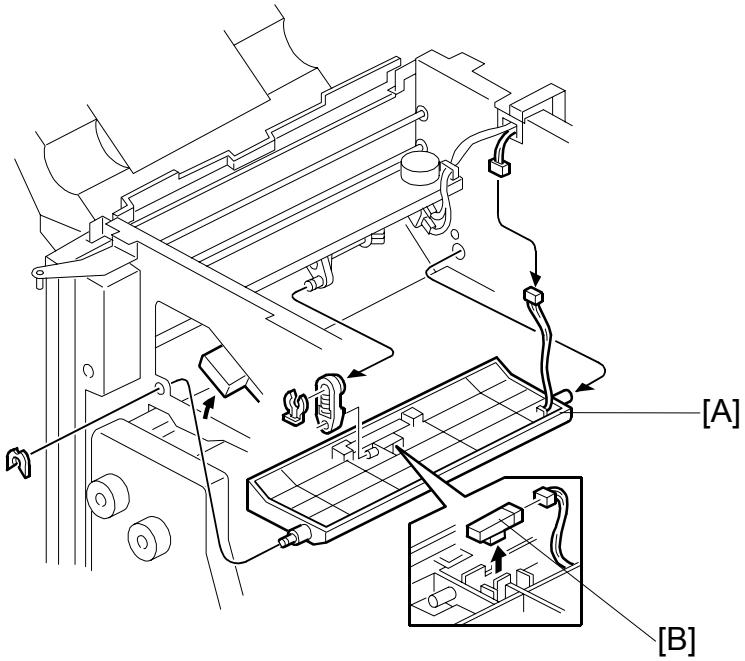


Open the front door.

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)

1.7 EXIT SENSOR



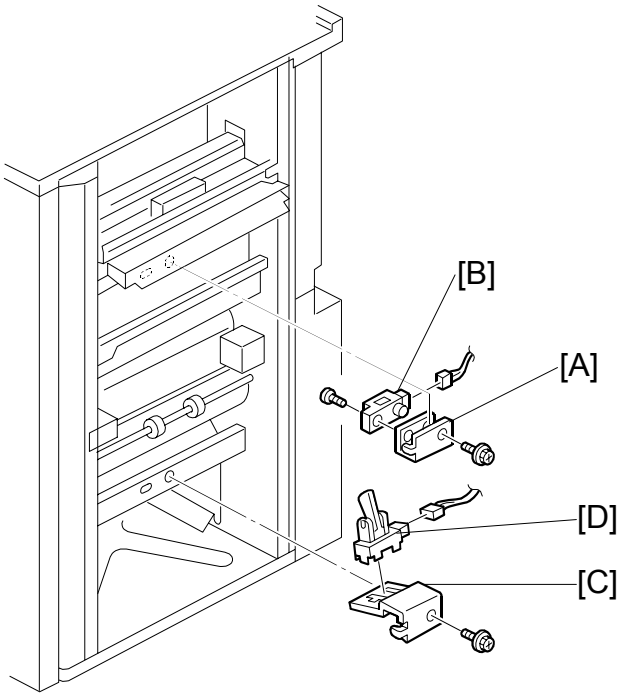
Open the front door.

Top and rear cover (☛ 1.1)

[A]: Guide plate (☞ x 1) (☞ x 2)

[B]: Exit sensor (☞ x 1)

1.8 FINISHER, STAPLER ENTRANCE SENSORS



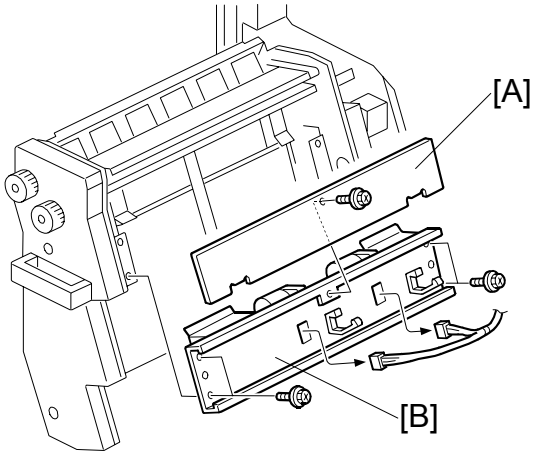
Disconnect the finisher from the main unit.

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.

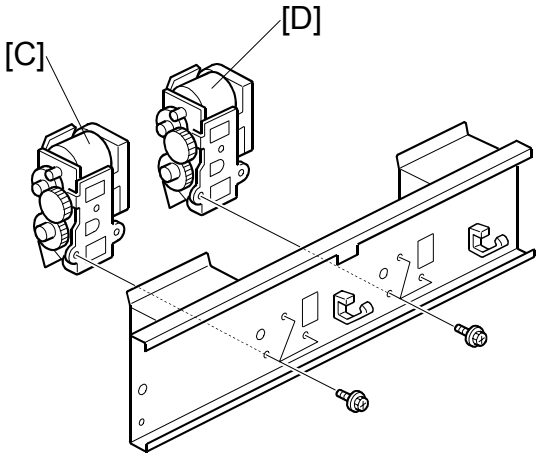
[A]: Finisher entrance sensor bracket (x 1)
[B]: Finisher entrance sensor (x 1) (x 1)
[C]: Stapler entrance sensor bracket (x 1)
[D]: Stapler entrance sensor and feeler (x 1)

1.9 SADDLE-STITCH STAPLER REPLACEMENT

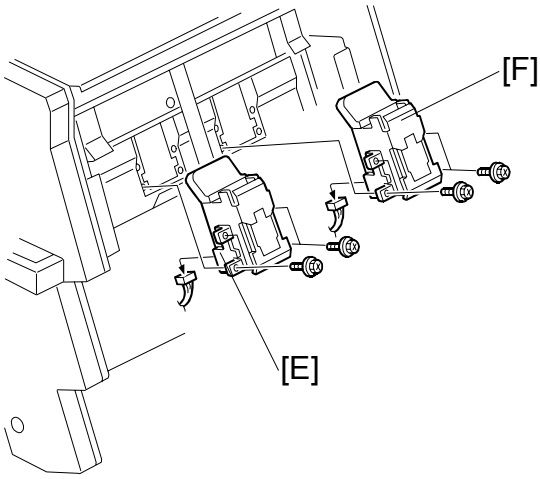
1. Remove the cover [A] (x 1).
2. Remove the staple unit motor mount [B] (x 4, x 2).



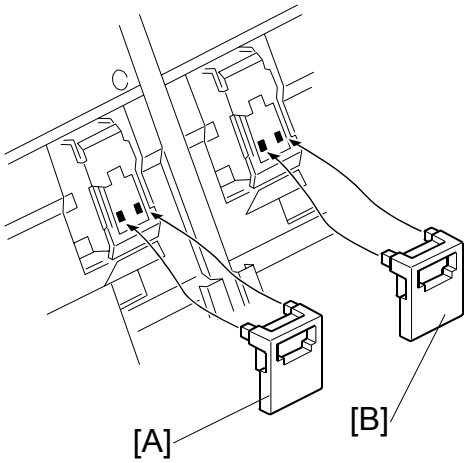
3. Remove the old booklet stapler motors (x 3 each x 1 each).
4. Attach the left booklet stapler motor [C] and right stapler motor [D] (x 3 each).
   NOTE: Do not tighten the screws.



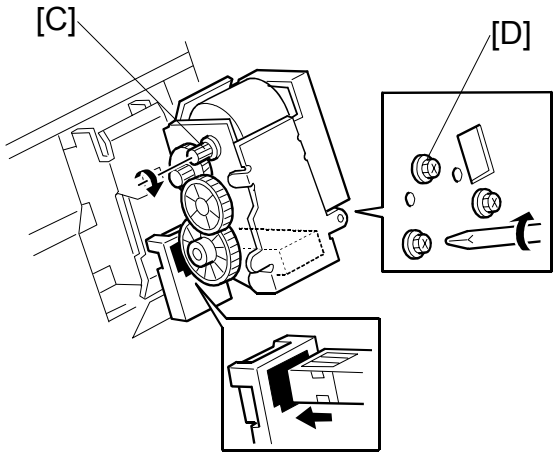
5. Remove the old booklet staplers (x 4 each, x 1 each).
6. Attach the booklet stapler [E] and the stapler [F] (x 4 each, x 1 each) and tighten the screws.



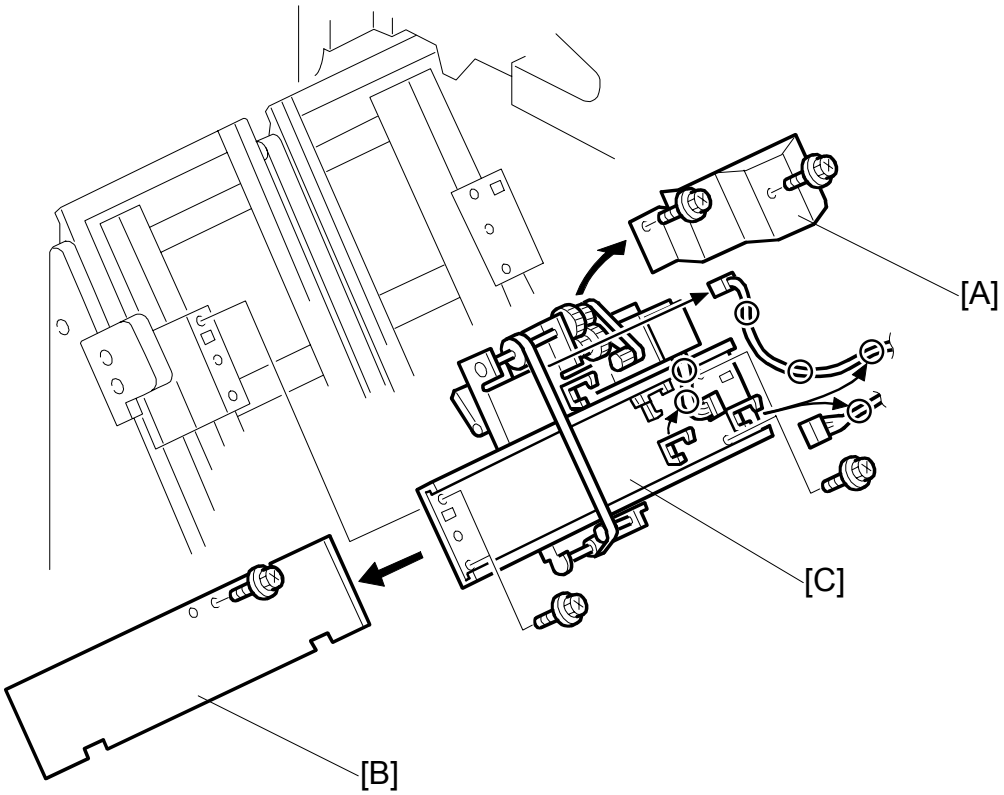
7. Attach the Teflon jigs [A] and [B].
8. Attach the new booklet stapler motor mount to the frame (x 4).



9. On each motor, with your finger turn the brass gear [C] toward you until it stops then tighten the motor screws [D] .(x 3)
10. Remove the motor mount board (x 4) and remove the jigs.
11. Fasten the new motor mount to the frame (x 4, x 2).

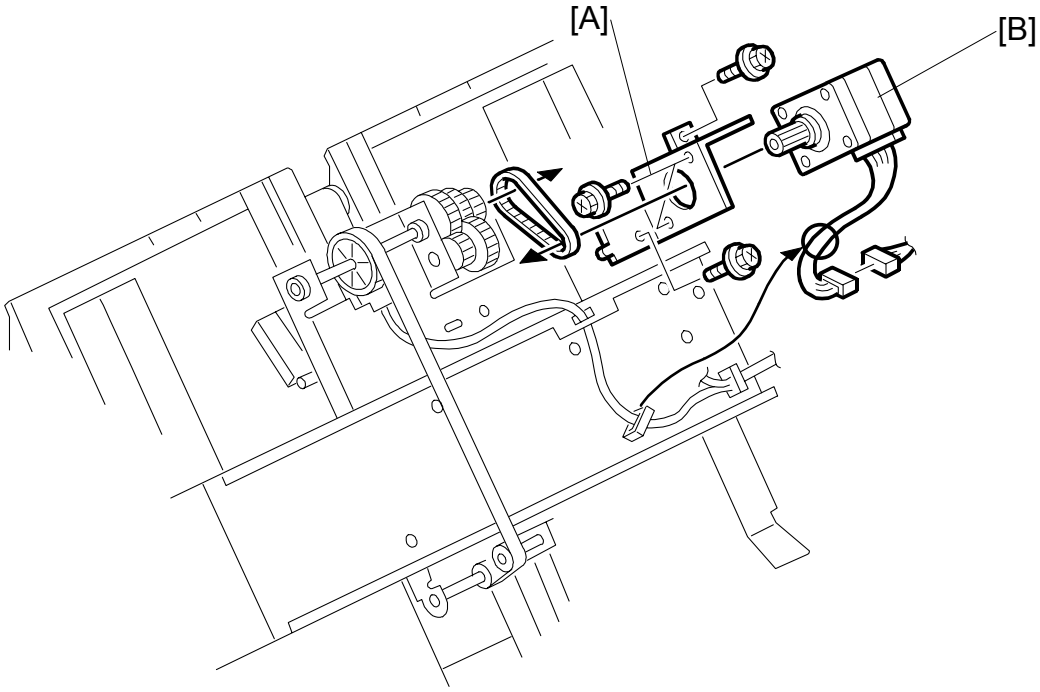


1.10 Z-FOLD JOGGER UNIT (B674 ONLY)



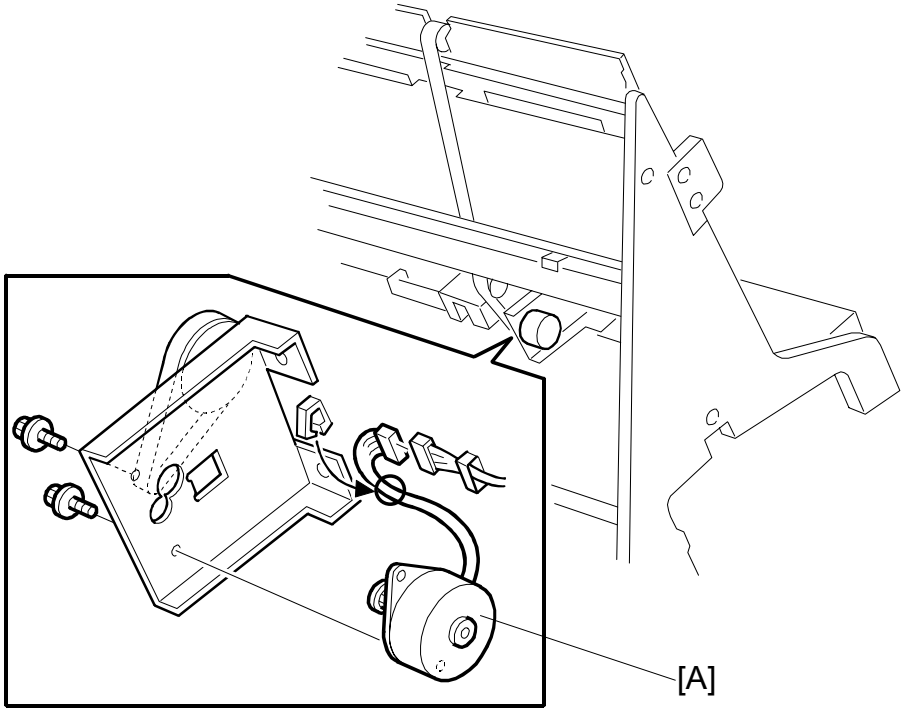
1. Open the front door and pull out the stapler tray unit.
2. Remove the Z-fold jogger unit cover [A]. (x 2)
3. Remove the Z-fold jogger unit cover [B]. (x 1)
4. Remove the Z-fold jogger unit [C] (x 4, x 4, x 2)

1.11 JOGGER TOP FENCE MOTOR (B674 ONLY)



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)

1.12 JOGGER BOTTOM FENCE MOTOR(B674 ONLY)

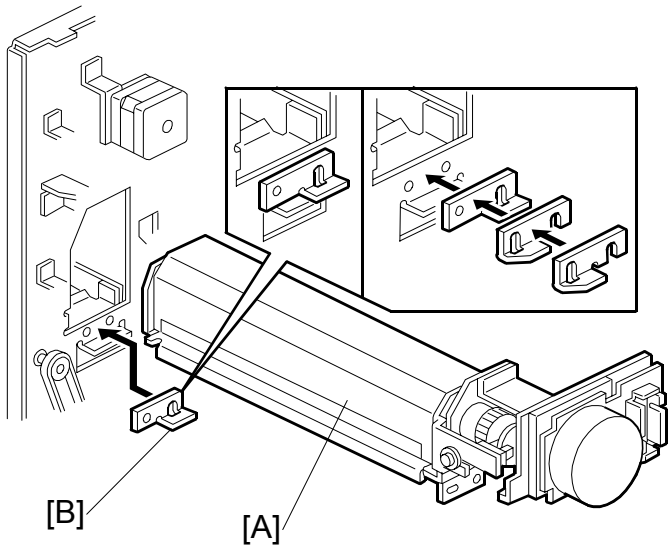


1. Open the front door and pull out the stapler tray unit.
2. Remove the jogger bottom fence motor [A] (x 2, timing belt x 1, x 1, x 1).

1.13 PUNCH POSITION ADJUSTMENT

The positions of punch holes can be adjusted in two directions:

- **Vertical positon**. 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.



- **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.

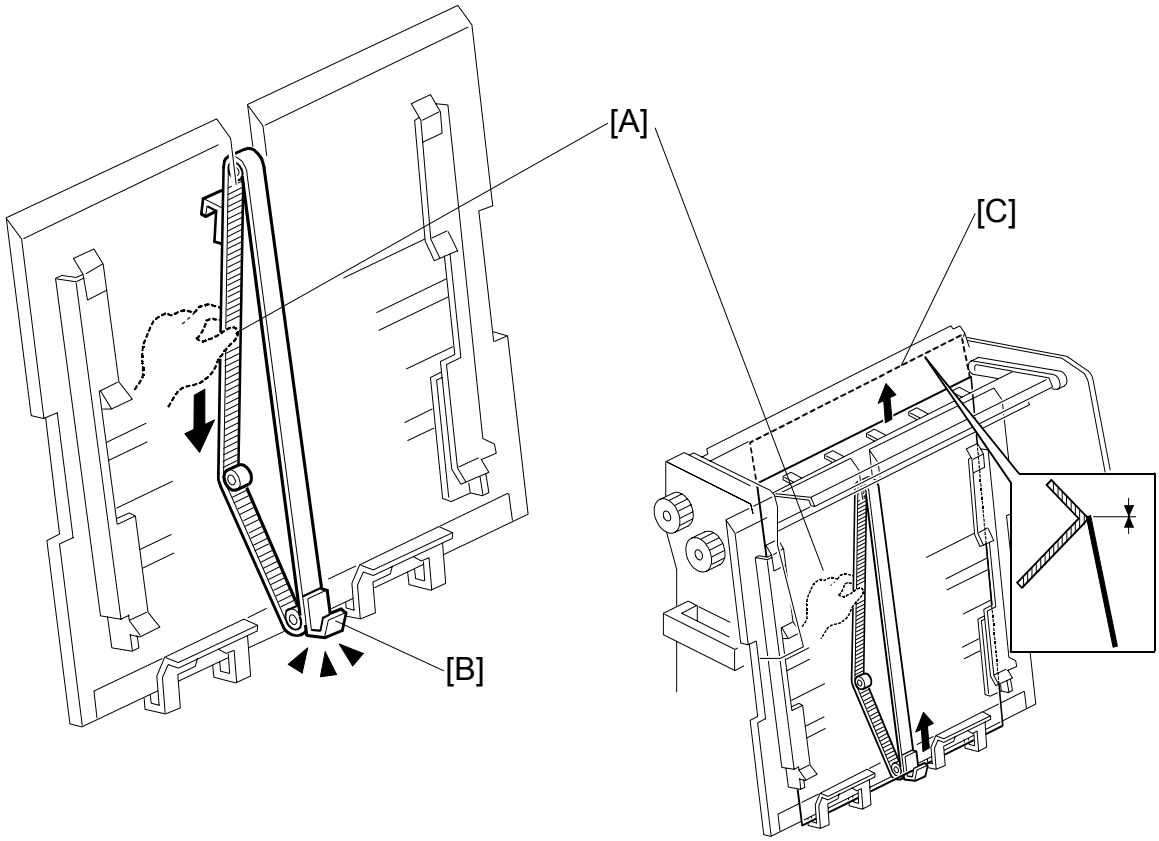
1) Make sure that the main switch is turned off.
2) Turn on DIP SW101-3.
3) Turn on the main switch. The finisher automatically repositions the trays to the shipping position.
4) After the finisher completes moving the trays, turn off DIP SW101-3.

1.16 JOGGER FENCE ADJUSTMENT

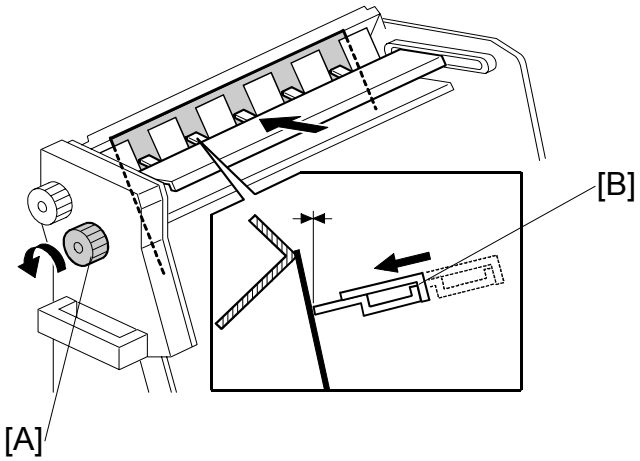
This adjustment corrects booklet skew to ensure that horizontal and vertical skewing occurs only within the specific tolerance of 2 mm or less. The tolerance (2 mm or less) refers to the amount of skew between the edges of the innermost sheet of a folded booklet (or a single sheet).

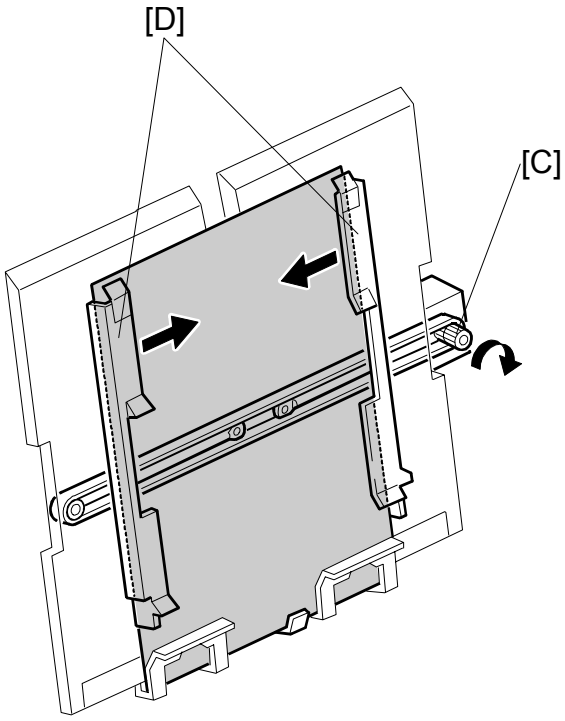
What You Need

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.)

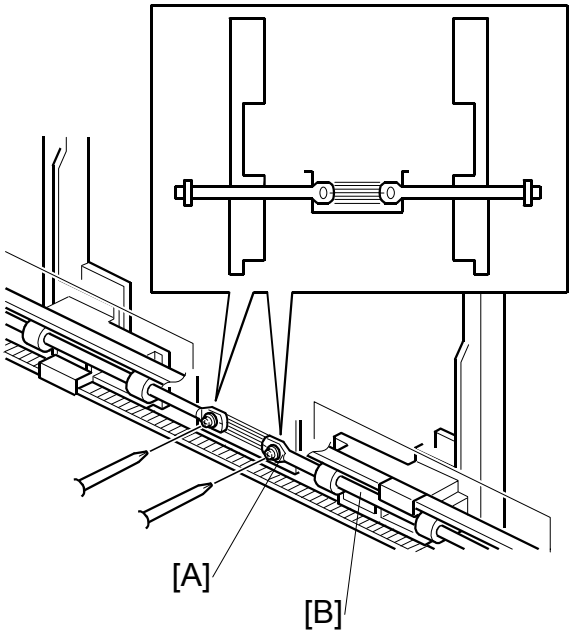


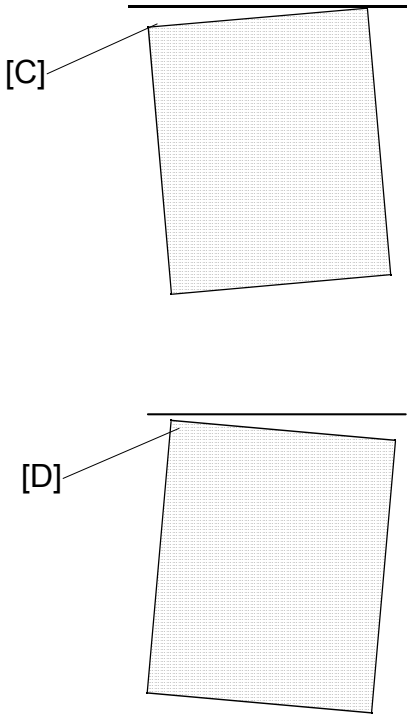
1. On the back of the unit, pull the belt [A] (not the hook) down until the hook is at [B].
2. Insert the adjustment board (B4689003) between the jogger fences.
3. Pull the belt [A] down slightly to raise the adjustment board until its top edge is even with the upper stay [C].



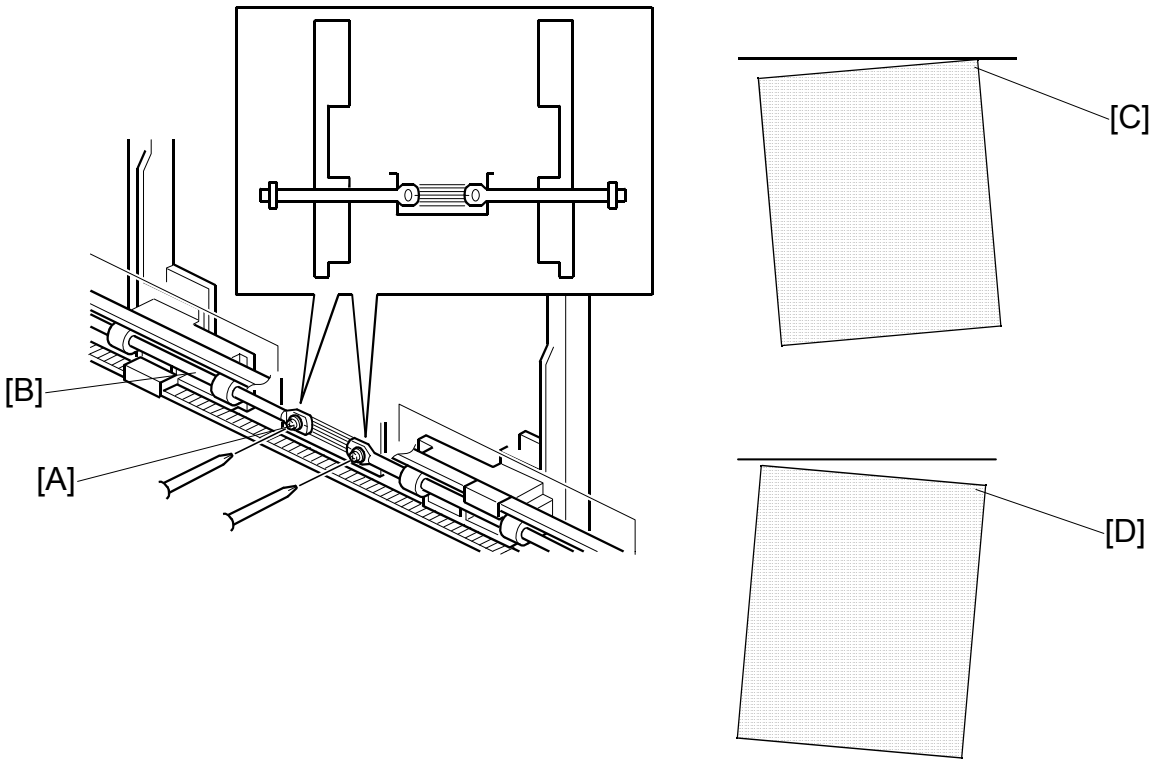


4. Rotate Knob R7 [A] until the folder plate [B] touches the adjustment board.
5. Turn knob [C] to bring both jogger fences[D] parallel to sides of the adjustment board.
   NOTE: Make sure that the adjustment board is flat. There should be a very small gap between the jogger fences and the sides of the adjustment board.

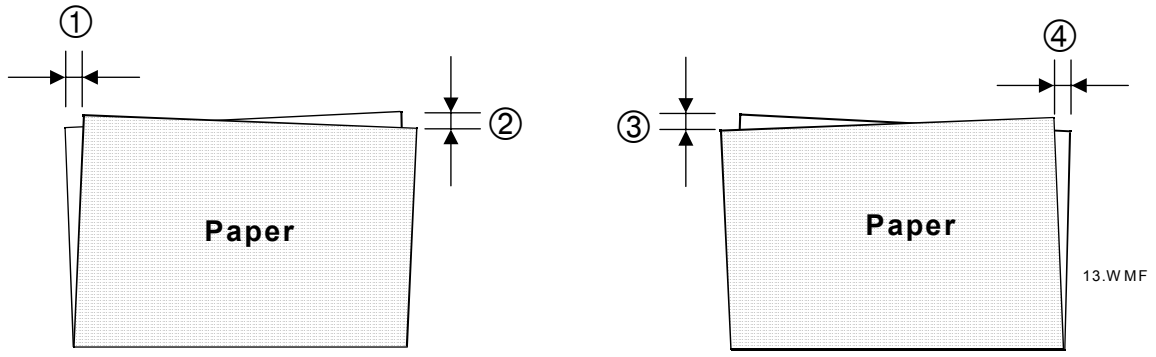




6. Push the left edge of the adjustment board against the front fence.
7. At the back of the unit, loosen screw [A] to release jogger shaft [B].
8. At the front, check the position of the upper left corner. The leading edge should be parallel to the stay.
   - If the left corner of the board is low [C], 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].



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.



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.

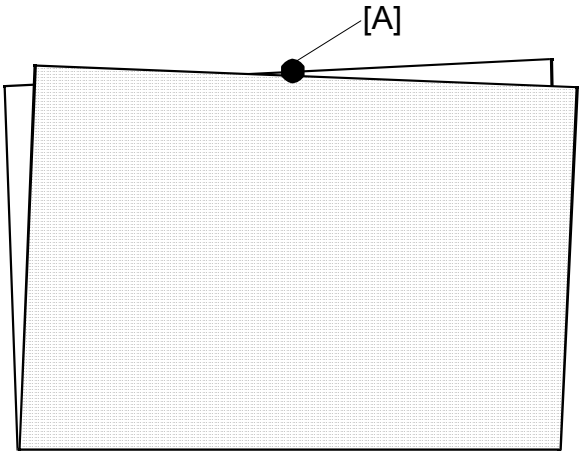
    (4) Press the # key on the operation panel, then remove the screwdriver from the door switch as soon as the jogger fences come close to the paper edges (about 10 mm wider than the paper width).

    (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.



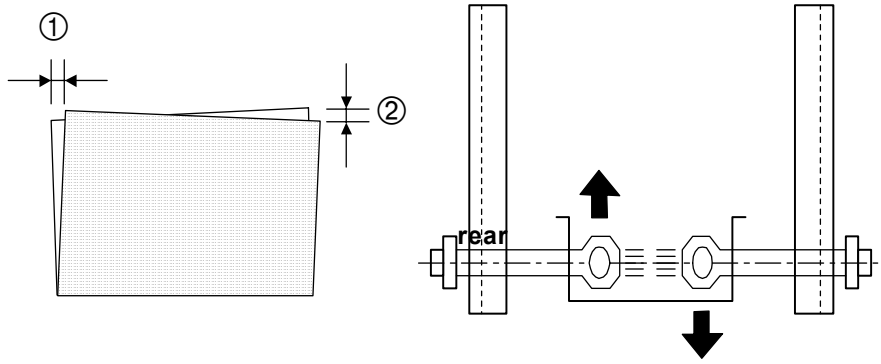
16. Use SP6902 (Fold Position Adjustment) until the two edges intersect in the middle at [A]. This minimizes vertical fold skewing by bringing the leading and trailing edges of the sheets closer together.
    NOTE: B140 copiers: First adjust SP 6902. Then if the same problem occurs when single sheets 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.

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.

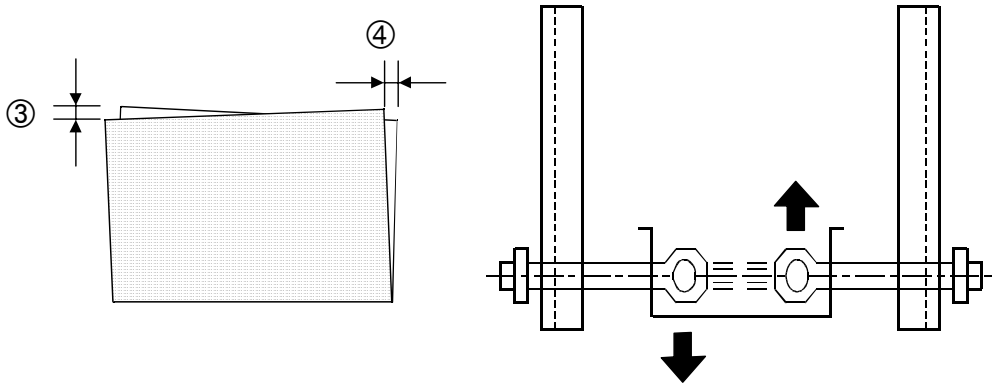
(2) Loosen the screw of the front jogger fence shaft, lower the shaft to bring the front jogger fence flush against the paper, then tighten the screw.



③ or ④ Over 2 mm

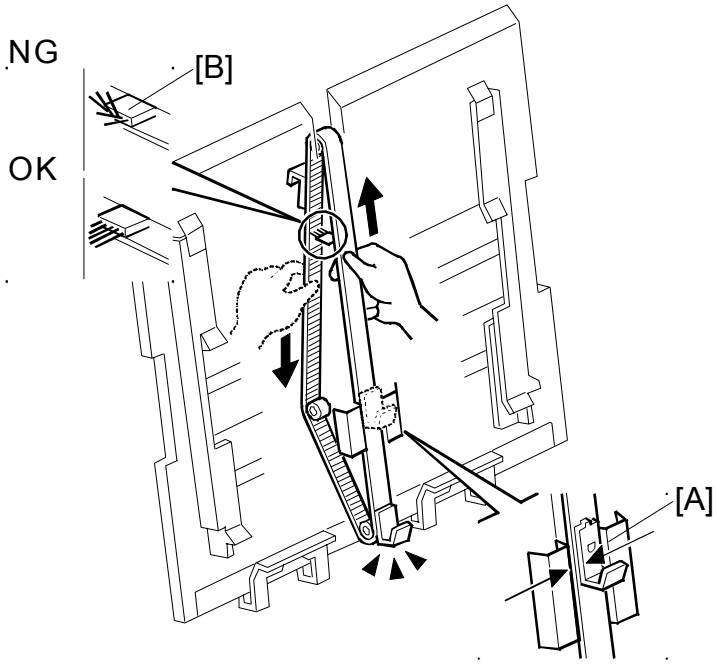
(1) Loosen the rear jogger fence screw, lower the rear jogger fence shaft, then tighten the screw.

(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.

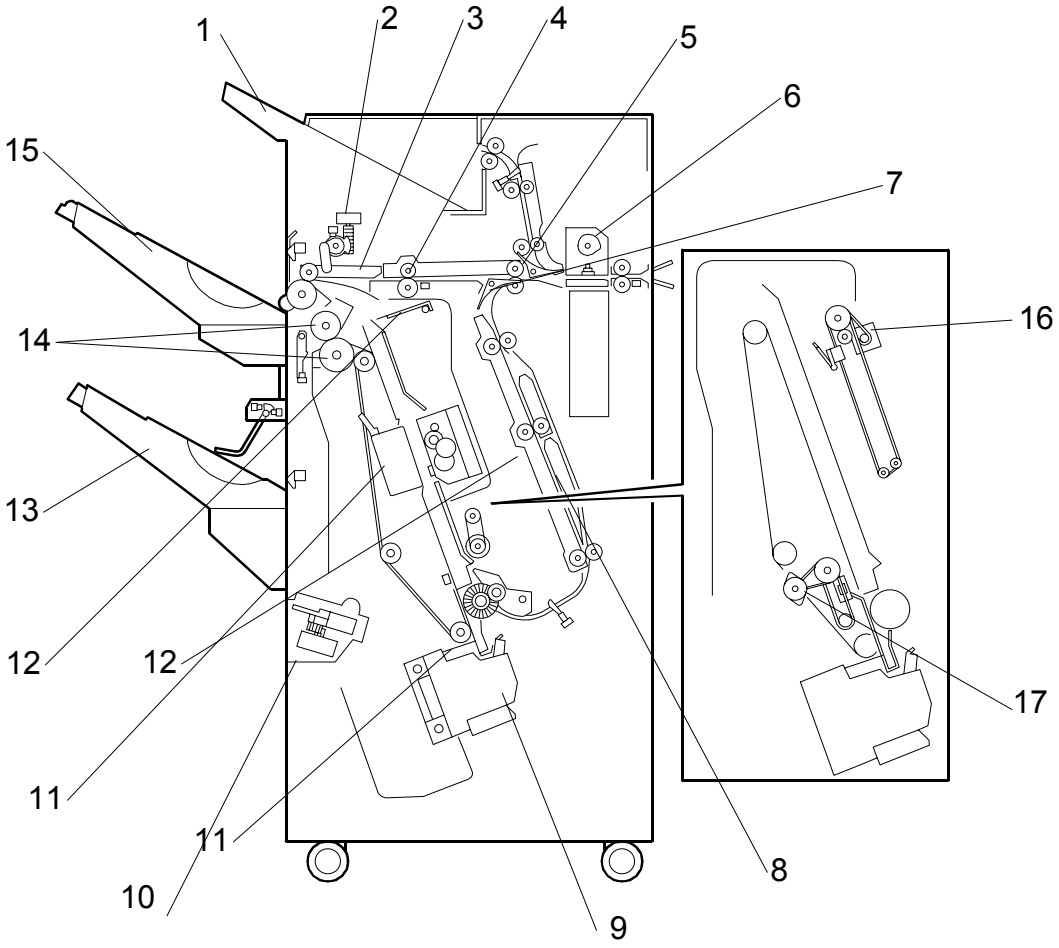
19. Repeat Step 18 until the gaps are all less than 2 mm.



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

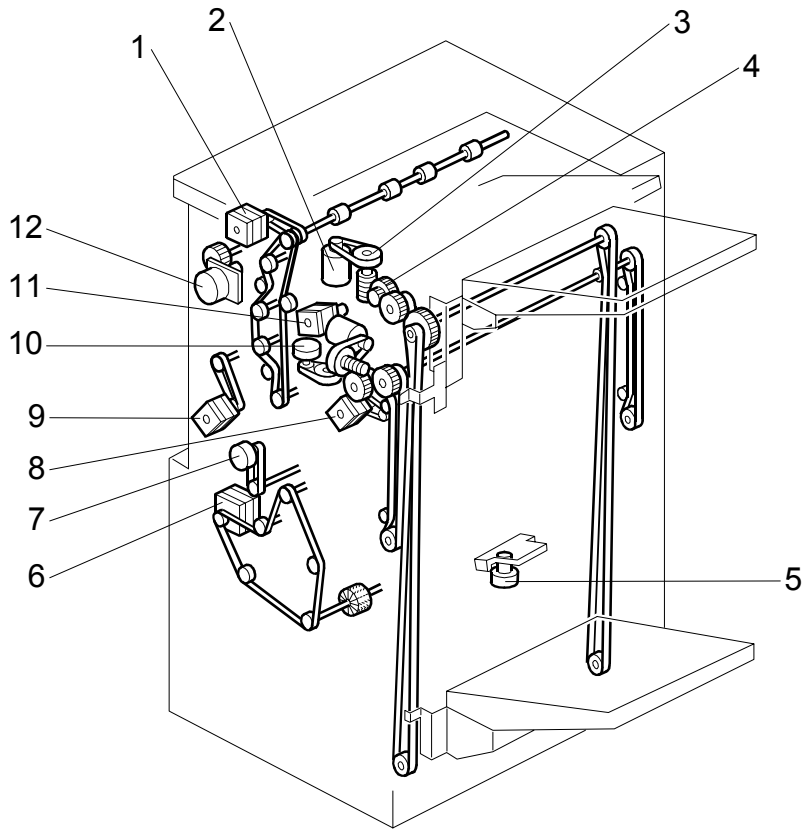
2.1 OVERVIEW



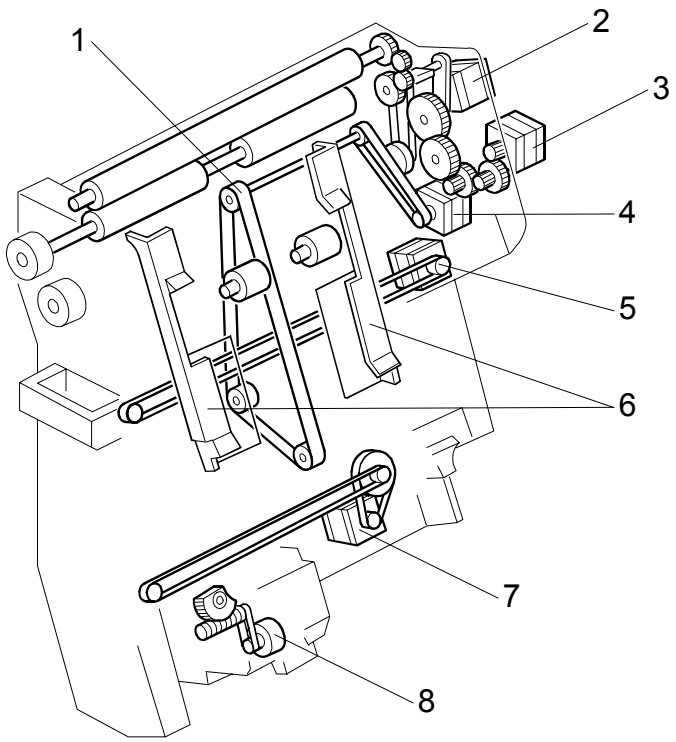
1. Proof Tray
2. Guide Plate Motor
3. Guide Plate
4. Shift Roller
5. Tray Junction Gate
6. Punch Unit
7. Stapler Junction Gate
8. Pre-Stack Tray
9. Stapler Unit
10. Pressure Plate Unit*
11. Saddle Stitch Stapler*
12. Folder Plate*
13. Lower Tray*
14. Folder Rollers*
15. Upper Tray
16. Jogger Top Fence Motor**
17. Jogger Bottom Fence Motor**

*** B468/B674 Only ** B674 Only**

2.2 DRIVE LAYOUT

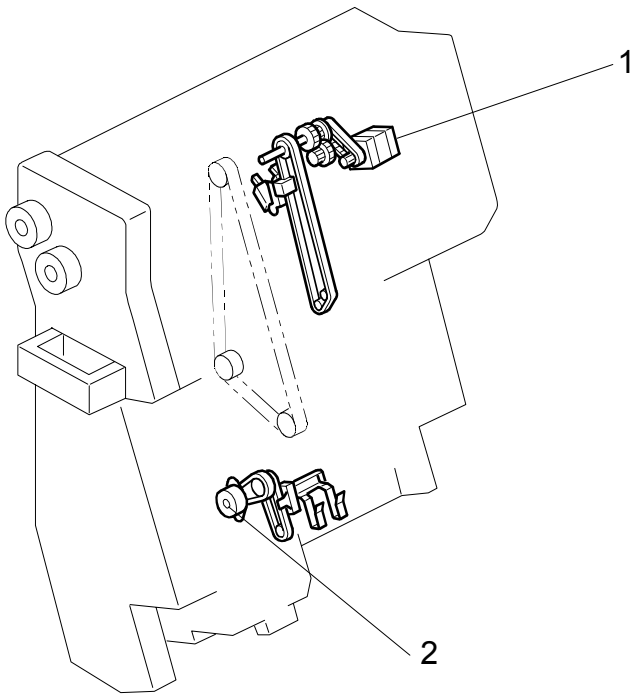


1. Proof Tray Motor
2. Lower Tray Lift Motor
3. Lower Tray Encoder Disk
4. Upper Tray Lift Motor
5. Pressure Plate Motor
6. Stapler Transport Motor
7. Pre-Stack Motor
8. Exit Motor
9. Entrance Motor
10. Shift Roller Motor
11. Shift Drive Motor
12. Punch Motor



1. Stack Feed Out Belt
2. Folder Roller Motor
3. Folder Plate Motor*
4. Feed Out Belt Motor
5. Jogger Fence Motor
6. Jogger Fences
7. Stapler Movement Motor
8. Stapler Rotation Motor

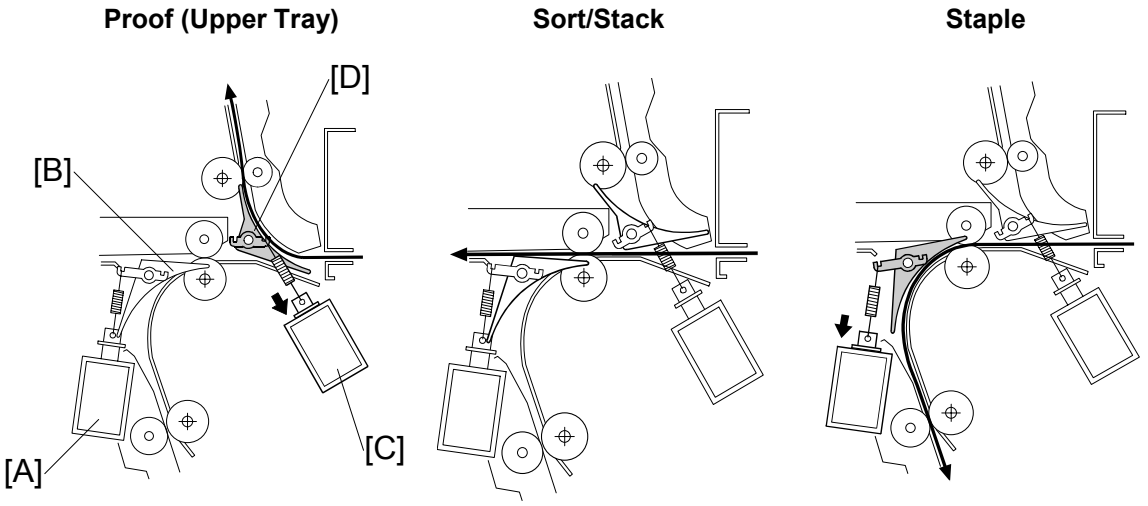
* **B468/B674 Only**



1. Jogger Top Fence Motor**
2. Jogger Bottom Fence Motor**

** **B674 Only**

2.3 TRAY/STAPLER JUNCTION GATES

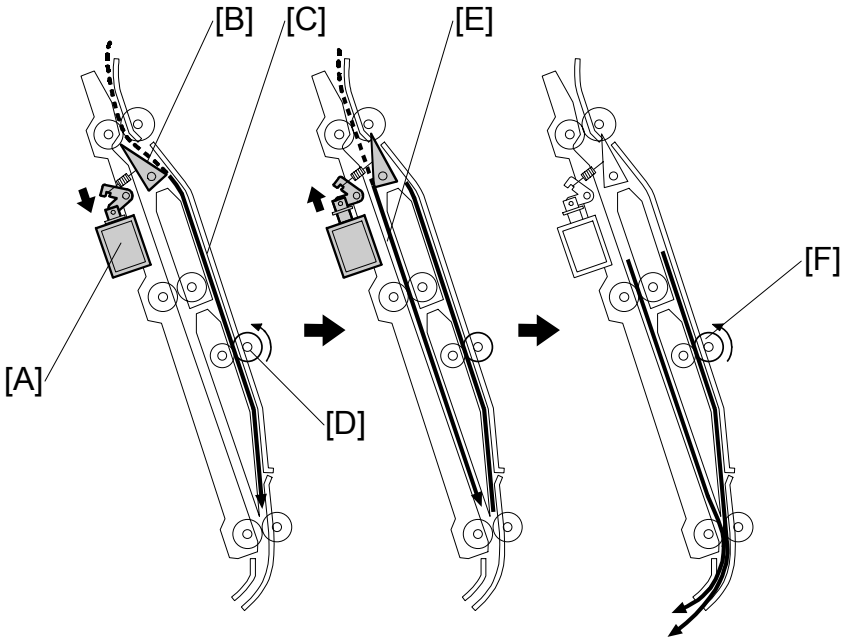


The finishing mode selected for the job determines the direction of the paper in the finisher.

- **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



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.

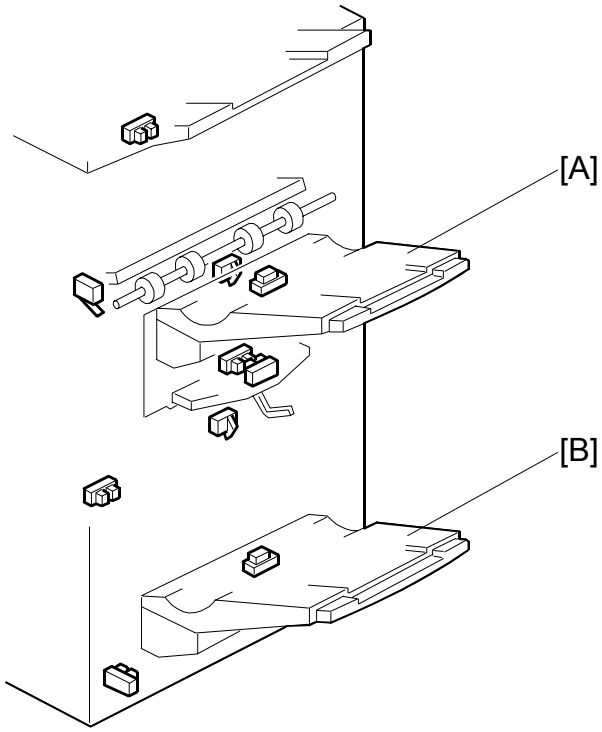
Shortly after the trailing edge of the first sheet enters the finisher, the solenoid switches off, and the junction gate closes. This allows the second sheet of the set to pass the closed junction gate and enter the main paper path [E].

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

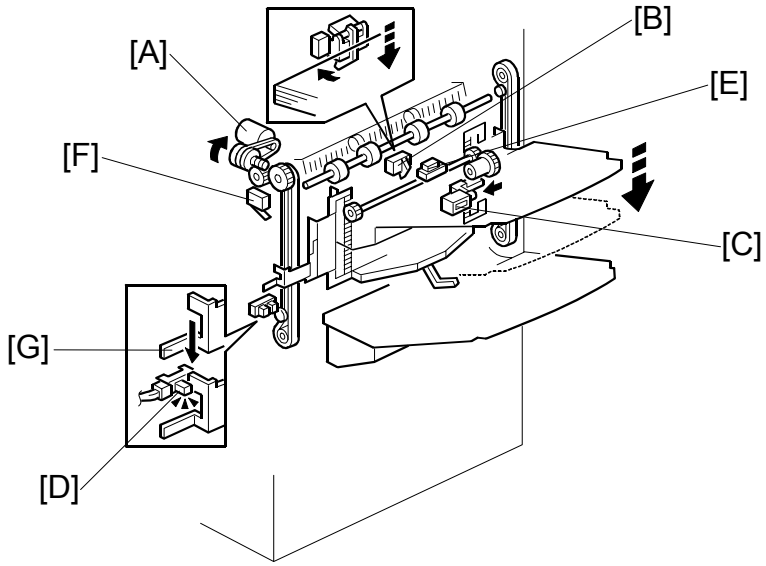


At power on, both trays lower slightly, then the upper tray stops at the feed-out position. The machine is ready for feed out to the upper tray [A]

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)

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.

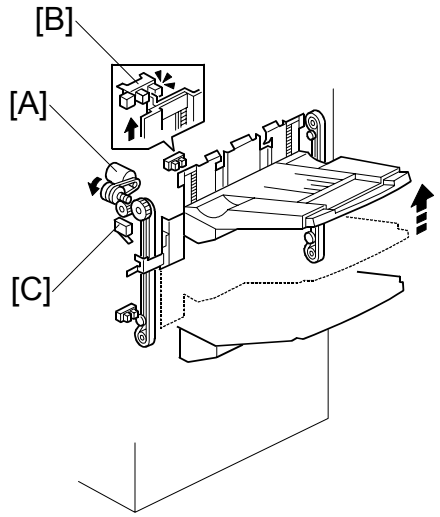
When the top of the stack actuates the sensor [B], a solenoid [C] inside the upper tray releases a locked one-way clutch long enough to lower the upper tray a short distance on its track to allow more pages to feed out. This process repeats until the tray is full.

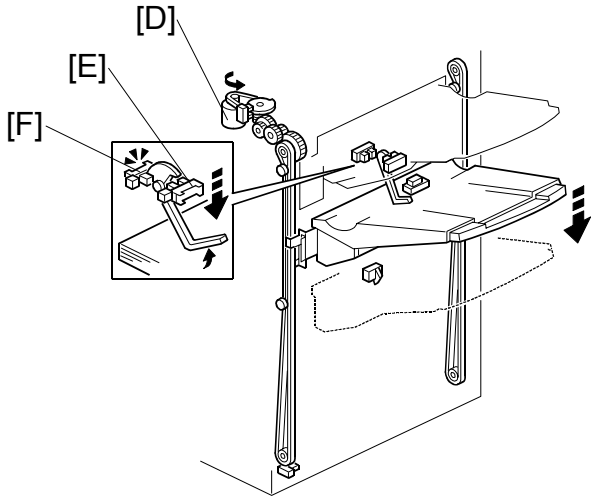
Upper Tray Full

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.

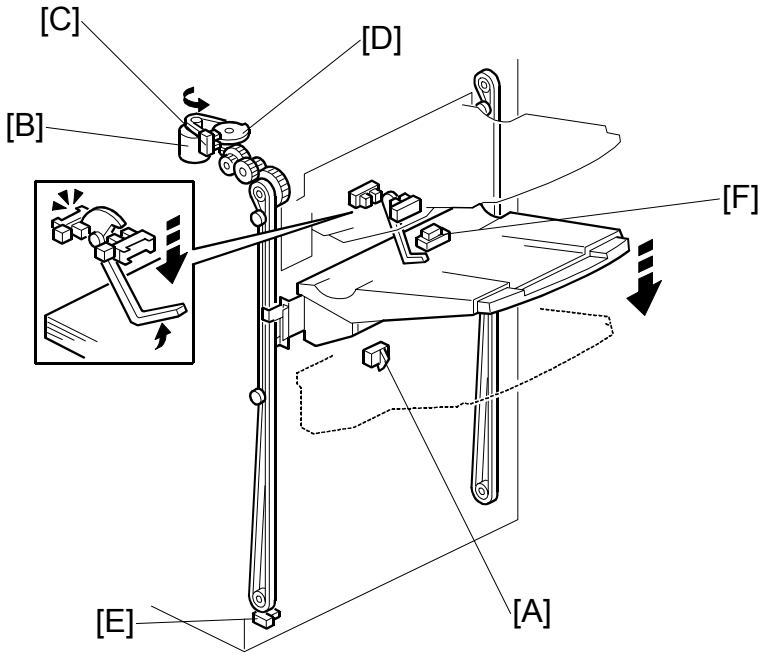
While the upper tray is being raised, motor [D] lifts the lower tray to the feed-out slot. The motor stops when the upper tray paper height sensor detects the tray.

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



[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

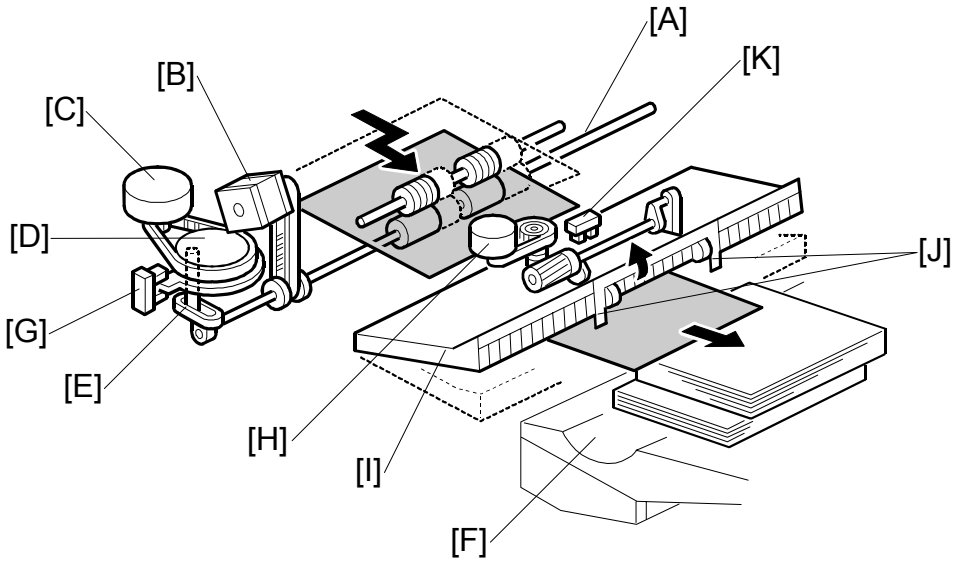
The sensor that is used depends on which mode the user has selected.

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.

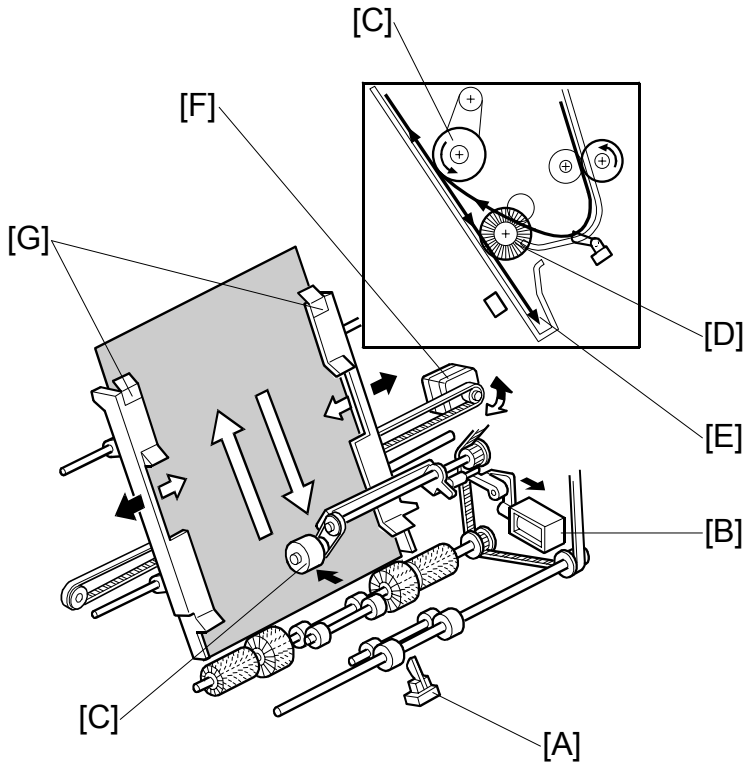
For the next set, the shift motor rotates the gear disk in the opposite direction to shift every page of the next stack to the opposite side.

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



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

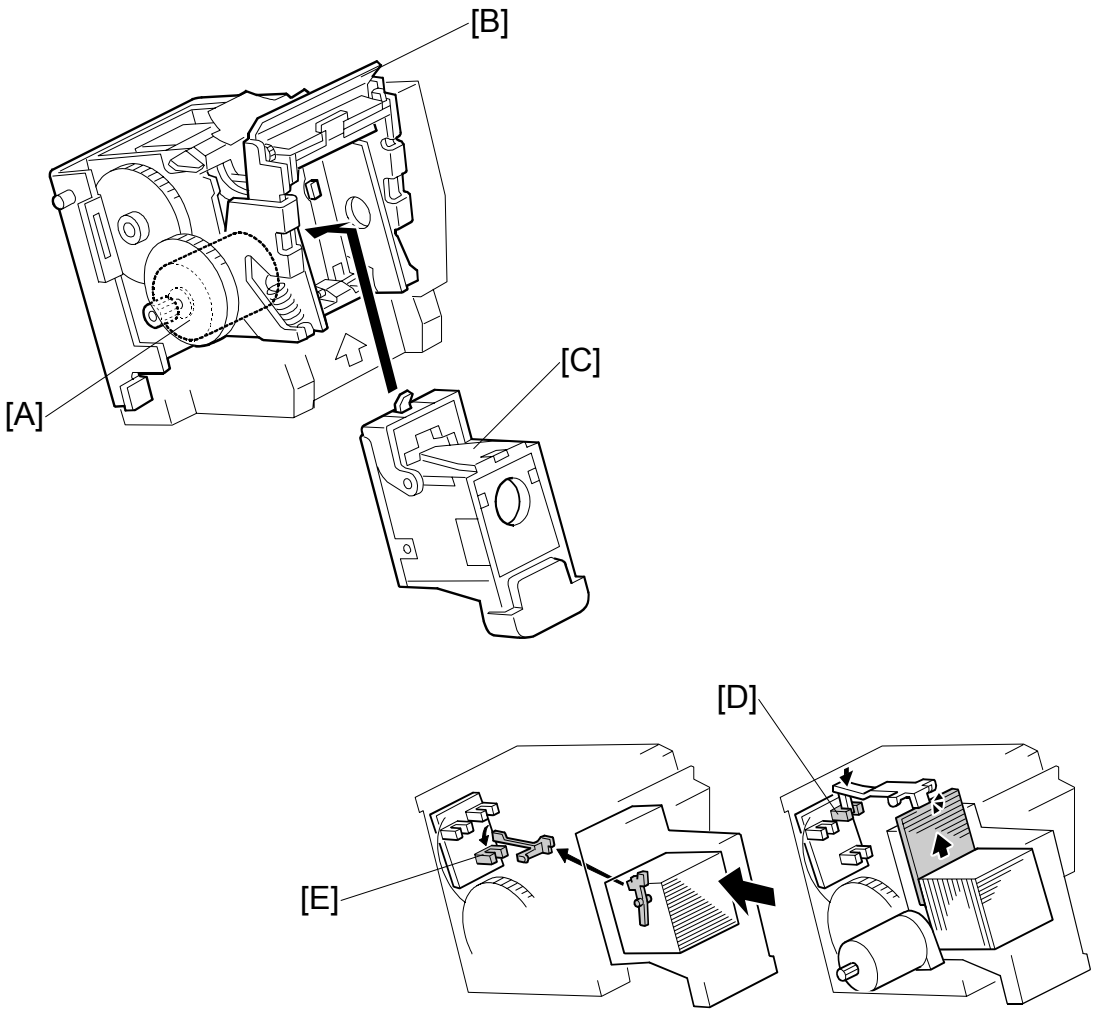
When the Start key is pressed, the jogger motor [F] switches on and opens the jogger fences 10 mm wider than the selected paper size.

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.

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].

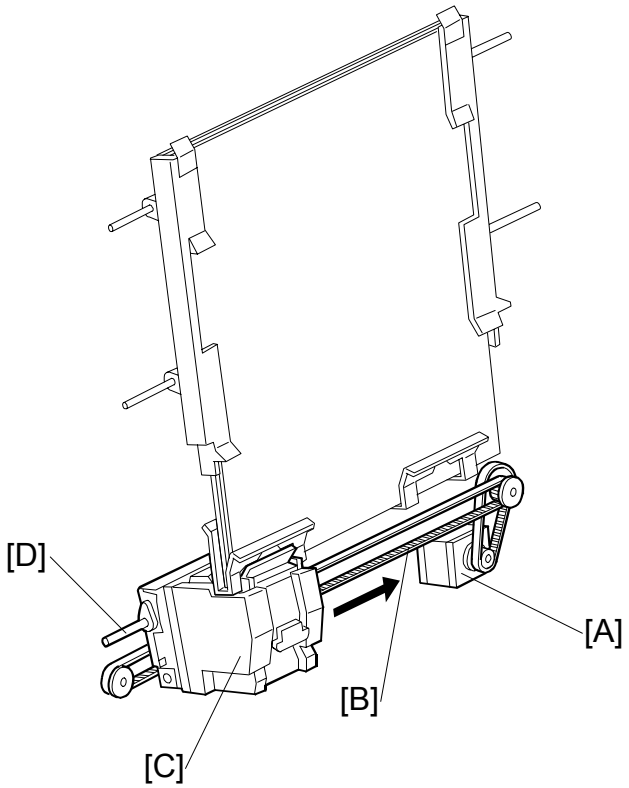
The cartridge set sensor [D] detects the cartridge at the correct position, or logs an SC if the stapler unit is not at the correct position.

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



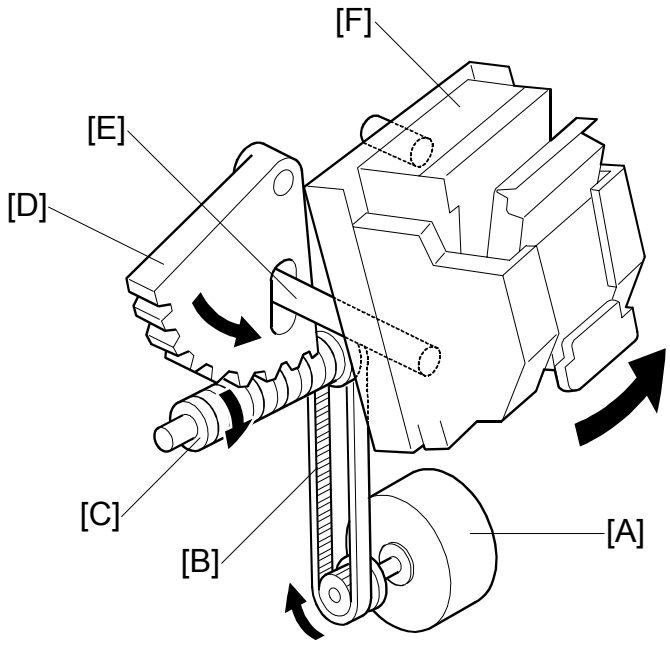
The stapler movement motor [A] drives the timing belt [B] which moves stapler [C] left and right on a support bar [D].

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”.

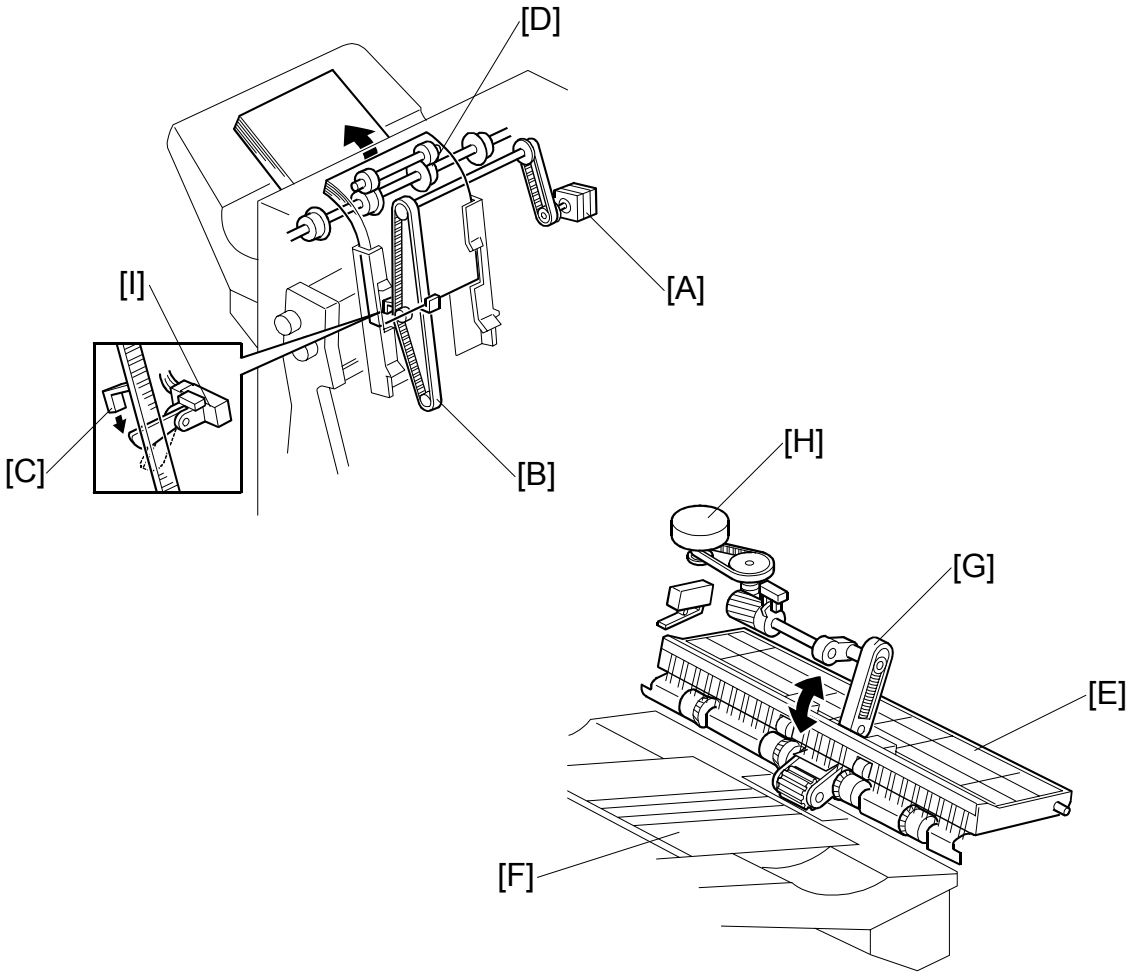
Rotational Stapler Movement



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



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.

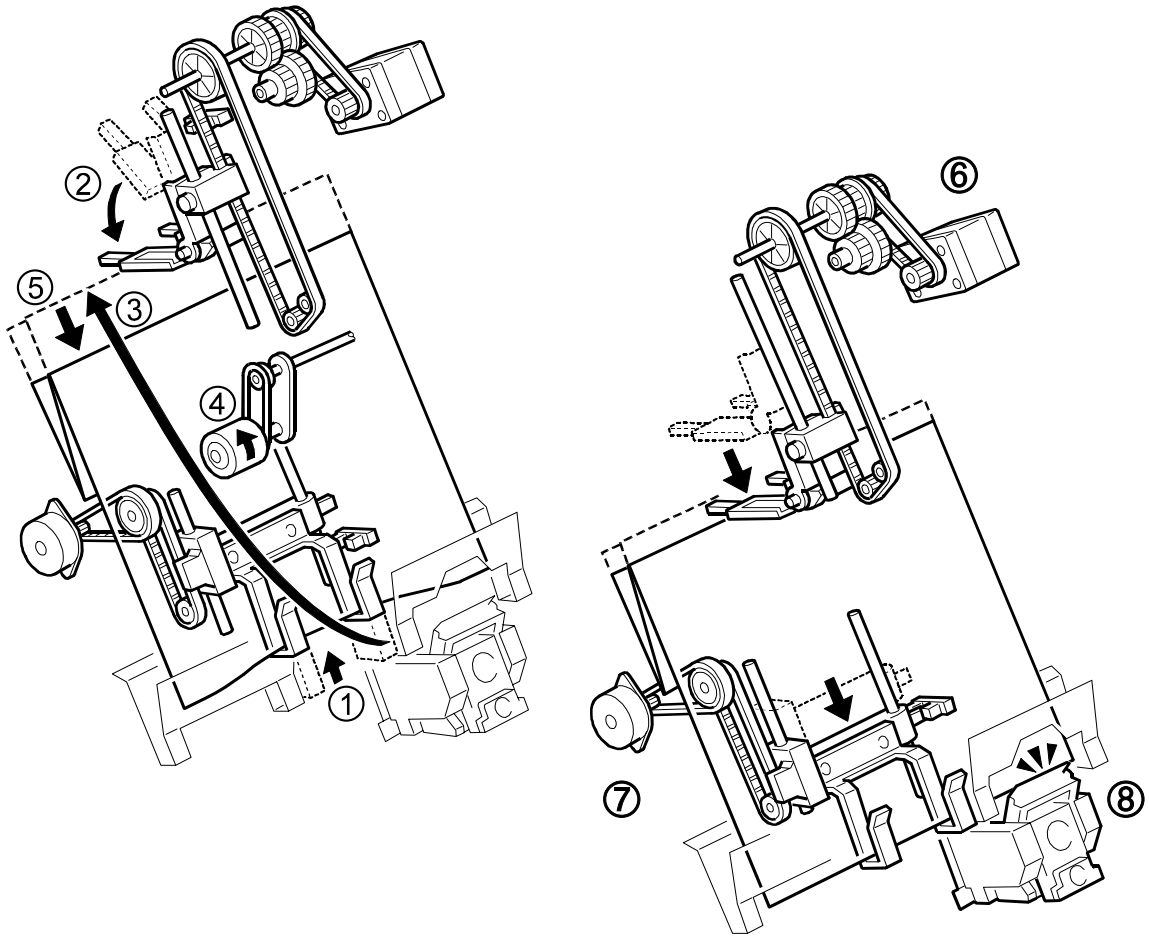
The exit guide plate [E] remains open until the leading edge of the stapled sheets has passed the prescribed distance from the tray exit rollers, then the exit guide plate closes, and the stapled sheets feed out to the tray [F].

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].

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

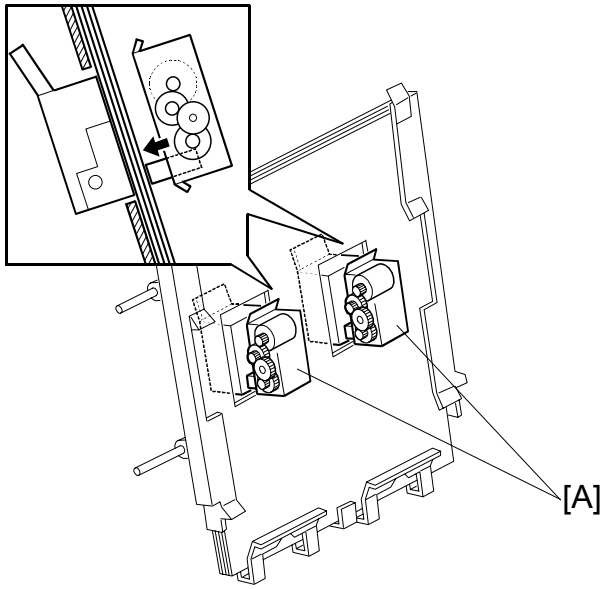
2.10.1 OVERVIEW

Stapling: Two booklet staplers are used. These are about half way up the stack fed-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

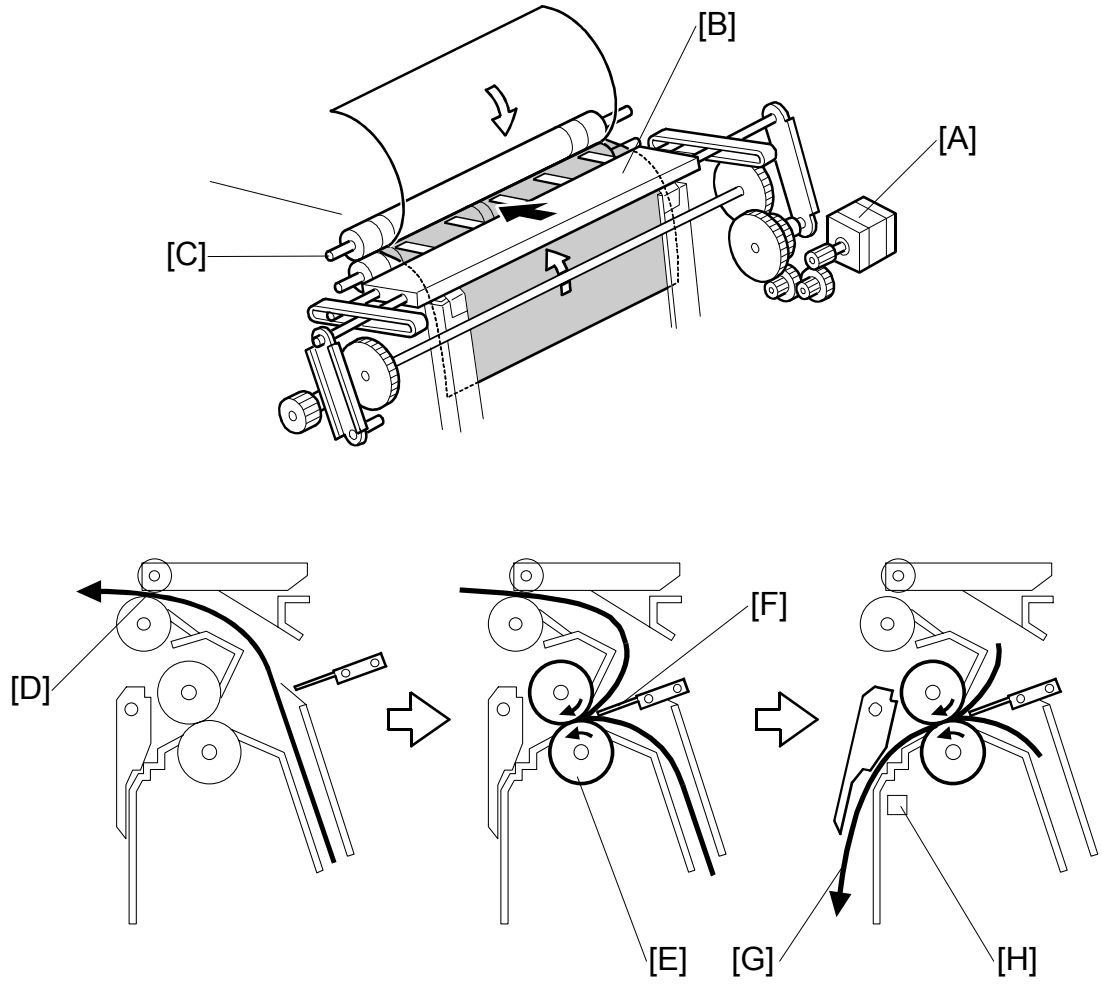


The sheets are aligned by the jogger fences before stapling. (☛ 2.7)

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



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.

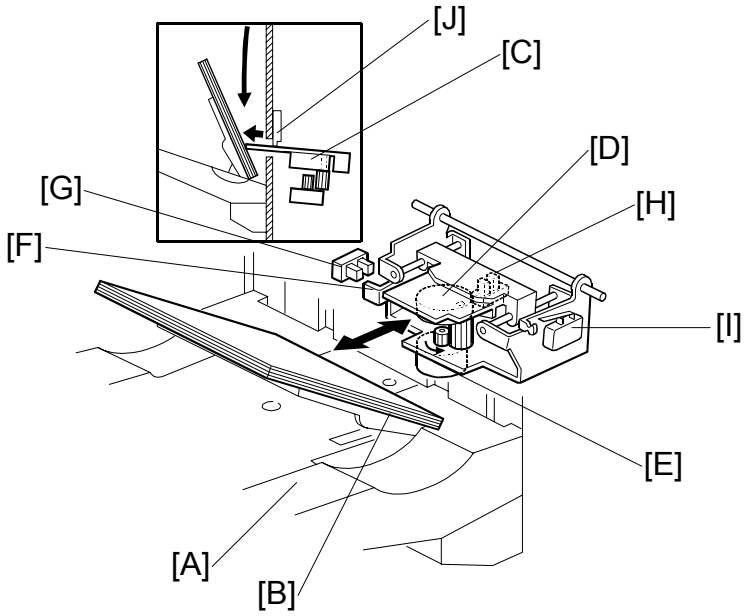
This is a detailed cross-section of the operation described above. The timing of the sequence depends on the size of the paper selected for the job.

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



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.

PUNCH UNIT TYPE 1045
B377

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PUNCH UNIT B377

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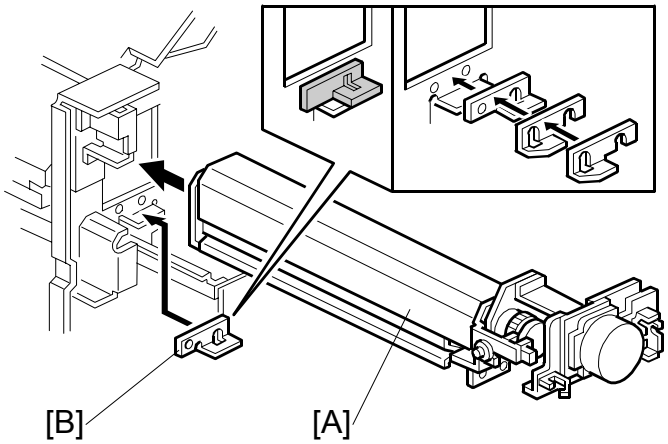
1. REPLACEMENT AND ADJUSTMENT

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.



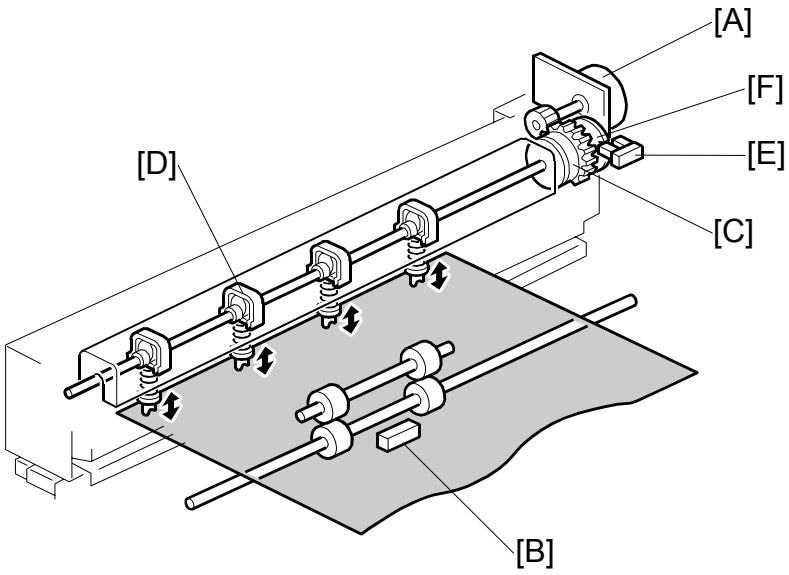
1. Rear cover (x 4)
2. Punch unit [A] (x 3, x 5)
3. Spacers [B]

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.

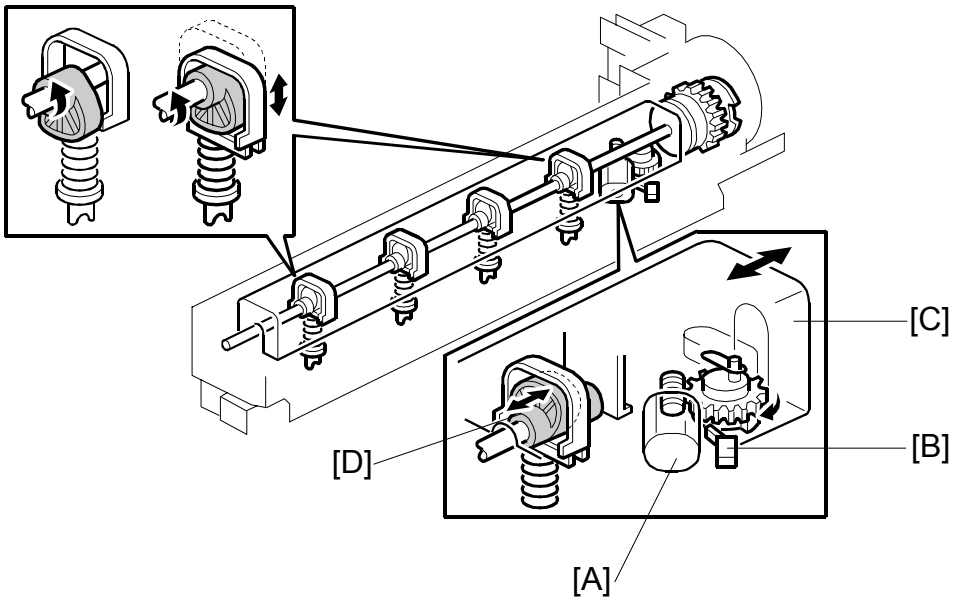
2.1 PUNCH DRIVE MECHANISM



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].

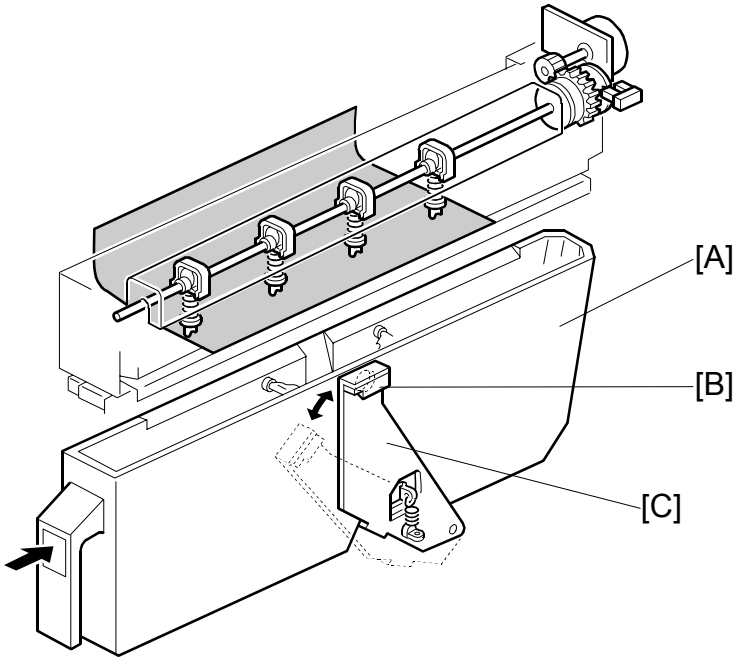
The punch HP sensor [E] detects the home position for the actuator. The punch unit switches off when the cut-out in the punch shaft disk [F] enters the punch HP sensor.

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”).



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.

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.

COVER INTERPOSER TRAY
B470

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COVER INTERPOSER TRAY B470

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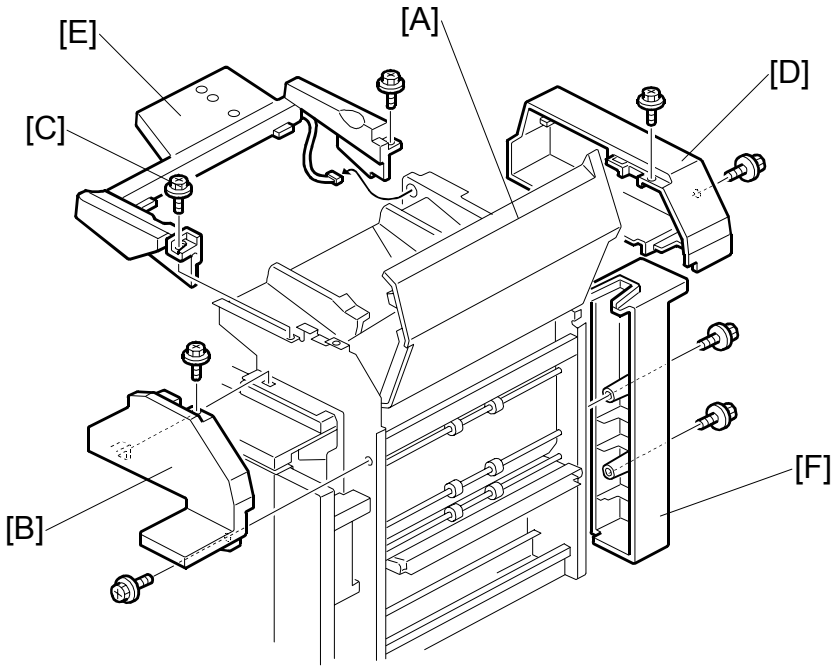
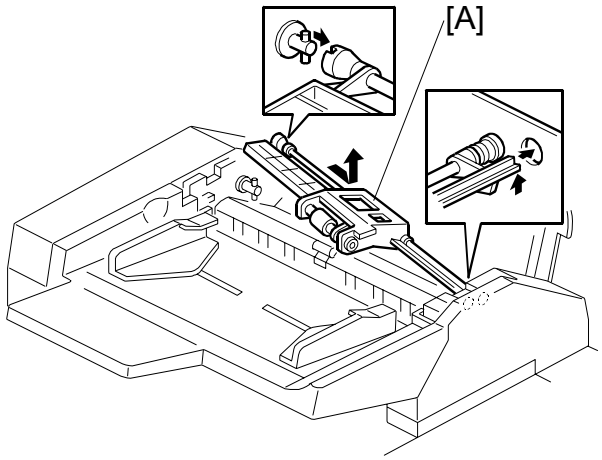
1. REPLACEMENT AND ADJUSTMENT

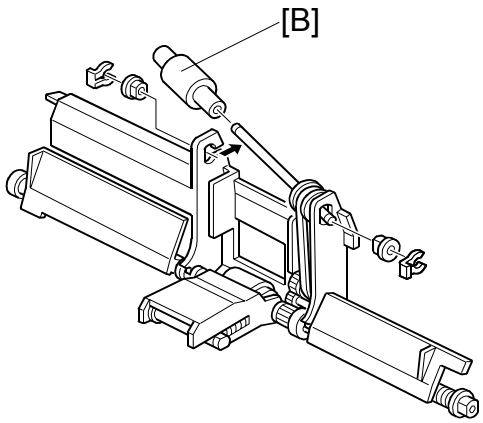
1.1 EXTERNAL COVERS



[A]: Open the feed cover.
[B]: Upper front cover (🔩 x 2)
NOTE: To remove the upper front cover, screw [C] must be removed.
[D]: Rear upper cover (🔩 x 2)
[E]: Slip sheet tray (🔩 x 2, 🖐 x 1)
[F]: Rear middle cover (🔩 x 2)

1.2 FEED UNIT AND PICK-UP ROLLER





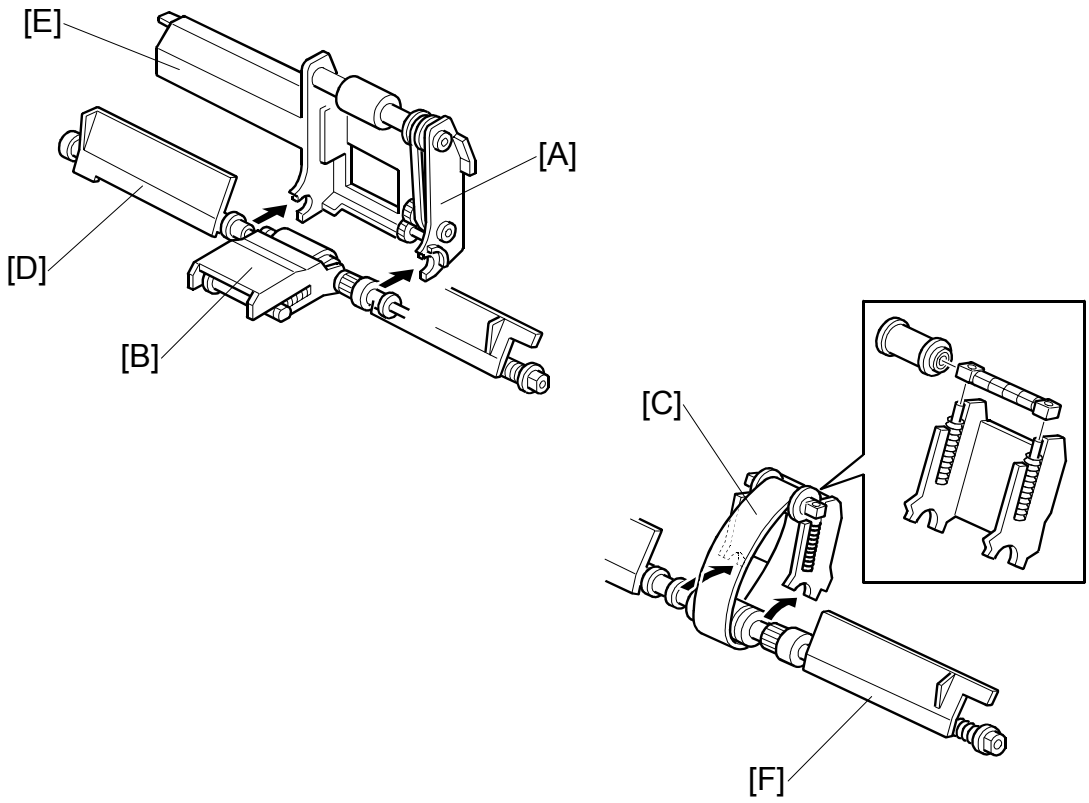
Open the feed cover.

[A]: Feed unit

- The unit is spring loaded. Push it to the right to release it, then lift it out.

[B]: Pick-up roller (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.

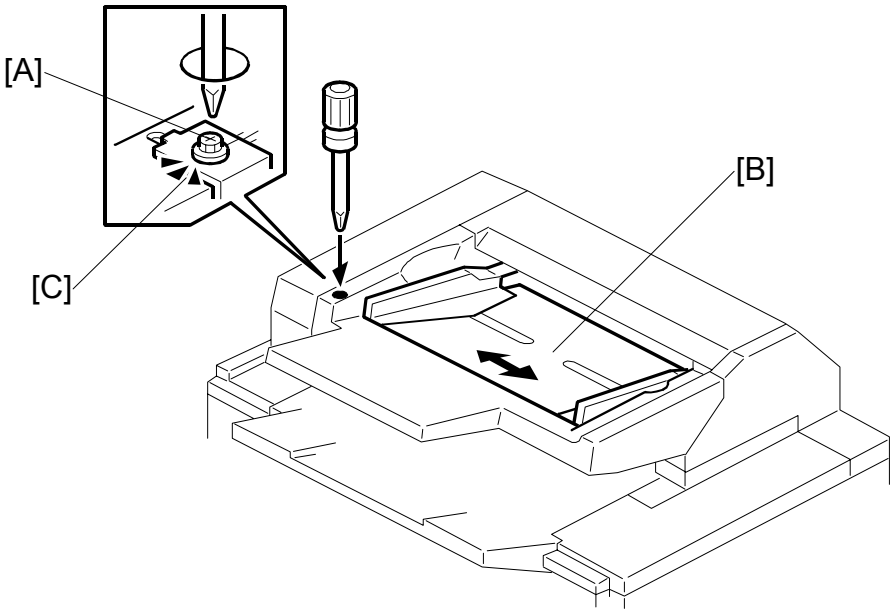
[B]: Feed belt holder
- Hold the feed belt holder by the sides, then lift up to separate from the holder.
- Pull slowly to avoid losing the springs.

[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.

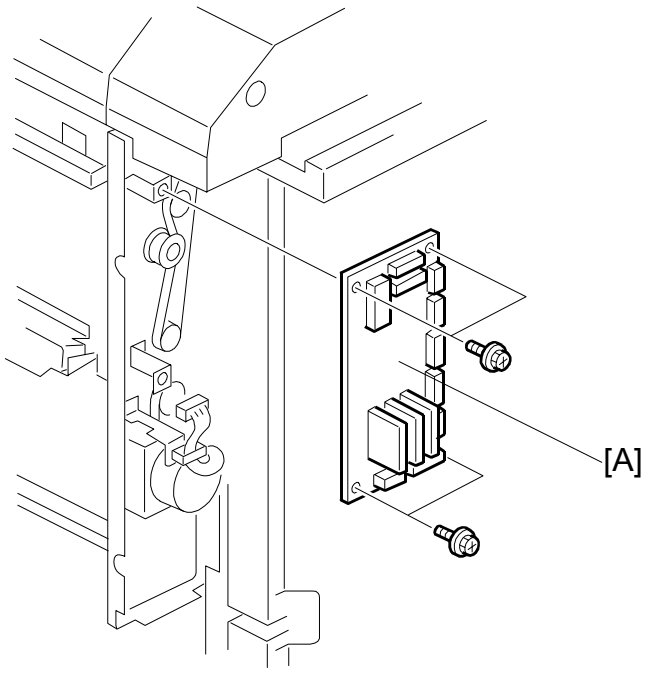
1.4 GUIDE PLATE ADJUSTMENT



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.

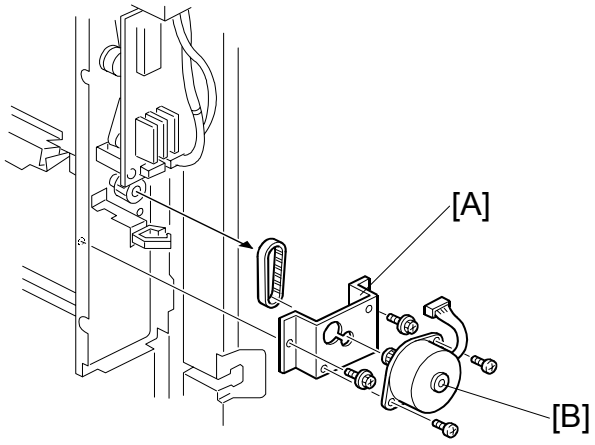
Rear cover (x 1)

[A]: Main board (x 9, x 4)

NOTE: All DIP switch settings on the main board of the cover sheet unit should be set to OFF.

1.6 MOTOR REPLACEMENT

1.6.1 VERTICAL TRANSPORT MOTOR



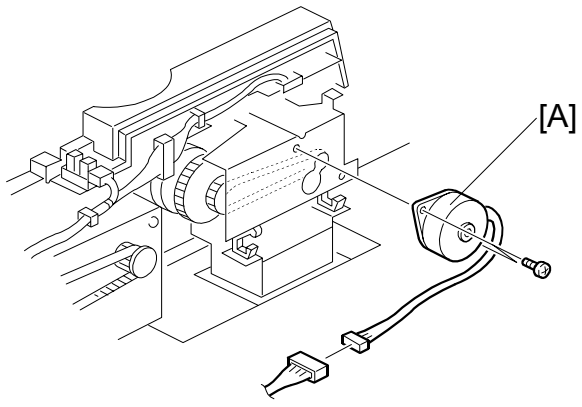
Open the top cover.

Rear middle cover (x 1) (☛ 1.1)

[A]: Motor bracket (x 1, harness x 1, x 2, timing belt x 1)

[B]: Motor (x 2)

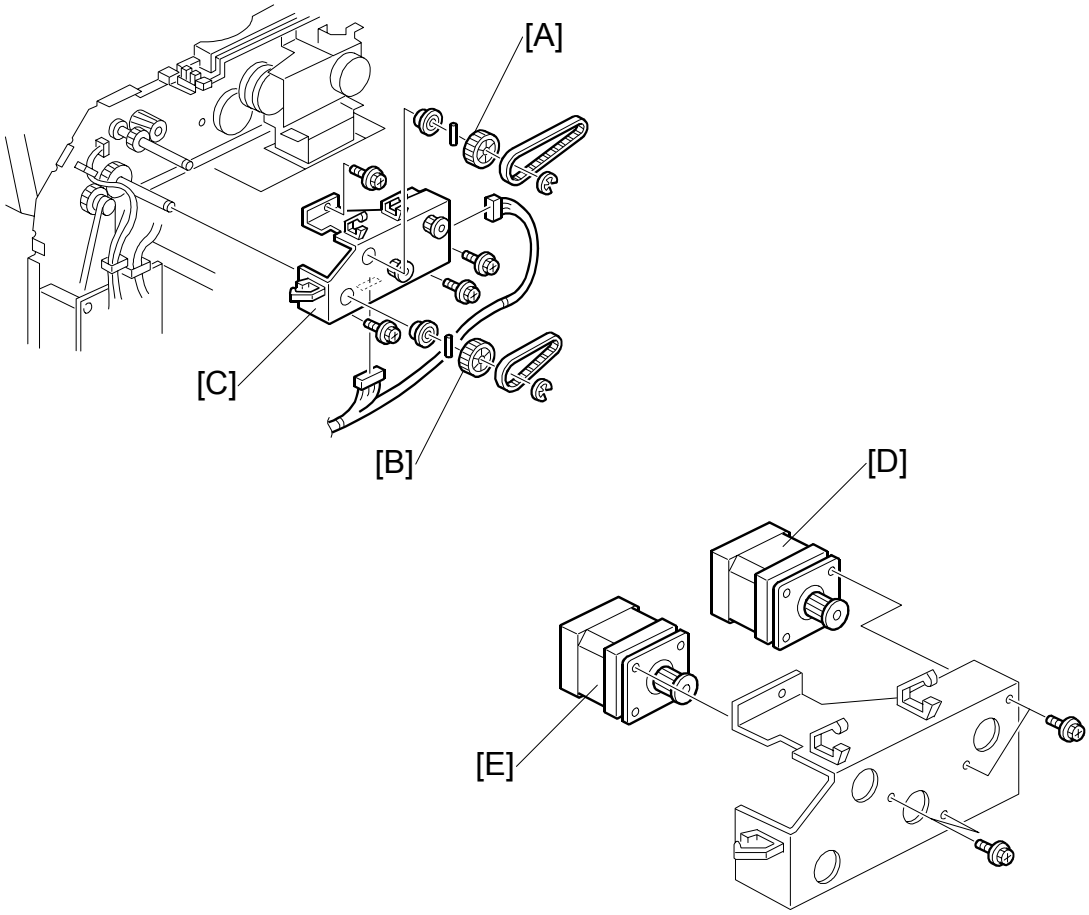
1.6.2 BOTTOM PLATE LIFT MOTOR



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)

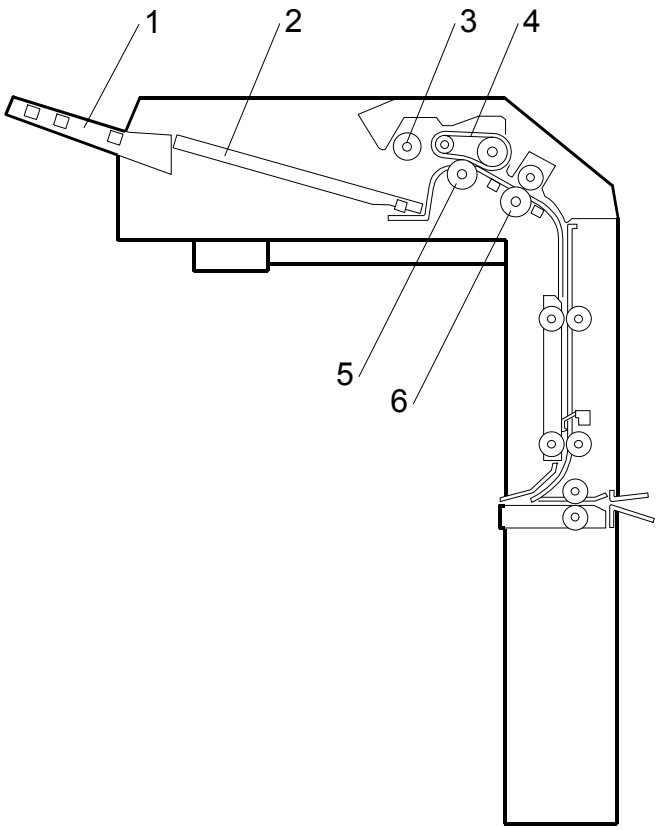
NOTE: When removing the feed gear and transport gear, hold one hand under the gear to catch the pin as it falls from the hole in the shaft.

[A]: Feed gear (ℂ x 1, pin x 1, timing belt x 1, bushing x 1)
[B]: Transport gear (ℂ x 1, pin x 1, timing belt x 1, bushing x 1)
[C]: Motor bracket (harness x 5, 𝒻 x 4)
[D]: Feed motor (🖳 x 1, 𝒻 x 2)
[E]: Transport motor (🖳 x 1, 𝒻 x 2)

2. DETAILS

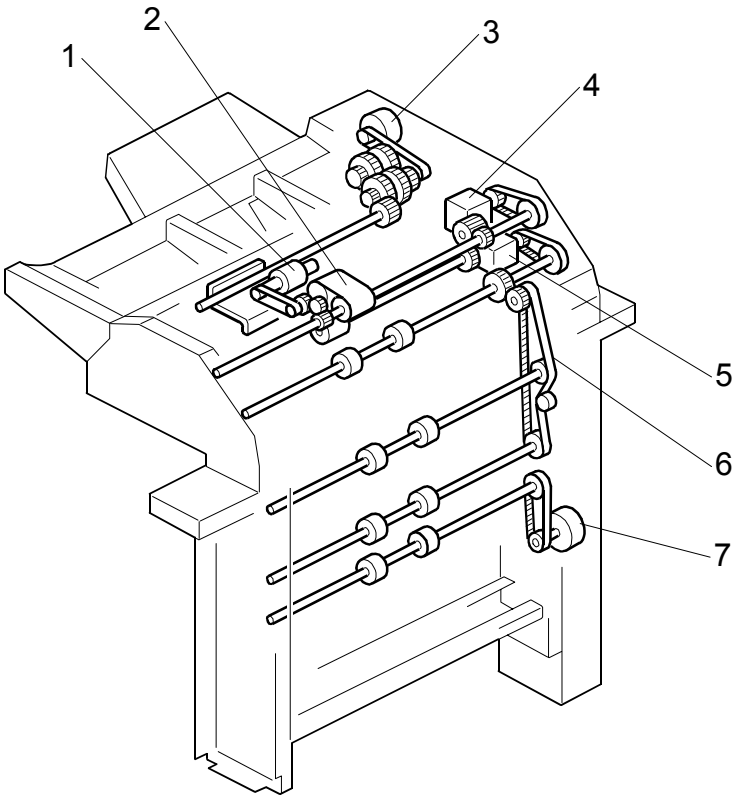
2.1 OVERVIEW

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

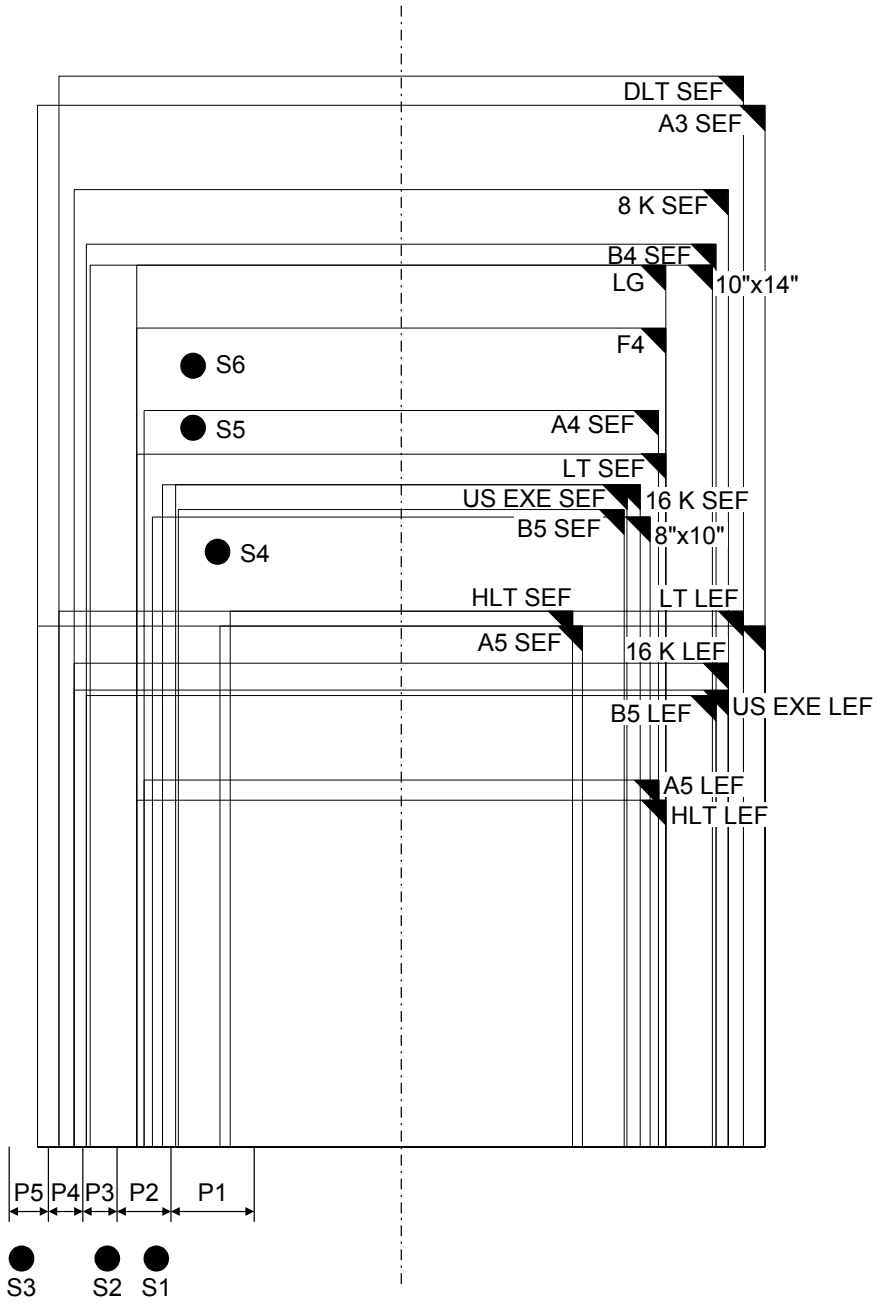
2.1.2 DRIVE LAYOUT



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

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
8 1/2" x 14"	1	0	0	1	1	1
8 1/2" x 13"	1	0	0	1	1	1
8 1/2" x 11"	1	0	0	1	0	0
11" x 8 1/2"	1	1	1	0	0	0
8" x 10"	1	0	0	1	0	0
5 1/2" x 8 1/2"	0	0	0	0	0	0
8 1/2" x 5 1/2"	1	0	0	0	0	0
7 1/2" x 10 1/2" (US Exec.)	0	0	0	1	0	0
10 1/2" x 7 1/2" (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"x14 *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	8 1/2" x 14"		Displays "F4 SEF" *2
LT SEF	8 1/2" x 11"		Displays "16 K SEF" *2
LT LEF	11" x 8 1/2"		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

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

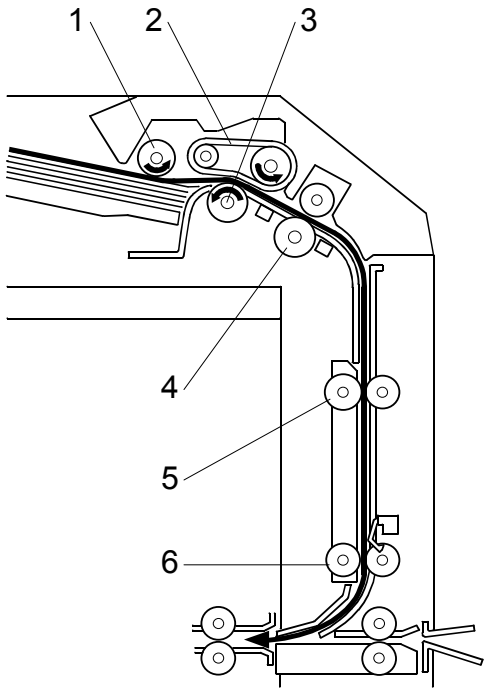
Execute SP5959 006 and enter the correct number for the size of the paper loaded for feeding from the cover interposer tray.

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.

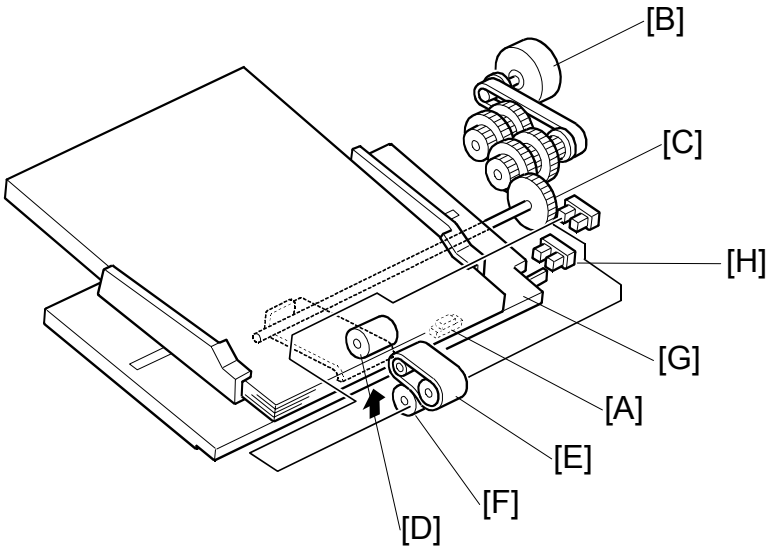
2.1.4 PAPER PATH



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.

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.

9-BIN MAILBOX
B471

REVISION HISTORY		
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9-BIN MAILBOX B471

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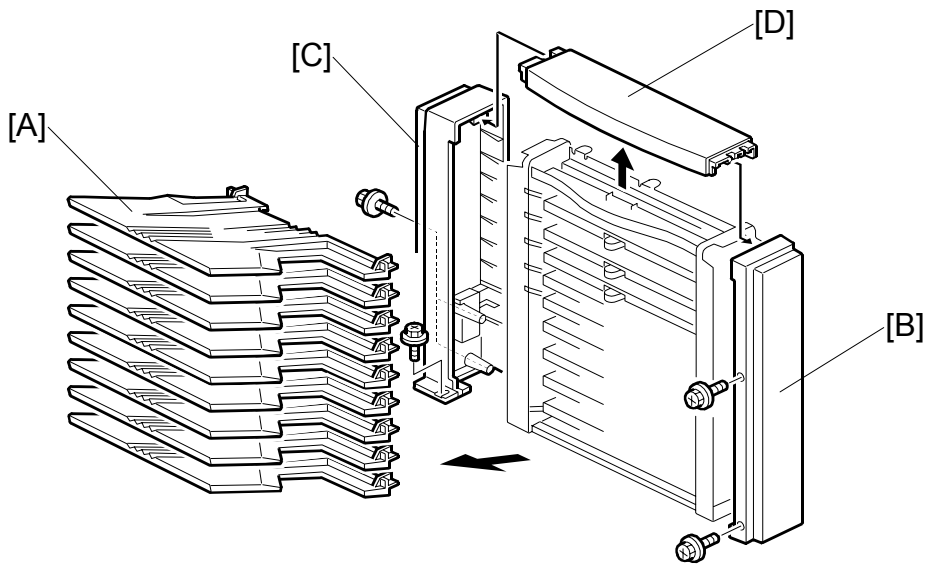
1. REPLACEMENT AND ADJUSTMENT

⚠CAUTION
Switch the machine off and unplug the machine before starting and procedure in this section.

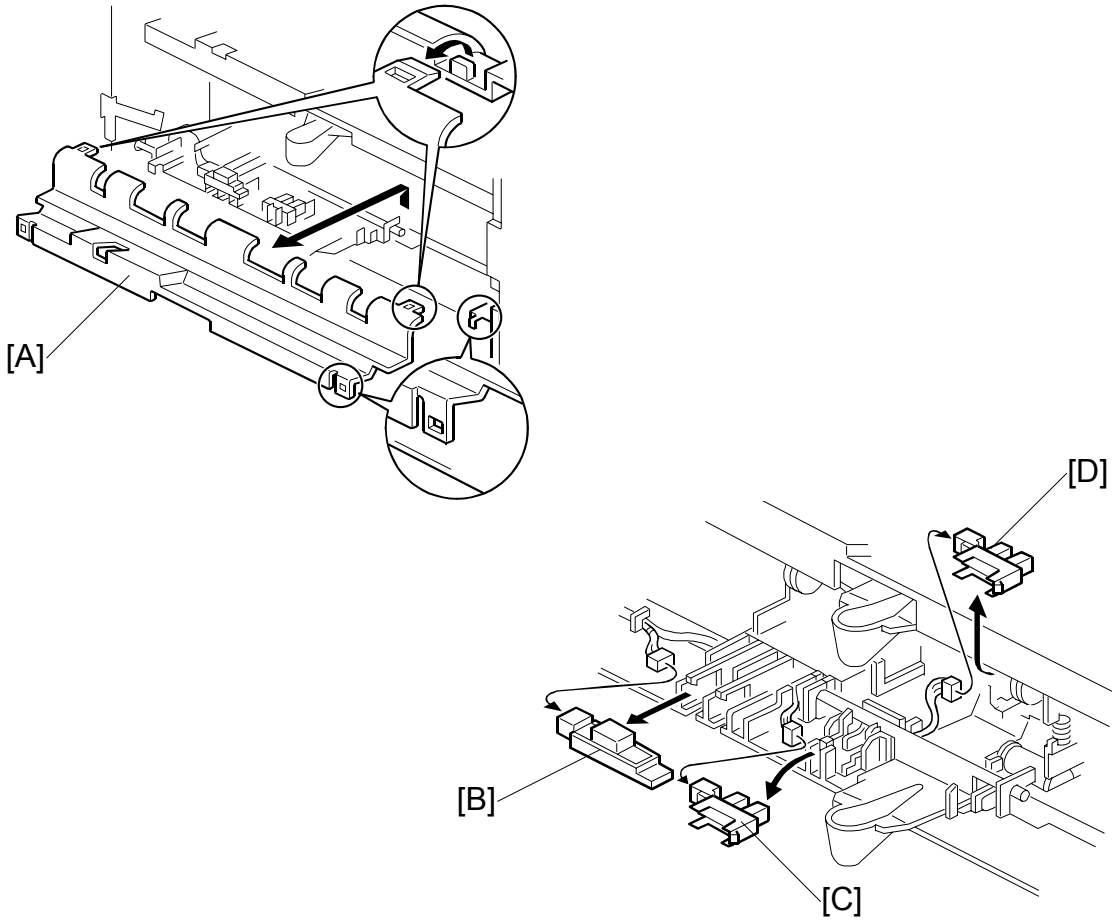
1.1 COVERS AND TRAYS



[A]: Trays
- Grip each tray by the front and lift out.

[B]: Front cover (🖉 x 2)
[C]: Rear cover (🖉 x 3)
[D]: Top cover

1.2 SENSORS



Remove the tray (☛ 1.1)

[A]: Bin cover

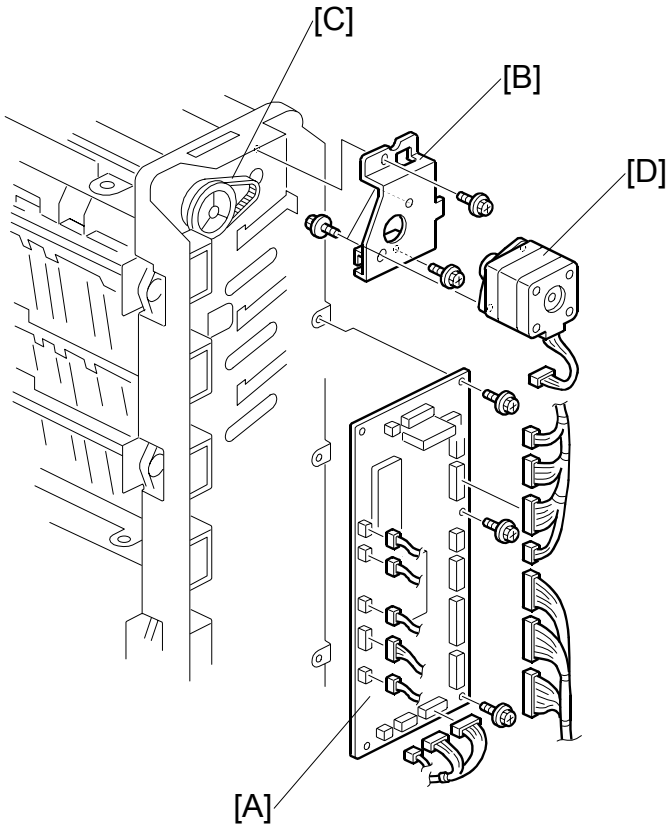
[B]: Tray sensor (✋ x 1)

[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



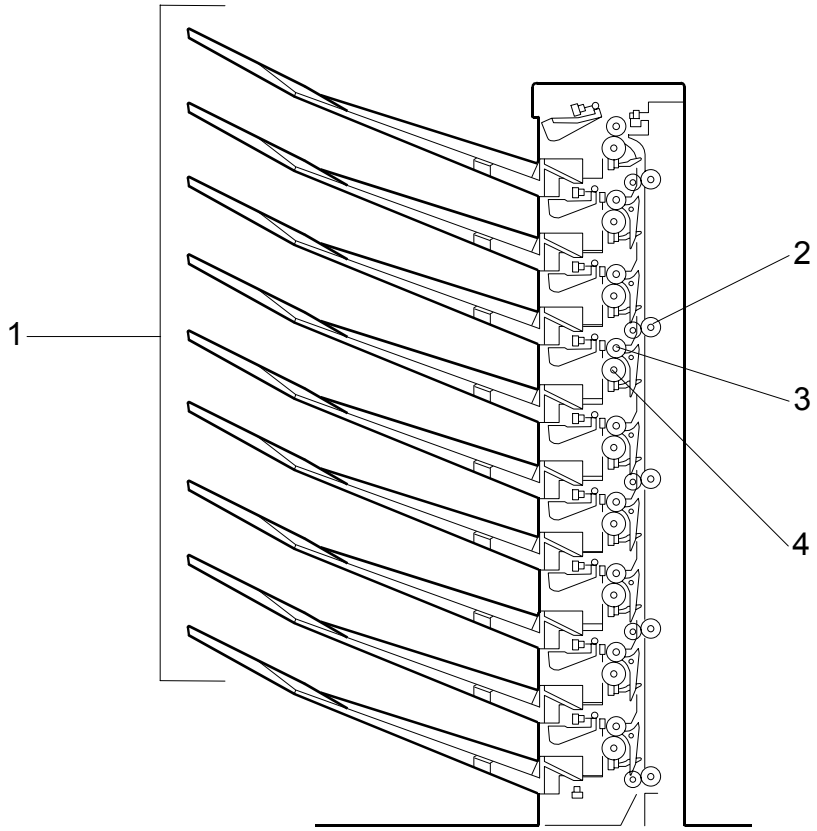
Rear cover (☛ 1.1)

[A]: Control board (🔩 x 3, 🖐 x 17)
[B]: Main motor bracket (main motor 🖐 x 1, 🔩 x 2)
[C]: Timing belt
[D]: Main motor (🔩 x 1)

2. DETAILS

2.1 OVERVIEW

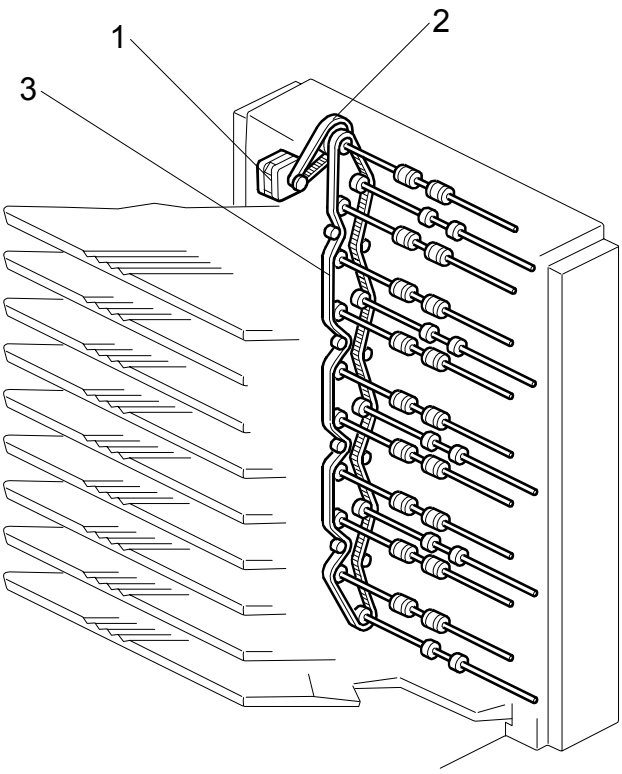
2.1.1 MAIN COMPONENT LAYOUT



1. Bins (x 9)
2. Vertical Transport Rollers (x 5)
3. Turn Gates (x 8)
4. Exit Rollers (x 9)

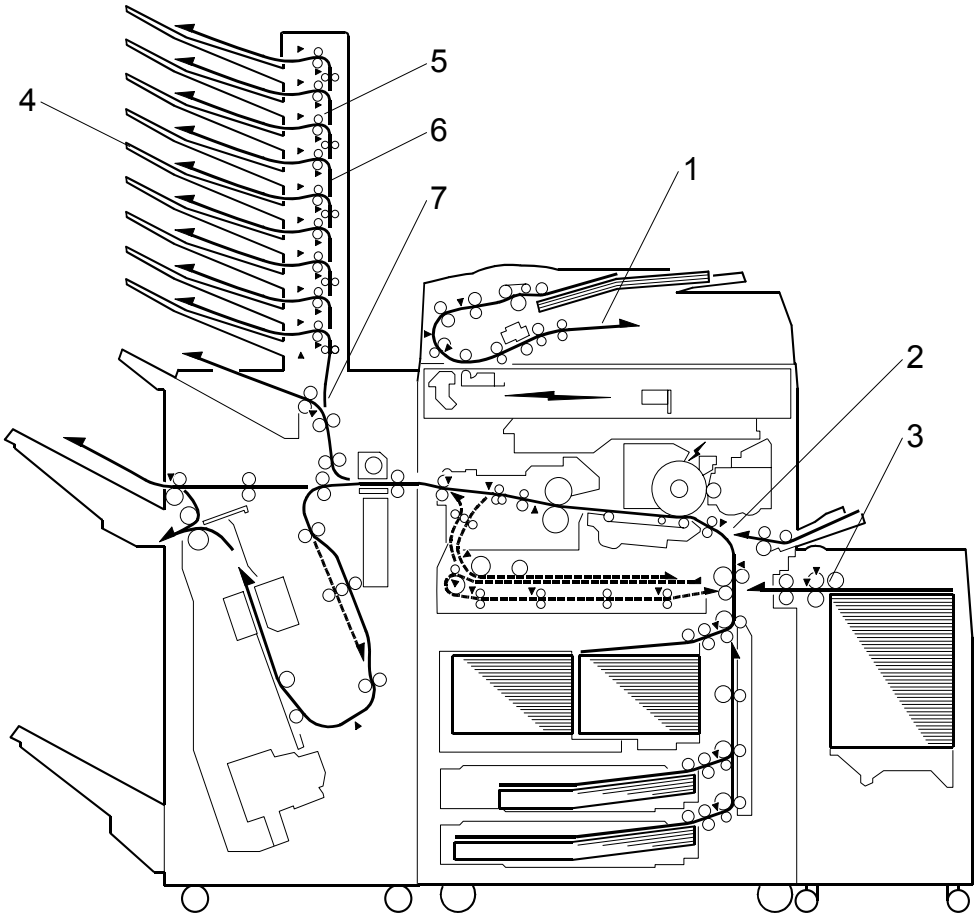
The trays are 1 to 9 (bottom to top). The numbers are clearly marked on the side of the unit. The top tray does not require a turn gate. When the top tray is selected for output, all turn gates remain closed, leaving only the top bin open.

2.1.2 DRIVE LAYOUT



1. Main Motor
2. Main Timing Belt
3. Timing Belt

2.1.3 PAPER PATH

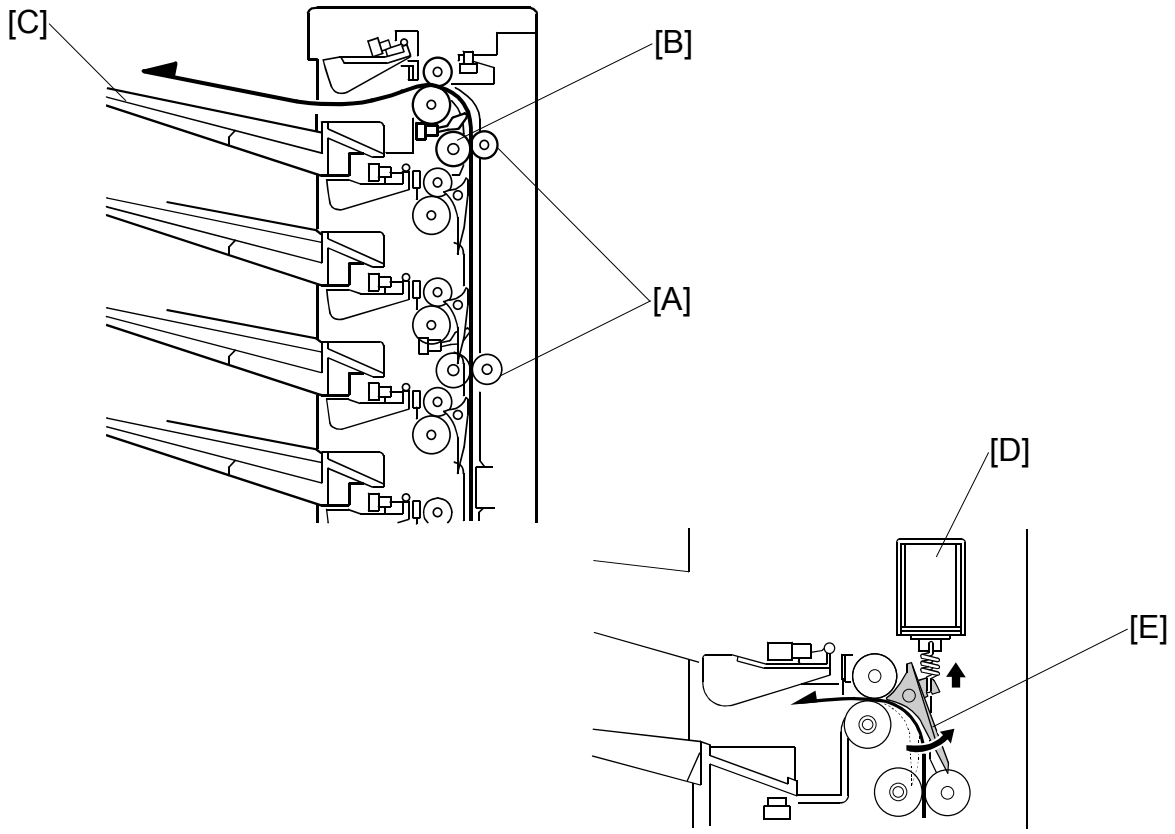


1. Original Paper Path
2. Vertical Transport Path
3. LCT Feed
4. Selected Trays
5. Turn Gates
6. Mailbox Paper Path
7. Junction Gate (paper goes either up to the mailbox or out to the finisher's proof tray)

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].

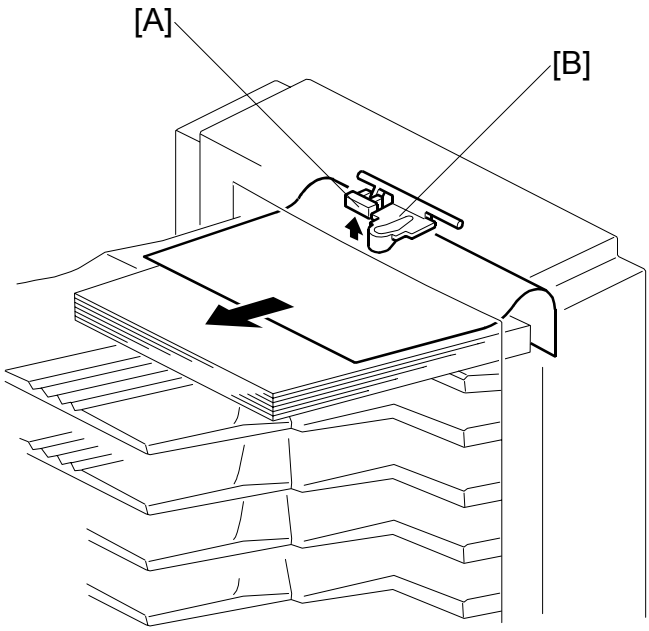
A solenoid [D] opens and closes the junction gate [E]. When a solenoid switches on, the gate opens and directs to the paper to the tray.

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.)

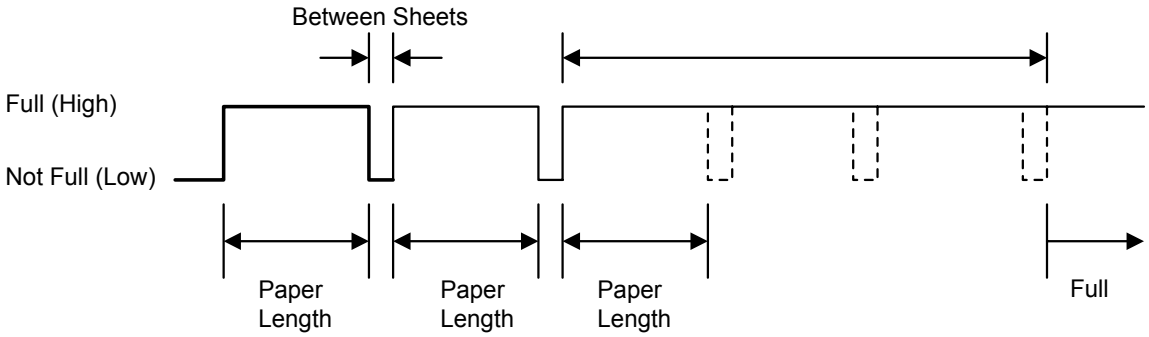
2.3 OVERFLOW DETECTION

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:

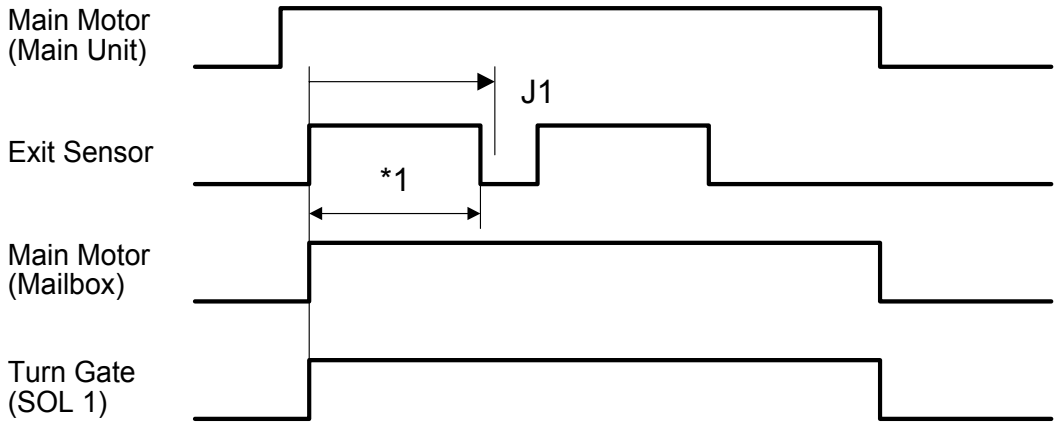
T (s) = (60/s x max. size ppm) x 3 s

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.

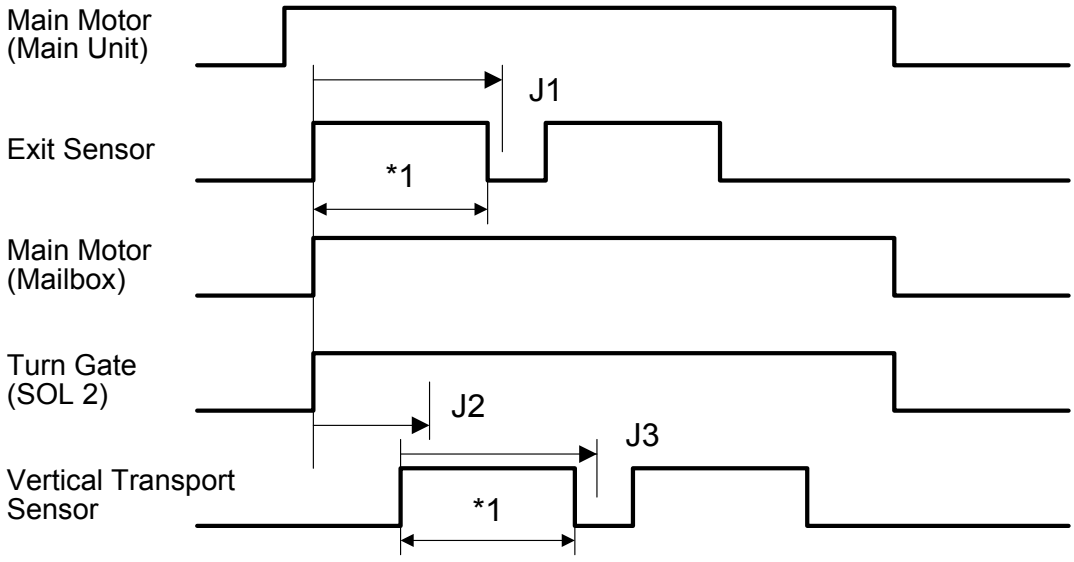
2.4 PAPER MISFEED DETECTION TIMING

2.4.1 A4 SIDEWAYS (LEF) → 1ST BIN TRAY



***1: Time required for A4 LEF**

2.4.2 A4 SIDEWAYS (LEF) → 2ND ~ 9TH BIN TRAY



***1: Time required for A4 Sideways (LEF)**
***2: Feed to 9th Tray: All SOLs OFF.**

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 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 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)

3000-SHEET FINISHER/JOGGER UNIT/PUNCH UNIT B478/B513/B531

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3000-SHEET FINISHER B478/JOGGER UNIT B513/PUNCH UNIT B531

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1. INSTALLATION

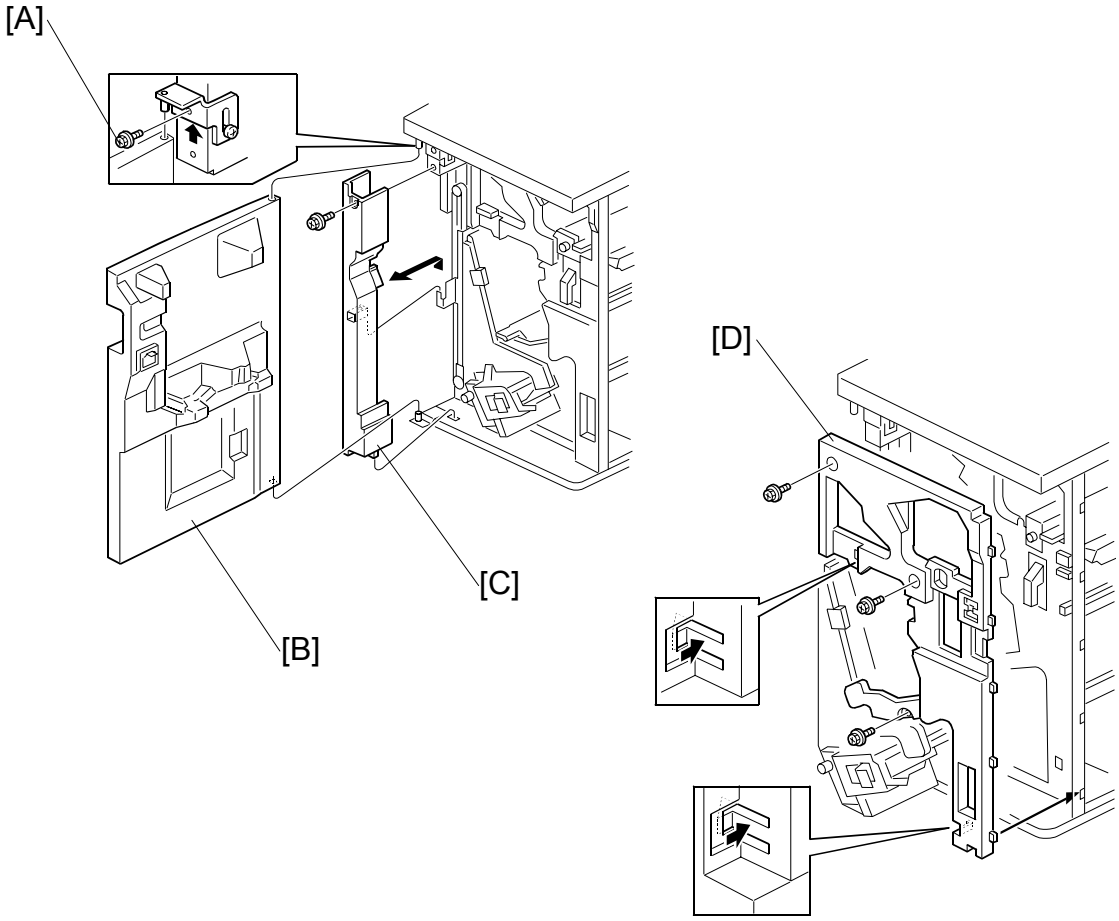
For details about installing the 3000 Sheet Finisher B478, please refer to the instructions you received with the instructions or the “1. Installation” in the main machine service manual.

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] (x 1).
2. Remove the front door [B].

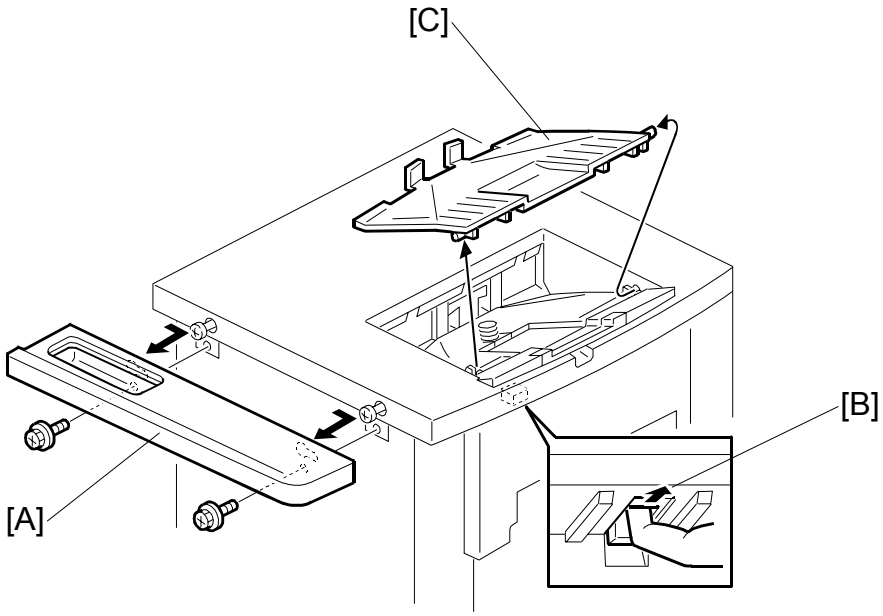
Left Inner Cover

1. Remove the front door.
2. Remove the left inner cover [C] (x 1).

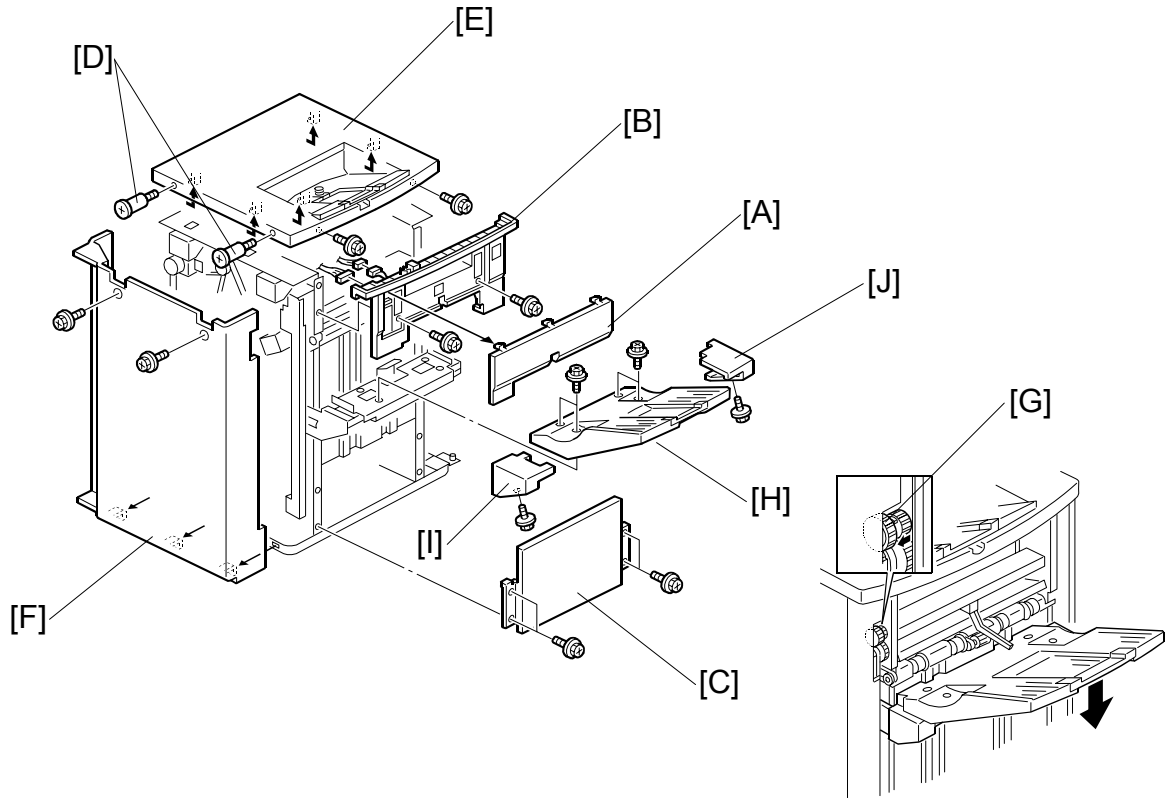
Inner Cover

1. Remove the inner cover [D] (x 3).

Side Table and Upper Tray



1. Remove the side table [A] (☞ 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] (x 2, x 2).
3. Remove the door and left inner cover. (See “Front Door and Left Inner Cover Replacement”.)
4. Remove the rear cover [F] (x 2).
5. Remove the left lower cover [C] (x 4).

Rear Cover and Top Cover

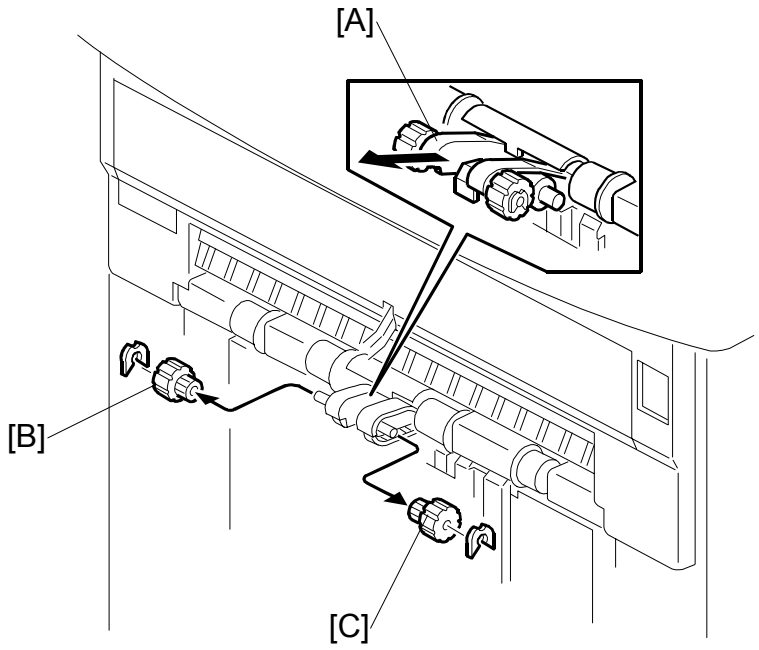
1. Remove the upper tray. (See “Side Table and Upper Tray”.)
2. Remove the step screws [D] (x 2).
3. Remove the top cover [E] (x 2). Slide to the right to remove.
4. Remove the rear cover [F] (x 2).

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] (x 4).
3. Remove the shift tray rear cover [I] and front cover [J] (x 1 each).

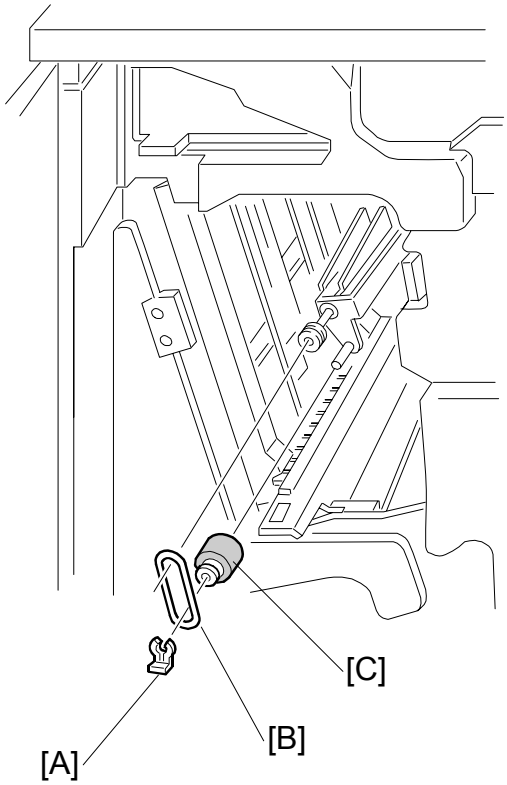
3.2 ROLLERS

3.2.1 SHIFT POSITIONING ROLLER



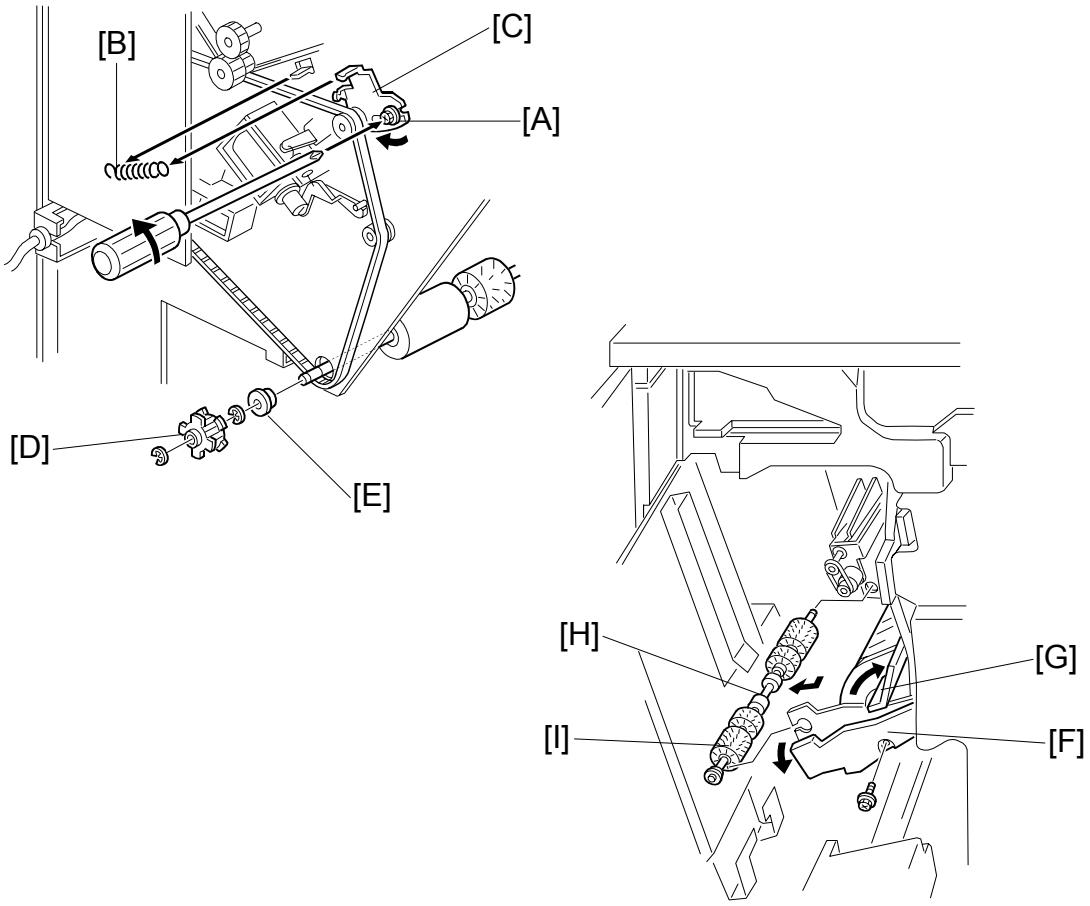
1. Above the shift tray, pull the roller mount [A] out.
2. Remove the rollers [B] and [C] (⟲ x 1 each)

3.2.2 POSITIONING ROLLER



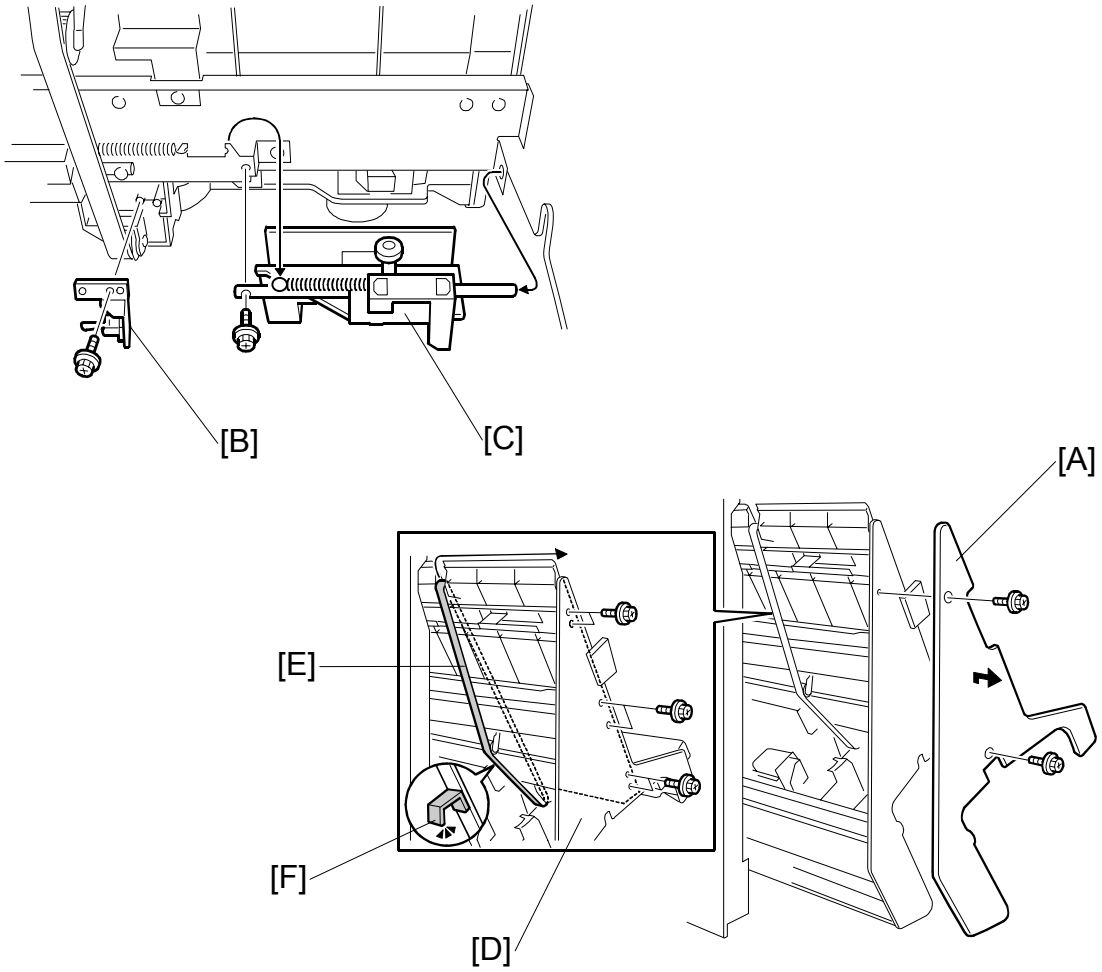
1. Open the front door.
2. Remove the snap ring [A].
3. Release the rubber belt [B].
4. Replace the positioning roller [C].

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 (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] (x 2).
6. Remove the inner cover [F] (x 1).
7. Open the guide [G], then remove the alignment brush roller assembly [H] (x 1).
8. Remove the alignment brush roller [I] (x 1, bushing x 1 front/back).

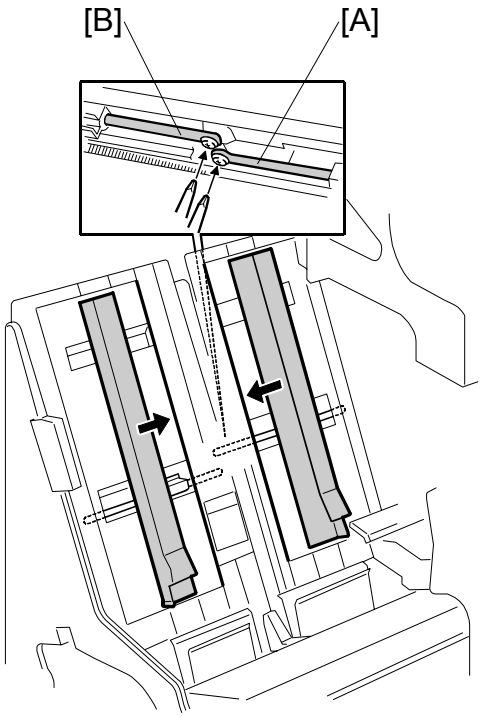
3.3 STACK FEED-OUT BELT



1. Open the front door.
2. Pull out the jogger and stapler unit.
3. Remove the inner cover [A] (x 2).
4. Remove the sensor bracket [B] (x 1, x 1, clamp x 1).
5. Remove the front guide [C] (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 (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.

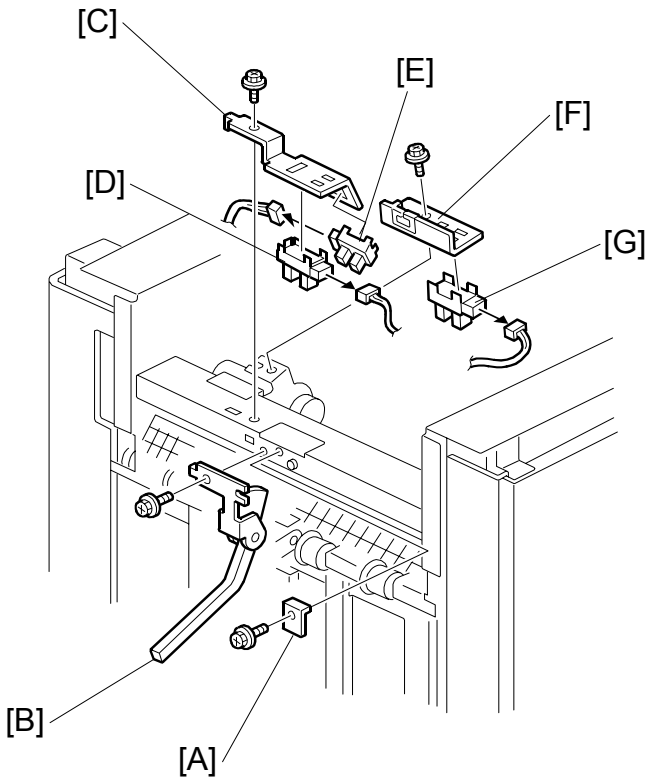
3.4 JOGGER FENCE



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



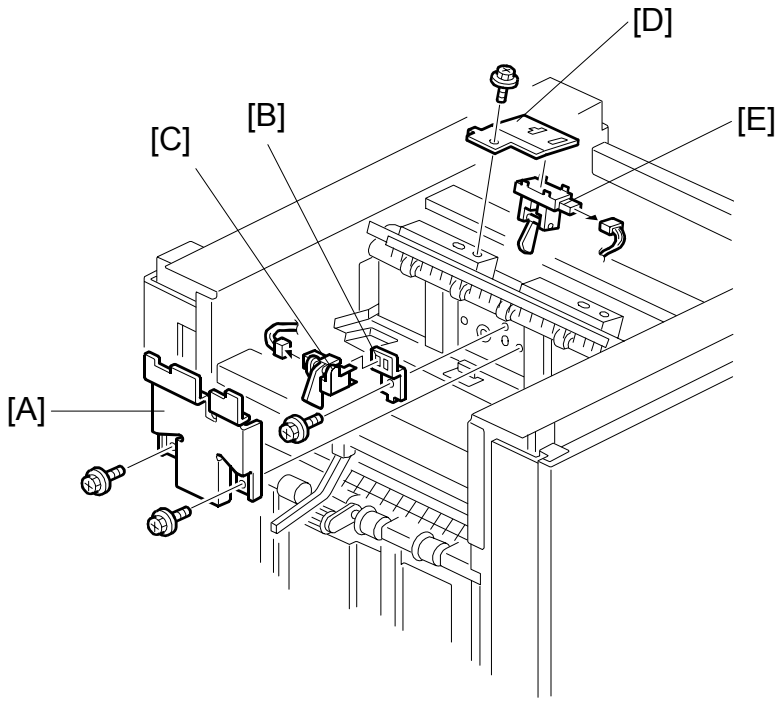
Stack Height Sensors 1 and 2

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



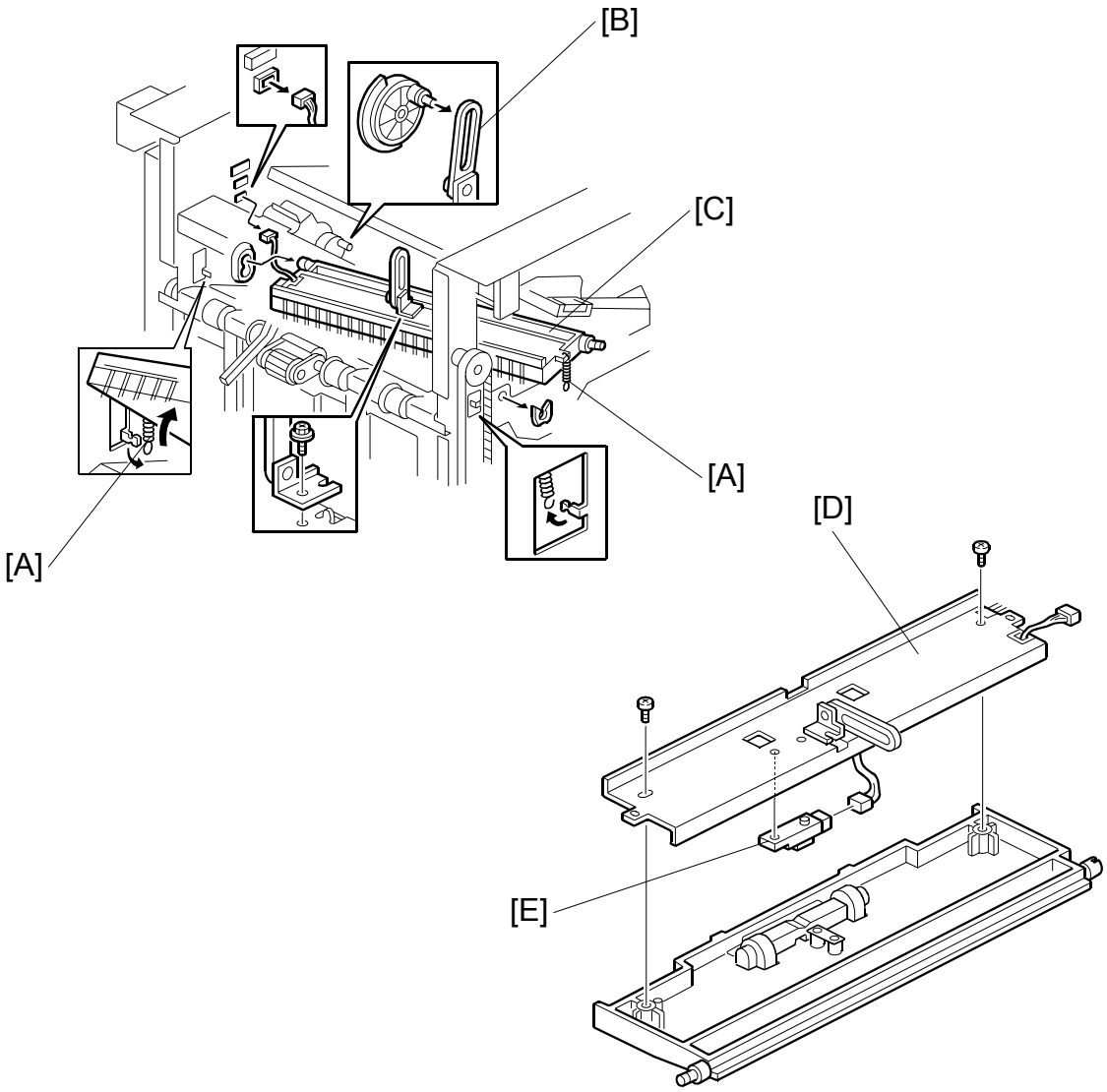
Upper Tray Paper Limit Sensor

1. Remove the top cover.
2. Remove the sensor cover [A] (☞ x 2).
3. Remove the sensor bracket [B] (☞ x 1).
4. Replace the upper tray paper limit sensor [C] (☞ x 1).

Upper Tray Exit Sensor

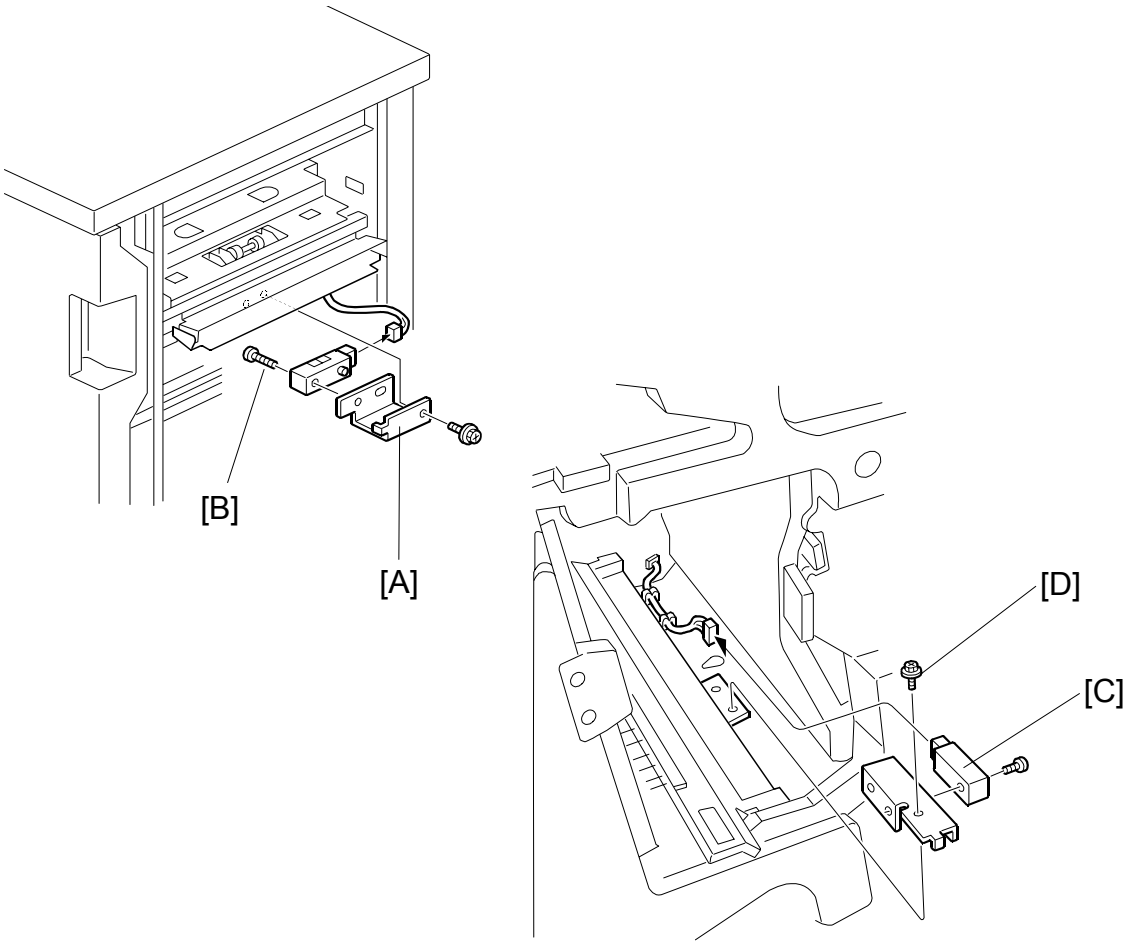
5. Remove the sensor bracket [D] (☞ x 1).
6. Replace the upper tray exit sensor [E] (☞ x 1).

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).

3.5.4 ENTRANCE AND STAPLER TRAY ENTRANCE SENSORS



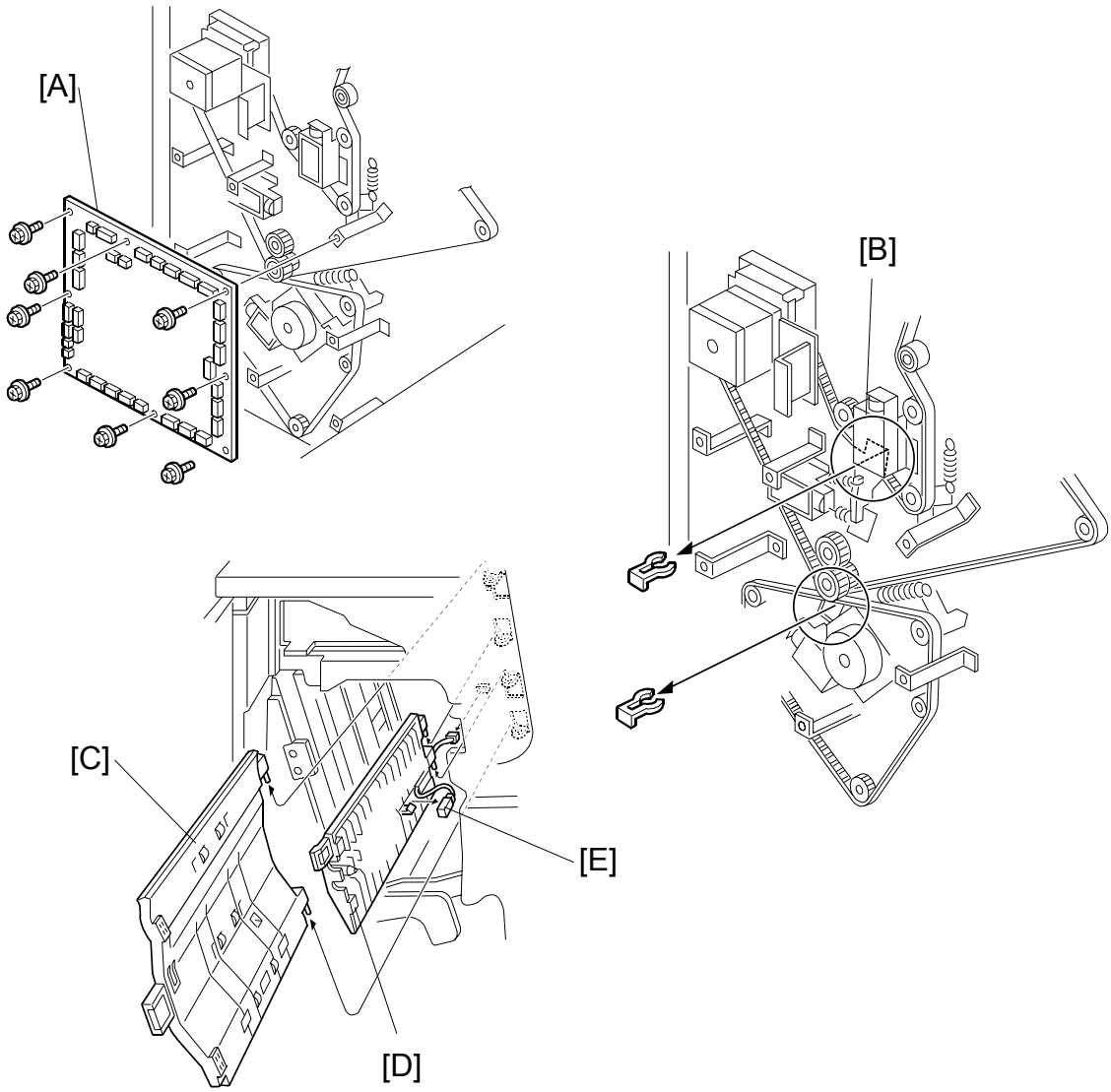
Entrance Sensor

1. Disconnect the finisher from the copier.
2. Remove the sensor bracket [A] (x 1).
3. Replace the entrance sensor [B] (x 1, x 1).

Stapler Tray Entrance Sensor

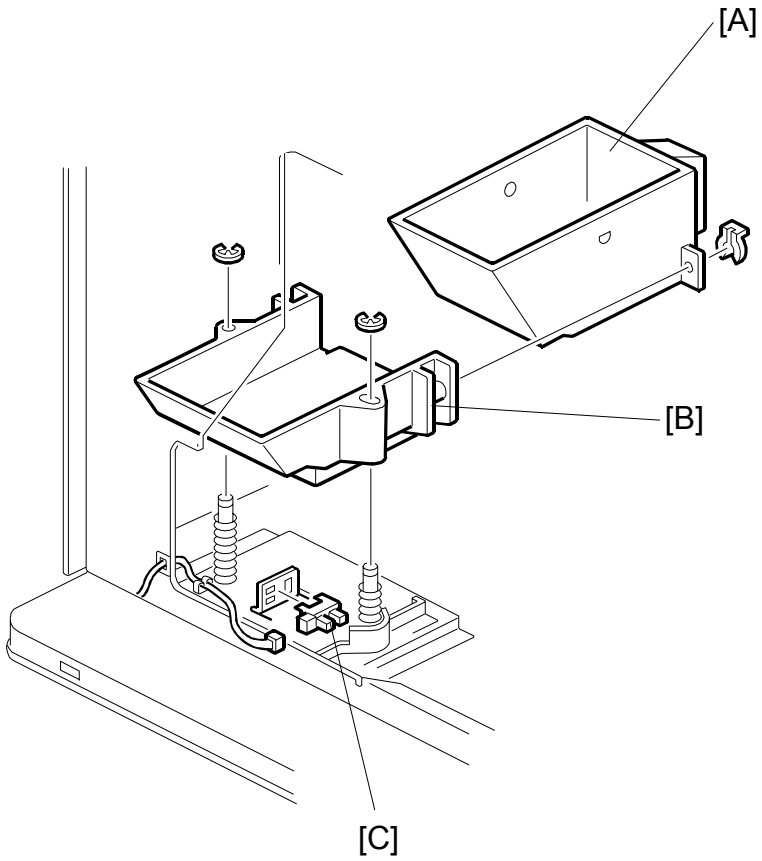
1. Open the front door.
2. Remove the sensor bracket [C] (x 1).
3. Replace the stapler tray entrance sensor [D] (x 1, x 1).

3.5.5 PRE-STACK PAPER SENSOR



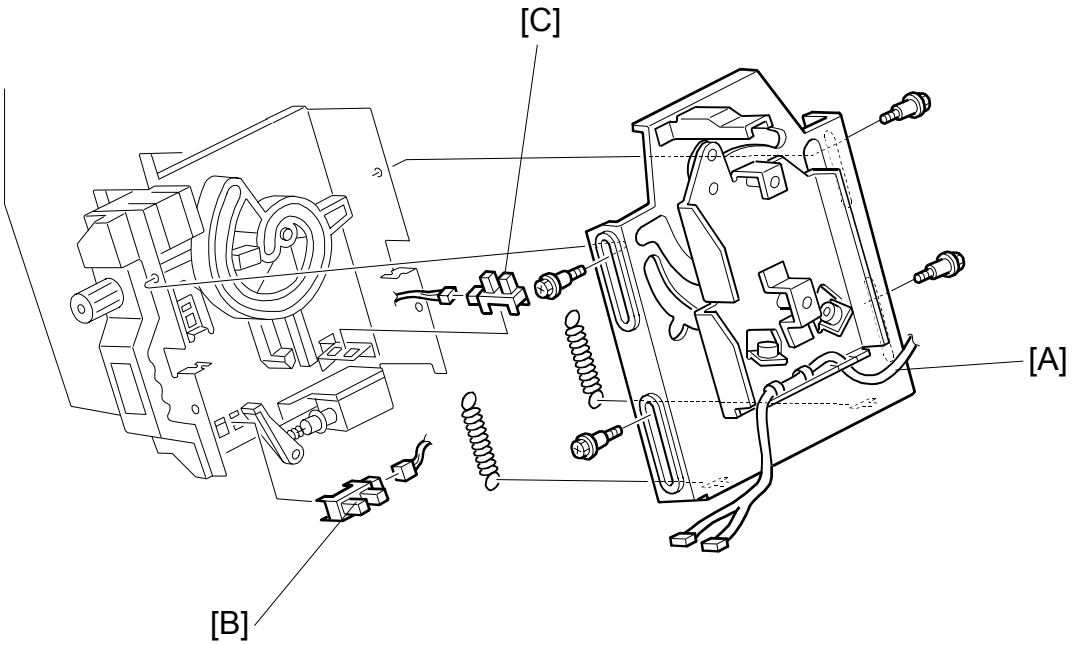
1. Remove the rear cover.
2. Remove the main board [A] (x 8, x all).
3. Release the guide [B] (x 2).
4. Open the front door.
5. Remove the left vertical transport guide [C].
6. Remove the middle vertical transport guide [D] (x 1).
7. Replace the pre-stack paper sensor [E] (x 1).

3.5.6 STAPLE WASTE HOPPER SENSOR



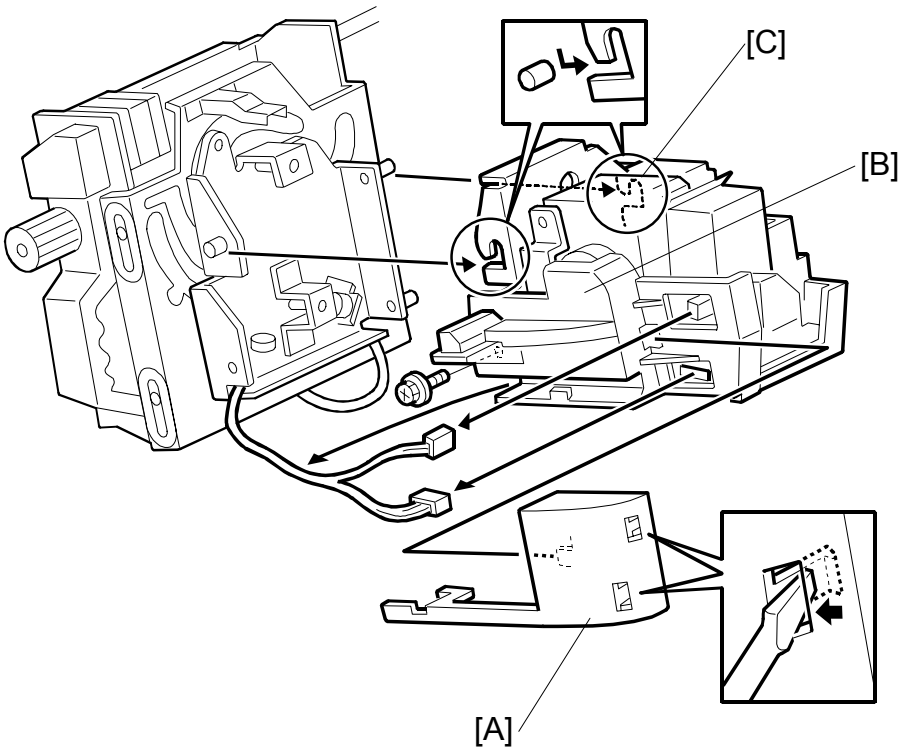
1. Open the front door, pull out the stapler unit, then remove the rear cover.
2. Remove the rear cover (x 2).
3. Remove the staple waste hopper [A] (x 1).
4. Remove the hopper holder [B] (x 2).
5. Replace the staple waste hopper sensor [C] (x 1).

3.5.7 STAPLER ROTATION HP AND STAPLER RETURN SENSORS



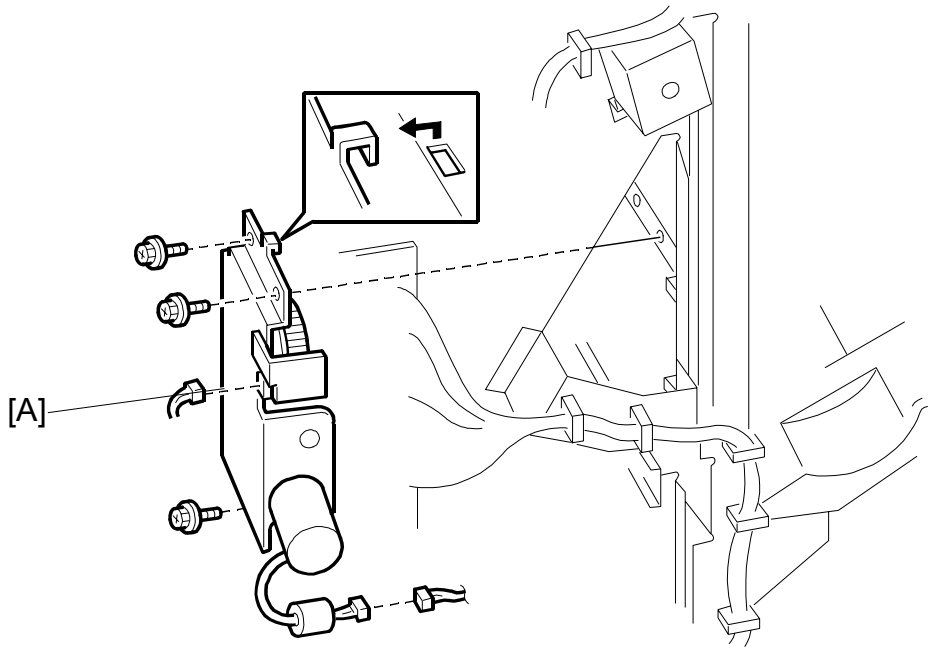
1. Remove the stapler unit. (See next page.)
2. Remove the stapler mount bracket [A] (x 4, springs x 2).
3. Replace the stapler rotation HP sensor [B] (x 1).
4. Replace the stapler return sensor [C] (x 1).

3.6 STAPLER



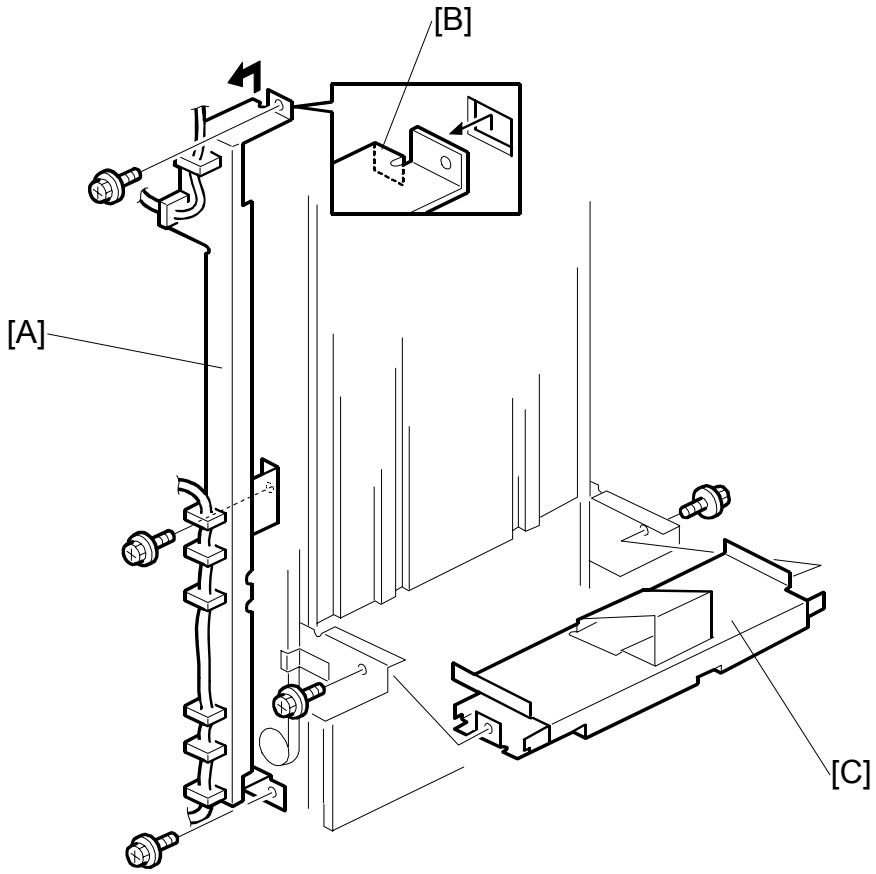
1. Open the front door and pull out the staple tray.
2. Remove the stapler unit harness cover [A].
3. Remove the stapler cover [B] (x 1, x 2).
4. Lift the stapler off of the pegs [C].

3.7 SHIFT TRAY MOTOR

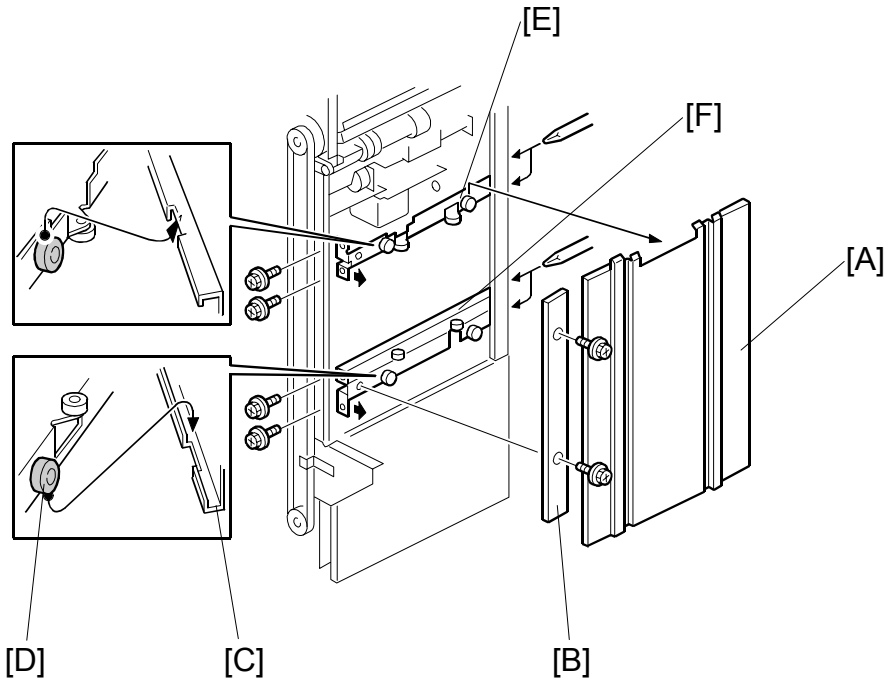


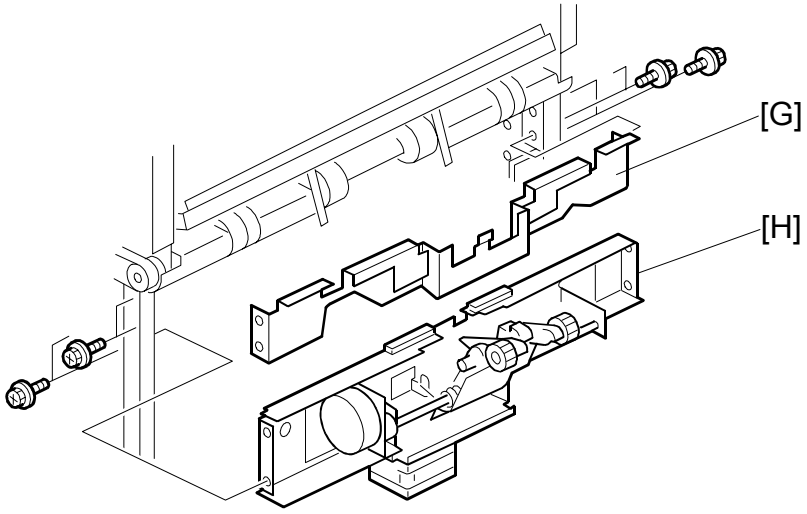
1. Remove the front door and rear cover (☛ 3.1).
2. Shift motor [A] (x 2, x 3)

3.7.1 STACKING ROLLER/ROLLER DRAG MOTORS, RETURN HP SENSOR

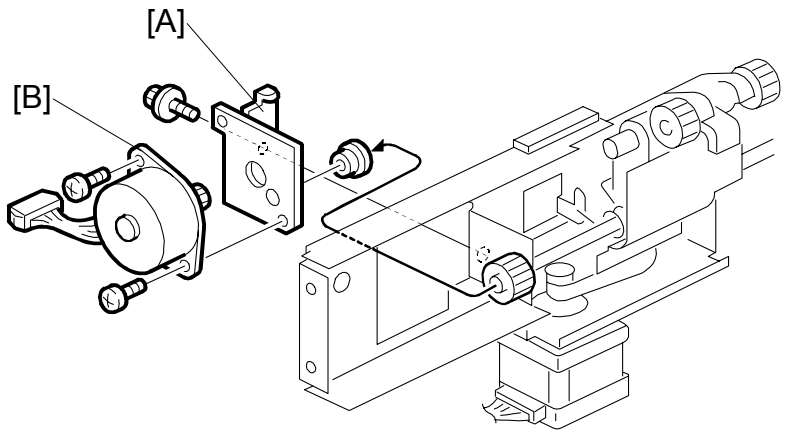


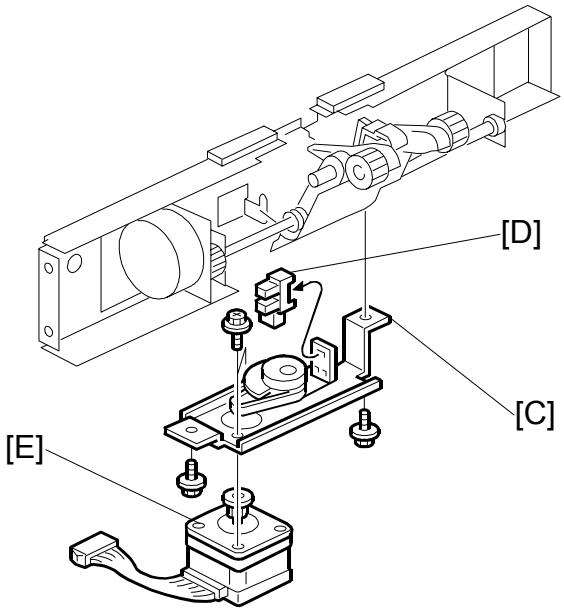
1. Do the procedures to remove the front door and all covers, with the exception of the left lower cover and top cover (labeled [C]: and [E]).
   NOTE: Be sure to lower the shift tray by pulling the gear toward you. The shift tray must be down.
2. Remove the shift tray motor. (☛ 3.7)
3. Remove the left stay [A] (🔩 x 3).
4. Unhook the stay at top [B].
5. Remove the shift tray mounting plate [C] (🔩 x 2).





6. Remove the end fence [A] and plate [B] (x 2).
7. Disengage the end fence races [C] from the rollers [D] behind the fence.
8. Remove the upper stay [E] (x 4).
9. Remove the lower stay [F] (x 4).
10. Remove the cover [G] (x 4).
11. Remove the stacking roller/drag motor stay [H] (x 3, x 4).
    NOTE: Make sure the motor and sensor connectors are disconnected before removing.

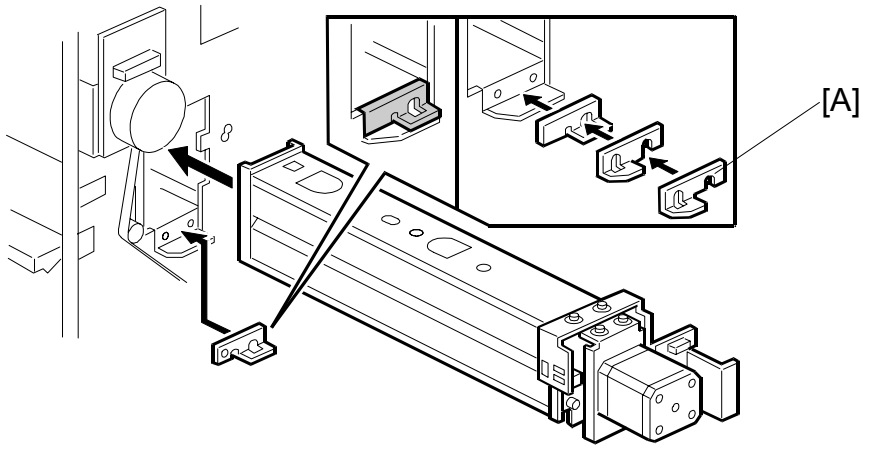




12. Remove the stacking motor bracket [A] (bushing x 1, ☞ x 1).
13. Remove the stacking motor [B] (☞ x 2).
14. Remove the roller drag motor bracket [C] (☞ x 2).
15. Remove return HP sensor [D].
16. Remove the roller drag motor [E] (☞ x 1).

3.8 PUNCH UNIT B531 (OPTION)

3.8.1 PUNCH POSITION ADJUSTMENT



The position of the punched holes can be adjusted in two ways.

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.

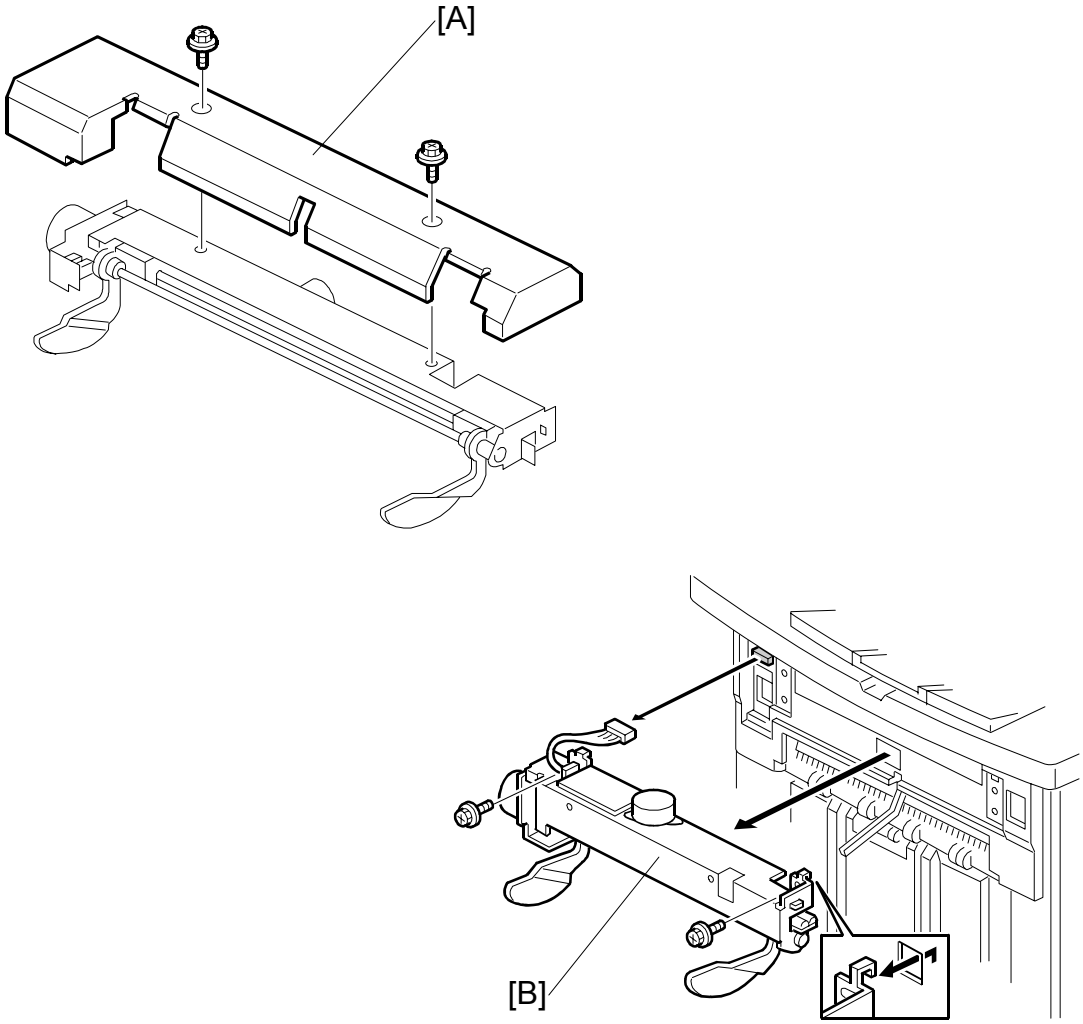
Right to Left Adjustment

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 ± 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.

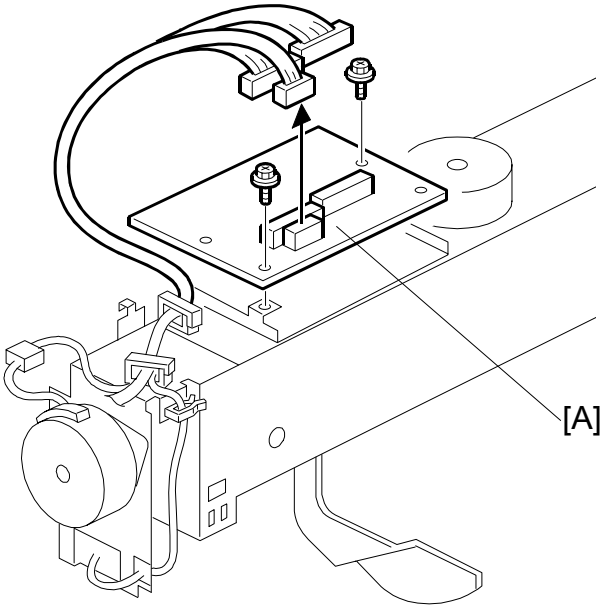
3.9 JOGGER UNIT B513 (OPTION)

3.9.1 JOGGER UNIT



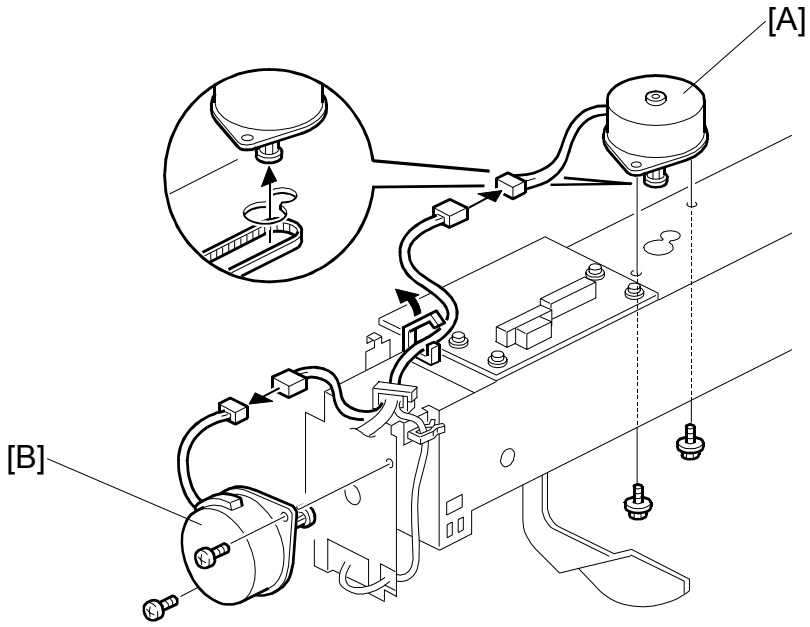
1. Remove the jogger unit cover [A] (☞ x 2).
2. Remove the jogger unit [B] (☞ x 2, ☞ x 1).

3.9.2 JOGGER UNIT PCB



1. Remove the jogger unit from the finisher. (☛ 3.9.1)
2. Remove the jogger unit control PCB [A] (🔩 x 2, 🔌 x 3).

3.9.3 JOGGER UNIT MOTOR



1. Remove the jogger unit from the finisher. (☛ 3.9.1)
2. Remove the shift jogger motor [A] (x 2, x 1).
3. Remove the shift jogger lift motor [B] (x 2, 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 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

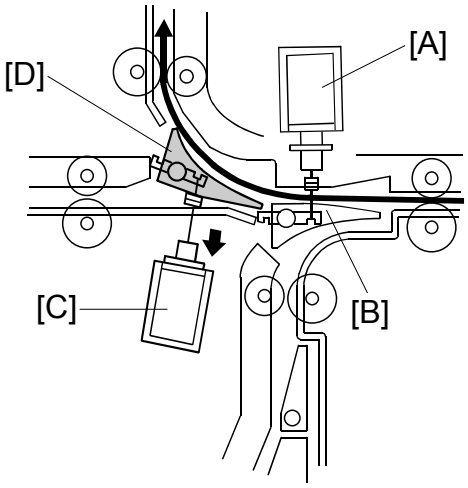
5.3 FUSES

No.	Function
FU100	Protects 24 V.

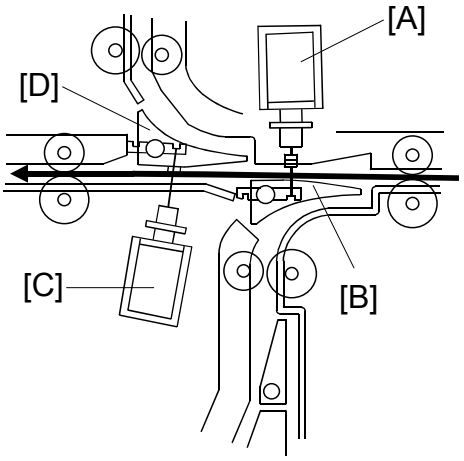
6. DETAILS

6.1 TRAY AND STAPLER JUNCTION GATE

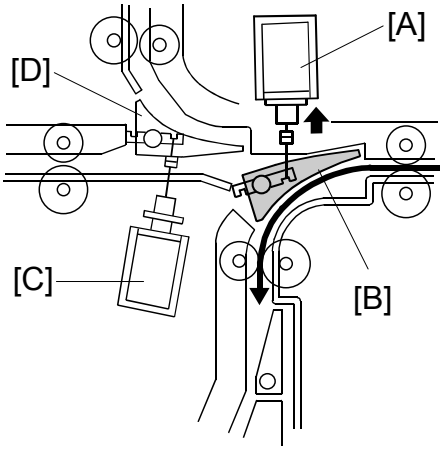
Upper Tray Mode



Sort/Stack Mode



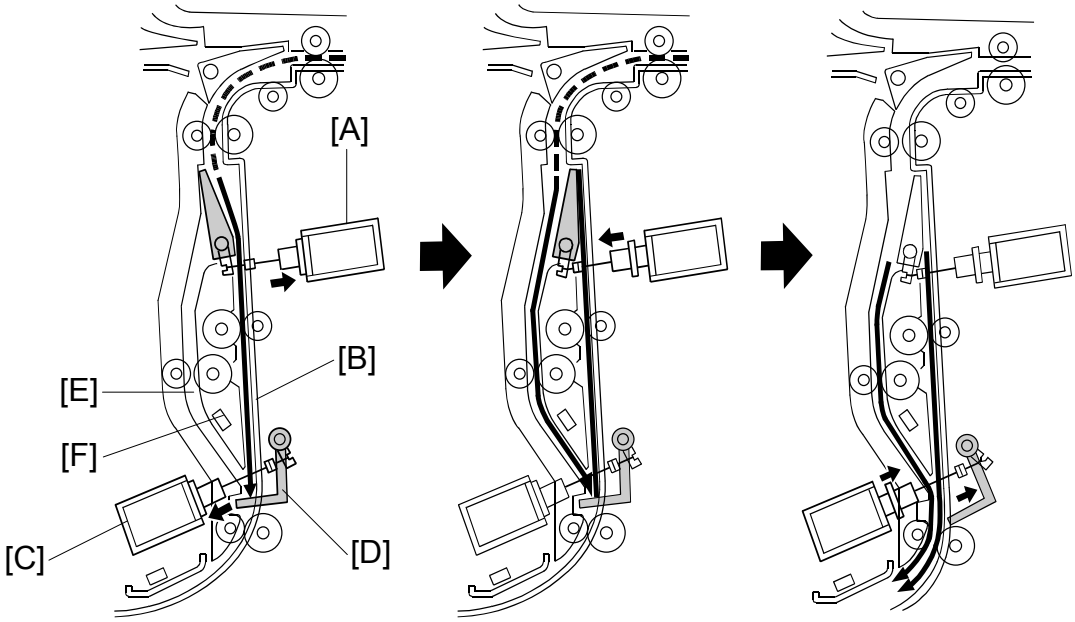
Staple Mode



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



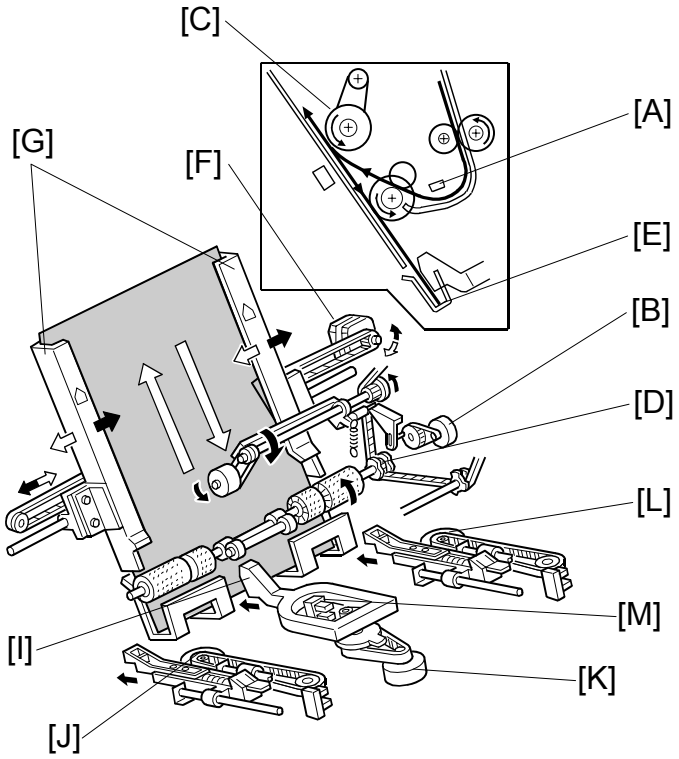
This mechanism improves productivity in staple mode. It is only used when copying on A4, LT, or B5 (all LEF).

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



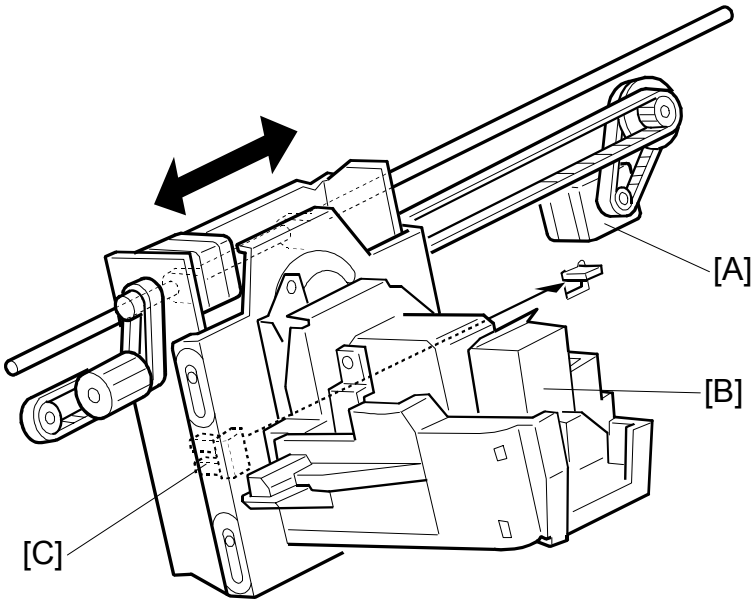
In the staple mode, as every sheet of paper arrives in the jogger unit, it is vertically and horizontally aligned, then the staple edge is pressed flat to ensure the edge of the stack is aligned correctly for stapling.

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



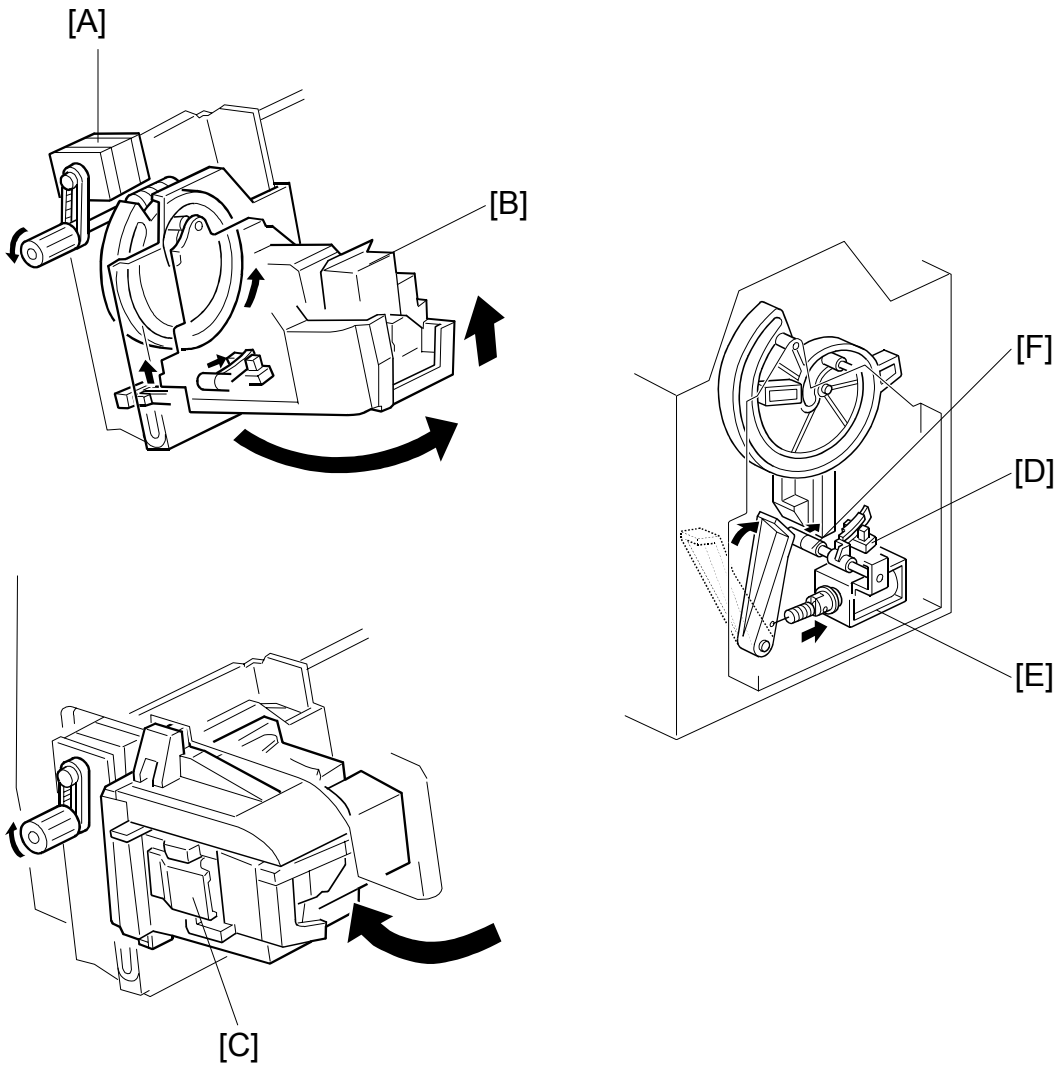
Side-to-Side

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].



Rotation (1)

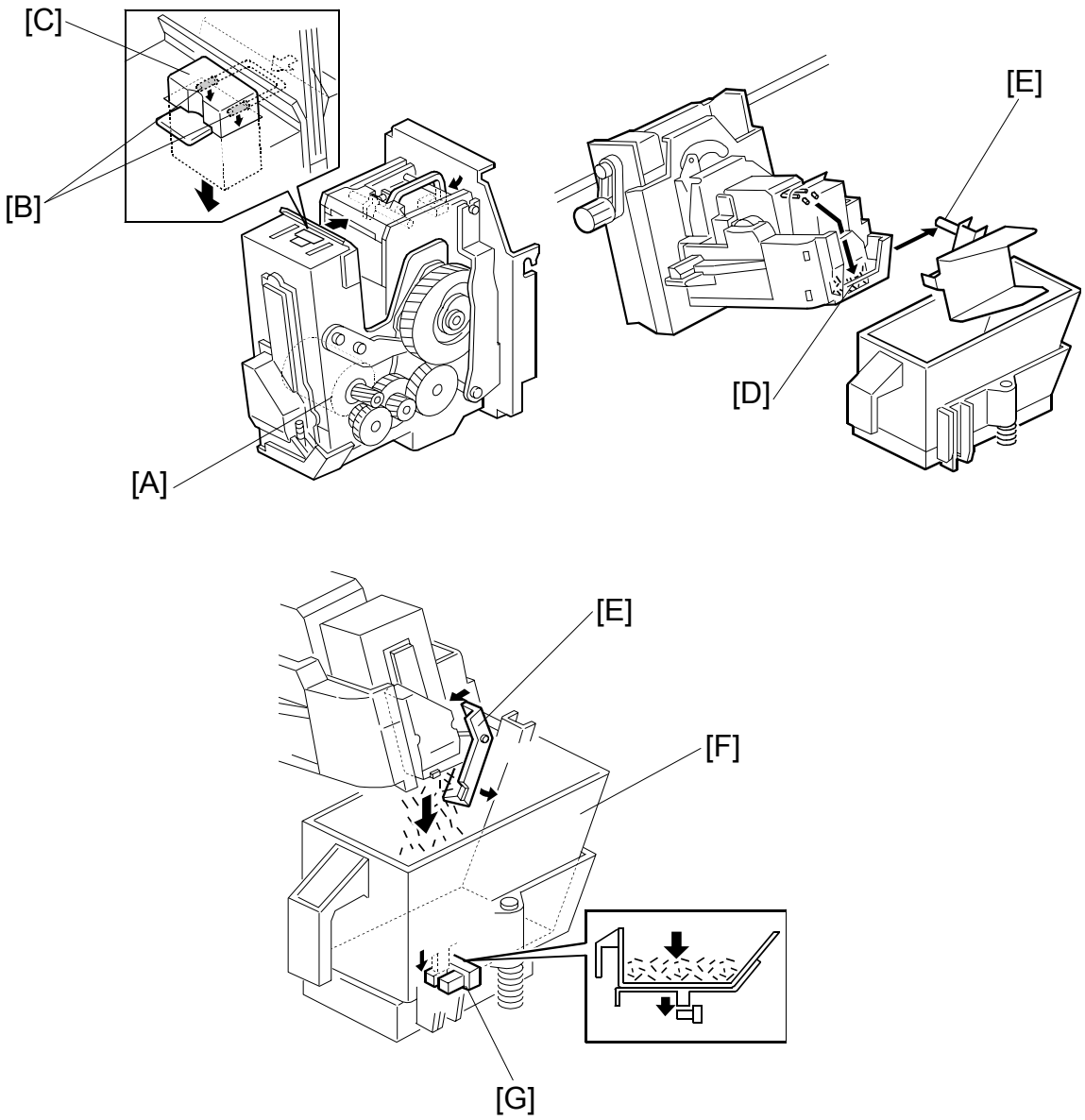
In the oblique staple position mode, the stapler rotation motor [A] rotates the stapler units [B] 45° to counterclockwise after it moves to the stapling position.

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.

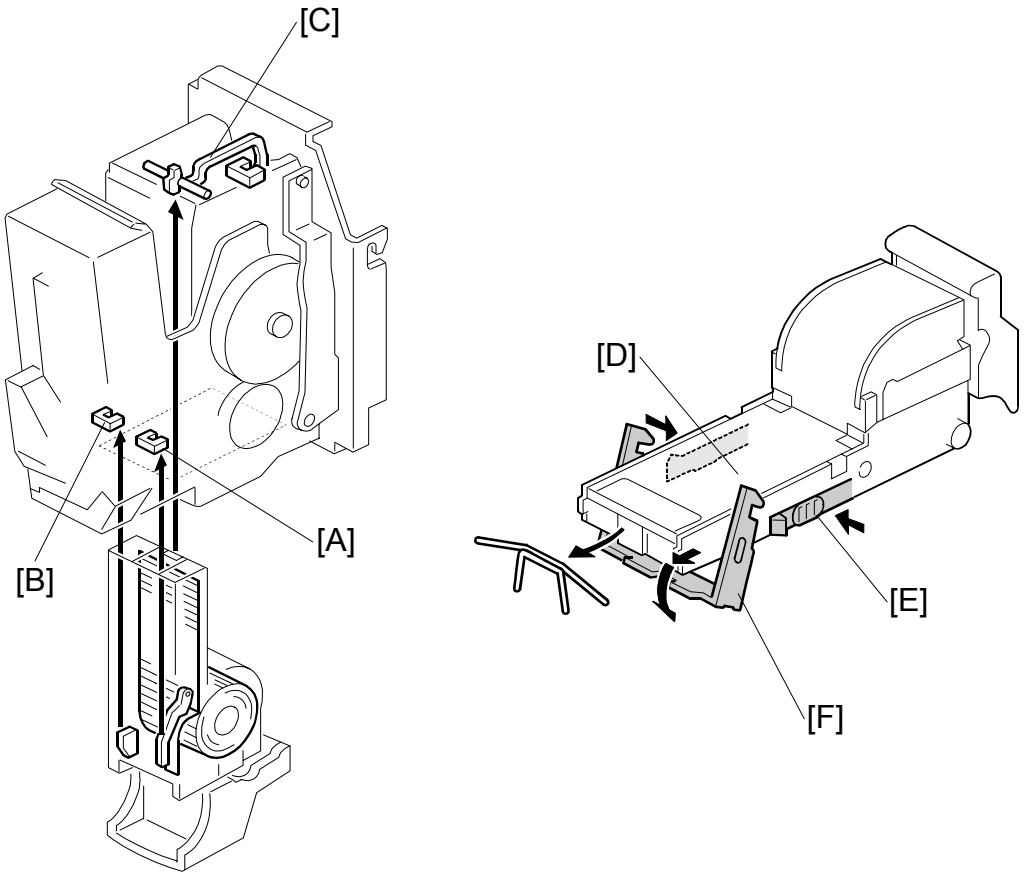
Once the staples have been installed, and the front door closed, the stapler unit returns to its home position. As the stapler unit is returning to the home position, the stapler return sensor [D] is activated, the return solenoid [E] turns on and it assists the guide roller [F] to return to its guide (this guide directs the stapler during rotation).

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.

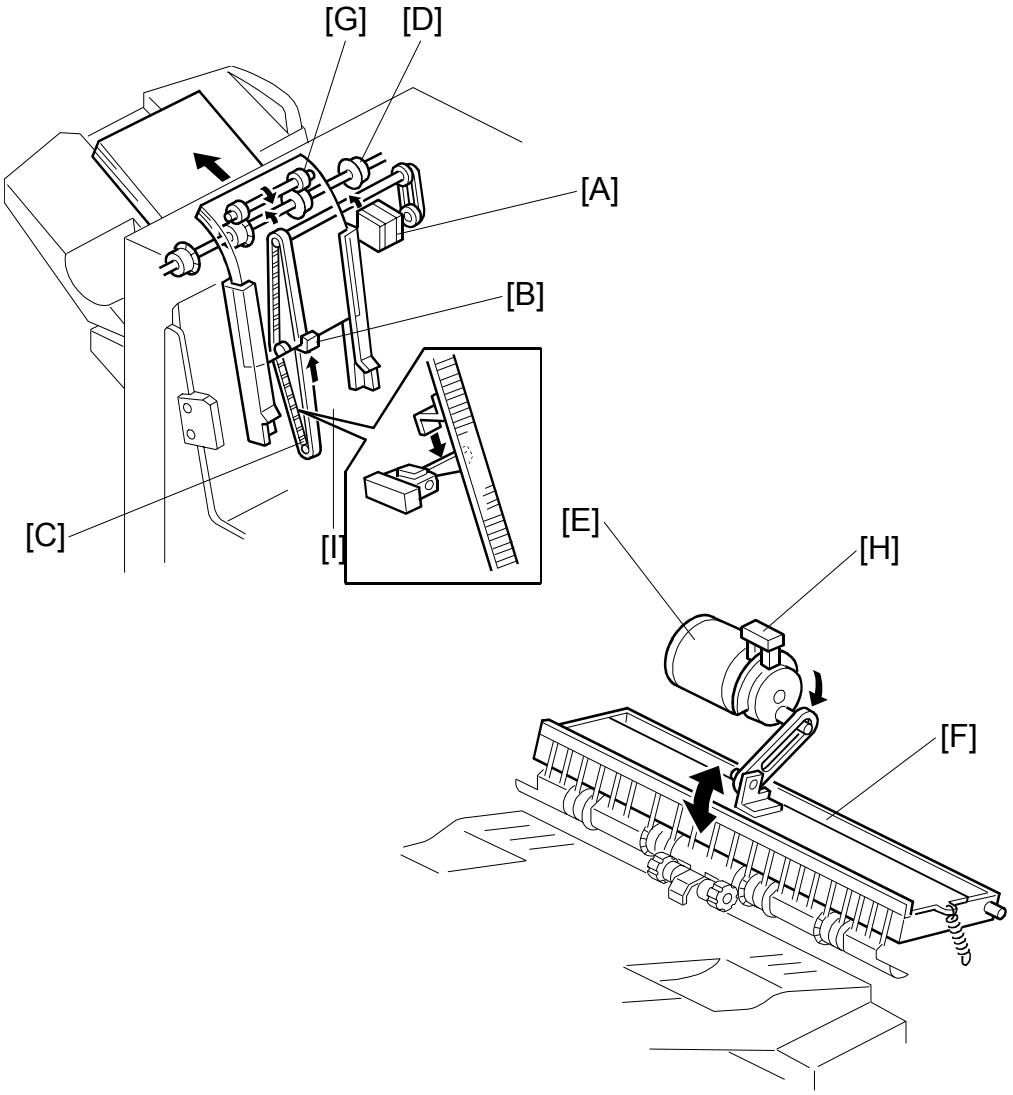


The stapler has a staple end sensor [A], cartridge set sensor [B] and staple hammer HP sensor [C].

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

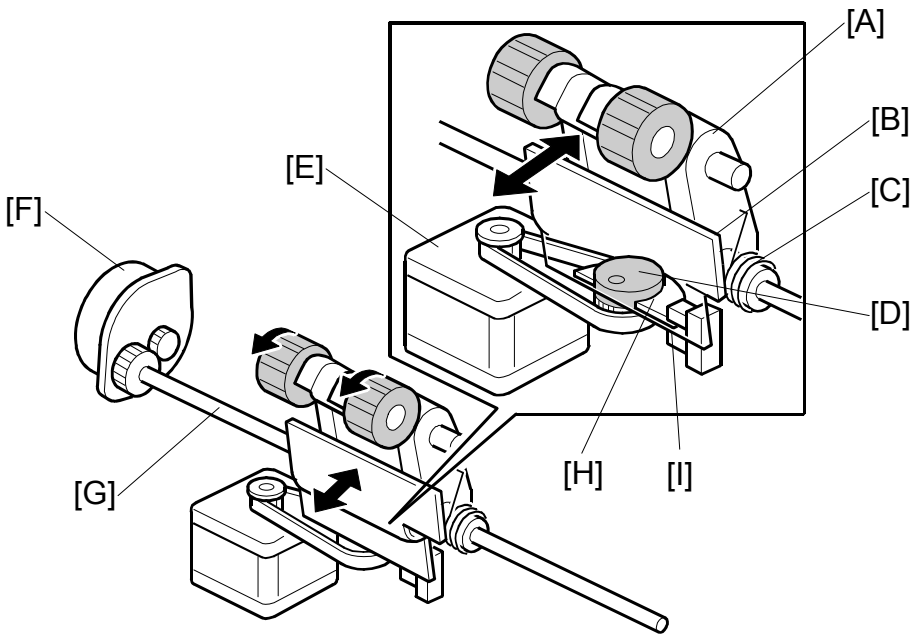


After the copies have been stapled, the stack feed-out motor [A] starts. The pawl [B] on the stack feed-out belt [C] transports the set of stapled copies up and feeds it to the shift tray exit roller [D]. When stapling starts, the exit guide motor [E] opens the upper exit guide [F], which includes the 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



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.

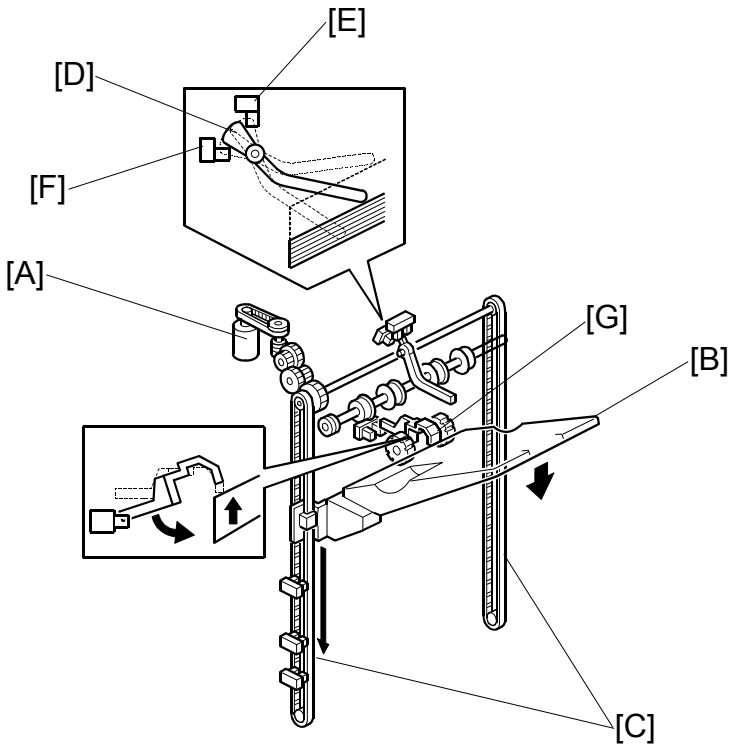
The stacking roller drag motor and timing belt rotate the cam against the bottom of the plate to move the rollers forward and back with each sheet ejected onto the shift tray.

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



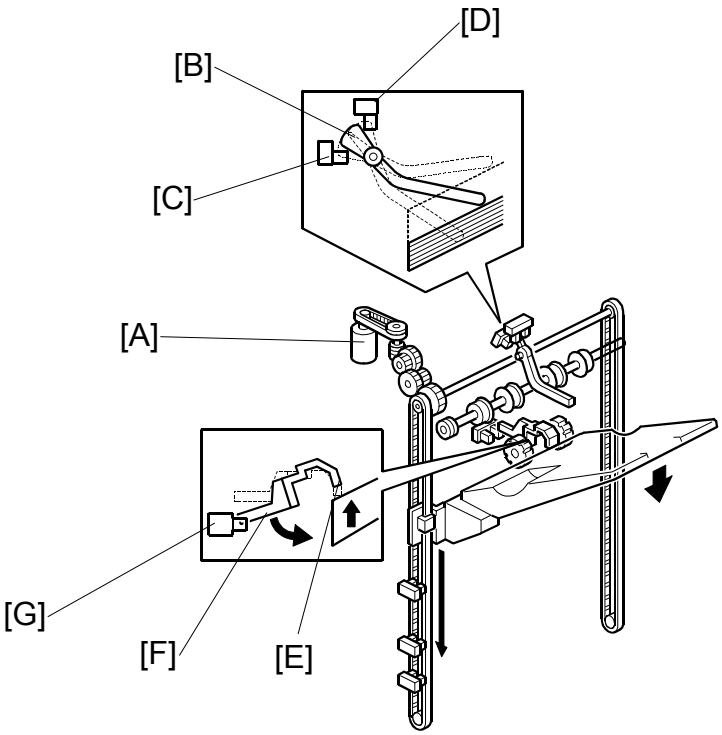
The shift tray lift motor [A] controls the vertical position of the shift tray [B] through gears and timing belts [C].

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



Sort/Stack Mode (Shift Mode)

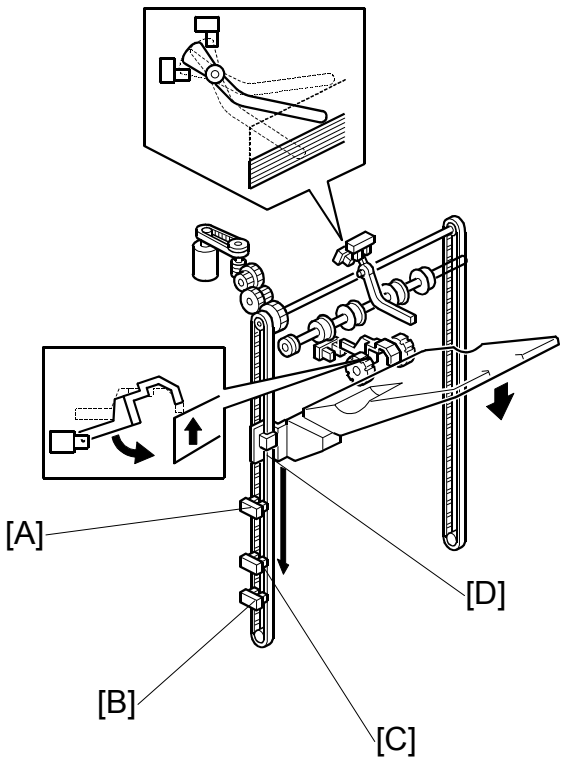
The shift tray moves to home position, which is when the actuator [F] has just exited the shift mode home position sensor [G] (S12). During feed-out, the tray is lowered automatically at prescribed intervals; sensor [D] (S7) is ignored. When the stack is removed from the tray, the end of the feeler [E] 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



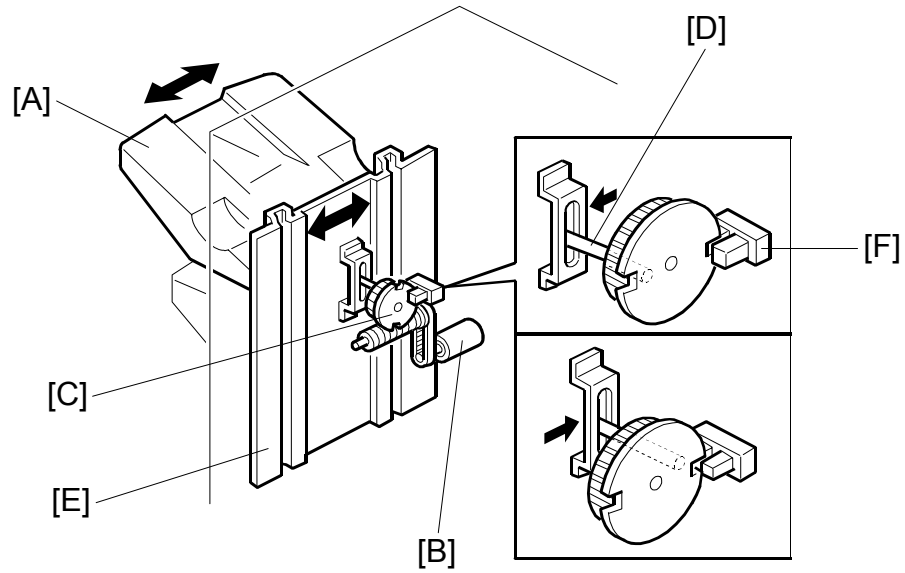
This machine has two shift tray lower limit sensors: shift lower limit sensor [A] (S9) for large paper (B4 and larger) and shift lower limit sensor [B] (S11) for small paper (smaller than B4).

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



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.

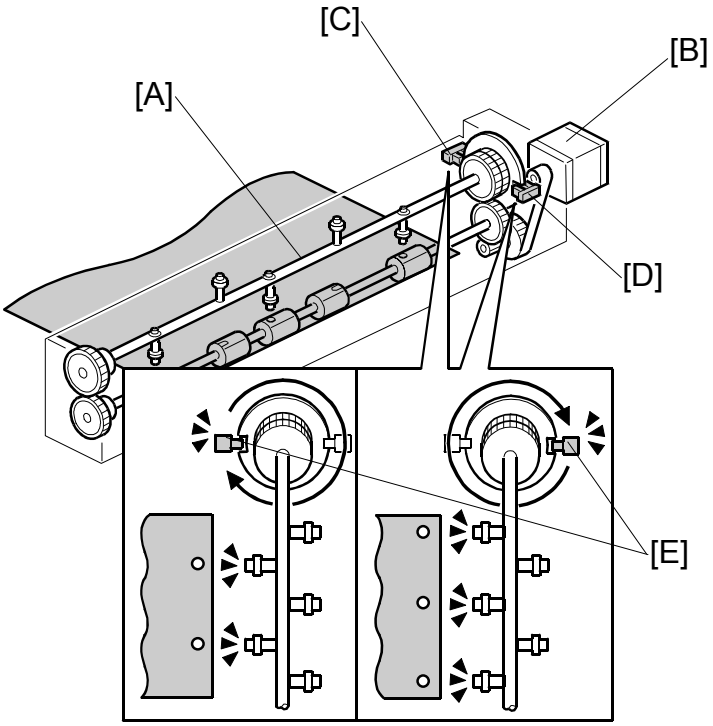
When the shift gear disk has rotated 180 degrees (when the shift tray is fully shifted across), the cut-out in the shift gear disk turns on the shift tray half-turn sensor [F] and the shift motor stops. The next set of copies is then delivered. The motor turns on, repeating the same process and moving 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



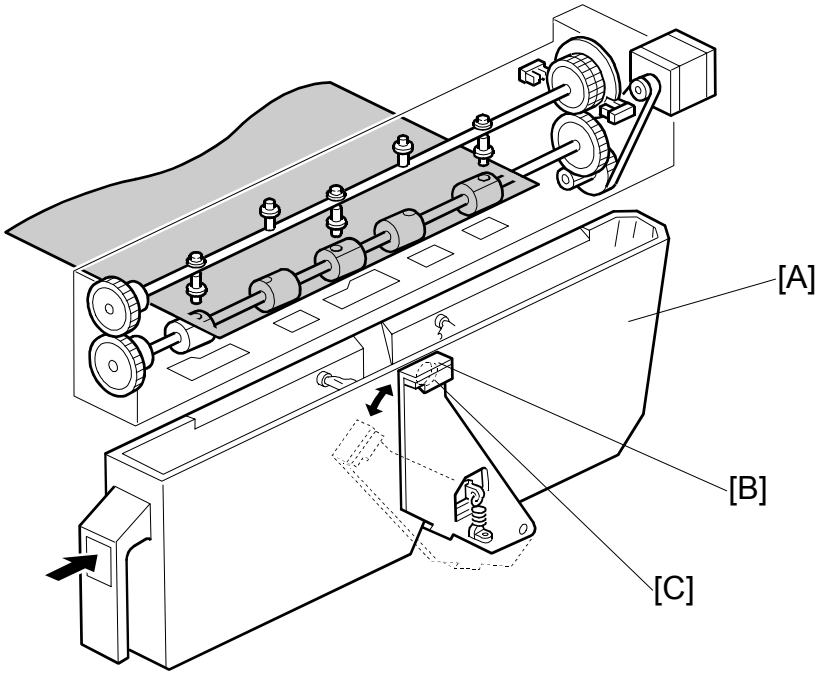
The punch unit makes 2 or 3 holes at the trailing edge of the paper. The number of holes depends on a selection made on the operation panel.

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.

6.11.2 PUNCH WASTE COLLECTION



Punch waste is collected in the punch waste hopper [A] positioned under the punch unit.

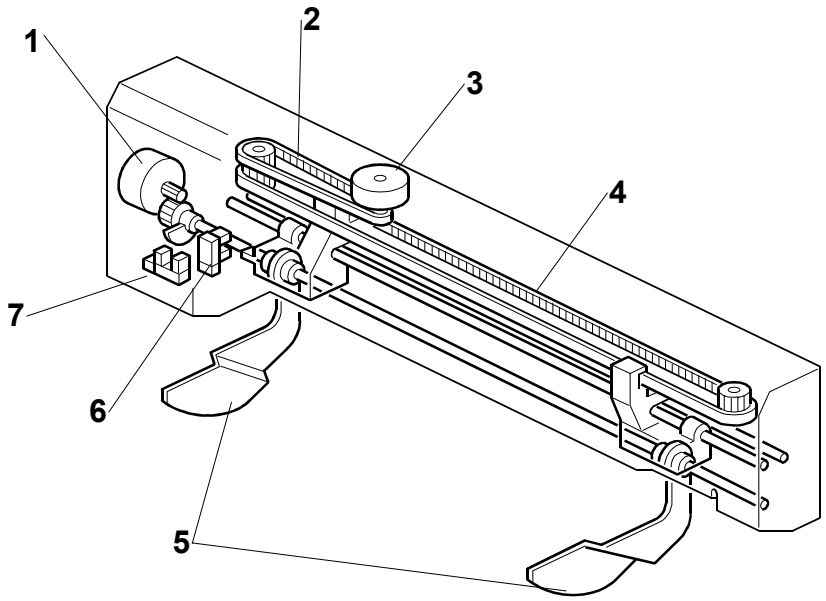
When the level of the punch waste in the hopper rises as far as the hole [B] in the hopper, the punch waste sensor [C] turns on, stops the job, and triggers a message on the operation to indicate that the hopper is full and must be removed and emptied.

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.

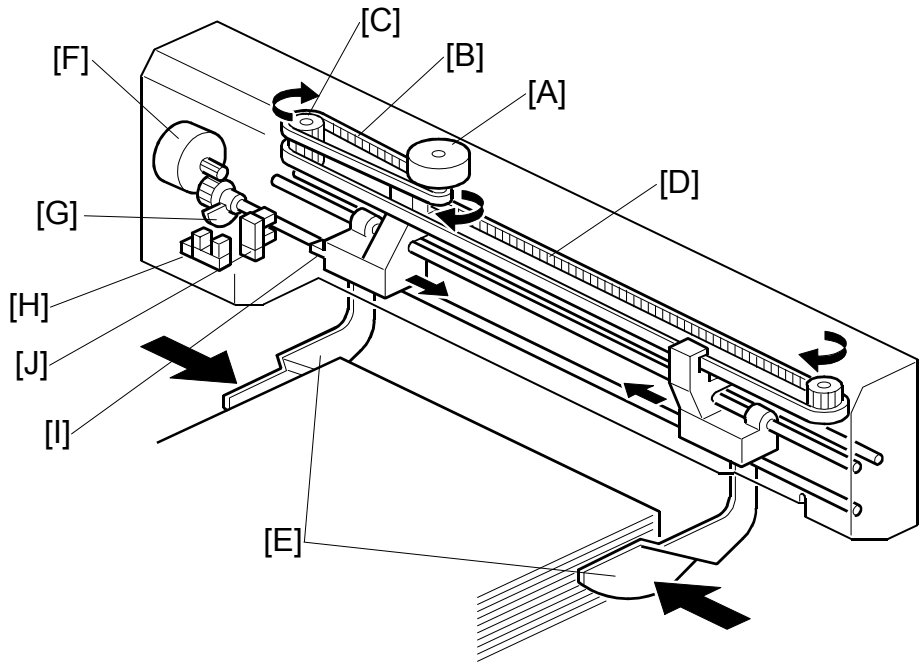
6.12 JOGGER UNIT B513 (OPTION)

6.12.1 JOGGER UNIT MECHANICAL LAYOUT



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

6.12.2 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.

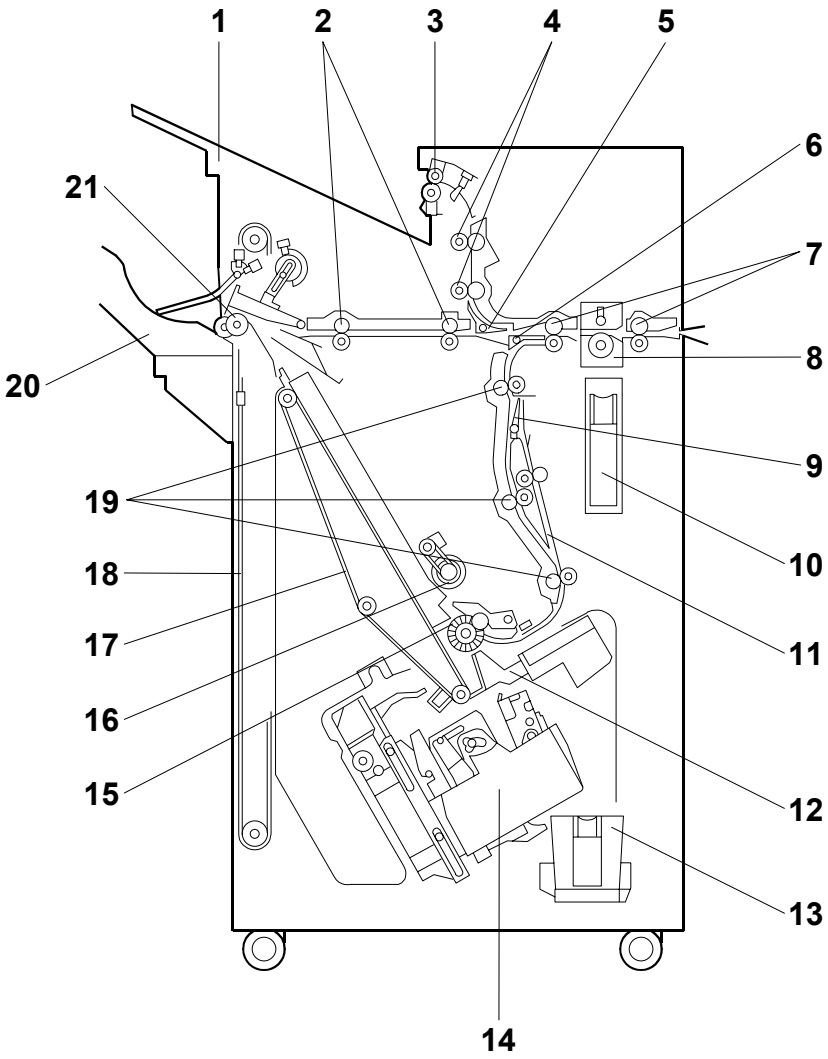
At the end of the job, the jogger fence lift motor [F] switches on and raises the fences until the actuator [G] leaves the slot of the shift jogger fence lift HP sensor [H] and shuts off the shift jogger fence lift motor.

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



1. Upper Tray
2. Middle Transport Rollers
3. Upper Tray Exit Roller
4. Upper Transport Rollers
5. Tray Junction Gate
6. Stapler Junction Gate
7. Entrance Rollers
8. Punch Unit
9. Pre-stack Junction Gate
10. Punch Waste Hopper
11. Pre-stack Tray
12. Stack Plate
13. Staple Waste Hopper
14. Stapler
15. Alignment Brush Roller
16. Positioning Roller
17. Stack Feed-out Belt
18. Shift Tray Drive Belt
19. Lower Transport Rollers
20. Shift Tray
21. Shift Tray Exit Roller

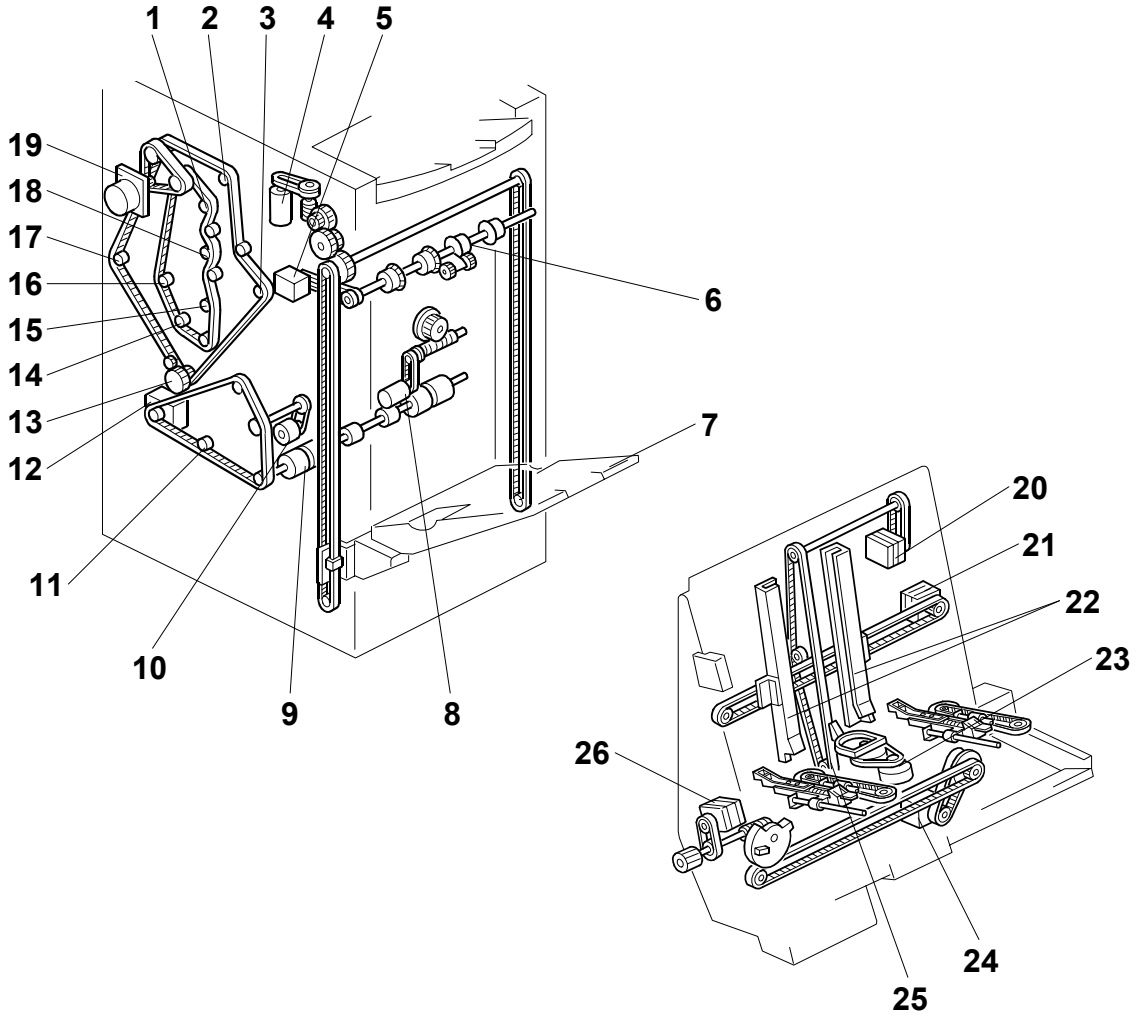
7.2 ELECTRICAL COMPONENT DESCRIPTION

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.

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).

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
2. Upper Tray Exit Roller
3. Lower Transport Roller 2
4. Shift Tray Lift Motor
5. Shift Tray Exit Motor
6. Shift Tray Exit Roller
7. Shift Tray
8. Shift Motor
9. Staple Tray Exit Roller
10. Positioning Roller
11. Lower Transport Roller 3
12. Lower Transport Motor
13. Lower Transport Rollers 2
14. Lower Transport Roller 1
15. Transport Roller 1
16. Entrance Roller 2
17. Entrance Roller
18. Upper Transport Roller 1
19. Upper Transport Motor
20. Stack Feed-out Motor
21. Jogger Motor
22. Jogger Fence
23. Stack Plate Motor
24. Stapler Motor
25. Stack Feed-out Belt
26. Stapler Rotation Motor

3000-SHEET FINISHER
B706

REVISION HISTORY		
Page	**Date**	**Added/Updated/New**
		None

3000-SHEET FINISHER B706

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1. INSTALLATION

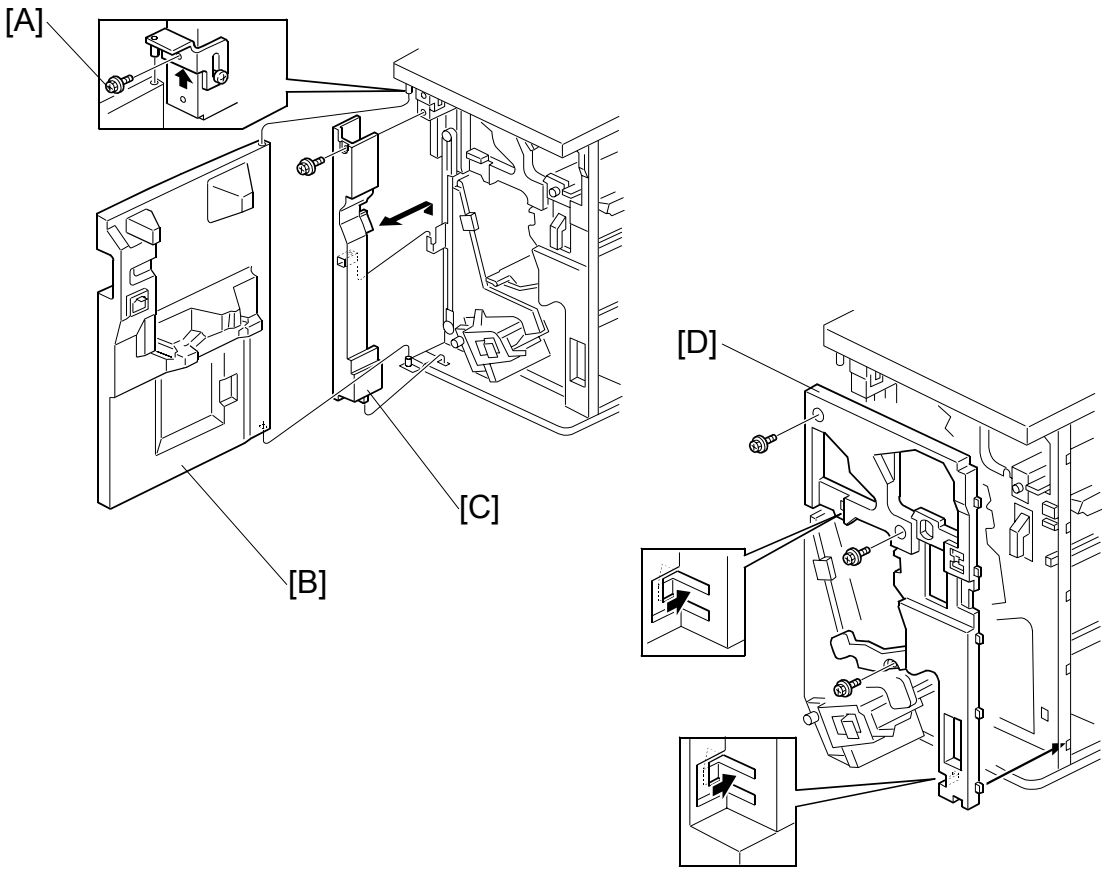
For details about installing the 3000 Sheet Finisher B706, please refer to the instructions you received with the instructions or the “1. Installation” in the main machine service manual.

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



Front Door

1. Remove the front door screw [A] (x 1).
2. Remove the front door [B].

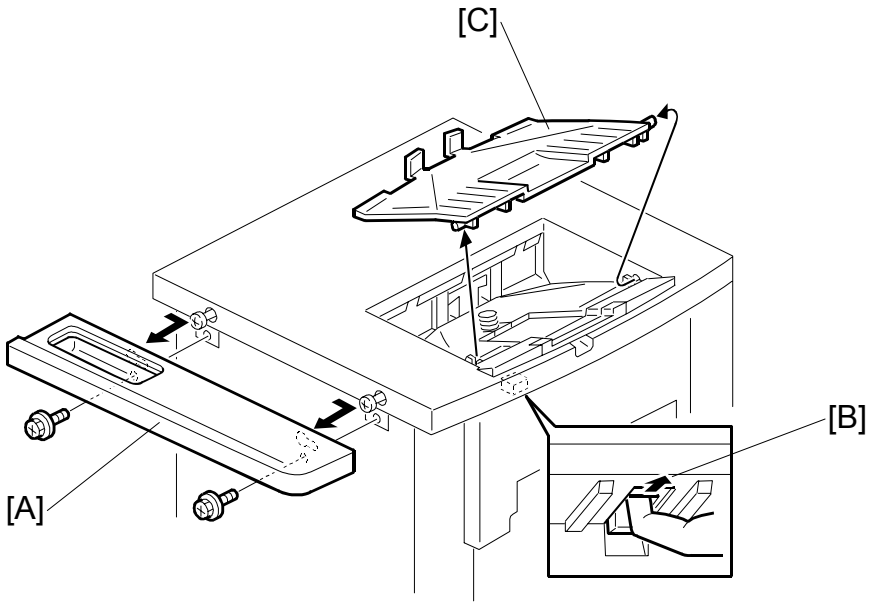
Left Inner Cover

1. Remove the front door.
2. Remove the left inner cover [C] (x 1).

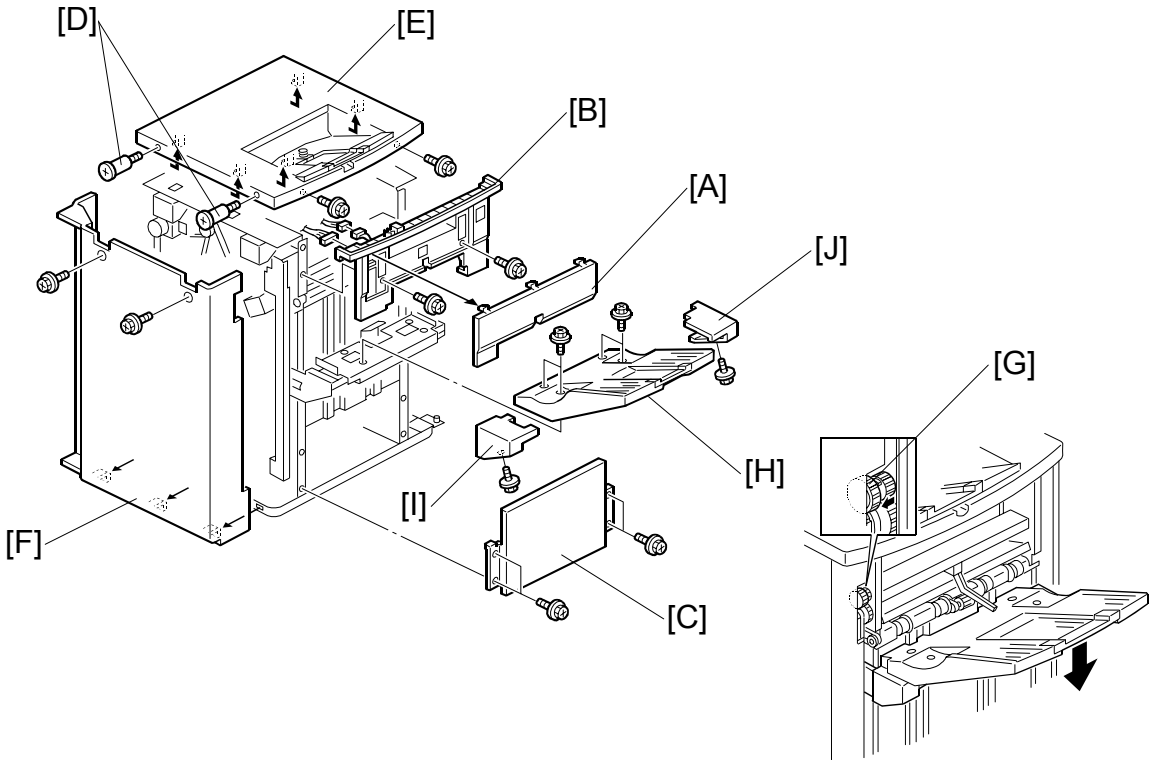
Inner Cover

1. Remove the inner cover [D] (x 3).

Side Table and Upper Tray



1. Remove the side table [A] (☞ 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] (x 2, x 2).
3. Remove the door and left inner cover. (See “Front Door and Left Inner Cover Replacement”.)
4. Remove the rear cover [F] (x 2).
5. Remove the left lower cover [C] (x 4).

Rear Cover and Top Cover

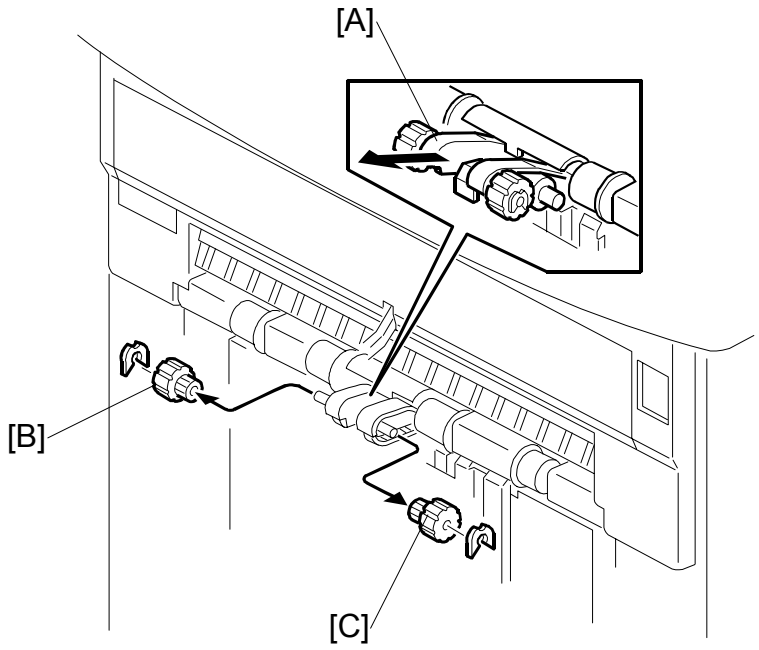
1. Remove the upper tray. (See “Side Table and Upper Tray”.)
2. Remove the step screws [D] (x 2).
3. Remove the top cover [E] (x 2). Slide to the right to remove.
4. Remove the rear cover [F] (x 2).

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] (x 4).
3. Remove the shift tray rear cover [I] and front cover [J] (x 1 each).

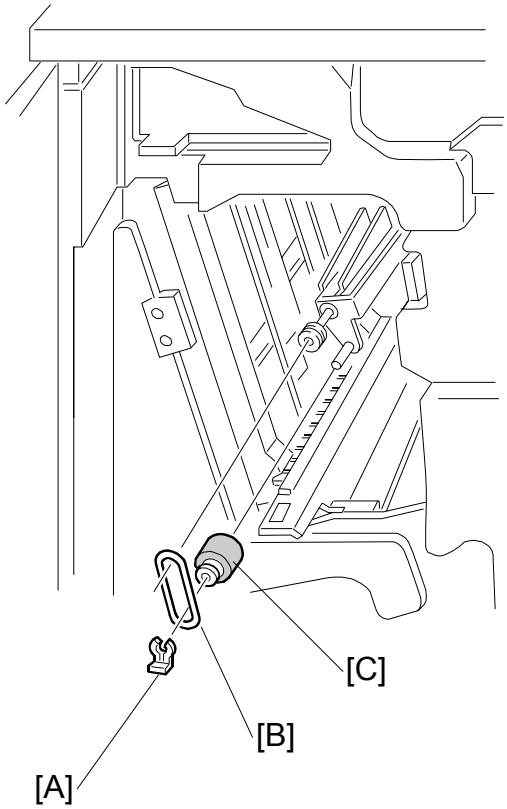
3.2 ROLLERS

3.2.1 SHIFT POSITIONING ROLLER



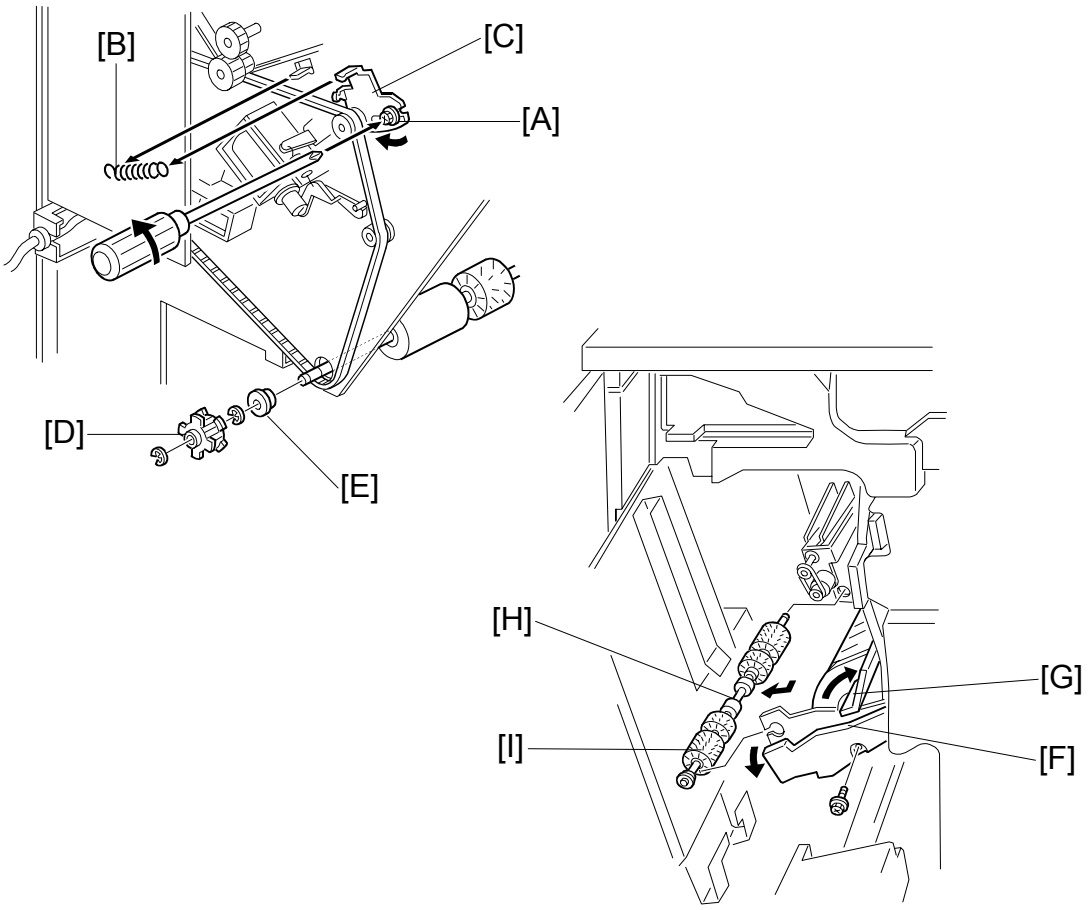
1. Above the shift tray, pull the roller mount [A] out.
2. Remove the rollers [B] and [C] (⟲ x 1 each)

3.2.2 POSITIONING ROLLER



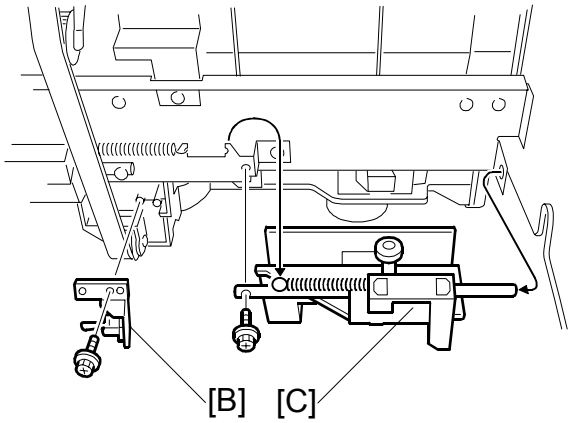
1. Open the front door.
2. Remove the snap ring [A].
3. Release the rubber belt [B].
4. Replace the positioning roller [C].

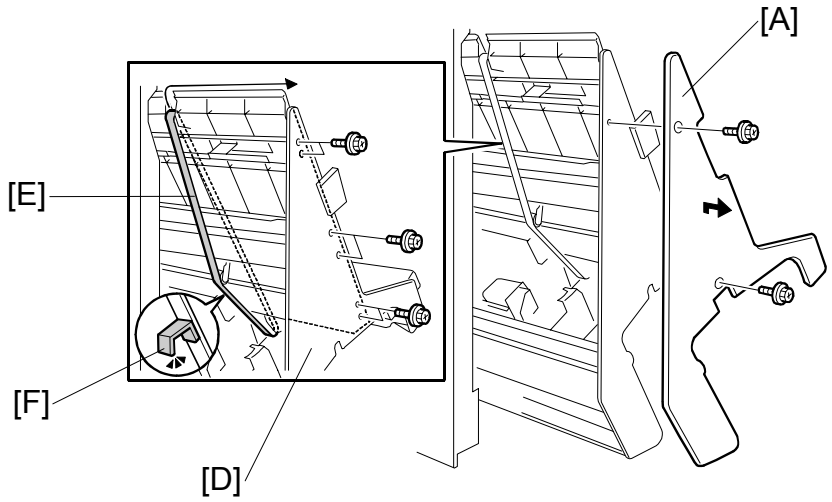
3.2.3 ALIGNMENT BRUSH ROLLER



1. Open the front door and pull out the staple unit.
2. Remove the rear cover.
3. Remove the main board and all connectors (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] (x 2).
6. Remove the inner cover [F] (x 1).
7. Open the guide [G], then remove the alignment brush roller assembly [H] (x 1).
8. Remove the alignment brush roller [I] (x 1, bushing x 1 front/back).

3.3 STACK FEED-OUT BELT

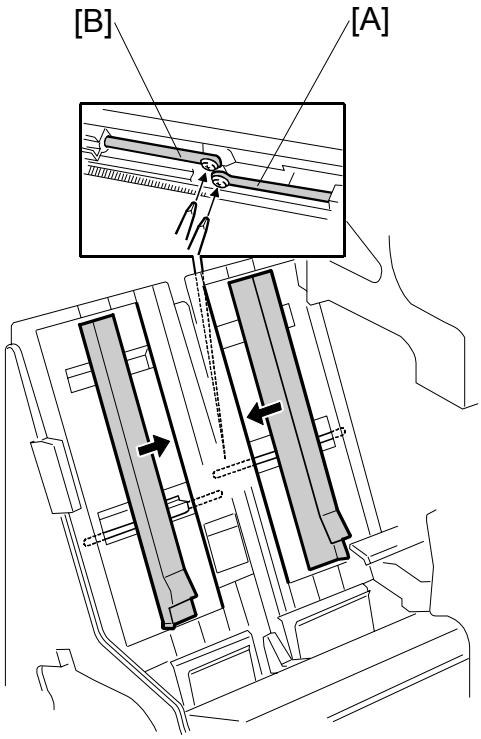




1. Open the front door.
2. Pull out the jogger and stapler unit.
3. Remove the inner cover [A] (x 2).
4. Remove the sensor bracket [B] (x 1, x 1, clamp x 1).
5. Remove the front guide [C] (x 1, spring x 1).
   NOTE: When re-installing, make sure that the flat end of the shaft is against the plate.
6. Remove the front panel [D] from the stays (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.

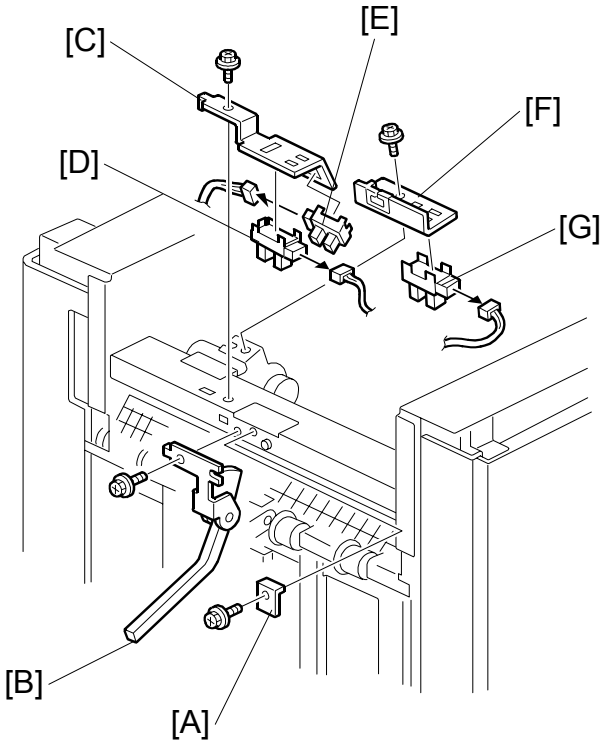
3.4 JOGGER FENCE



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



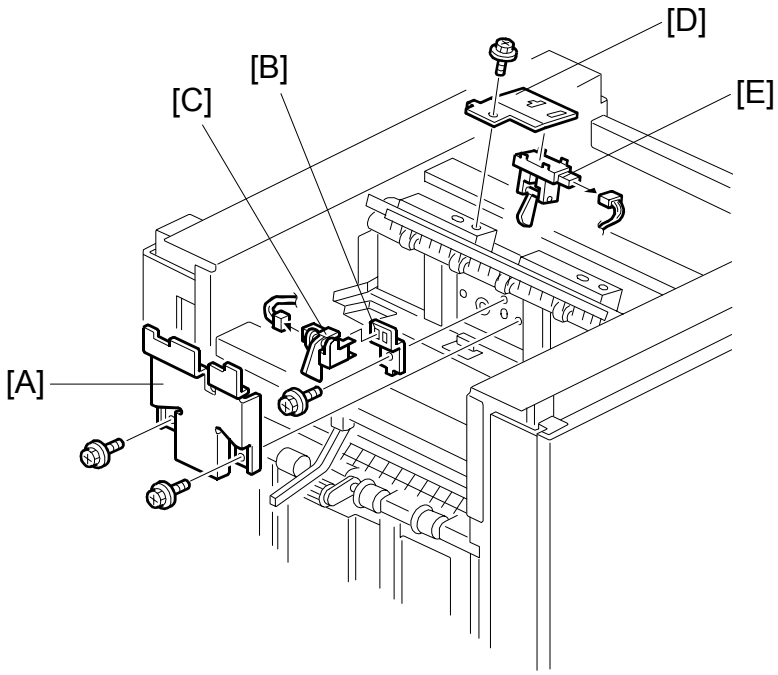
Stack Height Sensors 1 and 2

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



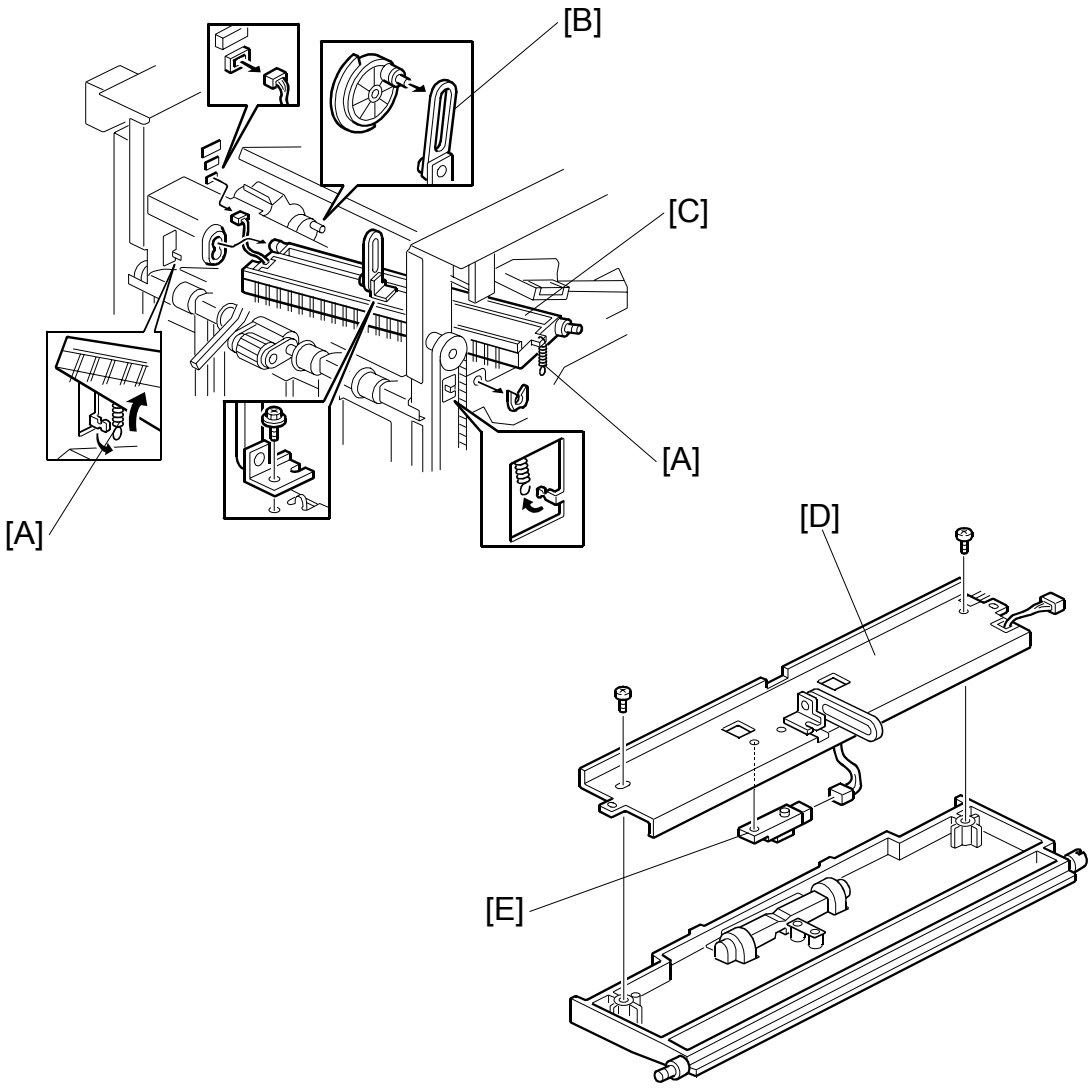
Upper Tray Paper Limit Sensor

1. Remove the top cover.
2. Remove the sensor cover [A] (☞ x 2).
3. Remove the sensor bracket [B] (☞ x 1).
4. Replace the upper tray paper limit sensor [C] (☜ x 1).

Upper Tray Exit Sensor

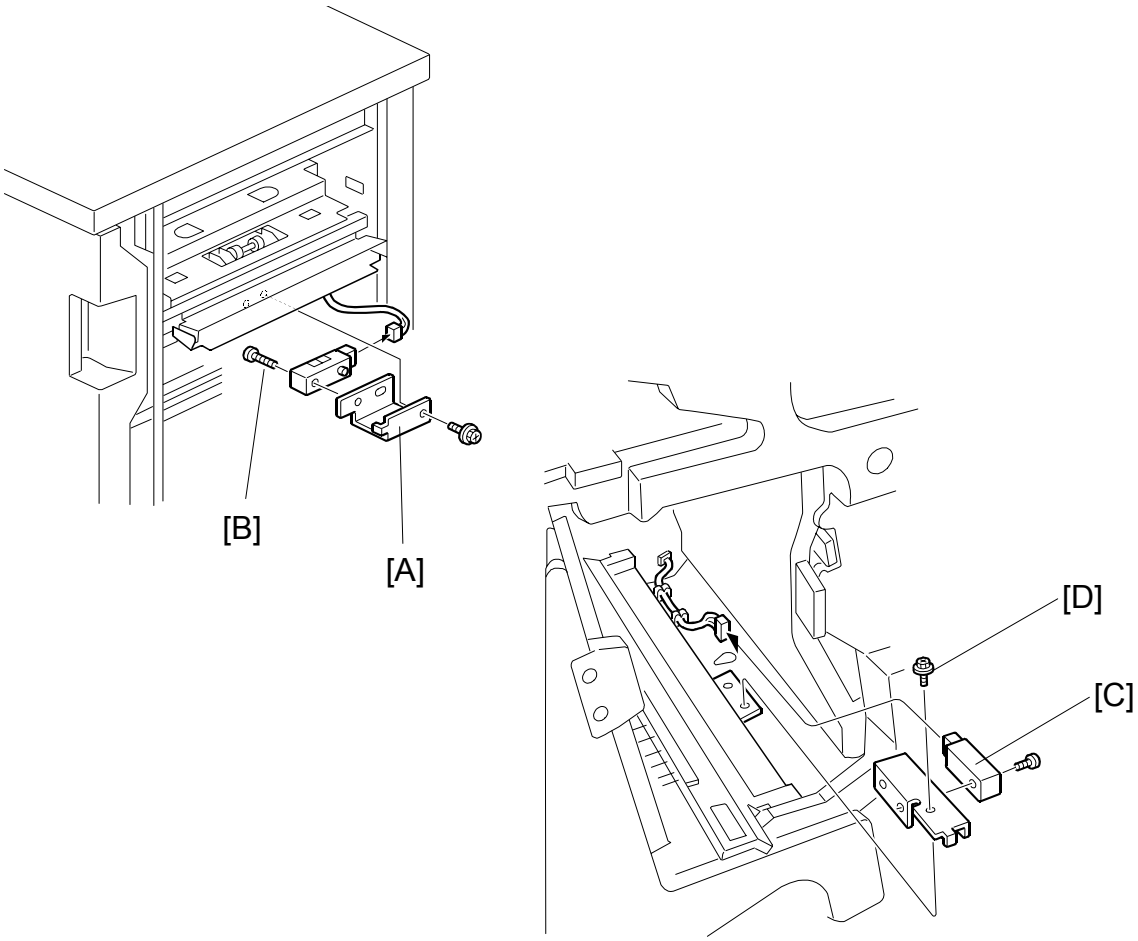
5. Remove the sensor bracket [D] (☞ x 1).
6. Replace the upper tray exit sensor [E] (☜ x 1).

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).

3.5.4 ENTRANCE AND STAPLER TRAY ENTRANCE SENSORS



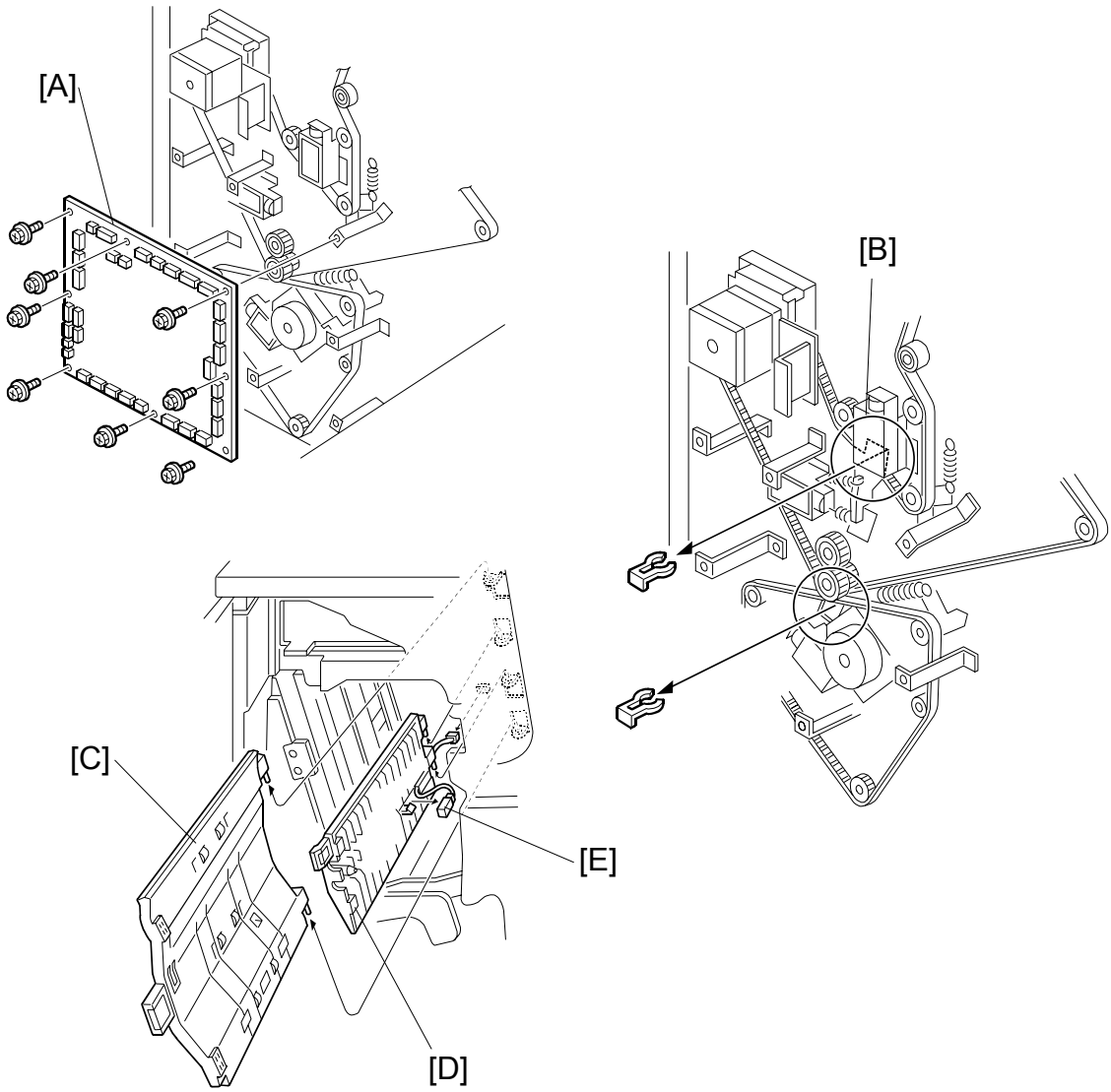
Entrance Sensor

1. Disconnect the finisher from the copier.
2. Remove the sensor bracket [A] (x 1).
3. Replace the entrance sensor [B] (x 1, x 1).

Stapler Tray Entrance Sensor

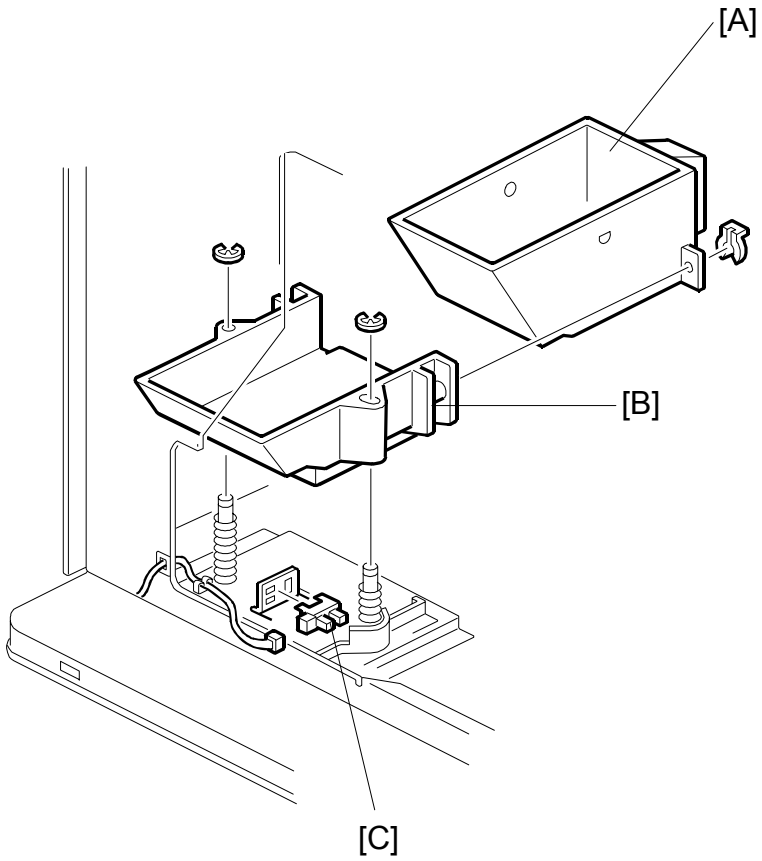
1. Open the front door.
2. Remove the sensor bracket [C] (x 1).
3. Replace the stapler tray entrance sensor [D] (x 1, x 1).

3.5.5 PRE-STACK PAPER SENSOR



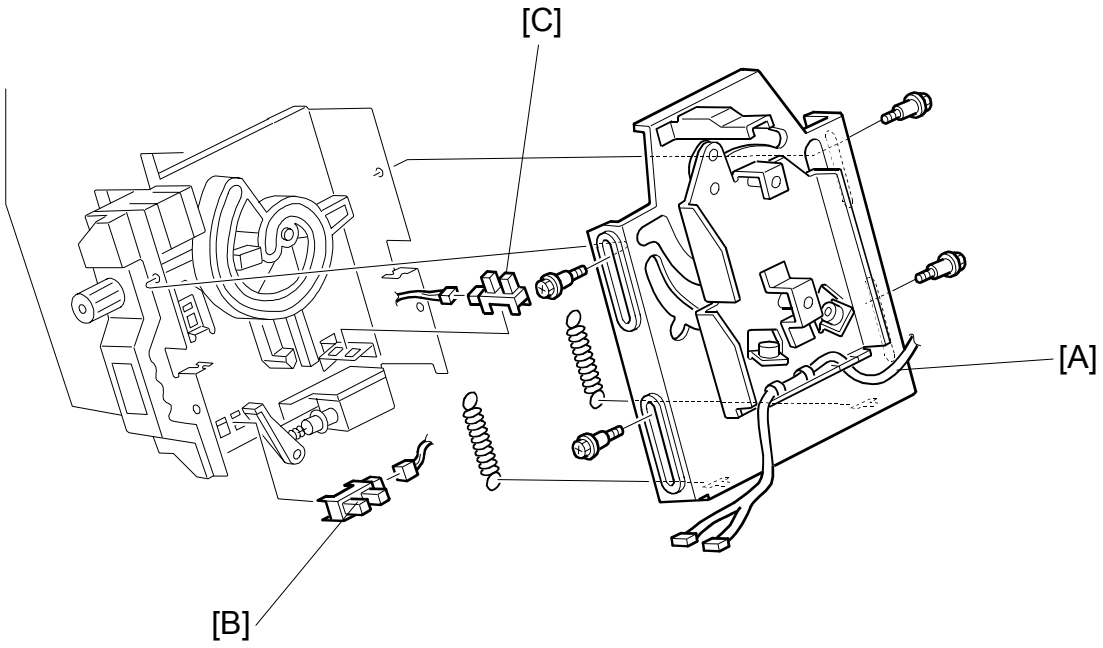
1. Remove the rear cover.
2. Remove the main board [A] (x 8, x all).
3. Release the guide [B] (x 2).
4. Open the front door.
5. Remove the left vertical transport guide [C].
6. Remove the middle vertical transport guide [D] (x 1).
7. Replace the pre-stack paper sensor [E] (x 1).

3.5.6 STAPLE WASTE HOPPER SENSOR



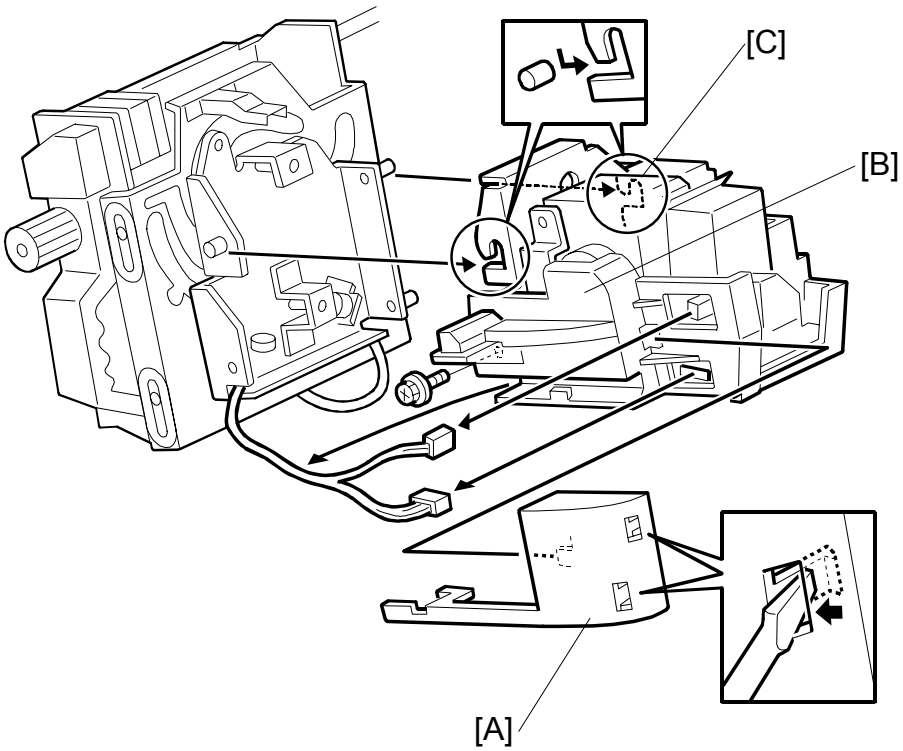
1. Open the front door, pull out the stapler unit, then remove the rear cover.
2. Remove the rear cover (x 2).
3. Remove the staple waste hopper [A] (x 1).
4. Remove the hopper holder [B] (x 2).
5. Replace the staple waste hopper sensor [C] (x 1).

3.5.7 STAPLER ROTATION HP AND STAPLER RETURN SENSORS



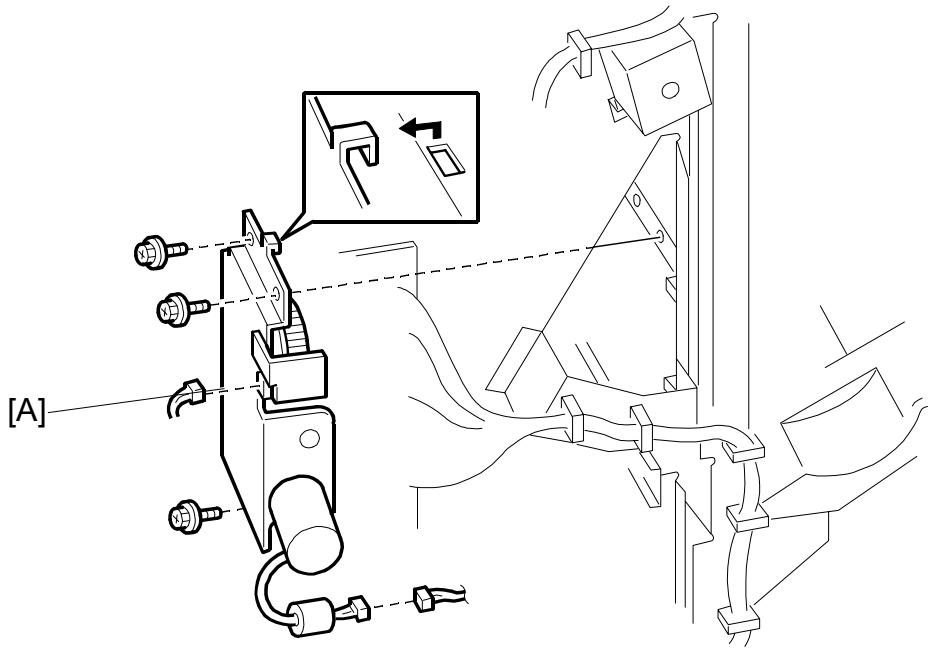
1. Remove the stapler unit. (See next page.)
2. Remove the stapler mount bracket [A] (x 4, springs x 2).
3. Replace the stapler rotation HP sensor [B] (x 1).
4. Replace the stapler return sensor [C] (x 1).

3.6 STAPLER



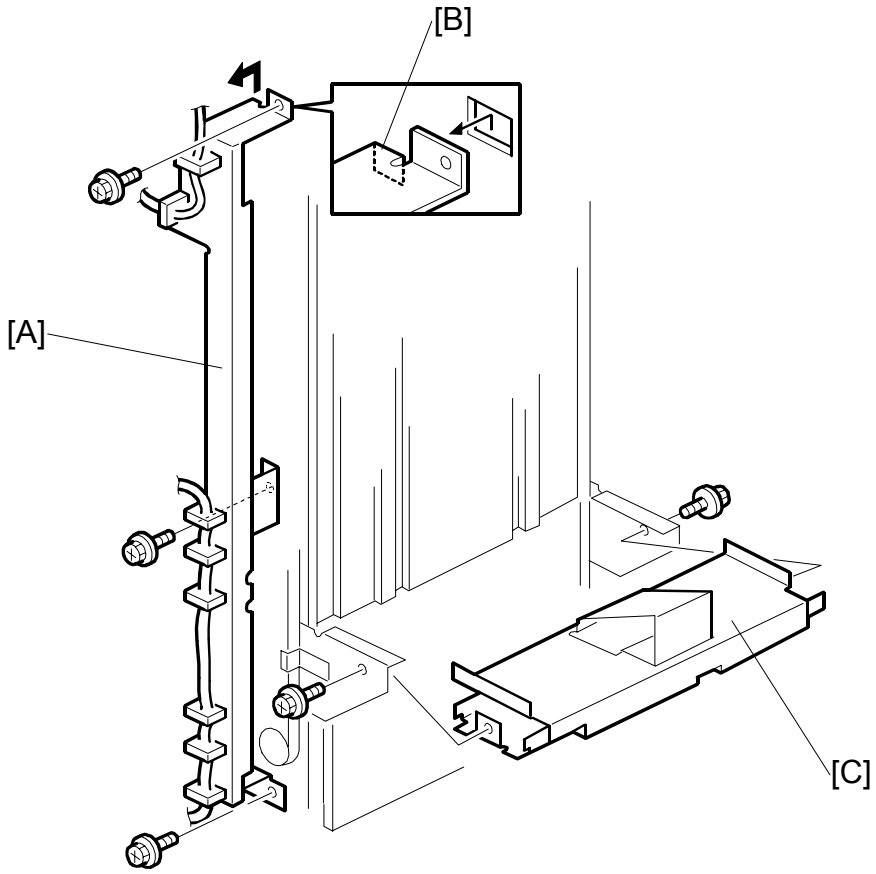
1. Open the front door and pull out the staple tray.
2. Remove the stapler unit harness cover [A].
3. Remove the stapler cover [B] (x 1, x 2).
4. Lift the stapler off of the pegs [C].

3.7 SHIFT TRAY MOTOR

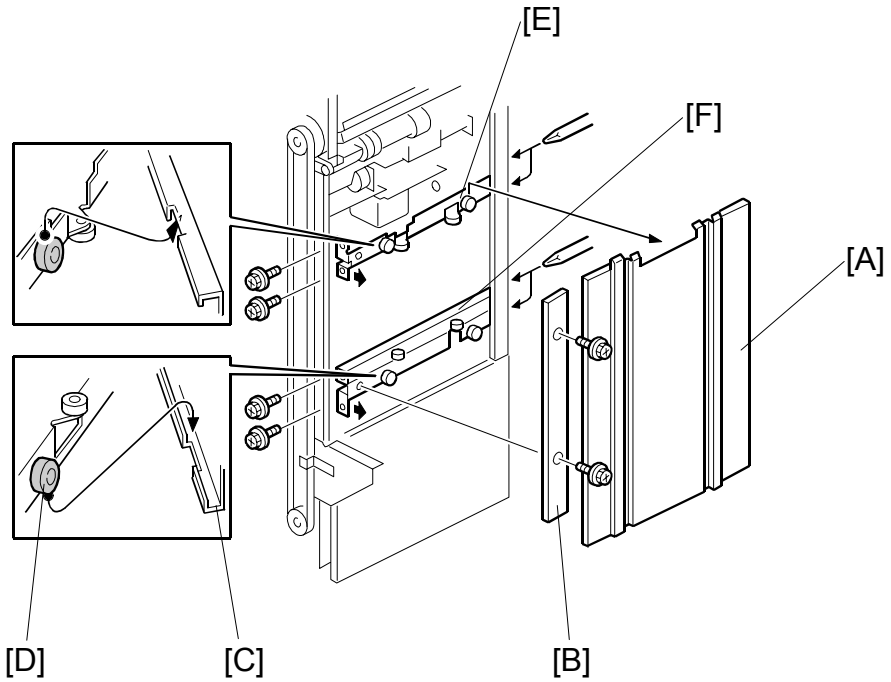


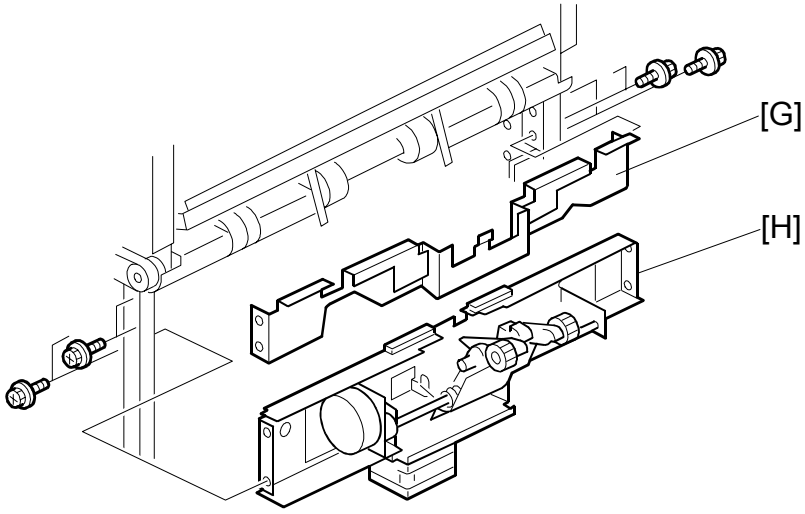
1. Remove the front door and rear cover (☛ 3.1).
2. Shift motor [A] (🔩 x 2, 🔩 x 3)

3.7.1 STACKING ROLLER/ROLLER DRAG MOTORS, RETURN HP SENSOR

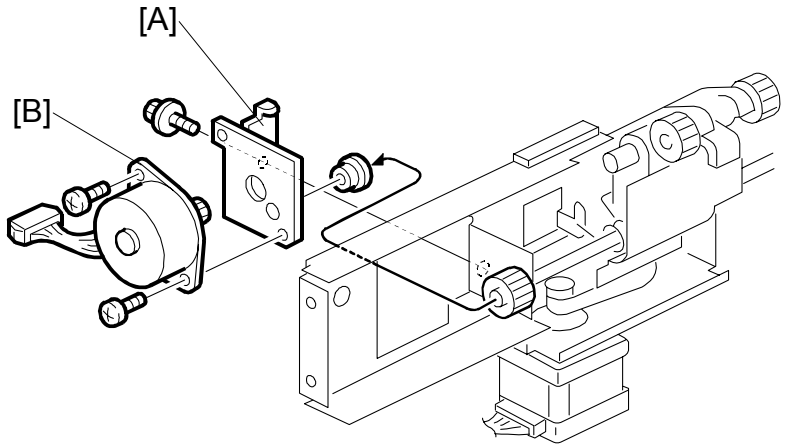


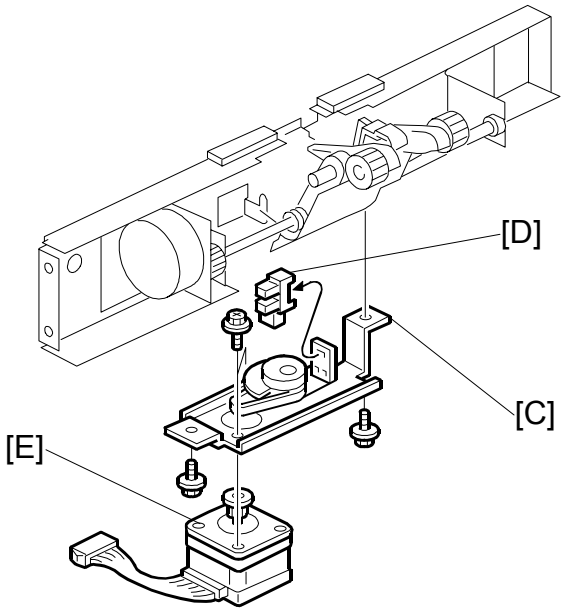
1. Do the procedures to remove the front door and all covers, with the exception of the left lower cover and top cover (labeled [C]: and [E]).
   NOTE: Be sure to lower the shift tray by pulling the gear toward you. The shift tray must be down.
2. Remove the shift tray motor. (☛ 3.7)
3. Remove the left stay [A] (🔩 x 3).
4. Unhook the stay at top [B].
5. Remove the shift tray mounting plate [C] (🔩 x 2).





6. Remove the end fence [A] and plate [B] (x 2).
7. Disengage the end fence races [C] from the rollers [D] behind the fence.
8. Remove the upper stay [E] (x 4).
9. Remove the lower stay [F] (x 4).
10. Remove the cover [G] (x 4).
11. Remove the stacking roller/drag motor stay [H] (x 3, x 4).
    NOTE: Make sure the motor and sensor connectors are disconnected before removing.

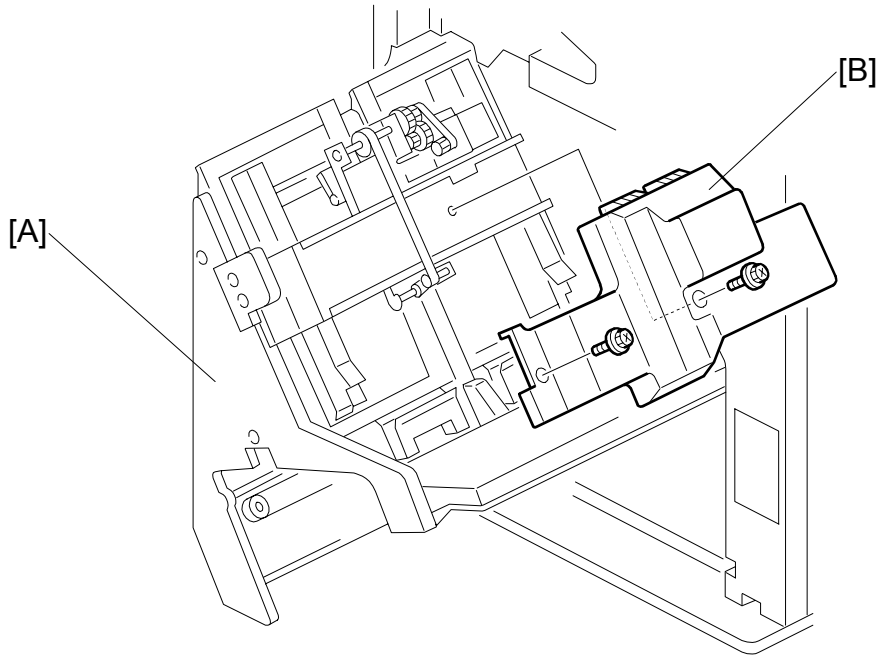




12. Remove the stacking motor bracket [A] (bushing x 1, x 1).
13. Remove the stacking motor [B] (x 2).
14. Remove the roller drag motor bracket [C] (x 2).
15. Remove return HP sensor [D].
16. Remove the roller drag motor [E] (x 1).

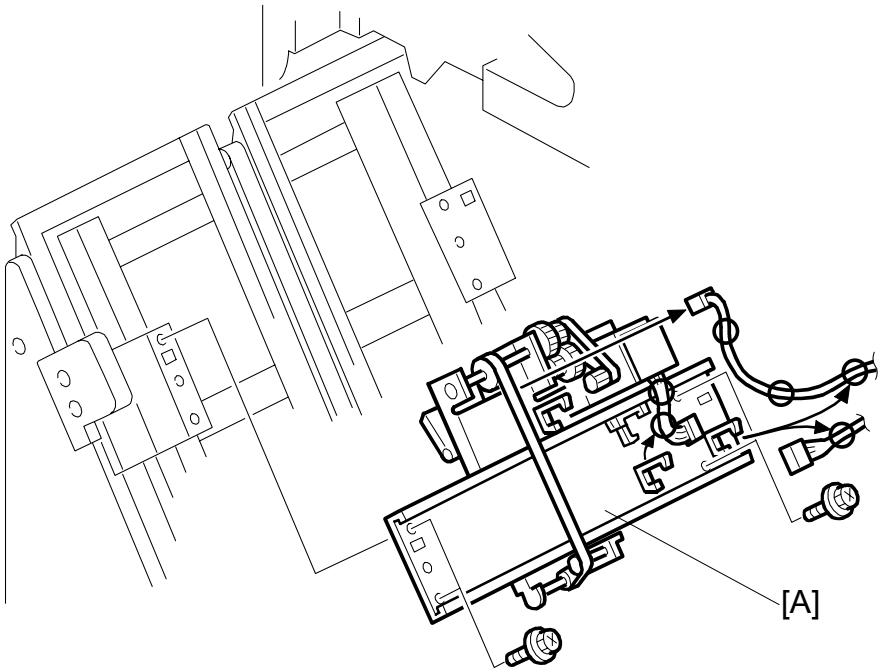
3.8 Z-FOLD JOGGER UNIT

3.8.1 Z-FOLD JOGGER UNIT COVER



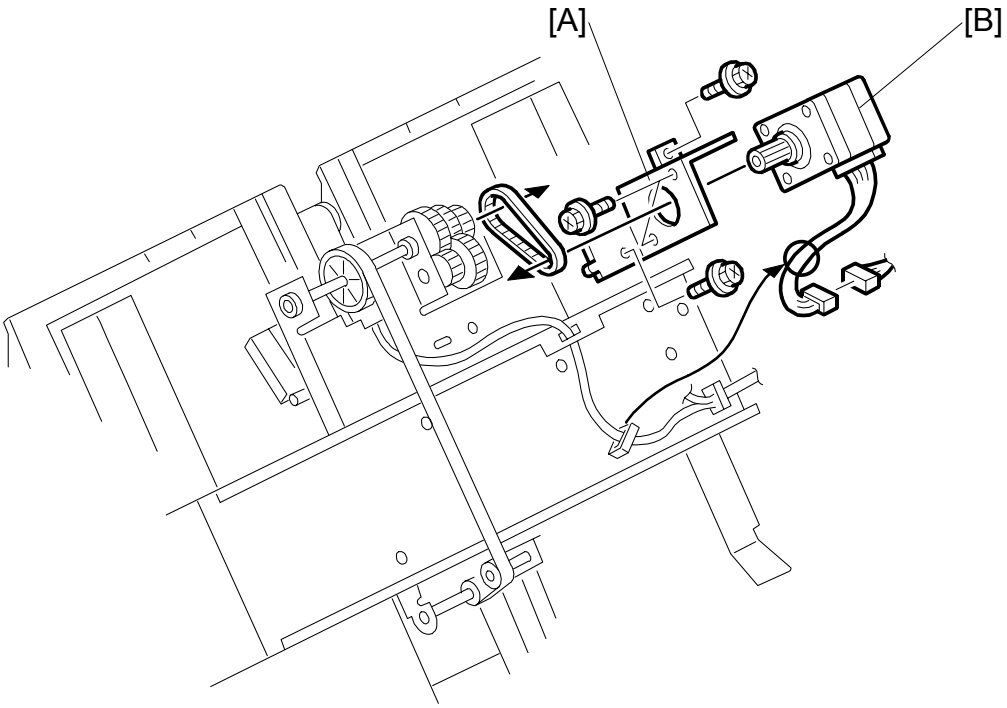
1. Open the front door.
2. Pull out the stapler tray unit [A].
3. Remove the Z-fold jogger unit cover [B] (🔩 x 2).

3.8.2 Z-FOLD JOGGER UNIT



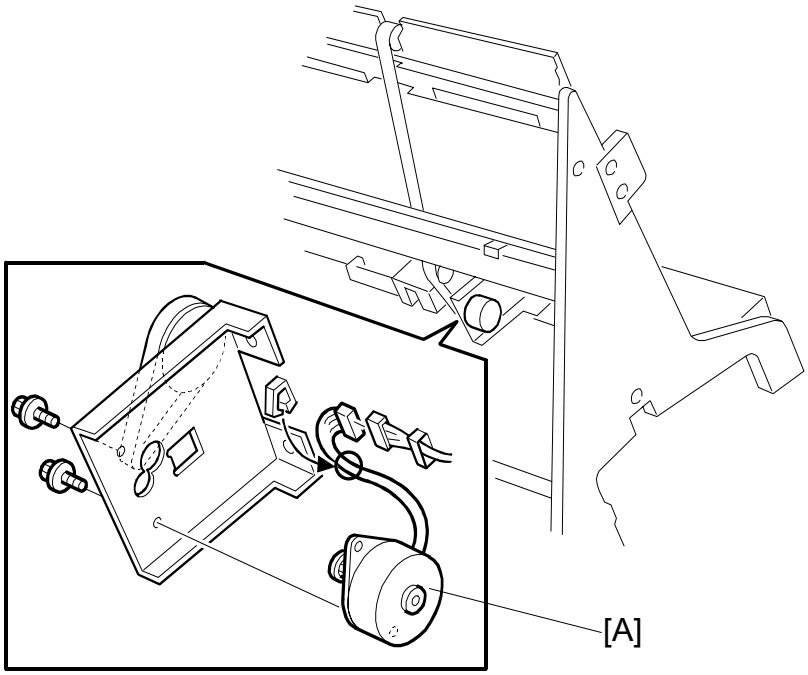
1. Open the front door and pull out the stapler tray unit.
2. Remove the Z-fold jogger unit cover (x 2).
3. Remove the Z-fold jogger unit [A] (x 4, x 4, x 2).

3.8.3 JOGGER TOP FENCE MOTOR



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).

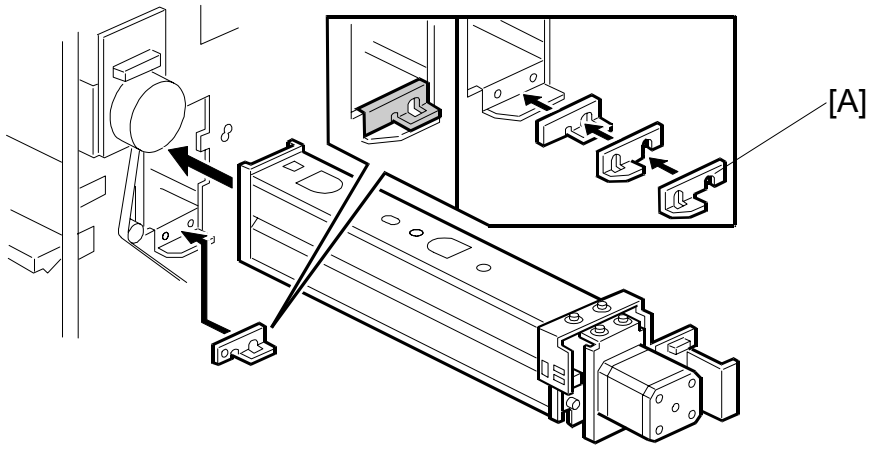
3.8.4 JOGGER BOTTOM FENCE MOTOR



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.

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.

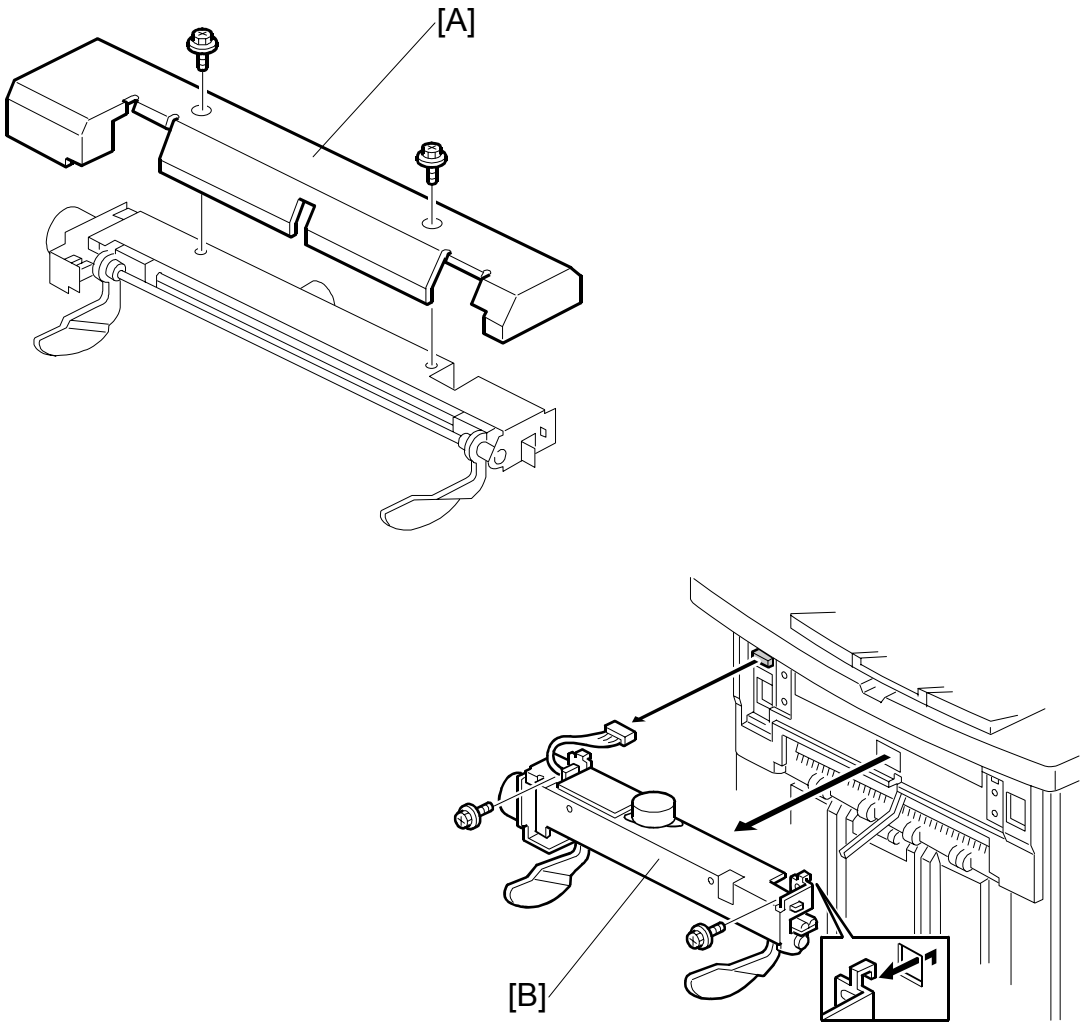
Right to Left Adjustment

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 ± 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.

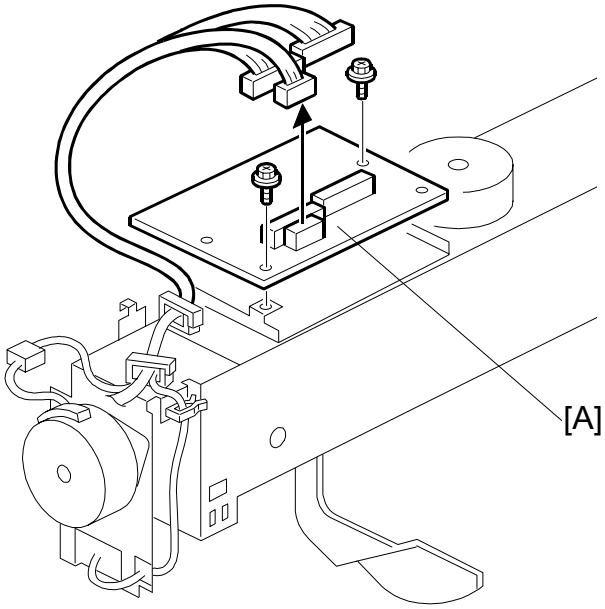
3.10 JOGGER UNIT B513 (OPTION)

3.10.1 JOGGER UNIT



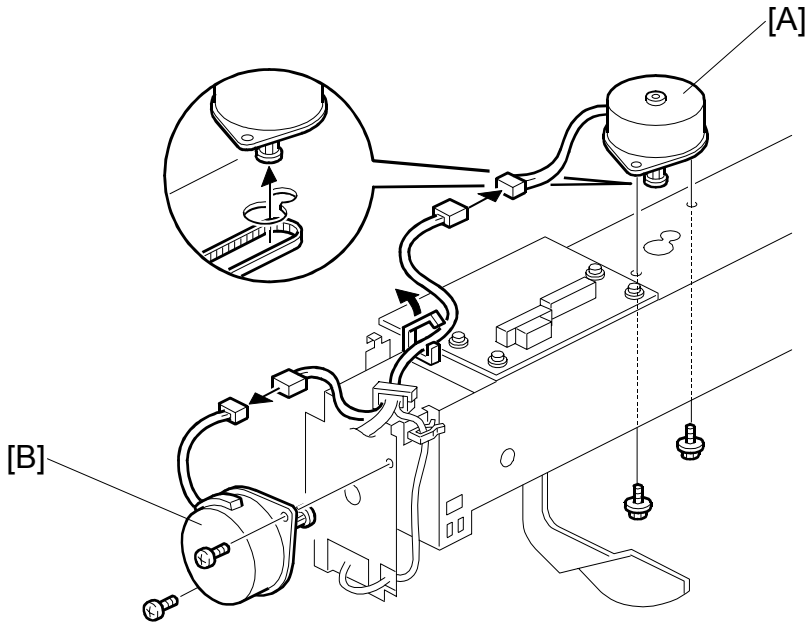
1. Remove the jogger unit cover [A] (☞ x 2).
2. Remove the jogger unit [B] (☞ x 2, ☜ x 1).

3.10.2 JOGGER UNIT PCB



1. Remove the jogger unit from the finisher. (☛ 3.10.1)
2. Remove the jogger unit control PCB [A] (x 2, x 3)

3.10.3 JOGGER UNIT MOTOR



1. Remove the jogger unit from the finisher. (☛ 3.10.1)
2. Remove the shift jogger motor [A] (x 2, x 1).
3. Remove the shift jogger lift motor [B] (x 2, 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

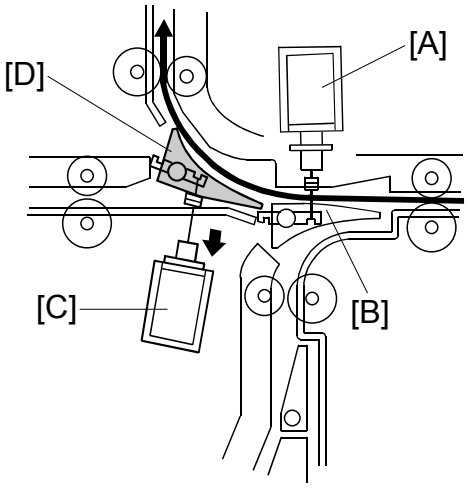
5.3 FUSES

No.	Function
FU100	Protects 24 V.

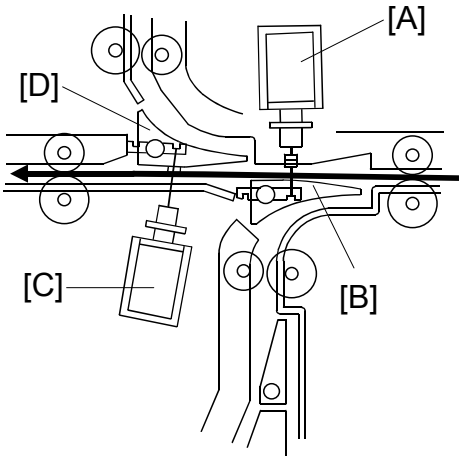
6. DETAILS

6.1 TRAY AND STAPLER JUNCTION GATE

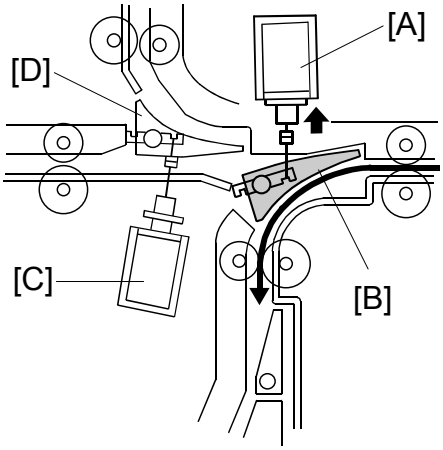
Upper Tray Mode



Sort/Stack Mode



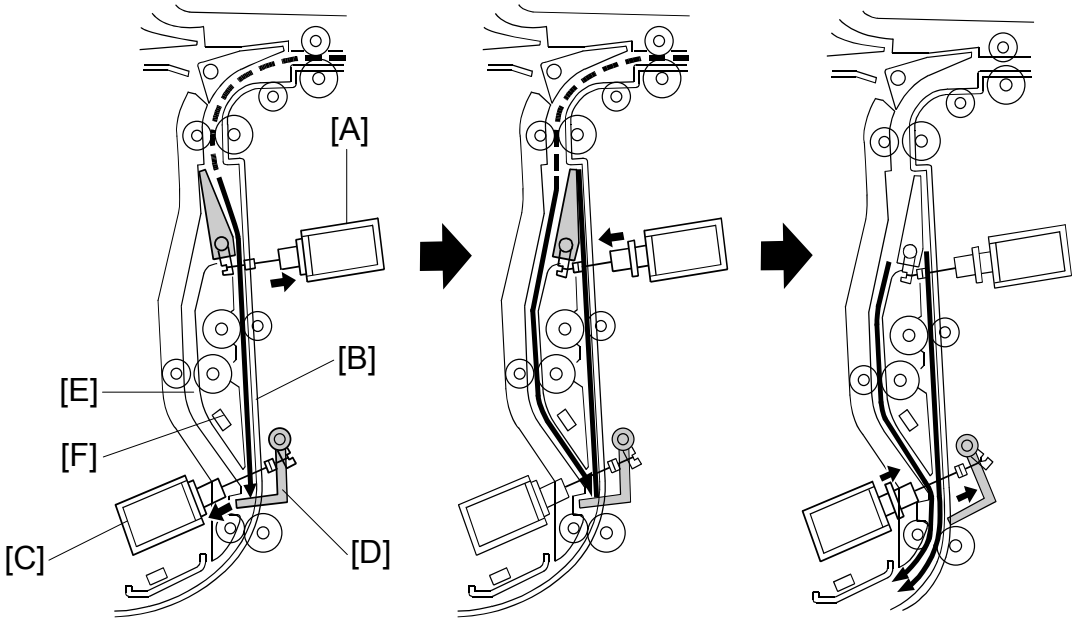
Staple Mode



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



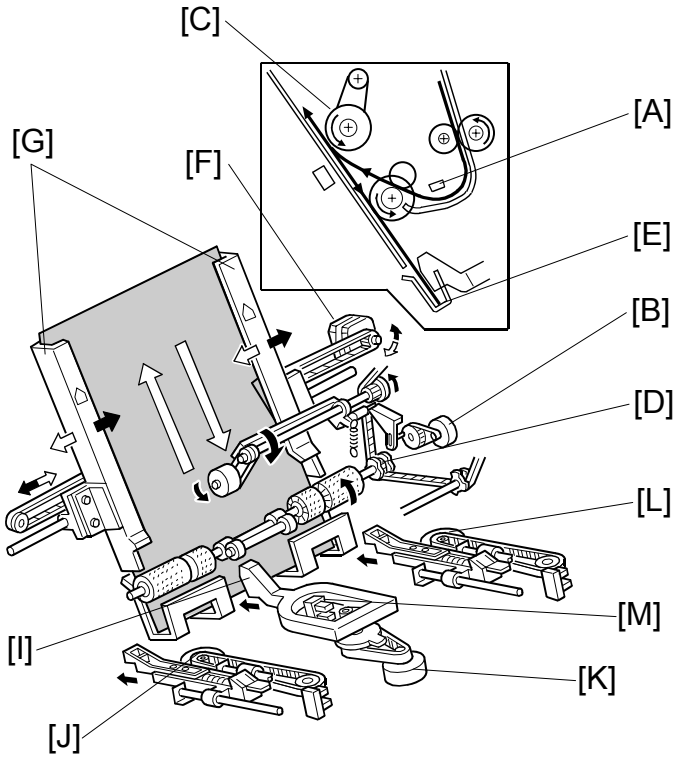
This mechanism improves productivity in staple mode. It is only used when copying on A4, LT, or B5 (all LEF).

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



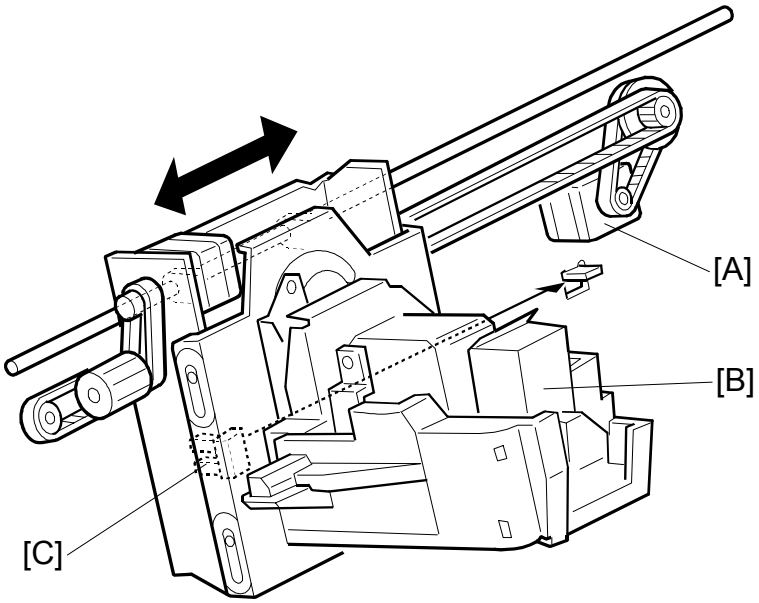
In the staple mode, as every sheet of paper arrives in the jogger unit, it is vertically and horizontally aligned, then the staple edge is pressed flat to ensure the edge of the stack is aligned correctly for stapling.

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



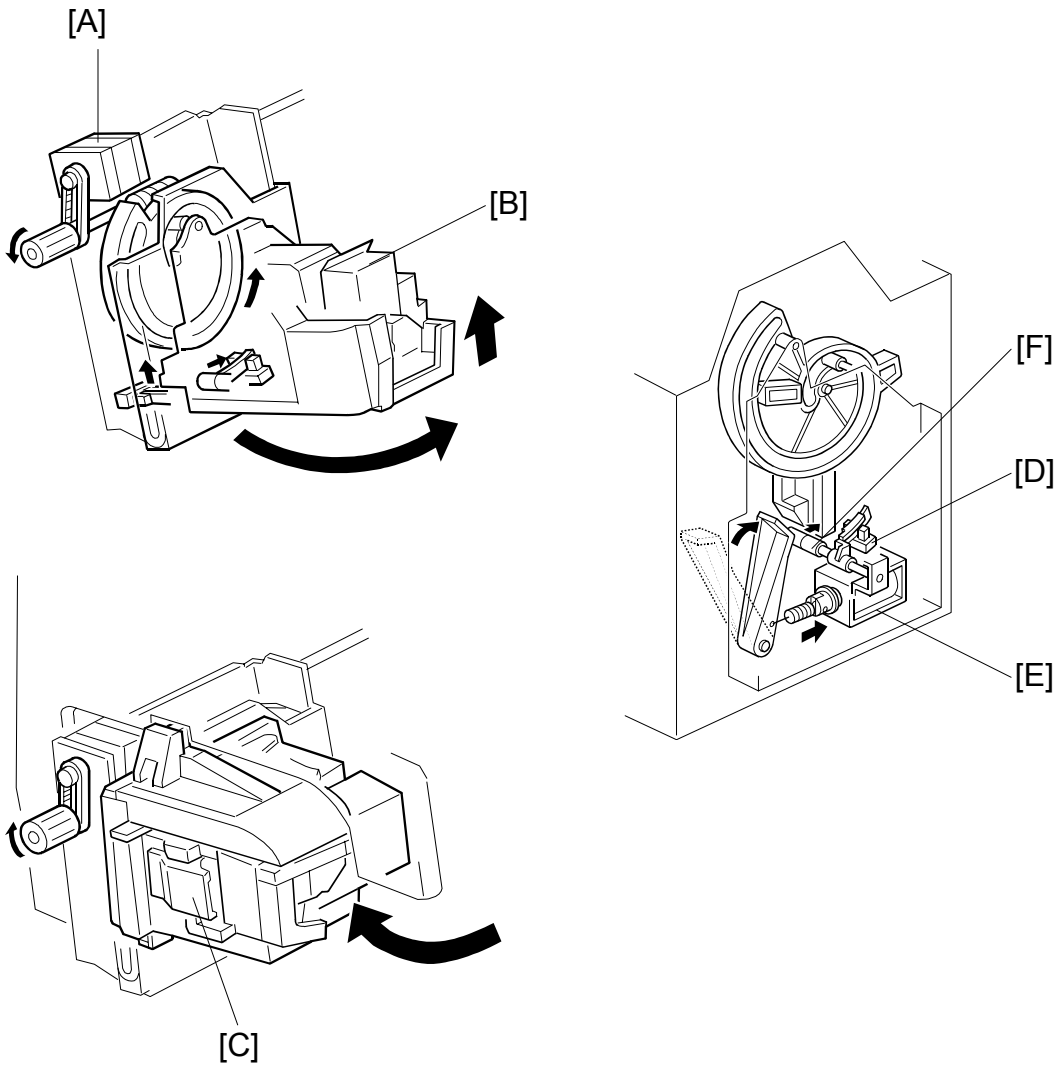
Side-to-Side

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].



Rotation (1)

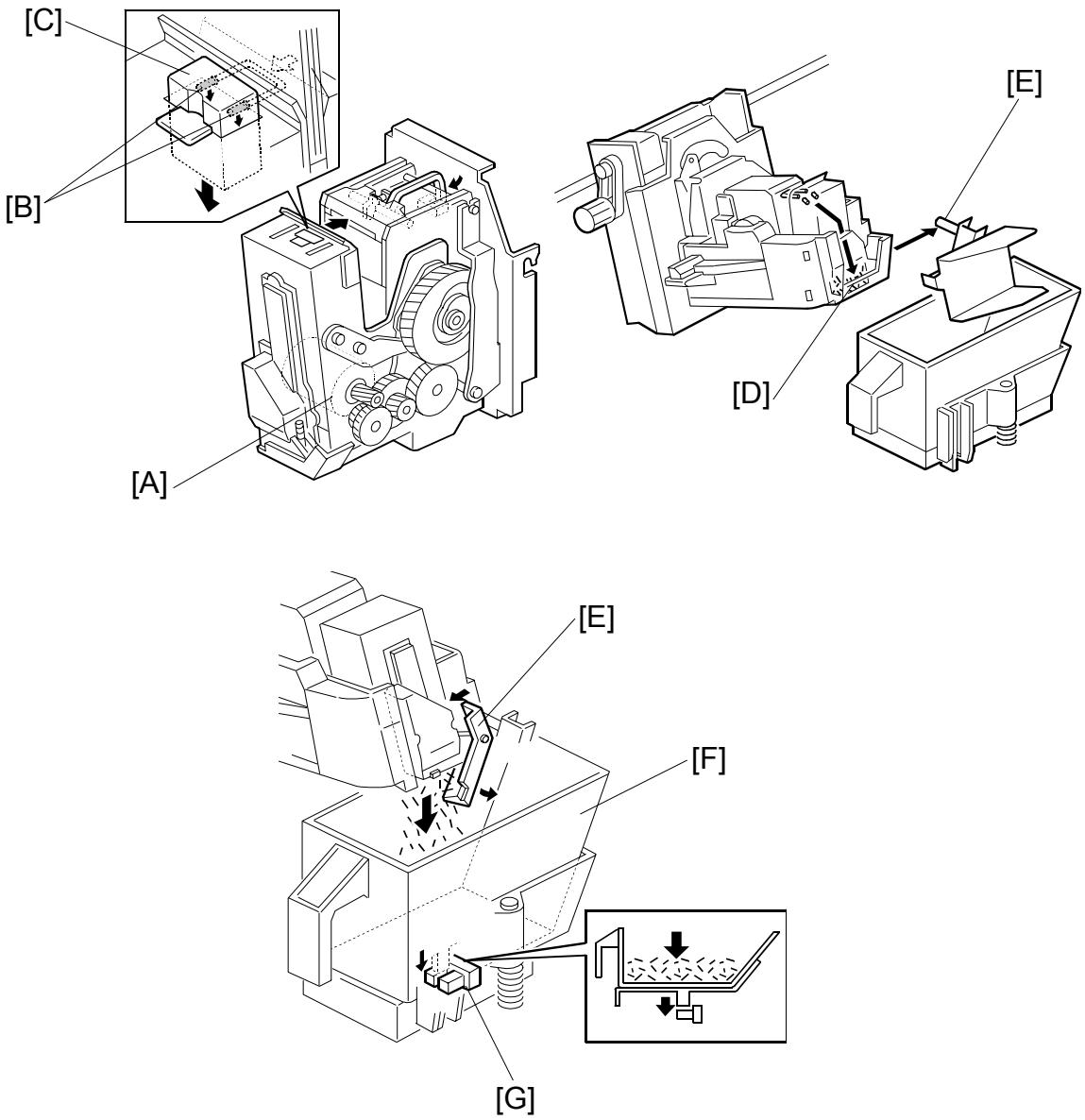
In the oblique staple position mode, the stapler rotation motor [A] rotates the stapler units [B] 45° to counterclockwise after it moves to the stapling position.

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.

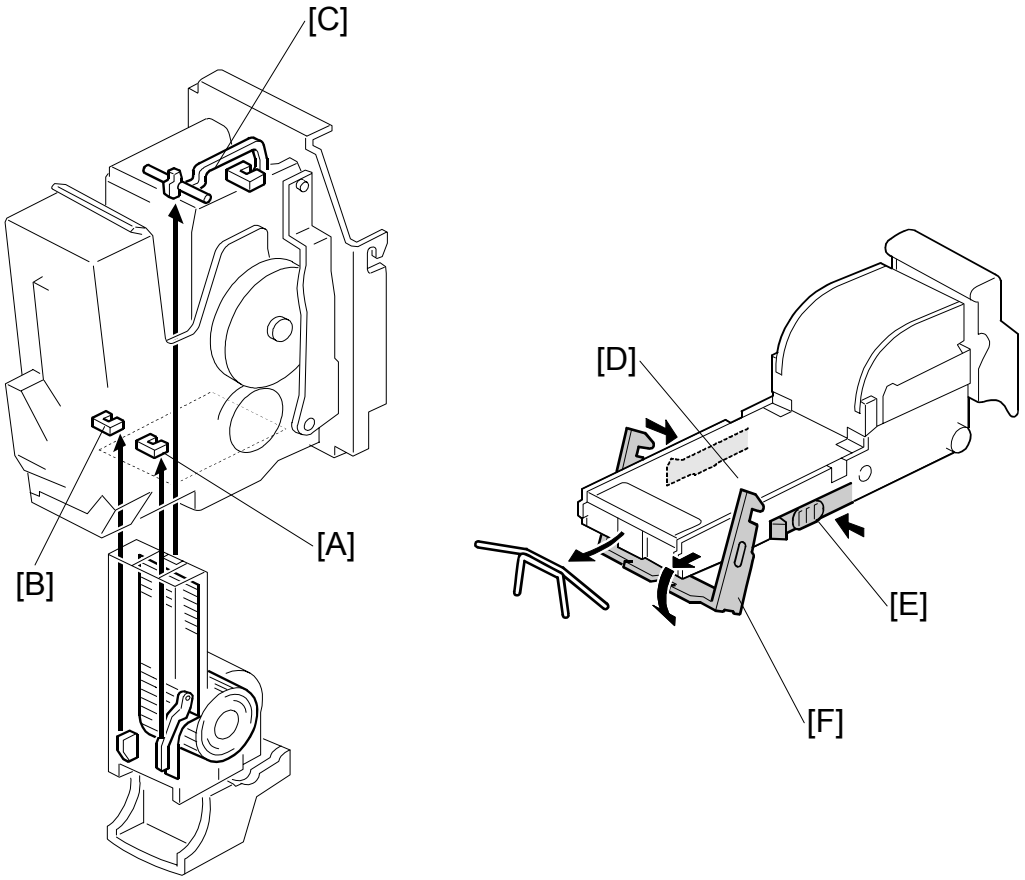
Once the staples have been installed, and the front door closed, the stapler unit returns to its home position. As the stapler unit is returning to the home position, the stapler return sensor [D] is activated, the return solenoid [E] turns on and it assists the guide roller [F] to return to its guide (this guide directs the stapler during rotation).

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.

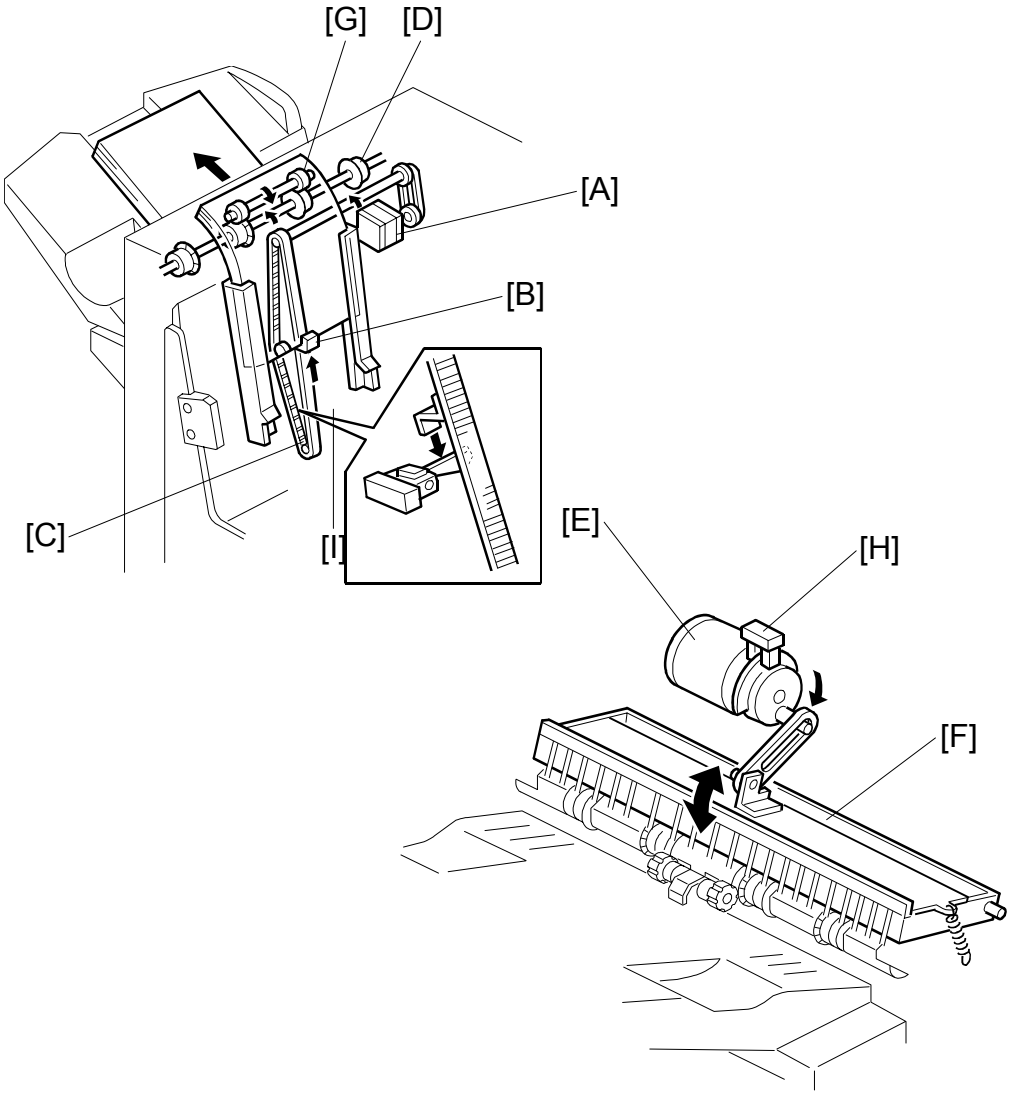


The stapler has a staple end sensor [A], cartridge set sensor [B] and staple hammer HP sensor [C].

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

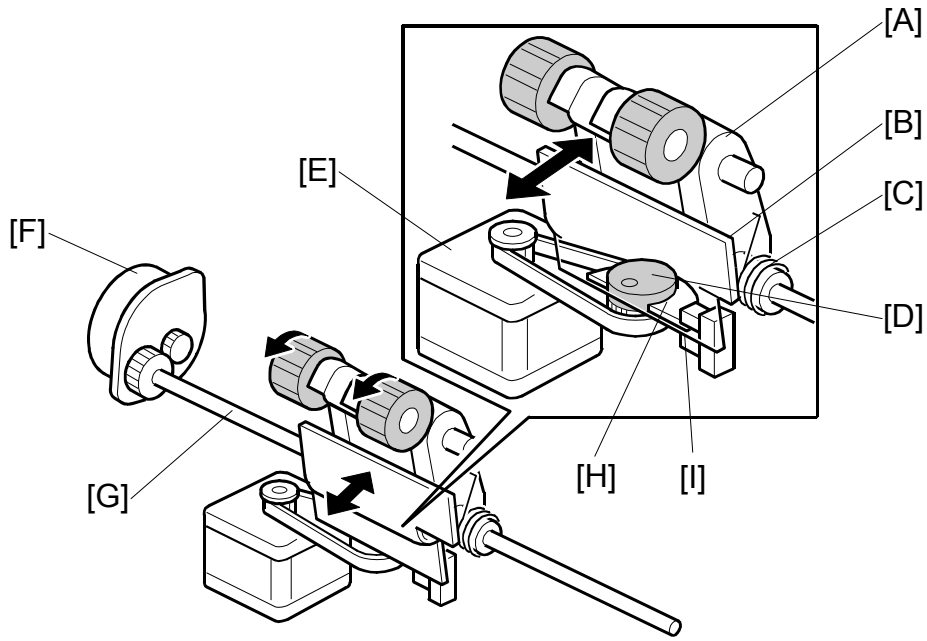


After the copies have been stapled, the stack feed-out motor [A] starts. The pawl [B] on the stack feed-out belt [C] transports the set of stapled copies up and feeds it to the shift tray exit roller [D]. When stapling starts, the exit guide motor [E] opens the upper exit guide [F], which includes the 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



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.

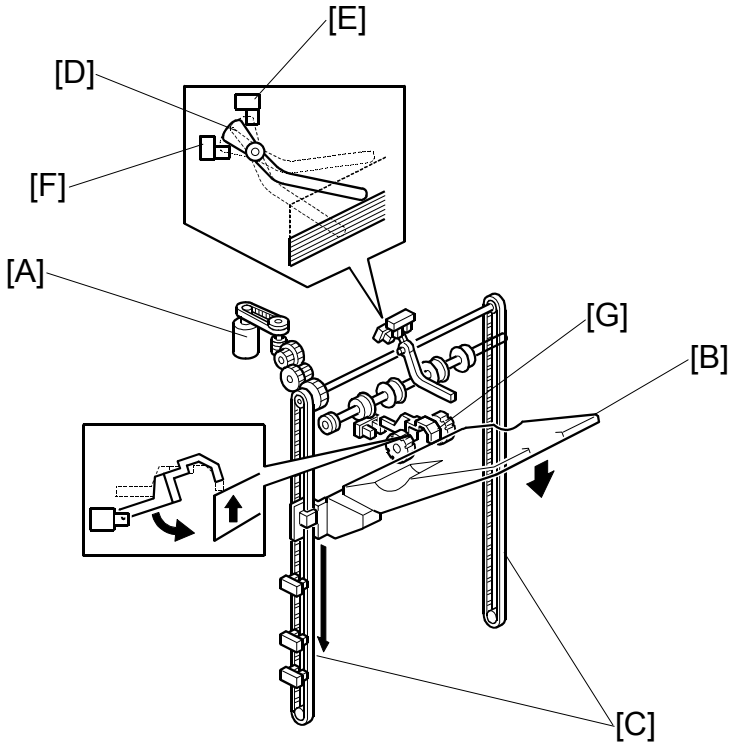
The stacking roller drag motor and timing belt rotate the cam against the bottom of the plate to move the rollers forward and back with each sheet ejected onto the shift tray.

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



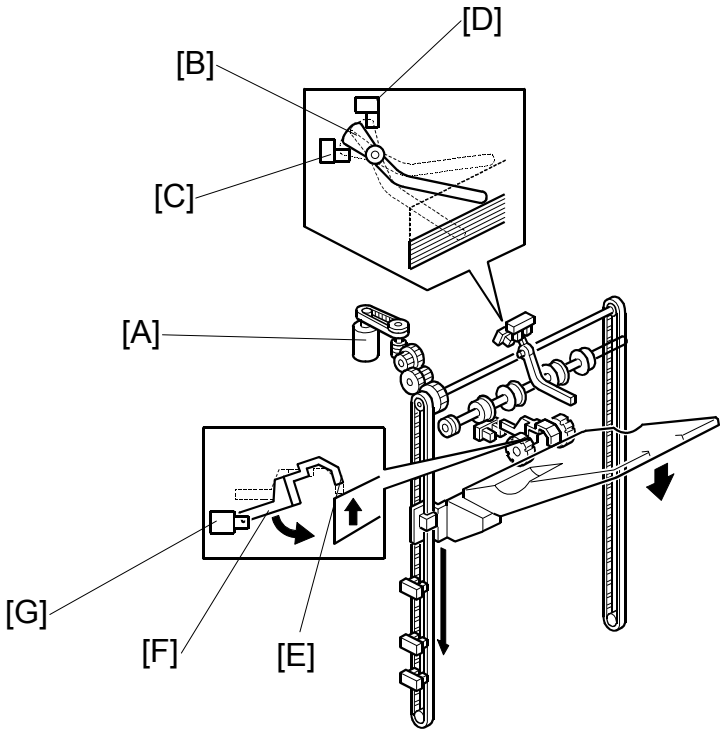
The shift tray lift motor [A] controls the vertical position of the shift tray [B] through gears and timing belts [C].

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



Sort/Stack Mode (Shift Mode)

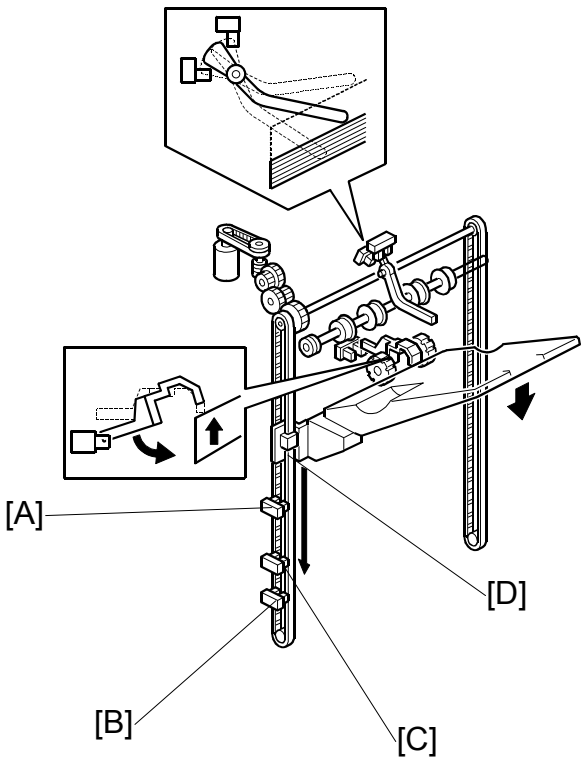
The shift tray moves to home position, which is when the actuator [F] has just exited the shift mode home position sensor [G] (S12). During feed-out, the tray is lowered automatically at prescribed intervals; sensor [D] (S7) is ignored. When the stack is removed from the tray, the end of the feeler [E] 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



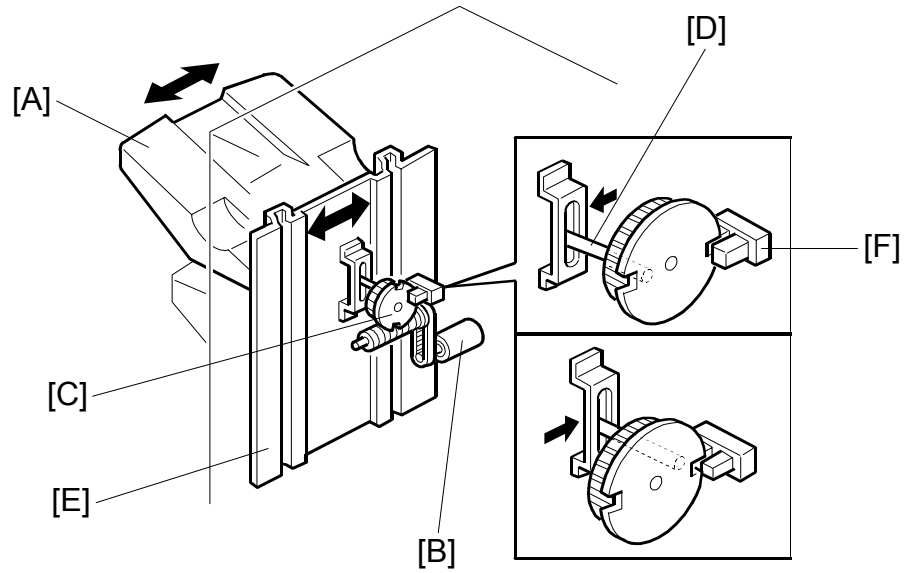
This machine has two shift tray lower limit sensors: shift lower limit sensor [A] (S9) for large paper (B4 and larger) and shift lower limit sensor [B] (S11) for small paper (smaller than B4).

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

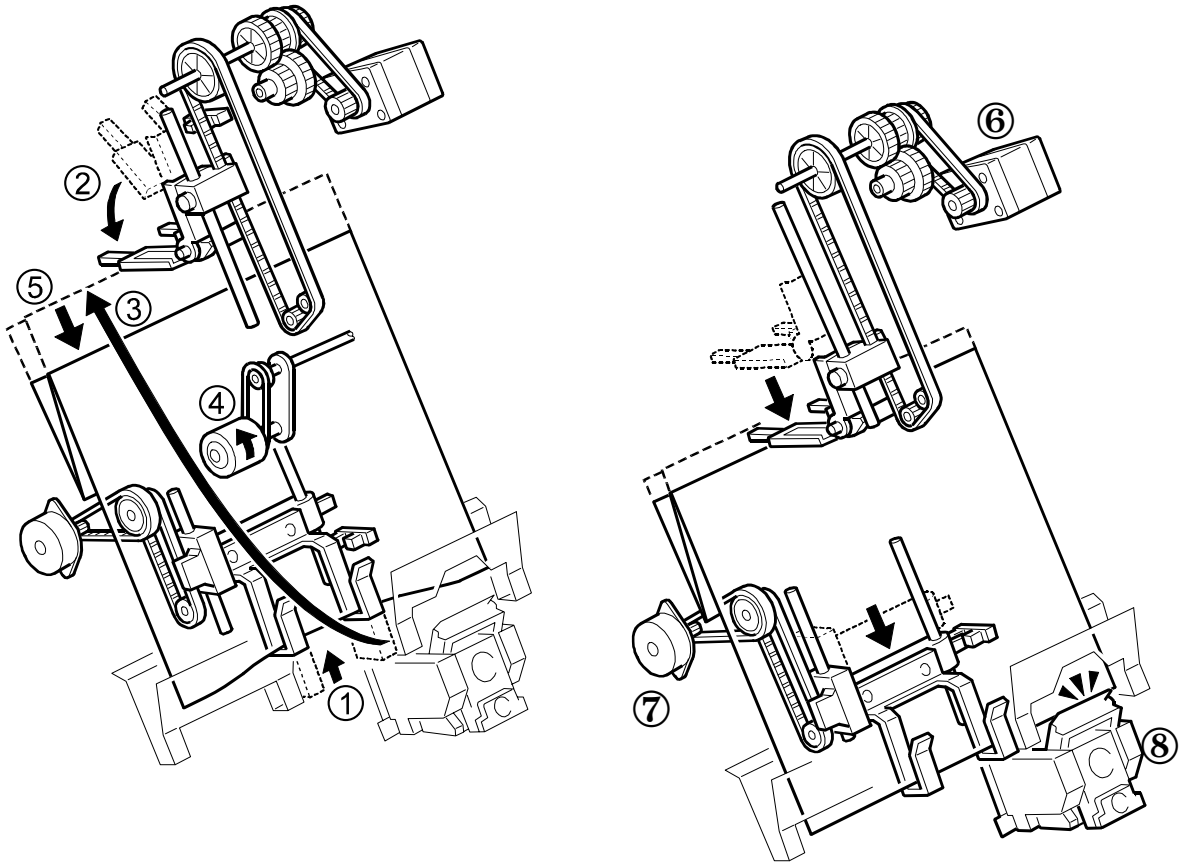


In sort/stack mode, the shift tray [A] moves from side to side to separate the sets of copies.

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 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.

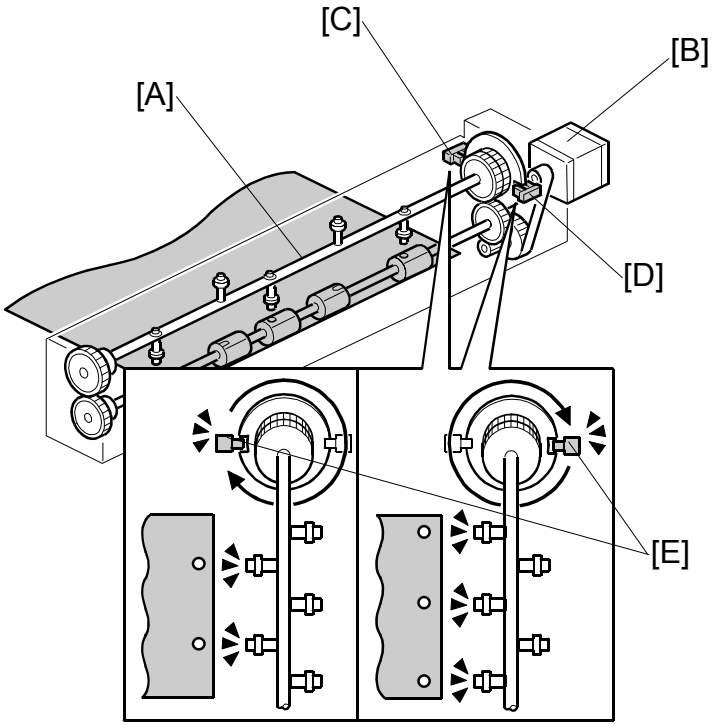
⑧ The stapler staples the stack.

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.

6.12 PUNCH UNIT B531 (OPTION)

6.12.1 PUNCH UNIT DRIVE



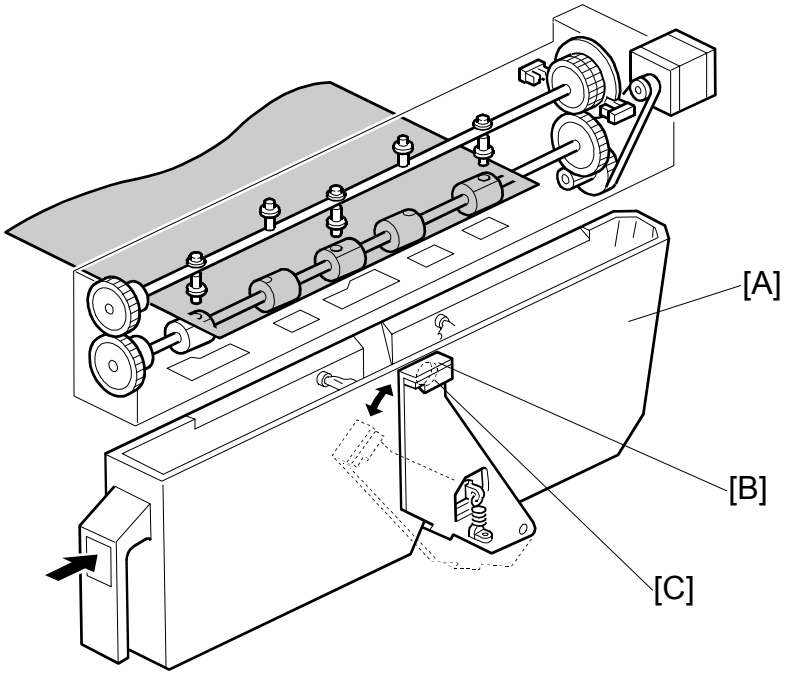
The punch unit makes 2 or 3 holes at the trailing edge of the paper. The number of holes depends on a selection made on the operation panel.

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



Punch waste is collected in the punch waste hopper [A] positioned under the punch unit.

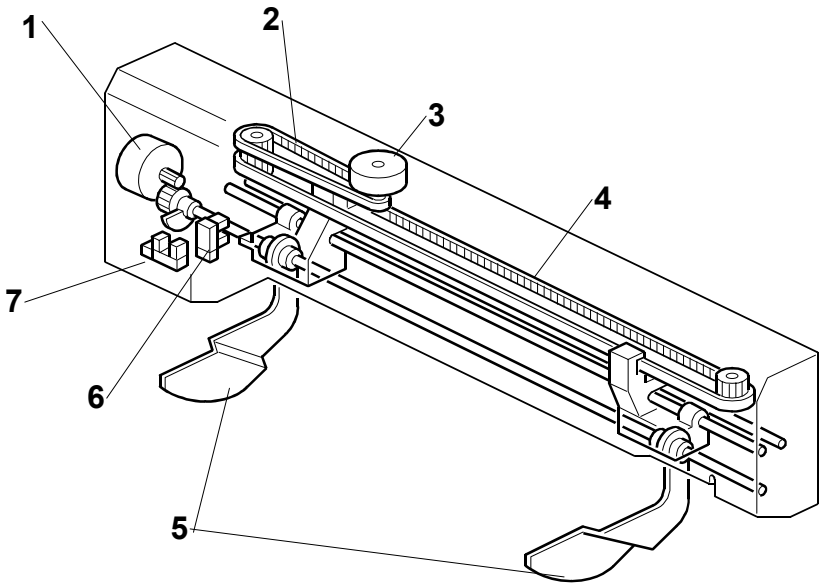
When the level of the punch waste in the hopper rises as far as the hole [B] in the hopper, the punch waste sensor [C] turns on, stops the job, and triggers a message on the operation to indicate that the hopper is full and must be removed and emptied.

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.

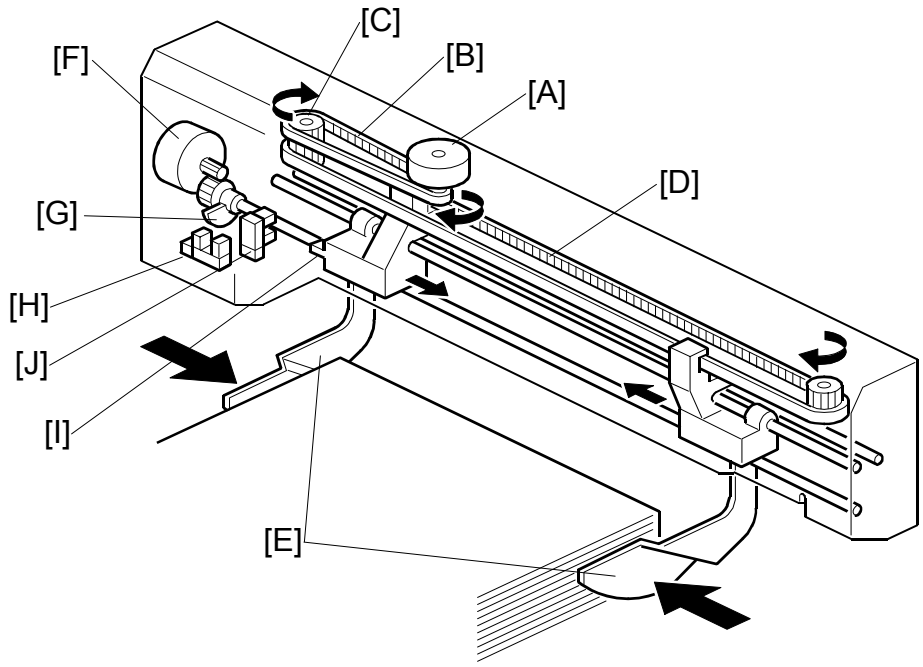
6.13 JOGGER UNIT B513 (OPTION)

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



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.

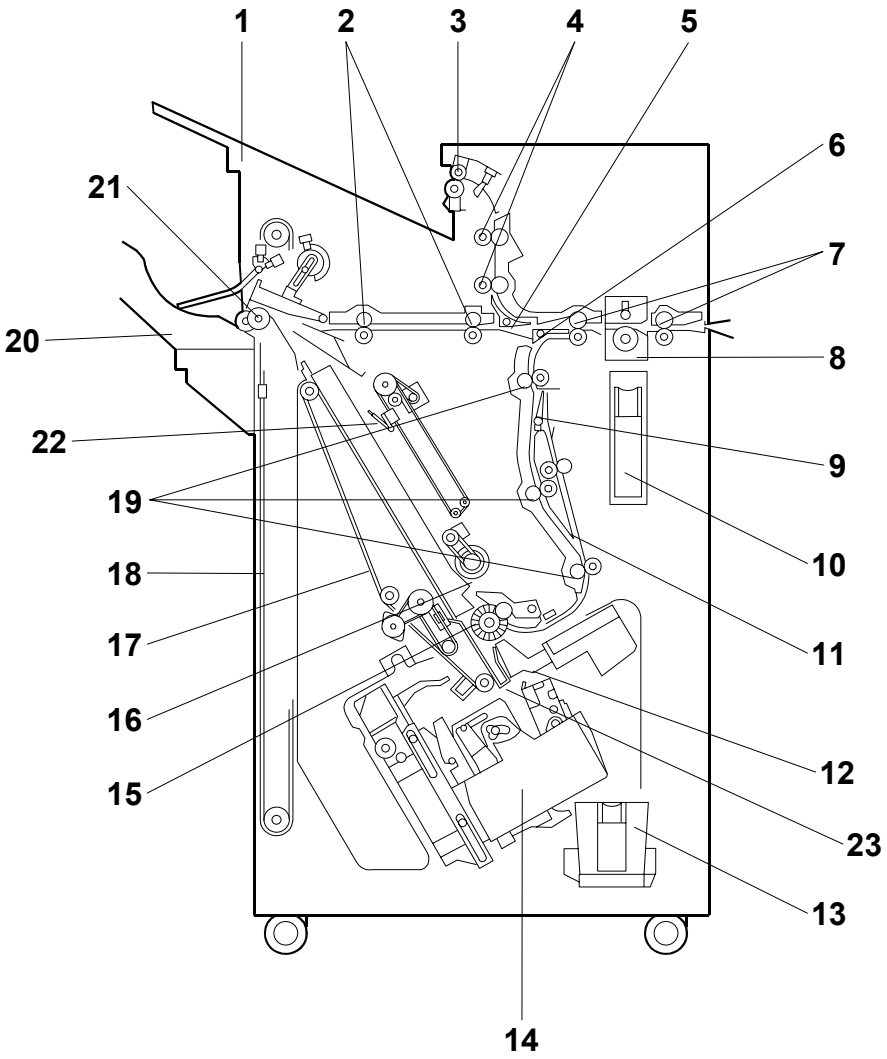
At the end of the job, the jogger fence lift motor [F] switches on and raises the fences until the actuator [G] leaves the slot of the shift jogger fence lift HP sensor [H] and shuts off the shift jogger fence lift motor.

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
2. Middle Transport Rollers
3. Upper Tray Exit Roller
4. Upper Transport Rollers
5. Tray Junction Gate
6. Stapler Junction Gate
7. Entrance Rollers
8. Punch Unit
9. Pre-stack Junction Gate
10. Punch Waste Hopper
11. Pre-stack Tray
12. Stack Plate
13. Staple Waste Hopper
14. Stapler
15. Alignment Brush Roller
16. Positioning Roller
17. Stack Feed-out Belt
18. Shift Tray Drive Belt
19. Lower Transport Rollers
20. Shift Tray
21. Shift Tray Exit Roller
22. Jogger Top Fence
23. Jogger Bottm Fence

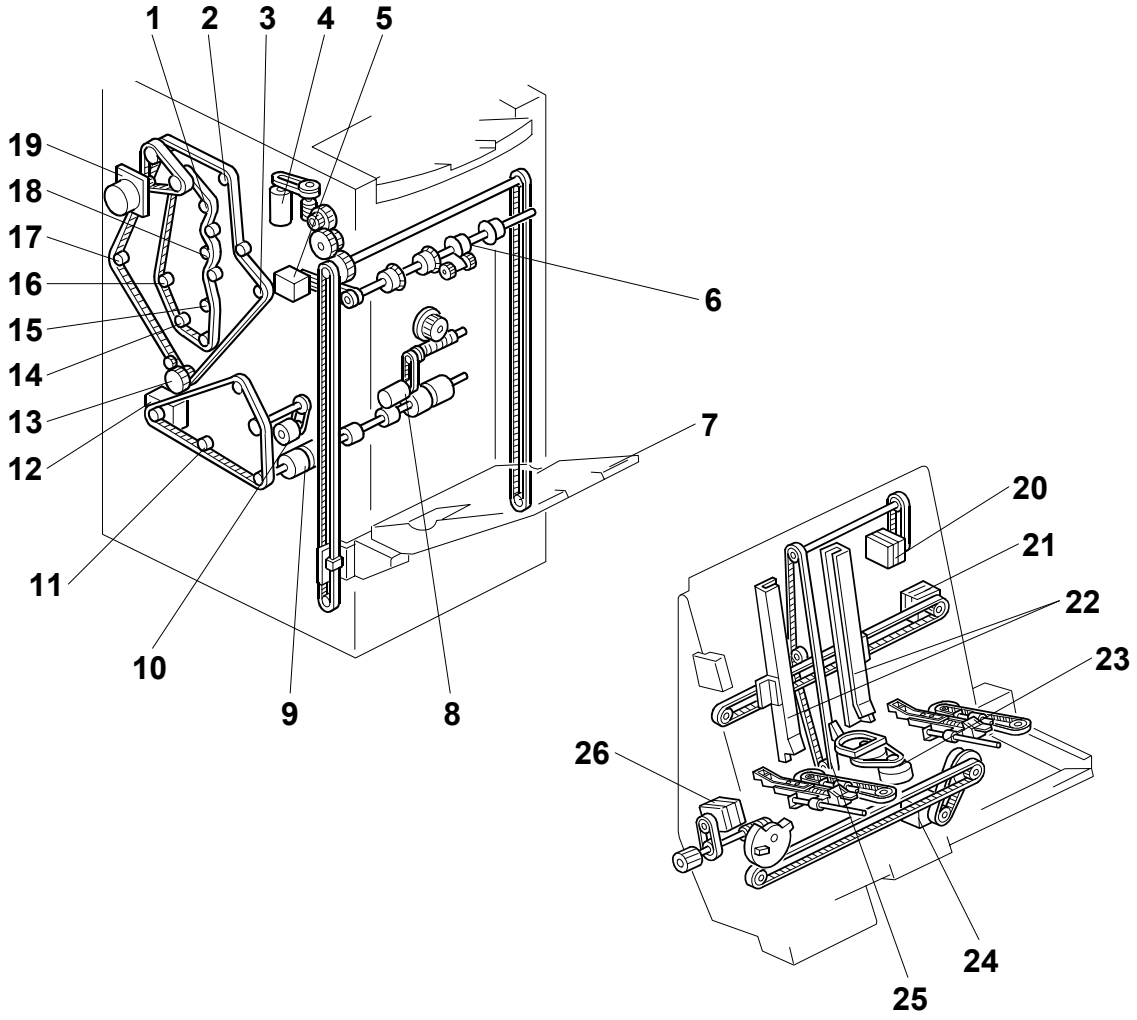
7.2 ELECTRICAL COMPONENT DESCRIPTION

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).

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).

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.

7.3 DRIVE LAYOUT



1. Upper Transport Roller 2
2. Upper Tray Exit Roller
3. Lower Transport Roller 2
4. Shift Tray Lift Motor
5. Shift Tray Exit Motor
6. Shift Tray Exit Roller
7. Shift Tray
8. Shift Motor
9. Staple Tray Exit Roller
10. Positioning Roller
11. Lower Transport Roller 3
12. Lower Transport Motor
13. Lower Transport Rollers 2
14. Lower Transport Roller 1
15. Transport Roller 1
16. Entrance Roller 2
17. Entrance Roller
18. Upper Transport Roller 1
19. Upper Transport Motor
20. Stack Feed-out Motor
21. Jogger Motor
22. Jogger Fence
23. Stack Plate Motor
24. Stapler Motor
25. Stack Feed-out Belt
26. Stapler Rotation Motor

Z-FOLDING UNIT ZF4000
B660

REVISION HISTORY		
Page	**Date**	**Added/Updated/New**
		None

Z-FOLDING UNIT B660

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1. INSTALLATION

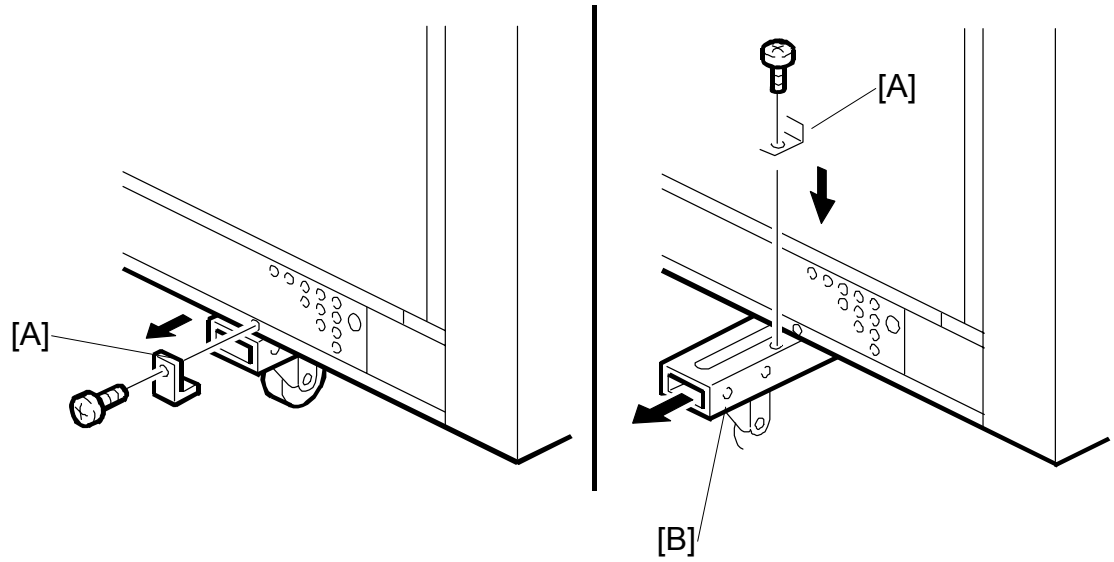
For details about installing the Z-Folding Unit B660, please refer to the instructions you received with the instructions or the “1. Installation” in the main machine service manual.

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



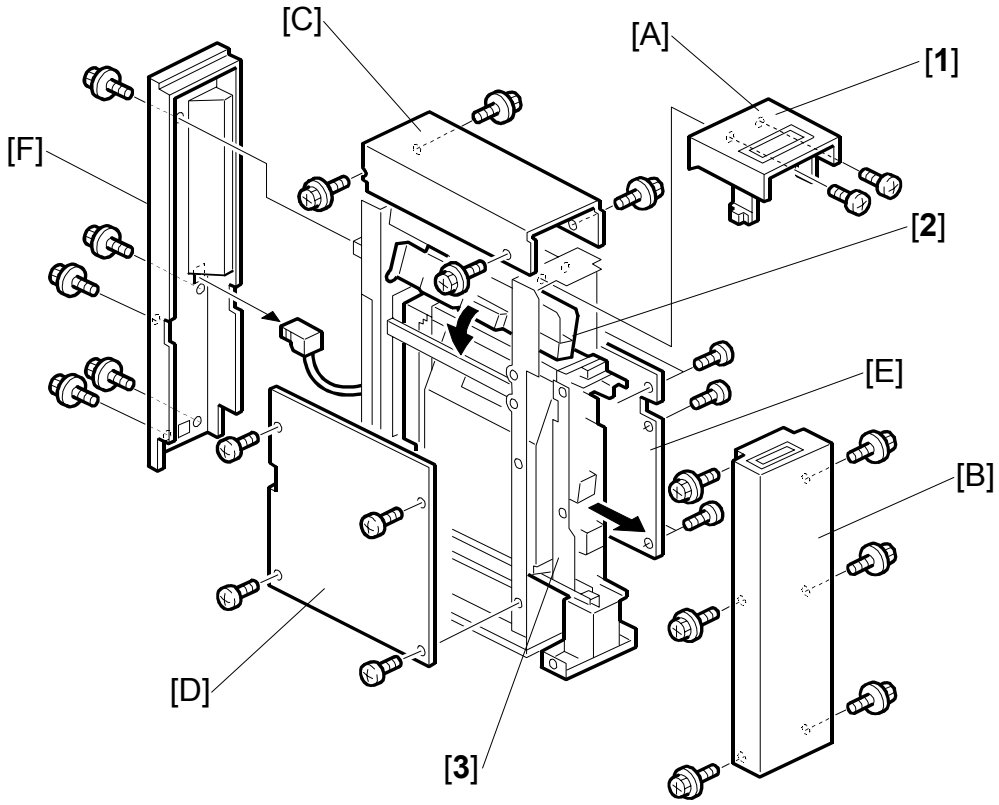
1. Disengage the Z-folding unit from the machine.
2. Disengage the Z-folding unit from the finisher (or cover sheet feeder).
3. At the bottom on the sides of the Z-folding unit:
   - Remove the lock bracket [A] (🔩 x 1).
   - Pull out the foot extension [B].
   - Re-attach the bracket [A] to lock the 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.

3.2 COVERS



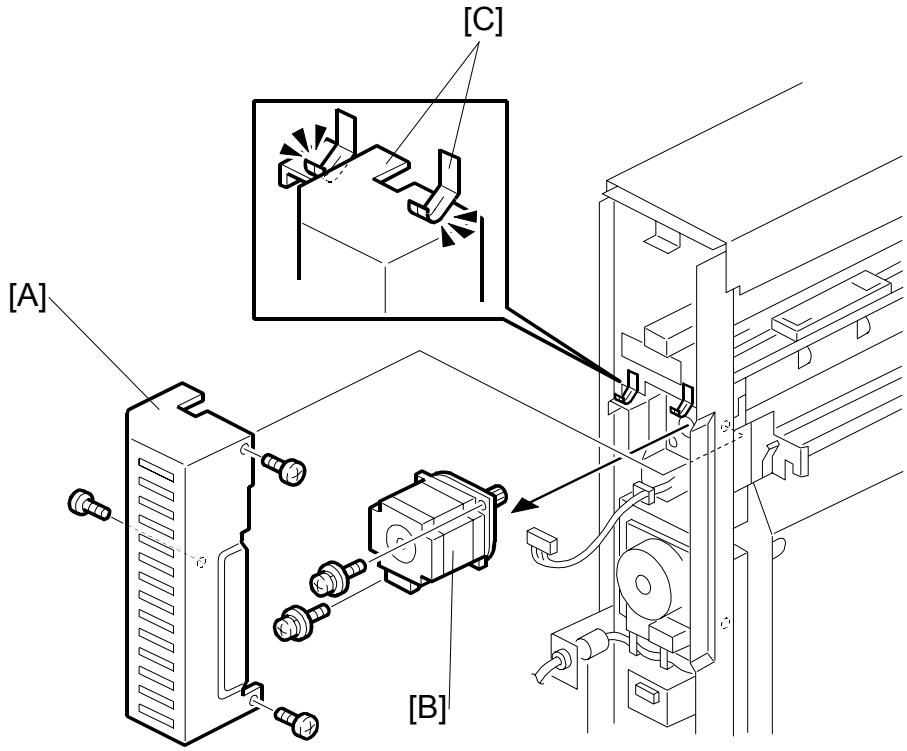
[**1**] Open the front door.

[**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



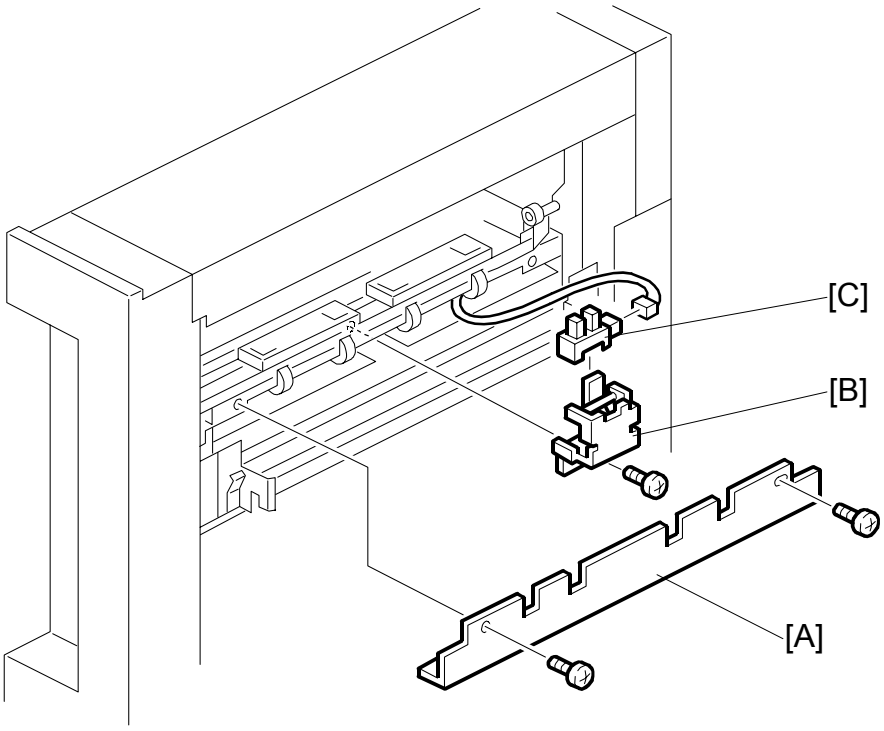
1. Pull the Z-folding mechanism out of the unit, but not fully.
2. Remove: (☛ 3.2)
   - Left cover
   - Right cover
   - Back cover

[A]: Motor cover (🔩 x 3)
[B]: Feed Motor (🔩 x 2, 🖐 x 1, timing belt x 1)

Re-installation

Make sure that the motor cover is below the leaf springs [C].

3.4 UPPER EXIT SENSOR



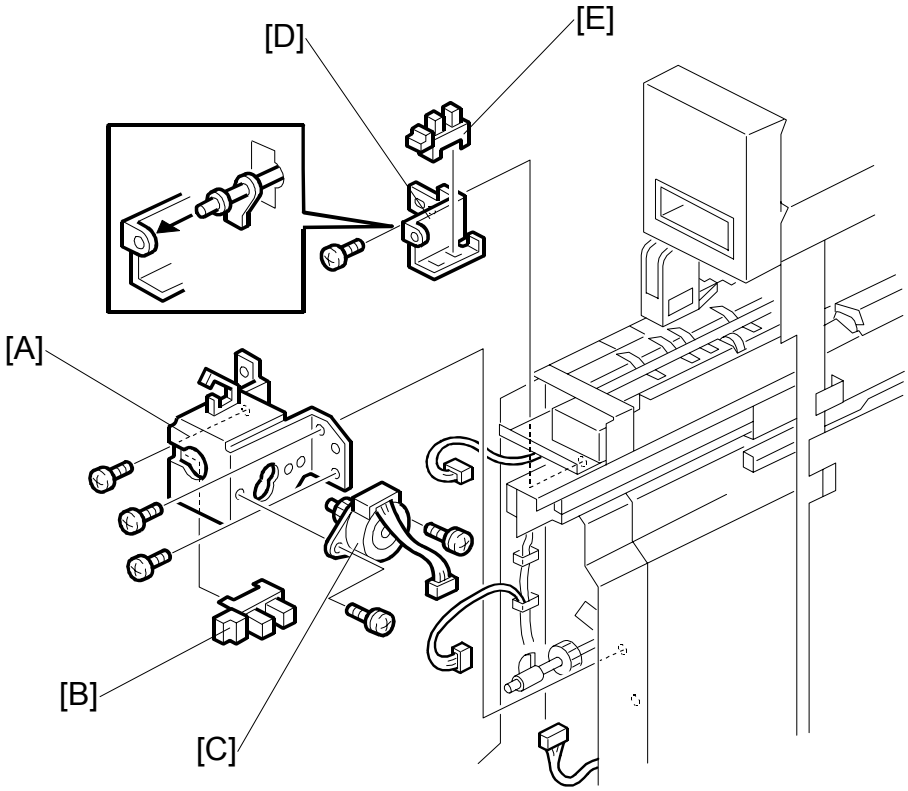
Left cover (☛ 3.2)

[A]: Bracket (🔩 x 2)

[B]: Upper exit sensor bracket (🔩 x 1, 🔌 x 1)

[C]: Upper exit sensor (✋ x 1)

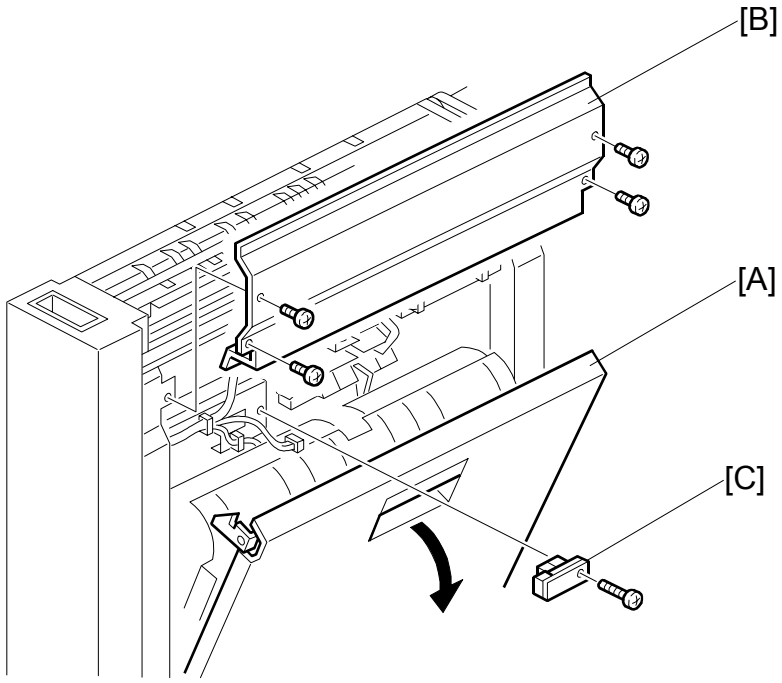
3.5 UPPER STOPPER MOTOR/HP SENSOR, FEED SENSOR



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



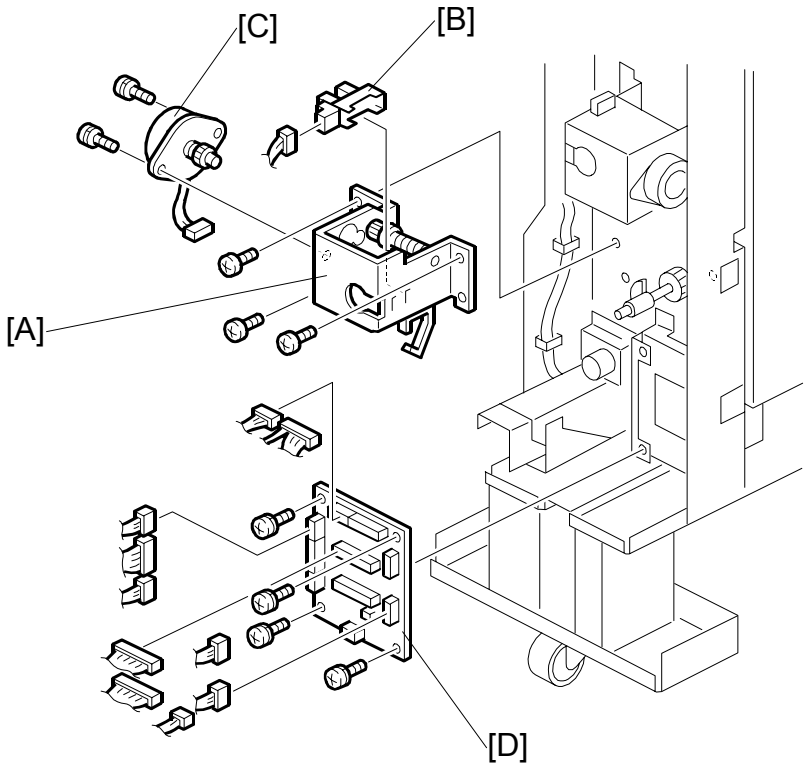
Pull the Z-fold mechanism out of the unit. (☛ 3.2)

[A]: Open the right vertical transport unit cover.

[B]: Plate (x 4)

[C]: Fold timing sensor (x 1, x 1)

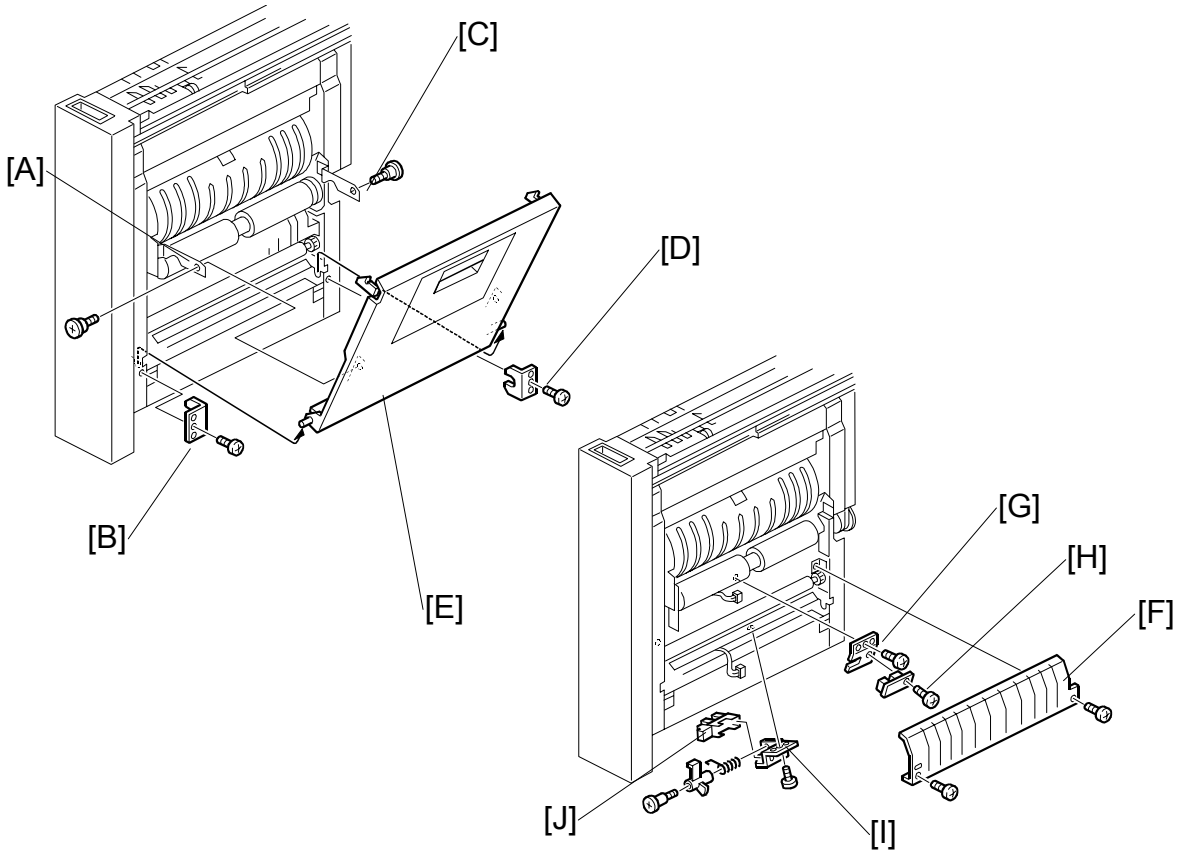
3.7 LOWER STOPPER MOTOR/HP SENSOR, RELAY BOARD



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

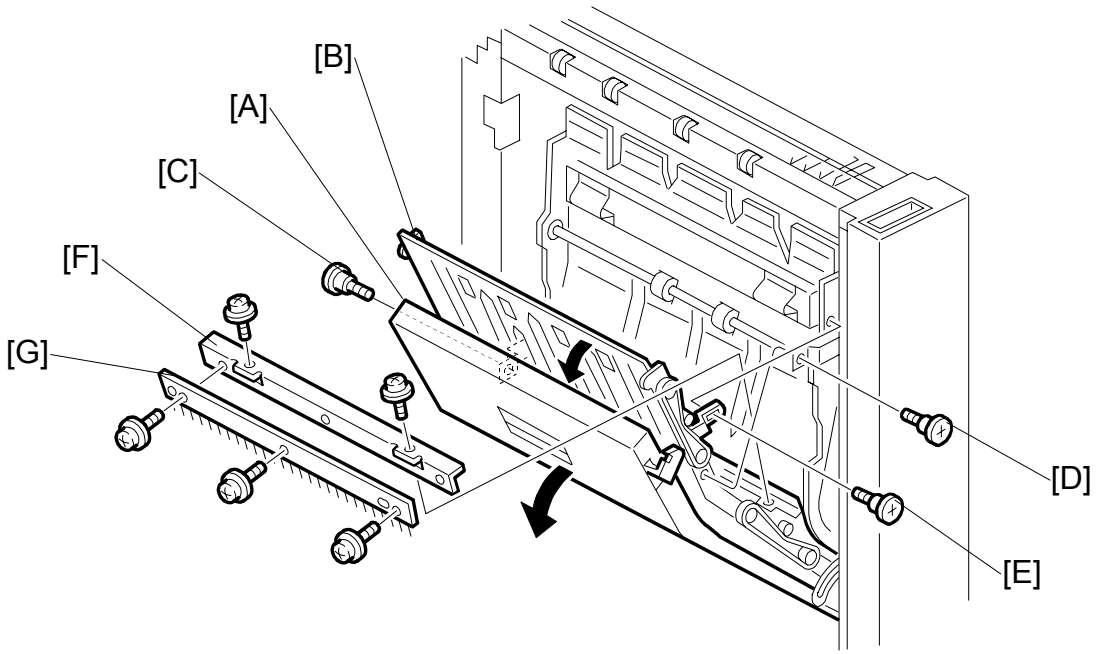


Pull out the Z-folding mechanism. (☛ 3.2)

Open the right vertical transport cover [E].

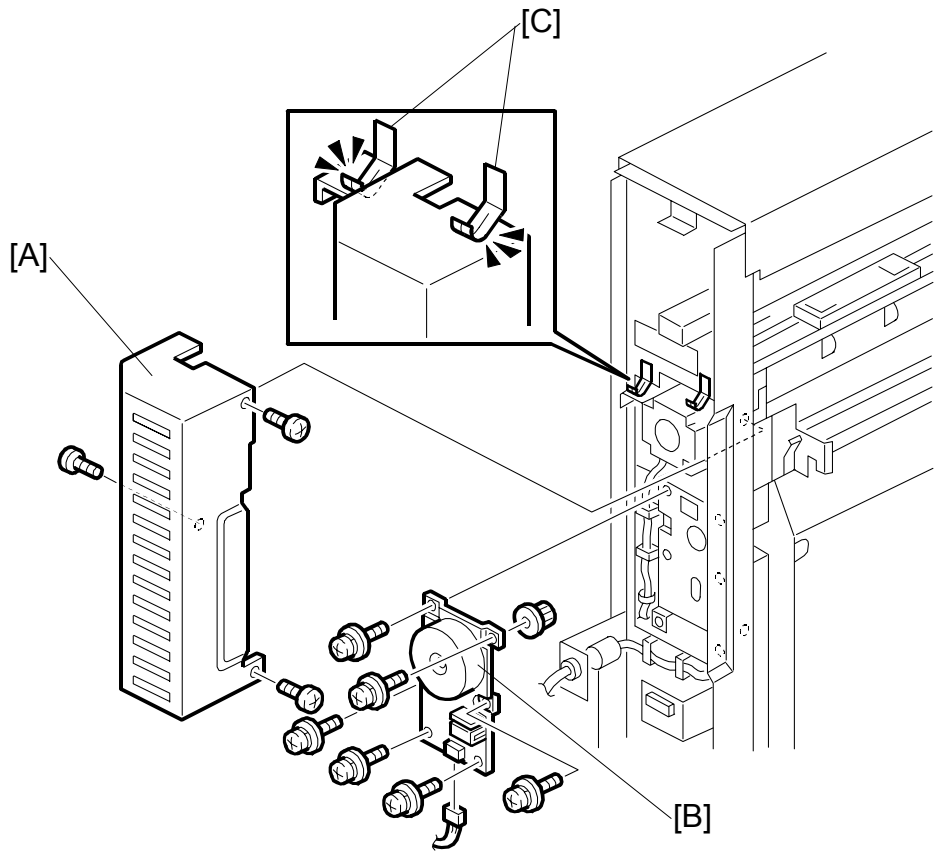
[A]: Left link arm (☞ x 1)
[B]: Left corner bracket (☞ x 1)
[C]: Right link arm (☞ x 1)
[D]: Right corner bracket (☞ x 1)
[E]: Vertical transport cover.
[F]: Lower fold roller cover (☞ x 2)
[G]: Leading edge sensor bracket (☞ x 1)
[H]: Leading edge sensor (☞ x 1, ☞ x 1)
[I]: Lower exit sensor bracket (☞ x 1)
[J]: Lower exit sensor (☞ x 1, ☞ x 1)

3.9 ANTI-STATIC BRUSH



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



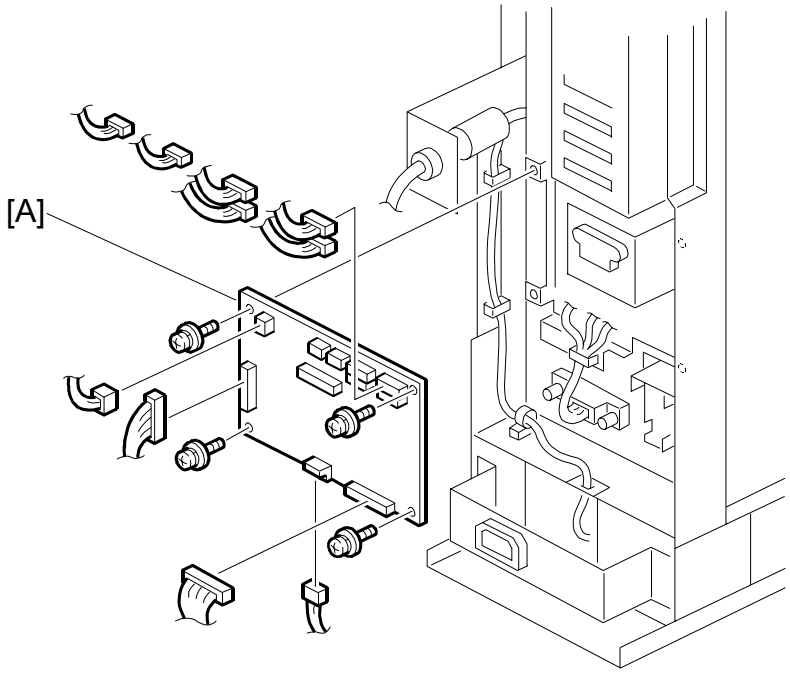
1. Pull the Z-folding mechanism out of the unit, but not fully.
2. Remove: (☛ 3.2)
   - Left cover
   - Right cover
   - Back cover

[A]: Motor cover (x 3)
[B]: Fold roller motor (x 6, x 1, timing belt x 1)

Reinstallation

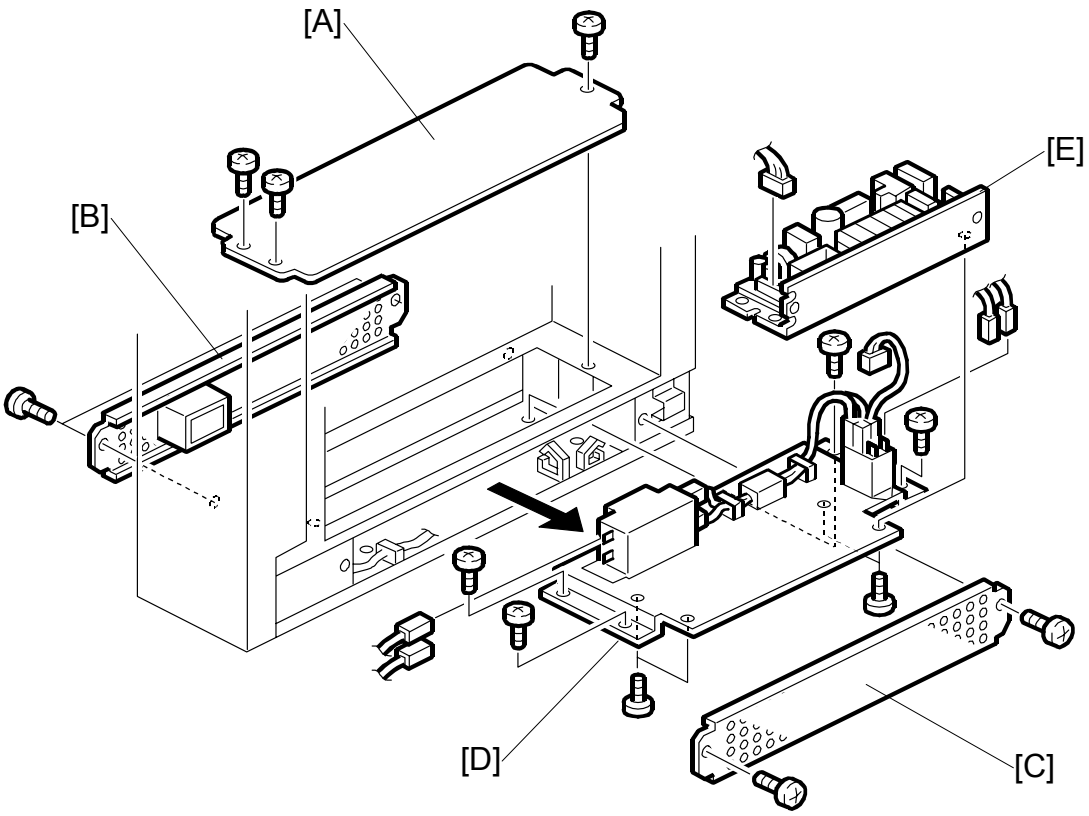
Make sure that the motor cover is below the leaf springs [C].

3.11 MAIN CONTROL BOARD



1. Remove the rear cover. (☛ 3.2)
2. Remove the main control board [A] (🔩 x 4, ✋ x 10)

3.12 PSU



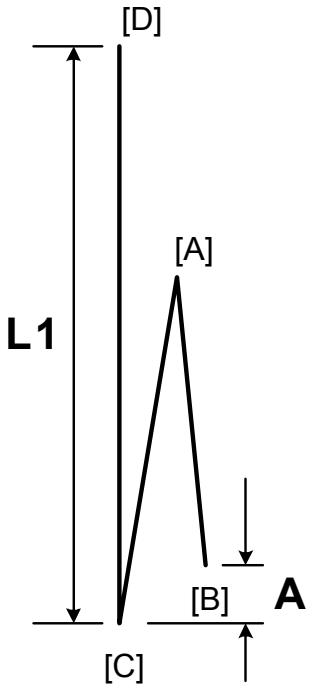
1. Open the front door. (☛ 3.2)
2. Pull the Z-fold mechanism out of the unit. (☛ 3.2)
3. Remove the left cover and right cover. (☛ 3.2)
4. Remove the base top cover [A] (🔩 x 3).
5. Remove the base left cover [B] (🔩 x 2).
6. Remove the base right cover [C] (🔩 x 2).
7. Make a mark at the positions of the 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] (🔩 x 4).
9. Pull the power supply unit [D] out of the right side of the bottom.
10. Remove the power supply board [E] (🔩 x 4, ✋ 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.



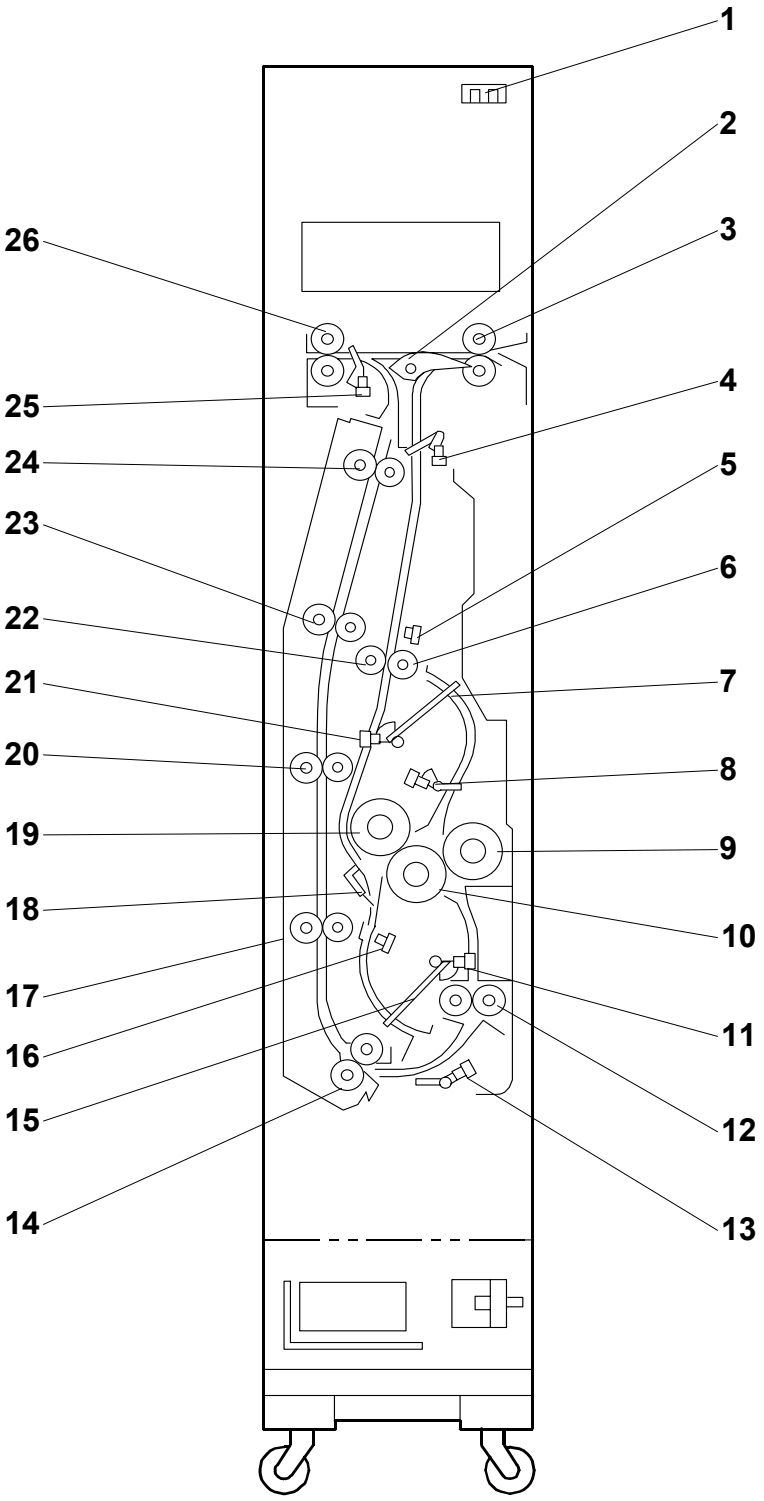
Use these SPs to adjust the locations of the first fold and the second fold.

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
	[-4 ~ +4/0/ 0.2 mm] 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].
SP6122 009-016	Fine Adjustment – 2nd Fold Position
	[-4 ~ +4/0/ 0.2 mm] Adjusts the position of the 2nd fold [C] to decrease or increase the length (**L1**) of the sheet between the trailing edge [D] and the 2nd fold.

6. DETAILS

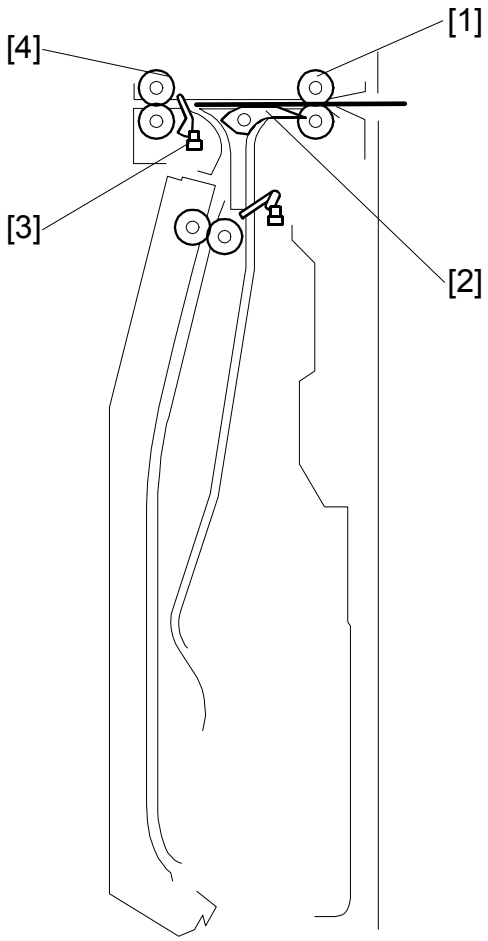
6.1 OVERVIEW



1. Front Door Sensor
2. Junction Gate
3. Feed Rollers
4. Feed Sensor
5. Fold Timing Sensor
6. Pinch Idle Roller
7. Upper Stopper
8. Upper Stopper Path Sensor
9. 3rd Fold Roller
10. 2nd Fold Roller
11. Lower Stopper HP Sensor
12. Lower Exit Rollers
13. Lower Exit Sensor
14. Grip Rollers
15. Lower Stopper
16. Leading Edge Sensor
17. Vertical Feed Rollers – 1
18. Anti-Static Brush
19. 1st Fold Roller
20. Vertical Feed Rollers – 2
21. Upper Stopper HP Sensor
22. Pinch Feed Roller
23. Vertical Feed Rollers – 3
24. Vertical Feed Rollers – 4
25. Upper Exit Sensor
26. Upper Exit Rollers

6.2 Z-FOLDING UNIT PAPER PATH

6.2.1 PAPER PATH WITH NO FOLDING



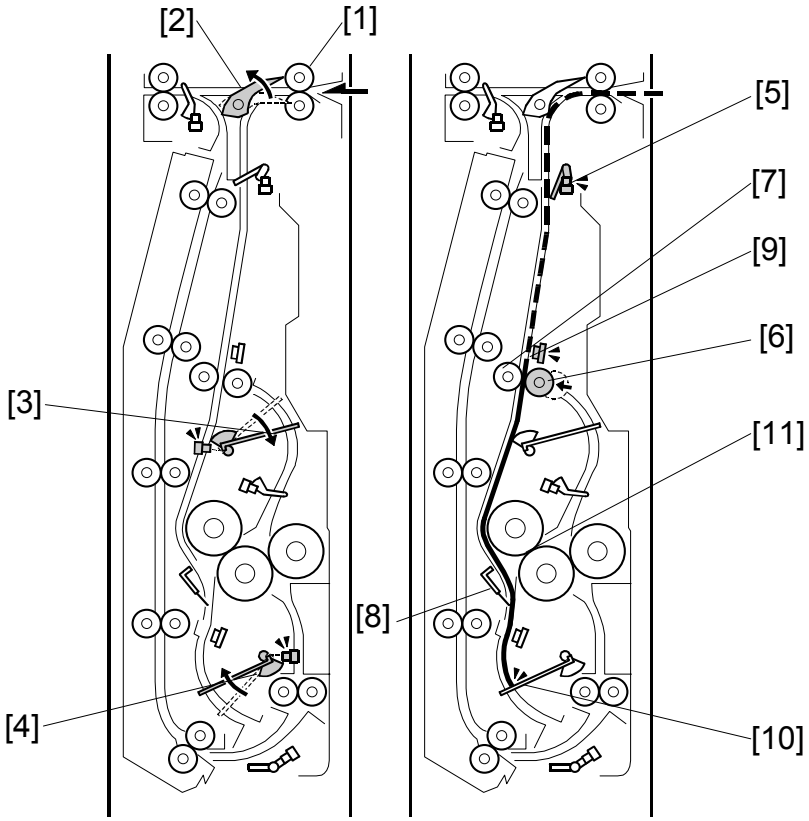
The feed rollers [1] feed the paper from the main machine into the Z-folding unit.

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.

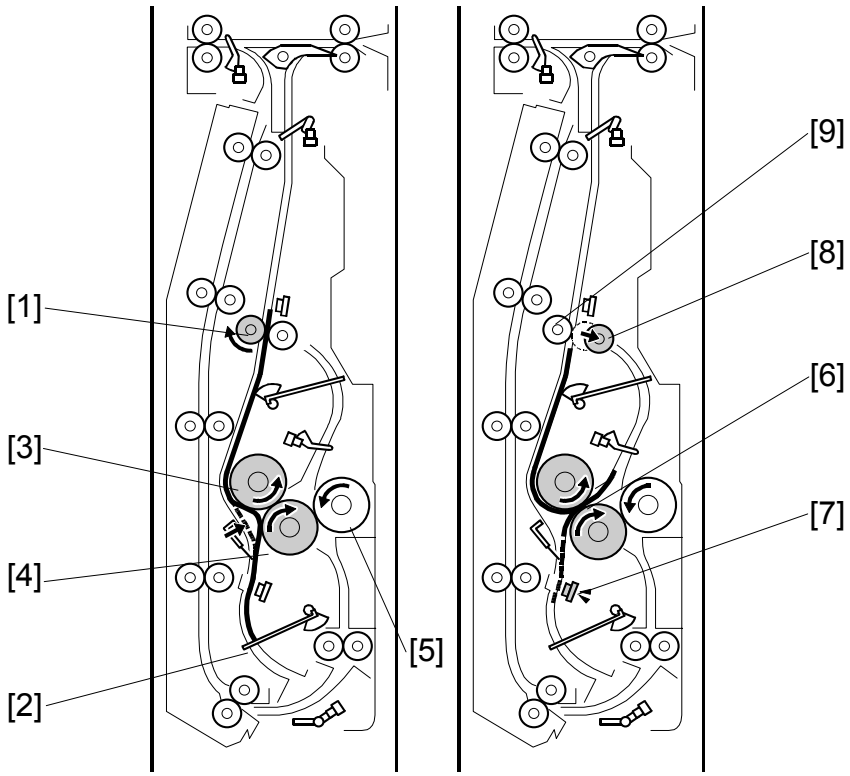
The upper and lower stopper motors move the upper stopper [3] and lower stopper [4] to the positions for the paper size that was used for the job, and for the fold positions that were selected.

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.



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]

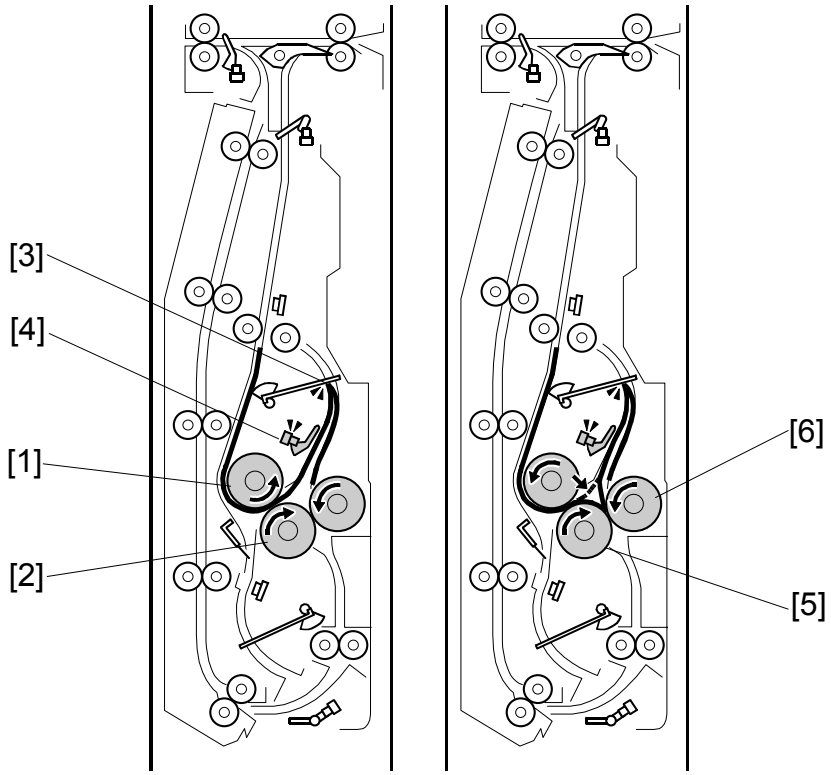
The sheet continues to buckle until it feeds into the nip [6] of the 1st and 2nd fold rollers. These two rollers fold the sheet.

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).



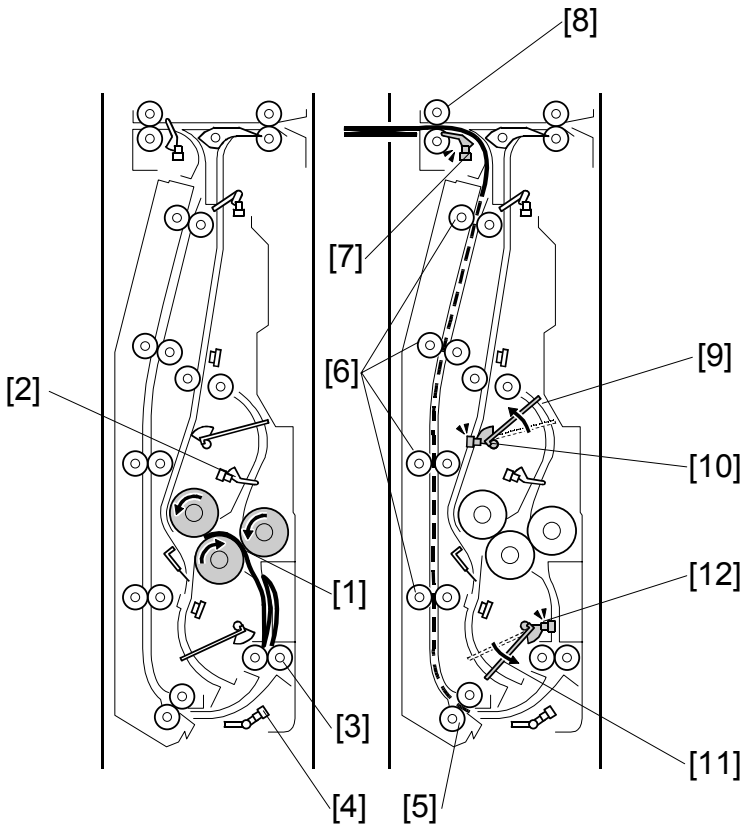
The 1st fold roller [1] and 2nd fold roller [2] continue to turn. This feeds the edge of the 1st fold up until it hits the upper stopper [3].

The sheet lifts the feeler of the upper stopper path sensor [4]. This sensor:

- Detects when the sheet comes to the upper stopper path.
- Detects when the sheet goes out of the upper stopper path.

The upper stopper sensor detects a jam if it does not detect that the sheet comes and goes at the correct times.

When the sheet feeds between the 1st and 2nd fold rollers, this pushes the first fold against the upper stopper. The sheet buckles down into the gap between the 2nd fold roller [5] and 3rd fold roller [6]. The second fold is made when the sheet feeds between the 2nd and 3rd feed rollers.



The 2nd and 3rd fold rollers [1] continue to turn and feed the sheet down.

The feeler of the upper stopper path sensor [2] falls and the sensor detects that the sheet is gone. The fold rollers feed the folded sheet to the lower exit rollers [3].

The lower exit sensor [4] detects the leading edge and trailing edge of the sheet. If the trailing edge is not detected during the correct time interval, the sensor detects a jam.

The grip rollers [5] feed the folded sheet to the four pairs of vertical feed rollers [6].

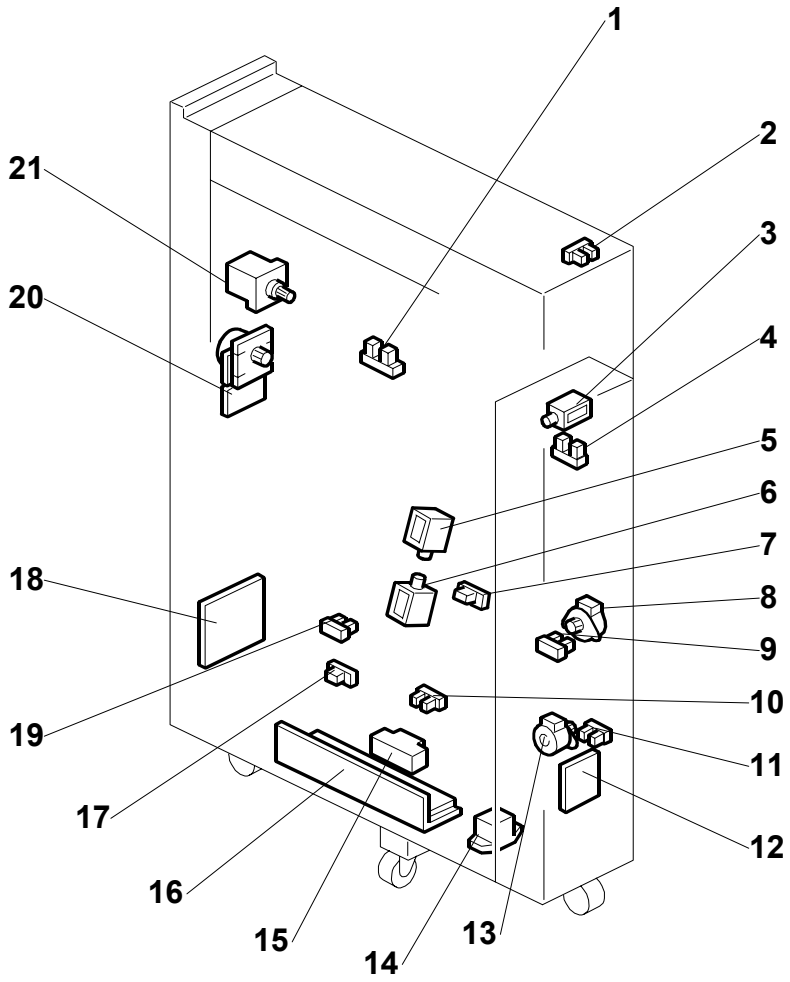
The upper exit sensor [7] detects the leading edge and trailing edge of each folded sheet. If the leading and trailing edge are not detected during the correct time interval, this sensor detects a jam.

The upper exit rollers [8] feed the folded sheet into the finisher.

At the correct time:

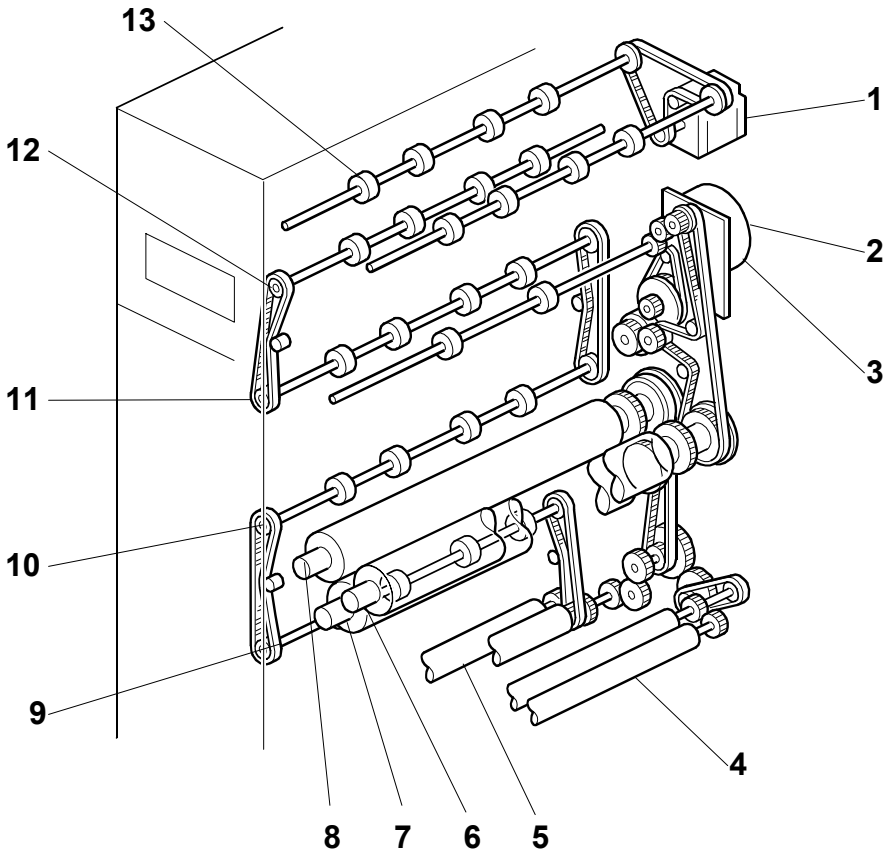
- The upper stopper motor lifts the upper stopper [9] until the upper stopper sensor [10] detects that the upper stopper is at its home position. This stops the motor.
- The lower stopper motor lowers the lower stopper [11] until the lower stopper sensor [12] detects that the lower stopper is at its home position. This stops the motor.

6.3 ELECTRICAL COMPONENTS



1. Upper Exit Sensor
2. Front Door Sensor
3. Junction Gate Solenoid
4. Feed Sensor
5. Pinch Idle Roller Solenoid – Upper
6. Pinch Idle Roller Solenoid – Lower
7. Fold Timing Sensor
8. Upper Stopper Motor
9. Upper Stopper HP Sensor
10. Lower Exit Sensor
11. Lower Stopper HP Sensor
12. Relay Board
13. Lower Stopper Motor
14. Connector Relay
15. Breaker
16. Power Supply Unit
17. Leading Edge Sensor
18. Main Control Board
19. Upper Stopper Path Sensor
20. Fold Roller Motor
21. Feed Motor

6.4 DRIVE LAYOUT



1. Feed Motor
2. Feed Rollers
3. Fold Roller Motor
4. Lower Exit Rollers
5. Grip Rollers
6. 3rd Fold Roller
7. 2nd Fold Roller
8. 1st Fold Roller
9. Vertical Feed Rollers – 1
10. Vertical Feed Rollers – 2
11. Vertical Feed Rollers – 3
12. Vertical Feed Rollers – 4
13. Upper Exit Rollers

Scanner Unit/Printer Unit
G338/G339

REVISION HISTORY		
Page	**Date**	**Added/Updated/New**
7	06/02/2002	Updated Information - IEEE1394 Board (Firewire)

SCANNER/PRINTER UNIT G338/G339

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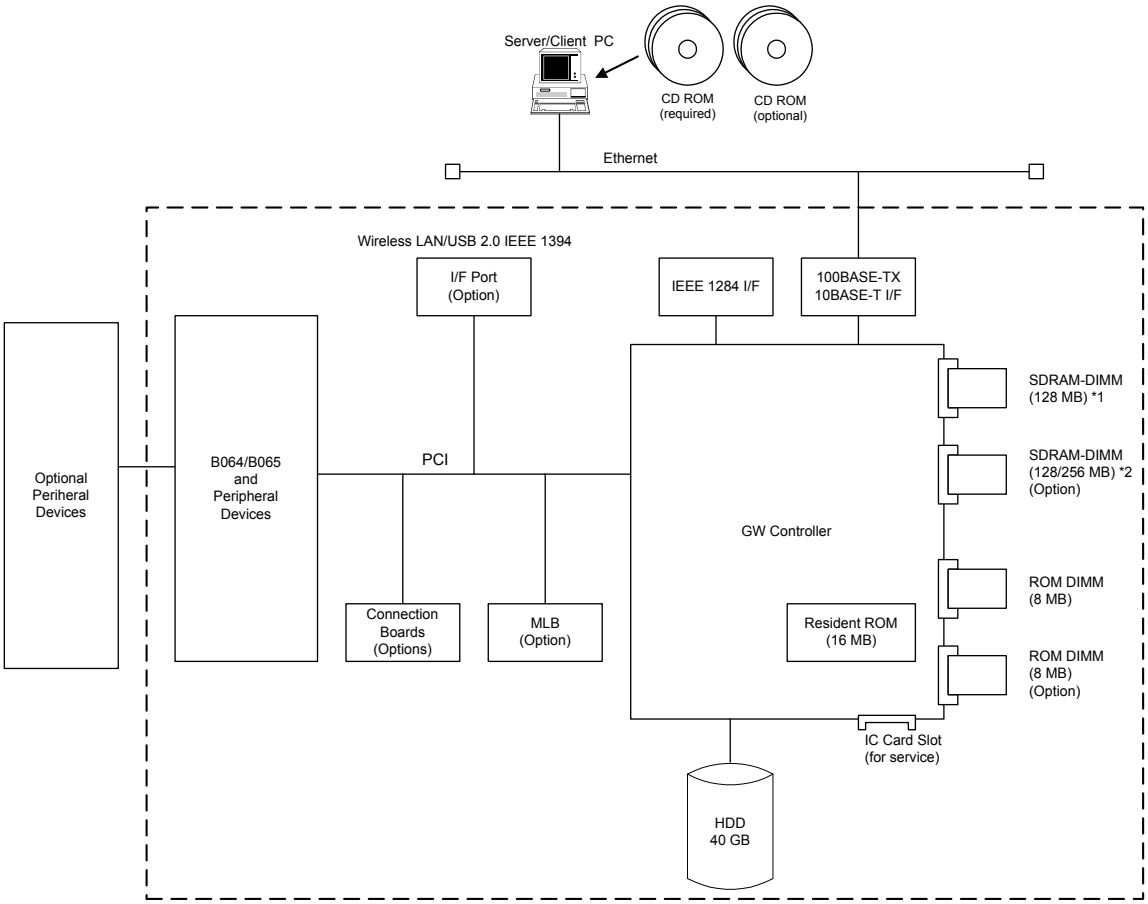
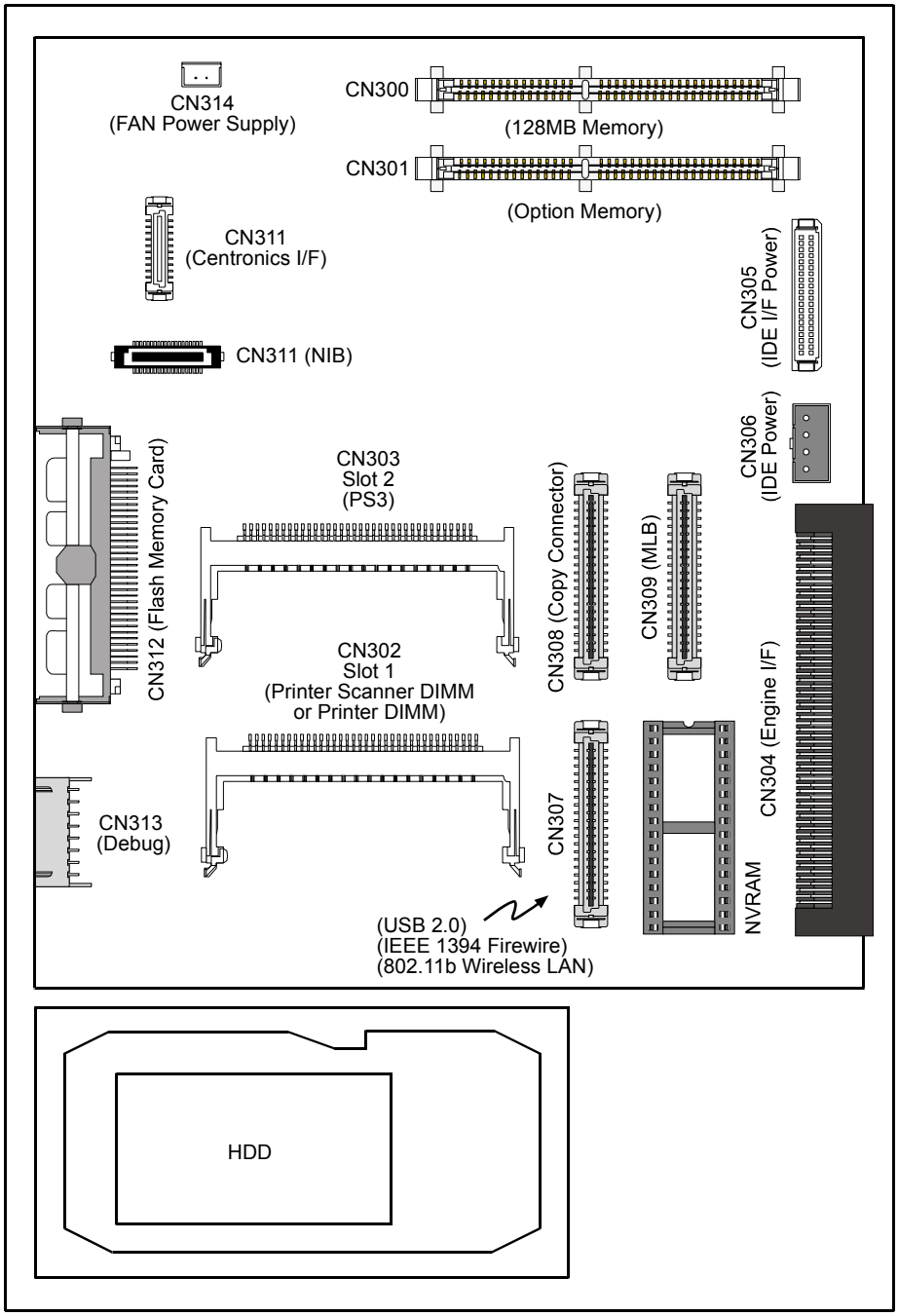
1. DETAILS

1.1 MACHINE LAYOUT



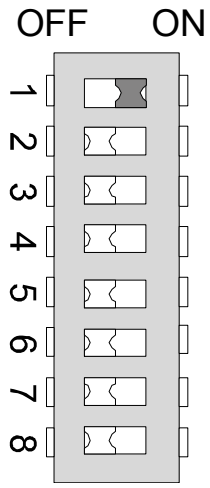
1.2 CONTROLLER BOARD

1.2.1 CONTROLLER BOARD LAYOUT



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

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	

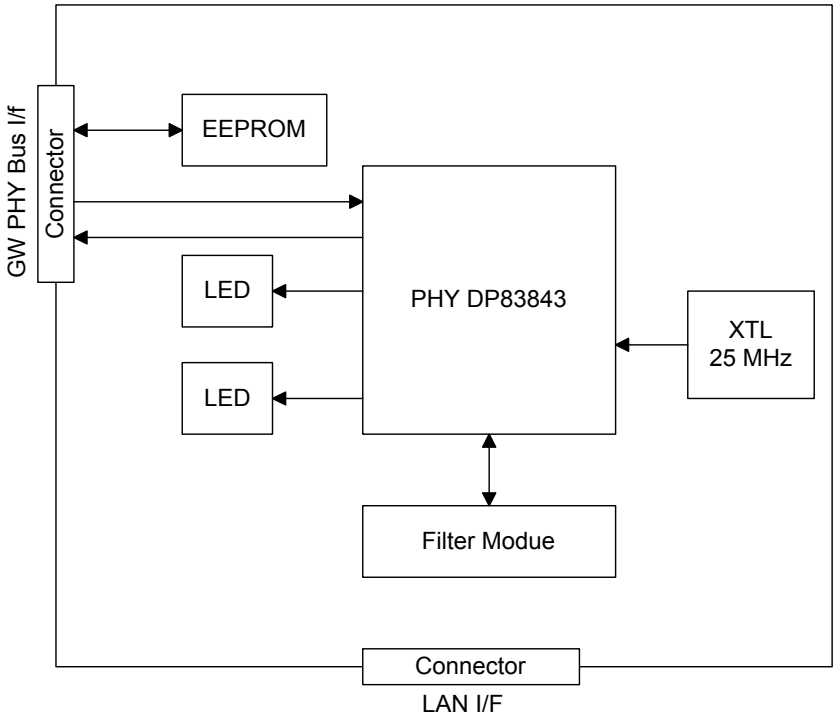
*1: Set SW1 ON and boot from the IC card only if the normal installation procedure fails. After booting from the card, switch the machine off, set SW1 to OFF, then switch the machine on. SW should always remain set to OFF.

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



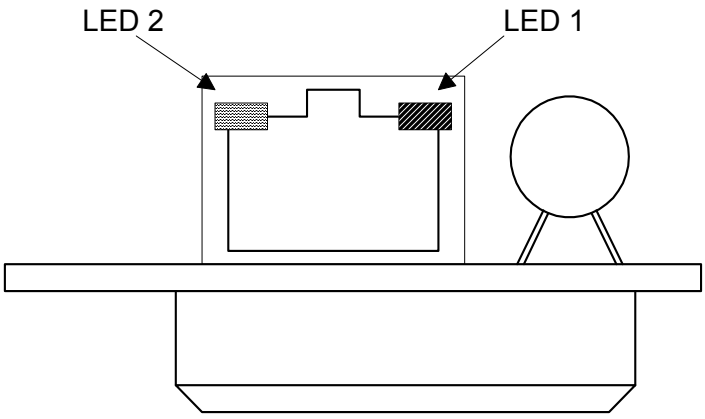
The Ethernet board is provided as a standard feature of this machine.

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.

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.

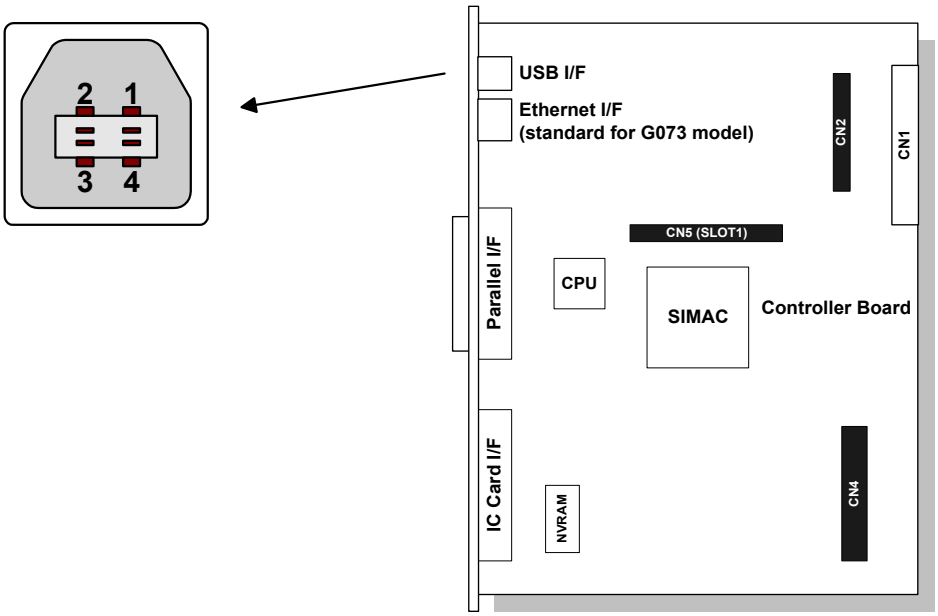


LED 1 (Green)	Indicates the link status: ON Link Safe OFF Link Fail
LED 2 (Orange)	Indicates the operation mode: ON 100 Mbps mode OFF 10 Mbps mode

1.4 USB

1.4.1 PIN ASSIGNMENT

The controller has a type “B” receptacle (CN10).



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.

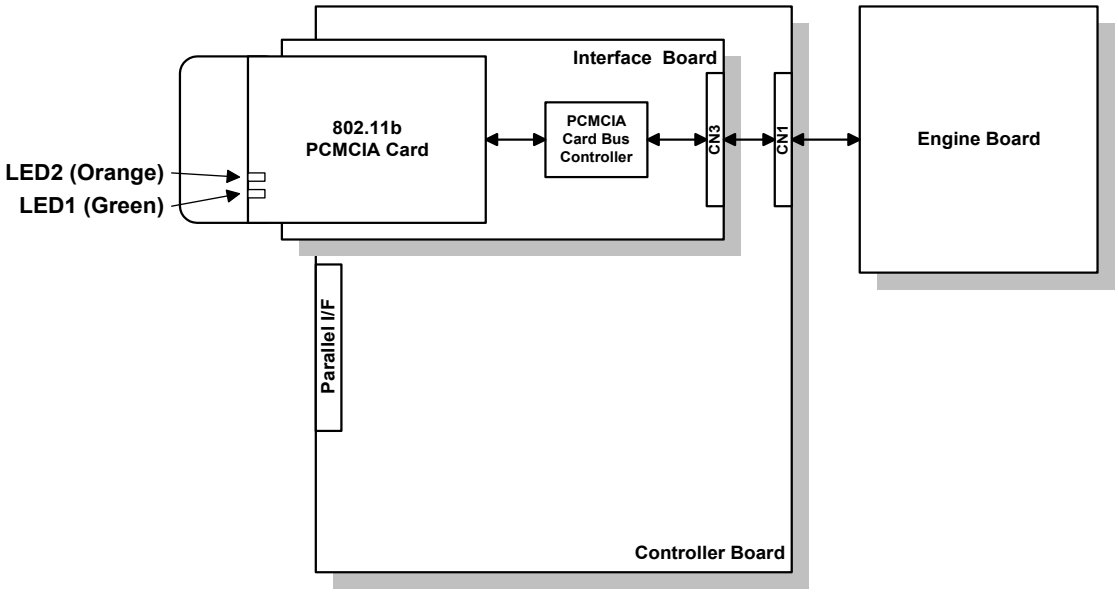
1.5 IEEE802.11B (WIRELESS LAN)

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	

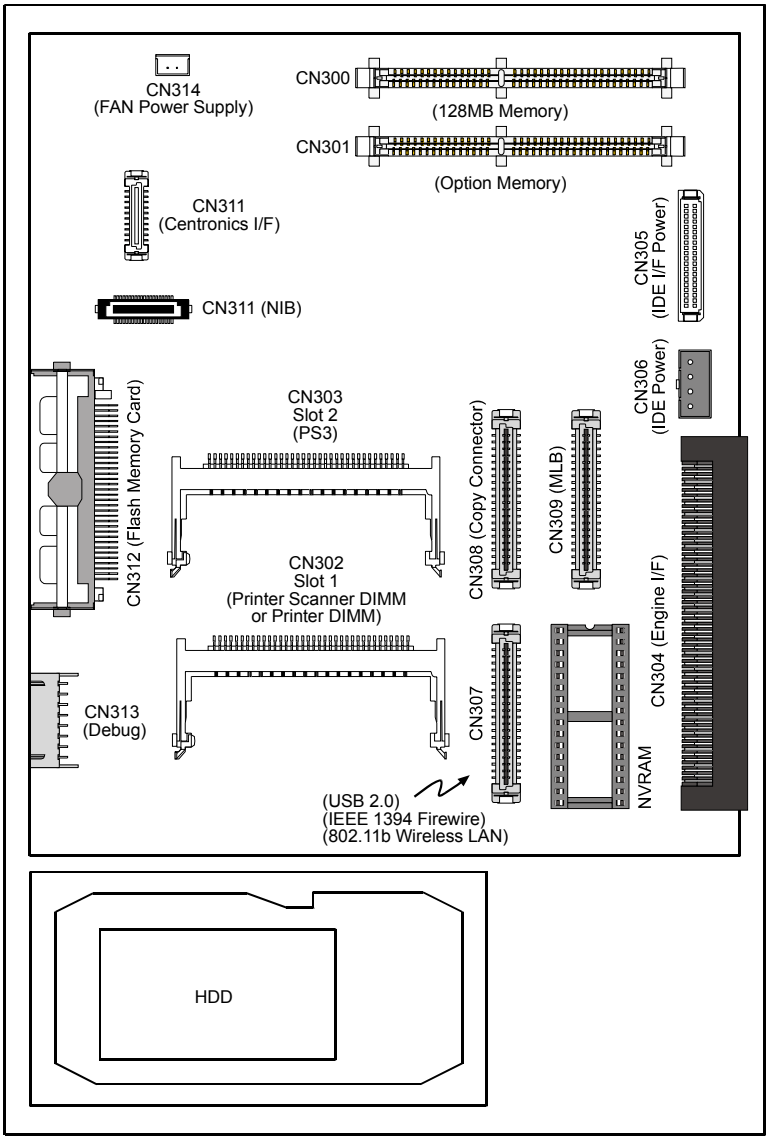
The scanner driver and utility software are provided on one CD-ROM.

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)	

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.

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.

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	YC	N	N
B6 LEF	182 x 128 mm	N	N	N	N	N
A6 SEF	105 x 148 mm	N	N	YC	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	YC	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.
YC	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)	

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

REVISION HISTORY		
Page	Date	Added/Updated/New
		None

MFP OPTIONS
B659/B581/B596/B582/G377/B609/B735
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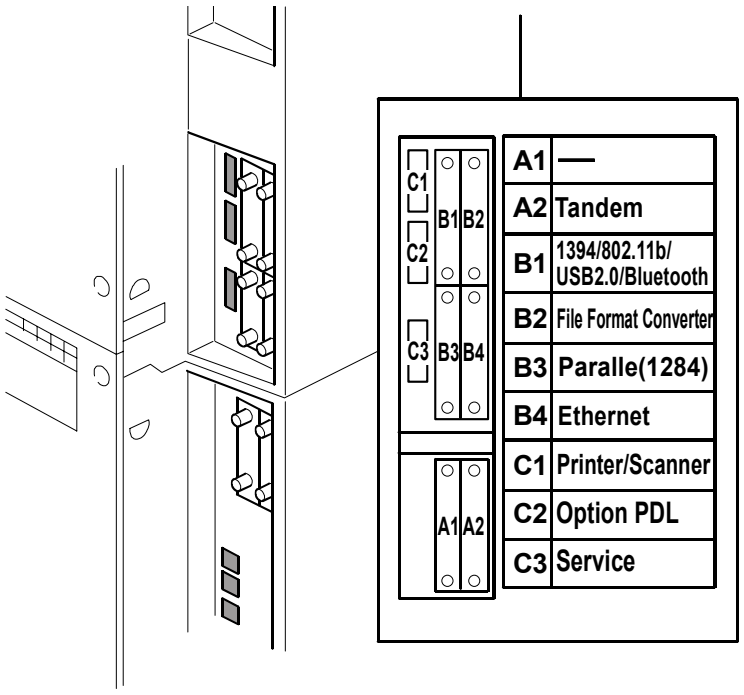
1. DETAILED DESCRIPTIONS

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



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.
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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#	YC	N	Y
Executive	LEF	10.5 x 7.25"	N/YC	N/YC	YC	N	Y
F	SEF	8 x 13"	Y#/Y#	Y#/Y#	YC	N	Y
Foolscap	SEF	8.5 x 13"	Y#/Y#	Y#/Y#	YC	N	Y
Folio	SEF	8.25 x 13"	Y#/Y#	Y#/Y#	YC	N	Y
Com10 Env.	SEF	4.125 x 9.5"	N	N	YC	N	N
C6 Env.	SEF	114 x 162 mm	N	N	YC	N	N
C5 Env.	SEF	162 x 229 mm	YC/N	YC/N	YC	N	N
C5 Env.	LEF	229 x 162 mm	YC/N	YC /N	YC	N	N
DL Env.	SEF	110 x 220 mm	N	N	YC	N	N
8K	SEF	267 x 390 mm	Y#/N	Y#/N	YC	N	Y
16K	SEF	195 x 267 mm	Y#/N	Y#/N	YC	N	Y
16K	LEF	267 x 195 mm	N#/N	Y#/N	YC	N	Y
Custom		Minimum: 100 x 297 mm Maximum: 148 x 600 mm	N	N	YC	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.
YC	Supported. The user has to enter the width and length of the paper.
N	Not supported.

1.4 NETWORK INTERFACE BOARD (NIB) (B594)

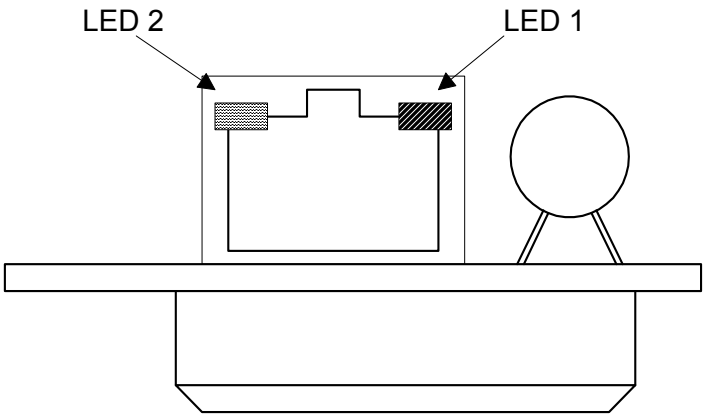
The Ethernet board is provided as a standard feature of this machine.

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.

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.

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 beign overwritten, the overwrite process is automatically interrupted until the next job is completed.

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)
RAPI 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)		

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.

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.)
	1 Mbps	400 m (437 yd.)
Channel	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 OPTI0N 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

2000/3000 SHEET FINISHER
B700/B701

REVISION HISTORY		
Page	**Date**	**Added/Updated/New**
		None

B700

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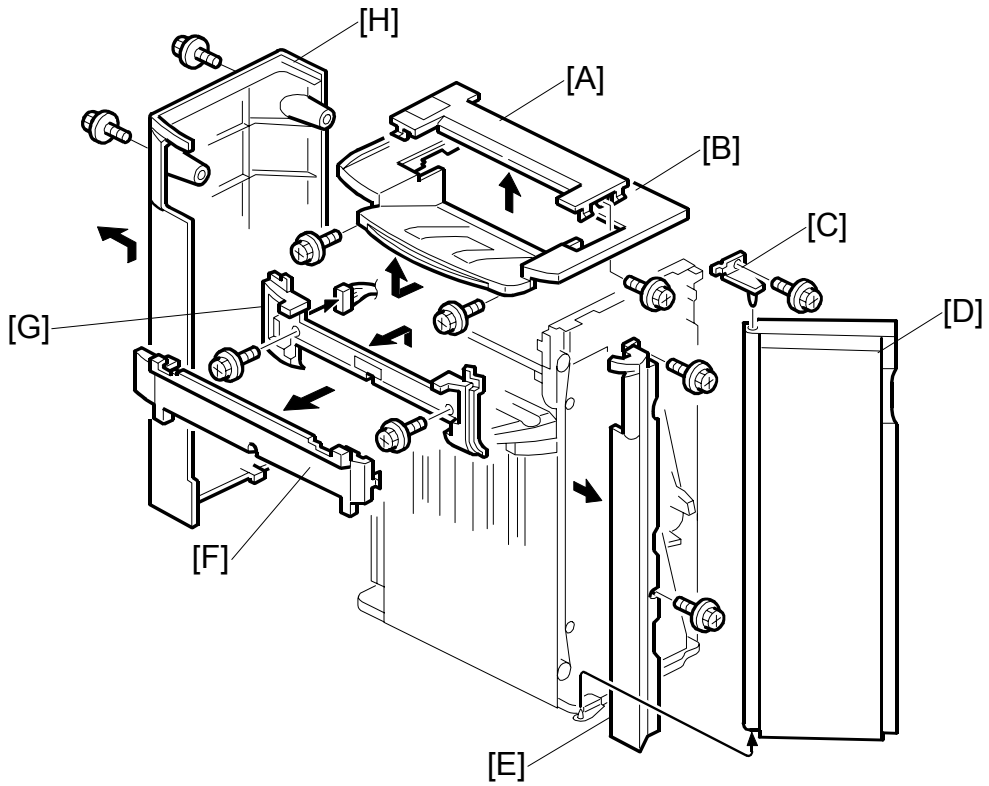
1. REPLACEMENT AND ADJUSTMENT

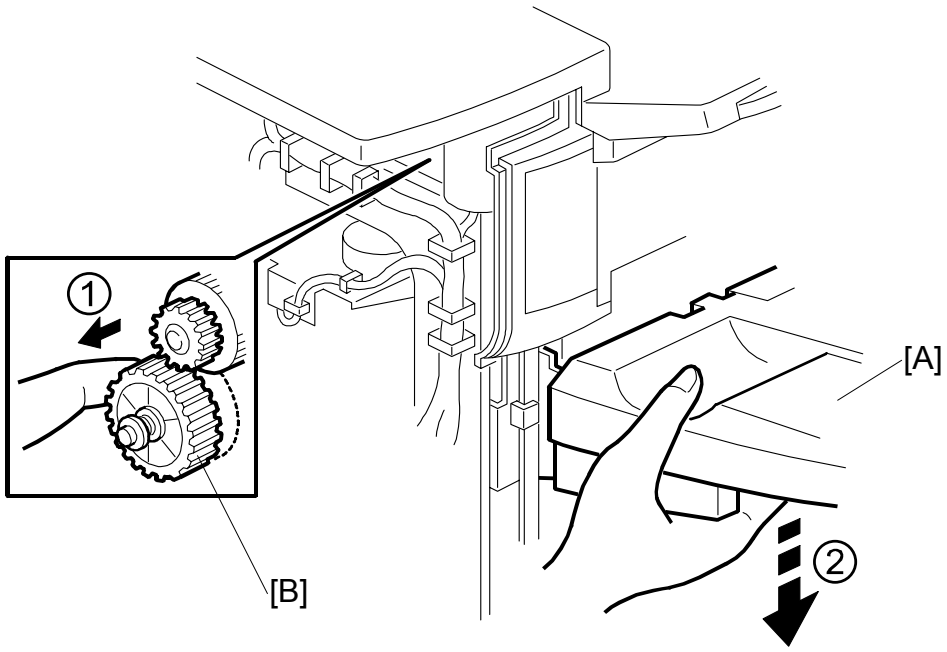
1.1 BASIC PROCEDURES

1.1.1 COVERS

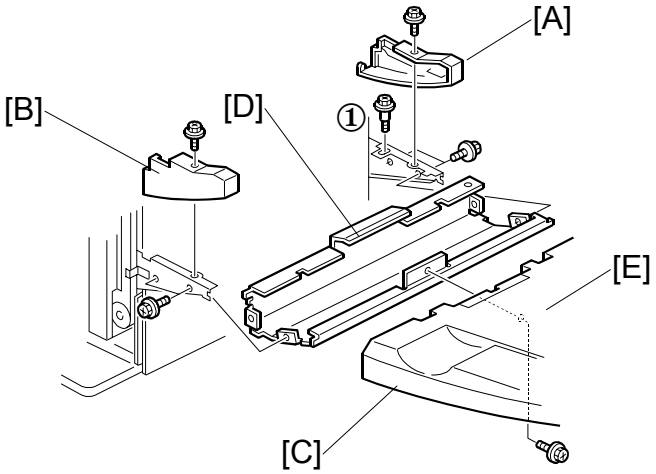


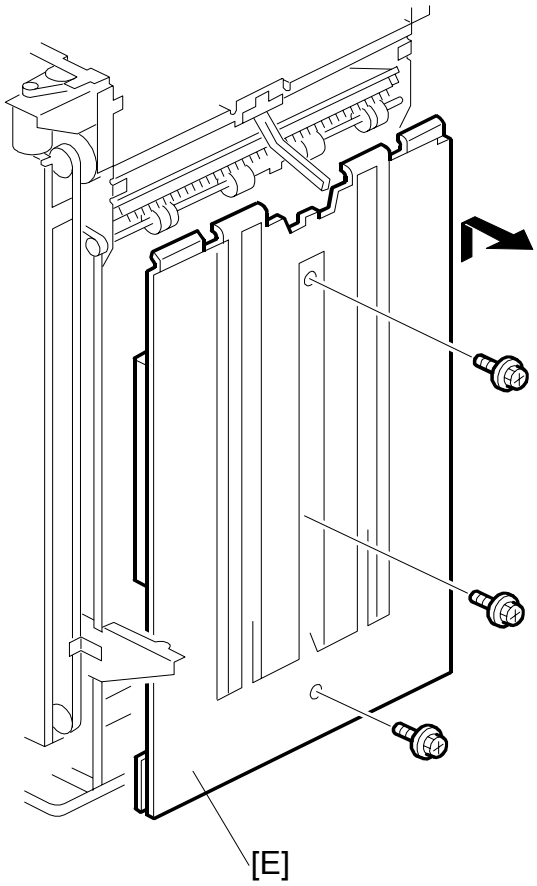
[A]: Small Upper Cover (☞ x1). Open the front door, remove the screw, then remove the cover.
[B]: Upper Cover (☞ x2)
[C]: Front Door Bracket (☞ x1)
[D]: Front Door
[E]: Front Left Side Cover (☞ x2)
[F]: Cover
[G]: Paper Exit Cover (☞ x2)
[H]: Rear Cover (☞ x2)

1.1.2 UPPER TRAY, END FENCE



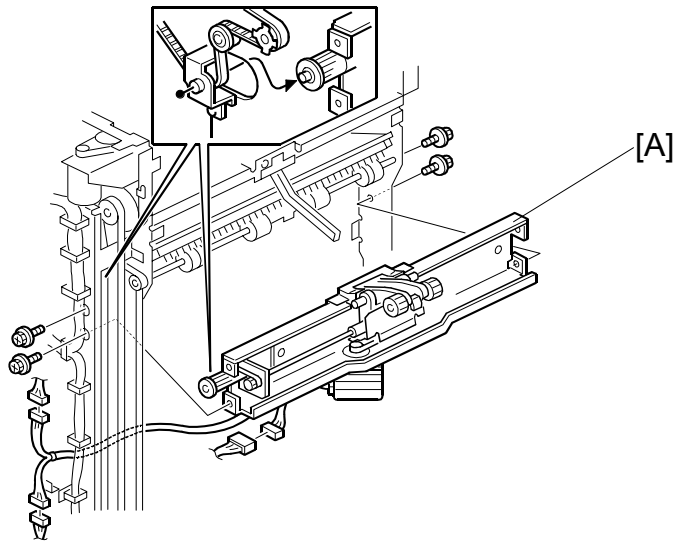
1. Remove the rear cover. (☛1.1.1)
2. To lower the upper tray:
   - Support the tray [A] with your right hand.
   - Pull gear [B] toward you ① to release.
   - Slowly lower the tray ② until it stops.

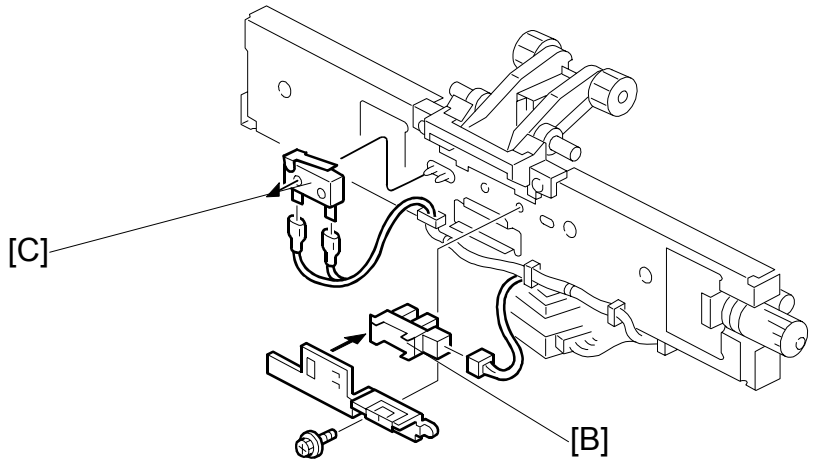




[A]: Front Side Cover (☞ x1)
[B]: Rear Side Cover (☞ x1)
[C]: Upper Tray (☞ x1)
[D]: Tray Bracket (☞ x4, ☞ x1 shoulder screw ①)
[E]: End Fence (☞ x3)

1.2 UPPER TRAY LIMIT SENSOR, LIMIT SWITCH



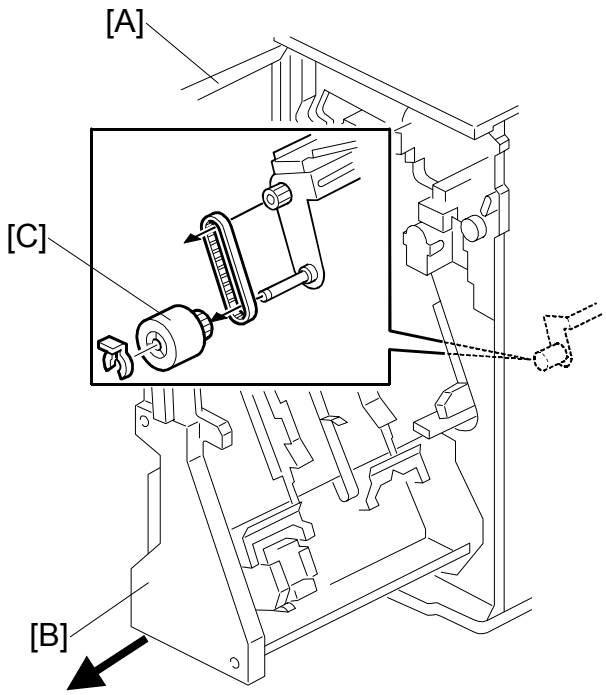


Remove:

- Front door, front left side cover, rear cover, upper cover (☛1.1.1)
- End fence (☛1.1.2)

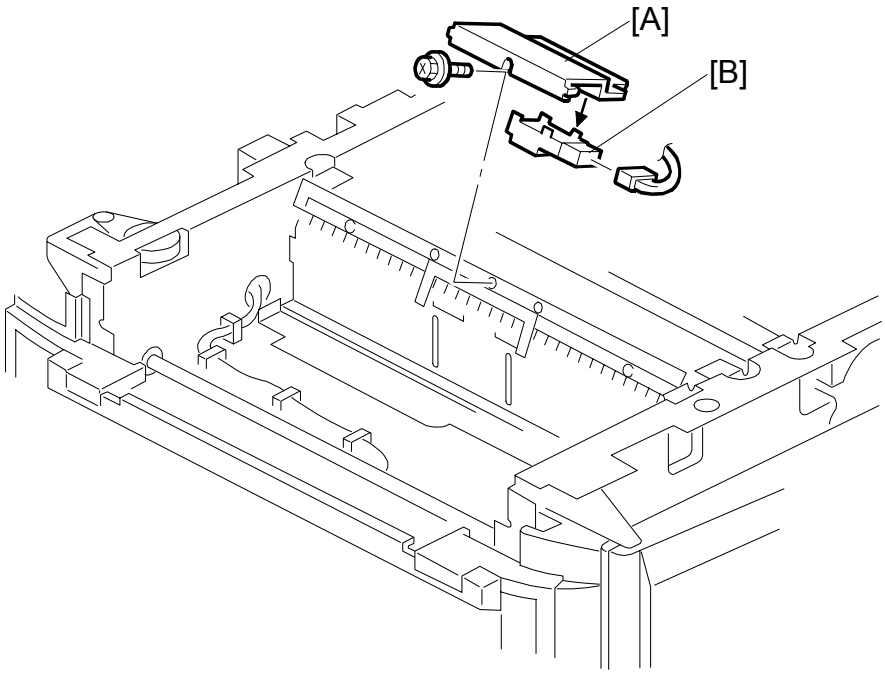
[A]: Upper tray exit mechanism (🔩 x4, 🖑 x3)
[B]: Upper tray limit sensor (🔩 x1, 🖑 x1)
[C]: Upper tray limit switch (🖑 x2)

1.3 POSITIONING ROLLER



[A]: Open the front door.
[B]: Pull out the stapling unit.
[C]: Positioning roller (x1, timing belt x1)

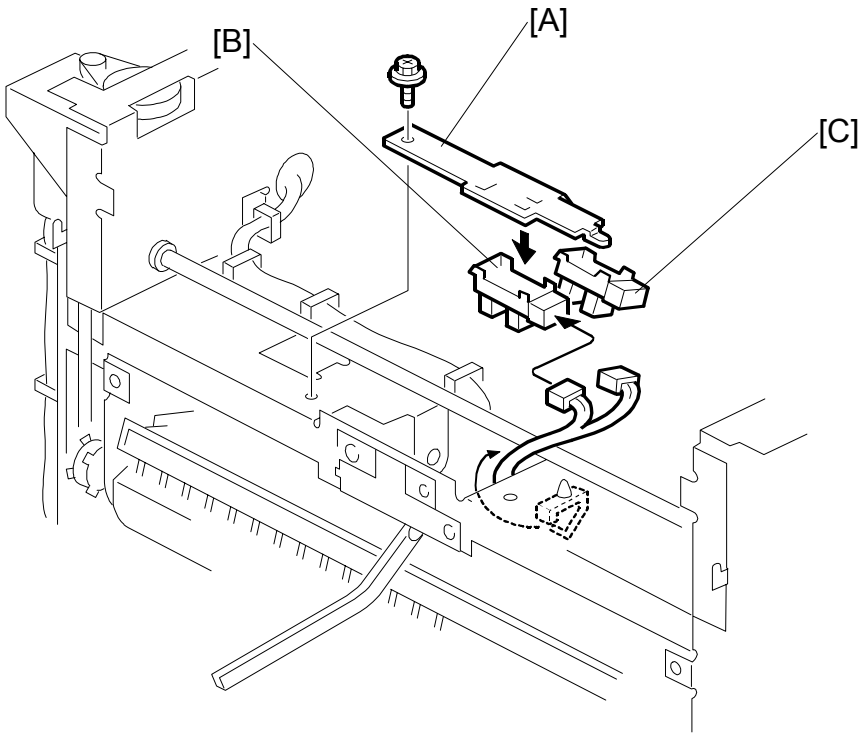
1.4 PROOF TRAY EXIT SENSOR



- Remove small upper cover (☛1.1.1)

[A]: Proof Tray Exit Sensor Bracket (x1)
[B]: Proof Tray Exit Sensor (S10) (x1)

1.5 UPPER TRAY HEIGHT SENSORS 1, 2



- Remove small upper cover, upper cover (☛1.1.1)

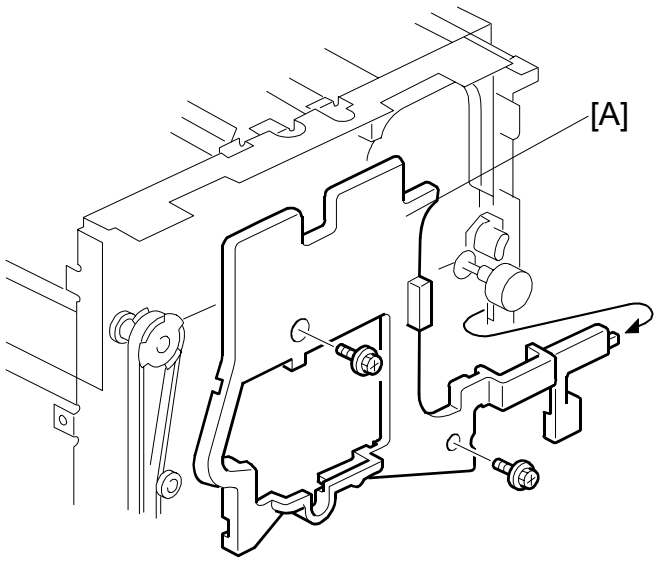
[A]: Upper Tray Paper Height Sensor Bracket (x1)
[B]: Upper Tray Paper Height Sensor – Staple Mode (S08) (x1)
[C]: Upper Tray Paper Height Sensor – Non-Staple Mode (S09) (x1)

1.6 EXIT GUIDE PLATE, UPPER TRAY EXIT SENSOR

Remove:

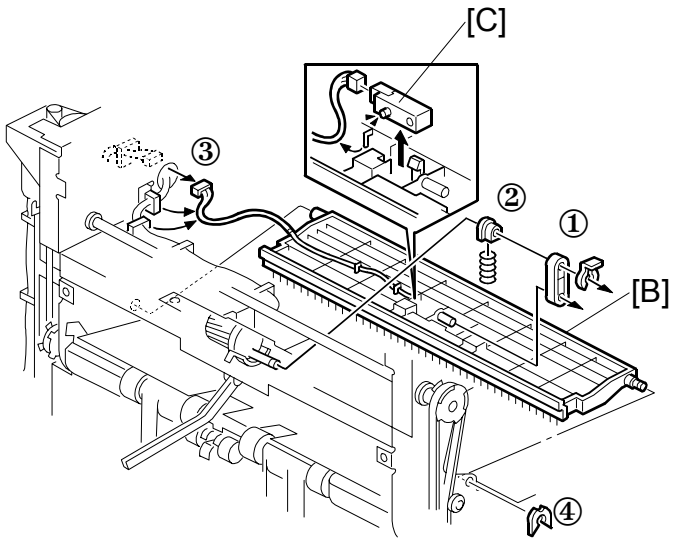
- Rear cover (☛1.1.1)
- Upper covers (☛1.1.1)
- Front door (☛1.1.1)
- Cover (☛1.1.1)
- Paper exit cover (☛1.1.1)

[A]: Inner cover (x2)

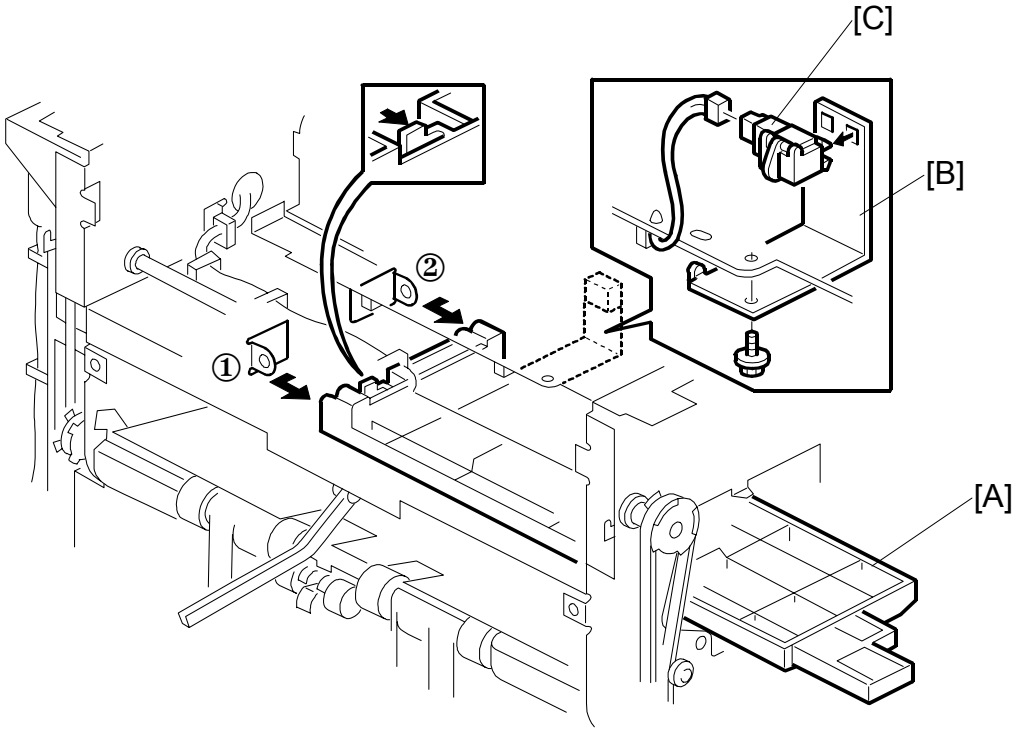


[B]: Exit guide plate
- ① x1
- ② Link and spring
- ③ x1
- ④ x1

[C]: Upper tray exit sensor (S6) (x1)



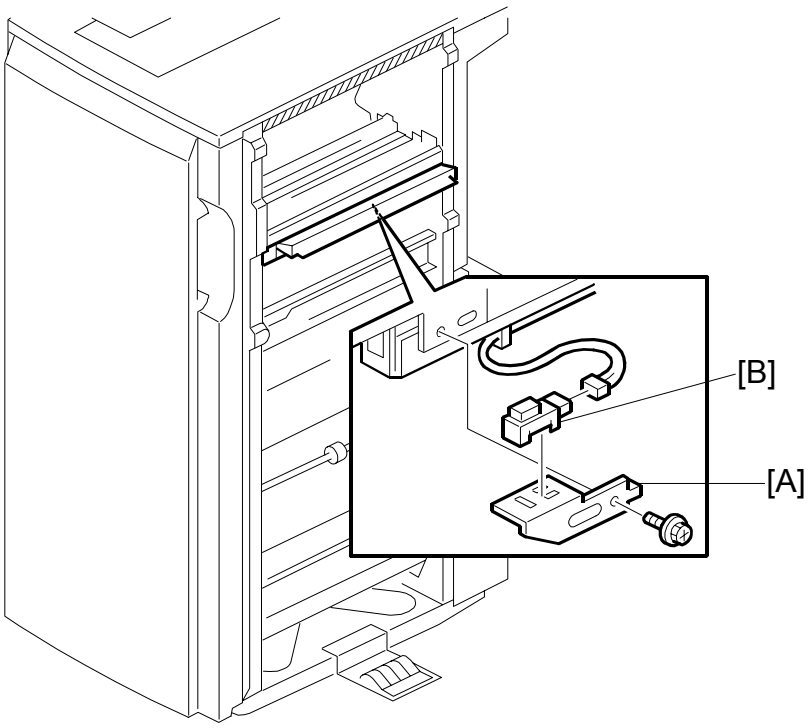
1.7 PROOF TRAY FULL SENSOR



- Remove the exit guide plate. (☛1.6)

[A]: Guide plate. Disconnect at ①, ②
[B]: Sensor bracket (🔩 x1)
[C]: Proof tray full sensor (S11) (✋ x1)

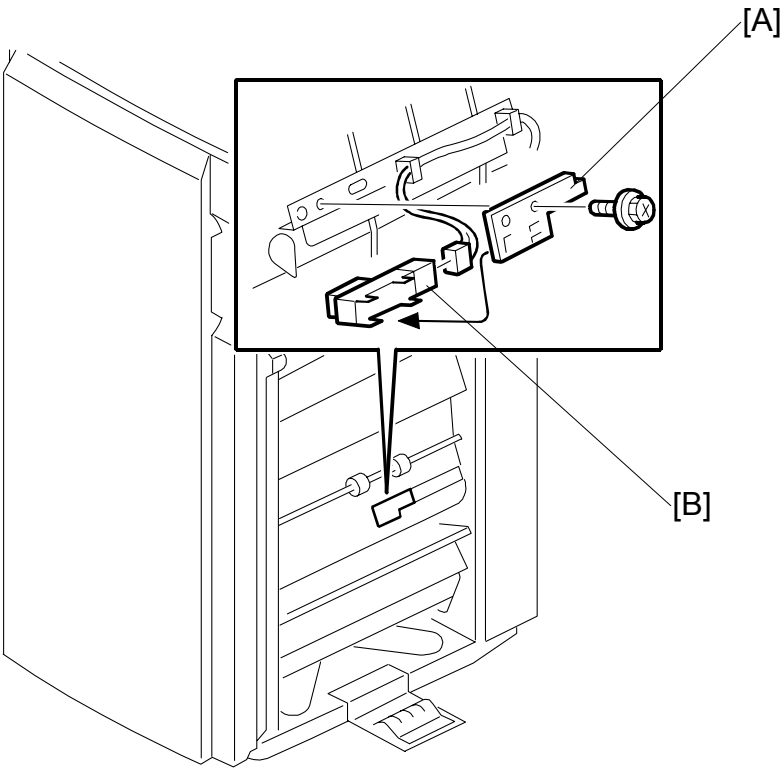
1.8 FINISHER ENTRANCE SENSOR



- Disconnect the finisher if it is connected to the copier.
- Disconnect the cover interposer if it is installed.

[A]: Sensor bracket (x1)
[B]: Finisher entrance sensor (S1) (x1)

1.9 PRE-STACK TRAY EXIT SENSOR



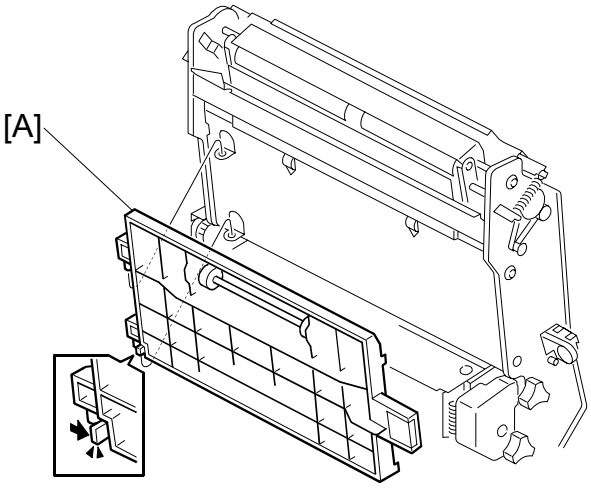
- Disconnect the finisher if it is connected to the copier.

[A]: Sensor bracket
[B]: Pre-stack tray exit sensor (S2)

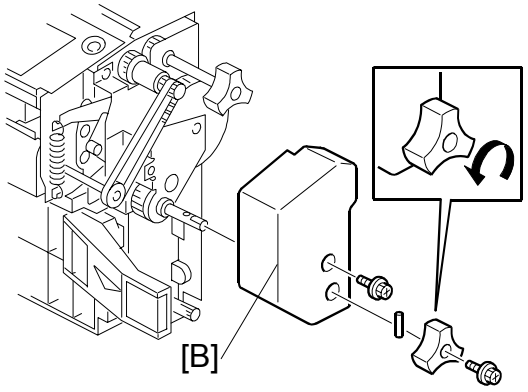
1.10 FOLD UNIT EXIT SENSOR

- Open the front door.
- Pull out the stapler tray.

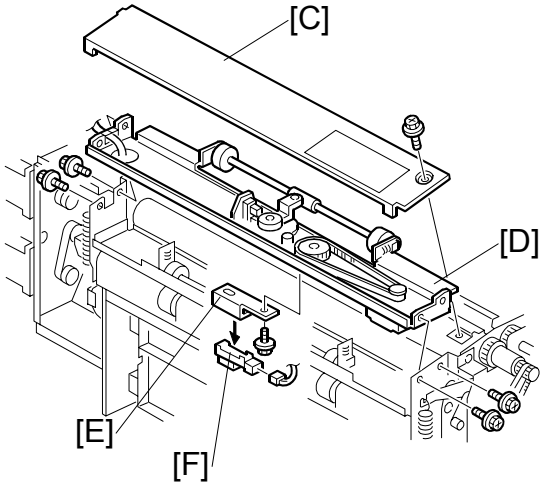
[A]: Fold unit vertical guide plate



[B]: Fold unit inner cover
(x2, Spring pin x1)

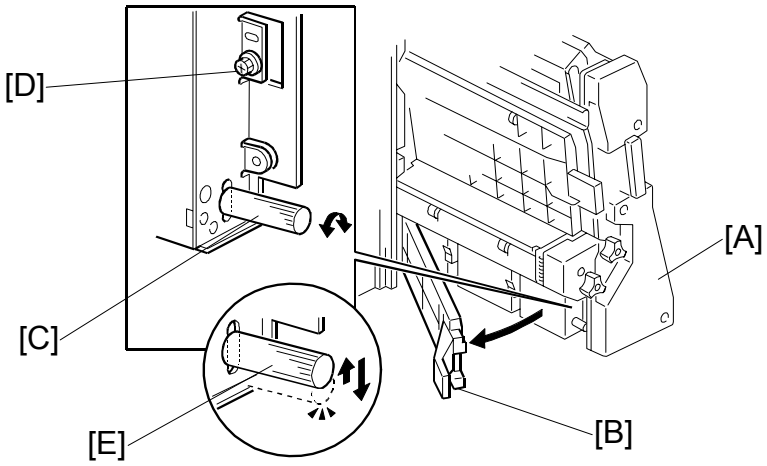


[C]: Fold unit upper cover (x1)
[D]: Paper clamp mechanism (x4)
[E]: Fold unit exit sensor bracket (x1)
[F]: Fold unit exit sensor (S31) (x1)



1.11 FOLD ADJUSTMENTS (B700 ONLY)

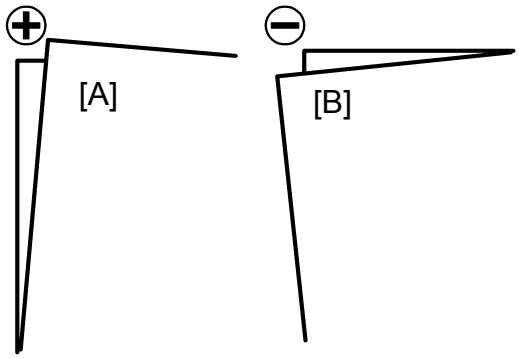
1.11.1 FOLDING HORIZONTAL SKEW ADJUSTMENT



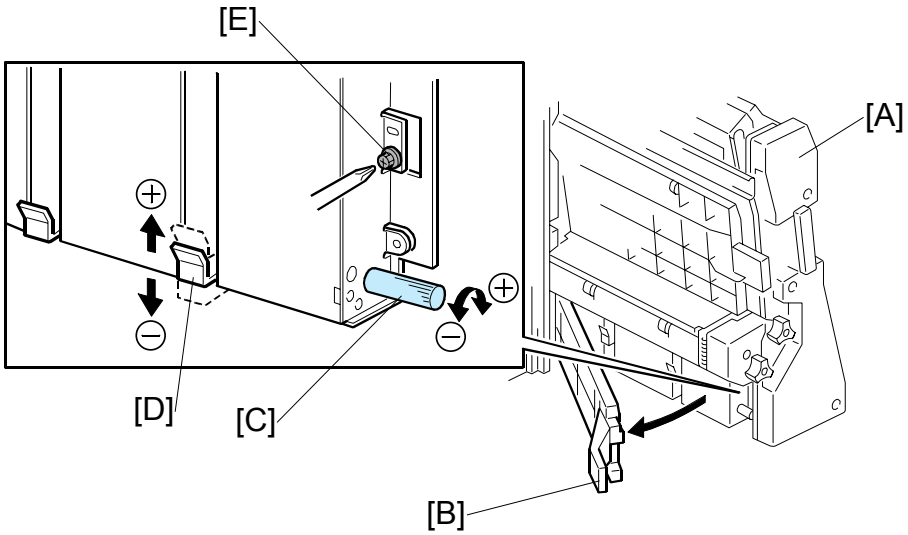
Important

- The fold unit is adjusted for optimum performance before the finisher is shipped from the factory. Do this adjustment only if the edges of folded booklets are not even.

1. Switch the copier on and enter the SP mode.
2. Europe, Asia: Use **SP 6113 001** (this is for A3 paper).
   North America: Use **SP 6113 005** (this is for DLT paper).
   NOTE: If the original setting of SP6113 001 or 005 is not 0, then you must do the vertical skew adjustment (☛1.11.2) after you finish this horizontal skew procedure.
3. Use the 10-key pad to input "**-2**" (mm) for the SP value.
   NOTE: (Press [・/✱] to enter the minus sign.)
4. Press [#] then exit the SP mode.
5. Open the front door and pull the stapler unit [A] out of the finisher.
6. Open the guide plate [B].
7. Loosen the adjustment screw [C] and then tighten until it stops. (Do not over tighten.)
8. Remove the lock screw [D].
9. Raise the tip [E] of the adjustment screw very slightly and allow it to descend under its own weight.



10. Push the stapler unit into the finisher and close the front door.
11. Do a folding test.
    - Switch the copier on.
    - Put one page of A3 or DLT paper in the ARDF.
    - On the copier operation panel, select booklet stapling.
    - Press [Start]. One sheet is folded.
12. Remove the sheet from the lower tray.
13. Hold the folded sheet with the creased side pointing down and face-up (the same way that it came out of the finisher).
14. Referring to the diagram, determine if the skew is **+** [A] or **–** [B].



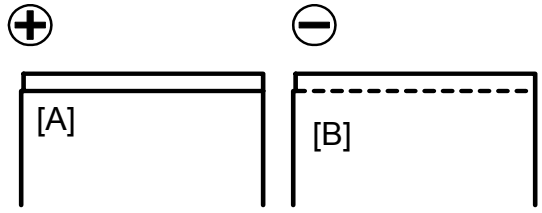
15. Open the front door of the finisher and pull the stapler unit [A] out.
16. Open the guide plate [B].
17. Turn the adjustment screw [C] to correct the amount of skew you measured from the test sheet.
    - For **+ skew ([A] on the previous page)**, turn the adjustment screw (clockwise).
    - For **– skew ([B] on the previous page)**, turn the adjustment screw to the left (counter-clockwise).
    - Every click in the +/– direction adjusts the fold position by 0.1 mm by moving the bottom fence [D]
18. Raise the tip of the adjustment screw [C] and allow it to lower under its own weight.
19. Attach and tighten the lock screw [E].
20. Push the stapler unit into the machine, close the front door, then turn the copier on.
21. Europe, Asia: Do **SP 6113 001** (this is for A3 paper).
    North America: Do **SP 6113 005** (this is for DLT paper).
22. Reset it to "**0**".
23. Do the test again.
24. If the result is satisfactory, this completes the adjustment.
    -or-
    If some skew remains, repeat this adjustment.
    NOTE: After doing this adjustment, adjust for vertical skew, if necessary. (☛1.11.2).

1.11.2 FOLD VERTICAL SKEW ADJUSTMENT

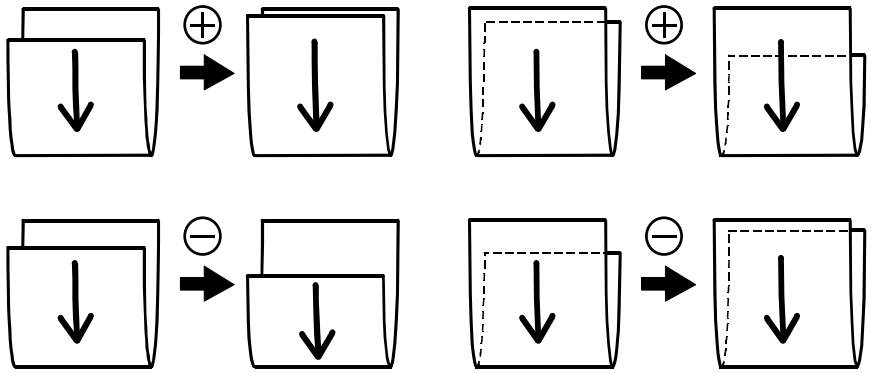
Important

- The fold unit is adjusted for optimum performance before the finisher is shipped from the factory. Do this adjustment only if the edges of folded booklets are not even.

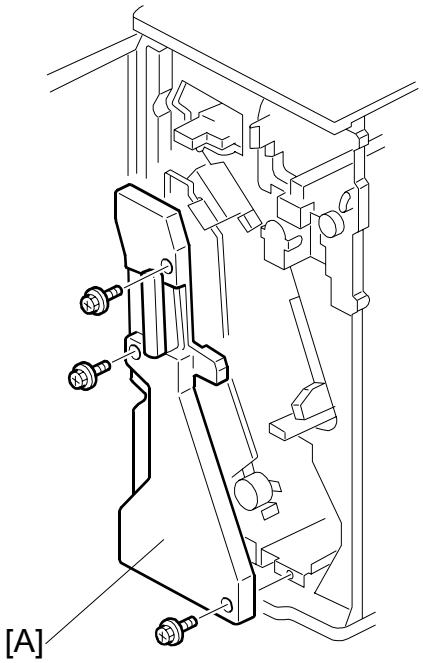
1. Switch the copier on.
2. Do a folding test.
   - Switch the copier on.
   - Put one page of A3 or DLT paper in the ARDF.
   - On the copier operation panel, select booklet stapling.
   - Press [Start]. One sheet is folded.
3. Hold the folded sheet with the creased side pointing down, and face-up (the same way that it came out of the finisher).
4. Referring to the diagram, determine if the skew is positive [A] or negative [B].

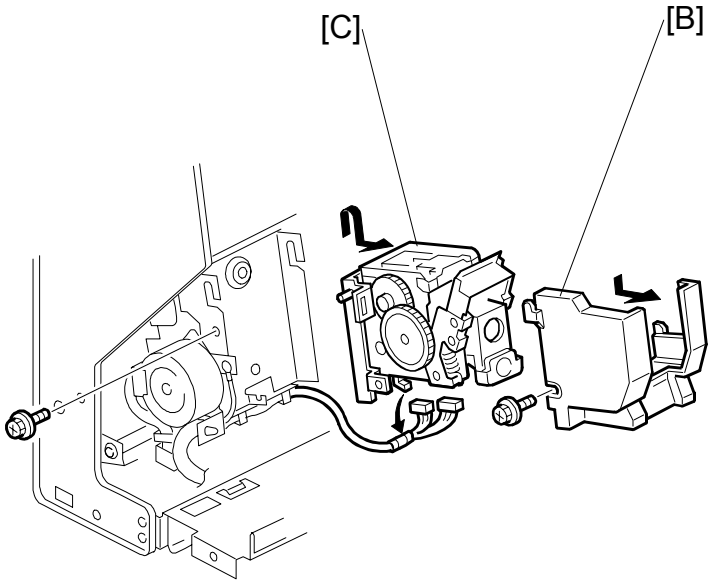


5. Measure the amount of skew.
6. Enter the SP mode
   - Europe, Asia: Use **SP 6113 001** (this is for A3 paper).
   - North America: Use **SP 6113 005** (this is for DLT paper).
7. Enter one-half the measured amount of skew.
   Example: If the measure amount of skew is -1.2 mm, enter -0.6 mm
   NOTE: The range for measurement is –3.0 mm to +3.0 mm in 0.2 mm steps for every notch adjustment.
8. Exit the SP mode and do the test again (steps 2 to 5).
9. Repeat this procedure until the skew is corrected.
   The illustration below shows the effects of +/- adjustment with **SP6113.** (The vertical arrows show the direction of paper feed.)



1.12 CORNER STAPLER

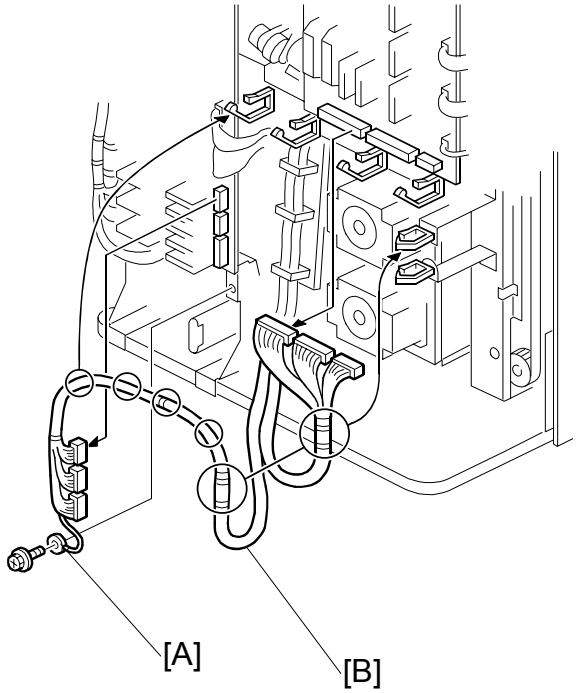


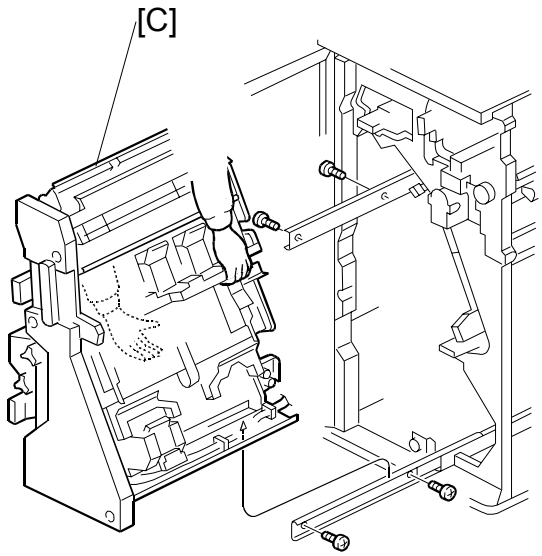


- Open the front door.
- Pull out the stapler unit

[A]: Inner cover (x3)
[B]: Stapler unit holder (x1)
[C]: Corner stapler (M20) (x1)

1.13 FOLD UNIT

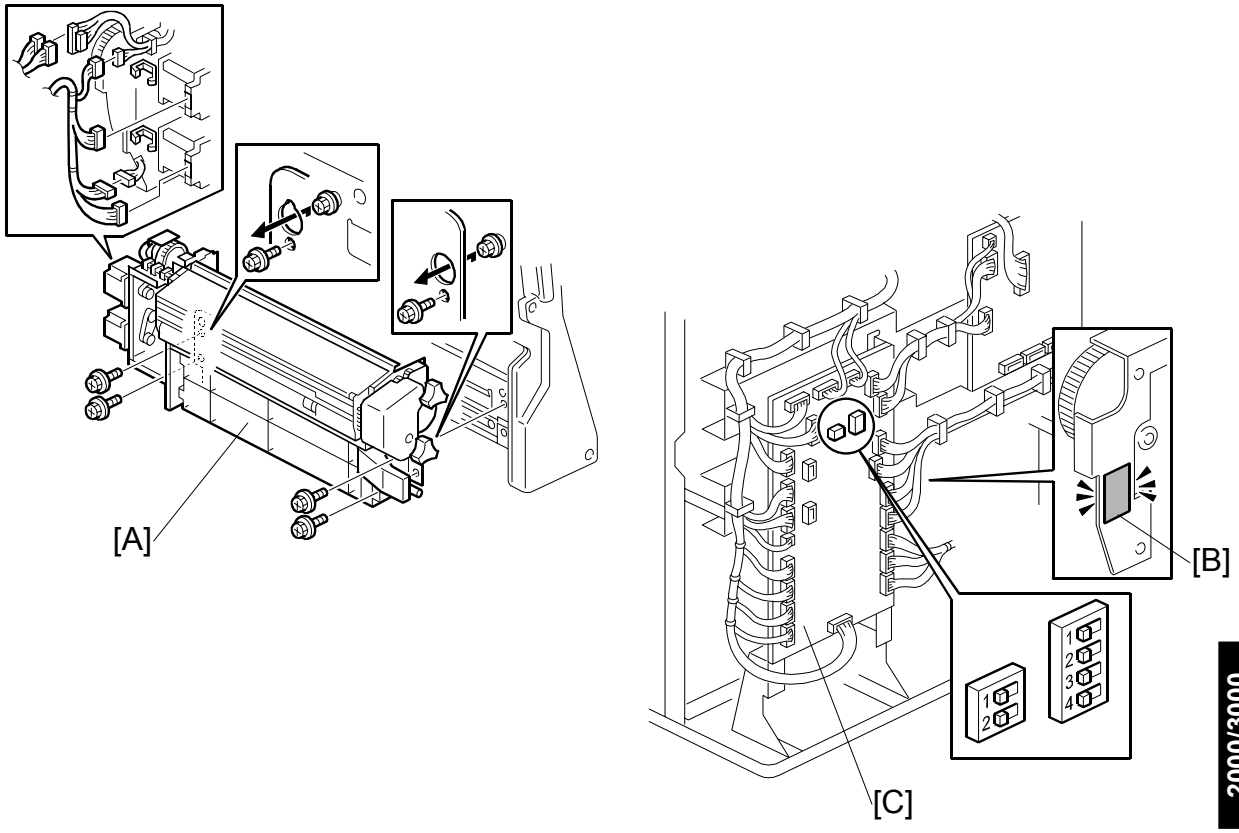




- Remove the back cover (☛1.1.1)
- Open the front door.

CAUTION: The stapler unit is heavy.

[A]: Ground screw (x1)
[B]: Harness (x6, x6)
[C]: Stapler unit (x4)



Important: Support the fold unit with your hand to prevent it from falling.

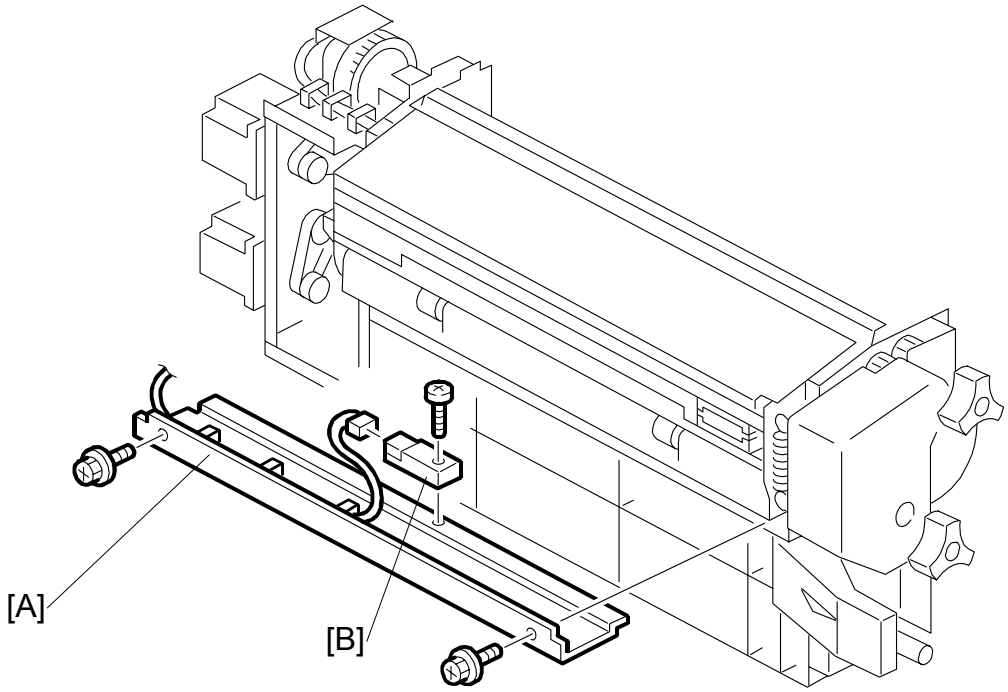
CAUTION: The fold unit is heavy.

[A]: Folding unit (x4, x2, x6)

If you have replaced the folding unit:

1. Read the DIP SW settings on the decal [B] attached to the back of the new folding unit.
2. Check the DIP SW settings on the main board [C] of the finisher.
3. If these settings are different, change these settings to match settings printed on the seal attached to the folding unit.
   NOTE: Set DIP switches 1 to 4 (the switch set on the right). Do not touch the other DIP switches.

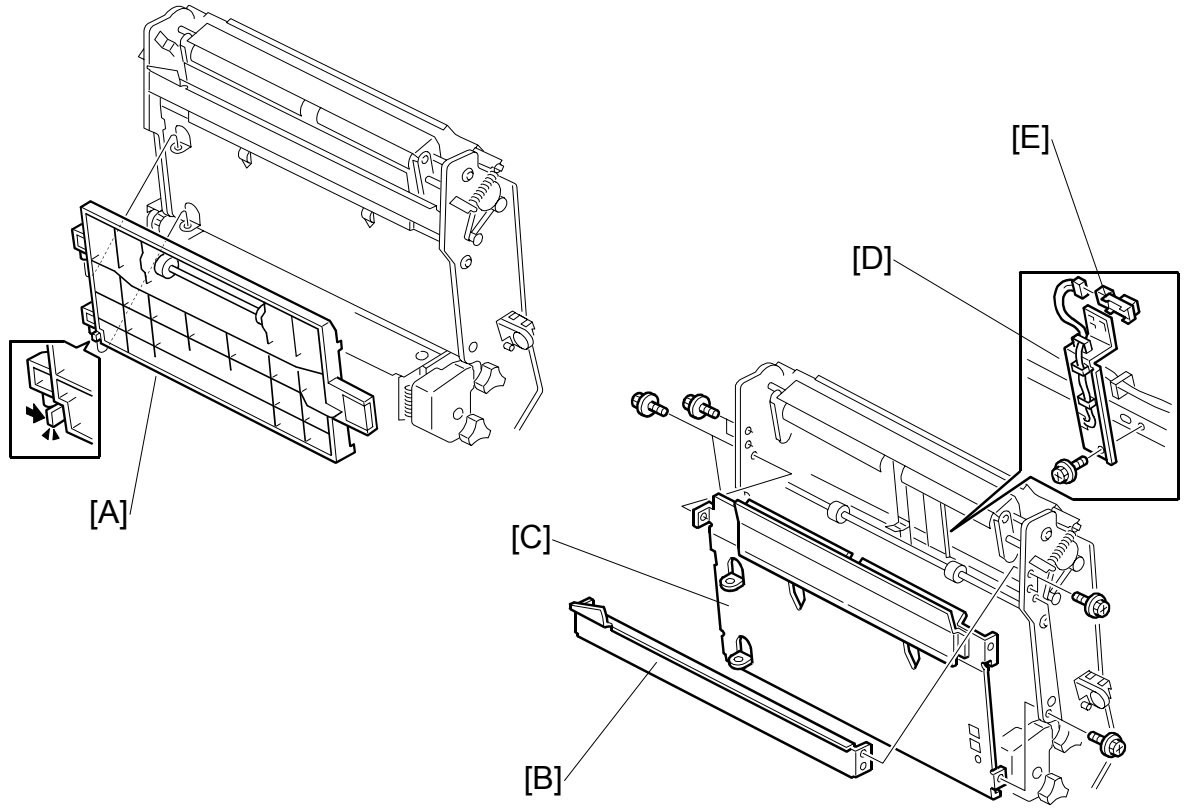
1.14 FOLD UNIT ENTRANCE SENSOR



- Pull out the stapler unit.

[A]: Fold unit entrance sensor bracket (x2)
[B]: Fold unit entrance sensor (S26) (x1, x1)

1.15 STACK PRESENT SENSOR



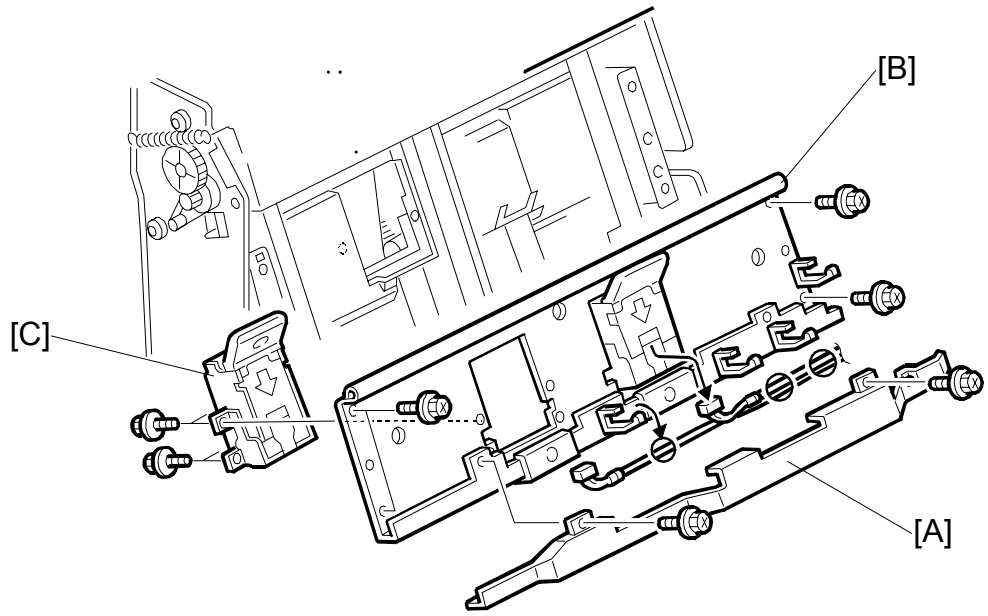
Important: If you intend to correct the horizontal and vertical skew for the fold unit at the same time, do those adjustments first, then replace the sensor. (☛1.11.1, 1.11.2)

- Remove the stapler unit (☛1.13)

[A]: Guide plate.
[B]: Stay (x4)
[C]: Left plate (x4)
[D]: Sensor bracket (x1)
[E]: Stack present sensor (S32) (x1)

1.16 BOOKLET STAPLER, BOOKLET STAPLER MOTOR

1.16.1 BOOKLET STAPLER



- Open the front door.
- Pull out the stapler unit.

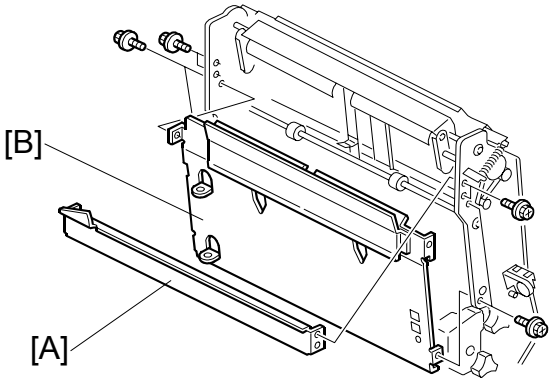
[A]: Harness cover (x2)
[B]: Booklet stapler support stay (x4, x2, x4)
[C]: Stapler (x4)

1.16.2 BOOKLET STAPLER MOTOR

- Open the front door.
- Remove the stapler unit. (☛1.13)

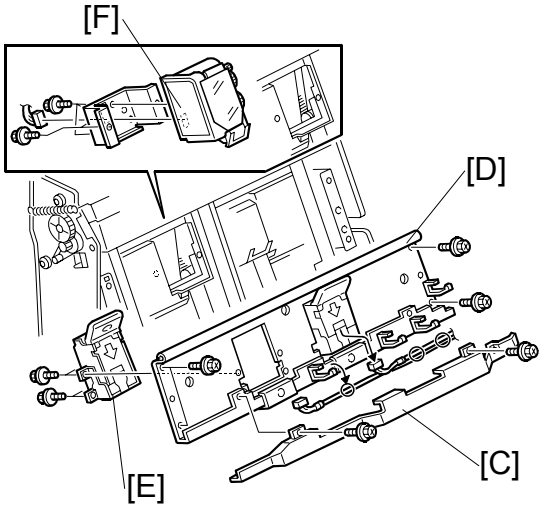
1. Remove:

[A]: Stay (☞ x4).
[B]: Left plate (☞ x4).



2. Remove:

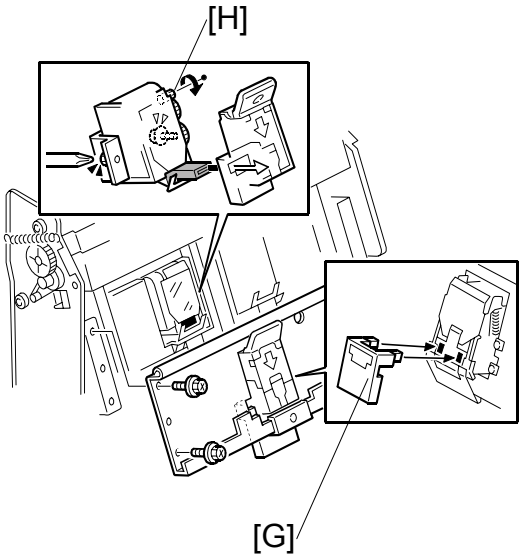
[C]: Harness cover (☞ x2)
[D]: Booklet stapler support stay (☞ x4, 🖐 x2, 🖐 x4)
[E]: Booklet stapler (☞ x4)
[F]: Booklet stapler motor (☞ x2, 🖐 x1)



To Reattach the Booklet Stapler Motor

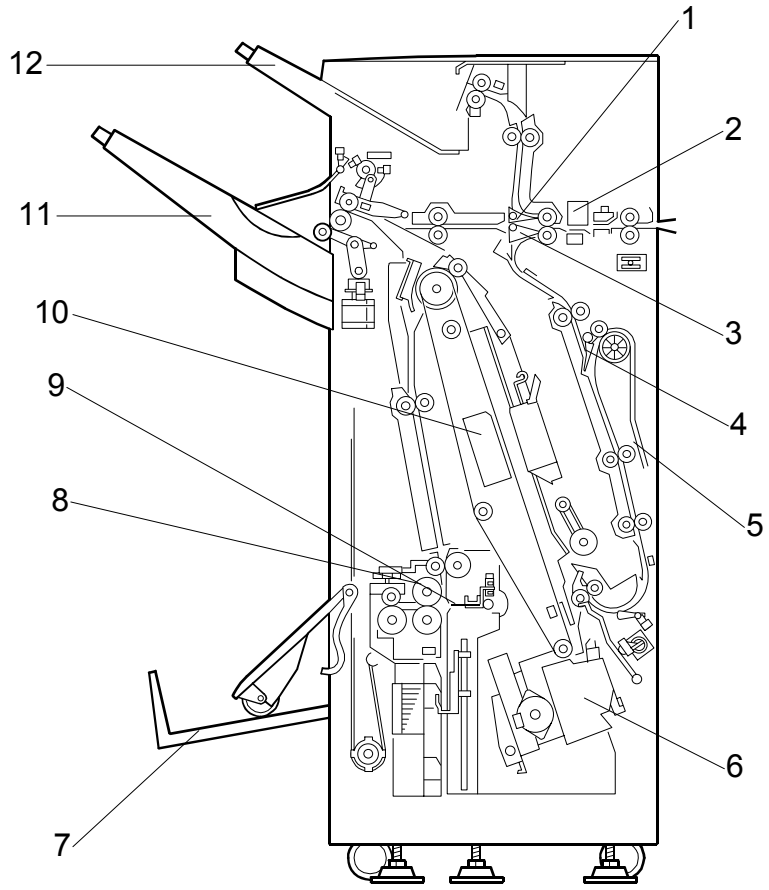
3. Reattach the booklet stapler motor.
   Important: Do not tighten the screws.

4. Attach the special tool [G] and reattach the booklet stapler stay.
   NOTE: This tool is included with the stapler spare part.
5. Turn the gear [H] with your finger until it stops.
6. Tighten the screws to attach to the booklet stapler motor.
7. Remove the stay again and remove the special tool.
8. Reattach the booklet stapler stay.
9. Push the stapler unit into the machine.



2. DETAILS

2.1 GENERAL LAYOUT



1. Proof Tray Junction Gate
2. Punch Unit
3. Stapler Junction Gate
4. Pre-Stack Junction Gate
5. Pre-Stack Tray
6. Corner Stapler (M20)
7. Lower Tray (Booklet)*1
8. Folder Rollers*1
9. Folder Plate*1
10. Booklet Stapler*1
11. Upper Tray (Shift)
12. Proof Tray

*1 **B700 Only**

Paper direction

The operation of the proof tray and stapler junction gates direct the flow of the paper once it enters the finisher:

Proof Junction Gate	Stapler Junction Gate	Paper Feeds
Closed	Closed	Paper feeds straight through
Open	Closed	Paper feeds to the proof tray
Closed	**Open**	Paper feds to the staple tray

Proof tray

Copies are sent to the proof tray (12) when neither sorting nor stapling are selected for the job.

Upper tray

The upper tray (11) receives copies that are sorted and shifted and also receives copies that have been corner stapled. Corner stapling is provided on both the B700 and the B701.

Pre-stack tray

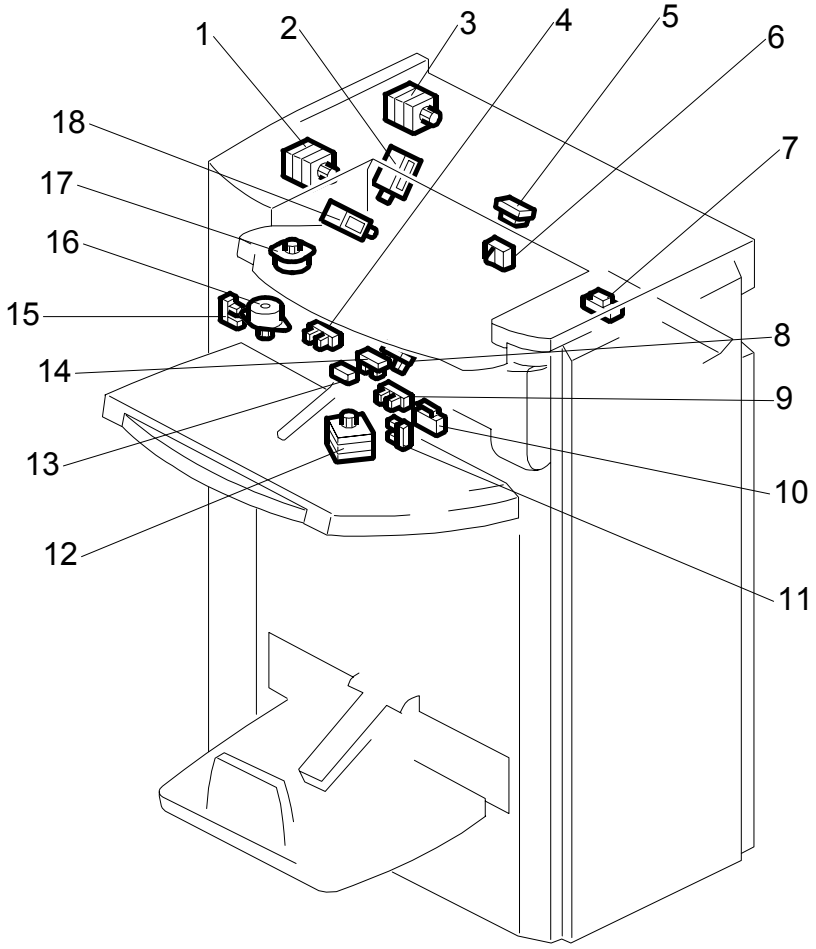
The pre-stack tray has a switchback mechanism to increase the productivity of stapling. (☛2.5) Pre-stacking is done for corner stapling in the B700/B701 and for booklet stapling in the B700.

Lower tray

The lower tray (7) receives copies that have been center folded and stapled (booklet stapling). Booklet stapling is not provided on the B701.

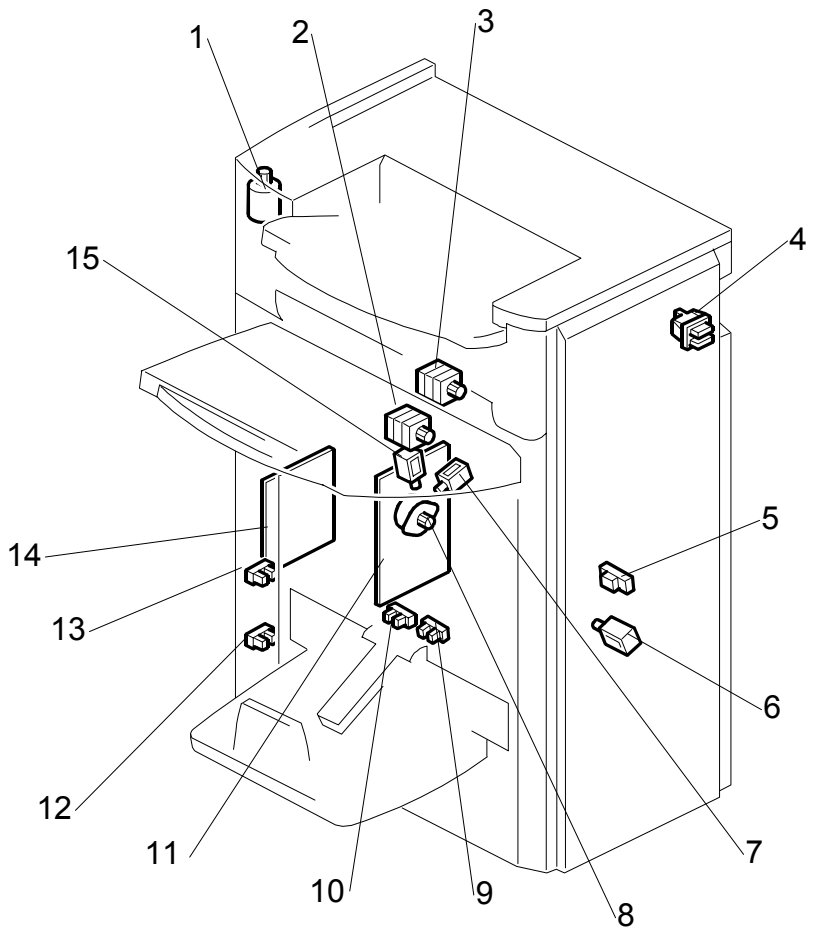
2.2 ELECTRICAL COMPONENTS

2.2.1 UPPER AREA B700/B701



1. Upper/Proof Exit Motor (M4)
2. Stapling Tray Junction Gate Solenoid (SOL2)
3. Upper Transport Motor (M2)
4. Exit Guide Plate HP Sensor (S7)
5. Proof Tray Exit Sensor (S10)
6. Proof Tray Full Sensor (S11)
7. Finisher Entrance Sensor (S1)
8. Upper Tray Paper Height Sensor (S9) (Non-Staple Mode)
9. Upper Tray Limit Sensor (S12)
10. Upper Tray Limit Switch (SW2)
11. Stacking Roller HP Sensor (S13)
12. Stacking Sponge Roller Motor (M10)
13. Upper Tray Exit Sensor (S6)
14. Upper Tray Paper Height Sensor (S8) (Staple Mode)
15. Shift Roller HP Sensor (S5)
16. Shift Roller Motor (M18)
17. Exit Guide Plate Motor (M19)
18. Proof Junction Gate Solenoid (SOL1)

2.2.2 LOWER AREA B700/B701

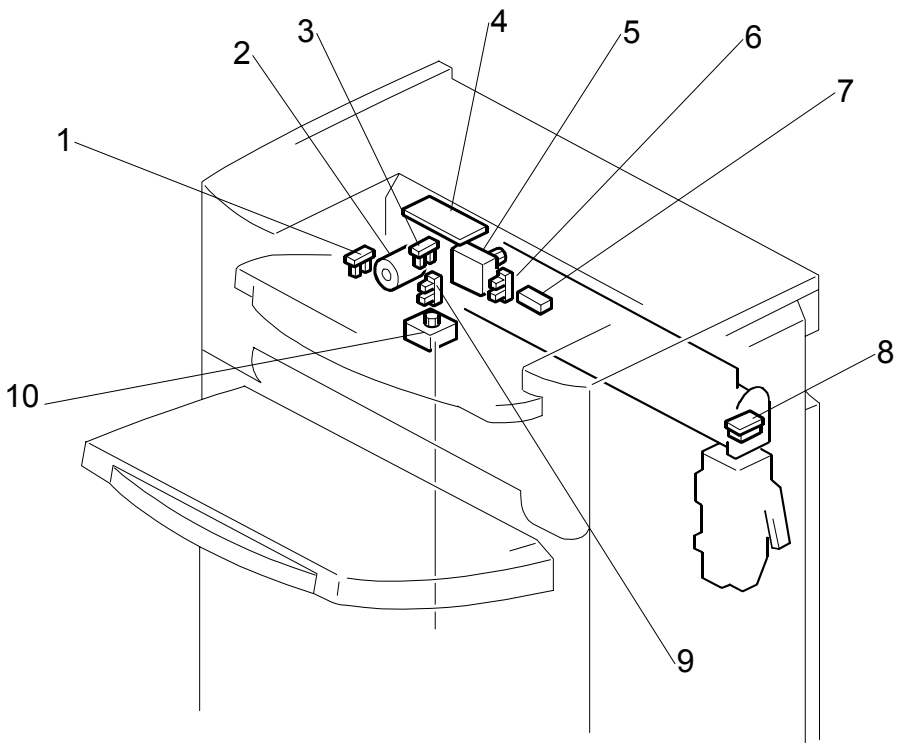


1. Upper Tray Lift Motor (M21)
2. Lower Transport Motor (M3)
3. Entrance Motor (M1)
4. Front Door Safety Switch (SW1)
5. Pre-Stack Tray Exit Sensor (S2)
6. Stapling Edge Pressure Plate Solenoid (SOL4)
7. Positioning Roller Solenoid (SOL3)
8. Positioning Roller Motor (M14)
9. Lower Tray Full Sensor – Front (S34)*1
10. Lower Tray Full Sensor – Rear (S33)*1
11. Main Board (PCB1)
12. Upper Tray Full Sensor – (S20) *2
13. Upper Tray Full Sensor – (S19)
14. Booklet Stapler Board (PCB2)*1
15. Booklet Pressure Roller Solenoid – (SOL5) *1

*1 B700 Only

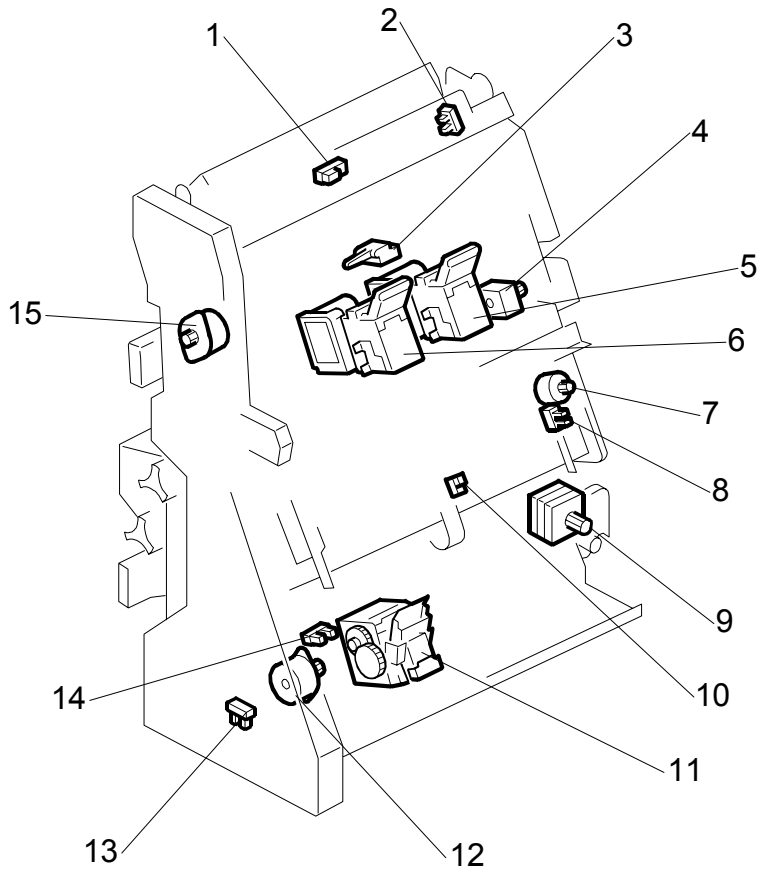
*2 B701 Only

2.2.3 PUNCH UNIT B702



1. Punch Encoder Sensor (S24)
2. Punch Drive Motor (M24)
3. Punch HP Sensor (S24)
4. Punch Unit Board (PCB3)
5. Paper position sensor slide motor (M7)
6. Paper Position Slide HP Sensor (S22)
7. Paper Position Sensor (S3)
8. Punch Hopper Full Sensor (S4)
9. Punch Movement HP Sensor (S21)
10. Punch Movement Motor (M9)

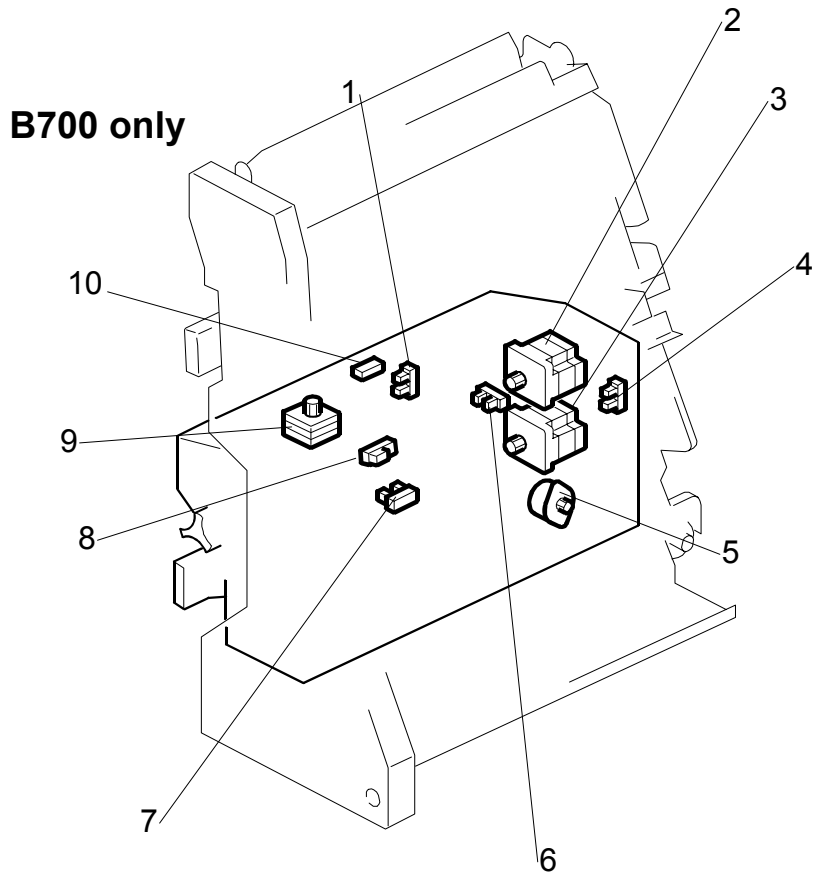
2.2.4 STACKER/STAPLER - B700/B701



1. Stack Present Sensor (S32)*1
2. Stack Junction Gate HP Sensor (S27)*1
3. Stack Feed Out Belt HP Sensor (S16)
4. Feed Out Belt Motor (M5)
5. Booklet Stapler EH185R – Rear (M23)*1
6. Booklet Stapler EH185R – Front (M22)*1
7. Jogger Fence Motor (M15)
8. Jogger Fence HP Sensor (S15)
9. Corner Stapler Movement Motor (M6)
10. Stapling Tray Paper Sensor (S14)
11. Corner Stapler EH530 (M20)
12. Corner Stapler Rotation Motor (M13)
13. Corner Stapler HP Sensor (S17)
14. Stapler Rotation HP Sensor (S18)
15. Stack Junction Gate Motor (M17) *1

*1 **B700 Only**

2.2.5 B700 FOLD UNIT



1. Clamp Roller HP Sensor (S25)
2. Fold Roller Motor (M12)
3. Fold Plate Motor (M11)
4. Fold Plate HP Sensor (S29)
5. Fold Unit Bottom Fence Lift Motor (M16)
6. Fold Cam HP Sensor (S30)
7. Fold Bottom Fence HP Sensor (S28)
8. Fold Unit Entrance Sensor (S26)
9. Clamp Roller Retraction Motor (M8)
10. Fold Unit Exit Sensor (S31)

2.2.6 SUMMARY OF ELECTRICAL COMPONENTS

Here is a general summary of all the electrical components of the B700/B701 finishers.

NOTE: In the table below a number that appears in bold text (**M8**, etc.) denotes a component that is on the 2000/3000 Sheet Finisher B700 only.

No.	Component	Function
Boards (PCB)		
PCB1	Main Board	The main board that controls the finisher
PCB2	Booklet Stapler Board	A separate board that controls booklet finishing.
PCB3	Punch Unit Board	The board that controls the punch unit.
Motors		
M1	Finisher Entrance Motor	Drives 1) the finisher entrance rollers, 2) and the punch waste transport belt of the punch unit.
M2	Upper Transport Motor	Drives the paper feed rollers that feed paper 1) to the proof tray, 2) straight-through to the upper tray, 3) the pre-stack tray entrance roller.
M3	Lower Transport Motor	Drives paper feed rollers forward and reverse in the pre-stack tray for the switchback, and drives the other rollers in the lower transport area.
M4	Upper/Proof Tray Exit Motor	Drives 1) proof tray exit rollers, 2) extension and retraction of the stacking sponge roller, 3) upper tray exit rollers.
M5	Feed Out Belt Motor	Drives the feed out belt that moves the stapled stacks out of the stapling tray after stapling.
M6	Corner Stapler Movement Motor	Moves the corner stapler horizontally on a steel rod to position the stapler at the stapling position at 1) the front, 2) the rear (straight stapling), 3) the rear (diagonal stapling), or 4) the front and rear for double stapling.
M7	Paper Position Sensor Slide Motor	Drives the movement of the paper position slide that holds the paper position sensor (S3) that detects the position of the paper.
M8	Clamp Roller Retraction Motor	Drives a large cam that alternately clamps and unclamps the clamp retraction roller, the idle roller of the clamp roller pair. When these rollers are clamped, they are part of the paper feed path and feed the stack toward the bottom fence of the fold unit. When the idle roller is retracted, the stacks falls a very short distance (3 mm) onto the fold unit bottom fence below. These rollers remain unclamped while the bottom fence positions the stack for folding and while the stack is folded by the fold rollers.
M9	Punch Movement Motor	Drives the front/back movement of the punch unit to position it correctly for stapling the paper below.
M10	Stacking Sponge Roller Motor	Rotates the stacking roller that drags each sheet back against the end fence to jog the bottom of each sheet after feed out to the upper tray.
M11	Fold Plate Motor	Drives the fold plate that pushes the center of the stack into the nip of the fold rollers to start the fold.
M12	Fold Roller Motor	Rotates forward and drives the fold rollers that fold the stack and feed it out of the fold unit, reverses to feed the fold once more into the fold unit, and then rotates forward again to feed the fold out of the fold unit.

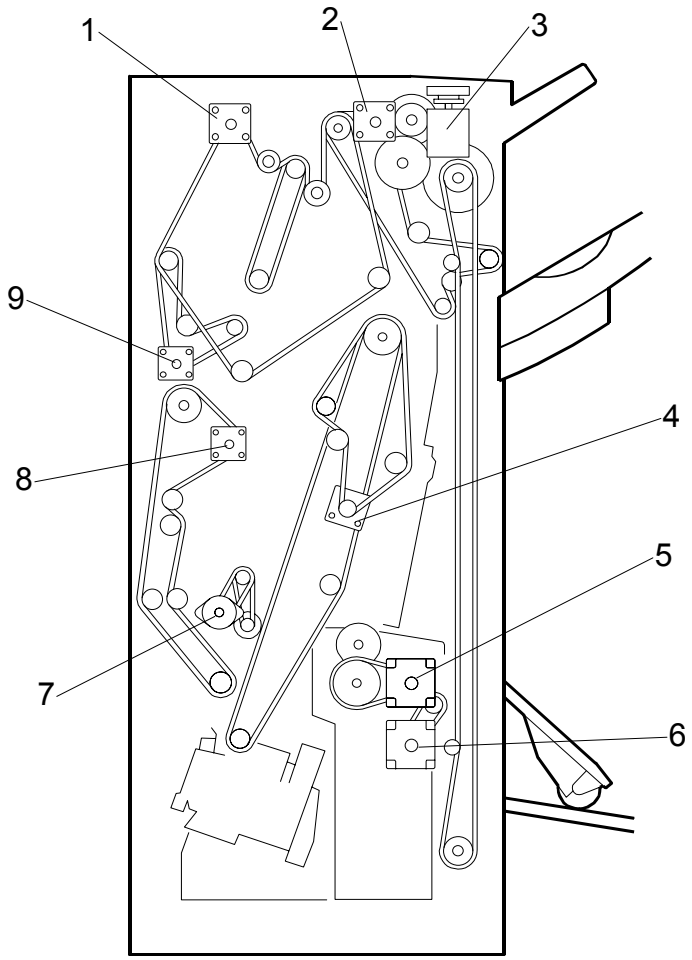
No.	Component	Function
M13	Corner Stapler Rotation Motor	Swivels the corner stapler and positions it so the staple fires at an oblique angle at the rear corner of the paper stack.
M14	Positioning Roller Motor	Drives the positioning roller in the stapling tray.
M15	Jogger Fence Motor	Drives the jogger fences in the stapling tray to jog both sides of the stack before stapling.
M16	Fold Unit Bottom Fence Lift Motor	Raises the bottom fence and stops when the center of the vertical stack is opposite the edge of the horizontal fold blade. The distance for raising the blade is prescribed as one-half the size of the paper selected for the job. For large paper, (A3, B4) the bottom fence first lowers the stack 10 mm below the fold position, and then raises it to the fold position.
M17	Stack Junction Gate Motor	Drives the large cam that operates the stack junction gate at the top of the stapling tray. When this gate is open, it directs the ascending stack to the upper tray if it has been corner stapled, or if it is closed the gate turns the booklet stapled stack down so it falls onto the bottom fence of the folding unit.
M18	Shift Roller Motor	Drives the shift roller that operates in shift mode to stagger document sets as they feed out to the upper tray (making them easier to separate).
M19	Exit Guide Plate Motor	Drives the mechanism that raises and lowers the exit guide plate.
M20	Corner Stapler EH530	This is the roving corner stapler, mounted on a steel rail that staples 1) at the front, 2) at the rear (straight staple), 3) at the rear (diagonal staple), and 4) font and rear (two staples).
M21	Upper Tray Lift Motor	Raises and lowers the upper tray during feed out to keep the tray at the optimum height until it is full.
M22	Booklet Stapler EH185R: Front	Booklet stapler. Staples paper stacks in the center before they are folded.
M23	Booklet Stapler EH185R: Rear	Booklet stapler. Staples paper stacks in the center before they are folded.
M24	Punch Drive Motor	Fires the punches that punch the holes in the paper.
Sensors		
S1	Finisher Entrance Sensor	Provides two functions: (1) Detects paper entering the finisher from the copier, and (2) Signals a jam if it detects paper at the entrance when the copier is switched on.
S2	Pre-stack Tray Exit Sensor	Detects 1) paper fed from the pre-stack tray to the stapling tray, and detects 2) paper in the pre-stack when the copier is switched on. (This sensor performs no timing function. The entire flow of paper through the pre-stacking mechanism is controlled by motor pulse counts.)
S3	Paper Position Sensor	The photosensor that detects the edge of the paper and sends this information to the punch unit board where it is used to position the punch for punching the holes in the paper.
S4	Punch Hopper Full Sensor	1) A photosensor that detects and signals that the punch hopper is filled with punch waste and needs emptying, and 2) confirms the presence of the punch hopper and signals an error if it is missing or not installed completely.
S5	Shift Roller HP Sensor	Located near the shift roller motor, controls the front-to-back movement of the shift roller as shifts paper during straight-through feed.
S6	Upper Tray Exit Sensor	A flat, photo sensor located inside the guide plate, detects the leading edge and trailing edge of the paper as it feeds out to the upper tray during straight-through jobs (with and

No.	Component	Function
		without stapling). When paper is fed to the upper tray, at the paper output slot this sensor signals an error when it detects (1) paper has failed to leave the paper exit (lag error), (2) detects paper has failed to arrive at the paper exit (late error), (3) detects paper is in the exit slot when the machine is turned on.
S7	Exit Guide Plate HP Sensor	Controls the vertical movement of the control exit guide . The guide plate is in the home position when the guide plate is down and the actuator interrupts the sensor gap.
S8	Upper Tray Paper Height Sensor (Staple Mode)	This is the upper sensor of the upper/lower paper height sensor pair that controls the lift of the upper tray. This sensor detects the paper height of the stack in the upper tray when the copier is operating in the staple mode.
S9	Upper Tray Paper Height Sensor (Non-Staple Mode)	This is the lower sensor of the upper/lower paper height sensor pair that controls the lift of the upper tray. When the machine is switched on, the upper tray rises until the actuator on the tray triggers this sensor to switch off the upper tray lift motor.
S10	Proof Tray Exit Sensor	This sensor detects and times the feeding of paper to the proof tray. It also detects whether paper is present at the proof tray exit when the copier is switched on.
S11	Proof Tray Full Sensor	The top of the stack in the proof tray increases until it nudges the feeler of this sensor. The sensor then signals that the proof tray is full and the job halts until some paper is removed from the proof tray.
S12	Upper Tray Limit Sensor	This sensor controls the position of the upper tray 1) during straight-through feed out, 2) during shift feed out, 3) when the machine is turned on. The machine obeys the signal of whichever sensor is actuated first. An actuator attached to an arm triggers this sensor. The tip of the same arm depresses the upper tray limit switch If the sensor fails, the tip of the arm will activate the upper tray limit microswitch (SW2) and stop the lift of the upper tray. **Note**: When the machine is turned on, the upper tray position is controlled by either this sensor or the upper tray paper height sensor (S9).
S13	Stacking Roller HP Sensor	Controls the forward and back motion of the stacking roller (a sponge roller) located at the output slot of the upper tray. The sponge roller drags each ejected sheet back against the end fence of the upper tray to keep the bottom of the stack aligned.
S14	Stapling Tray Paper Sensor	A photo sensor that detects whether paper is in the stapling tray. When this sensor detects paper, the bottom fence motor raises or lowers the bottom fence to position the selected paper size for booklet stapling.
S15	Jogger Fence HP Sensor	Detects the home position of the jogger fences. When the actuator on the jogger fence interrupts this sensor, the jogger fence is in its home position and the jogger fence motor (M15) stops.
S16	Stack Feed-Out Belt HP Sensor	Controls the position of the stack feed-out pawl on the stack feed-out belt. Once the actuator on the feed belt nudges the feeler of this sensor near the top of the stapling unit, the feed out belt motor (M5) remains on for the time prescribed to position the pawl at the home position to catch the next stack.
S17	Corner Stapler HP	Located at the front the stapling tray and mounted above the

No.	Component	Function
	Sensor	steel rod where the corner stapler travels, this sensor detects the home position of the corner stapler. The corner stapler is in its home position when the actuator on the corner stapler unit interrupts this sensor.
S18	Stapler Rotation HP Sensor	Controls the angle of the position of the corner stapler during oblique stapling.
S19	Upper Tray Full Sensor (B700/B701)	**B700**: When the actuator on the side of the upper fence enters the gap of this sensor, the sensor signals that the upper tray is at its lowest position (full) and stops the job. **B701**: One of two upper tray full sensors. This is the higher tray full sensor for A3 and other heavy paper. The other upper tray full sensor (20) is for lighter paper.
S20	Upper Tray Full Sensor (B701 only)	**B700**: This sensor is not used on the booklet finisher. There is only one upper tray full sensor (S18). **B701**: One of two upper tray full sensors. This is the lower tray full sensor for A4 and smaller paper. The other upper tray full sensor (19) is for larger paper.
S21	Punch Unit HP Sensor	Switches off the punch movement motor when the punch unit returns to its home position. Pulse counts determine where the punch unit pauses for punching and reversing.
S22	Paper Position Side HP Sensor	Controls the movement of the paper position detection unit. Switches on when the horizontal detection unit is at the home position (HP is the reference point).
S23	Punch HP Sensor	Detects the home position of the punch unit and controls the vertical movement of the punches when they fire.
S24	Punch Encoder Sensor	When the punch mode is selected for the job (2-hole, 3-hole, etc.), the machine controls the operation of the punch drive (M24) motor which drives a small encoder shaped like a notched wheel. This wheel is rotated forward and reverse precisely to select which punches are moved up and down during the punch stroke.
S25	Clamp Roller HP Sensor	Controls the movement of the clamp retraction roller (the idle roller of the clamp roller pair).
S26	Fold Unit Entrance Sensor	Detects 1) the leading edge of the stack during booklet stapling, and 2) also used to signal an alarm if a paper is detected at the entrance of the fold unit when the copier is turned on.
S27	Stack Junction Gate HP Sensor	Controls the opening and closing of the stack junction gate. Switches on when the stack junction gate is open and at the home position.
S28	Fold Bottom Fence HP Sensor	Controls the movement of the bottom fence in the folding unit using pulse counts based on the size of the paper selected for the job to position the stack correctly for feeding.
S29	Fold Plate HP Sensor	Along with the fold plate cam HP sensor (S30) this sensor controls the movement of the fold plate . The fold plate has arrived at the home position when the edge of the plate enters the gap of this sensor.
S30	Fold Plate Cam HP Sensor	Along with the fold plate HP sensor (S29), this sensor controls the movement of the fold plate. The actuator mounted on the end of the roller that drives the folder plate forward and back makes three full rotations, i.e. the actuator passes the sensor gap twice and stops on the 3rd rotation and reverses. This accounts for the left and right movement of fold plate.
S31	Fold Unit Exit Sensor	1) Detects the folded edge of the stack as it feeds out from the nip of the fold rollers, stops the rollers, and reverses them

No.	Component	Function
		so the fold feeds back into the nip, 2) when the folded booklet finally emerges from the nip of the fold rollers, detects the leading and trailing edge of the booklet to make sure that it feeds out correctly.
S32	Stack Present Sensor	This sensor determines whether a there is paper at the turn junction gate when the machine is turned on. If a stack is present, this triggers a jam alert. (This sensor performs no dynamic function such as pulse counting, etc. It only detects whether paper is at the top of the folding unit when power its turned on.)
S33	Lower Tray Full Sensor - Rear	This rear sensor is the lower sensor of the lower tray full sensor pair. Two actuators are attached to the actuator arm that touches the top of stapled and folded booklets as they feed out. The on/off combinations of the two sensors are used to detect when the tray is full and stop the job. (The lower tray is stationary. At tray full, the job halts until booklets are removed from the lower tray.)
S34	Lower Tray Full Sensor - Front	This front sensor is the higher sensor of the lower tray full sensor pair. Two actuators are attached to the actuator arm that touches the top of stapled and folded booklets as they feed out. The on/off combinations of the two sensors are used to detect when the tray is full and stop the job. (The lower tray is stationary. At tray full, the job halts until booklets are removed from the lower tray.)
Solenoids		
SOL1	Proof Junction Gate Solenoid	Opens and closes the proof tray junction gate. When the solenoid switches on, it opens the gate and paper is diverted to the proof tray. When this gate is closed, the paper goes straight to the upper tray. I
SOL2	Stapling Tray Junction Gate Solenoid	Directs paper to the stapling tray. When this solenoid is on, paper feeds straight through. When this solenoid is off, paper feeds to the stapler tray below.
SOL3	Positioning Roller Solenoid	Engages the stapler transport motor and the positioning roller of the stapling tray. The positioning roller pushes each sheet down against the bottom fence to align the bottom the stack for stapling. (The jogger fences align the sides.)
SOL4	Stapling Edge Pressure Plate Solenoid	Operates the pressure plate of the stapling unit. The pressure plate presses down the edge of stack in the stapling tray so it is tight for stapling.
SOL5	Booklet Pressure Roller Solenoid	When the paper stack in the stapling tray feeds to the folding unit, this solenoid turns on and operates the roller that pushes on the surface of the stack to flatten it.
Switches		
SW1	Front Door Safety Switch	The safety switch that cuts the dc power when the front door is opened.
SW2	Upper Tray Limit SW	A micro-switch that cuts the power to the upper tray lift motor when the upper tray reaches its upper limit. This switch duplicates the function of the upper tray limit sensor (S12) and stops the upper tray if S12 fails.

2.3 DRIVE LAYOUT



1. Upper Transport Motor (M2)
2. Upper/Proof Exit Motor (M4)
3. Upper Tray Lift Motor (M21)
4. Feed-Out Belt Motor (M5)
5. Fold Roller Motor*1 (M12)
6. Folder Plate Motor*1 (M11)
7. Positioning Roller Motor (M14)
8. Lower Transport Motor (M3)
9. Entrance Motor (M1)

*1 B700 Only

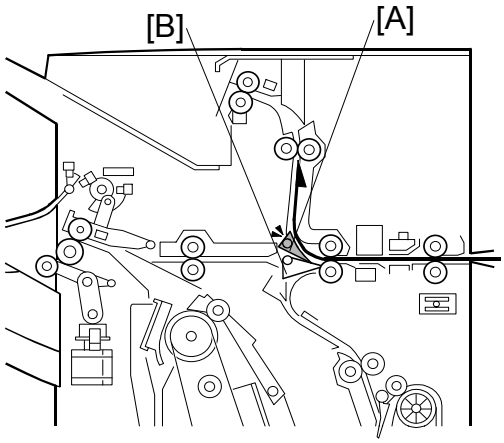
2.4 JUNCTION GATES

The positions of the proof tray and staple tray junction gates determine the direction of paper feed after paper enters the finisher.

Proof Mode

[A]: Proof tray junction gate opens.
[B]: Staple tray junction gate remains closed.

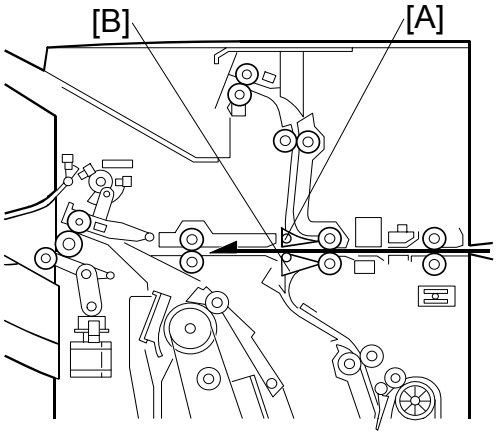
The proof tray junction gate directs paper to the proof tray above.



Shift Mode

[A]: Proof tray junction gate remains closed.
[B]: Staple tray junction gate remains closed.

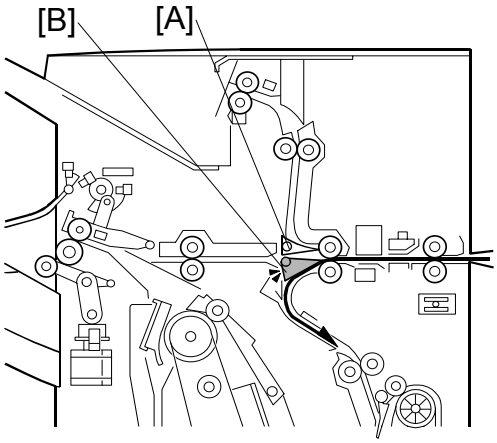
With both junction gates closed, the paper goes to the upper tray.



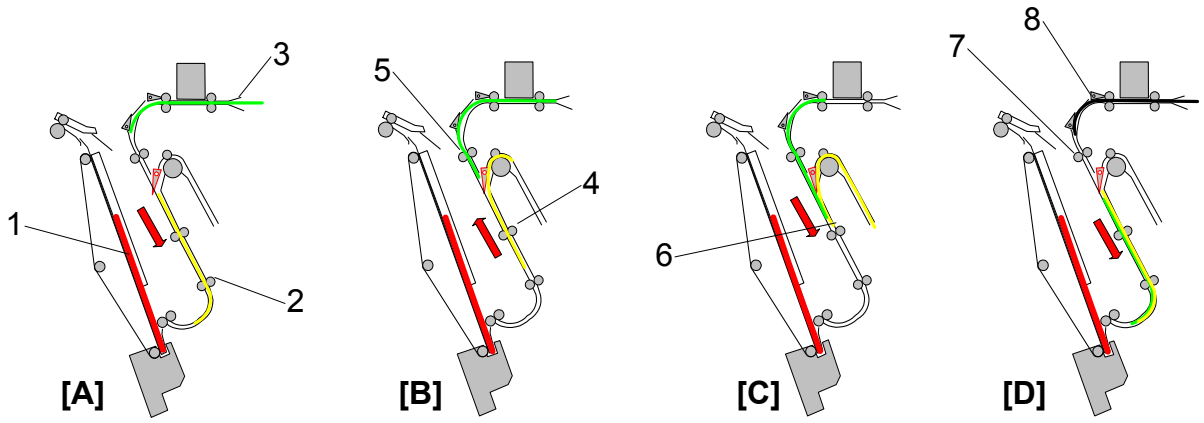
Staple Mode

[A]: Proof tray junction gate remains closed.
[B]: Staple tray junction gate opens

The staple tray junction gate directs the paper to the staple tray below for jogging and stapling.



2.5 PRE-STACKING



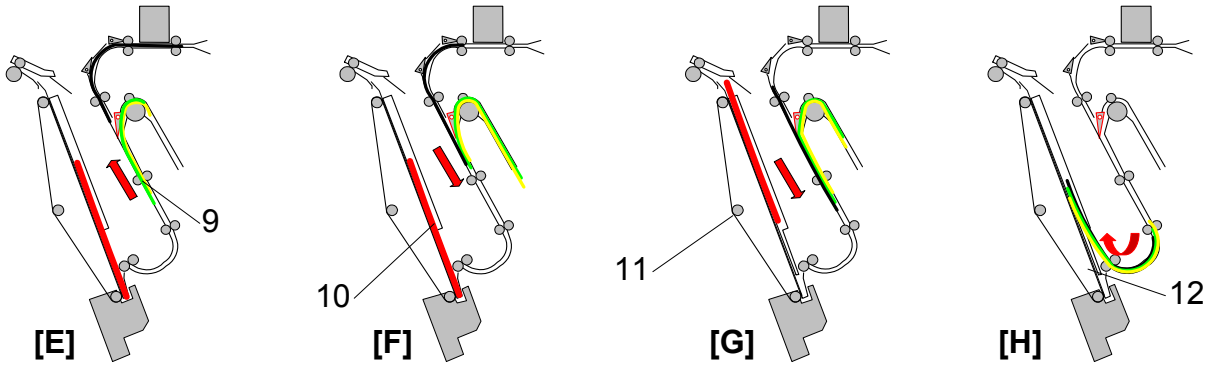
This example describes what happens to Set 2 during the feed and stapling cycle of sets that contain three pages.

[A]: While the Set 1 is being stapled in the staple tray [1], the 1st sheet of Set 2 [2] feeds to the pre-stack tray, and the 2nd sheet of Set 2 [3] enters the finisher.

[B]: The pre-stack junction gate opens and the 1st sheet of Set 2 [4] switches back to the top of the pre-stack tray as the 2nd sheet of Set 2 [5] starts to descend.

[C]: As the 2nd sheet of Set 2 continues to descend, the 1st sheet of Set 2 is fed from the pre-stack tray. At this time the leading edges [6] of both sheets are even.

[D]: The trailing edges of the 1st and 2nd sheets of Set 2 pass the junction gate [7] as the 3rd sheet of Set 2 [8] enters the finisher.



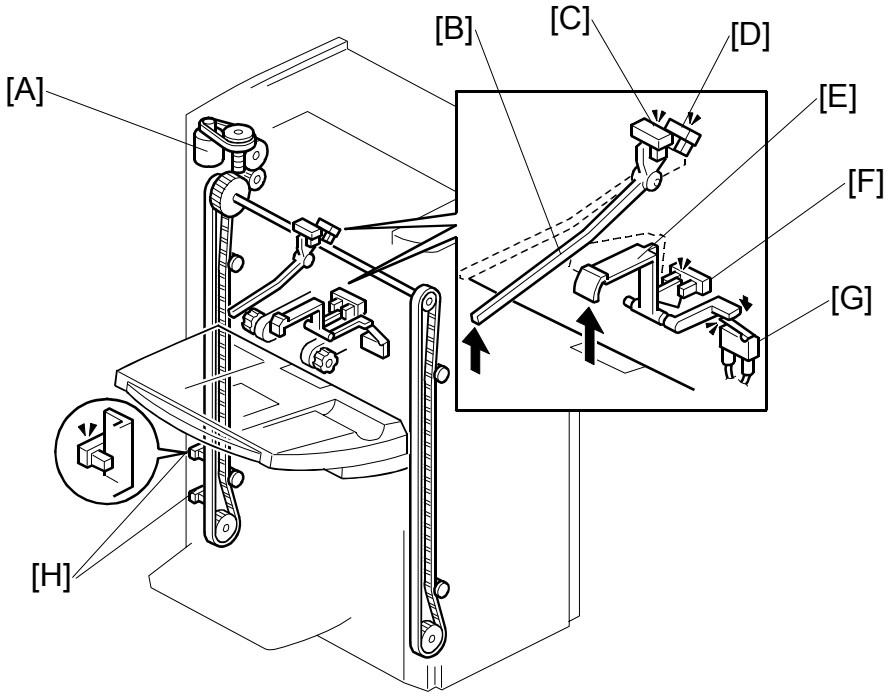
[E]: The 1st and 2nd sheets of Set 2 [9] switch back together into the top of the pre-stack and wait for the 3rd of Set 2 sheet to arrive.
[F]: The stapling of Set 1 in the staple tray [10] is completed.
[G]: Set 1 [11] exits the staple tray.
[H]: The three sheets of Set 2 [12] feed together into the stapler tray for stapling.

Pre-stacking is only done for A4, B5, and LT paper.

In one-staple mode, one sheet goes to the pre-stacking tray. Then two sheets go to the stapler tray at the same time.

In two-staple mode and booklet mode, three sheets go to the pre-stacking tray. Then four sheets go to the stapler tray at the same time.

2.6 UPPER TRAY



[A]: Upper Tray Lift Motor
[B]: Upper Feeler
[C]: Upper Tray Paper Height Sensor 1 (Staple Mode)
[D]: Upper Tray Paper Height Sensor 2 (Non-Staple Mode)
[E]: Lower Feeler
[F]: Upper Tray Limit Sensor
[G]: Upper Tray Limit Switch
[H]: Upper Tray Full Sensors

Important

- The B700 (shown above) has only one upper tray full sensor (the higher sensor at [H])
- The B701 has two upper tray full sensors (the upper and lower sensor at [H]). On the B701 the upper sensor detects tray full for heavier paper (A3, DLT, B4, LG, 12 x 18”), and the lower sensor detects tray full for lighter paper (A4, LT, etc.).
- The tray full capacity is 2,000 sheets (B700) for A4, LT and 3,000 sheets (B701) for A4, LT.

Five sensors and one switch control the operation of the upper tray lift motor [A].

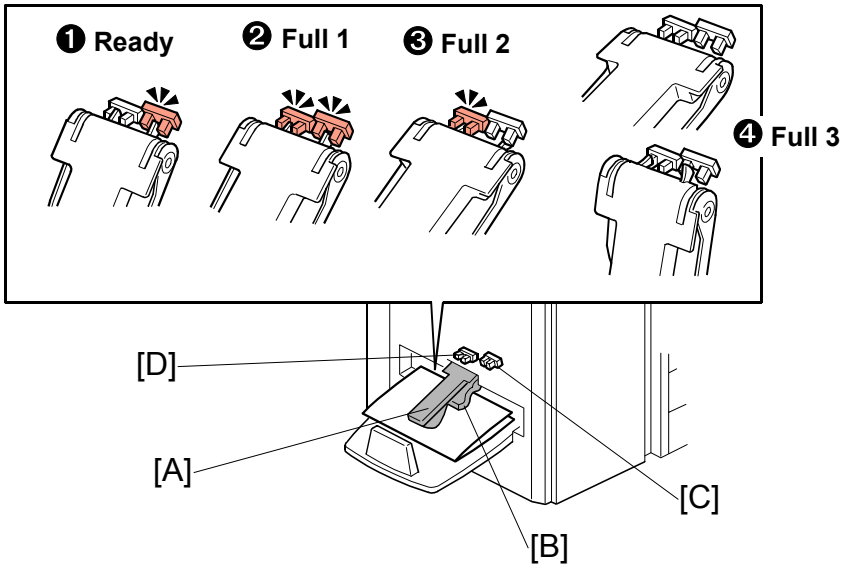
Upper Tray Raising and Lowering

Operation Mode	Sensors, Switch				Action
	[C]	[D]	[F]	[G]	
Standby (Non-Staple Mode)	OFF	OFF			Stops the lift motor is at the standby position when the actuator of the upper feeler deactivates sensor [C] (when it is between sensors [C] and [D]). **Note**: Sensor [F] and switch [G] are used as backup if sensor [C] fails or if the upper tray is not attached.
Straight Through			ON		**Non-staple mode operation:** During operation, tray lift is controlled only by sensor [F]. When the actuator leaves sensor [F], the tray lowers until the actuator reactivates sensor [F].
Shift			ON		
Standby (Staple Mode)	ON				**Standby**: The upper tray stops and waits for the paper output when the actuator activates sensor [C]. [D] is not used for staple mode **Staple Mode Operation**: • The upper tray lowers the prescribed distance immediately after the stack exits. • The upper tray rises until the actuator activates sensor [C] and stops the tray lift motor (and the tray) to wait for the next set. • Sensor [F] and switch [G] are used as backup if sensor [C] fails.

Tray Full

B700	When the actuator on the tray activates the upper tray full sensor [H] the tray lift motor [A] switches off. Operation resumes after some copies are removed from the tray. Upper Tray Capacity: 2,000 sheets (A4, LT)
B701	The operation of the upper tray full sensor is the same as the B700. Capacity: 1,500 sheets for A3, B4 or other large paper. An additional upper tray full sensor (below sensor [H]) allows more sheets to stack on the upper tray. Capacity: 3,000 sheets (A4, LT)

2.7 LOWER TRAY (B700 ONLY)



The lower tray sensor actuator arm [A] rests on the top of the stack of stapled booklets as they are output to the lower tray. A flap depressor [B] keeps the open ends of the booklets down.

The front lower tray full sensor (S34) [C] and rear lower tray full sensor (S33) [D] detect when the lower tray is full of booklets.

Important

- The front lower tray full sensor is mounted higher than the rear lower tray full sensor.
- The lower tray is stationary. When it becomes full, the stapling and folding job stops until booklets are removed from the tray.
- If the lower tray is not installed (this is detected if the front and rear sensors remain OFF), the machine will not operate in the booklet staple and fold mode. When booklet mode is selected, the tray full message appears on the operation panel.

The combinations of the two actuators and two sensors as the actuator arm rises determines the number of booklets that the lower tray can hold before the job stops.

The tray full detection depends on the size of the paper and the number of sheets in one stapled and folded booklet.

In the table below, the conditions (❶ Ready ❷ Full 1, ❸ Full 2 ❹ Full 3: See the illustration on the previous page) refer to the states of the sensors described on the previous page.

Condition	Front Sensor	Rear Sensor
Ready	ON	OFF
Full 1	ON	ON
Full 2	OFF	ON
Full 3 (or lower tray not installed)	OFF	OFF

In the tables below:

- "Sht" denotes "sheets in a stack".
- "Cnt" denotes "Count" (see below for an explanation).

After a booklet is feed out, the fold roller motor stops the exit roller. The machine then monitors the tray full sensors every 100 ms. The machine checks for a certain condition, based on the size of the paper and the number of sheets in the booklet.

An example is shown below. Tell the operators that the number of sheets that the lower tray can hold will vary greatly.

Lower Tray Full Condition Table

A3 (DLT)

	1 Sht	2 Sht	3 Sht	4 Sht	5 Sht	6 Sht	7 Sth	8 Sht	9 Sht	…
Full 1	3 Cnt	—	—	—	—	—	—	—	—	…
Full 2	—	5 Cnt	15 Cnt	—	—	—	—	—	—	…
Full 3	—	—	—	7 Cnt	13 Cnt	4 Cnt	2 Cnt	2 Cnt	2 Cnt	…

A4 (LT)

	1 Sht	2 Sht	3 Sht	4 Sht	5 Sht	6 Sht	7 Sth	8 Sht	9 Sht	…
Full1	16 Cnt	—	—	—	—	—	—	—	—	…
Full 2	—	10 Cnt	10 Cnt	15 Cnt	20 Cnt	15 Cnt	10 Cnt	8 Cnt	8 Cnt	…
Full 3	—	—	—							…

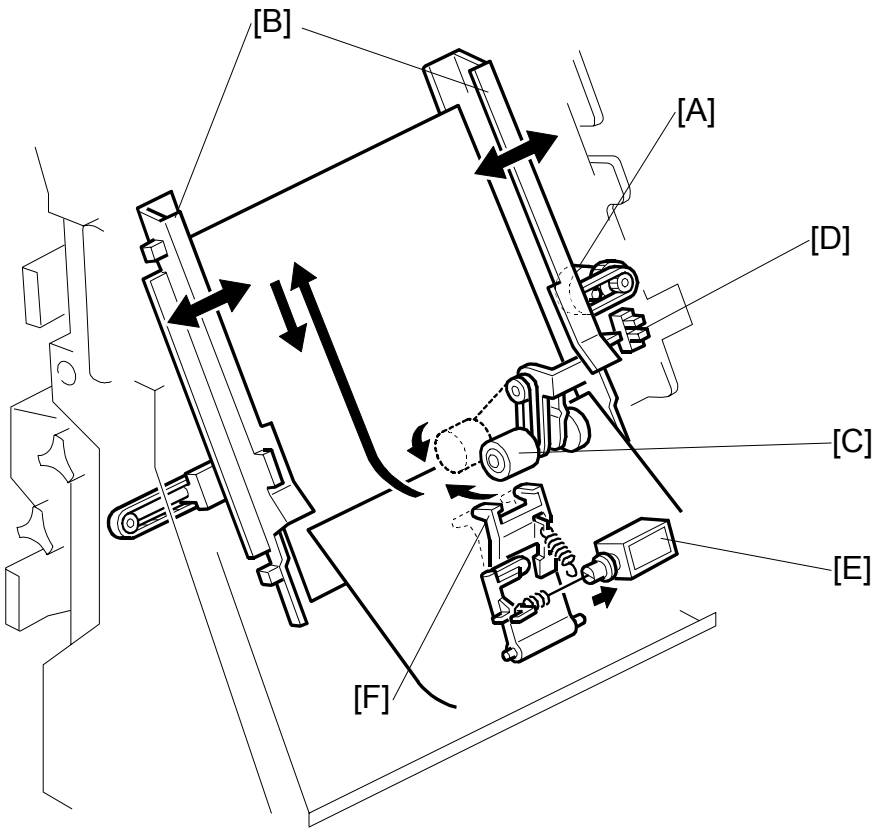
Examples

After the copier makes a booklet with 1 sheet of A3/DLT paper, the machine checks every 100 ms for the ‘Full 1’ condition. If the Full 1 condition occurs 3 times (shaded block in the table above), the machine detects that the tray is full.

After the copier makes a booklet with 5 sheets of A4/LT paper, the machine checks every 100 ms for the ‘Full 2’ condition. If the Full 2 condition occurs 20 times (shaded block in the table above), the machine detects that the tray is full.

2.8 CORNER STAPLING

2.8.1 STACKING AND JOGGING



[A]: Jogger Fence Motor (M15)
[B]: Jogger Fences
[C]: Positioning Roller
[D]: Jogger Fence HP Sensor (S15)
[E]: Stapling Edge Pressure Plate Solenoid (SOL4)
[F]: Pressure Plate

At the beginning of the job, the jogger fence motor (M15) [A] switches on and moves the jogger fences [B] to the standby position (7.5 mm from the sides of the selected paper size).

When each sheet passes the pre-stack tray exit sensor (S2) and enters the stapling tray:

- The jogger fence motor switches on and moves the jogger fences to within 5.5 mm of the sides of the selected paper size.
- The positioning roller solenoid (SOL3) switches on for the time prescribed for the paper size. This pushes the positioning roller [C] onto the sheet and pushes it down onto bottom fence. This aligns the edge of the stack.

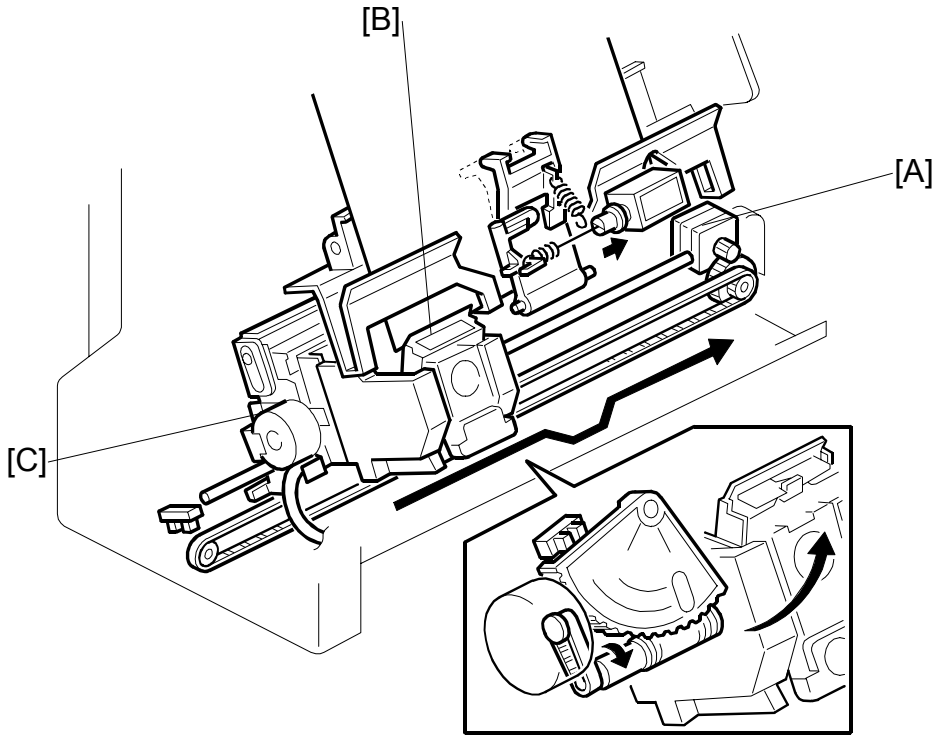
Next, the jogger fence motor:

- Switches on again and moves the jogger fences to within 2.6 mm of the sides of the stack to align the sides of the stack.
- Reverses and moves the fences to the standby position (7.5 mm away for the sides) and waits for the next sheet.
- The jogger fence HP sensor [D] switches off the jogger motor at the end of the job.

After the last sheet feeds:

- The stapling edge pressure plate solenoid [E] (SOL4) switches on and pushes the pressure plate [F] onto the stack to press down the edge for stapling.
- The corner stapler staples the stack.

2.8.2 STAPLER MOVEMENT



[A]: Stapler Movement Motor
[B]: Stapler
[C]: Stapler Rotation Motor

The stapler performs horizontal and rotational movement in each of the four staple modes:

- Front 1 staple
- Rear 1 staple
- Rear diagonal staple
- Rear/Front 2 staples.

The stapler movement motor [A] drives a timing belt that moves stapler [B] left and right on its stainless steel rail.

The stapler rotation motor [C] rotates the stapler into position for diagonal stapling at the rear.

- The stapler movement motor switches on and moves the stapler the standby stapling position. (This is the stapling position for the paper size selected for the job.)
- The stapler movement motor switches off and the stapler waits for the signal to fire (or swivel and for diagonal stapling).

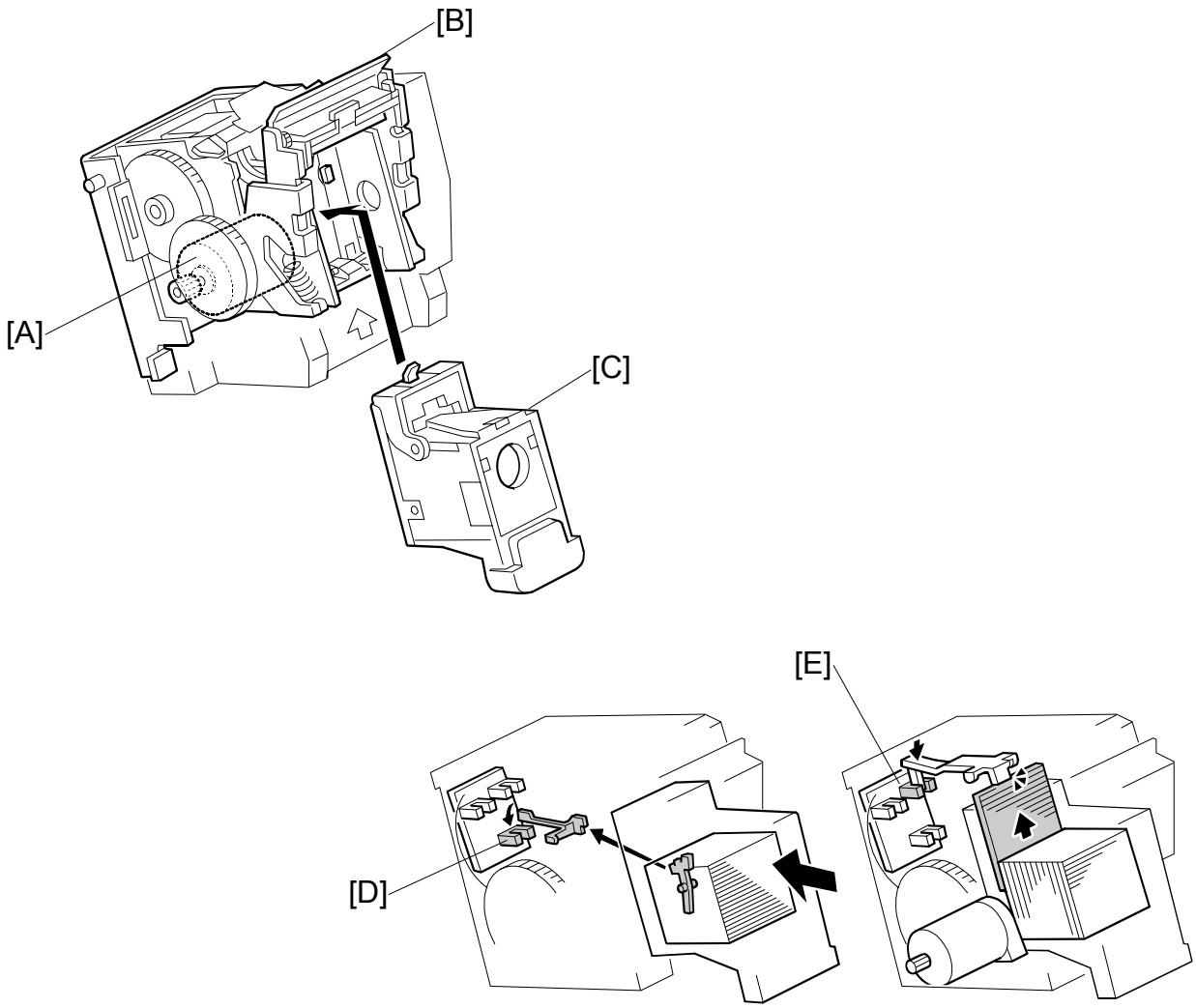
If the stack is to be stapled at two positions:

- The stapler movement motor moves the stapler to the front position and staples the front.
- The stapler movement motor moves the stapler to the rear and the stapler staples the rear.

If the stack will be stapled at the rear with a diagonal staple, the staple moves to the rear. When it is time for stapling, the rotation motor rotates the stapler to the correct angle and holds the stapler in that position while the stapler fires.

The stapling positions can be fine adjusted with **SP6109**.

2.8.3 CORNER STAPLING



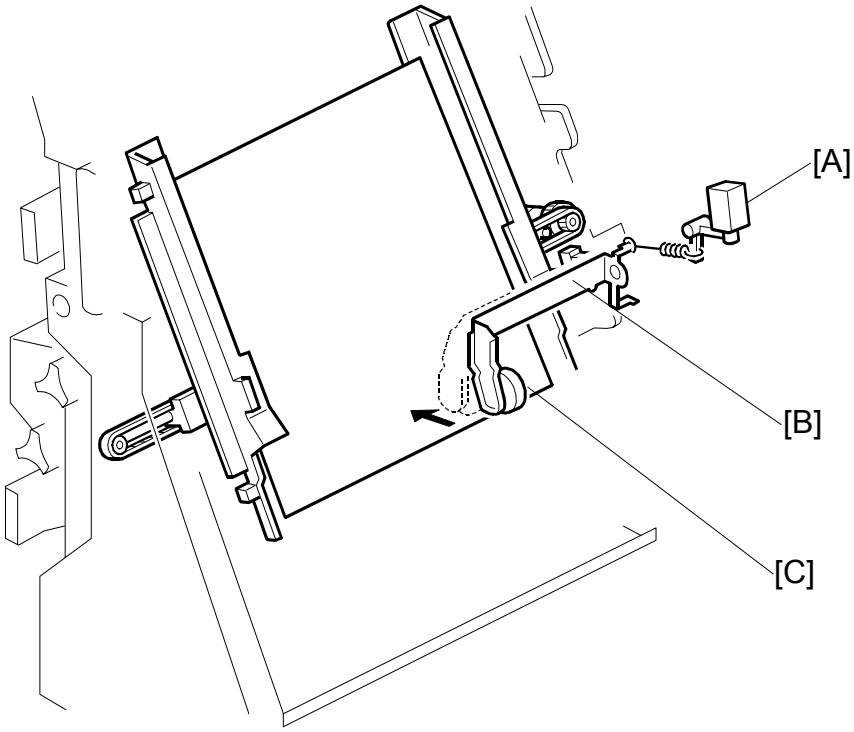
Staple firing is driven by the stapler motor [A] inside the stapler unit. The stapler hammer [B] fires the stapler [C].

The cartridge set sensor [D] detects the cartridge at the correct position.

The staple end sensor [E] detects the staple end condition.

2.9 BOOKLET STAPLING (B700 ONLY)

2.9.1 BOOKLET PRESSURE MECHANISM



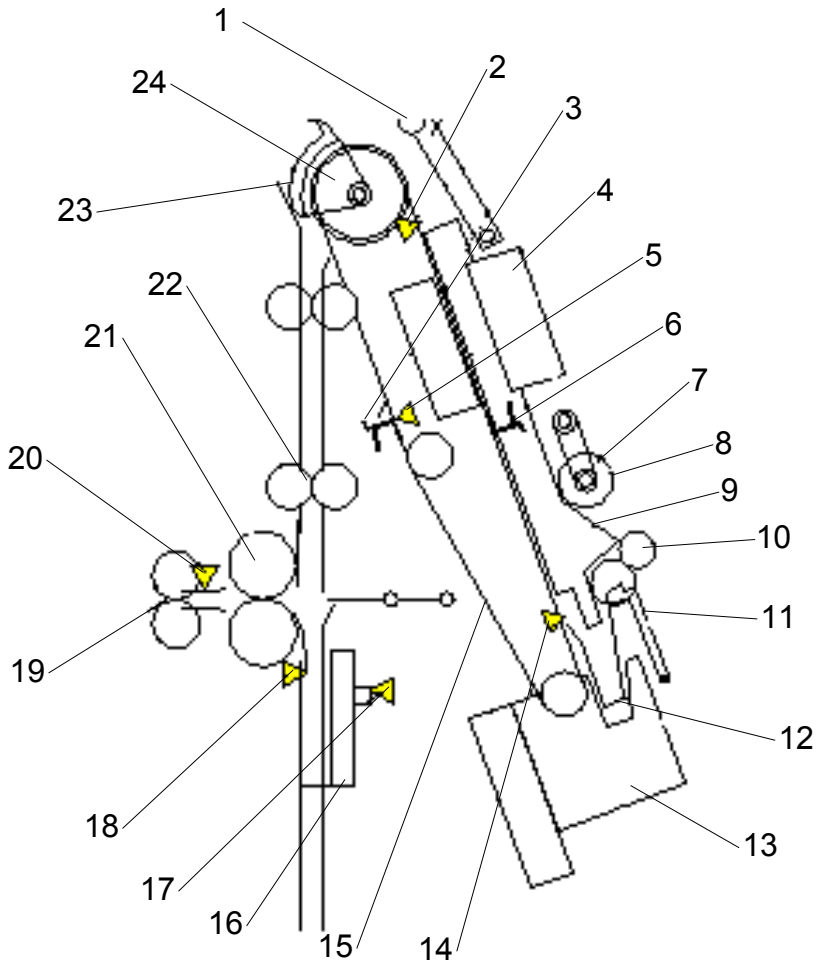
[A]: Booklet Pressure Roller Solenoid (SOL5)
[B]: Booklet Pressure Roller Arm
[C]: Booklet Pressure Roller

As soon as the edges are aligned by the positioning roller and the jogger fences, the stack feed out belt moves.

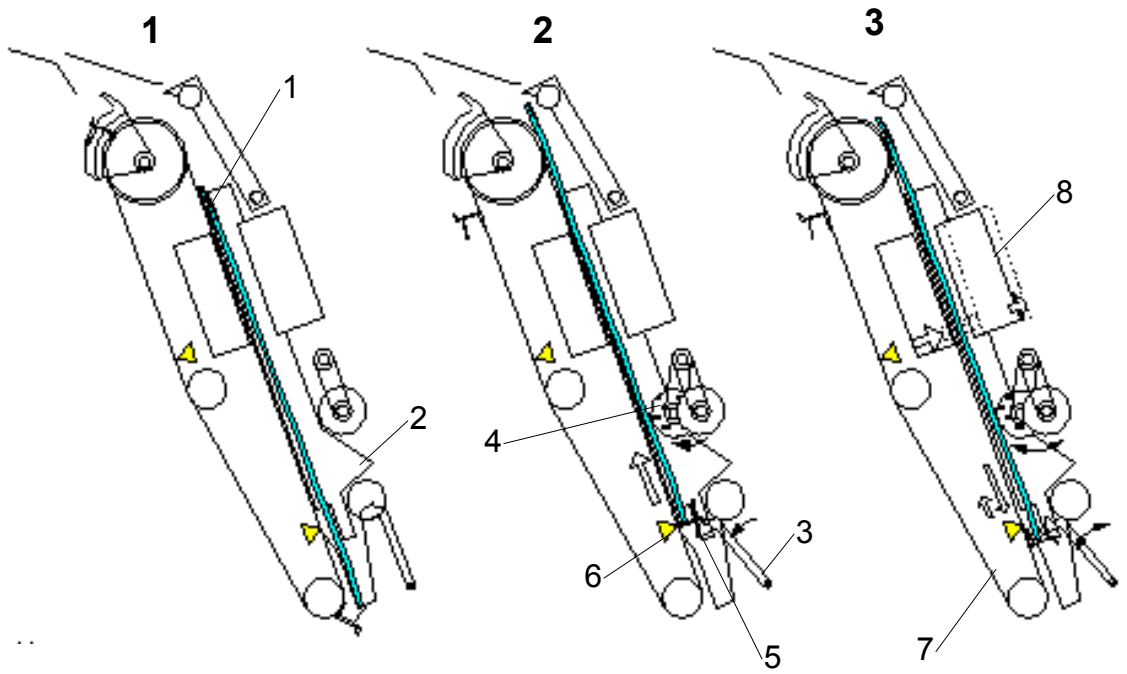
In booklet mode, immediately after the edges are aligned by the positioning roller and jogger fences, the booklet pressure solenoid switches on and the booklet pressure roller presses down on the stack until booklet stapling is finished. This prevents the stack from shifting during stapling.

2.9.2 BOOKLET STAPLING AND FOLDING

Overview



1. Leading Edge Pressure Roller
2. Stack Present Sensor (S32)
3. Feed Out Belt Pawl 1
4. Booklet Staplers x2 (M22, M23)
5. Stack Feed Out Belt HP Sensor (S16)
6. Feed Out Belt Pawl 2
7. Positioning Roller
8. Booklet Pressure Roller (Rear)
9. Jogger Fences x2
10. Pre-Stack Exit Roller
11. Pressure Plate
12. Stapling Tray Bottom Fence
13. Corner Stapler (M20)
14. Stapling Tray Paper Sensor (S14)
15. Feed Out Belt
16. Fold Unit Bottom Fence
17. Fold Bottom Fence HP Sensor (S28)
18. Fold Unit Entrance Sensor (S26)
19. Fold Unit Exit Rollers x2
20. Fold Unit Exit Sensor (S31)
21. Fold Rollers x2
22. Clamp Rollers x2
23. Stack Junction Gate
24. Stack Transport Roller



1

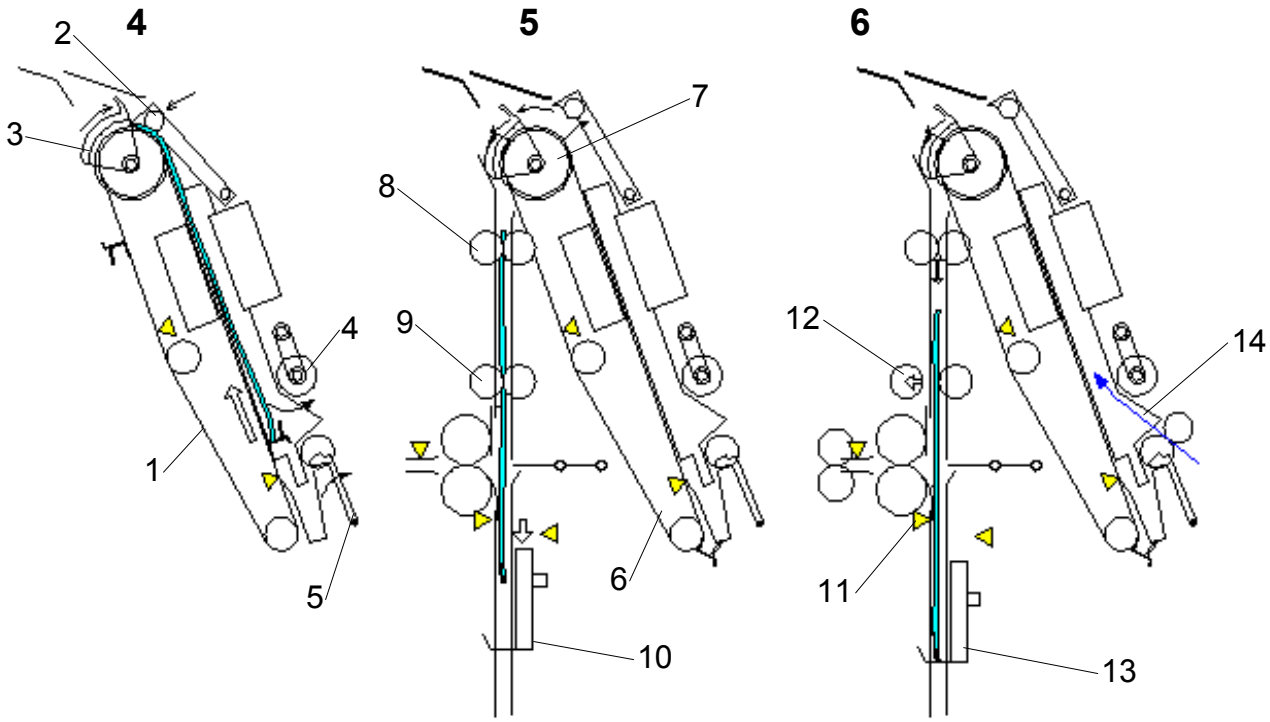
The last sheet of the stack [1] enters the stapling tray. The jogger fences [2] jog the last sheet into position (based on the width of the selected paper size) and then retract and stop 1 mm away from the sides of the stack.

2

The pressure plate [3] and booklet pressure roller [4] press down on the sheet. The stack feed out belt switches on and the pawl [5] on the feed out belt catches the bottom of the stack and raises it. The stapling tray sensor [6] detects the trailing edge of the paper stack.

3

The feed out belt [7] raises the stack to the prescribed stapling position and stops. The jogger fences move to the sides of the stack and the booklet staplers [8] staple the stack.



4

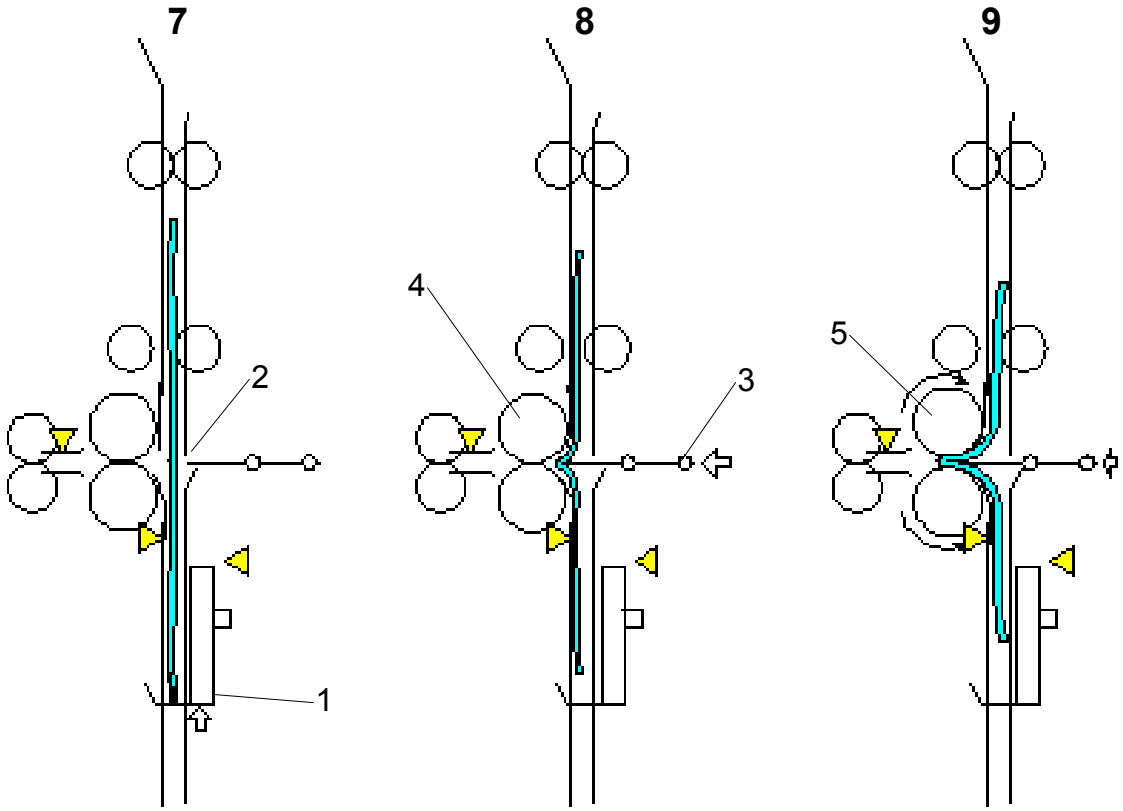
The jogger fences remain 1 mm away from the sides of the stack. The feed out belt [1] raises the stack until the top of the stack is 10 mm past the leading edge pressure roller [2] and stops. The leading edge pressure roller descends and applies pressure to the top of the stack. The stack junction gate [3] (normally open) closes. The pressure roller [4] and pressure plate [5] retract.

5

The feed out belt [6], transport rollers [7], [8], and clamp rollers [9] rotate and feed the stack past the closed stack junction, over the top and down toward the bottom fence [10]. At the same time, the fold unit bottom fence descends from its home position and stops 10 mm below the fold position.

6

The rollers feed the leading edge of the stack to within 3 mm of the stack stopper of the bottom fence [13]. The fold unit entrance sensor [11] detects the stack and opens the clamp rollers [12]. The stack drops 3 mm onto the fold unit bottom fence [13]. At this time, the first sheet [14] of the next stack feeds to the stapling tray.



7

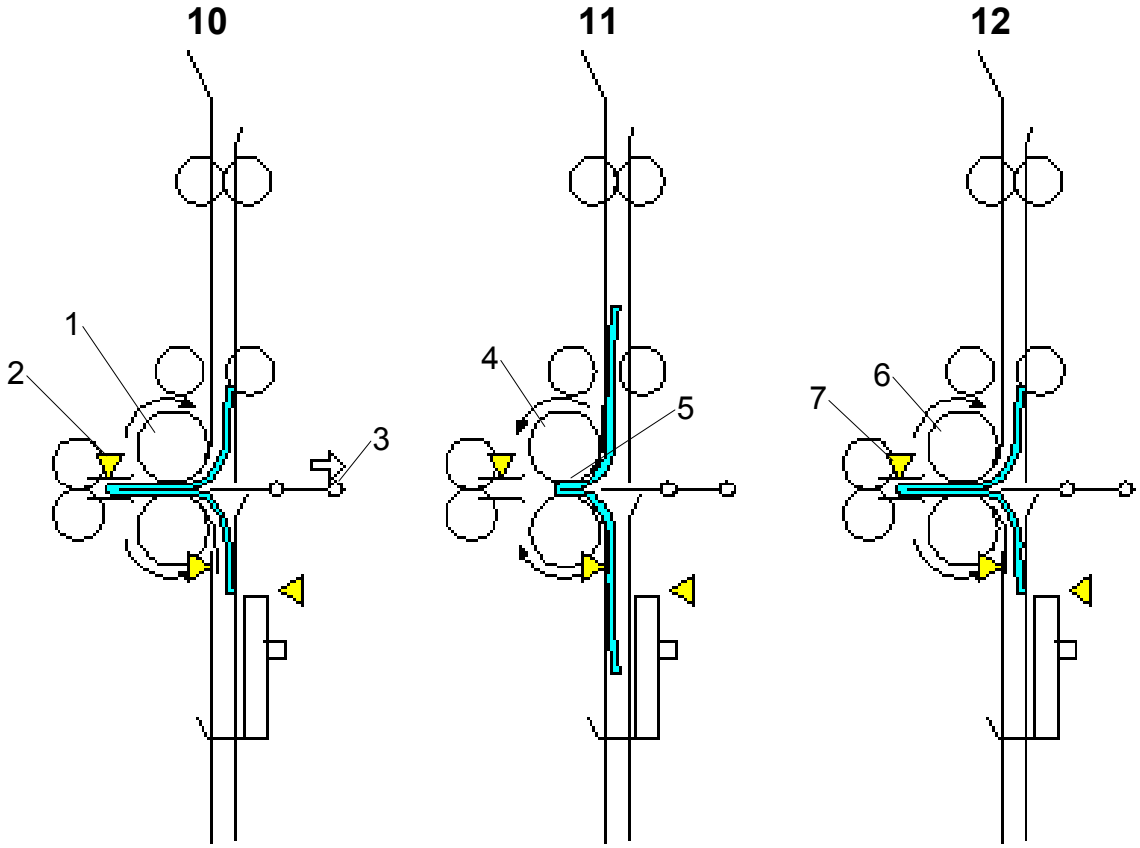
The bottom fence [1] raises the stack to the prescribed fold position [2].

8

The fold plate [3] moves to the left and advances 1/3 its maximum horizontal stroke and exerts 20 kg (44 lb.) of pressure at the fold rollers [4].

9

With the fold plate pushing the stack into nip of the fold rollers [5], the fold rollers begin to rotate and fold the stack as it feeds out.



10

When the fold rollers [1] feed the stack 10 mm past the nip, the fold plate retracts until it no longer touches the stack. The fold unit exit sensor [2] detects the folded edge of the stack and stops the fold rollers.

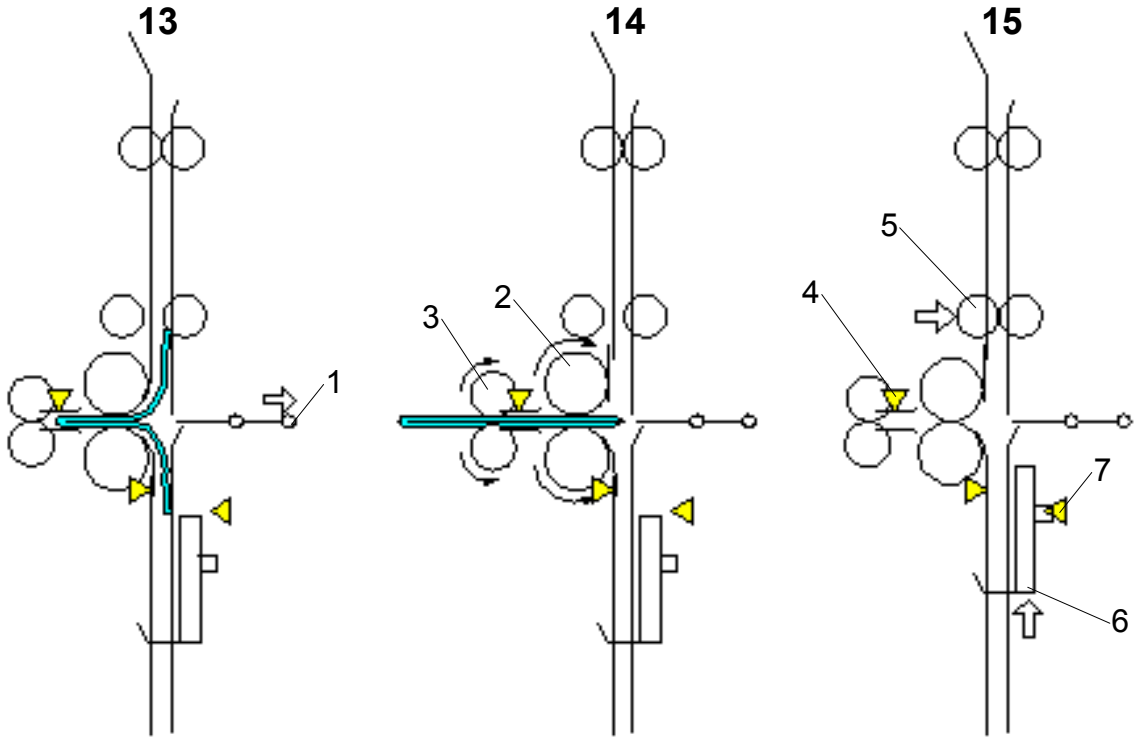
11

The rotation of the fold rollers [4] reverses and feeds the folded edge back until only 3 mm of the fold [5] remains at the nip.

12

The fold rollers [6] rotate forward once again feed out. The fold unit exit sensor [7] once again detects the edge of the fold.

NOTE: You can do **SP6114** to increase the sharpness of the fold. The number of forward and reverse feeds can be set in the range of 2 to 30. The machine repeats Steps **11** and **12.** For more, please refer to Section "5 Service Tables*.



13

With the feed of the stack halted, the fold plate [1] retracts. The fold plate HP sensor (not shown) detects the fold plate and stops it at its home position.

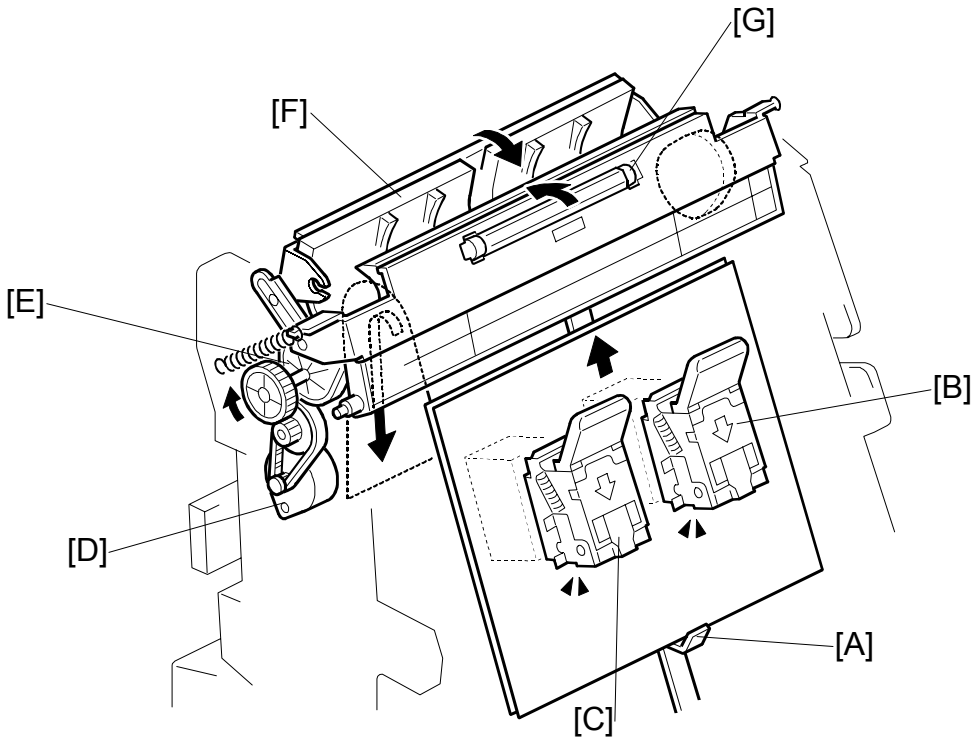
14

The fold rollers [2] and fold unit exit rollers [3] begin to rotate together and feed out the folded booklet to the lower tray.

15

Once the trailing edge of the stack passes the fold unit exit sensor [4], the clamp rollers [5] close to be ready to feed the next stack. The fold unit bottom fence [6] descends. The bottom fence HP sensor [7] stops the bottom fence when it detects the actuator on the bottom fence.

Booklet Stapling and Folding Mechanisms

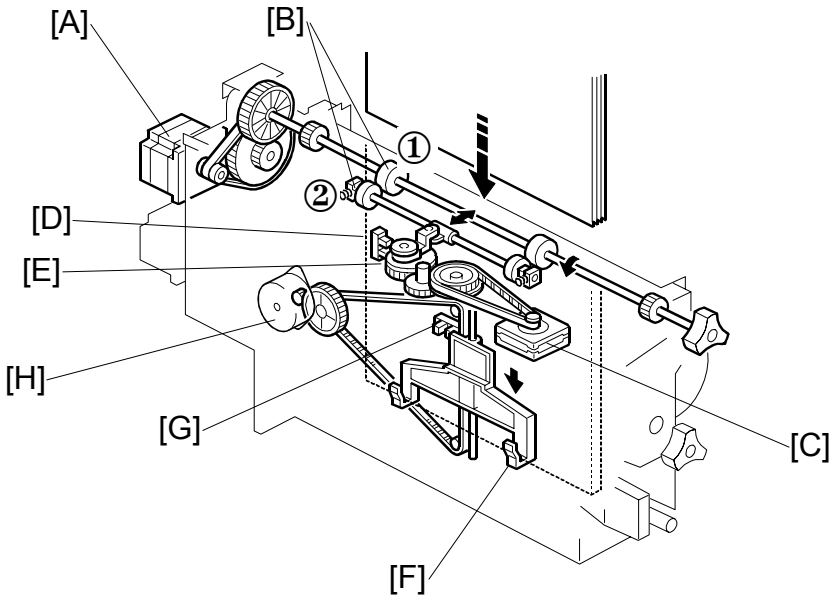


Booklet Stapler

[A]: Feed Out Belt Pawl. Raises the stack to stapling position.
[B]: Booklet Stapler EH185R – Rear
[C]: Booklet Stapler EH185R – Front

Stack Junction Gate

[D]: Stack Junction Gate Motor. Drives a timing belt and stack junction gate cam.
[E]: Stack Junction Gate Cam. Opens and closes the stack junction gate.
[F]: Stack Junction Gate. The stack junction gate motor and stack junction gate cam close the stack junction gate. The feed out belt pawl raises the stapled stack and sends it over the top and down to the fold unit.
[G]: Leading Edge Pressure Roller. Presses down on the leading edge of the stack after booklet stapling.



Clamp Roller

[A]: Fold Roller Motor. Drives the stationary clamp drive roller ① as well as the fold rollers (see next page).

[B]: Clamp Rollers.

① Clamp Roller – Drive. Rotated by the fold roller motor, this stationary roller feeds the stack down with the retracting roller closed.

② Clamp Roller – Retracting. Opened and closed by the retraction motor [C].

[C]: Clamp Roller Retraction Motor. Operates the clamp roller cam that retracts the retracting clamp roller. The clamp rollers feed the stack to within 3 mm of the bottom fence when closed and then open to drop the stack onto the bottom fence.

[D]: Clamp Roller HP Sensor. Controls the rotation of the clamp roller retraction motor and cam that open and close the retracting clamp roller.

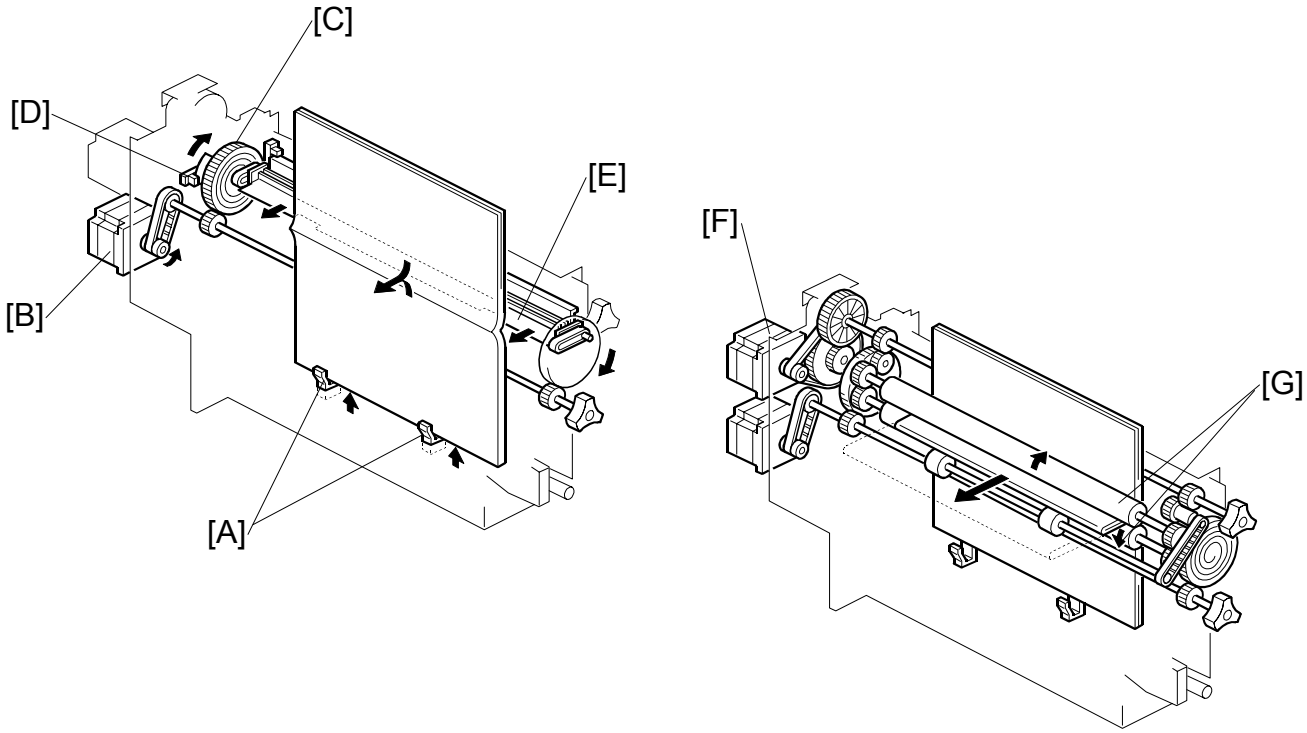
[E]: Clamp Roller Cam. Forces open the spring loaded retracting clamp roller.

Bottom Fence

[F]: Bottom Fence. Raises the booklet stapled stack to the fold position.

[G]: Bottom Fence HP Sensor. Detects the actuator on the bottom fence and stops it at the home position after folding.

[H]: Bottom Fence Lift Motor. Raises the bottom fence and stapled stack to the fold position prescribed for the paper size.



Fold Plate

[A]: Bottom Fence Stack Stoppers. Catches the stack after it is released by the clamp rollers.

[B]: Fold Plate Motor. Drives the timing belt and gears that move the fold plate.

[C]: Fold Plate Cam. Controls the movement of the fold plate to the left (into the nip of the fold rollers) and right (toward the fold plate home position).

[D]: Fold Plate HP Sensor. Controls operation of the fold plate motor.

[E]: Fold Plate. Moves left and pushes the stack into the nip of the fold rollers and then moves right to retract.

Fold Rollers

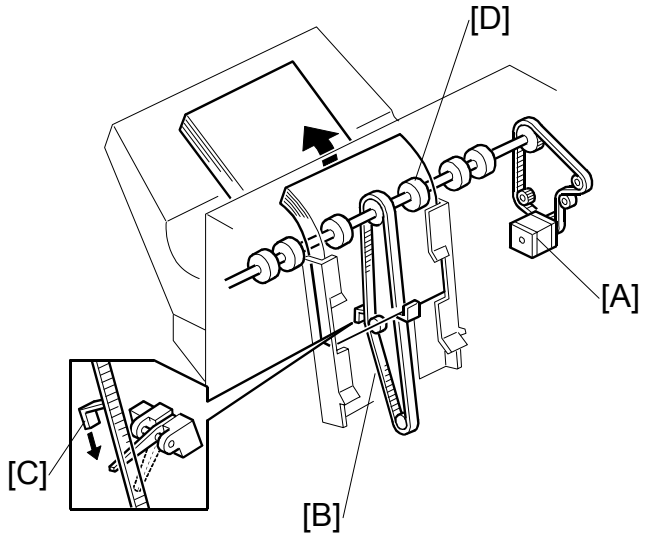
[F]: Fold Roller Motor. Drives forward to feed out the stack at the fold and then reverses to feed the fold in to sharpen the crease, and then drives forward again to feed out the folded stack. This reverse/forward cycle is done once.

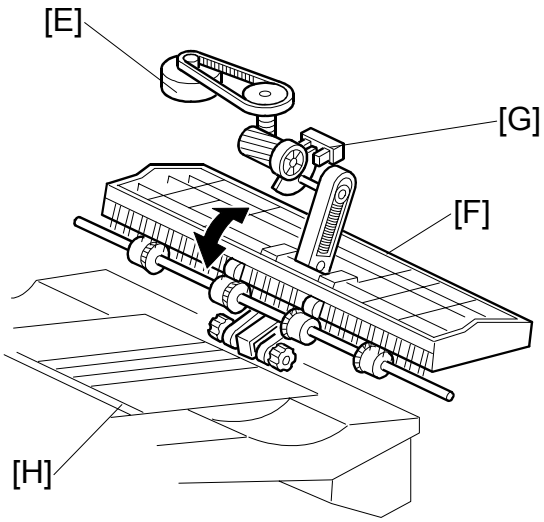
NOTE: This cycle can be repeated by changing the setting of **SP6114.**

[G]: Fold Rollers. Driven by the fold roller motor, this roller pair feeds out the stack at its fold, reverses to feed in the stack to, and then feeds forward again (assisted by the fold unit exit rollers – not shown) to feed out the stack to the lower tray.

2.10 UPPER TRAY OUTPUT

2.10.1 FEED OUT





[A]: Feed Out Belt Motor
[B]: Stack Feed-Out Belt
[C]: Pawl
[D]: Exit Rollers
[E]: Exit Guide Plate Motor
[F]: Exit Guide Plate
[G]: Exit Guide Plate HP Sensor
[H]: Upper Tray

After the stack is stapled, the feed out belt motor [A] switches on and drives the feed out belt [B].

The a pawl [C] attached to the feed out belt catches on the stack and lifts the stack toward the feed out slot.

The exit guide plate [F] remains open as the stack emerges at a prescribed distance away from the exit roller.

Next, the exit guide plate closes and the exit roller feeds the stack out.

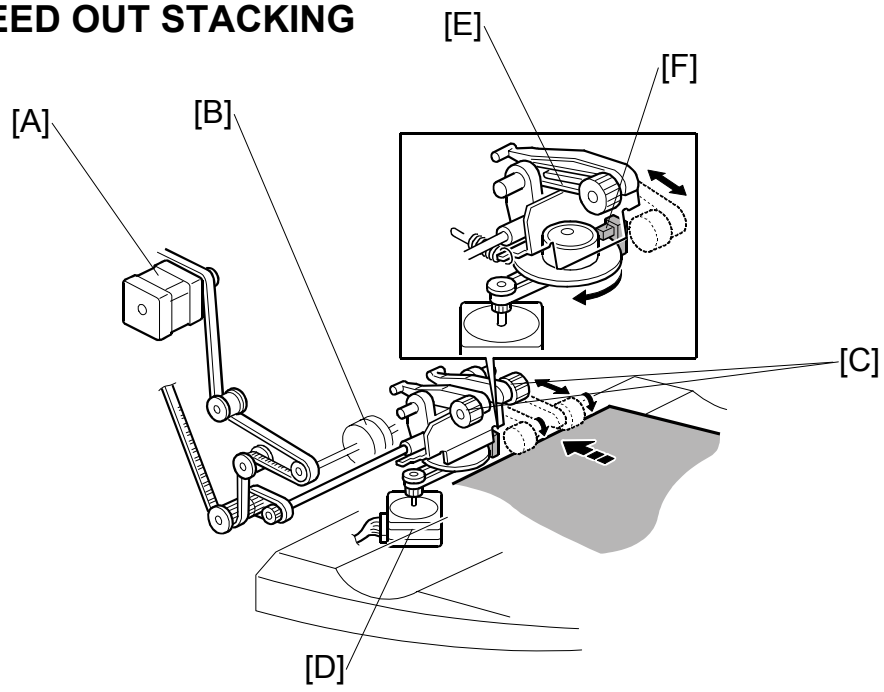
The opening and closing of the exit guide plate is controlled by the rising and falling of a link driven by a rotating cam attached to the shaft of the exit guide plate motor [E].

The feed out belt motor stops 300 ms to prevent the stapled stack from rising too high.

Next, the feed out belt motor switches on again, then the pawl actuates its home position sensor and switches off the motor.

There are two output pawls on the feed out belt to improve the productivity of the feed out operation.

2.10.2 FEED OUT STACKING



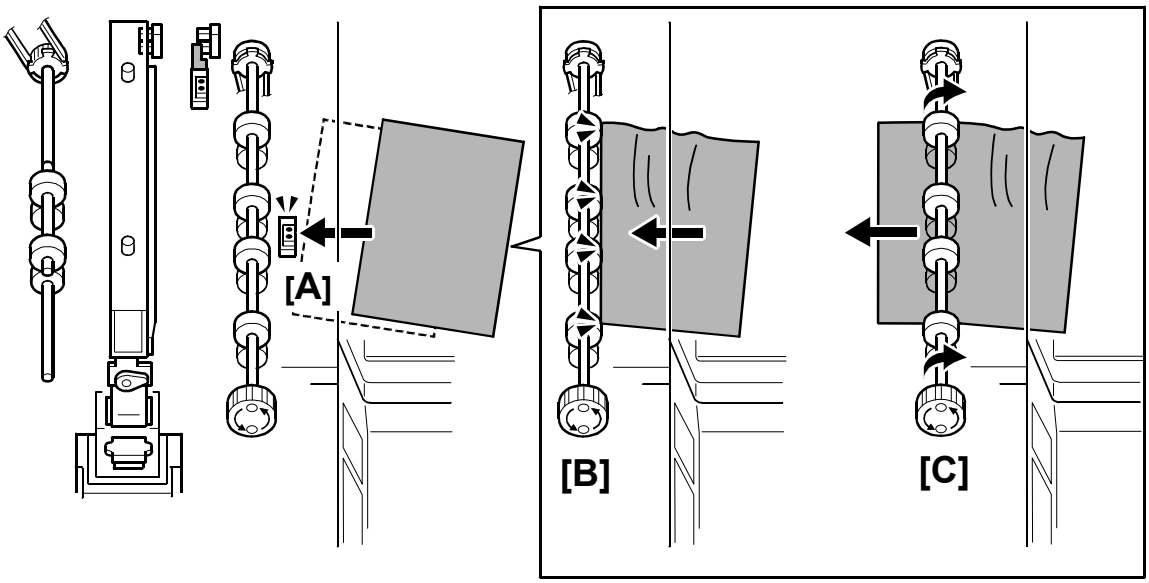
Upper/proof exit motor [A] drives feed roller [B] and stacking sponge roller [C].

Stacking sponge roller motor [D] moves the sponge roller forward and back with link [E].

The position of the stacking sponge roller [C] is controlled by the stacking sponge roller motor which is switched on and off by the stacking roller HP sensor [F].

2.11 PUNCH UNIT B702 (FOR B700/B701)

2.11.1 OVERVIEW OF OPERATION



Skew Correction Before Punching

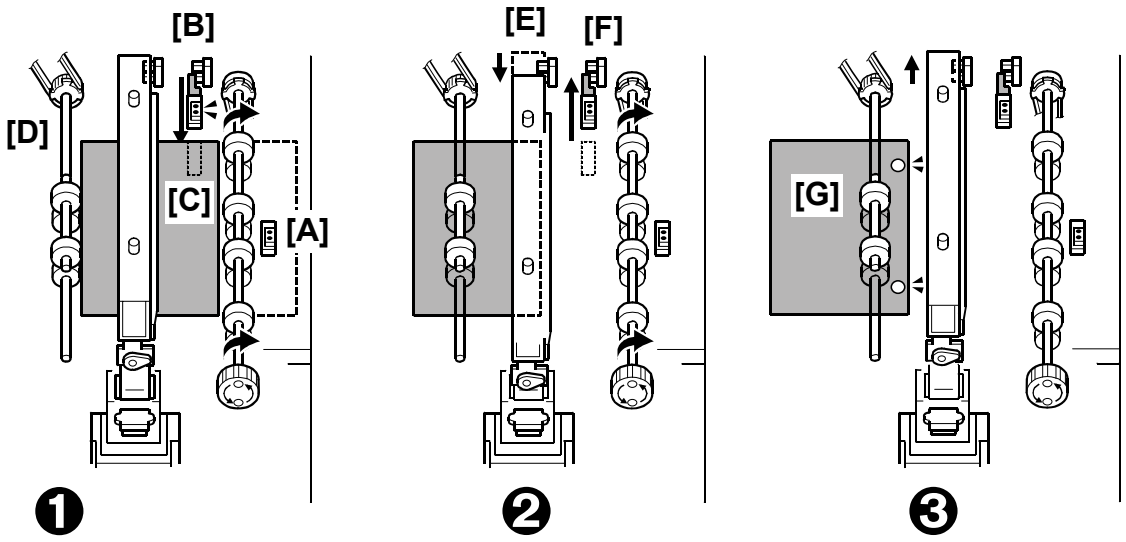
This punch unit corrects for paper skew and then positions the punch unit to punch holes at the correct position. Each sheet is punched one at a time.

Paper feeds out of the copier. The finisher entrance sensor [A] detects the leading edge of the sheet.

The finisher entrance roller [B] stops rotating briefly while the copier exit rollers continue to rotate. This buckles the paper against the finisher entrance roller to correct skew. The finisher entrance roller [C] starts to rotate again and feeds the sheet into the finisher.

These SP codes adjust the skew operation in the punch unit:

- **SP6103**. This SP corrects the punch hole alignment. To do this, it corrects the skew of each sheet by adjusting the amount of time the finisher entrance roller remains off while the exit roller of the machine remains on. For more, see Section "5. Service Tables".
- **SP6104**. This SP determines whether the finisher entrance roller stops to correct skew when paper enters the finisher. You can use this SP to disable the skew correction. For more, see Section "5. Service Tables".



Punch Unit Position Correction

These operations (skew correction before punching, and punch unit position correction) increase the accuracy of the punch alignment.

❶ The trailing edge of the sheet passes the finisher entrance sensor [A].

The paper position slide unit [B] moves the paper position sensor [C] forward to the edge of the paper.

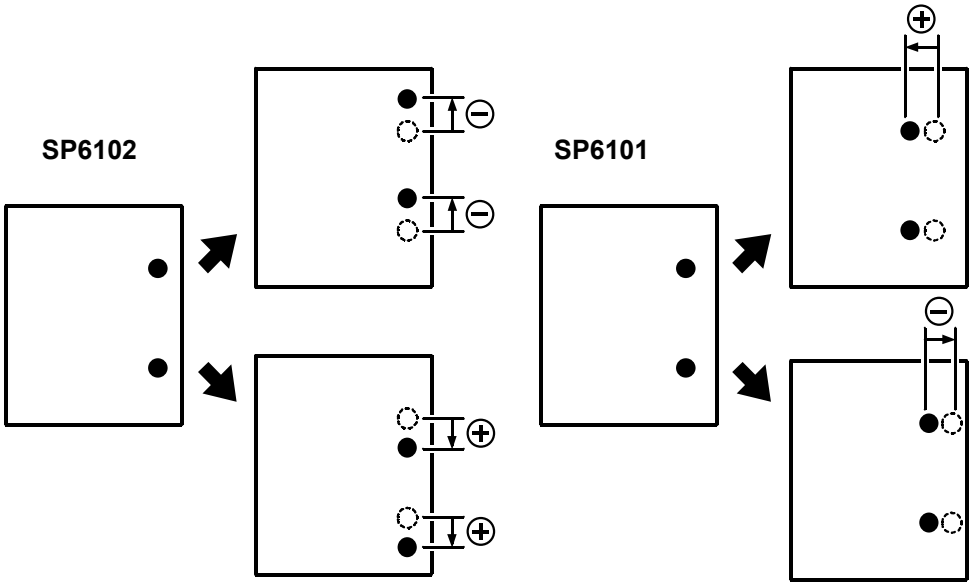
The paper position sensor detects the position of the paper edge and sends this information to the punch unit board. The machine uses the detected position of the paper edge to calculate the correct position for punching.

The upper transport motor switches on and rotates the feed rollers [D] the prescribed distance to position the paper under the punch unit.

❷ Using the result of the position calculation, the punch unit control board moves the punch unit [E] to the adjusted punch position.

The paper position slide unit and its paper sensor, move back to the paper position slide home position sensor [F], and the punch unit fires the punches to make the holes.

❸ The feed rollers [G] feed the punched paper out of the punch unit and into the paper path.



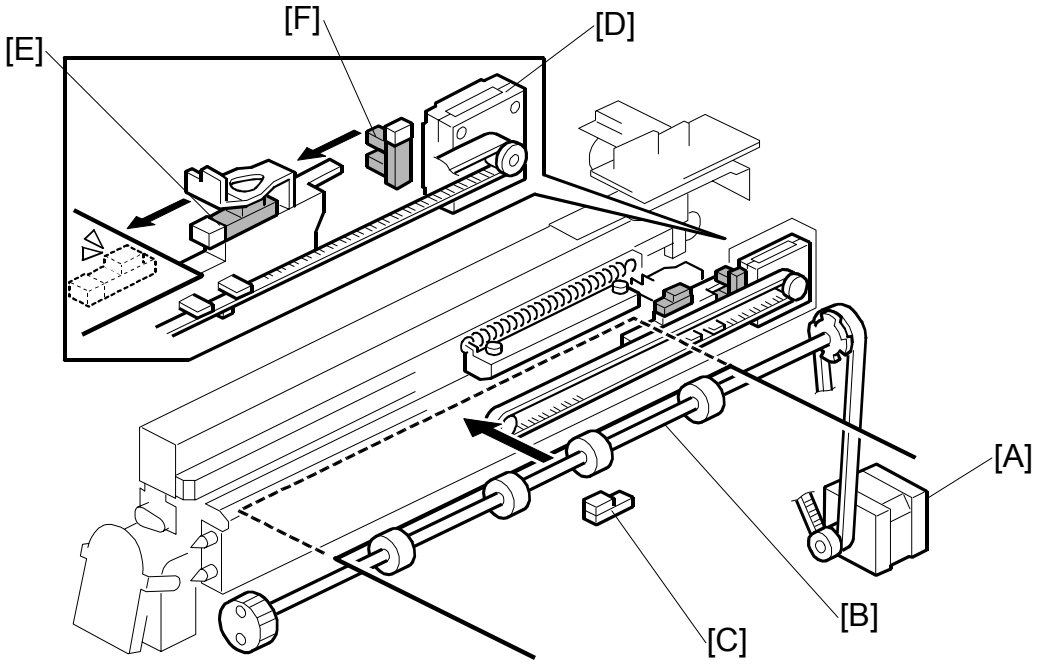
These SP codes adjust the punch hole alignment:

- **SP6101** Adjusts the punch positions in the direction of paper feed.
- **SP6102** Adjusts the punch position perpendicular to the direction of feed.

For more, see Section "5. Service Tables".

2.11.2 PUNCH MECHANISMS

Paper Position Detection



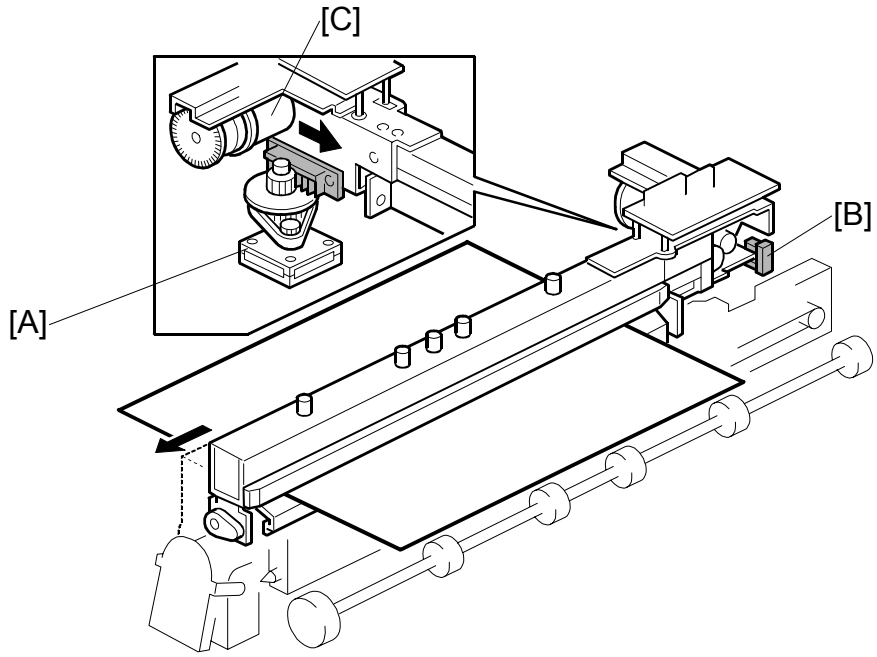
[A]: Finisher Entrance Motor (M1)
[B]: Finisher Entrance Roller
[C]: Finisher Entrance Sensor (S1)
[D]: Paper Position Sensor Slide Motor (M7)
[E]: Paper Position Sensor (S27)
[F]: Paper Position Sensor Slide HP Sensor (S22)

The finisher entrance motor (M1) [A] drives the finisher entrance rollers [B] that feed paper from the copier into the finisher. The finisher entrance sensor (S1) [C] detects paper when it enters the finisher, and detects paper jams.

The paper position slide sensor motor (M7) [D] extends and retracts the paper position slide that holds the paper position sensor (S27) [E]. The paper position sensor detects the position of the paper edge. The detected position of the paper is used to calculate and position the punch unit for punching.

The paper position slide HP sensor (S22) [F] detects the paper position slide when it retracts and stops the paper position slide motor so the slide stops at its home position.

Punch Unit Movement



[A]: Punch Movement Motor (M9)
[B]: Punch Movement HP Sensor (S21)
[C]: Punch Drive Motor (M24)

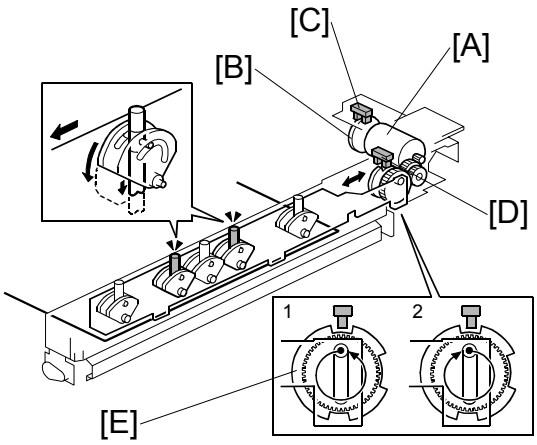
The punch movement motor (M9) [A] extends and retracts the punch unit to position it at the correct position for punching.

The punch movement HP sensor (S21) [B] detects the position when it retracts, switches off the punch position movement motor, and stops the punch unit at its home position.

The punch drive motor (M24) [C] fires the punches that punch holes in the paper below.

Punch Selection and Firing

[A]: Punch Drive Motor (M24)
[B]: Punch Encoder Wheel
[C]: Punch Encoder Sensor (S24)
[D]: Punch HP Sensor (S23)

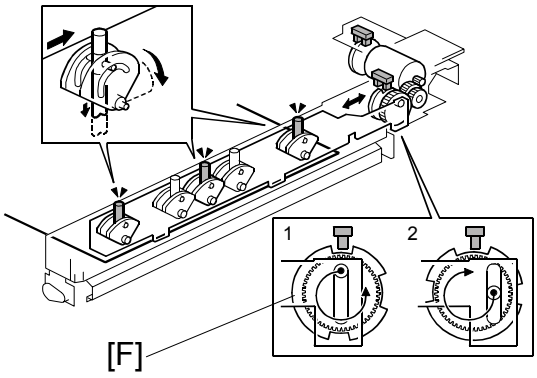


The punch drive motor (M24) [A] turns the small, notched encoder wheel [B] through the gap in the punch encoder sensor [C] (S24). The sensor output is used to control the punch timing.

The timing for 2-hole punching [E] is different from 3-hole punching [F].

When the punch unit is at the punching position, the punch motor turns until the encoder detects the starting position for 2-hole or 3-hole punching.

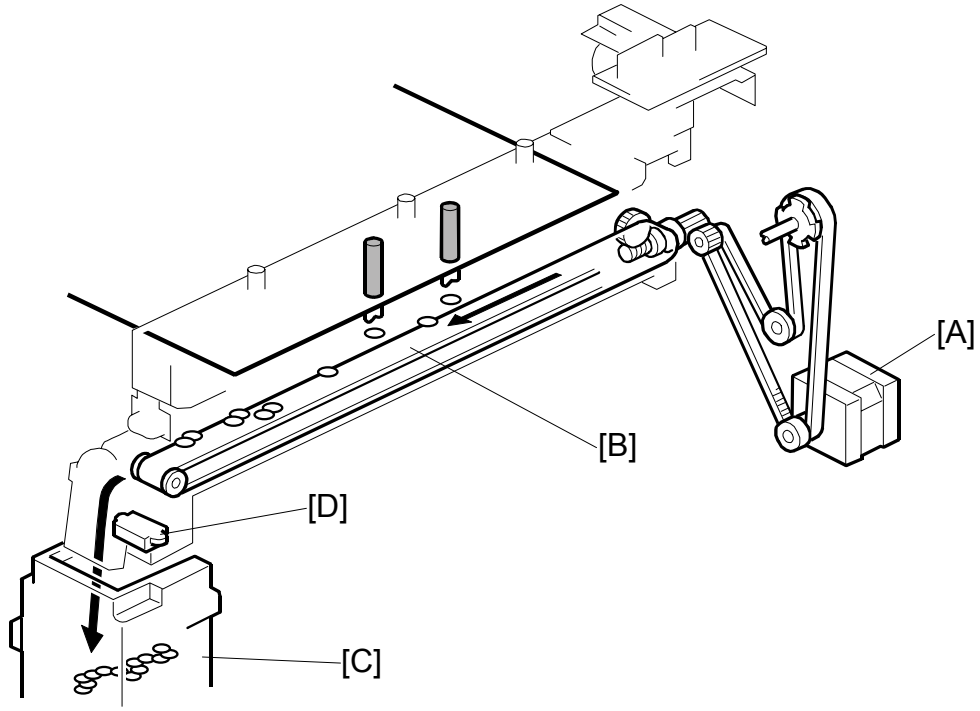
- This is the '1' position in the diagrams (the top diagram is for 2-hole punching, and the bottom diagram is for 3-hole punching).



Then, the punch drive motor turns counter-clockwise to the '2' position. This movement punches the holes in the paper.

Then, the punch drive motor turns clockwise to the '1' position, to be ready for the next sheet of paper.

2.11.3 PUNCH HOPPER MECHANISM



[A]: Finisher Entrance Motor (M1)
[B]: Punch Waste Belt
[C]: Punch Waste Hopper
[D]: Punch Hopper Full Sensor (S4)

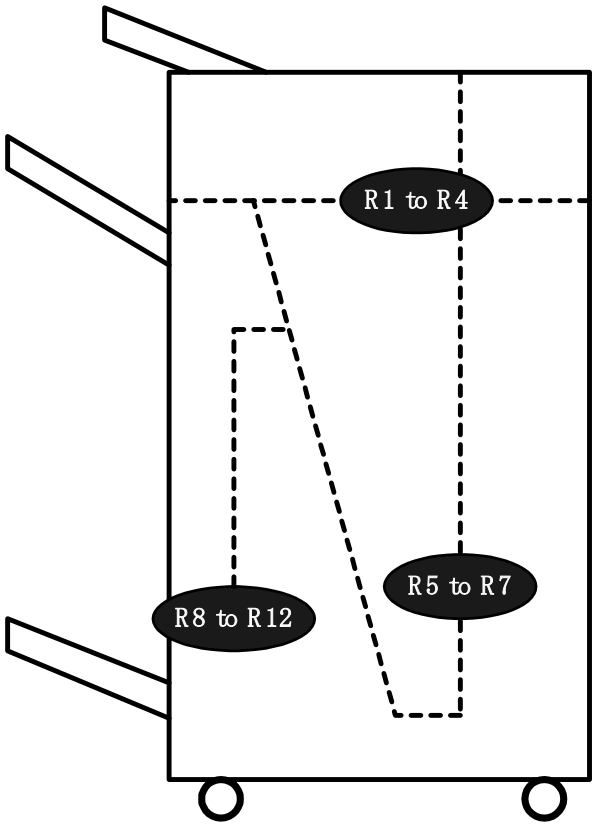
The finisher entrance motor (M1) [A] drives the timing belt and gears that rotate the punch waste belt [B].

The punchouts fall from the punch unit onto the belt. The belt moves the punchouts to the front and dumps them in the punch waste hopper [C].

The punch hopper full sensor [D]:

- Signals that the hopper is full when it detects the top of the stack of punchouts that have collected in the hopper.
- It also detects when the punch hopper is set properly.

2.12 FINISHER JAM DETECTION



Display	Mode	Jam	What It Means
R1 to R3	Proof Shift Staple	Finisher entrance sensor late	After main machine exit sensor goes OFF, finisher entrance sensor does not go ON even after enough time to feed 450 mm.
		Finisher entrance sensor lag	After finisher entrance sensor goes ON, it does not go OFF after enough time to feed a sheet 1.5 times its length has elapsed.
R3	Proof	Proof exit sensor late	After finisher entrance sensor goes ON, proof exit sensor does not go ON even after enough time to feed 450 mm.
		Proof exit sensor lag	After finisher entrance sensor goes OFF, proof exit sensor does not go OFF even after enough time to feed 450 mm.
R4	Shift	Upper tray exit sensor late	After finisher entrance sensor goes ON, upper tray exit sensor does not go ON even after enough time to feed 485 mm.
		Upper tray exit sensor lag	After finisher entrance sensor goes OFF, upper tray exit sensor does not go OFF even after enough time to feed 650 mm.

FINISHER JAM DETECTION

Display	Mode	Jam	What It Means
R5 to R7	Staple	Pre-stack tray exit sensor lag	After finisher entrance sensor goes ON, pre-stack tray exit sensor does not go ON even after enough time to feed 650 mm.
		Pre-stack tray exit sensor late	After finisher entrance sensor goes ON, pre-stack tray exit sensor does not go OFF even after enough time to feed 1650 mm.
R8 to R12	Booklet Staple (B700 Only)	Fold unit entrance sensor late (S26)	The fold unit entrance sensor goes not go ON after enough time has elapsed to feed 1.5 times the length of the stack after the leading edge of the stack reaches the stack present sensor (S32).
		Fold unit exit sensor late (S31)	The fold unit exit sensor does not go ON after enough time has elapsed for the stack to feed 1.5 times its length from the fold position.
		Fold unit exit sensor lag (S31)	After the fold unit exit sensor goes ON, it does not go OFF after enough time has elapsed to feed 442.9 mm.

FAX OPTION TYPE 7500
G3 INTERFACE UNIT TYPE 7500
B819/B820

REVISION HISTORY		
Page	**Date**	**Added/Updated/New**
31	10/05/2009	Error Code 31-21 added.
92	07/17/2007	Updated Information – Bit Switches G3 Switch 0F

Important Safety Notices

⚠CAUTION

1. Never install telephone wiring during a lightning storm.
2. Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
3. Never touch un-insulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
4. Use caution when installing or modifying telephone lines.
5. Avoid using a telephone (other than a cordless type) during an electrical storm. There may be remote risk of electric shock from lightning.
6. Do not use a telephone or cellular phone to report a gas leak in the vicinity of the leak.

⚠CAUTION

1. Before installing the fax unit, switch off the main switch, and disconnect the power cord.
2. The fax unit contains a lithium battery. The danger of explosion exists if a battery of this type is incorrectly replaced. Replace only with the same or an equivalent type recommended by the manufacturer. Discard batteries in accordance with the manufacturer's instructions and local regulations.

NOTE FOR AUSTRALIA

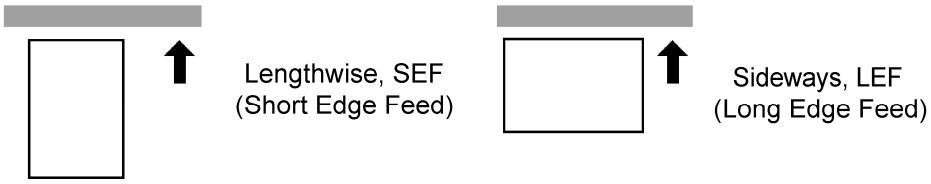
Unit must be connected to Telecommunication Network through a line cord which meets the requirements of ACA Technical Standard TS008.

Symbols and Abbreviations

Conventions Used in this Manual

This manual uses several symbols.

Symbol	What it means
☛	Refer to section number
	Screw
	Connector
	E-ring
	Clip ring
	Clamp



Cautions, Notes, etc.

The following headings provide special information:

⚠WARNING

Failure to obey warning information could result in serious injury or death.

⚠CAUTION

Obey these guidelines to ensure safe operation and prevent minor injuries.

NOTE:

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

B819/B820

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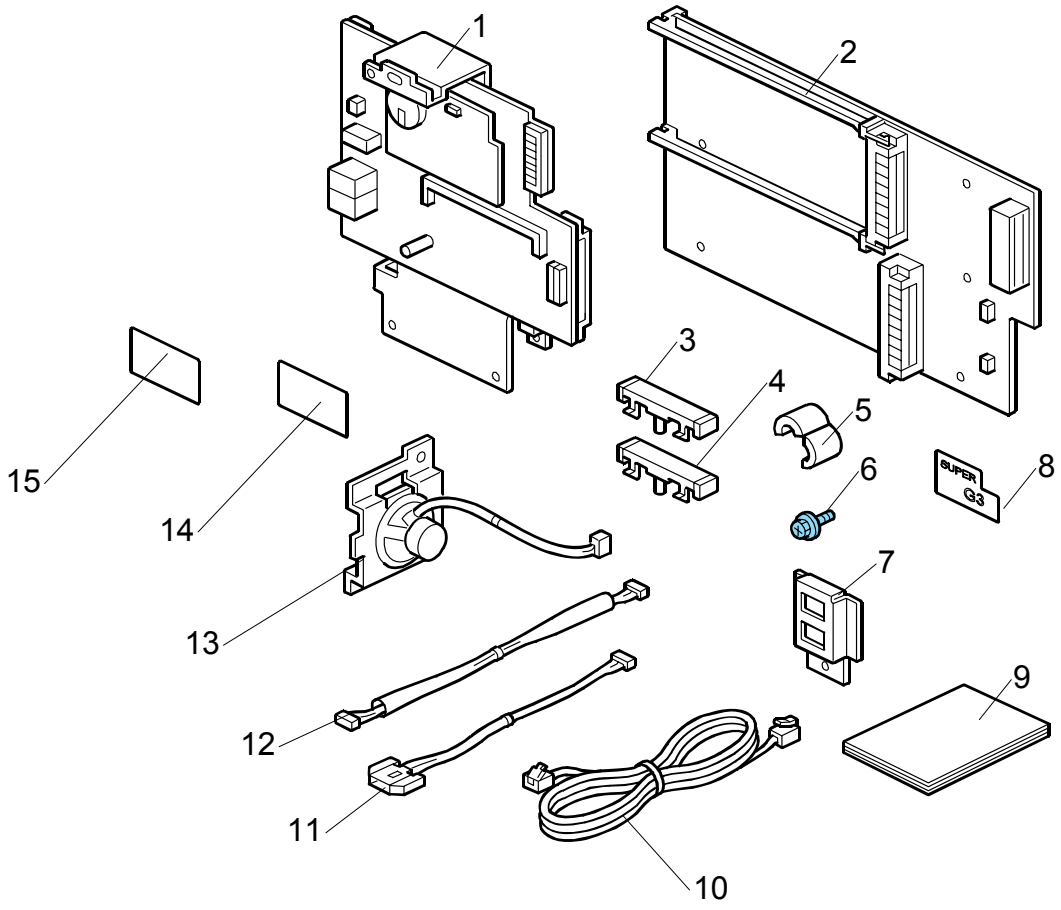
1. INSTALLATION

1.1 FAX OPTION TYPE 7500 (B819)

1.1.1 COMPONENT CHECK

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

No.	Description	Q'ty
1.	FCU	1
2.	Interface Board	1
3.	Keytop (NA)	1
4.	Keytops (Symbol)	1
5.	Ferrite Core	1
6.	Screws (Blue M3 x 6)	9
7.	Fax Connector Bracket	1
8.	Super G3 Decal	1
9.	Instructions	1
10.	Telephone Cable (NA only)	1
11.	FCU Power Harness	1
12.	FCU Power Relay Harness (insulated)	1
13.	Speaker	1
14.	FCC Decal (NA Only)	1
15.	Serial Number Decal	1



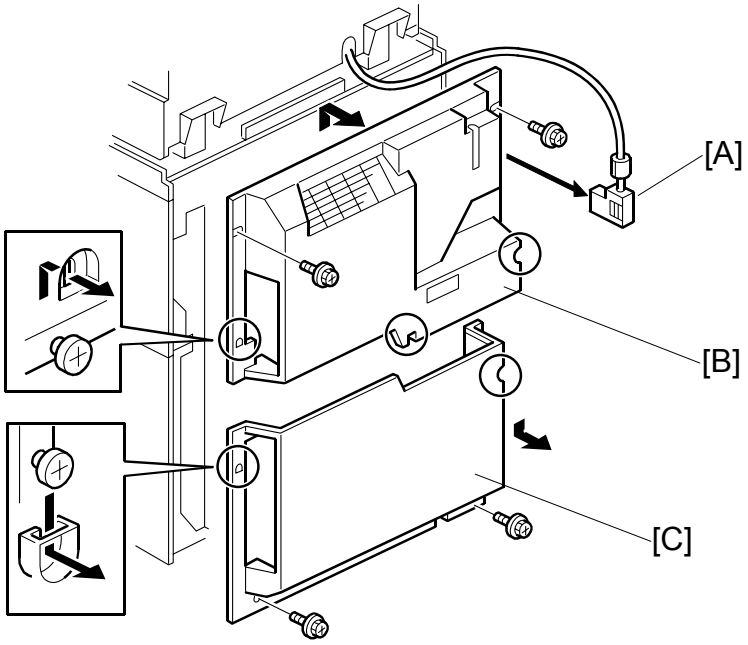
1.1.2 INSTALLATION PROCEDURE

FCU installation

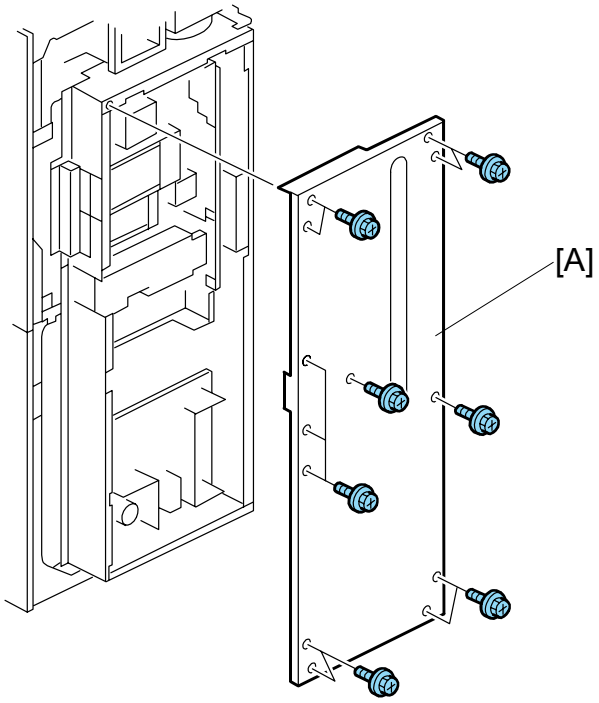
⚠CAUTION

Before installing this fax unit:

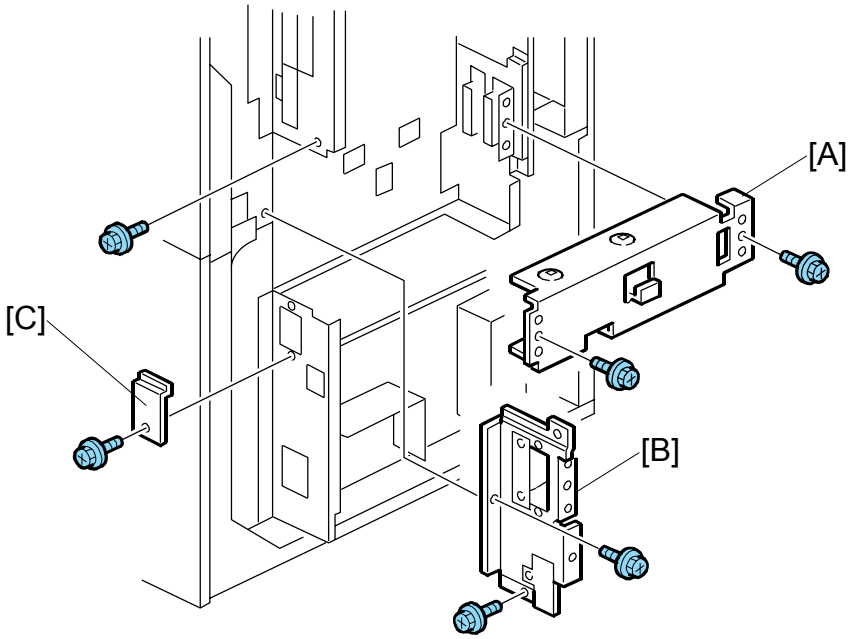
1) Print out all data in the printer buffer.
2) Turn off the main power switch and disconnect the power cord and the network cable.



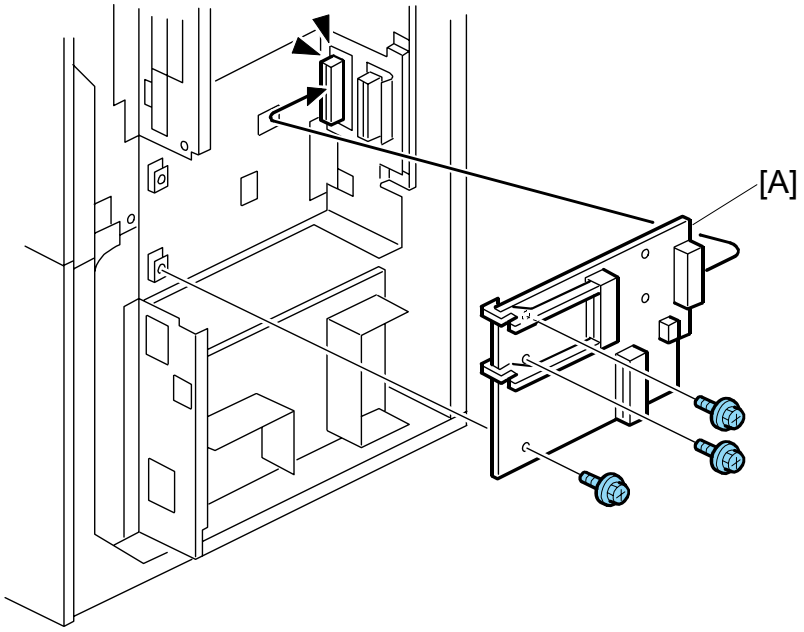
1. Disconnect the ADF connector [A].
2. Remove the rear upper cover [B] (🔩 x 2)
   - Slide down to remove.
   - When re-attaching, before tightening the screws make sure that the tabs on the cover are engaged with the shoulder screws.
3. Remove the rear lower cover [C] (🔩 x 2)
   - When re-attaching, before tightening the screws make sure that the tabs on the cover are engaged with the shoulder screws.



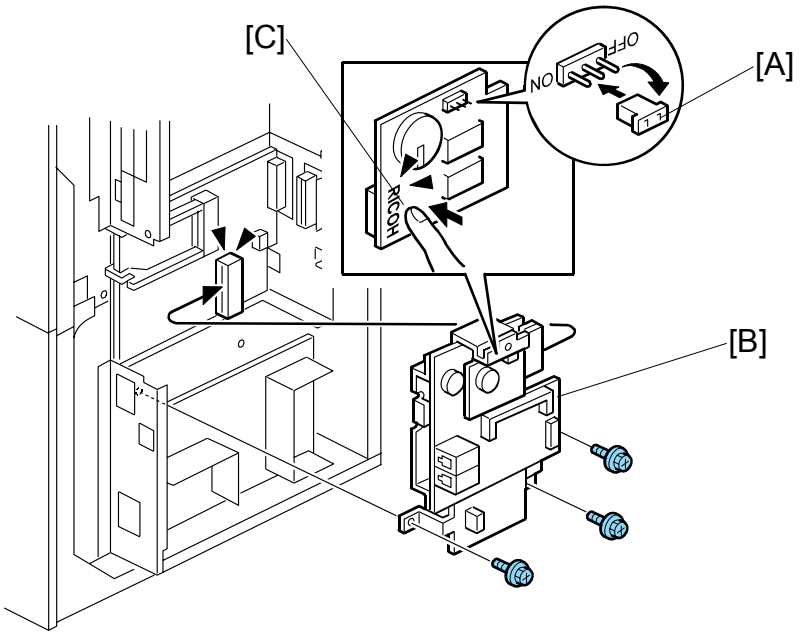
4. Remove the controller box cover [A] (☞ x13).



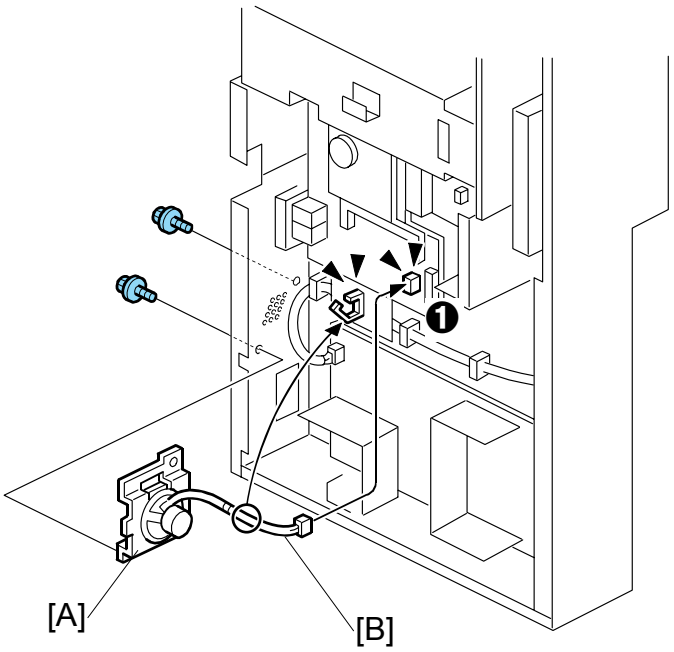
5. Remove the option board cover [A] (☞ x2).
6. Remove the option faceplate [C] (☞ x3).
7. Remove the cover plate [D] (☞ x1).



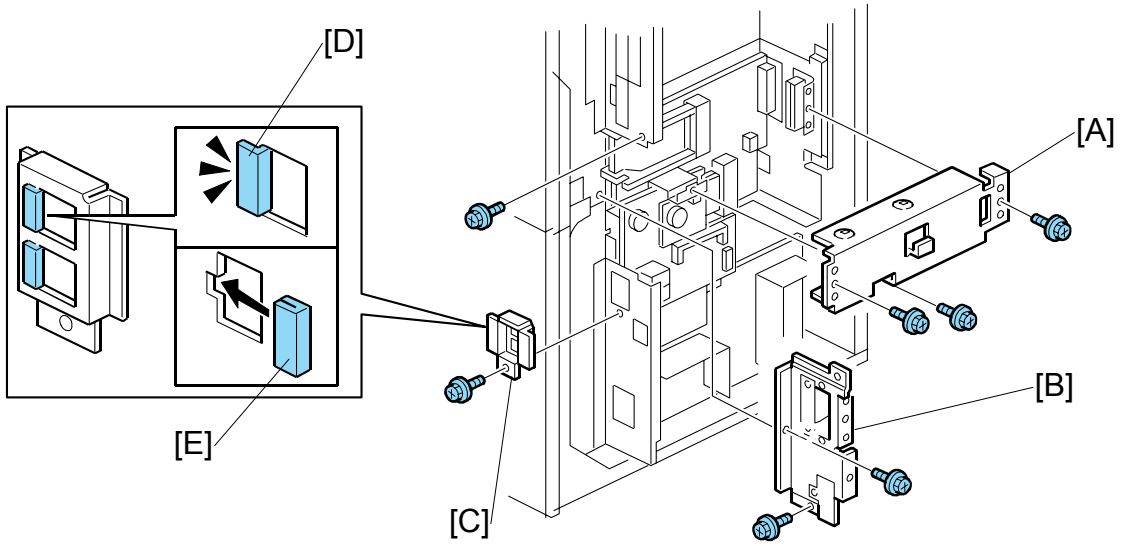
8. Attach the interface board [A] (☞ x3).



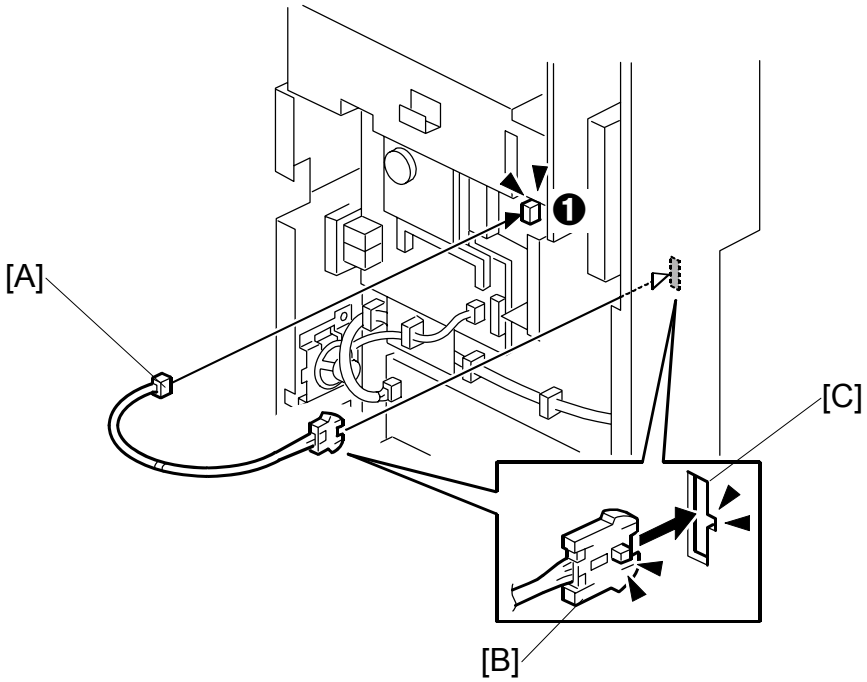
9. Remove the jumper [A] on the MBU and set it to the ON position.
   IMPORTANT: If the jumper remains at the OFF position this will cause SC672 (Controller Startup Error) to appear.
10. Attach the FCU [B] to the interface board (x4).
11. Press on the "RICOH" logo at [C] to confirm that the MBU is securely mounted on the FCU.



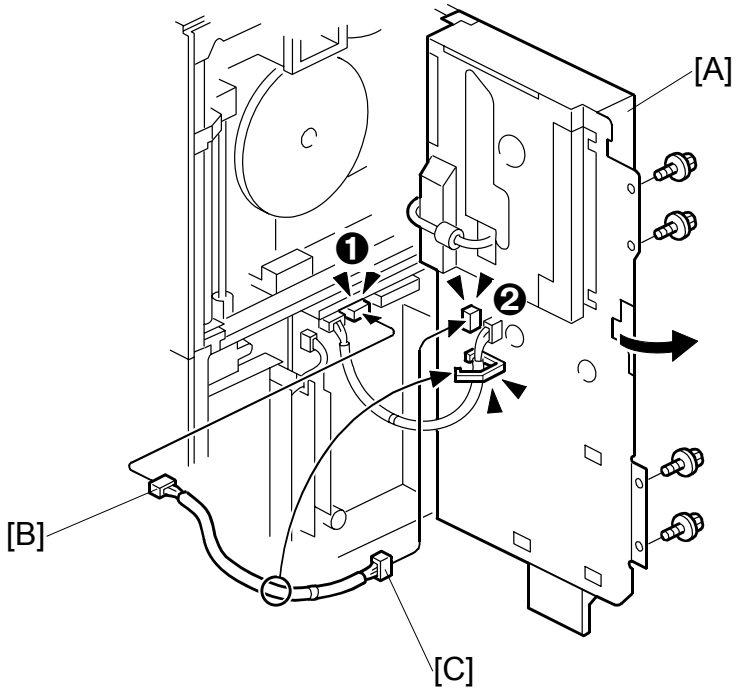
12. Attach the speaker [A] to the side of the controller box (x2).
13. Connect the speaker harness [B] to **CN605 ❶** on the FCU (x1, x2).



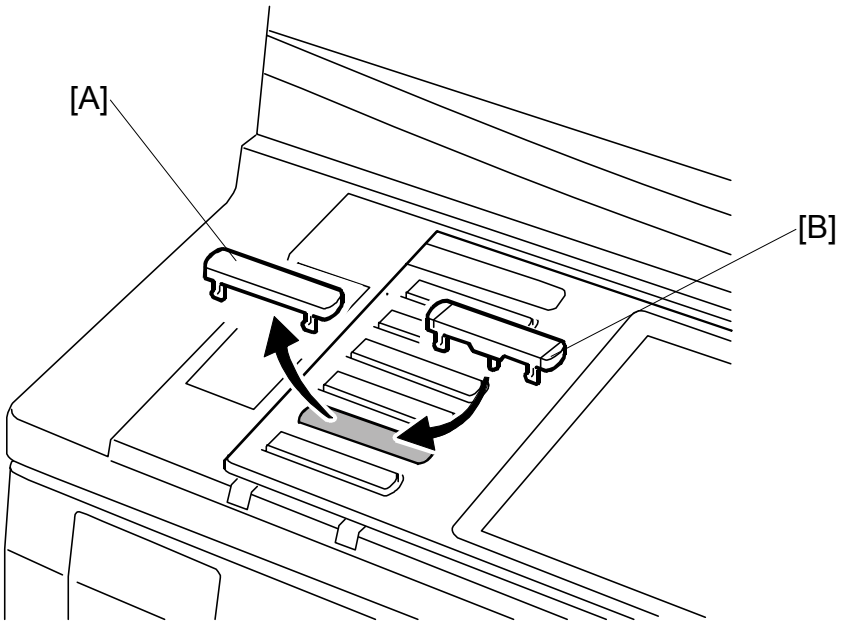
14. Reattach the option board cover [A] removed in Step 5 (x2).
15. Reattach the option faceplate [B] removed in Step 6 (x3).
16. Attach the fax connector bracket [C] (x1).
    NOTE: Make sure that the protective sleeves [D] and [E] are attached properly.



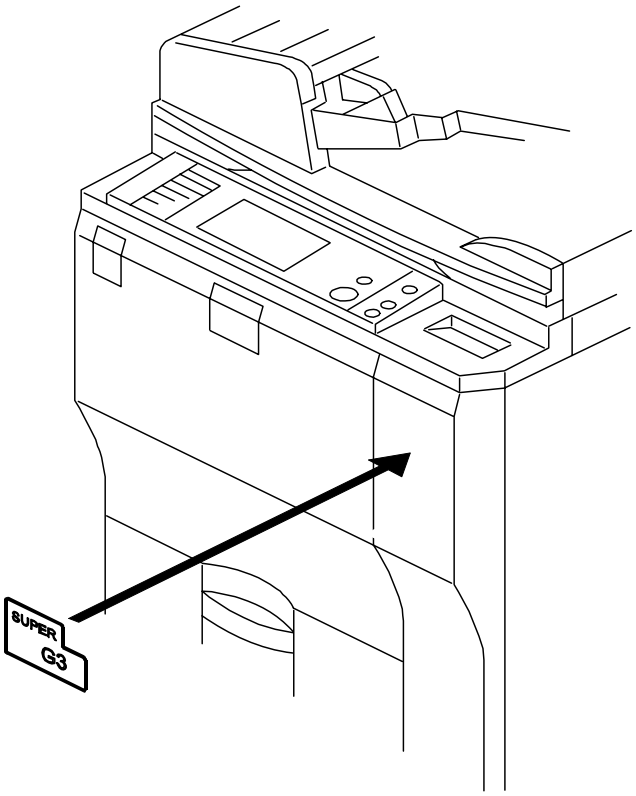
17. Connect the small end of the FCU power harness [A] to **CN323** ❶.
18. Set the large end of the harness [B] into the vertical cutout [C].



19. Remove the screws of the controller box [A] then open it (🔩 x4).
20. Connect one end of the FCU power relay harness [B] to **CN121** on the PSU ❶ (✋ x1).
21. Connect the other end of the FCU power relay harness [C] to the harness connector set in the vertical cutout at ❷ (the connector set in Step 18) (✋ x1, 🔩 x1).

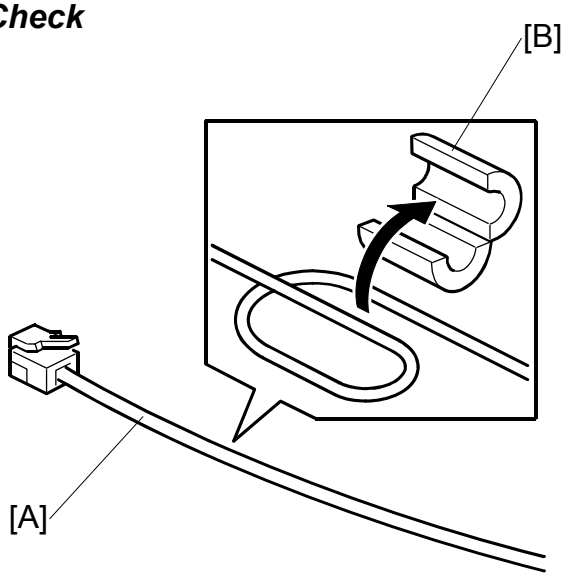


22. Remove the blank keytop [A] (5th from the top) and replace it with one of the keytops provided [B] (either the "Facsimile" keytop or the fax symbol keytop).

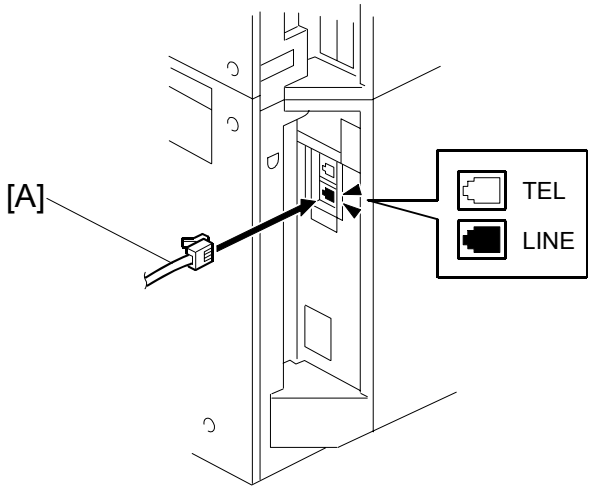


23. Attach the "Super G3" decal to the front door.
24. Attach the FCC and serial number decals to the rear cover of the machine.
    NOTE: The FCC decal is for the U.S. and Canada only.

Line Connection and Check



1. Loop one end of the telephone cable [A] once, then enclose it with the ferrite core [B] as shown.
   NOTE: Attach the ferrite core at least 9 cm (3.5 in.) from the connector.



2. Insert the end of the telephone cable [A] with the ferrite core into the "LINE" RJ-45 connector.
3. Reattach all covers and the ADF cable.
4. Connect the machine power cord to the power supply, then switch on the main power switch.

5. Go into the SP mode and confirm that the fax SP codes are enabled.
   - Push [Reset], enter "107", then hold down "Clear/Reset" for at least 3 sec.
   - At the initial screen, confirm that "Fax SP" is displayed. This indicates that the machine recognizes the fax unit.
6. Confirm that the date and time setting are correct.

   Push [User Tools] then touch "System Settings"> "Timer Settings"> "Set Date" and "Set Time".

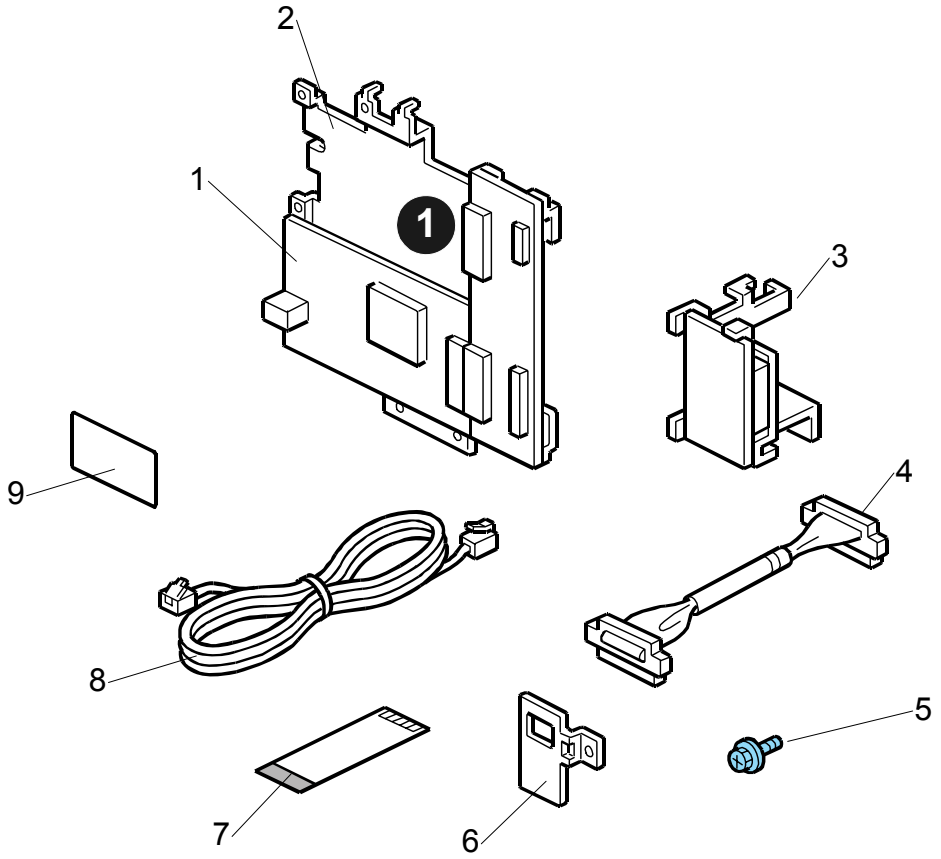
1.2 G3 INTERFACE UNIT TYPE 7500 (B820)

1.2.1 COMPONENT CHECK

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

No.	Description	Q'ty
1.	G3 Interface Board (attached)	
2.	G3 Interface Unit*1	1
3.	CCU Drive Board	1
4.	CCUIF Harness	1
5.	Screws (Blue M3 x 6)	5
6.	G3 Connector Bracket	1
7.	FFC (Flat Film Connector)	1
8.	Telephone Cable (NA Only)	1
9.	FCC Decal (NA Only)	1

***1** One additional G3 interface unit (ordered separately) can be mounted in the open slot of the G3 interface board.



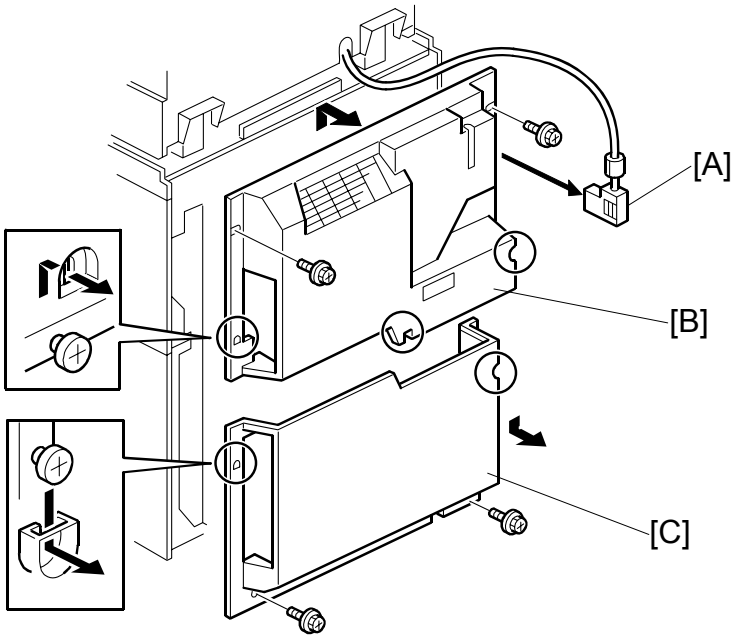
1.2.2 INSTALLATION PROCEDURE

G3 Board Installation

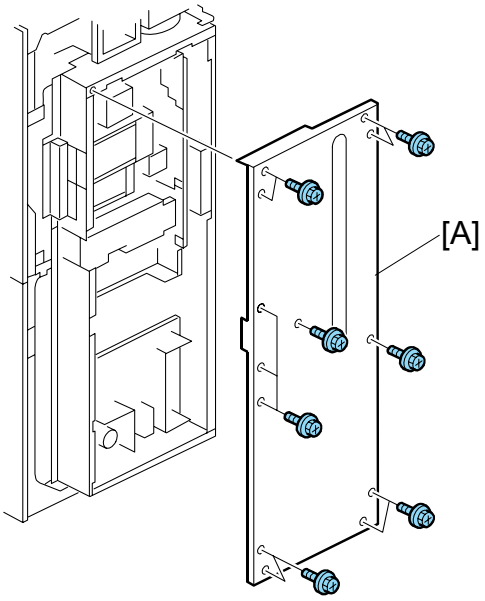
⚠CAUTION

Before installing this optional unit,

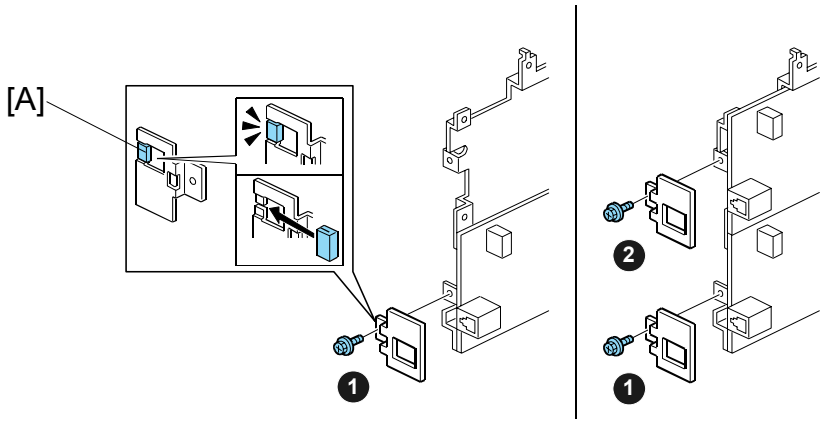
1) Print out all data in the printer buffer.
2) Turn off the main switch and disconnect the power cord and the network cable.



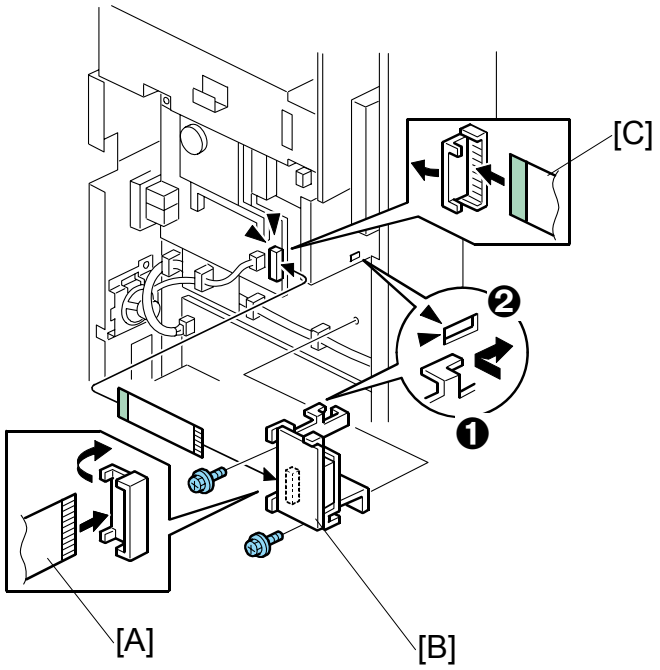
1. Disconnect the ADF connector [A].
2. Remove the rear upper cover [B] (🖉 x 2)
   - Slide down to remove.
   - When re-attaching, before tightening the screws make sure that the tabs on the cover are engaged with the shoulder screws.
3. Remove the rear lower cover [C] (🖉 x 2)
   - When re-attaching, before tightening the screws make sure that the tabs on the cover are engaged with the shoulder screws.



4. Remove the controller box cover [A] (x13).



5. If installing single-line G3, remove only one blind cover ❶.
   -or-
   If installing dual-line G3, remove two blind covers ❶ and ❷.
   NOTE: Make sure the protective sleeve [A] is attached properly.



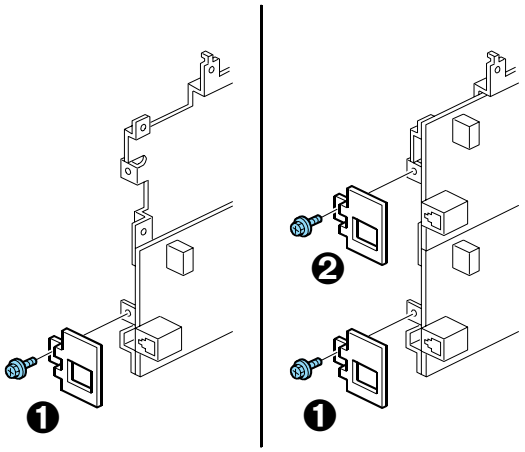
6. Connect the FFC [A] (Flat Film Connector) to the CCU drive board [B].

   IMPORTANT: Connect the FFC with the green, insulated side visible and the bare connector strip down so it touches the connector strip of the board.

7. Attach the CCU drive board [B] to the machine
   - Set the hook ❶ of the bracket into the slot ❷ in the frame.
   - Fasten the CCU drive board with the screws (x2).

8. Connect the other end of the FFC [C] to the FCU.

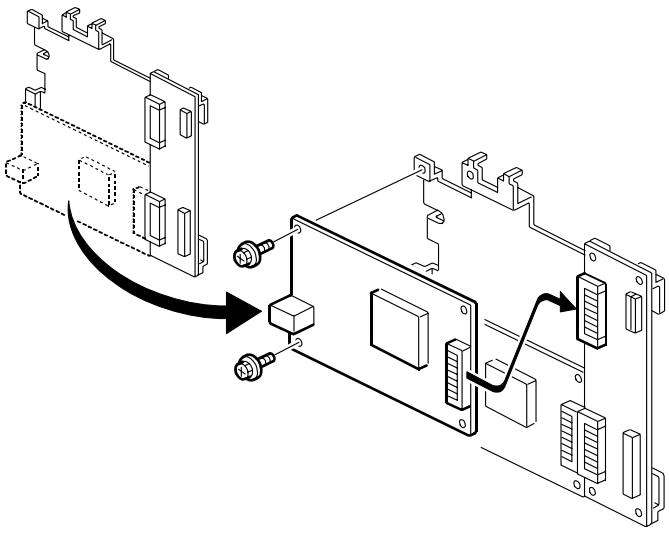
   IMPORTANT: Connect the FFC with the green, insulated visble and the bare connector strip down so it touches the connector strip of the board.



9. Attach the connector bracket to the G3 expansion board (☞ x1).
10. If one G3 line is being installed, attach the connector bracket ❶ as shown on the left..

    -or-

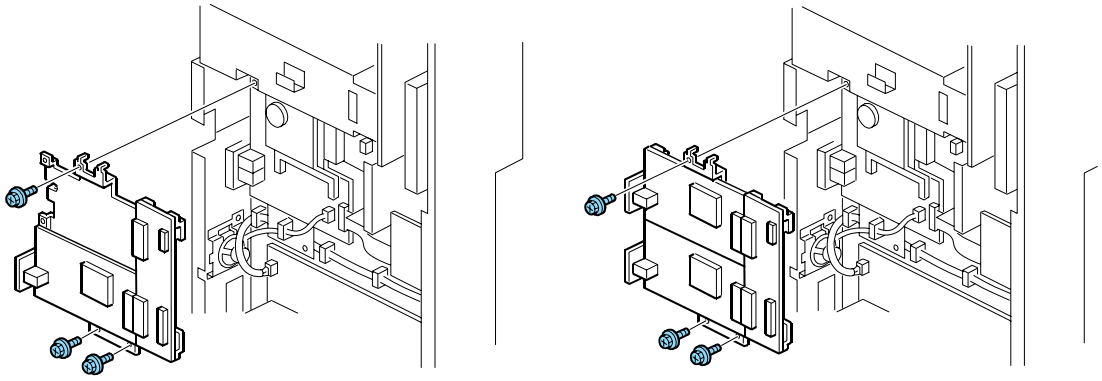
    If two G3 lines are being installed, attach the connector brackets ❶, ❷ as shown on the right.



11. If only one G3 line is being installed, go to the next step.

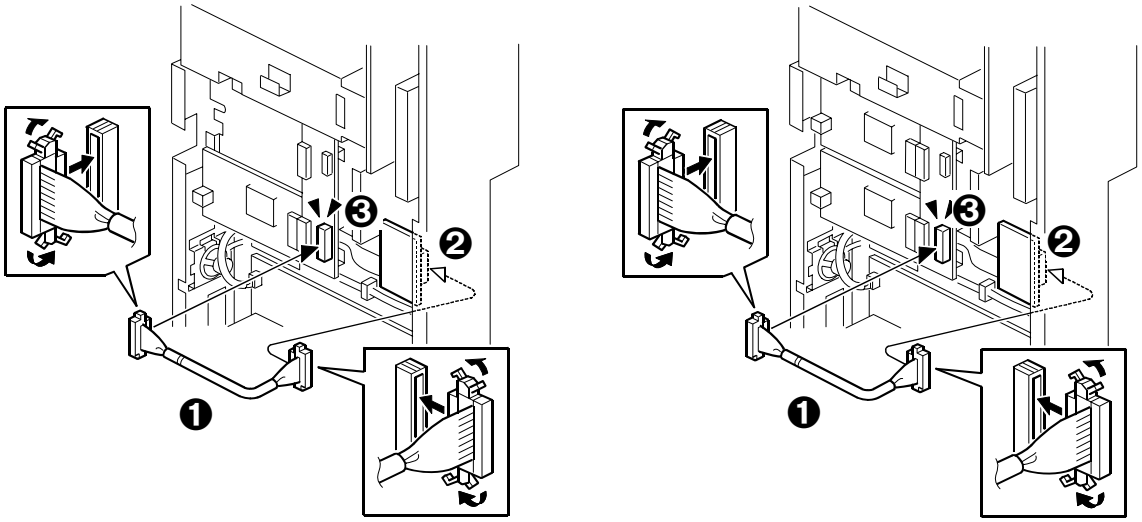
    -or-

    If two lines are being installed, insert the 2nd G3 board [A] into the empty slot of the interface unit and fasten it (☞ x2).



12. Attach the G3 interface unit (x3)

NOTE: The illustration on the left shows the single G3 board installation and the illustration on the right shows the dual G3 board installation.



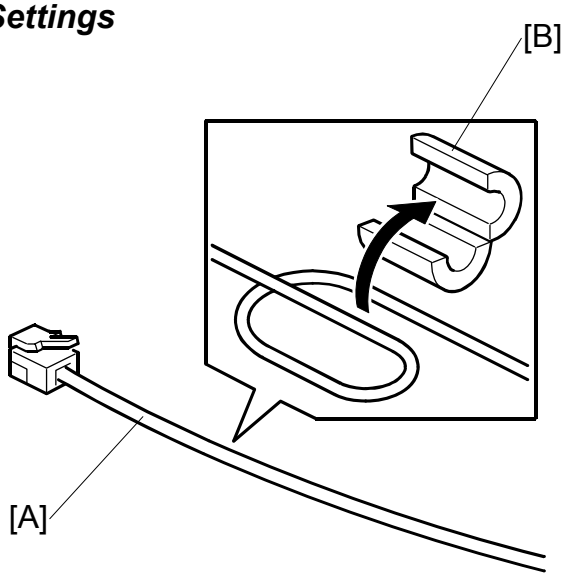
13. Connect the CCUIF harness ❶ to the CCU drive board ❷ and CCU I/F ❸.

NOTE: The illustration on the left shows the single G3 board installation and the illustration on the right shows the dual G3 board installation.

14. Reinstall all covers and reconnect the ADF cable.

15. Attach the FCC decal to the rear cover of the machine.

Line Connection and Settings



1. Loop one end of the telephone cable [A] once, then enclose it with the ferrite core [B] as shown.

   NOTE:

   - Attach the ferrite core at least 9 cm (3.5 in.) from the connector.
   - Attach a ferrite core to the 2nd G3 line if two G3 boards are installed.

2. Connect the telephone cable to "LINE 2" jack.

   -or-

   If dual G3 boards are installed connect the cables to "LINE 2" and "LINE 3" jacks.

3. Connect the machine power cord to the power supply, then switch on the main power switch.
4. Enter the Service Mode.
   - Push [Reset], enter "107", then hold down "Clear/Reset" for at least 3 sec.
   - Touch "Fax SP"

5. Do these communication switch settings:

SP1104-23 (Switch 16)	Set Bit 1 "1".
	Set Bit 3 "1" if two G3 boards are installed.

6. Exit the Service Mode and cycle the machine off/on with the main power switch.
7. Do SP5990-001 to print the system parameter list, then confirm that "G3" is listed as an option.
8. Enter the Service Mode and set the items required for PSTN communication.
   - If one G3 line is installed, use SP3103 (PSTN-1 Port Settings) to do the PSTN settings.
   - If two G3 lines are installed, use SP3103 (PSTN-1 Port Settings) and SP3104 (PSTN-2 Port Settings) to do the PSTN settings for the first and second G3 line.

2. TROUBLESHOOTING

2.1 ERROR CODES

If an error code occurs, retry the communication. If the same problem occurs, try to fix the problem as suggested below. Note that some error codes appear only in the error code display and on the service report.

Code	Meaning	Suggested Cause/Action
0-00	DIS/NSF not detected within 40 s of Start being pressed	Check the line connection. The machine at the other end may be incompatible. Replace the FCU. Check for DIS/NSF with an oscilloscope. If the Rx signal is weak, there may be a bad line.
0-01	DCN received unexpectedly	The other party is out of paper or has a jammed printer. The other party pressed Stop during communication.
0-03	Incompatible modem at the other end	The other terminal is incompatible.
0-04	CFR or FTT not received after modem training	Check the line connection. Try changing the Tx level and/or cable equalizer settings. Replace the FCU. The other terminal may be faulty; try sending to another machine. If the Rx signal is weak or defective, there may be a bad line. **Cross reference** Tx level - NCU Parameter 01 (PSTN) Cable equalizer - G3 Switch 07 (PSTN) Dedicated Tx parameters in Service Program Mode
0-05	Modem training fails even G3 shifts down to 2400 bps.	Check the line connection. Try adjusting the Tx level and/or cable equalizer. Replace the FCU. Check for line problems. **Cross reference** See error code 0-04.
0-06	The other terminal did not reply to DCS	Check the line connection. Try adjusting the Tx level and/or cable equalizer settings. Replace the FCU. The other end may be defective or incompatible; try sending to another machine. Check for line problems. **Cross reference** See error code 0-04.

Code	Meaning	Suggested Cause/Action
0-07	No post-message response from the other end after a page was sent	Check the line connection. Replace the FCU. The other end may have jammed or run out of paper. The other end user may have disconnected the call. Check for a bad line. The other end may be defective; try sending to another machine.
0-08	The other end sent RTN or PIN after receiving a page, because there were too many errors	Check the line connection. Replace the FCU. The other end may have jammed, or run out of paper or memory space. Try adjusting the Tx level and/or cable equalizer settings. The other end may have a defective modem/FCU; try sending to another machine. Check for line problems and noise. **Cross reference** Tx level - NCU Parameter 01 (PSTN) Cable equalizer - G3 Switch 07 (PSTN) Dedicated Tx parameters in Service Program Mode
0-14	Non-standard post message response code received	Incompatible or defective remote terminal; try sending to another machine. Noisy line: resend. Try adjusting the Tx level and/or cable equalizer settings. Replace the FCU. **Cross reference** See error code 0-08.
0-15	The other terminal is not capable of specific functions.	The other terminal is not capable of accepting the following functions, or the other terminal's memory is full. Confidential Rx Transfer function SEP/SUB/PWD/SID
0-16	CFR or FTT not detected after modem training in confidential or transfer mode	Check the line connection. Replace the FCU. Try adjusting the Tx level and/or cable equalizer settings. The other end may have disconnected, or it may be defective; try calling another machine. If the Rx signal level is too low, there may be a line problem. **Cross reference** See error code 0-08.

Code	Meaning	Suggested Cause/Action
0-20	Facsimile data not received within 6 s of retraining	Check the line connection. Replace the FCU. Check for line problems. Try calling another fax machine. Try adjusting the reconstruction time for the first line and/or Rx cable equalizer setting. **Cross reference** Reconstruction time - G3 Switch 0A, bit 6 Rx cable equalizer - G3 Switch 07 (PSTN)
0-21	EOL signal (end-of-line) from the other end not received within 5 s of the previous EOL signal	Check the connections between the FCU and line. Check for line noise or other line problems. Replace the FCU. The remote machine may be defective or may have been disconnected. **Cross reference** Maximum interval between EOLs and between ECM frames - G3 Bit Switch 0A, bit 4
0-22	The signal from the other end was interrupted for more than the acceptable modem carrier drop time (default: 200 ms)	Check the line connection. Replace the FCU. Defective remote terminal. Check for line noise or other line problems. Try adjusting the acceptable modem carrier drop time. **Cross reference** Acceptable modem carrier drop time - G3 Switch 0A, bits 0 and 1
0-23	Too many errors during reception	Check the line connection. Replace the FCU. Defective remote terminal. Check for line noise or other line problems. Try asking the other end to adjust their Tx level. Try adjusting the Rx cable equalizer setting and/or rx error criteria. **Cross reference** Rx cable equalizer - G3 Switch 07 (PSTN) Rx error criteria - Communication Switch 02, bits 0 and 1
0-30	The other terminal did not reply to NSS(A) in AI short protocol mode	Check the line connection. Try adjusting the Tx level and/or cable equalizer settings. The other terminal may not be compatible. **Cross reference** Dedicated Tx parameters - Section 4

Code	Meaning	Suggested Cause/Action
0-32	The other terminal sent a DCS, which contained functions that the receiving machine cannot handle.	Check the protocol dump list. Ask the other party to contact the manufacturer.
0-33	The data reception (not ECM) is not completed within 10 minutes.	Check the line connection. The other terminal may have a defective modem/FCU.
0-52	Polarity changed during communication	Check the line connection. Retry communication.
0-55	FCU does not detect the SG3.	FCU firmware or board defective. SG3 firmware or board defective.
0-56	The stored message data exceeds the capacity of the mailbox in the SG3.	SG3 firmware or board defective.
0-70	The communication mode specified in CM/JM was not available (V.8 calling and called terminal)	The other terminal did not have a compatible communication mode (e.g., the other terminal was a V.34 data modem and not a fax modem.) A polling Tx file was not ready at the other terminal when polling Rx was initiated from the calling terminal.
0-74	The calling terminal fell back to T.30 mode, because it could not detect ANSam after sending CI.	The calling terminal could not detect ANSam due to noise, etc. ANSam was too short to detect. Check the line connection and condition. Try making a call to another V.8/V.34 fax.
0-75	The called terminal fell back to T.30 mode, because it could not detect a CM in response to ANSam (ANSam timeout).	The terminal could not detect ANSam. Check the line connection and condition. Try receiving a call from another V.8/V.34 fax.
0-76	The calling terminal fell back to T.30 mode, because it could not detect a JM in response to CM (CM timeout).	The called terminal could not detect a CM due to noise, etc. Check the line connection and condition. Try making a call to another V.8/V.34 fax.
0-77	The called terminal fell back to T.30 mode, because it could not detect a CJ in response to JM (JM timeout).	The calling terminal could not detect a JM due to noise, etc. A network that has narrow bandwidth cannot pass JM to the other end. Check the line connection and condition. Try receiving a call from another V.8/V.34 fax.
0-79	The called terminal detected CI while waiting for a V.21 signal.	Check for line noise or other line problems. If this error occurs, the called terminal falls back to T.30 mode.

Code	Meaning	Suggested Cause/Action
0-80	The line was disconnected due to a timeout in V.34 phase 2 – line probing.	The guard timer expired while starting these phases. Serious noise, narrow bandwidth, or low signal level can cause these errors. If these errors happen at the transmitting terminal: Try making a call at a later time. Try using V.17 or a slower modem using dedicated tx parameters. Try increasing the Tx level. Try adjusting the Tx cable equalizer setting. If these errors happen at the receiving terminal: Try adjusting the Rx cable equalizer setting. Try increasing the Tx level. Try using V.17 or a slower modem if the same error is frequent when receiving from multiple senders.
0-81	The line was disconnected due to a timeout in V.34 phase 3 – equalizer training.	
0-82	The line was disconnected due to a timeout in the V.34 phase 4 – control channel start-up.	
0-83	The line was disconnected due to a timeout in the V.34 control channel restart sequence.	
0-84	The line was disconnected due to abnormal signaling in V.34 phase 4 – control channel start-up.	The signal did not stop within 10 s. Turn off the machine, then turn it back on. If the same error is frequent, replace the FCU.
0-85	The line was disconnected due to abnormal signaling in V.34 control channel restart.	The signal did not stop within 10 s. Turn off the machine, then turn it back on. If the same error is frequent, replace the FCU.
0-86	The line was disconnected because the other terminal requested a data rate using MPh that was not available in the currently selected symbol rate.	The other terminal was incompatible. Ask the other party to contact the manufacturer.
0-87	The control channel started after an unsuccessful primary channel.	The receiving terminal restarted the control channel because data reception in the primary channel was not successful. This does not result in an error communication.
0-88	The line was disconnected because PPR was transmitted/received 9 (default) times within the same ECM frame.	Try using a lower data rate at the start. Try adjusting the cable equalizer setting.
2-11	Only one V.21 connection flag was received	Replace the FCU.
2-12	Modem clock irregularity	Replace the FCU.
2-13	Modem initialization error	Turn off the machine, then turn it back on. Update the modem ROM. Replace the FCU.

ERROR CODES

Code	Meaning	Suggested Cause/Action
2-23	JBIG compression or reconstruction error	Turn off the machine, then turn it back on.
2-24	JBIG ASIC error	Turn off the machine, then turn it back on.
2-25	JBIG data reconstruction error (BIH error)	JBIG data error Check the sender's JBIG function. Update the MBU ROM.
2-26	JBIG data reconstruction error (Float marker error)	
2-27	JBIG data reconstruction error (End marker error)	
2-28	JBIG data reconstruction error (Timeout)	
2-29	JBIG trailing edge maker error	FCU defective Check the destination device.
2-50	The machine resets itself for a fatal FCU system error	If this is frequent, update the ROM, or replace the FCU.
2-51	The machine resets itself because of a fatal communication error	If this is frequent, update the ROM, or replace the FCU.
2-53	Snd msg() in the manual task is an error because the mailbox for the operation task is full.	The user did the same operation many times, and this gave too much load to the machine.
4-01	Line current was cut	Check the line connector. Check for line problems. Replace the FCU.
4-10	Communication failed because of an ID Code mismatch (Closed Network) or Tel. No./CSI mismatch (Protection against Wrong Connections)	Get the ID Codes the same and/or the CSIs programmed correctly, then resend. The machine at the other end may be defective.
5-10	DCR timer expired	Replace the FCU.
5-20	Storage impossible because of a lack of memory	Temporary memory shortage. Test the SAF memory.
5-21	Memory overflow	
5-23	Print data error when printing a substitute rx or confidential rx message	Test the SAF memory. Ask the other end to resend the message.

Code	Meaning	Suggested Cause/Action
5-25	SAF file access error	Replace an SD card or HDD. Replace the FCU.
6-00	G3 ECM - T1 time out during reception of facsimile data	Try adjusting the rx cable equalizer. Replace the FCU.
6-01	G3 ECM - no V.21 signal was received	
6-02	G3 ECM - EOR was received	
6-04	G3 ECM - RTC not detected	Check the line connection. Check for a bad line or defective remote terminal. Replace the FCU.
6-05	G3 ECM - facsimile data frame not received within 18 s of CFR, but there was no line fail	Check the line connection. Check for a bad line or defective remote terminal. Replace the FCU. Try adjusting the rx cable equalizer **Cross reference** Rx cable equalizer - G3 Switch 07 (PSTN)
6-06	G3 ECM - coding/decoding error	Defective FCU. The other terminal may be defective.
6-08	G3 ECM - PIP/PIN received in reply to PPS.NULL	The other end pressed Stop during communication. The other terminal may be defective.
6-09	G3 ECM - ERR received	Check for a noisy line. Adjust the Tx levels of the communicating machines. See code 6-05.
6-10	G3 ECM - error frames still received at the other end after all communication attempts at 2400 bps	Check for line noise. Adjust the Tx level (use NCU parameter 01 or the dedicated Tx parameter for that address). Check the line connection. Defective remote terminal.
6-21	V.21 flag detected during high speed modem communication	The other terminal may be defective or incompatible.
6-22	The machine resets the sequence because of an abnormal handshake in the V.34 control channel	Check for line noise. If the same error occurs frequently, replace the FCU. Defective remote terminal.
6-99	V.21 signal not stopped within 6 s	Replace the FCU.
13-17	SIP user name registration error	Double registration of the SIP user name. Capacity for user-name registration in the SIP server is not sufficient.

Code	Meaning	Suggested Cause/Action
13-18	SIP server access error	Incorrect initial setting for the SIP server. Defective SIP server.
14-00	SMTP Send Error	Error occurred during sending to the SMTP server. Occurs for any error other than 14-01 to 16. For example, the mail address of the system administrator is not registered.
14-01	SMTP Connection Failed	Failed to connect to the SMTP server (timeout) because the server could not be found. The PC is not ready to transfer files. SMTP server not functioning correctly. The DNS IP address is not registered. Network not operating correctly. Destination folder selection not correct.
14-02	No Service by SMTP Service (421)	SMTP server operating incorrectly, or the destination for direct SMTP sending is not correct. Contact the system administrator and check that the SMTP server has the correct settings and operates correctly. Contact the system administrator for direct SMTP sending and check the sending destination.
14-03	Access to SMTP Server Denied (450)	Failed to access the SMTP server because the access is denied. SMTP server operating incorrectly. Contact the system administrator to determine if there is a problem with the SMTP server and to check that the SMTP server settings are correct. Folder send destination is incorrect. Contact the system administrator to determine that the SMTP server settings and path to the server are correct. Device settings incorrect. Confirm that the user name and password settings are correct. Direct SMTP destination incorrect. Contact the system administrator to determine if there is a problem at the destination at that the settings at the destination are correct.
14-04	Access to SMTP Server Denied (550)	SMTP server operating incorrectly Direct SMTP sending not operating correctly

Code	Meaning	Suggested Cause/Action
14-05	SMTP Server HDD Full (452)	Failed to access the SMTP server because the HDD on the server is full. Insufficient free space on the HDD of the SMTP server. Contact the system administrator and check the amount of space remaining on the SMTP server HDD. Insufficient free space on the HDD where the destination folder is located. Contact the system administrator and check the amount of space remaining on the HDD where the target folder is located. Insufficient free space on the HDD at the target destination for SMTP direct sending. Contact the system administrator and check the amount of space remaining on the target HDD.
14-06	User Not Found on SMTP Server (551)	The designated user does not exist. The designated user does not exist on the SMTP server. The designated address is not for use with direct SMTP sending.
14-07	Data Send to SMTP Server Failed (4XX)	Failed to access the SMTP server because the transmission failed. PC not operating correctly. SMTP server operating incorrectly Network not operating correctly. Destination folder setting incorrect. Direct SMTP sending not operating correctly.
14-08	Data Send to SMTP Server Failed (5XX)	Failed to access the SMTP server because the transmission failed. SMTP server operating incorrectly Destination folder setting incorrect. Direct SMTP sending not operating correctly. Software application error.
14-09	Authorization Failed for Sending to SMTP Server	POP-Before-SMTP or SMTP authorization failed. Incorrect setting for file transfer
14-10	Addresses Exceeded	Number of broadcast addresses exceeded the limit for the SMTP server.
14-11	Buffer Full	The send buffer is full so the transmission could not be completed. Buffer is full due to using Scan-to-Email while the buffer is being used send mail at the same time.
14-12	Data Size Too Large	Transmission was cancelled because the detected size of the file was too large.

Code	Meaning	Suggested Cause/Action
14-13	Send Cancelled	Processing is interrupted because the user pressed Stop.
14-14	Security Locked File Error	Update the software because of the defective software.
14-15	Mail Data Error	The transmitting a mail is interrupted via DCS due to the incorrect data. Update the software because of the defective software.
14-16	Maximum Division Number Error	When a mail is divided for the mail transmission and the division number of a mail are more than the specified number, the mail transmission is interrupted. Update the software because of the defective software.
14-17	Incorrect Ticket	Update the software because of the defective software.
14-18	Access to MCS File Error	The access to MCS file is denied due to the no permission of access. Update the software because of the defective software.
14-30	MCS File Creation Failed	Failed to create the MCS file because: The number of files created with other applications on the Document Server has exceeded the limit. HDD is full or not operating correctly. Software error.
14-31	UFS File Creation Failed	UFS file could not be created: Not enough space in UFS area to handle both Scan-to-Email and IFAX transmission. HDD full or not operating correctly. Software error.
14-32	Cancelled the Mail Due to Error Detected by NFAX	Error detected with NFAX and send was cancelled due to a software error.
14-33	No Mail Address For the Machine	Neither the mail address of the machine nor the mail address of the network administrator is registered.
14-34	Address designated in the domain for SMTP sending does not exist	Operational error in normal mail sending or direct SMTP sending. Check the address selected in the address book for SMTP sending. Check the domain selection.

Code	Meaning	Suggested Cause/Action
14-50	Mail Job Task Error	Due to an FCU mail job task error, the send was cancelled: Address book was being edited during creation of the notification mail. Software error.
14-51	UCS Destination Download Error	Not even one return notification can be downloaded: The address book was being edited. The number for the specified destination does not exist (it was deleted or edited after the job was created).
14-60	Send Cancel Failed	The cancel operation by the user failed to cancel the send operation.
14-61	Notification Mail Send Failed for All Destinations	All addresses for return notification mail failed.
14-62	Transmission Error due to the existence of zero line page	When the 0 line page exists in received pages with G3 communication, the transmission is interrupted.
15-01	POP3/IMAP4 Server Not Registered	At startup, the system detected that the IP address of the POP3/IMAP4 server has not been registered in the machine.
15-02	POP3/IMAP4 Mail Account Information Not Registered	The POP3/IMAP4 mail account has not been registered.
15-03	Mail Address Not Registered	The mail address has not been registered.
15-10	DCS Mail Receive Error	Error other than 15-11 to 15-18.
15-11	Connection Error	The DNS or POP3/IMAP4 server could not be found: The IP address for DNS or POP3/IMAP4 server is not stored in the machine. The DNS IP address is not registered. Network not operating correctly.
15-12	Authorization Error	POP3/IMAP4 send authorization failed: Incorrect IFAX user name or password. Access was attempted by another device, such as the PC. POP3/IMAP4 settings incorrect.
15-13	Receive Buffer Full	Occurs only during manual reception. Transmission cannot be received due to insufficient buffer space. The buffer is being used for mail send or Scan-to-Email.
15-14	Mail Header Format Error	The mail header is not standard format. For example, the Date line description is incorrect.

Code	Meaning	Suggested Cause/Action
15-15	Mail Divide Error	The e-mail is not in standard format. There is no boundary between parts of the e-mail, including the header.
15-16	Mail Size Receive Error	The mail cannot be received because it is too large.
15-17	Receive Timeout	May occur during manual receiving only because the network is not operating correctly.
15-18	Incomplete Mail Received	Only one portion of the mail was received.
15-31	Final Destination for Transfer Request Reception Format Error	The format of the final destination for the transfer request was incorrect.
15-39	Send/Delivery Destination Error	The transmission cannot be delivered to the final destination: Destination file format is incorrect. Could not create the destination for the file transmission.
15-41	SMTP Receive Error	Reception rejected because the transaction exceeded the limit for the “Auth. E-mail RX” setting.
15-42	Off Ramp Gateway Error	The delivery destination address was specified with Off Ramp Gateway OFF.
15-43	Address Format Error	Format error in the address of the Off Ramp Gateway.
15-44	Addresses Over	The number of addresses for the Off Ramp Gateway exceeded the limit of 30.
15-61	Attachment File Format Error	The attached file is not TIFF format.
15-62	TIFF File Compatibility Error	Could not receive transmission due to: Resolution error Image of resolution greater than 200 dpi without extended memory. Resolution is not supported. Page size error The page size was larger than A3. Compression error File was compressed with other than MH, MR, or MMR.
15-63	TIFF Parameter Error	The TIFF file sent as the attachment could not be received because the TIFF header is incorrect: The TIFF file attachment is a type not supported. The TIFF file attachment is corrupted. Software error.

Code	Meaning	Suggested Cause/Action
15-64	TIFF Decompression Error	The file received as an attachment caused the TIFF decompression error: The TIFF format of the attachment is corrupted. Software error.
15-71	Not Binary Image Data	The file could not be received because the attachment was not binary image data.
15-73	MDN Status Error	Could not find the Disposition line in the header of the Return Receipt, or there is a problem with the firmware.
15-74	MDN Message ID Error	Could not find the Original Message ID line in the header of the Return Receipt, or there is a problem with the firmware.
15-80	Mail Job Task Read Error	Could not receive the transmission because the destination buffer is full and the destination could not be created (this error may occur when receiving a transfer request or a request for notification of reception).
15-81	Repeated Destination Registration Error	Could not repeat receive the transmission because the destination buffer is full and the destination could not be created (this error may occur when receiving a transfer request or a request for notification of reception).
15-91	Send Registration Error	Could not receive the file for transfer to the final destination: The format of the final destination or the transfer destination is incorrect. Destinations are full so the final and transfer destinations could not be created.
15-92	Memory Overflow	Transmission could not be received because memory overflowed during the transaction.
15-93	Memory Access Error	Transaction could not complete due to a malfunction of SAF memory.
15-94	Incorrect ID Code	The machine rejected an incoming e-mail for transfer request, because the ID code in the incoming e-mail did not match the ID code registered in the machine.
15-95	Transfer Station Function	The machine rejected an incoming e-mail for transfer because the transfer function was unavailable.
22-00	Original length exceeded the maximum scan length	Divide the original into more than one page. Check the resolution used for scanning. Lower the scan resolution if possible. Add optional page memory.

Code	Meaning	Suggested Cause/Action
22-01	Memory overflow while receiving	Wait for the files in the queue to be sent. Delete unnecessary files from memory. Transfer the substitute reception files to an another fax machine, if the machine's printer is busy or out of order. Add an optional SAF memory card or hard disk.
22-02	Tx or rx job stalled due to line disconnection at the other end	The job started normally but did not finish normally; data may or may not have been received fully. Restart the machine.
22-04	The machine cannot store received data in the SAF	Update the ROM Replace the FCU.
22-05	No G3 parameter confirmation answer	Defective FCU board or firmware.
23-00	Data read timeout during construction	Restart the machine. Replace the FCU.
25-00	The machine software resets itself after a fatal transmission error occurred	Update the ROM Replace the FCU.
⇒ 31-21	LAN Fax Error	It was cancelled received LAN Fax images during store the image to SAF of FCU. The LAN Fax transmission of a message was cancelled by the LAN Fax driver.
F0-xx	V.34 modem error	Replace the FCU.
F6-xx	SG3 modem error	Update the SG3 modem ROM. Replace the SG3 board. Check for line noise or other line problems. Try communicating another V.8/V.34 fax.

2.2 IFAX TROUBLESHOOTING

Use the following procedures to determine whether the machine or another part of the network is causing the problem.

Communication Route	Item	Action [Remarks]
General LAN	1. Connection with the LAN	Check that the LAN cable is connected to the machine. Check that the LEDs on the hub are lit.
	2. LAN activity	Check that other devices connected to the LAN can communicate through the LAN.
Between IFAX and PC	1. Network settings on the PC	Check the network settings on the PC. [Is the IP address registered in the TCP/IP properties in the network setup correct? Check the IP address with the administrator of the network.]
	2. Check that PC can connect with the machine	Use the “ping” command on the PC to contact the machine. [At the MS-DOS prompt, type ping then the IP address of the machine, then press Enter.]
	3. LAN settings in the machine	Check the LAN parameters Check if there is an IP address conflict with other PCs. [Use the “Network” function in the User Tools. If there is an IP address conflict, inform the administrator.]
Between machine and e-mail server	1. LAN settings in the machine	Check the LAN parameters Check if there is an IP address conflict with other PCs. [Use the “Network” function in the User Tools. If there is an IP address conflict, inform the administrator.]
	2. E-mail account on the server	Make sure that the machine can log into the e-mail server. Check that the account and password stored in the server are the same as in the machine. [Ask the administrator to check.]

Communication Route	Item	Action [Remarks]
Between machine and e-mail server …continued	3. E-mail server	Make sure that the client devices which have an account in the server can send/receive e-mail. [Ask the administrator to check. Send a test e-mail with the machine's own number as the destination. The machine receives the returned e-mail if the communication is performed successfully.]
Between e-mail server and internet	1. E-mail account on the Server	Make sure that the PC can log into the e-mail server. Check that the account and password stored in the server are the same as in the machine. [Ask the administrator to check.]
	2. E-mail server	Make sure that the client devices which have an account in the server can send/receive e-mail. [Ask the administrator to check. Send a test e-mail with the machine's own number as the destination. The machine receives the returned e-mail if the communication is performed successfully.]
	3. Destination e-mail address	Make sure that the e-mail address is actually used. Check that the e-mail address contains no incorrect characters such as spaces.
	4. Router settings	Use the "ping" command to contact the router. Check that other devices connected to the router can sent data over the router. [Ask the administrator of the server to check.]
	5. Error message by e-mail from the network of the destination.	Check whether e-mail can be sent to another address on the same network, using the application e-mail software. Check the error e-mail message. [Inform the administrator of the LAN.]

2.3 IP-FAX TROUBLESHOOTING

2.3.1 IP-FAX TRANSMISSION

Cannot send by IP Address/Host Name

Check Point		Action
1	LAN cable connected?	Check the LAN cable connection.
2	Specified IP address/host name correct?	Check the IP address/host name.
3	Firewall/NAT is installed?	Cannot breach the firewall. Send by using another method (Fax, Internet Fax)
4	Transmission sent manually?	Manual sending not supported.
5	IP address of local machine registered?	Register the IP address.
6	Remote terminal port number setting other than 1720?	Send by specifying the port number.
7	Specified port number correct?	Confirm the port number of the remote fax.
8	DNS server registered when host name specified?	Contact the network administrator.
9	Remote fax a T.38 terminal?	Check whether the remote fax is a T38 terminal.
10	Remote fax switched off or busy?	Check that the remote fax is switched on.
11	Network bandwidth too narrow?	Request the network administrator to increase the bandwidth.
		Raise the delay level. IPFAX SW 01 Bit 0 to 3
		IP-Fax bandwidth is the same as the DCS speed. Set IP-Fax SW00 Bit 6 to 1.
12	Remote fax cancelled transmission?	Check whether the remote fax cancelled the transmission.

Cannot send via VoIP Gateway

Check Point		Action
1	LAN cable connected?	Check the LAN cable connection.
2	VoIP Gateway T.38 standard?	Contact the network administrator.
3	VoIP Gateway installed correctly?	Contact the network administrator.
4	VoIP Gateway power switched on?	Contact the network administrator.
5	Is the IP address/host name of the specified Gateway correct?	Check the IP address/host name.
6	Number of the specified fax correct?	Check the remote fax number.
7	Firewall/NAT is installed?	Cannot breach the firewall. Send by using another method (Fax, Internet Fax)
8	Transmission sent manually?	Manual sending not supported.
9	IP address of local fax registered?	Register the IP address.
10	DNS registered when host name specified?	Contact the network administrator.
11	Remote fax a G3 fax?	Check that the remote fax is a G3 fax.
12	G3 fax is connected to VoIP gateway?	Check that G3 fax is connected.
13	Remote G3 fax turned on?	Check that G3 fax is switched on.
14	Network bandwidth too narrow?	Request the network administrator to increase the bandwidth.
		Raise the network delay level. IPFAX SW 01 Bit 0 to 3
		IP-Fax bandwidth is the same as the DCS speed. Set IP-Fax SW00 Bit 6 to 1.

Cannot send by Alias Fax number.

Check Point		Action
1	LAN cable connected?	Check the LAN cable connection.
2	Number of specified Alias fax correct?	Confirm the Alias of the remote fax. Error Code: 13-14
3	Firewall/NAT installed?	Cannot breach the firewall. Send by using another method (Fax, Internet Fax)
4	Transmission sent manually?	Manual sending not supported.
5	Gatekeeper installed correctly?	Contact the network administrator.
6	Gatekeeper power switched on?	Contact the network administrator.
7	IP address/host name of Gatekeeper correct?	Check the IP address/host name.
8	DNS server registered when Gatekeeper host name specified?	Contact the network administrator.
9	Enable H.323 SW is set to on?	Check the settings. See User Parameter SW 34 Bit 0
10	IP address of local fax registered?	Register the IP address of the local fax.
11	Alias number of local fax registered?	Register the Alias number of the local fax.
12	Remote fax registered in Gatekeeper?	Contact the network administrator.
13	Remote fax a T.38 terminal?	Check whether the remote fax is a T38 terminal.
14	Remote fax switched off or busy?	Contact the network administrator.
15	Network bandwidth too narrow?	Request the system administrator to increase the bandwidth.
		Raise the delay level. IPFAX SW 01 Bit 0 to 3
		Lower the modem transmission baud rate. IPFAX SW 05
16	Remote fax cancelled transmission?	Check whether the remote fax cancelled the transmission.

2.3.2 IP-FAX RECEPTION

Cannot receive via IP Address/Host Name.

Check Point		Action
1	LAN cable connected?	Check the LAN cable connection.
2	Firewall/NAT is installed?	Cannot breach the firewall. Send by using another method (Fax, Internet Fax)
3	IP address of local fax registered?	Register the IP address.
4	Port number specified at remote sender fax (if required)?	Request the sender to specify the port number.
5	Specified port number correct (if required)?	Request the sender to check the port number.
6	DNS server registered when host name specified on sender side?	Contact the network administrator. **NOTE:** The sender machine displays this error code if the sender fax is a Ricoh model.
7	Network bandwidth too narrow?	Request the system administrator to increase the bandwidth.
		Lower the start modem reception baud rate on the receiving side. IPFAX SW06
8	Remote fax cancelled transmission?	Check whether the remote fax cancelled the transmission.

Cannot receive by VoIP Gateway.

Check Point		Action
1	LAN cable connected?	Check the LAN cable connection.
2	Firewall/NAT is installed?	Cannot breach the firewall. Request the remote fax to send by using another method (Fax, Internet Fax)
3	VoIP Gateway installed correctly?	Contact the network administrator.
4	VoIP Gateway power switched on?	Contact the network administrator.
5	IP address/host name of specified VoIP Gateway correct on sender's side?	Request the remote fax to check the IP address/host name.
6	DNS server registered when host name specified on sender side?	Contact the network administrator.
7	Network bandwidth too narrow?	Request the network administrator to increase the bandwidth.
8	G3 fax connected?	Check that G3 fax is connected.
9	G3 fax power switched on?	Check that G3 fax is switched on.

Cannot receive by Alias Fax number.

	Check Point	Action
1	LAN cable connected?	Check the LAN cable connection.
2	Firewall/NAT is installed?	Cannot the breach firewall. Request the remote fax to send by using another method (Fax, Internet Fax)
3	Gatekeeper installed correctly?	Contact the network administrator. **NOTE:** The sender machine displays this error code when the sender fax is a Ricoh model.
4	Power to Gatekeeper switched on?	Contact the network administrator. **NOTE:** The sender machine displays this error code when the sender fax is a Ricoh model.
5	IP address/host name of Gatekeeper correct on the sender's side?	Request the sender to check the IP address/host name. **NOTE:** The sender machine displays this error code when the sender fax is a Ricoh model.
6	DNS server registered when Gatekeeper host name specified on sender's side?	Contact the network administrator. **NOTE:** The sender machine displays this error code when the sender fax is a Ricoh model.
7	Enable H.323 SW is set to on?	Request the sender to check the settings. User Parameter SW 34 Bit 0 **NOTE:** Only if the remote sender fax is a Ricoh fax.
8	Local fax IP address registered?	Register the IP address.
9	Local fax Alias number registered?	Register the Alias number.
10	Network bandwidth too narrow?	Request the system administrator to increase the bandwidth. Lower the start modem reception baud rate on the receiving side. IPFAX SW06
11	Remote fax cancelled transmission?	Check whether the remote fax cancelled the transmission.
12	Local fax registered in Gatekeeper?	Contact the network administrator. **NOTE:** The sender machine displays this error code when the sender fax is a Ricoh model.

3. SERVICE TABLES

3.1 BEFOREHAND

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.

NOTE: The main power LED (⏻) lights or flashes while the platen cover or ARDF is open, while the main machine is communicating with a facsimile or the network server, or while the machine is accessing the hard disk or memory for reading or writing data.

3.2 SERVICE TABLES

3.2.1 SP1-XXX (BIT SWITCHES)

☛ Bit Switches

1	Mode No.		Function
101	System Switch		
	001 – 032	00 – 1F	Change the bit switches for system settings for the fax option ☛ "Bit Switches"
102	Ifax Switch		
	001 – 016	00 – 0F	Change the bit switches for internet fax settings for the fax option ☛ "Bit Switches"
103	Printer Switch		
	001 – 016	00 – 0F	Change the bit switches for printer settings for the fax option ☛ "Bit Switches"
104	Communication Switch		
	001 – 032	00 – 1F	Change the bit switches for communication settings for the fax option ☛ "Bit Switches"
105	G3-1 Switch		
	001 – 016	00 – 0F	Change the bit switches for the protocol settings of the standard G3 board ☛ "Bit Switches"
106	G3-2 Switch		
	001 – 016	00 – 0F	Change the bit switches for the protocol settings of the optional G3 board ☛ "Bit Switches"
107	G3-3 Switch		
	001 – 016	00 – 0F	Change the bit switches for the protocol settings of the optional G3 board ☛ "Bit Switches"
108	G4 Internal Switch		
	001 – 032	00 – 1F	Not used (Do not change the bit switches)
109	G4 Parameter Switch		
	001 – 016	00 – 0F	Not used (Do not change the bit switches)
111	IP fax Switch		

	001 – 016	00 – 0F	Change the bit switches for optional IP fax parameters ☛ "Bit Switches"

3.2.2 SP2-XXX (RAM DATA)

2	Mode No.		Function
101	RAM Read/Write		
	001		Change RAM data for the fax board directly. ☛ "Service RAM Addresses"
102	Memory Dump		
	001	G3-1 Memory Dump	Print out RAM data for the fax board. ☛ "Service RAM Addresses"
	002	G3-2 Memory Dump	Print out RAM data for the optional SG3 board.
	003	G3-3 Memory Dump	Print out RAM data for the optional SG3 board.
	004	G4 Memory Dump	Not used
103	G3-1 NCU Parameters		
	001 – 023	CC, 01 – 22	NCU parameter settings for the standard G3 board. ☛ "NCU Parameters"
104	G3-2 NCU Parameters		
	001 – 023	CC, 01 – 22	NCU parameter settings for the optional G3 board. ☛ "NCU Parameters"
105	G3-3 NCU Parameters		
	001 – 023	CC, 01 – 22	NCU parameter settings for the optional G3 board. ☛ "NCU Parameters"

3.2.3 SP3-XXX (TEL LINE SETTINGS)

3	Mode No.		Function
101	Service Station		
	001	Fax Number	Enter the fax number of the service station.
	002	Select Line	Select the line type.
102	Serial Number		
	000		Enter the fax unit's serial number.
103	PSTN-1 Port Settings		

	001	Select Line	Select the line type setting for the G3-1 line. If the machine is installed on a PABX line, select “PABX”, “PABX(GND)” or “PABX(FLASH)”.
	002	PSTN Access Number	Enter the PSTN access number for the G3-1 line.
	003	Memory Lock Disabled	Not used
104	PSTN-2 Port Settings		
	001	Select Line	Select the line setting for the G3-2 line. If the machine is installed on a PABX line, select “PABX”, “PABX(GND)” or “PABX(FLASH)”.
	002	PSTN Access Number	Enter the PSTN access number for the G3-2 line.
	003	Memory Lock Disabled	Not used
	004	Transmission Disabled	If you turn this SP on, the machine does not send any fax messages on the G3-2 line.
105	PSTN-3 Port Settings		
	001	Select Line	Select the line setting for the G3-3 line. If the machine is installed on a PABX line, select “PABX”, “PABX(GND)” or “PABX(FLASH)”.
	002	PSTN Access Number	Enter the PSTN access number for the G3-3 line.
	003	Memory Lock Disabled	Not used
	004	Transmission Disabled	If you turn this SP on, the machine does not send any fax messages on the G3-3 line.
106	ISDN Port Settings		
	001	Select Line	**Not used** (Do not change the settings.)
	002	PSTN Access Number	
	003	Memory Lock Disabled	
106	004	Transmission Disabled	
107	IPFAX Port Settings		
	001	H323 Port	Sets the H323 port number.
	002	SIP Port	Sets the SIP port number.
	003	RAS Port	Sets the RAS port number.

	004	Gatekeeper port	Sets the Gatekeeper port number.
	005	T.38 Port	Sets the T.38 port number.
	006	SIP Server Port	Sets the SIP port number.
	007	IPFAX Protocol Priority	Select "H323" or "SIP".
201	FAX SW		
	001 – 032	00 – 1F	

3.2.4 SP4-XXX (ROM VERSIONS)

4	Mode No.		Function
101	001	FCU ROM Version	Displays the FCU ROM version.
102	001	Error Codes	Displays the latest 64 fax error codes.
103	001	G3-1 ROM Version	Displays the G3-1 modem version.
104	001	G3-2 ROM Version	Displays the G3-2 modem version.
105	001	G3-3 ROM Version	Displays the G3-3 modem version.
106	001	G4 ROM Version	**Not used** (Do not change the settings.)
107	001	Charge ROM Version	**Not used** (Do not change the settings.)

3.2.5 SP5-XXX (INITIALIZING)

5	Mode No.	Function
101	Initialize SRAM	
	000	Initializes the bit switches and user parameters, user data in the SRAM, files in the SAF memory, and clock.
102	Erase All Files	
	000	Erases all files stored in the SAF memory.
103	Reset Bit Switches	
	000	Resets the bit switches and user parameters.
104	Factory setting	
	000	Resets the bit switches and user parameters, user data in the SRAM and files in the SAF memory.
105	Initialize All Bit Switches	
	000	Initializes all the current bit switch settings.

106	Initialize Security Bit Switches	
	000	Initializes only the security bit switches. If you select automatic output/display for the user parameter switches, the security settings are initialized.

3.2.6 SP6-XXX (REPORTS)

6	Mode No.		Function
101	System Parameter List		
	000	-	Touch the “ON” button to print the system parameter list.
102	Service Monitor Report		
	000	-	Touch the “ON” button to print the service monitor report.
103	G3 Protocol Dump List		
	001	G3 All Communications	Prints the protocol dump list of all communications for all G3 lines.
	002	G3-1 (All Communications)	Prints the protocol dump list of all communications for the G3-1 line.
	003	G3-1 (1 Communication)	Prints the protocol dump list of the last communication for the G3-1 line.
	004	G3-2 (All Communications)	Prints the protocol dump list of all communications for the G3-2 line.
	005	G3-2 (1 Communication)	Prints the protocol dump list of the last communication for the G3-2 line.
	006	G3-3 (All Communications)	Prints the protocol dump list of all communications for the G3-3 line.
	007	G3-3 (1 Communication)	Prints the protocol dump list of the last communication for the G3-3 line.
104	G4 Protocol Dump List		
	001	Dch + Bch 1	**Not used** (Do not change the settings.)
	002	Dch	
	003	Bch 1 Link Layer	
	004	Dch Link Layer	
	005	Dch +Bch 2	
	006	Bch 2 Link Layer	
105	All Files print out		

	000	-	Prints out all the user files in the SAF memory, including confidential messages. **NOTE:** Do not use this function, unless the customer is having trouble printing confidential messages or recovering files stored using the memory lock feature.
106	Journal Print out		
	001	All Journals	The machine prints all the communication records on the report.
	002	Specified Date	The machine prints all communication records after the specified date.
107	Log List Print out		
	001	All log files	These log print out functions are for designer use only.
	002	Printer	
	003	SC/TRAP Stored	
	004	Decompression	
	005	Scanner	
	006	JOB/SAF	
	007	Reconstruction	
	008	JBIG	
	009	Fax Driver	
	010	G3CCU	
	011	Fax Job	
	012	CCU	
	013	Scanner Condition	
108	IP Protocol Dump List		
	001	All Communications	Prints the protocol dump list of all communications for the IP fax line.
	002	1 Communication	Prints the protocol dump list of the last communication for the IP fax line.

3.2.7 SP7-XXX (TEST MODES)

These are the test modes for PTT approval.

7	Function
101	G3-1 Modem Tests
102	G3-1 DTMF Tests
103	Ringer Test
104	G3-1 V34 (S2400baud)
105	G3-1 V34 (S2800baud)
106	G3-1 V34 (S3000baud)
107	G3-1 V34 (S3200baud)
108	G3-1 V34 (S3429baud)
109	Recorded Message Test
110	G3-2 Modem Tests
111	G3-2 DTMF Tests
112	G3-2 V34 (S2400baud)
113	G3-2 V34 (S2800baud)
114	G3-2 V34 (S3000baud)
115	G3-2 V34 (S3200baud)
116	G3-2 V34 (S3429baud)
117	G3-3 Modem Tests
118	G3-3 DTMF Tests
119	G3-3 V34 (S2400baud)
120	G3-3 V34 (S2800baud)
121	G3-3 V34 (S3000baud)
122	G3-3 V34 (S3200baud)
123	G3-3 V34 (S3429baud)
124	IG3-1 Modem Tests - **Not used**
125	IG3-1 DTMF Tests - **Not used**
126	IG3-1 V34 (S2400baud) - **Not used**
127	IG3-1 V34 (S2800baud) - **Not used**
128	IG3-1 V34 (S3000baud) - **Not used**

129	IG3-1 V34 (S3200baud) - **Not used**
130	IG3-1 V34 (S3429baud) - **Not used**
131	IG3-2 Modem Tests - **Not used**
132	IG3-2 DTMF Tests - **Not used**
133	IG3-2 V34 (S2400baud) - **Not used**
134	IG3-2 V34 (S2800baud) - **Not used**
135	IG3-2 V34 (S3000baud) - **Not used**
136	IG3-2 V34 (S3200baud) - **Not used**
137	IG3-2 V34 (S3429baud) - **Not used**

3.2.8 SP9-XXX (DESIGN SWITCH MODE)

9	Mode No.	Function
702	Design Switch **DFU**	

3.3 BIT SWITCHES

⚠WARNING

Do not adjust a bit switch or use a setting that is described as "Not used", as this may cause the machine to malfunction or to operate in a manner that is not accepted by local regulations. Such bits are for use only in other areas, such as Japan.

NOTE: Default settings for bit switches are not listed in this manual. Refer to the System Parameter List printed by the machine.

3.3.1 SYSTEM SWITCHES

<table>
<tr><th colspan="3">System Switch 00 [SP No. 1-101-001]</th></tr>
<tr><th>No</th><th>FUNCTION</th><th>COMMENTS</th></tr>
<tr><td>0</td><td>Dedicated transmission parameter programming
0: Disabled, 1: Enabled</td><td>Set this bit to 1 before changing any dedicated transmission parameters.
Reset this bit to 0 after programming dedicated transmission parameters.</td></tr>
<tr><td>1</td><td>Not used</td><td>Do not change</td></tr>
<tr><td rowspan="3">2</td><td>Technical data printed on Journal
0: Disabled, 1: Enabled</td><td>1: Instead of the personal name, the following data are listed on the Journal for each G3 communication.</td></tr>
<tr><td colspan="2">e.g. 0000 (1) // 32 (2) V34 (3) // 288 (4) // 264 (5) // L0100 (6) 03 (7) 04 (8)
(1): EQM value (Line quality data). A larger number means more errors.
(2): Symbol rate (V.34 only)
(3): Final modem type used
(4): Starting data rate (for example, 288 means 28.8 kbps)
(5): Final data rate
(6): Rx revel (refer to the note after this table for how to read the rx level)
(7): Total number of error lines that occurred during non-ECM reception.
(8): Total number of burst error lines that occurred during non-ECM reception.
NOTE: 1) EQM and Rx level are fixed at “FFFF” in Tx mode.
2) The seventh and eighth numbers are fixed at “00” for transmission records and ECM reception records.</td></tr>
<tr><td colspan="2">Rx level calculation
Example: 0000 // 32 V34 // 288/264 // L 01 00 03 04
The four-digit hexadecimal value (N) after “L” indicates the rx level.
The high byte is given first, followed by the low byte. Divide the decimal value of N by -16 to get the Rx level.
In the above example, the decimal value of N (= 0100 [H]) is 256.
So, the actual Rx level is 256/-16 = -16 dB</td></tr>
<tr><td>3</td><td>Not used</td><td>Do not change this setting.</td></tr>
<tr><td>4</td><td>Line error mark print
0: OFF, 1: ON (print)</td><td>When "1", a line error mark is printed on the printout if a line error occurs during reception.</td></tr>
<tr><td>5</td><td>G3/G4 communication parameter display
0: Disabled
1: Enabled</td><td>This is a fault-finding aid. The LCD shows the key parameters (see below). This is normally disabled because it cancels the CSI display for the user.
Be sure to reset this bit to 0 after testing.</td></tr>
<tr><td>6</td><td>Protocol dump list output after each communication
0: Off
1: On</td><td>This is only used for communication troubleshooting. It shows the content of the transmitted facsimile protocol signals. Always reset this bit to 0 after finishing testing. If system switch 09 bit 6 is at “1”, the list is only printed if there was an error during communication.</td></tr>
<tr><td>7</td><td>Not used</td><td>Do not change the setting.</td></tr>
</table>

System Switch 01 - Not used (Do not change the factory settings.)

System Switch 02 [SP No. 1-101-003]		
No	**FUNCTION**	**COMMENTS**
0-1	**Not used**	Do not change these settings.
2	Force after transmission stall 0: Off 1: On	With this setting on, the machine resets itself automatically if a transmission stalls and fails to complete the job.
3	**Not used**	Do not change these settings.
4	File retention time 0: Depends on User Parameter 24 [18(H)] 1: No limit (until the year 2126)	1: A file that had a communication error will not be erased unless the communication is successful.
5	**Not used**	Do not change this setting.
6-7	Memory read/write by RDS Bit 7: 0, Bit 6: 0 Always disabled Bit 7: 0, Bit 6: 1 User selectable Bit 7: 1, Bit 6: 0 User selectable Bit 7: 1, Bit 6: 1 Always enabled	(0,0): All RDS systems are always locked out. (0,1), (1,0): Normally, RDS systems are locked out, but the user can temporarily switch RDS on to allow RDS operations to take place. RDS will automatically be locked out again after a certain time, which is stored in System Switch 03. Note that if an RDS operation takes place, RDS will not switch off until this time limit has expired. (1,1): At any time, an RDS system can access the machine.

System Switch 03 [SP No. 1-101-004]		
No	**FUNCTION**	**COMMENTS**
0-7	Length of time that RDS is temporarily switched on when bits 6 and 7 of System Switch 02 are set to “User selectable”	00 - 99 hours (BCD). This setting is only valid if bits 6 and 7 of System Switch 02 are set to “User selectable”. The default setting is 24 hours.

System Switch 04 [SP No. 1-101-005]		
No	**FUNCTION**	**COMMENTS**
0-2	**Not used**	Do not change these settings.
3	Printing dedicated Tx parameters on Quick/Speed Dial Lists 0: Disabled 1: Enabled	1: Each Quick/Speed dial number on the list is printed with the dedicated tx parameters.
4-7	**Not used**	Do not change these settings.

System Switch 05 - Not used (Do not change the factory settings.)
System Switch 06 - Not used (Do not change the factory settings.)
System Switch 07 - Not used (Do not change the factory settings.)
System Switch 08 - Not used (Do not change the factory settings.)

System Switch 09 [SP No. 1-101-010]		
No	**FUNCTION**	**COMMENTS**
0	Addition of image data from confidential transmissions on the transmission result report 0: Disabled 1: Enabled	If this feature is enabled, the top half of the first page of confidential messages will be printed on transmission result reports.
1	Inclusion of communications on the Journal when no image data was exchanged. 0: Disabled 1: Enabled	0: Communications that reached phase C (message Tx/Rx) of the T.30 protocol are listed on the Journal. 1: Communications that reached phase A (call setup) of T.30 protocol are listed on the Journal. This will include telephone calls.
2	Automatic error report printout 0: Disabled 1: Enabled	0: Error reports will not be printed. 1: Error reports will be printed automatically after failed communications.
3	Printing of the error code on the error report 0: No 1: Yes	1: Error codes are printed on the error reports.

4	**Not used**	Do not change this setting.
5	Power failure report 0: Disabled 1: Enabled	1: A power failure report will be automatically printed after the power is switched on if a fax message disappeared from the memory when the power was turned off last.
6	Conditions for printing the protocol dump list 0: Print for all communications 1: Print only when there is a communication error	This switch becomes effective only when system switch 00 bit 6 is set to 1. 1: Set this bit to 1 when you wish to print a protocol dump list only for communications with errors.
7	Priority given to various types of remote terminal ID when printing reports 0: RTI > CSI > Dial label > Tel. Number 1: Dial label > Tel. number > RTI > CSI	This bit determines which set of priorities the machine uses when listing remote terminal names on reports. Dial Label: The name stored, by the user, for the Quick/Speed Dial number.

System Switch 0A [SP No. 1-101-011]		
No	**FUNCTION**	**COMMENTS**
0	Automatic port selection 0: Disabled, 1: Enabled	When "1" is selected, a suitable port is automatically selected if the selected port is not used.
1-3	**Not used**	Do not change these settings.
4	Dialing on the ten-key pad when the external telephone is off-hook 0: Disabled 1: Enabled	0: Prevents dialing from the ten-key pad while the external telephone is off-hook. Use this setting when the external telephone is not by the machine, or if a wireless telephone is connected as an external telephone. 1: The user can dial on the machine's ten-key pad when the handset is off-hook.
5	On hook dial 0: Disabled 1: Enabled	0: On hook dial is disabled.
6-7	**Not used**	Do not change the factory settings

System Switch 0B - Not used (Do not change the factory settings.)
System Switch 0C - Not used (Do not change the factory settings.)
System Switch 0D - Not used (Do not change the factory settings.)

System Switch 0E [SP No. 1-101-015]		
No	**FUNCTION**	**COMMENTS**
0-1	**Not used**	Do not change the settings.
2	Enable/disable for direct sending selection 0: Direct sending off 1: Direct sending on	Direct sending cannot operate when the capture function is on during sending. Setting this switch to "1" enables direct sending without capture. Setting this switch to "0" masks the direct sending function on the operation panel so it cannot be selected.
3	Action when the external handset goes off-hook 0: Manual tx and rx operation 1: Memory tx and rx operation (the display remains the same)	0: Manual Tx and Rx are possible while the external handset is off-hook. However, memory Tx is not possible. 1: The display stays in standby mode even when the external handset is used, so that other people can use the machine for memory Tx operation. Note that manual Tx and Rx are not possible with this setting.
4-7	**Not used**	Do not change these settings.

System Switch 0F [SP No. 1-101-016]			
No	FUNCTION		COMMENTS
0-7	Country/area code for functional settings (Hex)		This country/area code determines the factory settings of bit switches and RAM addresses. However, it has no effect on the NCU parameter settings and communication parameter RAM addresses. **Cross reference** NCU country code: SP No. 2-103-001 for G3-1 SP No. 2-104-001 for G3-2 SP No. 2-105-001 for G3-3
	00: France	11: USA	
	01: Germany	12: Asia	
	02: UK	12: Asia	
	03: Italy	13: Japan	
	04: Austria	14: Hong Kong	
	05: Belgium	15: South Africa	
	06: Denmark	16: Australia	
	07: Finland	17: New Zealand	
	08: Ireland	18: Singapore	
	09: Norway	19: Malaysia	
	0A: Sweden	1A: China	
	0B: Switzerland	1B: Formosa	
	0C: Portugal	1C: Korea	

	0D: Netherland	20: Turkey	
	0E: Spain	21: Greece	
	0F: Israel	22: Hungary	
	10: ---	23: Czech	
	11: USA	24: Poland	

System Switch 10 [SP No. 1-101-017]		
No	**FUNCTION**	**COMMENTS**
0-7	Threshold memory level for parallel memory transmission	Threshold = N x 128 KB + 256 KB N can be between 00 - FF(H) Default setting: 02(H) = 512 KB

System Switch 11 [SP No. 1-101-018]		
No	**FUNCTION**	**COMMENTS**
0	TTI printing position 0: Superimposed on the page data 1: Printed before the data leading edge	Change this bit to 1 if the TTI overprints information that the customer considers to be important (G3 transmissions).
1	**Not used**	Japan Only
2	**Not used**	Do not change the factory settings.
3	TTI printing type 0: Address unit 1: File unit	TTI printing unit can be selected.
4-6	**Not used**	Do not change the factory settings.
7	**Not used**	Japan Only

System Switch 12 [SP No. 1-101-019]		
No	**FUNCTION**	**COMMENTS**
0-7	TTI printing position in the main scan direction	TTI: 08 to 92 (BCD) mm Input even numbers only. This setting determines the print start position for the TTI from the left edge of the paper. If the TTI is moved too far to the right, it may overwrite the file number which is on the top right of the page. On an A4 page, if the TTI is moved over by more than 50 mm, it may overwrite the page number.

System Switch 13 - Not used (do not change these settings)
System Switch 14 - Not used (do not change these settings)

System Switch 15 [SP No. 1-101-022]		
No	**FUNCTION**	**COMMENTS**
0	**Not used**	Do not change the settings.
1	Going into the Energy Saver mode automatically 0: Enabled 1: Disabled	1: The machine will restart from the Energy Saver mode quickly, because the +5V power supply is active even in the Energy Saver mode.
2-3	**Not used**	Do not change these settings.
4-5	Interval for preventing the machine from entering Energy Saver mode if there is a pending transmission file. Bit 5: 0, Bit 4: 0 1 min Bit 5: 0, Bit 4: 1 30 min1 Bit 5: 1, Bit 4: 0 1 hour Bit 5: 1, Bit 4: 1 24 hours	If there is a file waiting for transmission, the machine does not go to Energy Saver mode during the selected period. After transmitting the file, if there is no file waiting for transmission, the machine goes to the Energy Saver mode.
6-7	**Not used**	Do not change

System Switch 16 [SP No. 1-101-023]		
No	**FUNCTION**	**COMMENTS**
0	Parallel Broadcasting 0: Disabled 1: Enabled	1: The machine sends messages simultaneously using all available ports during broadcasting.
1	Priority setting for the G3 line. 0: PSTN-1 > PSTN-2 or 3 1: PSTN-2 or 3 > PSTN-1	This function allows the user to select the default G3 line type. The optional SG3 unit(s) are required to use the PSTN-2 or 3 setting.
2-7	**Not used**	Do not change these settings.

System Switch 17 - Not used (do not change these settings)
System Switch 18 - Not used (do not change these settings)

System Switch 19 [SP No. 1-101-026]		
No	**FUNCTION**	**COMMENTS**
0-5	**Not used**	Do not change the settings.
6	Extended scanner page memory after memory option is installed 0: Disabled 1: Enabled	0: After installing the memory expansion option, the scanner page memory is extended to 4 MB from 2 MB. 1: If this bit is set to 1 after installing the memory expansion option, the scanner page memory is extended to 12 MB. But the SAF memory decreases to 18 MB.
7	Special Original mode 0: Disabled 1: Enabled	1: If the customer frequently wishes to transmit a form or letterhead which has a colored or printed background, change this bit to “1”. “Original 1” and “Original 2” can be selected in addition to the “Text”, “Text/Photo” and “Photo” modes.

System Switch 1A [SP No. 1-101-027]		
No.	**FUNCTION**	**COMMENTS**
0-7	LS RX memory remaining refresh value setting	Sets a value of 4K. If the amount of memory remaining falls below 4K, documents received in memory are printed to create more space in memory. Initial value: 0x80 (512K) 00-FF (0-1020 KB: Hex)

System Switch 1B - Not used (do not change these settings)
System Switch 1C - Not used (do not change these settings)

System Switch 1D [SP No. 1-101-030]		
No	**FUNCTION**	**COMMENTS**
0	RTI/CSI/CPS code display 0: Enable 1: Disable	0: RTI, CSI, CPS codes are displayed on the top line of the LCD panel during communication. 1: Codes are switched off (no display)
1	**Not used**	Do not change this setting.
2	Destination telephone number display limitation 0: OFF, 1: ON	When "1" is selected, the destination telephone number display is limited and redial is disabled.
3	Operation selection without PIN code registered 0: Transmission interrupted 1: No interrupted transmission	0: When "0" is selected without PIN code registration, transmission is interrupted and an alert message shows on the LCD.
4-7	**Not used**	Do not change these settings.

System Switch 1E [SP No. 1-101-031]		
No	**FUNCTION**	**COMMENTS**
0	Communication after the Journal data storage area has become full 0: Impossible 1: Possible	0: When this switch is on and the journal history becomes full, the next report prints. If the journal history is not deleted, the next transmission cannot be received. This prevents overwriting communication records before the machine can print them. 1: If the buffer memory of the communication records for the Journal is full, fax communications are still possible. But the machine will overwrite the oldest communication records. **NOTE**: This setting is effective only when Automatic Journal printout is enabled but the machine cannot print the report (e.g., no paper).
1	Action when the SAF memory has become full during scanning 0: The current page is erased. 1: The entire file is erased.	0: If the SAF memory becomes full during scanning, the successfully scanned pages are transmitted. 1: If the SAF memory becomes full during scanning, the file is erased and no pages are transmitted. This bit switch is ignored for parallel memory transmission.
2	RTI/CSI display priority 0: RTI 1: CSI	This bit determines which identifier, RTI or CSI, is displayed on the LCD while the machine is communicating in G3 non-standard mode.
3	File No. printing 0: Enabled 1: Disabled	1: File numbers are not printed on any reports.
4	Action when authorized reception is enabled but authorized RTIs/CSIs are not yet programmed 0: All fax reception is disabled 1: Faxes can be received if the sender has an RTI or CSI	If authorized reception is enabled but the user has stored no acceptable sender RTIs or CSIs, the machine will not be able to receive any fax messages. If the customer wishes to receive messages from any sender that includes an RTI or CSI, and to block messages from senders that do not include an RTI or CSI, change this bit to “1”, then enable Authorized Reception. Otherwise, keep this bit at “0 (default setting)”.
5-7	**Not used**	Do not change the settings

System Switch 1F [SP No. 1-101-032]		
No	**FUNCTION**	**COMMENTS**
0	**Not used**	Do not change the settings.
1	Report printout after an original jam during SAF storage or if the SAF memory fills up 0: Enabled 1: Disabled	0: When an original jams, or the SAF memory overflows during scanning, a report will be printed. Change this bit to “1” if the customer does not want to have a report in these cases. Memory tx – Memory storage report Parallel memory tx – Transmission result report
2	**Not used**	Do not change the settings.
3	Received fax print start timing (G3 reception) 0: After receiving each page 1: After receiving all pages	0: The machine prints each page immediately after the machine receives it. 1: The machine prints the complete message after the machine receives all the pages in the memory.
4-6	**Not used**	Do not change the factory settings.
7	Action when a fax SC has occurred 0: Automatic reset 1: Fax unit stops	0: When the fax unit detects a fax SC code other than SC1201 and SC1207, the fax unit automatically resets itself. 1: When the fax unit detects any fax SC code, the fax unit stops. **Cross Reference** Fax SC codes - See “Troubleshooting”

3.3.2 I-FAX SWITCHES

I-fax Switch 00 [SP No. 1-102-001]		
No	**FUNCTION**	**COMMENTS**
	Original Width of TX Attachment File	This setting sets the maximum size of the original that the destination can receive. (Bits 3~7 are reserved for future use or not used.)
0	A4	0: Off (not selected), 1: On (selected) If more than one of these three bits is set to "1", the larger size has priority. For example, if both Bit 2 and Bit 1 are set to "1" then the maximum size is "A3" (Bit 2). When mail is sent, there is no negotiation with the receiving machine at the destination, so the sending machine cannot make a selection for the receiving capabilities (original width setting) of the receiving machine. The original width selected with this switch is used as the RX machine's original width setting, and the original is reduced to this size before sending. The default is A4. If the width selected with this switch is higher than the receiving machine can accept, the machine detects this and this causes an error.
1	B4	
2	A3	
3-6	Reserved	
7	**Not used**	

I-fax Switch 01 [SP No. 1-102-002]		
No	**FUNCTION**	**COMMENTS**
	Original Line Resolution of TX Attachment File	These settings set the maximum resolution of the original that the destination can receive.
0	200x100 Standard	0: Not selected 1: Selected If more than one of these three bits is set to “1”, the higher resolution has priority. For example, if both Bit 0 and Bit 2 are set to “1” then the resolution is set for "Bit 2 200 x 400.
1	200x200 Detail	
2	200x400 Fine	
3	300 x 300 Reserve	
4	400 x 400 Super Fine	
5	600 x 600 Reserve	
6	Reserve	
7	mm/inch	
	This setting selects mm/inch conversion for mail transmission. 0: Off (No conversion), 1: On (Conversion) When on (set to “1”), the machine converts millimeters to inches for sending mail. There is no switch for converting inches to millimeters. Unlike G3 fax transmissions which can negotiate between sender and receiver to determine the setting, mail cannot negotiate between terminals; the mm/inch selection is determined by the sender fax. When this switch is Off (0): Images scanned in inches are sent in inches. Images scanned in mm are sent in mm. Images received in inches are transmitted in inches. Images received in mm are transmitted in mm. When this switch is On (1): Images scanned in inches are sent in inches. Images scanned in mm are converted to inches. Images received in inches are transmitted in inches. Images received in mm are converted to inches.	

I-fax Switch 02 [SP No. 1-102-003]		
No	**FUNCTION**	**COMMENTS**
0	RX Text Mail Header Processing	
	This setting determines whether the header information is printed with text e-mails when they are received. 0: Prints only text mail. 1: Prints mail header information attached to text mail. When a text mail is received with this switch On (1), the “From” address and “Subject” address are printed as header information. When a mail with only binary data is received (a TIFF-F file, for example), this setting is ignored and no header is printed.	
1	Output from Attached Document at E-mail TX Error	
	This setting determines whether only the first page or all pages of an e-mail attachment are printed at the sending station when a transmission error occurs. This allows the customer to see which documents have not reached their intended destinations if sent to the wrong e-mail addresses, for example. 0: Prints 1st page only. 1: Prints all pages.	
2-3	Text String for Return Receipt	
	This setting determines the text string output for the Return Receipt that confirms the transmission was received normally at the destination.	
	00: “Dispatched” Sends from PC mail a request for a Return Receipt. Receives the Return Receipt with “dispatched” in the 2nd part: Disposition: Automatic-action/MDN-send automatically; dispatched The “dispatched” string is included in the Subject string. 01: “Displayed” Sends from PC mail a request for a Return Receipt. Receives the Return Receipt with “displayed” in the 2nd part: Disposition: Automatic-action/MDN-send automatically; displayed The “displayed” string is included in the Subject string. 10: Reserved 11: Reserved A mail requesting a Return Receipt sent from an IFAX with this switch set to “00” (for “dispatched”) received by Microsoft Outlook 2000 may cause an error. If any setting other than “displayed” (01) causes a problem, change the setting to “01” to enable normal sending of the Return Receipt.	
4	Media accept feature	
	This setting adds or does not add the media accept feature to the answer mail to confirm a reception. 0: Does not add the media accept feature to the answer mail 1: Adds the media accept feature to the answer mail. Use this bit switch if a problem occurs when the machine receives an answer mail, which contains the media accept feature field.	
5-6	**Not Used**	

7	Image Resolution of RX Text Mail
	This setting determines the image resolution of the received mail. 0: 200 x 200 1: 400 x 400 The “1” setting requires installation of the Function Upgrade Card in order to have enough SAF (Store and Forward) memory to receive images at 400 x 400 resolution.

I-fax Switch 03 - Not used (do not change the settings) [SP No. 1-102-004]

I-fax Switch 04 [SP No. 1-102-005]

No	FUNCTION	COMMENTS
0	Subject for Delivery TX/Memory Transfer	
	This setting determines whether the RTI/CSI registered on this machine or the RTI/CSI of the originator is used in the subject lines of transferred documents. 0: Puts the RTI/CSI of the originator in the Subject line. If this is used, either the RTI or CSI is used. Only one of these can be received for use in the subject line. 1: Puts the RTI/CSI registered on this machine in the Subject line. When this switch is used to transfer and deliver mail to a PC, the information in the Subject line that indicates where the transmission originated can be used to determine automatically the destination folder for each e-mail.	
1	Subject corresponding to mail post database 0: Standard subject 1: Mail post database subject The standard subject is replaced by the mail post database subject in the following three cases: 1) When the service technician sets the service (software) switch. 2) When memory sending, delivery specified by F code or SMTP reception is done. 3) With relay broadcasting (1st stage without the Schmidt 4 function). **NOTE:** This switch does not apply for condition 3) when the RX system is set up for memory sending, delivery by F-code, sending with SMTP RX and when operators are using FOL (to prevent problems when receiving transmissions).	
2-7	**Not Used**	

I-fax Switch 05 [SP No. 1-102-006]		
No	**FUNCTION**	**COMMENTS**
0	Mail Addresses of SMTP Broadcast Recipients	
	Determines whether the e-mail addresses of the destinations that receive transmissions broadcasted using SMTP protocol are recorded in the Journal. For example: "1st destination + Total number of destinations: 9" in the Journal indicates a broadcast to 9 destinations. 0: Not recorded 1: Recorded	
1	I-Fax Automatic Re-dial Setting 0: OFF 1: ON	Determines whether the I-fax automatically redials when an error occurs.
2-7	**Not Used**	

I-fax Switch 06 - Not used (do not change the settings) [SP No. 1-102-007]
I-fax Switch 07 - Not used (do not change the settings) [SP No. 1-102-008]

I-fax Switch 08 [SP No. 1-102-009]		
No	**FUNCTION**	**COMMENTS**
0-7	Memory Threshold for POP Mail Reception	
	This setting determines the amount of SAF (Store and Forward) memory. (SAF stores fax messages to send later for transmission to more than one location, and also holds incoming messages if they cannot be printed.) When the amount of SAF memory available falls below this setting, mail can no longer be received; received mail is then stored on the mail server. 00-FF (0 to 1024 KB: HEX) **NOTE:** The hexadecimal number you enter is multiplied by 4 KB to determine the amount of memory.	

I-fax Switch 09 [SP No. 1-102-010]		
No	**FUNCTION**	**COMMENTS**
0-3	**Not used**	Do not change the settings
4-7	Restrict TX Retries	This setting determines the number of retries when connection and transmission fails due to errors. 01-F (1-15 Hex)

I-fax Switch 0A - Not used (do not change the settings) **[SP No. 1-102-011]**
I-fax Switch 0B - Not used (do not change the settings) **[SP No. 1-102-012]**
I-fax Switch 0C - Not used (do not change the settings) **[SP No. 1-102-013]**
I-fax Switch 0D - Not used (do not change the settings) **[SP No. 1-102-014]**
I-fax Switch 0E - Not used (do not change the settings) **[SP No. 1-102-015]**

I-fax Switch 0F [SP No. 1-102-016]		
No	**FUNCTION**	**COMMENTS**
0	Delivery Method for SMTP RX Files	
	This setting determines whether files received with SMTP protocol are delivered or output immediately. 0: Off. Files received via SMTP are output immediately without delivery. 1: On. Files received via SMTP are delivered immediately to their destinations.	
1-7	**Not used**	

3.3.3 PRINTER SWITCHES

Printer Switch 00 [SP No. 1-103-001]		
No	**FUNCTION**	**COMMENTS**
0	Select page separation marks 0: Off 1: On	0: If a 2 page RX transmission is split, [*] is printed in the bottom right corner of the 1st page and only a [2] is printed in the upper right corner of the 2nd page. 1: If a 2 page RX transmission is split into two pages, for example, [*] [2] is printed in the bottom right corner of the 1st page and only a [2] is printed in the upper right corner of the 2nd page. **NOTE:** This helps the user to identify pages that have been split because the size of the paper is smaller than the size of the document received. (When A5 is used to print an A4 size document, for example.)
1	Repetition of data when the received page is longer than the printer paper 0: Off 1: On	1: Default. 10 mm of the trailing edge of the previous page are repeated at the top of the next page. 0: The next page continues from where the previous page stopped without any repeated text.
2	Prints the date and time on received fax messages 0: Disabled 1: Enabled	This switch is only effective when user parameter 02 - bit 2 (printing the received date and time on received fax messages) is enabled. 1: The machine prints the received and printed date and time at the bottom of each received page.
3-7	**Not used**	Do not change the settings.

Printer Switch 01 [SP No. 1-103-002]		
No	**FUNCTION**	**COMMENTS**
0-2	**Not used**	Do not change the settings.
3-4	Maximum print width used in the setup protocol Bit 4: 0, Bit 3: 0 = Not used Bit 4: 0, Bit 3: 1 = A3 Bit 4: 1, Bit 3: 0 = B4 Bit 4: 1, Bit 3: 1 = A4	These bits are only effective when bit 7 of printer switch 01 is “1”.
5-6	**Not used**	Do not change the settings.
7	Received message width restriction in the protocol signal to the sender 0: Disabled 1: Enabled	0: The machine informs the transmitting machine of the print width depending on the paper size available from the paper feed stations. Refer to the table on the next page for how the machine chooses the paper width used in the setup protocol (NSF/DIS). 1: The machine informs the transmitting machine of the fixed paper width which is specified by bits 3 and 4 above.

Printer Switch 02 [SP No. 1-103-003]		
No	**FUNCTION**	**COMMENTS**
0	1st paper feed station usage for fax printing 0: Enabled 1: Disabled	0: The paper feed station can be used to print fax messages and reports. 1: The specified paper feed station will not be used for printing fax messages and reports. **NOTE:** Do not disable usage for a paper feed station which has been specified by User Parameter Switch 0F (15), or which is used for the Specified Cassette Selection feature.
1	2nd paper feed station usage for fax printing 0: Enabled 1: Disabled	
2	3rd paper feed station usage for fax printing 0: Enabled 1: Disabled	
3	4th paper feed station usage for fax printing 0: Enabled 1: Disabled	
4	LCT usage for fax printing 0: Enabled 1: Disabled	
5-7	**Not used**	Do not change the settings.

Printer Switch 03 [SP No. 1-103-004]		
No	**FUNCTION**	**COMMENTS**
0	Length reduction of received data 0: Disabled 1: Enabled	0: Incoming pages are printed without length reduction. (Page separation threshold: Printer Switch 03, bits 4 to 7) 1: Incoming page length is reduced when printing. (Maximum reducible length: Printer Switches 04, bits 0 to 4)
1-3	Not used	Do not change the settings
4-7	Page separation setting when sub scan compression is forbidden 00-0F (0-15 mm: Hex) Default: 6 mm	Page separation threshold (with reduction disabled with switch 03-0 above). For example, if this setting is set to "10", and A4 is the selected paper size: If the received document is 10 mm or less longer than A4, then the 10 mm are cut and only 1 page prints. If the received document is 10 mm longer than A4, then the document is split into 2 pages.

Printer Switch 04 [SP No. 1-103-005]

No	FUNCTION	COMMENTS
0-4	Maximum reducible length when length reduction is enabled with switch 03-0 above. <Maximum reducible length> = <Paper length> + (N x 5mm) “N” is the decimal value of the binary setting of bits 0 to 4.	
	For A5 sideways and B5 sideways paper <Maximum reducible length> = <Paper length> + 0.75 x (N x 5mm)	
5-6	Length of the duplicated image on the next page, when page separation has taken place. Bit 6: 0, Bit 5: 0 = 4 mm Bit 6: 1, Bit 5: 0 = 10 mm Bit 6: 0, Bit 5: 1 = 15 mm Bit 6: 1, Bit 5: 1 = **Not used**	
7	**Not used.**	Do not change the setting.

Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Setting
0	0	0	0	0	0 mm
0	0	0	0	1	5 mm
0	0	1	0	0	20 mm
1	1	1	1	1	155 mm

Printer Switch 05 - Not used (do not change the settings)

Printer Switch 06 [SP No. 1-103-007]		
No	**FUNCTION**	**COMMENTS**
0	Printing while a paper cassette is pulled out, when the Just Size Printing feature is enabled. 0: Printing will not start 1: Printing will start if another cassette has a suitable size of paper, based on the paper size selection priority tables.	**Cross reference** Just size printing on/off – User switch 05, bit 5
1-7	**Not used.**	Do not change the settings.

Printer Switch 07 [SP No. 1-103-008]		
No	**FUNCTION**	**COMMENTS**
0-3	**Not used.**	Do not change the settings.
4	List of destinations in the Communication Failure Report for broadcasting 0: All destinations 1: Only destinations where communication failure occurred	1: Only destinations where communication failure occurred are printed on the Communication Failure Report.
5-7	**Not used.**	Do not change the settings.

Printer Switch 08 - Not used (do not change the settings)
Printer Switch 09 - Not used (do not change the settings)
Printer Switch 0A - Not used (do not change the settings)

Printer Switch 0B - Not used (do not change the settings)
Printer Switch 0C - Not used (do not change the settings)
Printer Switch 0D - Not used (do not change the settings)

Printer Switch 0E [SP No. 1-103-015]		
No	**FUNCTION**	**COMMENTS**
0	Paper size selection priority 0: Width 1: Length	0: A paper size that has the same width as the received data is selected first. 1: A paper size which has enough length to print all the received lines without reduction is selected first.
1	Paper size selected for printing A4 width fax data 0: 8.5" x 11" size 1: A4 size	This switch determines which paper size is selected for printing A4 width fax data, when the machine has both A4 and 8.5" x 11" size paper.
2	Page separation 0: Enabled 1: Disabled	1: If all paper sizes in the machine require page separation to print a received fax message, the machine does not print the message (Substitute Reception is used). After a larger size of paper is set in a cassette, the machine automatically prints the fax message.
3-4	Printing the sample image on reports Bit 4: 0, Bit 3: 0 = The upper half only Bit 4: 0, Bit 3: 1 = 50% reduction in sub-scan only Bit 4: 1, Bit 3: 0 = Same size Bit 4: 1, Bit 3: 1 = **Not used**	"Same size" means the sample image is printed at 100%, even if page separation occurs. User Parameter Switch 19 (13H) bit 4 must be set to "0" to enable this switch. Refer to Detailed Section Descriptions for more on this feature.
5-6	**Not used**	Do not change the settings.
7	Equalizing the reduction ratio among separated pages (Page Separation) 0: Enabled 1: Disabled	0: When page separation has taken place, all the pages are reduced with the same reduction ratio. 1: Only the last page is reduced to fit the selected paper size when page separation has taken place. Other pages are printed without reduction.

Printer Switch 0F [SP No. 1-103-016]		
No	**FUNCTION**	**COMMENTS**
0-1	Smoothing feature Bit 1: 0 Bit 0: 0 = Disabled Bit 1: 0 Bit 0: 1 = Disabled Bit 1: 1 Bit 0: 0 = Enabled Bit 1: 1 Bit 0: 1 = **Not used**	(0, 0) (0, 1): Disable smoothing if the machine receives halftone images from other manufacturers fax machines frequently.
2	Duplex printing 0: Disabled 1: Enabled	1: The machine always prints received fax messages in duplex printing mode:
3	Binding direction for Duplex printing 0: Left binding 1: Top binding	0: Sets the binding for the left edge of the stack. 1: Sets the binding for the top of the stack.
4-7	**Not used**	Do not change the settings.

3.3.4 COMMUNICATION SWITCHES

Communication Switch 00 [SP No. 1-104-001]		
No	**FUNCTION**	**COMMENTS**
0-1	Compression modes available in receive mode Bit 1: 0 Bit 0: 0 = MH only Bit 1: 0 Bit 0: 1 = MH/MR Bit 1: 1 Bit 0: 0 = MH/MR/MMR Bit 1: 1 Bit 0: 1 = MH/MR/MMR/JBIG	These bits determine the compression capabilities to be declared in phase B (handshaking) of the T.30 protocol.
2-3	Compression modes available in transmit mode Bit 3: 0 Bit 2: 0 = MH only Bit 3: 0 Bit 2: 1 = MH/MR Bit 3: 1 Bit 2: 0 = MH/MR/MMR Bit 3: 1 Bit 2: 1 = MH/MR/MMR/JBIG	These bits determine the compression capabilities to be used in the transmission and to be declared in phase B (handshaking) of the T.30 protocol.
4	**Not used**	Do not change the settings.
5	JBIG compression method: Reception 0: Only basic supported 1: Basic and optional both supported	Change the setting when communication problems occur using JBIG compression.
6	JBIG compression method: Transmission 0: Basic mode priority 1: Optional mode priority	Change the setting when communication problems occur using JBIG compression.
7	**Not used**	Do not change the settings.

Communication Switch 01 [SP No. 1-104-002]		
No	**FUNCTION**	**COMMENTS**
0	ECM 0: Off 1: On	If this bit is set to 0, ECM is switched off for all communications. In addition, V.8 protocol and JBIG compression are switched off automatically.
1	**Not used**	Do not change the settings.
2-3	Wrong connection prevention method Bit 3: 0, Bit 2: 0 = None Bit 3: 0, Bit 2: 1 = 8 digit CSI Bit 3: 1, Bit 2: 0 = 4 digit CSI Bit 3: 1, Bit 2: 1 = CSI/RTI	(0,1) - The machine will disconnect the line without sending a fax message, if the last 8 digits of the received CSI do not match the last 8 digits of the dialed telephone number. This does not work when manually dialed. (1,0) - The same as above, except that only the last 4 digits are compared. (1,1) - The machine will disconnect the line without sending a fax message, if the other end does not identify itself with an RTI or CSI. (0,0) - Nothing is checked; transmission will always go ahead. **NOTE:** This function does not work when dialing is done from the external telephone.
4-5	**Not used**	Do not change the setting.
6-7	Maximum printable page length available Bit 7: 0 Bit 6: 0 = No limit Bit 7: 0 Bit 6: 1 = B4 (364 mm) Bit 7: 1 Bit 6: 0 = A4 (297 mm) Bit 7: 1 Bit 6: 1 = **Not used**	The setting determined by these bits is informed to the transmitting terminal in the pre-message protocol exchange (in the DIS/NSF frames).

Communication Switch 02 [SP No. 1-104-003]			
No	**FUNCTION**	**COMMENTS**	
0	G3 Burst error threshold 0: Low 1: High	If there are more consecutive error lines in the received page than the threshold, the machine will send a negative response. The Low and High threshold values depend on the sub-scan resolution, and are as follows.	
		100 dpi	6(L) ⇒2(H)
		200 dpi	12(L) ⇒ 24(H)
		300 dpi	18(L) ⇒ 36(H)
		400 dpi	24(L) ⇒ 48(H)
1	Acceptable total error line ratio 0: 5% 1: 10%	If the error line ratio for a page exceeds the acceptable ratio, RTN will be sent to the other end.	
2	Treatment of pages received with errors during G3 reception 0: Deleted from memory without printing 1: Printed	0: Pages received with errors are not printed.	
3	Hang-up decision when a negative code (RTN or PIN) is received during G3 immediate transmission 0: No hang-up, 1: Hang-up	0: The next page will be sent even if RTN or PIN is received. 1: The machine will send DCN and hang up if it receives RTN or PIN. This bit is ignored for memory transmissions or if ECM is being used.	
4-7	**Not used**	Do not change the settings.	

Communication Switch 03 [SP No. 1-104-004]		
No	**FUNCTION**	**COMMENTS**
0-7	Maximum number of page retransmissions in a G3 memory transmission	00 - FF (Hex) times. This setting is not used if ECM is switched on. Default setting - 03(H)

Communication Switch 04 - Not used (do not change the settings)
Communication Switch 05 - Not used (do not change the settings)
Communication Switch 06 - Not used (do not change the settings)
Communication Switch 07 - Not used (do not change the settings)
Communication Switch 08 - Not used (do not change the settings)

Communication Switch 09 [SP No. 1-104-010]		
No	**FUNCTION**	**COMMENTS**
0-7	IP-Fax dial interval setting	Adjusts the interval of the I-fax dialing. The interval of I-fax dialing is calculated by following formula. [Interval time = specified value with this switch x 0.2 msec]

Communication Switch 0A [SP No. 1-104-011]		
No	**FUNCTION**	**COMMENTS**
0	Point of resumption of memory transmission upon redialing 0: From the error page 1: From page 1	0: The transmission begins from the page where transmission failed the previous time. 1: Transmission begins from the first page, using normal memory transmission.
1-7	**Not used**	Do not change the settings.

Communication Switch 0B - Not used (do not change the settings)
Communication Switch 0C - Not used (do not change the settings)

Communication Switch 0D [SP No. 1-104-014]		
No	**FUNCTION**	**COMMENTS**
0-7	The available memory threshold, below which ringing detection (and therefore reception into memory) is disabled	00 to FF (Hex), unit = 4 kbytes (e.g., 06(H) = 24 kbytes) One page is about 24 kbytes. The machine refers to this setting before each fax reception. If the amount of remaining memory is below this threshold, the machine cannot receive any fax messages. If this setting is kept at 0, the machine will detect ringing signals and go into receive mode even if there is no memory available. This will result in communication failure.

Communication Switch 0E [SP No. 1-104-015]		
No	**FUNCTION**	**COMMENTS**
0-7	Minimum interval between automatic dialing attempts	06 to FF (Hex), unit = 2 s (e.g., 06(H) = 12 s) This value is the minimum time that the machine waits before it dials the next destination.

Communication Switch 0F – Not used (do not change the settings.)

Communication Switch 10 [SP No. 1-104-017]		
No	**FUNCTION**	**COMMENTS**
0-7	Memory transmission: Maximum number of dialing attempts to the same destination	01 – FE (Hex) times

Communication Switch 11 – Not used (do not change the settings.)

Communication Switch 12 [SP No. 1-104-019]		
No	**FUNCTION**	**COMMENTS**
0-7	Memory transmission: Interval between dialing attempts to the same destination	01 – FF (Hex) minutes

Communication Switch 13 – Not used (do not change the settings.)

Communication Switch 14 [SP No. 1-104-021]		
No	**FUNCTION**	**COMMENTS**
0	Inch-to-mm conversion during transmission 0: Disabled 1: Enabled	0: In immediate transmission, data scanned in inch format are transmitted without conversion. In memory transmission, data stored in the SAF memory in mm format are transmitted without conversion. **NOTE**: When storing the scanned data into SAF memory, the fax unit always converts the data into mm format. 1: The machine converts the scanned data or stored data in the SAF memory to the format which was specified in the set-up protocol (DIS/NSF) before transmission.
1-5	**Not used**	Do not change the factory settings.
6-7	Available unit of resolution in which fax messages are received Bit 7: 0, Bit 6: 0 = mm Bit 7: 0, Bit 6: 1 = inch Bit 7: 1, Bit 6: 0 = mm and inch (default) Bit 7: 1, Bit 6: 1 = **Not used**	For the best performance, do not change the factory settings. The setting determined by these bits is informed to the transmitting terminal in the pre-message protocol exchange (in the DIS/NSF frames).

Communication Switch 15 – Not used (do not change the settings)

Communication Switch 16 [SP No. 1-104-023]		
No	**FUNCTION**	**COMMENTS**
0	**Not used**	Do not change the factory settings.
1	Optional G3 unit (G3-2) 0: Off 1: On	Change this bit to "1" when installing the first optional G3 unit (G3-2).
2	**Not used**	Do not change the factory settings.
3	Optional G3 unit (G3-3) 0: Off 1: On	Change this bit to "1" when installing the second optional G3 unit (G3-3).
4-7	**Not used**	Do not change the factory settings.

Communication Switch 17 [SP No. 1-104-024]		
No	**FUNCTION**	**COMMENTS**
0	SEP reception 0: Disabled 1: Enabled	0: Polling transmission to another maker's machine using the SEP (Selective Polling) signal is disabled.
1	SUB reception 0: Disabled 1: Enabled	0: Confidential reception to another maker's machine using the SUB (Sub-address) signal is disabled.
2	PWD reception 0: Disabled 1: Enabled	0: Disables features that require PWD (Password) signal reception.
3-6	**Not used**	Do not change the factory settings.
7	Action when there is no box with an F-code that matches the received SUB code 0: Disconnect the line 1: Receive the message (using normal reception mode)	Change this setting when the customer requires.

Communication Switch 18 [SP No. 1-104-025]		
No	**FUNCTION**	**COMMENTS**
0-4	**Not used**	Do not change the factory settings.
5	IP-Fax dial-in routing selection 0: Off 1: On	1: Transfers receiving data to each IP-Fax dial-in number. IP-Fax dial-in number is 4 digit-number.
6-7	**Not used**	Do not change the factory settings.

Communication Switch 19 - Not used (do not change the settings)
Communication Switch 1A - Not used (do not change the settings)

Communication Switch 1B [SP No. 1-104-028]		
No	**FUNCTION**	**COMMENTS**
0-7	Extension access code (0 to 7) to turn V.8 protocol On/Off 0: On 1: Off	If the PABX does not support V.8/V.34 protocol procedure, set this bit to “1” to disable V.8. Example: If “0” is the PSTN access code, set bit 0 to 1. When the machine detects “0” as the first dialed number, it automatically disables V.8 protocol. (Alternatively, if “3” is the PSTN access code, set bit 3 to 1.)

Communication Switch 1C [SP No. 1-104-029]		
No	**FUNCTION**	**COMMENTS**
0-1	Extension access code (8 and 9) to turn V.8 protocol On/Off 0: On 1: Off	Refer to communication switch 1B. Example: If “8” is the PSTN access code, set bit 0 to 1. When the machine detects “8” as the first dialed number, it automatically disables V.8 protocol. (If “9” is the PSTN access code, use bit 1.)
2-7	**Not used**	Do not change the settings.

Communication Switch 1D - Not used (do not change the settings)
Communication Switch 1E - Not used (do not change the settings)
Communication Switch 1F - Not used (do not change the settings)

3.3.5 G3 SWITCHES

G3 Switch 00 [SP No. 1-105-001]		
No	**FUNCTION**	**COMMENTS**
0 1	Monitor speaker during communication (tx and rx) Bit 1: 0, Bit 0: 0 = Disabled Bit 1: 0, Bit 0: 1 = Up to Phase B Bit 1: 1, Bit 0: 0 = All the time Bit 1: 1, Bit 0: 1 = **Not used**	(0, 0): The monitor speaker is disabled all through the communication. (0, 1): The monitor speaker is on up to phase B in the T.30 protocol. (1, 0): Used for testing. The monitor speaker is on all through the communication. Make sure that you reset these bits after testing.
2	Monitor speaker during memory transmission 0: Disabled 1: Enabled	1: The monitor speaker is enabled during memory transmission.
3-5	**Not used**	Do not change the settings.
6	G3 mode selection for direct line 0: Off 1:On	1: G3 communication through the direct line is enabled.
7	**Not used**	Do not change the settings.

G3 Switch 01 [SP No. 1-105-002]		
No	**FUNCTION**	**COMMENTS**
0-1	**Not used**	Do not change the settings.
2-3	**Not used**	Do not change the settings.
4	DIS frame length 0: 10 bytes 1: 4 bytes	1: The bytes in the DIS frame after the 4th byte will not be transmitted (set to 1 if there are communication problems with PC-based faxes which cannot receive the extended DIS frames).
5	**Not used**	Do not change the setting.
6	Forbid CED/AMsam output 0: Off 1: On (Forbid output)	Do not change this setting (Default: 0: Off), unless communication problem is caused by a CED or ANSam transmission.
7	**Not used**	Do not change the setting.

G3 Switch 02 [SP No. 1-105-003]		
No	**FUNCTION**	**COMMENTS**
0	G3 protocol mode used 0: Standard and non-standard 1: Standard only	Change this bit to 1 only when the other end can only communicate with machines that send T.30-standard frames only. 1: Disables NSF/NSS signals (these are used in non-standard mode communication)
1-6	**Not used**	Do not change the settings.
7	Short preamble 0: Disabled 1: Enabled	Refer to Appendix B in the Group 3 Facsimile Manual for details about Short Preamble.

G3 Switch 03 [SP No. 1-105-004]		
No	**FUNCTION**	**COMMENTS**
0	DIS detection number (Echo countermeasure) 0: 1 1: 2	0: The machine will hang up if it receives the same DIS frame twice. 1: Before sending DCS, the machine will wait for the second DIS which is caused by echo on the line.
1	**Not Used**	Do not change the settings.
2	V.8 protocol 0: Disabled 1: Enabled	0: V.8/V.34 communications will not be possible. Note: Do not set to 0 unless the line condition is always bad enough to slow down the data rate to 14.4 kbps or lower.
3	ECM frame size 0: 256 bytes 1: 64 bytes	Keep this bit at “0” in most cases.
4	CTC transmission conditions 0: After one PPR signal received 1: After four PPR signals received (ITU-T standard)	0: When using ECM in non-standard (NSF/NSS) mode, the machine sends a CTC to drop back the modem rate after receiving a PPR, if the following condition is met in communications at 14.4, 12.0, 9.6, and 7.2 kbps. $\sqrt{\text{NTransmit} \leq \text{NResend}}$ NTransmit- Number of transmitted frames NResend- Number of frames to be retransmitted 1: When using ECM, the machine sends a CTC to drop back the modem rate after receiving four PPRs. PPR, CTC: These are ECM protocol signals. This bit is not effective in V.34 communications.
5	Modem rate used for the next page after receiving a negative code (RTN or PIN) 0: No change 1: Fallback	1: The machine’s Tx modem rate will fall back before sending the next page if a negative code is received. This bit is ignored if ECM is being used.
6	**Not Used**	Do not change the settings
7	Select detection of reverse polarity in ringing 0: Off 1: On	This switch is used to prevent reverse polarity in ringing on the phone line (applied to PSTN-G3 ringing). Do not change this setting 0: No detection ⇒ Outside Japan 1: Detection ⇒ Inside Japan only

G3 Switch 04 [SP No. 1-105-005]		
No	**FUNCTION**	**COMMENTS**
0-3	Training error detection threshold	0 - F (Hex); 0 - 15 bits If the number of error bits in the received TCF is below this threshold, the machine informs the sender that training has succeeded.
4-7	**Not used**	Do not change the settings.

G3 Switch 05 [SP No. 1-105-006]						
No	**FUNCTION**					**COMMENTS**
0-3	Initial Tx modem rate					These bits set the initial starting modem rate for transmission. Use the dedicated transmission parameters if you need to change this for specific receivers. If a modem rate 14.4 kbps or slower is selected, V.8 protocol should be disabled manually. **Cross reference** V.8 protocol on/off - G3 switch 03, bit2
	Bit 3	Bit 2	Bit 1	Bit 0	bps	
	0	0	0	1	2.4k	
	0	0	1	0	4.8k	
	0	0	1	1	7.2k	
	0	1	0	0	9.6k	
	0	1	0	1	12.0k	
	0	1	1	0	14.4k	
	0	1	1	1	16.8k	
	1	0	0	0	19.2k	
	1	0	0	1	21.6k	
	1	0	1	0	24.0k	
	1	0	1	1	26.4k	
	1	1	0	0	28.8k	
	1	1	0	1	31.2k	
	1	1	1	0	33.6k	
	Other settings - **Not used**					
4-5	Initial modem type for 9.6 k or 7.2 kbps. Bit 5: 0, Bit 4: 0 = V.29 Bit 5: 0, Bit 4: 1 = V.17 Bit 5: 1, Bit 4: 0 = V.34 Bit 5: 1, Bit 4: 1 = **Not used**					These bits set the initial modem type for 9.6 and 7.2 kbps, if the initial modem rate is set at these speeds.
6-7	**Not used**					Do not change the settings.

G3 Switch 06 [SP No. 1-105-007]

<table>
<tr><th>No</th><th>FUNCTION</th><th>COMMENTS</th></tr>
<tr><td>0-3</td><td>Initial Rx modem rate
<table>
<tr><th>Bit 3</th><th>Bit 2</th><th>Bit 1</th><th>Bit 0</th><th>bps</th></tr>
<tr><td>0</td><td>0</td><td>0</td><td>1</td><td>2.4k</td></tr>
<tr><td>0</td><td>0</td><td>1</td><td>0</td><td>4.8k</td></tr>
<tr><td>0</td><td>0</td><td>1</td><td>1</td><td>7.2k</td></tr>
<tr><td>0</td><td>1</td><td>0</td><td>0</td><td>9.6k</td></tr>
<tr><td>0</td><td>1</td><td>0</td><td>1</td><td>12.0k</td></tr>
<tr><td>0</td><td>1</td><td>1</td><td>0</td><td>14.4k</td></tr>
<tr><td>0</td><td>1</td><td>1</td><td>1</td><td>16.8k</td></tr>
<tr><td>1</td><td>0</td><td>0</td><td>0</td><td>19.2k</td></tr>
<tr><td>1</td><td>0</td><td>0</td><td>1</td><td>21.6k</td></tr>
<tr><td>1</td><td>0</td><td>1</td><td>0</td><td>24.0k</td></tr>
<tr><td>1</td><td>0</td><td>1</td><td>1</td><td>26.4k</td></tr>
<tr><td>1</td><td>1</td><td>0</td><td>0</td><td>28.8k</td></tr>
<tr><td>1</td><td>1</td><td>0</td><td>1</td><td>31.2k</td></tr>
<tr><td>1</td><td>1</td><td>1</td><td>0</td><td>33.6k</td></tr>
<tr><td colspan="5">Other settings - Not used</td></tr>
</table></td><td>▪ These bits set the initial starting modem rate for reception.
▪ Use a lower setting if high speeds pose problems during reception.
▪ If a modem rate 14.4 kbps or slower is selected, V.8 protocol should be disabled manually.
Cross reference:
V.8 protocol on/off - G3 switch 03, bit2</td></tr>
<tr><td>4-7</td><td>Modem types available for reception
<table>
<tr><th>Bit 7</th><th>Bit 6</th><th>Bit 5</th><th>Bit 4</th><th>Setting</th></tr>
<tr><td>0</td><td>0</td><td>0</td><td>1</td><td>V.27ter</td></tr>
<tr><td>0</td><td>0</td><td>1</td><td>0</td><td>V.27ter,V.29</td></tr>
<tr><td>0</td><td>0</td><td>1</td><td>1</td><td>V.27ter, V.29, V.33</td></tr>
<tr><td>0</td><td>1</td><td>0</td><td>0</td><td>V.27ter, V.29, V.17/V.33</td></tr>
<tr><td>0</td><td>1</td><td>0</td><td>1</td><td>V.27ter, V.29, V.17/V33, V.34</td></tr>
<tr><td colspan="5">Other settings - Not used</td></tr>
</table></td><td>▪ The setting of these bits is used to inform the transmitting terminal of the available modem type for the machine in receive mode.
▪ If V.34 is not selected, V.8 protocol must be disabled manually.
Cross reference:
V.8 protocol on/off - G3 switch 03, bit2</td></tr>
</table>

G3 Switch 07 [SP No. 1-105-008]		
No	**FUNCTION**	**COMMENTS**
0-1	PSTN cable equalizer (Tx mode: Internal) Bit 1: 0, Bit 0: 0 = None Bit 1: 0, Bit 0: 1 = Low Bit 1: 1, Bit 0: 0 = Medium Bit 1: 1, Bit 0: 1 = High	Use a higher setting if there is signal loss at higher frequencies because of the length of wire between the modem and the telephone exchange. Use the dedicated transmission parameters for specific receivers. Also, try using the cable equalizer if one or more of the following symptoms occurs. Communication error Modem rate fallback occurs frequently. **NOTE:** This setting is not effective in V.34 communications.
2-3	PSTN cable equalizer (Rx mode: Internal) Bit 3: 0, Bit 2: 0 = None Bit 3: 0, Bit 2: 1 = Low Bit 3: 1, Bit 2: 0 = Medium Bit 3: 1, Bit 2: 1 = High	Use a higher setting if there is signal loss at higher frequencies because of the length of wire between the modem and the telephone exchange. Also, try using the cable equalizer if one or more of the following symptoms occurs. Communication error with error codes such as 0-20, 0-23, etc. Modem rate fallback occurs frequently. **NOTE:** This setting is not effective in V.34 communications.
4	PSTN cable equalizer (V.8/V.17 Rx mode: External) 0: Disabled 1: Enabled	Keep this bit at “1”.
5	**Not used**	Do not change the settings.
6	Parameter selection for dial tone detection 0: Normal parameter 1: Specific parameter	0: This uses the fixed table in the ROM for dial tone detection. 1: This uses the specific parameter adjusted with SRAM (69ECBEH - 69ECDEH). Select this if the dial tone cannot be detected when the "Normal parameter: 0" is selected.
7	**Not used**	Do not change the settings.

G3 Switch 08 - Not used (do not change the settings)
G3 Switch 09 - Not used (do not change the settings)

G3 Switch 0A [SP No. 1-105-011]		
No	**FUNCTION**	**COMMENTS**
0-1	Maximum allowable carrier drop during image data reception Bit 1: 0, Bit 0: 0 = 200 (ms) Bit 1: 0, Bit 0: 1 = 400 (ms) Bit 1: 1, Bit 0: 0 = 800 (ms) Bit 1: 1, Bit 0: 1 = **Not used**	These bits set the acceptable modem carrier drop time. Try using a longer setting if error code 0-22 is frequent.
2	Select cancellation of high-speed RX if carrier signal lost while receiving 0: Off 1: On	This switch setting determines if high-speed receiving ends if the carrier signal is lost when receiving during non-ECM mode
3	**Not used**	Do not change the settings
4	Maximum allowable frame interval during image data reception. 0: 5 s 1: 13 s	This bit set the maximum interval between EOL (end-of-line) signals and the maximum interval between ECM frames from the other end. Try using a longer setting if error code 0-21 is frequent.
5	**Not used**	Do not change the settings.
6	Reconstruction time for the first line in receive mode 0: 6 s 1: 12 s	When the sending terminal is controlled by a computer, there may be a delay in receiving page data after the local machine accepts set-up data and sends CFR. This is outside the T.30 recommendation. But, if this delay occurs, set this bit to 1 to give the sending machine more time to send data. Refer to error code 0-20. ITU-T T.30 recommendation: The first line should come within 5 s of CFR.
7	**Not used**	Do not change the settings.

G3 Switch 0B - Not used (do not change the settings).
G3 Switch 0C - Not used (do not change the settings)
G3 Switch 0D - Not used (do not change the settings).

G3 Switch 0E [SP No 1-105-015]		
0-7	Set CNG send time interval Some machines on the receiving side may not be able to automatically switch the 3-second CNG interval.	
	High order bit	3000-2250ms: 3000-50xNms 3000 – 50 x Nms 0F (3000 ms) ≤ N ≤ FF (2250 ms)
	Low order bit	00-0E(3000-3700ms: 3000+50xNms 3000 – 50 x Nms 0F (3000 ms) ≤ N ≤ 0F (3700 ms)

G3 Switch 0F [SP No. 1-105-016]		
No	**FUNCTION**	**COMMENTS**
0	Alarm when an error occurred in Phase C or later 0: Disabled 1: Enabled	If the customer wants to hear an alarm after each error communication, change this bit to “1”.
1	Alarm when the handset is off-hook at the end of communication 0: Disabled 1: Enabled	If the customer wants to hear an alarm if the handset is off-hook at the end of fax communication, change this bit to “1”.
2	**Not used**	Do not change the settings.
⇒ 4	SIDAA manual calibration setting 0: Off 1: On	1: Manually calibrates for communication with a line, whose current change occurs such as an optical fiber line. **NOTE**: SIDAA means Silicon Direct Access Arrangement. In this case, it refers to the changing of the telecommunications line I/F, i.e. FAX communication circuit, from software to hardware (IC-based) control. Its settings can be changed if trouble with FAX transmission or reception occurs.
5-7	**Not used**	Do not change the settings.

3.3.6 G3-2/3 SWITCHES

These switches require an optional G3 interface unit.

G3-3 switches are the same as for G3-2 switches.

G3-2 Switch 00 [SP No. 1-106-001]		
No	**FUNCTION**	**COMMENTS**
0-1	Monitor speaker during communication (Tx and Rx) Bit 1: 0, Bit 0: 0 = Disabled Bit 1: 0, Bit 0: 1 = Up to Phase B Bit 1: 1, Bit 0: 0 = All the time Bit 1: 1, Bit 0: 1 = Not used	(0, 0): The monitor speaker is disabled all through the communication. (0, 1): The monitor speaker is on up to Phase B in the T.30 protocol. (1, 0): Used for testing. The monitor speaker is on all through the communication. Make sure that you reset these bits after testing.
2	Monitor speaker during memory transmission 0: Disabled 1: Enabled	1: The monitor speaker is enabled during memory transmission.
3-6	**Not used**	Do not change the settings.

G3-2 Switch 01 [SP No. 1-106-002]		
No	**FUNCTION**	**COMMENTS**
0-3	**Not used**	Do not change the settings.
4	DIS frame length 0: 10 bytes, 1: 4 bytes	1: The bytes in the DIS frame after the 4th byte will not be transmitted (set to 1 if there are communication problems with PC-based faxes which cannot receive the extended DIS frames).
5	**Not used**	Do not change the setting.
6	CED/ANSam transmission 0: Disabled 1: Enabled	Do not change this setting, unless the communication problem is caused by the CED/ANSam transmission.
7	**Not used**	Do not change the setting.

G3-2 Switch 02 [SP No. 1-106-003]		
No	**FUNCTION**	**COMMENTS**
0	G3 protocol mode used 0: Standard and non-standard 1: Standard only	Change this bit to 1 only when the other end can only communicate with machines that send T.30-standard frames only. 1: Disables NSF/NSS signals (these are used in non-standard mode communication)
1-4	**Not used**	Do not change the settings.
5	Use of modem rate history for transmission using Quick/Speed Dials 0: Disabled 1: Enabled	0: Communications using Quick/Speed Dials always start from the highest modem rate. 1: The machine refers to the modem rate history for communications with the same machine when determining the most suitable rate for the current communication.
6	**Not used**	Do not change the settings.
7	Short preamble 0: Disabled, 1: Enabled	Refer to Appendix B in the Group 3 Facsimile Manual for details about Short Preamble.

G3-2 Switch 03 [SP No. 1-106-004]		
No	**FUNCTION**	**COMMENTS**
0	DIS detection number (Echo countermeasure) 0: 1 1: 2	0: The machine will hang up if it receives the same DIS frame twice. 1: Before sending DCS, the machine will wait for the second DIS which is caused by echo on the line.
1	**Not used**	Do not change the settings.
2	V.8 protocol 0: Disabled 1: Enabled	0: V.8/V.34 communications will not be possible. **NOTE:** Do not set to 0 unless the line condition is always bad enough to slow down the data rate to 14.4 kbps or lower.
3	ECM frame size 0: 256 bytes 1: 64 bytes	Keep this bit at “0” in most cases.
4	CTC transmission conditions 0: After one PPR signal received 1: After four PPR signals received (ITU-T standard)	0: When using ECM in non-standard (NSF/NSS) mode, the machine sends a CTC to drop back the modem rate after receiving a PPR, if the following condition is met in communications at 14.4, 12.0, 9.6, and 7.2 kbps. $\sqrt{\ }$ NTransmit ≤ NResend NTransmit- Number of transmitted frames NResend- Number of frames to be retransmitted 1: When using ECM, the machine sends a CTC to drop back the modem rate after receiving four PPRs. PPR, CTC: These are ECM protocol signals. This bit is not effective in V.34 communications.
5	Modem rate used for the next page after receiving a negative code (RTN or PIN) 0: No change, 1: Fallback	1: The machine’s Tx modem rate will fall back before sending the next page if a negative code is received. This bit is ignored if ECM is being used.
6	**Not used**	Do not change the settings.
7	**Not used**	Do not change the settings.

G3-2 Switch 04 [SP No. 1-106-005]		
No	**FUNCTION**	**COMMENTS**
0-3	Training error detection threshold	0 - F (Hex); 0 - 15 bits If the number of error bits in the received TCF is below this threshold, the machine informs the sender that training has succeeded.
4-7	**Not used**	Do not change the settings.

G3-2 Switch 05 [SP No. 1-106-006]						
No	**FUNCTION**					**COMMENTS**
0-3	Initial Tx modem rate					These bits set the initial starting modem rate for transmission. Use the dedicated transmission parameters if you need to change this for specific receivers. If a modem rate 14.4 kbps or slower is selected, V.8 protocol should be disabled manually. **Cross reference** V.8 protocol on/off - G3 switch 03, bit2
	Bit 3	Bit 2	Bit 1	Bit 0	bps	
	0	0	0	1	2.4k	
	0	0	1	0	4.8k	
	0	0	1	1	7.2k	
	0	1	0	0	9.6k	
	0	1	0	1	12.0k	
	0	1	1	0	14.4k	
	0	1	1	1	16.8k	
	1	0	0	0	19.2k	
	1	0	0	1	21.6k	
	1	0	1	0	24.0k	
	1	0	1	1	26.4k	
	1	1	0	0	28.8k	
	1	1	0	1	31.2k	
	1	1	1	0	33.6k	
	Other settings - **Not used**					
4-5	Initial modem type for 9.6 k or 7.2 kbps. Bit 5: 0, Bit 4: 0 = V.29 Bit 5: 0, Bit 4: 1 = V.17 Bit 5: 1, Bit 4: 0 = V.34 Bit 5: 1, Bit 4: 1 = **Not used**					These bits set the initial modem type for 9.6 and 7.2 kbps, if the initial modem rate is set at these speeds.
6-7	**Not used**					Do not change the settings.

G3-2 Switch 06 [SP No. 1-106-007]

<table>
<tr><th>No</th><th>FUNCTION</th><th>COMMENTS</th></tr>
<tr><td>0-3</td><td>
Initial Rx modem rate
<table>
<tr><th>Bit 3</th><th>Bit 2</th><th>Bit 1</th><th>Bit 0</th><th>bps</th></tr>
<tr><td>0</td><td>0</td><td>0</td><td>1</td><td>2.4k</td></tr>
<tr><td>0</td><td>0</td><td>1</td><td>0</td><td>4.8k</td></tr>
<tr><td>0</td><td>0</td><td>1</td><td>1</td><td>7.2k</td></tr>
<tr><td>0</td><td>1</td><td>0</td><td>0</td><td>9.6k</td></tr>
<tr><td>0</td><td>1</td><td>0</td><td>1</td><td>12.0k</td></tr>
<tr><td>0</td><td>1</td><td>1</td><td>0</td><td>14.4k</td></tr>
<tr><td>0</td><td>1</td><td>1</td><td>1</td><td>16.8k</td></tr>
<tr><td>1</td><td>0</td><td>0</td><td>0</td><td>19.2k</td></tr>
<tr><td>1</td><td>0</td><td>0</td><td>1</td><td>21.6k</td></tr>
<tr><td>1</td><td>0</td><td>1</td><td>0</td><td>24.0k</td></tr>
<tr><td>1</td><td>0</td><td>1</td><td>1</td><td>26.4k</td></tr>
<tr><td>1</td><td>1</td><td>0</td><td>0</td><td>28.8k</td></tr>
<tr><td>1</td><td>1</td><td>0</td><td>1</td><td>31.2k</td></tr>
<tr><td>1</td><td>1</td><td>1</td><td>0</td><td>33.6k</td></tr>
</table>
Other settings - Not used
</td><td>
▪ These bits set the initial starting modem rate for reception.
▪ Use a lower setting if high speeds pose problems during reception.
▪ If a modem rate 14.4 kbps or slower is selected, V.8 protocol should be disabled manually.
Cross reference:
V.8 protocol on/off - G3 switch 03, bit2
</td></tr>
<tr><td>4-7</td><td>
Modem types available for reception
<table>
<tr><th>Bit 7</th><th>Bit 6</th><th>Bit 5</th><th>Bit 4</th><th>Setting</th></tr>
<tr><td>0</td><td>0</td><td>0</td><td>1</td><td>V.27ter</td></tr>
<tr><td>0</td><td>0</td><td>1</td><td>0</td><td>V.27ter,V.29</td></tr>
<tr><td>0</td><td>0</td><td>1</td><td>1</td><td>V.27ter, V.29, V.33</td></tr>
<tr><td>0</td><td>1</td><td>0</td><td>0</td><td>V.27ter, V.29, V.17/V.33</td></tr>
<tr><td>0</td><td>1</td><td>0</td><td>1</td><td>V.27ter, V.29, V.17/V33, V.34</td></tr>
</table>
Other settings - Not used
</td><td>
▪ The setting of these bits is used to inform the transmitting terminal of the available modem type for the machine in receive mode.
▪ If V.34 is not selected, V.8 protocol must be disabled manually.
Cross reference:
V.8 protocol on/off - G3 switch 03, bit2
</td></tr>
</table>

G3-2 Switch 07 [SP No. 1-106-008]		
No	**FUNCTION**	**COMMENTS**
0-1	PSTN cable equalizer (Tx mode: Internal) Bit 1: 0, Bit 0: 0 = None Bit 1: 0, Bit 0: 1 = Low Bit 1: 1, Bit 0: 0 = Medium Bit 1: 1, Bit 0: 1 = High	Use a higher setting if there is signal loss at higher frequencies because of the length of wire between the modem and the telephone exchange. Use the dedicated transmission parameters for specific receivers. Also, try using the cable equalizer if one or more of the following symptoms occurs. Communication error Modem rate fallback occurs frequently. **NOTE:** This setting is not effective in V.34 communications.
2-3	PSTN cable equalizer (Rx mode: Internal) Bit 3: 0, Bit 2: 0 = None Bit 3: 0, Bit 2: 1 = Low Bit 3: 1, Bit 2: 0 = Medium Bit 3: 1, Bit 2: 1 = High	Use a higher setting if there is signal loss at higher frequencies because of the length of wire between the modem and the telephone exchange. Also, try using the cable equalizer if one or more of the following symptoms occurs. Communication error with error codes such as 0-20, 0-23, etc. Modem rate fallback occurs frequently. **NOTE:** This setting is not effective in V.34 communications.
4	PSTN cable equalizer (V.8/V.17 Rx mode: External) 0: Disabled 1: Enabled	Keep this bit at “1”.
5	**Not used**	Do not change the settings.
6	Parameter selection for dial tone detection 0: Normal parameter 1: Specific parameter	0: This uses the fixed table in the ROM for dial tone detection. 1: This uses the specific parameter adjusted with SRAM (69ECBEH - 69ECDEH). Select this if the dial tone cannot be detected when the "Normal parameter: 0" is selected.
7	**Not used**	Do not change the settings.

G3-2 Switch 08 - Not used (do not change the settings)
G3-2 Switch 09 - Not used (do not change the settings)

G3-2 Switch 0A [SP No. 1-106-011]		
No	**FUNCTION**	**COMMENTS**
0-1	Maximum allowable carrier drop during image data reception Bit 1: 0, Bit 0: 0 = 200 (ms) Bit 1: 0, Bit 0: 1 = 400 (ms) Bit 1: 1, Bit 0: 0 = 800 (ms) Bit 1: 1, Bit 0: 1 = **Not used**	These bits set the acceptable modem carrier drop time. Try using a longer setting if error code 0-22 is frequent.
2	Select cancellation of high-speed RX if carrier signal lost while receiving 0: Off 1: On	This switch setting determines if high-speed receiving ends if the carrier signal is lost when receiving during non-ECM mode
3	**Not used**	Do not change the settings
4	Maximum allowable frame interval during image data reception. 0: 5 s 1: 13 s	This bit set the maximum interval between EOL (end-of-line) signals and the maximum interval between ECM frames from the other end. Try using a longer setting if error code 0-21 is frequent.
5	**Not used**	Do not change the settings.
6	Reconstruction time for the first line in receive mode 0: 6 s 1: 12 s	When the sending terminal is controlled by a computer, there may be a delay in receiving page data after the local machine accepts set-up data and sends CFR. This is outside the T.30 recommendation. But, if this delay occurs, set this bit to 1 to give the sending machine more time to send data. Refer to error code 0-20. ITU-T T.30 recommendation: The first line should come within 5 s of CFR.
7	**Not used**	Do not change the settings.

G3-2 Switch 0B - Not used (do not change the settings.)
G3-2 Switch 0C - Not used (do not change the settings.)
G3-2 Switch 0D - Not used (do not change the settings)
G3-2 Switch 0E - Not used (do not change the settings)
G3-2 Switch 0F - Not used (do not change the settings)

3.3.7 IP FAX SWITCHES

IP Fax Switch 00 [SP No. 1-111-001]		
No.	**FUNCTION**	**COMMENTS**
0	**Not used**	Do not change this setting.
1	IP Fax Transport 0: TCP, 1: UDP	Selects TCP or UDP protocol for IP-Fax
2	IP Fax single port selection 0: OFF, 1: ON (enable)	Selects single data port.
3	IP Fax double ports (single data port) selection 0: OFF, 1: ON (enable)	Selects whether IP-Fax uses a double port.
4	IP Fax Gatekeeper 0: OFF, 1: ON (enable)	Enables/disables the communication via the gatekeeper for IP-Fax.
5	IP Fax T30 bit signal reverse 0: LSB first, 1: MSB first	Reverses the T30 bit signal.
6	IP Fax max bit rate setting 0: Not affected, 1: Affected	When "0" is selected, the max bit rate does not affect the value of the DIS/DCS. When "1" is selected, the max bit rate affects the value of the DIS/DCS.
7	IP Fax received telephone number confirmation 0: No confirmation, 1: Confirmation	When "0" is selected, fax data is received without checking the telephone number. When "1" is selected, fax data is received only when confirming that the telephone number from the sender matches the registered telephone number in this machine. If this confirmation fails, the line is disconnected.

<table>
<tr><th colspan="7">IP-Fax Switch 01</th></tr>
<tr><th>No.</th><th colspan="5">FUNCTION</th><th>COMMENTS</th></tr>
<tr><td rowspan="8">0-3</td><td colspan="5">Select IP FAX Delay Level</td><td rowspan="8">Raise the level by selecting a higher setting if too many transmission errors are occurring on the network.
If TCP/UDP is enabled on the network, raise this setting on the T.30 machine. Increasing the delay time allows the recovery of more lost packets.
If only UDP is enabled, increase the number of redundant packets.
Level 1~2: 3 Redundant packets
Level 3: 4 Redundant packets</td></tr>
<tr><td>Bit3</td><td>Bit2</td><td>Bit1</td><td>Bit0</td><td>Setting</td></tr>
<tr><td>0</td><td>0</td><td>0</td><td>0</td><td>Level 0</td></tr>
<tr><td>0</td><td>0</td><td>0</td><td>1</td><td>Level 1</td></tr>
<tr><td>0</td><td>0</td><td>1</td><td>0</td><td>Level 2</td></tr>
<tr><td>0</td><td>0</td><td>1</td><td>1</td><td>Level 3</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>4-7</td><td colspan="5">IP Fax preamble wait time setting</td><td>Selects the preamble wait time.
[00 to 0f]
There are 16 values in this 4-bit binary switch combination.
Waiting time: set value level x 100 ms
Max: 0f (1500 ms) Min: 00 (No wait time)
The default is "0000" (00H).</td></tr>
</table>

IP Fax Switch 02 [SP No. 1-111-003]		
No.	**FUNCTION**	**COMMENTS**
0	IP Fax bit signal reverse setting 0: Maker code setting 1: Internal bit switch setting	When "0" is selected, the bit signal reverse method is decided by the maker code. When "1" is selected, the bit signal reverse method is decided by the internal bit switch. When communicating between IP Fax devices, LSB first is selected.)
1	IP Fax transmission speed setting 0: Modem speed 1: No limitation	Selects the transmit speed for IP Fax communication.
2	SIP transport setting 0: TCP 1: UDP	This bit switch sets the transport that has priority for receiving IP Fax data. This function is activated only when the sender has both TCP and UDP.
3	CCM connection 0: No CCM connection 1: CCM connection	When "1" is selected, only the connection call message with H.323 or no tunneled H.245 is transmitted via CCM.
4	Message reception selection from non-registered SIP server 0: Answer 1: Not answer	0: This answers the INVITE message from the SIP server not registered for the machine. 1: This does not receive the INVITE message from the SIP server not registered for the machine and send a refusal message.
5	ECM communication setting 0: No limit for image compression 1: Limit for image compression	0: This does not limit the type of the image compression with ECM communication. 1: When the other end machine is Ciscco, this permits the image compression other than JBIG or MMR with ECM communication.
6-7	**Not used**	Do not change these settings.

IP Fax Switch 03 [SP No. 1-111-004]		
No.	**FUNCTION**	**COMMENTS**
0	Effective field limitation for G3 standard function information 0: OFF, 1: 4byte (DIS)	Limits the effective field for standard G3 function information.
1	Switching between G3 standard and G3 non standard 0: Enable switching 1: G3 standard only	Enables/disables switching between G3 standard and G3 non-standard.
2	Not used.	Do not change this setting.
3	ECM frame size selection at transmitting 0: 256byte, 1: 64byte	Selects the ECM frame size for sending.
4	DIS detection times for echo prevention 0: 1 time, 1: 2 times	Sets the number of times for DIS to detect echoes.
5	CTC transmission selection 0: PPRx1 1: PPRx4	When "0" is selected, the transmission condition is decided by error frame numbers. When "1" is selected, the transmission condition is based on the ITU-T method.
6	Shift down setting at receiving negative code 0: OFF, 1: ON	Selects whether to shift down when negative codes are received.
7	**Not used**	Do not change this setting.

IP Fax Switch 04 [SP No. 1-111-005]		
No.	**FUNCTION**	**COMMENTS**
0	TCF error threshold	Sets the TCF error threshold level. [00 to 0f] The default is "1111" (0fH).
1		
2		
3		
4-7	**Not used**	Do not change these settings.

<table>
<tr><th colspan="6">IP Fax Switch 05 [SP No. 1-111-006]</th></tr>
<tr><th>No.</th><th colspan="4">FUNCTION</th><th>COMMENTS</th></tr>
<tr><td rowspan="15">0-3</td><td colspan="5">Modem bit rate setting for transmission
Sets the modem bit rate for transmission. The default is "0110" (14.4K bps).</td></tr>
<tr><td>Bit 3</td><td>Bit 2</td><td>Bit 1</td><td>Bit 0</td><td></td></tr>
<tr><td>0</td><td>0</td><td>0</td><td>1</td><td>2400 bps</td></tr>
<tr><td>0</td><td>0</td><td>1</td><td>1</td><td>4800 bps</td></tr>
<tr><td>0</td><td>0</td><td>1</td><td>1</td><td>7200 bps</td></tr>
<tr><td>0</td><td>1</td><td>0</td><td>0</td><td>9600 bps</td></tr>
<tr><td>0</td><td>1</td><td>0</td><td>1</td><td>12.0 Kbps</td></tr>
<tr><td>0</td><td>1</td><td>1</td><td>0</td><td>14.4 Kbps</td></tr>
<tr><td>0</td><td>1</td><td>1</td><td>1</td><td>16.8 Kbps</td></tr>
<tr><td>1</td><td>0</td><td>0</td><td>0</td><td>19.2 Kbps</td></tr>
<tr><td>1</td><td>0</td><td>0</td><td>1</td><td>21.6 Kbps</td></tr>
<tr><td>1</td><td>0</td><td>1</td><td>0</td><td>24.0 Kbps</td></tr>
<tr><td>1</td><td>0</td><td>1</td><td>1</td><td>26.4 Kbps</td></tr>
<tr><td>1</td><td>1</td><td>0</td><td>0</td><td>28.8 Kbps</td></tr>
<tr><td>1</td><td>1</td><td>0</td><td>1</td><td>31.2 Kbps</td></tr>
<tr><td>1</td><td>1</td><td>1</td><td>0</td><td>33.6 Kbps</td></tr>
<tr><td>4-5</td><td colspan="5">Modem setting for transmission
Sets the modem for transmission.
The default is "00" (V29).
Bit 5: 0, Bit 4: 0 = V29
Bit 5: 0, Bit 4: 1 = V17
Bit 5: 1, Bit 4: 0 = V34*
Bit 5: 1, Bit 4: 1 = Not used
*V34 is not supported for IP-Fax communication.</td></tr>
<tr><td>6-7</td><td colspan="4">Not used</td><td>Do not change these settings.</td></tr>
</table>

IP Fax Switch 06 [SP No. 1-111-007]

No.	FUNCTION				COMMENTS
0-3	Modem bit rate setting for reception Sets the modem bit rate for reception. The default is "0110" (14.4K bps).				
	Bit 3	Bit 2	Bit 1	Bit 0	
	0	0	0	1	2400 bps
	0	0	1	0	4800 bps
	0	0	1	1	7200 bps
	0	1	0	0	9600 bps
	0	1	0	1	12.0 Kbps
	0	1	1	0	14.4 Kbps
	0	1	1	1	16.8 Kbps
	1	0	0	0	19.2 Kbps
	1	0	0	1	21.6 Kbps
	1	0	1	0	24.0 Kbps
	1	0	1	1	26.4 Kbps
	1	1	0	0	28.8 Kbps
	1	1	0	1	31.2 Kbps
	1	1	1	0	33.6 Kbps
4-7	Modem setting for reception Sets the modem type for reception. The default is "0100" (V27ter, V29, V17).				
	Bit 7	Bit 6	Bit 5	Bit 4	
	0	0	0	1	V27ter
	0	0	1	0	V27ter, V29
	0	0	1	1	V27ter, V29, V33 (invalid)
	0	1	0	0	V27ter, V29, V17
	0	1	0	1	V27ter, V29, V17, V34*
	*V34 is not supported for IP-Fax communication.				

IP Fax Switch 07 [SP No. 1-111-008]		
No.	**FUNCTION**	**COMMENTS**
0	TSI information 0: Not added, 1: Added	Adds or does not add TSI information to NSS(S).
1	DCN transmission setting at T1 timeout 0: Not transmitted, 1: Transmitted	Transmits or does not transmit DCN at T1 timeout.
2	**Not used**	Do not change this setting.
3	Hang up setting at DIS reception disabled 0: No hang up 1: Hang up after transmitting DCN	Sets whether the machine disconnects after DIS reception.
4	Number of times for training 0: 1 time, 1: 2 times	Selects the number of times training is done at the same bit rate.
5	Space CSI transmission setting at no CSI registration 0: Not transmitted, 1: Transmitted	When "0" is selected, frame data is enabled. When "1" is selected, the transmitted data is all spaces.
6-7	**Not used**	Do not change these settings.

IP Fax Switch 08 [SP No. 1-111-009]		
No.	**FUNCTION**	**COMMENTS**
0-1	T1 timer adjustment Adjusts the T1 timer. The default is "00" (35 seconds). Bit 1: 0, Bit 0: 0 = 35 sec Bit 1: 0, Bit 0: 1 = 40 sec Bit 1: 1, Bit 0: 0 = 50 sec Bit 1: 1, Bit 0: 1 = 60 sec	-
2-3	T4 timer adjustment Adjust the T4 timer. The default is "00" (3 seconds). Bit 3: 0, Bit 2: 0 = 3 sec Bit 3: 0, Bit 2: 1 = 3.5 sec Bit 3: 1, Bit 2: 0 = 4 sec Bit 3: 1, Bit 2: 1 = 5 sec	-
4-5	T0 timer adjustment Bit 5: 0, Bit 4: 0 = 75 sec Bit 5: 0, Bit 4: 1 = 120 sec Bit 5: 1, Bit 4: 0 = 180 sec Bit 5: 1, Bit 4: 1 = 240 sec	Adjusts the fail safe timer. This timer sets the interval between "setup" data transmission and T.38 phase decision. If your destination return is late on the network or G3 fax return is late, adjust the longer interval timer. The default is "00" (75 seconds).
6-7	**Not used**	Do not change these settings.

3.4 NCU PARAMETERS

The following tables give the RAM addresses and the parameter calculation units that the machine uses for ringing signal detection and automatic dialing. The factory settings for each country are also given. Most of these must be changed by RAM read/write (SP2-102), but some can be changed using NCU Parameter programming (SP2-103, 104 and 105); if SP2-103, 104 and 105 can be used, this will be indicated in the Remarks column. The RAM is programmed in hex code unless (BCD) is included in the Unit column.

NOTE: 1) The following addresses describe settings for the standard NCU.
2) Change the fourth digit from "5" to "6" (e.g. 680500 to 680600) for the settings for the first optional G3 interface unit and from "5" to "7" (e.g. 680700) for the settings for the second optional G3 interface unit.

Address	Function					
680500	Country/Area code for NCU parameters					
	Use the Hex value to program the country/area code directly into this address, or use the decimal value to program it using SP2-103-001					
	Country /Area	**Decimal**	**Hex**	**Country /Area**	**Decimal**	**Hex**
	France	00	00	USA	17	11
	Germany	01	01	Asia	18	12
	UK	02	02	Hong Kong	20	14
	Italy	03	03	South Africa	21	15
	Austria	04	04	Australia	22	16
	Belgium	05	05	New Zealand	26	17
	Denmark	06	06	Singapore	24	18
	Finland	07	07	Malaysia	25	19
	Ireland	08	08	China	26	1A
	Norway	09	09	Taiwan	27	1B
	Sweden	10	0A	Korea	28	1C
	Switzerland	11	0B	Turkey	32	20
	Portugal	12	0C	Greece	33	21
	Holland	13	0D	Hungary	34	22
	Spain	14	0E	Czech	35	23
	Israel	15	0F	Poland	36	24

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Address	Function	Unit	Remarks
680501	Line current detection time	20 ms	Line current detection is disabled. Line current is not detected if 680501 contains FF.
680502	Line current wait time		
680503	Line current drop detect time		
680504	PSTN dial tone frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680505	PSTN dial tone frequency upper limit (low byte)		
680506	PSTN dial tone frequency lower limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680507	PSTN dial tone frequency lower limit (low byte)		
680508	PSTN dial tone detection time	20 ms	If 680508 contains FF(H), the machine pauses for the pause time (address 68050D / 68050E). Italy: See Note 2.
680509	PSTN dial tone reset time (LOW)		
68050A	PSTN dial tone reset time (HIGH)		
68050B	PSTN dial tone continuous tone time		
68050C	PSTN dial tone permissible drop time		
68050D	PSTN wait interval (LOW)		-
68050E	PSTN wait interval (HIGH)		
68050F	PSTN ring-back tone detection time	20 ms	Detection is disabled if this contains FF.
680510	PSTN ring-back tone off detection time	20 ms	-
680511	PSTN detection time for silent period after ring-back tone detected (LOW)	20 ms	-
680512	PSTN detection time for silent period after ring-back tone detected (HIGH)	20 ms	-
680513	PSTN busy tone frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680514	PSTN busy tone frequency upper limit (low byte)		

Address	Function	Unit	Remarks
680515	PSTN busy tone frequency lower limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680516	PSTN busy tone frequency lower limit (low byte)		
680517	PABX dial tone frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680518	PABX dial tone frequency upper limit (low byte)		
680519	PABX dial tone frequency lower limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
68051A	PABX dial tone frequency lower limit (low byte)		
68051B	PABX dial tone detection time	20 ms	If 68051B contains FF, the machine pauses for the pause time (680520 / 680521).
68051C	PABX dial tone reset time (LOW)		
68051D	PABX dial tone reset time (HIGH)		
68051E	PABX dial tone continuous tone time		
68051F	PABX dial tone permissible drop time		
680520	PABX wait interval (LOW)		-
680521	PABX wait interval (HIGH)		
680522	PABX ringback tone detection time	20 ms	If both addresses contain FF(H), tone detection is disabled.
680523	PABX ringback tone off detection time	20 ms	
680524	PABX detection time for silent period after ringback tone detected (LOW)	20 ms	If both addresses contain FF(H), tone detection is disabled.
680525	PABX detection time for silent period after ringback tone detected (HIGH)	20 ms	
680526	PABX busy tone frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680527	PABX busy tone frequency upper limit (low byte)		

Address	Function	Unit	Remarks
680528	PABX busy tone frequency lower limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680529	PABX busy tone frequency lower limit (low byte)		
68052A	Busy tone ON time: range 1	20 ms	-
68052B	Busy tone OFF time: range 1		
68052C	Busy tone ON time: range 2		
68052D	Busy tone OFF time: range 2		
68052E	Busy tone ON time: range 3		
68052F	Busy tone OFF time: range 3	20 ms	
680530	Busy tone ON time: range 4		
680531	Busy tone OFF time: range 4		
680532	Busy tone continuous tone detection time		
680533	Busy tone signal state time tolerance for all ranges, and number of cycles required for detection (a setting of 4 cycles means that ON-OFF-ON or OFF-ON-OFF must be detected twice). Tolerance (±) Bit 1: 0, Bit 0: 0 = 75% Bits 2 and 3 must always be kept at 0. Bit 1: 0, Bit 0: 0 = 50% Bits 2 and 3 must always be kept at 0. Bit 1: 0, Bit 0: 0 = 25% Bit 1: 0, Bit 0: 0 = 12.5% Bits 7, 6, 5, 4 - number of cycles required for cadence detection		
680534	International dial tone frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680535	International dial tone frequency upper limit (low byte)		
680536	International dial tone frequency lower limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680537	International dial tone frequency lower limit (low byte)		
680538	International dial tone detection time	20 ms	If 680538 contains FF, the machine pauses for the pause time (68053D / 68053E). Belgium: See Note 2.
680539	International dial tone reset time (LOW)		
68053A	International dial tone reset time (HIGH)		

Address	Function	Unit	Remarks
68053B	International dial tone continuous tone time		
68053C	International dial tone permissible drop time		
68053D	International dial wait interval (LOW)		-
68053E	International dial wait interval (HIGH)		
68053F	Country dial tone upper frequency limit (HIGH)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680540	Country dial tone upper frequency limit (LOW)		
680541	Country dial tone lower frequency limit (HIGH)		If both addresses contain FF(H), tone detection is disabled.
680542	Country dial tone lower frequency limit (LOW)		
680543	Country dial tone detection time	20 ms	If 680543 contains FF, the machine pauses for the pause time (680548 / 680549).
680544	Country dial tone reset time (LOW)		
680545	Country dial tone reset time (HIGH)		
680546	Country dial tone continuous tone time	-	-
680547	Country dial tone permissible drop time	20 ms	-
680548	Country dial wait interval (LOW)		
680549	Country dial wait interval (HIGH)		
68054A	Time between opening or closing the DO relay and opening the OHDI relay	1 ms	See Notes 3, 6 and 8. SP2-103-012 (parameter 11).
68054B	Break time for pulse dialing	1 ms	See Note 3. SP2-103-013 (parameter 12).
68054C	Make time for pulse dialing	1 ms	See Note 3. SP2-103-014 (parameter 13).
68054D	Time between final OHDI relay closure and DO relay opening or closing	1 ms	See Notes 3, 6 and 8. SP2-103-015 (parameter 14). This parameter is only valid in Europe.

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Address	Function	Unit	Remarks
68054E	Minimum pause between dialed digits (pulse dial mode)	20 ms	See Note 3 and 8. SP2-103-016 (parameter 15).
68054F	Time waited when a pause is entered at the operation panel		SP2-103-017 (parameter 16). See Note 3.
680550	DTMF tone on time	1 ms	SP2-103-018 (parameter 17).
680551	DTMF tone off time		SP2-103-019 (parameter 18).
680552	Tone attenuation level of DTMF signals while dialing	-N x 0.5 – 3.5 dBm	SP2-103-020 (parameter 19). See Note 5.
680553	Tone attenuation value difference between high frequency tone and low frequency tone in DTMF signals	-dBm x 0.5	SP2-103-021 (parameter 20). The setting must be less than –5dBm, and should not exceed the setting at 680552h above. See Note 5.
680554	PSTN: DTMF tone attenuation level after dialling	-N x 0.5 – 3.5 dBm	SP2-103-022 (parameter 21). See Note 5.
680555	ISDN: DTMF tone attenuation level after dialling	-dBm x 0.5	See Note 5
680556	Not used	-	Do not change the settings.
680557	Time between 68054Dh (NCU parameter 14) and 68054Eh (NCU parameter 15)	1 ms	This parameter takes effect when the country code is set to France.
680558	Not used	-	Do not change the setting.
680559	Grounding time (ground start mode)	20 ms	The Gs relay is closed for this interval.
68055A	Break time (flash start mode)	1 ms	The OHDI relay is open for this interval.
68055B	International dial access code (High)	BCD	For a code of 100: 68055B - F1 68055C - 00
68055C	International dial access code (Low)		

Address	Function	Unit	Remarks
68055D	PSTN access pause time	20 ms	This time is waited for each pause input after the PSTN access code. If this address contains FF[H], the pause time stored in address 68054F is used. Do not set a number more than 7 in the UK.
68055E	Progress tone detection level, and cadence detection enable flags	Bit 7: 0, Bit 6: 0, Bit 5: 0 = -25.0 dBm Bit 7: 0, Bit 6: 0, Bit 5: 1 = -35.0 dBm Bit 7: 0, Bit 6: 1, Bit 5: 0 = -30.0 dBm Bit 7: 1, Bit 6: 0, Bit 5: 0 = -40.0 dBm Bit 7: 1, Bit 6: 1, Bit 5: 0 = -49.0 dBm Bits 2, 0 - See Note 2.	
68055F To 680564	**Not used**	-	Do not change the settings.
680565	Long distance call prefix (HIGH)	BCD	For a code of 0: 680565 – FF 680566 - FF
680566	Long distance call prefix (LOW)	BCD	
680567 to 680571	**Not used**	-	Do not change the settings.
680572	Acceptable ringing signal frequency: range 1, upper limit	1000/ N (Hz).	SP2-103-003 (parameter 02).
680573	Acceptable ringing signal frequency: range 1, lower limit		SP2-103-004 (parameter 03).
680574	Acceptable ringing signal frequency: range 2, upper limit		SP2-103-005 (parameter 04).
680575	Acceptable ringing signal frequency: range 2, lower limit		SP2-103-006 (parameter 05).
680576	Number of rings until a call is detected	1	SP2-103-007 (parameter 06). The setting must not be zero.
680577	Minimum required length of the first ring	20 ms	See Note 4. SP2-103-008 (parameter 07).
680578	Minimum required length of the second and subsequent rings	20 ms	SP2-103-009 (parameter 08).
680579	Ringing signal detection reset time (LOW)	20 ms	SP2-103-010 (parameter 09).

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Address	Function	Unit	Remarks
68057A	Ringing signal detection reset time (HIGH)		SP2-103-011 (parameter 10).
68057B to 680580	**Not used**	-	Do not change the settings.
680581	Interval between dialing the last digit and switching the Oh relay over to the external telephone when dialing from the operation panel in handset mode.	20 ms	Factory setting: 500 ms
680582	Bits 0 and 1 - Handset off-hook detection time Bit 1:0, Bit 0: 0 = 200 ms Bit 1:0, Bit 0: 1 = 800 ms Other Not used Bits 2 and 3 - Handset on-hook detection time Bit 3: 0, Bit 2: 0 = 200 ms Bit 3: 0, Bit 2: 1 = 800 ms Other Not used Bits 4 to 7 - **Not used**		-
680583 To 6805A0	**Not used**	-	Do not change the settings.
6805A1	Acceptable CED detection frequency upper limit (high byte)	BCD (Hz)	If both addresses contain FF(H), tone detection is disabled.
6805A2	Acceptable CED detection frequency upper limit (low byte)		
6805A3	Acceptable CED detection frequency lower limit (high byte)	BCD (Hz)	If both addresses contain FF(H), tone detection is disabled.
6805A4	Acceptable CED detection frequency lower limit (low byte)		
6805A5	CED detection time	20 ms ± 20 ms	Factory setting: 200 ms
6805A6	Acceptable CNG detection frequency upper limit (high byte)	BCD (Hz)	If both addresses contain FF(H), tone detection is disabled.
6805A7	Acceptable CNG detection frequency upper limit (low byte)		
6805A8	Acceptable CNG detection frequency lower limit (high byte)	BCD (Hz)	If both addresses contain FF(H), tone detection is disabled.
6805A9	Acceptable CNG detection frequency lower limit (low byte)		
6805AA	**Not used**	-	Do not change the setting.

Address	Function	Unit	Remarks
6805AB	CNG on time	20 ms	Factory setting: 500 ms
6805AC	CNG off time	20 ms	Factory setting: 3000 ms
6805AD	Number of CNG cycles required for detection	-	The data is coded in the same way as address 680533.
6805AE	**Not used**	-	Do not change the settings.
6805AF	Acceptable AI short protocol tone (800Hz) detection frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
6805B0	Acceptable AI short protocol tone (800Hz) detection frequency upper limit (low byte)		
6805B1	Acceptable AI short protocol tone (800Hz) detection frequency lower limit (high byte)	Hz(BCD)	If both addresses contain FF(H), tone detection is disabled.
6805B2	Acceptable AI short protocol tone (800Hz) detection frequency lower limit (low byte)		
6805B3	Detection time for 800 Hz AI short protocol tone	20 ms	Factory setting: 360 ms
6805B4	PSTN: Tx level from the modem	-N – 3 dBm	SP2-103-002 (parameter 01).
6805B5	PSTN: 1100 Hz tone transmission level	- N 6805B4 - 0.5N 6805B5 –3.5 (dB) See Note 7.	
6805B6	PSTN: 2100 Hz tone transmission level	- N6805B4 - 0.5N 6805B6 –3 (dB) See Note 7.	
6805B7	PABX: Tx level from the modem	- dBm	
6805B8	PABX: 1100 Hz tone transmission level	- N 6805B7 - 0.5N 6805B8 (dB)	
6805B9	PABX: 2100 Hz tone transmission level	- N 6805B7 - 0.5N 6805B9 (dB)	
6805BD	Modem turn-on level (incoming signal detection level)	-37-0.5N (dBm)	
6805BE to 6805C6	**Not used**	-	Do not change the settings.

<table>
<tr><th>Address</th><th colspan="7">Function</th><th>Unit</th><th>Remarks</th></tr>
<tr><td>6805C7</td><td colspan="7">Bits 0 to 3 – Not used
Bit 4 = V.34 protocol dump 0: Simple, 1: Detailed (default)
Bits 5 to 7 – Not used.</td><td></td><td></td></tr>
<tr><td>6805C8
to
6805D9</td><td colspan="7">Not used</td><td>-</td><td>Do not change the settings.</td></tr>
<tr><td>6805DA</td><td colspan="7">T.30 T1 timer</td><td>1 s</td><td>-</td></tr>
<tr><td>6805E0
bit 3</td><td colspan="7">Maximum wait time for post message</td><td>0: 12 s
1: 30 s</td><td>1: Maximum wait time for post message (EOP/EOM/MPS) can be changed to 30 s. Change this bit to “1” if communication errors occur frequently during V.17 reception.</td></tr>
<tr><td rowspan="9">6805E3</td><td colspan="7">Voltage setting to detect off-hook for voltage/DP detection for an externally connected line.</td><td>0: Auto
1: Fixed V</td><td rowspan="9">Do not change these settings</td></tr>
<tr><td colspan="7">Here is a summary of the fixed voltage settings (1: Fixed) for an externally connected line.</td><td></td></tr>
<tr><td>Bit 7</td><td>Bit 6</td><td>Bit 5</td><td>Bit 4</td><td colspan="3">-</td></tr>
<tr><td>0</td><td>0</td><td>0</td><td>0</td><td colspan="3">Not used</td></tr>
<tr><td>0</td><td>0</td><td>0</td><td>1</td><td colspan="3">2.75 V</td></tr>
<tr><td>0</td><td>0</td><td>1</td><td>0</td><td colspan="3">5.5 V</td></tr>
<tr><td>1</td><td>0</td><td>0</td><td>0</td><td colspan="3">22 V</td></tr>
<tr><td>1</td><td>1</td><td>1</td><td>1</td><td colspan="3">41.25 V</td></tr>
<tr><td rowspan="4">6805E4</td><td colspan="3" rowspan="4">Bit 1 sets the level of the call signal, Bit 3 sets the call signal impedance</td><td rowspan="2">Bit 1</td><td>0</td><td>RT=0 (Low)</td><td rowspan="4">0 : , 1 :</td></tr>
<tr><td>1</td><td>RT=1 (High)</td></tr>
<tr><td rowspan="2">Bit 3</td><td>0</td><td>RZ=0 (High)</td></tr>
<tr><td>1</td><td>RZ=1 (Composite)</td></tr>
<tr><td rowspan="4">6805E5</td><td colspan="3" rowspan="4">Bit 0 sets the ring detection method, Bit 1 sets the ring detection method when fixed.</td><td rowspan="2">Bit 0</td><td>0</td><td>Auto</td><td rowspan="4">If any setting is changed, select a setting that is higher than the default setting.</td></tr>
<tr><td>1</td><td>Fixed</td></tr>
<tr><td rowspan="2">Bit 1</td><td>0</td><td>Use RDTP</td></tr>
<tr><td>1</td><td>Use RDTN</td></tr>
</table>

Address	Function				Unit	Remarks
	Here is a summary of the voltages for the detection of off-hook for DP detection.					
	Bit 7	Bit 6	Bit 5	Bit 4	-	
	0	0	0	0	**Not used**	
	0	0	0	1	2.75 V	
	0	0	1	0	5.5 V	
	1	0	0	0	22 V	
	1	1	1	1	41.25 V	

NOTE: 1) If a setting is not required, store FF in the address.

2) Italy and Belgium only
   RAM address 68055E: the lower four bits have the following meaning.
   Bit 2 - 1: International dial tone cadence detection enabled (Belgium)
   Bit 1 - Not used
   Bit 0 - 1: PSTN dial tone cadence detection enabled (Italy)
   If bit 0 or bit 2 is set to 1, the functions of the following RAM addresses are changed.
   680508 (if bit 0 = 1) or 680538 (if bit 2 = 1): tolerance for on or off state duration (%), and number of cycles required for detection, coded as in address 680533.
   68050B (if bit 0 = 1) or 68053B (if bit 2 = 1): on time, hex code (unit = 20 ms)
   68050C (if bit 0 = 1) or 68053C (if bit 2 = 1): off time, hex code (unit = 20 ms)
3) Pulse dial parameters (addresses 68054A to 68054F) are the values for 10 pps. If 20 pps is used, the machine automatically compensates.
4) The first ring may not be detected until 1 to 2.5 wavelengths after the time specified by this parameter.
5) The calculated level must be between 0 and 10.
   The attenuation levels calculated from RAM data are:
   High frequency tone:
   - $-0.5 \times N_{680552/680554} - 3.5$ dBm
   - $-0.5 \times N_{680555}$ dBm

   Low frequency tone:
   - $0.5 \times (N_{680552/680554} + N_{680553}) - 3.5$ dBm
   - $-0.5 \times (N_{680555} + N_{680553})$ dBm

   NOTE: N680552, for example, means the value stored in address 680552(H)
6) 68054A: Europe - Between Ds opening and Di opening, France - Between Ds closing and Di opening
   68054D: Europe - Between Ds closing and Di closing, France - Between Ds opening and Di closing
7) Tone signals which frequency is lower than 1500Hz (e.g., 800Hz tone for AI short protocol) refer to the setting at 6805B5h. Tones which frequency is higher than 1500Hz refer to the setting at 6805B6h.
8) 68054A, 68054D, 68054E: The actual inter-digit pause (pulse dial mode) is the sum of the period specified by the RAM addresses 68054A, 68054D, and 68054E.

3.5 DEDICATED TRANSMISSION PARAMETERS

There are two sets of transmission parameters: Fax and E-mail

Each Quick Dial Key and Speed Dial Code has eight bytes of programmable parameters allocated to it. If transmissions to a particular machine often experience problems, store that terminal's fax number as a Quick Dial or Speed Dial, and adjust the parameters allocated to that number.

The programming procedure will be explained first. Then, the eight bytes will be described.

3.5.1 PROGRAMMING PROCEDURE

1. Set the bit 0 of System Bit Switch 00 to 1.
2. Enter Address Book Management mode ([User Tools]> System Settings> Key Operator> Address Book Management).
3. Select the address book that you want to program.
4. For the fax parameter, select "Fax Dest.", for the E-mail parameter, select "E-mail", then press "Start". Make sure that the LED of the Start button lights green.
5. The settings for the switch 00 are now displayed. Press the bit number that you wish to change.
6. To scroll through the parameter switches, either:
7. Select the next switch: press "Next" or Select the previous switch: "Prev." until the correct switch is displayed. Then go back to step 6.
8. After the setting is changed, press "OK".
9. After finishing, reset bit 0 of System Bit Switch 00 to 0.

3.5.2 PARAMETERS

Fax Parameters

The initial settings of the following fax parameters are all FF(H) - all the parameters are disabled.

Switch 00
FUNCTION AND COMMENTS
ITU-T T1 time (for PSTN G3 mode) If the connection time to a particular terminal is longer than the NCU parameter setting, adjust this byte. The T1 time is the value stored in this byte (in hex code), multiplied by 1 second. **Range:** 0 to 120 s (00h to 78h) FFh - The local NCU parameter factory setting is used. Do not program a value between 79h and FEh.

Switch 01

<table>
<tr><th>No</th><th>FUNCTION</th><th>COMMENTS</th></tr>
<tr><td rowspan="11">0-4</td><td colspan="6">Tx level</td><td rowspan="11">If communication with a particular remote terminal often contains errors, the signal level may be inappropriate. Adjust the Tx level for communications with that terminal until the results are better.
If the setting is “Disabled”, the NCU parameter 01 setting is used.

NOTE: Do not use settings other than listed on the left.</td></tr>
<tr><td>Bit4</td><td>Bit3</td><td>Bit2</td><td>Bit1</td><td>Bit0</td><td></td></tr>
<tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>0</td><td>0</td><td>0</td><td>0</td><td>1</td><td>–1</td></tr>
<tr><td>0</td><td>0</td><td>0</td><td>1</td><td>0</td><td>–2</td></tr>
<tr><td>0</td><td>0</td><td>0</td><td>1</td><td>1</td><td>–3</td></tr>
<tr><td>0</td><td>0</td><td>1</td><td>0</td><td>0</td><td>–4</td></tr>
<tr><td>⇓</td><td>⇓</td><td>⇓</td><td>⇓</td><td>⇓</td><td>⇓</td></tr>
<tr><td>0</td><td>1</td><td>1</td><td>1</td><td>1</td><td>–15</td></tr>
<tr><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>Disabled</td></tr>
<tr><td>5-7</td><td colspan="6">Cable equalizer
Bit 7: 0, Bit 6: 0, Bit 5: 0 = None
Bit 7: 0, Bit 6: 0, Bit 5: 1 = Low
Bit 7: 0, Bit 6: 1, Bit 5: 0 = Medium
Bit 7: 0, Bit 6: 1, Bit 5: 1 = High
Bit 7: 1, Bit 6: 1, Bit 5: 1 = Disabled</td><td>Use a higher setting if there is signal loss at higher frequencies because of the length of wire between the modem and the telephone exchange when calling the number stored in this Quick/Speed Dial.
Also, try using the cable equalizer if one or more of the following symptoms occurs.
Communication error with error codes such as 0-20, 0-23, etc.
Modem rate fallback occurs frequently.

NOTE: Do not use settings other than listed on the left.

If the setting is “Disabled”, the bit switch setting is used.</td></tr>
</table>

<table>
<tr><th colspan="8">Switch 02</th></tr>
<tr><th>No</th><th colspan="6">FUNCTION</th><th>COMMENTS</th></tr>
<tr><td rowspan="20">0-3</td><td colspan="6">Initial Tx modem rate</td><td rowspan="20">If training with a particular remote terminal always takes too long, the initial modem rate may be too high. Reduce the initial Tx modem rate using these bits.
For the settings 14.4 or kbps slower, Switch 04 bit 4 must be changed to 0.

NOTE: Do not use settings other than listed on the left. If the setting is “Disabled”, the bit switch setting is used.</td></tr>
<tr><td>Bit3</td><td>Bit2</td><td>Bit1</td><td>Bit0</td><td>bps</td></tr>
<tr><td>0</td><td>0</td><td>0</td><td>0</td><td>Not used</td></tr>
<tr><td>0</td><td>0</td><td>0</td><td>1</td><td>2400</td></tr>
<tr><td>0</td><td>0</td><td>1</td><td>0</td><td>4800</td></tr>
<tr><td>0</td><td>0</td><td>1</td><td>1</td><td>7200</td></tr>
<tr><td>0</td><td>1</td><td>0</td><td>0</td><td>9600</td></tr>
<tr><td>0</td><td>1</td><td>0</td><td>1</td><td>12000</td></tr>
<tr><td>0</td><td>1</td><td>1</td><td>0</td><td>14400</td></tr>
<tr><td>0</td><td>1</td><td>1</td><td>1</td><td>16800</td></tr>
<tr><td>1</td><td>0</td><td>0</td><td>0</td><td>19200</td></tr>
<tr><td>1</td><td>0</td><td>0</td><td>1</td><td>21600</td></tr>
<tr><td>1</td><td>0</td><td>1</td><td>0</td><td>24000</td></tr>
<tr><td>1</td><td>0</td><td>1</td><td>1</td><td>26400</td></tr>
<tr><td>1</td><td>1</td><td>0</td><td>0</td><td>28800</td></tr>
<tr><td>1</td><td>1</td><td>0</td><td>1</td><td>31200</td></tr>
<tr><td>1</td><td>1</td><td>1</td><td>0</td><td>33600</td></tr>
<tr><td>1</td><td>1</td><td>1</td><td>1</td><td>Disabled</td></tr>
<tr><td colspan="6">Other settings: Not used</td></tr>
<tr><td>4-7</td><td colspan="6">Not used</td><td>Do not change the settings.</td></tr>
</table>

Switch 03		
No	**FUNCTION**	**COMMENTS**
0-1	Inch-mm conversion before tx Bit 1: 0, Bit 0: 0 = Inch-mm conversion available Bit 1: 0, Bit 0: 1 = Inch only Bit 1: 1, Bit 0: 0 = Not used Bit 1: 1, Bit 0: 1 = Disabled	The machine uses inch-based resolutions for scanning. If “inch only” is selected, the printed copy may be slightly distorted at the other end if that machine uses mm-based resolutions. If the setting is “Disabled”, the bit switch setting is used.
2-3	DIS/NSF detection method Bit 3: 0, Bit 2: 0 = First DIS or NSF Bit 3: 0, Bit 2: 1 = Second DIS or NSF Bit 3: 1, Bit 2: 0 = Not used Bit 3: 1, Bit 2: 1 = Disabled	(0, 1): Use this setting if echoes on the line are interfering with the set-up protocol at the start of transmission. The machine will then wait for the second DIS or NSF before sending DCS or NSS. If the setting is “Disabled”, the bit switch setting is used.
4	V.8 protocol 0: Off 1: Disabled	If transmissions to a specific destination always end at a lower modem rate (14,400 bps or lower), disable V.8 protocol so as not to use V.34 protocol. 0: V.34 communication will not be possible. If the setting is “Disabled”, the bit switch setting is used.
5	Compression modes available in transmit mode 0: MH only 1: Disabled	This bit determines the capabilities that are informed to the other terminal during transmission. If the setting is “Disabled”, the bit switch setting is used.
6-7	ECM during transmission Bit 7: 0, Bit 6: 0 = Off Bit 7: 0, Bit 6: 1 = On Bit 7: 1, Bit 6: 0 = Not used Bit 7: 1, Bit 6: 1 = Disabled	For example, if ECM is switched on but is not wanted when sending to a particular terminal, use the (0, 0) setting. **NOTE:** 1) V.8/V.34 protocol and JBIG compression are automatically disabled if ECM is disabled. 2) If the setting is “Disabled”, the bit switch setting is used.

Switch 04 - Not used (do not change the settings)
Switch 05 - Not used (do not change the settings)
Switch 06 - Not used (do not change the settings)
Switch 07 - Not used (do not change the settings)
Switch 08 - Not used (do not change the settings)
Switch 09 - Not used (do not change the settings)

E-mail Parameters

The initial settings of the following e-mail parameters are all "0" (all parameters disabled).

Switch 00		
No	**FUNCTION**	**COMMENTS**
0	MH Compression mode for e-mail attachments **0**: Off 1: On	Switches MH compression on and off for files attached to e-mails for sending.
1	MR Compression mode for e-mail attachments **0**: Off 1: On	Switches MR compression on and off for files attached to e-mails for sending.
2	MMR Compression mode for e-mail attachments **0**: Off 1: On	Switches MMR compression on and off for files attached to e-mails for sending.
3-6	**Not used**	Do not change these settings.
7	Designates the bits to reference for compression method of e-mail attachments **0**: Registered (Bit 0 to 6) 1: No registration.	The "0" selection (default) references the settings for Bits 00, 01, 02 above. The "1" selection ignores the selections of Bits 00, 01, 02.

Switch 01		
No	**FUNCTION**	**COMMENTS**
0	Original width of e-mail attachment: A4 **0**: Off 1: On	Sets the original width of the e-mail attachment as A4.
1	Original width of e-mail attachment: B4 **0**: Off 1: On	Sets the original width of the e-mail attachment as B4.
2	Original width of e-mail attachment: A3 **0**: Off 1: On	Sets the original width of the e-mail attachment as A3.
3-6	**Not used**	Do not change these settings.

7	Designates the bits to reference for original size of e-mail attachments **0**: Registered (Bit 0 to 6) 1: No registration.	The "0" selection (default) references the settings for Bits 00, 01, 02 above. The "1" selection ignores the selections of Bits 00, 01, 02.

Switch 02		
No	**FUNCTION**	**COMMENTS**
0	Line resolution of e-mail attachment: 200 x 100 **0**: Off 1: On	Sets the line resolution of the e-mail attachment as 200 x100.
1	Line resolution of e-mail attachment: 200 x 200 **0**: Off 1: On	Sets the line resolution of the e-mail attachment as 200 x 200.
2	Line resolution of e-mail attachment: 200 x 400 **0**: Off 1: On	Sets the line resolution of the e-mail attachment as 200 x 400.
3	Not used	Do not change these settings.
4	Line resolution of e-mail attachment: 400 x 400 **0**: Off 1: On	Sets the line resolution of the e-mail attachment as 400 x 400.
5-6	**Not used**	Do not change these settings.
7	Designates the bits to reference for original size of e-mail attachments **0**: Registered (Bit 0 to 6) 1: No registration.	The "0" selection (default) references the settings for Bits 00, 01, 02, 04 above. The "1" selection ignores the selections of Bits 00, 01, 02, 04.

Switch 03 - Not used (do not change the settings)

Switch 04		
No	**FUNCTION**	**COMMENTS**
0	Full mode address selection 0: Full mode address 1: No full mode (simple mode)	If the other ends have the addresses, which have the full mode function flag ("0"), this machine determines them as full mode standard machines. ▪ This machine attaches the "demand of reception confirmation" to a message when transmitting. ▪ This machine updates the reception capability to the address book when receiving.
1-7	**Not used**	Do not change these settings.

Switch 05		
No	**FUNCTION**	**COMMENTS**
0	Directr transmission selection to SMTP server 0: ON 1: OFF	Allows or does not allow the direct transmission to SMTP server.
1-7	Not used	Do not change these settings.

Switch 06 - Not used (do not change the settings)
Switch 07 - Not used (do not change the settings)
Switch 08 - Not used (do not change the settings)
Switch 09 - Not used (do not change the settings)

3.6 SERVICE RAM ADDRESSES

⚠CAUTION
Do not change the settings which are marked as "Not used" or "Read only."

680001 to 680004(H) - ROM version (Read only)
680001(H) - Revision number (BCD)
680002(H) - Year (BCD)
680003(H) - Month (BCD)
680004(H) - Day (BCD)
680006 to 680015(H) - Machine's serial number (16 digits - ASCII)
680018(H) - Total program checksum (low)
680019(H) - Total program checksum (high)
680020 to 68003F(H) - System bit switches
680050 to 68005F(H) - Printer bit switches
680060 to 68007F(H) - Communication bit switches
680080 to 68008F(H) - G3 bit switches
680090 to 68009F(H) - G3-2 bit switches: Not used
6800A0 to 6800AF(H) - G3-3 bit switches: Not used
6800D0(H) - User parameter switch 00 (SWUER_00) : Not used
6800D1(H) - User parameter switch 01 (SWUSR_01) : Not used
6800D2(H) - User parameter switch 02 (SWUSR_02)
Bit 0: Forwarding mark printing on forwarded messages 0: Disabled, 1: Enabled
Bit 1: Center mark printing on received copies
(This switch is not printed on the user parameter list.)
0: Disabled, 1: Enabled
Bit 2: Reception time printing
(This switch is not printed on the user parameter list.)
0: Disabled, 1: Enabled
Bit 3: TSI print on received messages 0: Disabled, 1: Enabled
Bit 4: Checkered mark printing
(This switch is not printed on the user parameter list.)
0: Disabled, 1: Enabled
Bit 5: Not used
Bit 6: Not used
Bit 7: Not used

6800D3(H) - User parameter switch 03 (SWUSR_03: Automatic report printout)
Bit 0: Transmission result report (memory transmissions) 0: Off, 1: On
Bit 1: Not used
Bit 2: Memory storage report 0: Off, 1: On
Bit 3: Polling reserve report (polling reception) 0: Off, 1: On
Bit 4: Polling result report (polling reception) 0: Off, 1: On
Bit 5: Transmission result report (immediate transmissions) 0: Off, 1: On
Bit 6: Not used
Bit 7: Journal 0: Off, 1: On
6800D4(H) - User parameter switch 04 (SWUSR_04: Automatic report printout)
Bit 0: Not used
Bit 1: Automatic communication failure report and transfer result report output 0: Off, 1: On
Bits 2 to 3: Not used
Bit 4: Indicates the parties 0: Not indicated, 1: Indicated
Bit 5: Include sender's name on reports 0: Off, 1: On
Bit 6: Not used
Bit 7: Inclusion of a sample image on reports 0: Off, 1: On
6800D5(H) - User parameter switch 05 (SWUSR_05)
Bit 0: Substitute reception when the base copier is in an SC condition
0: Enabled, 1: Disabled
Bits 1 and 2: Condition for substitute rx when the machine cannot print messages (Paper end, toner end, jam, and during night mode)
Bit 2: 0, Bit 1: 0 = The machine receives all the fax messages.
Bit 2: 0, Bit 1: 1 = The machine receives the fax messages with RTI or CSI.
Bit 2: 1, Bit 1: 0 = The machine receives the fax messages with the same ID code.
Bit 2: 1, Bit 1: 1 = The machine does not receive anything.
Bit 3: Not used
Bit 4: Not used
Bit 5: Just size printing 0: Off, 1: On
Bit 6: Not used
Bit 7: Add paper display when a cassette is empty 0: Off, 1: On
6800D6(H) - User parameter switch 06 (SWUSR_06): Not used
6800D7(H) - User parameter switch 07 (SWUSR_07)
Bit 0 Ringing 0: Off, 1: On
Bit1: Automatic answering message 0: Off, 1: On
Bit 2: Parallel memory transmission 0: Off, 1: On
Bits 3 and 4: Not used
Bit 5: Remote control 0: Off, 1: On
Bits 6 and 7: Not used
6800D8(H) - User parameter switch 08 (SWUSR_08)
Bits 0 and 1: Not used.
Bit 2: Authorized reception
0: Only faxes from senders whose RTIs/CSIs are specified are accepted.
1: Only faxes from senders whose RTIs/CSIs are not specified are accepted.
Bits 3 to 7: Not used.
6800D9(H) - User parameter switch 09 (SWUSR_09): Not used

6800DA(H) - User parameter switch 10 (SWUSR_0A)
Bits 0 to 2: Not used
Bit 3: Page reduction 0: Off, 1: On
Bits 4 and 5: Not used
Bit 6: Use both e-mail notification and printed reports to confirm the transmission results 0: Off, 1: On
Bit 7: Not used
6800DB(H) - User parameter switch 11 (SWUSR_0B)
Bits 0 and 1: Not used
Bit 2: White original detection 0: Off, 1: On (alarm and alert message on the LCD)
Bit 3: Receive rejection for 1300 Hz transmission 0: Off (receive), 1: On (not receive)
Bit 5: Not used
Bit 6: Printout of messages received while acting as a forwarding station 0: Off, 1: On
Bit 7: Not used
6800DC(H) - User parameter switch 12 (SWUSR_0C): Not used
6800DD(H) - User parameter switch 13 (SWUSR_0D): Not used
6800DE(H) - User parameter switch 14 (SWUSR_0E)
Bit 0: Message printout while the machine is in Night Printing mode 0: On, 1: Off
Bit 1: Maximum document length detection 0: Double letter, 1: Longer than double-letter (well log) – up to 1,200 mm
Bit 2: Not used
Bit 3: Fax mode settings, such as resolution, before a mode key (Copy/Fax/Printer/Scanner) is pressed 0: Not cleared, 1: Cleared
Bits 4 to 6: Not used
Bit 7: Not used
6800DF(H) - User parameter switch 15 (SWUSR_0F)
(This switch is not printed on the user parameter list.)
Bits 0, 1 and 2: Cassette for fax printout
Bit 2: 0, Bit 1: 0, Bit 0: 1 = 1st paper feed station
Bit 2: 0, Bit 1: 1, Bit 0: 0 = 2nd paper feed station
Bit 2: 0, Bit 1: 1, Bit 0: 1 = 3rd paper feed station
Bit 2: 1, Bit 1: 0, Bit 0: 0 = 4th paper feed station
Bit 2: 1, Bit 1: 0, Bit 0: 1 = LCT
Other settings Not used
Bits 3 and 4: Not used
Bit 5: Using the cassette specified by bits 0, 1 and 2 above only 0: On, 1: Off
Bits 6 and 7: Not used
6800E0(H) – User parameter switch 16 (SWUSR_10)
(This switch is not printed on the user parameter list.)
Bits 0 and 1: Not used
Bit 2: Paper size selection priority for an A4 size fax message when A4/LT size paper is not available. 0: A3 has priority, 1: B4 has priority
Bits 3 to 7: Not used

6800E1(H) – User parameter switch 17 (SWUSR_11)
Bit 0: Not used
Bit 1: Not used
Bit 2: Inclusion of the “Add” button when a sequence of Quick/Speed dials is selected for broadcasting 0:Not needed, 1: Needed
Bits 3 to 6: Not used
Bit 7: Press “Start” key without an original when using the on hook dial or the external telephone,
0: displays “Cannot detect original size”. 1: Receives fax messages.

6800E2(H) - User parameter switch 18 (SWUSR_12)
Bit 0: TTI date 0: Off, 1: On
Bit 1: TTI sender 0: Off, 1: On
Bit 2: TTI file number 0: Off, 1: On
Bit 3: TTI page number 0: Off, 1: On
Bits 4 to 6: Not used
Bit 7: Japan only

6800E3(H) - User parameter switch 19 (SWUSR_13)
Bit 0: Not used
Bit 1: Journal format
0: The Journal is separated into transmissions and receptions
1: The Journal is separated into G3-1, G3-2, and G3-3 communications
Bit 2: Not used
Bit 3: 90° image rotation during B5 portrait Tx (This switch is not printed on the user parameter list.) 0: Off, 1: On
Bit 4: Reduction of sample images on reports to 50% in the main scan and sub-scan directions. (This switch is not printed on the user parameter list.) 0: Technician adjustment (printer switch 0E bits 3 and 4), 1: 50% reduction
Bit 5: Use of A5 size paper for reports (This switch is not printed on the user parameter list.) 0: Off, 1: On
Bits 6 and 7: Not used

6800E4(H) - User parameter switch 20 (SWUSR_14)
Bit 0: Automatic printing of the LAN fax result report 0: Off, 1: On
Bit 1: Not used.
Bits 2 to 5: Store documents in memory which could not be printed from PC fax (LAN fax) driver

Bit 5	Bit 4	Bit 3	Bit 2	Setting
0	0	0	0	0 min.
0	0	0	1	1 min.
⇓	⇓	⇓	⇓	⇓
1	1	1	0	14 min.
1	1	1	1	15 min.

Bits 6 and 7: Not used.

6800E5(H) - User parameter switch 21 (SWUSR_15)
Bit 0: Print results of sending reception notice request message 0: Disabled (print only when error occurs), 1: Enabled
Bit 1: Respond to e-mail reception acknowledgment request 0: Disabled, 1: Enabled
Bit 2: Not used
Bit 3: File format for forwarded folders 0: TIFF, 1:PDF
Bit 4: Transmit Journal by E-mail 0: Disabled, 1: Enabled
Bit 5: Not used
Bit 6: Network error display 0: Displayed, 1: Not displayed
Bit 7: Transmit error mail notification 0: Enabled, 1: Disabled
6800E6(H) - User parameter switch 22 (SWUSR_16)
(This switch is not printed on the user parameter list.)
Bit 0: Dial tone detection (PSTN 1) 0: Disabled, 1: Enabled
Bits 1 to 7: Not used
6800E7(H) – User parameter switch 23 (SWUSR_17): Not used
6800E8(H) - User parameter switch 24 (SWUSR_18): Not used
6800E9(H) - User parameter switch 25 (SWUSR_19)
Bit 0: Not used
Bit 1: Reception mode switch timer 0: Off, 1: On (switching Fax or Fax/Tel)
Bit 2: Mode priority switch 0: Fax first, 1: Tel first
Bit 3: Dial in function (Japan Only)
Bit 4: RDS operation 0: Not acceptable, 1: Acceptable for the limit specified by system switch 03

NOTE: This bit is only effective when RDS operation can be selected by the user (see system switch 02).

Bits 5 to 7: Not used
6800EA(H) and 6800EB(H) - User parameter switches 26 and 27 (SWUSR_1A and 1B): Not used
6800EC(H) - User parameter switch 28(SWUSR_1C)
Xxxxx
6800ED(H) - User parameter switch 29(SWUSR_1D)
xxxxxx
6800EE(H) and 6800EF(H) - User parameter switches 30 and 31 (SWUSR_1E and 1F): Not used
6800F0(H) - User parameter switch 32 (SWUSR_20)
Bit 0: Quotation priority for a destination when there is no destination of the specified type
0: Paper output priority = Priority order: 1. IP-fax destination, 2. Fax Number, 3. E-mail address, 4. Folder
1: Electric putout order = Priority order: 1. E-mail address, 2. Folder, 3. IP-fax destination, 4. Fax number
Bits 1 to 7: Not used
6800F1(H) - User parameter switch 33 (SWUSR_21): Not used
6800F2(H) - User parameter switch 34 (SWUSR_22)
Bit 0: Gatekeeper server used with IP-Fax 0: Disabled, 1: Enabled
Bit 1: SIP server used with IP-Fax 0: Disabled, 1: Enabled
Bits 2 to 7: Not used
680100 to 68010F(H) - G4 Parameter Switches – Not used

680110 to 68012F(H) - G4 Internal Switches – Not used
680130 to 68016F(H) - Service Switches
680170 to 68017F(H) - IFAX Switches
680180 to 68018F(H) - IP-FAX Switches
680190 to 6801AF(H) - Service station's fax number (SP3-101)
6801B0 to 6801B9(H) - Own fax PABX extension number
6801BA to 6801C3(H) - Own fax number (PSTN) – Not used
6801C4 to 6801D7(H) - Own fax number (ISDN G4) – Not used
6801D8 to 6801E3(H) - The first subscriber number (ISDN G3) – Not used
6801E4 to 6801EF(H) - The second subscriber number (ISDN G3) – Not used
6801F0 to 6801FB(H) - The first subscriber number (ISDN G4) – Not used
6801FC to 680207(H) - The second subscriber number (ISDN G4) – Not used
680208 to 68021B(H) - PSTN-1 RTI (Max. 20 characters - ASCII) - See the following note.
68021C to 68022F(H) - PSTN-2 RTI (Max. 20 characters - ASCII) - Not used
680230 to 680246(H) - PSTN-3 RTI (Max. 20 characters - ASCII) - Not used
680247 to 680286(H) - TTI 1 (Max. 64 characters - ASCII) - See the following note.
680287 to 6802C6(H) - TTI 2 (Max. 64 characters - ASCII) - Not used
6802C7 to 680306(H) - TTI 3 (Max. 64 characters - ASCII) - Not used
680307 to 68031A(H) - PSTN-1 CSI (Max. 20 characters - ASCII)
68031B to 68032E(H) - PSTN-2 CSI (Max.20 characters - ASCII) - Not used
68032F to 680342(H) - PSTN-3 CSI (Max.20 characters - ASCII) - Not used
680343(H) - Number of PSTN-1 CSI characters (Hex)
680344(H) - Number of PSTN-2 CSI characters (Hex) - Not used
680345(H) Number of PSTN-3 CSI characters (Hex) - Not used

NOTE: If the number of characters is less than the maximum (20 for RTI, 64 for TTI), add a stop code (00[H]) after the last character.

680380 to 680387(H) - Last power off time (Read only)
680380(H) - 01(H) - 24-hour clock, 00(H) - 12-hour clock (AM), 02(H) - 12-hour clock (PM)
680381(H) - Year (BCD)
680382(H) - Month (BCD)
680383(H) - Day (BCD)
680384(H) – Hour
680385(H) – Minute
680386(H) – Second
680387(H) - 00: Monday, 01: Tuesday, 02: Wednesday, /// , 06: Sunday
680394(H) - Optional equipment (Read only – Do not change the settings)
Bit 0: Page Memory 0: Not installed, 1: Installed
Bit 1: SAF Memory 0: Not installed, 1: Installed
Bits 2 to 7; Not used
680395(H) - Optional equipment (Read only – Do not change the settings)
Bits 0 to 3: Not used
Bit 4: G3-2 0: Not installed, 1: Installed
Bit 5: G3-3 0: Not installed, 1: Installed
Bit 6 and 7: Not used

680406 to 68040A – Option G3 board (G3-2) ROM information (Read only)
680406(H) - Suffix (BCD)
680407(H) - Version (BCD)
680408(H) - Year (BCD)
680409(H) - Month (BCD)
68040A(H) - Day (BCD)
68040B to 68040F – Option G3 board (G3-3) ROM information (Read only)
68040B(H) - Suffix (BCD)
68040C(H) - Version (BCD)
68040D(H) - Year (BCD)
68040E(H) - Month (BCD)
68040F(H) - Day (BCD)
680410(H) - G3-1 Modem ROM version (Read only)
680412(H) - G3-2 Modem ROM version (Read only)
680414(H) - G3-3 Modem ROM version (Read only)
680420(H) - Number of multiple sets print (Read only)
680476(H) - Time for economy transmission (hour in 24h clock format - BCD)
680477(H) - Time for economy transmission (minute - BCD)
680492(H) - Transmission monitor volume 00 - 07(H)
680493(H) - Reception monitor volume 00 - 07(H)
680494(H) - On-hook monitor volume 00 - 07(H)
680495(H) - Dialing monitor volume 00 - 07(H)
680496(H) - Buzzer volume 00 - 07(H)
680497(H) - Beeper volume 00 - 07(H)
6804A8(H) - Machine code (Check ram 4)
688E8E to 68918D(H) - SIP server address (Read only)
688E8E(H) - Proxy server - Main (Max. 128 characters - ASCII)
688F0E(H) - Proxy server - Sub (Max. 128 characters - ASCII)
688F8E(H) - Redirect server - Main (Max. 128 characters - ASCII)
68900E(H) - Redirect server - Sub (Max. 128 characters - ASCII)
68908E(H) - Registrar server - Main (Max. 128 characters - ASCII)
68910E(H) - Registrar server - Sub (Max. 128 characters - ASCII)
68918E(H) - Gatekeeper server address - Main (Max. 128 characters - ASCII)
68920E(H) - Gatekeeper server address - Sub (Max. 128 characters - ASCII)
68928E(H) - Arias Number (Max. 128 characters - ASCII)
68930E(H) - SIP user name (Max. 128 characters - ASCII)
68938E(H) - SIP digest authentication password (Max. 128 characters - ASCII)
68940E(H) - Gateway address information (Max. 7100 characters - ASCII)
68AFCA(H) - Stand-by port number for H.232 connection
68AFCCH) - Stand-by port number for SIP connection
68AFCE(H) - RAS port number
68AFD0(H) - Gatekeeper port number
68AFD2(H) - Port number of data waiting for T.38
68AFD4(H) - Port number of SIP server
68AFD6(H) - Priority for SIP and H.323 0: H.323, 1: SIP
68AFD7(H) - SIP function 0: Disabled, 1: Enabled
68AFD8(H) - H.323 function 0: Disabled, 1: Enabled
68AFD9(H) - SIP digest authentication function 0: Disabled, 1: Enabled
68AFDA(H) - IP-Fax backup data 00 - 600 (H)

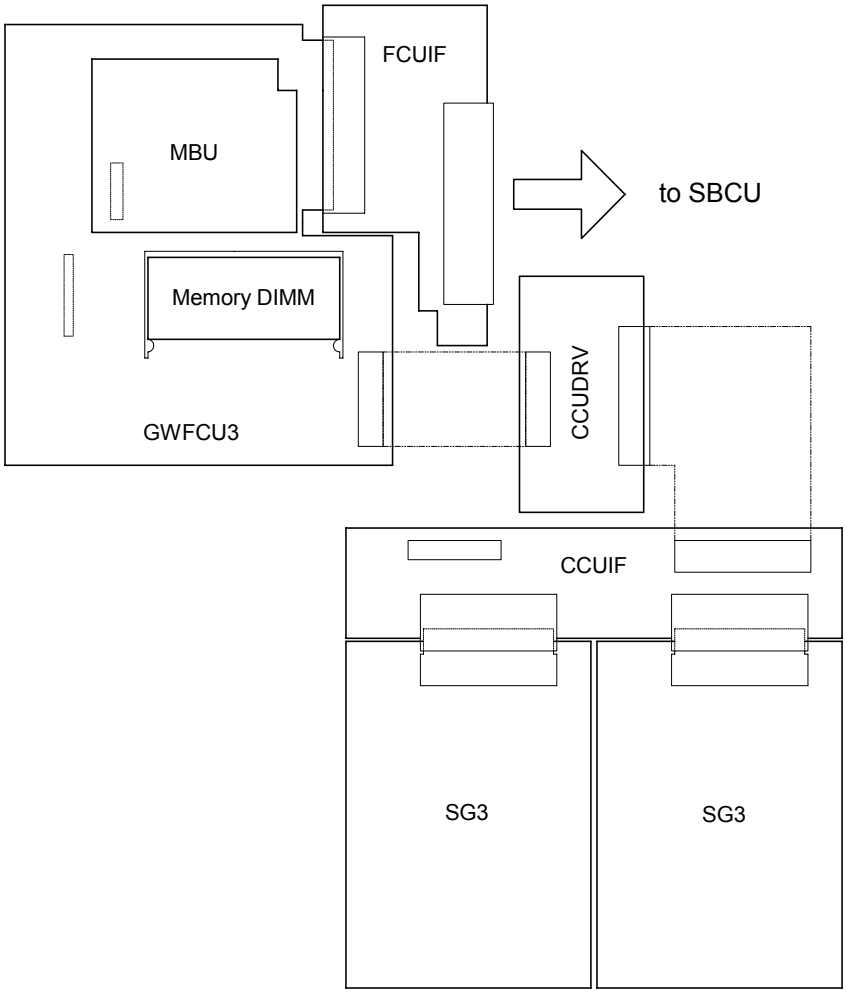
69ECBE(H) - 69ECDE(H) - Dial tone detection parameter (Max. 11 x 3 lines)
This initializes following order. [0x04, 0x40, 0x03, 0x60, 0x64, 0xf4, 0x01,0x64, 0x04, 0xc8, 0x00]
6BEBFE(H) – Dial tone detection frequency – Upper limit (High)
Defaults: NA: 06, EU: 06, ASIA: 06
6BEBFF(H) – Dial tone detection frequency – Upper Limit (Low)
Defaults: NA: 50, EU: 50, ASIA: 50
6BEC00(H) – Dial tone detection frequency – Lower Limit (High)
Defaults: NA: 03, EU: 02, ASIA: 02
6BEC01(H) – Dial tone detection frequency – Lower Limit (Low)
Defaults: NA: 60, EU: 90, ASIA: 90
6BEC02(H) –Dial tone detection waiting time (20 ms)
Defaults: NA: 64, EU 64, ASIA: 64
6BEC03 to 6BEC04 – Dial tone detection monitoring time (20 ms)
Defaults

Area	6BEC03	6BEC04
NA	F4	01
EU	F4	01
ASIA	F4	01

6BEC05(H) – Dial tone detect judge time (20 ms)
Defaults: NA: 64, EU: 1B, ASIA: 32
6BEC06(H) – Dial tone disconnect permission time (20 ms)
Defaults: NA: 11, EU: 0F, ASIA: 11

4. DETAILED SECTION DESCRIPTIONS

4.1 OVERVIEW



The basic fax unit consists of two PCBs: an FCU and an MBU.

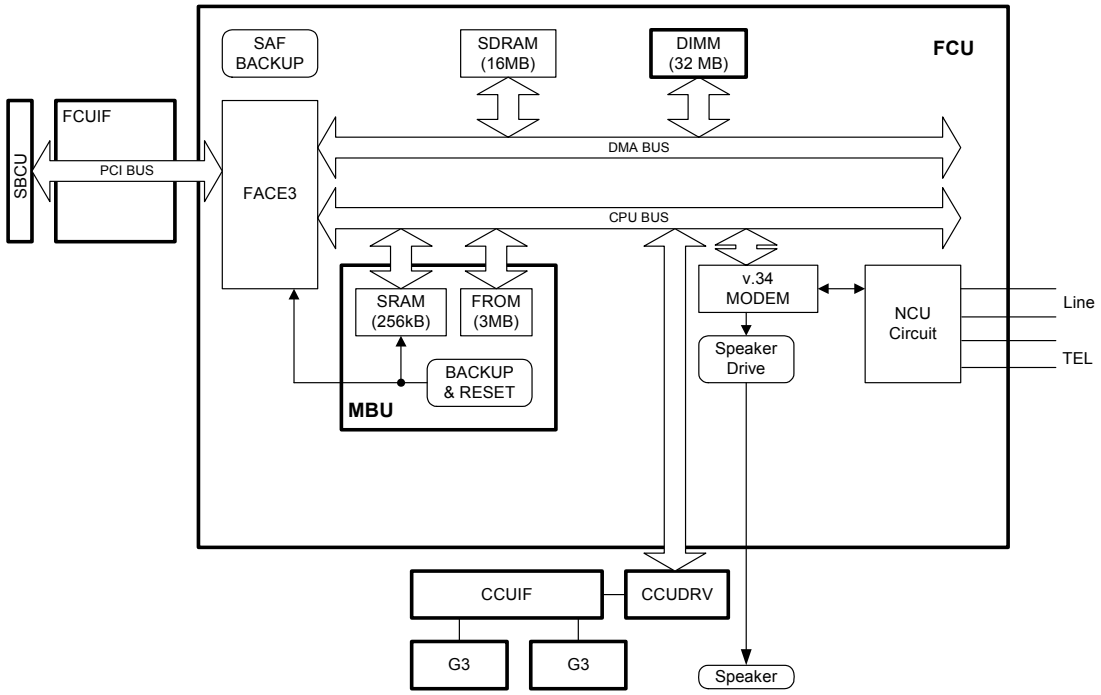
The FCU controls all the fax communications and fax features, in cooperation with the controller board. The MBU contains the ROM and SRAM. Also, the FCU has an NCU circuit.

Fax Options:

1. Extra G3 Interface option: This provides one more analog line interface. This allows full dual access. Two extra G3 interface options can be installed.
2. Memory Expansion: This expands the SAF memory and the page memory (used for image rotation); without this expansion, the page memory is not big enough for image rotation at 400 dpi, so transmission at 400 dpi is not possible.

4.2 BOARDS

4.2.1 FCU



The FCU (Facsimile Control Unit) controls fax communications, the video interface to the base copier's engine, and all the fax options.

FACE3 (Fax Application Control Engine)

- CPU
- Data compression and reconstruction (DCR)
- DMA control
- Clock generation
- DRAM backup control

Modem (FAME)

- V.34, V33, V17, V.29, V.27ter, V.21, and V.8

DRAM

- The 16 MB of DRAM is shared as follows.
  SAF memory : 4MB
  Working memory : 8MB
  Page memory : 4MB
- The SAF memory is backed up by a rechargeable battery.

Memory Back-up

- A Rechargeable battery backs up the SAF memory (DRAM) for 1 hour.

4.2.2 MBU

On this board, the flash ROM contains the FCU firmware, and the SRAM contains the system data and user parameters. Even if the FCU is changed, the system data and user parameters are kept on the MBU board.

ROM

- 3MB flash ROMs for system software storage
  2MB (16bit x 1MB) + 1MB (16bit x 512K)

SRAM

- The 256KB SRAM for system and user parameter storage is backed up by a lithium battery.

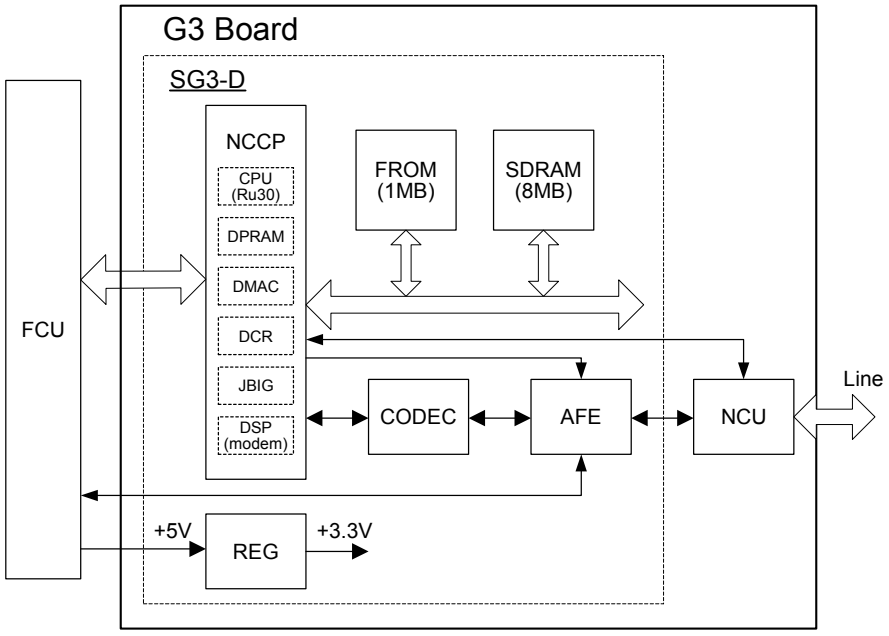
Memory Back-up

- A lithium battery backs up the system parameters and programmed items in the SRAM, in case the base copier's main switch is turned off.

Switches

Item	Description
SW1	Switches the SRAM backup battery on/off.

4.2.3 SG3 BOARD



The SG3 board allows up to three simultaneous communications when used in combination with the FCU and optional G3 boards. The NCU is on the same board as the common SG-3 board. This makes the total board structure smaller. But, the specifications of the SG3 board do not change.

NCCP (New Communication Control Processor)

- Controls the SG3 board.
- CPU (RU30)
- DPRAM (Dual Port RAM): Handshaking with the FCU is done through this block.
- DMA controller
- JBIG
- DSP V34 modem (RL5T892): Includes the DTMF Receiver function
- DCR for MH, MR, MMR, and JBIG compression and decompression

FROM

- 1Mbyte flash ROM for SG3 software storage and modem software storage

SDRAM

- 4Mbyte DRAM shared between ECM buffer, line buffer, and working memory

AFE (Analog Front End)

- Analog processing

CODEC (COder-DECoder)

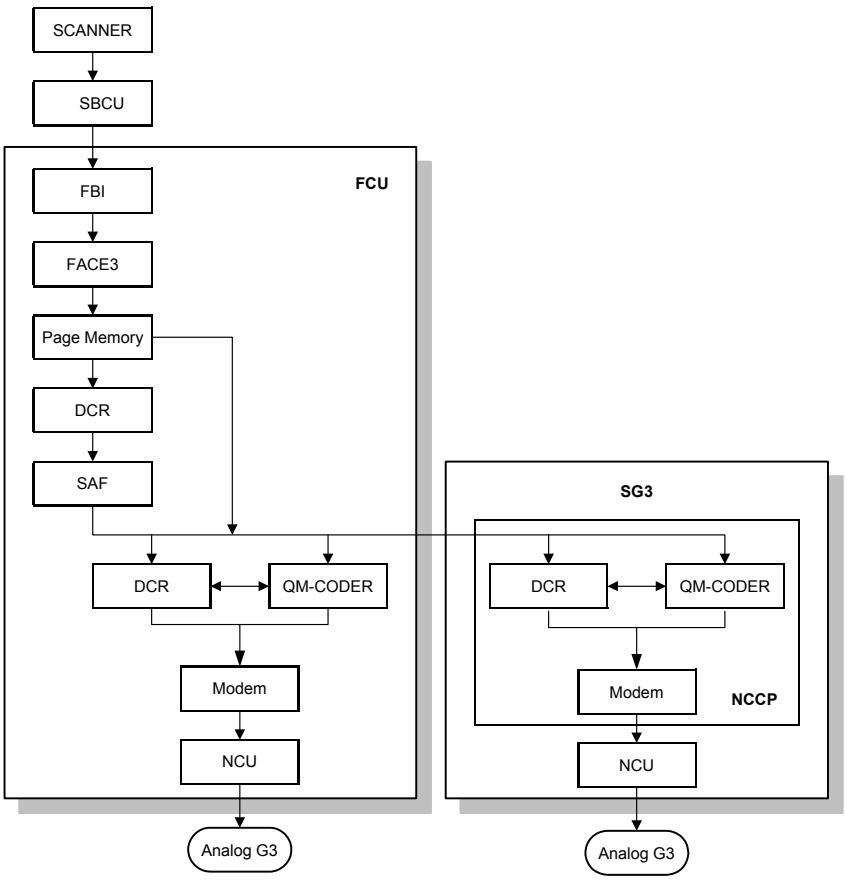
- A/D & D/A conversions for modem

REG

- Generates +3.3 V from the +5V from the FCU

4.3 VIDEO DATA PATH

4.3.1 TRANSMISSION



Memory Transmission and Parallel Memory Transmission

The base copier's scanner scans the original at the selected resolution in inch format. The BICU processes the data and transfers it to the FCU.

NOTE: When scanning a fax original, the BICU uses the MTF, independent dot erase and thresholding parameter settings programmed in the fax unit's scanner bit switches, not the copier's SP modes.

Then, the FCU converts the data to mm format, and compresses the data in MMR or raw format to store it in the SAF memory. If image rotation will be done, the image is rotated in page memory before compression.

At the time of transmission, the FCU decompresses the stored data, then re-compresses and/or reduces the data if necessary for transmission. The NCU transmits the data to the line.

Immediate Transmission

The base copier's scanner scans the original at the resolution agreed with the receiving terminal. The BICU video processes the data and transfers it to the FCU.

NOTE: When scanning a fax original, the BICU uses the MTF, independent dot erase and thresholding parameter settings programmed in the fax unit's scanner bit switches, not the copier's SP modes.

Then the FCU stores the data in page memory, and compresses the data for transmission. The NCU transmits the data to the line.

JBIG Transmission

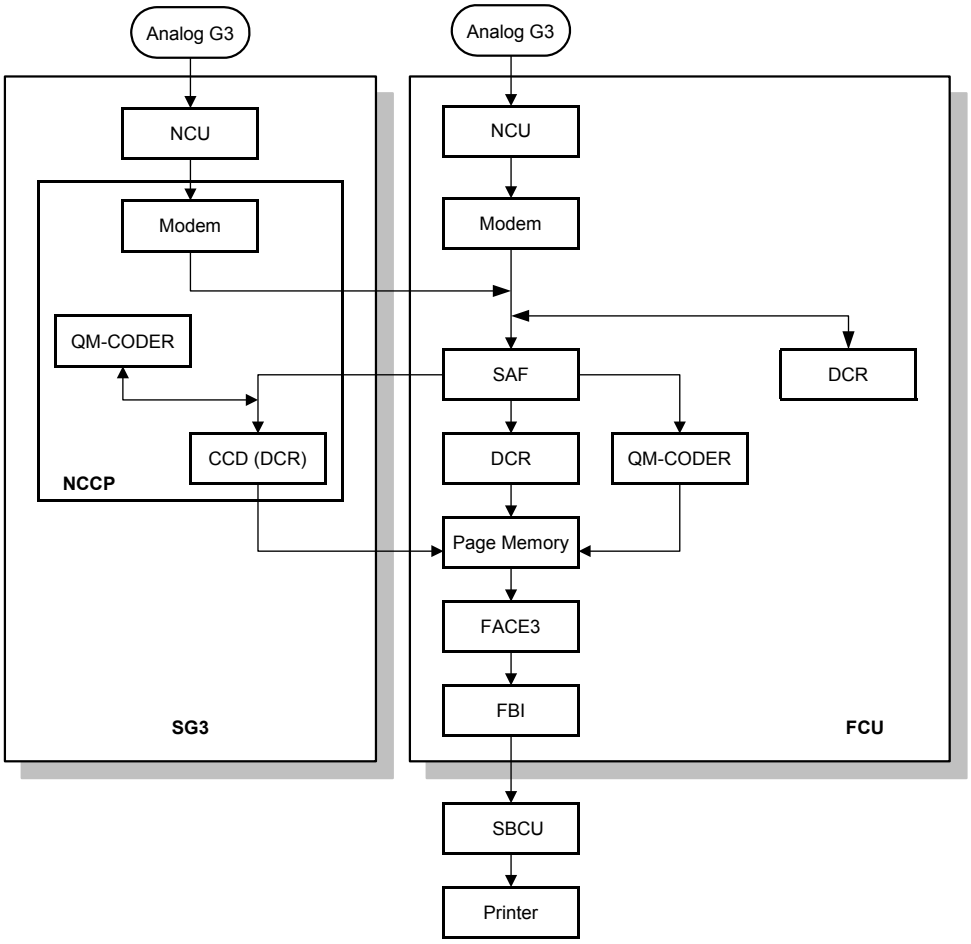
- **Memory transmission:** If the receiver has JBIG compression, the data goes from the DCR to the QM-Coder. Then the NCU transmits the data to the line. When an optional G3 unit (SG3) is installed and PSTN2 is selected as the line type, JBIG compression is available, but only for the PSTN-2 line.
- **Immediate transmission:** If the receiver has JBIG compression, the data goes from the page memory to the QM-Coder. Then the NCU transmits the data to the line. When an optional G3 unit (SG3) is installed and PSTN2 is selected as the line type, JBIG compression is available, but only for the PSTN-2 line.

Adjustments

Priority for the line used for G3 transmissions (PSTN 1/PSTN 2 or 3):

System switch 16 bit 1

4.3.2 RECEPTION



First, the FCU stores the incoming data from either an analog line to the SAF memory. (The data goes to the FACE3 at the same time, and is checked for error lines/frames.)

The FCU then decompresses the data and transfers it to page memory. If image rotation will be done, the image is rotated in the page memory. The data is transferred to the BICU.

If the optional G3 unit is installed, the line that the message comes in on depends on the telephone number dialled by the other party (the optional G3 unit has a different telephone number from the main fax board).

JBIG Reception

When data compressed with JBIG comes in on PSTN-1 (the standard analog line), the data is sent to the QM-CODER for decompression. Then the data is stored in the page memory, and transferred to the BICU.

When data compressed with JBIG comes in on PSTN-2 (optional extra analog line), the data is sent to the QM-CODER on the SG3 board for decompression.

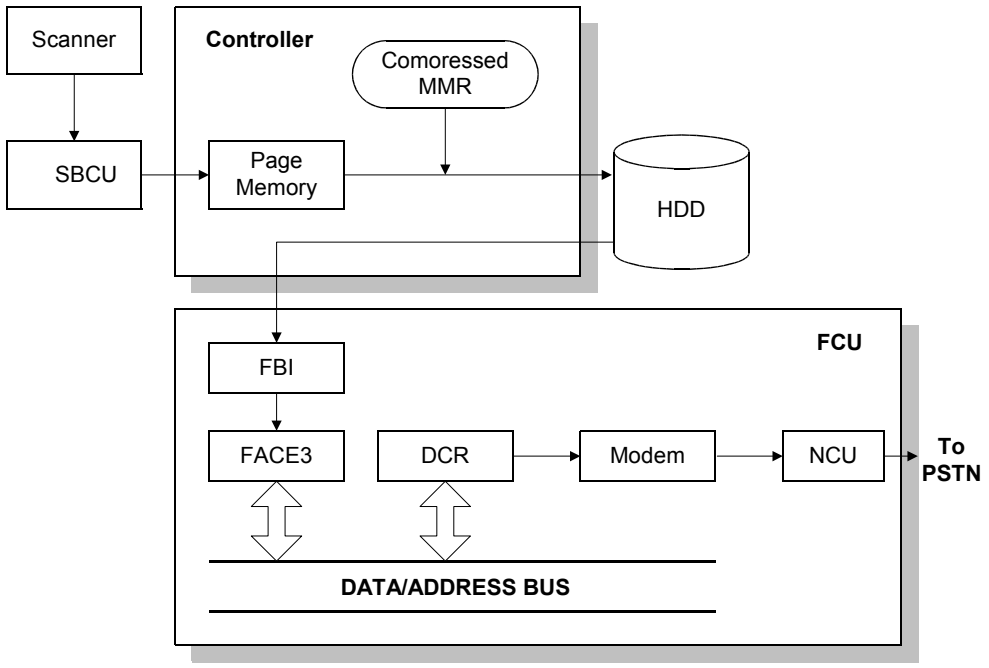
4.4 FAX COMMUNICATION FEATURES

4.4.1 MULTI-PORT

When the optional extra G3 Interface Unit is installed, communication can take place at the same time through the two or three lines at once.

Option	Available Line Type	Available protocol Combinations
Standard only	PSTN	G3
Extra G3 Interface Unit (single)	PSTN + PSTN	G3 + G3
Extra G3 Interface Unit (double)	PSTN + PSTN +PSTN	G3 + G3 +G3

4.4.2 DOCUMENT SERVER



The base copier's scanner scans the original at the selected resolution. The IPU video processes the data and transfers it to the controller board.

Then the controller stores the data in the page memory for the copier function, and compresses the data in MMR (by software) to store it in the HDD. If image rotation will be done, the image is rotated in the page memory before compression.

For transmission, the stored image data is transferred to the FCU. The FCU decompresses the image data, then recompresses and/or reduces the data if necessary for transmission. The NCU transmits the data to the line.

The documents can be stored in the HDD (Document Server) from the fax application. The stored documents in the document sever can be used for the fax transmission many times. More than one document and the scanned document can be combined into one file and then the file can be transmitted.

When using the document server, the SAF memory is not used.

- The document is compressed with MMR and stored.
- Up to 9,000 pages can be stored. (1 file: Up to 1,000 pages) from the fax application.
- Only stored documents from the fax application can be transmitted.
- Scanned documents are given a name automatically, such as “FAX001”. But it is possible to change the file name, user name and password.
- Up to 30 files can be selected at once.

NOTE: 1) The compression method of the fax application is different from the copy application. The storing time is longer than the copier storing.
2) When selecting “Print 1st page”, the stored document will be reduced to A4 size.

4.4.3 INTERNET MAIL COMMUNICATION

Mail Transmission

This machine supports T.37 full mode. (ITU-, RFC232). The difference between T.37 simple mode and full mode is as follows.

Function	T.37 Simple Mode	T.37 Full Mode
Resolution	200 x 100 200 x 200	200 x100 200 x 200 200 x 400 400 x 400 (if available)
RX Paper Width	A4	A4, B4, A3
RX Data Compression Method	MH	MH (default), MR, MMR,
Signals	Image data transmission only	Image data transmission, exchange of capability information between the two terminals, and acknowledgement of receipt of fax messages

Data Formats

The scanned data is converted into a TIFF-F formatted file.

The fields of the e-mail and their contents are as follows:

Field	Content
From	Mail address of the sender
Reply To	Destination requested for reply
To	Mail address of the destination
Bcc	Backup mail address
Subject	From CSI or RTI (Fax Message No. xxxx)
Content Type	Multipart/mixed Attached files: image/tiff
Content Transfer Encoding	Base 64, 7-bit, 8-bit, Quoted Printable
Message Body	MIME-converted TIFF-F (MIME standards specify how files are attached to e-mail messages)

Direct SMTP Transmission

Internet Fax documents can be sent directly to their destinations without going through the SMTP server. (Internet Faxes normally transmit via the SMTP server.)

For example:

e-mail address:	gts@ricoh.co.jp
SMTP server address:	gts.abcd.com

In this case this feature destination e-mail address (gts@ricoh.co.jp) is read as the SMTP server address "gts.abcd.com" and the transmissions bypass the SMTP server.

Selectable Options

These options are available for selection:

- With the default settings, the scan resolution can be either standard or detail. Inch-mm conversion before TX depends on IFAX SW01 Bit 7. Detail resolution will be used if Super Fine resolution is selected, unless Fine resolution is enabled with IFAX SW01.
- The requirements for originals (document size, scan width, and memory capacity) are the same as for G3 fax memory TX.
- The default compression is TIFF-F format.
- IFAX SW00: Acceptable paper widths for sending
- IFAX SW09: Maximum number of attempts to the same destination

Secure Internet Transmission

- SMTP Authentication: User Tools> System Settings> File Transfer> SMTP Authentication
- POP Before SMTP: User Tools> System Settings> File Transfer> POP Before SMTP

Mail Reception

This machine supports three types of e-mail reception:

- POP3 (Post Office Protocol Ver. 3.)
- IMAP4 (Internet Messaging Access Protocol)
- SMTP (Simple Mail Transfer Protocol)

For details: Core Technology Manual – Facsimile Processes – Faxing from a PC – Internet/LAN Fax Boards – Mail Reception

POP3/IMAP4 Mail Reception Procedure

The machine automatically picks up e-mail from the server at an interval which is adjustable in the range 2 to 1440 min. in 1-minute steps: User Tools> System Settings> File Transfer> E-mail Reception Interval

SMTP Reception

- The IFAX must be registered as an SMTP server in the MX record of the DNS server, and the address of the received mail must specify the IFAX.
- Enable SMTP reception: User Tools> System Settings> File Transfer> Reception Protocol
  Even if the MX record on the DNS server includes the IFAX, mail cannot be received with SMTP until SMTP reception is enabled:
  However, if SMTP reception is selected and the machine is not registered in the MX record of the DNS server, then either IMAP4 or POP3 is used, depending on the setting: User Tools> System Settings> File Transfer> Reception Protocol

Mail Delivery Conditions: Transferring Mail Received With SMTP

1. The machine must be set up for SMTP mail delivery: User Tools> Facsimile Features> E-mail Settings> SMTP RX File Delivery Settings
2. If the user wishes to limit this feature so that the machine will only deliver mail from designated senders, the machine's "Auth. E-mail RX" feature must be set (User Tools> Facsimile Features> E-mail Settings> SMTP RX File Delivery Settings).
3. If the "SMTP RX File Delivery Setting" is set to 0 to prohibit SMTP receiving, and if there is mail designated for delivery, then the machine responds with an error. (User Tools> Facsimile Features> E-mail Settings> SMTP RX File Delivery Settings)
4. If the quick dial, speed dial, or group dial entry is incorrect, the mail transmission is lost, and the IFAX issues an error to the SMTP server and outputs an error report.

Auth. E-mail RX

In order to limit access to mail delivery with IFAX, the addresses of senders must be limited using the Access Limit Entry. Only one entry can be registered.

1. Access Limit Entry
   For example, to limit access to @IFAX.ricoh.co.jp:

gts@IFAX.ricoh.co.jp	Matches and is delivered.
gts@IFAX.abcde.co.jp	Does not match and is not delivered.
IFAX@ricoh.co.jp	Does not match and is not delivered.

2. Conditions
   - The length of the Access Limit Entry is limited to 127 characters.
   - If the Access Limit Entry address and the mail address of the incoming mail do not match, the incoming mail is discarded and not delivered, and the SMTP server responds with an error. However, in this case an error report is not output.
   - If the Access Limit Entry address is not registered, and if the incoming mail specifies a delivery destination, then the mail is delivered unconditionally.

Handling Mail Reception Errors

Abnormal files

When an error of this type occurs, the machine stops receiving and commands the server to erase the message. Then the machine prints an error report and sends information about the error by e-mail to the sender address (specified in the “From” or “Reply-to” field of the message). If there is an incomplete received message in the machine memory, it will be erased.

The machine prints an error message when it fails to send the receive error notification after a certain number of attempts.

The following types of files are judged to be abnormal if one or more of the following are detected:

1. Unsupported MIME headers.
   Supported types of MIME header

Header	Supported Types
Content-Type	Multipart/mixed, text/plain, message/rfc822 Image/tiff
Charset	US-ASCII, ISO 8859 X. Other types cannot be handled, and some garbage may appear in the data.
Content-Transfer-Encoding	Base 64, 7-bit, 8-bit, Quoted Printable

2. MIME decoding errors
3. File format not recognized as TIFF-F format
4. Resolution, document size, or compression type cannot be accepted

Remaining SAF Capacity Error

The machine calls the server but does not receive e-mail if the remaining SAF capacity is less than a certain value (the value depends on IFAX Switch 08. The e-mail will be received when the SAF capacity increases (for example, after substitute reception files have been printed). The error handling method for this type of error is the same as for “Abnormal files”.

If the capacity of the SAF memory drops to zero during reception, the machine operates in the same way as when receiving an abnormal file (refer to “Abnormal files” above).

Secure Internet Reception

To enable password encryption and higher level security: User Tools> System Settings> File Transfer> POP3/IMAP4 Settings> Encryption (set to “On”)

Transfer Request: Request By Mail

For details: Core Technology Manual – Facsimile Processes – Faxing from a PC – Internet/LAN Fax Boards – Transfer Request

The fields of the e-mail and their contents are as follows:

Field	Content
From	E-mail address of the requesting terminal
To	Destination address (Transfer Station address)
Bcc	Blind carbon copy
Subject	From TSI (Fax Message No. xxxx)
Content-Type	Multipart/mixed Text/Plain (for a text part), image/tiff (for attached files)
Content-Transfer-Encoding	Base 64, 7-Bit, 8-bit, Quoted Printable
Mail body (text part)	RELAY-ID-: xxxx (xxxx: 4 digits for an ID code) RELAY: #01#*X#**01….
Message body	MIME-converted TIFF-F.

E-Mail Options (Sub TX Mode)

The following features are available as options for mail sending: entering a subject, designating the level of importance, confirming reception of the mail.

Subject and Level of Importance

You can enter a subject message with: Sub TX Mode> E-mail Options

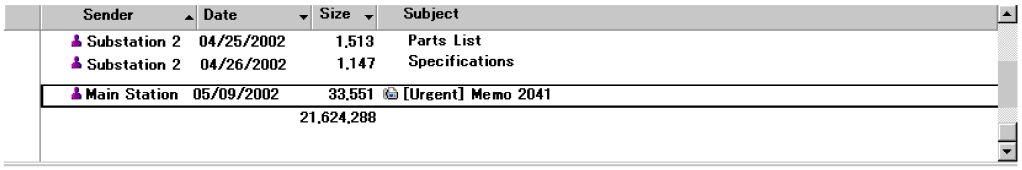
The Subject entry for the mail being sent is limited to 64 characters. The subject can also be prefixed with an “Urgent” or “High” notation.

How the Subject Differs According to Mail Type

<table>
<tr><th>Mail Type</th><th>①</th><th colspan="2">②</th><th>③</th></tr>
<tr><td>Subject Entry</td><td>---</td><td colspan="2">Entry Condition</td><td rowspan="5">Fax Message No.
+
File No.</td></tr>
<tr><td rowspan="4">No Subject Entry</td><td></td><td colspan="2">1. “CSI” (“RTI”)</td></tr>
<tr><td></td><td>2. “RTI”</td><td>CSI not registered</td></tr>
<tr><td></td><td>3. “CSI”</td><td>RTI not registered</td></tr>
<tr><td></td><td>4. None</td><td>CSI, RTI not registered</td></tr>
<tr><td rowspan="4">Confirmation of Reception</td><td rowspan="4">From</td><td colspan="2">1. “CSI” (“RTI”)</td><td rowspan="2">Normal:
Return Receipt (dispatched).
You can select “displayed” with IFAX SW02 Bits 2 and 3.</td></tr>
<tr><td>2. “RTI”</td><td>CSI not registered</td></tr>
<tr><td>3. “CSI”</td><td>RTI not registered</td><td rowspan="2">Error:
Return Receipt (processed/error)</td></tr>
<tr><td>4. None</td><td>CSI, RTI not registered</td></tr>
<tr><td rowspan="4">Mail delivery, memory transfer, SMTP receiving and delivery</td><td rowspan="4">From</td><td>RTI or CSI of the station designated for delivery</td><td>Mail delivery</td><td rowspan="4">Fax Message No. + File Number</td></tr>
<tr><td>RTI or CSI of sender</td><td>Mail sending from G3 memory</td></tr>
<tr><td>Mail address of sender</td><td>Memory sending</td></tr>
<tr><td>Mail address of sender</td><td>SMTP receiving and delivery (Off Ramp Gateway)</td></tr>
<tr><td>Mail error notification</td><td>---</td><td colspan="3">Error Message No. xxxx From CSI (RTI)</td></tr>
</table>

Items ① ② ③ of the table above are in the Subject.

Subjects Displayed on the PC



E-mail Messages

After entering the subject, you can enter a message with:

Sub TX Mode> E-mail Options

An e-mail message (up to 5 lines) can be pre-registered with: User Tools> System Settings> File Transfer> Program/Change/Delete E-mail Message

Limitations on Entries

Item	Maximum
Number of Lines	5 lines
Line Length	80 characters
Name Length	20 characters

Message Disposition Notification (MDN)

For details: Core Technology Manual – Facsimile Processes – Faxing from a PC – Internet/LAN Fax Boards – E-mail Options

The network system administrator can confirm whether a sent mail has been received correctly or not. This function is enabled only when "I-FAX switch 02 Bit 4" is set to "1"This confirmation is done in four steps.

1. Send request for confirmation of mail reception. To enable or disable this request (known as MDN):
2. Sub TX Mode> E-mail Options
3. Mail reception (receive confirmation request)
4. Send confirmation of mail reception
5. Receive confirmation of mail reception
   The other party's machine will not respond to the request unless the two conditions below are met:
   - The other party's machine must be set up to respond to the confirmation request.
   - The other party's machine must support MDN (Message Disposition Notification).

- Setting up the Receiving Party -

The receiving party will respond to the confirmation request if:

1. The “Disposition Notification To” field is in the received mail header (automatically inserted in the 4th line in the upper table on the previous page, if MDN is enabled), and
2. Sending the disposition notification must be enabled (User Parameter Setting SW21 (15 [H]) Bit 1 for this model). The content of the response is as follows:

Normal reception:	“Return Receipt (dispatched)” in the Subject line
IFAX SW02 (Bit 2, 3)	“Return Receipt (displayed)” in the Subject line
Error:	“Return Receipt (processed/error)” in the Subject line

Handling Reports

1. Sending a Request for a Return Receipt by Mail
2. After the mail sender transmits a request for a return receipt, the mail sender’s journal is annotated with two hyphens (--) in the Result column and a “Q” in the Mode column.
3. Mail Receipt (Request for Receipt Confirmation) and Sending Mail Receipt Response
4. After the mail receiver sends a response to the request for a return receipt, the mail receiver’s journal is annotated with two hyphens (--) in the Result column and an “A” in the Mode column.
5. Receiving the Return Receipt Mail
   - After the mail sender receives a return receipt, the information in the mail sender’s journal about the receipt request is replaced, i.e. the journal is annotated with “OK” in the Result column.
   - When the return receipt reports an error, the journal is annotated with an “E” in the Result column.
   - The arrival of the return receipt is not recorded in the journal as a separate communication. Its arrival is only reported by the presence of “OK” or “E” in the Result column.
   - If the mail address used by the sender specifies a mailing list (i.e., a Group destination; the machine sends the mail to more than one location. See “How to set up Mail Delivery”), the Result column of the Journal is updated every time a return receipt is received. For example, if the mailing list was to 5 destinations, the Result column indicates the result of the communication with the 5th destination only. The results of the communications to the first 4 destinations are not shown.
   - Exceptions: If one of the communications had an error, the Result column will indicate E, even if subsequent communications were OK.
   - If two of the communications had an error, the Journal will indicate the destination for the first error only.

Report Sample

```
  DATE     TIME   ADDRESS                      MODE      TIME      PAGE
                                  RESULT
-------------------------------------------------------------------------
  MAY. 5  10:15   fuser_01@dom1g. ricoh. co.  Mail SM  0'09"       2
                                  --
          10:16   fuser_01@dom1g. ricoh. co.  Mail SMQ 0'05"       1
                                  --
          10:17   s_tadashi@dom1g. ricoh. co. Mail SMQ 0'09"       2
                                  OK
          10:19   m_masataka@dom1g. ricoh. co. Mail SMA 0'05"      1
                                  --
```

4.5 IP-FAX

4.5.1 WHAT IS IP-FAX?

For details: Core Technology Manual – Facsimile Processes – Faxing from a PC – Internet/LAN Fax Boards – IP-FAX

T.38 Packet Format

TCP is selected by default for this machine, but you can change this to UDP with IPFAX SW 00 Bit 1.

UDP Related Switches

IP-Fax Switch 01						
No.	**FUNCTION**					**COMMENTS**
0-3	Select IP FAX Delay Level					Raise the level by selecting a higher setting if too many transmission errors are occurring on the network. If TCP/UDP is enabled on the network, raise this setting on the T.30 machine. Increasing the delay time allows the recovery of more lost packets. If only UDP is enabled, increase the number of redundant packets. Level 1~2: 3 Redundant packets Level 3: 4 Redundant packets
	Bit3	Bit2	Bit1	Bit0	Setting	
	0	0	0	0	Level 0	
	0	0	0	1	Level 1	
	0	0	1	0	Level 2	
	0	0	1	1	Level 3	

Settings

User parameter switch 34 (22[H]), bit 0

IP-Fax Gate Keeper usage 0: No, 1: Yes

IP Fax Switches: Various IP-FAX settings (see the bit switch table)

5. SPECIFICATIONS

5.1 GENERAL SPECIFICATIONS

5.1.1 FCU

Type:	Desktop type transceiver
Circuit:	PSTN (max. 3ch.) PABX
Connection:	Direct couple
Original Size:	Book (Face down) Maximum Length: 432 mm [17 ins] Maximum Width: 297 mm [11.7 ins] ARDF (Face up) (Single-sided document) Length: 128 - 1200 mm [5.0 - 47.2 ins] Width: 105 - 297 mm [4.1 - 11.7 inch] (Double-sided document) Length: 128 - 432 mm [5.0 - 17 inch] Width: 105 - 297 mm [4.1 - 11.7 inch]
Scanning Method:	Flat bed, with CCD
Resolution:	G3 8 x 3.85 lines/mm (Standard) 8 x 7.7 lines/mm (Detail) 8 x 15.4 line/mm (Fine) See Note1 16 x15.4 line/mm (Super Fine) See Note 1 200 x 100 dpi (Standard) 200 x 200 dpi (Detail) 400 x 400 dpi (Super Fine) See Note 1 **NOTE:** Optional Expansion Memory required
Transmission Time:	G3: 3 s at 28800 bps; Measured with G3 ECM using memory for an ITU-T #1 test document (Slerexe letter) at standard resolution
Data Compression:	MH, MR, MMR, JBIG
Protocol:	Group 3 with ECM
Modulation:	V.34, V.33, V.17 (TCM), V.29 (QAM), V.27ter (PHM), V.8, V.21 (FM)
Data Rate:	G3: 33600/31200/28800/26400/24000/21600/ 19200/16800/14400/12000/9600/7200/4800/2400 bps Automatic fallback
I/O Rate:	With ECM: 0 ms/line Without ECM: 2.5, 5, 10, 20, or 40 ms/line

Memory Capacity:	ECM: 128 KB SAF Standard: 4 MB With optional Expansion Memory: 28 MB (4 MB+ 24 MB) Page Memory Standard: 4 MB (Print: 2 MB + Scanner: 2 MB) With optional Expansion Memory: 12 MB (4 MB + 8 MB) (Print 8 MB + Scanner: 4 MB)

5.1.2 CAPABILITIES OF PROGRAMMABLE ITEMS

The following table shows the capabilities of each programmable items.

Item	Standard
Quick Dial	2000
Groups	100
Destination per Group	500
Destinations dialed from the ten-key pad overall	500
Programs	100
Auto Document	6
Communication records for Journal stored in the memory	200
Specific Senders	30

The following table shows how the capabilities of the document memory will change after the Expansion Memory are installed.

	Without the Expansion Memory	With the Expansion Memory
Memory Transmission file	400	400
Maximum number of page for memory transmission	1000	1000
Memory capacity for memory transmission (☛ Note)	320	2240

NOTE: Measured using an ITU-T #1 test document (Slerexe letter) at the standard resolution, the auto image density mode and the Text mode.

5.2 IFAX SPECIFICATIONS

Connectivity:	Local area network Ethernet 100base-Tx/10base-T IEEE1394 (IP over 1394) IEEE802.11b (wireless LAN)
Resolution:	Main scan: 400 dpi, 200 dpi Sub scan: 400 dpi, 200 dpi, 100 dpi **NOTE:** To use 400 dpi, IFAX SW01 Bit 4 must be set to “1”.
Transmission Time:	1 s (through a LAN to the server) Condition: ITU-T #1 test document (Selerexe Letter) MTF correction: OFF TTI: None Resolution: 200 x 100 dpi Communication speed: 10 Mbps Correspondent device: E-mail server Line conditions: No terminal access
Document Size:	Maximum message width is A4/LT. **NOTE:** To use B4 and A3 width, IFAX SW00 Bit 1 (B4) and/or Bit 2 (A3) must be set to “1”.
E-mail File Format:	Single/multi-part MIME conversion Image: TIFF-F (MH, MR, MMR)
Protocol:	**Transmission:** SMTP, TCP/IP **Reception:** POP3, SMTP, IMAP4, TCP/IP
Data Rate:	100 Mbps(100base-Tx) 10 Mbps (10base-T)
Authentication Method:	SMTP-AUTH POP before SMTP A-POP
Remark:	The machine must be set up as an e-mail client before installation. Any client PCs connected to the machine through a LAN must also be e-mail clients, or some features will not work (e.g. Autorouting).

5.3 IP-FAX SPECIFICATIONS

Network:	Local Area Network Ethernet/10base-T, 100base-TX IEEE1394 (IP over 1394) IEEE802.11b (wireless LAN)
Scan line density:	8 x 3.85 lines/mm, 200x100dpi (standard character), 8 x 7.7lines/mm, 200x200dpi (detail character), 8 x 15.4lines/mm (fine character: optional expansion memory required), 16 x 15.4lines/mm, 400x400dpi (super fine character: optional expansion memory required)
Original size:	Maximum A3 or 11"x 17" (DLT)
Maximum scanning size:	Standard: A3, 297mm x 432mm Irregular: 297mm x 1200mm
Transmission protocol:	Recommended: T.38 Annex protocol, TCP, UDP/IP communication
Compatible machines:	IP-Fax compatible machines
IP-Fax transmission function:	Specify IP address and send fax to an IP-Fax compatible fax through a network. Also capable of sending fax from a G3 fax connected to the public telephone lines via a VoIP gateway.
IP-Fax reception function:	Receive a fax sent from an IP-Fax compatible fax through a network. Also capable of receiving fax from a G3 fax connected the public telephone lines via a VoIP gateway.