Model AL-P1
Machine Code: G179

SERVICE MANUAL

December, 2007
Subject to change

Safety Notices

Important Safety Notices

Prevention of Physical Injury

1. Before disassembling or assembling parts of the main machine and peripherals, make sure that the power cord of the main machine is unplugged.
2. The wall outlet should be near the machine and easily accessible.
3. Note that some components of the machine and the paper tray unit are supplied with electrical voltage even if the main power switch is turned off.
4. If any adjustment or operation check has to be made with exterior covers off or open while the main switch is turned on, keep hands away from electrified or mechanically driven components.
5. If the Start key is pressed before the machine 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 machine starts making prints as soon as the warm-up period is completed.

1. The inside and the metal parts of the fusing unit become extremely hot while the machine is operating. Be careful to avoid touching those components with your bare hands.

⚠WARNING

- To prevent a fire or explosion, keep the machine away from flammable liquids, gases, and aerosols.

Health Safety Conditions

1. Toner and developer are non-toxic, but if you get either of them in your eyes by accident, it may cause temporary eye discomfort. Immediately wash eyes with plenty of water. If unsuccessful, get medical attention.
2. This machine, which uses a high voltage power source, can generate ozone gas. High ozone density is harmful to human health. Therefore, the machine must be installed in a well-ventilated room.

Observance of Electrical Safety Standards

1. This machine and its peripherals must be serviced 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, the maintenance unit which includes developer or the organic photoconductor 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

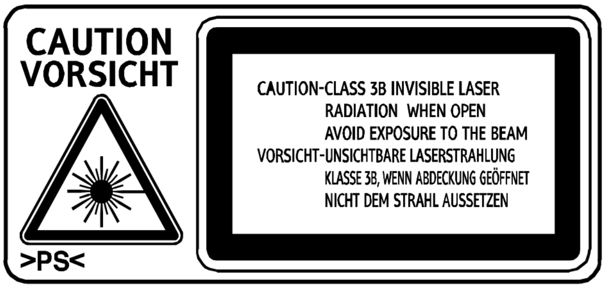
The Center for Devices and Radiological Health (CDRH) prohibits the repair of laser-based optical units in the field. The optical housing unit can only be repaired in a factory or at a location with the requisite equipment. The laser subsystem is replaceable in the field by a qualified Customer Engineer. 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 Optics Housing Unit section. Laser beams can seriously damage your eyes.
- CAUTION MARKING:


CAUTION
VORSICHT
>PS<
CAUTION-CLASS 3B INVISIBLE LASER
RADIATION WHEN OPEN
AVOID EXPOSURE TO THE BEAM
VORSICHT-UNSICHTBARE LASERSTRAHLUNG
KLASSE 3B, WENN ABDECKUNG GEÖFFNET
NICHT DEM STRAHL AUSSETZEN

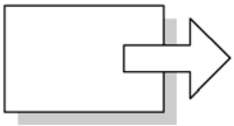
3d-laser_decal

Symbols and Abbreviations

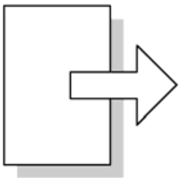
Symbols and Abbreviations

This manual uses several symbols and abbreviations. The meaning of those symbols and abbreviations are as follows:

☛	See or Refer to
	Clip ring
	Screw
	Connector
	Clamp
	E-ring
SEF	Short Edge Feed
LEF	Long Edge Feed



Short Edge Feed (SEF)



Long Edge Feed (LEF)

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.

TABLE OF CONTENTS

1. Installation

2. Preventive maintenance

3. Replacement and Adjustment

4. Troubleshooting

5. Service Tables

6. Detailed Section Descriptions

7. Specifications

1. Installation

Installation Requirements

⚠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.

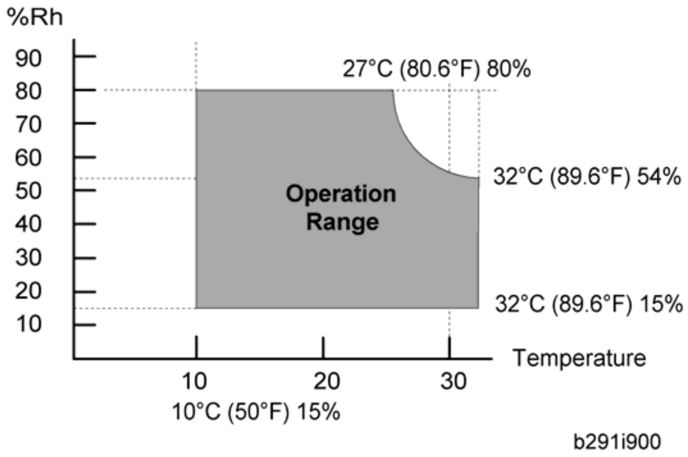
Important

- Install the machine in a safe place for keeping security.
- Make sure that the operation instructions are kept at a customer's hand.

Note

- The main power LED lights or flashes while the main machine is communicating with the network server, or while the machine is accessing the hard disk or memory for reading or writing data.

Environment



Temperature Range:	10°C to 32°C (50°F to 90°F)
Humidity Range:	15% to 80% RH
Ambient Illumination:	Less than 1,500 lux (do not expose to direct sunlight.)
Ventilation:	Room air should turn at least 30 m3/hr/person

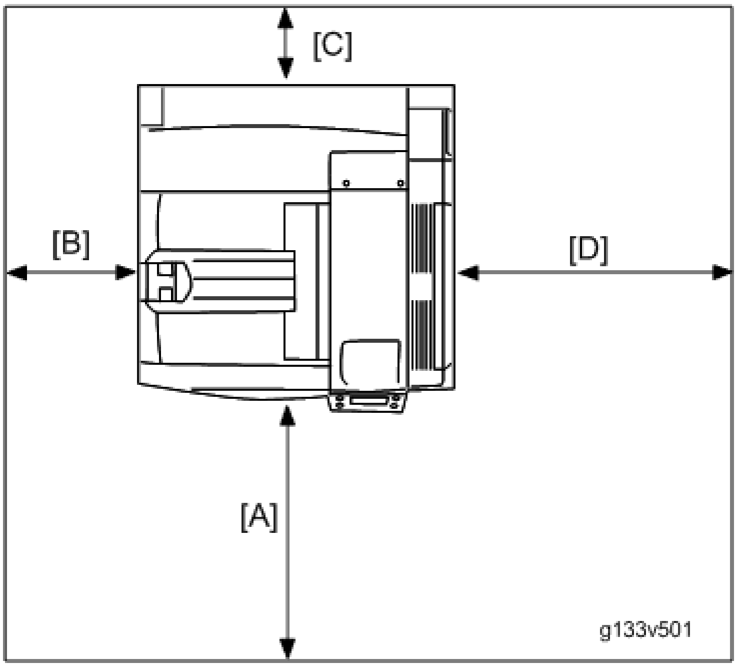
Ambient Dust:	Less than 0.10 mg/m3 (2.7 x 10/6 oz/yd3)
1. Avoid areas exposed to sudden temperature changes: 1) Areas directly exposed to cool air from an air conditioner. 2) Areas directly exposed to heat from a heater. 2. Do not place the machine where it will be exposed to corrosive gases. 3. Do not install the machine at any location over 2,000 m (6,500 ft.) above sea level. 4. Place the main machine on a strong and level base. Inclination on any side should be no more than 5 mm (0.2"). 5. Do not place the machine where it may be subjected to strong vibrations.	

Machine Level

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

Minimum Space Requirements

Place the main machine near the power source, providing clearance as shown:



A: Front: >75 cm (29.6")

B: Left: > 10 cm (4")

C: Rear: > 10 cm (4")

D: Right > 55 cm (21.7")

Note

- The 75 cm (29.6") recommended for the space at the front is for pulling out the paper tray only. If the operator stands at the front of the main machine, more space is required.

Power Requirements

⚠CAUTION

- Make sure that the wall outlet is near the main machine and easily accessible. Make sure the plug is firmly inserted in the outlet.
- Avoid multi-wiring.
- Be sure to ground the machine.

1. Input voltage level:

   North America 120 V, 60 Hz: More than 12.5 A

   Europe/Asia 220 V to 240V, 50 Hz/60 Hz: more than 6.8 A
2. Permissible voltage fluctuation: 10% to 15%
3. Never set anything on the power cord.

Main Machine Installation

Installation Overview

The installation procedures of the following items are in the Operating Instructions:

Main Machine and Hardware Options

- Printer G179 (main machine) Installation
- Paper Feed Unit D351 (Option)

Controller Options

- IEEE1284 Interface Board B679
- IEEE802.11a/g Interface Unit D377
- Gigabit Ethernet G874
- VM Card M345
- Data Storage Card G874
- IPDS Unit M345
- DataOverwriteSecurity Unit (Type J) M345
- HDD Encryption Unit (Type B) M345

Note

- The bridge unit (D386) and either the 2,000-sheet LCT (D352) or the paper tray (D351) must be installed before the finisher SR3030 (B805) or SR790 (B408) is installed.

The installation procedures of the following options are in this service manual:

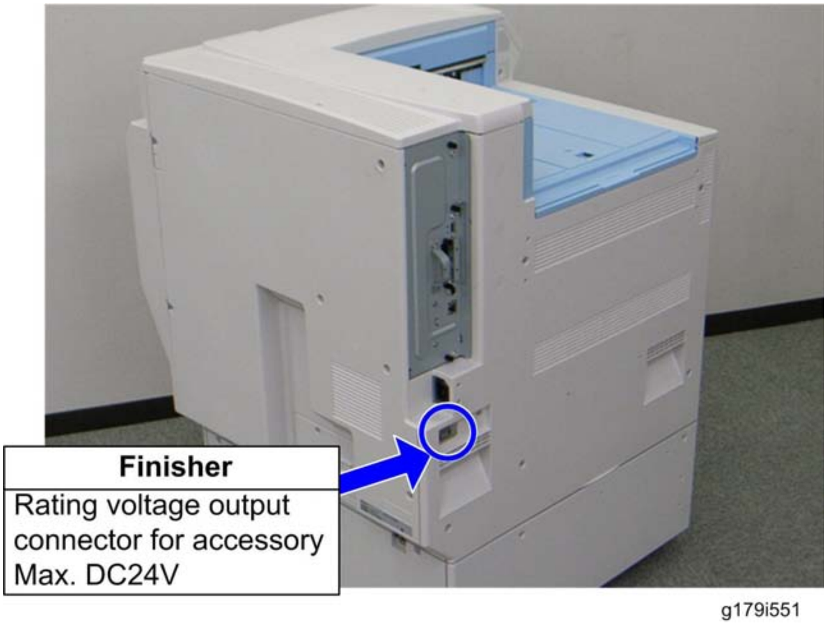
Hardware Options

- LCIT PB3050: D352
- LCIT RT3000: D353
- Bridge Unit: D386 (for Finisher SR3030 and SR790)
- Finisher SR3030 B805
    - Punch Unit B702 (for Finisher SR3030)
    - Jogger Unit B703 (for Finisher SR3030)
- Finisher SR790 B408

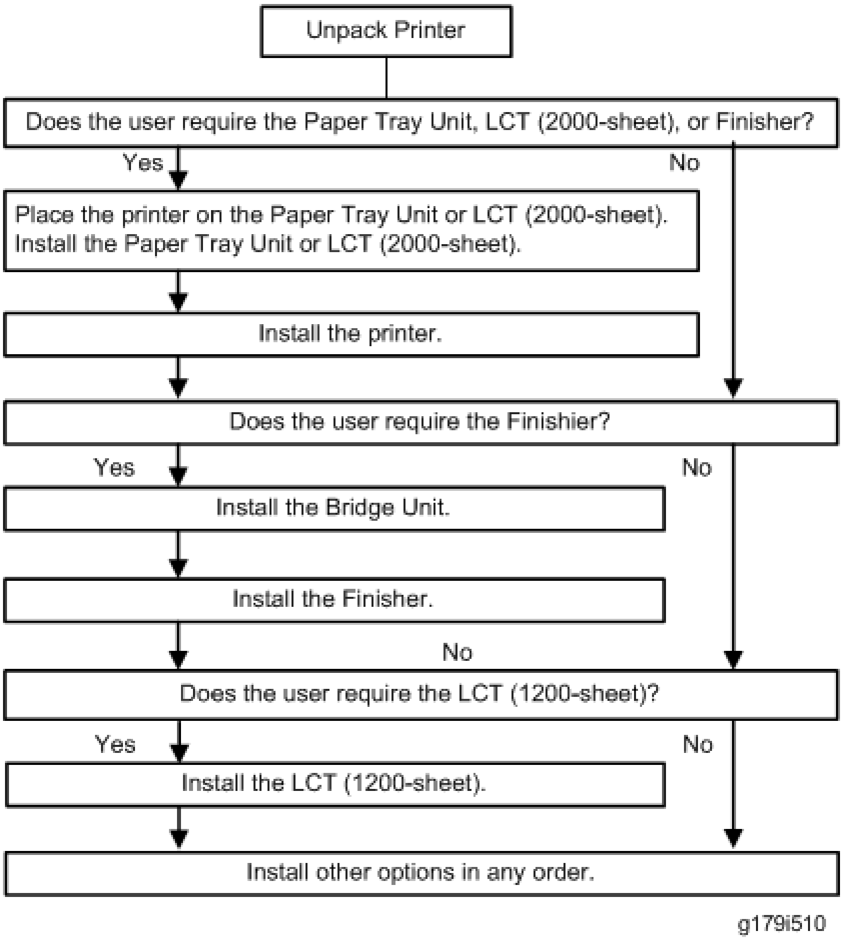
Power Socket for Peripheral

⚠ CAUTION

- Rating voltage for peripheral.
- Make sure to plug the cable into the correct socket.



Installation Flowchart


Unpack Printer
Does the user require the Paper Tray Unit, LCT (2000-sheet), or Finisher?
Yes
No
Place the printer on the Paper Tray Unit or LCT (2000-sheet). Install the Paper Tray Unit or LCT (2000-sheet).
Install the printer.
Does the user require the Finishier?
Yes
No
Install the Bridge Unit.
Install the Finisher.
No
Does the user require the LCT (1200-sheet)?
Yes
No
Install the LCT (1200-sheet).
Install other options in any order.
g179i510

Moving the Machine

This section shows you how to manually move the machine from one floor to another floor. See the section "Transporting the Machine" if you have to pack the machine and move it a longer distance.

1. Remove all trays from the optional paper feed unit or LCT.

Transporting the Machine

1. Make sure there is no paper left in the paper trays. Then fix down the bottom plates with a sheet of paper and tape.
2. Do one of the following:

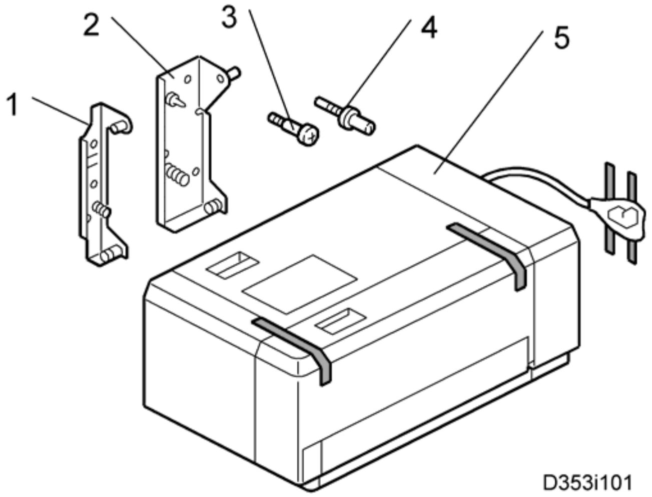
- Attach shipping tape to the covers and doors.
- Shrink-wrap the machine tightly.

1200-Sheet LCT (D353)

Component Check

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

No.	Description	Q'ty
1	Front Bracket	1
2	Rear Bracket	1
3	Stud Screw	4
4	Joint Pin	2
5	LCT	2



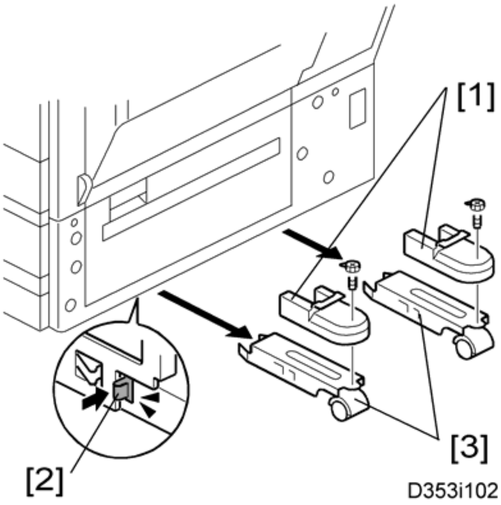
Installation procedure

⚠CAUTION

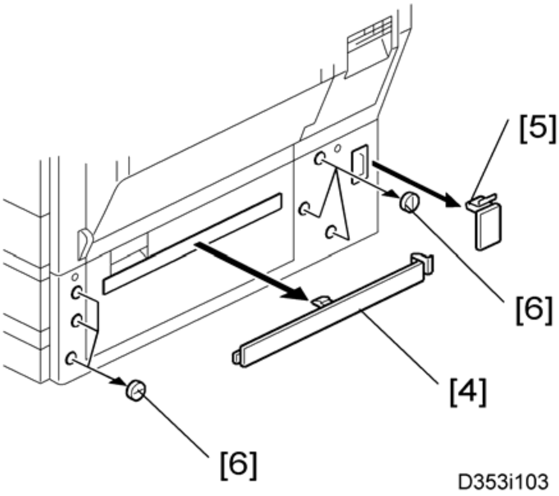
- Unplug the main machine power cord before starting the following procedure.

Note

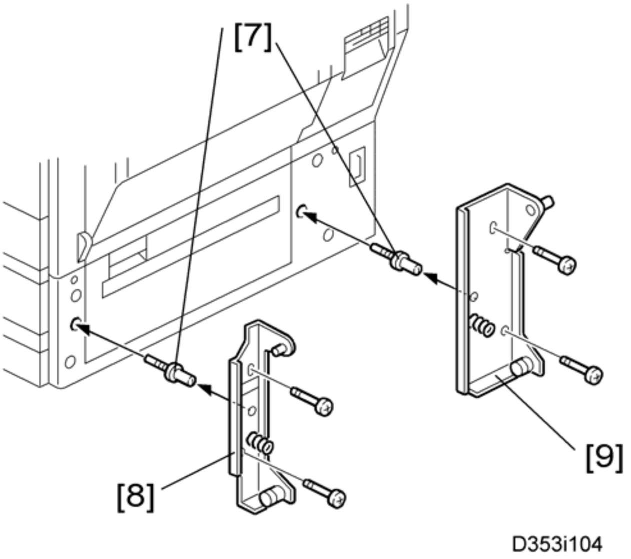
- The Paper Tray Unit (D351) or LCT 2000-sheet (D352) must be installed before installing this 1200-sheet LCT.



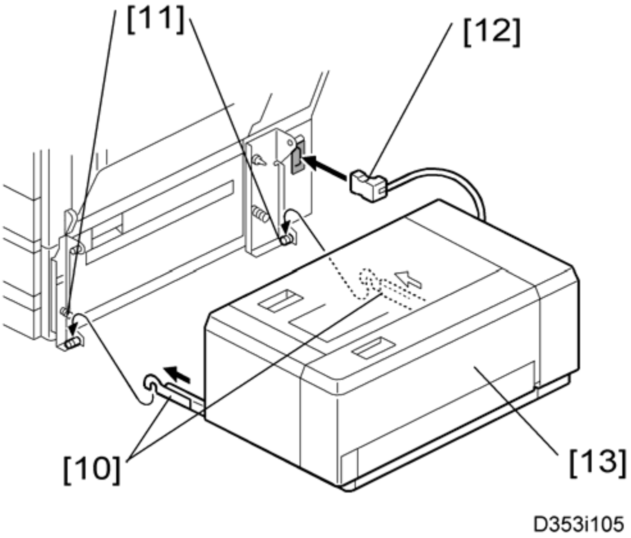
1. Unpack the LCT and remove the tapes.
2. Remove the stand covers [1].
3. Release the locks [2] of the front and rear caster stands.
4. Remove the caster stands [3].



5. Remove the paper path cover [4], connector cover [5] and six hole covers [6].



6. Insert the joint pins [7].
7. Attach the front [8] and rear brackets [9].



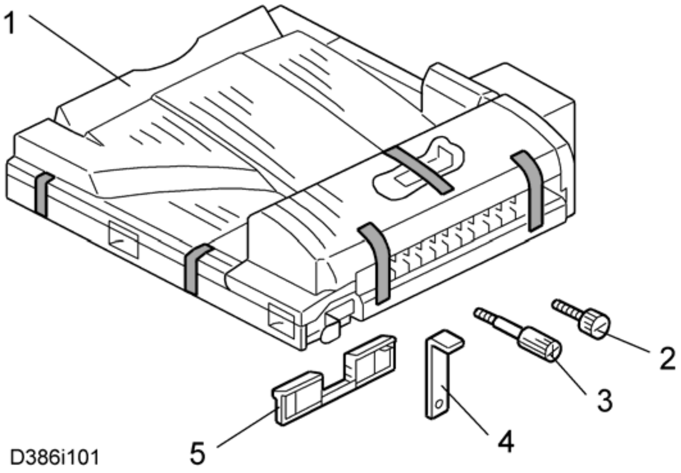
8. Pull out the front and rear rails [10], and then hang them on each bracket [11].
9. Connect the LCT cable [12] to the main machine.
10. Slide the LCT [13] into the main machine.
11. Make sure that the front and rear sides of the LCT are closely attached to the main machine.

Bridge Unit (D386)

Component Check

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

No.	Description	Q'ty
1	Bridge Unit	1
2	Knob screw	1
3	Long Knob Screw	1
4	Holder bracket	1
5	Guide	2



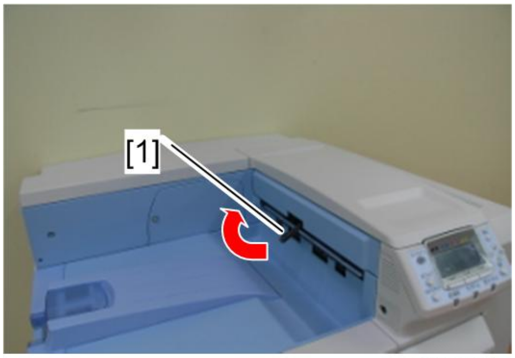
Installation Procedure

⚠CAUTION

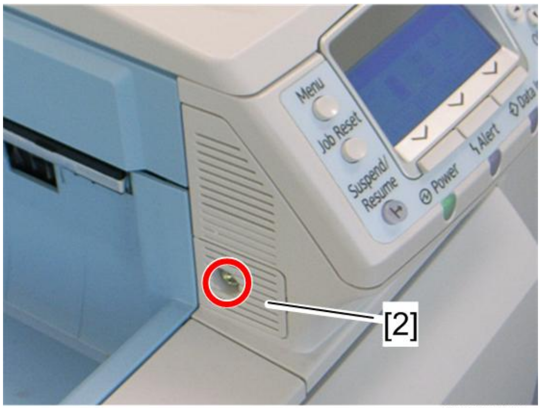
- Unplug the machine power cord before starting the following procedure.

Note

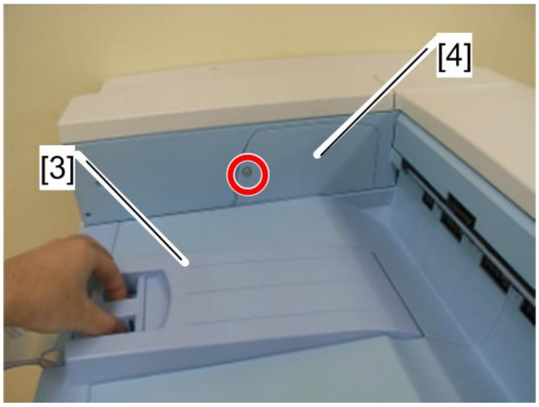
- If you will install the finisher unit (B408 or B805) on the machine, install it after installing the bridge unit (D386).



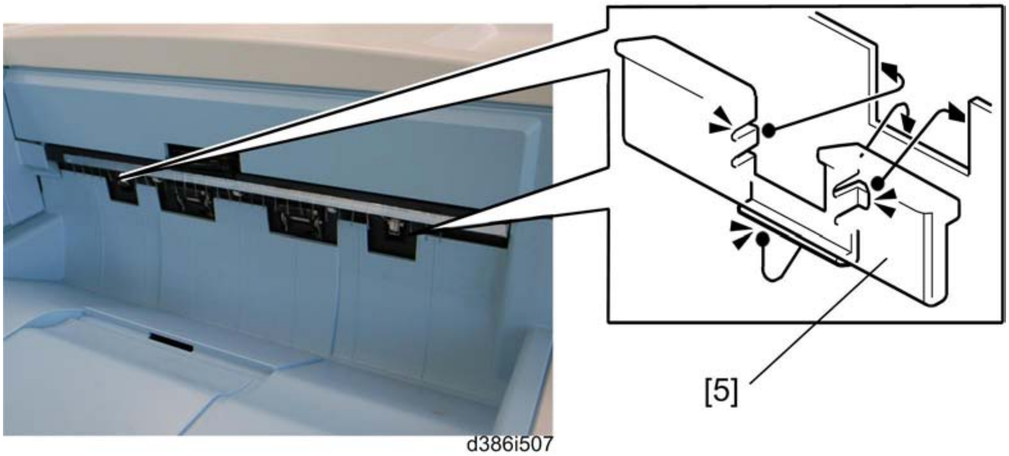
1. Remove all tapes.
2. If the sensor feeler [1] is out, fold it into the machine.



3. Remove the connection cover [2] (🔩 x 1).

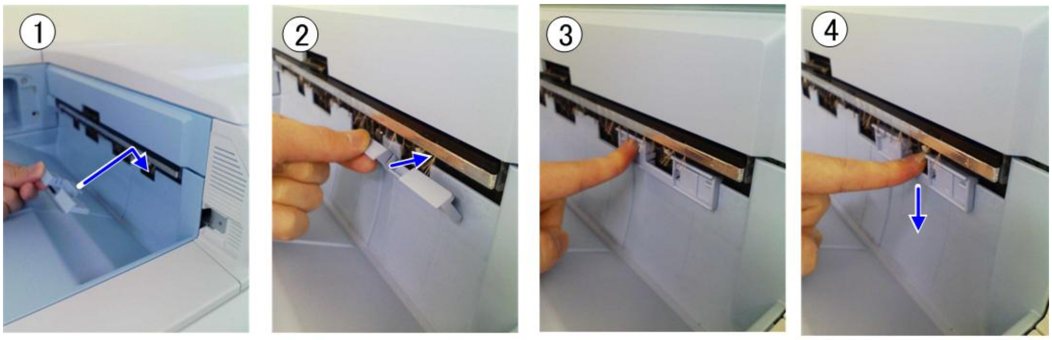


4. Remove the inner tray [3].
5. Remove the connector cover [4] (🔩 x 1).



d386i507

6. Attach the two guides [5] to the cutouts in the paper exit.



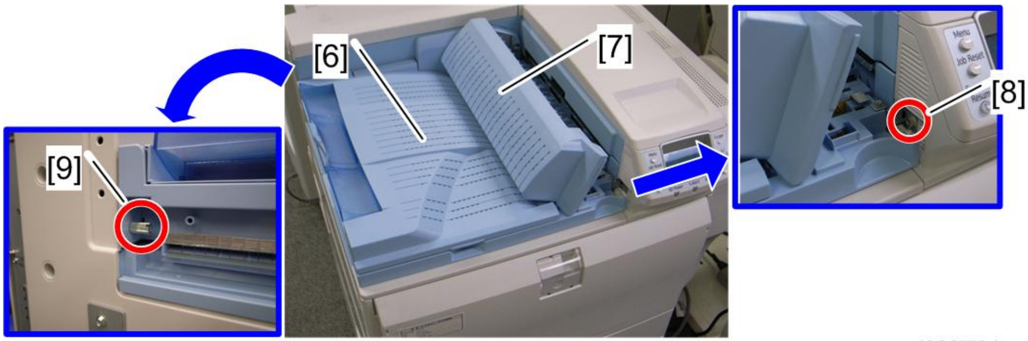
d386i508

1) Place the lower hook of the guide in the cutout of the paper exit.

2) Attach the guide as shown until the two side hooks hold the paper exit.

3) Press the guide.

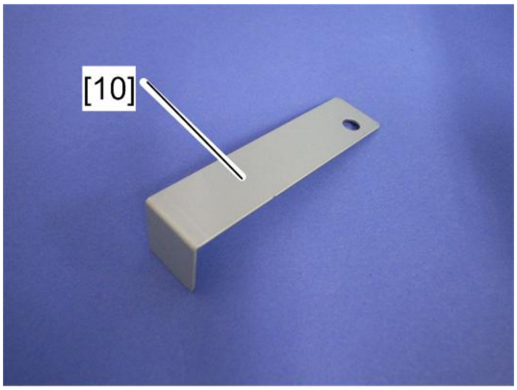
4) Press down the guide as shown.



d386i504

7. Install the bridge unit [6].

8. Open the bridge unit cover [7]
9. Secure it with the knob screw [8] and long knob screw [9].
10. Close the bridge unit cover [7].
11. Reassemble the machine.
12. Install the optional finisher (refer to the finisher installation procedure).



d386i506

Note

- Holder bracket [10] is used in the installation procedure of the finisher (B408 or B805). At this time, do not install it yet.

13. Turn on the main power switch of the machine.
14. Check the bridge unit operation.

3000-Sheet Finishers (B805)

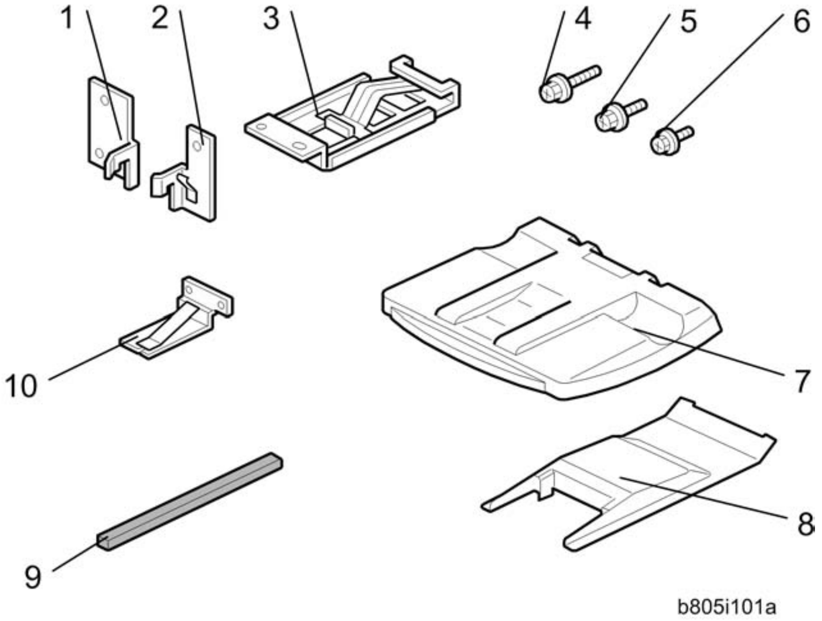
Accessory Check

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

No.	Description	Q'ty
1	Rear joint bracket	1
2	Front joint bracket	1
3	Ground (earth) plate	1
4	Tapping screws - M4 x14	4
5	Tapping screws - M3 x 8	1
6	Tapping screws - M3 x 6	6*[1]
7	Upper output tray	1
8	Support Tray	1
9	Cushion (with double-sided tape)	1
10	Small ground (earth) plate*[2]	2

*[1]: Four of these six screws are not used for this model.

*[2]: Item No.10 is not used for this model.



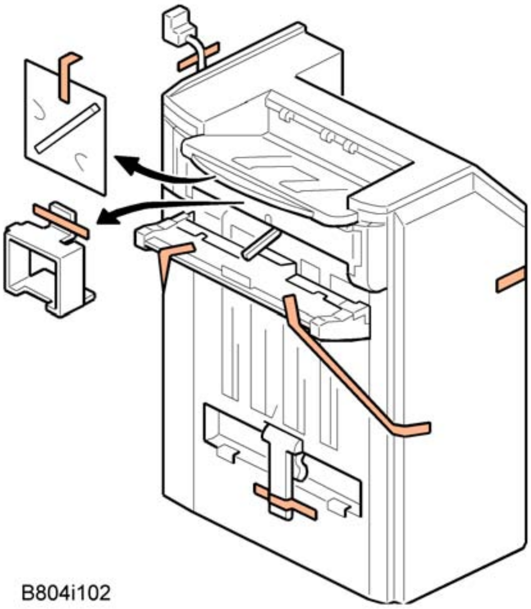
Installation Procedure

⚠CAUTION

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

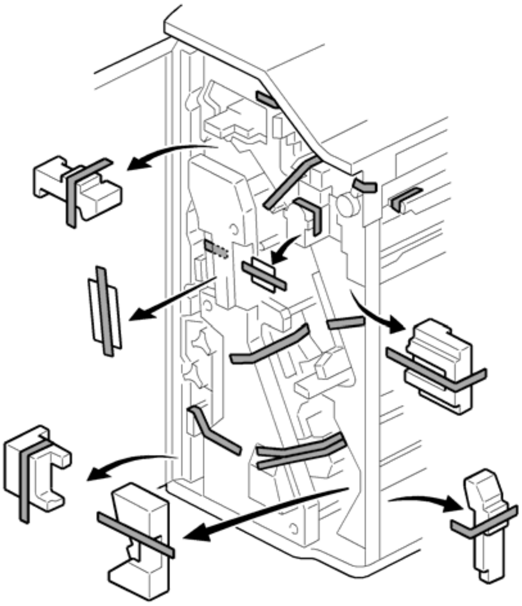
If this finisher is installed on the G179 printer, the following options must be installed before installing this finisher.

- Bridge Unit (D386)
- Paper Feed Unit (D351) or LCT (D352)



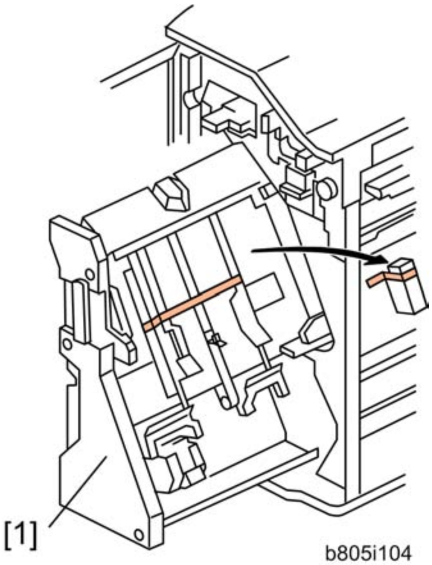
B804i102

1. Unpack the finisher and remove all tapes and packing materials from the finisher.

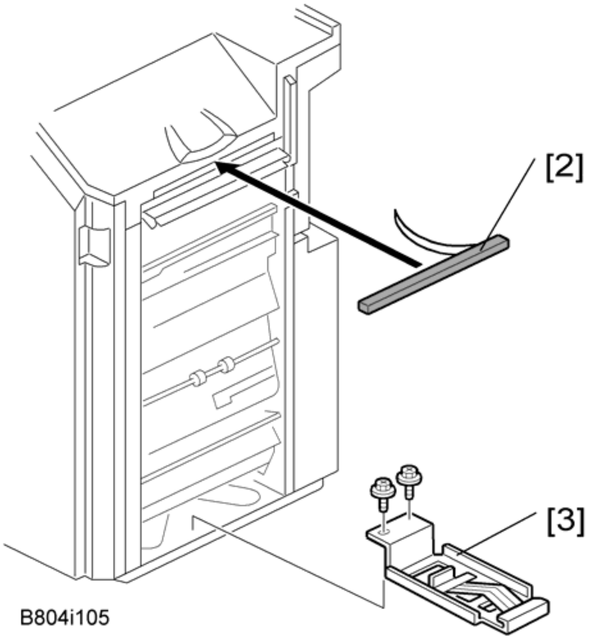


B804i103

2. Open the front door, and then remove all tapes and packing materials from the inside of the finisher.



3. Pull out the jogger unit [1], and then remove all tapes and retainers.

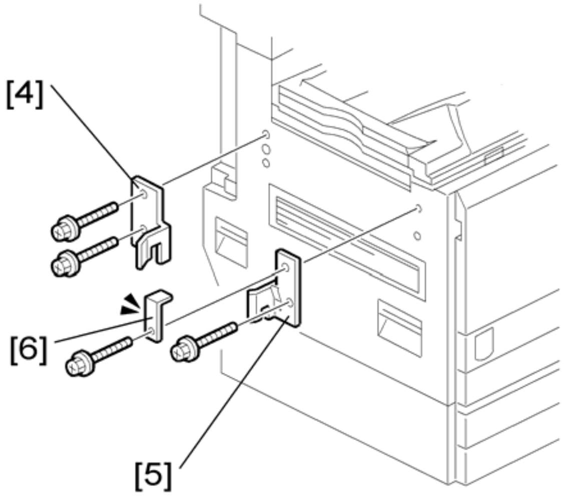


4. Attach the cushion [2] to the finisher.

Note

- Make sure that the cushion is placed within 0 to 1 mm from the edge of the cover.

5. Install the ground plate [3] on the finisher (🔩 x 2; M3 x 6).

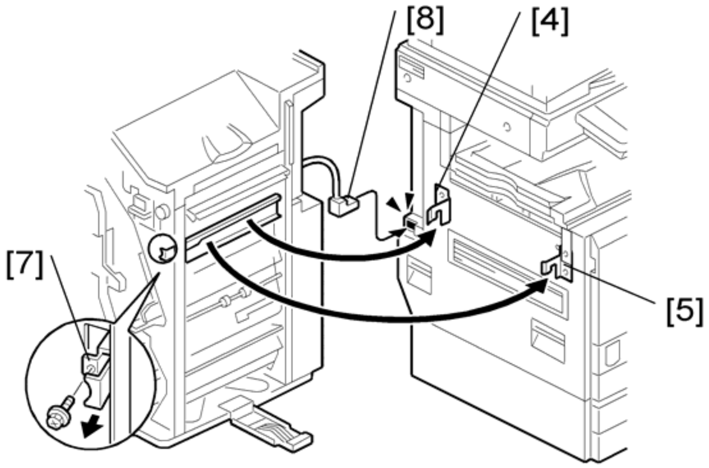


B804i106a

6. Attach the rear joint bracket [4] (🔩 x 2; M4 x 14).
7. Attach the front joint bracket [5] and the holder bracket [6] (🔩 x 2; M4 x 14).

Note

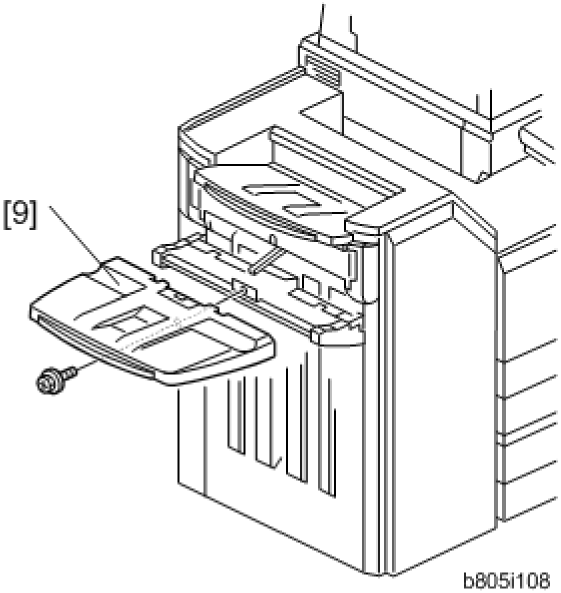
- Holder bracket [6] must be placed outside the front joint bracket [5]. This bracket is provided with the Bridge Unit (D386).



B804i107

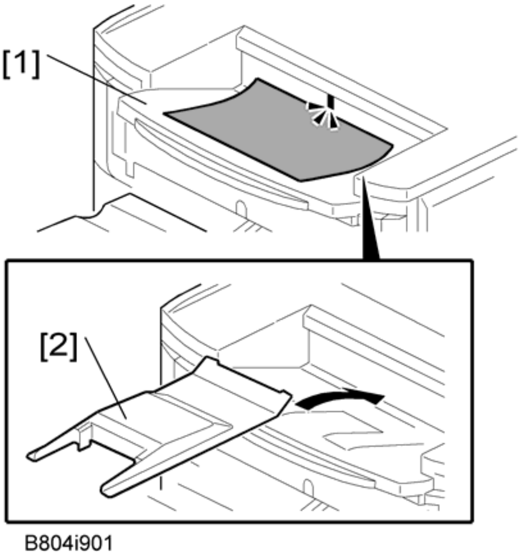
8. Pull the lock lever [7] (🔩 x 1).
9. Slowly push the finisher to the left side of the machine, keeping its front door open until the brackets [4] [5] go into their slots.
10. Push the lock lever [7], and then secure it (🔩 x 1).
11. Close the front door of the finisher.

12. Connect the finisher connector [8] to the machine.



13. Install the upper output tray [9] (🔩 x 1; M3 x 8).
14. Turn on the main power switch of the machine.
15. Check the finisher operation.

Support Tray Installation



If a stacking problem occurs several times on the upper output tray [1], put the support tray [2] on the tray as shown.

Note

- Keep this tray in the manual pocket if this tray does not need to be installed.

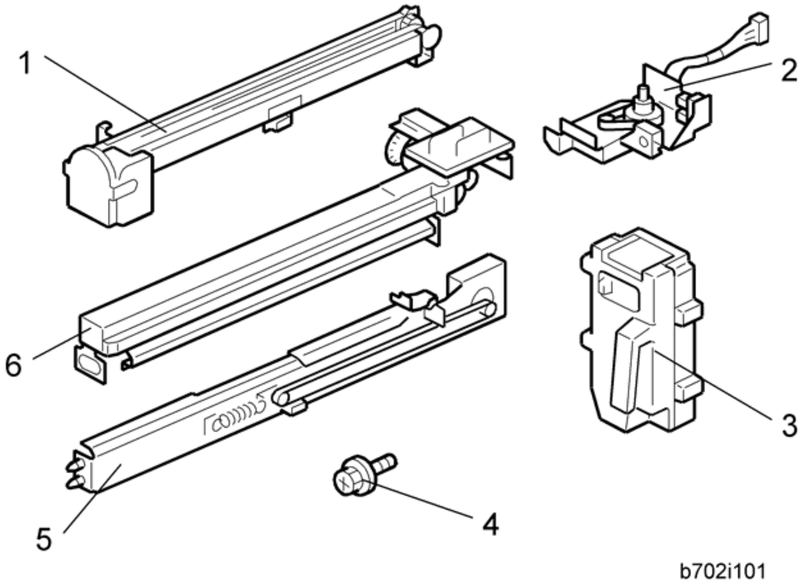
Punch Unit (B702)

The Punch Unit B702 can be installed in the 3000 Sheet Finisher B805.

Component Check

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

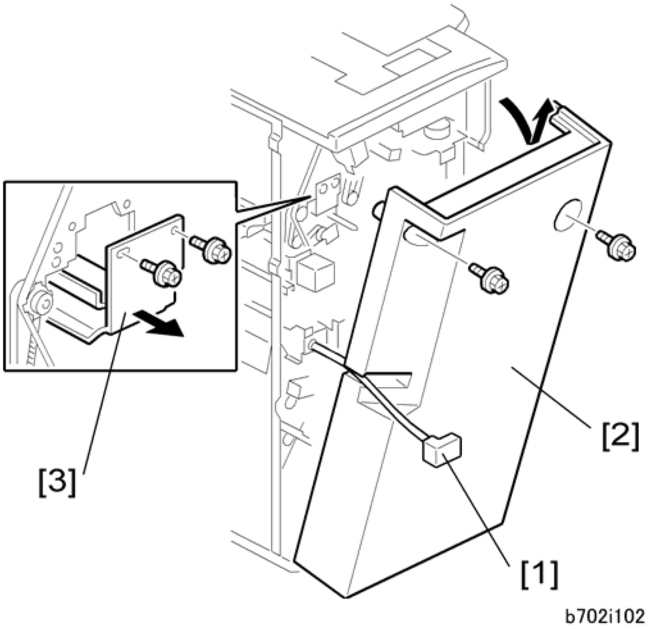
No.	Description	Q'ty
1	Punch-out Waste Unit	1
2	Slide Drive Unit	1
3	Punch Waste Hopper	1
4	Screws (M3 x 6)	5
5	Side-to-Side Detection Unit	1
6	Punching Unit	1



Installation Procedure

⚠CAUTION

- Unplug the main machine power cord before starting the following procedure. If the 3000-sheet finisher has been installed, disconnect it and pull it away from the machine.

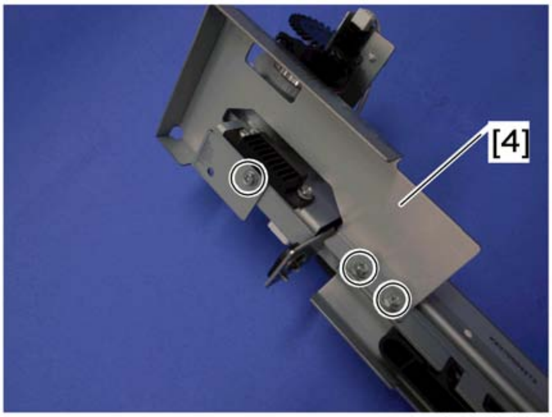


1. If the finisher is connected to the machine, disconnect the power connector [1] and move the finisher away from the machine.
2. Remove the rear cover [2] (🔩 x 2) and open the front door.

   Note

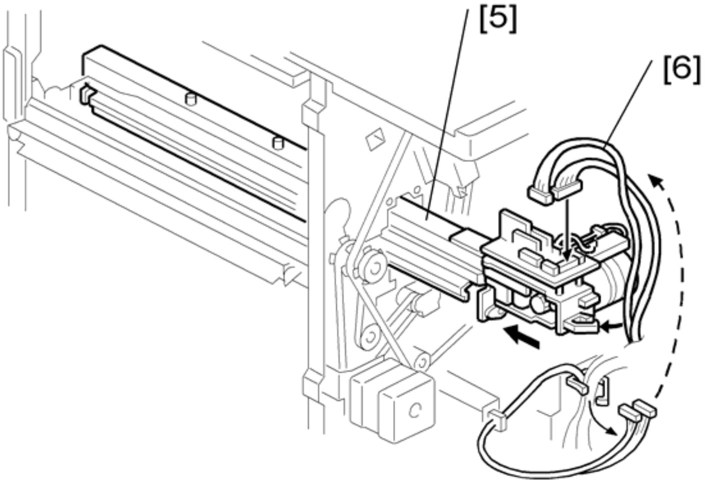
   - At the bottom of the rear cover, make sure to disconnect the tabs that attach the cover to the frame.

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



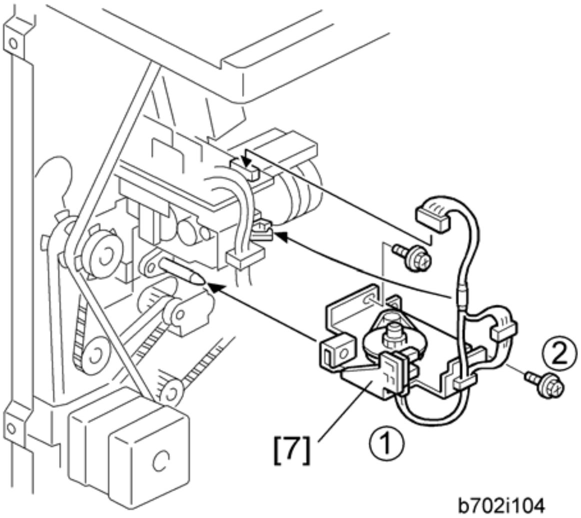
b702i501

4. Remove the bracket [4] from the punch unit (🔩 x 3).



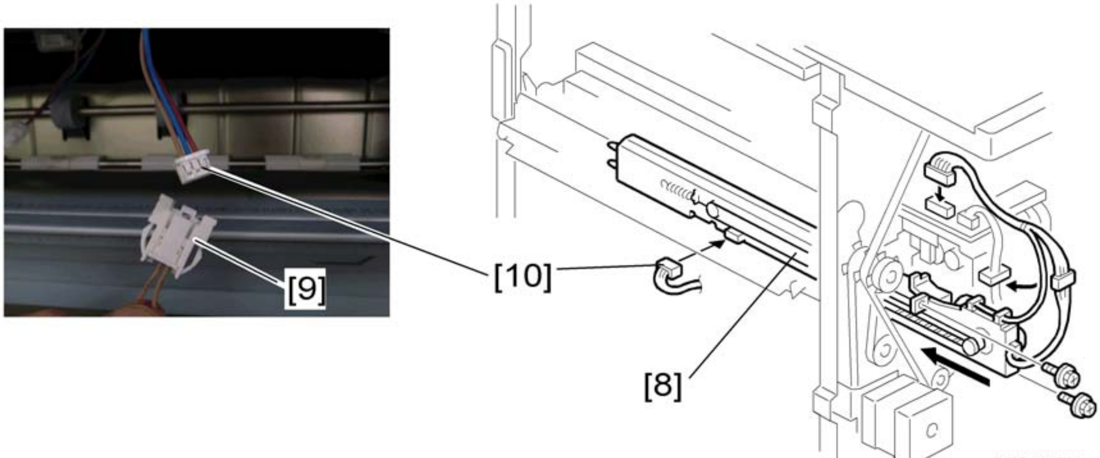
b702i103

5. Move the punch unit [5] along its rails into the finisher. Make sure that the pin engages correctly at the front and rear.
6. Connect the cables [6] of the finisher to the connectors (CN601 and CN602) on the punch unit board (🔌 x 2, ⎍ x 1).
    - The cables [6] are coiled and attached to the PCB.



b702i104

7. Attach the slide drive unit [7] to the finisher and connect it to the punch unit (🔩 x 2, 🔌 x 1). Push in the slide drive unit at ① when you attach the screw .
8. Make sure that the punch unit moves freely and is not blocked by the screws.

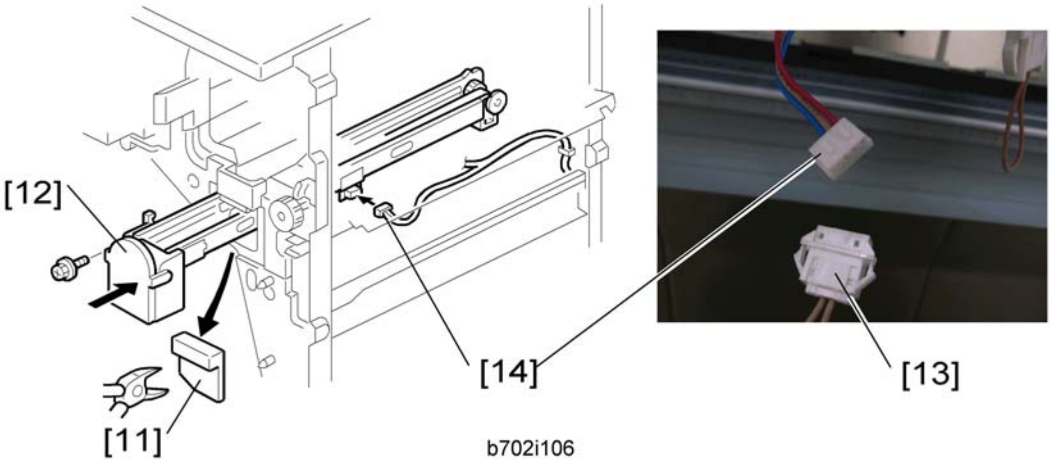


b702i105

9. Put the side-to-side detection unit [8] in the machine. Make sure that the two pins are engaged correctly at the front.
10. Make sure that the side-to-side detection unit moves smoothly on its rails. If it does not, make sure that the rails are aligned with their grooves.
11. Attach the side-to-side detection unit and connect it at the rear (🔩x 2, 📎x 1, 🔌x 1).
12. Pull the short connector [9] out of the connector [10], then connect the cable [10] of the finisher (🔌x 1).

Note

- This is the 3-pin connector.

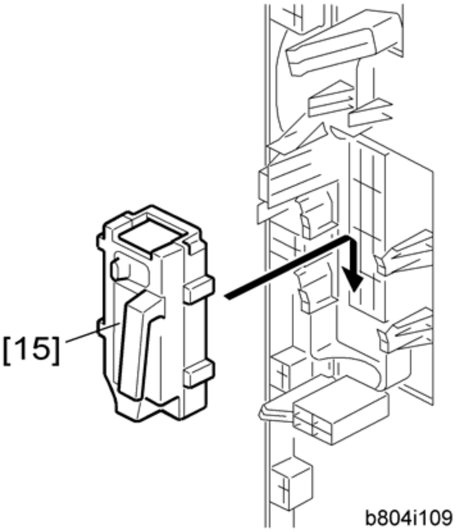


13. At the front, use a pair of wire cutters to remove the part [11] of the cover.
14. Install the punch-waste transport unit [12] in the finisher.
15. Make sure that the punch-waste transport unit moves smoothly on its rails. If it does not, make sure that the rails are aligned with the grooves.
16. Remove the short connector [13] from the connector [14].

Note

- This is the 4-pin connector.

17. Connect the cable [14] and attach the punch-waste transport unit (x 1, x 1, x 1).



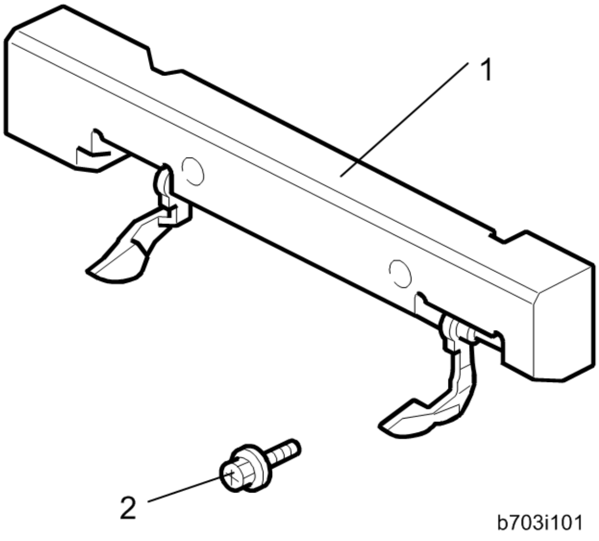
18. Set the hopper [15] in its holder.
19. Reassemble the finisher, and then install it on the main machine.
20. Connect the power cord to the outlet, and then turn the main power switch on.
21. Check the punch unit operation.

Output Jogger Unit (B703)

Accessories

Check the accessories and their quantities against this list.

Description	Qty
1. Jogger Unit	1
2. Tapping Screws M3x6	2



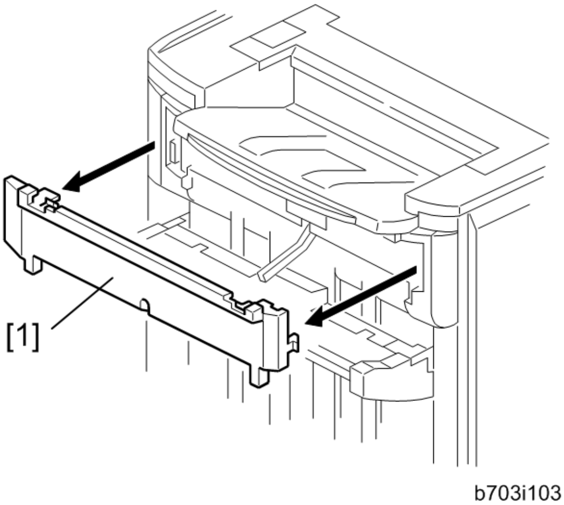
Installation

The Output Jogger Unit B703 is installed only on the 3000-Sheet Finisher B805.

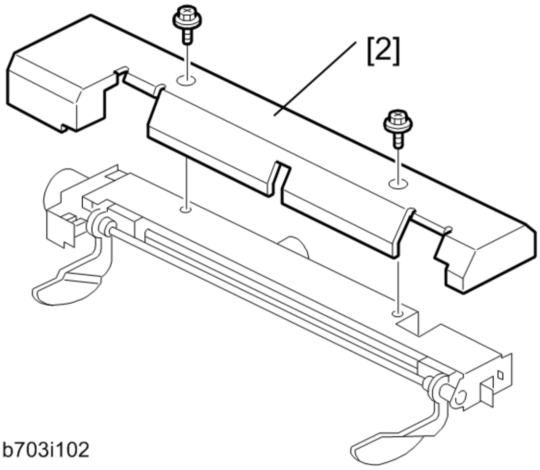
⚠**WARNING**

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

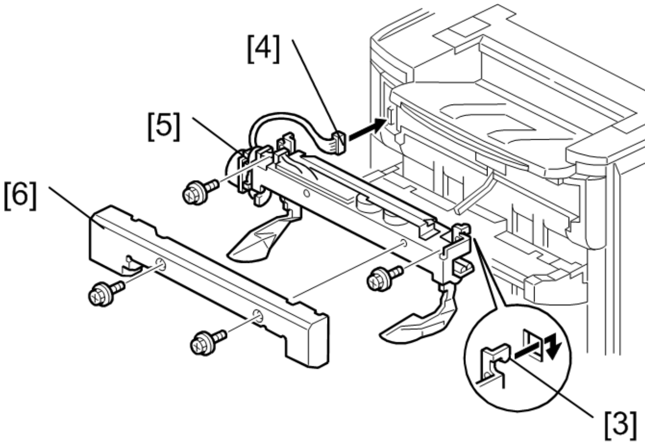
1. Turn the main machine switch off.
2. Disconnect the finisher from the main frame.



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



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



b703i104

5. While holding the jogger unit with the connector on the left, put the hooks on the frame of the jogger unit [3] into the holes in the left and right side of the finisher frame.
6. Connect connector [4] to the socket (🔌 x 1).
7. Attach the jogger unit [5] to the finisher (🔩 x 2).
8. Reattach the jogger unit cover [6] to the jogger unit (🔩 x 2).

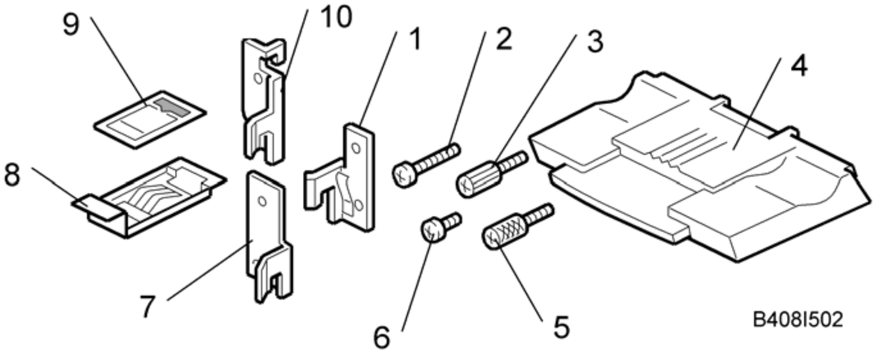
1000-Sheet Finisher (B408)

Accessory Check

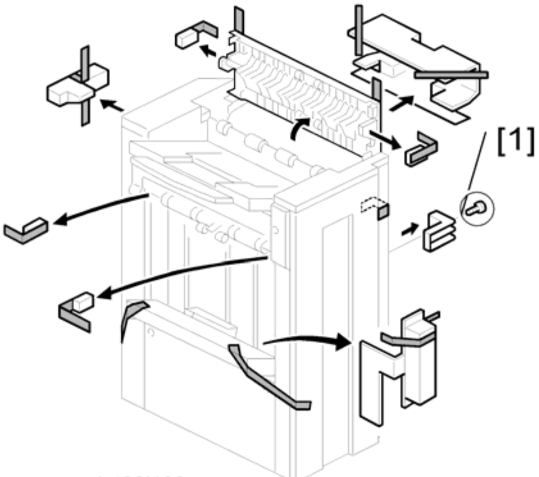
Check the quantity and condition of the accessories against the following list.

No.	Description	Q'ty	For this model
1	Front Joint Bracket	1	✔
2	Screw - M4 x 14	4	✔ (Use 4)
3	Knob Screw - M4 x 10	1	✔
4	Copy Tray	1	✔
5	Knob Screw - M3 x 8	1	✔
6	Screw - M3 x 8	1	✔
7	Rear Joint Bracket	1	✔
8	Grounding Plate	1	✔
9	Staple Position Decal	1	✔
10	Rear Joint Bracket	1	---

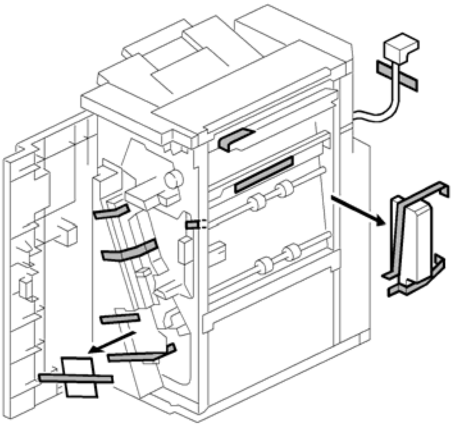
✔ = Necessary, --- = Not necessary



Installation Procedure



b408i102



b408i103

⚠CAUTION

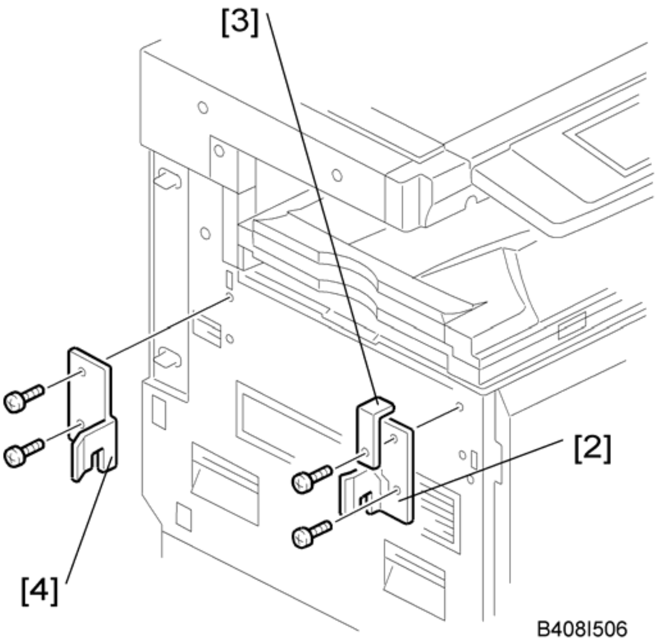
- Unplug the main machine power cord before starting the following procedure.

If this finisher is installed, the Bridge Unit (D386) and Paper Feed Unit (D351) or LCT (D352) must be installed before installing this finisher.

1. Unpack the finisher and remove the tapes.

Note

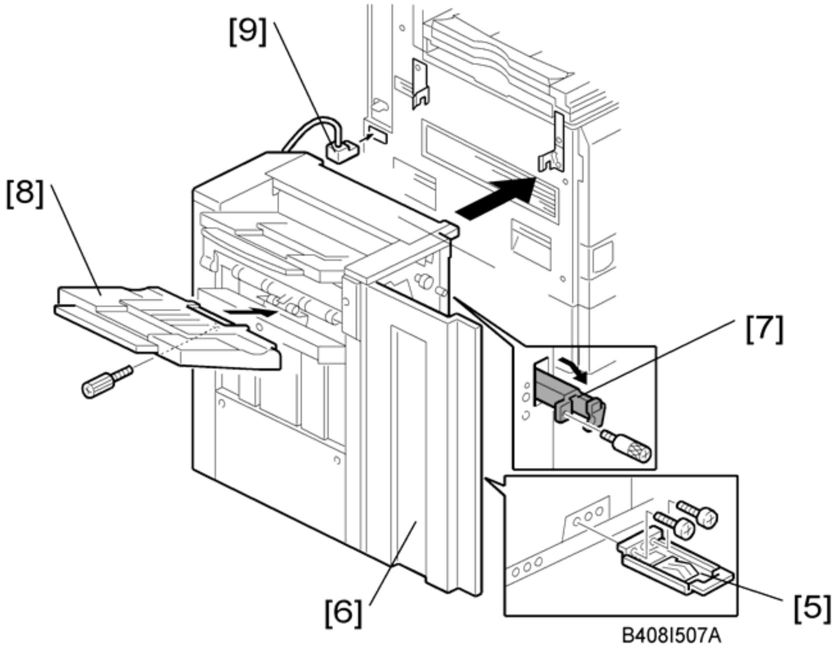
- Be sure to keep screw [1] shown at the top left drawing above. It will be needed to secure the grounding plate later in this procedure.



2. Install the front joint bracket [2] / holder bracket [3] (🔩 x 2; M4 x 14) and rear joint bracket [4] (🔩 x 2; M4 x 14).

Note

- The holder bracket [3] must be placed outside the front joint bracket [2]. The holder bracket [3] is provided with the Bridge Unit (D386).



3. Install the grounding plate [5] on the finisher (🔩 x 2; M3 x 8)

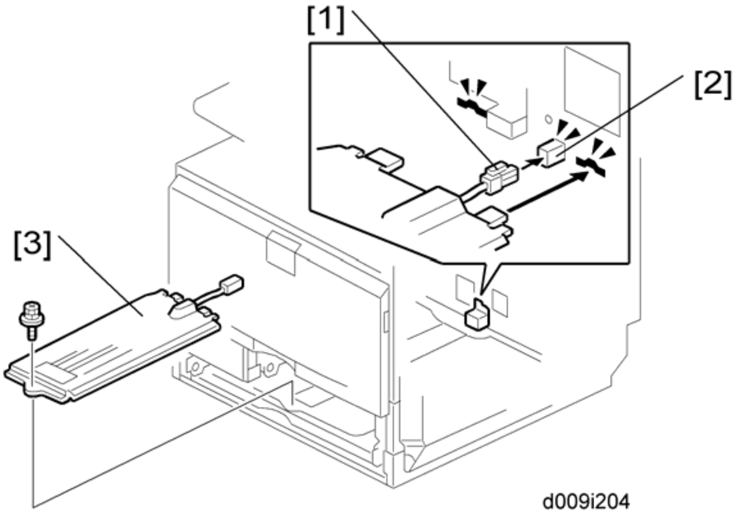
Note

- Use the screw removed in step 1 and the screw from the accessory box.

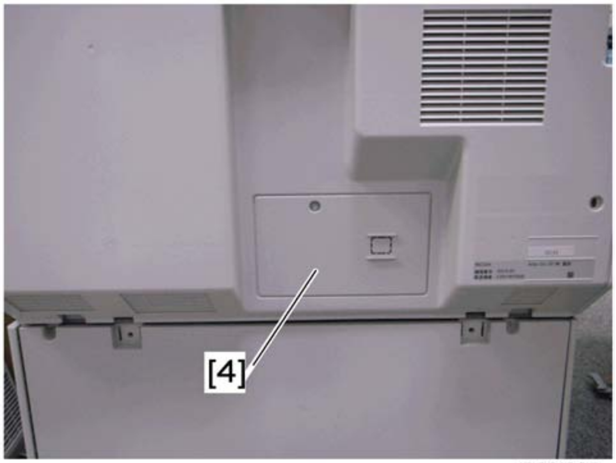
4. Open the front door [6] then pull the locking lever [7].
5. Align the finisher on the joint brackets, and lock it in place by pushing the locking lever.
6. Secure the locking lever (1 knob screw; M3 x 8).
7. Close the front door.
8. Install the copy tray [8] (1 knob screw; M4 x 10).
9. Connect the finisher cable [9] to the main machine as shown above.
10. Attach the staple position decal to the top right cover.
11. Turn on the main power switch and check the finisher operation.

Tray Heater

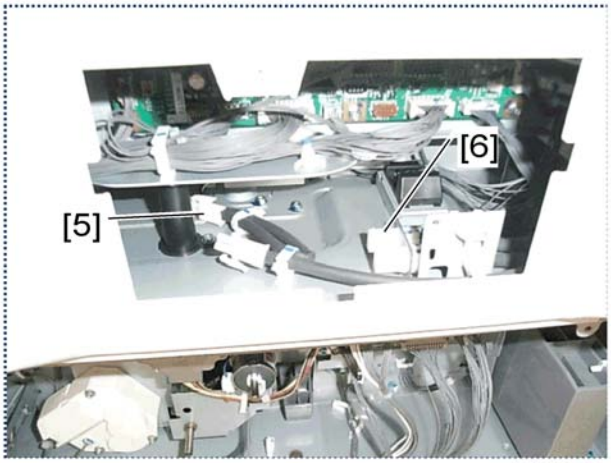
Installation Procedure



1. Remove trays 1 and 2 from the machine.
2. Connect the connector [1] of the heater to the connector [2] of the main machine.
3. Install the heater [3] inside the machine (🔩 x 1).



4. Remove the connector cover [4] (🔩 x 1).

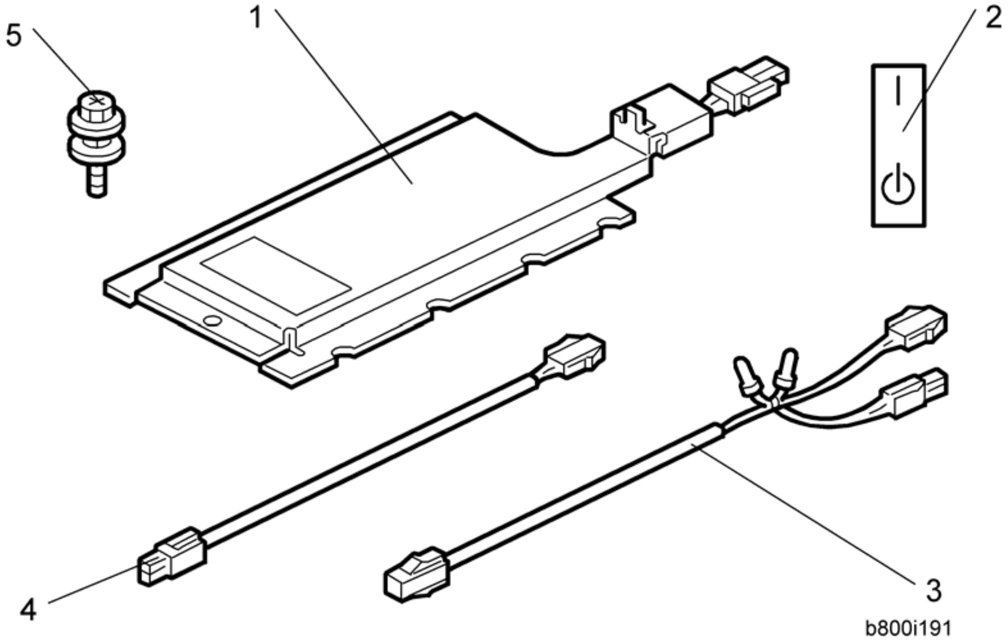


5. Release the heater relay connector [5] (🔌 x 1).
6. Connect the heater relay connector to the connector [6] (front side) of the main frame (🔌 x 1).
7. Reassemble the machine.

Tray Heater (Optional Paper Feed Unit)

Component Check

No.	Description	Q'ty
1	Tray heater	1
2	On-standby decal	1 (-90) or 2 (-91)
3	Harness 2 (For G832)	1
4	Harness 1 (For B800/B801/D351/D352)	1
5	Screw M4 x 10	2
-	Installation procedure	1



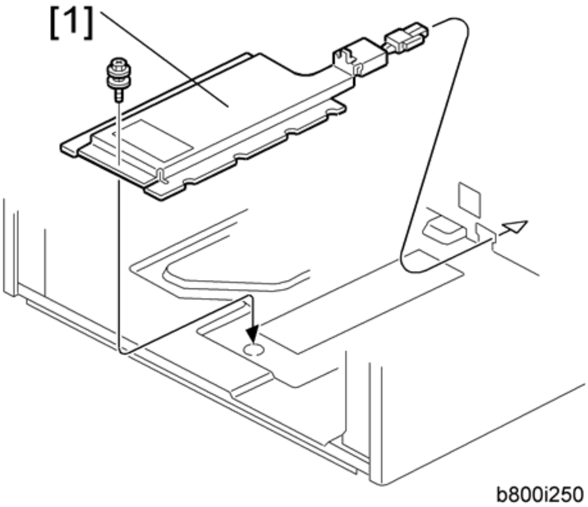
Installation Procedure

⚠CAUTION

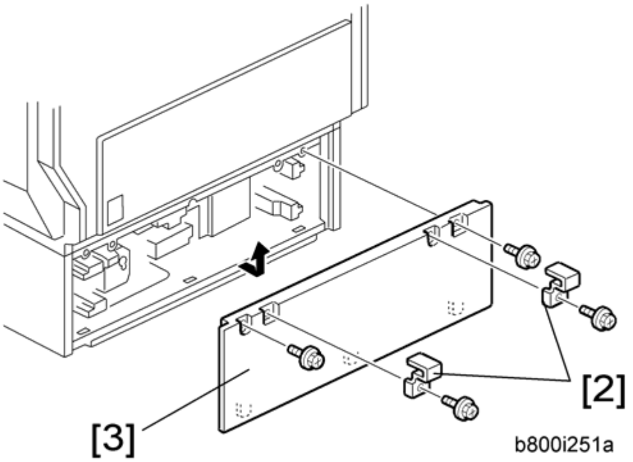
- Unplug the machine power cord before starting the following procedure.

For installing the tray heater in the D351 (Two-tray paper feed unit)

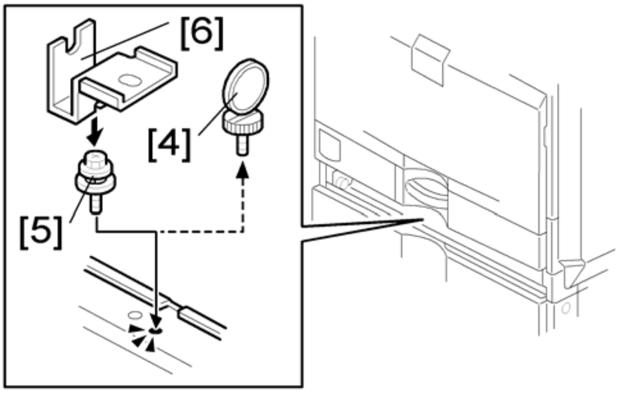
1. Remove the rear cover of the mainframe (🔩 x 6).
2. Pull out the two trays from the optional paper feed unit.



3. Install the tray heater [1] in the optional paper feed unit (🔩 x 1).

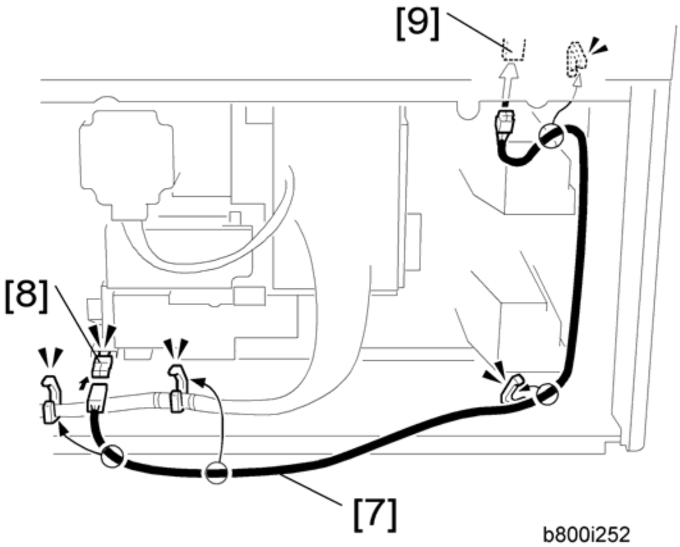


4. Remove the two securing brackets [2] (🔩 x 1 each), and then the rear cover [3] of the optional paper feed unit (🔩 x 2).



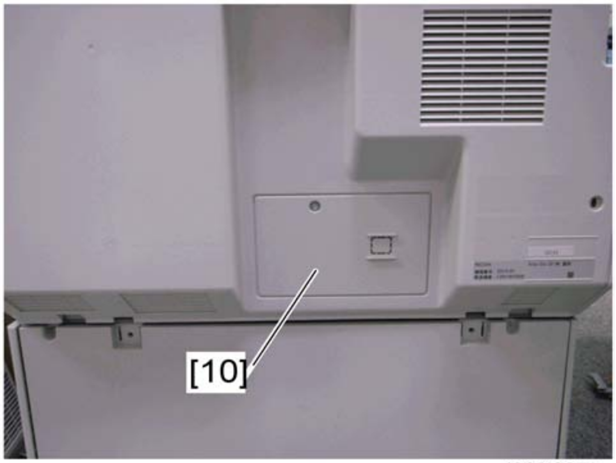
g832i250a

5. Pull out tray 2 from the mainframe.
6. Replace the shoulder screw [4] with the washer screw [5], using the securing bracket [6] (🔩 x 1).



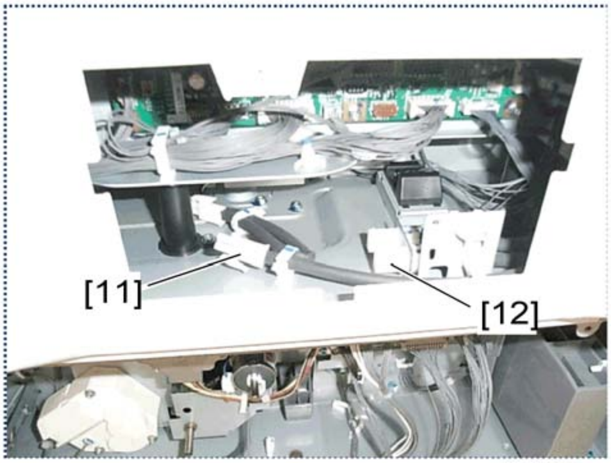
b800i252

7. Connect the harness [7] to the connector [8] of the tray heater.
8. Route the harness [7] as shown and clamp it with four clamps (🗜 x 4).
9. Connect the harness [7] to the connector [9] of the mainframe.



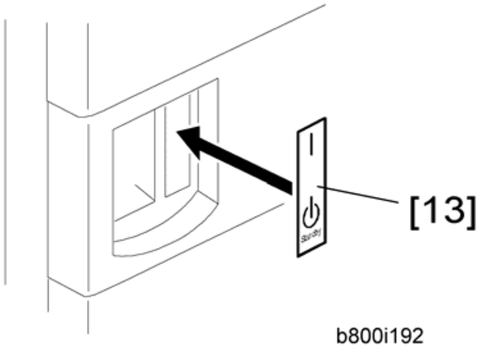
d009i205a

10. Remove the connector cover [10] (🔩 x 1).



d009i206a

11. Release the optional heater relay connector [11] (🔌 x 1).
12. Connect the optional heater relay connector to the connector [12] (rear side) of the main frame (🔌 x 1).
13. Reassemble the mainframe and optional paper feed unit.



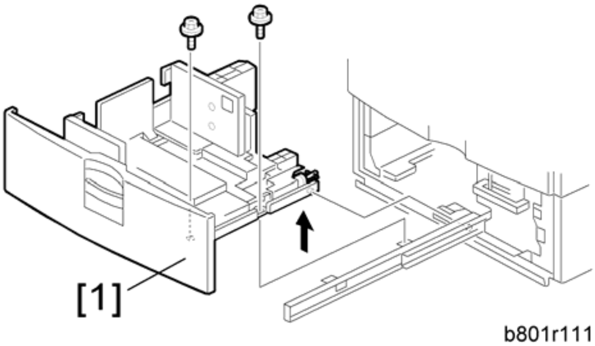
14. Attach the on/standby decal [13] to the right-hand side of the main power switch.

For installing the tray heater in the D352 (LCT)

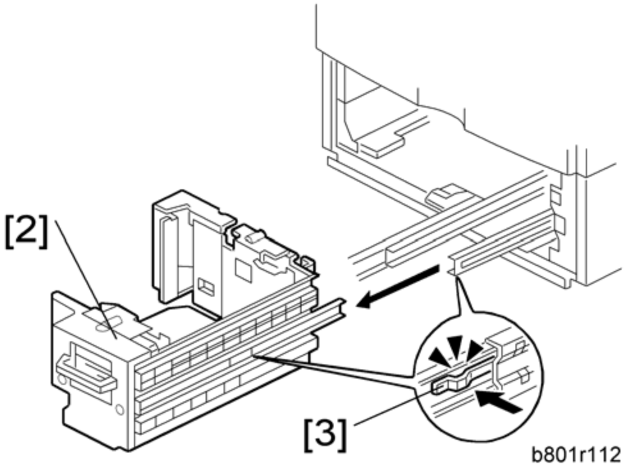
1. Remove the rear cover of the mainframe (🔩 x 6).
2. Pull out the LCT drawer.

Note

- If the right tray comes out with the left tray, push the right tray into the LCT.



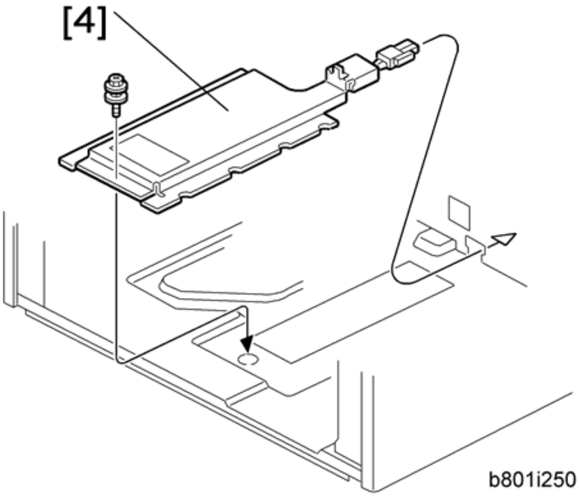
3. Left tray [1] (🔩 x 2)



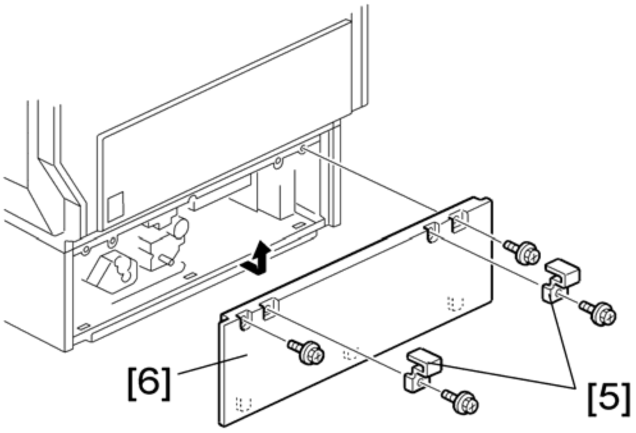
4. Remove the right tray [2] while pressing down the stopper [3].

Note

- When reinstalling the right tray, set the right tray on the guide rail and carefully push the tray in, making sure to keep the tray level.

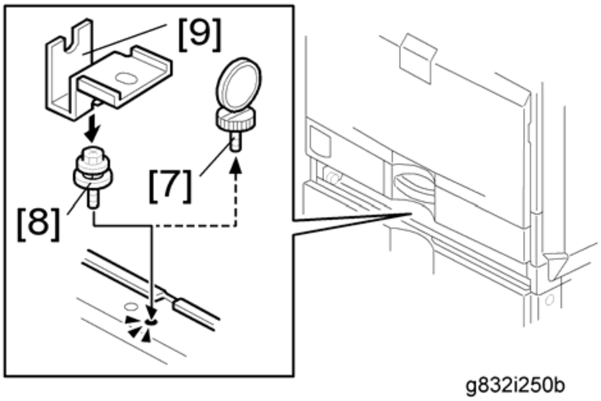


5. Install the tray heater [4] in the optional LCT (🔩 x 1).



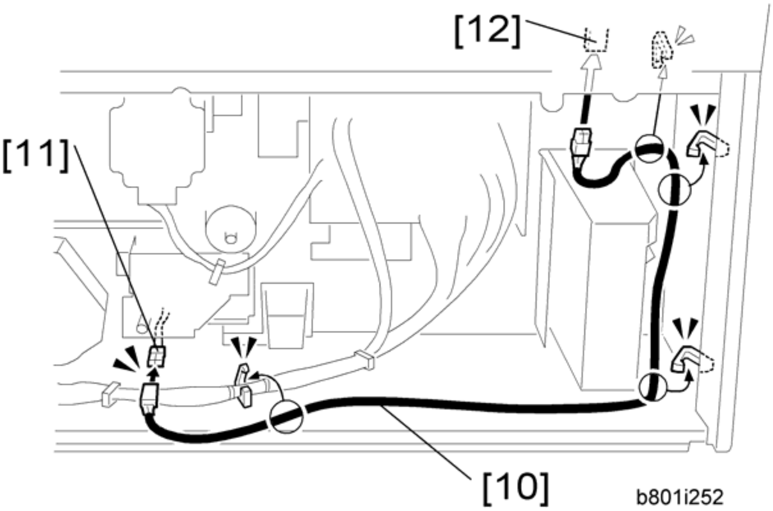
b801i251a

6. Remove the two securing brackets [5] (🔩 x 1 each), and then the rear cover [6] of the optional LCT (🔩 x 2).

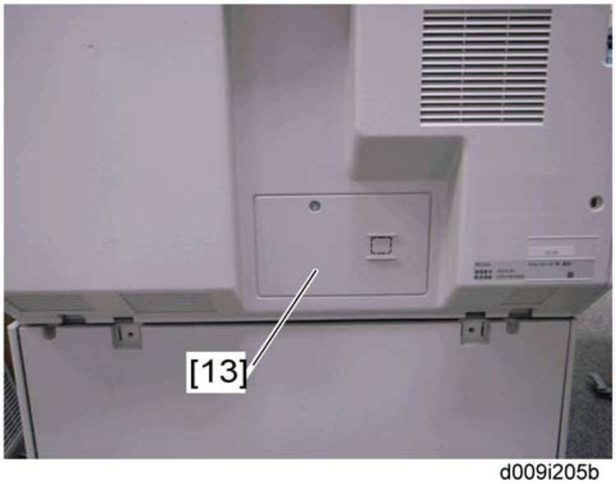


g832i250b

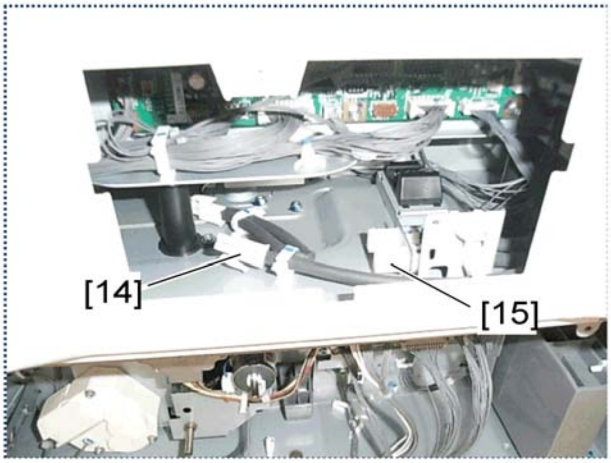
7. Pull out tray 2 from the mainframe.
8. Replace the shoulder screw [7] with the washer screw [8], using the securing bracket [9] (🔩 x 1).



9. Connect the harness [10] to the connector [11] of the tray heater.
10. Route the harness [10] as shown and clamp it with four clamps (🗄 x 4).
11. Connect the harness [10] to the connector [12] of the mainframe.

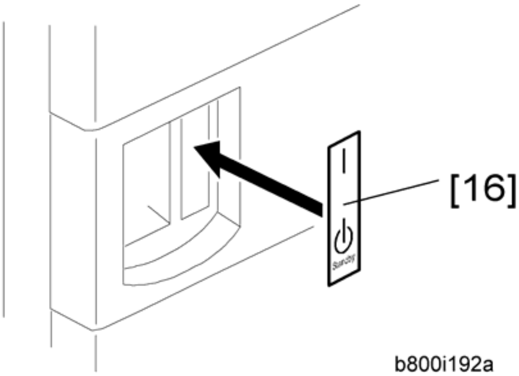


12. Remove the connector cover [13] (🔩 x 1).



d009i206b

13. Release the optional heater relay connector [14] (🔌 x 1).
14. Connect the optional heater relay connector to the connector [15] (rear side) of the main frame (🔌 x 1).
15. Reassemble the mainframe and optional LCT.



b800i192a

16. Attach the on/standby decal [16] to the right-hand side of the main power switch.

2. Preventive maintenance

Service Maintenance Parts - Mainframe

PM Parts Tables for Mainframe

Amounts mentioned as the PM interval indicate the number of prints.

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

G179	EM	160K	320K	800K	Note
Drum (OPC) Area					
OPC Drum	I	R			
Charge Roller		R			
Charge Roller Cleaning Roller		R			
Drum Cleaning Blade 1		R			
Drum Cleaning Blade 2		R			
Quenching Lamp	C		C		Dry cloth
Pick-off Pawls		R			
Spurs	C	C			Dry cloth
ID Sensor	C	C			Perform SP3-001-2 after blower brush cleaning.
Cleaning Entrance Seal		C			Blower brush. Replace if required.
Side Seal		I			
Development Unit					
Development Drive Gears				C	Dry cloth
Development Filter		R			
Developer		I	R		

G179	EM	160K	320K	800K	Note
Entrance Seal		I			
Side Seal		I			
Development Roller		C			Dry cloth
Paper Feed					
Registration Roller	I	C			Water
Idle Roller Dust Blade	I	C			Detach and tap gently on flat surface to empty. Blower brush.
Registration Roller Dust Blade	I	C			Blower brush.
Feed Rollers	I	C			Water
Pick-up Rollers	I	C			Water
Separation Rollers	I	C			Water
By-pass Feed Roller	I	C			Water
By-pass Pick-up Roller	I	C			Water
By-pass Separation Roller	I	C			Water
Paper Feed Guides	I	C			Dry cloth
Relay Rollers	I	C			Water
Bottom Plate Pad	I	C			Water
Bottom Plate Pad (By-pass feed)	I	C			Water
Registration Sensor	I	C			Blower brush
By-pass Feed Roller Gear	I	L			Silicone Grease G-501
Relay Sensors	I	C			Blower Brush
Paper Feed Sensors	I	C			Blower Brush
Duplex Unit					

G179	EM	160K	320K	800K	Note
Inverter Rollers		C			Water
Transport Rollers		C			Water
Entrance Sensor		C			Water
Exit Sensor		C			Water
Transfer Belt Unit					
Transfer Belt	C	R			Dry cloth. To prevent damage to the cleaning blade, always replace these items together.
Transfer Belt Cleaning Blade		R			
Transfer Belt Rollers		C			Dry cloth
Entrance Seal		C			Dry cloth
Transfer Entrance Guide	C	C			Dry cloth
Used Toner Tank	I	C			Empty the tank
Paper Exit					
Paper Exit Sensor	I	I			Blower brush
Junction Gate Jam sensor	I	C			Blower brush
Fusing Exit Sensor	I	I			Blower brush
Paper Exit Rollers	I	I			Water
Junction Transport Roller	I	I			Water
Paper Exit Guide	I	I			Water

Note

- Due to their durability and extended service life, the feed rollers, separation rollers, and pick-up rollers of the mainframe, optional paper trays, and LCT are not replaced at PM.

*1: Lubricate the by-pass feed clutch gear with Silicone Grease G501 every P.M.

G179	EM	160K	320K	800K	Note
Fusing Unit and Paper Exit					
Fusing Entrance and Exit Guide Plates		C			Water or alcohol
Hot Roller		R			
Pressure Roller		R			
Fusing Thermistors		R			
Cleaning Roller Bushings		L			Grease: Barrierta JFE 55/2
Hot Roller Strippers		C			Water or alcohol
Paper Exit Guide Ribs		C			Water or alcohol
Web Supply Roller		R			
Web Holder Roller			R		
Brake Pad			R		

Service Maintenance Parts - Options

PM Parts Tables for Options

Amounts mentioned as the PM interval indicate the number of prints/ originals.

Symbol key: C: Clean, R: Replace, L: Lubricate, I: Inspect

D351	EM	150K	300K	450K	Note
Paper Feed Unit					
Relay Rollers		C			Dry or damp cloth
Bottom Plate Pad		C			Dry or damp cloth

D352	EM	150K	300K	450K	Note
LCT 2000-sheet					
Bottom Plate Pad		C			Dry or damp cloth

B408	EM	150K	300K	450K	Note
1000-Sheet Finisher					
Rollers	C				Water or alcohol.
Discharge Brush	C	C			Dry cloth
Sensors	C				Blower brush
Jogger Fences	I	I			Replace if required.

B805	EM	Note
3000-Sheet Finisher		
Rollers	C	Water or alcohol.
Discharge Brush	C	Dry cloth
Sensors	C	Blower brush
Jogger Fences	I	Replace if required.

B805	EM	Note
Punch Unit		
Punch Chads	C	Discard chads.

D386	EM	Note
Bridge Unit		
Rollers	C	Dry or damp cloth
Copy Tray	C	Dry or damp cloth
Sensors	C	Blower brush

3. Replacement and Adjustment

General Cautions

⚠CAUTION

- To avoid damage to the transfer belt, drum, or development unit when it is removed or re-installed, never turn off power switch while electrical components are active.

⚠CAUTION

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

Laser Unit

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

Used Toner

Dispose of used toner in accordance with local regulations. Never throw toner into an open flame, for toner dust may ignite.

Special Tools and Lubricants

Special Tools

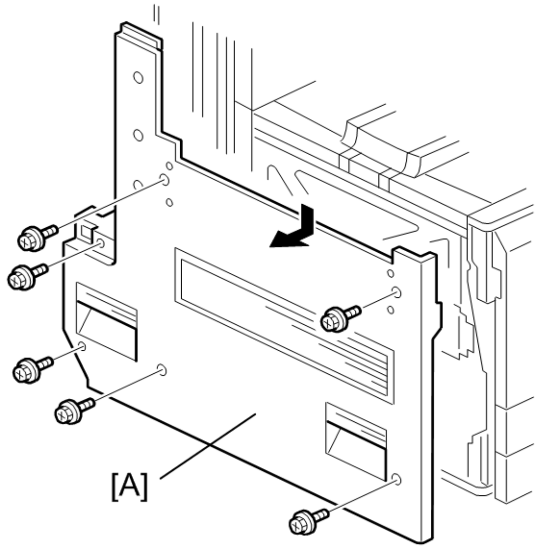
Part Number	Description	Q'ty
VSSM9000	Digital Multimeter – FLUKE 187	1
A2309003	Adjustment Cam – Laser Unit	1
A2309004	Positioning Pin – Laser Unit	1
B6455010	SD Card	1
B6456820	USB Read/Writer	1

Lubricants

Part Number	Description	Q'ty
A2579300	Grease Barrierta S552R	1
52039502	Silicone Grease G-501	1

Exterior Covers

Left Cover

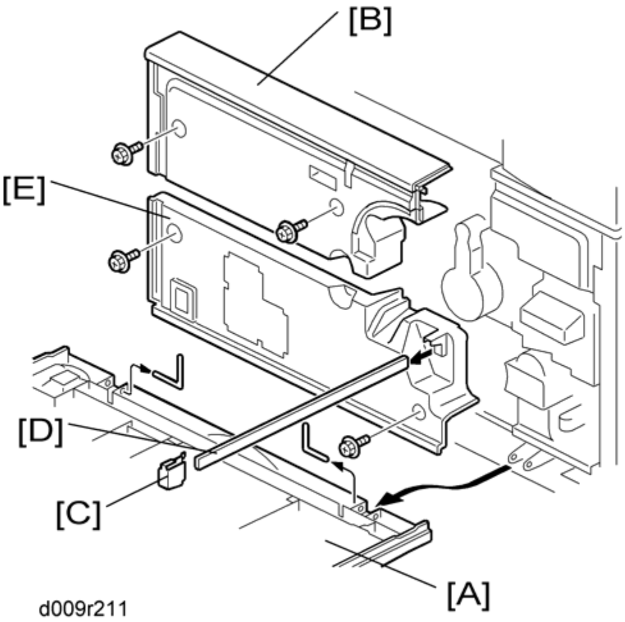


g179r201

1. Left cover [A] (🔩 x 6)

Front Door, Upper and Lower Inner Cover

1. Left Cover (☛ Left Cover)



2. Open and remove the front door [A] (pin x 2).

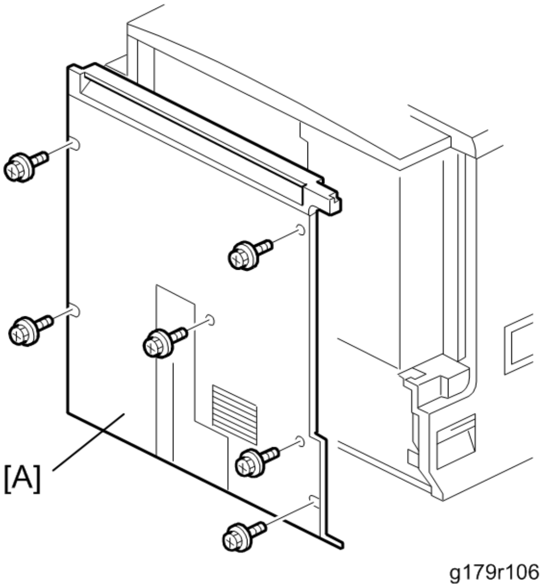
Upper Inner Cover

1. Open the front door [A].
2. Upper inner cover [B] (🔩 x 2)

Lower Inner Cover

1. Remove the front door [A] (pin x 2)
2. Shield glass cover [C]
3. Shield glass [D] (🔩 x 2)
4. Lower inner cover [E]

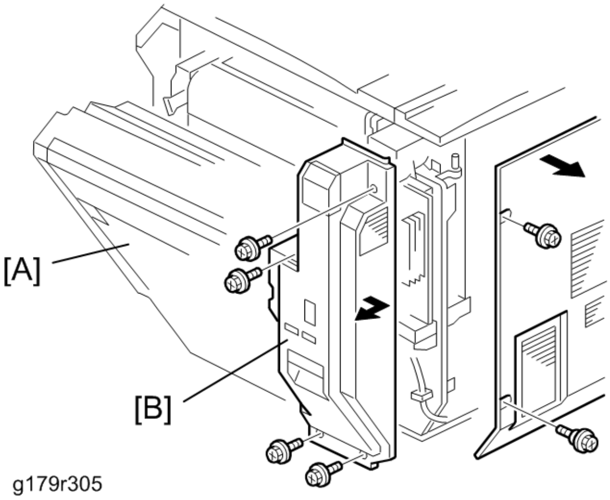
Rear Cover



1. Rear cover [A] (🔩 x 6)

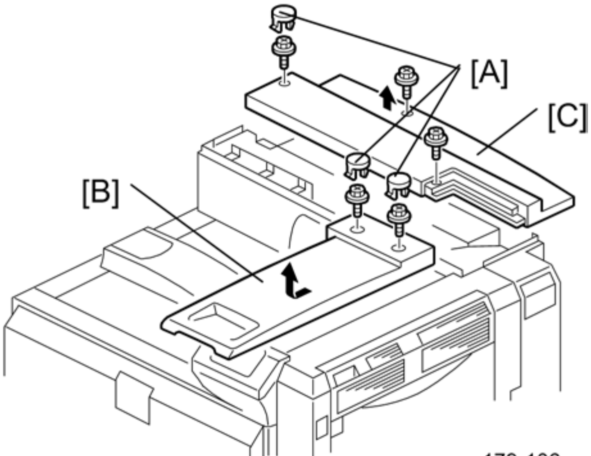
Right Rear Cover

1. Rear cover(☛ Rear Cover)



2. Open the right door [A].
3. Right rear cover [B] (🔩 x 4)

Top Right and Top Rear Cover

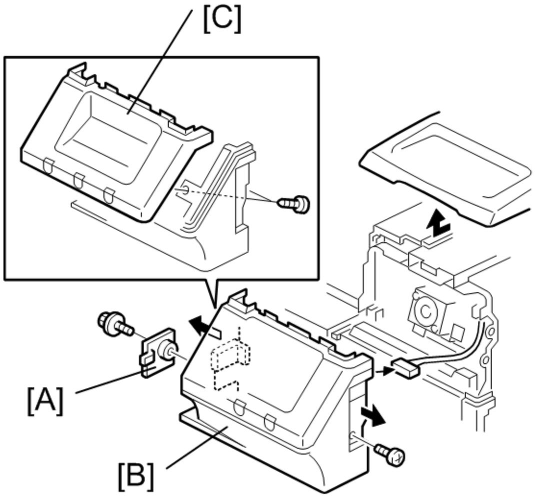


g179r106a

1. Remove the screw caps [A].
2. Top right cover [B] (🔩 x 2)
3. Top rear cover [C] (🔩 x 3)

Operation Panel

1. Open the right door.
2. Top right cover (☛ Top Right and Top Rear Cover)



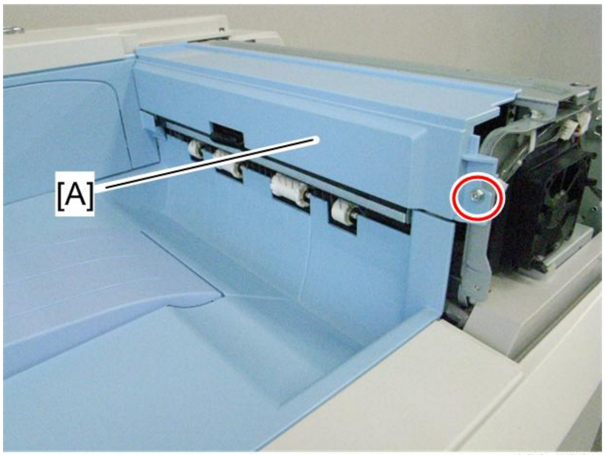
g179r157

3. Connection cover [A] (🔩 x 1)

4. Operation panel cover [B] (🔩 x 1, 🔌 x 1, hook)
5. Operation panel [C] (🔩 x 2)

Paper Exit Cover

1. Top right cover (☛ Top Right and Top Rear Cover)
2. Operation panel cover (☛ Operation Panel)

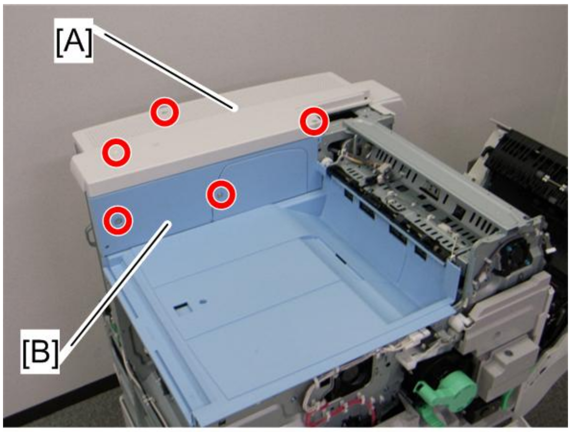


g133r593

3. Paper exit cover [A] (🔩 x 1)

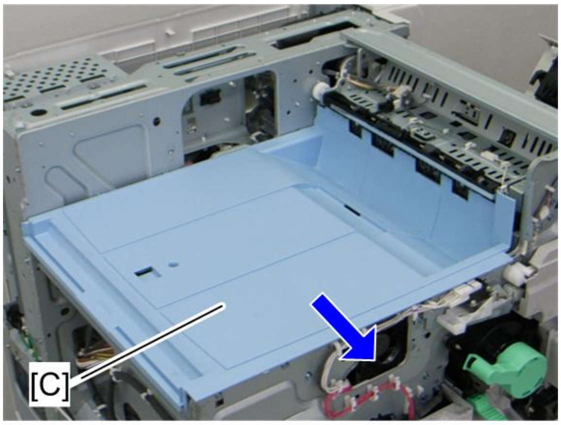
Output Tray

1. Left cover (☛ Left Cover)
2. Upper inner cover (☛ Front Door, Upper and Lower Inner Cover)
3. Top right cover (☛ Top Right and Top Rear Cover)
4. Paper exit cover (☛ Paper Exit Cover)



g179r133a

5. Top rear cover [A] (screw cap x 1, 🔩 x 3)
6. Inner rear cover [B] (🔩 x 2)



g179r133

7. Output tray [C]

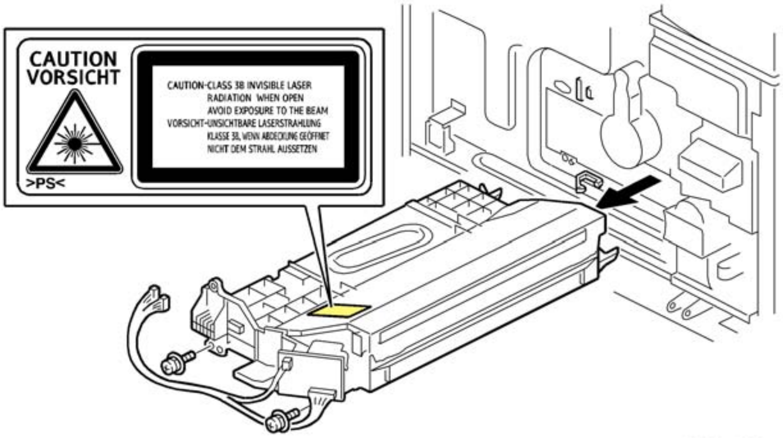
Laser Unit

⚠WARNING

- Turn off the main power switch and unplug the machine before attempting any of the procedures in this section. Laser beams can seriously damage your eyes.

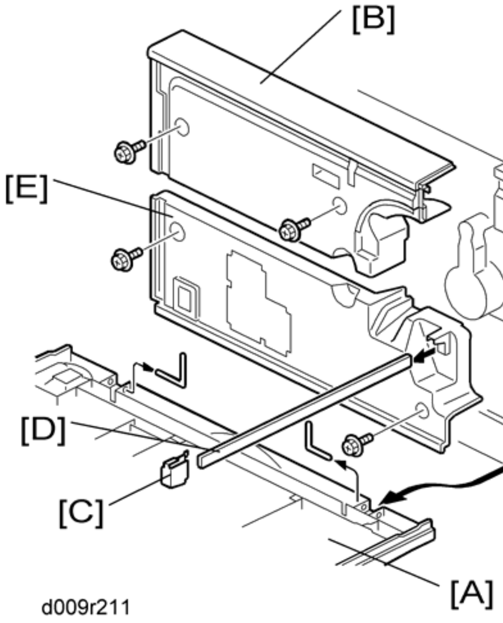
Caution Decal Locations

Two caution decals are located in the laser section as shown below. (See the next page for removal instructions.)

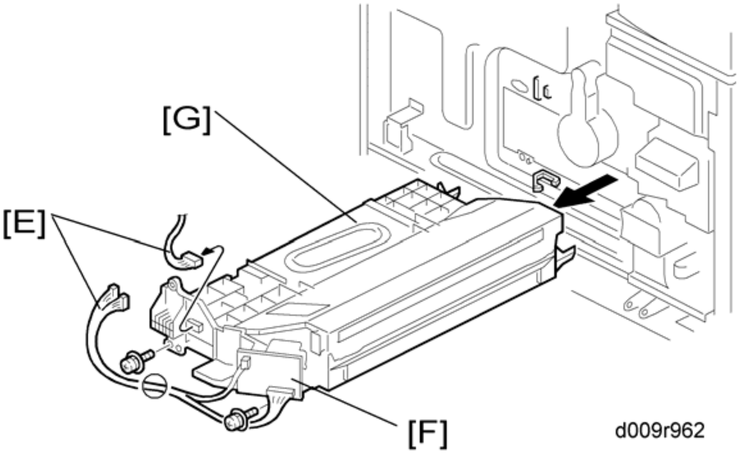

CAUTION
VORSICHT
>PS<
CAUTION-CLASS 3B INVISIBLE LASER
RADIATION WHEN OPEN
AVOID EXPOSURE TO THE BEAM
VORSICHT-UNSICHTBARE LASERSTRAHLUNG
KLASSE 3B, WENN ABDECKUNG GEÖFFNET
NICHT DEM STRAHL AUSSETZEN

d009r500

Laser Unit



1. Open the front door.
2. Front door [A] (pins x 2)
3. Upper inner cover [B] (🔩 x 2)
4. Glass cap [C]
5. Shield glass [D]
6. Lower inner cover [E] (🔩 x 2)



7. Laser unit connectors [E] (🔌 x 3, 📎 x 1)

Important

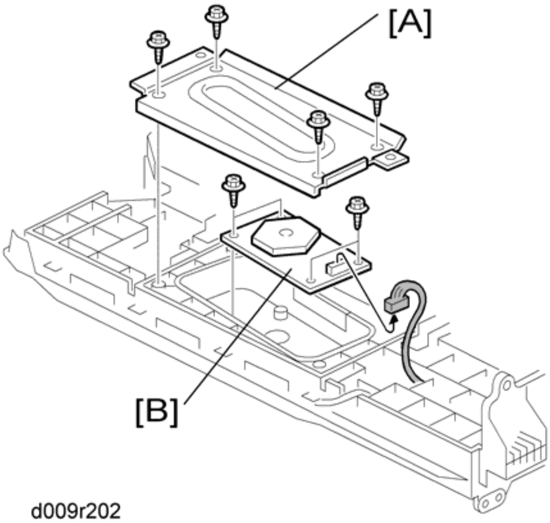
- Do not disconnect the harnesses on the LD board [F] unless the LD unit has to be replaced. This board is precisely adjusted in the factory.

8. Laser unit [G] (🔩 x 2)

Important

- When sliding out the laser unit, do not hold the LD board. Hold the laser unit.

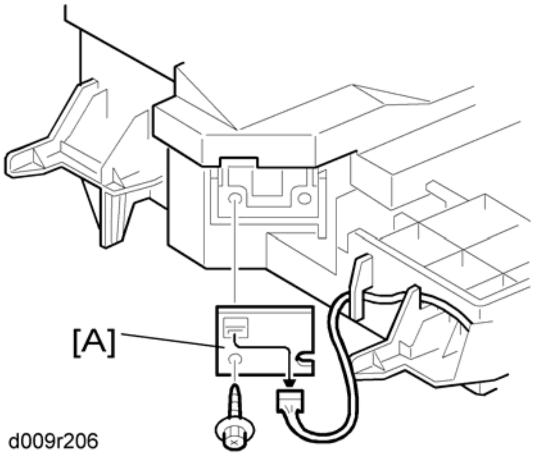
Polygon Mirror Motor



1. Laser unit (☛ Laser Unit)
2. Laser unit cover [A] (🔩 x 4)
3. Polygon mirror motor [B] (🔩 x 4, 🔌 x 1)
4. After replacing the polygon mirror motor, do the image adjustment (☛ Printing).

Laser Synchronization Detector

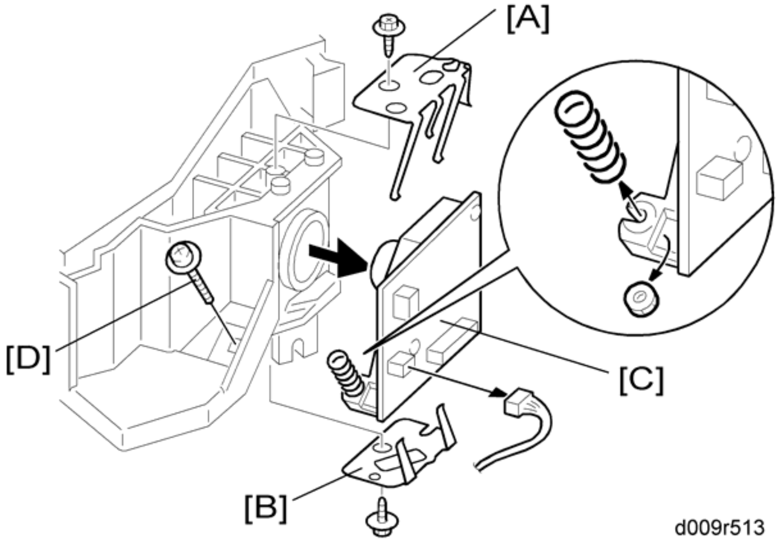
1. Laser unit (☛ Laser Unit)



2. Laser synchronization detector [A] (🔩 x1, 🔌 x1)

LD Unit

1. Laser unit (☛ Laser Unit)



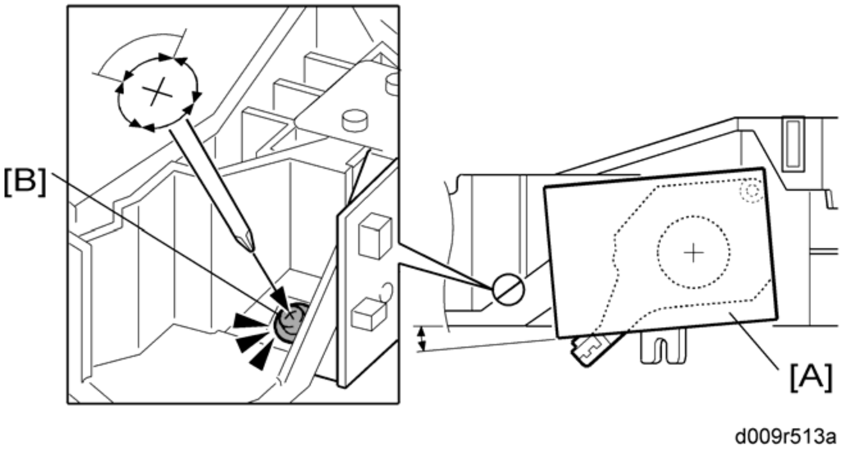
2. Upper spring plate [A] (🔩 x 1)
3. Lower spring plate [B] (🔩 x 1)
4. LD unit [C] (🔩 x 1, 🔌 x1, spring x 1)

Note

- To avoid damaging the LD board, hold it securely when disconnecting the connectors. Hold the laser unit casing.

5. After replacing the LD board, do the "Laser Beam Pitch Adjustment" (described in the following section). Keep the lower inner cover removed before doing this adjustment because you need to adjust the adjustor screw [D] on the LD unit with a screwdriver.

Laser Beam Pitch Adjustment

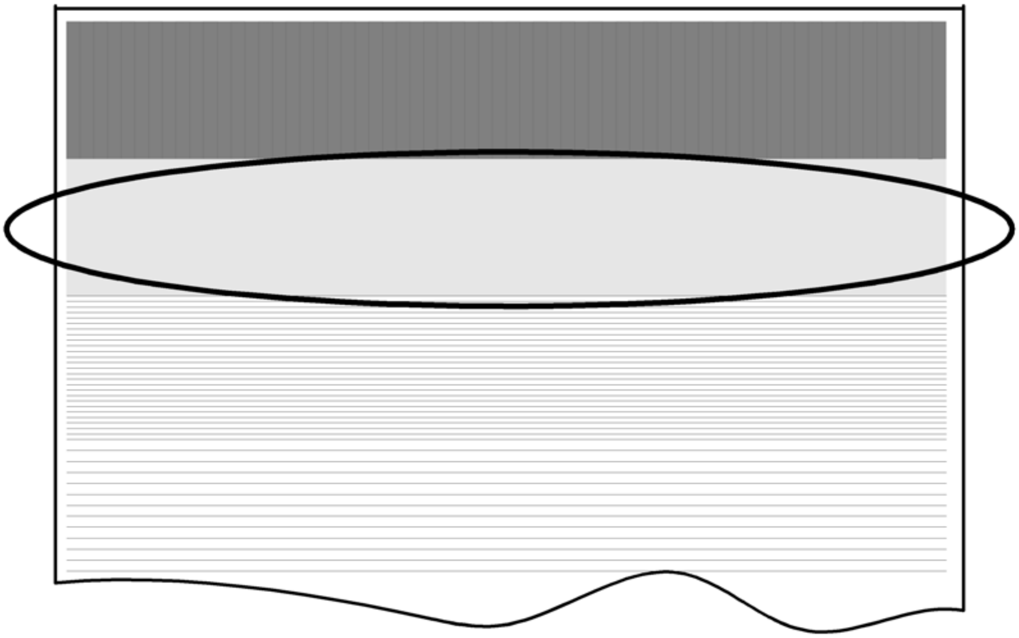


1. Install a (new) LD unit [A] with the left side of the LD unit being lower than the right side. (This makes this adjustment easier.)
2. Print the test pattern "Hound.s Tooth Check (Horizontal)" (No. 16 in SP2109-001).
3. Check if the vertical stripes appear on the second pattern (counted from the leading edge) of the printout.
    - Correct: No vertical stripes appear (see the sample following this procedure.)
    - Wrong: Vertical stripes appear (see the sample following this procedure.)
4. Turn the adjustor screw [B] by 90 degrees clockwise (counterclockwise).

    Note

    - If the image of the printout is getting worse, try reverse rotation (clockwise ↔ counterclockwise)
5. Print the test pattern and check it out.
6. Try steps 2 to 4 again until you get an image with no vertical stripes.
7. Reassemble the machine after completing this adjustment.

Correct: No vertical stripes appear



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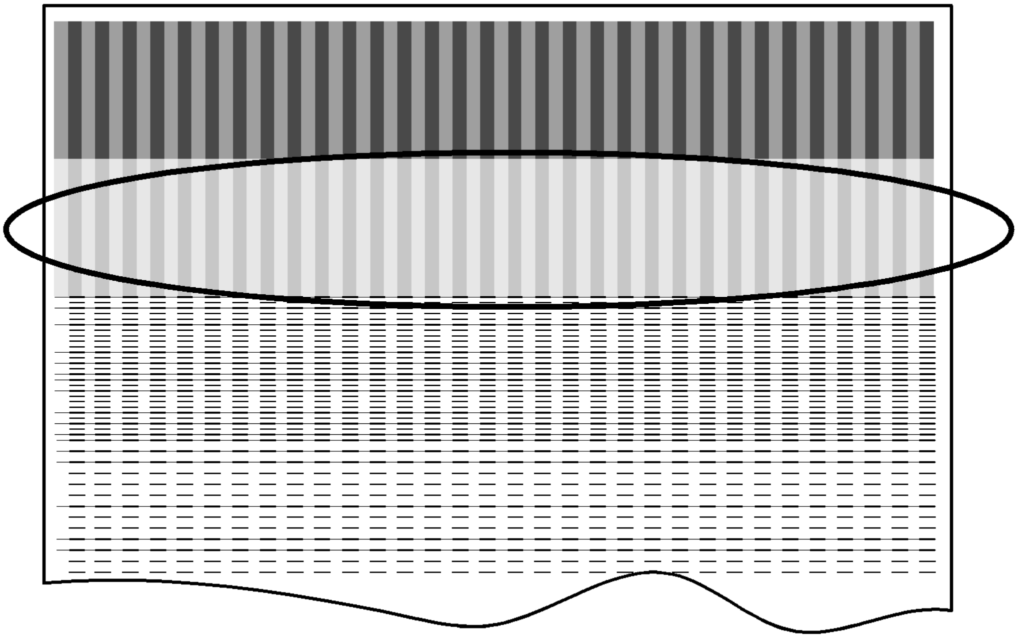
Incorrect: Vertical stripes appear

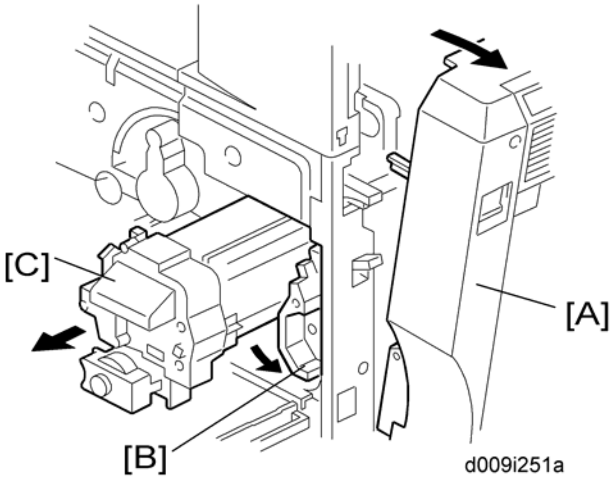


d009r553

PCDU

PCDU (Photoconductor and Development Unit)

1. Open the front door.



2. Open the right door [A].
3. Release the lock lever [B].
4. Pull out the PCDU [C] and place it on a clean flat surface.
5. Spread a large piece of paper on a flat surface.

Note

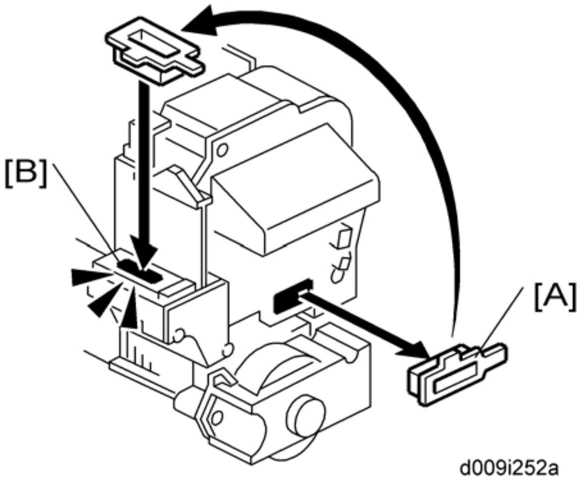
- Make sure the area is free of pins, paper clips, staples, etc. to avoid attraction to the magnetic development roller.

Reinstallation

Open the right cover before you install the PCDU in the machine.

Drum

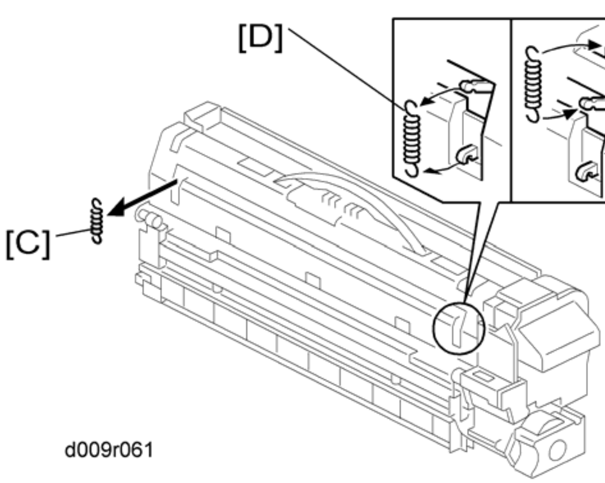
1. Remove the PCDU (☛ PCDU (Photoconductor and Development Unit))



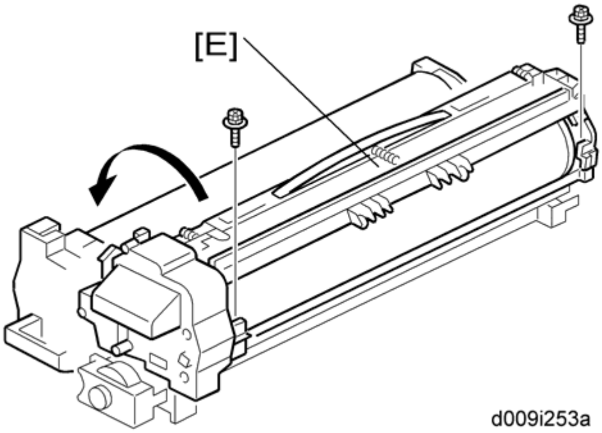
2. Toner cap [A]
3. Insert cap [A] into the opening of the PCDU [B].

Note

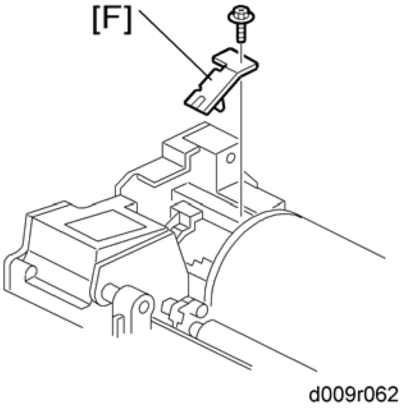
- Make sure that the cap is inserted completely into the opening.



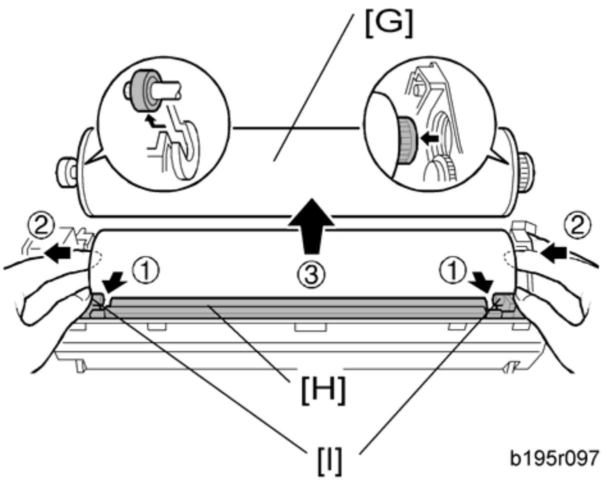
4. Remove the spring [C] on the rear side of the PCDU.
5. Remove the spring [D] on the front side of the PCDU and attach it to the hooks as shown.
    - To prevent breaking the weaker hook ①, use a pair of needle-nose pliers to disconnect the spring at ②, remove the spring, then re-attach to ② and ③.
    - When you move this spring, this retracts the movable drum cleaning blade so that it does not touch the surface of the drum when the drum is re-installed.



6. Open the PDCU [E] (🔩 x 2).



7. Bracket [F] (🔩 x 1)



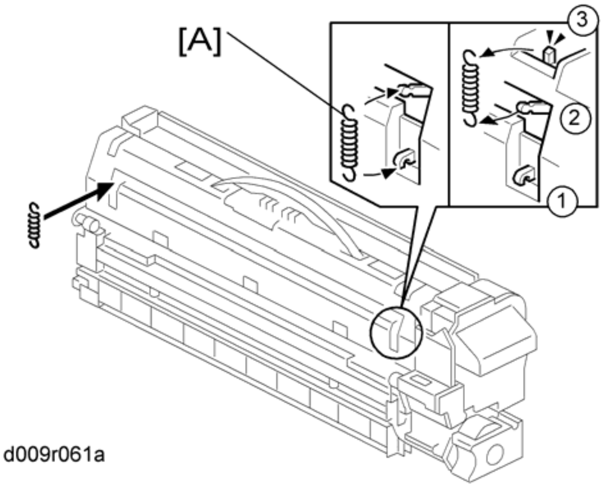
8. Pull the drum [G] towards the front ② (the left side in the illustration) while releasing the charge roller [H] using the release levers ① [I], and then remove the drum ③.

⚠CAUTION

- Never touch the drum surface with bare hands.

Re-installation

1. Replace the drum and close the PCDU (🔩 x 2).



2. Put the opening cap [A in the previous procedure] back in its original place.
3. Detach the spring [A] from ②, ③ and re-attach it to ①, ②.

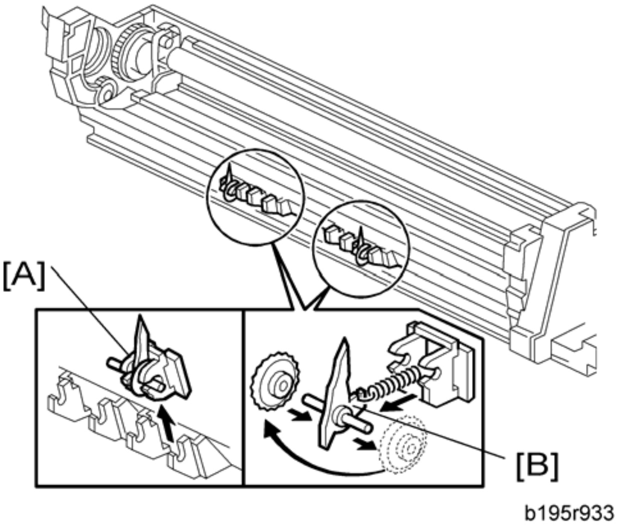
⚠CAUTION

- You must re-attach the spring to ①, ② for the cleaning blade to operate correctly. If you fail to re-attach the spring to ① and ②, the movable cleaning blade will not contact the drum for cleaning, but the machine will operate without generating an error. However, printouts will gradually become dirty due to toner collecting on the drum.

4. Re-attach the spring on the rear side of the PCDU.
5. After replacing the drum, do these SPs:
    - SP 3001-2: ID sensor initial setting
    - SP 2810-1: Grayscale Setting

Pick-off Pawls

1. Drum (☛ Drum)



2. Pawl assembly [A]
3. Pick-off pawl [B] (spring x 1, spur x 1)

Pick-off Pawl Position Adjustment

If the pick-off pawl has marked the drum with a line, the pick-off pawl position can be adjusted using either method:

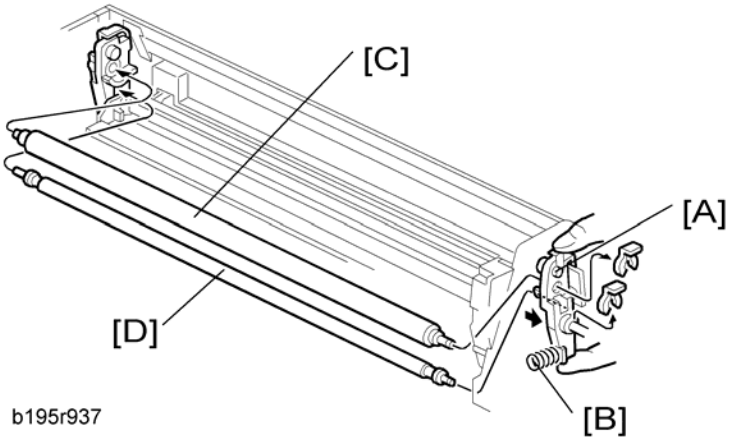
- Changing the spur position
- Changing the pick-off pawl assembly position

⚠CAUTION

- After re-assembly, make sure that the front spring of the movable cleaning blade is re-attached to the ①, ② position. (☛ Drum)

Charge Roller and Cleaning Roller

1. Drum (☛ Drum)



2. Push the charge roller holder [A] toward the front of the drum unit (x 2) and remove the spring [B].
3. Charge roller [C].

Note

- Disengage the charge roller on the right side to remove it. Try to avoid touching the charge roller.

4. Cleaning roller [D]

Note

- Disengage the cleaning roller on the left to remove it.

5. After replacing the charge roller and cleaning roller, check the value of SP2001-001. If it is not at the standard value (1500), set SP2001-001 to "1500".

Note

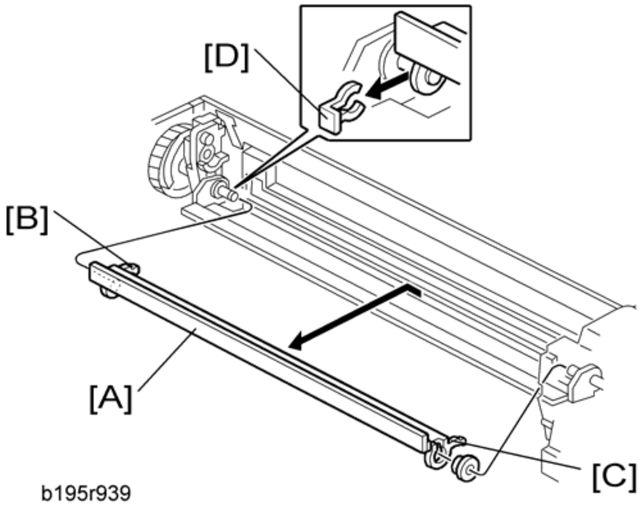
- If this is not done, the carrier will be attracted to the drum because the charge roller voltage will be too high.

⚠CAUTION

- After re-assembly, make sure that the front spring of the movable cleaning blade is re-attached to the ①, ② position. (☛ Drum)

Drum Cleaning Blade 2

1. Drum (☛ Drum)
2. Charge roller and cleaning roller (☛ Charge Roller and Cleaning Roller)



3. Remove cleaning blade 2 [A]. (Ω x 1, bushing x 1)

Re-installation

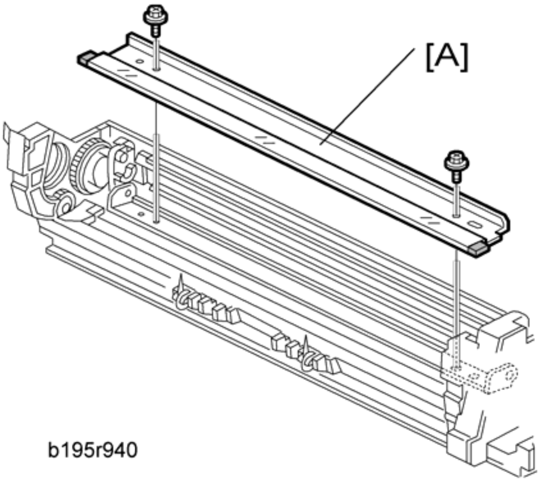
- Engage the left end of the cleaning blade first, then make sure that both arms [B] and [C] are through the holes on the left and right side.
- When you re-attach the snap-ring, make sure that the head of the snap ring [D] is below the blade.

⚠CAUTION

- After re-assembly make sure that the front spring of the movable cleaning blade is re-attached to the ①, ② position. (☛ Drum)

Drum Cleaning Blade 1

1. Drum (☛ Drum)
2. Charge roller and cleaning roller (☛ Charge Roller and Cleaning Roller)
3. Drum cleaning blade 2 (☛ Drum Cleaning Blade 2)



4. Remove drum cleaning blade 1 [A] (🔩 x 2)

Re-installation

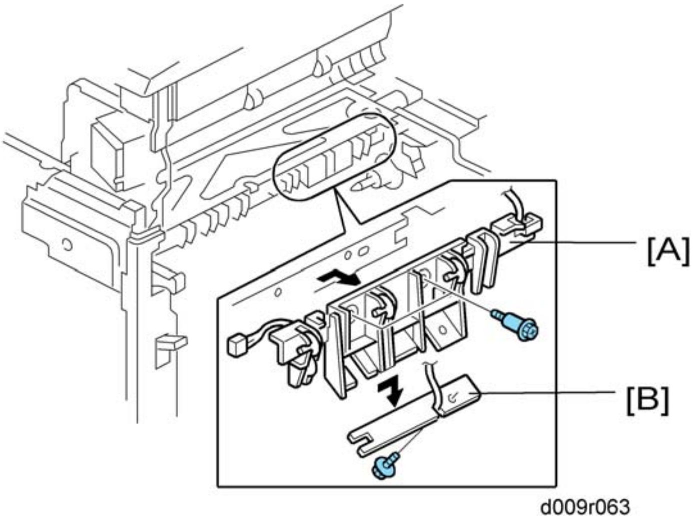
Put toner on the edge of cleaning blade 1 and the mylar at the back side of cleaning blade 1 before re-installing this blade.

⚠CAUTION

- After re-assembly, make sure that the front spring of the movable cleaning blade is re-attached to the ①, ② position. (☛ Drum)

ID Sensor

1. Left cover (☛ Left Cover)
2. Paper exit cover (☛ Paper Exit Cover)
3. Output tray (☛ Output Tray)
4. Exhaust duct (☛ Toner Supply Motor)
5. PCDU (☛ PCDU (Photoconductor and Development Unit))
6. Fusing unit (☛ Fusing Unit)



7. ID sensor bracket [A] (🔩 x 2, 🔌 x 1)
8. ID sensor [B] (🔩 x 1)

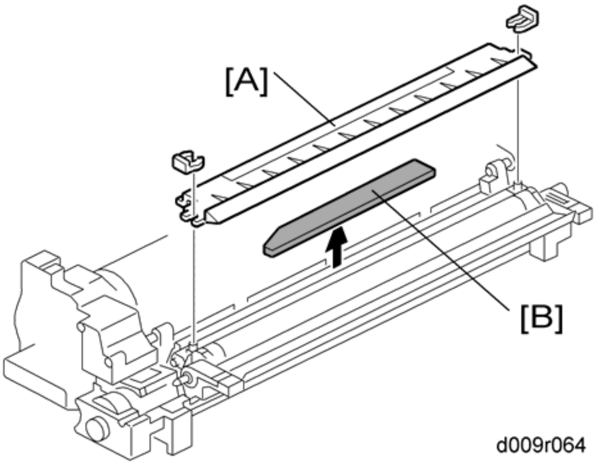
Note

- Do SP3-001-002 to initialize the ID sensor after replacing.

Development

Development Filter

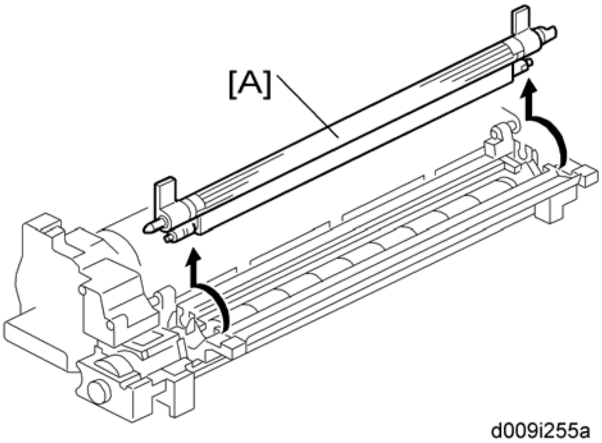
1. PCDU (☛ PCDU (Photoconductor and Development Unit))
2. Open the PCDU. (☛ Drum)



3. Upper development cover [A] (x2)
4. Development filter [B]

Development Roller

1. PCDU (☛ PCDU (Photoconductor and Development Unit))
2. Open the PCDU. (☛ Drum)
3. Upper development cover (☛ Development Filter)



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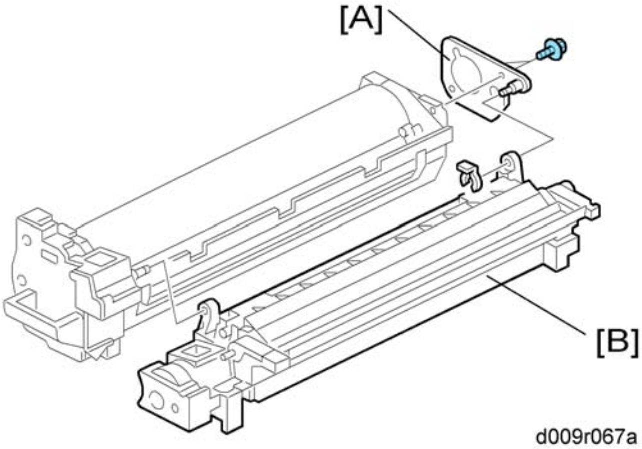
4. Development roller [A]

Note

- Work carefully to avoid scratching or nicking the development roller.

Developer

1. PCDU (☛ PCDU (Photoconductor and Development Unit))
2. Open the PCDU. (☛ Drum)
3. Development roller (☛ Development Roller)



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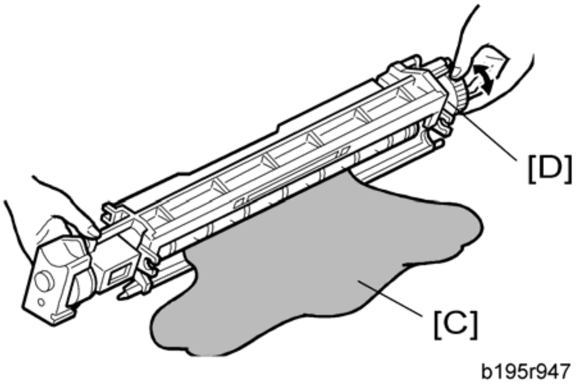
4. Joint bracket [A] (🔩 x 2)
5. Development unit [B]

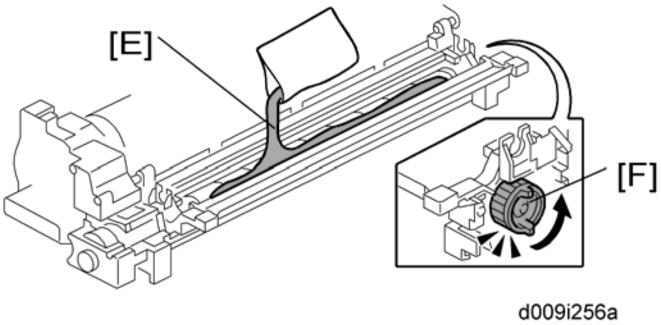


6. Tip out the old developer [C].
7. Turn drive gear [D] to ensure that no developer remains in the unit or on the developer roller.

Note

- Dispose of the used developer in accordance with local regulations. Work carefully to avoid scratching or nicking the development roller.

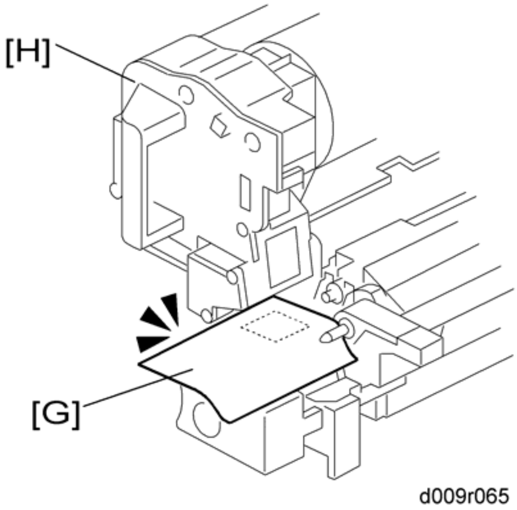
8. Clean the development roller with a dry cloth.



9. Pour approximately 1/3 of the developer [E] evenly along the length of the development unit.
10. Rotate the drive gear [F] to work the developer into the unit.
11. Repeat steps 8 and 9 until all toner is in the unit and level with the edges.
12. Re-install the development roller.

Note

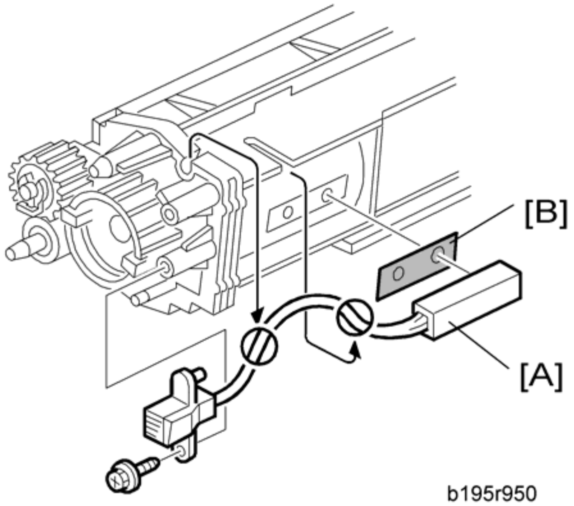
- Make sure that the seals at the both sides of the development roller are set inside the case after you re-install the development roller.



13. Place a piece of paper [G] over the toner entrance hole. This prevents used toner falling from the drum unit into the development unit during the TD sensor initial setting and interfering with the Vref setting (toner density reference voltage)
14. Secure the drum unit [H] to the development unit, to close the PCDU (🔩 x 2).
15. Install the PCDU in the machine and close the front and right doors.
16. Turn on the main power switch, and wait for the machine to warm up.
17. Do SP2801 to initialize the TD sensor and enter the developer lot number.
18. After performing the TD sensor initial setting, remove the sheet of paper from the PCDU.

TD Sensor

1. PCDU (☛ PCDU (Photoconductor and Development Unit))
2. Empty all developer from the development unit. (☛ Developer)



3. Seal
4. TD sensor [A] (🔩 x1)

Note

- The TD sensor is attached to the casing with double-sided tape [B]. Pry it off with the flat head of a screwdriver. Use fresh double-sided tape to re-attach the sensor.

5. Pour new developer into the development unit and perform the TD sensor initial setting using SP2-801.

Note

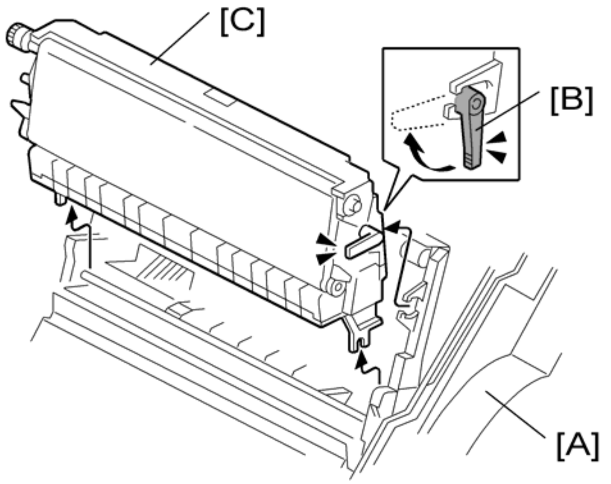
- When performing the TD sensor initial setting, cover the toner entrance hole with a piece of paper.

Transfer

Transfer Belt Unit

Note

- To avoid exposing the drum to strong light, cover it with paper if the right cover will be open for a long period.



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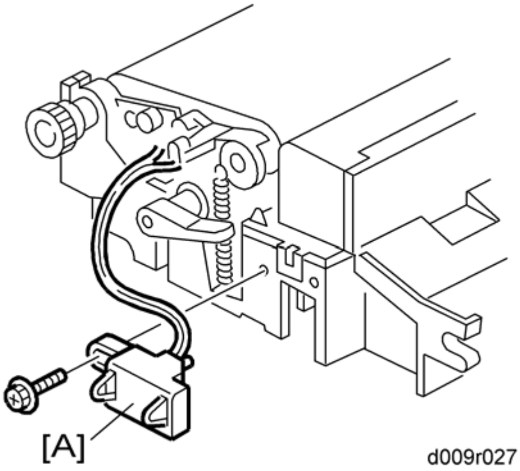
1. Open the right door [A].
2. Release the lever [B].
3. Transfer belt unit [C]

   Note

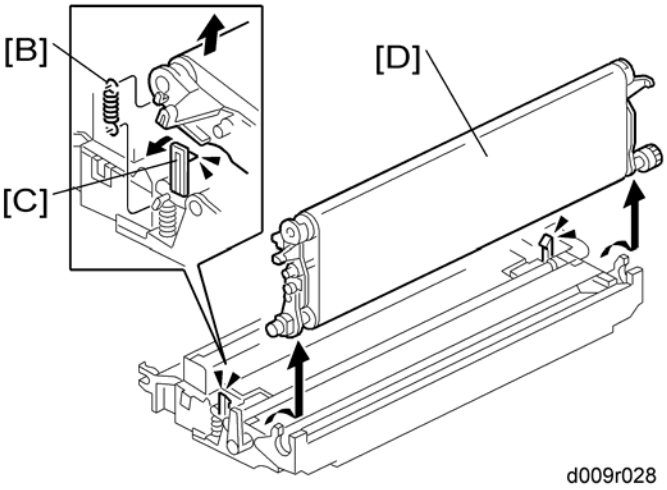
   - Avoid touching the transfer belt surface.

Transfer Belt

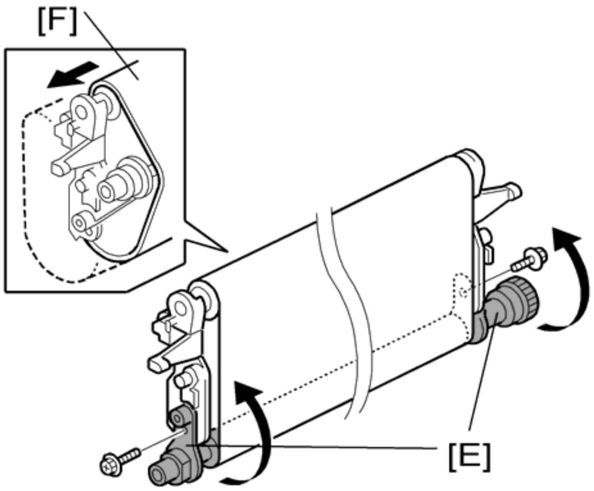
1. Transfer belt unit (☛ Transfer Belt Unit)



2. Connector [A] (🔩 x 1)



3. Remove the springs (front and rear) [B].
4. Release the hooks (front and rear) [C].
5. Transfer belt with rollers [D]



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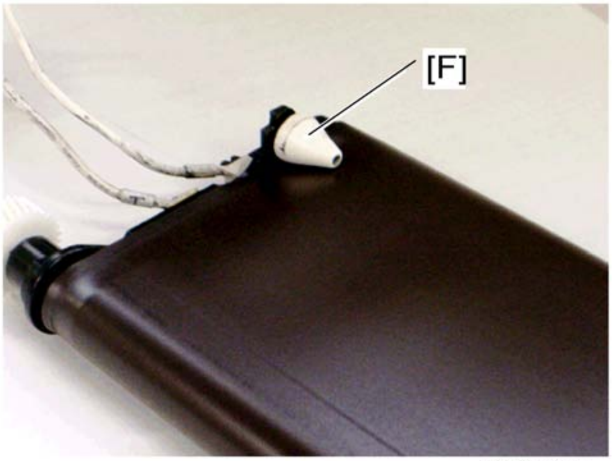
6. Lay the transfer belt with rollers on a flat clean surface, and fold the unit [E] to release the tension on the belt (🔩 x 2).



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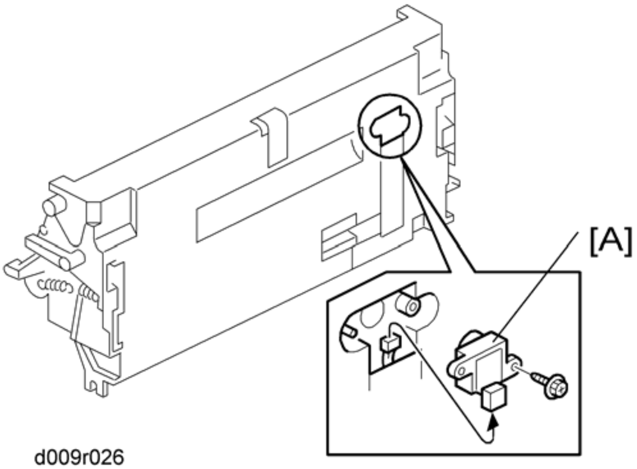
7. Transfer belt [F]

Note

- Avoid touching the transfer belt surface.
- Before installing the new transfer belt, clean all the rollers and shafts with alcohol to prevent the belt from slipping.
- When reinstalling the transfer belt, make sure that the belt is under the pin [F].
- To avoid damaging the transfer belt during installation, manually turn the rollers and make sure that the new transfer belt is not running over the edges of any of the rollers.

Toner Overflow Sensor

1. Transfer belt unit (☛ Transfer Belt Unit)



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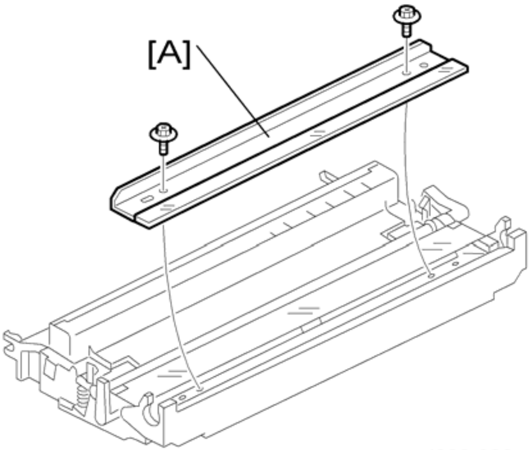
2. Toner overflow sensor [A] (🔩 x 1, 🔌 x 1)

Transfer Belt Cleaning Blade

1. Transfer belt unit (☛ Transfer Belt Unit)
2. Transfer belt (☛ Transfer Belt)



d009r030

3. Transfer belt cleaning blade [A] (🔩 x 2)

Note

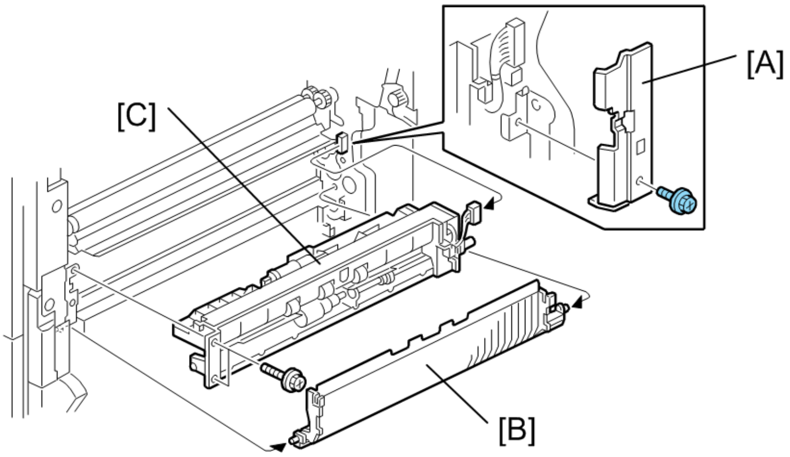
- Avoid touching the edge of the new blade. Check the new blade for dust or damage.

Paper Feed

Paper Feed Unit

Tray 1 and Tray 2

1. Rear cover (☛ Rear Cover)
2. Right rear cover (☛ Right Rear Cover)
3. Duplex unit (☛ Duplex Unit)
4. Pull out tray 1 and tray 2.



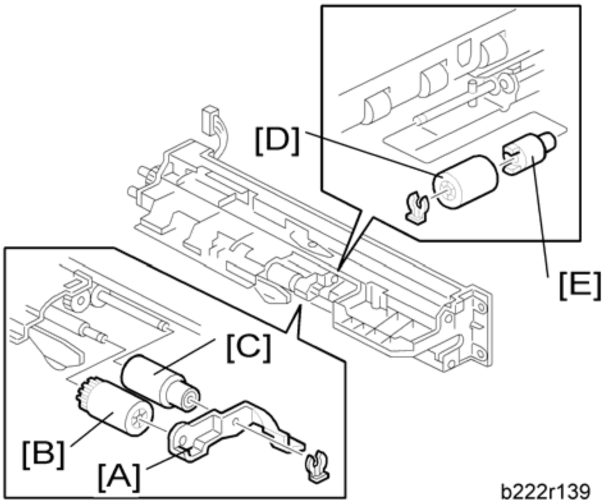
g179r138

5. Harness cover [A] (🔩 x 1)
6. Paper guide plate [B] (hook x 2)
7. Paper feed unit [C] (🔩 x 2, 🔌 x 1)

Pick-Up, Feed and Separation Rollers

Tray 1 and Tray 2

1. Paper feed unit (☛ Paper Feed Unit)

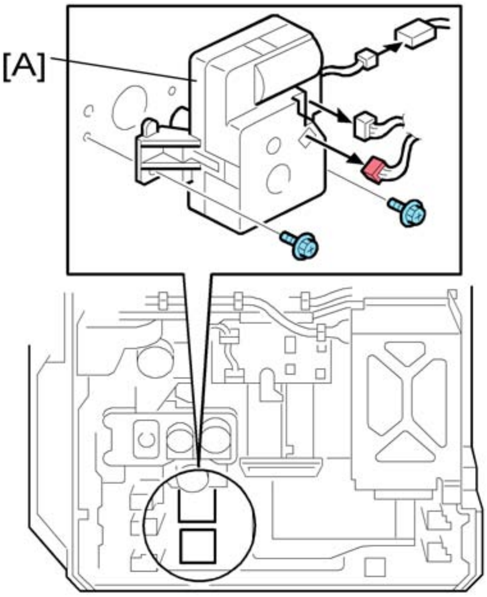


b222r139

2. Roller holder [A] (Ω x 1)
3. Pick-up roller [B]
4. Feed roller [C]
5. Separation roller [D] and torque limiter [E] (Ω x 1)

Tray Lift Motor

1. Rear cover (☛ Rear Cover)



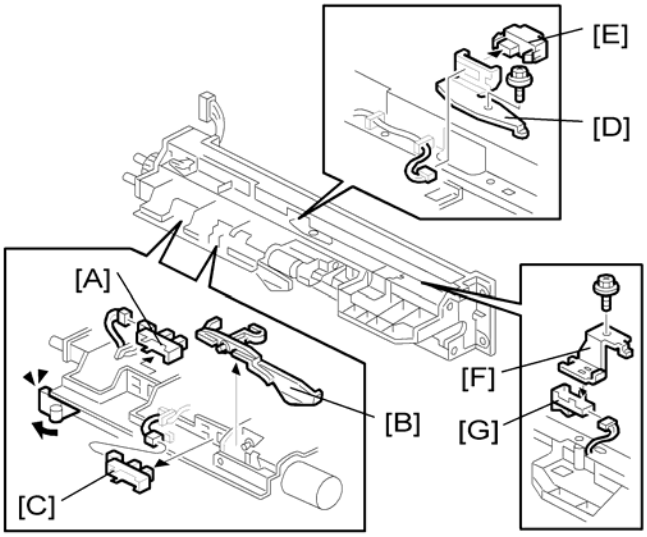
d009r013

2. Tray lift motor 1 or 2 [A] (🔩 x 2, 🔌 x 3)

Relay, Tray Lift, Paper End and Paper Feed Sensors

Tray 1 and Tray 2

1. Rear cover (☛ Rear Cover)
2. Right rear cover (☛ Right Rear Cover)
3. Duplex unit (☛ Duplex Unit)
4. Paper feed unit (☛ Paper Feed Unit)

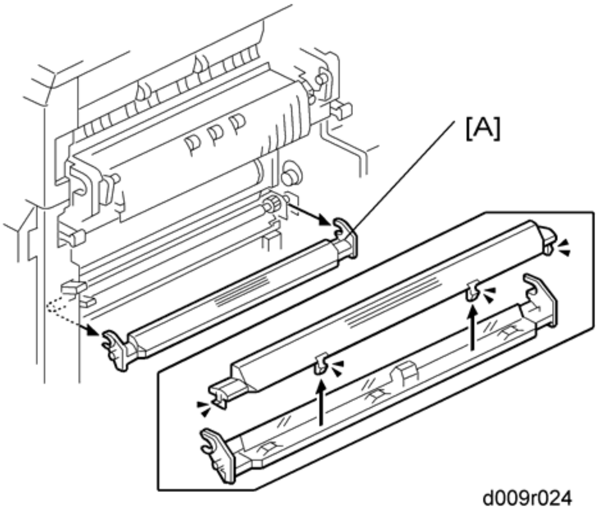


5. Tray lift sensor [A] (🔌 x 1)
6. Paper end feeler [B] and paper end sensor [C] (hook, 🔌 x 1 each)
7. Relay sensor bracket [D] (🔩 x 1)
8. Relay sensor [E] (🔌 x 1, hook)
9. Paper feed sensor bracket [F] (🔩 x 1)
10. Paper feed sensor [G] (🔌 x 1, hook)

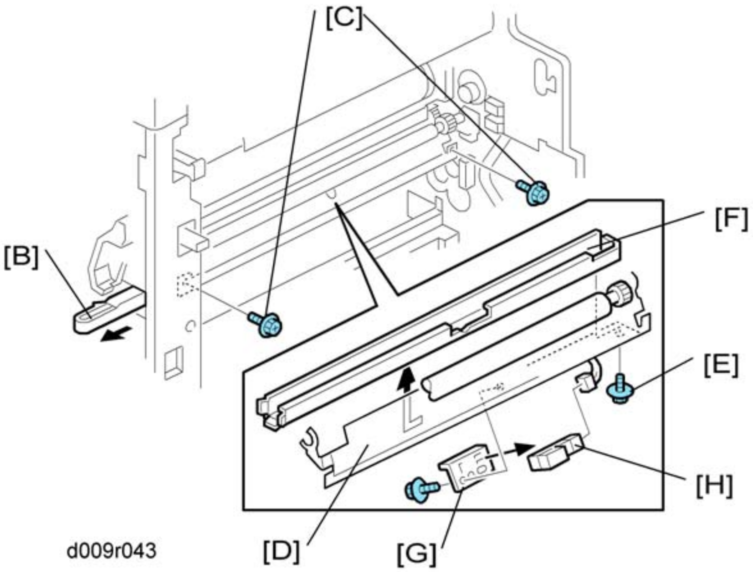
Registration Sensor

1. Rear cover (☛ Rear Cover)
2. Right rear cover (☛ Right Rear Cover)

3. Duplex unit (☛ Duplex Unit)
4. Paper feed unit for tray 1 (☛ Paper Feed Unit)
5. Paper Trays 1 and 2



6. Paper dust box [A]



7. Pull out the paper dust container [B].
8. Remove two screws [C].

Note

- This makes the paper guide [D] tilt a little bit. Now you can access the screw [E].

9. Dust container rail [F] (🔩 [E] x 1)
10. Sensor bracket [G] (🔩 x 1)

Note

- You can only access the screw on the sensor bracket from the inside (paper tray location) of the machine.

11. Registration sensor [H] (🔌 x 1, hooks)

Reinstall the registration sensor

It is very difficult to secure the sensor bracket to the frame. First attach the sensor bracket with tape temporarily.

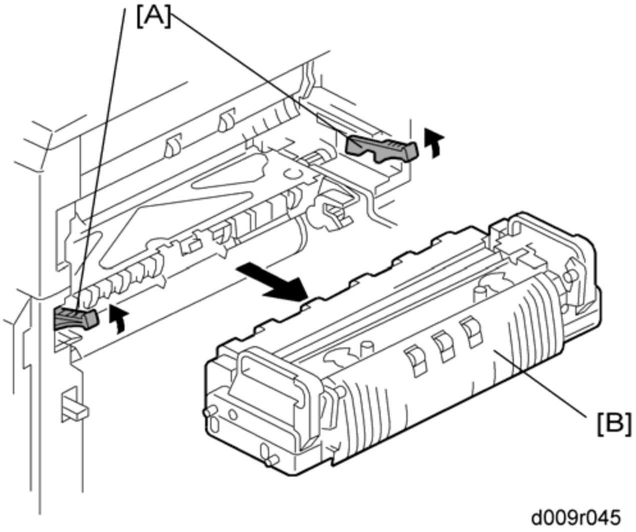
Fusing

Fusing Unit

⚠CAUTION

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

1. Turn off the main power switch.
2. Open the right door.



3. Pull up the lock levers [A].
4. Pull the fusing unit [B] until you hear a click.

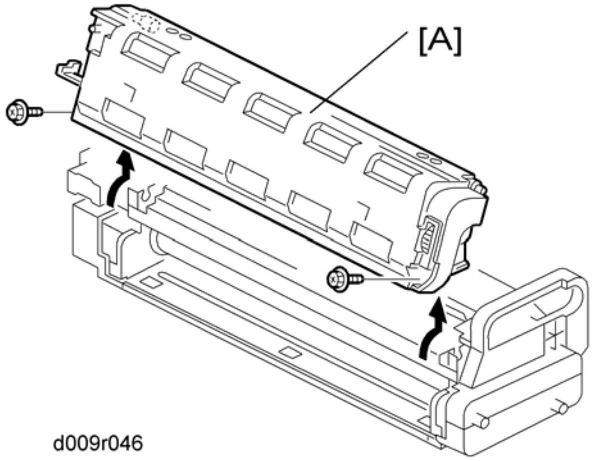
Note

- The lock levers lock the fusing unit again at this time to prevent the fusing unit from falling down.

5. Pull up the lock levers [A] again, and then remove the fusing unit [B].

Web Roller Unit

1. Fusing unit (☛ Fusing Unit)

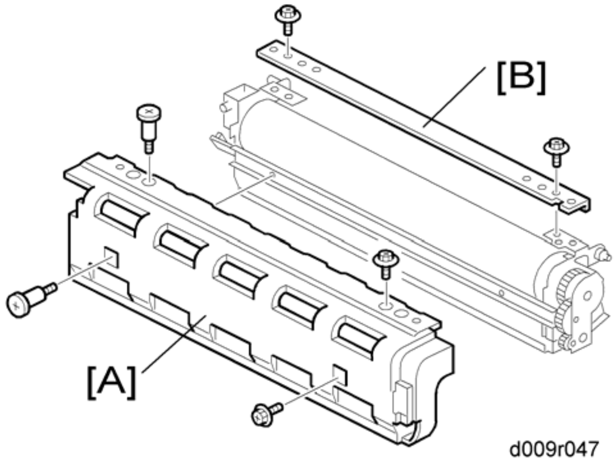


d009r046

2. Web roller unit [A] (🔩 x 2)

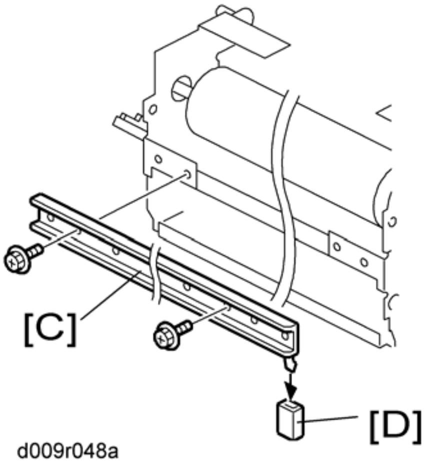
Brake Pad

1. Web roller unit (☛ Web Roller Unit)



d009r047

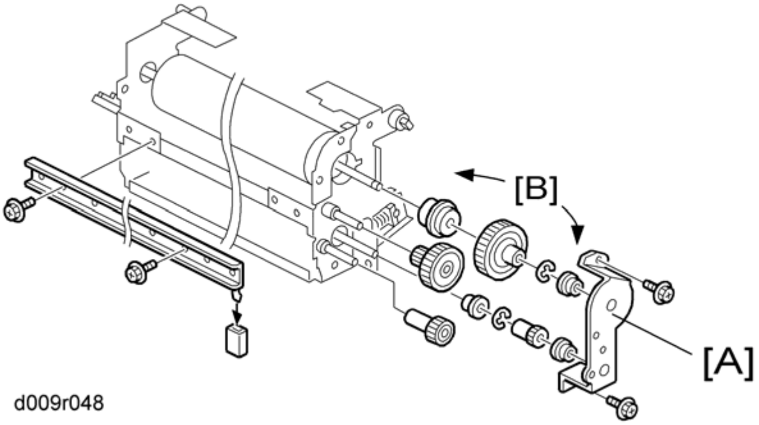
2. Web left cover [A] (front: 🔩 x 2, rear: stepped screw x 2)
3. Web top frame [B] (🔩 x 2)



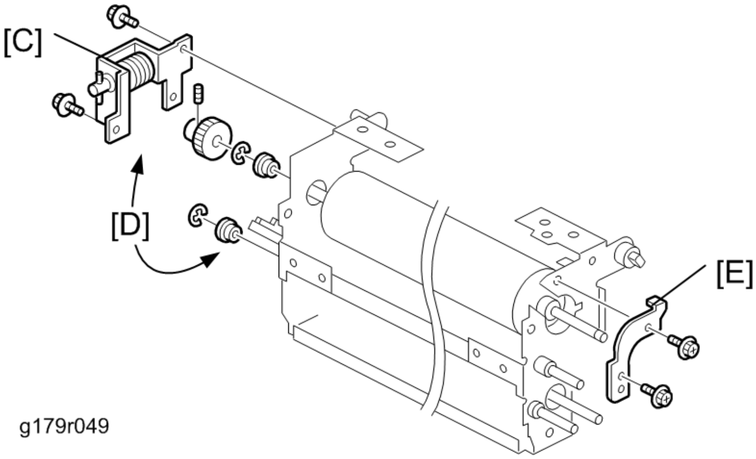
4. Web left frame [C] (🔩 x 2)
5. Brake pad [D]

Web Holder Roller and Web Rollers

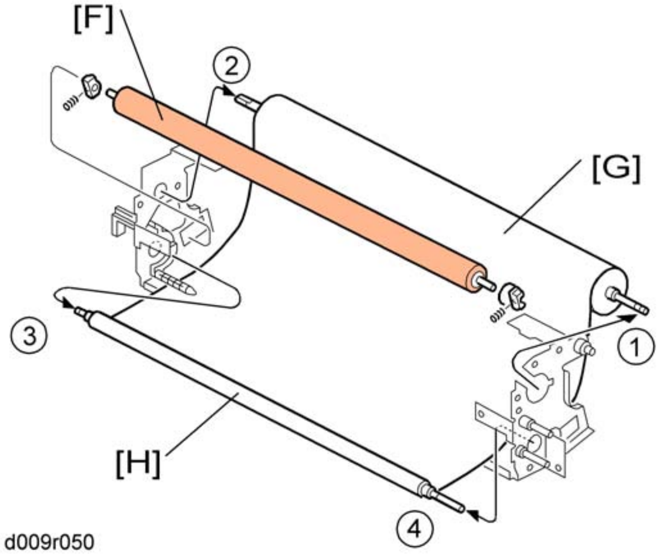
1. Web roller unit (☛ Web Roller Unit)
2. Web left cover (☛ Brake Pad)
3. Web top frame (☛ Brake Pad)
4. Web left frame (☛ Brake Pad)



5. Front gear bracket [A] (🔩 x 2)
6. All gears and bushings (rear side) [B] (ℂ x 2)

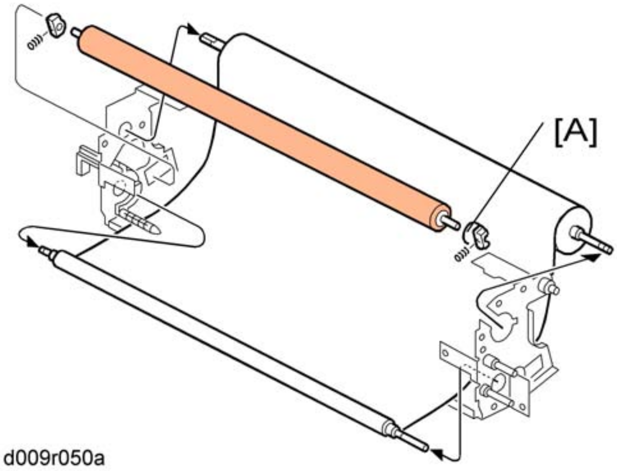


7. Rear gear bracket [C] (🔩 x 2)
8. All gear and bushings (rear side) [D] (ℂ x 2, spring x 1)
9. Front bracket [E] (🔩 x 2)



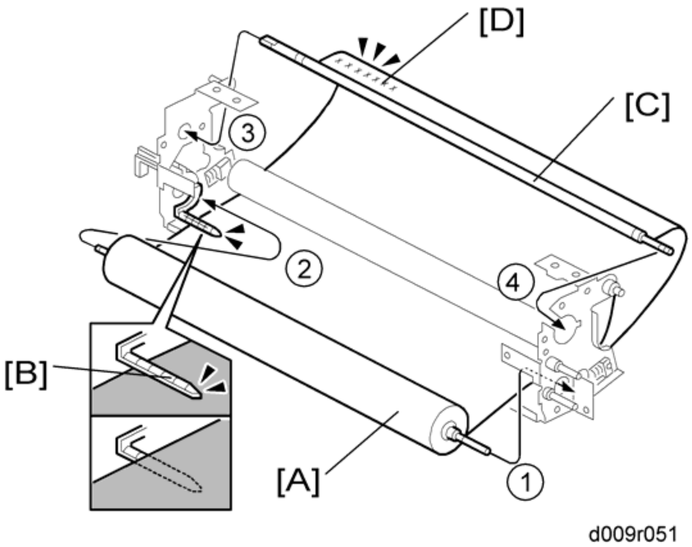
10. Web holder roller [F] (holder x 2, spring x 2)
11. Web take up roller [G] (① ➔ ②)
12. Web supply roller [H] (③ ➔ ④)

Installing a new web holder roller



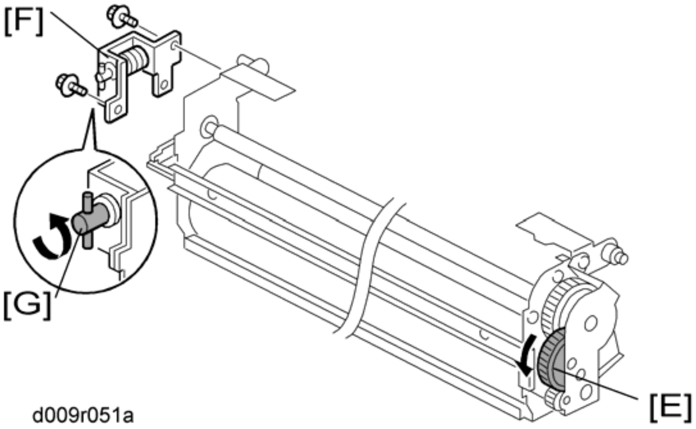
The holder [A] has a one-way clutch. Make sure that the holder [A] is set at the front side.

Installing new web rollers



1. Install the web supply roller [A] first (① → ②). Make sure that the web sheet is under the pin [B].
2. Install the web take up roller [C] (③ → ④). Make sure that the printed number [D] is outside the web take up roller.
3. Reinstall the rear gear bracket (☛ Web Holder Roller and Web Rollers).
4. Reinstall the front and rear gears and bushings (☛ Web Holder Roller and Web Rollers).

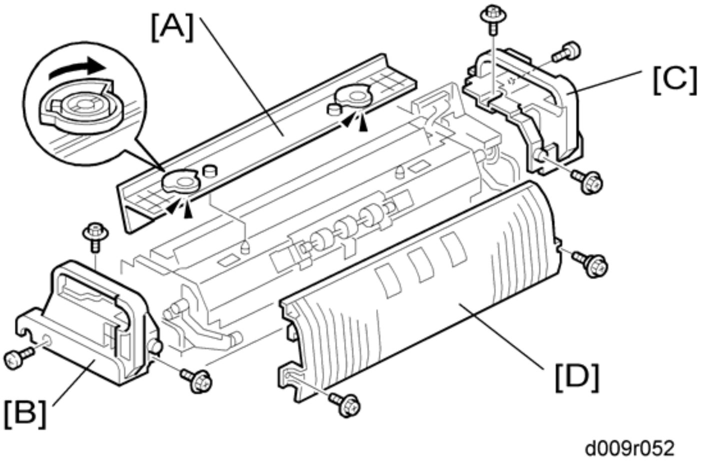
5. Reinstall the rear gear bracket (☛ Web Holder Roller and Web Rollers).



6. Turn the rear gear [E] in the arrow direction to remove the slack in the web sheet.
7. Reinstall the front gear bracket [F] (☛ Web Holder Roller and Web Rollers).
8. Turn the coupling [G] in the arrow direction to remove the slack in the web sheet.
9. Reinstall the web unit.
10. If you install a new cleaning web, reset SP 7806-008 (press "Execute" on the operation panel).

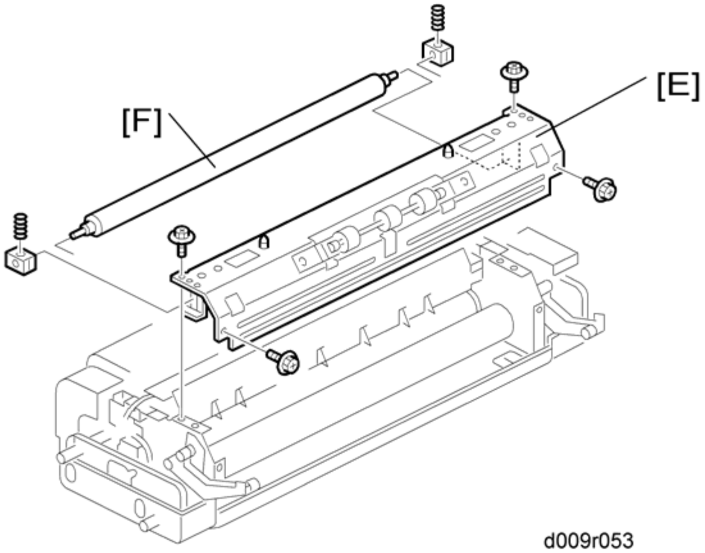
Pressure Roller Cleaning Roller

1. Fusing unit (☛ Fusing Unit)



2. Fusing exit guide [A] (lock x 2)
3. Fusing front upper cover [B] (🔩 x 3)

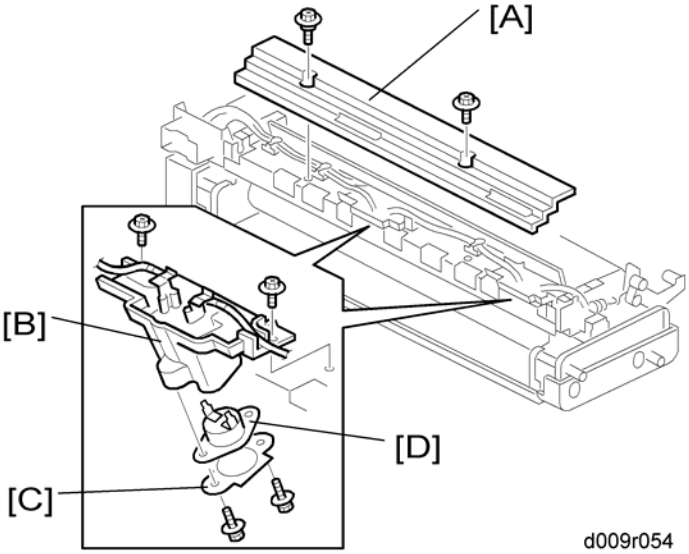
4. Fusing rear upper cover [C] (🔩 x 3)
5. Fusing outer guide [D] (front: 🔩 x 1, rear: stepped screw x 1)



6. Cleaning roller unit [E] (🔩 x 4)
7. Pressure roller cleaning roller [F] (spring x 2, holder x 2)

Thermostat

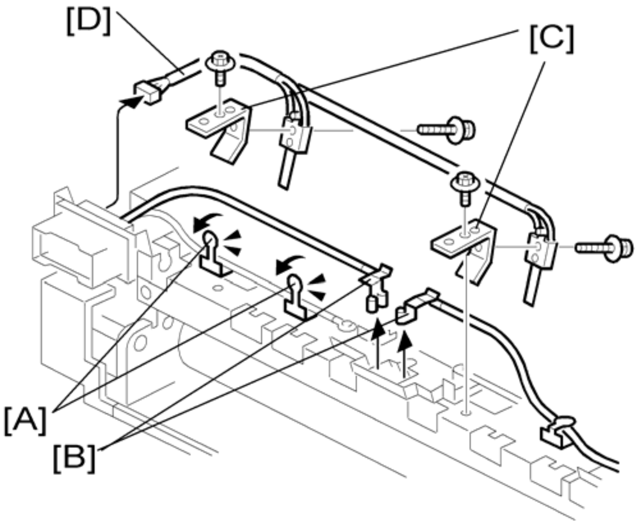
1. Fusing unit (☛ Fusing Unit)
2. Web roller unit (☛ Web Roller Unit)



3. Fusing top cover [A] (front: 🔩 x 1, rear: stepped screw x 1)
4. Thermostat holder [B] (🔩 x 2)
5. Thermostat cover [C] (🔩 x 2)
6. Thermostat [D] (terminal x 2)

Thermistor

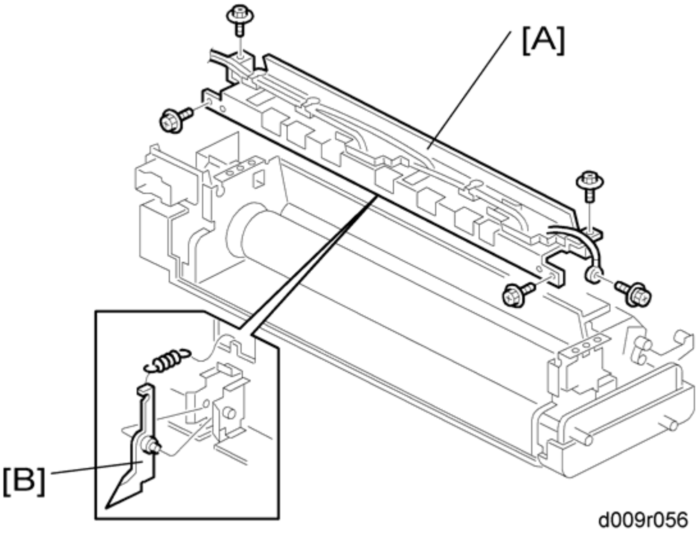
1. Fusing unit (☛ Fusing Unit)
2. Web roller unit (☛ Web Roller Unit)
3. Fusing top cover (☛ Thermostat)



4. Pull the two tabs [A].
5. Disconnect the two terminals [B].
6. Sensor stays [C] (🔩 x 1 each)
7. Thermistors [D] (🔩 x 2, 🔌 x 1)

Hot Roller Strippers

1. Fusing unit (☛ Fusing Unit)
2. Web roller unit (☛ Web Roller Unit)
3. Fusing top cover (☛ Thermostat)



4. Fusing top frame [A] (🔩 x 5)

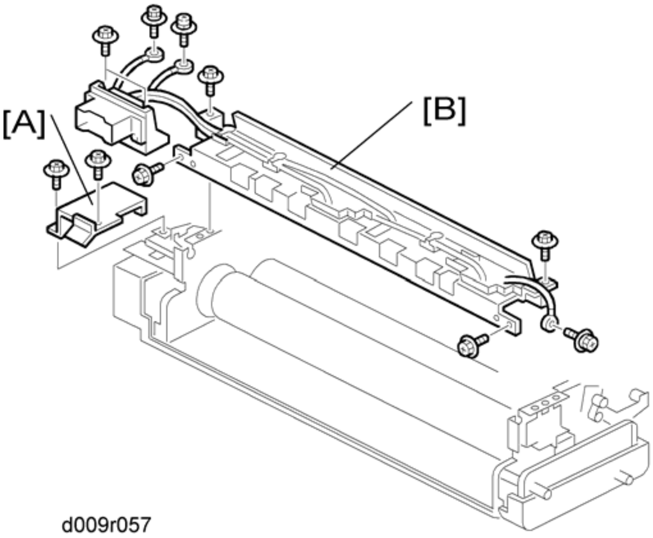
Note

- The cords on this frame are still connected to the fusing unit at this time. Be careful not to damage the cords when removing the hot roller stripper [B].

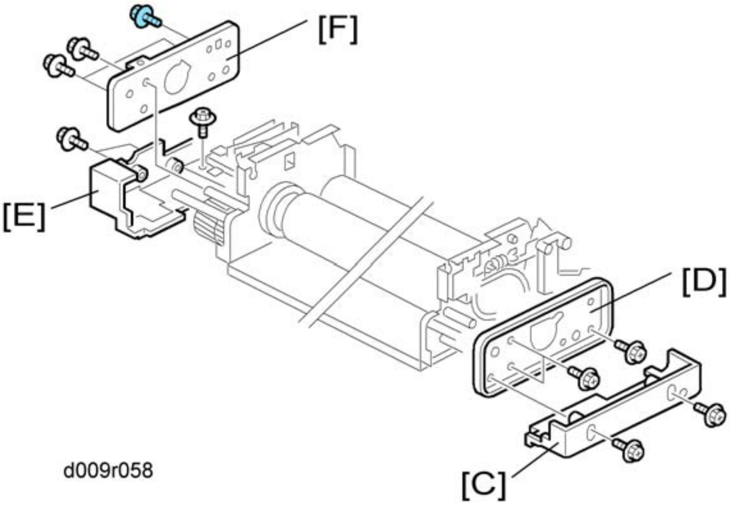
5. Hot roller stripper [B] (spring x 1)

Fusing Lamps

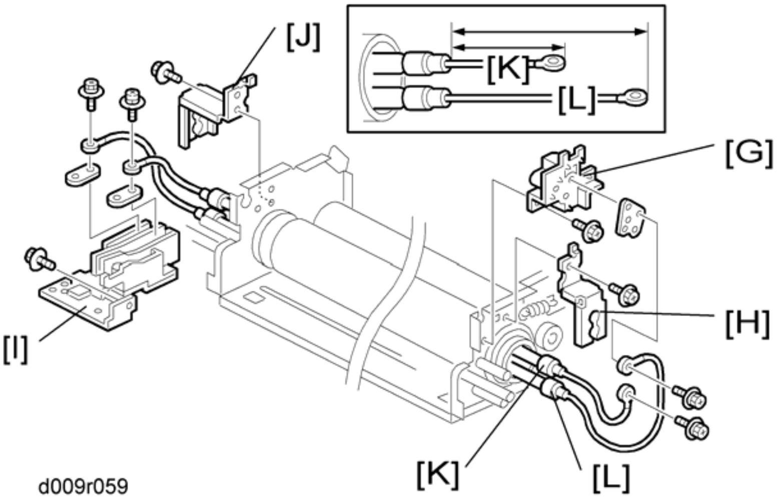
1. Fusing unit (☛ Fusing Unit)
2. Web roller unit (☛ Web Roller Unit)
3. Fusing top cover (☛ Thermostat)



4. Connector cover [A] (🔩 x 2)
5. Fusing top frame with connector [B] (🔩 x 9)



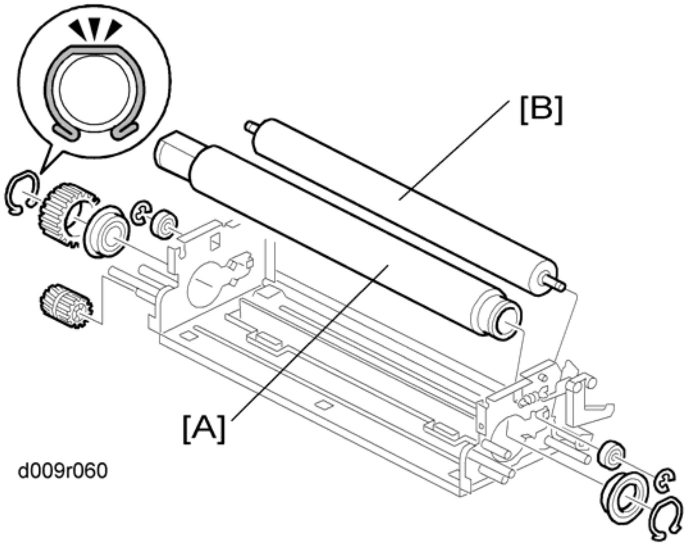
6. Fusing front lower cover [C] (🔩 x 2)
7. Fusing front frame [D] (🔩 x 3)
8. Fusing rear lower cover [E] (🔩 x 2)
9. Fusing rear frame [F] (🔩 x 5)



10. Terminal bracket [G] (🔩 x 4)
11. Front holder bracket [H] (🔩 x 1)
12. Terminal base [I] (🔩 x 3)
13. Rear holder bracket [J] (🔩 x 1)
14. Fusing lamp-Center (550W) [K]
15. Fusing lamp-End (750W) [L]

Hot Roller and Pressure Roller

1. Fusing lamps-Center and End (☛ Fusing Lamps)

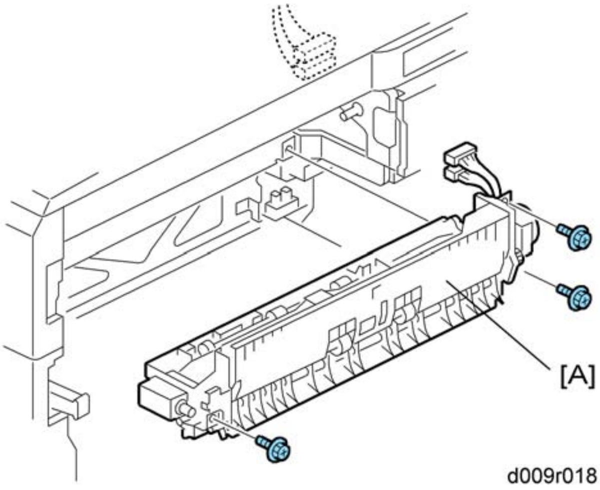


2. Hot roller [A] (snap ring x 2, gear x 2, bushing x 2)
3. Pressure roller [B] (ℂ x 2, bushing x 2)

Paper Exit

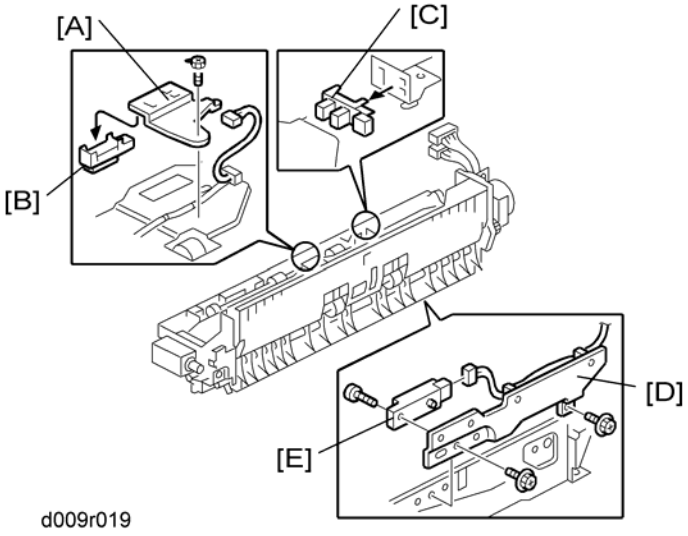
Paper Exit Unit

1. Fusing unit (☛ Fusing Unit)
2. Fusing exhaust fan duct (☛ Fusing Exhaust Fan)



3. Paper exit unit [A] (🔩 x 3, 🔌 x 2)

Fusing Exit, Paper Overflow, and Paper Exit Sensors



Paper Exit Sensor

1. Paper exit unit (☛ Paper Exit Unit)
2. Sensor bracket [A] (🔩 x 1)
3. Paper exit sensor [B] (🔌 x 1, hooks)

Paper Overflow Sensor

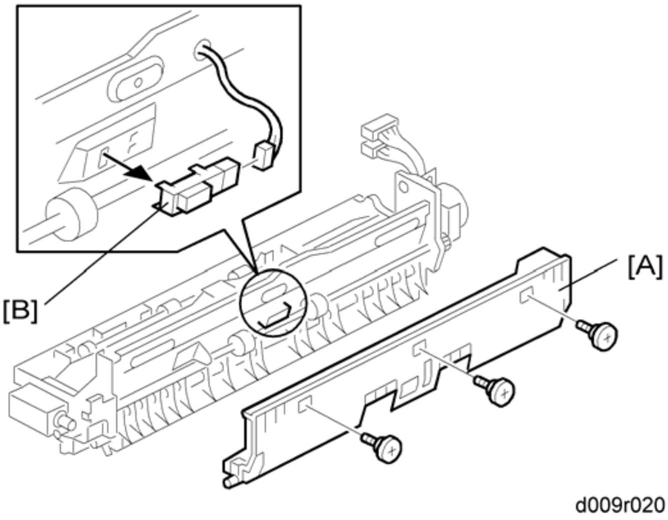
1. Paper exit unit (☛ Paper Exit Unit)
2. Paper overflow sensor [C] (🔌 x 1, hooks)

Fusing Exit Sensor

1. Paper exit unit (☛ Paper Exit Unit)
2. Sensor bracket [D] (🔩 x 2)
3. Fusing exit sensor [E] (🔩 x 1, 🔌 x 1)

Junction Jam Sensor

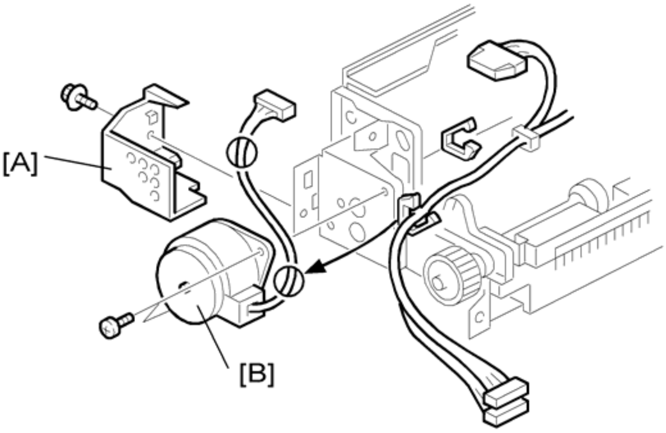
1. Paper exit unit (☛ Paper Exit Unit)



2. Paper guide [A] (🔩 x 3)
3. Junction jam sensor [B] (🔌 x 1)

Paper Exit Motor

1. Paper exit unit (☛ Paper Exit Unit)



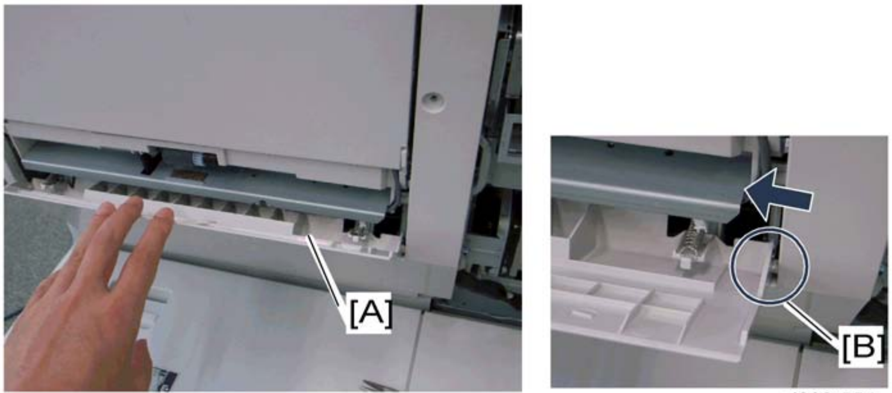
d009r021

2. Motor cover [A] (🔩 x 1)
3. Paper exit motor [B] (🔩 x 2, ⊐ x 2, 🔌 x 1)

Duplex

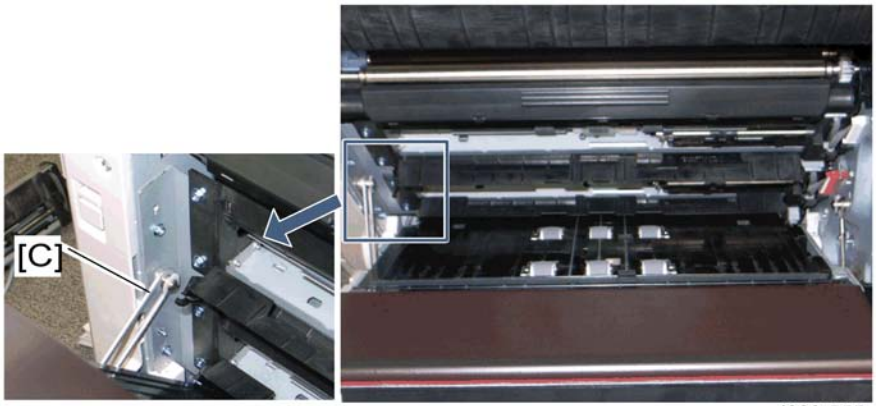
Duplex Unit

1. Rear cover (☛ Rear Cover)
2. Right rear cover (☛ Right Rear Cover)



d009r554

3. Open the lower door [A] at the duplex unit.
4. Release the tab [B] and remove the lower door (spring x 2).
5. Open the right door.

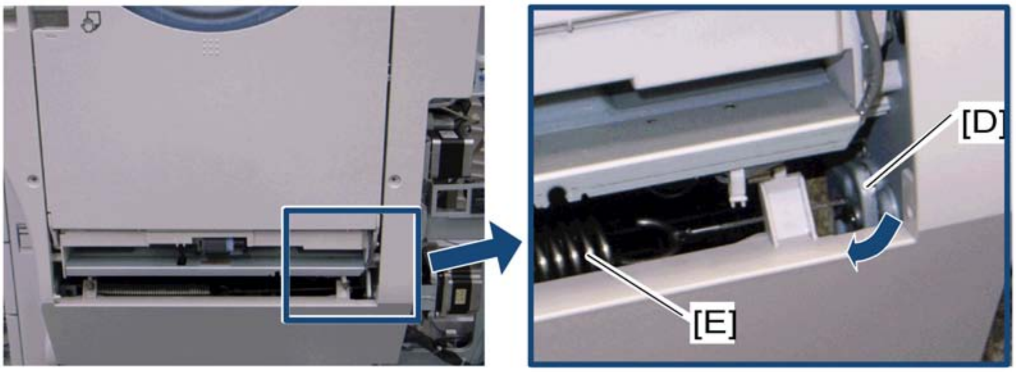


d009r555

6. Release the front link [C] (x 1).

d009r557

7. Keep the right door fully open.

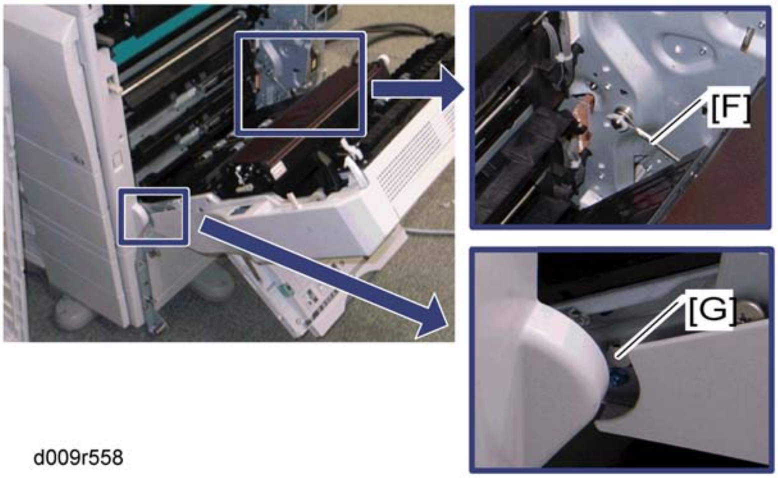


d009r556

8. Push up the duplex unit a little bit, while pressing the bracket [D] to lock the spring [E].

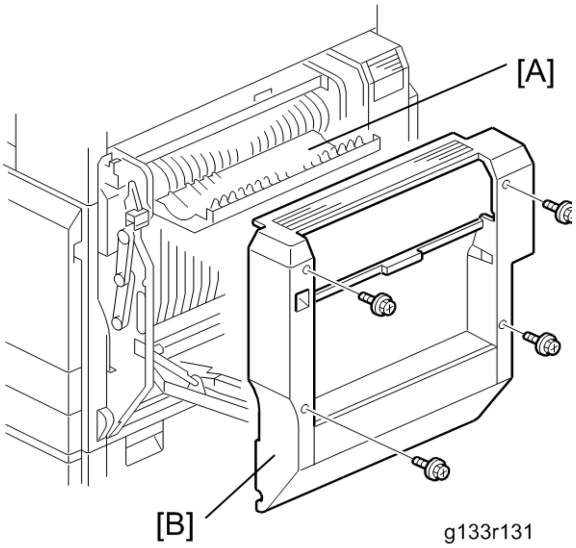
Note

- Do not let the duplex unit open fully before releasing the wire (step 9). Otherwise, the lock for the spring [E] is released.



9. Wire [F] (🔗 x 1)
10. Push the projection [G].
11. Duplex unit (🔌 x 3, ground cable x 1)

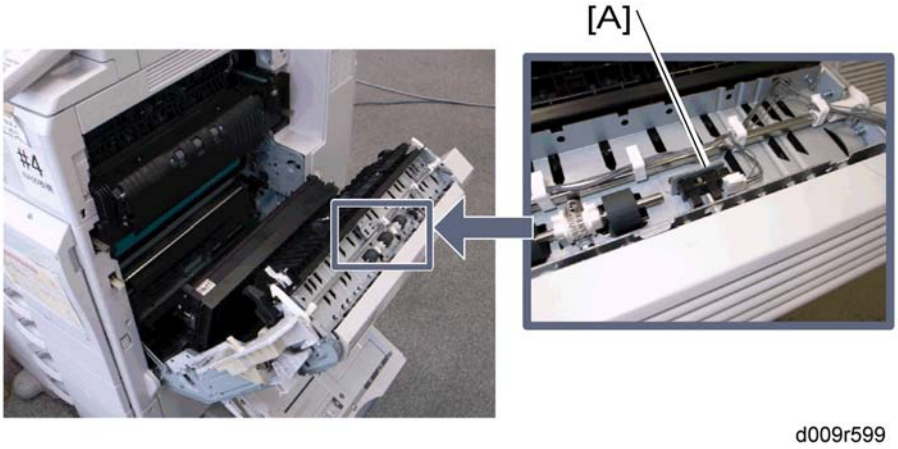
Right Door Cover



1. Open the duplex door [A] and by-pass tray.
2. Right door cover [B] (🔩 x 4)

Duplex Door Sensor

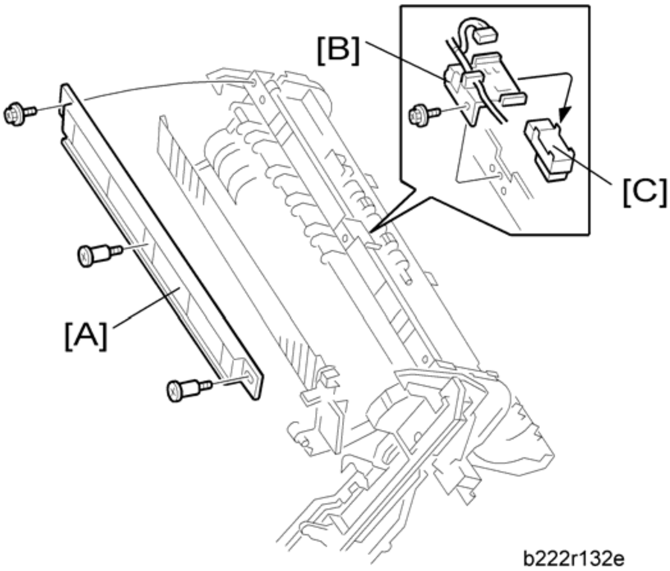
1. Right door cover (☛ Duplex Unit)
2. Open the right door.



3. Duplex door sensor [A] (🔌 x 1, hook)

Duplex Entrance Sensor

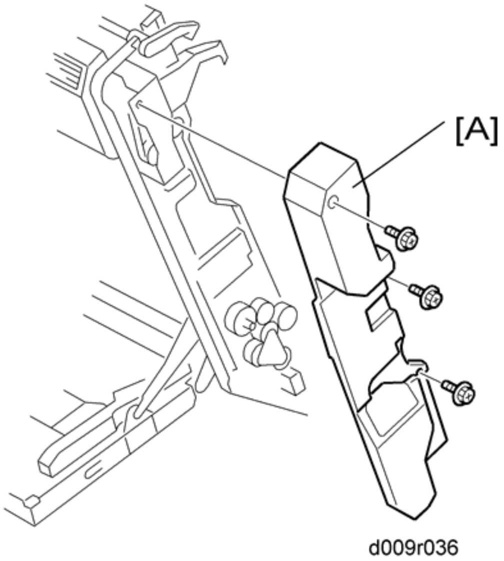
1. Right door cover (☛ Duplex Unit)
2. Open the right door.



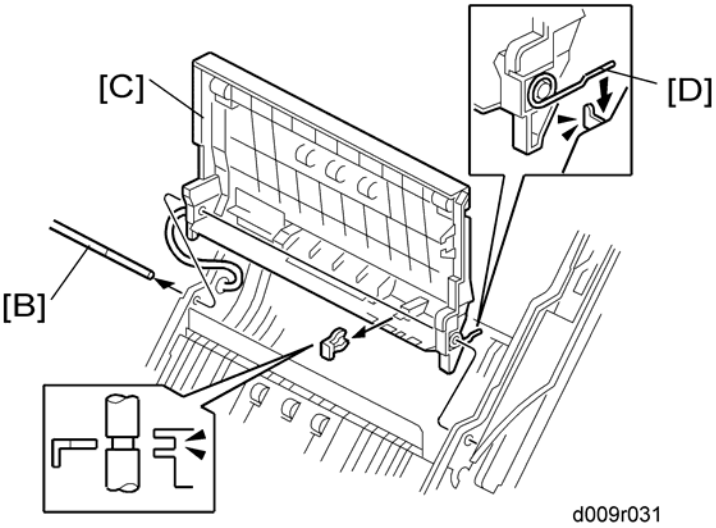
3. Duplex entrance guide [A] (🔩 x1, stepped screw x 2)
4. Duplex entrance sensor bracket [B] (🔩 x 1, 🔌 x 1)
5. Duplex entrance sensor [C] (hooks)

Duplex Exit Sensor

1. Transfer belt unit (☛ Transfer Belt Unit)



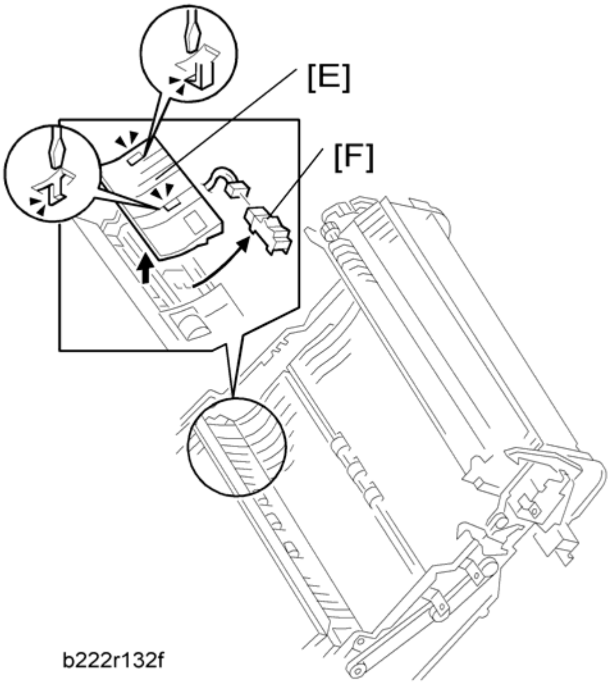
2. Right door rear cover [A] (x 3)



3. Remove the shaft [B] (x 1).
4. Transfer belt unit holder [C] (x 1, x 1)

Note

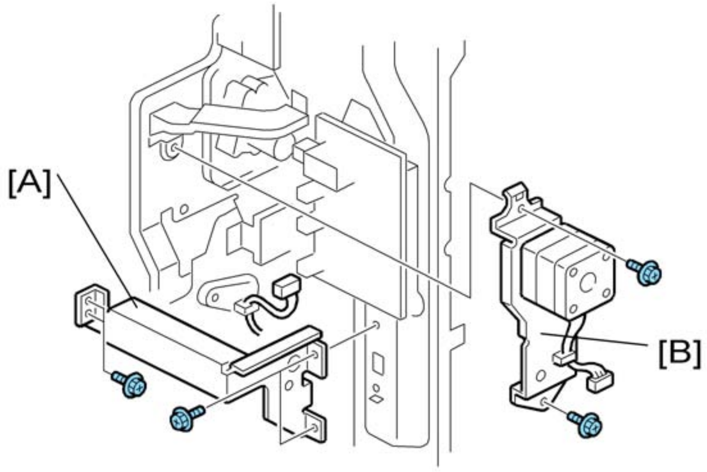
- When re-installing the transfer belt unit holder, make sure that the spring [D] correctly hooks onto the frame.



5. Guide plate [E] (two hooks)
6. Duplex exit sensor [F] (🔌 x 1, hooks)

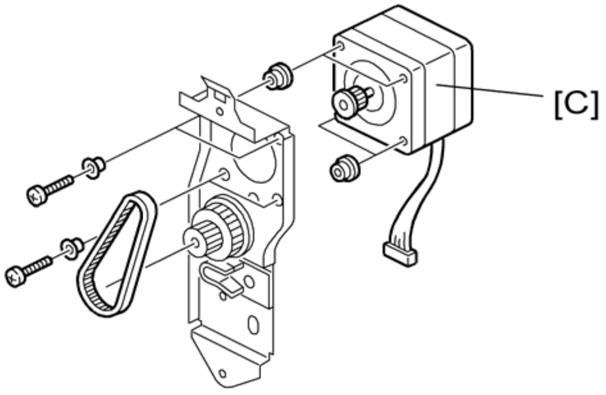
Duplex/By-pass Motor

1. Rear cover (☛ Rear Cover)



d009r034

2. Frame [A] (🔩 x 4)
3. Duplex/By-pass motor bracket [B] (🔩 x 2, 🔌 x 1)

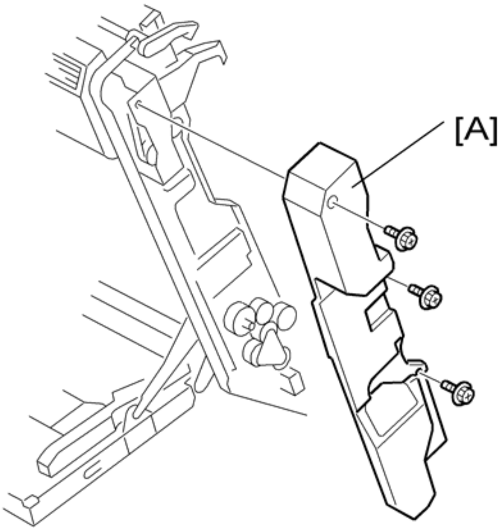


d009r035

4. Duplex/By-pass motor [C] (🔩 x 4, bushing x 8, timing belt x 1)

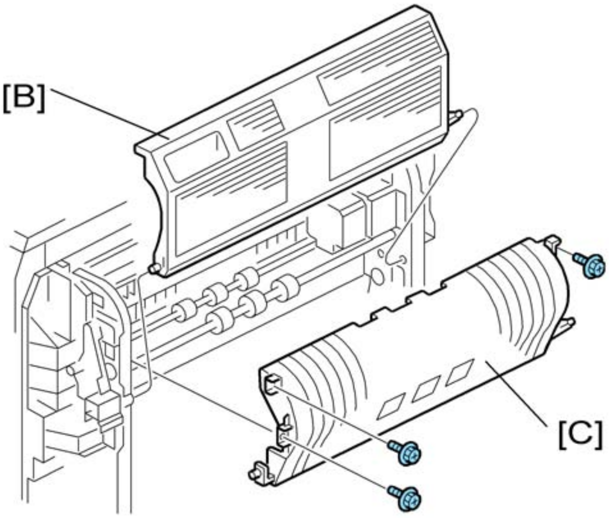
Duplex Inverter Motor

1. Right door cover (☛ Duplex Unit)
2. Open the right door.



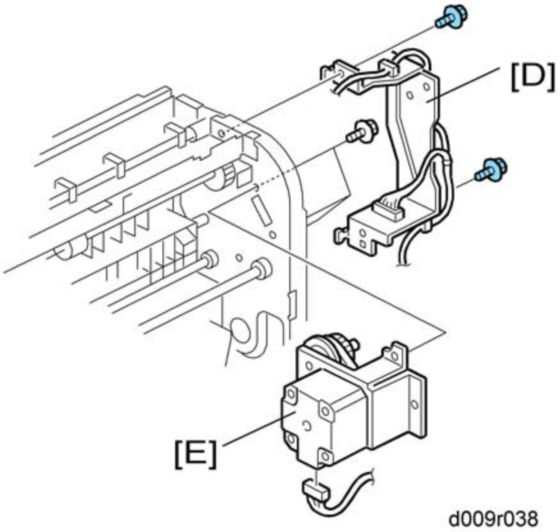
d009r036

3. Right door rear cover [A] (🔩 x 3)



d009r037

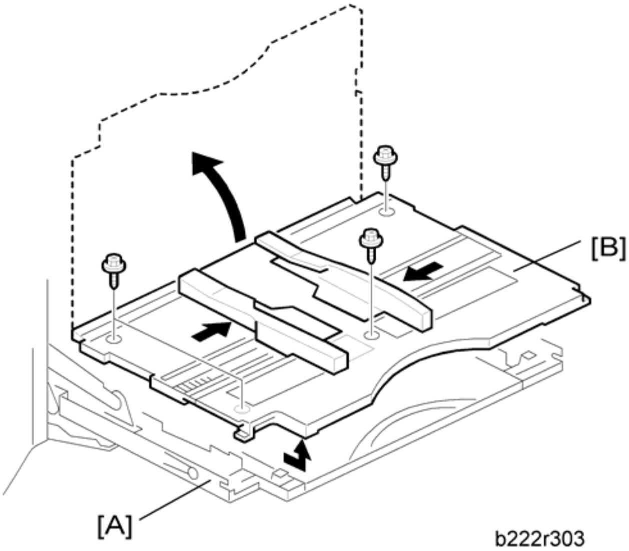
4. Duplex door [B]
5. Duplex guide plate [C] (🔩 x 3)



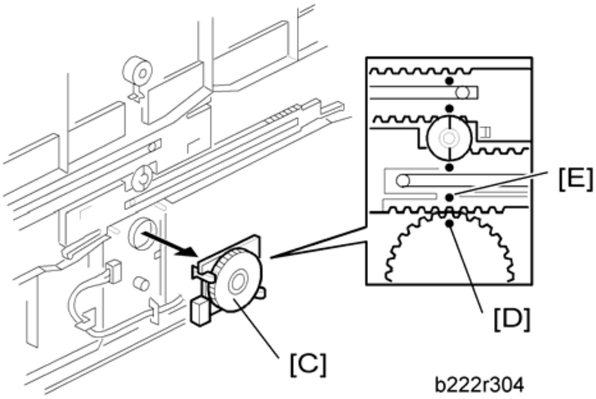
6. Bracket [D] (🔩 x 2)
7. Duplex inverter motor [E] (🔩 x 3, 🔌 x 1)

By-pass

By-pass Paper Size Sensor



1. Open the by-pass tray [A].
2. Move the side fences to the center.
3. By-pass tray cover [B] (🔩 x 4)



4. By-pass paper size sensor [C] (🔌 x 1)

When reinstalling the by-pass paper size sensor

1. Adjust the projection [E] of the left side fence bar (it must be centered).

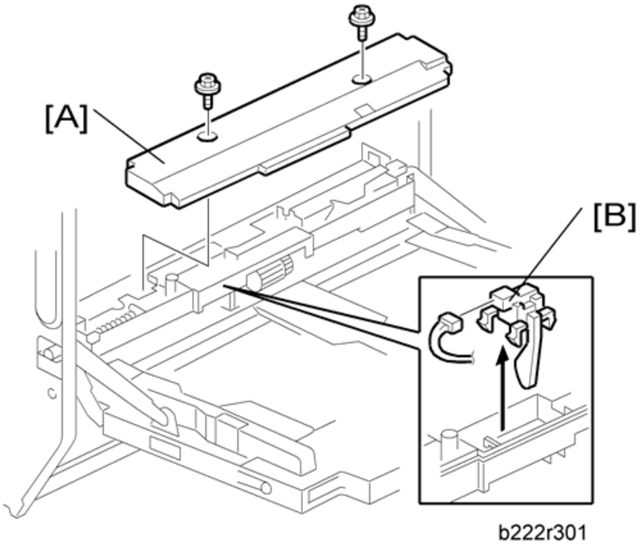
2. Install the by-pass paper size sensor so that the hole [D] in this sensor faces the projection [E] of the left side fence bar.
3. Reassemble the machine.
4. Plug in and turn on the main power switch.
5. Check this switch operation with SP5803-024 (By-pass paper size < Input Check).

- Display on the LCD -

Paper Size	Display	Paper Size	Display
A3 SEF	00001110	A5 SEF	00001011
B4 SEF	00001100	B6 SEF	00000011
A4 SEF	00001101	A6 SEF	00000111
B5 SEF	00001001	Smaller A6 SEF	00001111

By-pass Paper End Sensor

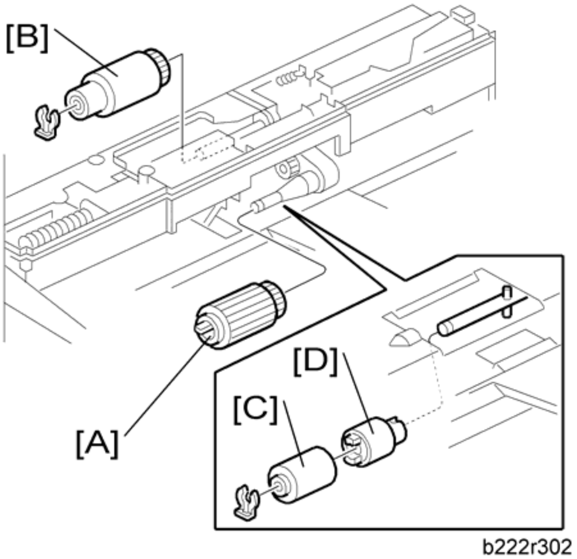
1. Right door cover (☛ Right Door Cover)



2. By-pass feed unit cover [A] (🔩 x 2).
3. By-pass paper end sensor [B] (🔌 x 1, hooks)

By-pass Pick-up, Feed and Separation Roller, Torque Limiter

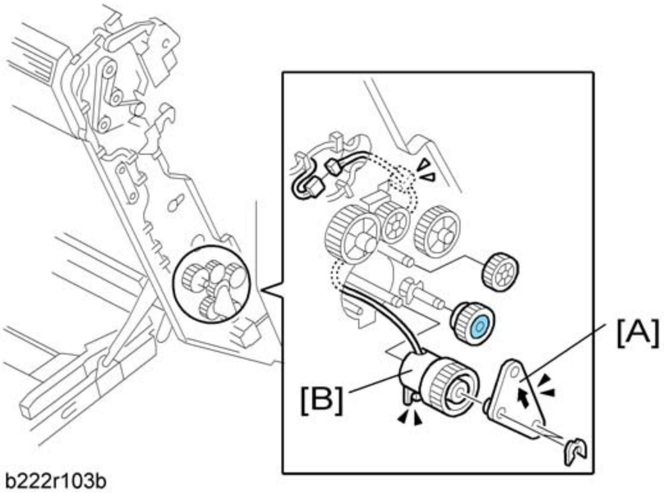
1. Right door cover (☛ Right Door Cover)
2. By-pass feed unit cover (☛ By-pass Paper End Sensor)



3. By-pass pick-up roller [A] (hook)
4. By-pass feed roller [B] (⚲ x 1)
5. By-pass separation roller [C] (⚲ x 1)
6. Torque limiter [D]

By-pass Feed Clutch

1. Open the right door.
2. Right door rear cover (☛ Duplex Exit Sensor)
3. Transfer belt unit (☛ Transfer Belt Unit)
4. Transfer belt unit holder (☛ Duplex Exit Sensor)



b222r103b

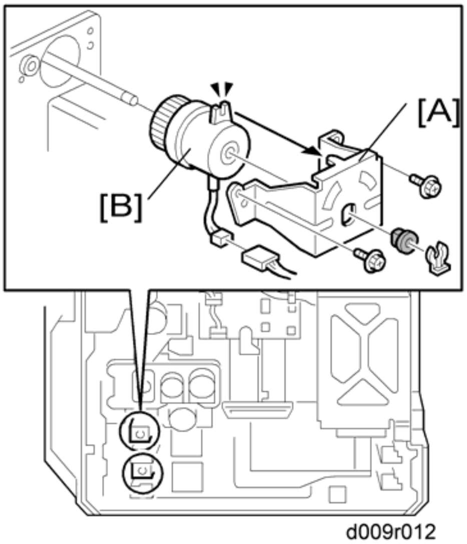
5. By-pass feed clutch holder [A] (x 2)
6. By-pass feed clutch [B] (x 1, x 1)

Drive Area

Paper Feed Clutch

Tray 1 and Tray 2

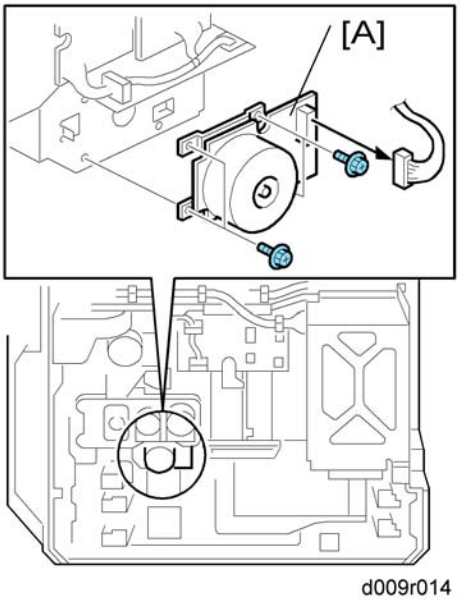
1. Rear cover (☛ Rear Cover)



2. Clutch bracket [A] (🔩 x 2, 🗜 x 1, bushing x 1)
3. Paper feed clutch [B] (🔌 x 1)

Development Paddle Motor

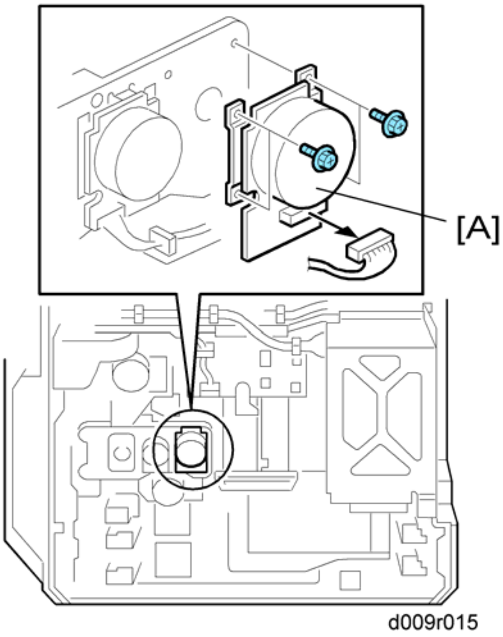
1. Rear cover (☛ Rear Cover)



2. Development paddle motor [A] (🔩 x 4, 🔌 x 1)

Transfer/Development Motor

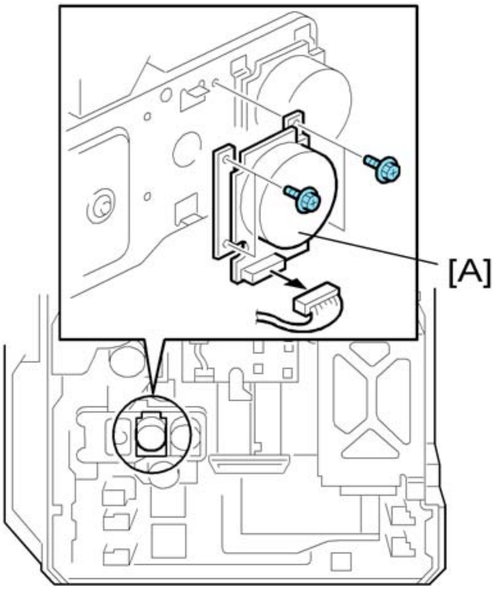
1. Rear cover (☛ Rear Cover)



2. Transfer/development motor [A] (🔩 x 4, 🔌 x 1)

Drum Motor

1. Rear cover (☛ Rear Cover)

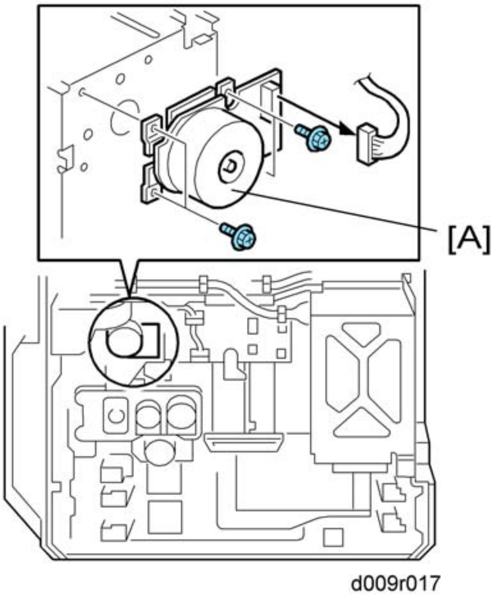


d009r016

2. Drum motor [A] (🔩 x 4, 🔌 x 1)

Fusing Motor

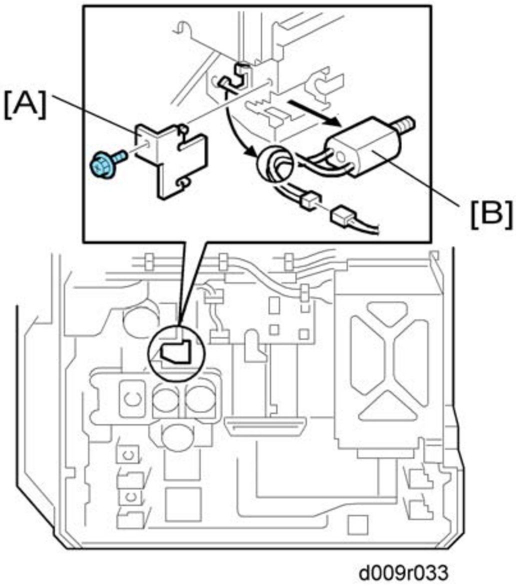
1. Rear cover (☛ Rear Cover)



2. Fusing motor [A] (🔩 x 4, 🔌 x 1)

Web Motor

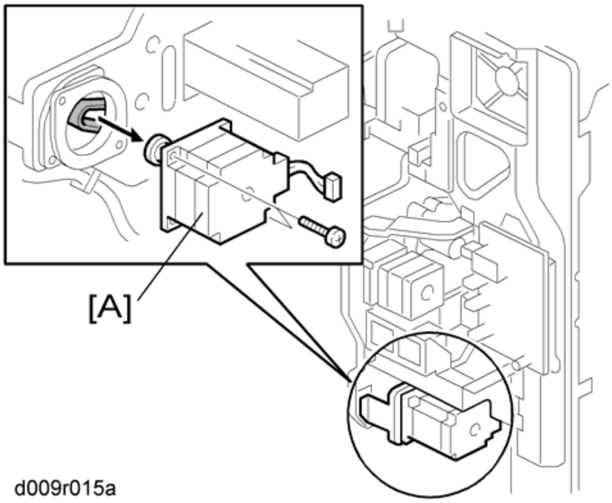
1. Rear cover (☛ Rear Cover)



2. Bracket [A] (🔩 x 1, 🔌 x 1)
3. Web motor [B] (🔌 x 1, 🗜 x 1)

Paper Feed Motor

1. Rear cover (☛ Rear Cover)
2. Right rear cover (☛ Right Rear Cover)

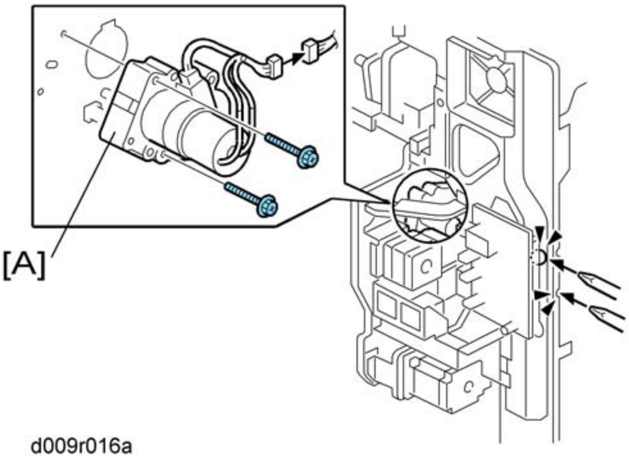


d009r015a

3. Paper feed motor [A] (🔩 x 2, 🔌 x 1)

Transfer Belt Contact Motor

1. Rear cover (☛ Rear Cover)
2. Right rear cover (☛ Right Rear Cover)

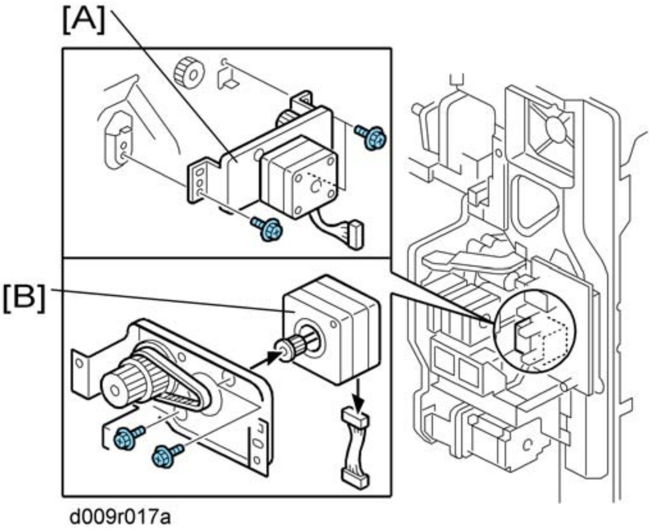


d009r016a

3. Transfer belt contact motor [A] (🔩 x 2, 🔌 x 1)

Registration Motor

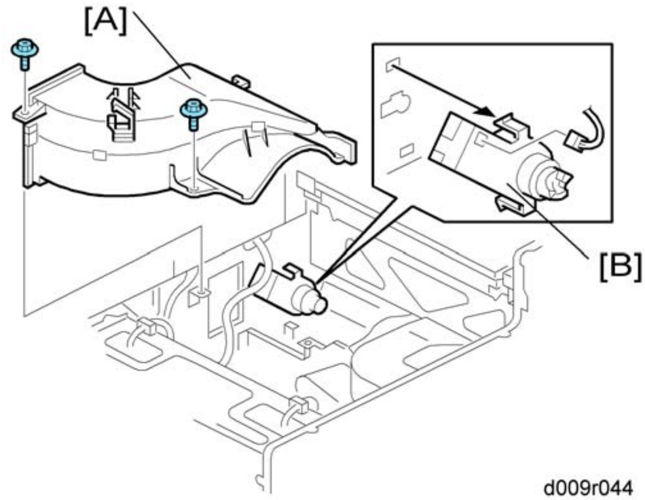
1. Rear cover (☛ Rear Cover)
2. Right rear cover (☛ Right Rear Cover)



3. Registration motor bracket [A] (🔩 x 3, 🔌 x 1)
4. Registration motor [B] (🔩 x 2, 🔌 x 1)

Toner Supply Motor

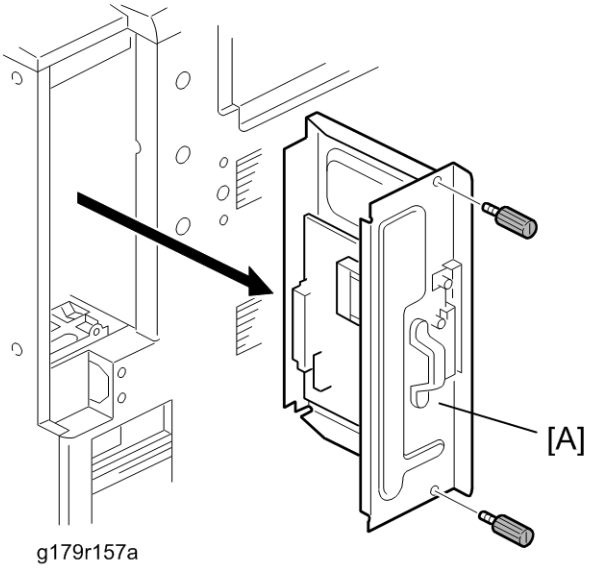
1. Left cover (☛ Left Cover)
2. Upper inner cover (☛ Front Door, Upper and Lower Inner Cover)
3. Output tray (☛ Output Tray)



4. Exhaust duct [A] (🔩 x 2)
5. Toner supply motor [B] (hooks, 🔌 x 1)

Electrical Components

Controller Unit

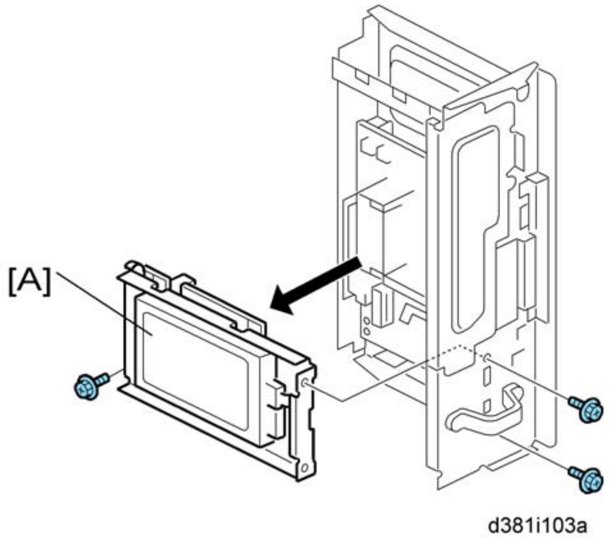


1. Controller unit [A] (knob screw x 2)

HDD Unit

Replacement Procedure

1. Controller unit (☛ Controller Unit)



2. HDD unit [A] (🔩 x 3)

After installing the new HDD unit

1. Do SP5832-001 to format the hard disk.
2. Turn the main power switch off/on.

Disposal of HDD Units

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

Reinstallation

- If the customer is using the DataOverwriteSecurity or the Data Encryption feature, these applications must be installed again. For more, see "Installation".
- If the customer is using the HDD Encryption Unit, the encryption key must be restored after replacing the HDD unit. For details, see the "Security Guide".

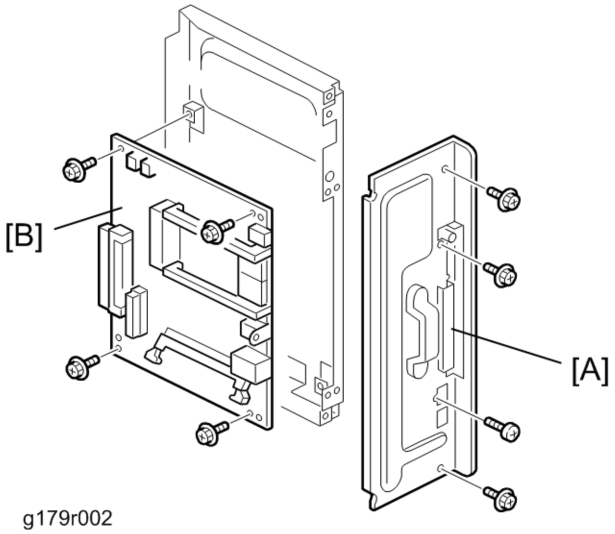
Controller Board

⚠CAUTION

- The battery on the control board can explode if replaced incorrectly.
- Dispose of the old battery in accordance with the instructions.

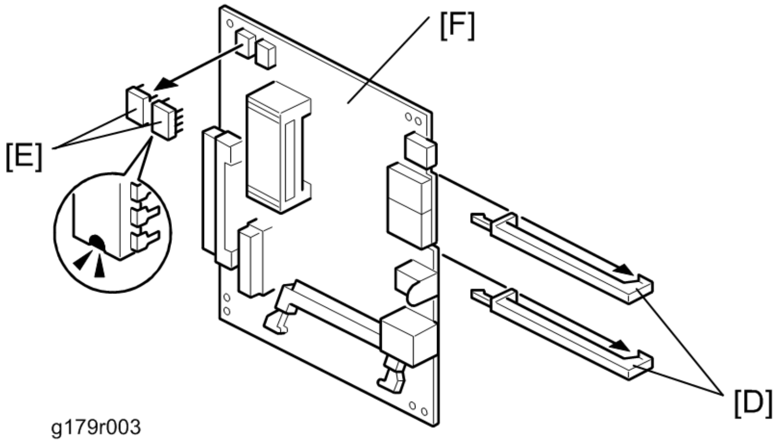
Replacement Procedure

1. Controller unit (☛ Controller Unit)
2. HDD unit (if it has been installed.) (☛ HDD Unit)



g179r002

3. Controller left cover [A] (🔩 x 4)
4. Controller board assembly [B] (🔩 x 4, connector caps)



g179r003

5. Interface rails [D] (hooks each)
6. NVRAMs [E]
7. DIMM-RAM (If it is installed.)
8. Controller board [F]

When installing the new controller board

1. Remove the NVRAMs from the old controller board.
2. Install them on the new controller board after you replace the controller board.
3. Replace the NVRAMs if the NVRAM on the old controller board is defective.

Note

- Make sure you print out the SMC reports ("SP Mode Data" and "Logging Data") before you replace the NVRAMs.

⚠CAUTION

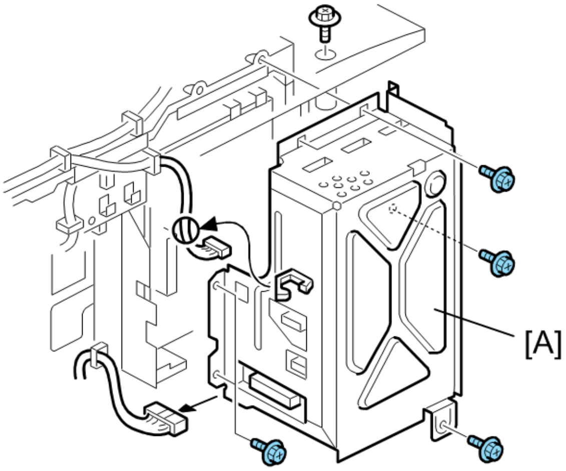
- Keep NVRAMs away from any objects that can cause static electricity. Static electricity can damage NVRAM data.
- Make sure the NVRAMs are correctly installed on the controller board.
- Make sure that the DIP-switch settings on the old controller board are the same for the new controller board. Do not change the DIP switches on the controller board in the field.

After installing the controller board

1. For a model in which the HDD encryption unit has been installed, restoring the encryption key is required. Refer to "Security Guide" for details.
2. Turn the main power switch off/on.

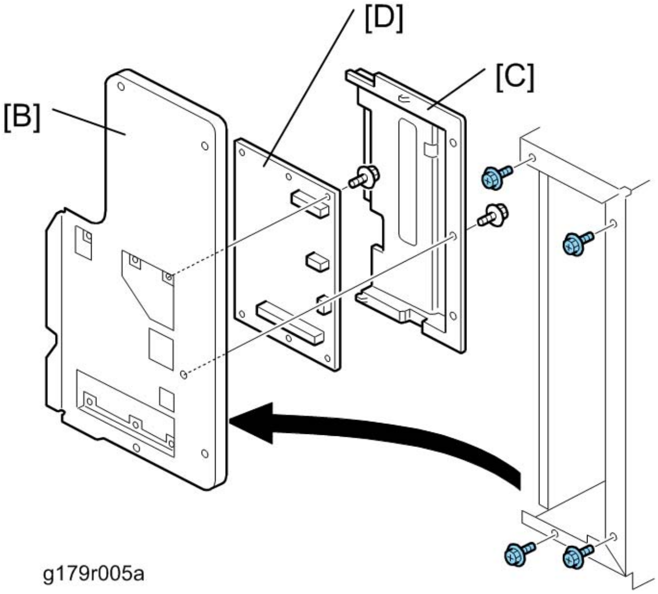
Mother Board

1. Rear cover (☛ Rear Cover)
2. Controller unit (☛ Controller Unit)



g179r004

3. Controller box [A] (🔩 x 7, 🔌 x 1, ⊐ x 2)

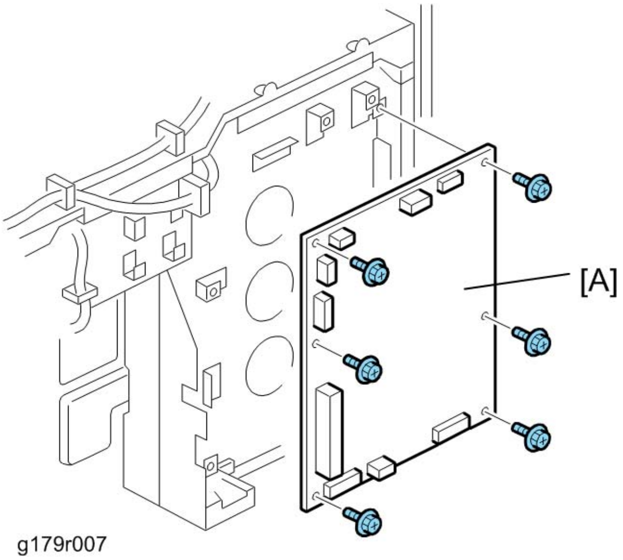


g179r005a

4. Controller box right cover [B] (🔩 x 4)
5. Mother board bracket [C] (🔩 x 1)
6. Mother board [D] (🔩 x 6)

BCU

1. Controller box (☛ Mother Board)



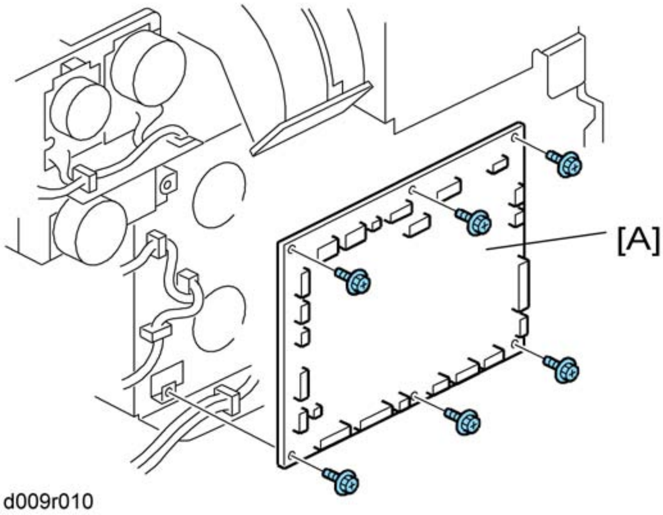
RTB 20

2. BCU [A] (🔩 x 6, 🔌 x all)

Steps added to BCU replacement procedure.

IOB

1. Rear cover (☛ Rear Cover)



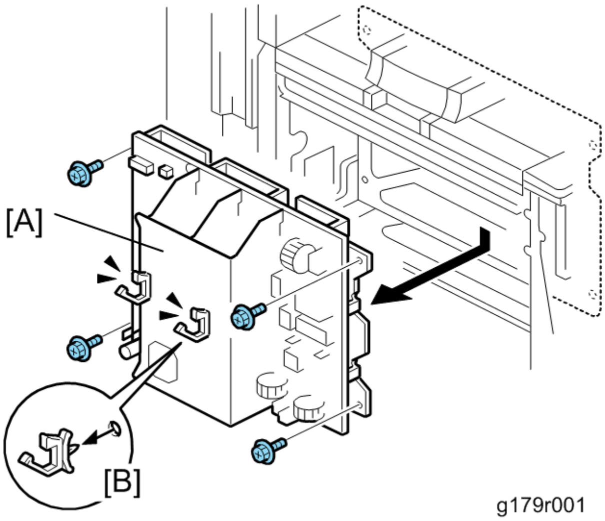
2. IOB [A] (🔩 x 6, 🔌 x all)

When installing a new IOB

1. Set the bit switches on the new IOB to the same settings as the old IOB.

PSU

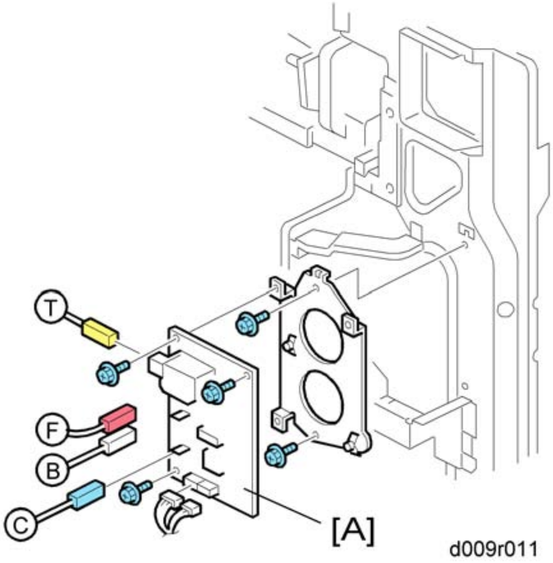
1. Left cover (☛ Left Cover)



2. PSU [A] (🔩 x 4, 🔌 x all)
3. Two clamps [B] (Two clamps will be used for the new PSU.)

High Voltage Power Supply Board

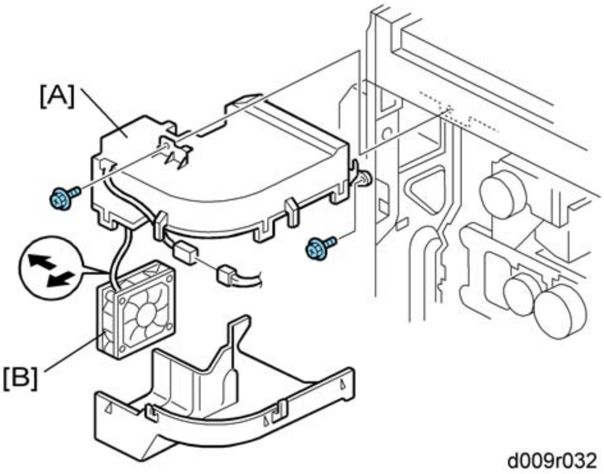
1. Rear cover (☛ Rear Cover)
2. Right rear cover (☛ Right Rear Cover)



3. High voltage power supply board [A] (🔩 x 3, 🔌 x all)

Fusing Exhaust Fan

1. Rear cover (☛ Rear Cover)



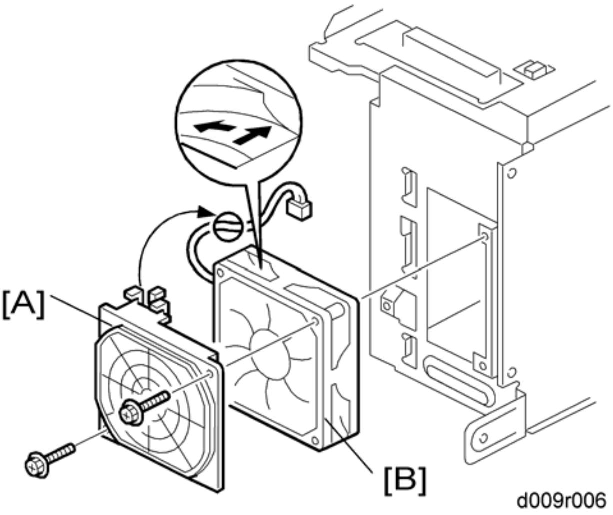
2. Fusing exhaust duct [A] (🔩 x 2, 🔌 x 1)
3. Separate the duct (hooks).
4. Fusing exhaust fan [B]

When installing the fusing exhaust fan

Make sure that the fusing fan is installed with its decal facing the right side of the machine.

Controller Fan

1. Controller box (☛ Mother Board)



2. Fan cover [A] (🔩 x 2)
3. Controller fan [B] (🔌 x 1)

When installing the controller fan

Make sure that the controller fan is installed with its decal facing upward.

Print Adjustments

Overview

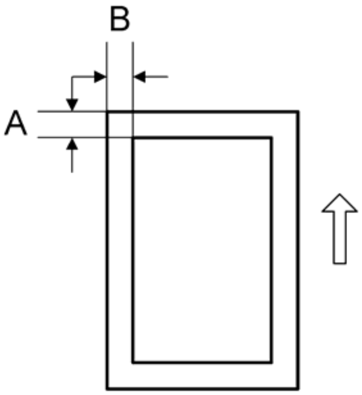
Perform these adjustments after replacing any of the following:

- Polygon Mirror Motor
- Paper Side Fence
- Memory All Clear

Printing

1. Make sure paper is installed correctly in each paper tray before you start these adjustments.
2. Use the Trimming Area Pattern (SP2-109-1, No. 14) to print the test pattern for the following procedures.

Registration - Leading Edge/Side-to-Side



b195r827

1. Check the leading edge registration [A] for each paper type and paper feed station, and adjust it with following SP modes.

	SP No.	Specification
Tray: Plain	SP1-001-1	0 ±9.0 mm
Tray: Thick 1	SP1-001-2	

	SP No.	Specification
Tray: Thick 2	SP1-001-3	
By-pass: Plain	SP1-001-4	
By-pass: Thick 1	SP1-001-5	
By-pass: Thick 2	SP1-001-6	
Duplex: Plain	SP1-001-7	
Duplex: Thick 1	SP1-001-8	

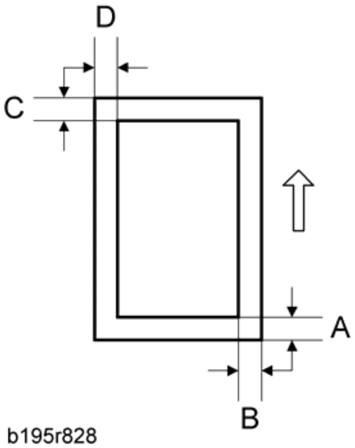
2. Check side-to-side registration [B] for each paper feed station, and adjust with the following SP modes.

	SP No.	Specification
By-pass	SP1-002-1	0 ±4.0 mm
Tray 1	SP1-002-2	
Tray 2	SP1-002-3	
Tray 3	SP1-002-4	
Tray 4	SP1-002-5	
LCT	SP1-002-6	
Duplex	SP1-002-7	

Blank Margin

Note

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



b195r828

1. Check the trailing edge [A], right edge [B], leading edge [C] and left edge [D] blank margins, and adjust them with the following SP modes.

	SP No.	Specification
Leading Edge	SP2-103-1	3.0 mm [0.0 to 9.0 mm]
Trailing Edge	SP2-103-2	
Left	SP2-103-3	2.0 mm [0.0 to 9.0 mm]
Right	SP2-103-4	
Duplex: Trailing Edge: L Size: Plain	SP2-103-5	1.0 mm [0.0 to 4.0 mm]
Duplex: Trailing Edge: M Size: Plain	SP2-103-6	0.8 mm [0.0 to 4.0 mm]
Duplex: Trailing Edge: S Size: Plain	SP2-103-7	0.6 mm [0.0 to 4.0 mm]
Duplex: Left: Plain	SP2-103-8	0.3 mm [0.0 to 1.5 mm]
Duplex: Right: Plain	SP2-103-9	
Duplex: Trailing Edge: L Size: Thick	SP2-103-10	0.8 mm [0.0 to 4.0 mm]
Duplex: Trailing Edge: M Size: Thick	SP2-103-11	0.6 mm [0.0 to 4.0 mm]

	SP No.	Specification
Duplex: Trailing Edge: S Size: Thick	SP2-103-12	0.4 mm [0.0 to 4.0 mm]
Duplex: Left: Thick	SP2-103-13	0.1 mm [0.0 to 1.5 mm]
Duplex: Right: Thick	SP2-103-14	

- L Size: Paper length is 297.1 mm or more.
- M Size: Paper length is 216.1 to 297 mm
- S Size: Paper length is 216 mm or less.

Main Scan Magnification

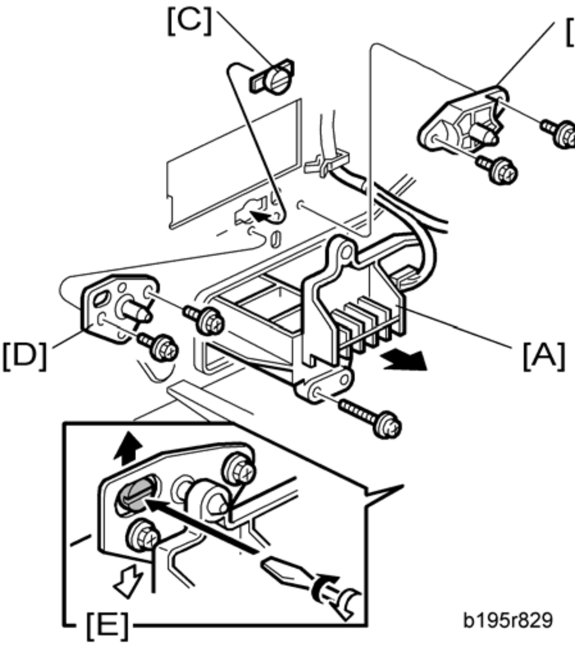
1. Use SP2-109-001 no 5 (Grid Pattern) to print a single dot pattern.
2. Check magnification, and then SP2-102 (Magnification Adjustment Main Scan) to adjust magnification if required. Specification: ±2%.

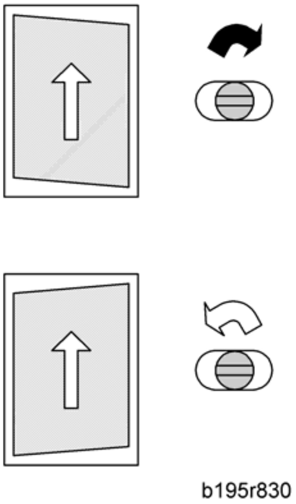
Parallelogram Image Adjustment

Do the following procedure if a parallelogram prints while adjusting the printing registration or printing margin using a trimming area pattern.

The following procedure should be done after adjusting the side-to-side registration for each paper tray station.

Use SP2-109-1 No. 14 (Trimming Area) to determine whether a parallelogram image appears. If the parallelogram pattern appears, perform the following procedure.





1. Laser unit [A]
2. Bracket [B] (🔩 x2)
3. Install adjustment cam [C] (P/N: A2309003).
4. Secure positioning pin [D] (P/N A2309004) with the two screws removed with the bracket [B]. Do not tighten the screws at this time.
5. To adjust the position of the laser unit [E]

   1) Adjust the laser unit position by turning the adjustment cam. (See the illustration above.)

   2) Tighten the adjustment bracket.

   3) Print the trimming area pattern to check the image. If the results are not satisfactory, repeat steps "5-1)" to "5-3)".

4. Troubleshooting

Service Call Conditions

Summary

There are 4 levels of service call conditions.

Level	Definition	Reset Procedure
A	To prevent damage to the machine, the main machine cannot be operated until the SC has been reset by a service representative (see the note below).	Enter SP mode, use SP 5810, press [Execute] button, and 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 operation switch or main switch off and on.
C	The SC history is updated. The machine can be operated as usual.	The SC will not be displayed. Only the SC history is updated.
D	Turning the main switch off then on resets SCs displayed on the operation panel. These are re-displayed if the error occurs again.	Turn the operation switch off and on.

SC Code Descriptions

Important

- If a problem concerns a circuit board, disconnect and reconnect the connectors and then test the machine. Often a loose or disconnected harness is the cause of the problem. Always do this before you decide to replace the PCB.
- If a motor lock error occurs, check the mechanical load before you decide to replace the motor or sensors.
- When a Level "A" or "B" SC occurs while in an SP mode, the machine cannot display the SC number. If this occurs, check the SC number after leaving the SP mode.
- The machine reboots automatically when the machine issues a Level "D" SC code. This is done for Level "D" SC codes only.

⚠CAUTION

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

Note

- The main power LED (☀⏽) lights or flashes while the main machine is communicating with the network server, or while the machine is accessing the hard disk or memory for reading or writing data.

SC Tables: SC1xx

There are no Group 1xx SC codes for this machine.

SC Tables: SC2xx

202	D	Polygon motor error 1: ON timeout
		The polygon mirror motor does not reach the targeted operating speed within 10 sec. after turning on or changing speed
203	D	Polygon motor error 2: OFF timeout
		The polygon mirror motor does not leave the READY status within 3 sec. after the polygon motor switched off.
204	D	Polygon motor error 3: XSCRDY signal error
		The SCRDY_N signal remains HIGH for 200 ms while the LD unit is firing.
		• Polygon motor/driver board harness loose or broken • Polygon motor/driver board defective • Laser optics unit defective • IPU defective

220	D	Laser synchronizing detection error: start position LD0
		The laser synchronizing detection signal for the start position of the LDB is not output for two seconds after LDB unit turns on while the polygon motor is rotating normally
		• Disconnected cable from the laser synchronizing detection unit or defective connection • Defective laser synchronizing detector • Defective LD board • Defective BCU

221	D	Laser synchronizing detection error: start position LD1
		The laser synchronizing detection signal for the start position of the LDB is not output for two seconds after LDB unit turns on while the polygon motor is rotating normally.
		• Disconnected cable from the laser synchronizing detection unit or defective connection • Defective laser synchronizing detector • Defective LD board

		• Defective BCU

230	D	FGATE ON error
		The FGATE signal does not assert within the prescribed time. (The BCU generates the FGATE signal and sends it to the LD unit when the registration sensor switches on.)
231	D	FGATE OFF error
		The FGATE signal does not assert within the prescribed time. (The BCU generates the FGATE signal and sends it to the LD unit when the registration sensor switches on.)
		• BCU defective • BCU, Controller board harness loose or broken • Controller board defective.

240	C	LD error
		The IPU detected a problem at the LD unit.
		• Worn-out LD • Disconnected or broken harness of the LD.

SC Tables: SC3xx

302	D	Charge roller bias leak
		The charge roller bias leak signal is detected.
		• Charge roller damaged • High voltage supply board defective • PCDU harness defective or disconnected

304	D	Charge roller bias correction leak
		The charge roller bias correction is performed twice even if the maximum charge roller bias (-2000V) is applied to the roller.
		• ID sensor defective • Worn charge roller • Charge roller damaged

320	D	Development roller bias leak
		A development roller bias leak is detected for 60 ms after the high voltage has been supplied to the development unit.
		• Development bias leak • Broken harness • Defective high voltage power supply, voltage supply • Defective high voltage supply unit

324	D	Development paddle motor error
		The machine detects a lock signal error from the development puddle motor for 2 seconds after the drum motor has turned on.
		• Overload on the development puddle motor • Defective development puddle motor • Defective harness • Defective IOB

350	D	ID sensor pattern test error
		One of the following readings occurred 10 times in the ID sensor output when the ID sensor pattern was checked: 1) Vsp ≥ 2.5V 2) Vsg ≤ 2.5V 3) Vsp =0V 4) Vsg = 0V
		• ID sensor connector defective • Poor ID sensor connector connection • I/O board (IOB) defective • Poor writing of ID sensor pattern on the drum • High voltage supply board defective

351	D	ID sensor Vsg test error
		When the ID sensor was checked, the ID sensor output voltage is 5.0V while the LED current value is 0.
		• ID sensor defective or dirty • ID sensor connector defective • Poor ID sensor connection • I/O board (IOB) defective • Defect at the ID sensor pattern writing area of the drum

355	C	Grayscale measurement error
		When the grayscale control result is the maximum and it does not operate correctly and these cases are detected 15 times.
		• ID sensor defective or dirty • The life of ID sensor or photo conductor • Shield glass dirty

360	D	TD sensor (Vt) error 1
		The following condition occurs thirty times consecutively during printing. Vt is less than 0.5V or 4.8V or more

		• TD sensor disconnected • Harness between TD sensor and PCDU defective • Defective TD sensor.

372	D	TD sensor adjustment error
		Vts is less than 1.8V or 4.8V or more during TD sensor initialization.
		• Heat seal not removed from a new developer pack • TD harness sensor disconnected, loose or defective • TD sensor defective • Harness between TD sensor and drawer disconnected, defective

396	D	Drum motor error
		The machine detects a lock signal error from the drum motor for 2 seconds after the drum motor turned on.
		• Overload on the motor • Defective drum motor • Defective harness • Defective IOB

SC Tables: SC4xx

400	D	Vsg adjustment error
		Vsg is more than 4.2V or 3.8V or less when the machine adjusts Vsg value.
		• Dirty or defective ID sensor • Defective ID sensor shutter

440	D	Transfer belt bias error
		The feed back bias from the transfer belt is more than 4V for 60 msec while the transfer belt bias is output. The A/D conversion level is 20 or less for 60 msec. The PWM duty is 24% or more for 60 msec.
		• Power pack broken • Defective harness • Disconnected connector

441	D	Transfer/Development motor error
		The machine detects a lock signal error from the transfer/development motor for 2 seconds after the transfer/development motor turned on.
		• Overload on the motor • Defective transfer/development motor • Defective harness • Defective IOB

442	D	Transfer belt contact motor error
		The transfer belt HP sensor detects incorrect movement of the transfer belt after the transfer belt contact motor has turned on.
		• Dirty transfer belt HP sensor • Defective transfer belt contact motor • Disconnected connector of the transfer belt HP sensor or motor • Disconnected cable

		• Defective IOB

SC Tables: SC5xx -1

501	B	1st tray lift malfunction
		The tray lift sensor is not activated after the tray lift motor has been on for 10 seconds. If the main power switch is turned on when the paper is already at the feed height, the paper height position is detected again. At this time, the tray lift sensor should de-activate within 1.5 sec after the paper bottom plate starts to drop. If it does not deactivate within 1.5 sec., a message will prompt the user to reset Tray 1. After two attempts to release the error by re-setting the paper tray, if this does not solve the problem then this SC is displayed.
		• An obstruction (jammed paper, paper scraps, etc.) has blocked the motor drive and caused an overload. • Tray lift sensor connection loose, disconnected, or damaged • Tray lift sensor defective • Tray lift motor connection loose, disconnected, or damaged • Tray lift motor defective

502	B	2nd tray lift malfunction
		The tray lift sensor is not activated after the tray lift motor has been on for 10 seconds. If the main power switch is turned on when the paper is already at the feed height, the paper height position is detected again. At this time, the tray lift sensor should de-activate within 1.5 sec. after the paper bottom plate starts to drop. If it does not deactivate within 1.5 sec., a message will prompt the user to reset Tray 2. After two attempts to re-set the paper tray, if this does not solve the problem then this SC is displayed.
		• An obstruction (jammed paper, paper scraps, etc.) has blocked the motor drive and caused an overload. • Tray lift sensor connection loose, disconnected, or damaged • Tray lift sensor defective • Tray lift motor connection loose, disconnected, or damaged • Tray lift motor defective

503		3rd tray lift malfunction (optional paper feed unit or LCT)
-1	B	**For the paper feed unit:** • SC 503-01 occurs if the lift sensor does not turn on within 10 seconds after the tray lift motor has turned on.

		For the LCT: • SC 503-01 occurs if the lift sensor does not turn on or turn off within 8 seconds after the tray lift motor has turned on to lift or lower the tray.
		For the paper feed unit: • Defective tray lift motor or connector disconnection • Defective lift sensor or connector disconnection For the LCT: • Defective stack transport clutch or connector disconnection • Defective tray motor or connector disconnection • Defective end fence home position sensor or connector disconnection • Defective upper limit sensor or connector disconnection • Defective tray lift motor or connector disconnection
-2	B	This SC is generated if the following condition occurs 3 consecutive times. For the paper feed unit: • When the tray lowers, the tray lift sensor does not go off within 1.5 sec. For the LCT: • When the main switch is turned on or when the LCT is set, if the end fence is not in its position (home position sensor ON), the tray lift motor stops. • If the upper limit does not go off for 1.5 seconds even the tray lift motor turns on to lower the tray after the upper limit has been detected at power on.
		For the paper feed unit: • Defective tray lift motor or connector disconnection • Defective lift sensor or connector disconnection For the LCT: • Defective stack transport clutch or connector disconnection • Defective tray motor or connector disconnection • Defective end fence home position sensor or connector disconnection

504		4th tray lift malfunction (optional paper feed unit)
-1	B	For the paper feed unit: • When the tray lift motor turns on, the upper limit is not detected within 10 seconds. If this condition occurs three consecutive times, the SC is generated.
		For the paper feed unit:

		• Defective tray lift motor or connector disconnection • Defective lift sensor or connector disconnection
-2	B	**For the paper feed unit:** When the tray lift motor is turned on, the upper limit is not detected within 10 seconds. If this condition occurs three consecutive times, the SC is generated.
		• Defective tray lift motor or connector disconnection • Defective lift sensor or connector disconnection

505		5th tray lift malfunction (optional LCT)
-1	B	This SC is generated if the following condition occurs: • When the tray lift sensor of the LCT 1200-sheet does not go on after the tray lift motor has turned on to lift the paper tray. • When the tray lift sensor of the LCT 1200-sheet does not go off after the tray lift motor has turned on to lower the paper tray. • When the tray lift sensor of the LCT 1200-sheet does not go on after the pick-up roller solenoid has turned on at power on.
		• Tray lift motor defective or disconnected • Tray lift sensor defective or disconnected
-2	B	Both tray lift sensor and lower limit sensor are turned on at the same time when the main power is turned on or the right door is closed.
		• Tray lift motor defective or disconnected • Tray lift sensor defective or disconnected • Lowe limit sensor defective or disconnected

530	D	Fusing exhaust fan motor error
		The IOB does not receive the lock signal for10 seconds after turning on the fusing exhaust fan.
		• Defective fusing exhaust fan motor or connector disconnection • Defective IOB • Disconnected harness

531	D	Exhaust fan motor error

		The IOB does not receive the lock signal for 10 seconds after turning on the exhaust fan motor.
		• Defective exhaust fan motor or connector disconnection. • Defective IOB • Disconnected harness

532	D	Cooling fan motor error
		The machine does not detect the fan motor lock signal for 10 seconds after turning on the cooling fan motor.
		• Defective cooling fan motor or connector disconnection. • Disconnected harness • Defective IOB

533	D	Paper exit cooling fan motor error
		The machine does not detect the fan motor lock signal for 10 seconds after turning on the paper exit cooling fan motor.
		• Defective paper exit cooling fan motor or connector disconnection. • Defective IOB • Disconnected harness

540	D	Fusing motor error
		The IOB does not receive the lock signal for 2 seconds after turning on the fusing motor.
		• Motor overload • Defective fusing motor or connector disconnection. • Defective IOB • Disconnected harness

SC Tables: SC5xx -2

541	A	Fusing thermistor open (center)
		The thermistor (center) detects 0°C or less for 5 sec.
		• Fusing thermistor disconnected • Fusing thermistor connector defective

542	A	Fusing temperature warm-up error(center)
		This SC is generated if the following condition occurs: • The thermistor (center) does not detect an 8°C increment in the fusing temperature for 7.5 sec. just after the fusing temperature reached 45°C. • The temperature of the center thermistor does not reach the target temperature for 28 seconds after the fusing lamps turned on.
		• Thermistor warped or broken

543	A	Fusing overheat error 1 (software detection)
		A fusing temperature (at the center) of over 230°C (446°F) is detected for 1 second by the fusing thermistors at the center or at either end of the fusing roller.
		• Power supply unit defective • I/O board (IOB) defective • BICU defective • TRIAC short on PSU (PSU defective)

544	A	Fusing overheat error 1 (hardware detection)
		A fusing temperature (at the center) over 250°C is detected by the fusing temperature monitor circuit in the BICU board.
		• I/O board (IOB) defective • BICU defective

545	A	Fusing lamp consecutive full power 1

		After warm-up the fusing lamp remains at full power for 15 seconds without the hot roller rotating.
		• Disconnected or defective thermistors (center) • Defective fusing lamp

547	D	Zero cross error
		• The zero cross signal is detected three times even though the heater relay is off when turning on the main power. • The zero cross signal is not detected for 2 seconds even though the heater relay is on after turning on the main power or closing the front door. • The detection error occurs twice or more in the 11 zero cross signal detections. This error is defined when the detected zero cross signal is less than 45.
		• Defective fusing lamp relay • Defective fusing lamp relay circuit • Unstable power supply

551	A	Fusing thermistor open (end)
		The thermistor (end) detects 0°C or less for 5 sec.
		• Fusing thermistor (end) disconnected • Fusing thermistor (end) connector defective

552	A	Fusing temperature warm-up error (end)
		This SC is generated if the following condition occurs: • The thermistor (end) does not detect an 8°C increment in the fusing temperature for 7.5 sec. just after the fusing temperature reached 45°C. • The temperature of the end thermistor does not reach the target temperature for 31 seconds after the fusing lamps turned on.
		• Thermistor warped or broken

553	A	Fusing overheat error 1 (software detection)
		A fusing temperature (at the end) of over 230°C (446°F) is detected for 1 second by the fusing thermistors at the center or at either end of the fusing roller.

		• Power supply unit defective • I/O board (IOB) defective • BICU defective • TRIAC short on PSU (PSU defective)

554	A	Fusing overheat error 1 (hardware detection)
		A fusing temperature (at the end) over 250°C is detected by the fusing temperature monitor circuit in the BICU board.
		• I/O board (IOB) defective • BICU defective

555	A	Fusing lamp consecutive full power 1
		After warm-up, the fusing lamp remains at full power for 15 seconds without the hot roller rotating.
		• Disconnected or defective thermistors (ends) • Defective fusing lamp

557	C	Zero cross frequency error
		When the zero cross signal is 66 or more and it is detected 10 times or more in 11 detections, the machine determines that input 60 Hz and SC557 occurs.
		• Noise (High frequency)

559	A	Fusing unit jam
		The fusing sensor detected a fusing unit paper late jam three times. The paper was late and the fusing exit sensor could not detect the paper three times.
		• Remove the paper that is stopped in the fusing unit. • Check that the fusing unit is clean and has no obstacles in the paper feed path. • If the error persists, replace the fusing unit.

Important

- SC559 does not operate until SP1159 has been set to "1" (ON). This sets the machine to count the number of occurrences of paper late jams in the fusing unit. The default setting is "0" (OFF).

- SC559 is issued after the third occurrence of a paper late jam in the fusing unit. Once this SC has been issued, the machine cannot be used until the service technician removes the cause of the jam and restores it to normal operation.
- The jam counter is reset after a sheet of paper successfully passes the fusing exit sensor after the cause of the jam has been removed.

SC Tables: SC6xx

610	D	Mechanical counter error: BK
		This SC is only for NA models. The machine detects the mechanical counter error when SP5987-001 is set to "1".
		• Disconnected mechanical counter • Defective mechanical counter

621	D	Communication timeout error between IOB and finisher or mailbox
		A break (low) signal is received from the finisher or the mailbox.
		• Disconnected cable • Defective IOB • Defective main board in the peripherals

622	D	Paper feed unit communication error
		While the IOB communicates with a peripheral, an SC code is displayed if one of following conditions occurs. • The IOB receives the break signal which is generated by the peripheral only just after the main switch is turned on. • The IOB receives the break signal which is generated by URAT.
		• Defective main control board of the peripheral • Defective BCU or IOB • Disconnected peripheral

623	D	2nd Paper Bank communication error
		This SC is not issued for this machine. When a communication error signal between the 1st paper bank and 2nd paper bank is received.
		• Loose connector
		The accounting device sends the controller the report that indicates the battery voltage error has occurred.

		• Defective controller of the MF accounting device • Battery error

641	CTL B	BCU communication error
		The BCU does not respond to the frame transmitted from the controller.
		• Defective controller • Detective BCU

669	D	EEPROM error
		Retry of EEPROM communication fails three times after the machine has detected the EEPROM error.
		• Caused by noise

670	CTL D	Engine startup error
		The BCU fails to respond with the prescribed time when the machine is turned on.
		• Connections between BCU and controller board are loose, disconnected, or damaged 1. Replace the BCU 2. Replace the controller board

671	CTL D	BCU error
		The model code from the BCU is not correct when the machine is turned on.
		Install the correct BCU for this model.

687	D	Memory address (PER) command error
		The BCU does not receive a memory address command from the controller for the prescribed time after the paper has reached the registration sensor.
		• Harness Disconnection at BCU • Controller board loose or broken • Defective BCU • Defective Controller Board

SC Tables: SC7xx

721	B	Finisher jogger motor error
		The jogger fences move out of the home position but the HP sensor output does not change within the specified number of pulses. The 1st failure issues an original jam message, and the 2nd failure issues this SC code.
		• Jogger HP sensor disconnected, defective • Jogger motor disconnected, defective • Jogger motor overloaded due to obstruction • Finisher main board and jogger motor

723	B	Stack feed-out motor error
		• The stack feed-out HP sensor does not detect the home position of the stack feed-out belt 3000ms after the stack feed-out belt has moved to its home position. • The stack feed-out HP sensor does not turn off 200 ms after the stack feed-out belt has moved from its home position. The 1st detection failure causes a jam error, and the 2nd failure causes this SC code.
		• Defective stack feed-out HP sensor • Overload on the stack feed-out motor • Defective stack feed-out motor • Defective main board • Disconnected or defective harness

725	B	Finisher exit guide plate motor error
		After moving away from the guide plate position sensor, the exit guide is not detected at the home position within the prescribed time. The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.
		• Guide plate motor disconnected, defective • Guide plate motor overloaded due to obstruction • Guide plate position sensor disconnected, defective

726	B	Shift jogger motor 1 error

		The side fence does not retract within the prescribed time after the shift jogger motor 1 switches on. The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.
		• Shift jogger motor 1 disconnected, defective • Shift jogger motor 1 overloaded due to obstruction • Shift jogger 1 HP sensor disconnected, defective

727	B	Shift jogger motor 2 error
		The side fence does not retract within the prescribed time after the shift jogger motor 2 switches on. The 1st detection failure issues a jam error, and the 2nd failure issues this SC code.
		• Shift jogger motor 2 disconnected, defective • Shift jogger motor 2 overloaded due to obstruction • Shift jogger 2 HP sensor disconnected, defective

728	B	Shift jogger retraction motor error
		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.
		• Shift jogger retraction motor broken • Shift jogger retraction motor connection loose • Shift jogger retraction motor overloaded • Defective shift jogger retraction HP sensor

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

740	B	Finisher corner stapler motor error
		The 1st detection failure causes a jam error, and the 2nd failure causes this SC code. **For the 3000-sheet finisher** • Staple movement is not finished after a certain time. **For the 1000-sheet finisher** • The stapler motor does not switch off within the prescribed time after operating. • The HP sensor of the staple unit does not detect the home position after the staple unit moves to its home position. • The HP sensor of the staple unit detects the home position after the staple unit moves from its home position.
		• Staple jam • Motor overload • Defective stapler motor

741	B	Finisher corner stapler rotation motor error
		The stapler does not return to its home position within the specified time after stapling. The 1st detection failure causes a jam error, and the 2nd failure causes this SC code.
		• Defective stapler rotation motor • Overload to the stapler rotation motor • Defective stapler rotation HP sensor

742	B	Finisher stapler movement motor error
		Staple movement is not finished within a certain time. The 1st detection failure causes a jam error, and the 2nd failure causes this SC code.
		• Motor overload • Loose connection of the stapler home position sensor • Loose connection of the stapler movement motor • Defective stapler home position sensor • Defective stapler movement motor

750	B	1000/3000-sheet finisher: Tray lift motor error
		The 1st detection failure causes a jam error, and the 2nd failure causes this SC code.

		The upper tray paper height sensor does not change its status with the specified time after the tray raises or lowers.

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

760	B	Finisher punch motor error
		The punch HP sensor is not activated within the specified time after the punch motor turned on. The 1st detection failure causes a jam error, and the 2nd failure causes this SC code.
		• Punch HP sensor disconnected, defective • Punch motor disconnected or defective • Punch motor overload due to obstruction

763	B	Punch movement motor error
		The punch unit moves but is not detected at the home position within the specified time. The 1st detection failure causes a jam error, and the 2nd failure causes this SC code.
		• Motor harness disconnected, loose, defective • Defective motor

764	B	Paper position sensor slide motor error
		The paper position sensor moves but is not detected at the home position within the specified time. The 1st detection failure causes a jam error, and the 2nd failure causes this SC code.
		• Motor harness disconnected, loose, defective • Defective motor

791	D	Bridge unit error

		The machine recognizes the finisher, but does not recognize the bridge unit.
		• Defective connector • Broken harness

792	B	Finisher error
		The machine does not recognize the finisher, but recognizes the bridge unit.
		• Defective connector • Defective harness • Incorrect installation

SC Tables: SC8xx -1

817	CTL D	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

819	CTL C	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.	
		0x696e	init died
		0x766d	vm_pageout: VM is full
		4361	Cache Error
		Other	
		• System program defective • Controller board defective • Optional board defective • Replace controller firmware	

Note

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

821	CTL D	Self-diagnostics error: ASIC [XXXX]: Detailed error code
[0B06]		ASIC detection error
		The I/O ASIC for system control is not detected.
		• Defective ASIC • Defective North Bridge and PCI I/F

821	CTL D	Self-diagnostics error: ASIC [XXXX]: Detailed error code
		Replace the controller board.

Note

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

822	CTL B	Self-diagnostic error: HDD
[3003]		Check performed only 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.
		• 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

824	CTL D	Self-diagnostic error : NVRAM
		NVRAM device does not exist, NVRAM device is damaged, or NVRAM socket damaged.
		• NVRAM defective • Controller board defective • NVRAM backup battery exhausted • NVRAM socket damaged

839	CTL C	USB NAND Flash ROM error
	[9101]	The ID of the USB NAND Flash ROM cannot be read.
		• Defective controller board
	[9110]	The USB NAND Flash ROM controller is disconnected.

839	CTL C	USB NAND Flash ROM error
		• Defective controller baord

851	CTL B	IEEE 1394 I/F error
		Driver setting incorrect and cannot be used by the 1394 I/F.
		Not supported by this machine • NIB (PHY), LINK module defective; change the Interface Board • Controller board defective

853	CTL 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 (Bluetooth).
		• Wireless LAN card missing (was removed)

854	CTL 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 (Bluetooth).
		• Wireless LAN card missing (was removed)

855	CTL B	Wireless LAN error 3
		An error is detected on the wireless LAN card (802.11a/g, g or Bluetooth).
		• Wireless LAN card defective • Wireless LAN card connection incorrect

856	CTL B	Wireless LAN error 4
		An error was detected on the wireless LAN card (Bluetooth).
		• Wireless LAN card defective • PCI connector (to the mother board) loose

857	CTL B	USB I/F Error

		The USB driver is not stable and caused an error.
		- Bad USB card connection Replace the controller board

858	CTL C	HDD Encryption unit error 1
		A serious error occurs when data is encrypted to update an encryption key with the HDD encryption unit.
	[0]	Encryption key acquisition error: The controller fails to get a new encryption key.
		- Defective controller board Replace the controller board.
	[1]	Encryption key setting for HDD error: The controller fails to copy a new encryption key to the HDD.
		- Defective SATA chip on the controller board Replace the controller board.
	[2]	NVRAM data encryption error 1: An error occurs while the NVRAM data is encrypted.
		- Defective NVRAM on the controller board Replace the NVRAM.
	[30]	NVRAM data encryption error 2: An error occurs before the NVRAM data is encrypted.
		- Defective controller board Replace the controller board.
	[31]	Other error: A serious error occurs while the data is encrypted.
		- Same as SC991

859	CTL C	HDD Encryption unit error 2
		A serious error occurs when the HDD data is encrypted to update an encryption key with the HDD encryption unit.
	[8]	HDD check error: The HDD is not correctly installed.
		• No HDD installed • Unformatted HDD • The encryption key on the controller is different from the one on the HDD 1. Install the HDD correctly. 2. Initialize the HDD.
	[9]	Power failure during the data encryption: The data encryption (NVRAM and HDD) has not been completed.
		• Power failure during the data encryption Initialize the HDD.
	[10]	Data read/write error: The DMAC error is detected twice or more.
		• Same as SC863

SC Tables: SC8xx -2

860	CTL B	HDD startup error at main power on
		• HDD is connected but a driver error is detected. • The driver does not respond with the HDD within 30 s.
		• HDD is not initialized • Label data is corrupted • Defective HDD Initialize the HDD with SP5832-001.

861	CTL D	HDD re-try failure
		At power on, the HDD is detected. Power supply to the HDD is interrupted after the system has entered the energy save mode, but after the HDD has been awakened from the energy save mode, it does not return to the ready status within 30 sec.
		• Harness between HDD and controller board disconnected, defective • HDD power connector disconnected • HDD defective • Controller board defective

863	CTL 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	CTL D	HDD data CRC error
		During HDD operation, the HDD cannot respond to a CRC error query. Data transfer does not execute normally while data is being written to the HDD.
		• HDD defective

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

SC866
RTB 11

866	CTL B	SD 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	CTL D	SD card error 2: SD card removed
		The SD card in the slot is removed while the machine is on.
		Insert the SD card, then turn the machine off and on.

868	CTL D	SD card error 3: SC card access
		An error occurs while an SD card is 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	CTL B	Address book data error
		The address book data cannot be read from the HDD, SD card or flash ROM on the controller 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 SP5846-046 (Initialize All Setting & Addr Book) to reset all address book data. - Reset the user information with SP5832-001 (HDD – Formatting (All)). - Replace the HDDs.

872	CTL B	HDD mail receive data error
		- The machine detects that the HDD is not operating correctly at power on. - The machine detects that the HDD is not operating correctly (can neither read nor write) while processing incoming email.
		- HDD defective - The machine is turned off while the HDD is being accessed. Do SP5832-001 to format the all data on the HDD.

873	CTL B	HDD mail send data error
		An error is detected on the HDD immediately after the machine has been turned on, or power has been turned off while the machine has used the HDD.
		1. Do SP5832-001 (HDD – Formatting (All)) to initialize the HDD. 2. Replace the HDD

874	CTL D	Delete All error 1: HDD
		A data error is detected for the HDD/NVRAM after the Delete All option has been used. **Note:** The source of this error is the DataOverwriteSecurity Unit (M345) running from an SD card.
		1. Turn the main switch off/on and try the operation again. 2. Install the DataOverwriteSecurity Unit again. For more, see "Installation". 3. HDD defective

875	CTL D	Delete All error 2: Data area
		An error occurs while the machine deletes data from the HDD.

		Note: The source of this error is the DataOverwriteSecurity Unit (M345) running from an SD card.
		Turn the main switch off/on and try the operation again

876	CTLD	Log Data Error
		An error is detected in the handling of the log data at power on or during machine operation. This can be caused by switching the machine off while it is operating.
-001		Log Data Error 1
		• Damaged log data file in the HDD
		Initialize the HDD with SP5832-001.
-002		Log Data Error 2
		• HDD encryption unit not installed
		1. Ask the customer's administrator to disable the HDD encryption setting with a user tool. 2. Install the HDD encryption unit.
-003		Log Data Error 3
		• Invalid log encryption key due to defective NVRAM data
		1. Initialize the HDD with SP5832-001. 2. Ask the customer's administrator to disable the HDD encryption setting with a user tool.
-004		Log Data Error 4
		• Unusual HDD encryption function due to defective NVRAM data
		Initialize the HDD with SP5832-001.
-005		Log Data Error 5
		• Installed a NVRAM or HDD which was used in another machine
		1. Reinstall the previous NVRAM or HDD. 2. Initialize the HDD with SP5832-001.
-099		Log Data Error 99

876	CTL D	Log Data Error
		An error is detected in the handling of the log data at power on or during machine operation. This can be caused by switching the machine off while it is operating.
		• Other than the above causes
		Ask your supervisor.

877	CTL B	HDD DataOverwriteSecurity SD card error
		The 'all delete' function cannot be executed but the DataOverwriteSecurity Unit (M345) is installed and activated.
		• Defective SD card (M345) • SD card (M345) not installed
		1. Replace the NVRAM and then install the new SD card (M345). 2. Check and reinstall the SD card (M345).

878	CTL D	TPM system authentication error
		The system firmware is not authenticated by TPM (security chip).
		• Incorrect updating for the system firmware • Defective flash ROM on the controller board Replace the controller board.

SC Tables: SC9xx

900	CTL D	Electrical total counter error
		The total counter contains something that is not a number.
		• NVRAM incorrect type • NVRAM defective • NVRAM data scrambled • Unexpected error from external source

920	CTL B	Printer error 1
		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	CTL D	Printer font error
		A necessary font is not found in the SD card.
		• A necessary font is not found in the SD card. • The SD card data is corrupted.

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

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.

Note

- 1) is the recommended method, because another SC could write over the information for the previous SC.

992	CTL D	Undefined error
		Defective software program
		• An error undetectable by any other SC code occurred

998	CTL D	Software Error 4: Application cannot start
		Register processing does not operate for an application within 60 s after the machine power is turned on. No applications start correctly, and all end abnormally.
		• Software bug • A RAM or DIMM option necessary for the application is not installed or not installed correctly.

Electrical Component Defects

Sensors

Component (Symbol)	CN	Condition	Symptom
Fusing Entrance (S8)	208-8 (IOB)	Open	CPU cannot detect paper even if a sheet of paper remains at the fusing unit.
		Shorted	CPU detects paper even if a sheet of paper does not remain at the fusing unit.
ID (Image Density) (S9)	208-11 (IOB)	Open	SC350 is displayed after printing.
		Shorted	SC351 is displayed after printing.
Web End (S10)	208-16 (IOB)	Open	CPU detects web end even if the web is not used up.
		Shorted	CPU cannot detect web end even if the web is used up.
TD (Toner Density) (S11)	213-14 (IOB)	Open	The add toner indicator blinks even if there is toner in the development unit.
		Shorted	SC390 is displayed.
Toner Overflow (S13)	217-B15 (IOB)	Open	CPU cannot detect toner overflow even if the waste toner bottle in the transfer belt unit is full.
		Shorted	CPU detects toner overflow even if the waste toner bottle in the transfer belt unit is not full.
Duplex Entrance (S14)	217-A8 (IOB)	Open	Jam Z (Jam 26/27)
		Shorted	Jam Z (Jam 1)
Duplex Cover (S15)	217-A11 (IOB)	Open	"Open Cover" is displayed
		Shorted	"Open cover" cannot be detected.
Duplex Exit (S16)	217-A14 (IOB)	Open	Jam Z (Jam 25)
		Shorted	Jam Z (Jam 1)

Component (Symbol)	CN	Condition	Symptom
By-pass Paper End (S17)	217-B3 (IOB)	Open	The Paper End indicator lights even if paper is placed on the by-pass tray.
		Shorted	The Paper End indicator does not light even if there is no paper on the by-pass tray.
By-pass Paper Size (S18)	217-B9, 10,12,13 (IOB)	Open	Paper size error
		Shorted	
Paper Feed 1 (S9)	216-A4 (IOB)	Open/ Shorted	No symptom, but this may cause Jam A (Jam 11) and some pieces of paper are remaining at the paper feed unit when tray 1 is opened.
Relay 1 (S20)	216-A7 (IOB)	Open	Jam A (Jam 3, 11)
		Shorted	Jam A, B (Jam 1)
Paper End 1 (S21)	216-A10 (IOB)	Open	The Paper End indicator lights even if paper is placed in paper tray 1.
		Shorted	The Paper End indicator does not light even if there is no paper in paper tray 1.
Tray Lift 1 (S22)	216-A13 (IOB)	Open/ Shorted	SC501 is displayed.
Paper Feed 2 (S23)	216-B4 (IOB)	Open/ Shorted	No symptom, but this may cause Jam A (Jam 12) and some pieces of paper are remaining at the paper feed unit when tray 2 is opened.
Relay 2 (S24)	216-B7 (IOB)	Open	Jam A (Jam 3, 11)
		Shorted	Jam A, B (Jam 1)
Paper End 2 (S25)	216-B10 (IOB)	Open	The Paper End indicator lights even if paper is placed in paper tray 2.
		Shorted	The Paper End indicator does not light even if there is no paper in paper tray 2.
Tray Lift 2 (S26)	216-B13 (IOB)	Open/	SC502 is displayed.

Component (Symbol)	CN	Condition	Symptom
		Shorted	
Registration (S27)	209-2 (IOB)	Open	Jam A (Jam 8, 17)
		Shorted	Jam A, B (Jam 1)
Paper Size 1 (S28)	209-4,5,6, 8 (IOB)	Open/ Shorted	Paper size error in tray 1
Paper Size 2 (S29)	209-9,10,1 1,13 (IOB)	Open/ Shorted	Paper size error in tray 2
Lower Paper Height 1 (S30)	210-4 (IOB)	Open/ Shorted	Remaining paper volume in tray 2 on the LCD is wrong.
Lower Paper Height 2 (S31)	210-7 (IOB)	Open/ Shorted	
Upper Paper Height 1 (S32)	210-12 (IOB)	Open/ Shorted	Remaining paper volume in tray 1 on the LCD is wrong.
Upper Paper Height 2 (S33)	210-15 (IOB)	Open/ Shorted	
Junction Jam (S34)	221-A10 (IOB)	Open/ Shorted	Jam C (Jam 24/64)
Paper Exit (S35)	221-B2 (IOB)	Open	Jam C (Jam 20)
		Shorted	Jam C (Jam 1)
Fusing Exit	221-B5	Open	Jam C (Jam 19)
		Shorted	Jam C (Jam 1)
Paper Overflow	221-B8	Open	Paper overflow message is not displayed when a paper overflow condition exists.
		Shorted	Paper overflow message is displayed when a paper overflow condition does not exist.

Switches

Component (Symbol)	CN	Condition	Symptom
Main Power (SW1)	903-1,2 (PSU)	Open	The machine does not turn on.
		Shorted	The machine does not turn off.
Interlock 1 (SW2)	913-1 (PSU)	Open	"Doors/Covers Open" is displayed even if the front or right door is closed.
		Shorted	The LCD goes blank when the front or right door is opened.
Interlock 2 (SW3)	913-2 (PSU)	Open	"Open Cover" is displayed even if the front or right door is closed.
		Shorted	The LCD goes blank when the front or right door is opened.
Right Door (SW4)	221-B10 (IOB)	Open	"Open Cover" is displayed even if the right door is closed.
		Shorted	The LCD goes blank when the right door is opened.

Blown Fuse Conditions

Fuse	Rating		Symptom at power on
	115V	210 to 230V	
Power Supply Board			
FU21	6.3A / 125V	6.3A / 250V	SC 533 (Power to IOB)
FU23	10A / 125V	10A / 250V	"Open Cover" is displayed. (Power to Interlock Switch)
FU24	10A / 125V	10A / 250V	"Open Cover" is displayed. (Power to Interlock Switch)
FU25	6.3A / 125V	6.3A / 250V	Alert LED turns on and operation panel does not turn on. (Power to MB)
FU26	6.3A / 125V	6.3A / 250V	The stack of paper in the optional paper feed unit or LCT is not detected. SC 503 is issued after opening and closing the tray 3 or 4. (Power to optional PFU or LCT)
FU27	6.3A / 250V	6.3 A/ 250V	The machine does not detect a finisher. (Power to optional Finisher)
FU101	15A / 125V	8A / 250V	No response
FU102	12A / 125V	4A / 250V	No response

5. Service Tables

Service Program Mode Operation

General Notes

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

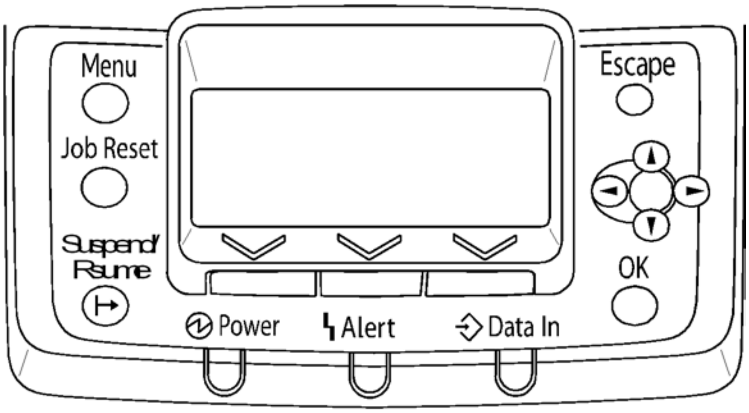
⚠CAUTION

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

Note

- The main power LED lights or flashes while the main machine is communicating with the network server, or while the machine is accessing the hard disk or memory for reading or writing data.

Entering and Leaving the Service Program Mode



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To set the printer in the service mode:

If the printer is "OFF":

1. Press and hold down [Online] and [Escape], and then switch the printer on.
2. Release the buttons when you see “1. Service” in the LCD.

-or-

If the printer is "ON":

1. Press and hold down △ and ▽ for over 5 seconds and release.
2. Press [#Enter]. You will see "1. Service" in the LCD. The printer is in the service mode.

Accessing the Required Program

- Use the "Up/Down arrow" keys to scroll through the menu listing.

  1. Service: Controller service modes

  2. Engine: Engine service modes

  3. End: Exit service mode
- To select an item, press the "OK" key. Then the sub-menu appears.
- Scroll through the sub menu items using the "◀ ▶" keys.
- To go back to a higher level, press the "Escape" key.

Inputting a Value or Setting for a Service Program

Enter the required program mode as explained above. The setting appearing on the display is the current setting.

- Select the required setting using the "◀ ▶" keys, then press the "OK" key. The previous value remains if the "OK" key is not pressed.

Exiting Service Mode

Select "End" from the service mode main menu, then press the "OK" key.

Note

- To make the settings effective, turn the main switch off and on after exiting service mode.

Service Program Mode Tables

Please note these general changes in this section:

- Group 8 (Data Log 2) is a new group of counters.
- Along with the addition of Group 8, many of the Group 7 counters have been removed.

Service Table Key

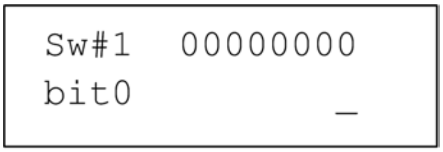
Notation	What it means

[range / **default** / step]	Example: [-9 to +9 / **0** / 0.1 mm step]. The setting can be adjusted in the range ±9, value reset to +3.0 after an NVRAM reset, and the value can be changed in 0.1 mm steps with each key press.
*	Value stored in NVRAM. After a RAM reset, this default value (factory setting) is restored.
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.
SSP	This denotes a “Special Service Program” mode.

Bit Switch Programming

Do not change the bit switches unless you are told to do this by the manufacturer.

1. Start the SP mode. Select the “Service” menu with "▲/▼" keys.
2. Press the "OK" key three times.
3. To select a bit switch, press the "◀/▶" keys.
4. Push the OK key.
5. Set the value with these keys:
    - [Left] [Right]: Moves the cursor to one of the adjacent bits.
    - [Up] [Down]: Changes a bit between "0" and "1".
    - [Escape]: Goes out of the program without saving changes.
    - [OK]: Goes out of the program and saves changes.



```
Sw#1  00000000
bit0         _
```

g133s502

6. Push the "Escape" key one or more times until the menu “SP mode (Service)” is shown.
7. Select “End” and push the OK key.

Controller Service Mode

Controller Service Mode

1001	[Bit Switch]		
1001 001	Bit Switch 1	*CTL	Adjusts bit switch settings. **DFU**
1001 002	Bit Switch 2	*CTL	Bit 0 to 2: Not used. Do not change the settings. Bit 3: Changing the print language (PCL <-> PS) • 0: Enabled • 1: Disabled (No change) Bit 4 to 7: Not used. Do not change the settings.
1001 003	Bit Switch 3	*CTL	Bit 0: PostScript3 Euro glyph • 0: Disabled • 1: Enabled (Even if there is no Euro Glyph in the ROM, it is possible to load the Euro Glyph data.) Bit 1: Not used. Do not change the setting. Bit 2:PCL5e/5c (HP4000/HP8000) The left space command is set to "0", the machine is changed to "1" • 0: Disabled • 1: Enabled Bit 3: PCL5e/GL2: pen # of PW • 0: Normal • 1: Patch Bit 4: Tray selecting • 0: Ricoh GW products (If a tray is selected using PCL5e commands and it has paper, GW products go to alert status and wait for the user to take action.) • 1: HP/SV products (If a tray is selected using PCL5e commands and it has paper, HP/SV products search for another tray that has the same paper size/type.)

			Bit 5 to 7: Not used. Do not change the settings.
1001 004	Bit Switch 4	*CTL	Adjusts bit switch settings. **DFU**
1001 005	Bit Switch 5	*CTL	Bit 0 to 2: Not used. Do not change the settings. Bit 3: Enables the "%%" command of the PostScript detection condition for the auto print language selection function. • 0: Enabled • 1: Disabled Bit 4 to 7: Not used. Do not change the settings.
1001 006	Bit Switch 6	*CTL	Adjusts bit switch settings. **DFU**
1001 007	Bit Switch 7	*CTL	
1001 008	Bit Switch 8	*CTL	

RTB 23
Bit switch
added

1003	**[Clear Setting]**		
1003 001	Initialize System	-	Initializes settings in the System menu of the user mode.
1003 003	Delete Program	-	**DFU**

1004	**[Print Summary]**		
1004 001	Service Summary	-	Prints the service summary sheet (a summary of all the controller settings).

1005	**[Display Version]**		
1005 001	Printer Version	-	Displays the version of the controller firmware.

1007	**[Supply Display]**		
	Enables or disables the display for information on each consumable supply.		
1007 001	Development	*CTL	[0 or 1 / 1 / 1 /step] 0: OFF, 1: ON
1007 002	PCU	*CTL	
1007 003	Transfer	*CTL	

1007 004	Int. Transfer	*CTL	
1007 005	Transfer Roller	*CTL	
1007 006	Fuser	*CTL	
1007 007	Fuser Oil	*CTL	

Engine SP1-xxx: Feed-1

1001*	Leading Edge Registration:	
	Adjusts the leading edge registration by changing the registration clutch operation timing.	
001	Tray: Plain	[–9 to 9/ **0** / 0.1 mm step]
002	Tray: Thick 1	
003	Tray: Thick 2	
004	By-pass: Plain	
005	By-pass: Thick 1	
006	By-pass: Thick 2	
007	Duplex: Plain	
008	Duplex: Thick 1	

1002*	Side-to-Side Registration	
	Adjusts the side to side registration by changing the laser main scan start position for each mode.	
001	By-pass	[–4 to 4/ **0** / 0.1 mm step]
002	Tray 1	
003	Tray 2	
004	Tray 3	
005	Tray 4	
006	LCT	
007	Duplex	

1003*	Registration Buckle Adjustment	
	Adjusts the paper feed motor timing. Paper feed motor timing determines the amount of paper buckle at Registration. (A "+" setting causes more buckling.)	
001	Tray 1: Plain	[-9 to 5 / **-4** / 1 mm step]

002	Tray 1: Thick 1	
003	Tray 1: Thick 2	
004	Tray 2, 3, 4: Plain	
005	Tray 2, 3, 4: Thick1	
006	Tray 2, 3, 4: Thick2	
007	By-pass: Plain	[-9 to 5 / **-2** /1 mm step]
008	By-pass: Thick 1	
009	By-pass: Thick 2	
010	Duplex: Plain	[-9 to 5 / **-4** / 1 mm step]
011	Duplex: Thick 1	[-9 to 5 / **-3** / 1 mm step]
012	LCT: Plain	[-9 to 5 / **-4** / 1 mm step]
013	LCT: Thick1	
014	LCT: Thick2	

1007*	By-pass P - Size Det	
	Controls paper size detection for the by-pass feed table.	
1007 1	Detection Timing	[-15 to 15 / **0** / 5 mm step]
1007 2	LG Detection	[0 to 1 / **0** / 1] 0: LT SEF, 1: LG

1103*	Fusing Idling	
	Switches fusing idling on/off. When on, printing will not start until enough time has elapsed so the hot roller can reach optimum temperature. This ensures even heat on the hot roller. Switch on if fusing on the 1st and 2nd prints is incomplete (this may occur if the room is cold.). You must switch SP1103-1 ON before you set the fusing interval with SP1103-2.	
001	Enable Fusing Idling	**0 = Off**, 1 = On
002	Interval	[0 to 60 / **30** / 1 sec.]

003	Idl Time at Every Job	Sets the machine to fusing idling only for 30 sec. for every job (when the original is set on the ARDF, when the ARDF cover is opened, etc.) and the fusing unit has reached the reload temperature (optimum temperature for operation). [0 to 30 / **0** / 1 sec.] 0: No idling done before a job.

1104*	Fusing Temp. Cont
	On-Off/Phase
	Selects the fusing temperature control method. After changing this setting, be sure to turn the machine off and on again with the main power switch to enable the new setting. [0 to 1 / **0** / 1] 0: Normal (ON/OFF control). Allows full application from ac power supply to bring the hot roller up to the target fusing temperature then shuts off. Determines the on-time from the present temperature (detected by the thermistor on the hot roller) and the temperature of 1 cycle before. 1: Phase (hysterisis) control. Sets the upper and lower limits for the temperature; at the lower temperature the fusing lamp is on and at the higher temperature the fusing lamp is off. Change this setting to "0" only if the user has excessive electrical noise or interference on the power supply line. Such interference can cause voltage to drop when power is applied using the ON/OFF control method. Interference can be caused by the general poor quality of the power supply lines, or if the machine is sharing a power supply with other electrical devices such as fluorescent lights. Before changing this setting, make sure that the machine is connected to a power supply not shared by other electrical equipment. **Note** • Selecting Phase control ("1") could cause the fusing temperature control board to emit low pitched noise

1105*	Fusing Temp.Cont
	Allows adjustment of the hot roller temperature at the center and ends of the roller for the quality or thickness of the paper. The hot roller in this machine has two fusing lamps: one heats the center of the roller, the other heats both ends. Each fusing lamp can be adjusted separately.

	The "re-load temperature" is the "print ready temperature". When the fusing temperature exceeds this setting, the machine can operate. Do not set up a re-load temperature (Re-load Temp. = Fusing. Temp – SP Value.) that is higher than the SP1-105-2 setting.	
001	Center	[100 to 170 / **150** / 1 deg]
	Adjusts the fusing temperature at the center of the hot roller.	
002	Ends	[100 to 170 / **155** / 1 deg]
	Adjusts the fusing temperature at the ends of the hot roller.	
003	Re-load Temp. Cent	[0 to 60 / **0** / 1 deg]
	Sets the reload temperature for the center of the hot roller. This setting depends on the target temperature. Reload temp. = Target Temp – This SP Setting **Note** • Do not set a temperature that is higher than the setting for SP1105 1 (Roller Center: Trays)	
004	Re-load Temp. Ends	[0 to 60 / **0** / 1 deg]
	Sets the reload temperature for the ends of the hot roller. This setting depends on the target temperature. Reload temp. = Target Temp – This SP Setting **Note** • Do not set a temperature that is higher than the setting for SP1105 2 (Roller Ends: Trays)	
005 to 022	The following SPs adjust the fusing temperature at the center or ends of the hot roller for each paper type.	
005	Center: M-Thick	[100 to 170 / **155** / 1 deg]
006	Ends: M-Thick	[100 to 170 / **160** / 1 deg]
007	Center: Thick 1	[100 to 170 / **130** / 1 deg]
008	Ends: Thick 1	
009	Center: Thick 2	[100 to 170 / **150**/ 1 deg]
010	Ends: Thick 2	
011	Center: Thin	[100 to 170 / **140** / 1 deg]

012	Ends: Thin	[100 to 170 / **145** / 1 deg]
013	Center: OHP: Plain	[100 to 170 / **150**/ 1 deg]
014	Ends: OHP: Plain	[100 to 170 / **155**/ 1 deg]
015	Center: OHP: Thick	
016	Ends: OHP: Thick	[100 to 170 / **160**/ 1 deg]
017	Center: Special 1	[100 to 170 / **150** / 1 deg]
018	Ends: Special 1	[100 to 170 / **155** / 1 deg]
019	Center: Special 2	[100 to 170 / **150** / 1 deg]
020	Ends: Special 2	[100 to 170 / **155** / 1 deg]
021	Center: Special 3	[100 to 170 / **150** / 1 deg]
022	Ends: Special 3	[100 to 170 / **155** / 1 deg]
023	Feed Waiting: Plain	Turns the feed waiting mode on or off for each paper type. [0 to 1 / **0** / 1] 0=Off, 1=On The paper waits at the registration roller until the fusing temperature reaches the prescribed temperature (adjustable with SP1105-028 to -37). If you enable this feature, also set SP 1105-38 to a convenient value for the customer.
024	Feed Waiting: M-Thick	
025	Feed Waiting: Thick 1	
026	Feed Waiting: Thick 2	
027	Feed Waiting: Thin	
028	Wait: Cent: Plain	Adjusts the offset value for each re-load temperature to exit the feed waiting mode. [0 to 60 / **0** / 1 deg]
029	Wait: Ends: Plain	
030	Wait: C: M-Thick	
031	Wait: E: M-Thick	
032	Wait: C: Thick 1	
033	Wait: E: Thick 1	
034	Wait: Center Minus: Thick 2	

035	Wait: Ends Minus: Thick 2	
036	Wait: Center Minus: Thin	
037	Wait: Ends Minus: Thin	
038	Waiting: Maximum Time	Sets the maximum feed waiting time. [0 to 30 / **0** / 1 sec] The paper is fed when the time specified with this SP has passed even though the fusing temperature has not reached the prescribed temperature. 0: Disabled.

1106	Fusing Temp. Displ	
001	Roller Center	Displays the temperature of the fusing unit. [-20 to 250 / **0** / 1 deg]
002	Roller Ends	
003	Mc Inside at P. On	Displays the temperature inside the machine. [-20 to 250 / **0** / 1 deg]
004	Machine Inside	

1109*	Fusing Nip Band Ck	
	Checks the fusing nip band.	
001	Execution	
002	Idl. Rotat. Time	[0 to 120 / **60** / 1 sec]
	Specifies the fusing rotation time before executing SP1109-001.	
003	Pre-Idling Time	[5 to 30 / **10** / 1 sec]
	Specifies the time that the paper stops in the fusing unit for measuring the nip.	

1159	Fusing Jam Detect
	SC Display
	[0 to 1 / **0** / 1] 0:OFF, 1:ON This SP setting determines whether SC559 is issued after three paper late jams occur in the fusing unit. After this SP code is turned on, a counter monitors the number of paper

	late jams that occur in the fusing unit. After the 3rd occurrence of a fusing jam, SC559 is issued and the machine cannot be used until the service technician releases the error. **Note** • Switching the machine off/on does not reset this jam counter. The counter is reset after the cause of the jam has been removed and a sheet of paper successfully passes the fusing exit sensor.

SP1-xxx: Feed-2

1801*	Motor Speed Adj.	
	Adjusts the speeds of each motor. Each step decreases or increases motor speed in 0.05% increments Regist: Registration motor, Feed: Feed motor, Duplex: Duplex/By-pass motor, Inverter: Duplex inverter motor, Exit: Paper exit motor, Bridge: Bridge unit drive motor, OpcMot: Drum motor, TransferMot: Transfer/Development Motor, FusingMot: Fusing motor, DevPuddleMot: Development Paddle motor	
001	Regist: 90: Thick 2	[-2 to 2 / **0.4** / 0.05 %]
002	Regist: 154: Thick 1	
003	Regist: 180: Plain	
004	Regist: 230: Plain	
005	Feed: 90: Thick 2	
006	Feed: 154: Thick 1	
007	Feed: 180: Plain	[-2 to 2 / **-1** / 0.05 %]
008	Feed: 230: Plain	
009	Dup. CW: 90: Thick 2	[-4 to 4 / **0.4** / 0.1 %]
010	Dup. CW: 154: Thick 1	
011	Dup. CW: 180: Plain	[-4 to 4 / **2.3** / 0.1 %]
012	Dup. CW: 230: Plain	[-4 to 4 / **0.4** / 0.1 %]
013	Dup. CCW: 90: Thick 2	
014	Dup. CCW: 154: Thick 1	
015	Dup. CCW: 180: Plain	[-4 to 4 / **2.3** / 0.1 %]
016	Dup. CCW: 230: Plain	[-4 to 4 / **2.3** / 0.1 %]
017	Inv. CW: 90: Thick 2	[-4 to 4 / **0** / 0.1 %]

018	Inv. CW: 154: Thick 1	
019	Inv. CW: 180: Plain	
020	Inv. CW: 230: Plain	
021	Inv. CCW: 90: Thick 2	
022	Inv. CCW: 154: Thick 1	
023	Inv. CCW: 180: Plain	
024	Inv. CW: 230: Plain	
025	Exit CW: 90: Thick 2	
026	Exit CW: 154: Thick 1	
027	Exit CW: 180: Plain	
028	Exit CW: 230: Plain	
029	Bridge: 90: Thick 2	
030	Bridge: 154: Thick 1	
031	Bridge: 180: Plain	
032	Bridge: 230: Plain	
033	OpcMot:90	[-4 to 4 / 0 / 0.01 %]
034	OpcMot:154	
035	OpcMot:180	
036	OpcMot:230	
037	TransferMot:90	
038	TransferMot:154	
039	TransferMot:180	
040	TransferMot:230	
041	FusingMot:90	
042	FusingMot:154	
043	FusingMot:180	

044	FusingMot:230	
045	DevPuddleMot	[-4 to 4 / **0** / 0.1 %]

1902*	Clean Web Setting	
001	Web Consumption	[0 to 120 / **0** / 1 %]
	Displays the consumed amount of the web roll.	
002	Web Motor Interval	[3 to 130 / **6.7** / 0.1 sec]
	Adjusts the interval for web motor rotation.	
003	Web Motor Time	[0.3 to 10 / **4.2** / 0.1 sec]
	Adjusts the rotation time of the web motor.	
004	Near End Setting	EU [0 to 100 / **90** / 1 %] ASIA/NA [0 to 100 / **92** / 1 %]
	Adjusts the threshold for web near end.	
005	Motor Int: Thick 1	[3 to 130 / **11.2** / 0.1 sec]
	Adjusts the interval for web motor rotation (thick 1).	
006	Motor Int: Thick 2	[3 to 130 / **16.8** / 0.1 sec]
	Adjusts the interval for web motor rotation (thick 2).	
007	Pap. Interval Time	[0 to 10 / **5** / 1 sec]
	Adjusts the threshold for paper feeding. When the time between trailing edge detection and leading edge detection is within the value of this setting, the machine determines that the paper is still being fed.	
008	Web Mot Set: Web End	[0 to 60 / **27** / 1 sec]
	Adjusts the motor rotation time after the web end.	
009	Web Mot Rotat: P. On	[0 to 10 / **2** / 1 times]
	Adjusts the number of web motor rotations at the re-load state.	
010	Web Mot Int: Pre-idle	[0 to 30 / **5** / 1 sec]
	Adjusts the motor waiting time after the fusing motor idling.	

011	Web Mot Rotat: Pre-idle	[0 to 10 / **2** / 1 times]
	Adjusts the number of web motor rotations at the fusing idling state.	

1903	Clean Web Setting	
001	Total Paper Count	[0 to 999999999 / **0** / 1 sec]
	Displays the total paper feeding time.	
002	Total Web Mot Dri Time	[0 to 999999999 / **0** / 1 sec]
	Displays the total time of web motor rotation.	

1907*	P Feed Timing Adj. **(DFU)**	
001	Feed Sol ON: Plain	[-10 to 40 / **0** / 2.5 mm]
002	Feed Sol ON: Thick	
003	Feed Sol OFF: Plain	[-10 to 10 / **0** / 1 mm]
004	Feed Sol OFF: Thick	
005	Feed Cl ON: Plain	
006	Feed Cl ON: Thick	
007	Stop Pos. before Inv	
008	Stop Pos. after Inv	
009	Re-Feed Stop Position	
010	By-pass Sol OFF	[0 to 40 / **0** / 1 mm]
011	By-pass Sol ON	[0 to 1 / **1** / 1 mm]
012	By-pass Feed Cl ON	[-10 to 10 / **0** / 1 mm]
013	Exit Roller Shift: 180	
014	Exit Roller Shift: 230	
015	Exit: Junc Sol ON	
016	Exit: Junc Sol OFF	
017	Bridge: Junc Sol ON	

018	Bridge: Junc Sol OFF	
019	1-Bin: Junction Solenoid ON	
020	1-Bin: Junction Solenoid OFF	
021	Shift Motor ON	[-1 to 1 / **0** / 0.1 mm]

1908*	F1 Plate Adj **(DFU)**	
001	A3, DLT: 100%	[-10 to 10 / **0** / 1 mm]
002	A3, DLT: 70%	

SP1-xxx: Feed-3

1916	CPM Down Setting	
	When this machine gets a sequence of printing jobs, the machine uses CPM down mode to prevent the fusing temperature from becoming too low.	
001	Temp.: Plain	Adjusts the thresholds for each environmental condition (between Low and Medium). [10 to 23 / **17** / 1 deg]
002	Temp.: M-Thick	
003	Temp.: Thick 1	
004	Temp.: Thick 2	
005	Temp.: Thin	
006	ON/OFF: Low: Plain	Turns on or off the CPM down setting for each paper type and ambient temperature. [0 to 1 / **0** / 1] 0= Off, 1= On
007	ON/OFF: Low: M-Thick	
008	ON/OFF: Low: Thick 1	
009	ON/OFF: Low: Thick 2	
010	ON/OFF: Low: Thin	
011	ON/OFF: Nor: Plain	
012	ON/OFF: Nor: M-Thick	
013	ON/OFF: Nor:: Thick 1	
014	ON/OFF: Nor: Thick 2	
015	ON/OFF: Nor: Thin	
016	Wait Time: L: Plain	Adjusts the threshold time to enter the CPM down mode. [0 to 180 / **60** / 1 sec] The machine determines whether the CPM down mode is activated or not after the time specified with these SPs has passed.
017	Wait Time: L: M-Thick	
018	Wait Time: L: Thick 1	
019	Wait Time: L: Thick 2	
020	Wait Time: L: Thin	
021	Wait Time: N: Plain	

022	Wait Time: N: M-Thick	
023	Wait Time: N: Thick 1	
024	Wait Time: N: Thick 2	
025	Wait Time: N: Thin	
026	Temp.: Low: Plain	Adjusts the threshold temperature of the fusing unit to enter the CPM down mode. [100 to 200 / **120** / 1 deg] If the temperature of the fusing unit is less than the temperature specified with these SPs, the machine changes the CPM (adjustable with SP1916-36 to -45).
027	Temp.: Low: M Thick	
028	Temp.: Low: Thick 1	
029	Temp.: Low: Thick 2	
030	Temp.: Low: Thin	
031	Temp.: Norm: Plain	
032	Temp.: Norm: M-Thick	
033	Temp.: Norm: Thick 1	
034	Temp.: Norm: Thick 2	
035	Temp.: Norm: Thin	
036	Low: Plain	Adjusts the CPM in the CPM down mode. [20 to 45 / **45** / 5 cpm]
037	Low: M-Thick	Adjusts the CPM in the CPM down mode. [20 to 45 / **45** / 5 cpm]
038	Low: Thick 1	Adjusts the CPM in the CPM down mode. [5 to 25 / **25** / 5 cpm]
039	Low: Thick 2	Adjusts the CPM in the CPM down mode. [5 to 15 / **15** / 5 cpm]
040	Low: Thin	Adjusts the CPM in the CPM down mode. [30 to 45 / **45** / 5 cpm]
041	Plain	
042	M-Thick	
043	Thick 1	Adjusts the CPM in the CPM down mode. [5 to 25 / **25** / 5 cpm]

044	Thick 2	Adjusts the CPM in the CPM down mode. [5 to 15 / **15** / 5 cpm]
045	CPM: Normal: Thin	Adjusts the CPM in the CPM down mode. [30 to 45 / **45** / 5 cpm]

1930	OnOff Time Adjust	
001	On Time Adjust	[0 to 100 / **40** / 10 msec]
	Adjusts the Off-On interval of the transfer belt contact motor. ("On" means that the transfer belt is in contact with the drum.)	
002	Off Time Adjust	[0 to 100 / **20** / 10 msec]
	Adjusts the On-Off interval of the transfer belt contact motor. ("Off" means that the transfer belt is away from the drum.)	

1950	Tray Lock at Jam	[0 or 1 / **0** / 1] 0= OFF, 1= ON
	Not used	

SP2-xxx: Drum-1

2001*	Charge Bias	
001	Setting (Printing)	[1000 to 2000 / **1500** / 10 V]
	Adjusts the voltage applied to the charge roller for printing.	
002	Setting (P Pattern)	[0 to 700 / **250** / 10 V]
	Adjusts the voltage applied to the charge roller when making the VSDP ID sensor pattern (for charge roller voltage correction). The actual charge roller voltage is this value plus the value of SP2001-1.	

2005*	Bias Control	
001	Bias Correction 1	[0.1 to 1 / **0.85** / 0.05 step]
	Adjusts the lower threshold value for the charge roller correction. When the value of VSDP/VSG is greater than this value, the charge roller voltage increases by 30 V (e.g., from –500 to –530).	
002	Bias Correction 2	[0.1 to 1 / **0.9** / 0.05 step]
	Adjusts the upper threshold value for the charge roller correction. When the value of VSDP/VSG is greater than this value, the charge roller voltage decreases by 30 V (absolute value).	
003	Bias Adjustment 1	[1000 to 2000 / **1500** / 10 vol]
	Adjusts the lower limit value for charge roller voltage correction.	
004	Bias Adjustment 2	[1000 to 2000 / **2000** / 10 vol]
	Adjusts the upper limit value for charge roller voltage correction.	
005	Bias Adjustment 3	[0 to 100 / **30** / 10 vol]
	Adjusts the correction voltage adjustment step size.	

2102*	Magnifi Adj.	
001	Main Scan	[-1 to 1 / **0** / 0.1 %]
	Adjusts the magnification in the main scan direction for printer mode.	

002	Sub Scan	[-1 to 1 / **0** / 0.1 %]
	Adjusts the magnification in the sub scan direction for printer mode.	

2103*	Erase Margin Adj.	
	Adjusts the erase margin by deleting image data at the margins. L Size: 297.1 mm or more (length) M Size: 216.1 to 297 mm (length) S Size: 216 mm or less (length)	
001	Leading Edge	[0 to 9 / **3** / 0.1mm]
002	Trailing Edge	
003	Left	[0 to 9 / **2** / 0.1mm]
004	Right	
005	Dup Trail.: L: Plain	[0 to 4 / **1** / 0.1mm]
006	Dup Trail.: M: Plain	[0 to 4 / **0.8** / 0.1mm]
007	Dup Trail.: S: Plain	[0 to 4 / **0.6** / 0.1mm]
008	Dup Left: Plain	[0 to 1.5 / **0.3** / 0.1mm]
009	Dup Right: Plain	
010	Dup Trail.: L: Thick	[0 to 4 / **0.8** / 0.1mm]
011	Dup Trail.: M: Thick	[0 to 4 / **0.6** / 0.1mm]
012	Dup Trail.: S: Thick	[0 to 4 / **0.4** / 0.1mm]
013	Dup Left: Thick	[0 to 1.5 / **0.1** / 0.1mm]
014	Dup Right: Thick	

2105*	LD Power Adj.	
	Adjusts the LD power for each mode. Each LD power setting is decided by the process control.	
001	Process Cont. LD1	[–50 to 79 / **5** /1]

002	Process Cont. LD2	
003	Printer LD1	[–50 to 79 / **-25** /1]
004	Printer LD2	

2106*	Poly. Rotat. Time (Polygon motor rotation time)	
001	Pre Rot. Time	[0 to 60 / **10** /1 sec]
	Adjusts the time of polygon motor rotation before a job. If this is set to "0", this SP is not activated.	
002	Post Rot. Time	[0 to 60 / **0** /1 sec]
	Adjusts the time of the polygon motor rotation after a job. If this is set to "0", the polygon motor never switches off in standby mode. However, if the machine enters the energy saver mode, the polygon motor will ignore the zero setting and switch itself off.	

2109	Test Pattern RTB 18 SP 2109: Text changed	
	Use this SP to select a print test pattern. After you select any pattern other than "0:None", this puts the printer in the Test Pattern Print mode. In the Test Pattern Print mode, the test pattern can be printed by "List/Test Print" in the "User Mode".	
001	Pattern Selection	[0 to 24 / **0** /1] Test pattern of the GAVD
	0: None 1: Vertical Line (1 dot) 2: Vertical Line (2 dot) 3: Horizontal Line (1 dot) 4: Horizontal Line (2 dot) 5: Grid Vertical Line 6: Grid Horizontal Line 7: Grid pattern small 8: Grid Pattern Large 9: Argyle Pattern Small 10: Argyle Pattern Large	13: Independent Pattern (3 dot) 14: Trimming Area 15: Hound's Tooth Check (Vertical) 16: Hound's Tooth Check (Horizontal) 17: Black Band (Horizontal) 18: Black band (Vertical) 19: Checker Flag Pattern 20: Grayscale (Vertical Margin) 21: Grayscale (Horizontal Margin) 22: Two Beam Density Pattern 23: Full Dot Pattern

	11: Independent pattern (1 dot) 12: Independent Pattern (2 dot)	24:All white Pattern
002	Density	[0 to 15 / **15** /1]
		Set the density of the test pattern which is output in SP2109-001. This SP is not used for the Grayscale patterns.

2201*	Dev. Bias Adj.	
001	Development Bias	[200 to 700 / **560V** / 10V]
	Adjusts the development bias for printing. Use as a temporary measure to correct faint printouts from an aging drum.	
002	ID Sensor Pattern	[200 to 700 / **400V** / 10V]
	Adjusts the development bias for the ID sensor pattern for VSP	

2207	Forced Toner Supply
	Forces the toner bottle to supply toner at 1-second intervals for up to 30 seconds. To start, press the "EXECUTE" button.

2208*	Toner Supply Mode	[**0**: Sensor, 1: pixel]
	Selects the toner mode. If you select "1", SP2-209-002 should be set to its default value. Use image pixel count modes only as a temporary measure if the ID or TD sensor is defective.	

2209*	Toner Supply Rate	
001	Toner Rate	[10 to 800 / **60 mg/s** / 5 mg]
	Sets the amount of toner supplied every second by the toner supply motor. The length of time the motor remains on is determined by the data read by the TD sensor and ID sensor. Increasing this value reduces the toner supply clutch on time. Use a lower value if the user tends to make lots of printouts that have a high proportion of black.	
002	Correction Data	[25 to 300 / **300** / 25]
	Displays the toner supply correction coefficient (K). It can also be used to adjust K, but the value is changed again when VT is measured for the next print.	

	The toner supply rate depends on the amount of toner in the toner bottle. This change is corrected using this coefficient. This SP can be used to check the toner supply condition. The lower the value of K, the lower the toner density

2210*	P Pattern Cycle	
	Sets the interval between ID sensor pattern prints.	
001*	Job Page Count	[0 to 200 / **10** / 1 sheet]
	Sets the interval between ID sensor pattern printing. For users that do not make many printouts daily, set a smaller interval to compensate for the effects of seasonal and weather changes.	
002*	Forced Page Count	[2 to 999 / **100** / 1 sheet]
	Sets the interval between ID sensor pattern printing. Forces creation of the ID sensor pattern to prevent low density printouts for customers who use the machine for long print jobs.	

2213*	Toner End Setting
	Selects the detection type for toner end. [0 to 2 / **0** / 1 step] [0: 90 printouts, 1: No printout, 2: 10 printouts] **Note** • 90 printouts: Toner end is determined if a low density image (Vref < Vt(10)) is detected 90 times after toner near end. • If "1" is selected, the machine stops printing when the ID sensor output drops below 0.9. • Select 1 or 2 if the customer normally makes printouts of very high density.

2220*	Vref Setting
	Adjusts the TD sensor reference voltage (Vref). Change this value after replacing the development unit with another development unit that contains toner. [1 to 5 / **4** / 0.01] 1. Check the value of SP2-220 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, and then input the VREF for this unit into SP2-220.

	3. After the test, put back the old development unit, and change SP2-220 back to the original value.

2221*	Reverse Interval	Drum,Transfer [0 to 2000 / **0** / 100 sheets]
	Adjusts the threshold for the reverse rotation of the drum and development/transfer motors. This helps the drum and transfer belt cleaning operations. This reverse rotation will interrupt a multiple printing job.	

2223*	Vt Display	
001	Current	[0 to 5 / **4** / 0.01]
	Displays the TD sensor output voltage for the immediately previous print.	
002	Average 10 printouts	[0 to 5 / **4** / 0.01]
	Displays the average of the most recent TD sensor outputs (from the previous 10 printouts).	
003	Rate of Change	[-10000 to 10000 / **0** / 1]
	Displays the rate of change in the TD sensor output.	
004	GAIN	[0 to 255 / **0** / 1]
	Displays the GAIN value used to calculate the on time for the toner supply motor.	
005	Image Pixel Count	[0 to 255 / **0** / 1]
	Displays the image pixel count.	

2228*	Developer Lot
	Displays the lot number of the developer. (The lot number is embossed on the top edge of the developer pack.)

2301*	Trans. Curr. Adj.	
	If the transfer current of image area is set highly than normal, the print image is easily come out. If the leading transfer current is set as same, the black line is come out due to exfoliation leave.	
001	Image Area: 1st Side	[10 to 100 / **45** / 1µA]

	Adjusts the transfer current for printing the first side of the paper	
002	Image Area: 2nd Side	[10 to 100 / **40** / 1µA]
	Adjusts the transfer current for printing the second side of the paper	
003	Leading Edge: 1st Side	[10 to 100 / **20** / 1µA]
	Adjusts the transfer current for printing at leading edge the first side of the paper. Increase the current to separate the paper from the drum properly in high humidity and high temperature conditions.	
004	Leading Edge: 2nd Side	[10 to 100 / **20** / 1µA]
	Adjusts the transfer current for printing at leading edge the second side of the paper. Increase the current to separate the paper from the drum properly in high humidity and high temperature conditions.	
005	By-pass: Image Area	[10 to 100 / **45** / 1µA]
	Adjusts the transfer current for printing from the by-pass tray. If the user normally feeds thicker paper from the bypass tray, use a higher setting.	
006	By-pass: Leading Edge	[10 to 100 / **20** / 1µA]
	Adjusts the transfer current for printing at the leading edge of paper fed from the by-pass tray. Increase the current to separate the paper from the drum properly in high humidity and high temperature conditions.	

SP2-xxx: Drum-2

2309*	Current: Paper Size Correction	
001	Paper Lower Width (a)	[1 to 150 / **150** / 1 mm]
	Adjusts the lower paper width threshold for the transfer current, charge voltage, and development bias corrections. Use this SP when an image problem (e.g., insufficient toner transfer) occurs with a small width paper. If the paper width is smaller than this value, the transfer current will be multiplied by the factor in SP2-309-3 (paper tray) or SP2-309-5 (by-pass).	
002	Paper Upper Width (b)	[151 to 296 / **216** / 1 mm]
	Adjusts the upper paper width threshold for the transfer current, charge voltage, and development bias corrections. As for SP2-309-1, but the factors are in SP2-309-4 (paper tray) and SP2-309-6 (by-pass).	
003	Paper Tray: Plain (alpha)	[1 to 3 / **1** / 0.1]
	Adjusts the transfer current correction coefficient used if the paper width is less than the setting of SP2-309-1.	
004	Paper Tray: Plain (beta)	[1 to 3 / **1** / 0.1]
	Adjusts the transfer current correction coefficient used if the paper width is less than the setting of SP2-309-2.	
005	By-pass: Plain (gamma)	[1 to 3 / **1.1** / 0.1]
	Adjusts the transfer current correction coefficient used if the paper width is less than the setting of SP2-309-1.	
006	By-pass: Plain (delta)	[1 to 3 / **1.1** / 0.1]
	Adjusts the transfer current correction coefficient used if the paper width is less than the setting of SP2-309-2.	

2801*	TD Sen. Ini. Set	Initialization
	Performs the TD sensor initial setting and allows the service technician to enter the lot number of the developer. (The lot number is embossed on the edge of the developer package.) This SP mode controls the voltage applied to the TD sensor to make the TD	

	sensor output about 3.0 V. Press "EXECUTE" to start. After finishing this, the TD sensor output voltage is displayed. Use this mode only after installing the machine, changing the TD sensor, or adding new developer.

2802*	TD Sen. Man. Set.	
	Allows you to adjust the TD sensor output manually for the following.	
001	VTS	[1 to 5 / **4.78** / 0.01vol]
	Adjusts the TD sensor output (VT). 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. To adjust VT, use a similar procedure as for SP2-220.	
002	VTMAX	[1 to 5 / **4.78** / 0.01vol]
	Adjusts the maximum value for SP2802 1.	
003	VTMIN	[1 to 5 / **1** / 0.01vol]
	Adjusts the minimum value for SP2802 1.	

2805*	Process Setting (Not used)
	Performs the developer initialization. Press "Execute" to start. This SP should be performed after doing SP2801 at installation and after replacing the drum.

2810	Paper Setting
	Initializes the LD power setting. This SP should be done after replacing the drum.

2912*	Tr. Rev. Rotation	
002	Interval	[0 to 10 / **3** / 1]
	Sets the reverse time of the transfer/development motor after the end of a job.	

2914*	Process Control Setting	
001	C-alpha	[0 to 400 / **150** / 10vol]

	Adjusts the charge roller voltage used when paper with a small width is fed from the by-pass tray. The paper width below which the correction starts depends on the value of SP2-309-1. Use this SP when an image problem (such as white spots at the center of black dots or breaks in thin black lines) occurs when paper with a small width is fed from the by-pass feed tray.	
002	C-beta	[0 to 400 / **0** / 10vol]
	Adjusts the charge roller voltage used when paper with a small width is fed from the by-pass tray. The paper width below which the correction starts depends on the value of SP2-309-2. Use this SP when an image problem (see 2-914-1) occurs when paper with a small width is fed from the by-pass feed tray.	
003	B-gamma	[0 to 300 / **200** / 10vol]
	Adjusts the development bias used when paper with a small width is fed from the by-pass tray. The paper width below which the correction starts depends on the value of SP2-309-1. Use this SP when an image problem (see 2-914-1) occurs when paper with a small width is fed from the by-pass feed tray.	
004	B-delta	[0 to 300 / **50** / 10vol]
	Adjusts the development bias used when paper with a small width is fed from the by-pass tray. The paper width below which the correction starts depends on the value of SP2-309-2. Use this SP when an image problem (see 2-914-1) occurs when paper with a small width is fed from the by-pass feed tray.	

SP2-xxx: Drum-3

2960*	Toner Overflow Sens	[0 = OFF, **1= ON**]
	Selects whether or not the toner overflow sensor is activated.	

2974*	Image Density	
001	Adj. Mode	[1 to 5 / **3** / 1]
	Adjusts image density. Changing this setting adjusts development bias and ID sensor output voltage that in turn raises or lowers image density.	

2975*	Near End Setting	
	Detection Time	[0 to 2000 / **0** / 10 sec]
	Sets a time for toner supply motor rotation for issuing the toner near end warning on the operation panel. The time may need to be shorter for customers who run especially large print jobs (working at night, for example) to ensure earlier warning of the toner near end condition so toner out does not interrupt a long job.	

2976*	Bottle Motor Time
	Displays the total ON time of the toner supply motor, calculated from when the toner bottle was replaced. Use this to check that the toner end count (SP2975) is working properly. When SP2975 is set to any value other than "0", this value is displayed when it matches the setting of SP2975. When SP2975 is set to "0", SP2976 is disabled. SP2976 is automatically set to zero by toner end recovery.) [0 to 7,000,000 / **0** / 1 msec]

2977*	Toner End Status	
	Indicates the toner near end or end condition.	
001	Near End	[0 to 10 / **0** / 1] 0: Not detected 1: Detected by SP2975-001 2: $Vt (10) - Vref \geq 0.2$ and $Vsp \geq 0.6$ 3: $Vt (10) - Vref \geq 0.45$

		4: $0.45 > \mathrm{Vt}\ (10) - \mathrm{Vref} \geq 0.2$ and toner end counter ≥ 300 5 to 10: Not used
002	End	[0 to 10 / **0** / 1] 0: Not detected 1: $\mathrm{Vsp} \geq 2.0$ 2: Toner end counter ≥ 90 when SP2213-001 is set to "0". 3: Toner end counter < 90 and $\mathrm{Vt}\ (10) > (\mathrm{Vref} + 0.3)$ when SP2213-001 is set to "0". 4: When SP2213-001 is set to "2" 5: $\mathrm{Vsp} \geq 0.9$ when SP2213-001 is set to "2" 6: Special order 7 to 10: Not used

2980*	Charge Counter	[0 to 1000000 / **0** / 1 sheets]
	Set the number of pages to print after toner and carrier initialization before the charge input is increased to compensate for deterioration over time in the polarity of the carrier. The strength in the polarity of the carrier in the toner will eventually decrease and cause lower charge output. Setting the charge output to increase after a specified number of printouts can compensate for this effect.	

SP3-xxx: Process-1

3001*	P Sensor Setting	
001	Current	[0 to 43 / **13** / 0.1 mA]
	Allows you to reset the ID sensor LED to avoid a service call error after clearing NVRAM or replacing the NVRAM. The LED current value is stored by executing SP-3001-2.	
002	ID Initialization	—
	Performs the ID sensor initial setting. ID sensor output for the bare drum (VSG) is adjusted automatically to 4.0 ±0.2 V. Press “EXECUTE” to start. Perform this setting after replacing or cleaning the ID sensor, replacing the drum, or clearing NVRAM.	

3045*	Toner End Setting,	ON/OFF **(DFU)**
	[0 to 1 / **0** / 1] 0=Off, 1=On	

3103*	P Sensor Output	
	Displays the current VSG, VSP, VSDP, and grayscale control. If the P sensor does not detect the P pattern, “VSP = 5.0 V/VSG = 5.0 V” is displayed and an SC code is generated. If the P sensor does not detect the bare area of the drum, “VSP = 0.0 V/VSG =0.0 V” is displayed and an SC code is generated.	
001	Vsg	[0 to 5 / **0** / 0.1]
002	Vsp	[0 to 5 / **0** / 0.1]
003	Vsdp	[0 to 5 / **0** / 0.1]
004	Vsm/Vsg	[0 to 5 / **0** / 0.1]

3902*	New PCU Detection	
001	On/OFF Setting	[0 to 1 / **1** / 1] 0: Off, 1: On
	Turns on or off the new unit detection for the transfer belt unit and fusing unit.	

3905*	Hot Roll Strip. Clean
	"Cleaning A": 15 sec. off/on cycle for the fusing motor. "Cleaning B": Off (45 sec.) and On (15 sec.) cycle for the fusing motor.
001	1st Clean: Interval
	Sets the threshold for the 1st cleaning mode. "Cleaning A" is done once. [0 to 5 / **5** / 1 sheets]
002	1st Clean: Mod Sett
	Sets the number of additional execution times of the 1st cleaning mode. [0 to 5 / **0** / 1 times]
003	2nd Clean: Interval
	Sets the threshold for the 2nd cleaning mode. "Cleaning A" is done twice. [6 to 49 / **30** / 1 sheets]
004	2nd Clean: Mod Sett
	Sets the number of additional execution times of the 2nd cleaning mode. [0 to 5 / **0** / 1 times]
005	3rd Cleaning: Interval
	Sets the threshold for the 3rd cleaning mode. "Cleaning A" is done twice and "Cleaning B" is done "N" times. "N" is specified with SP3905-006. [50 to 999 / **100** / 1 sheets]
006	3rd Clean: Mod Setting
	Sets the number of execution times of the 3rd cleaning mode. [0 to 5 / **0** / 1 times] **Note** • All fans remain on during cleaning and then switch off 60sec after the cleaning cycle ends.
007	Clean Priority Sett

	[0 to 1 / 0 / 1 sheets] 0: Priority to printing (No job interruption) 1: Priority to cleaning (Job interruption)

SP4-xxx:

There are no Group 4 SP modes for this machie.

SP5-xxx: Mode-1

5001	All Indicators On
	Lights the LCD and all LEDs on the operation panel to demonstrate that they are operating properly. [OFF/ON]

5024*	mm/inch Selection	0: Europe/Asia (mm) 1: North America (inch)
	Selects the unit of measurement. After selection, turn the main power switch off and on.	

5037*	Status Lamp Mode
	Determines whether the status lamp on the operation panel operates or not. If a customer finds the flashing of this lamp disturbing, use this SP to switch it off. [0 to 1 / **1** / 1] 0: Lamp operation off 1: Lamp operation on

5055*	Display IP Address
	Display or does not display the IP address on the LCD. [0 to 1 / **0** / 1] 0: OFF, 1: ON

5056*	Coverage Counter
	Display or does not display the coverage counter on the LCD. [0 to 1 / **0** / 1] 0: Not displayed, 1: Displayed

5131*	Paper Size Type Select
	Selects the paper size (type) for both originals and print paper. [0 to 2 / **-** / 1 step]

	0: Japan, 1: North America, 2: Europe After changing the setting, turn the machine off and on. If the paper size of the archive files stored on the HDD is different, abnormal printouts could result.

5150	Bypass Length Setting
	Sets up the by-pass tray for long paper. [0 to 1 / **0** / 1] 0: Off [Default] 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.

5165*	Z - fold Position
001 to 008	Not used

5169*	CE Login
	If you will change the printer bit switches, you must 'log in' to service mode with this SP before you go into the printer SP mode. [0 to 1 / **0** / 1] 0: Off. Printer bit switches cannot be adjusted. 1: On. Printer bit switches can be adjusted.

5179*	By-pass Tray Paper Size Error	[0 to 1 / **0** / 1] 0= OFF, 1= ON
	This SP determines whether a paper size error prompt appears when the machine detects the wrong paper size for the job and during feed from the by-pass tray.	

5181*	P. Size Setting	
	Adjusts the paper size for each tray. [0 to 1 / **0** / 1] [0 to 1 / **1** / 1]: For NA	
001	Tray 1: 1	0: A4 LEF, 1: LT LEF
002	Tray 1: 2	0: A3, 1: DLT
003	Tray 1: 3	0: B4, 1: LG

004	Tray 1: 4	0: B5 LEF, 1: Exe LEF
005	Tray 2: 1	0: A4 LEF, 1: LT LEF
006	Tray 2: 2	0: A3, 1: DLT
007	Tray 2: 3	0: B4, 1: LG
008	Tray 2: 4	0: B5 LEF, 1: Exe LEF
009	Tray 3: 1 (Tandem)	0: A4 LEF, 1: LT LEF
010	Tray 3: 2	0: A3, 1: DLT
011	Tray 3: 3	0: B4, 1: LG
012	Tray 3: 4	0: B5 LEF, 1: Exe LEF
013	Tray 4: 1	0: A4 LEF, 1: LT LEF
014	Tray 4: 2	0: A3, 1: DLT
015	Tray 4: 3	0: B4, 1: LG
016	Tray 4: 4	0: B5 LEF, 1: Exe LEF
017	LCT	[0 to 2] 0: A4 LEF, 1: LT LEF, 2: B5 LEF

5186*	RK4 Setting (Japan only)
	Enable or distance the prevention for RK4 (Accounting device) Disconnection. If the RK4 is disconnected for 10 seconds when this SP is set to "1 (Enable)", the machine automatically jams a sheet of paper and stops. [0 to 1 / 0 / 1]

5195*	Limitless SW
	DFU

5302*	Set Time
002	Time Difference
	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 to 1440 / - / 1 min.]

	Japan: +540 (Tokyo) NA: -300 (NY) EU: +60 (Paris) CH: +480 (Peking) TW: +480 (Taipei) AS: +480 (Hong Kong) KO: +540 (Korea)

5307	Summer Time	
001	ON/OFF	[0 to 1 / **1 (NA/EU), 0 (ASIA)** / 1 /step] 0: OFF 1: ON
	Enables or disables the summer time mode. **Note** • Make sure that both SP5-307-3 and -4 are correctly set. Otherwise, this SP is not activated even if this SP is set to "1".	
003	Start	
	Specifies the start setting for the summer time mode. There are 8 digits in this SP. For months 1 to 9, the "0" cannot be input in the first digit, so the eight-digit setting for -2 or -3 becomes a seven-digit setting. • 1st and 2nd digits: The month. [1 to 12] • 3rd digit: The week of the month. [1 to 5] • 4th digit: The day of the week. [0 to 6 = Sunday to Saturday] • 5th and 6th digits: The hour. [00 to 23] • 7th digit: The length of the advanced time. [0 to 9 / 1 hour /step] • 8th digit: The length of the advanced time. [0 to 5 / 10 minutes /step] For example: 3500010 The timer is advanced by 1 hour at am 0:00 on the 5th Sunday in March. The digits are counted from the left. Make sure that SP5-307-1 is set to "1".	
004	Rule Set (End)	
	Specifies the end setting for the summer time mode.	

	There are 8 digits in this SP. • 1st and 2nd digits: The month. [1 to 12] • 3rd digit: The week of the month. [0 to 5] • 4th digit: The day of the week. [0 to 7 = Sunday to Saturday] • 5th and 6th digits: The hour. [00 to 23] • The 7th and 8 digits must be set to "00". The digits are counted from the left. Make sure that SP5-307-1 is set to "1".

5401*	Access Control **(DFU)**	
	This SP stores the settings that limit uses access to SDK application data.	
200	SDK1 Unique ID	"SDK" is the "Software Development Kit". This data can be converted from SAS (VAS) when installed or uninstalled. **(DFU)**
201	SDK1 Certification Method	
210	SDK2 Unique ID	
211	SDK2 Certification Method	
220	SDK3 Unique ID	
221	SDK3 Certification Method	
230	SDK cert	

5404	User Code Count Clear
	Clears the counts of the user codes assigned by the key operator to restrict the use of the machine. Press [Execute] to clear.

5411*	LDAP Certification	
004	Easy Certification	Turns simple authentication on or off for LDAP. [0 to 1 / **1** / 1] 0: OFF 1: ON
005	Password Null Not Permit	This SP is enabled only when SP5411-4 is set to “1” (ON). [0 to 1 / **0** / 1]

		0: Password null is not permitted. 1: Password null is permitted.

5413	Lock out Setting	
001	Lockout On/Off	[0 to 1 / **0** / 1] 0: OFF, 1:ON
	Turns on or off the account lock for the local address book account.	
002	Lockout Threshold	[1 to 10 / **5** / 1]
	Sets the maximum trial times for accessing the address book account.	
003	Cancellation On/Off	[0 to 1 / **0** / 1] 0: OFF (Lockout is not cancelled.) 1: ON (Lockout is cancelled if a user ID and password are correctly entered after the lockout function has been executed and a specific time has passed.)
	Turns on or off the cancellation function of the account lockout.	
004	Cancellation Time	[1 to 9999 / **60** / 1 min]
	Sets the interval of the retry for accessing the local address book account after the lockout function has been executed. This setting is enabled only if SP5413-3 is set to "1" (ON).	

5414	Access Mitigation
001	Mitigation ON / OFF
	Permits or does not permit consecutive access to the machine with the same ID and password. [0 to 1 / **0** / 1] 0: OFF (Permitted) 1: ON (Not permitted)
002	Mitigation Time
	Sets the prohibiting time for consecutive access to the machine with the same ID and password. [0 to 60 / **15** / 1 min]

5415*	Password Attack	
001	Permissible Number	[0 to 100 / **30** / 1 times]
	Sets the threshold number of attempts to attack the system with random passwords to gain illegal access to the system.	
002	Detect Time	[0 to 10 / **5** / 1 sec]
	Sets a detection time to count a password attack.	

5416*	Access Info	
001	User Max Num	[50 to 200 / **200** / 1]
	Sets the number of users for the access exclusion and password attack detection function.	
002	Password Max Num	[50 to 200 / **200** / 1]
	Sets the number of passwords for the access exclusion and password attack detection function.	
003	Monitor interval	[1 to 10 / **3** / 1 sec]
	Sets the interval of watching out for user information and passwords.	

5417	Access Attack	
001	Permissible number	[0 to 500 / **100** / 1]
	Sets a limit on access attempts to prevent password cracking.	
002	Attack Detect Time	[10 to 30 / **10** / 1 sec]
	Sets a detection time to count password cracking.	
003	Cert Wait	[0 to 9 / **3** / 1 sec]
	Sets the wait time to slow down the speed of certification when an excessive number of access attempts have been detected.	
004	Attack Max Num	[50 to 200 / **200** / 1]
	Sets a limit on the number of requests received for certification in order to slow down the certification speed when an excessive number of access attempts have been detected.	

5420	User Authentication

	These settings should be done with the System Administrator. **Note** • These functions are enabled only after the user access feature has been enabled.	
041	Printer	[0 or 1/ **0** / 1] 0: ON. 1: OFF Determines whether certification is required before a user can use the printer application.
051	SDK1	[0 or 1/ **0** / 1] 0: ON. 1: OFF Determines whether certification is required before a user can use the SDK application.
061	SDK2	
071	SDK3	

5481	Auth Error Code	
	These SP codes determine how the authentication failures are displayed.	
001	System Log Disp	[0 or 1 / **0** / -] 0: OFF [Default], 1: ON Determines whether an error code appears in the system log after a user authentication failure occurs.

5501*	PM Alarm Interval
001	Print Out
	Sets the PM alarm interval. [0 to 9999 / **0** / 1 k printouts/step] 0: No PM alarm

5504*	Jam Alarm
	Sets the alarm to sound for the specified jam level (document misfeeds are not included). [0 to 3 / 3 / 1 step] 0: Zero (Off) 1: Low (2.5K jams) 2: Medium (3K jams) 3: High (6K jams)

5505*	Error Alarm
	Sets the number of sheets to clear the error alarm counter. The error alarm counter counts "1" when any SC is detected. However, the error alarm counter decreases by "1" when an SC is not detected during a set number of printed sheets (for example, default 5000 (C1b) or 10000 (C1c) sheets). The error alarm occurs when the SC error alarm counter reaches "5". [0 to 255 / **100** / 100 printouts / step]

5507*	Supply Alarm	
001	Paper Size	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	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	Switches the control call on/off for the toner end. **(DFU)** 0: Off, **1: On** If you select "1" the alarm will sound when the machine detects toner end.
010	Maintenance Kit A	Switches the PM alarm call to @Remote on/off for the Maintenance-A Kit **(DFU).** 0: Off, **1: On**
011	Maintenance Kit B	Switches the control call to @Remote on/off for the Maintenance-B Kit. **(DFU)** 0: Off, **1: On**
080	Toner Call Timing	Changes the timing of the "Toner Supply Call" via the NRS, when the next conditions occur. 0: Toner is replaced

		1: Toner near end or Ends
128	Interval: Others	The "Paper Supply Call Level: nn" SPs specify the paper control call interval for the referenced paper sizes. **(DFU)** [250 to 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	Auto Call Setting	
001	Jam Remains	Enables/disables initiating a call. [0 to 1 / **1** / 1] 0: Disable 1: Enable
002	Frequent Jams	
003	Door Open	
011	Jam Remains: Time	Sets the length of time to determine the length of an unattended paper jam. [3 to 30 / **10** / 1 minute]
012	Freq Jam: # of Time	Sets the number of continuous paper jams required to initiate a call. [2 to 10 / **5** / 1 time]
013	Door Open: Time	Sets the length of time the remains opens to determine when to initiate a call. [3 to 30/ **10** / 1 minute]

5515*	SC/Alarm Setting
	With @Remote in use, these SP codes can be set to issue an SC call when an SC error occurs. If this SP is switched off, the SC call is not issued when an SC error occurs.

001	SC Call	[0 or 1 / **1** / 1] 0: OFF 1: ON
002	Service Parts Near End Call	[0 or 1 / **0** / 1] 0: OFF 1: ON
003	Service Parts End Call	
004	User Call	[0 or 1 / **1** / 1] 0: OFF 1: ON
006	Communication Information Test Call	
007	Machine Information Notice	
008	Alarm Notice	[0 or 1 / **0** / 1] 0: OFF 1: ON
010	Supply Automatic Ordering Call	[0 or 1 / **1** / 1] 0: OFF 1: ON
011	Supply Management Report Call	

5792	MCS Debug Log **DFU**

5793	ECS Debug SW **DFU**

SP5-xxx: Mode-2

5801	Memory Clear Resets NVRAM data to the default settings. Before executing any of these SP codes, print an SMC Report.	
001	All Clear	Initializes items 2 to 15 below.
002	Engine Clear	Initializes all registration settings for the engine and printer 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	No SP modes are cleared. (MCS: Memory Control Service)
008	Printer application	Initializes the printer defaults, programs registered, the printer SP bit switches, and the printer CSS counter.
010	GWWS/NFA	Deletes the Netfile (NFA) management files and thumbnails, and initializes the Job login ID. Netfiles: Jobs to be printed from the DeskTopBinder software
011	NCS	Initializes the system defaults and interface settings (IP addresses also), the SmartDeviceMonitor for Admin settings, WebStatusMonitor settings, and the TELNET settings. (NCS: Network Control Service)
014	Clear DCS Setting	Initializes the DCS (Delivery Control Service) settings.
015	Clear UCS Setting	Initializes the UCS (User Information Control Service) settings.
016	MIRS Setting	Initializes the MIRS (Machine Information Report Service) settings.
017	CCS	Initializes the CCS (Certification and Charge-control Service) settings.
018	SRM Memory Clear	Initializes the SRM (System Resource Manager) settings.

019	LCS Clear	Initializes the LCS (Log Count Service) settings.
021	ECS	Initializes the ECS settings.

5802*	Free Run	
	Performs a free run on the printer engine. • The correct paper should be loaded in the 1st tray or 2nd tray, but paper is not fed. • The main switch has to be turned off and on after using the free run mode for a test.	
001	TRAY1:A4LEF	-
002	TRAY2:A3	-
003	TRAY2:A4SEF	-

5803	Input Check
	Displays the signals received from sensors and switches. (☛ Input Check - 1)

5804	Output Check
	Turns on the electrical components individually for test purposes. (☛ Output Check - 1)

5810	SC Reset	
	Fusing SC Reset	Resets all level A service call conditions, such as fusing errors. To clear the service call, touch “Execute” on the LCD, then turn the main power switch off/on.

5811*	Machine No. Setting **(DFU)**	Code Set
	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.	

5812*	Service TEL	
001	Telephone	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).

SP5-xxx: Mode-3

5816*	NRS Function
001	I/F Setting
	Turns the remote diagnostics off and on. [0 to 2 / **2** / 1] 0: Remote diagnostics OFF. 1: Serial (CSS) remote diagnostics ON. 2: @Remote diagnostics. ON
002	CE Call
	Lets the customer engineer start or end the remote machine check with CSS or @Remote; to do this, push the center report key
003	Function Flag
	Enables or disables the remote service function. [0 to 1 / **0** / 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 @Remote over a network interface. [0 to 1 / **0** / 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 @Remote network. [1 to 90 / **30** / 1 sec.]
009	RCG Write Timeout
	Sets the length of time (seconds) for the time-out when sent data is written to the RCG during a call over the @Remote network.

	[0 to 100 / **60** / 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 @Remote network. [0 to 100 / **60** / 1 sec.]
011	Port 80 Enable
	Controls if permission is given to get access to the SOAP method over Port 80 on the @Remote network. [0 to 1 / **0** / 1] 0: No. Access denied 1: Yes. Access granted.
013	RFU Timing
021	Function Flag
	This SP displays the embedded RCG-N installation end flag. 1: Installation completed 2: Installation not completed
022	Install status
	This SP displays the RCG device installation status. 0: RCG device not registered 1: RCG device registered 2: Device registered
023	Connect Mode (N/M)
	This SP displays and selects the embedded RCG-N connection method. 0: Internet connection 1: Dial-up connection
061	Not time Expim **(DFU)**
	Proximity of the expiration of the certification.
062	HTTP Proxy use

	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 the RCG device and the gateway. Use this SP to set up or display the customer proxy server address. The address is necessary to set up the embedded RCG-N. **Note** • The address display is limited to 128 characters. Characters beyond the 128 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 the embedded RCG-N and the gateway. This setting is necessary to set up the embedded RCG-N. **Note** • This port number is customer information and is not printed in the SMC report.	
065	HTTP Proxy 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 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	Cer: Updt Cond	
	Displays the status of the certification update.	
	0	The certification used by the embedded RCG-N 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	Cer Abnml Canse	
	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	Cer Updt Req ID	
	The ID of the request for certification.	
083	Updating	
	Displays the status of the firmware update.	
084	Firm UpFlg NoHDD	
	This setting determines if the firmware can be updated, even without the HDD installed.	
085	Firm Up Us Conf	
	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 Vsn	
	Displays the macro version of the @Remote certification	
088	CERT: PAC Vsn	
	Displays the PAC version of the @Remote certification.	
089	CERT: ID2 Code	
	Displays ID2 for the @Remote certification. Spaces are displayed as underscores (_). Asterisks (* * * *) indicate that no NRS certification exists.	
090	CERT: Subject	

	Displays the common name of the @Remote certification subject. CN = the following 17 bytes. Spaces are displayed as underscores (_). Asterisks (* * * *) indicate that no DESS exists.	
091	CERT: SeriNum	
	Displays serial number for the @Remote certification. Asterisks (* * * *) indicate that no DESS exists.	
092	CERT: Issuer	
	Displays the common name of the issuer of the @Remote certification. CN = the following 30 bytes. Asterisks (* * * *) indicate that no DESS exists.	
093	CERT: St ExpTime	
	Displays the start time of the period for which the current @Remote certification is enabled.	
094	CERT: ExpTime	
	Displays the end time of the period for which the current @Remote certification is enabled.	
200	Manual Polling	
	No information is available at this time.	
201	Instl: Condition	
	Displays a number that indicates the status of the @Remote service device.	
	0	Neither the registered device by the external nor embedded RCG device is set.
	1	The embedded RCG device is being set. Only Box registration is completed. In this status, this unit cannot answer a polling request from the external RCG.
	2	The embedded RCG device is set. In this status, the external RCG unit cannot answer a polling request.
	3	The registered device by the external RCG is being set. In this status the embedded RCG device cannot be set.
	4	The registered module by the external RCG has not started.
202	Instl: ID#	
	Allows entry of the number of the request needed for the embedded RCG.	
203	Instl: Reference	

	Executes the inquiry request to the @Remote Gate Way URL.	
204	Instl: Ref Rslt	
	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	Instl: Ref Section	
	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	Instl: Rgstltn	
	Executes "Embedded RCG Registration".	
207	Instl: Rgstltn Rst	
	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	Instl 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.
		-12005	@Remove communication prohibited
		-12006	Confirmation requested again after confirmation completed.
		-12007	Different numbers were used for registration and confirmation.
		-12008	Update certification failed because device was in use.
	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	External RCG not managed
		-2394	Device not managed
		-2395	Box ID for external RCG is illegal
		-2396	Device ID for external RCG is illegal
		-2397	Incorrect ID2 format
		-2398	Incorrect request number format
209	Inst Clear		
	Releases the machine from its embedded RCG setup.		
250	Print CommLog		
	Prints the communication log.		

5821*	NRS Address	
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 to FFFFFFFFh / - / 1]

5824	NVRAM Upload
	Uploads the NVRAM data to an SD card. Push Execute. **Note**: When uploading data in this SP mode, the front door must be open.

5825	NVRAM Download
	Downloads data from an SD card to the NVRAM in the machine. After downloading is completed, remove the card and turn the machine power off and on.

5828	Network Setting

001	IPv4 Address (Ethernet/IEEE 802.11)	This SP allows you to confirm and reset the IPv4 address for Ethernet and wireless LAN (802.11): aaa.bbb.ccc.ddd
002	IPv4 Subnet Mask (Ethernet/IEEE 802.11)	This SP allows you to confirm and reset the IPv4 subnet mask for Ethernet and wireless LAN (802.11): aaa.bbb.ccc.ddd
003	IPv4 default Gateway (Ethernet/IEEE 802.11)	This SP allows you to confirm and reset the IPv4 default gateway used by the network for Ethernet and wireless LAN (802.11): aaa.bbb.ccc.ddd
006	DHCP (Ethernet/IEEE 802.11)	This SP code allows you confirm and change the setting that determines whether the IP address is used with DHCP on an Ethernet or wireless (802.11) LAN network. [0 to 1 / **1** / 1] 0: Not used (manual setting) 1: Used
021	Active IPv4 Address	This SP allows you to confirm the IPv4 address that was used when the machine started up with DHCP.
022	Active IPv4 Subnet Mask	This SP allows you to confirm the IPv4 subnet mask setting that was used when the machine started up with DHCP.
023	Active IPv4 Gateway Address	This SP allows you to confirm the IPv4 default gateway setting that was used when the machine started up with DHCP.
050	1284 Compatibility (Centro)	Enables and disables bi-directional communication on the parallel connection between the machine and a computer. [0 to 1 / **1** / 1] 0:Off, 1: On

<table>
<tr><td>052</td><td colspan="2">ECP (Centro)</td><td colspan="2">Disables and enables the ECP feature (1284 Mode) for data transfer.
[0 to 1 / **1** / 1]
0: Disabled, 1: Enabled</td></tr>
<tr><td>065</td><td colspan="2">Job Spooling</td><td colspan="2">Switches the job spooling on and off.
[0 to 1 / **0** / 1]
0: No spooling, 1: Spooling enabled</td></tr>
<tr><td>066</td><td colspan="2">Job Spooling Clear: Start Time</td><td colspan="2">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".
[0 to 1 / **1** / 1]
1: Resumes printing spooled jog.
0: Clears spooled job.</td></tr>
<tr><td rowspan="5">069</td><td colspan="2">Job Spooling (Protocol)</td><td colspan="2">This SP determines whether job spooling is enabled or disabled for each protocol. This is a 8-bit setting.
[0 to 1 / **1** / 1]
0: No spooling, 1: Spooling enabled</td></tr>
<tr><td>0</td><td>LPR</td><td>4</td><td>BMLinks (Japan Only)</td></tr>
<tr><td>1</td><td>FTP (Not Used)</td><td>5</td><td>DIPRINT</td></tr>
<tr><td>2</td><td>IPP</td><td>6</td><td>Reserved (Not Used)</td></tr>
<tr><td>3</td><td>SMB</td><td>7</td><td>Reserved (Not Used)</td></tr>
<tr><td>090</td><td colspan="2">TELNET
(0:OFF 1:ON)</td><td colspan="2">Disables or enables Telnet operation. If this SP is disabled, the Telnet port is closed.
[0 to 1 / **1** / 1]
0: Disable, 1: Enable</td></tr>
<tr><td>091</td><td colspan="2">Web
(0:OFF 1:ON)</td><td colspan="2">Disables or enables the Web operation.
[0 to 1 / **1** / 1]
0: Disable, 1: Enable</td></tr>
<tr><td>145</td><td colspan="2">Active IPv6 Link Local Address</td><td colspan="2">This is the IPv6 local address referenced on the Ethernet or wireless LAN (802.11) in the format: "Link-Local address" + "Prefix Length"</td></tr>
</table>

		The IPv6 address consists of a total 128 bits configured in 8 blocks of 16 bits each. These notations can be abbreviated. See "Note: IPV6 Addresses " below this table.
147	Active IPv6 Stateless Address 1	These SPs are the IPv6 stateless addresses (1 to 5) referenced on the Ethernet or wireless LAN (802.11b) in the format: "Stateless Address" + "Prefix Length" The IPv6 address consists of a total 128 bits configured in 8 blocks of 16 bits each.
149	Active IPv6 Stateless Address 2	
151	Active IPv6 Stateless Address 3	
153	Active IPv6 Stateless Address 4	
155	Active IPv6 Stateless Address 5	
156	IPv6 Manual Address	
	This SP is the IPv6 manually set address referenced on the Ethernet or wireless LAN (802.11) in the format: "Manual Set Address" + "Prefix Length" The IPv6 address consists of a total 128 bits configured in 8 blocks of 16 bits each. These notations can be abbreviated. See "Note: IPV6 Addresses" below this table.	
158	IPv6 Gateway	
	This SP is the IPv6 gateway address referenced on the Ethernet or wireless LAN (802.11). The IPv6 address consists of a total 128 bits configured in 8 blocks of 16 bits each. These notations can be abbreviated. See "Note: IPV6 Addresses" below this table.	

Note: IPV6 Addresses

Ethernet and the Wireless LAN (802.11) reference the IPV6 "Link-Local address + Prefix Length". The IPV6 address consists of 128 bits divided into 8 blocks of 16 bits:
aaaa:bbbb:cccc:dddd:eeee:ffff:gggg:hhhh:

The prefix length is inserted at the 17th byte (Prefix Range: 0x0 to 0x80). The initial setting is 0x40 (64).

For example, the data: "20011234567890 12abcdef0123456789 40h" is expressed:

"2001:1234:5678:9012:abcd:ef01:2345:6789": prefixlen 64

However, the actual IPV6 address display is abbreviated according to the following rules.

Rules for Abbreviating IPV6 Addresses

1. The IPV6 address is expressed in hexadecimal delimited by colons (:) with the following characters:

		0123456789abcdefABCDEF 2. A colon is inserted as a delimiter every 4th hexadecimal character. fe80:0000:0000:0000:0207:40ff:0000:340e 3. The notations can be abbreviated by eliminating zeros where the MSB and digits following the MSB are zero. The example in "2" above, then, becomes fe80:0:0:0207:40ff:0:340e 4. Sections where only zeros exist can be abbreviated with double colons (::). This abbreviation can be done also where succeeding sections contain only zeros (but this can be done only at one point in the address). The example in "2" and "3" above then becomes: fe80::207:40ff:0:340e (only the first null sets zero digits are abbreviated as "::") -or- fe80:0:0:0:207:40ff::340e (only the last null set before "340e" is abbreviated as "::")
161	IPv6 Stateless Auto Setting	Enable or disables the automatic setting for IPv6 stateless.
236	Web Item visible	Displays or does not display the Web system items. [0 x 0000 to 0 x ffff / **0 x ffff**] 0: Not displayed, 1: Displayed bit0: Net RICOH bit1: Consumable Supplier bit2-15: Reserved (all)
237	Web shop link visible	Displays or does not display the link to Net RICOH on the top page and link page of the web system. [0 to 1 / **1** / 1] 0: Not display, 1:Display
238	Web supplies Link visible	Displays or does not display the link to Consumable Supplier on the top page and link page of the web system. [0 to 1 / **1** / 1] 0: Not display, 1:Display
239	Web Link1 Name	

	This SP confirms or changes the URL1 name on the link page of the web system. The maximum characters for the URL name are 31 characters.	
240	Web URL	
	his SP confirms or changes the link to URL1 on the link page of the web system. The maximum characters for the URL are 127 characters.	
241	Web visible	
	Displays or does not display the link to URL1 on the top page of the web system. [0 to 1 / **1** / 1] 0: Not display, 1:Display	
242	Web Link2 Name	Same as "-239"
243	Web Link2 URL	Same as "-240"
244	Web Link2 visible	Same as "-241"

5832	HDD
	Enter the SP number for the partition to initialize, then press #. When the execution ends, cycle the machine off and on.
001	Formatting (All)

5840*	IEEE 802.11	
006	Channel MAX	
	Sets the maximum range of the bandwidth for the wireless LAN. This bandwidth setting varies for different countries. [1 to 14 / **11 (NA), 13 (EU), 14 (JPN)** / 1] JPN: 1 to 14, NA: 1 to 11, EU: 1 to 13	
007	Channel MIN	
	Sets the minimum range of the bandwidth for operation of the wireless LAN. This bandwidth setting varies for different countries. [1 to 14 / **1** / 1] JPN: 1 to 14, NA: 1 to 11, EU: 1 to 13	
008	Transmission speed	[0 x 00 to 0 x FF / **0 x FF to Auto** / -]

	0 x FF to Auto [Default] 0 x 11 - 55M Fix 0 x 10 - 48M Fix 0 x 0F - 36M Fix 0 x 0E - 18M Fix 0 x 0D - 12M Fix 0 x 0B - 9M Fix 0 x 0A - 6M Fix	0 x 07 - 11M Fix 0 x 05 - 5.5M Fix 0 x 08 - 1M Fix 0 x 13 - 0 x FE (reserved) 0 x 12 - 72M (reserved) 0 x 09 - 22M (reserved)
011	WEP Key Select	
	Selects the WEP key. Bit 1 and 0 **00: Key1**, 01: Key2 (Reserved), 10: Key3 (Reserved), 11: Key4(Reserved) This SP is displayed only when the IEEE802.11 card is installed.	
042	Fragment Thresh	
	Adjusts the fragment threshold for the IEEE802.11 card. [256 to 2346 / **2346** / 1] This SP is displayed only when the IEEE802.11 card is installed.	
043	11g CTS to self	
	Determines whether the CTS self function is turned on or off. [0 to 1 / **1** / 1] 0: Off, 1: On This SP is displayed only when the IEEE802.11 card is installed.	
044	11g Slot Time	
	Selects the slot time for IEEE802.11. [0 to 1 / **0** / 1] 0: 20 µm, 1: 9 µm This SP is displayed only when the IEEE802.11 card is installed.	
045	WPA Debug Lvl	
	Selects the debug level for WPA authentication application. [1 to 3 / **3** / 1] 1: Info, 2: warning, 3: error This SP is displayed only when the IEEE802.11 card is installed.	

SP5-xxx: Mode-4

5842*	GWWS Analysis **(DFU)**		
	This is a debugging tool. It sets the debugging output mode of each Net File process. Bit SW 0011 1111	**Bit**	**Groups**
		0	System & other groups (LSB)
		1	Capture related
		2	Certification related
		3	Address book related
		4	Machine management related
		5	Output related (printing, delivery)
		6	Repository related
001	Setting 1	Default: 00000000 – do not change Netfiles: Jobs to be printed from the DeskTopBinder software	
002	Setting 2	Adjusts the debug program mode setting. Bit7: 5682 mmseg-log setting 0: Date/Hour/Minute/Second 1: Minute/Second/Msec. 0 to 6: Not used	

5844	USB
001	Transfer Rate
	Sets the speed for USB data transmission. [0 x 01 or 0 x 04 / **0 x 04** /-] 0 x 01 [Full Speed], 0 x 04 [Auto Change]
002	Vendor ID
	Sets the vendor ID: Initial Setting: 0x05A Ricoh Company [0x0000 to 0xFFFF/1] **(DFU)**

003	Product ID
	Sets the product ID. [0x0000 to 0xFFFF/1] **(DFU)**
004	Device Release No.
	Sets the device release number of the BCD (binary coded decimal) display. [0000 to 9999/1] **(DFU)** Enter as a decimal number. NCS converts the number to hexadecimal number recognized as the BCD.

5845*	Delivery Server Setting	
	These are delivery server settings.	
003	Retry Interval	
	Sets the time interval before the machine tries again when it goes back to standby after an error occurs during an image transfer with the SMTP server. [60 to 900 / **300** / 1]	
004	No. of Retries	
	Sets the number of times the machine tries again before it returns to standby after an error occurs during an image transfer with the delivery or SMTP server. [0 to 99 / **3** / 1]	
022	Instant Trans Off	[0 to 1 / **0** / -] 0: Disable, 1: Enable
	Enables or disables the prevention function for the continuous data sending error.	

5846*	UCS Setting
010	LDAP Search Timeout
	Sets the length of the time-out for the search of the LDAP server. [1 to 255 / **60** /1 step]
041	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

<table>
<tr><td></td><td colspan="2">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.</td></tr>
<tr><td rowspan="3">043</td><td colspan="2">Addr Bk Media</td></tr>
<tr><td colspan="2">Displays the slot number where an address book data is in.
[0 to 30 / - /1]</td></tr>
<tr><td>0: Unconfirmed
1: SD Slot 1
2: SD Slot 2
4: USB Flash ROM</td><td>20: HDD
30: Nothing</td></tr>
<tr><td rowspan="2">047</td><td colspan="2">Ini Local Addr B</td></tr>
<tr><td colspan="2">Clears all of the address information from the local address book of a machine managed with UCS.</td></tr>
<tr><td rowspan="2">049</td><td colspan="2">Ini LDAP Addr B</td></tr>
<tr><td colspan="2">Push [Execute] to delete all items (this does not include user codes) in the LDAP address book that is controlled by UCS.</td></tr>
<tr><td rowspan="2">050</td><td colspan="2">Ini All Addr B</td></tr>
<tr><td colspan="2">Clears everything (including users codes) in the directory information managed by UCS. However, the accounts and passwords of the system administrators are not deleted.</td></tr>
<tr><td rowspan="2">051</td><td colspan="2">Backup All Addr B</td></tr>
<tr><td colspan="2">Copies all directory information to the SD card. Do this SP before replacing the controller board or HDD. The operation may not succeed if the controller board or HDD is damaged.</td></tr>
<tr><td>052</td><td colspan="2">Restr All Addr B</td></tr>
</table>

	Copies back all directory information from the SD card to the flash ROM or HDD. Upload the address book from the old flash ROM or HDD with SP5846-51 before removing it. Do SP5846 52 after installing the new HDD.	
053	Clear Backup Info.	
	Deletes the address book uploaded from the SD card in the slot 2. 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	Compl Opt1	
	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 to 32 / 0 / 1step] **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	Compl Opt2	

	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 to 32 / 0 / 1step] **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	Compl Opt3
	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 to 32 / 0 / 1step] **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	Compl Opt4
	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 to 32 / 0 / 1step] **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.
094	Encryption Start
	Shows the status of the encryption function of the address book on the LDAP server. [0 to 255 / 1] No default

5848*	Web Service
	5848-2 sets the 4-bit switch assignment for the access control setting. Setting of 0001 has no effect on access and delivery from Scan Router.

	5848-100 sets the maximum size of images that can be downloaded. The default is equal to 1 gigabyte.	
004	Ac: UD	Switches access control on and off. 0000: OFF, 0001: ON
009	Ac: Job Ctrl	
011	Ac: Dev Mng	
022	Ac: Uadmin	
	No information is available at this time. 0: Not allowed 1: Allowed	
210	Log Type: Job 1	
	No information is available at this time.	
211	Log Type: Job 2	
	No information is available at this time.	
212	Log Type: Access	
	No information is available at this time.	
213	Primary Srv	
	No information is available at this time.	
214	Secondary Srv	
	No information is available at this time.	
215	Setting: Start Time	
	No information is available at this time.	
216	Interval Time	
	No information is available at this time.	
217	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 to 1 / **1** / -] 0: OFF (No Print) 1: ON (Print)
003	Total Counter	When the total number of pages that are made reaches this value, the current date becomes the 'official' installation date for this machine. [0 to 99999999 / **0** / 1]

5851*	Bluetooth
	Sets the operation mode for the Bluetooth Unit. Press either key. **[0: Public]** / [1: Private]

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 to 1 / **0** / 1 step] 0: Not allowed 1: Allowed

5857	Debug Log
001	On/Off (1:ON 0:OFF)
	Switches on the debug log feature. The debug log cannot be captured until this feature is switched on. [0 to 1 / **0** / 1] 0: OFF, 1: ON
002	Target (2: HDD 3: SD)

	Selects the destination where the debugging information generated by the event selected by SP5858 will be stored if an error is generated [2 to 3 / **2** / 1] 2: HDD, 3: SD Card
005	Save to HDD
	Specifies the decimal key number of the log to be written to the hard disk.
006	Save to SD Card
	Specifies the decimal key number of the log to be written to the SD Card.
009	Copy HDD to SD Card
	Takes the most recent 4 MB of the log written to the hard disk and copies them to the SD Card. A unique file name is generated to avoid overwriting existing file names on the SD Card. Up to 4MB can be copied to an SD Card. 4 MB segments can be copied one by one to each SD Card.
010	Copy HDD to SD Card Latest
	Takes the log of the specified key from the log on the hard disk and copies it to the SD Card. A unique file name is generated to avoid overwriting existing file names on the SD Card. Up to 4 MB can be copied to an SD Card. 4 MB segments can be copied one by one to each SD Card. This SP does not execute if there is no log on the HDD with no key specified.
011	Erase HDD Debug
	Erases all debug logs on the HDD
012	Erase SD Debug
	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	Dsply-SD Space
	Displays the amount of space available on the SD card.
014	SD to SD Latest

	Copies the last 4MB of the log (written directly to the card from shared memory) onto an SD card.
015	SD to SD Any
	This SP copies the log on an SD card (the file that contains the information written directly from shared memory) to a log specified by key number.
016	Make HDD Debug
	This SP creates a 32 MB file to store a log on the HDD.
017	Make SD Debug
	This SP creates a 4 MB file to store a log on an SD card.

5858*	Debug Log Save: SC	
	These SPs select the content of the debugging information to be saved to the destination selected by SP5857-002. SP5858-003 stores one SC specified by number.	
001*	Engine SC (0:OFF 1:ON)	Stores SC codes generated by printer engine errors.
002*	Controller SC (0:OFF 1:ON)	Stores SC codes generated by GW controller errors.
003*	Any SC	[0 to 65535 / **0** / 1step]
004*	Jam (0:OFF 1:ON)	Stores jam errors.

5859*	Debug Log Save Key	
001	Key 1	These SPs allow you to set up to 10 keys for log files for functions that use common memory on the controller board. [-9999999 to 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
002	SMTP Svr Port No.
	This SP sets the number of the SMTP server port. [1 to 65535 / **25** / 1]
003	SMTP Authentication
	This setting switches SMTP certification on and off for mail sending. [0 or 1 / **0** / -] 0: Off, 1: On
006	SMTP Auth Encryption
	This setting determines whether the password for SMTP certification is encrypted. [0 to 2/ **0** / 1] 0: Automatic, 1: No encryption done, 2: Encryption done
007	POP Before SMTP
	This setting determines whether the transmission connects with the POP server first for certification before it connects to the SMTP server for sending. [0 or 1 / **0** / -] 0: No connection to POP server 1: Connection to POP server
008	POP to SMTP Waiting
	This SP sets the amount of time to allow for the connection to the SMTP server after the transmission has connected to the POP server and been certified during the execution of POP Before SMTP. [0 to 10000 / **300** / 1]
009	Mail Receive Protocol
	This SP specifies a protocol for the mail reception or switches off receiving. [1 to 3 / **1** / 1]

	0: No receiving, 1: POP3 protocol 2: IMAP4 protocol, 3: SMTP protocol
013	POP3/IMAP4 Auth.
	This SP specifies whether password encryption is done for POP3/IMAP4 certification. [0 to 2 / **0** / 1] 0: Automatic, 1: No encryption done, 2: Encryption done
014	POP3 Srv Port No
	This SP sets the number of the POP3 server port. [1 to 65535 / **110** / 1]
015	IMAP4 Srv Port No
	This SP sets the number of the IMAP4 server port. [1 to 65535 / **143** / 1]
016	SMTP5 Rcv Port No
	This SP sets the number of the port that receives SMTP mail. [1 to 65535 / **25** / 1]
017	Mail Rx Interval
	This SP sets the timing for mail received at regular intervals. [2 to 1440 / **15** / 1 min.] **Note:** Setting this SP to "0" switches off receiving mail at timed intervals.
019	Mail Keep Setting.
	This SP setting determines whether received mail is stored on the server. [0 to 2 / **0** / 1] 0: Received mail not stored 1: All received mail stored 2: Stores only mail that generated errors during receiving
020	Par Mail/Rec Tout
	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.

	[1 to 168 / **72** / 1/step]
021	MDN Res RFC2298
	Determines whether RFC2298 compliance is switched on for MDN reply mail. [0 to 1 / **1** / -] 0: No, 1: Yes
022	SMTP Auth. From Field Repl
	Determines whether the FROM item of the mail header is switched to the validated account after the SMTP server is validated. [0 to 1 / **0** / -] 0: No. "From" item not switched. 1: Yes. "From" item switched.
025	SMTP Auth Direct Sent
	Select the authentication method for SMPT. Bit 0: LOGIN Bit 1: PLAIN Bit 2: CRAM_MD5 Bit 3: DIGEST_MD5 Bit 4 to Bit 7: Not Used **Note** • This SP is activated only when SMTP authentication is enabled by UP mode.
026	S/MIME: MIME Header
	Selects the MIME header type of an E-mail sent by S/MIME. [0 to 2 / **0** / 1] 0: Microsoft Outlook Express standard 1: Internet Draft standard 2: RFC standard

5866	E-Mail Report	
001	Report Validity	Enables or disables the E-mail alert function. [0 or 1 / **0** / –] 0: Enabled, 1: Disabled

005	Add Date Field	Adds or does not add the date field to the header of the alert mail. [0 or 1 / **0** / –] 0: Not added, 1: Added

5869	RAM Disk Setting	
001	Mail Function	
	This SP determines whether the RAM disk is used for either the mail function or PDL Storage. [0 or 1 / **0** / -] 0:Used, 1:Not used	

5870	Common Key Info Writing	
	Writes to flash ROM the common proof for validating the device for NRS specifications.	
001	Writing	These SPs are for future use and currently are not used.
003	Initialize	

5873	SD Card Appli. Move	
	Allows you to move applications from one SD card another. For more, see "Merging Applications on One SD Card".	
001	Move Exec	Executes the move from one SD card to another.
002	Undo Exec	This is an undo function. It cancels the previous execution.

5878	Option Setup	
001	Data Overwrite Security	Press [Execute] to initialize the Data Overwrite Security option for the machine. For more, see "DataOverwriteSecurity Unit" in the chapter "Installation".
002	HDD Encryption	Installs the HDD Encryption unit.

5886*	Farm Update Procedure	
	Permit ROM Update	This SP determines whether the ROM can be updated [0 or 1 / **0** / 1 step]

		0: ON, 1: OFF

5887	SD Get Counter
	This SP sends a text file to an SD card inserted in SD card Slot 2 (lower slot). The operation stores. The file is stored in a folder created in the root directory of the SD card called SD_COUNTER. The file is saved as a text file (*.txt) prefixed with the number of the machine. 1. Insert the SD card in SD card Slot 2 (lower slot). 2. Select SP5887 then touch [EXECUTE]. 3. Touch [Execute] in the message when you are prompted.

5888*	Person Infor Prot.
	Selects the protection level for logs. [0 to 1 / **0** / 1/step] 0: No authentication, No protection for logs 1: No authentication, Protected logs (only an administrator can see the logs)

5907	Plug & Play/Setting 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.
	[0 to 23 / **-** / 1 step] **FA** 0: RICOH Aficio SP 8200 DN 1: SAVIN xxxxx 2: Gestetner MP xxxxx 3: LANIER MP xxxxx 4: NRG MP xxxxx 5: infotec MP xxxxx

5924*	SDK Apli Display
001	SDK Apli Display
	Enables or disables the LCD display of the SDK application.

	[0 or 1 / 0 / 1/step] 0: Not display, 1: Display

5930	Meter charge
001	Enables or disables the Meter Charge mode. When enabling the Meter Charge mode, the “Counter” menu is added to the user menu. [0 or 1 / 0 / -] 0: OFF, 1: ON

5987*	Count Falsific Prev
	This SP detects that a mechanical counter device is removed. If it is detected, SC610 occurs. [0 or 1 / 0 / -] 0: OFF, 1: ON

5990	SP Print Mode	
001	All (Data List)	Prints out the SMC sheets.
002	SP (Mode Data List)	
004	Logging Data	
005	Diagnostic Report	
006	Non-Default	
007	NIB Summary	

SP6-xxx: Peripherals-1

6128	Punch Position: Sub Scan	
	Adjusts the punching position in the sub scan direction. (For B805)	
001	2-Hole: JPN	[-7.5 to 7.5 / 0 / 0.5 mm]
002	3-Hole: NA	
003	4-Hole: EU	
004	5-Hole: SCAN	
005	2-Hole: NA	
006	1-Hole: JPN	

6129	Punch Position: Main Scan	
	Adjusts the punching position in the main scan direction. (For B805)	
001	2-Hole: JPN	[-2 to 2 / 0 / 0.4 mm]
002	3-Hole: NA	
003	4-Hole: EU	
004	4-Hole: SCAN	
005	2-Hole: NA	
006	1-Hole: JPN	

6130*	Skew Corr: Buckle Adj.	
	Adjusts the paper buckle at the punch unit for each paper size. (For B805)	
001	A3 SEF	[-5 to 5 / 0 / 0.25 mm]
002	B4 SEF	
003	A4 SEF	
004	A4 LEF	
005	B5 SEF	

006	B5 LEF	
007	DLT SEF	
008	LG SEF	
009	LT SEF	
010	LT LEF	
011	12" x 18"	
012	Other	

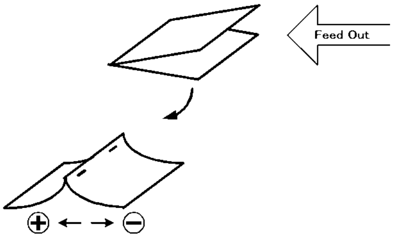
6131*	Skew Corr Cont	
	Selects the skew correction control for each paper size. (For B805)	
001	A3 SEF	[0 to 1 / 1 / 1 mm]
002	B4 SEF	
003	A4 SEF	
004	A4 LEF	
005	B5 SEF	
006	B5 LEF	
007	DLT SEF	
008	LG SEF	
009	LT SEF	
010	LT LEF	
011	12" x 18"	
012	Other	

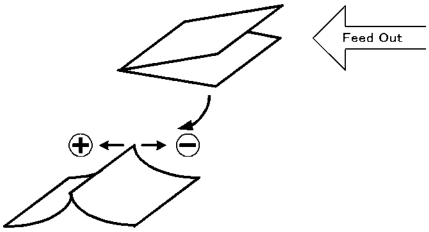
6132*	Jogger Fence Fine Adj.
	This SP adjusts the distance between the jogger fences and the sides of the stack on the finisher stapling tray in the Finisher B805. The adjustment is done perpendicular to the direction of paper feed.

001	A3 SEF	[-1.5 to 1.5 / **0** / 0.5 mm]
002	B4 SEF	
003	A4 SEF	
004	A4 LEF	
005	B5 SEF	
006	B5 LEF	
007	DLT SEF	
008	LG SEF	
009	LT SEF	
010	LT LEF	
011	12" x 18"	
012	Other	

6133*	Staple Posi Adj
	Adjusts the staple position for each finisher (B408/B805). + Value: Moves the staple position to the rear side. - Value: Moves the staple position to the front side. [-3.5 to 3.5 / **0** / 1/step]

6134*	Saddle Stitch Position Adjustment **[Not Used]**	
	Use this SP to adjust the stapling position of the booklet stapler when paper is stapled and folded in the Booklet Finisher (B804).	
001	A3 SEF	[-3 to 3 / **0** / 0.2 mm] + Value: Shifts staple position toward the crease. - Value: Shifts staple position away from the crease
002	B4 SEF	
003	A4 SEF	
004	B5 SEF	
005	DLT SEF	
006	LG SEF	

007	LT SEF	
008	12" x 18"	
009	Other	

6135*	Folder Position Adj. **[Not Used]**	
	This SP corrects the folding position when paper is stapled and folded in the Booklet Finisher B804.	
001	A3 SEF	[-3 to 3 / **0** / 0.2 mm] + Value: Shifts staple position toward the crease. - Value: Shifts staple position away from the crease. 
002	B4 SEF	
003	A4 SEF	
004	B5 SEF	
005	DLT SEF	
006	LG SEF	
007	LT SEF	
008	12" x 18"	
009	Other	

6136*	Book Fold Repeat **[Not Used]**
	Sets the number of times that folding is done in the Booklet Finisher B804. [2 to 30 / **2** / 1 time/step]

6137	Finisher Free Run	
	These SPs are used only for the B408.	
001	Free Run 1	B408: Free run for stapling mode (without paper feeding).
002	Free Run 2	B408: Free run for stapling mode and shift mode (without paper feeding).
003	Free Run 3	B408: Not used

004	Free Run 4	Not used

6139	FIN (KIN) INPUT Check
	Display the signals received from sensors and switches of the (booklet) finisher. (B408) (☛ Input Check -2)

6140	FIN (EUP) INPUT Check
	Display the signals received from sensors and switches of the (booklet) finisher. (B805) (☛ Input Check -2)

6144	FIN (KIN) OUPUT Check
	Display the signals received from sensors and switches of the (booklet) finisher. (B408) (☛ Output Check -2)

6145	FIN (EUP) OUPUT Check
	Display the signals received from sensors and switches of the (booklet) finisher. (B805) (☛ Output Check -2)

6148*	Jogger Fine Adj **Not used**	
001	A3 SEF	This SP corrects the distance between the output jogger fence and the sides of the stack. + Value: Increases the distance between the output jogger fence and the sides of the stack. - Value: Decreases the distance between the output jogger fences and the sides of the stack. [-1.5 to 1.5 / **0** / 0.5 mm]
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	

6149*	Max. Pre-Stack Sheet	[0 to 3 / **3** / 1 sheets step]
	This SP sets the number of sheets sent to the pre-stack tray. **Note** • You may need to adjust this setting or switch it off when feeding thick or slick paper.	

6150*	Jogger Control
	This SP is for the output jogger control. [0 to 1 / **0** / -] 0: Off, 1: On

SP7-xxx: Data Log-1

7401*	SC Total
	Displays the total number of service calls that have occurred.

7403*	SC History	
001	Latest	Displays the most recent 10 service calls.
002	Latest 1	
003	Latest 2	
004	Latest 3	
005	Latest 4	
006	Latest 5	
007	Latest 6	
008	Latest 7	
009	Latest 8	
010	Latest 9	

7502*	Counter-Paper Jam
	Displays the total number of paper jams.

13	Bank P Feed 1: OFF
7504*	Paper Jam/LOC
	These SPs display the total number of paper jams by location. A “Check-in” (paper late) error occurs when the paper fails to activate the sensor at the precise time. A “Check-out” (“paper lag”) paper jam occurs when the paper remains at the sensor for longer than the prescribed time.
1	At power On
3	Non Feed Tray 1
4	Non Feed Tray 2

13	Bank P Feed 1: OFF
5	Non Feed Tray 3
6	Non Feed Tray 4
7	LCT
8	Bypass
9	Duplex
11	Paper Feed 1: OFF
12	Paper Feed 2: OFF
14	Bank P Feed 2: OFF
17	Registration: SN OFF
19	Fusing Exit: SN OFF
20	SN: OFF
21	Relay Exit: OFF
22	Relay Feed SN: OFF
24	Junction SN: OFF
25	Duplex Exit: OFF
26	D Ent out: OFF
27	D Ent return: OFF
51	Paper Feed 1: ON
52	Paper Feed 2: ON
53	Bank P Feed 1: ON
54	Bank P Feed 2: ON
57	Regist SN: ON
58	LCT Feed SN: ON
60	Paper Exit SN: ON
61	Relay Exit: ON

13	Bank P Feed 1: OFF
62	Relay Feed SN: ON
64	Junction SN: ON
65	Duplex Exit: ON
66	D Ent out: ON
67	D Ent return: ON
100	Fini Entrance
101	Fini Shift Tray
102	Fini Staple
103	Fini Exit
105	Fini Tray Lift Motor
106	Fini Jogger Motor
107	Fini Shift Tray
108	Fini Staple Moto
109	Fini Exit Motor
191	Fini Entrance
192	Fini Proof Exit
193	Fini Shift Tray
194	Fini Staple Exit
195	Fini Exit
198	Fini Booklet Folder
199	Fini Tray Motor
200	Fini Jogger Motor: EUP
201	Fini Shift Tray
202	Fini Staple Motor
203	Fini Staple Motor

13	Bank P Feed 1: OFF
206	Fini Punch Motor

7506*	Jam Count by Paper Size	
005	A4 LEF	Displays the total number of print jams by paper size.
006	A5 LEF	
014	B5 LEF	
038	LT LEF	
044	HLT LEF	
132	A3 SEF	
133	A4 SEF	
134	A5 SEF	
141	B4 SEF	
142	B5 SEF	
160	DLT SEF	
164	LG SEF	
166	LT SEF	
172	HLT SEF	
255	Others	

7507*	Dspla - P Jam Hist	
7507 1	Last	Displays the print jam history (the most recent 10 jams) Sample Display: CODE:007 SIZE:05h TOTAL:0000334 DATE: Mon Mar 15 11:44:50 2000 where:
7507 2	Latest 1	
7507 3	Latest 2	
7507 4	Latest 3	
7507 5	Latest 4	
7507 6	Latest 5	

7507 7	Latest 6	CODE is the SP7504-* * * number (see above. SIZE is the ASAP paper size code in hex. TOTAL is the total jam error count (SP7502) DATE is the date the jams occurred.			
7507 8	Latest 7				
7507 9	Latest 8				
7507 10	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

7801	Memory/Version/PN			
255	Displays the ROM numbers and firmware version numbers.			
	001	System	159	PCLXL
	002	Engine	161	MSIS(OPTION)
	007	Finisher1	162	PDF
	009	Bank	163	BMLinks
	010	LCT	165	PJL
	018	NIB	166	IPDS
	019	Bank2	180	FONT
	023	HDD Format Option	181	FONT1
	132	NetWare	182	FONT2
	150	RPCS	183	FONT3
	151	PS	200	Factory
	152	RPDL	202	NetFile
	153	R98	204	Printer

	154	R16	210	MIB
	155	RPGL	211	WebSystem
	156	R55	213	SDK1
	157	RTIFF	214	SDK2
	158	PCL	215	SDK3

SP7-xxx: Data Log-2

7803	PM Counter	
	Displays the PM counter since the last PM.	
001	Paper	[0 to 999999 / 0 / 1 page]
	Displays the number of outputs.	
002	Page: PCD	[0 to 999999 / 0 / 1 page]
	Displays the PCD (Drum and Development unit) counter (pages).	
003	Page: Transfer	[0 to 999999 / 0 / 1 page]
	Displays the transfer unit counter (pages).	
004	Page: Fusing	[0 999999 / 0 / 1 page]
	Displays the fusing unit counter (pages).	
005	Rotation: PCD	[0 999999999 / 0 / 1 mm]
	Displays the PCD rotation counter (distance).	
006	Rotation: Trans	[0 999999999 / 0 / 1 mm]
	Displays the transfer unit rotation counter (distance).	
007	Rotation: Fuser	[0 999999999 / 0 / 1 mm]
	Displays the fuser unit rotation counter (distance).	
008	Rotation(%): PCD	[0 255 / 0 / 1 %]
	Displays the PCD (%) rotation counter (Distance/PM).	
009	Rotation(%):Trans	[0 255 / 0 / 1 %]
	Displays the transfer unit (%) rotation counter (distance/PM).	
010	Rotat (%):Fuser	[0 255 / 0 / 1 %]
	Displays the fuser unit (%) rotation counter (distance/PM).	
011	Rotation(%):Web	[0 255 / 0 / 1 %]
	Displays the web unit (%) rotation counter (distance/PM).	

7804	PM Counter. Reset	
	Resets the PM counter. To reset, press the "EXECUTE" button.	
001	Paper	
	Resets the PM counter of the machine.	
002	PCD	
	Resets the PM counter of the PCD (Drum and Development unit except developer).	
003	Transfer	
	Resets the PM counter of the transfer unit.	
004	Fusing	
	Resets the PM counter of the fuser unit.	
005	Web	
	Reset the PM counter of the web unit.	
006	All Clear	
	Resets all PM counter	

7805	Parts Counter	
001	Page: OPC	[0 to 999999 / 0 / 1 page]
	Displays the parts counter (pages) of the OPC.	
002	Page: Charge Roller	[0 to 999999 / 0 / 1 page]
	Displays the parts counter (pages) of the charge roller.	
003	Page: Developer	[0 to 999999 / 0 / 1 page]
	Displays the parts counter (pages) of the developer.	
004	Page: Belt Blade	[0 to 999999 / 0 / 1 page]
	Displays the parts counter (pages) of the transfer belt cleaning blade.	
005	Page: Heat Roller	[0 to 999999 / 0 / 1 page]
	Displays the parts counter (pages) of the hot roller.	

006	Page: Pressure Roller	[0 to 999999 / 0 / 1 page]
	Displays the parts counter (pages) of the pressure roller.	
007	Page: Clean Roller	[0 to 999999 / 0 / 1 page]
	Displays the parts counter (pages) of the cleaning roller.	
008	Page: Thermistor	[0 to 999999 / 0 / 1 page]
	Displays the parts counter (pages) of the thermistors.	
009	Page: Stripper	[0 to 999999 / 0 / 1 page]
	Displays the parts counter (pages) of the strippers.	
010	Rotation: OPC	[0 to 999999999 / 0 / 1 mm]
	Displays the parts counter (rotations) of the OPC.	
011	Rotat: Charge Roller	[0 to 999999999 / 0 / 1 mm]
	Displays the parts counter (rotations) of the charge roller.	
012	Rotat: Developer	[0 to 999999999 / 0 / 1 mm]
	Displays the parts counter (rotations) of the developer.	
013	Rotation: Belt Blade	[0 to 999999999 / 0 / 1 mm]
	Displays the parts counter (rotations) of the transfer belt, blade.	
014	Rotation: Heat Roller	[0 to 999999999 / 0 / 1 mm]
	Displays the parts counter (rotations) of the hot roller.	
015	Rotation: Press Roller	[0 to 999999999 / 0 / 1 mm]
	Displays the parts counter (rotations) of the pressure roller.	
016	Rotation: Clean Roller	[0 to 999999999 / 0 / 1 mm]
	Displays the parts counter (rotations) of the cleaning roller.	
017	Rotat: Thermistor	[0 to 999999999 / 0 / 1 mm]
	Displays the parts counter (rotations) of the thermistors.	
018	Rotation: Stripper	[0 to 999999999 / 0 / 1 mm]
	Displays the parts counter (rotations) of the strippers.	

019	Page(%): Web	[0 to 255 / **0** / 1 %]
	Displays the parts counter (rotations/PM %) of the cleaning web.	

7806	Counter Clear	
001	OPC	
	Resets the parts counter of the OPC.	
002	Charge Roller	
	Resets the parts counter of the charge roller.	
003	Developer	
	Resets the parts counter of the developer.	
004	Belt: Blade	
	Resets the parts counter of the transfer belt cleaning blade.	
005	Heat Roller	
	Resets the parts counter of the hot roller.	
006	Pressure Roller	
	Resets the parts counter of the pressure roller.	
007	Cleaning Roller	
	Resets the parts counter of the cleaning roller.	
008	Web	
	Resets the parts counter of the cleaning web.	
009	Thermistor	
	Resets the parts counter of the thermistors.	
010	Stripper	
	Resets the parts counter of the strippers.	
011	All Clear	
	Resets all parts counters.	

7807	SC/Jam Counter Reset
	Resets the SC and jam counters. To reset, push "EXECUTE" button. This SP does not reset the jam history counters: SP7-508.

7832	Display-Selg-Diag
	This SP displays the results of the self-diagnostic test executed at start up, or executed manually by switching the machine off, holding down [Online] and [#Enter], and then switching the machine on.

7836	Total Memory Size
	Displays the contents of the memory on the controller board.

7853*	Replacement Counter	
001	PCD	[0 to 255 / **0** / 1]
	Displays the replacement counter of the PCD (Drum and Development unit).	
002	Transfer	[0 to 1 / **0** / 1]
	Displays the replacement counter of the transfer unit.	
003	Fusing	[0 to 1 / **0** / 1]
	Displays the replacement counter of the fusing unit.	
004	Web	[0 to 1 / **0** / 1]
	Displays the replacement counter of the cleaning web.	

7856* 1	Zero Cross	[0 to 255 / **60** / 1]
	Stores and displays the detected zero cross frequency of the main ac power supply from the wall socket.	

7901	Assert Info **[DFU]**	
	Records the location where SC990 is detected in the program. The data stored in this SP is used for problem analysis.	
001	File Name	

002	Number of Lines	
003	Location	

7904*	Near End Setting	
	Sets the near end setting for each maintenance items.	
001	PCD	[0 to 2 / 1 / 1 /step] 0: Earlier, 1: Default, 2: Nearly Limit
002	Transfer	
003	Fusing	

7906	Prev Counter	
001	Page: PCD	[0 999999 / 0 / 1 page]
	Displays the counter (pages) of the previous PCD	
002	Page: Transfer	[0 999999 / 0 / 1 page]
	Displays the previous counter (pages) of the previous transfer unit.	
003	Page: Fusing	[0 999999 / 0 / 1 page]
	Displays the previous counter (pages) of the previous fusing unit.	
004	Rotation: PCD	[0 999999999 / 0 / 1 mm]
	Displays the previous counter (rotations) of the previous PCD	
005	Rotation: Transfer	[0 999999999 / 0 / 1 mm]
	Displays the previous counter (rotations) of the previous transfer unit.	
006	Rotation: Fusing	[0 999999999 / 0 / 1 mm]
	Displays the previous counter (rotations/PM %) of the previous fusing unit.	
007	Rotation(%):PCD	[0 to 255 / 0 / 1 mm]
	Displays the previous counter (rotations/PM %) of the previous PCD	
008	Rotation(%):Transfer	[0 to 255 / 0 / 1 mm]
	Displays the previous counter (rotations/PM %) of the previous transfer unit.	
009	Rotation(%):Fuser	[0 to 255 / 0 / 1 mm]

	Displays the previous counter (rotations/PM %) of the previous fusing unit.	
010	Rotation(%):Web	[0 to 255 / **0** / 1 %]
	Displays the previous counter (rotations/PM %) of the previous cleaning web.	

7950	Replacement Date	
001	PCD	[0 to 1 / **0** / 1]
	Displays the replacement date of the PCD.	
002	Transfer	[0 to 1 / **0** / 1]
	Displays the replacement date of the transfer unit.	
003	Fusing	[0 to 1 / **0** / 1]
	Displays the replacement date of the fusing unit.	
004	Web	[0 to 1 / **0** / 1]
	Displays the replacement date of the web unit.	

7951	Remaining Counter	
001	PCD(Page)	[0 to 255 / **255** / 1 days]
	Displays the remaining counter (pages) of the PCD.	
002	Transfer(Page)	[0 to 255 / **255** / 1 days]
	Displays the remaining counter (pages) of the transfer unit.	
003	Fuser(Page)	[0 to 255 / **255** / 1 days]
	Displays the remaining counter (pages) of the fusing unit.	
005	PCD(Rotation)	[0 to 255 / **255** / 1 days]
	Displays the remaining counter (rotations) of the PCD.	
006	Transfer(Rotation)	[0 to 255 / **255** / 1 days]
	Displays the remaining counter (rotations) of the transfer unit.	
007	Fuser(Rotation)	[0 to 255 / **255** / 1 days]
	Displays the remaining counter (rotations) of the fusing unit.	

009	PCD (%)	[0 to 255 / **100** / 1 %]
	Displays the remaining counter (%) of the PCD.	
010	Transfer (%)	[0 to 255 / **100** / 1 %]
	Displays the remaining counter (%) of the transfer unit.	
011	Fuser (%)	[0 to 255 / **100** / 1 %]
	Displays the remaining counter (%) of the fusing unit.	
013	Web (%)	[0 to 255 / **100** / 1 %]
	Displays the remaining counter (%) of the cleaning web.	

7952	PM Yield Setting	
	Sets the each yield of the following.	
001	PCD(Page)	[0 to 99999999/ **160000** / 1 sheet]
	Sets the PM yield of the PCD (Pages).	
002	Transfer(Page)	[0 to 9999999 / **160000** / 1 sheet]
	Sets the PM yield of the transfer unit (Pages).	
003	Fusing(Page)	[0 to 9999999 / **160000** / 1 sheet]
	Sets the PM yield of the fusing unit (Pages).	
005	PCD(Rotation)	[0 to 999999999 / **199000** / 1 mm]
	Sets the PM yield of the PCD (Rotations).	
006	Transfer(Rotation)	[0 to 999999999 / **277000** / 1 mm]
	Sets the PM yield of the transfer unit (Rotations).	
007	Fuser(Rotation)	[0 to 999999999 / **54880000** / 1 mm]
	Sets the PM yield of the fusing unit (Rotations).	
009	Web (%)	[0 to 255 / **92** / 1 %]
	Sets the PM yield (%) of the web unit.	

7953	Operation Env Log

001	T<10	[0 to 99999999 / 0 / 1 mm]
	Displays the PCU rotation distance in the environment: T<10°C	
002	10<=T<=17	[0 to 99999999 / 0 / 1 mm]
	Displays the PCU rotation distance in the environment: 10°C≤T≤17°C	
003	17<T<23	[0 to 99999999 / 0 / 1 mm]
	Displays the PCU rotation distance in the environment: 17<T<23	
004	23<=T<=32	[0 to 99999999 / 0 / 1 mm]
	Displays the PCU rotation distance of the environment: 23<=T<=32	
005	27<T<=32	[0 to 99999999 / 0 / 1 mm]
	Displays the PCU rotation distance of the environment: 27<T<=32	
006	32<T	[0 to 99999999 / 0 / 1 mm]
	Displays the PCU rotation distance of the environment: 32<T	

7954	Env Log Clear
	Resets the environment logs (SP7953).

SP8-xxx: Data Log2-1

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.).
P:	Print application.	Totals (pages, jobs, etc.) executed for each application when the job was not stored on the document server.
O:	Other applications (external network applications, for example)	Refers to network applications such as Web Image Monitor. Utilities developed with the SDK (Software Development Kit) will also be counted with this group in the future.

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

Key for Abbreviations

Abbreviation	What It Means
/	“By”, e.g. “T:Jobs/Apl” = Total Jobs “by” Application
>	More (2> “2 or more”, 4> “4 or more”
AddBook	Address Book
Apl	Application
B/W	Black & White
Bk	Black
C	Cyan
ColCr	Color Create
ColMode	Color Mode
Comb	Combine

Abbreviation	What It Means
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

Abbreviation	What It Means
Palm 2	Print Job Manager/Desk Top Editor: A pair of utilities that allows print jobs to be distributed evenly among the printers on the network, and allows files to moved around, combined, and converted to different formats.
PC	Personal Computer
PGS	Pages. A page is the total scanned surface of the original. Duplex pages count as two pages, and A3 simplex count as two pages if the A3/DLT counter SP is switched ON.
PJob	Print Jobs
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 8counters are recorded in the SMC report.
Svr	Server
TonEnd	Toner End
TonSave	Toner Save
TXJob	Send, Transmission
YMC	Yellow, Magenta, Cyan
YMCK	Yellow, Magenta, Cyan, BlacK

Note

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

8001	T:Total Jobs	These SPs count the number of times each application is used to do a job. [0 to 9999999 / 0 / 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.
8004	P:Total Jobs	

- These SPs reveal the number of times an application is used, not the number of pages processed.
- When an application is opened for image input or output, this counts as one job.
- Interrupted jobs (paper jams, etc.) are counted, even though they do not finish.
- Only jobs executed by the customer are counted. Jobs executed by the customer engineer using the SP modes are not counted.
- When a print job is stored on the document server, only the L: counter increments.
- When the user enters document server mode and prints data stored on the document server, only the L: counter increments.
- When an image received from Palm 2 is received and stored, the L: counter increments.
- When the customer prints a report (user code list, for example), 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 to 9999999 / 0 / 1]
8024	P:Pjob/LS	
8027	O:Pjob/LS	

- When a job already on the document server is printed with another application, the L: counter increments.
- When images stored on the document server by a network application (including Palm 2), are printed with another application, the O: counter increments.

8031	T:Pjob/DesApl	These SPs reveal what applications were used to output documents from the document server. [0 to 9999999 / 0 / 1]
8034	P:Pjob/DesApl	
8037	O:Pjob/DesApl	

- When documents already stored on the document server are printed, the count for the application that started the print job is incremented.

8061	T:FIN Jobs	[0 to 9999999 / 0 / 1]
	These SPs total the finishing methods. The finishing method is specified by the application.	
8064	P:FIN Jobs	[0 to 9999999 / 0 / 1]
	These SPs total finishing methods for print jobs only. The finishing method is specified by the application.	
8067	O:FIN Jobs	[0 to 9999999 / 0 / 1]
	These SPs total finishing methods for jobs executed by an external application, over the network. The finishing method is specified by the application.	
806x 1	Sort	Number of jobs started in Sort mode.
806x 2	Stack	Number of jobs started out of Sort mode.
806x 3	Staple	Number of jobs started in Staple mode.
806x 4	Booklet	Number of jobs started in Booklet mode. If the machine is in staple mode, the Staple counter also increments.
806x 5	Z-Fold	Number of jobs started In any mode other than the Booklet mode and set for folding (Z-fold).
806x 6	Punch	Number of jobs started in Punch mode. When Punch is set for a print job, the P: counter increments. (See SP8064 6.)
806x 7	Other	Reserved. Not used.

SP8-xxx: Data Log2-2

<table>
<tr><td rowspan="2">8071</td><td>T:Jobs/PGS</td><td colspan="2">[0 to 9999999 / 0 / 1]</td></tr>
<tr><td colspan="3">These SPs count the number of jobs broken down by the number of pages in the job, regardless of which application was used.</td></tr>
<tr><td rowspan="2">8074</td><td>P:Jobs/PGS</td><td colspan="2">[0 to 9999999 / 0 / 1]</td></tr>
<tr><td colspan="3">These SPs count and calculate the number of print jobs by size based on the number of pages in the job.</td></tr>
<tr><td rowspan="2">8077</td><td>O:Jobs/PGS</td><td colspan="2">[0 to 9999999 / 0 / 1]</td></tr>
<tr><td colspan="3">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.</td></tr>
<tr><td>807x 1</td><td>1 Page</td><td>807x 8</td><td>21to50 Pages</td></tr>
<tr><td>807x 2</td><td>2 Pages</td><td>807x 9</td><td>51to100 Pages</td></tr>
<tr><td>807x 3</td><td>3 Pages</td><td>807x 10</td><td>101to300 Pages</td></tr>
<tr><td>807x 4</td><td>4 Pages</td><td>807x 11</td><td>301to500 Pages</td></tr>
<tr><td>807x 5</td><td>5 Pages</td><td>807x 12</td><td>501to700 Pages</td></tr>
<tr><td>807x 6</td><td>6 to10 Pages</td><td>807x 13</td><td>701to1000 Pages</td></tr>
<tr><td>807x 7</td><td>11to20 Pages</td><td>807x 14</td><td>1001to Pages</td></tr>
</table>

- 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.
- When printing the first page of a job from within the document server screen, the page is counted.
- Platen count is 1 and the SADF count is 3.

<table>
<tr><td>8381</td><td>T:Total PrtPGS</td><td rowspan="3">These SPs count the number of pages printed by the customer. The counter for the application used for storing the pages increments.
[0 to 9999999 / 0 / 1]</td></tr>
<tr><td>8384</td><td>P:Total PrtPGS</td></tr>
<tr><td>8387</td><td>O:Total PrtPGS</td></tr>
</table>

- When the A3/DLT double count function is switched on with SP5104, 1 A3/DLT page is counted as 2.
- When several documents are merged for a print job, the number of pages stored are counted for the application that stored them.
- These counters are used primarily to calculate charges on use of the machine, so the following pages are not counted as printed pages:

  > Blank pages in a duplex printing job.

  > Reports printed to confirm counts.

  > All reports done in the service mode (service summaries, engine maintenance reports, etc.)

  > Test prints for machine image adjustment.

  > Error notification reports.

  > Partially printed pages as the result of a printer jam.

8391	LSize PrtPGS	[0 to 9999999 / 0 / 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 machine.	

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 to 9999999 / 0 / 1]

8421	T:PrtPGS/Dup Comb	[0 to 9999999 / 0 / 1]
	These SPs count by binding and combine, and n-Up settings the number of pages processed for printing. This is the total for all applications.	
8424	P:PrtPGS/Dup Comb	[0 to 9999999 / 0 / 1]
	These SPs count by binding and combine, and n-Up settings the number of pages processed for printing by the printer application.	
8427	O:PrtPGS/Dup Comb	[0 to 9999999 / 0 / 1]
	These SPs count by binding and combine, and n-Up settings the number of pages processed for printing by Other applications	
842x 1	Simplex> Duplex	

842x 4	Simplex Combine	
842x 5	Duplex Combine	
842x 6	2>	2 pages on 1 side (2-Up)
842x 7	4>	4 pages on 1 side (4-Up)
842x 8	6>	6 pages on 1 side (6-Up)
842x 9	8>	8pages on 1 side (8-Up)
842x 10	9>	9 pages on 1 side (9-Up)
842x 11	16>	16 pages on 1 side (16-Up)
842x 12	Booklet	
842x 13	Magazine	

- These counts (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		Magazine	
Original Pages	Count	Original Pages	Count
1	1	1	1
2	2	2	2
3	2	3	2
4	2	4	2
5	3	5	4
6	4	6	4
7	4	7	4
8	4	8	4

8431	T:PrtPGS/ImgEdt	[0 to 9999999 / **0** / 1]

	These SPs count the total number of pages output with the three features below, regardless of which application was used.	
8434	P:PrtPGS/ImgEdt	[0 to 9999999 / 0 / 1]
	These SPs count the total number of pages output with the three features below with the print application.	
8437	O:PrtPGS/ImgEdt	[0 to 9999999 / 0 / 1]
	These SPs count the total number of pages output with the three features below with Other applications.	
843x 1	Cover/Slip Sheet	Total number of covers or slip sheets inserted. The count for a cover printed on both sides counts 2.
843x 2	Series/Book	The number of pages printed in series (one side) or printed as a book with booklet right/left pagination.
843x 3	User Stamp	The number of pages printed where stamps were applied, including page numbering and date stamping.

8441	T:PrtPGS/Ppr Size	[0 to 9999999 / 0 / 1]
	These SPs count by print paper size the number of pages printed by all applications.	
8444	P:PrtPGS/Ppr Size	[0 to 9999999 / 0 / 1]
	These SPs count by print paper size the number of pages printed by the printer application.	
8447	O:PrtPGS/Ppr Size	[0 to 9999999 / 0 / 1]
	These SPs count by print paper size the number of pages printed by Other applications.	
844x 1	A3	
844x 2	A4	
844x 3	A5	
844x 4	B4	
844x 5	B5	
844x 6	DLT	
844x 7	LG	

844x 8	LT	
844x 9	HLT	
844x 10	Full Bleed	
844x 254	Other (Standard)	
844x 255	Other (Custom)	

- These counters do not distinguish between LEF and SEF.

SP8-xxx: Data Log2-3

8451	PrtPGS/Ppr Tray	[0 to 9999999 / 0 / 1]
	These SPs count the number of sheets fed from each paper feed station.	
001	Bypass	Bypass Tray
002	Tray 1	Main Machine
003	Tray 2	Main Machine
004	Tray 3	Paper Tray Unit (Option)
005	Tray 4	Paper Tray Unit (Option)
006	Tray 5	LCT (Option)
007	Tray 6	Currently not used.
008	Tray 7	Currently not used.
009	Tray 8	Currently not used.
010	Tray 9	Currently not used.
011	Tray 10	Currently not used.
012	Tray 11	Currently not used.

8461	T:PrtPGS/Ppr Type	[0 to 9999999 / 0 / 1]
	These SPs count by paper type the number pages printed by all applications. These counters are not the same as the PM counter. The PM counter is based on feed timing to accurately measure the service life of the feed rollers. 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.	
8464	P:PrtPGS/Ppr Type	[0 to 9999999 / 0 / 1]
	These SPs count by paper type the number pages printed by the printer application.	
846x 1	Normal	

846x 2	Recycled
846x 3	Special
846x 4	Thick
846x 5	Normal (Back)
846x 6	Thick (Back)
846x 7	OHP
846x 8	Other

8471	PrtPGS/Mag	[0 to 9999999 / 0 / 1]
	These SPs count by magnification rate the number of pages printed.	
001	to 49%	
002	50% to 99%	
003	100%	
004	101% to 200%	
005	201% to	

- 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.
- 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. Note: These SPs return the same results as this SP is limited to the Print application. [0 to 9999999 / 0 / 1]

8511	T:PrtPGS/Emul	[0 to 9999999 / 0 / 1]
	These SPs count by printer emulation mode the total number of pages printed.	
8514	P:PrtPGS/Emul	[0 to 9999999 / 0 / 1]
	These SPs count by printer emulation mode the total number of pages printed.	
001	RPCS	
002	RPDL	
003	PS3	
004	R98	
005	R16	
006	GL/GL2	
007	R55	
008	RTIFF	
009	PDF	
010	PCL5e/5c	
011	PCL XL	
012	IPDL-C	
013	BM-Links	Japan Only
014	Other	

- SP8511 and SP8514 return the same results as they are both limited to the Print application.
- Print jobs output to the document server are not counted.

8521	T:PrtPGS/FIN	[0 to 9999999 / 0 / 1]
	These SPs count by finishing mode the total number of pages printed by all applications.	
8524	P:PrtPGS/FIN	[0 to 9999999 / 0 / 1]
	These SPs count by finishing mode the total number of pages printed by the Print application.	
852x 1	Sort	

852x 2	Stack
852x 3	Staple
852x 4	Booklet
852x 5	Z-Fold
852x 6	Punch
852x 7	Other

Note

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

8531	Staples	This SP counts the amount of staples used by the machine. [0 to 9999999 / 0 / 1]

8581	T: Counter	[0 to 9999999 / 0 / 1]
	These SPs count the total output broken down by color output, regardless of the application used. In addition to being displayed in the SMC Report, these counters are also displayed in the User Tools display on the 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 to 9999999 / 0 / 1]
	These SPs count the totals for A3/DLT paper use, number of duplex pages printed, and the number of staples used. These totals are for Other (O:) applications only.	
001	A3/DLT	
002	Duplex	

8601	Cvg Counter	[0 to 9999999 / 0 / 1]
	These SPs count the total coverage for each color and printout pafes for each printing mode.	
001	Cvg: BW %	

011	Cvg: BW pages	

SP8-xxx: Data Log2-4

8771	Dev Counter	[0 to 9999999/ 0 / 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.	

8781	Toner Bottle Info.
001	Bk
	This SP displays the number of toner bottles used. The count is done based on the equivalent of 1,000 pages per bottle.

8801	Toner Remain	[0 to 100 / 0 / 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.	

8851	Cvr Cnt: 0-10%	[0 to 9999999 / 0 / 1]
	These SPs count the percentage of dot coverage for black other color toners.	
011	0 to 2%: BK	
021	3 to 4%: BK	
031	5 to 7%: BK	
041	8 to 10%: BK	

8861	Cvr Cnt: 11-20%	[0 to 9999999 / 0 / 1]
	These SPs count the percentage of dot coverage for black other color toners.	

001	K	Black toner	Do not display for this machine.

8871	Cvr Cnt: 21-30%		[0 to 9999999 / 0 / 1]
	These SPs count the percentage of dot coverage for black other color toners.		
001	K	Black toner	Do not display for this machine.

8881	Cvr Cnt: 31 -%		[0 to 9999999 / 0 / 1]
	These SPs count the percentage of dot coverage for black other color toners.		
001	K	Black toner	Do not display for this machine.

8891	Page/toner Bottle	[0 to 9999999 / 0 / 1]
	These SPs display the amount of the remaining current toner.	

8901	Page/Ink-Prev 1	[0 to 9999999 / 0 / 1]
	These SPs display the amount of the remaining previous toner.	

8911	Page/Ink-Prev 2	[0 to 9999999 / 0 / 1]
	These SPs display the amount of the remaining 2nd previous toner.	

8921	Cvr Count Total	[0 to 9999999 / 0 / 1]
	Displays the total coverage and total printout number for each color.	
001	Coverage (%): BK	
011	Coverage /p:BK	

8941	Machine Status	[0 to 9999999 / 0 / 1]
	These SPs count the amount of time the machine spends in each operation mode. These SPs are useful for customers who need to investigate machine operation for improvement in their compliance with ISO Standards.	
001	Operation Time	Engine operation time. Does not include time while controller is saving data to HDD (while engine is not operating).

002	Standby Time	Engine not operating. Includes time while controller saves data to HDD. Does not include time spent in Energy Save, 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	SC	Total down time due to SC errors.
007	PrtJam	Total down time due to paper jams during printing.
008	OrgJam	Total down time due to original jams during scanning.
009	Supply PM Unit End	Total down time due to supply unit end.

8999	Adomin. Counter List	[0 to 9999999 / **0** / 1]
	Display the total coverage and total printout number for each color.	
001	Total	
007	Printer BW	
012	A3/DLT	
013	Duplex	
015	Coverage: BW (%)	
017	Coverage: BW Print Page (%)	

Input Check -1

Main Machine

When entering the Input Check mode, 8 digits display the result for a section. Each digit corresponds to a different device as shown in the table.

Bit No.	7	6	5	4	3	2	1	0
Result	0 or 1	0 or 1	0 or 1	0 or 1	0 or 1	0 or 1	0 or 1	0 or 1

5803	Input Check		
	Description	Reading	
		0	1
001	Tray 1: P Size Sens	See the table 1 following this table.	
002	Tray 1: Tray Set Sens	Set	Not set
003	Tray 1: P Lift Sens	Not upper limit	Upper limit
004	Tray 1: P End Sens	No paper	Paper remaining
005	Tray 1: P Height Sens 1	See the table 2 following this table.	
006	Tray 1: P Height Sens 2		
007	Tray 2: P Size Sens	See the table 1 following this table.	
008	Tray 2: Tray Set Sens	Set	Not set
009	Tray 2: Paper Lift Sens	Not upper limit	Upper limit
010	Tray 2: Paper End Sens	No paper	Paper remaining
011	Tray 2: P Height Sens 1	See the table 2 following this table.	
012	Tray 2: P Height Sens 2		
013	Tray 1: Paper Feed Sens	Paper detected	No paper detected
014	Tray 2: Paper Feed Sens	Paper detected	No paper detected
015	Tray 3: Paper Feed Sens	Paper detected	No paper detected

016	Tray 4: Paper Feed Sens	Paper detected	No paper detected
017	LCT: Paper Feed Sens	No paper detected	Paper detected
018	Relay Sensor 1	Paper detected	No paper detected
019	Relay Sensor 2	Paper detected	No paper detected
020	Relay Sensor 3	No paper detected	Paper detected
021	Relay Sensor 4	No paper detected	Paper detected
022	Relay Sensor: LCT	No paper detected	Paper detected
023	By-pass: P End Sens	Not end	Paper end
024	By-pass: P Size Sens	See the table 3 following this table.	
025	Regist Sensor	Paper detected	No paper detected
026	Fusing Exit Sen	No paper detected	Paper detected
027	Fusing Ent. Sen	Paper detected	No paper detected
028	Junc Gate Relay Sen	Paper detected	No paper detected
029	Exit Sensor	Paper detected	No paper detected
030	P Ovflow Sensor	Not full	Full
031	Right Cov Open/Close	Close	Open
032	Dup. Unit Open/Close	Open	Close
033	Dup. Entr. Sensor	Paper detected	No paper detected
034	Dup. Exit. Sensor	Paper detected	No paper detected
035	Bank R. Cover Open/Close	Close	Open
036	Tray Cover Open/Close	Close	Open
037	LCT Set	Set	Not set
038	Bridge Exit Sens	Paper detected	No paper detected
039	Bridge Relay Sens	Paper detected	No paper detected
040	Bridge Unit Set Det	Set	Not set
041	Bridge L Guide Open/Close	Close	Open

042	Bridge R Guide Open/Close	Close	Open
043	T. Belt U. HP Sen	Not HP	HP
044	New. U. Det.: Trans	?	?
045	New. U. Det.: Fusing	?	?
046	Fusing Unit Set	Set (Bit1)	Not set (Bit1)
047	Toner Ovflow Sen	Not full	Full
048	Int.lock Det. 1	Right or front door is open.	Right or front door is close.
049	Int.lock Det. 2	Right or front door is open.	Right or front door is close.
052	Mech. Counter Set	Not set	set
055	New. U. Det.: PCDU		
056	Dip Switch	-	-
057	Cleaning Web End	Not end	End
058	1 Hole Punch	?	?
064	Shift Tray Sensor	Stay at rear	Stay at front

Table 1: Paper Height Sensor

0: Deactivated, 1: Activated (actuator inside sensor)

Remaining paper	Paper height sensor 1	Paper height sensor 2
Full	0	0
Nearly full	1	0
Near end	1	1
Almost empty	0	1

Table 2: Paper Size Switch

Switch 1 is used for the tray set detection.

0: Pushed, 1: Not pushed

Models		Switch Location		
North America	Europe/Asia	4	3	2
11" x 17" SEF*1 (A3 SEF)	A3 SEF*1 (11" x 17" SEF)	0	0	1
8.5" x 14" SEF *2 (B4 SEF)	B4 SEF *2 (8.5" x 14" SEF)	0	0	0
A4 SEF	A4 SEF	1	1	0
8.5" x 11" SEF	8.5" x 11" SEF	1	1	1
B5 SEF	B5 SEF	0	1	1
11" x 81/2" LEF*3 (A4 LEF)	A4 LEF*3 (11" x 81/2" LEF)	1	0	0
10.5" x 7.25" LEF*4 (B5 LEF)	B5 LEF*4 (10.5" x 7.25" LEF)	0	1	0
A5 LEF	A5 LEF	1	0	1
*1: The machine detects either 11" x 17" SEF or A3 SEF, depending on the setting of SP 5-181-002 (Tray 1) or -006 (Tray 2). *2: The machine detects either 8.5" x 14" SEF or B4 SEF, depending on the setting of SP 5-181-003 (Tray 1) or -007 (Tray 2). *3: The machine detects either 11" x 81/2" LEF or A4 LEF, depending on the setting of SP 5-181-001 (Tray 1) or -005 (Tray 2). *4: The machine detects either B5 LEF or 10.5" x 7.25" LEF, depending on the setting of SP 5-181-004 (Tray 1) or -008 (Tray 2)..				

Table 3: Paper Size (By-pass Table)

0: Pushed, 1: Not pushed

Models		Bit No.			
North America	Europe/Asia	3	2	1	0
11" x 17" SEF*1	A3 SEF*1	1	1	1	0

(11" x 8.5" LEF)	(A4 LEF)				
11" x 17" SEF*1 (11" x 8.5" LEF)	A3 SEF*1 (A4 LEF)	1	1	0	0
8.5" x 11" SEF*1 (8.5" x 11" SEF*2)	A4 SEF*1 (A5 LEF)	1	1	0	1
8.5" x 11" SEF*1 (8.5" x 11" SEF*2)	A4 SEF*1 (B5 LEF)	1	0	0	1
5.5" x 8.5" SEF	A5 SEF	1	0	1	1
5.5" x 8.5" SEF	A5 SEF	0	0	1	1
5.5" x 8.5" SEF	A6 SEF	0	1	1	1
5.5" x 8.5" SEF	A6 SEF	1	1	1	1

Note

- *1: When the machine determines that the paper feed direction is "LEF", it considers that the paper size is bracketed size.

Input Check -2

Options

3000-Sheet Finisher (B805)

6140	Bit	Description	Reading	
			0	1
001		Entrance Sensor	No paper detected	Paper detected
002		Proof Exit Sensor	No paper detected	Paper detected
003		Proof Full Det. Sen	Not Full	Full
004		Up Tray Exit Sen	No paper detected*1	Paper detected*1
005		Staple Exit Sen	No paper detected	Paper detected
006		Shift Roll HP Sens	Not HP	HP
007		Shift Exit Sens	No paper detected	Paper detected
008		Exit Guide Plate HP Sensor	Not HP	HP
009		Low Tray Higt Sen	No paper detected	Paper detected
010		Up Tray Higt Sen	No paper detected	Paper detected
011		Up Tray Full Sen	Not Full	Full
012		StackRoll HP Sen	Not HP	HP
013		Jogger HP Sensor	Not HP	HP
014		F-Out Belt HP Sen	HP	Not HP
015		Staple Tray P. Sen	No paper detected	Paper detected
016		CorneStapl Sen	Not HP	HP
017		StaplerRot.HP Sen	Not HP	HP
018		Up Tray Limit SW	Not Limit	Limit

6140	Bit	Description	Reading	
			0	1
019		DOOR Switch	Closed	Open
020		CornStaple Operat	Not HP	HP
021		Staple Detection	No staple detected	Staple detected
022		Staple Tip Detect	No staple detected	Staple detected
023		Punch MovHP Sensor	Not HP	HP
024		P. PosiSlideHP Sensor	Not HP	HP
025		P. Posi Sensor	No paper detected	Paper detected
026		Punch Full Sensor	Not Full	Full
027		Punch HP Sensor	Not HP	HP
028		Punch DIPSW 1	See *1	
029		Punch DIPSW 2	See *1	
030		Stk Junc Gate HP Sen	Not HP	HP
031		StkPresent Sensor	No paper detected	Paper detected
032		Clamp Roll HP Sensor	Not HP	HP
033		Fold Ent. Sensor	No paper detected	Paper detected
034		BottomFence HP Sensor	Not HP	HP
035		Fold Cam HP Sensor	Not HP	HP
036		Fold Plate HP Sensor	Not HP	HP
037		Fold Unit Exit	No paper detected	Paper detected
038		Low Tray Full Sen Front	No paper detected	Paper detected
039		Low Tray Full Sen Rear	No paper detected	Paper detected
040		BkletStapler1: Ope	Not HP	HP
041		BkletStapler1: Stap In	No staple detected	Staple detected
042		BkletStapler1: Stap In	No staple detected	Staple detected

6140	Bit	Description	Reading	
			0	1
043		BkletStapler1: StapIn Ope	Not HP	HP
044		BkletStapler2: Stap In	No staple detected	Staple detected
045		BkletStapler2: Stap In	No staple detected	Staple detected
046		Up Try Full Sen: 3000	Not Full	Full
047		Jogg HP Sen: Front	Not used in the machine	
048		Jogg HP Sen: Rear	Not used in the machine	
049		Jogg HP Sen: Upper	Not used in the machine	

*1: Combination of DIP SW 1 and SW 2

DIP SW 1	DIP SW 2	Punch Type
0	0	Japan
1	0	Europe
0	1	North America
1	1	North Europe

1000-Sheet Finisher (B408)

6139	Bit	Description	Reading	
			0	1
001		Entrance Sensor	Paper detected	No paper detected
002		Shift Exit Sensor (Lower Tray Exit Sensor)	No paper detected	Paper detected
003		Staple Entrance Sensor (Stapler Tray Entrance Sensor)	Paper detected	No paper detected
004		Staple Moving HP Sensor (Stapler HP Sensor)	Not HP	HP

6139	Bit	Description	Reading	
			0	1
005		Jogger HP Sensor (Jogger Fence HP Sensor)	Not HP	HP
006		Stack Feed-out Belt HP Sensor	HP	Not HP
007		Staple Tray Paper Sensor	No paper detected	Paper detected
008		Staple Rotation Sensor (Staple Rotation HP Sensor)	Not HP	HP
009		Staple Sensor	Staple detected	No staple detected
010		Staple READY Detection	Staple detected	No staple detected
011		Exit Guide Plate HP (Exit Guide Plate HP Sensor)	Not HP	HP
012		Shift HP Sensor	Not HP	HP
013		Paper Sensor (Stack Height Sensor)	No output tray detected	Output tray detected
014		Tray Lower Sensor (Lower Tray Lower Limit Sensor)	Lower limit	Not lower limit
015		Proof Full Sensor (Paper Limit Sensor)	Not full	Full

Output Check -1

Main Machine

5804	Output Check	
001	Exit Motor: 350	Paper exit motor (Mainframe)
002	Exit Motor: 175	
003	Exit Motor: 230	
004	Exit Motor: 180	
005	Exit Motor: 154	
006	Exit Motor: 90	
007	Feed Motor: 300	Paper feed motor (Mainframe)
008	Feed Motor: 255	
009	Feed Motor: 230	
010	Feed Motor: 215	
011	Feed Motor: 180	
012	Feed Motor: 154	
013	Feed Motor: 90	
014	Bank: Feed Motor: 300	Paper feed motor (Optional paper feed unit)
015	Bank: Feed Motor: 255	
016	Bank: Feed Motor: 230	
017	Bank: Feed Motor: 215	
018	Bank: Feed Motor: 180	
019	Bank: Feed Motor: 154	
020	Bank: Feed Motor: 90	
021	LCT: Feed Motor: 300	Paper feed motor (Optional LCT)

5804	Output Check	
022	LCT: Feed Motor: 255	
023	LCT: Feed Motor: 230	
024	LCT: Feed Motor: 215	
025	LCT: Feed Motor: 180	
026	LCT: Feed Motor: 154	
027	LCT: Feed Motor: 90	
028	Paper Feed Clutch 1	Paper feed clutch 1/2 (Mainframe)
029	P. Feed Cl 2	
030	Bank: P. Feed Cl 3	Paper feed clutch 3/4 (Optional paper feed unit)
031	Bank: P. Feed Cl 4	
032	LCT: P. Feed Cl	Paper feed clutch (Optional LCT)
033	P-up Solenoid 1	Pick-up Solenoid 1/2 (Mainframe)
034	P-up Solenoid 2	
035	Bank: P-up Solenoid 3	Pick-up Solenoid 3/4 (Optional paper feed unit)
036	Bank: P-up Solenoid 4	
037	LCT: P-up Solenoid	Pick-up Solenoid (LCT)
038	Tray Lift Mot 1: Up	-
039	Tray Lift Mot 1: Down	
040	Tray Lift Mot 2: Up	
041	Tray Lift Mot 2: Down	
042	P.Tray Lock Sol	Not used
043	Bank: P. Tray Lk. Sol	Tray lock solenoid (Optional paper feed unit)
044	Regist. Motor: 230	-
045	Regist. Motor: 180	

5804	Output Check	
046	Regist. Motor: 154	
047	Regist. Motor: 90	
048	Exit: Junc Gate Sol	Junction gate 1 solenoid
049	Dup: Inv Gate Solenoid	Not used
050	Dup Inv Mot: Fwd: 230	-
051	Dup Inv Mot: Fwd: 180	
052	Dup Inv Mot: Fwd: 154	
053	Dup Inv Mot: Fwd: 90	
054	Dup Inv Mot: Rev: 230	
055	Dup Inv Mot: Rev: 180	
056	Dup Inv Mot: Rev: 154	
057	Dup Inv Mot: Rev: 90	
058	Dup/B Motor: Fwd: 230	-
059	Dup/B Motor: Fwd: 180	
060	Dup/B Motor: Fwd: 154	
061	Duplex/By-pass Motor: Fwd: 90	
062	Duplex/By-pass Motor: Rev: 230	
063	Duplex/By-pass Motor: Rev: 180	
064	Duplex/By-pass Motor: Rev: 154	
065	Duplex/By-pass Motor: Rev: 90	
066	By-pass Feed Clutch	-
067	By-pass Pick-up Solenoid	-
068	Bridge: Drive Motor: 230	Drive motor (Bridge unit)
069	Bridge: Drive Motor: 180	
070	Bridge: Drive Motor: 154	

5804	Output Check	
071	Bridge: Drive Motor: 90	
072	Bridge: Junction Gate Solenoid	Junction Gate Solenoid (Bridge unit)
073	Bridge: Drive Motor: Reset	-
074	Bridge: Drive Motor: Enable	-
075	Bridge: Cooling Fan Motor	Not used
076	Transfer Belt Contact Motor	-
077	OPC Motor: 230	Drum motor
078	OPC Motor: 180	
079	OPC Motor: 154	
080	OPC Motor: 90	
081	Transfer/Development Motor: 230	-
082	Transfer/Development Motor: 180	
083	Transfer/Development Motor: 154	
084	Transfer/Development Motor: 90	
085	Fusing Motor: 230	-
086	Fusing Motor: 180	
087	Fusing Motor: 154	
088	Fusing Motor: 90	
089	Development Puddle Motor	-
090	PTL Control	-
091	Fusing Fan Motor: High	Fusing exhaust fan motor
092	Fusing Fan Motor: Low	
093	Exhaust Fan Motor: High	Exhaust fan motor
094	Exhaust Fan Motor: Low	
095	Duct Fan Motor	Cooling fan motor

5804	Output Check	
096	Exit Fan Motor: High	Paper exit cooling fan motor
097	Exit Fan Motor: Low	
098	PSU Fan Motor	-
100	Polygon Motor: 230	-
101	Polygon Motor: 180	
102	Polygon Motor: 154	
103	Polygon Motor: 90	
104	LD 1	-
105	LD 2	
106	Toner Bottle Motor: Fwd	Toner supply motor
107	Quenching Lamp	-
108	Charge Bias	-
109	Development Bias	-
110	Transfer Belt Voltage	-
111	ID Sensor LED	-
115	Cleaning Web Motor	Web motor
116	Shift Tray Motor	Not used
117	CTL Cooling FAN	Controller fan

Output Check -2

1000-Sheet Finisher (B408)

6144	Display	Description
6144 1	Upper Relay Motor	Upper Transport Motor
6144 2	Lower Relay Motor	Lower Transport Motor
6144 3	Exit Motor	-
6144 4	Proof Junc. Gate SOL	Tray Junction Gate Solenoid
6144 5	Lower Tray Lift Motor	Lower Tray Lift Motor
6144 6	Jogger Fence Mot	Jogger Fence Motor
6144 7	Stapler Motor	Stapler Motor
6144 8	Staple Hammerr	Stapler Hammer
6144 9	Staple Junc.Gate SOL	Stapler Junction Gate Solenoid
6144 10	Posi Roller Sol	Positioning Roller Solenoid
6144 11	Stack F-out Motor	-
6144 12	Shift Mot	-
6144 13	Exit Guide Plate Mot	-

3000-Sheet Finisher

6145	Display	Description
6145 1	Entrance Motor	Finisher Entrance Motor
6145 2	UpTrans. Feed Mot	Upper Transport Motor
6145 3	LowTrans. Feed Mot	Lower Transport Motor
6145 4	Up/ProofTry ExMot	Upper/Proof Tray Exit Motor
6145 5	Clamp Rol Retr. Mot	Clamp Roller Retraction Motor

6145 6	Shift Roller Motor	Shift Roller Motor
6145 7	Ext Guide Plate Mot	Exit Guide Plate Motor
6145 8	Up Tray Lift Mot	Upper Tray Lift Motor
6145 9	StkSpomge Roll Mot	Stacking Sponge Roller Motor
6145 10	Jogg Fence Mot	Jogger Fence Motor
6145 11	Stack Feed-out Motor	Feed Out Belt Motor
6145 12	CornStpl Mov Mot	Corner Stapler Movement Motor
6145 13	CornStpl Rot Mot	Corner Stapler Rotation Motor
6145 14	Corner Stapler	Corner Stapler EH530
6145 15	Proof Junction Gate Sol	Proof Junction Gate Solenoid
6145 16	Stpl JuncGatSo	Stapling Tray Junction Gate Solenoid
6145 17	Stp Edge PrePlate Sol	Stapling Edge Pressure Plate Solenoid
6145 18	PosiRoll Sol	Positioning Roller Solenoid
6145 19	BkletPesRoll Sol	Booklet Pressure Roller Solenoid
6145 20	StkJuncGate Mot	Stack Junction Gate Motor
6145 21	FDUnBotFenLiftMot	Fold Unit Bottom Fence Lift Motor
6145 22	BkletStapler:Fr	Booklet Stapler EH185R: Front
6145 23	BkletStapler:Re	Booklet Stapler EH185R: Rear
6145 24	Fold Plate Mot	Fold Plate Motor
6145 25	Fold Roll Mot	Fold Roller Motor
6145 26	PosiRollMot	Positioning Roller Motor
6145 27	Punch D Motor	Punch Drive Motor
6145 28	Punch Move Motor	Punch Movement Motor
6145 29	P PosiSenSlideMot	Paper Position Sensor Slide Motor
6145 30	Exit Jogg Mot: Fr	-
6145 31	Exit Jogg Mot: Re	-

6145 32	Exit Jogg Rel Mot	-

Using SP Modes

Test Pattern Printing

Note

- Always print a test pattern to confirm correct operation of the machine.

1. Enter the SP mode and select SP2-109.
2. Enter the number for the test pattern that you want to print and press "OK" button (see the tables below). This selects the test pattern for printing.

   Note

   - You can check the test patterns on the LCD by pressing the "Details" button on the operation panel.
3. Exit the SP mode.
4. Press the "Menu" button, and then select "List/Test Print".
5. Press the "OK" button, and then select "Operations Test".
6. Press the "OK" button, and then press the "Print" button.

   Note

   - You can select which tray paper is fed from and which tray paper is output to at this time.

Test Pattern Table (SP2-109-001: Printing test pattern)

No.	Test Pattern	No.	Test Pattern
0	None	13	Independent Pattern (4-dot)
1	Vertical Line (1-dot)	14	Trimming Area
2	Vertical Line (2-dot)	15	Hound's Tooth Check (Vertical)
3	Horizontal Line (1-dot)	16	Hound's Tooth Check (Horizontal)
4	Horizontal Line (2-dot)	17	Black Band (Horizontal)
5	Grid Vertical Line	18	Black Band (Vertical)
6	Grid Horizontal Line	19	Checker Flag Pattern
7	Grid Pattern Small	20	Grayscale (Vertical Margin)
8	Grid Pattern Large	21	Grayscale (Horizontal Margin)
9	Argyle Pattern Small	22	Two Beam Density Pattern

No.	Test Pattern	No.	Test Pattern
10	Argyle Pattern Large	23	Full Dot Pattern
11	Independent Pattern (1-dot)	24	All White Pattern
12	Independent Pattern (2-dot)		

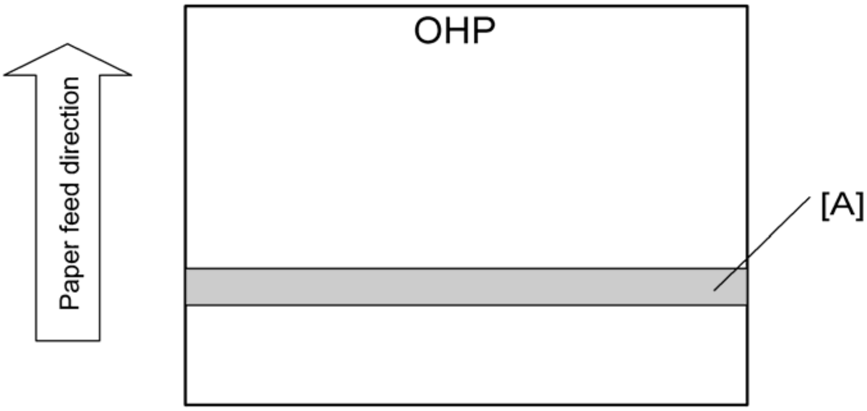
SMC Print Out Lists: SP5-990

1. Open SP mode 5-990.

SMC (System Parameter and Data Lists)	
1	All Data List

2. Press the “EXECUTE” button on the operation panel.
3. Select “Single” or “Both”.
4. After printing the list, press the “Escape” button to return to the SP mode display.

Nip Band Width Check: SP1-109



b195s902

When paper wrinkling or image offset occurs, the pressure from the pressure roller can be adjusted by changing the position of the pressure springs. At this time, the nip bandwidth can also be checked with SP1-109.

1. Execute SP5-802 to perform a free run of about 50 sheets.
2. Open SP1-109-1, press "OK" button, and then press "Yes" to confirm the selection.

Note

- Check the nip bandwidth around the center of the OHP.

Nip band Specification: 7.0 ± 0.5 mm

Memory Clear: SP5-801

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

SP5811-1:	Machine serial number
SP5907:	Plug & Play Brand Name and Production Name Setting

Important

- **This procedure restores all SP code settings to their factory default settings.**
- **Before clearing all settings in memory with SP5801, print an SMC report with SP5990. You may need this for reference to restore previously adjusted settings.**

1. Push △ and ▽ together, hold down for over 5 seconds, release and then press the "OK" button.
2. Press △ or ▽ to display “2.Engine”.
3. Press the "OK" button.
4. Press △ or ▽ to display “5.Mode” then press the "OK" button.
5. Press △ or ▽ to display “SP5801/Memory Clear” then press the "OK" button.
6. With “ALL Clear” displayed, press the "OK" button, then press the "EXECUTE" button.
7. With "Would you like starting..." displayed, then press the "EXECUTE" button again to execute.

```
<All>
result=OK
```

Here is a summary of all the settings.

No.	Item	What It Initializes
001	All	All items in this table
002	Clear Engine	All settings set for engine and processing
003	SCS	System Control Service (ROM update information)
004	IMH Memory Clr	Image Memory Handler

No.	Item	What It Initializes
008	Printer	Printer defaults
010	GWWS/NFA	Netfile (NFA) management files, thumbnails, the Job login ID.
011	NCS	Network Control Service. IP addresses, SmartDeviceMonitor for Admin., Web Status Monitor settings, TELNET settings
014	Clear DCS Setting	DCS (Delivery Control Service) settings
015	Clear UCS Settings	User Information Control Service settings
016	MIRS Settings	Machine Information Report Service settings
017	CCS	Certification and Charge-control Service settings.
018	SRM Memory Clr	System Resource Management settings
019	LCS	Log Count Service settings
021	ECS	

8. After clearing all settings, make sure that you do the following:
    - Do the laser beam pitch adjustment. (☛ LD Unit in the section “Replacement and Adjustment)
    - Referring to the SMC Report, re-enter any values, which had been changed from their factory settings.
    - Execute SP3001-2 (ID Sensor Initial Setting).

Updating the Firmware

⚠CAUTION

- Never switch off the power while downloading. Switching off the power while the new software is being downloaded can damage the boot files in the controller.

Setting the Machine in Firmware Update Mode

1. Turn off the power switch.
2. Remove the SD card cover (🔩 x 1).
3. Insert the SD card that contains the firmware in SD card slot 2.
4. Turn on the machine.

```
Preparing to start
Firmware update...
```

Wait about 60 sec. for the "Power" LED on the operation panel to light, and for the first module selection to appear.

```
Program UpDate Menu P.01
Engine
```

Reviewing the Module Statuses

With the machine in the firmware update mode, follow this procedure to review the status of the firmware modules.

```
Program UpDate Menu P.01
Engine
```

1. Push "◁" "▷" to display the part number of the first module.

```
ROM: G1795160A
NEW: G1795160A
```

  - "ROM" is the part number of the module in the machine.
  - "NEW" is the part number of the module on the SD card.

2. Push "◁" "▷" again to display the version numbers of the modules.

```
ROM : 0.09
NEW : 0.19
```

  - "ROM" is the version number of the module in the machine.
  - "NEW" is the version number of the module on the SD card.
  - If the "NEW" version number is higher than the "ROM" version number, the module must be updated.

3. Push "◁" "▷" to return to the previous level.

```
Program UpDate Menu P.01
Engine
```

4. Push "△" "▽" to select another module, then push the "OK" key again to review the module name and version number.
5. Repeat this procedure to review the version numbers of the modules: Web Support, Network Support, Onboard Sys, Onboard Prn, Engine, and NeworkDocBox.

How to Update a Module

Follow this procedure to update a module.

Important

- **Only one module can be updated at a time. The machine power must be turned off and on after each module is updated.**

1. Set the machine in the firmware update mode. (See "Setting the Machine in the Firmware Update Mode" above.)

```
Program UpDate Menu P.01
Engine
```

2. Push △ or ▽ to change the module page that you want to update (Web Support, Network Support, Onboard Sys, Onboard Prn, Engine or etc.).

```
Program UpDate Menu P.02
Web Support
```

3. Push "OK" to select a module and then the update screen appears on the LCD.

```
Program UpDate Menu P.02
```

```
Web Support
UpDate Exit
```

4. Press "UpDate" to start updating. An asterisk appears in the loading screen and asterisks replace the underscores in the progress line as the data updates.

```
Loading
***____
```

5. Push [#Enter] to start the update of the selected module.

   When the update is completed, you will see:

```
Update done.
Web Support
Card No.:1/1
```

   If firmware update does not complete successfully, try to update it again. If firmware update always fails, replace the controller board.

6. Turn the machine off.
7. If you are finished, remove the SD card from the slot and turn the machine on.

   -or-

   If you need to update another module, leave the SD card in place, turn the machine on again and repeat this procedure from Step 1.

Firmware Update Error

If a firmware update error occurs, this means the update was cancelled during the update because the module selected for update was not on the SD card.

Recovery after Power Loss

If the ROM update is interrupted as a result of accidental loss of power while the firmware is updating, then the correct operation of the machine cannot be guaranteed after the machine is switched on again. If the ROM update does not complete successfully for any reason, then in order to ensure the correct operation of the machine, the ROM update error will continue to show until the ROM is updated successfully.

In this case, insert the card again and switch on the machine to continue the firmware download automatically from the card without the menu display.

Printing the Self-Diagnosis Report

The Self-Diagnosis Report, printed with SP5990 (SP Print Mode), lists the current names and version numbers of the update modules.

1. To enter the SP mode, push and hold down △▽ for 5 sec. then push [OK].
2. Push ▽ to display "2. Engine" then push [OK].
3. Push ▽ to display "5. Mode" then push [OK].

   ```
   5.001 All Indicators On
   ```

4. Push ▽ once to select SP5990 then push [OK].

   ```
   5.990.001 All
   ```

5. Push ▽ three times to select SP5990-005 then push [OK].

   ```
   5.990.005 Diagnostic Report
   EXECUTE
   ```

6. Push [#Enter] to print the report.

   The firmware module names and version numbers are listed in the report.

Handling Firmware Update Errors

An error message shows in the first line if an error occurs during a download. The error code consists of the letter “E” and a number (“E20”, for example).

Error Message Table

Code	Meaning	Solution
20	Cannot map logical address	Make sure the SD card is installed correctly, or use a different SD card.
21	Cannot access memory	HDD connection incorrect or replace HDD.
22	Cannot decompress compressed data	Incorrect ROM data on the SD card, or data is damaged.
23	Error occurred when ROM update program started	Controller program defective. If the second attempt fails, replace controller board.

Code	Meaning	Solution
24	SD card access error	Make sure the SD card is inserted correctly, or use a different SD card.
30	No HDD available for stamp data download	HDD connection incorrect or replace HDD.
31	Data incorrect for continuous download	Insert the SD card with the remaining data required for the download, the re-start the procedure.
32	Data incorrect after download interrupted	Execute the recovery procedure for the intended module download, then repeat the installation procedure.
33	Incorrect SD card version	Incorrect ROM data on the SD card, or data is corrupted.
34	Module mismatch - Correct module is not on the SD card)	SD update data is incorrect. Acquire the correct data (Japan, Overseas, OEM, etc.) then install again.
35	Module mismatch – Module on SD card is not for this machine	SD update data is incorrect. The data on the SD card is for another machine. Acquire correct update data then install again.
36	Cannot write module – Cause other than E34, E35	SD update data is incorrect. The data on the SD card is for another machine. Acquire correct update data then install again.
40	Engine module download failed	Replace the update data for the module on the SD card and try again, or replace the BCU board.
42	Operation panel module download failed	Replace the update data for the module on the SD card and try again, or replace the LCDC.
43	Stamp data module download failed	Replace the update data for the module on the SD card and try again, or replace the hard disks.
44	Controller module download failed	Replace the update data for the module on the SD card and tray again, or replace controller board.
50	Electronic confirmation check failed	SD update data is incorrect. The data on the SD card is for another machine. Acquire correct update data then install again.

NVRAM Data Upload/Download

The content of the NVRAM can be uploaded to and downloaded from an SD card.

Uploading NVRAM Data (SP5-824)

1. Turn off the main switch.
2. Remove the SD card cover (🔩 x 1).
3. Insert the SD card into SD card slot 2.
4. Turn on the main switch.
5. Execute SP5-824.
6. Press the "EXECUTE" button to start uploading the NVRAM data.

Downloading NVRAM Data (SP5-825)

The following data are not downloaded from the SD card:

- Total counter
- Dupelx, A3/DLT/Over 420 mm, Staple counters (system settings).

1. Turn off the main switch.
2. Remove the SD card cover [A].
3. Plug the SD card [B] into SD card slot 2.
4. Turn on the main switch.
5. Execute SP5-825.
6. Press the "EXECUTE" button to start downloading the NVRAM data.

Note that the following errors could occur during downloading:

- If a card is not installed in the card slot and a message tells you that downloading cannot proceed, you cannot execute downloading, even by pressing the "EXECUTE" button.
- If the correct card for the NVRAM data is not inserted in the card slot, after you press the "EXECUTE" button a message will tell you that downloading cannot proceed because the card is abnormal and the execution will halt.

SD Card Appli Move

Overview

The service program “SD Card Appli Move” (SP5-873) lets you to copy application programs from one SD card to another SD card.

Slot 1 and Slot 2 are used to store application programs. However you can move application programs from Slot 2 to Slot 1 with the following procedure.

Use caution when you do the SD Card Appli Move procedure:

1. The data necessary for authentication is transferred with the application program from an SD card to another SD card. Authentication fails if you try to use the SD card after you copy the application program from one card to another card.
2. Do not use the SD card if it has been used by the user on the computer. Normal operation is not guaranteed when such an SD card is used.
3. Return the SD card to a customer for safekeeping place after you copy the application program from one card to another card. This is done for the following reasons:
    - The SD card can be the only proof that the user is licensed to use the application program.
    - You may need to check the SD card and its data to solve a problem in the future.

Move Exec

The menu “Move Exec” (SP5-873-001) lets you copy application programs from the original SD card to another SD card.

Important

- **Do not turn ON the write protect switch of the system SD card or application SD card on the machine. If the write protect switch is ON, a download error (e.g. Error Code 44) occurs during a firmware upgrade or application merge.**

1. Turn the main switch off.
2. Make sure that an SD card is in SD Card Slot 1. The application program is copied into this SD card.
3. Insert the SD card (having stored the application program) to SD Card Slot 2. The application program is copied from this SD card.
4. Turn the main switch on.
5. Start the SP mode.
6. Select SP5-873-001 “Move Exec.”

7. Follow the messages shown on the operation panel.
8. Turn the main switch off.
9. Remove the SD card from SD Card Slot 2.
10. Turn the main switch on.
11. Check that the application programs run normally.

Undo Exec

The menu "Undo Exec" (SP5-873-002) lets you copy back application programs from an SD card to the original SD card. You can use this program when, for example, you have mistakenly copied some programs by using Move Exec (SP5-873-001).

Important

- **Do not turn ON the write protect switch of the system SD card or application SD card on the machine. If the write protect switch is ON, a download error (e.g. Error Code 44) occurs during a firmware upgrade or application merge.**

1. Turn the main switch off.
2. Insert the original SD card in SD Card Slot 2. The application program is copied back into this card.
3. Insert the SD card (having stored the application program) to SD Card Slot 1. The application program is copied back from this SD card.
4. Turn the main switch on.
5. Start the SP mode.
6. Select SP5-873-002 "Undo Exec."
7. Follow the messages shown on the operation panel.
8. Turn the main switch off.
9. Remove the SD card from SD Card Slot 2.

   Note

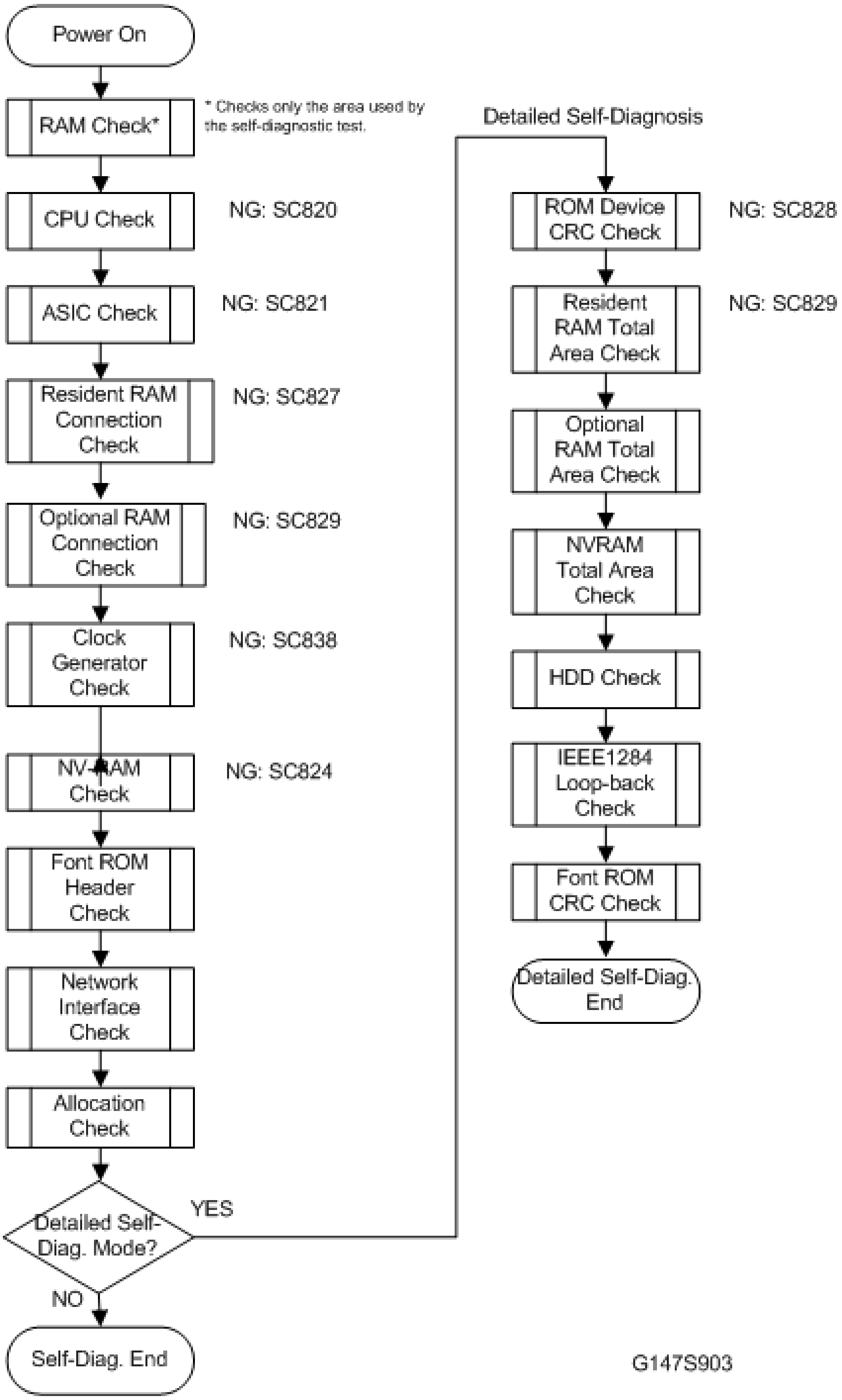
   - This step assumes that the application programs in the SD card are used by the machine.
10. Turn the main switch on.
11. Check that the application programs run normally.

Self-Diagnostic Mode

Self-Diagnostic Mode at Power On

As soon as the main machine is powered on, the controller waits for the initial settings of the printer engine to take effect and then starts an independent self-diagnostic test program. The self-diagnostic test follows the path of the flow chart shown below and checks the CPU, memory, HDD, and so on. An SC code is displayed in the touch panel if the self-diagnostic program detects any malfunction or abnormal condition.

Self-Diagnostic Test Flow



G147S903

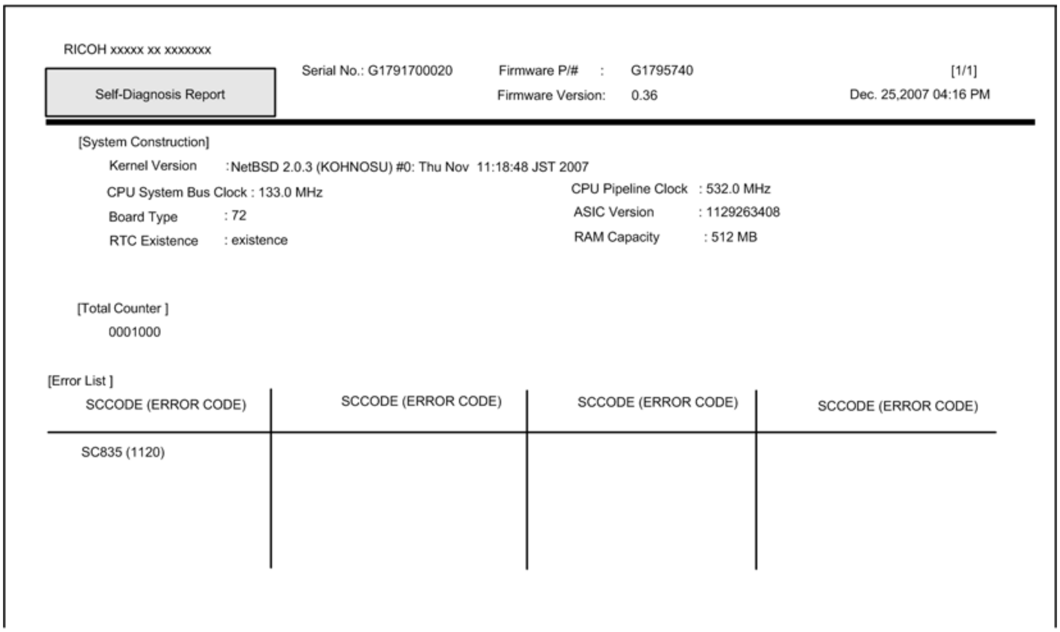
Executing Detailed Self-Diagnosis

Follow this procedure to execute detailed self-diagnosis manually.

1. Switch off the printer.
2. Press and hold down the [Suspend/Resume] and [OK] buttons together, then switch on the printer.
3. Release the buttons when you see:

```
DIAGNOSE
0200
```

4. The number will change automatically as the self-diagnostic test runs. After about 30 seconds, the initial display returns and a self-diagnostic report prints.
5. A report like the one below is printed every time a detailed self-diagnostic test is executed, whether errors were detected or not.



RICOH xxxxx xx xxxxxxx

Self-Diagnosis Report

Serial No.: G1791700020

Firmware P/# : G1795740

Firmware Version: 0.36

[1/1]

Dec. 25,2007 04:16 PM

[System Construction]

Kernel Version :NetBSD 2.0.3 (KOHNOSU) #0: Thu Nov 11:18:48 JST 2007

CPU System Bus Clock : 133.0 MHz

Board Type : 72

RTC Existence : existence

CPU Pipeline Clock : 532.0 MHz

ASIC Version : 1129263408

RAM Capacity : 512 MB

[Total Counter]

0001000

[Error List]

SCCODE (ERROR CODE)	SCCODE (ERROR CODE)	SCCODE (ERROR CODE)	SCCODE (ERROR CODE)
SC835 (1120)			

G179S901

Using Debug Log

Overview

This machine provides a debug log feature that allows the service technician to save and retrieve error information for analysis.

Every time an error occurs, debug information is recorded in RAM but this information is lost when the machine is switched off and on.

To capture this debug information, the Save Debug Log feature provides two main features:

- Switching on the debug feature so error information is saved directly to the HDD for later retrieval.
- Copying the error information from the HDD to an SD card.

When a user is experiencing problems with the machine, follow the procedures below to set up the machine so the error information is saved automatically to the HDD. Then attempt to duplicate the problem so the error data will be stored.

Setting Up "Save Debug Log"

The debug information cannot be saved until the “Save Debug Log” function is switched on and a target is selected.

To Switch Debug Log On

1. To enter the SP mode, press △▽ together (5s), release, then press the "OK" button.
2. Select SP5857.

    5.857 Debug Log Save

3. Push the "OK" button.

    5.857.001 ON/OFF

    0

    (0)

4. Push the "OK" button, and then select "1 (ON)" with the △ or ▽ button.
5. Push the "OK" button again.
6. Push the "Escape" button to return the SP mode menu.
7. Do the next procedure to select the target.

To Select the Target for the Debug Log File

You can select either the HDD (default) or the SD card as the target. This procedure shows you how to select the SD card.

1. Enter SP5857-002
2. Select "2 (HDD)" or "3 (SD)" as the target.
3. Push the "Escape" button to return to the SP mode menu.
4. Do the next procedure to select the events that you want to record in the debug log file.

To Select Events

Here is a list of the events that you can select. Any number of events can be selected.

SP No.	Name	What It Does
SP5858-001	EngineSC Error	Saves error data when an engine-related SC code occurs.
SP5858-002	SystemSC Error	Saves error data when a controller-related SC Code occurs.
SP5858-003	Any SC Error	Saves error data only for the SC code that you specify by manually entering the SC code number.
SP5858-004	Jam	Saves error data for jams.

- Example 1: To Select Items 001, 002, or 004 -

1. Push △ or ▽ to select 001, 002, or 003. This example shows the selection of 001.

```
5.858.001 Engine SC
0
(0)
```

2. Push the "OK" button, and then select "1 (ON)" with the △ or ▽ button.
3. Push the "OK" button again.
4. Push the "Escape" button to return to the SP mode menu.
5. Repeat this procedure to select either 002 or 004.

- Example 2: To set an SC code with 003 -

Note

- For details about SC code numbers, please refer to the SC tables in Section "4. Troubleshooting".

1. Select "SP5858-003".

5.858.003 Any SC
0000
(0000)

2. Push the "OK" button.
3. Push △ or ▽ to display the number in the 1st line.
4. Push ◁ or ▷ to move the cursor.
5. Input the desired SC code number with the △, ▽, ◁ or ▷ and "OK" buttons.
6. Push the "Escape" button twice.
7. Do the next procedure to select one or more memory modules for the debug error data recording.

To select one or more memory modules for recording in the debug log file

1. Select SP5859.
2. Input the desied SC code number with the △, ▽, ◁, ▷ and "OK" buttons.
3. Push the "Escape" button twice.

Note

- The default settings for Keys 1 to 10 are all zero (“0”).

Select the number from the table below, then use these key presses to enter the number.

Refer to the table below for the 4-digit numbers to enter for each key. (The acronyms in parentheses indicate the names of the modules.)

4-Digit Entries for Keys 1 to 10

Key No.	Printer	Web
1	2222 (SCS)	
2	2223 (SRM)	
3	256 (IMH)	
4	1000 (ECS)	
5	1025 (MCS)	
6	4400 (GPS)	5682 (NFA)
7	4500 (PDL)	6600 (WebDB)

Key No.	Printer	Web
8	4600 (GPS-PM)	3300 (PTS)
9	2000 (NCS)	6666 (WebSys)
10	2224 (BCU)	2000 (NCS)

Key to Acronyms

Acronym	Meaning
ECS	Engine Control Service
GPS	GW Print Service
GSP-PM	GW Print Service – Print Module
IMH	Image Memory Handler
MCS	Memory Control Service
NCS	Network Control Service
NFA	Net File Application
PDL	Printer Design Language
PTS	Print Server
SCS	System Control Service
SRM	System Resource Management
WebDB	Web Document Box (Document Server)

The machine is now set to record the debugging information automatically on the SD card or HDD (the target selected with SP5857-002) for the events that you selected SP5858 and the memory modules selected with SP5859.

Please keep the following important points in mind when you are doing this setting:

- The initial settings are all zero.
- These settings remain in effect until you change them. Be sure to check all the settings, especially the settings for Keys 6 to 10. To switch off a key setting, enter a zero for that key.
- You can select any number of keys from 1 to 10 (or all) by entering the corresponding 4-digit numbers from the table.
- One area of the disk is reserved to store the debug log. The size of this area is limited to 4 MB.

Retrieving the Debug Log from the HDD

1. Insert the SD card into service slot 2.
2. Enter the SP mode and execute SP5857-009 (HDD to SD Latest) to write the debugging data to the SD card.
3. Use a card reader to copy the file and send it for analysis to your local Ricoh representative by email, or just send the SD card by mail.

More About Debug Log

SP5857-015: SD to SD (Any)

This SP copies the log on an SD card (the file that contains the information written directly from shared memory) to a log specified by key number. The print 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 print operation to prevent overwriting files of the same name. This means that log data from more than one machine can be copied onto the same SC card.

This command does not execute if there is no log on the HDD for the name of the specified key.

SP5857-016: Make HDD LogFile

This SP creates a 32 MB file to store a log on the HDD. However, this is not a completely empty file. The created file will hold the number “2225” as the SCS key number and other non-volatile information.

Even if this SP is not executed, a file is created on the HDD when the first log is stored on the HDD, but this operation takes time. This creates the possibility that the machine may be switched off and on before the log can be created completely.

If you execute this SP to create the log file beforehand, this will greatly reduce the amount of time required to acquire the log information and save onto the HDD. With the file already created on the HDD for the log file, the data only needs to be recorded; a new log file does not require creation.

To create a new log file, execute SP5857-011 to delete the debug log data from the HDD and then execute this SP (SP5857-016).

SP5857-017: Make SD Log File

This SP creates a 4 MB file to store a log on an SD card. However, this is not a completely empty file. The created file will hold the number “2225” as the SCS key number and other non-volatile information.

Even if this SP is not executed, a file is created on the SD card when the first log is stored on the SD card, but this operation takes time. This creates the possibility that the machine may be switched off and on before the log can be created completely.

If you execute this SP to create the log file beforehand, this will greatly reduce the amount of time required to acquire the log information and save onto the SD card. With the file already created on the SD card for the log file, the data only needs to be recorded; a new log file does not require creation.

To create a new log file, execute SP5857-012 to delete the debug log data from the SD card and then execute this SP (SP5857-017).

Dip Switches

I/O Board: DIP SW101

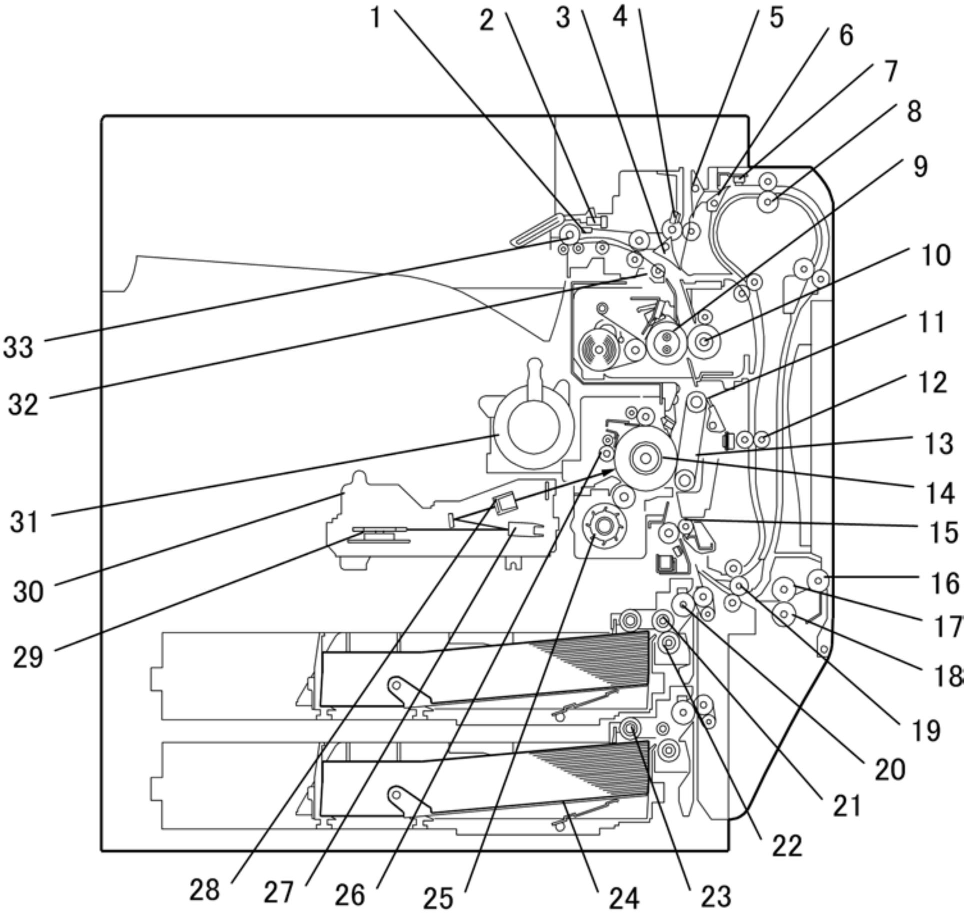
Location	Bit		
	6	7	8
Japan	ON	ON	OFF
North America	OFF	ON	OFF
Europe	ON	OFF	OFF
China	OFF	OFF	ON
Taiwan	OFF	ON	ON
Korea	ON	OFF	ON
Asia	ON	ON	ON

ON: Up, OFF: Down

6. Detailed Section Descriptions

Overview

Component Layout

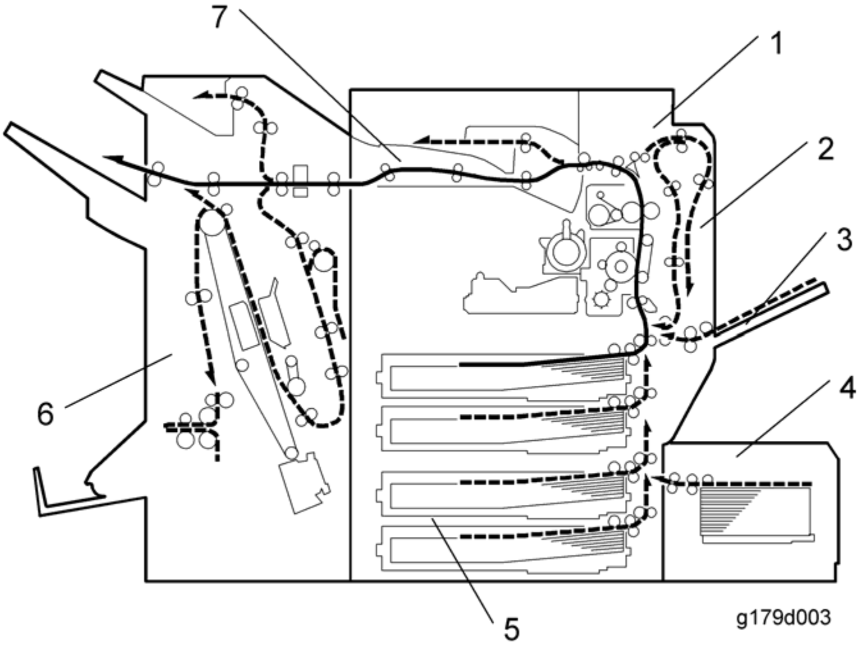


g179D002

1	Paper Exit Sensor	17	By-pass Feed Roller
2	Paper Overflow Sensor	18	By-pass Separation Roller
3	Junction Gate 1	19	Duplex/by-pass transport roller
4	Junction Jam Sensor	20	Upper Relay Roller

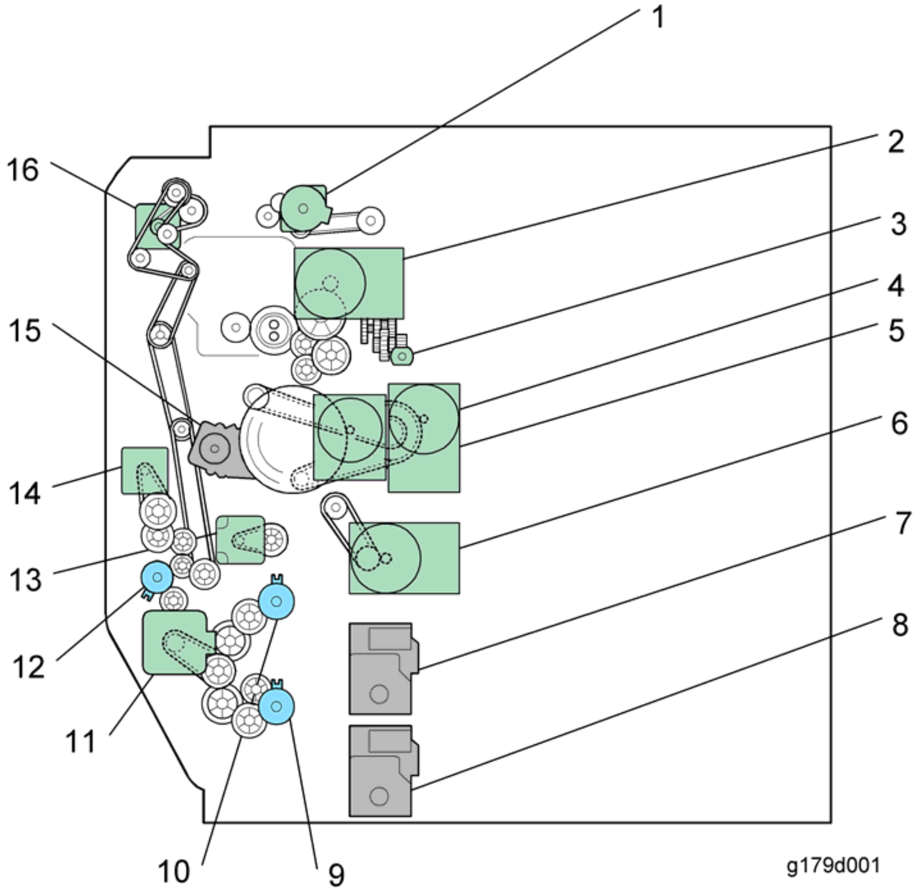
5	Duplex Inverter Gate	21	Feed Roller
6	Junction Gate 2	22	Separation Roller
7	Duplex Entrance Sensor	23	Pick-up Roller
8	Duplex Inverter Roller	24	Bottom Plate
9	Hot Roller	25	Development Unit
10	Pressure Roller	26	Charge Roller
11	Transfer Belt Cleaning Blade	27	Fθ Mirror
12	Duplex Transport Roller	28	Barrel Toroidal Lens (BTL)
13	Transfer Belt	29	Polygonal Mirror Motor
14	OPC Drum	30	Laser Unit
15	Registration Roller	31	Toner Bottle Holder
16	By-pass Pick-up Roller	32	Fusing Exit Sensor
		33	Exit Roller

Paper Path



1	Interchange Unit
2	Duplex Unit
3	By-pass Tray
4	Large Capacity Tray (LCT: 1200-sheet)
5	Paper Tray Unit
6	Two-Tray Finisher
7	Bridge Unit

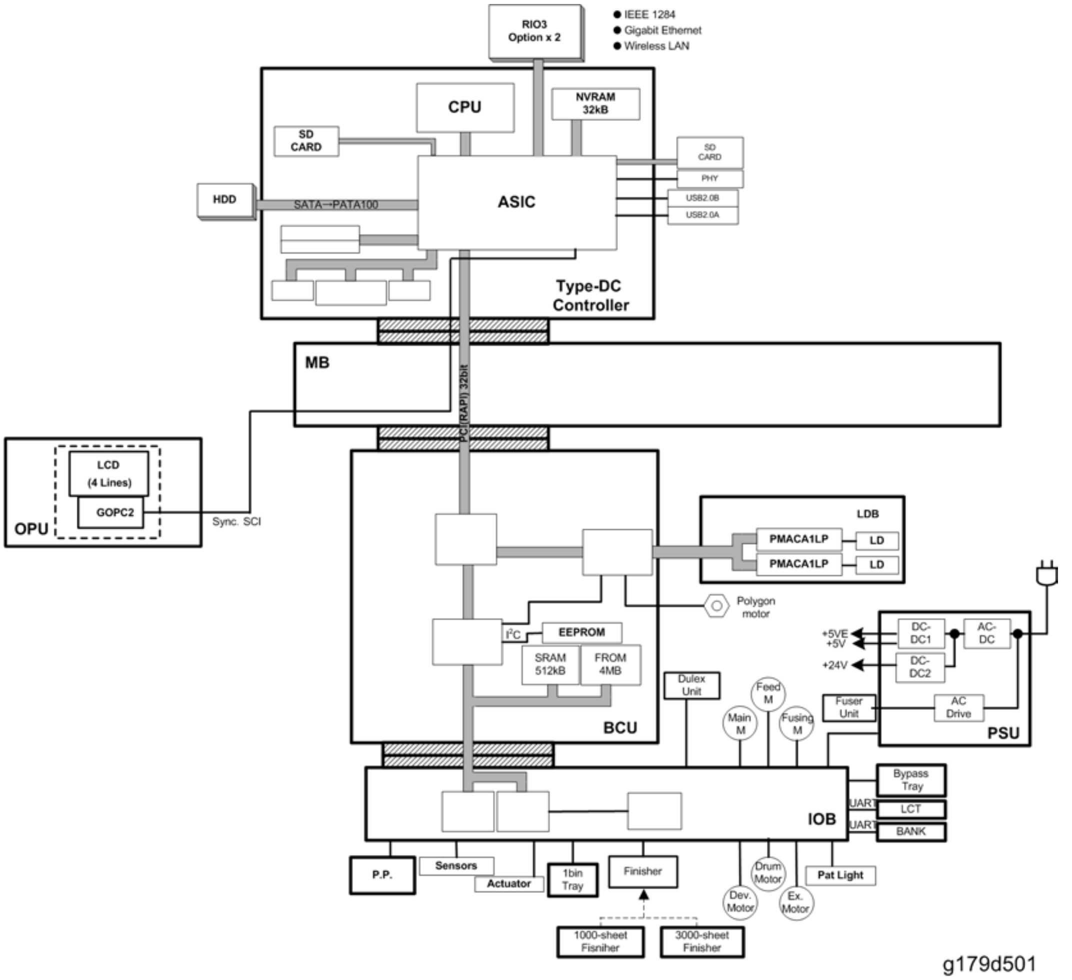
Drive Layout



1	Paper Exit Motor	9	Paper Feed Clutch 2
2	Fusing Motor	10	Paper Feed Clutch 1
3	Web Motor	11	Feed Motor
4	Transfer/Development Motor	12	By-pass Paper Feed Clutch
5	Drum Motor	13	Registration Motor
6	Development Paddle Motor	14	Duplex/By-pass Motor
7	Tray Lift Motor 1	15	Transfer Belt Contact Motor
8	Tray Lift Motor 2	16	Duplex Inverter Motor

Board Structure

Block Diagram



This machine employs the GW architecture, which allows the printer to be expanded by installing optional boards in the two controller board slots. The BCU is connected to the controller via a PCI bus.

BCU (Base engine Control Unit):

Controls all machine functions both directly and through other control boards.

Controller:

Controls memory and all peripheral devices. Two SD card slots are provided, one for servicing (firmware updates) and one for SD card options. In addition to the RAM and NVRAM, the NIC and USB functions are also built into this controller. The HDD unit is also attached to the controller board. The Controller Board has external slots to accommodate the following interfaces:

- IEEE1284 (Centronics)
- IEEE802.11a/g, g (Wireless LAN)
- Gigabit Ethernet Board

IOB (Input/Output Board):

The IOB uses the new eI0 chips and handles the following functions.

- Drive control for the sensors, motors, and solenoids of the main unit
- PWM control for the high voltage supply board
- Serial interface with peripherals
- Fusing control
- Paper feed control

The IOB is located behind the rear covers for easy access. The same IOB is used for all models but the DIP switches must be set correctly for each model. (☛ High Voltage Power Supply)

LDB (Laser Drive Board):

Holds the laser diodes. The board and diodes are controlled by the GAVD Type-R mounted on the BCU not the LDB itself.

MB (Mother Board):

Interfaces the BCU with controller. The operation panel connects directly to the Mother Board.

OPU (Operation Panel Unit):

Controls the LCD user interface and button controls.

PSU (Power Supply Unit):

The improved PSU on this machine consumes less than 1 W when the machine is in the energy save (low power) mode.

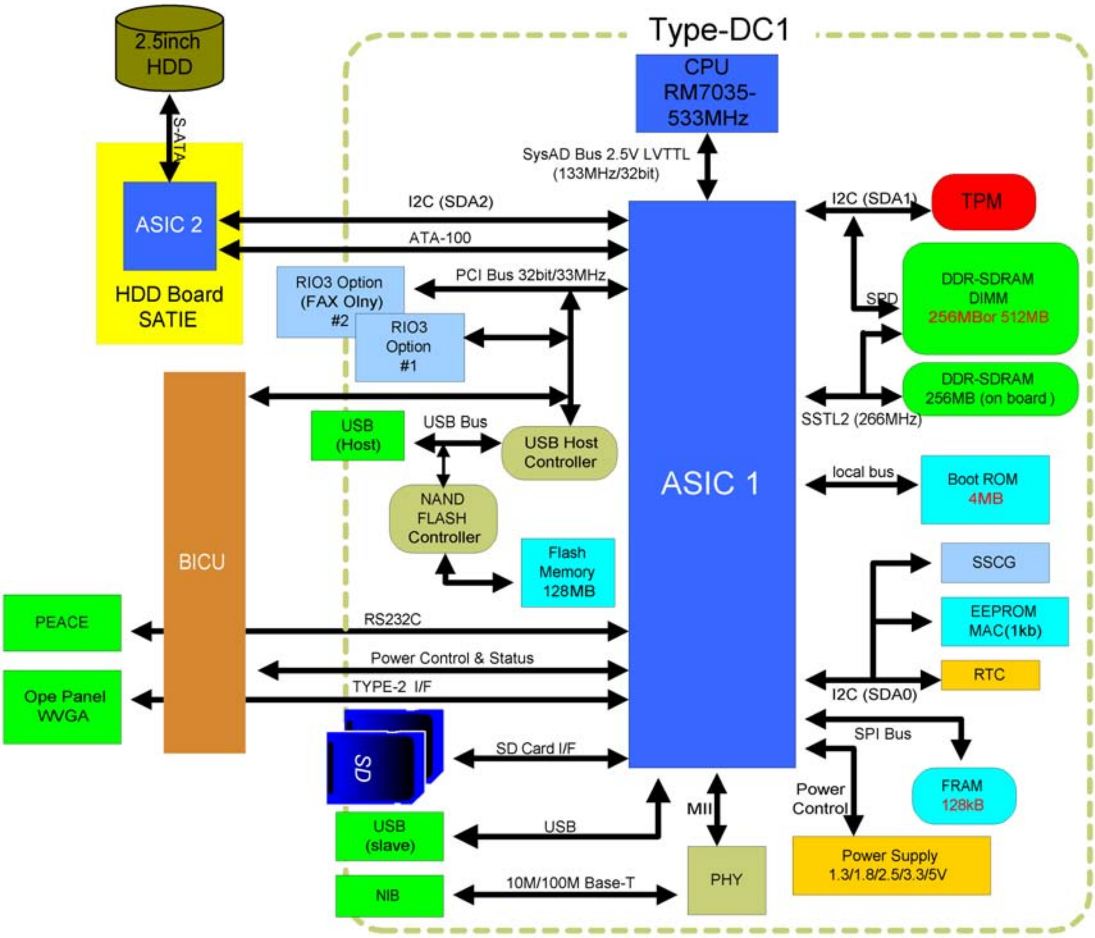
HVPS (High Voltage Power Supply)

Supplies high voltage to the drum charge roller, development roller, and transfer belt.

Duplex

Provides the system interface for all electronic components, i.e. sensors, switches, motors, and solenoids for the duplex unit.

Controller



d009d502

The controller controls all applications. To add the optional applications, SD cards must be inserted in the SD card slots of the controller.

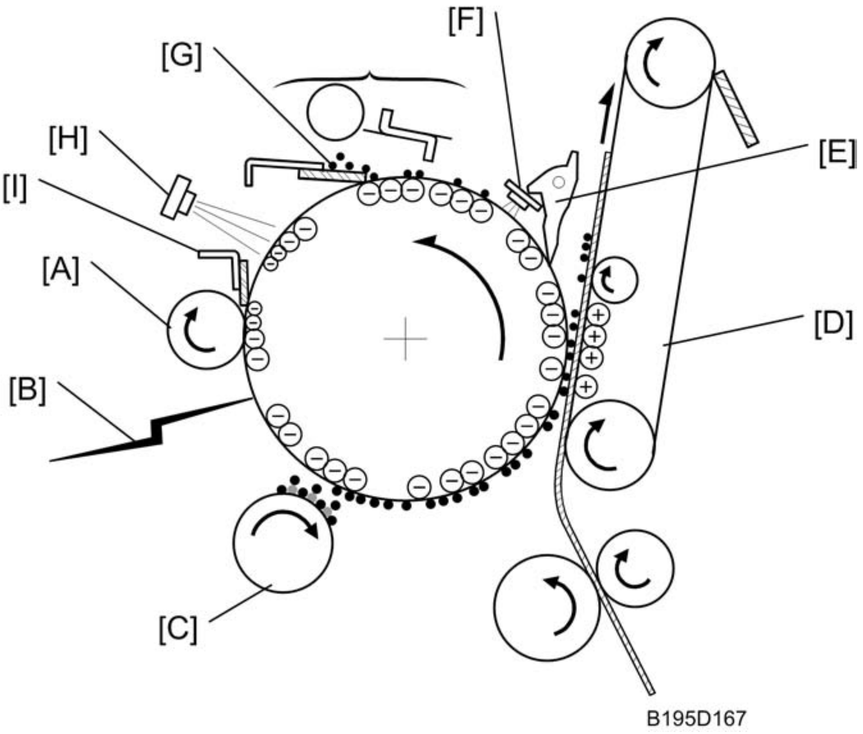
ASCI 1: Contains the dedicated GW controller chips of the shared resources (the CPU, memory, and HDD hardware) for the printing function.

- CPU (RM7035-533MHz). The central processing unit that controls the operation of the controller board.
- HDD. The interface for connection of the cable connection to the HDD unit.

- DDR SDRAM. The image memory for the printer function where image compression, image rotation and other operations are done.
- SD. This is the interface for SD card slots 1 and 2. Slot 2 is for optional applications or service slot for firmware version updates, moving. applications to other SD cards, and downloading/uploading NVRAM contents
- **Board Option Slot.** Only one of the following options can be installed in either I/F Slot: IEEE1284 Interface Board (Centronics), IEEE802.11a/g, g (Wireless LAN) or Gigabit Ethernet.
- **Flash ROM.** Stores the program. Maximum capacity: 128 MB.
- **USB**. The interface for USB 2.0 devices. Supports both low-speed and high-speed modes. USB support is built-into the controller. No installation is required for the USB function.
- **NIB.** The Ethernet interface connection. Network support is built-into the controller. No installation is required for the network function.
- **EEPROM.** Stores the data for the SP code settings.
- **NVRAM.** The memory that stores the system configuration and other information.
- **HDD:** A 2.5" HDD (more than 60 GB) can be connected using an S-ATA I/F.

Print Process

Overview



Drum charge

The charge roller [A] gives a negative charge to the organic photoconductive (OPC) drum. The charge remains on the surface of the drum because the OPC layer has a high electrical resistance in the dark.

Laser exposure

The image data is projected onto the drum the drum by two laser beams [B], which form an electrostatic latent image on the drum surface. The amount of charge remaining as a latent image on the drum depends on the laser beam intensity, controlled by the BCU.

Development

The magnetic developer brush on the development roller [C] contacts the latent image on the drum. Toner particles are electrostatically attracted to the areas of the drum surface where the laser reduced the negative charge on the drum.

Image transfer

Paper is fed into the area between the drum surface and the transfer belt [D] at the proper time to align it with the image on the drum. The transfer bias 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 surface onto the paper while the paper is electrostatically attracted to the transfer belt.

Separation

Paper separates from the drum as a result of the electrical attraction between the paper and the transfer belt. Pick-off pawls [E] help separate the paper from the drum.

ID sensor

The ID sensor [F] measures the reflectivity of the pattern formed by the laser on the surface of the drum. This output signal is used for toner supply control and also measures the drum surface reflectivity, which is used for charge roller voltage control.

Cleaning

The drum cleaning blade [G] removes any toner remaining on the drum surface after the image is transferred to the paper.

Quenching

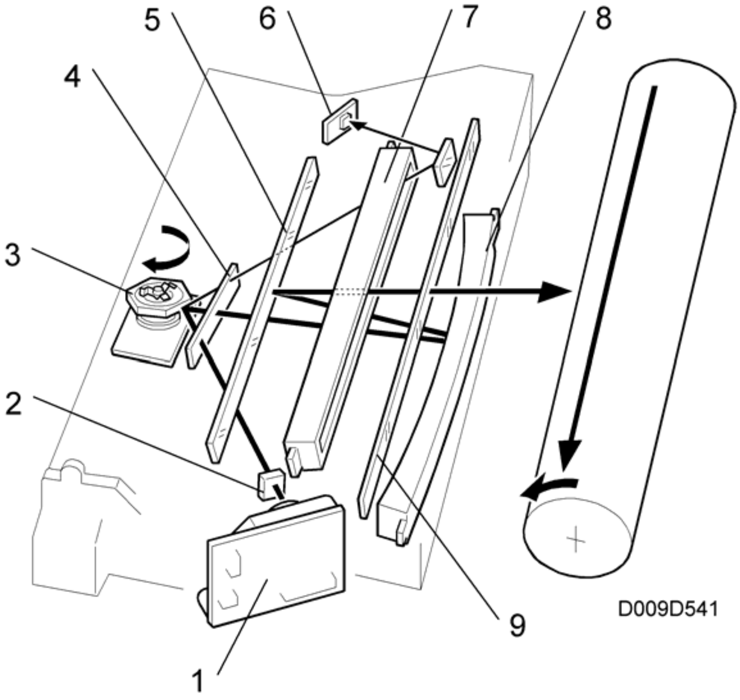
The light from the quenching lamp [H] electrically neutralizes the charge on the drum surface.

Cleaning

The 2nd drum cleaning blade [I] removes any remaining toner.

Laser Exposure

Overview



1. LD unit 2. Cylindrical lens 3. Polygonal mirror 4. Shield glass 5. Mirror	6 Synchronization detector 7 BTL (Barrel Toroidal Lens) 8 F-theta mirror 9 Toner shield glass

This machine uses two laser diodes to produce electrostatic images on an OPC drum. The laser diode unit converts image data from the BCU board into laser pulses, and the optical components direct these pulses to the drum. To produce a high quality print image, these are 256 gradations for the laser power.

The output path from the laser diode to the drum is shown above. The LD unit outputs two laser beams to the polygon mirror through the cylindrical lens and the shield glass.

Each surface of the polygon mirror reflects two full main scan lines. The laser beams go to the F-theta mirror, mirror, and BTL (barrel toroidal lens). Then these laser beams go to the drum through the toner shield glass. The laser synchronization detector determines the main scan starting position.

Note

- The front door and right door are equipped with safety switches that automatically shut down the laser unit when either door is opened.

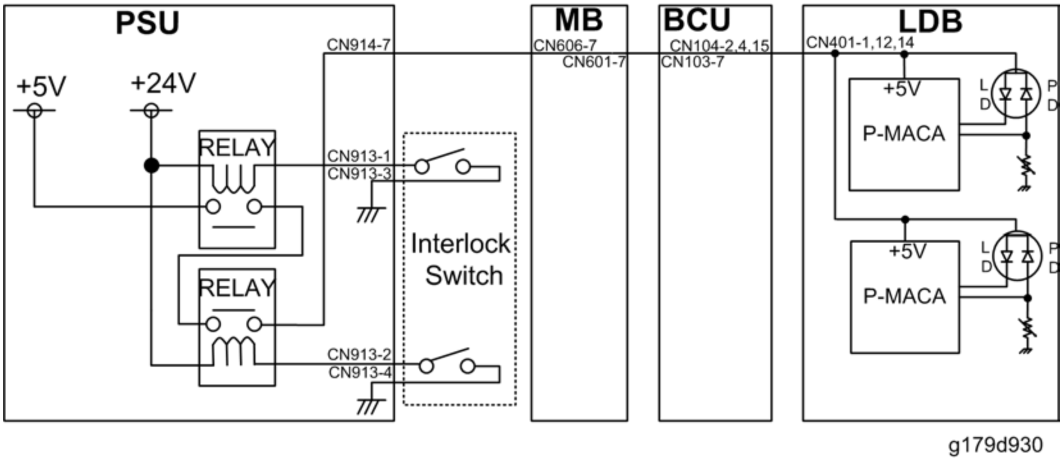
Auto Power Control (APC)

The LD driver on the LDB drives the laser diode. Even if a constant electric current is applied to the laser diode, the intensity of the output light changes with the temperature. The intensity of the output decreases as the temperature increases.

In order to keep the output level constant, the LDB monitors the electrical current passing through the photodiode (PD). Then it increases or decreases the current to the laser diode as necessary, comparing it with the reference level. This auto power control is done just after the machine is turned on and during printing while the laser diode is active.

The reference levels are adjusted on the production line. Do not touch the variable resistors on the LDB in the field.

LD Safety Switches

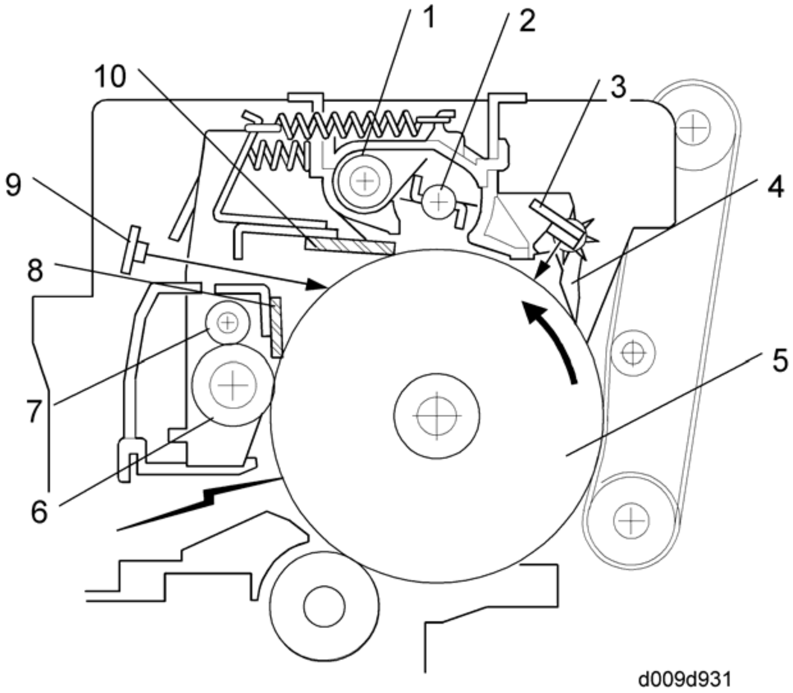


- PSU: Power Supply Unit
- MB: Mother Board
- BCU: Base-engine Control Unit
- LDB: LD Drive Board

The relays on the power supply unit (PSU) ensure technician and user safety and prevent the laser beam from inadvertently switching on during servicing. These relays turn off when the front cover or right door is opened, and cuts the power (+5V) supplied to the LD Board through the BCU.

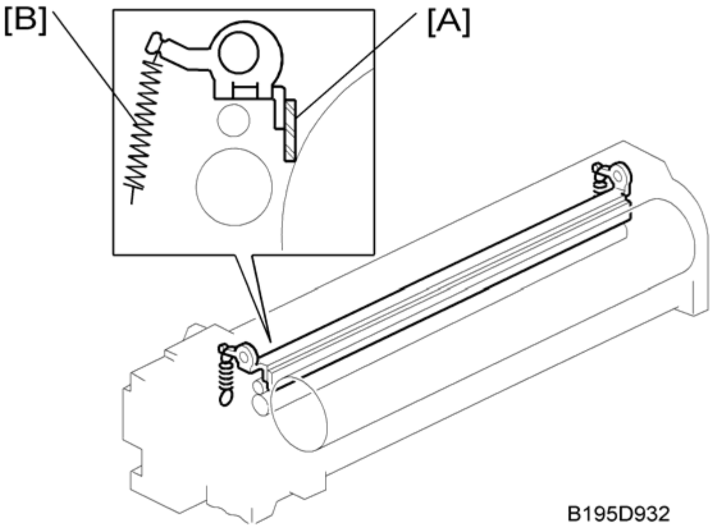
Around the Drum

Overview



1. Toner Collection Coil	6. Charge Roller
2. Toner Collection Plate	7. Charge Roller Cleaning Roller
3. Image Density Sensor	8. Drum Cleaning Blade 2
4. Pick off Pawl	9. Quenching Lamp
5. OPC Drum (ϕ60 mm)	10. Drum Cleaning Blade 1

Drum Cleaning



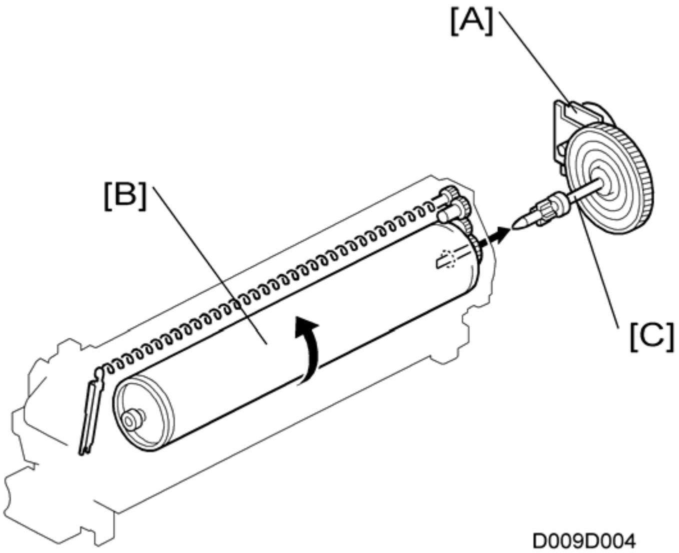
The PxP (Polyester Polymerization) toner of this machine is of much finer particle size so in addition to the stationary cleaning blade, mounted with two screws at the bottom of the PCDU, an additional cleaning blade [A] has been added to increase the efficiency of drum cleaning.

The new cleaning blade is held in contact with the drum by two small springs [B] (one on each end) that keep the cleaning blade in contact with the drum. This cleaning blade is not a counter blade.

The tension of these springs has been reduced for this model in order to reduce the amount of pressure applied by the bladed against the drum.

Every time the PCDU is opened for replacement or cleaning, the spring closest to the front of the PCDU must moved in order to retract the cleaning blade away from the OPC drum. After cleaning or replacement, the spring must be returned to its original position to keep the blade in contact with the OPC drum for normal operation. For details, see “Replacement and Adjustment”.

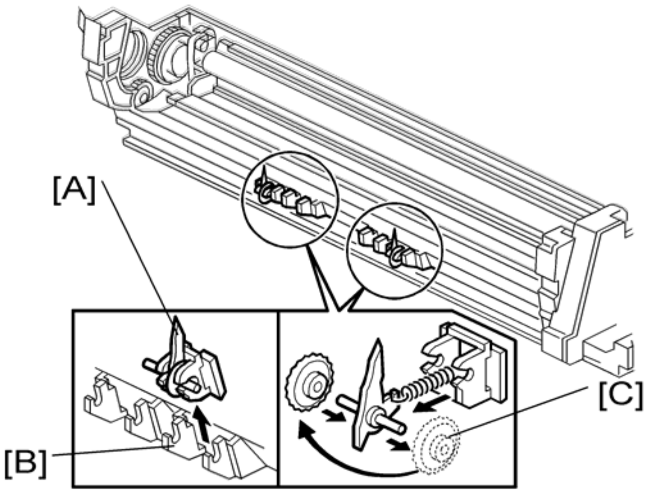
Drive Mechanism



The drive from the drum motor [A] is transmitted to the drum [B] through the drum drive shaft [C].

The drum motor has a drive controller, which outputs a motor lock signal when the rotation speed is out of the specified range.

Drum Pawls

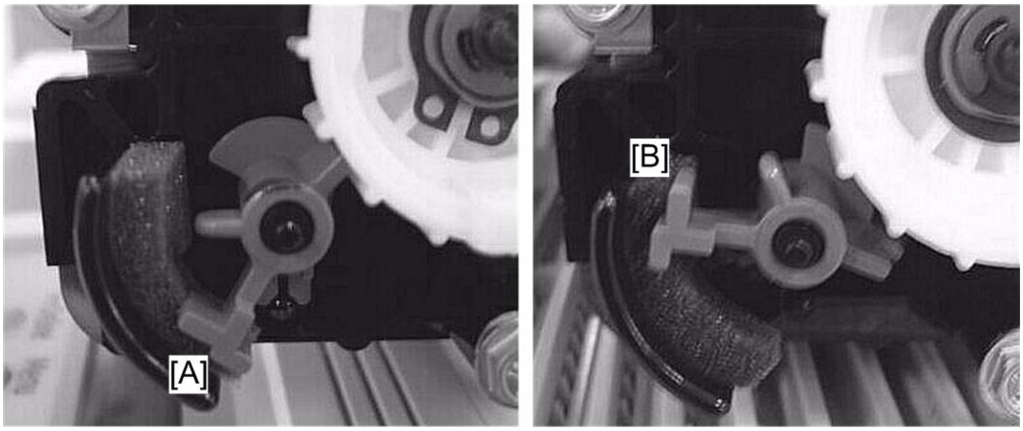


B195D934

The pick-off pawls [A], mounted in the holders [B] on the drum and in contact with the drum, strip paper from the drum if it has not yet separated. The gears [C] are removable, and the positions of the holders can be adjusted.

New PCDU Unit Detection

New Unit Detection Mechanism



G147D991

This printer uses a push-switch to trigger the initialization of a new PCU.

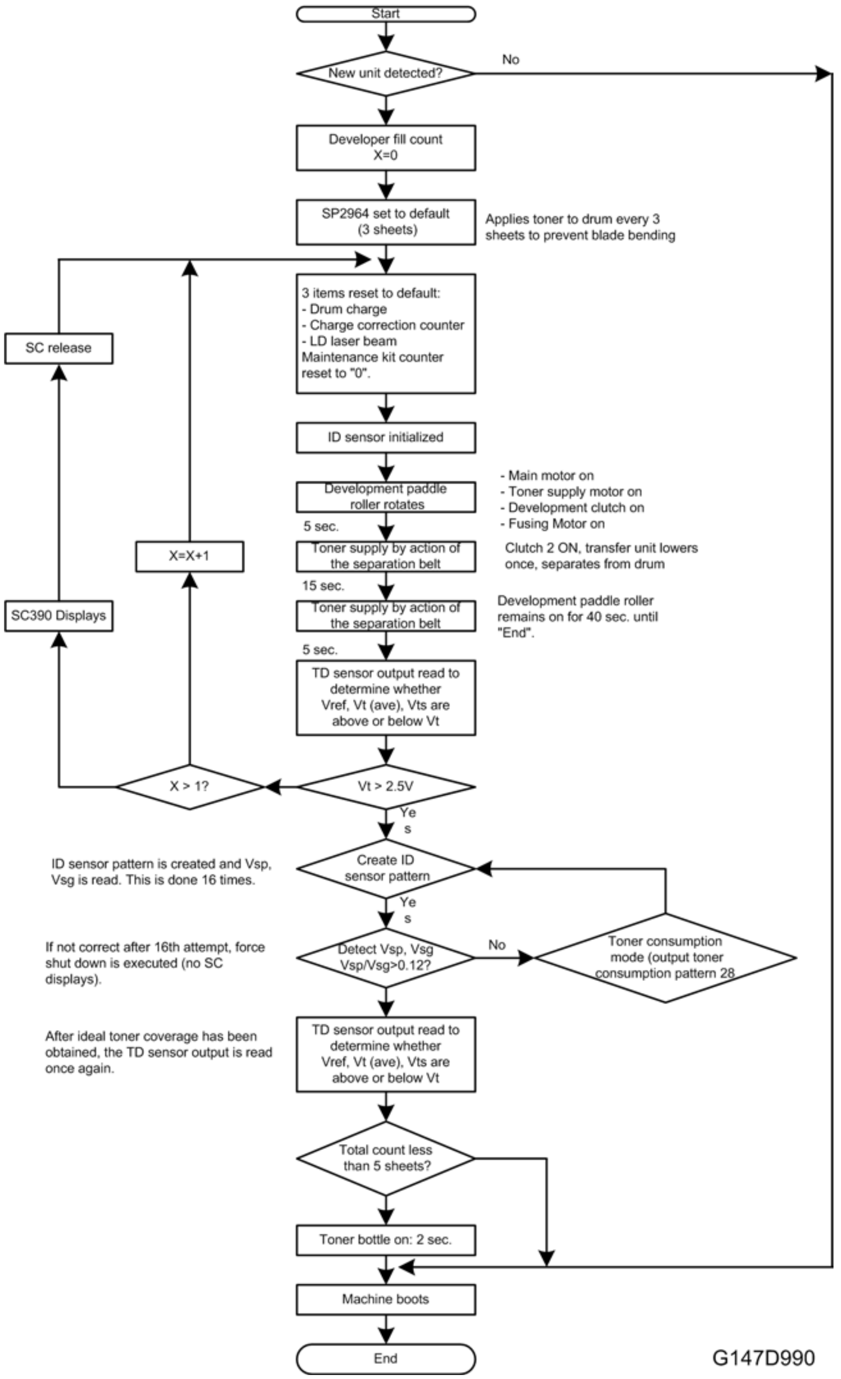
When the PCU is removed from the maintenance kit, the trip lever is in the down position [A]. After the new PCU is installed in the machine, the trip lever is forced into the up position [B]. This triggers the initialization procedure shown below (Please refer to the flow chart below, "What Happens When a New Unit Is Detected".)

This event is triggered only once after the new PCU is installed. The trip lever will remain in the up position for the remainder of the service life of the PCU, regardless of how many times the PCU is removed and reinstalled in the machine.

Important

- When a new PCU is removed from its box, handle it carefully to avoid hitting the trip lever and moving it accidentally out of its down position.
- If the trip lever on a new PCU is not down when the PCU is inserted in the machine for the first time, the machine will not detect the PCU as a new unit and the initialization sequence will not occur.

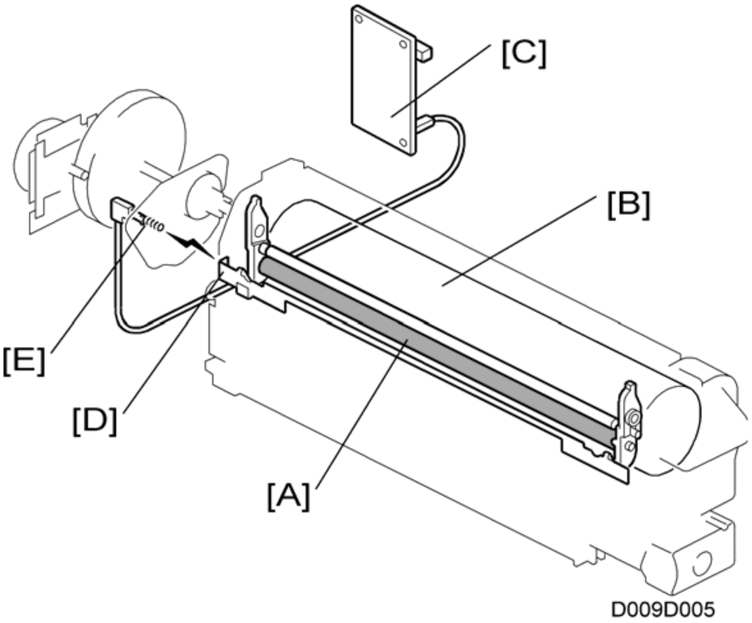
What Happens When a New Unit Is Detected



G147D990

Drum Charge

Overview

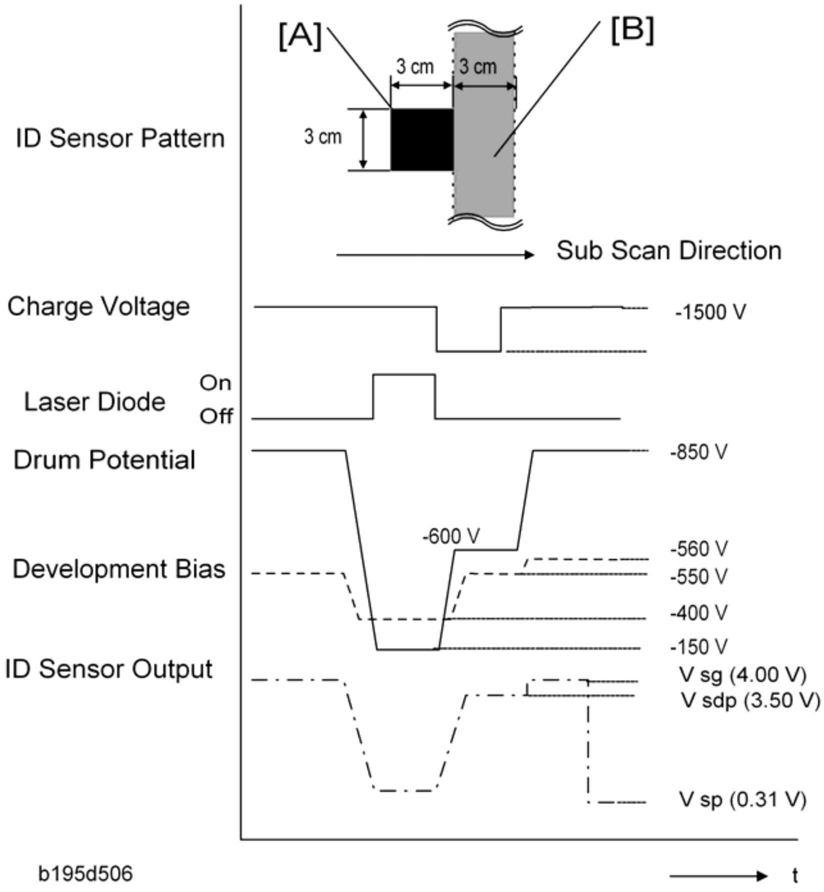


This machine uses a drum charge roller to charge the drum.

The drum charge roller [A] contacts the surface of the drum [B] to give it a negative charge. The high voltage supply board [C] supplies a negative dc voltage to the drum charge roller through the charge roller terminal [D], bias spring terminal [E], and the rear roller bushing to give the drum surface a negative charge of –820V.

Charge Roller Voltage Correction

Correction for Environmental Conditions



The voltage transferred from roller to drum could vary with the temperature and humidity around the drum charge roller. The lower the temperature or humidity, the higher the applied voltage required.

The ID sensor measures the effects of ambient conditions, and any small change in drum potential caused by changes in temperature/humidity is reflected in the amount of toner transferred to the drum.

This measurement is done immediately after the ID sensor pattern for toner density control. After creating ID sensor pattern [A], another pattern [B] is made. To do this, the LD switches off, the charge roller voltage drops, and the drum potential is reduced to -600V. At the same time, development bias returns to -550V. The drum potential is now slightly higher than the development bias, so only a very small amount of toner transfers to the drum. The ID sensor measures the density of pattern [B], and Vsdp, the output voltage, is compared with Vsg which was read from the bare drum at the same time.

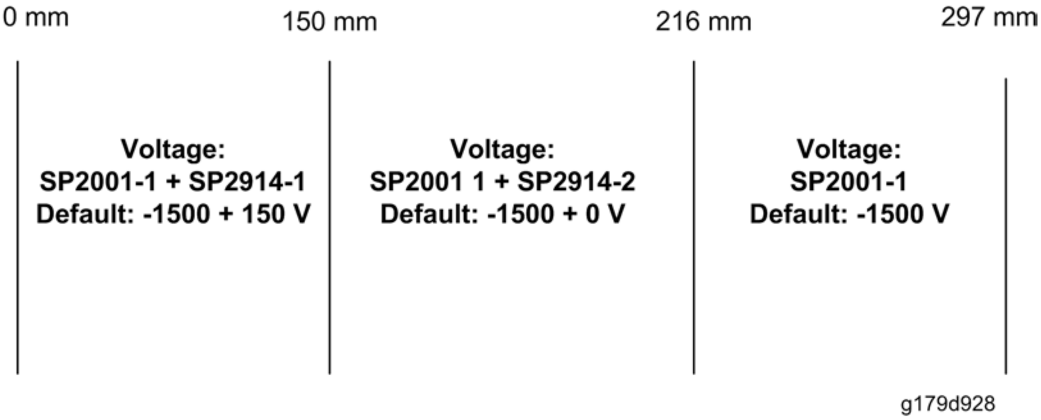
Correction for Paper Width and Thickness

Note

- This correction is done for the bypass tray only.
- The by-pass tray can be used for non-standard paper narrower than sizes accepted by the paper trays. Thicker paper, OHP sheets, etc. can also be loaded in the by-pass tray but adjustments must be performed with the SP modes listed below in order to avoid jams and print quality problems.

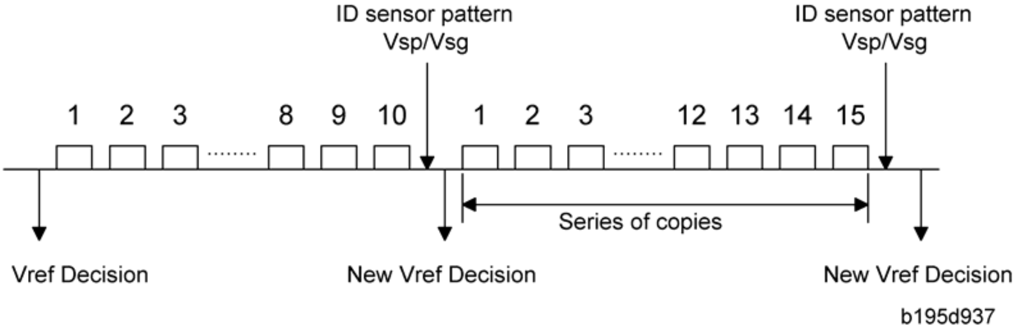
SP Mode	SP Name	
SP2001-001	Charge Bias	Width 216 - 297 mm (Default: -1500 V)
SP2914-001	C-alpha	Adjust 10V/step (Default: 150 V)
SP2914-002	C-beta	Adjust 10V/step (Default: 0 V)

The way that these SP modes are used is shown below.



For example, with the default settings, if the paper width fed from the by-pass tray is 200 mm, the charge roller voltage will be –1500 +0 V.

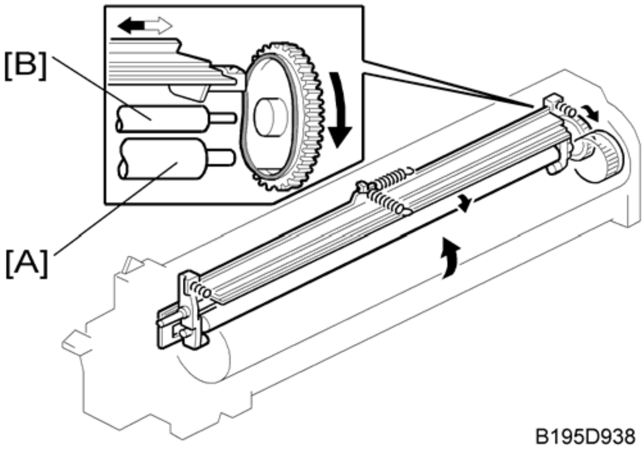
ID Sensor Pattern Production Timing



When the machine temperature is less than 16°C at power on, an ID sensor pattern is created after the main machine is powered on, and after finishing a job of 10 or more sheets.

The ID sensor pattern production interval can be adjusted with SP2210-001 (ID Sensor Pattern Interval).

Drum Charge Roller Cleaning

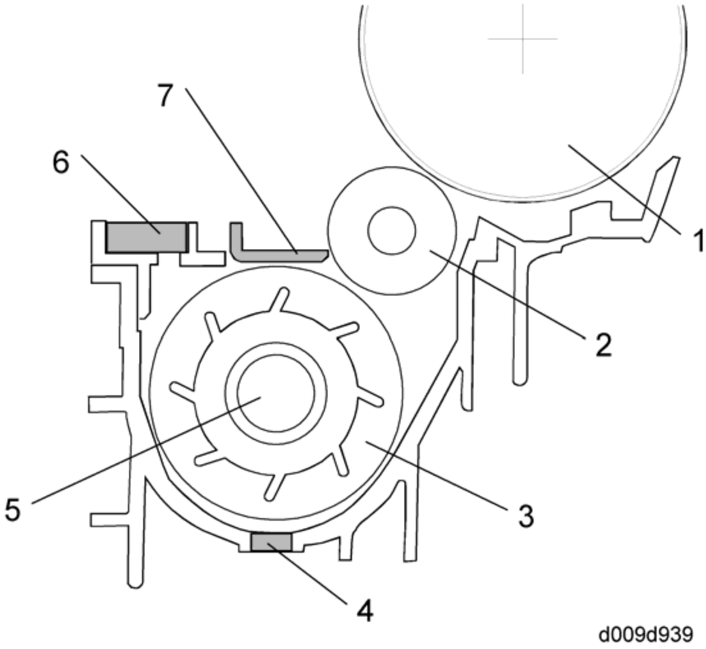


The drum charge roller [A] (always in contact with the drum), gets dirty easily.

The brush roller [B] remains in contact with the charge roller to clean the charge roller.

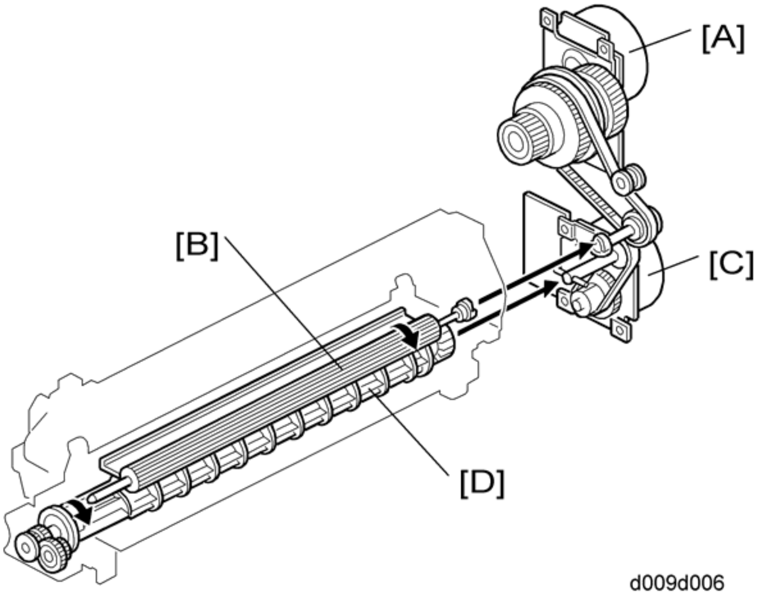
Development

Overview



1. Drum 2. Development Roller 3. Paddle Roller 4. TD Sensor	5. Mixing Auger 6 Development Filter 7 Doctor Blade

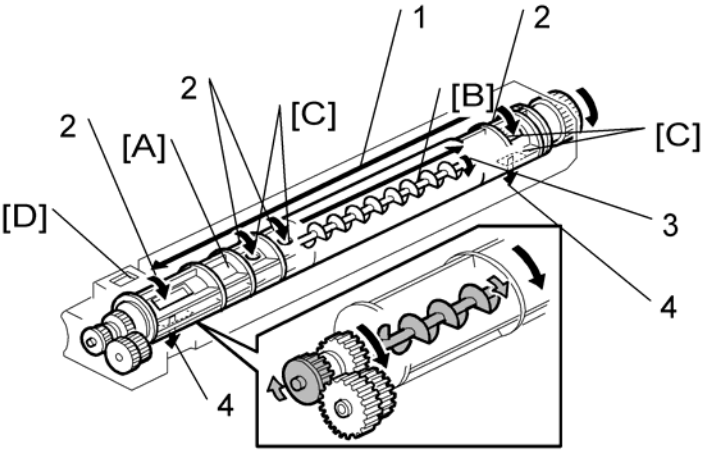
Drive Mechanism



This machine has two motors for the development unit. The transfer/development motor [A] drives the development roller [B] through gears and a timing belt. The development paddle motor [C] drives the paddle roller [D] and mixing auger (located in the paddle roller).

The drive shafts engage the development roller gear and paddle roller gear when the development unit is inserted into the machine. The drive shafts disengage from the development roller gear and paddle roller gear when the development unit is removed from the machine.

Developer Mixing



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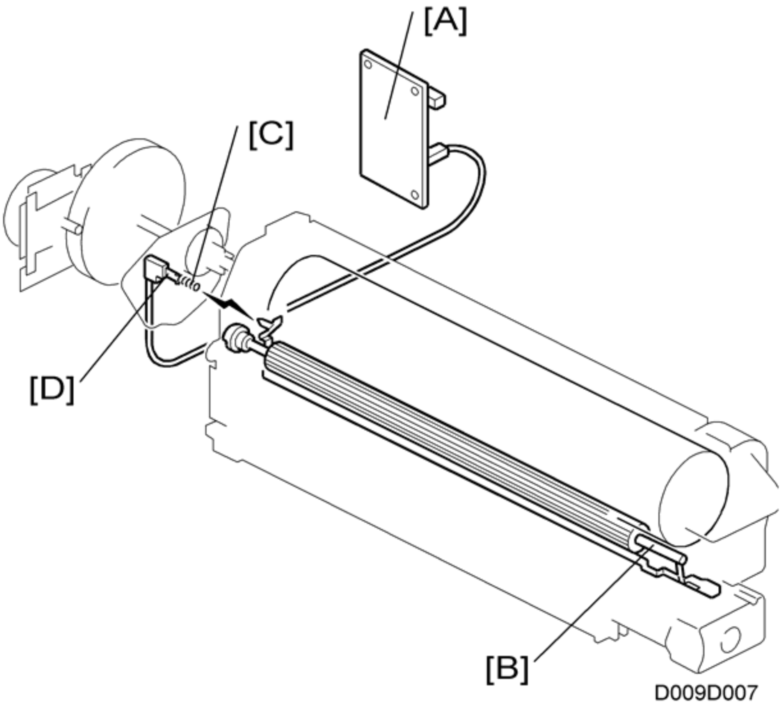
The dual mixing roller consists of the outer paddle [A] and the inner auger [B].

The outer paddle moves developer to the front 1 and supplies it to the development roller. Developer that spills off by the doctor blade 2 passes through the holes [C] in the outer paddle, and is transported to the rear 3 by the inner auger.

While the dual mixing roller is moving the developer, some developer also passes back to the development unit through the holes in the bottom of the paddle roller 4. New toner from the toner bottle and recycled toner from the toner collection coil both enter the development unit at [D].

Development Bias

Mechanism



Black areas of the latent image are at a low negative charge (about –150 V) and white areas are at a high negative charge (about –850 V).

To attract negatively charged toner to the black areas of the latent image on the drum, the high voltage supply board [A] applies a bias of –560 volts to the development roller throughout the image development process. The bias is applied to the development roller shaft [B] through the bias terminal spring [C] and bias terminal [D].

The development bias voltage (-560 V) can be adjusted with SP2201-001 (Development Bias).

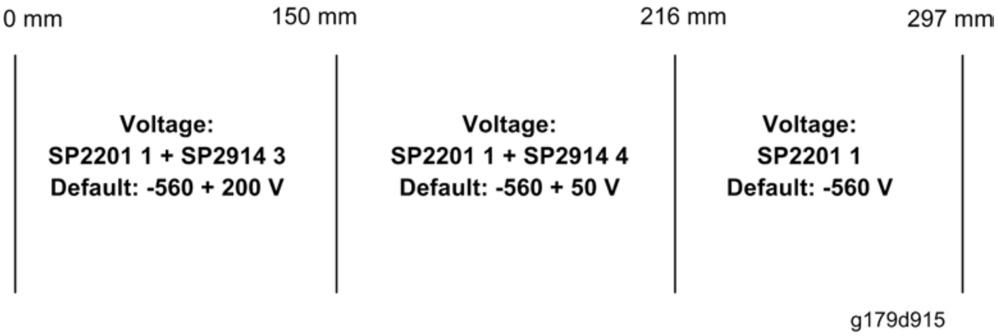
Correction for paper width and thickness (by-pass tray only)

The by-pass tray can be used for non-standard paper narrow than sizes accepted by the paper trays. Thicker paper, OHP sheets, etc. can also be loaded in the by-pass tray but adjustments must be performed with the SP modes listed below in order to avoid jams and misfeeds.

SP Mode	SP Name	

SP2201 1	Development Bias	Width 216 - 297 mm (Default: -560V)
SP2914 3	Process Control Setting (Bγ)	Adjust 10V/step (Default: 200V)
SP2914 4	Process Control Setting (Bδ)	Adjust 10V/step (Default: 50V)

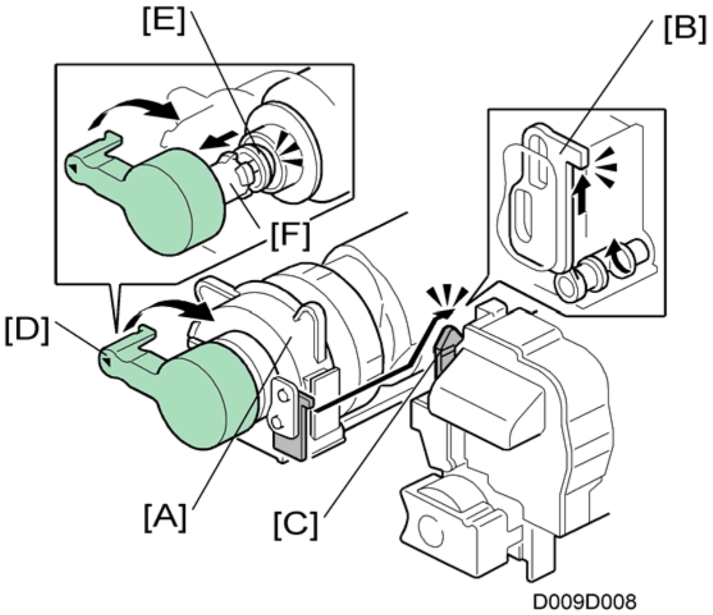
The way that these SP modes are used is shown below.



For example, with the default settings, if the paper width fed from the by-pass tray is 200 mm, the development bias voltage will be –560 + 50 V.

Toner Supply

Toner Bottle Replenishment Mechanism



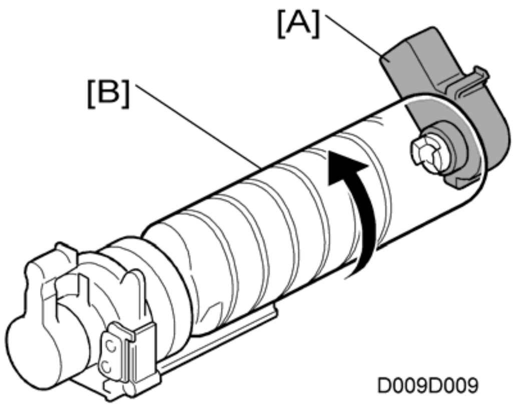
When the toner bottle is installed in the bottle holder [A], the hook of the toner shutter [B] slides up the side [C] of the drum unit, pulling out the toner shutter. When the toner bottle holder lever [D] is returned to its original position, the cap [E] pulls away and is kept in place by the chuck [F].

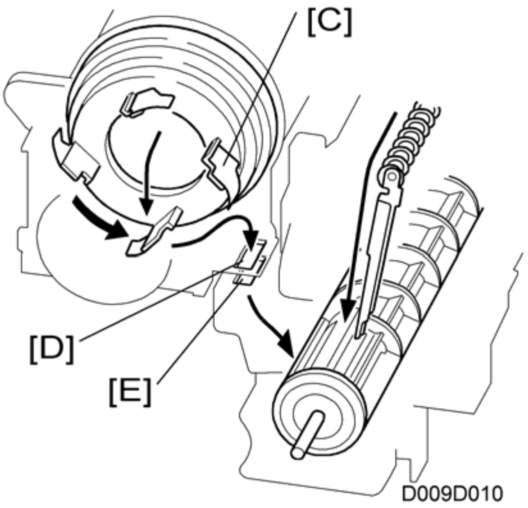
The toner bottle holder lever [D] cannot be locked until one of the following occurs:

- Until a toner bottle is installed in the holder. This prevents toner falling out of the holder unit as a result of lowering the handle with no toner bottle installed.
- Until the holder and bottle have been pushed into the machine completely and locked in place. Instruct the customer to always follow the bottle replacement instructions of the new decal attached to the toner bottle.

The toner bottle has a spiral groove, which rotates the bottle to move toner to the development unit. When the bottle holder unit is pulled out, the chuck [F] releases the toner bottle cap and the toner shutter [B] closes and blocks the opening.

Toner Supply Mechanism





The toner supply motor [A] rotates the toner bottle [B] and the mylar blades [C]

Toner falls into the toner bottle holder, and the toner supply mylar blades [C] transfer the toner to slit [D]. The toner falls into the development unit through the port [E].The left side of the entrance seal is higher than the right. This improves the efficiency of seal on the left side, especially when the drum is removed.

Toner Density Control

There are two modes for controlling and maintaining constant toner supply: sensor control (both direct and indirect) and image pixel count control. The mode can be changed with SP2-208-1 (Toner Supply Mode).

Note

- The factory setting is sensor control mode; image pixel count mode should only be used temporarily until a defective TD or ID sensor can be replaced.

Sensor Control Mode

In the sensor control mode, the amount of toner required to print the page is calculated by the CPU; it adds up the image data value of each pixel and converts the sum to a value between 0 and 255. (255 would mean a completely black page.)

The machine must vary toner supply for each print in order to maintain the correct amount of toner in the developer and to account for changes in drum reflectivity due to changes in temperature and humidity. The CPU uses data from the TD sensor and ID sensor to determine whether or not the toner supply motor should be switched on and to calculate how long it should remain on in order to supply more toner to the mixture in the development unit.

- TD Sensor: When new developer of standard toner concentration is installed, namely 20 g of toner per 500 g of developer (4.0% by weight), the TD sensor must be set to its initial setting of 3.0V with SP2-801. This initial setting is used as the toner supply reference voltage or Vref. For every print cycle, the TD sensor directly checks the toner density in the developer mixture, and after 10 prints these 10 readings are averaged and this value becomes TD sensor output voltage Vt(10).

  The machine compares Vt(10) with Vref. If Vt(10) is greater than Vref, the toner concentration in the development unit judged to be low. When Vt(10) is detected to be greater than Vref 20 times, then this indicates that the toner concentration is consistently low, Vref is incremented by 0.1V, and the conditions are checked again. The result of this check determines the value of K, the toner supply rate coefficient, which is one of the factors for the toner supply motor on-time calculation.
- ID Sensor: In addition to comparing Vt(10) from the TD sensor and Vref, after every 10 prints the ID sensor, located at the lower right area of the drum, checks both the reflectivity (Vsg) and the pattern on the drum (Vsp), created by the laser diodes and charge roller. If the reflected light is too strong, this indicates that toner is low and toner is added to the development unit. (The frequency of these checks can be adjusted with SP2-210 (ID Sensor Pattern Interval).

Image Pixel Count Mode

This mode should only be used as a temporary measure while waiting for replacement parts, such as a TD sensor. This mode controls the toner supply amount using the same method for determining the toner bottle motor on time. However, the values that were in effect when the toner density control mode was changed over to image pixel count mode with SP2-208-1 (Toner Supply Mode) remain in effect and cannot be changed.

Toner Near End/End Detection

Toner Near End

The machine triggers the toner near-end alert and starts to rotate the toner supply bottle when the following conditions occur.

- Detected by SP2975-001
- $Vt(10) - Vref \geq 0.2$ and $Vsp \geq 0.6$
- $Vt(10) - Vref \geq 0.45$
- $0.45 > Vt(10) - Vref \geq 0.2$ and toner end counter ≥ 300

Toner End

After the machine enters the toner near-mode, it will trigger the toner end alert if any of the conditions below continue to exist.

- Vsp ≥ 2.0
- Toner end counter ≥ 90 when SP2213-001 is set to "0".
- Toner end counter < 90 and Vt (10) > (Vref + 0.3) when SP2213-001 is set to "0".
- When SP2213-001 is set to "2"
- Vsp ≥ 0.9 when SP2213-001 is set to "2"
- Special order

Toner End Recovery

If the front door is opened for 10 seconds and then closed while a toner near end/end condition exists, the machine will attempt to recover. When the front door is closed, the toner supply motor turns on to supply toner. The machine checks the TD sensor output 2 seconds after the main motor turns on (Vtp), and the sensor is checked again every 1 second (Vtp1)

The machine detects the toner concentration using Vref, Vt (10), Vtp, and Vtp1. If the toner concentration is still too low, the toner supply motor remains on for another 10 seconds while the machine checks Vt. If toner concentration is judged to be at the standard level, then the toner near end/end condition is cancelled and K (toner supply coefficient) is reset. If toner concentration has not reached the standard level, the toner supply motor rotates continuously until it does (maximum motor on time is 16 seconds) and then it will switch off.

Toner Supply with Abnormal Sensors

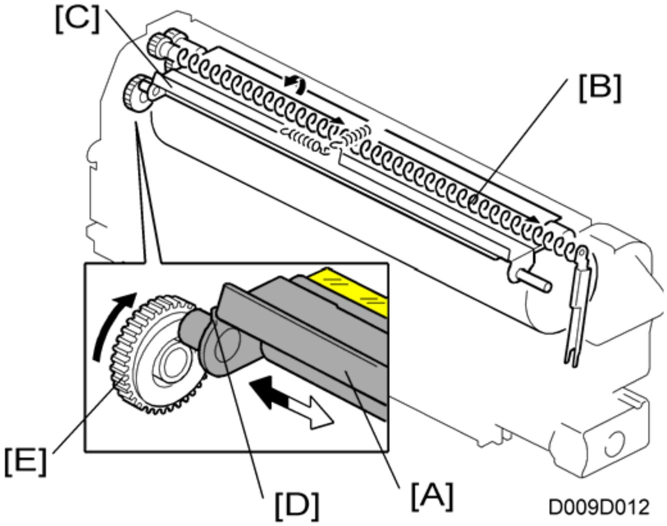
The TD sensor is checked every print. If the readings from the TD sensor become abnormal during a print job, the machine holds the GAIN factor constant (GAIN is normally calculated from TD sensor readings) to allow toner supply to vary with only pixel count for the rest of the print job. Then at the end of the print y job, an SC code is generated and the machine must be repaired.

The ID sensor is checked every 10 prints. If readings become abnormal, an SC code is generated and the machine must be repaired. If this happens during a print job, Vref is not changed, the print job is allowed to finish, and then the SC code is generated.

If spare parts are not available, the technician can use SP2-208-1 to temporarily put the machine in image pixel count mode. (☛ Chapter 5 Service Tables)

Drum Cleaning and Toner Recycling

Drum Cleaning

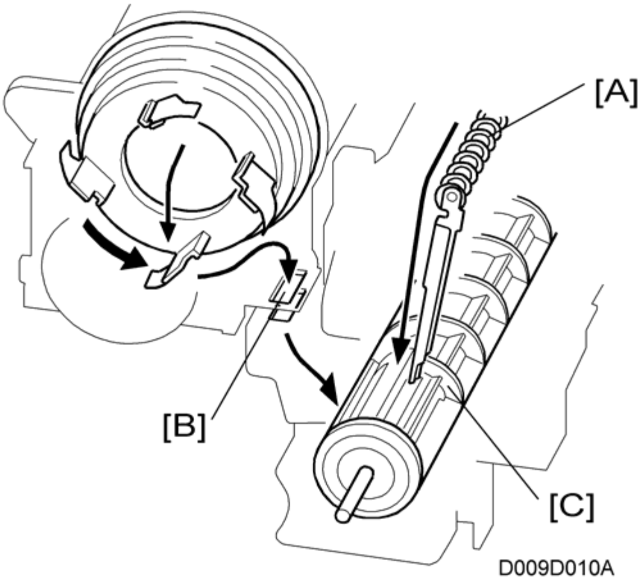


This machine employs a counter blade system. After the image is transferred to paper, a cleaning blade [A] removes any toner remaining on the drum. The toner collection coil [B] carries scraped off toner to the toner collection plate [C].

The collar [D] on the cleaning blade bracket contacts the outer rim of cam gear [E], which moves the cleaning blade side to side. This side-to-side movement disperses accumulated toner to prevent early blade edge wear at one location.

The drum reverses about 5 mm after every print job to remove particles on the edge of the cleaning blade.

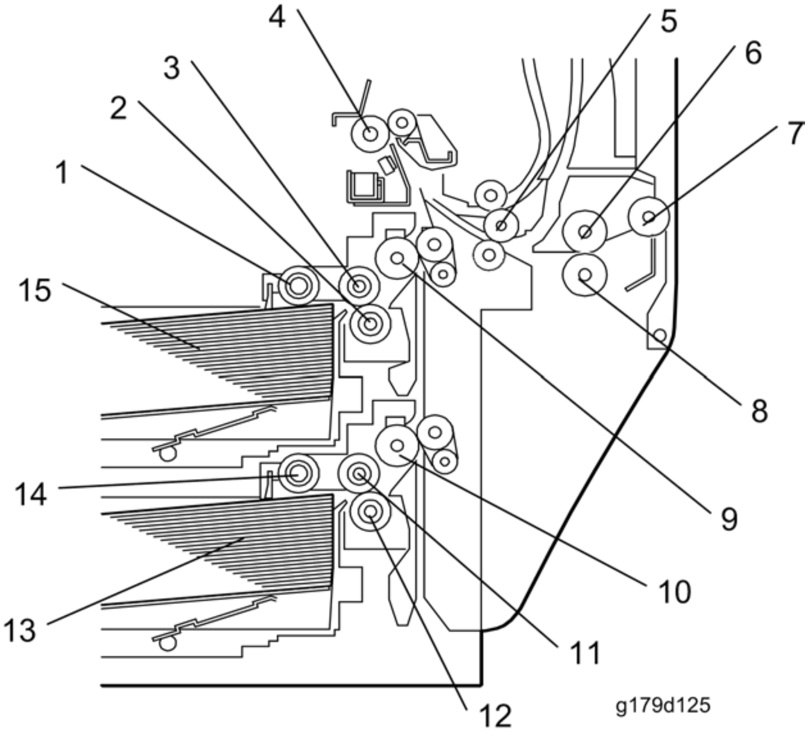
Toner Recycling



Toner collected by the toner collection coil [A] is transported to the opening [B]. This toner falls into the development unit with new toner coming from the toner bottle. The paddle roller [C] mixes the collected toner with the new toner.

Paper Feed

Overview



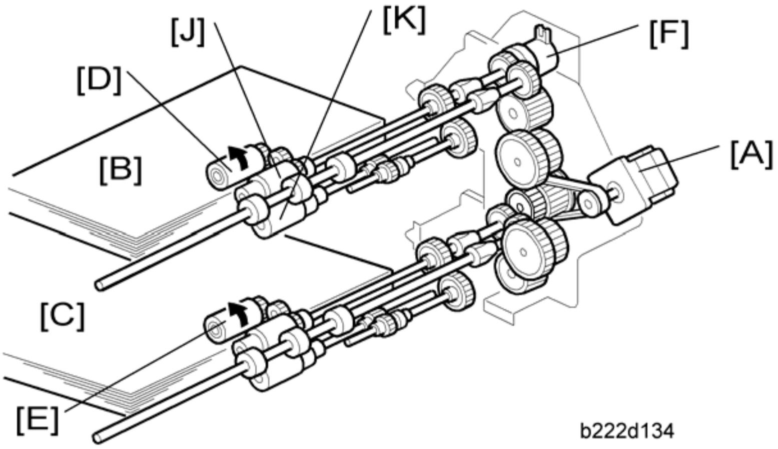
1. Pick-up roller - tray 1 2. Separation roller - tray 1 3. Feed roller - tray 1 4. Registration roller 5. Transport roller - By-pass feed 6. Feed roller - By-pass feed 7. Pick-up roller - By-pass feed	8. Separation roller - By-pass feed 9. Upper relay roller 10. Lower relay roller 11. Feed roller - tray 2 12. Separation roller - tray 2 13. Paper tray 2 14. Pick-up roller - tray 2 15. Paper tray 1

There are two paper trays (500 sheets each), and a by-pass feed table (100 sheets).

The paper feed mechanism uses an FRR system for tray 1, 2 and by-pass tray.

Tray 1 and Tray 2 can hold a range of sizes.

Paper Feed Drive

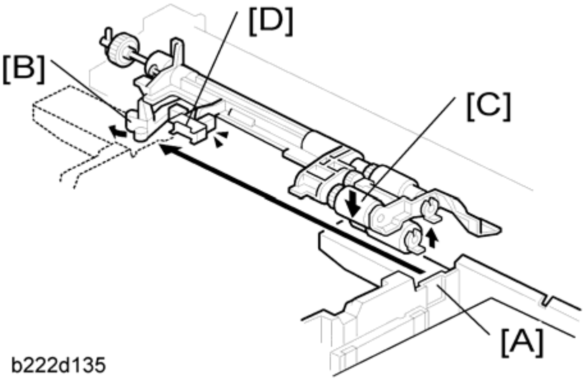


The paper feed motor [A] drives the pick-up and feed mechanisms in tray 1 [B], tray 2 [C]. It uses clutches and complex trains of gears to do this.

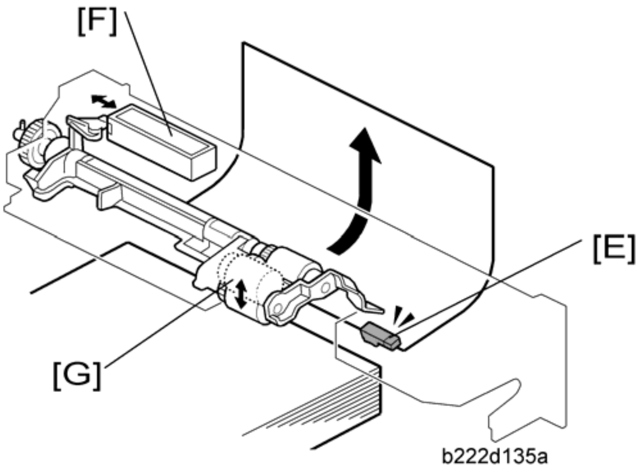
When tray 1 and tray 2 are inside the machine, their pick-up rollers [D][E] are always in contact with each top sheet of the paper stack (☛ Paper Lift). When the paper feed clutch [F] for tray 1 turns on, the pick-up, feed [J] and separation [K] rollers start rotating to feed the paper. The paper from tray 2 is also fed in the same way.

The paper feed clutch stays on until shortly after the registration sensor activates.

Pick-Up and Separation Roller Release Mechanism



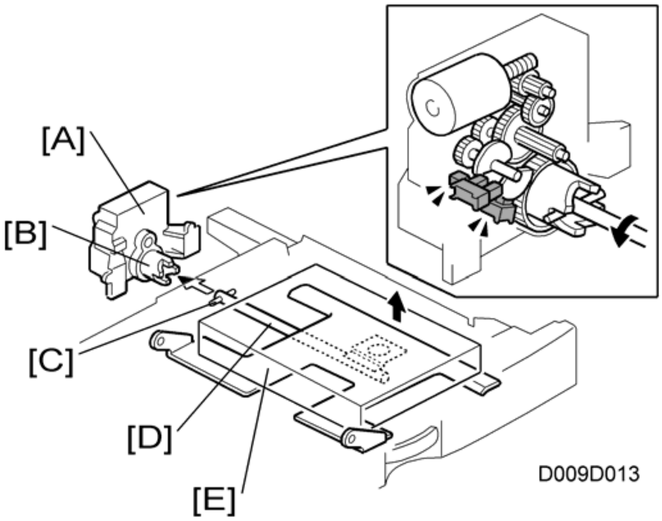
When the tray is installed in the machine, the rear [A] of the tray pushes the lever [B], and this lever pushes down the pick-up roller [C] onto the paper. This turns the tray lift sensor [D] "OFF".



When the paper feed sensor [E] detects the trailing edge of the paper, the pick-up solenoid [F] turns on and off. This lifts the pick-up roller [G] from the top of the stack paper briefly and then releases the pick-up roller. This makes paper pick-up more effective.

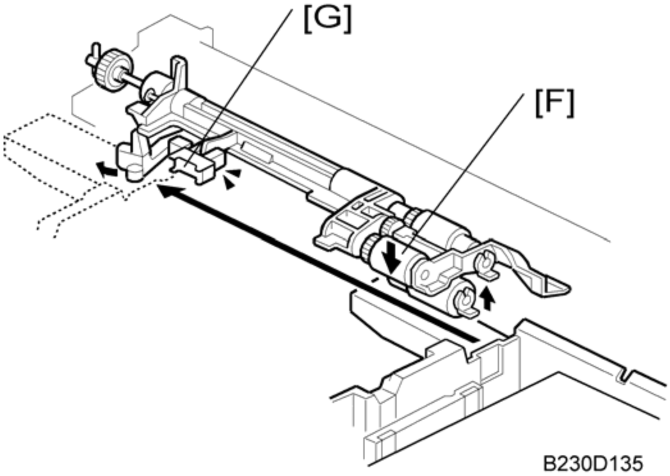
The paper feed sensor [E] also controls the paper feed clutch "ON" and "OFF" timing.

Paper Lift



The rear end of the paper tray pushes the tray set switch (for tray 2, this is the paper size switch). As a result, the machine detects that the paper tray is installed.

When the machine detects that a tray has been placed in the machine, the tray lift motor [A] rotates and the coupling gear [B] on the tray lift motor engages the pin [C] on the lift arm shaft [D]. Then the tray lift arm lifts the tray bottom plate [E]. When the tray is removed from the machine, the connection between the coupling gear and lift arm shaft is disengaged, and the tray bottom plate lowers. After that, the coupling gear is moved to its home position.



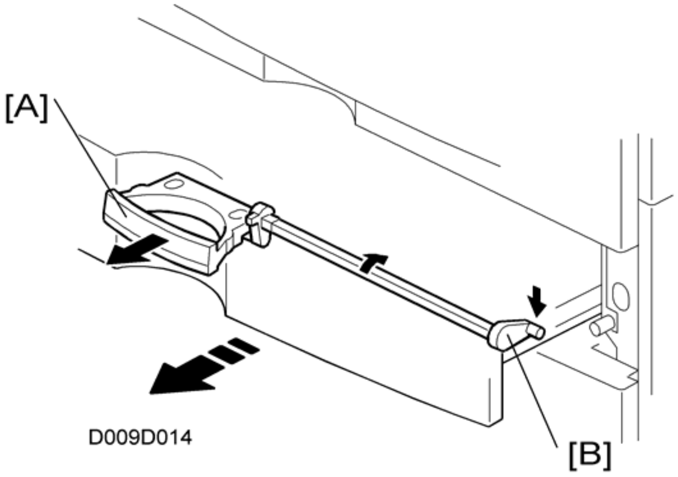
When the paper tray is set in the machine, the pick-up roller [F] lowers. When the top sheet of paper reaches the proper height for paper feed, the paper pushes up the pick-up roller, and the actuator on the pick-up roller supporter activates the paper lift sensor [G] to stop the tray lift motor.

After several paper feed cycles, the paper level gradually lowers and the paper lift sensor is de-activated. The tray lift motor turns on again until this sensor is activated again.

When the paper tray is removed from the machine, the tray lift motor coupling gear disengages the pin on the lift arm shaft, and the tray bottom plate then drops under its own weight.

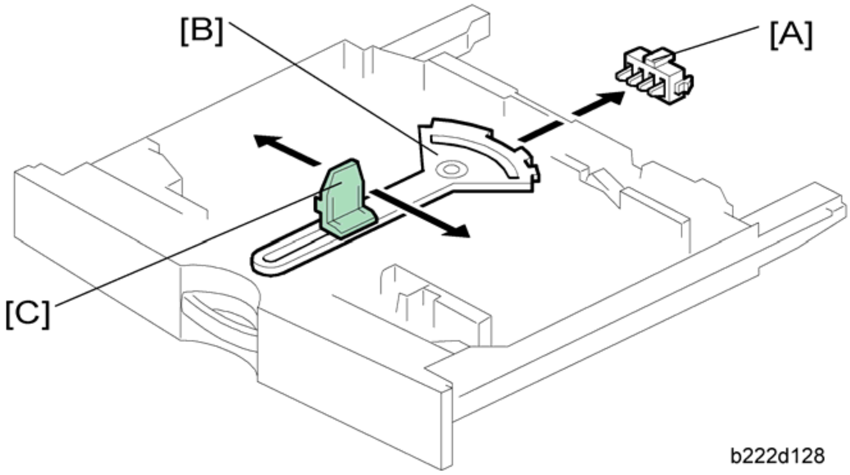
Tray Lock Mechanism

This machine has a tray lock mechanism.



The lock at the front prevents the tray from coming out of the machine during transporting or shipping. When you pull the handle [A], the lock lever [B] is lowered. As a result, you can pull out the tray.

Paper Size Detection – Trays 1 and 2



There are four paper size switches [A] in tray 1 and tray 2. Switch 1 (right end) is for tray set detection. The other three switches detect the paper size as shown in the table below. The actuator [B] is moved by the end plate [C].

0: Pushed, 1: Not pushed

Models		Switch Location		
North America	Europe/Asia	SW4	SW3	SW2

DLT (A3) SEF*1	A3 (DLT) SEF*1	0	0	1
LG (B4) SEF*2	B4 (LG) SEF*2	0	0	0
A4 SEF	A4 SEF	1	1	0
LT SEF	LT SEF	1	1	1
B5 SEF	B5 SEF	0	1	1
LT (A4) LEF*3	A4 (LT) LEF*3	1	0	0
Exe (B5) LEF*4	B5 (Exe) LEF*4	0	1	0
A5 LEF	A5 LEF	1	0	1

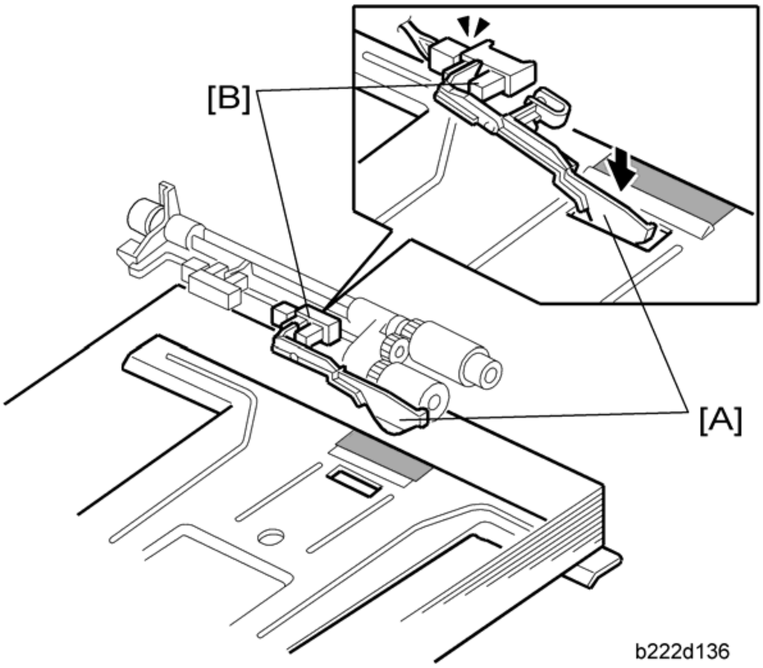
Note

- *1: The machine detects either DLT SEF or A3 SEF, depending on the setting of SP5-181-2.
- *2: The machine detects either LG SEF or B4 SEF, depending on the setting of SP5-181-3.
- *3: The machine detects either LT LEF or A4 LEF, depending on the setting of SP5-181-1.
- *4: The machine detects either Exe LEF or B5 LEF, depending on the setting of SP5-181-4
- SP 5-181-5 to –17 does similar functions for the tray 2 and optional paper trays.

The machine disables paper feed from a tray if the paper size cannot be detected (if the paper size actuator is broken or no tray is installed).

For non-standard paper sizes, if they are not visible on the user tool screen for selecting paper sizes, then set SP 5112 to "1". If the user selects one of these sizes, auto paper size selection is disabled.

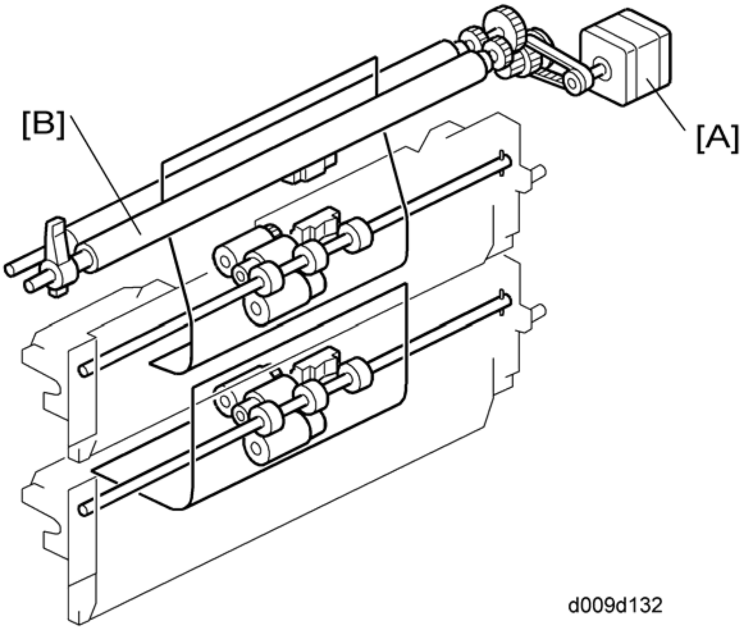
Paper End Detection – Trays 1 and 2



The paper stack raises the paper end feeler [A] and the paper end sensor [B] deactivates if there is some paper in the paper tray.

When the paper tray runs out of paper, the paper end feeler [A] drops into the cutout in the tray bottom plate. At this time the paper end sensor [B] activates.

Registration

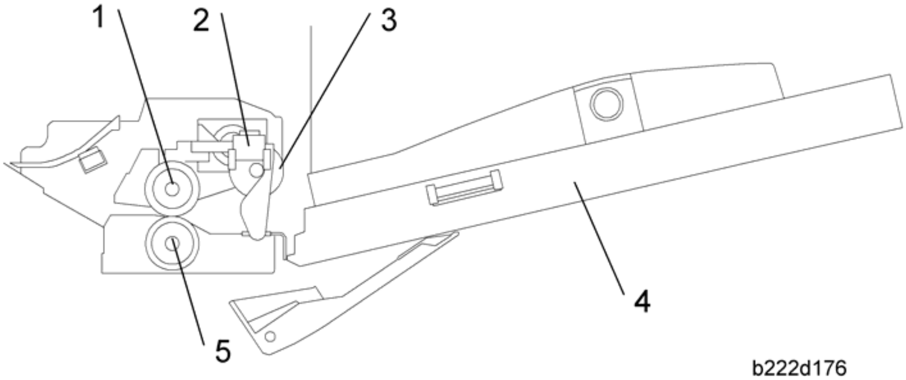


The registration motor [A] drives the registration roller [B] with a complex train of gears.

The machine makes a paper buckle at the registration roller to correct paper skew. You can adjust the paper buckle with SP1-003.

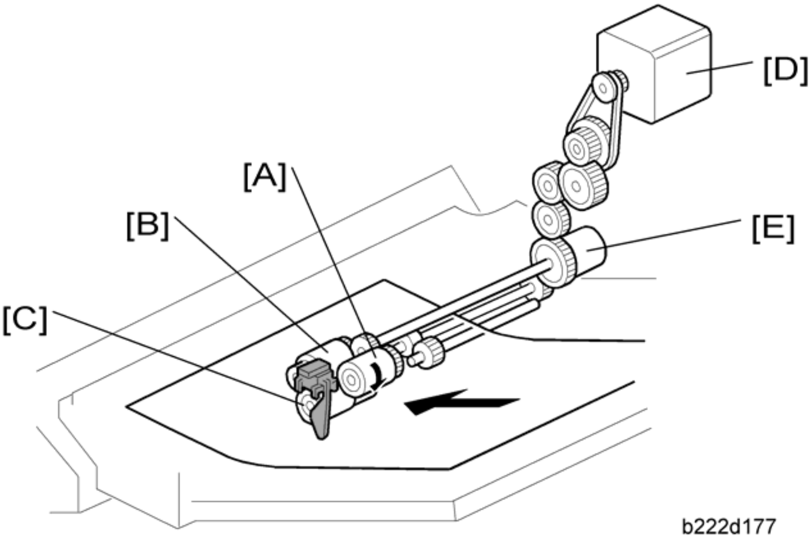
By-Pass Tray

Overview



1. By-pass feed roller
2. By-pass paper end sensor
3. By-pass pick-up roller
4. By-pass tray
5. By-pass separation roller

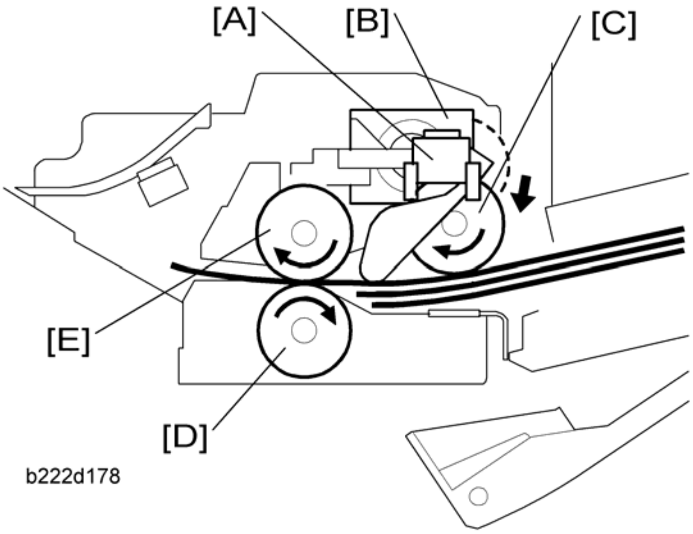
Drive



The by-pass pick-up roller [A] stays away from the top of the stack of paper until the by-pass pick-up solenoid turns on.

The duplex/by-pass motor [D] drives the by-pass pick-up, feed [B] and separation roller [C] through the by-pass clutch [E] and gears.

By-pass Paper Separation

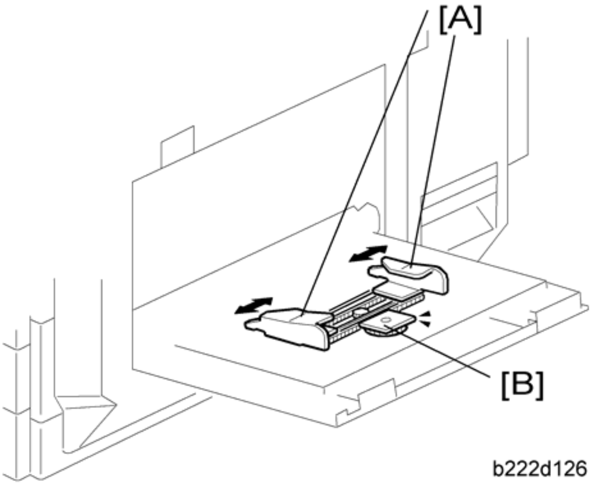


When the by-pass paper end sensor [A] sensor detects paper and the machine gets a by-pass printing job, the by-pass solenoid [B] drops the by-pass pick-up roller [C] onto the top of the paper stack on the by-pass tray. After that, the by-pass pick-up roller moves one sheet of paper to the feed roller.

This machine uses an FRR (Feed and Reverse Roller) system for feeding paper.

There is friction between the by-pass feed roller [E] and separation roller [D]. This friction separates the top sheet of paper from the stack.

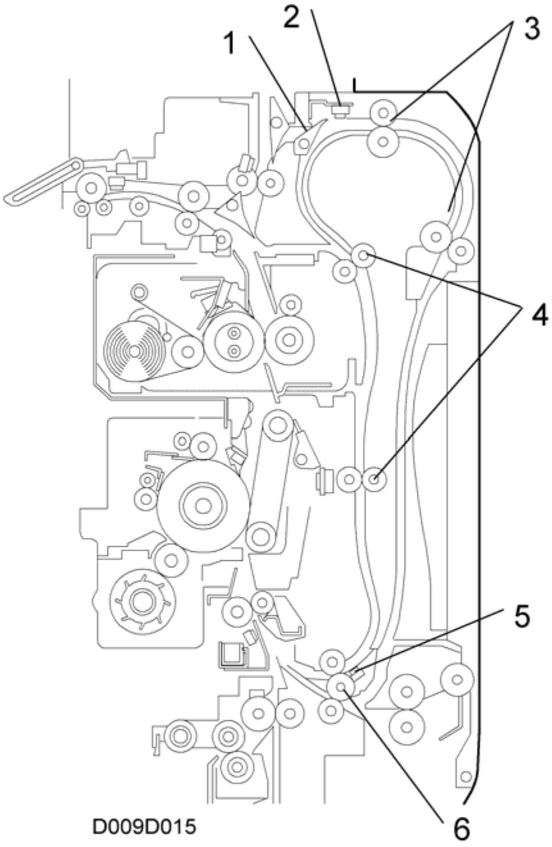
By-pass Paper Size Detection



There are two paper side plates [A] on the by-pass tray. These connect with the paper size sensor [B] through a rack-and-pinion mechanism.

Duplex Unit

Overview



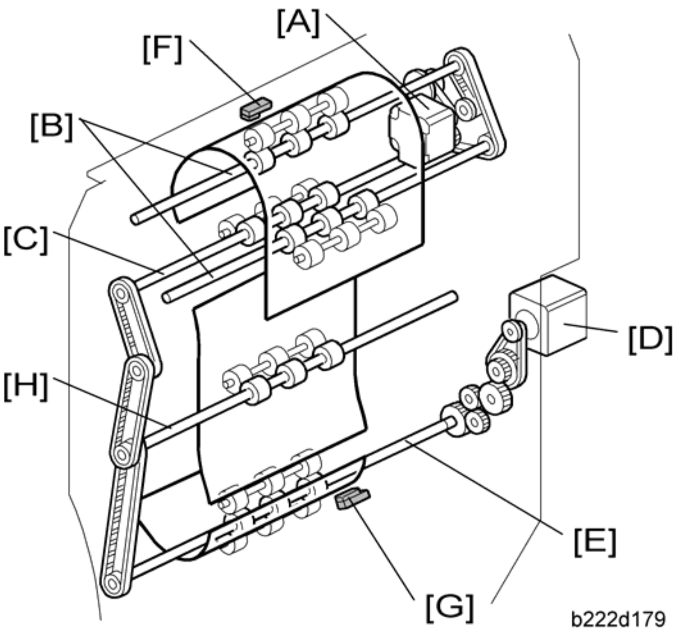
1. Duplex inverter gate	4. Duplex transport rollers
2. Duplex entrance sensor	5: Duplex exit sensor
3. Duplex inverter rollers	6. Duplex/by-pass transport roller

The duplex inverter rollers move the paper to the inverter path, and then feed it backwards to the duplex paper feed path. The duplex transport rollers move paper to the waiting position (just before the duplex/by-pass transport roller).

The duplex/by-pass transport roller moves the paper to the registration roller. This roller is also used for by-pass mode as the by-pass transport roller (to feed paper in from the by-pass tray). But the by-pass tray cannot be used with duplex mode.

The duplex entrance sensor and duplex exit sensor control the timing for duplex paper feed.

Duplex Drive



The duplex inverter motor [A] drives the following:

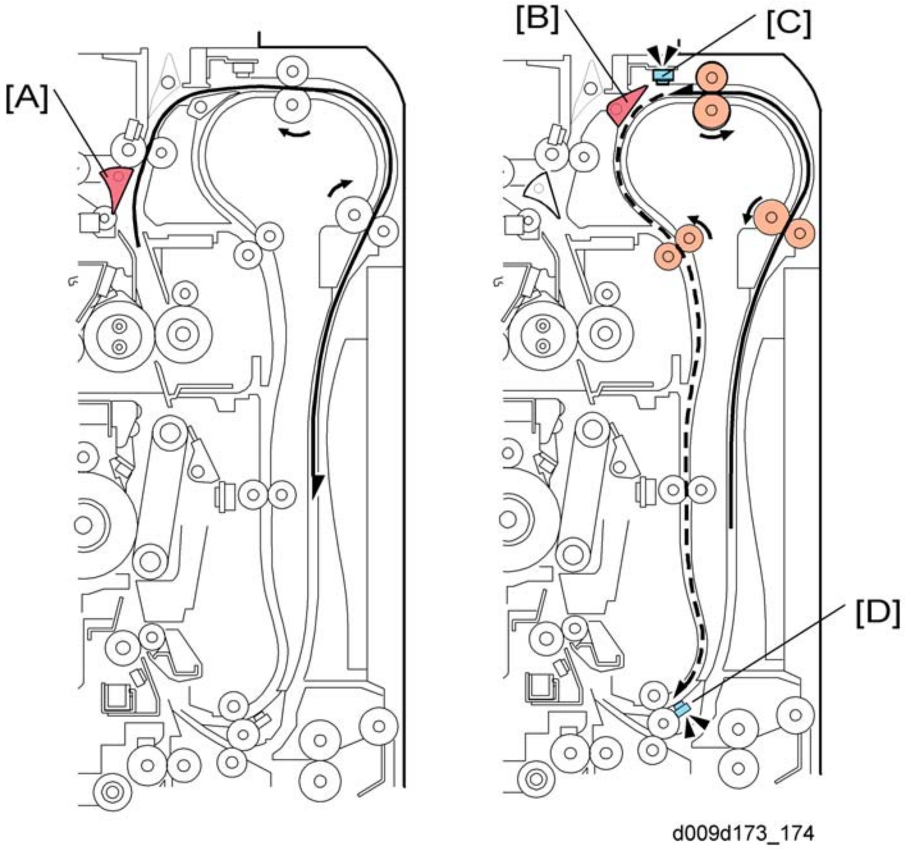
- Duplex inverter rollers [B]
- Duplex transport roller [C]

The duplex/by-pass motor [D] drives the following:

- Duplex/by-pass transport roller [E]
- Duplex transport rollers [C][H]

The duplex entrance sensor [F] and duplex exit sensor [G] control the interleave movement and detect paper jams.

Inverter Mechanism



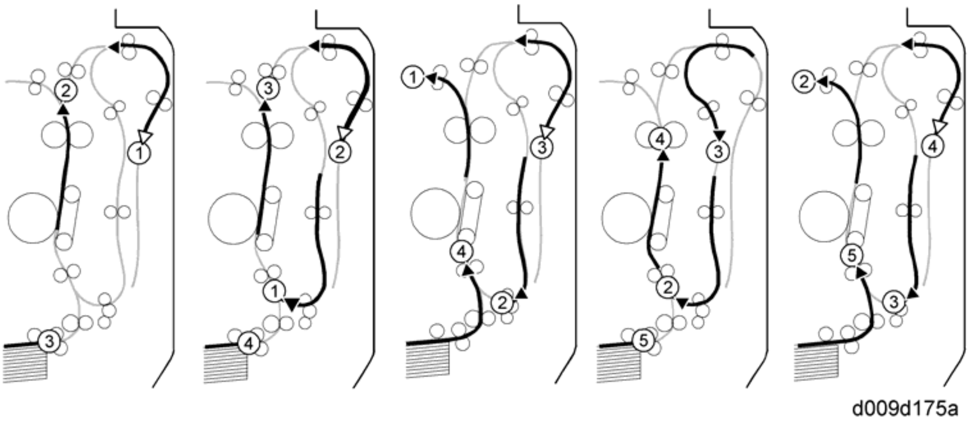
The paper is fed to the duplex path in duplex mode after junction gate 1 [A] opens the duplex path. The duplex inverter motor moves the paper into the inverter, as far as the switching back position. The duplex inverter plate always closes the path to the inverter by spring tension. However, this spring tension is low, so the force from the leading edge of the paper can open the duplex inverter plate.

Then, after the duplex entrance sensor [C] detects the trailing edge of the paper, the duplex inverter motor stops, and the duplex inverter plate [B] opens the duplex feed path (the plate is always open by spring tension). Then, the duplex inverter motor reverses and moves the paper from the switching position to the duplex feed path.

In the duplex feed path, the paper is fed by the transport rollers (these rollers are driven by the duplex inverter motor) and the duplex/by-pass transport roller (this roller is driven by the duplex/by-pass motor). When the machine gets a multi-page duplex printing job, the duplex exit sensor [D] controls the duplex inverter motor and duplex/by-pass motor to synchronize the duplex feed timing.

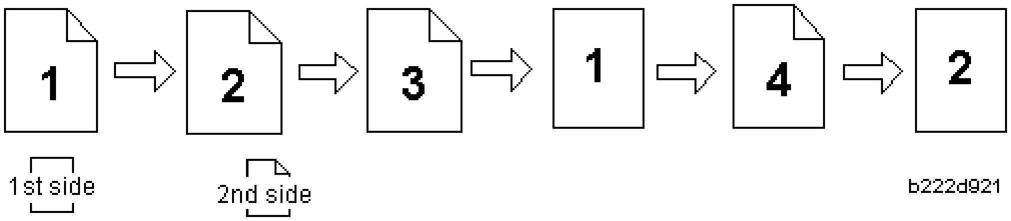
Duplex Operation

Up to A4/LT (81/2" x 11") LEF

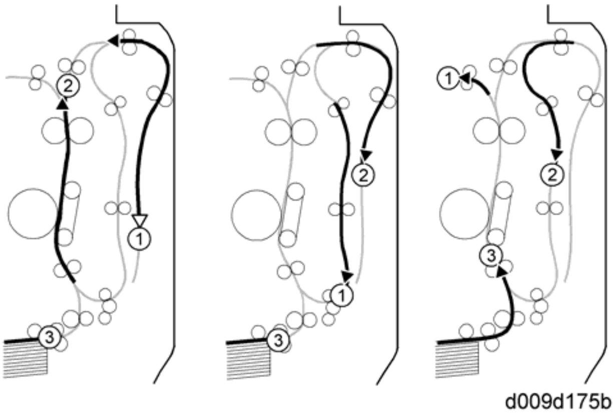


There are three sheets of paper in the paper feed path at the same time. The interleave method is used.

The drawing above shows the paper movement with the interleave method for three sheets of paper. The printing is done as follows:



From A4/LT (8 1/2" x 11") LEF to 400mm length



There are two sheets of paper in the paper feed path at the same time. The interleave method is used. For sheets longer than 400 mm, there is no interleaving.

The drawing above shows the paper movement with the interleave method for two sheets of paper. The printing is done as follows:

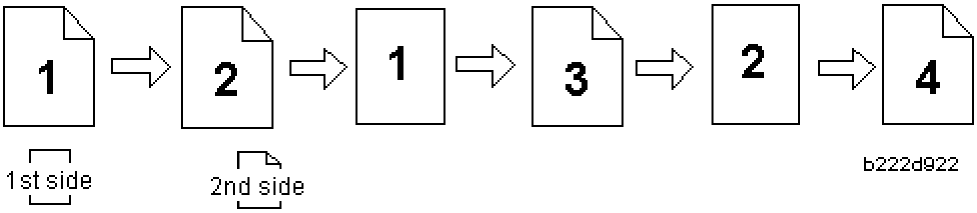
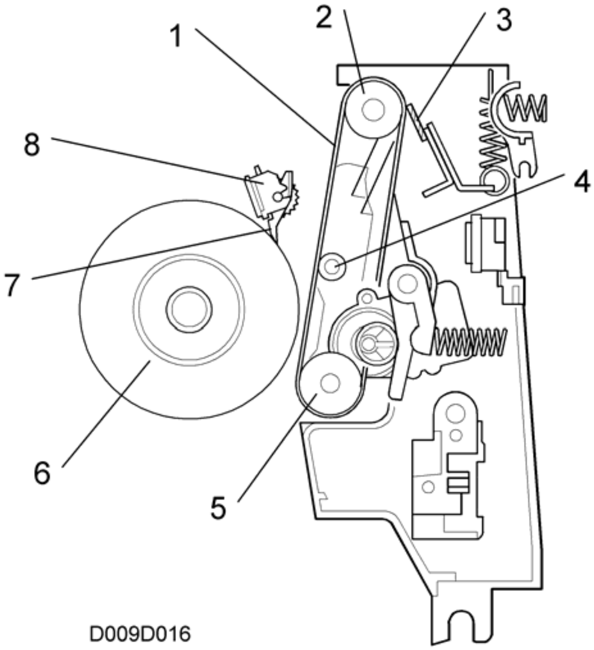


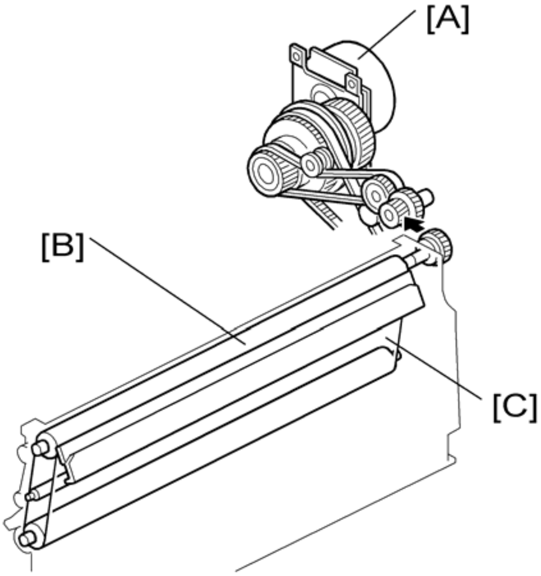
Image Transfer and Paper Separation

Overview



1. Transfer belt	5. Idle roller
2. Drive roller	6. OPC
3. Transfer belt cleaning blade	7. Pick-off pawls
4. Bias roller	8. ID sensor

Belt Drive Mechanism



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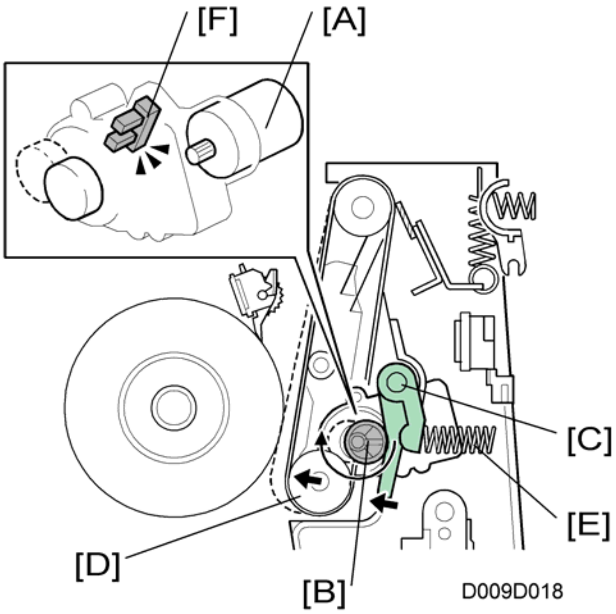
The transfer/development motor [A] drives the transfer belt drive roller [B] through gears and a timing belt. As a result, the transfer belt [C] turns.

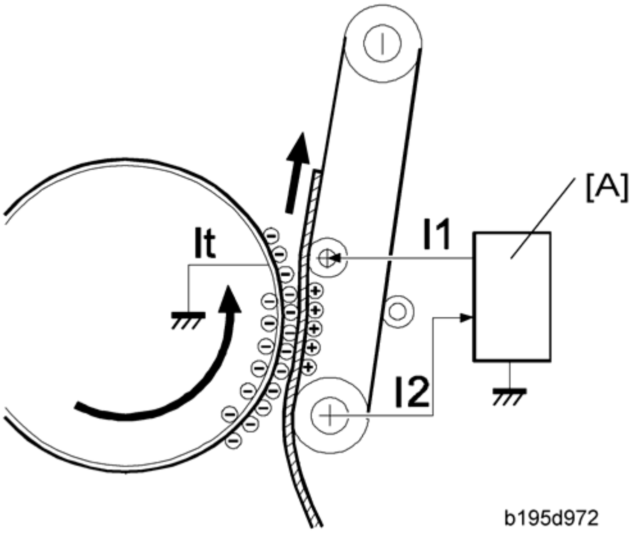
Transfer Belt Unit Contact Mechanism



The belt contact and release mechanism consists of the belt contact motor [A], cam [B], and contact lever [C], transfer belt [D]. The belt contact motor turns on and the cam attached to the transfer belt motor rotates half a complete rotation. The contact lever, riding on the cam, is lifted up and the springs [E] push the belt into contact with the drum.

The transfer belt HP sensor [F] detects the home position of the cam (this is when the belt is away from the drum). The belt must be released from the drum between print jobs in order to prevent the ID sensor pattern from being rubbed off and to prevent contamination of the drum from the surface of the belt.

Image Transfer and Paper Separation Mechanism

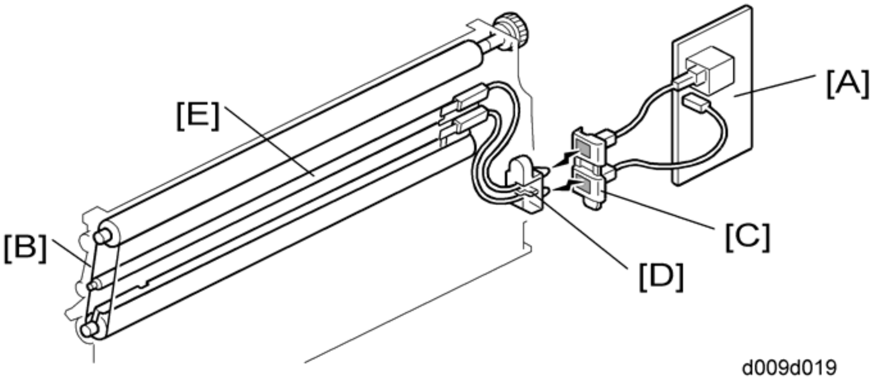


When the paper enters the gap between the belt and the drum, the high voltage supply board [A] applies a high positive current to the belt to transfer the image to the paper.

After receiving the image from the drum, the paper is fed by the belt. The paper moves to the end of the transfer belt unit, where it separates from the belt as the belt curves away. Then the paper moves on to the fusing unit.

Transfer Belt Charge

Mechanism



The high voltage supply board [A] applies a positive current to the transfer belt [B] through the terminal block [C], terminal plate [D], and the bias roller [E].

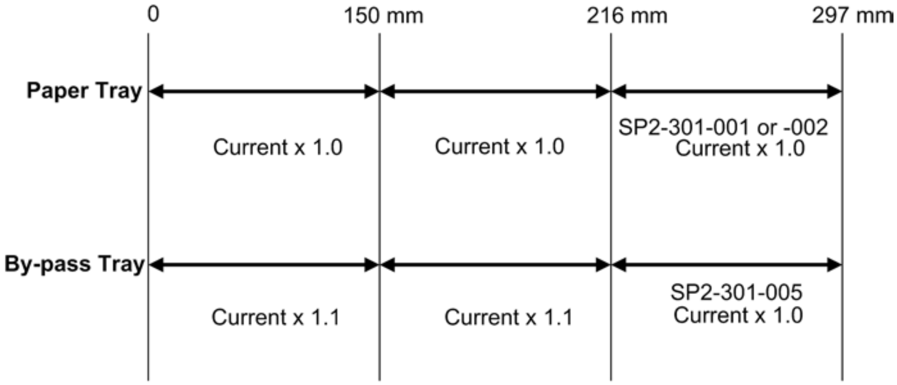
The high voltage supply board adjusts the current to the roller to keep a small but constant current flow to ground through the belt, paper, and drum. If this current is not kept constant, efficiency of toner transfer and paper separation will vary with paper thickness, type, environmental condition, or changes in transfer belt surface resistance.

Correction for paper width and thickness

The base current for the main tray and the by-pass tray is adjustable with SP modes in order to adjust the machine so it can handle papers of non-standard size and thickness.

For paper width, there are two thresholds. The factory settings are 150 mm (5.9") and 216 mm (8.5").

Thick paper must be fed from the by-pass tray because the proper current is adjusted only for the by-pass tray in order to accommodate thick paper. The current for paper narrower than 216 mm is 1.1 times the normal current.



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This illustration shows the SP modes, which control these currents. The base transfer current depends on SP 2-301. This is different for various parts of the image, and is different for the by-pass tray; see the next page for details.

Currents applied to leading edge, image areas - by-pass feed

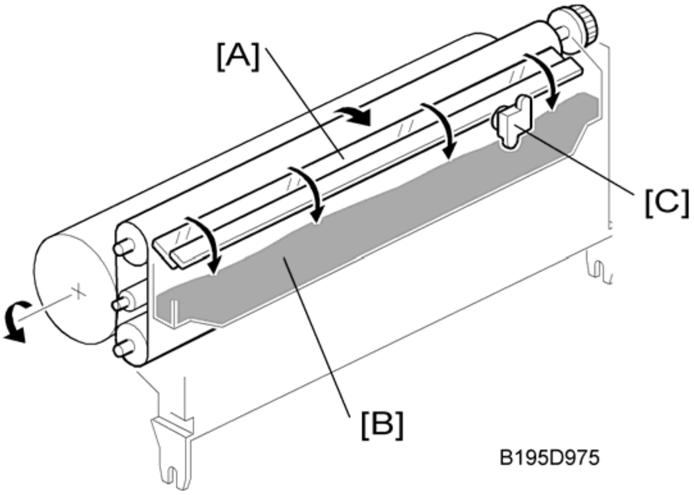
Transfer current can also be adjusted for the leading edge and the image area, and for by-pass feed. The timing for starting to apply leading edge current, for the switchover from leading edge current to image area current, and for switching off at the trailing edge can also be changed.

The table below lists the SP modes you can use to adjust these settings.

SP2-301 Transfer Current Adjustment

Image areas	SP2-301-1	1st Side of Paper
	SP2-301-2	2nd Side of Paper
	SP2-301-5	By-pass Feed
Leading edge areas	SP2-301-3	Leading Edge 1st side
	SP2-301-4	Leading Edge 2nd side
	SP2-301-6	Leading Edge By-pass Feed
SP2-911 Transfer Current Timing		
Timing	SP2-911-1	On Timing (at leading edge)
	SP2-911-2	Switch Timing (from leading edge to image area current
	SP2-911-3	Off Timing (at trailing edge)

Transfer Belt Cleaning Mechanism

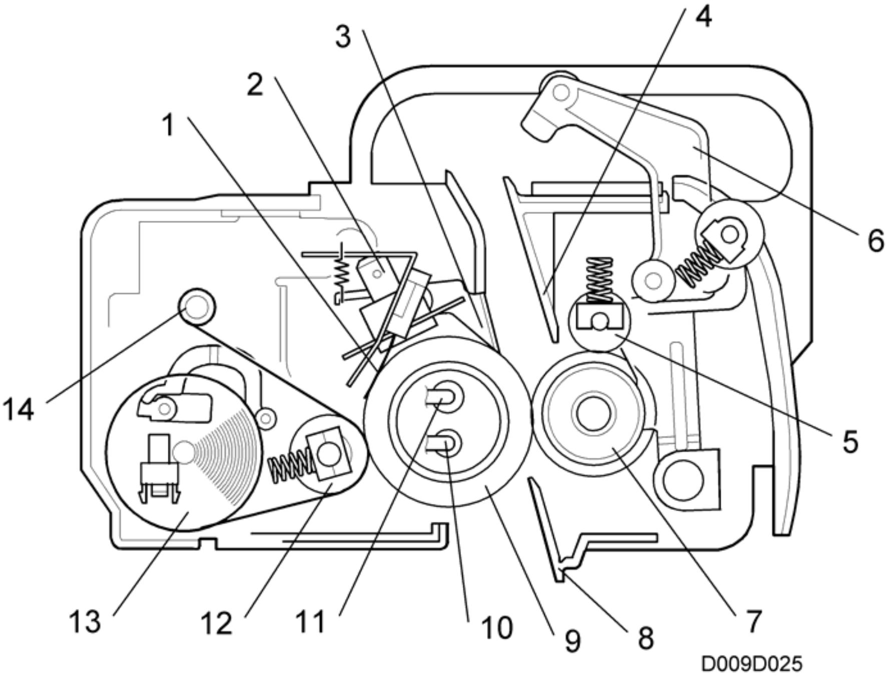


The cleaning blade [A], always in contact with the transfer belt, scrapes off toner and paper dust remaining on the transfer belt.

Scraped off toner and paper dust falls into the toner collection tank [B] in the transfer belt unit. This toner is not recycled. When the toner overflow sensor [C] detects toner overflow, the toner overflow indicator lights. Up to 999 prints can be made before the toner overflow condition shuts down the machine.

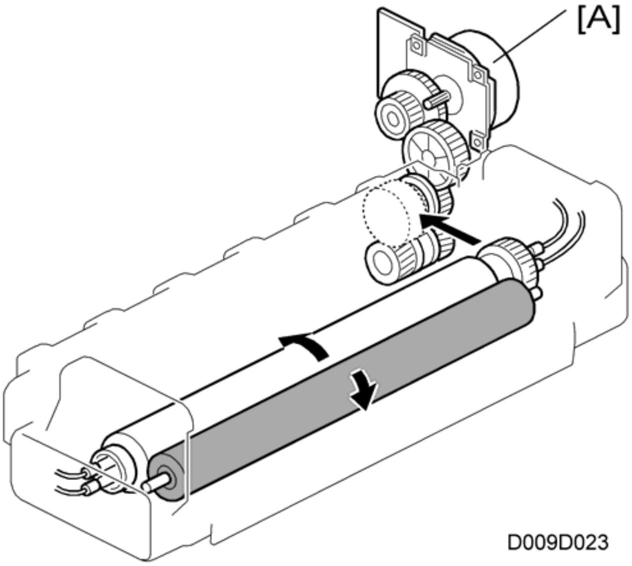
Image Fusing

Overview



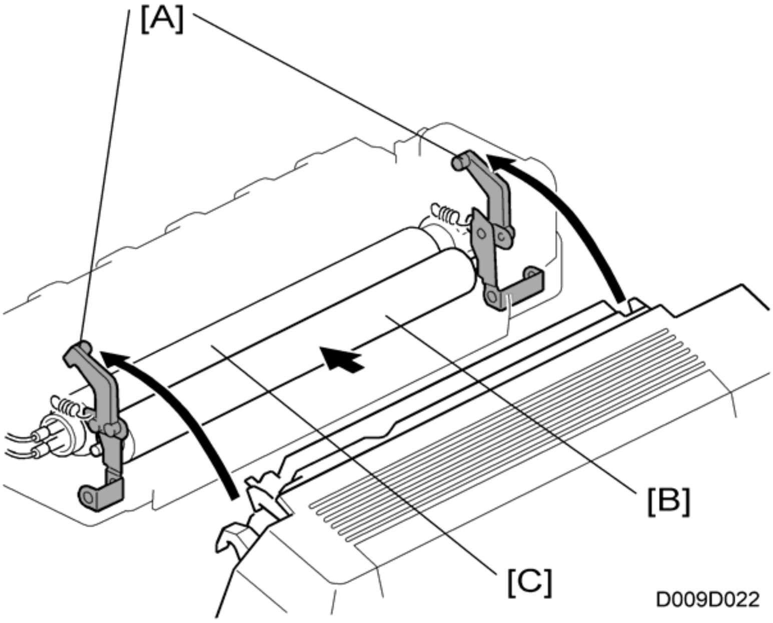
1. Thermistors (center/end)	8. Entrance guide
2. Thermostats (center/end)	9. Hot roller
3. Hot roller strippers	10. Fusing lamp (ends)
4. Fusing exit guide plate	11. Fusing lamp (center)
5. Pressure roller cleaning roller	12. Web holder roller
6. Pressure arm	13. Web supply roller
7. Pressure roller	14. Web take up roller

Fusing Drive



The fusing motor [A] drives the hot roller through gears.

Pressure Release Mechanism



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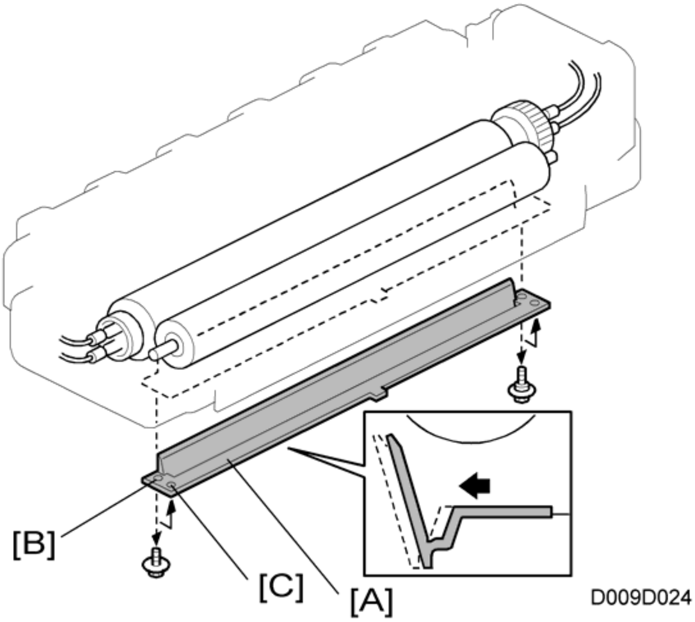
The pressure levers [A] apply the correct pressure to the nip between the pressure roller [B] and hot roller [C]. When the right door is opened, the pressure roller moves away from the hot roller. If a paper jam occurs in the fusing unit, releasing these levers make it easier to remove jammed paper.

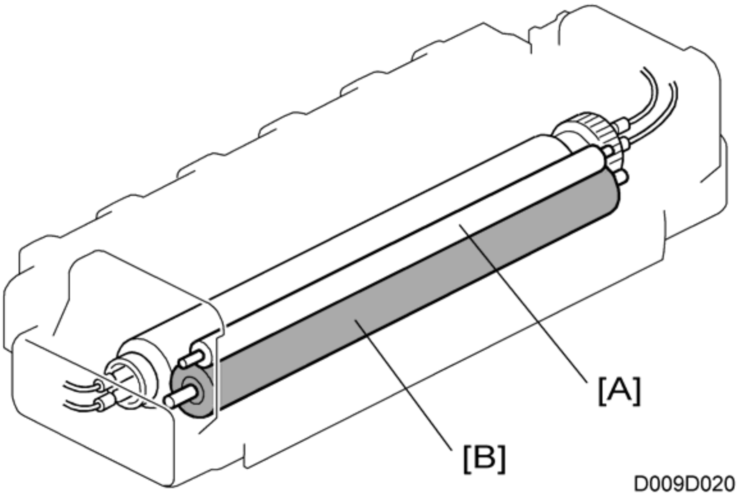
Fusing Entrance Guide Shift Mechanism



The entrance guide [A] has two holes on each side to adjust for paper thickness to prevent creasing. Normally, the left screw hole [B] on each side is used.

For thin paper, use screw holes [C] to move the entrance guide to the left. This setting allows more direct access to the gap between the hot and pressure rollers, and prevents thin paper from buckling against the hot roller which can cause blurring at the leading edge of the output.

Pressure Roller Cleaning

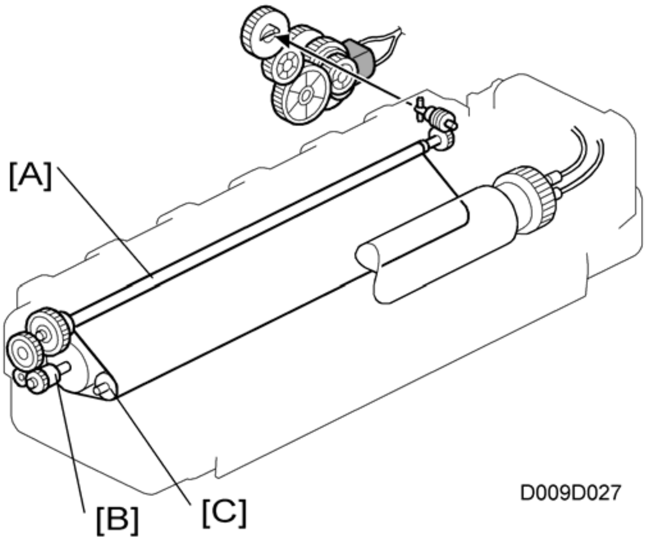


The pressure roller cleaning [A], in constant contact with the pressure roller [B], collects toner and paper dust from the surface of the pressure roller.

Because the cleaning roller is metal, it can collect adhering matter better than the pressure roller, which is coated with Teflon.

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.

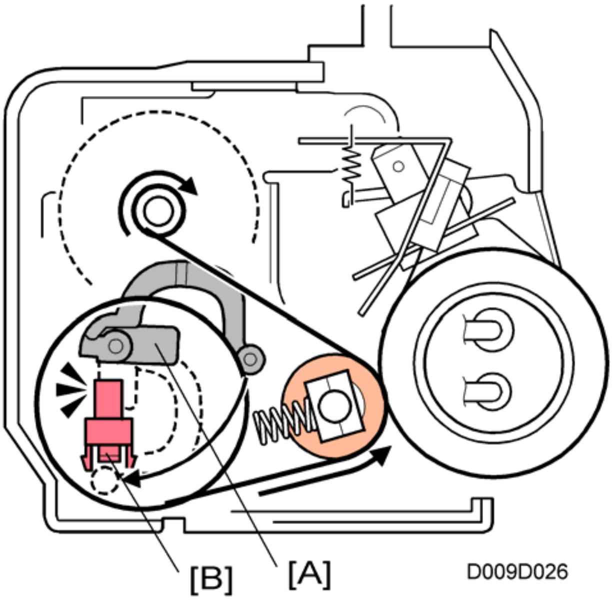
Web Drive

The web motor drives the web supply roller [B] and web take-up roller [A]. The web motor switches on for 0.3 to 10 s at 8.4 s intervals during printing.

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 90% (EU) or 92% (Asia/NA) of the web has been used, which is about 144 K: EU, 147 K: NA/ASIA (A4 LEF).

Web End



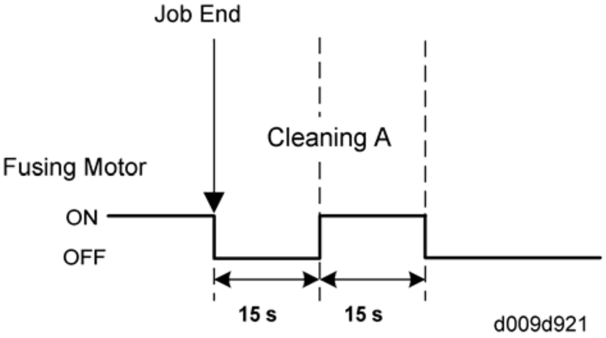
The feeler stays on the top of the web roll. When the roll runs out, the actuator on the rear end of the feeler [A] enters the web end sensor [B] in its on weight.

When all of the web has been used (after about another 30k prints), the actuator rotates, its feeler actuates the web end sensor. The machine detects the web end status when the web motor has rotated for 27 seconds after the first web end detection and the web end sensor is interrupted again.

Hot Roller Stripper Cleaning

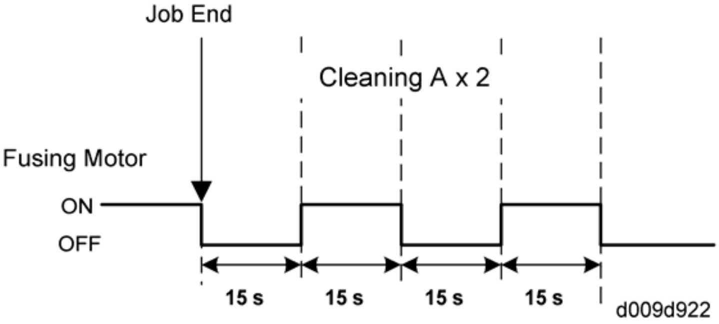
Toner clinging to the hot roller strippers can cause black dots to appear on the back sides of outputs. To ensure that the hot roller strippers are clean and not contaminated by old toner, the machine switches on the fusing motor and rotates the hot roller after the job. The hot roller rotation sequence at the end of a job depends on the size of the job.

1st Cleaning Mode



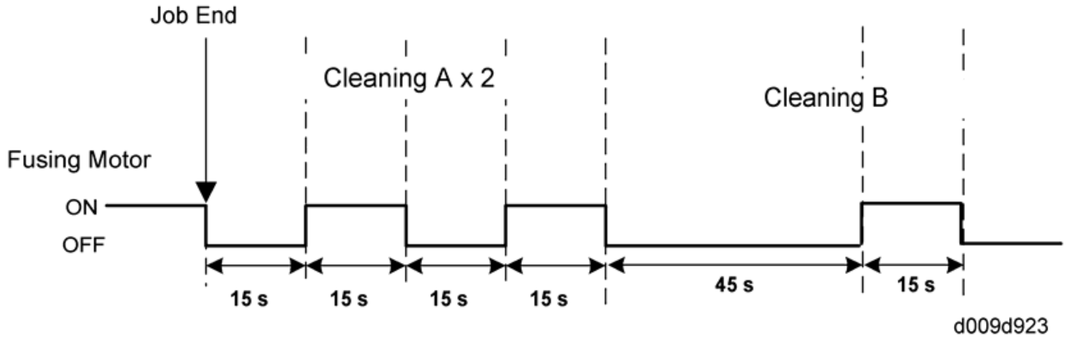
After the machine has completed printing a total of 0 to 5 sheets continuously (adjustable with SP3905-001: default 5), the fusing motor waits for 15 seconds at the end of the job, and then switches on for 15 sec. This 15 sec. off/on cycle, called "Cleaning A", is done once.

2nd Cleaning Mode



After the machine has completed printing a total of 6 to 49 sheets continuously (adjustable with SP3905-003: default 30), Cleaning A is done twice at the end of the job.

3rd Cleaning Mode



After the machine has completed printing a total of 50 to 999 sheets continuously (adjustable with SP3905-005: default 100), Cleaning A is done twice at the end of the job. After that, the fusing motor waits for 45 sec. again and then switches on for 15 sec. This off/on cycle (45 sec. wait and 15 sec. rotate) is called "Cleaning B".

SP Settings for Post-Job Cleaning

The previous description of stripper cleaning with drum rotation after small, medium, and large print jobs is based on the default settings of SP3905. These settings can be adjusted.

These are the SP codes that control how cleaning is done at the end of a job.

No.	Name	Function
3905-001	1st Cleaning: Interval	Sets the number of pages (accumulative total) to print before "1st Cleaning Mode" is done. (Default: 5)
3905-002	1st Cleaning: Mode Setting	Sets the number of additional execution times of cleaning A for "1st Cleaning Mode" (Default: 0)
3905-003	2nd Cleaning: Interval	Sets the number of pages (accumulative total) to print before "2nd Cleaning Mode" has been done. (Default: 30)
3905-004	2nd Cleaning: Mode Setting	Sets the number of additional execution times of cleaning A for "2nd Cleaning Mode" (Default: 0)
3905-005	3rd Cleaning: Interval	Sets the number of pages (accumulative total) to print before "3rd Cleaning Mode" is done. (Default: 100)
3905-006	3rd Cleaning: Mode Setting	Sets the number of additional execution times of cleaning B for "3rd Cleaning Mode" (Default: 0)

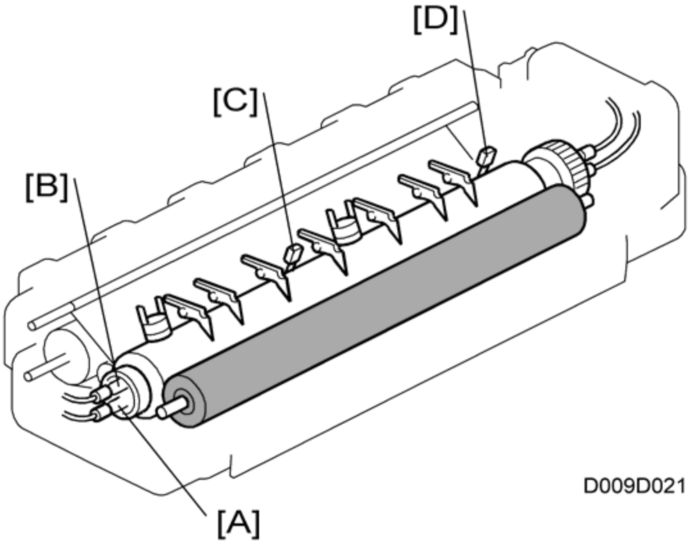
Here are some important points to keep in mind about hot roller stripper cleaning:

If the machine switches to any of the energy saver modes (low power mode, etc.) while cleaning is in progress, the cleaning cycle will not be interrupted.

The cleaning cycle is not interrupted by free rotation of the hot roller when the machine is getting ready to print.

Opening the front door, however, while cleaning is in progress will stop a cleaning cycle, and the remaining part of the cleaning cycle is cancelled.

Fusing Temperature Control



The fusing unit has two fusing lamps: the first fusing lamp (ends: 750 W) [A] heats the center of the fusing roller, and the second fusing lamp (center: 550 W) [B] heats both ends of the hot roller. This arrangement ensures even heat on all surfaces of the roller.

In order to control the temperature of the roller, two high response thermistors are attached to the unit, one near the center [C] and one at the end [D] of the hot roller.

Temperature Control

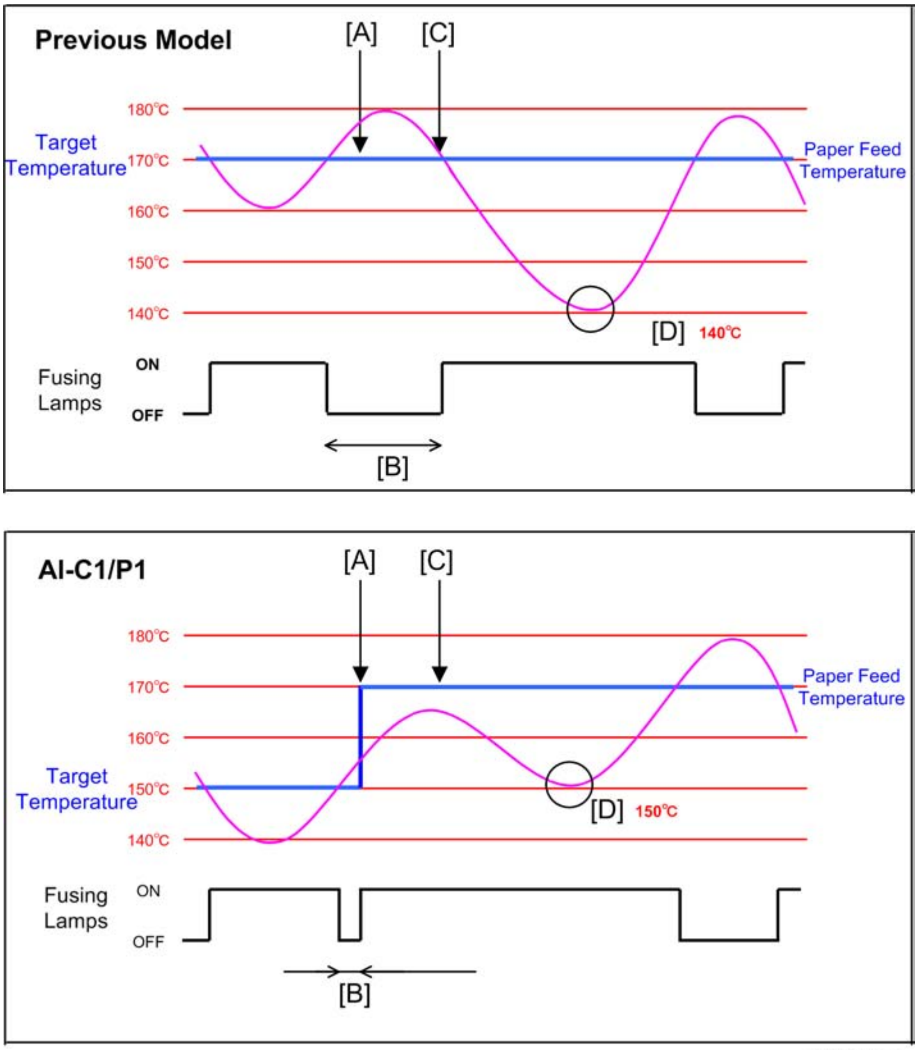
There are two types of temperature control:

On/off control (Default)

Phase control.

Either mode can be selected with SP1104 (Fusing Temperature Control).

After the machine is powered on, the CPU checks the AC frequency for 500 ms, in case phase control is selected later for the temperature control, and then switches on the fusing lamp.



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This model has a new temperature control theory. In previous models, the target temperature, paper feed temperature and print ready temperature are set to the same temperature. The machine turns the fusing lamp on and off to keep this temperature. However, after the start of a job [A], the fusing temperature goes down [D] when the first sheet of paper [C] goes into the fusing unit while the fusing lamp is turned off [B]. In this case, at the lowest temperature [D], the difference between an ideal fusing temperature and the actual fusing temperature is up to 40°C. This may cause cold offset on the first output sheet of paper.

In the AI-P1 model, the target temperature and print ready temperature are set to the same temperature, but the paper feed temperature is different. The machine turns on the fusing lamp after it gets a print job [A], even if the fusing temperature is at the target temperature or more. Because the lamp-off time [B] is shorter than previous models, the lowest temperature [D] while feeding the first sheet of paper is kept closer to the target temperature [C]. This prevents cold offset on the first output sheet of paper, and gives a better first print in comparison with previous models.

Fusing Idling Temperature

If prints are not sufficiently fused soon after the main power switch is turned on, fusing idling should be enabled with SP1103-001.

When fusing idling is enabled, it is done when the temperature reaches the print ready ("re-load") temperature. The re-load temperature can be adjusted with SP1105-003, -004.

In the opposite case, even if fusing idling is disabled, it is done when the temperature at power-up is less than or equal to 17°C

The fusing idling time is as follows.

Temperature at power-on	Fusing Idling Mode		
	0: Disabled	1: Enabled	SP1103-1
17°C or less	30 s	30 s	SP1103-2
Higher than 17°C	Not done	30 s	

CPM Down System

When this machine gets a sequence of printing jobs, the machine uses CPM down mode to control the printing speed, to prevent insufficient fusing temperature. The CPM down mode is activated as following conditions below.

1. Ambient Temperature Threshold:

   The machine determines whether the ambient temperature is in the 'low' condition or 'medium' condition (the threshold temperature is 17°C, which is adjustable with SP1-916-001 to -005 for each paper type).

2. CPM Down ON/OFF Setting:

   The CPM down mode can be turned on or off with the following SPs for each condition (Low or Medium) and paper type.

   - Low temperature condition: SP1-916-006 to -010 (default: Off)
   - Medium temperature condition: SP1-916-011 to -015 (default: Off)

3. Waiting Time:

   The machine decides whether the CPM down mode is activated or not after the specified time has passed since the first sheet of paper has been fed.

   - Low temperature condition: SP1-916-016 to -020 (default: 60 sec.)

    - Medium temperature condition: SP1-916-021 to -025 (default: 60 sec.)

4. Fusing Temperature Check:

   The machine decides whether the CPM down mode is activated or not when the fusing temperature (center) does not reach the specified temperature.

    - Low temperature condition: SP1-916-026 to -030 (default: 120 °C)
    - Medium temperature condition: SP1-916-031 to -035 (default: 120 °C)

5. CPM Setting in the CPM Down Mode

   The machine changes the CPM when the machine goes into the CPM down mode.

    - Low temperature condition: SP1-916-036 to -040
    - Medium temperature condition: SP1-916-041 to -045

Paper Feed Waiting Mode

When this machine gets a sequence of printing jobs, the machine uses paper feed waiting mode to prevent insufficient fusing temperature.

The paper waits at the registration roller until the fusing temperature (center and ends) reaches the correct temperature.

1. Paper Feed Waiting Mode On/Off Setting:

   The paper feed waiting mode can be turned on or off with SP1-105-023 to -027 for each paper type.

2. Threshold temperature for the paper feed waiting mode:

   (Target temperature + Paper feed temperature) – Paper feed waiting temperature = Threshold temperature

    - Target temperature: SP1-105-001 (center) and -002 (ends)
    - Paper feed temperature: Fixed value (Not adjustable with SP)
    - Paper feed waiting temperature: SP1-105-028 to -037

3. Maximum Waiting Time

   The machine gets out of the paper feed waiting mode after the maximum waiting time has passed, even if the fusing temperature does not reach the threshold temperature for the paper feed waiting mode (adjustable with SP1-105-38).

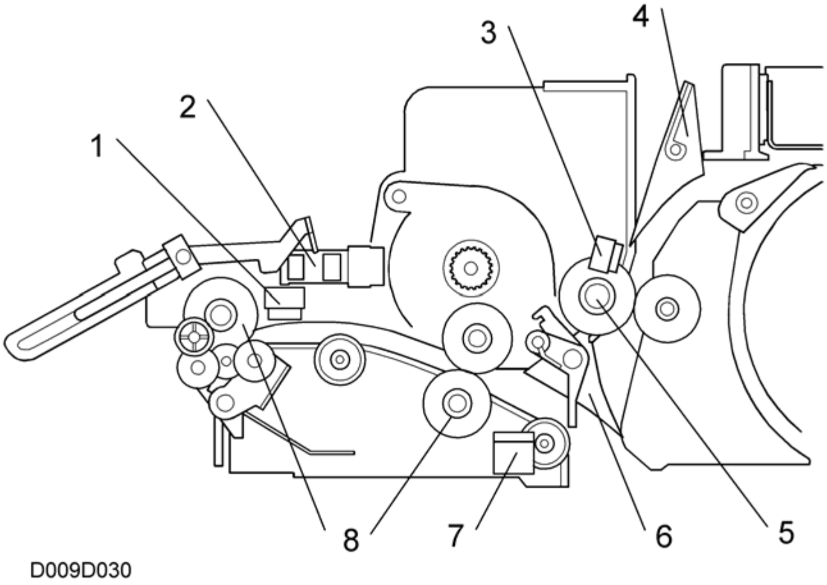
Overheat Protection

If the hot roller temperature becomes greater than 230°C, the CPU cuts off the power to the fusing lamp, and SC534 or 553 (Fusing Overheat Error) will be displayed.

Even if the thermistor overheat protection fails, there is a thermostat in series with the common ground line of the fusing lamp. If the temperature of the thermostat reaches 220°C (center)/ 219°C (ends), the thermostat opens, removing power from the fusing lamp. At the same time, the machine stops operating. At this time, SC534 or 553 (Fusing Temperature Warm-up Error) will be displayed.

Paper Exit

Overview



1. Paper exit sensor	5. Junction Transport Roller
2. Paper overflow sensor	6. Junction gate 1
3. Junction gate jam sensor	7. Fusing exit sensor
4. Junction gate 2 (Not used)	8. Paper exit rollers

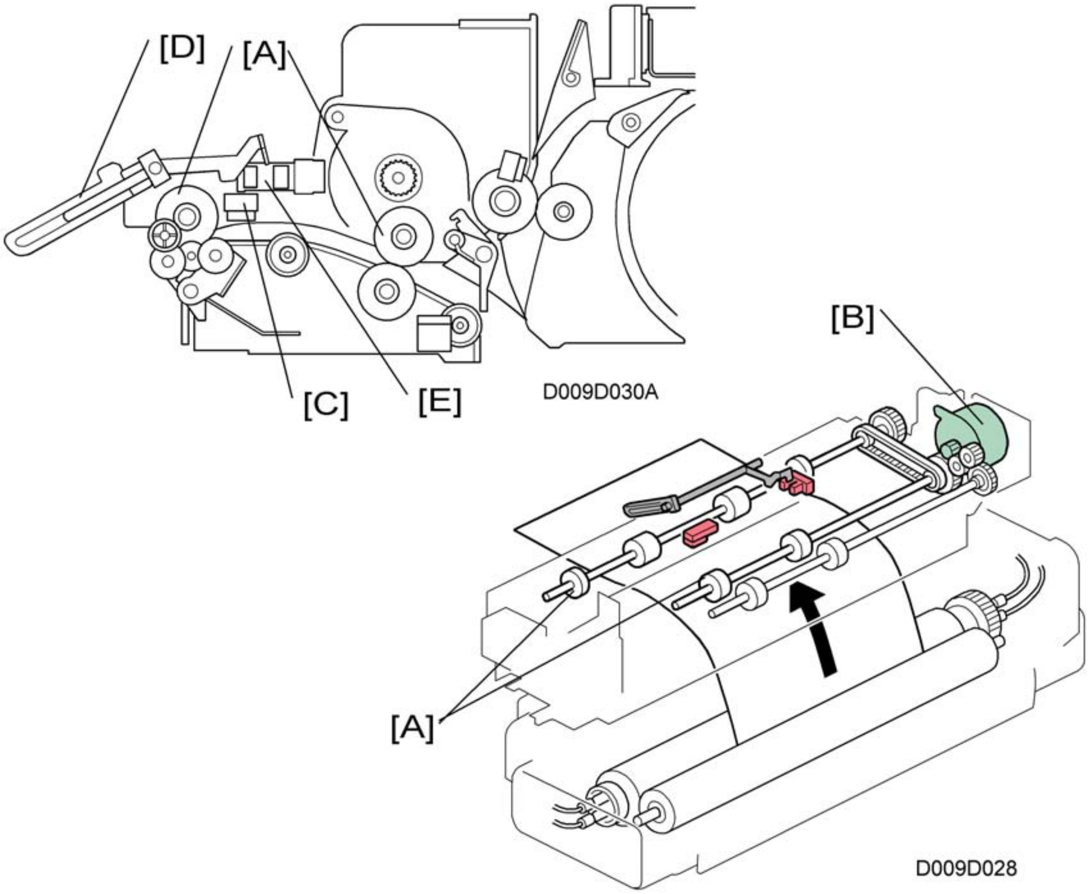
This machine has two junction gates around the paper exit unit (junction gate 2 is located in the duplex unit):

- Junction gate 1 switches the paper feed direction to the standard output tray path or the duplex unit path. This gate is controlled by the junction gate 1 solenoid. When the junction gate 1 HP sensor detects that the gate is at home position, the standard output tray path is opened.
- Junction gate 2 is not used in this machine.

The paper exit motor drives the paper exit rollers and the junction transport roller.

Junction Gate Mechanism

To the Standard Tray

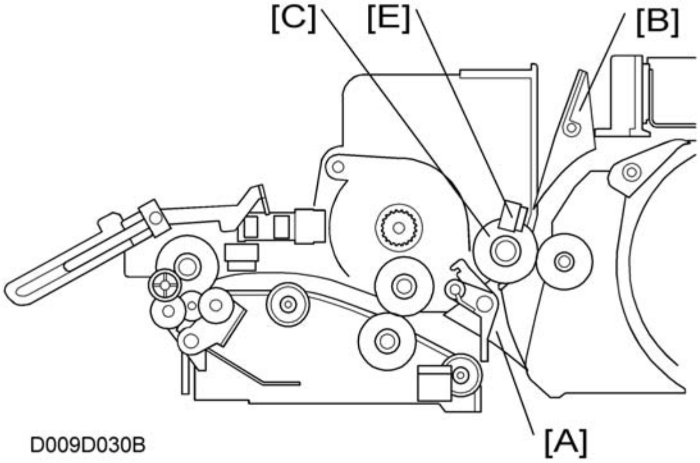


The paper exit rollers [A] feed paper to the standard output tray. These rollers are driven by the paper exit motor [B].

When a sheet of paper stays in the paper exit unit, the paper exit sensor [C] detects the paper jam and a jam message is displayed.

When outputs push up the tray full actuator [D], the paper overflow sensor [E] detects that standard output tray is full of outputs and a jam message is displayed after a job end.

To Duplex Unit



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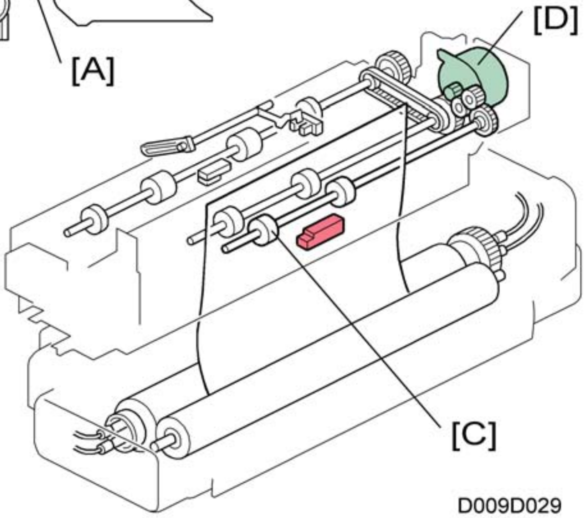

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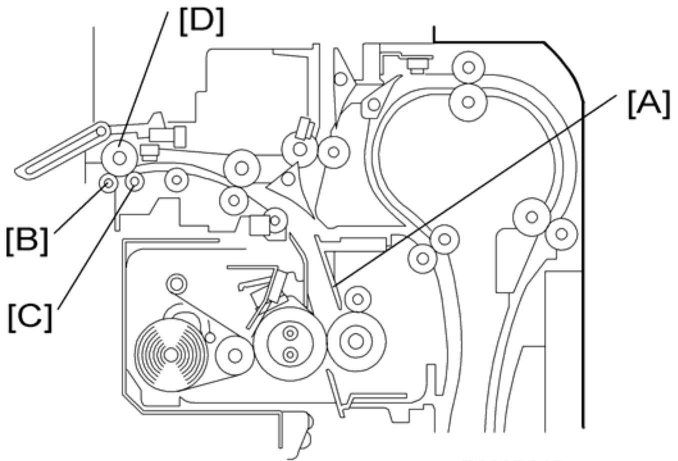
When duplex mode is selected, junction gate 1 [A] closes the paper path to the standard tray. And then, junction gate 2 [B] sends the paper to the duplex unit. The junction transport roller [C] is driven by the paper exit motor [D]. The junction gate jam sensor [E] in the path detects paper jams in the path to the duplex unit.

Exit Guide Plate and De-Curler Rollers



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The exit guide plate [A] also functions as a pressure roller stripper. The exit guide plate can be moved in order to remove jammed paper.

Stacking has been improved by mounting a face-curl correction mechanism at the paper exit roller.

Two de-curler rollers [B] and [C] have been added under the exit roller [D] to correct the curl that paper acquires during transport through the fusing unit.

Energy Saver Modes

If the printer remains idle for the selected time interval, the machine automatically enters the energy saver mode and switches off the fusing lamps to reduce power consumption.

The customer can select the idle time interval or switch the energy saver mode off. The Energy Saver selector setting is in the System menu, which can be accessed at the printer operation panel:

[Menu]> System> Energy Saver> Energy Saver On/Off (*On)

[Menu]> System> Energy Saver> Energy Save Timer (*1 minute)

[Menu]	Settings
Energy Saver On/Off	On (default)
Energy Saver Timer	*1 (default), 5, 15, 30, 45, 60 minutes

- After the machine remains idle for the specified time, the CPU switches off the fusing lamps.
- The machine leaves the energy saver mode and returns to normal operation when any key on the operation panel is pressed, when the printer receives a print job from the computer, or after the printer is switched off and on.
- The time from receiving the print start command to making the first print is longer than when powering up from normal standby mode.

For details, see the Operating Instructions.

7. Specifications

General Specifications

Printer

Engine

Type		Desktop	
Technology		Laser beam scanning & Electro photographic printing and Dual-component toner development	
Resolution (dpi, bit/pixel)		300dpi (PCL5e, PS3, IPDS(opt)), 600dpi (All PDLs)	
Printing Speed		A4/8.5"x11"	LEF : 50ppm
First Print Speed		3.5 sec (A4/8.5" x 11"- LEF, 1st Tray)	
Duplex Printing		Standard (Top and Side binding, Interleaving) A3-A5 (LEF)/ 12"x18"-8.5"x11", 60 to 169g/m^2 (16-45lb), duplex printing speed (50ppm)	
Dimensions (WxDxH)	Main unit without options		670x640x560mm/26.4"x25.2"x22"
Footprint (WxDxH)	Main unit with options		1065x677x560mm/41.9"x26.7"x22"
Weight			64Kg, 140.8lb.
Input capacity	Standard	Std Tray	550 sheet tray x 2
		Bypass Tray	100 sheets
	Op. Paper Feed Unit		550 sheets x 2
	Op. LCT 2000		2000 sheets
	Op. LCT 1200		1200 sheets
	Max		Up to 4,400 sheets total capacity

			(550 sheets/tray x 2 with 100 sheets in the by-pass tray, 1200-sheet LCT and 2000-sheet LCT)
Output capacity	Standard Tray	Face down	500 sheets (A4/8.5"x11"-LEF)
	Op. Finisher		3000 sheets (A4 LEF-Type6200 only) on Lower moving Tray, 250 sheets on Upper Tray
Input paper size	Standard Tray		A3/DLT - A5
	Bypass Tray		A3/DLT - A6
	Op. LCT		8 1/2"x11"LEF(LT)/A4 LEF
Paper Weight	Standard Tray		60-216g/m^2 (16-57lb) (Supports specific types of paper from 170 to 216g/m^2 (45-57lb))
	Bypass tray		52-220g/m^2 (14-59lb)
	Op. Paper Tray		60-216g/m^2 (16-57lb)
	Op. Large capacity Tray		60-216g/m^2 (16-57lb)
Rating Power	US version		120V, 60Hz
	EU version		220-240V, 50/60Hz
Power Consumption	NA version	Max.	1370W
		Energy Saver	7W or less
	EU version	Max.	1420W
		Energy Saver	7W or less
Warm-up Time			25 sec or less

Controller

CPU		RM7035C-533L 533MHz
RAM	Std.	256 MB
	Max.	512 MB

HDD	Option		Approx. 60GB
PDL	Std.		RPCS, PCL5e, PCL6, PostScript 3, PDF
	Option		IPDS
Fonts	Std.		PCL: Truetype:10 fonts,Intelli:35 fonts, Bitmapped:1 font + International Font (Arabic,Cyrillic,Greek and Hebrew) 13 Intelli fonts, PS3: 136 fonts
	Option		OCR Barcode
Connectivity	Host Interface	Std.	USB2.0, I/F, 100/10Base-TX, USB Host I/F
		Option	IEEE1284, IEEE802.11a/g, Gigabit Ethernet
	Network Protocol		TCP/IP, IPX/SPX, EtherTalk, IPP, RHPP
	MIB support	Private MIB	Ricoh Original
		Standard MIB (SMNP Printer MIB)	MIB-II(RFC1213), HostResource (RFC1514), PrinterMib (RFC1759)
	Operating Systems/ Network		Windows 2000/Me/XP/Server 2003/Vista
			Netware 3.12, 3.2, 4.1, 4.11, 5.0, 5.1, 6
			Unix (using Ricoh UNIX filter)
			Mac OS 8.6-9.2x, OS X 10.1 or later
			USB print is supported for Mac OS X v.10.3.3 or later. For Mac OS; Plug-in function for Sample Print, Locked Print and User Code is supported 10.2 or later.
Others	VM Card		Java based device SDK Option
	DESS Module		Data encryption module (Standard)

Software Accessories

Printer drivers and utility software are provided on one CD-ROM. An automatic run installer allows you to select which components to install.

Printer Drivers

Printer Language	Windows	Macintosh
	2000/XP/Server 2003/ Vista	
RPCS	Yes	No
PCL 5e/PCL 6	Yes	No
PostScript3	Yes	Yes

Note

- A PPD file for each operating system is provided with the driver.
- The PostScript driver for the Macintosh supports Mac OS 8.6 to OS 9.x, Mac OSX 10.1, 10.2, 10.3 or later.
- The supported Unix versions change from time to time, so please consult service support staff for the latest information.

Utility Software

Software	Description
Agfa Font Manager (Windows 95/98/Me/, NT40.0, 2000 XP, Server 2003)	Font management utility with screens fonts for printer.
DesktopBinderLite (Windows 2000 XP, Server 2003, Vista)	Utility for document management. Printer management utility for client users. Also includes peer-to-peer printing utility for parallel/recovery printing.
Printer Utility for Macintosh	Provides several convenient functions for printing from Macintosh clients.
SmartDeviceMonitor for Admin (Windows 2000 XP, Server 2003, Vista)	Printer management utility for administrators.

Supported Paper Sizes

Paper Feed

BT: By-pass Tray,

T1: Tray 1, T2: Tray 2,

PFU: Paper Feed Unit,

LCT: Large Capacity Tray,

Remarks:

A	Supported: the sensor detects the paper size.
M	Supported: the user specifies the paper size.
–	Not supported
① to ④	Supported: depends on a user adjustment
SP	Supported: depends on a technician adjustment (SP mode)

NA Model

Paper	SEF LEF	Size (W x L)	BT	Tray1/2	PFU	LCT2000	LCT1200
A3 (12"x18")	SEF	305 x 458	M	–	–	–	–
A3	SEF	297 x 420	M	M①	M①	–	–
B4	SEF	257 x 364	M	M②	M②	–	–
A4	SEF	210 x 297	M	M③	M③	–	–
	LEF	297 x 210	M	M④	M④	SP	SP
B5	SEF	182 x 257	M	A	A	–	–
	LEF	257 x 182	M	M	M	–	SP
A5	SEF	148 x 210	M	–	–	–	–
	LEF	210 x 148	M	A	A	–	–

Paper	SEF LEF	Size (W x L)	BT	Tray1/2	PFU	LCT2000	LCT1200
B6	SEF	128 x 182	M	–	–	–	–
	LEF	182 x 128	–	–	–	–	–
A6	SEF	105 x 148	M	–	–	–	–
DLT	SEF	11" x 17"	A	A①	A①	–	–
LG	SEF	8.5" x 14"	M	A②	A②	–	–
LT	SEF	8.5" x 11"	A	A③	A③	–	–
	LEF	11" x 8.5"	M	A④	A④	M	M
HLT	SEF	5.5" x 8.5"	A	–	–	–	–
	LEF	8.5" x 5.5"	M	–	–	–	–
F	SEF	8" x 13"	M	M	M	–	–
Folio	SEF	8.25" x 13"	M	M	M	–	–
Foolscap	SEF	8.5" x 13"	M	M	M	–	–
US Executive	SEF	7.5" x 10.5"	M	M	M	–	–
	LEF	10.5" x 7.5"	M	M	M	–	–
	SEF	11" x 15"	M	M	M	–	–
	SEF	10" x 14"	M	M	M	–	–
	SEF	8" x 10"	M	M	M	–	–
8K	SEF	267 x 390	–	–	–	–	–
16K	SEF	267 x 195	–	–	–	–	–
	LEF	195 x 267	–	–	–	–	–
Custom	--	--	M	M*1	M*1	–	–

*1: Adjustable range is limited from "A3 SEF" to "A5 LEF".

EU/ ASIA Model

Paper	SEF LEF	Size (W x L)	BT	Tray1/2	PFU	LCT2000	LCT1200
A3 (12"x18")	SEF	305 x 458	M	–	–	–	–
A3	SEF	297 x 420	A	A①	A①	–	–
B4	SEF	257 x 364	M	M	M	–	–
A4	SEF	210 x 297	A	A②	A②	–	–
	LEF	297 x 210	M	A③	A③	M	M
B5	SEF	182 x 257	M	A	A	–	–
	LEF	257 x 182	M	A	A	–	SP
A5	SEF	148 x 210	A	–	–	–	–
	LEF	210 x 148	M	A	A	–	–
B6	SEF	128 x 182	M	–	–	–	–
	LEF	182 x 128	–	–	–	–	–
A6	SEF	105 x 148	M	–	–	–	–
DLT	SEF	11" x 17"	M	M①	M①	–	–
LG	SEF	8.5" x 14"	M	M②	M②	–	–
LT	SEF	8.5" x 11"	M	M③	M③	–	–
	LEF	11" x 8.5"	M	A	A	SP	SP
HLT	SEF	5.5" x 8.5"	M	–	–	–	–
	LEF	8.5" x 5.5"	M	–	–	–	–
F	SEF	8" x 13"	M	M	M	–	–
Folio	SEF	8.25" x 13"	M	M	M	–	–
Foolscap	SEF	8.5" x 13"	M	M	M	–	–
US Executive	SEF	7.5" x 10.5"	M	M	M	–	–
	LEF	10.5" x 7.5"	M	M	M	–	–

Paper	SEF LEF	Size (W x L)	BT	Tray1/2	PFU	LCT2000	LCT1200
	SEF	11" x 15"	M	M	M	–	–
	SEF	10" x 14"	M	M	M	–	–
	SEF	8" x 10"	M	M	M	–	–
8K	SEF	267 x 390	–	–	–	–	–
16K	SEF	267 x 195	–	–	–	–	–
	LEF	195 x 267	–	–	–	–	–
Custom	--	--	M	M*1	M*1	–	–

*1: Adjustable range is limited from "A3 SEF" to "A5 LEF".

Paper Exit

3000 Sheet Finisher

Remark

MF:	Main Frame	2P:	2 Holes Punch
Prf:	Proof Tray	S2P:	Scandinavia 2 Holes
Clr:	Clear,	3P:	3 Holes Punch
Shf:	Shift	4 P:	4 Holes Punch
Stp:	Staple	S4P:	Scandinavia 4 Holes Punch

Paper	Size (W x L)	MF	Prf	Clr	Shf	Stp	2P/S2P	3P	4P	S4P
A3 W	12" x 18"	Y	Y	Y	Y	30	-	-	-	-
A3 SEF	297 x 420	Y	Y	Y	Y	30	Y	Y	Y	Y
A4 SEF	210 x 297	Y	Y	Y	Y	50	Y	-	-	Y
A4 LEF	297 x 210	Y	Y	Y	Y	50	Y	Y	Y	Y

Paper	Size (W x L)	MF	Prf	Clr	Shf	Stp	2P/S2P	3P	4P	S4P
A5 SEF	148 x 210	Y	Y	Y	Y	-	Y	-	-	Y
A5 LEF	210 x 148	Y	Y	Y	Y	-	Y	-	-	Y
A6 SEF	105 x 148	Y	Y	Y	-	-	-	-	-	-
B4 SEF	257 x 364	Y	Y	Y	Y	30	Y	Y	Y*4	Y*4
B5 SEF	182 x 257	Y	Y	Y	Y	50	Y	-	-	Y
B5 LEF	257 x 182	Y	Y	Y	Y	50	Y	Y	Y	Y
B6 SEF	128 x 182	Y	Y	Y	-	-	-	-	-	-
Ledger	11" x 17"	Y	Y	Y	Y	30	Y	Y	Y	Y
Letter SEF	8.5" x 11"	Y	Y	Y	Y	50	Y	-	-	Y
Letter LEF	11" x 8.5"	Y	Y	Y	Y	50	Y	Y	Y	Y
Legal SEF	8.5" x 14"	Y	Y	Y	Y	30	Y	-	-	Y
Government Legal SEF	8.25" x 14"	Y	Y	Y	Y	30	Y	-	-	Y
Half Letter SEF	5.5" x 8.5"	Y	Y	Y	Y	-	Y	-	-	Y
Executive SEF	7.25" x 10.5"	Y	Y	Y	Y	50	Y	-	-	Y
Executive LEF	10.5" x 7.25"	Y	Y	Y	Y	50	Y	Y	Y	Y
F SEF	8" x 13"	Y	Y	Y	Y	30	Y	-	-	Y
Foolscap SEF	8.5" x 13"	Y	Y	Y	Y	30	Y	-	-	Y
Folio SEF	8.25" x 13"	Y	Y	Y	Y	30	Y	-	-	Y
	11" x 15"	Y	Y	Y	Y	30	Y	Y	Y	Y
	10" x 14"	Y	Y	Y	Y	30	Y	Y	-	Y
	8" x 10"	Y	Y	Y	Y	50	Y	-	-	Y
8K	267 x 390	Y	Y	Y	Y	30	Y	Y	Y	Y
16K SEF	195 x 267	Y	Y	Y	Y	50	Y	-	-	Y
16K LEF	267 x 195	Y	Y	Y	Y	50	Y	Y	Y	Y

Paper	Size (W x L)	MF	Prf	Clr	Shf	Stp	2P/S2P	3P	4P	S4P
Custom		Y	Y	Y	-	-	Y*3	Y*3	Y*3	Y*3
Com10 Env.	4.125" x 9.5"	Y	Y *1	Y *2	-	-	-	-	-	-
Monarch Env.	3.875" x 7.5"	Y	-	Y	-	-	-	-	-	-
C6 Env.	114 x 162	Y	-	Y	-	-	-	-	-	-
C5 Env.	162 x 229	Y	-	Y	-	-	-	-	-	-
DL Env.	110 x 220	Y	-	Y	-	-	-	-	-	-

Remarks:

Y	Supported
15	Output up to 15 sheets
30	Output up to 30 sheets
50	Output up to 50 sheets
-	Not supported

*1: Minimum 100 mm or more, Maximum 600 mm or less

*2: Minimum 100 mm or more, Maximum 600 mm or less

- Longer paper (feed length) than DLT (432 mm) is not guaranteed in this mode.

*3: Minimum 100 mm for 2P, 230 mm for 3P, 255 mm for 4P, 125 mm for S4P

*4: Corner stapling is not available in this mode.

1000-Sheet Booklet Finisher

MF:	Main Frame	SS:	Saddle Stitch
Prf:	Proof Tray	2/3 P:	2/3 Holes Punch
Clr:	Clear,	4 P:	4 Holes Punch
Shf:	Shift	S4P:	Scandinavia 4 Holes Punch
Stp:	Staple		

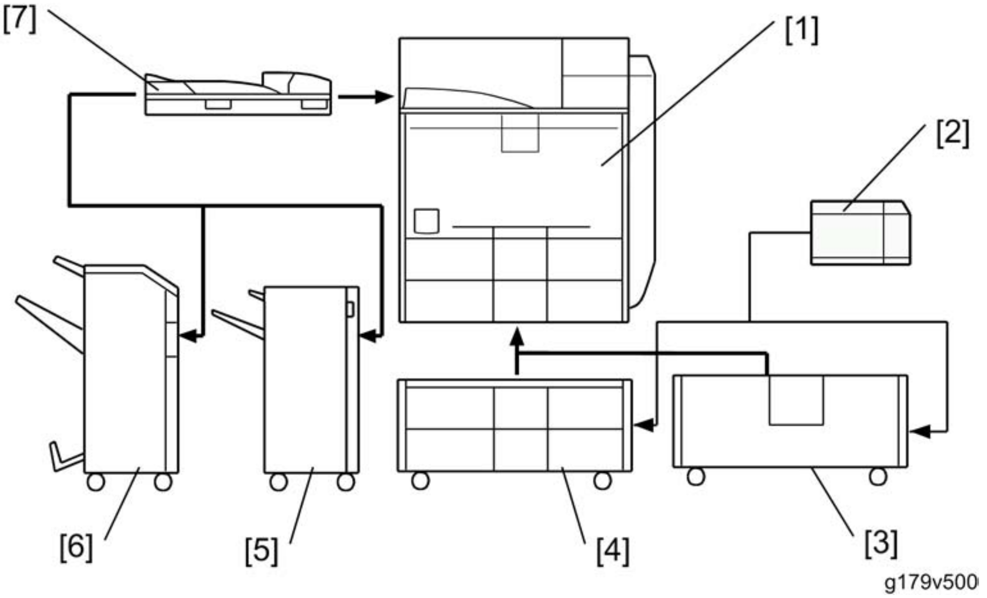
Paper	Size (W x L)	MF	1000-sheet booklet finisher							
			Prf	Clr	Shf	Stp	SS	2/3 P	4 P	S4P
A3 W	12" x 18"	Y	Y	Y	Y	-	-	-	-	-
A3 SEF	297 x 420 mm	Y	Y	Y	Y	30	10	Y	Y	Y
A4 SEF	210 x 297 mm	Y	Y	Y	Y	50	10	-	-	Y
A4 LEF	297 x 210 mm	Y	Y	Y	Y	50	-	Y	Y	Y
A5 SEF	148 x 210 mm	Y	Y	Y	Y	-	-	-	-	Y
A5 LEF	210 x 148 mm	Y	Y	Y	Y	-	-	-	-	Y
A6 SEF	105 x 148 mm	Y	Y	Y	-	-	-	-	-	-
B4 SEF	257 x 364 mm	Y	Y	Y	Y	30	10	Y	Y	Y
B5 SEF	182 x 257 mm	Y	Y	Y	Y	50	10	-	-	Y
B5 LEF	257 x 182 mm	Y	Y	Y	Y	50	-	Y	Y	Y
B6 SEF	128 x 182 mm	Y	Y	Y	-	-	-	-	-	-
Ledger	11" x 17"	Y	Y	Y	Y	30	10	Y	Y	Y
Letter SEF	8.5" x 11"	Y	Y	Y	Y	50	10	-	-	Y
Letter LEF	11" x 8.5"	Y	Y	Y	Y	50	-	Y	Y	Y
Legal SEF	8.5" x 14"	Y	Y	Y	Y	30	10	-	-	Y
Government Legal SEF	8.25" x 14"	Y	Y	Y	Y	30	10	Y	Y	Y
Half Letter SEF	5.5" x 8.5"	Y	Y	Y	Y	-	-	-	-	Y
Executive SEF	7.25" x 10.5"	Y	Y	Y	Y	50	-	-	-	Y
Executive LEF	10.5" x 7.25"	Y	Y	Y	Y	50	-	Y	Y	Y
F SEF	8" x 13"	Y	Y	Y	Y	30	-	-	-	Y
Foolscap SEF	8.5" x 13"	Y	Y	Y	Y	30	-	-	-	Y
Folio SEF	8.25" x 13"	Y	Y	Y	Y	30	-	-	-	Y
	11" x 15"	Y	Y	Y	Y	30	-	Y	Y	Y

Paper	Size (W x L)	MF	1000-sheet booklet finisher							
			Prf	Clr	Shf	Stp	SS	2/3 P	4 P	S4P
	10" x 14"	Y	Y	Y	Y	30	-	Y	-	Y
	8" x 10"	Y	Y	Y	Y	50	-	-	-	Y
8K	267 x 390 mm	Y	Y	Y	Y	30	-	Y	Y	Y
16K SEF	195 x 267 mm	Y	Y	Y	Y	50	-	-	-	Y
16K LEF	267 x 195 mm	Y	Y	Y	Y	50	-	Y	Y	Y
Custom		Y	Y	Y	-	-	-	-	-	-
Com10 Env.	4.125" x 9.5"	Y	Y	-	-	-	-	-	-	-
Monarch Env.	3.875" x 7.5"	Y	Y	-	-	-	-	-	-	-
C6 Env.	114 x 162 mm	Y	Y	Y	-	-	-	-	-	-
C5 Env.	162 x 229 mm	Y	Y	Y	-	-	-	-	-	-
DL Env.	110 x 220 mm	Y	Y	Y	-	-	-	-	-	-

Remarks:

Y	Supported
10	Output up to 10 sheets
30	Output up to 30 sheets
50	Output up to 50 sheets
-	Not supported

Machine Configuration



Key: Symbol: **U**: Unique option, **C**: Option also used with other products

	Item	Callout	Key	Machine Code
Printer	Printer	[1]	-	G179
	Two-Tray Paper Feed Unit	[4]	C	D351
	2000-sheet LCT	[3]	C	D352
	1200-sheet LCT	[2]	C	D353
	Bridge Unit	[7]	C	D386
	1000-sheet Finisher (See Note 1.)	[5]	C	B408
	3000-Sheet Finisher (See Note 1)	[6]	C	B804/B805
	-Punch Unit (See Note 2.)	-	C	B702-17 (2/3-hole) US
	-Punch Unit (See Note 2.)	-	C	B702-27 (2/4-hole) Metric
	-Punch Unit (See Note 2.)	-	C	B702-28 (4-hole) Scandinavia

	Item	Callout	Key	Machine Code
Printer Options	HDD	-	C	D362
	DataOverwriteSecurity	-	U	M345
	HDD Encryption Unit	-	U	M345
	Gigabit Ethernet	-	C	G381
	IEEE 1284	-	C	B679
	IEEE 802.11a/g, g Wireless LAN	-	C	D377
	Data Storage Card	-	C	G874
	IPDS Unit	-	U	M345
	VM Card		U	M345
	Memory Unit 128 MB	-	U	M345
	Memory Unit 256 MB	-	C	D362
	SD Card for Fonts	-	U	M345

NOTE:

1. The finisher requires the bridge unit and two-tray paper feed unit or 2000-sheet LCT. The 1000-sheet finisher and 000-sheet finisher cannot be installed together.
2. The punch unit requires the 3000-sheet finisher.

Optional Equipment

Two-tray Paper Feed Unit

Paper Feed System:	FRR
Paper Height Detection:	5 steps (100%, 70%, 30%, 10% (Near end), and Empty)
Capacity:	550 sheets x 2 trays
Paper Weight:	60 to 169 g/m^2 (16 to 45 lb.)
Paper Size:	A3 SEF to A5, DLT SEF to HLT
Power Source:	DC 24V, 5V (from the main frame)
Power Consumption:	Less than 60 W (Max.)/ Less than 35 W (Ave,)
Dimensions (W x D x H):	580 mm x 620 mm x 260 mm (22.8" x 24.4" x 10.2")
Weight:	26 kg (57.3 lb.)

LCT 2000-sheet

Paper Size:	A4 LEF/LT LEF
Paper Weight:	60 g/m^2 to 169 g/m^2, 16 lb. to 45 lb.
Tray Capacity:	2,000 sheets (80 g/m^2, 20lb.)
Remaining Paper Detection:	5 steps (100%, 70%, 30%, 10%, Empty): Right Tray 4 steps (100%, 70%, 30%, Empty): Left Tray
Power Source:	DC 24 V, 5 V (from copier/printer)
Power Consumption:	55 W (Max.)/30 W (Ave.)
Weight:	26 kg (57.3 lb.)
Size (W x D x H):	580 mm x 620 mm x 260 mm (22.8" x 24.4" x 10.2")

LCT 1200-sheet

Paper Size:	A4 LEF/ LT LEF/ B5 LEF
Paper Weight:	60 g/m^2 to 169 g/m^2, 16 lb to 45 lb
Tray Capacity:	1200 sheets (80 g/m^2, 20lb)
Remaining Paper Detection:	5 steps (100%, 75%, 30%, 10%, End)
Power Source:	24 Vdc, 5 Vdc (from copier/printer)
Power Consumption:	55 W (Max)/ 25 W (Ave.)
Weight:	14 kg (30.8 lb.)
Size (W x D x H):	348 mm x 540 mm x 290 mm (13.7" x 21.3" x 11.4")

Bridge Unit

Paper Size:	Standard sizes A6 SEF to A3, HLT to DLT Non-standard sizes Width: 90 to 305 mm Length: 148 to 600 mm
Paper Weight:	52 g/m^2 to 253 g/m^2, 16 lb. to 78 lb.
Power Source:	DC 24 V, 5 V (form the copier/printer)
Dimensions (W x D x H):	415 mm x 412 mm x 111 mm (16.3" x 16.2" x 4.4")
Weight	5 kg (11 lb.)

1000-Sheet Finisher

Upper Tray

Paper Size:	A3 to A6 11" x 17" to 5.5" x 8.5"

Paper Weight:	60 to 157 g/m^2 (16 to 42 lb.)
Paper Capacity:	250 sheets (A4 LEF/8.5" x 11" SEF or smaller) 50 sheets (A4, 8.5" x 11" or smaller) 30 sheets (B4, 8.5" x 14" or larger)

Lower Tray

<table>
<tr><td>Paper Size:</td><td>No staple mode:
A3 to B5, DLT to HLT
Staple mode:
A3, B4, A4, B5, DLT to LT</td></tr>
<tr><td>Paper Weight:</td><td>No staple mode: 60 to 157 g/m^2 (16 to 42 lb)
Staple mode: 64 to 90 g/m^2 (17 to 24 lb)</td></tr>
<tr><td>Stapler Capacity:</td><td>30 sheets (A3, B4, DLT, LG)
50 sheets (A4, B5 LEF, LT)</td></tr>
<tr><td>Paper Capacity:</td><td>No staple mode:
1,000 sheets (A4/LT or smaller: 80 g/m^2, 20 lb.)
500 sheets (A3, B4, DLT, LG: 80 g/m^2, 20 lb.)
Staple mode: (80 g/m^2, 20 lb., number of sets)
<table>
<tr><td>Set Size</td><td rowspan="2">2 to 9</td><td colspan="2">10 to 50</td></tr>
<tr><td>Size</td><td>10 to 30</td><td>31 to 50</td></tr>
<tr><td>A4/LT LEF
B5 LEF</td><td>100</td><td>100 to 20</td><td>100 to 20</td></tr>
<tr><td>A4/LT SEF</td><td>100</td><td>50 to 10</td><td>50 to 10</td></tr>
<tr><td>A3, B4, DLT, LG</td><td>50</td><td>50 to 10</td><td>-</td></tr>
</table>
</td></tr>
<tr><td>Staple positions:</td><td>1 Staple: 2 positions (Front, Rear)
2 Staples: 2 positions (Upper, Left)</td></tr>
<tr><td>Staple Replenishment:</td><td>Cartridge (5,000 staples/cartridge)</td></tr>
<tr><td>Power Source:</td><td>DC 24 V, 5 V (from the copier/printer)</td></tr>
</table>

Power Consumption:	50 W
Weight:	25 kg (55.2 lbs)
Dimensions (W x D x H):	527 x 520 x 790 mm (20.8" x 20.5" x 31.1")

3000-Sheet Finisher

Finisher			
Dimension (w x d x h)		657 mm x 613 mm x 960 mm (25.9" x 24.1" x 37.8")	
Weight		Less than 54 kg (119 lb.) (no punch unit) Less than 56 kg (123.5 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, 8.5" x 11" or smaller 50 sheets: B4, 8.5" x 14" or larger	
	Paper Size	A5-A3 SEF, A6 SEF, A6 SEF 5.5" x 8.5"-11" x 17" SEF, 12" x 18" SEF	
	Paper Weight	52 g/m^2 - 163 g/m^2 (14 lb. - 43 lb.)	
Shift Tray	Stack Capacity	3,000 sheets	A4 LEF, 8.5" x 11" LEF
		1,500 sheets	A3 SEF, A4 SEF, B4 SEF, B5, 11" x 17" SEF, 8.5" x 14" SEF, 8.5" x 11" SEF, 12" x 18" SEF
		500 sheets	A5 LEF
		100 sheets	A5 SEF, B6 SEF, A6 SEF, 5.5" x 8.5" SEF
	Paper Size	A5 - A3 SEF, A6 SEF, B6 SEF,	

		5.5" x 8.5"- 11" x 17" SEF, 12" x 18" SEF	
	Paper Weight	52 g/m^2 - 256 g/m^2 (14 lb. - 68 lb.)	
Staples			
Paper Size		B5 - A3 8.5" x 11" - 11" x 17", 12" x 18"	
Paper Weight		64 g/m^2 - 90 g/m^2 (14 lb. - 24 lb.)	
Staple Position		Top, Bottom, 2 Staple, Top-slant	
Stapling Capacity	Same Paper Size	50 sheets	A4, 8.5" x 11" or smaller
		30 sheets	B4, 8.5" x 14" or larger
	Mixed Paper Size	30 sheets	A4 LEF + A3 SEF, B5 LEF + B4 SEF, 8.5" x11" LEF + 11" x 17" SEF

Staple Replenishment	Cartridge exchange / 5000 pins per cartridge		
Stapled Stack Capacity (same size)	Paper Size	Pages/Set	Sets
	A4 LEF, 8.5" x 11" LEF	20 - 50 pages	150 - 60 sets
		2 - 19 pages	150 sets
	A4 SEF, B5, 8.5" x 11" 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, 8.5" x11" LEF & 11" x 17" SEF	2 - 30 pages	50 set

Punch Unit for 3000-Sheet Finisher

Available Punch Units	NA	2/3 holes switchable
	EU	2/4 holes switchable

		Scandinavia	4 holes
Punch Waste Replenishment		NA 2-holes	Up to 5,000 sheets
		NA 3-holes	Up to 5,000 sheets
		EU 2-holes	Up to 14,000 sheets
		EU 4-holes	Up to 7,000 sheets
		Scandinavia 4-holes	Up to 7,000 sheets
Paper Weight		$52\ g/m^2$ - $163\ g/m^2$, 14 lb Bond - 43 lb Bond	
Paper Sizes	NA 2-holes	SEF	A5 to A3, 5.5" x 8.5" to 11" x 17"
		LEF	A5 to A4, 5.5" x 8.5" , 8.5" x 11"
	NA 3-holes	SEF	A3, B4, 11" x 17"
		LEF	A4, B5, 8.5" x 11"
	EU 2-holes	SEF	A5 to A3, 5.5" x 8.5" to 11" x 17"
		LEF	A5 to A4, 5.5" x 8.5", 8.5" x 11"
	EU 4-holes	SEF	A3, B4, 11"x17"
		LEF	A4, B5, 8.5" x 11"
	Scandinavia 4-holes	SEF	A5 to A3, 5.5" x 8.5" to 11" x 17"
		LEF	A5 to A4, 5.5" x 8.5", 8.5" x 11"

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