Model J-CF
(Machine Code: G570)

SERVICE MANUAL

December 21st 2001
Subject to change

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ARDF (G564)

1. INSTALLATION

1.1 INSTALLATION REQUIREMENTS

1.1.1 ENVIRONMENT

1. Temperature Range: 10 °C to 32 °C (50 °F to 89.6 °F)
2. Humidity Range: 15% to 80% RH
3. Ambient Illumination: Less than 2,000 lux (do not expose to direct sunlight)
4. Ventilation 3 times/hr/person or more
5. Avoid exposing the machine to sudden temperature changes, which include:
   1) Direct cool air from an air conditioner
   2) Direct heat from a heater
6. Avoid installing the machine in areas that might be exposed to corrosive gas.
7. Install the machine at a location lower than 2,500 m (8,200 ft.) above sea level.
8. Install the machine on a strong, level base. (Inclination on any side must be no more than 5 mm.)
9. Avoid installing the machine in areas that may be subjected to strong vibration.

1.1.2 MACHINE LEVEL

Front to back: Within 5 mm (0.2")

Right to left: Within 5 mm (0.2")

1.1.3 MACHINE SPACE REQUIREMENTS

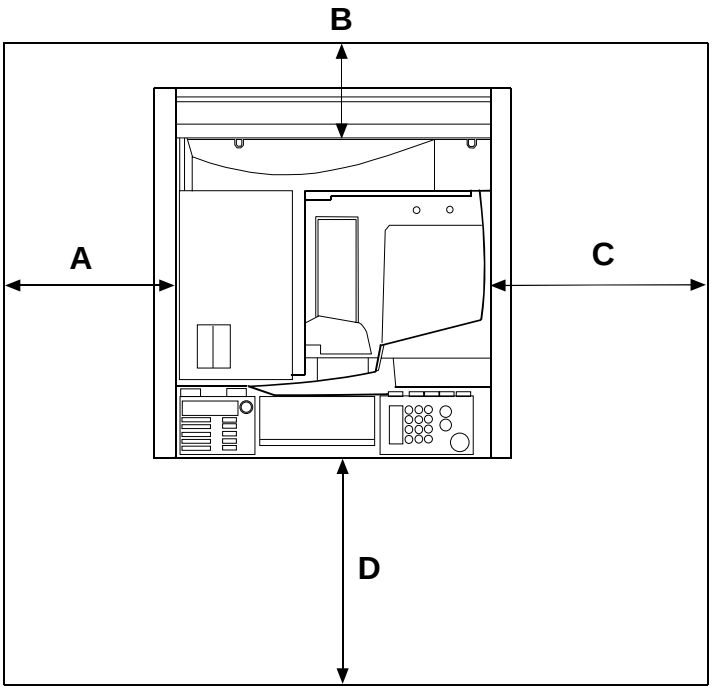
CF Expander with Rack

A: Over 460 mm (18.1") from the printer mainframe

B: Over 100 mm (3.9") from the printer mainframe

C: Over 550 mm (21.7") from the printer mainframe

D: Over 700 mm (27.6") from the printer mainframe



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CF Expander without Rack

A: Over 460 mm (18")

B: Over 100 mm (4")

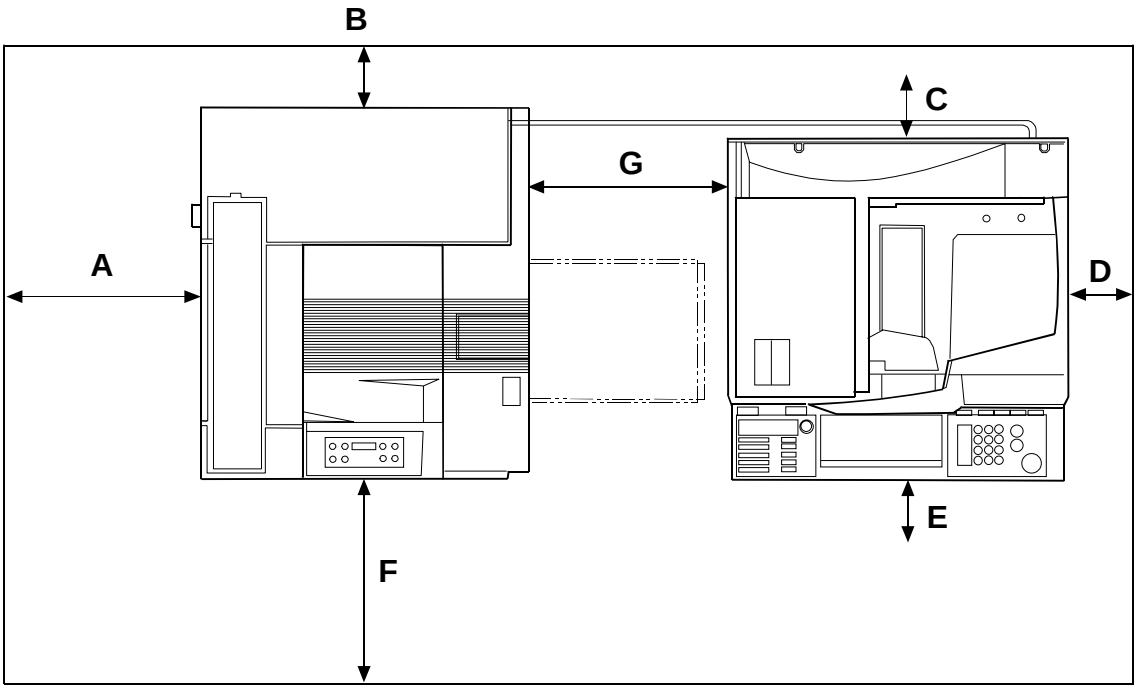
C: Over 100 mm (4")

D: Over 100 mm (4")

E: Over 100 mm (4")

F: Over 700 mm (28")

G: Over 450 mm (17.7")



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1.1.4 POWER REQUIREMENTS

⚠CAUTION

1. **Insert firmly the plug in the outlet.**
2. **Avoid using an outlet extension plug or cord, except for the accessory power strip for the 230V machine.**
3. **Ground the machine.**

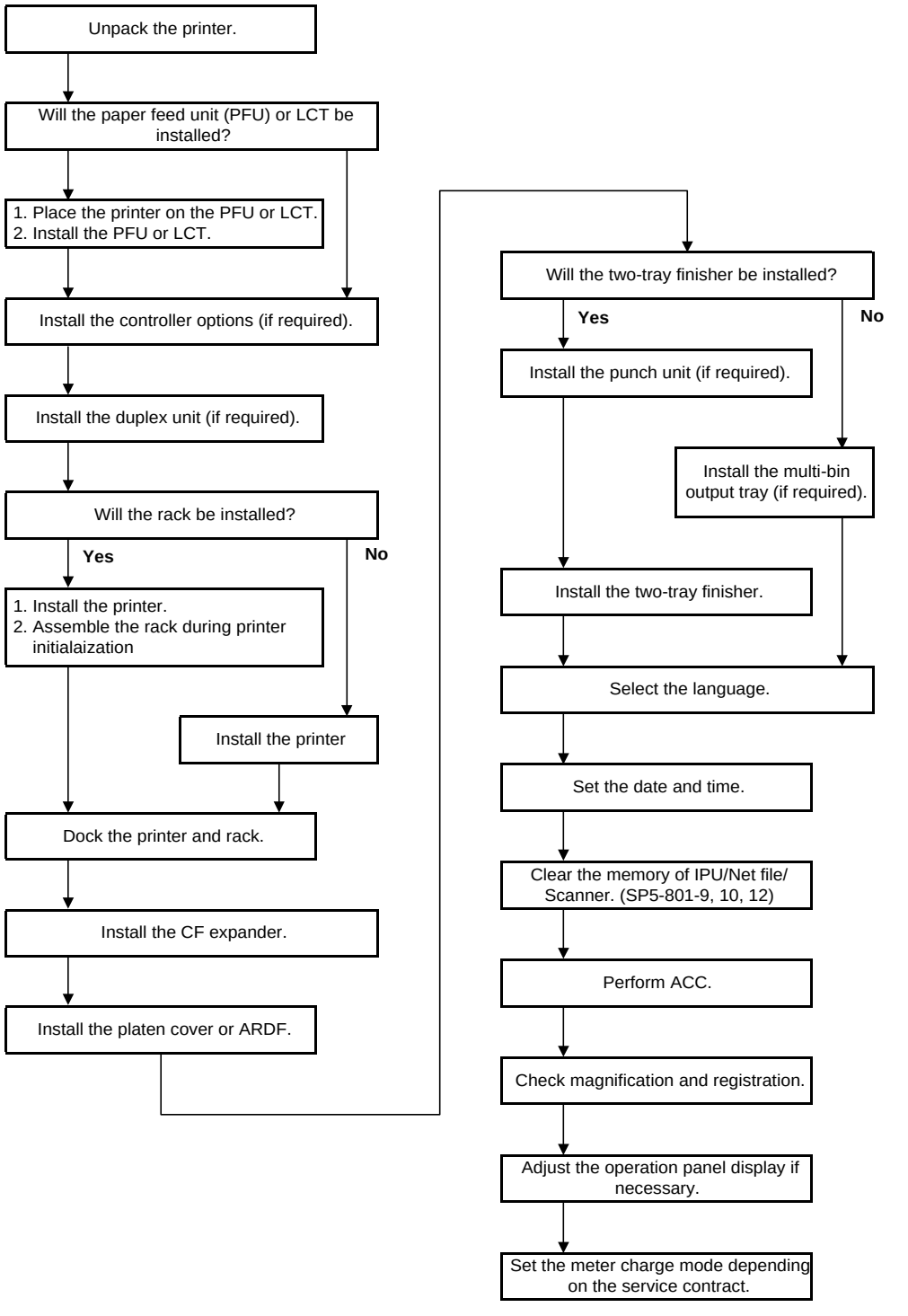
1. Input voltage level: 120 V, 60 Hz: More than 10 A
   220 V ~ 240 V, 50 Hz/60 Hz: More than 6 A
2. Permissible voltage fluctuation: ±10 %
3. Do not put anything on the power cord.

1.2 OPTIONAL UNIT COMBINATIONS

Item No.	Options	Alternative	Required	Remarks
1	CF expander		Item 4 or 5	The optional tray for the printer mainframe, item 2, and item 3 are recommended. ☛ the note below.
2	40GB HDD			Option for item 1
3	Rack			Option for item 1
4	ARDF	Item 5		Option for item 1
5	Platen cover	Item 4		Option for item 1
6	Multi-bin output tray	Finisher	Duplex unit	Option for item 1
7	Fax unit			Option for item 1
8	G3 additional unit	Item 9		Option for item 7
9	G4 unit	Item 8		Option for item 7
10	JBIG			Option for item 7
11	Handset			Option for item 7 (U.S. model only)

NOTE: If the 40GB HDD is not installed, some copier functions such as duplex copying and sorting, and document server functions cannot be used.

1.3 INSTALLATION WORK FLOW



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NOTE: Install the fax unit after making sure that the CF expander works properly. (☛ "1. Installation" in the service manual for the fax option)

1.4 MACHINE INSTALLATION

If the customer has a service contract, change the settings of the following SP modes depending on the contract type.

Item	SP No.	Function	Default
Meter charge	SP5-930-1	Specifies whether the meter charge mode is enabled or disabled. **Meter charge mode enabled:** • The Counter menu appears immediately after the Menu key is pressed. • The counter type selected by the counting method (SP5-045-1) can be displayed with the Counter menu. • The counter values can also be printed with the Counter menu. • The selected counter starts from a negative number. **Meter charge mode disabled:** • The Counter menu is not displayed. • The total counter starts from 0.	Off
Counting method	SP5-045-1	Specifies whether the counting method used in meter charge mode is based on developments or prints. **Important:** This SP can only be done before the negative counters are reset with SP7-825-1	0: Developments
A3/11" x 17" double counting	SP5-104-1	Specifies whether the counter is doubled for A3/11" x 17" paper.	No: Single counting
Menu (PM warning display 1)	SP5-930-3	Specifies whether the PM warning for PCUs and development units is displayed when the replacement time arrives. Click 1: Displayed Click 2: Not displayed	Click 1
Menu (PM warning display 2)	SP5-930-4 to SP5-930-5	Specifies whether the PM warning for the paper feed roller and transfer unit is displayed.	No Alert
Fax TEL No. setting	SP5-812-1 to SP5-812-2	Programs the service station fax and telephone number. The number is printed on the counter list when the meter charge mode is selected, so that the user can fax the counter data to the service station.	

Item	SP No.	Function	Default
Counter reset	SP7-825-1	Resets the counters to 0. **Important:** This must be done at installation after all the above settings have been finished. The negative counters used in meter charge mode will be reset to zero.	

NOTE: 1) The default setting for this machine is meter-charge mode off.
2) The meter-charge counter cannot be reset.

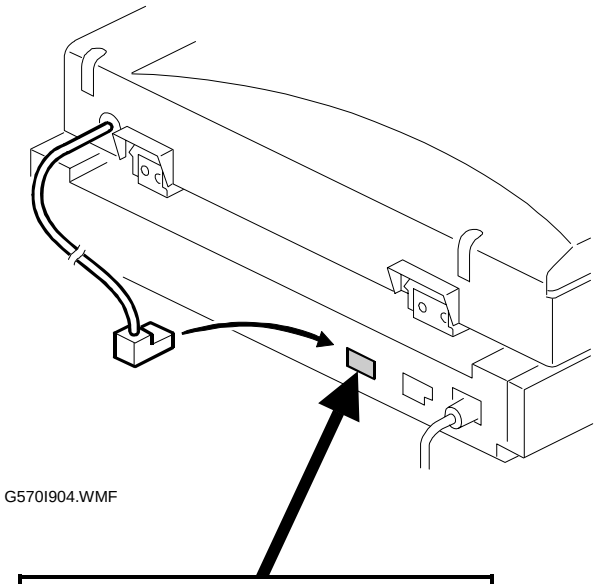
1.5 MACHINE INSTALLATION

NOTE: The following is the procedure for installing the Copier Feature Expander in machines equipped with the optional rack. For the printer mainframe and printer option installation procedures, please refer to the Operating Instructions “Set-up Guide”.

To avoid a possible build-up of ozone, make sure to install the machine in a room that is well ventilated.

⚠CAUTION

Rating Voltage:



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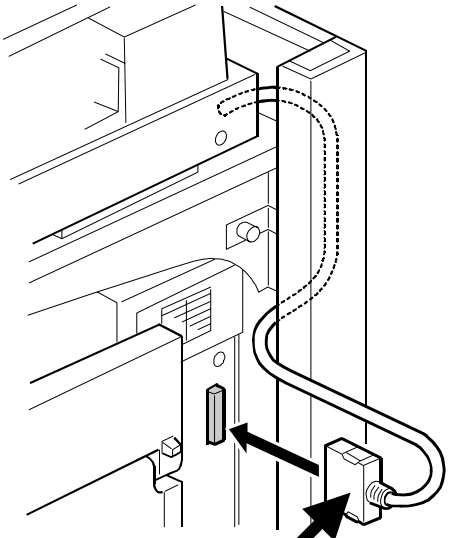
For the ARDF
Rating voltage of output connector; Maximum DC 24V



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Scanner I/F Harness
Rating voltage of I/F harness connector; Maximum DC 24V

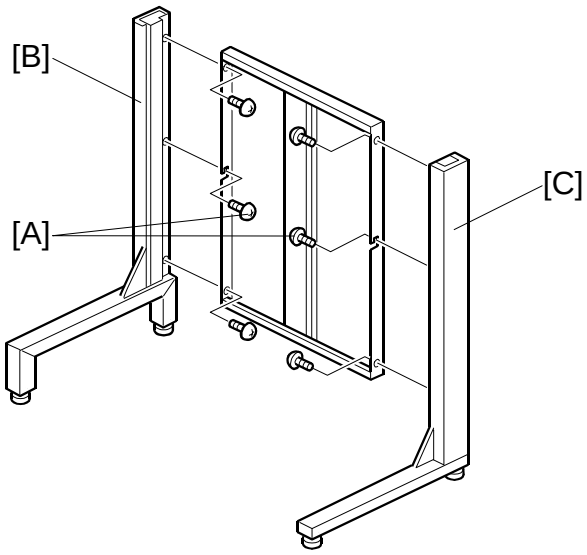
1.5.1 RACK

Accessories Check List

	Description	Quantity
1.	Left Side Stand	1
2.	Right Side Stand	1
3.	Table Board	1
4.	Backboard	1
5.	Left Arm	1
6.	Right Arm	1
7.	Left Securing Bracket	1
8.	Right Securing Bracket	1
9.	Grounding Wire	2
10.	Grounding Bracket	1
11.	Large Thumb Screw	4
12.	Small Thumb Screw	4
13.	Spacer	2
14.	Screw (M6 x 10)	14
15.	Screw (M4 x 6)	4
16.	Washer	4
17.	Spring Washer	4
18.	Clamp	1

Assembling the Rack

1. Insert a screw [A] about half way into the center holes of both the left [B] and right [C] side stands.
2. Hook the center part of the backboard onto the 2 screws.
3. Making sure that the two side stands are parallel, insert the remaining screws, then tighten all 6 screws.



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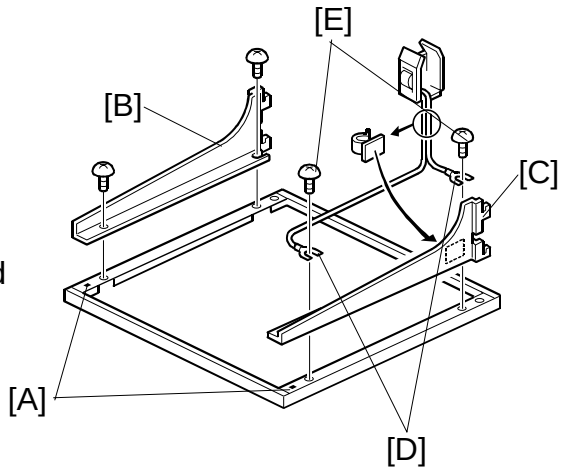
4. With the 2 square holes [A] in the table board in front of you as shown, attach the left [B] and right [C] arms. When attaching the right arm, secure the ground wires [D] with screws [E] as shown.
   NOTE: Please make sure to orient the table with the square holes toward you.



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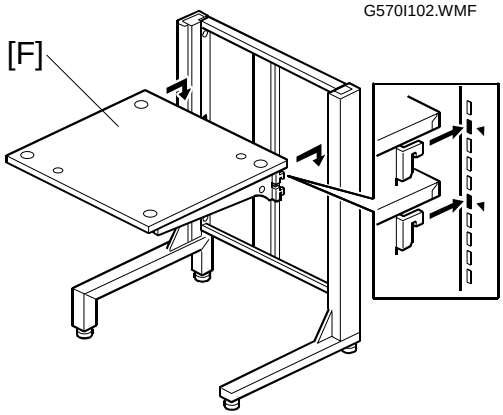
5. Set the table board [F] on the stand as shown.
   NOTE: 1) Please make sure that the screw holes for the scanner unit are positioned at the right rear and left front of the table board.
   2) Recommended attachment positions for the table board:
   - Machine with Two-tray Paper Supply Unit & LCT: 2nd hole from the top
   - Machine with One-tray Paper Supply Unit: 6th hole from the top



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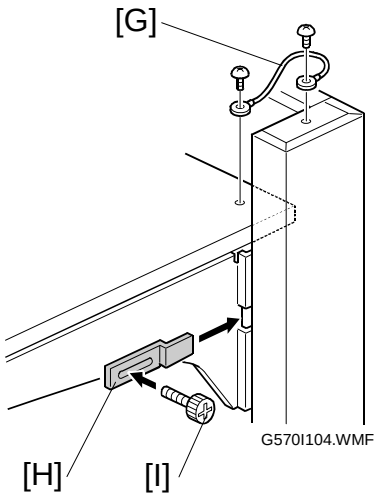
   3) When attaching the table board at a lower position than the recommended one, make sure the upper right cover can be opened and toner cartridges (especially black) can be replaced.
   When attaching the table board below the recommended position, it is necessary to shift the printer mainframe 10 cm (3.9") toward the front so that the upper right cover can be opened for toner replenishment.

6. Secure the two grounding wires [G] (🔩 x 2 each). There is a wire at the left side and one at the right side.
7. Attach the securing brackets [H] to the left and right arms as shown (1 thumb screw [I] for each).



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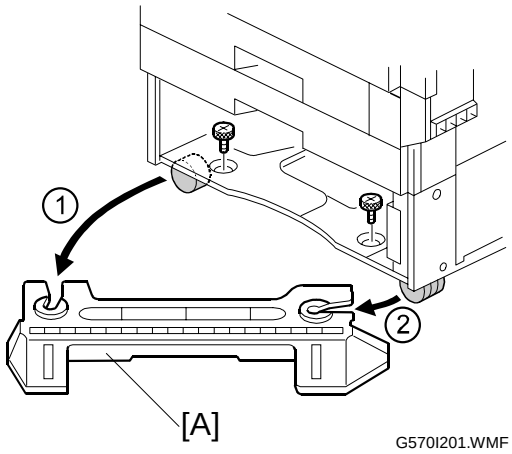
Docking the Rack and Printer Mainframe

NOTE: If the Finisher is going to be installed, the mounting bracket of the rail should be attached *after* docking the mainframe with the rack. In addition, the Finisher should be attached after docking is complete.

1. Remove the paper tray and front stand [A] from the paper feed unit as shown (x 2).



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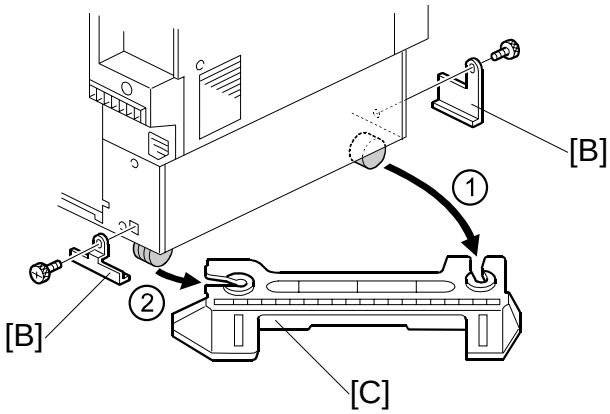
2. Remove the brackets [B] and rear stand [C] (x 1 for each).
3. Reinsert the paper tray.
   NOTE: Since the front and rear stands will no longer be necessary, dispose of them according to local regulations.
4. Place the assembled rack down in the area where the mainframe is to be installed.
5. Adjust the height of the side stand legs for stabilization if necessary.



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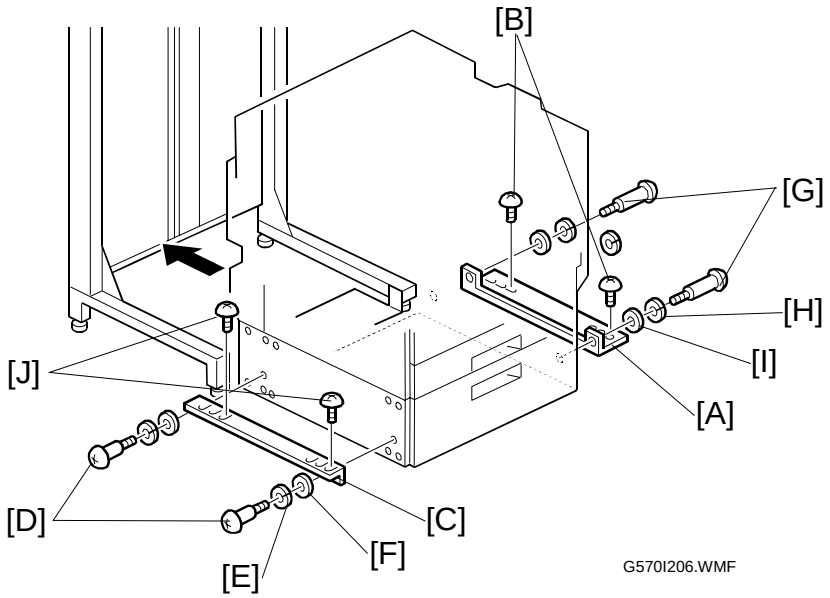
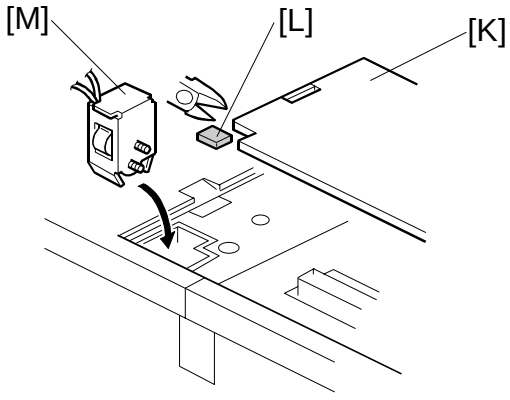
CAUTION: The stand is designed to support objects placed on the table only after the rack and mainframe have been docked. Therefore, use caution in handling the assembled stand before docking, as it is relatively unstable.



6. Attach the right bridging bracket [A] to the rack's right stand (2 screws [B]).
7. Attach the left bridging bracket [C] to the lower left corner of the paper feed unit (2 stepped screws [D], 2 spring washers [E] and 2 washers [F]).
8. Insert the printer in between the racks as shown and set it to the desired position.
9. Secure the right bridging bracket [A] to the paper feed unit (2 stepped screws [G], 2 spring washers [H] and 2 washers [I]).
10. Secure the left bridging bracket [C] to the rack's left stand (☞ x 2 [J]).

11. Remove the mailbox upper cover [K]. With a pair of pliers, remove the small square cutout [L] in the corner of the cover with a pair of pliers.

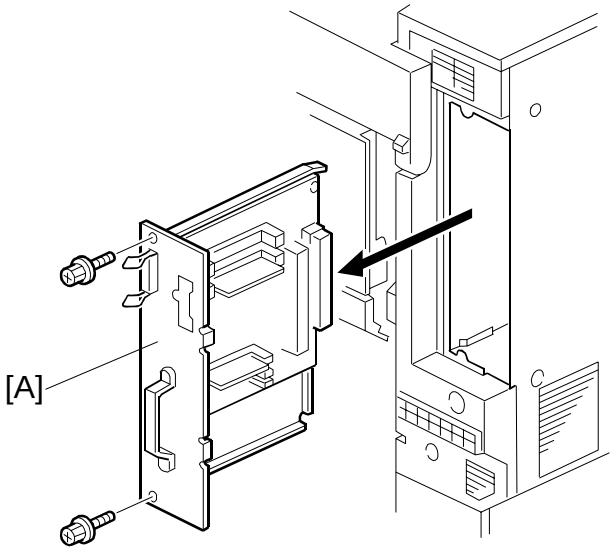
    Then, set the grounding bracket [M] in the machine as shown and reattach the upper cover.



1.5.2 CF EXPANDER

Accessories Check List

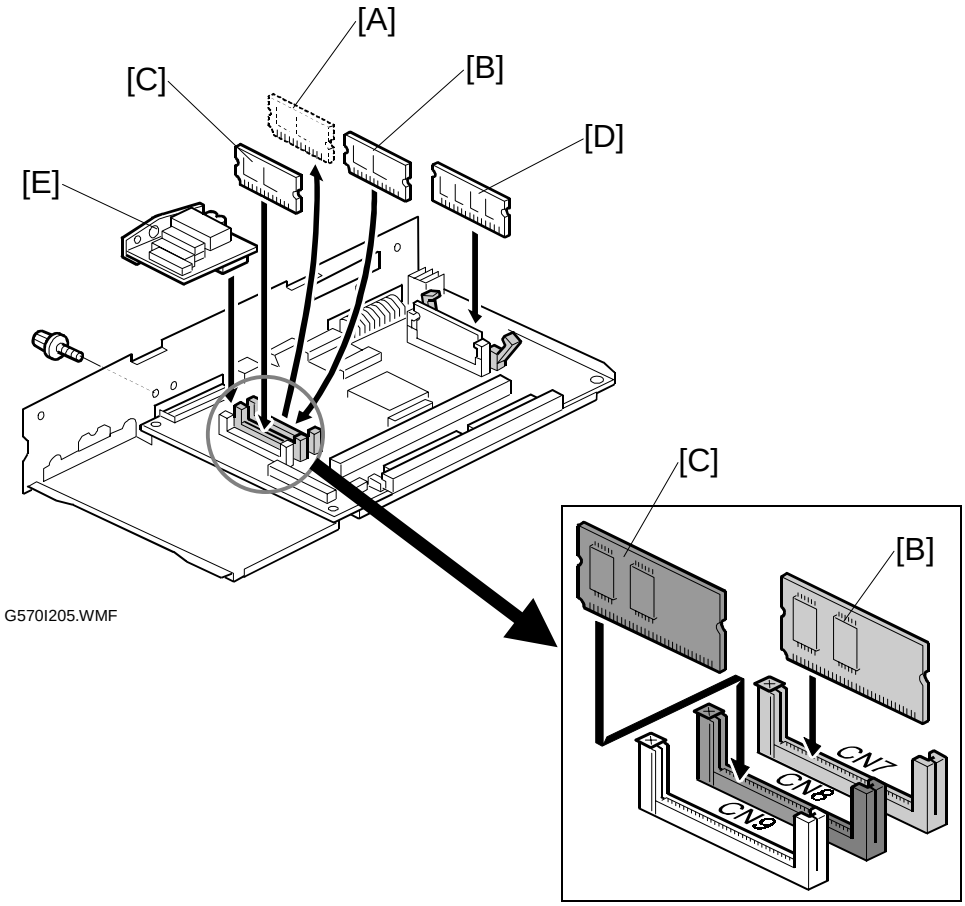
Description	Quantity
1. Scanner Unit	1
2. Main Switch Cover	1
3. Screw (M3 x 6)	3
4. Screw (M3 x 6)	2
5. IPU Board	1
6. NVRAM Board	1
7. DIMM #1 (SYSTEM)	1
8. DIMM #2 (PRT/SCN)	1
9. 128 MB DIMM (for 230V only)	1
10. Cushion	1
11. Power Strip (for 230V only)	1



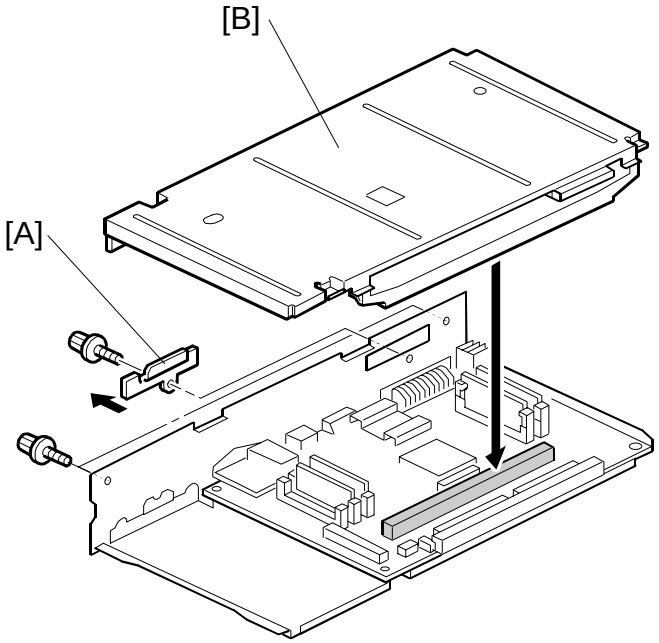
G570I203.WMF

CF Expander Installation

1. Remove the controller board (☞ x 2) [A].



2. Replace the printer module [A] in the upper slot with DIMM #1 (SYSTEM) [B].
3. Insert DIMM #2 (PRT/SCN) [C] into the center slot.
4. Insert the 128MB memory [D].
   NOTE: 1) It is not necessary to install the additional memory if the present memory is 192MB or more.
   2) Make sure that the modules are firmly set in their slots. If they are not, this will cause SC997.
5. Attach the NVRAM board [E] (☞ x 1).
   NOTE: 1) It is not necessary to install this NVRAM board in machines that already contain the optional User Account Enhancement Unit Type B. However, if the P/N on the Unit Type B decal is G0606070 or G0606070A, it is necessary to use Timer Setting in UP Mode System Settings when adjusting the time zone setting (as SP5-302-2 in Copy SP mode will not function properly).
   2) If replacing the Unit Type B (all P/N) with the NVRAM board, be sure to back up and re-enter the User Code data using SmartNetMonitor for Admin.



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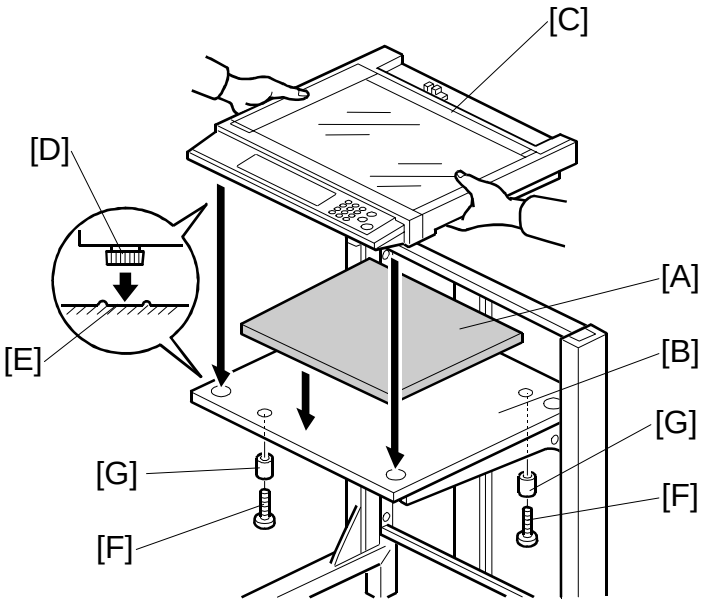
6. Remove the scanner connector cover [A].
7. Install the IPU board [B] (x 2).
8. Reinsert the controller into the printer using the 2 screws (M3 x 6) enclosed as accessories instead of the original screws.
   NOTE: Make sure that the IPU board is firmly connected to the controller board. If it is not, this will cause SC990.



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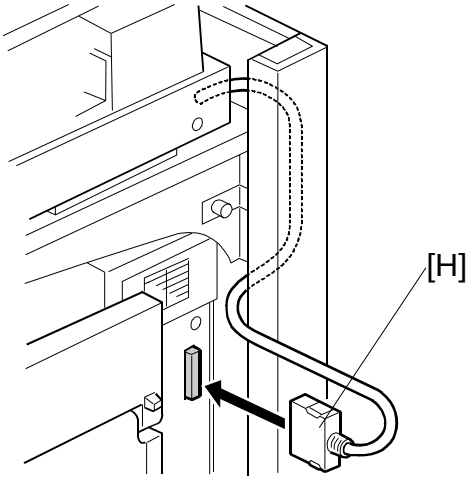

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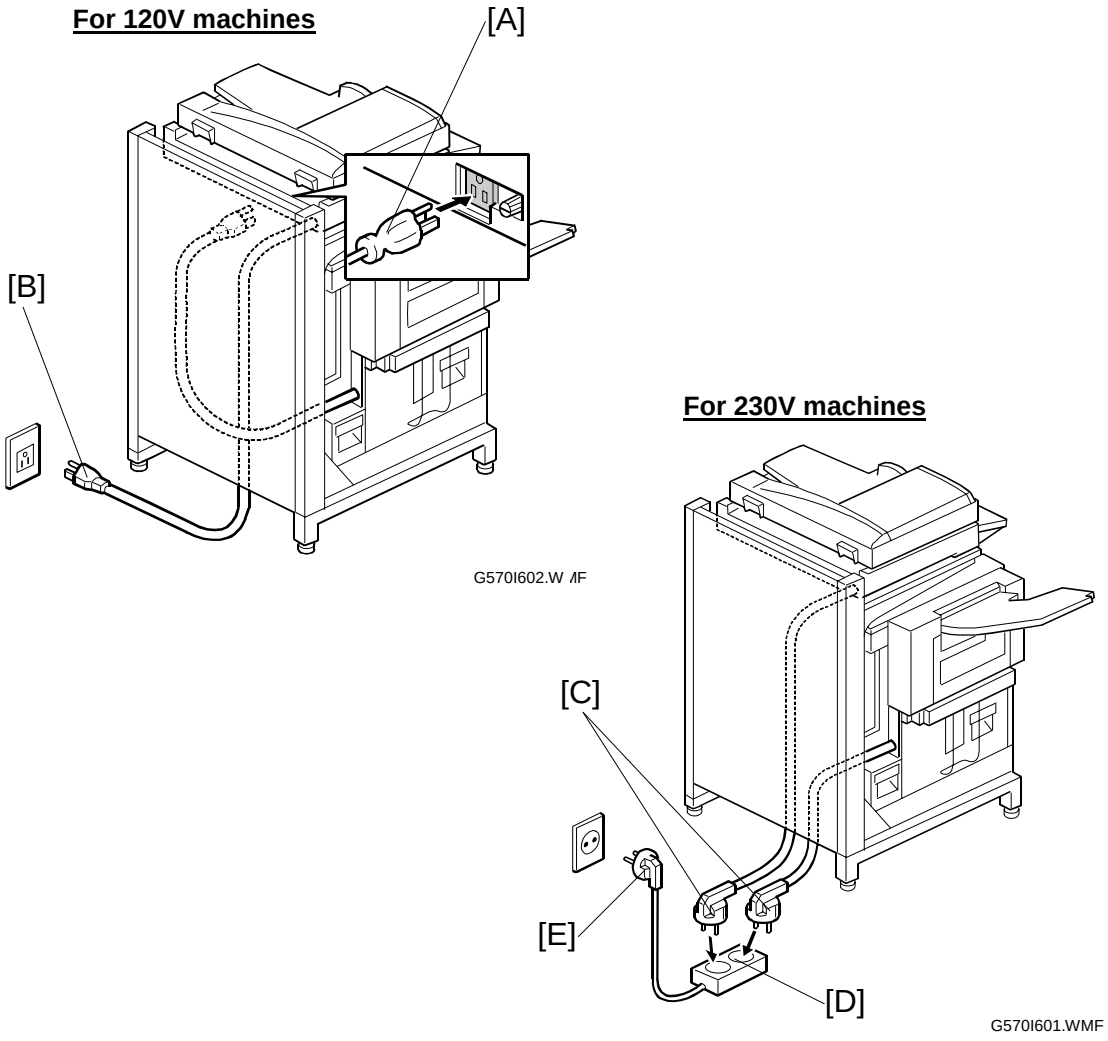
9. Place the cushion [A] on the table board [B].
10. Place the scanner unit [C] on the table board so that the scanner unit legs [D] line up with the indents [E] in the table as shown.
11. Secure the scanner unit in place (x 2 [F] and spacers [G] enclosed as accessories for the optional rack).
12. Remove the shipping tape from the scanner cables.
13. Lead the scanner cable [H] along the inside of the rack as shown, then connect it to the IPU board on the controller frame.



14. For 120V machines:
    Connect the printer power cord [A] to the output port on the scanner, then plug the scanner power cord [B] into the power outlet.

    For 230V machines:
    Connect the power cords [C] from both the printer and scanner to the power strip [D] enclosed as an accessory. Then, plug the power cord [E] into the power outlet.
15. Attach the printer main switch cover.

NOTE: Make sure that the wall outlet is near the machine and freely accessible, so that in the event of an emergency the cord can be easily unplugged.

For 230V machines:
In addition, make sure that the power strip is also freely accessible, so that in the event of an emergency the power cords from the machines can be easily unplugged.

16. Select the language in the UP mode.
17. Set the date and time.
18. Enter SP Mode.
19. Clear the scanner settings by using SP5-801-9.
20. Clear the network application settings by using SP5-801-10.
21. Clear the IPU settings by using SP5-801-12.
22. Exit SP mode and turn the main power off/on.
23. Perform Auto Color Calibration (ACC).
24. Make some test copies in the following modes using a C4 Test Chart.
    - Full color in Text Mode
    - B&W in Text Mode
25. Check the test copies to make sure each of the following is within standard values, making any necessary adjustments. (☛ 3.3 Image Adjustment)
    - Leading edge registration
    - Side-to-side registration
    - Scanner sub-scan magnification
    - Scanner leading edge registration
    - Scanner side-to-side registration
    - ARDF side-to-side registration
    - ARDF sheet through registration
26. If necessary, perform the touch panel position adjustment. (☛ 3.6 Others)
27. If the customer has a service contract, change the meter charge SP mode settings accordingly.

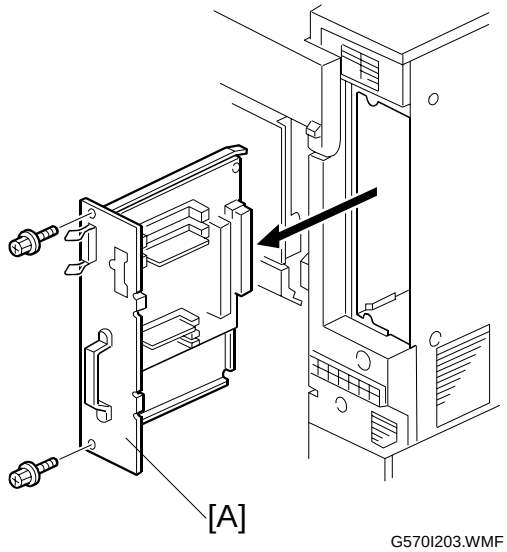
1.5.3 40GB HDD

Accessories Check List

	Description	Quantity
1.	40GB HDD	1
2.	Power Cable	1
3.	Harness	1
4.	Screw (M3x6)	2
5.	Key Top (Document Server)	1

40 GB HDD Installation

1. Remove the controller board [A] (2 screws).
2. Mount the 40GB HDD [B] on the controller (2 connectors, 2 screws).
   NOTE: If the CF expander has already been installed, remove the IPU board first, then install the HDD.
3. Reinsert the controller in the printer using the 2 screws (M3x6) enclosed in the CF expander, instead of the original screws.
   NOTE: When installing the HDD and CF expander simultaneously, be sure to install both before performing the next step.
4. Make sure that the power cords are properly plugged in, then turn on the main switch. Format the HDD according to the instructions displayed on the touch panel. Print the configuration page and confirm that the HDD has been properly installed.



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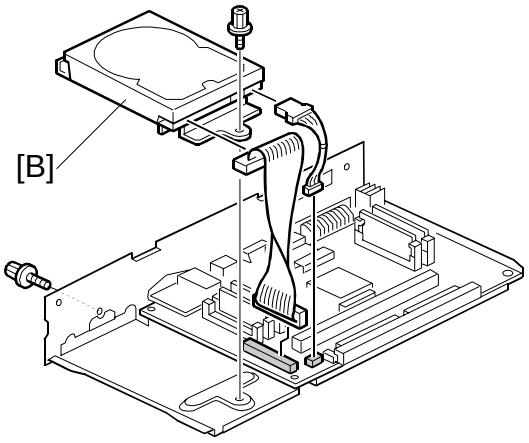

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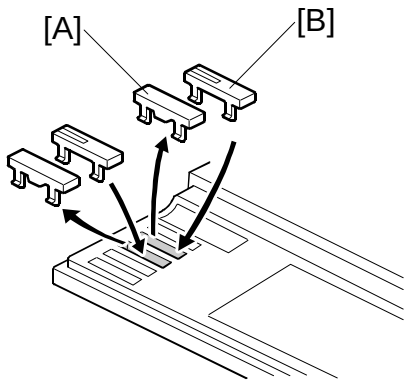
5. Remove the cover key top [A] and replace it with the document box key top [B].



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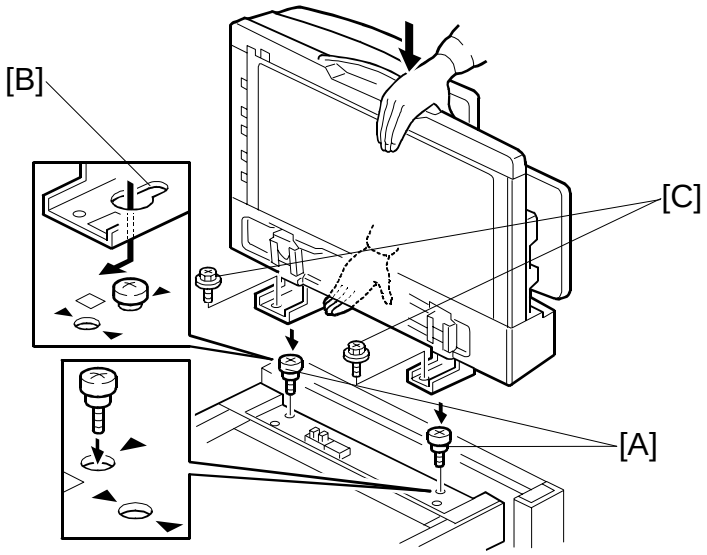
1.5.4 ARDF

Accessories Check List

	Description	Quantity
1.	Stepped Screw	2
2.	Screw (M4 x 10)	2
3.	Knob Screw	4
4.	Decal – Attention	1
5.	Installation Procedure	1

ARDF Installation



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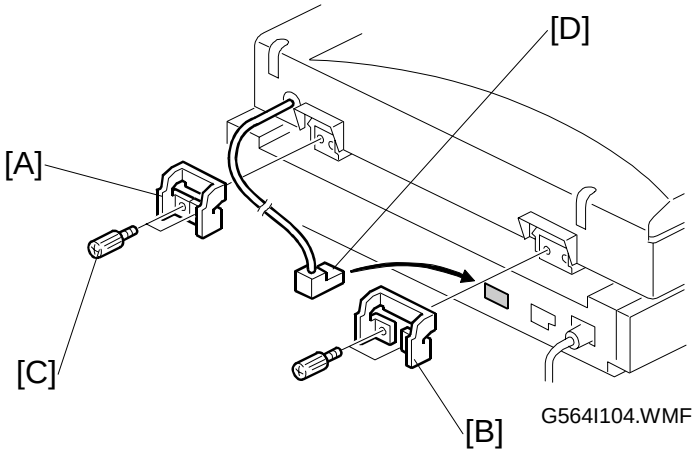
1. Attach and tighten [A] (☞ x 2 stud).
2. Mount the ARDF by aligning the screw keyholes [B] in the ARDF support plate over the stud screws, and slide the ARDF toward the front of the machine.
   NOTE: To avoid damaging the ARDF, hold it as shown in the illustration.
3. Secure the ARDF (☞ x 2 [C]).



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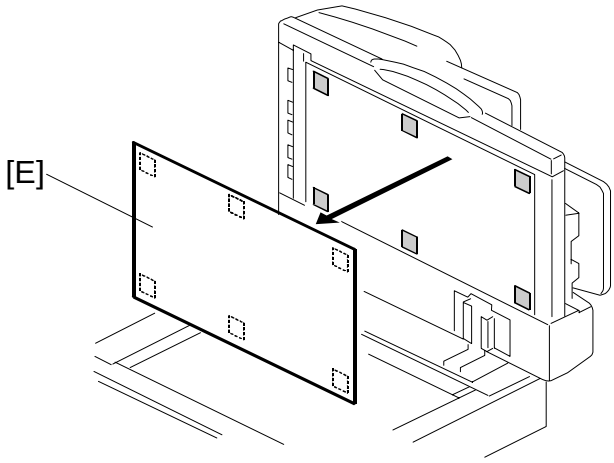

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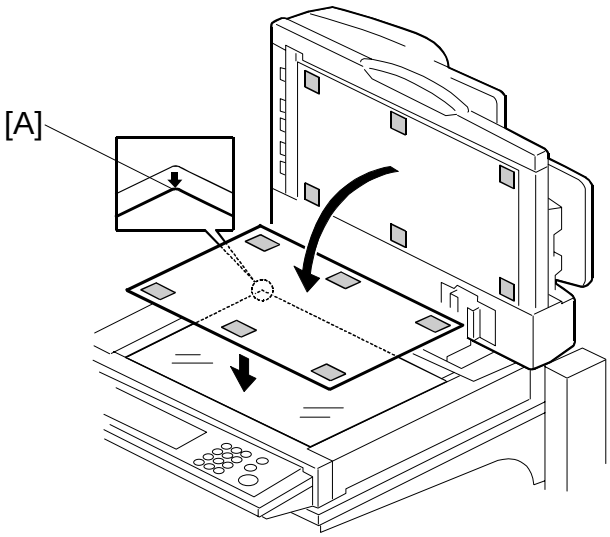
4. Attach the left [A] and right [B] stopper brackets with knob screws [C] (x 4).
5. Connect the I/F cable [D] (x 1) to the main machine.
6. Peel off the platen sheet [E] and place it on the exposure glass.



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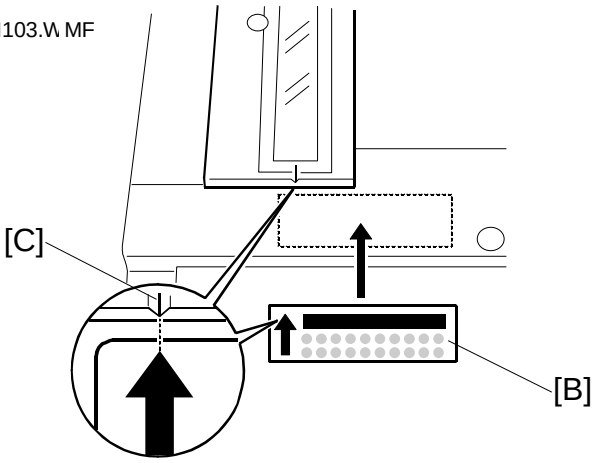

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7. Line up the rear left corner of the platen sheet flush against corner [A] on the exposure glass.
8. Close the ARDF.
9. Attach the decal [B] to the cover so that the arrow on the decal lines up with the groove [C] in the left scale as shown.
10. Turn on the main switch.
11. Check the ARDF operation and copy quality. Be sure to check and adjust the registration for the ARDF with the SP modes.

1.5.5 MULTI-BIN OUTPUT TRAY

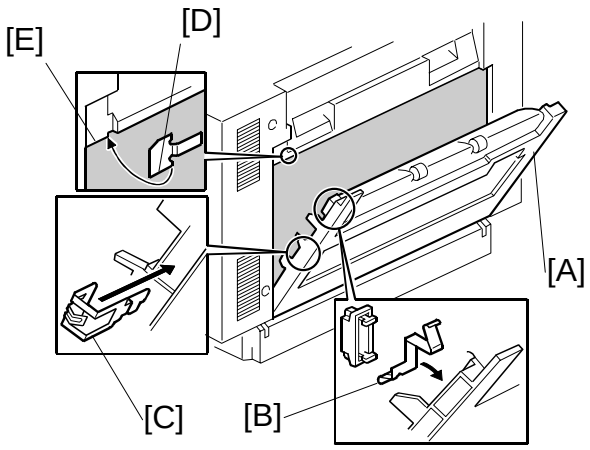
Accessories Check List

	Description	Quantity
1.	Front Tray Holder	1
2.	Rear Tray Holder	1
3.	Tray	2
4.	Screw (3 x 1 4)	4
5.	Discharge Brush	2
6.	Ground Plate for Left Cover	1
7.	Ground Plate for Upper Exit	1
8.	Ground Plate for Lower Exit	1

Installing the Multi-Bin Output Tray

NOTE: Before installing the multi-bin output tray, install the duplex unit.

1. Open the left cover [A] of the duplex unit.
2. Install the ground plate [B] behind the magnet.
3. Install the ground plate [C] on the rear of the left cover.
4. Attach the ground plate to the top cover, aligning the bottom edges of the plate [D] and cover [E].



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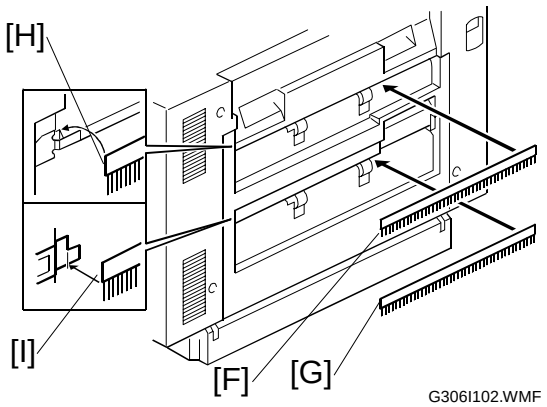
5. Attach the discharge brushes [F][G] to the upper edges of the paper exits, so that the ends of the brushes [H][I] touch the ground plates [C][D] respectively.
   NOTE: Make sure the brushes do not obstruct paper coming from the exits.



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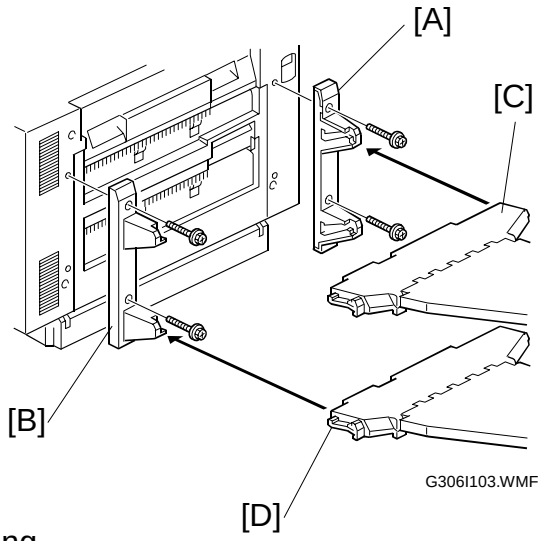
6. Install the front [A] and rear [B] tray holders on the top cover (🔩 x 2 for each).
7. Install the upper [C] and lower [D] trays.
8. Turn the main switch on; select the SP mode menu, SP6–901–1; and change the multi-bin output tray setting.

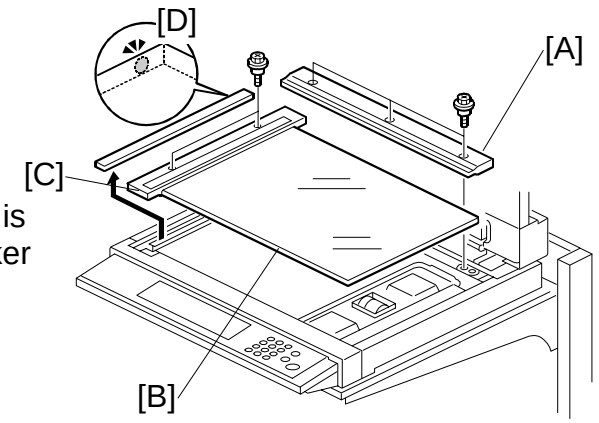
NOTE: The multi-bin output tray is not automatically recognized by the printer mainframe. The multi-bin output tray cannot be used until you have changed this SP mode setting.



1.5.6 ANTI-CONDENSATION HEATER

1. Remove the rear scale [A] (☞ x 3).
2. Remove the exposure glass [B] with the left scale [C] (☞ x 2).

NOTE: You do not have to remove the ADF exposure glass. If the glass is removed, position the glass marker [D] at the rear-left corner when reattaching.



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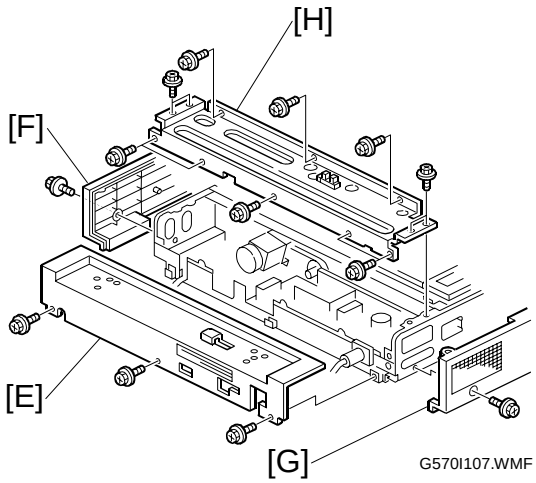
3. Remove the rear cover [E] (☞ x 3).
4. Remove the right cover [F] (☞ x 3).
5. Remove the left cover [G] (☞ x 3).
6. Remove the rear frame [H] (☞ x 12, ✋ x 2).



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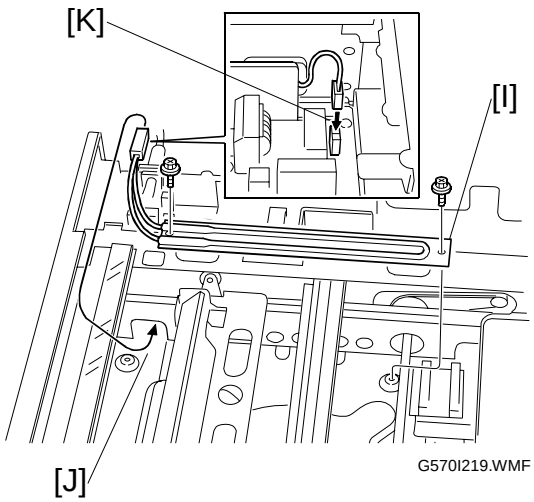
7. Install the anti-condensation heater [I] in the rear-left corner of the scanner unit (☞ x 2).
8. Pass the cable through the opening [J] in the rear rail and connect it to the connector [K] at the front-left corner of the power supply unit.
9. Reassemble the scanner unit.



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2. PREVENTIVE MAINTENANCE

2.1 USER MAINTENANCE

The following maintenance kits are available for the customer to do PM.

Type A:	Color (C/M/Y) PCU	50k copies
Type B:	Color (C/M/Y) Development Unit	100k copies
Type C:	Fusing Unit	100k copies
Type D:	Black Development Unit / Dust Filter	100k copies
Type E:	Waste Toner Bottle	50k copies
Type F:	Black PCU	50k copies
Type G:	Oil Supply Unit	20k copies
Type H:	Paper Feed Rollers	150k copies

Chart: A4(LT)/5%
Mode: 5 copies/original
Environment: Normal temperature and humidity
Yield may change depending on circumstances and copy conditions.

When the machine's default settings are used, an error message is displayed when a maintenance counter reaches the value in the PM table below, except for the items in maintenance kit H.

NOTE: To have the machine display the message for maintenance kit H also, set SP5-930-4 to 1.

After the user replaces the items in a maintenance kit, the machine automatically resets the counter for this maintenance kit, except for the items in kit H.

NOTE: Except for the items in kit H, the machine can automatically detect when new items have been installed.

The machine stops when the counters for parts in maintenance kits C, E and G reach the replacement value in the following table.

NOTE: To have the machine display the alert only for maintenance kits C, E, and G, set SP5-930-3 to 0.

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

Printer Mainframe

Item	20k	50k	100k	150k	EM	Remarks
Black PCU		R				Included in maintenance kit F
Color (Y/M/C) PCU		R				Included in maintenance kit A
Black Development Unit			R			Included in maintenance kit D
Color (C/M/Y) Development Unit			R			Included in maintenance kit B
Fusing Unit			R			Included in maintenance kit C
Oil Supply Unit	R					Included in maintenance kit G
Waste Toner Bottle		R				Included in maintenance kit E
Dust Filter			R			Included in maintenance kit D
Pick-up Roller				R		Included in maintenance kit H
Feed Roller				R		Included in maintenance kit H
Separation Roller				R		Included in maintenance kit H

Punch Kit

Item	10k				EM	Remarks
Chads	I					Discard chads.

2.2 SERVICE MAINTENANCE

NOTE: After replacing the transfer unit, make sure to reset the maintenance counter using SP7-804-16 and 7-804-27.
After replacing paper feed rollers, reset the maintenance counters for these also: By-pass tray (7-804-10), Tray 1 (7-804-11), Tray 2 (7-804-12), Tray 3/LCT (7-804-13), Tray 4 (7-804-14)

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

Printer Mainframe

Item	20k	50k	100k	150k	1000k	EM	Remarks
Transfer Unit					R		
By-pass Feed Roller				R			
By-pass Pick-up Roller				R			
By-pass Separation Roller				R			

One-tray Paper Feed Unit (500 sheets x 1)

Item	20k	50k	100k	150k	1000k	EM	Remarks
Relay Roller						C	Damp cloth
Bottom Plate Pad						C	Damp cloth

Two-tray Paper Feed Unit (500 sheets x 2)

Item	20k	50k	100k	150k	1000k	EM	Remarks
Relay Roller						C	Damp cloth
Bottom Plate Pad						C	Damp cloth

LCT (2000 sheets)

Item	20k	50k	100k	150k	1000k	EM	Remarks
Relay Roller						C	Damp cloth
Bottom Plate Pad						C	Damp cloth

Two-tray Finisher

Items	20k	50k	100k	150k	1000k	EM	Remarks
Rollers						C	Damp cloth
Discharge Brush						C	Dry cloth
Sensors						C	Blower brush
Jogger Fences						I	Replace if required.

CF Expander

Item	20k	50k	100k	1000k	EM	Remarks
1st Mirror					C	Optics cloth
2nd Mirror					C	Optics cloth
3rd Mirror					C	Optics cloth
APS Sensor					C	Dry cloth
Xenon Exposure Lamp					C	Dry cloth
Exposure Glass (Sheet through)					C	Dry cloth or alcohol

ARDF

Item	400k				EM	Remarks
Pick-up Roller	R				C	Damp cloth or alcohol
Feed Belt	R				C	Damp cloth or alcohol
Separation Roller	R				C	Damp cloth or alcohol
Sensors	C				C	Blower brush
Platen Sheet Cover					C	Damp cloth or alcohol. Replace platen sheet if required.
White Plate					C	Dry or damp cloth
Drive Gear	L					Grease, G501

NOTE: 400k copies (= 80k originals x 5 copies/original)

3. REPLACEMENT AND ADJUSTMENT

⚠CAUTION

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

NOTE: This manual uses the following symbols.
☛ : See or Refer to : Screws : Connectors

3.1 SPECIAL TOOLS

Part Number	Description	Q'ty
A0069104	Scanner Positioning Pin (4 pcs/set)	1
A2309352	Flash Memory Card - 4MB	1
A0929503	C4 Color Test Chart (3 pcs/set)	1
C4019503	20X Magnification Scope	1

3.2 LUBRICANTS

Part Number	Description	Q'ty
52039501	Silicone Grease G501	1

NOTE: This is only used for the optional ARDF.

3.3 IMAGE ADJUSTEMNT

3.3.1 PRINTING

Leading edge registration

See the service manual for the printer mainframe.

Side-to-side registration

See the service manual for the printer mainframe.

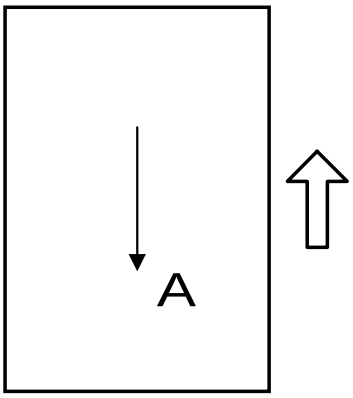
3.3.2 SCANNING

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

NOTE: Use a C4 test chart to perform the following adjustments.

Scanner sub-scan magnification

1. Place the test chart on the exposure glass and make a copy from one of the feed stations.
2. Check the magnification ratio. Use SP4-008 to adjust if necessary.
   Standard: ±1.0%.



A: Sub-scan magnification

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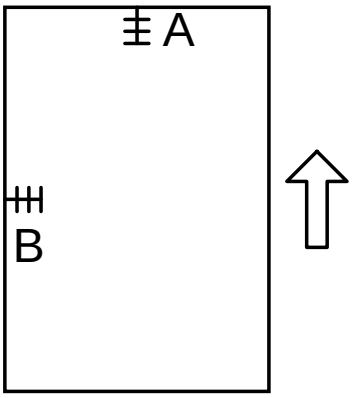
Scanner leading edge and side-to-side registration

1. Place the test chart on the exposure glass and make a copy from one of the feed stations.
2. Check the leading edge and side-to-side registration, and adjust them with the following SP modes if necessary. Standard: 0 ± 2mm.

	SP mode
Sub-scan	SP4-010
Main-scan	SP4-011



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

Main scan dot position correction

NOTE: Before adjusting the scanner, adjust the printer registration.

1. Enter the SP mode and open SP4-010 and SP4-011.
2. Check that each value corresponds to the factory-set value.
3. Press the Interrupt key and copy the C-4 chart in the full-color photo mode.

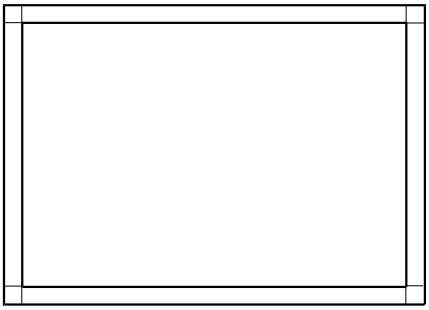
NOTE: Be sure to copy in the photo mode. This is because color displacement cannot be checked properly in text mode.

4. Check the yellow and cyan vertical lines. (Use a Magnification Scope to do this.) If they exactly overwrite the black line at the edges of the copy, exit the SP mode to end the adjustment. If the yellow and cyan lines significantly extend beyond the black line, proceed to the next step.
5. Press the Interrupt key to return to the SP mode and open SP4-932. Compare the current values against the table.

SP4-932-1	Dot correction R left edge
SP4-932-2	Dot correction R right edge
SP4-932-3	Dot correction B left edge
SP4-932-4	Dot correction B right edge

3.3.3 ARDF

ARDF side-to-side and leading edge registration



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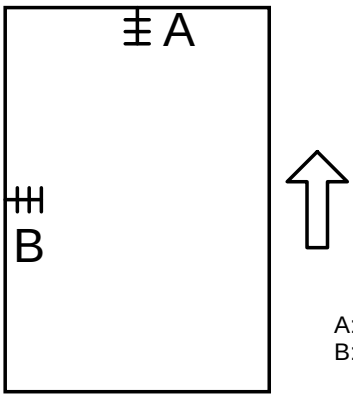

A: Leading edge registration
B: Side-to-side registration

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Make a temporary test chart as shown above using A3/DLT paper.

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

SP Code	What It Does	Adjustment Range
SP6-006-1	Side-to-Side Registration	± 1.0 mm
SP6-006-2	Leading Edge Registration (Simplex)	± 2.0 mm
SP6-006-3	Leading Edge Registration (Duplex: Front)	± 4.2 mm
SP6-006-4	Leading Edge Registration (Duplex: Back)	± 4.2 mm

3.3.4 PRINTER GAMMA CORRECTION

NOTE: Normally, the ACC is enough to adjust the color balance to achieve the optimum print output. The printer gamma correction is only required for fine-tuning to meet user requirements.

The printer gamma curve created during ACC can be modified using SP modes. The gamma data for highlight, middle, shadow areas, and IDmax can be adjusted. The adjustable range is from 0 to 30 (31 steps).

Printer Mode

There are six adjustable modes:

- 1200 x 1200 photo mode (select this mode with printer SP1-102-1)
- 600 x 600 text mode (select this mode with printer SP1-102-2)
- 1200 x 600 text mode (select this mode with printer SP1-102-3)
- 600 x 600 photo mode (select this mode with printer SP1-102-4)
- 1200 x 600 photo mode (select this mode with printer SP1-102-5)
- 1200 x 1200 text mode (select this mode with printer SP1-102-6)

	K	C	M	Y
Highlight	SP1-104-1	SP1-104-21	SP1-104-41	SP1-104-61
Middle	SP1-104-2	SP1-104-22	SP1-104-42	SP1-104-62
Shadow	SP1-104-3	SP1-104-23	SP1-104-43	SP1-104-63
IDmax	SP1-104-4	SP1-104-24	SP1-104-44	SP1-104-64

Adjustment Procedure

1. Do ACC for the printer mode.
2. Turn the main power off and on.
3. Enter SP mode.
4. Select “Printer SP”.
5. Select SP1-102 and select the print mode that you are going to adjust.
6. To review the image quality for these settings, choose SP1-103-1 to print out a tone control test sheet.
7. Adjust the color density with SP1-104 as shown below comparing the tone control test sheet with the C4 test chart.
   NOTE: Adjust the density in order from “ID Max”, “Shadow”, “Middle”, and then “Highlight”.
8. Save the adjusted settings with SP1-105.

Adjustment Reference For Gamma Correction

The following tables show the adjustment reference for gamma correction in the photo mode. The tables show the level of the color scale on the C4 test chart and on the tone control test sheet printed in the printer SP mode.

For example, for K at 1200 x 1200 dpi, grade 12 on the tone control test sheet should be the same as grade 8 on the C4 chart.

Normally, it is not necessary to adjust the gamma data as shown in the table since ACC adjusts the gamma curve automatically. The fine-tuning of color balance by gamma data adjustment will be required only when the result from ACC and Color Calibration does not meet the customer's requirements.

K	C4 test chart		1	2	3	4	5	6	7	8	9	10
	Test sheet	600 x 600	–	1	3	5	6	9	10	11	16	–
		1200 x 600	–	1	3	5	6	8	10	11	16	–
		1200 x 1200	–	1	3	4	6	8	10	12	15	16

C	C4 test chart		1	2	3	4	5	6	7	8	9	10
	Test sheet	600 x 600	–	1	3	5	6	9	10	12	13	14
		1200 x 600	–	1	3	5	6	8	10	11	12	13
		1200 x 1200	–	1	3	4	5	8	10	11	12	13

M	C4 test chart		1	2	3	4	5	6	7	8	9	10
	Test sheet	600 x 600	–	1	4	6	8	11	12	14	16	–
		1200 x 600	–	1	4	6	8	11	12	15	16	–
		1200 x 1200	–	1	4	6	7	10	12	14	16	–

Y	C4 test chart		1	2	3	4	5	6	7	8	9	10
	Test sheet	600 x 600	1	3	4	9	11	12	14	15	16	–
		1200 x 600	1	3	5	8	10	11	14	15	16	–
		1200 x 1200	1	3	5	8	10	11	14	15	16	–

Copy Mode

KCMY Color Balance Adjustment

The adjustment uses only “Offset” values.

NOTE: Never change “Option” values (default value is 0).

Highlight (Low ID)	Levels 2 through 5 in the C4 chart 10-level scale
Middle (Middle ID)	Levels 3 through 7 in the C4 chart 10-level scale
Shadow (High ID)	Levels 6 through 9 in the C4 chart 10-level scale
ID max	Level 10 in the C4 chart 10-level scale (affects the entire image density.)
Offset	The higher the number in the range associated with the low ID, middle ID, high ID, and ID max, the greater the density.

There are four adjustable modes:

- Color text mode
- Color photo mode
- B/W text mode
- B/W photo mode

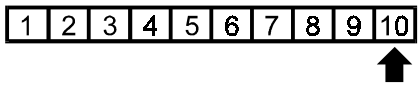
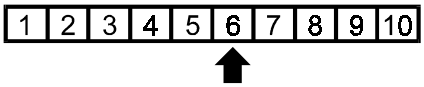
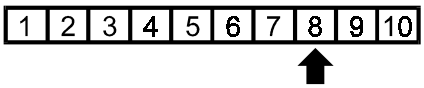
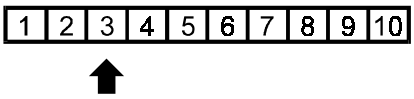
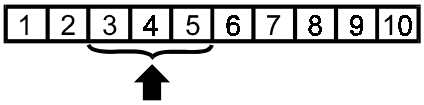
		K	C	M	Y
Text mode	Highlight Middle Shadow ID max	SP4-910-1 SP4-910-2 SP4-910-3 SP4-910-4	SP4-911-1 SP4-911-2 SP4-911-3 SP4-911-4	SP4-912-1 SP4-912-2 SP4-912-3 SP4-912-4	SP4-913-1 SP4-913-2 SP4-913-3 SP4-913-4
Photo mode	Highlight Middle Shadow ID max	SP4-915-1 SP4-915-2 SP4-915-3 SP4-915-4	SP4-916-1 SP4-916-2 SP4-916-3 SP4-916-4	SP4-917-1 SP4-917-2 SP4-917-3 SP4-917-4	SP4-918-1 SP4-918-2 SP4-918-3 SP4-918-4
B/W text mode	Highlight Middle Shadow ID max	SP4-914-1 SP4-914-2 SP4-914-3 SP4-914-4	–	–	–
B/W photo mode	Highlight Middle Shadow ID max	SP4-909-1 SP4-909-2 SP4-909-3 SP4-909-4	–	–	–

Adjustment Procedure

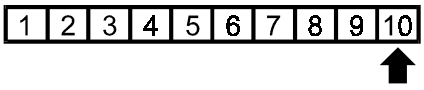
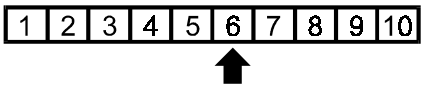
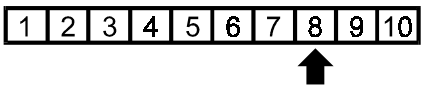
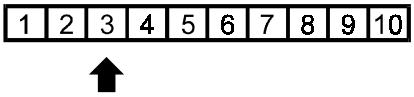
1. Copy the C-4 chart in mode that you are going to adjust.
2. Enter the SP mode.
3. Select “Copy SP”.
4. Select SP4-9xx that you are going to adjust.
5. Adjust the offset values until the copy quality conforms to the standard (☛ the table below).

NOTE: 1) Never change “Option” value (default value is 0).
2) Adjust the density in order from “ID Max”, “Middle”, “Shadow”, and then “Highlight”.

- Standard Copy Quality in Color Text/Photo Mode -

Standard Copy Quality in Color Text/Photo Mode			
Step	**Item to Adjust**	**Level on the C-4 chart**	**Adjustment Standard**
1	ID max: (K, C, M, and Y)		Adjust the offset value so that the density of level 10 matches that of level 10 on the C-4 chart.
2	Middle (Middle ID) (K, C, M, and Y)		Adjust the offset value so that the density of level 6 matches that of level 6 on the C-4 chart.
3	Shadow (High ID) (K, C, M, and Y)		Adjust the offset value so that the density of level 8 matches that of level 8 on the C-4 chart.
4	Highlight (Low ID) (K, C, M, and Y)		Adjust the offset value so that dirty background is not visible on the copy and the density of level 3 is slightly lighter that of level 3 on the C-4 chart.
5	K Highlight (Low ID) (C, M, and Y) <on the full color copy> only for Photo		Adjust the offset value so that the color balance of black scale levels 3 through 5 in the copy is seen as gray.

<Standard Copy Quality in B/W Text/Photo Mode>

Standard Copy Quality in B/W Text/Photo Mode			
Step	**Item to Adjust**	**Level on the C-4 chart (K)**	**Adjustment Standard**
1	ID max: (K)		Adjust the offset value so that the density of level 10 matches that of level 10 on the C-4 chart.
2	Middle (Middle ID) (K)		Adjust the offset value so that the density of level 6 matches that of level 6 on the C-4 chart.
3	Shadow (High ID) (K)		Adjust the offset value so that the density of level 8 matches that of level 8 on the C-4 chart.
4	Highlight (Low ID) (K)		Adjust the offset value so that dirty background is not visible on the copy and the density of level 3 is slightly lighter that of level 3 on the C-4 chart.

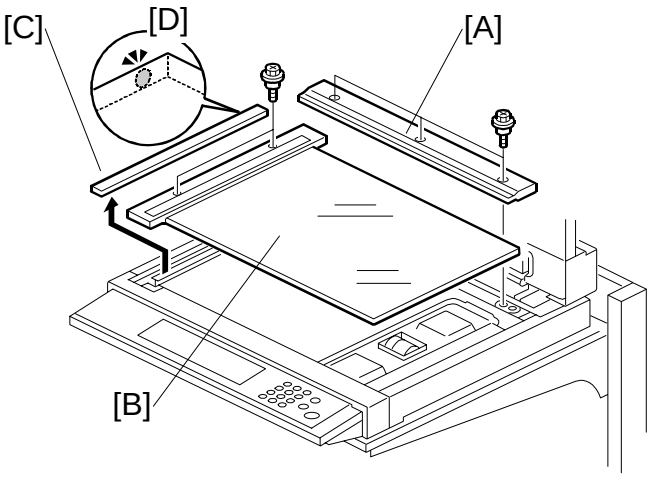
NOTE: After adjusting 'shadow' as explained above, text parts of the test pattern may not be printed clearly. If this happens, check whether the 5 line/mm pattern at each corner is printed clearly. If it is not, adjust the offset value of 'shadow' again until it is.

3.4 REPLACEMENT

3.4.1 EXPOSURE GLASS

1. Rear scale [A] (☞ x 3)
2. Exposure glass with left scale [B] (☞ x 2)
3. ARDF exposure glass [C]

NOTE: When reattaching the exposure glass and ARDF exposure glass, position the glass marker [D] at the rear-left corner.



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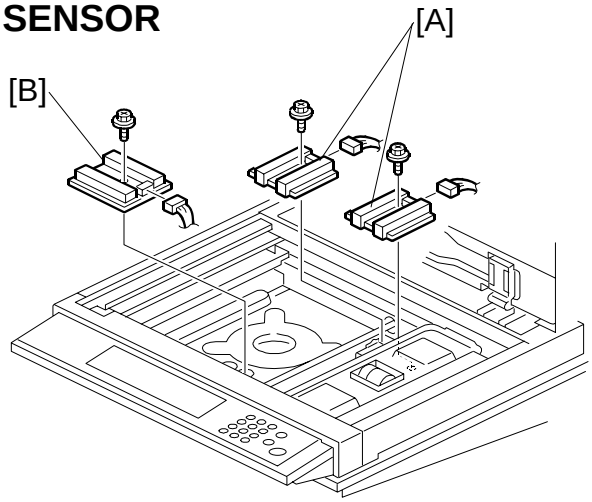
3.4.2 ORIGINAL LENGTH/WIDTH SENSOR

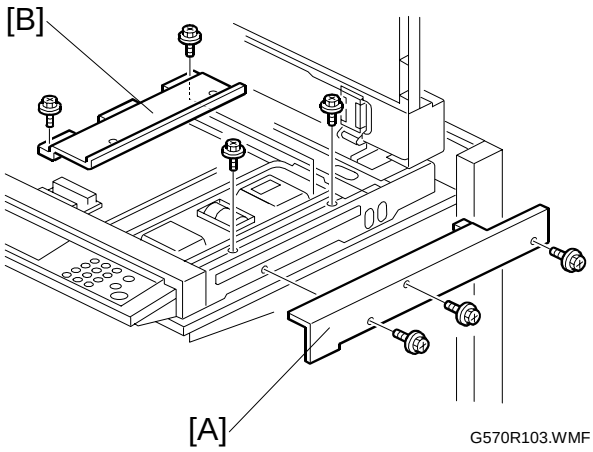
1. Exposure glass with left scale (☛ 3.4.1)
2. Original length sensors [A] (☞ x 2, ☞ x2)
3. Original width sensor 1 [B] (☞ x 1, ☞ x1)



G570R501.WMF

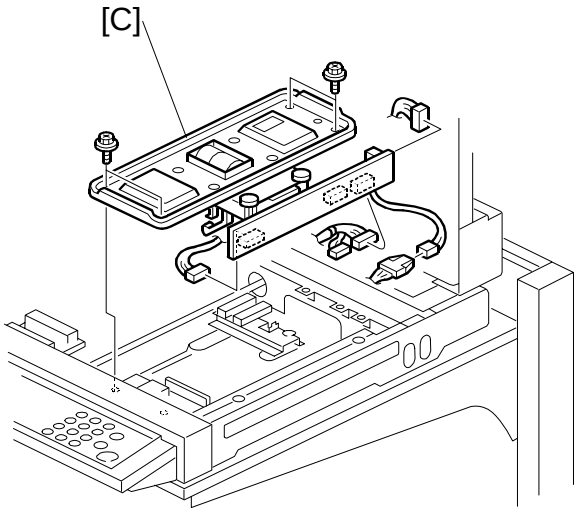
3.4.3 SENSOR BOARD UNIT (SBU)

1. Open the ARDF/platen cover
2. Rear cover (☛ 3.1.6)
3. Right cover [A] (🔩 x 3)
4. Inner cover [B] (🔩 x 4)



G570R103.WMF

5. Sensor board unit [C] (🔩 x 4, 🔌 x 4)



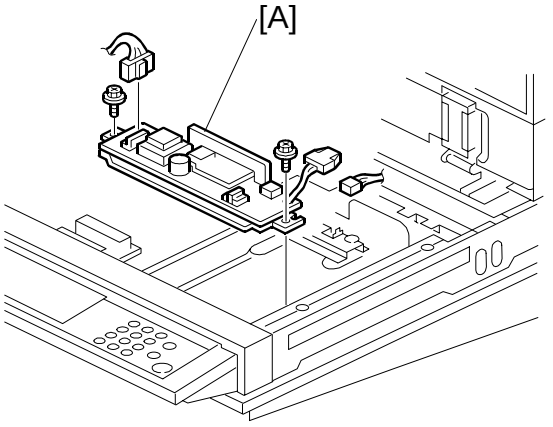
G570R104.WMF

6. After replacing the sensor board unit, adjust the following SP modes (☛ 3.3.12):
   - SP4–008 (Scanner leading edge magnification)
   - SP4–010 (Scanner leading edge registration)
   - SP4–011 (Scanner side-to-side registration)

NOTE: The settings above are stored in the NVRAM on the SBU.

3.4.4 EXPOSURE LAMP STABILIZER

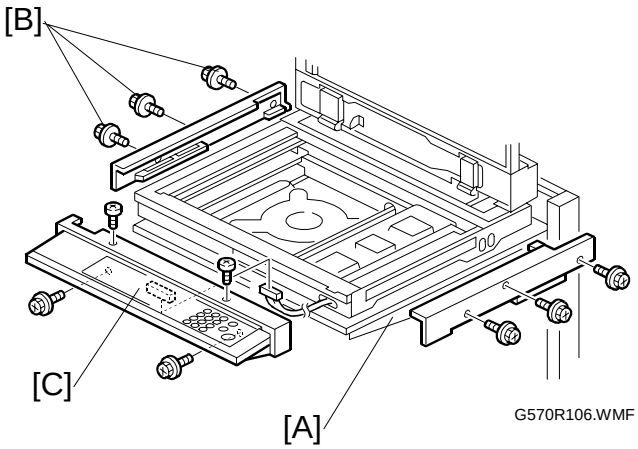
1. Exposure glass with left scale (☛ 3.4.1)
2. Sensor board unit (☛ 3.1.3)
3. Exposure lamp stabilizer [A] (☞ x 2, 🖑 x 2)



G570R105.WMF

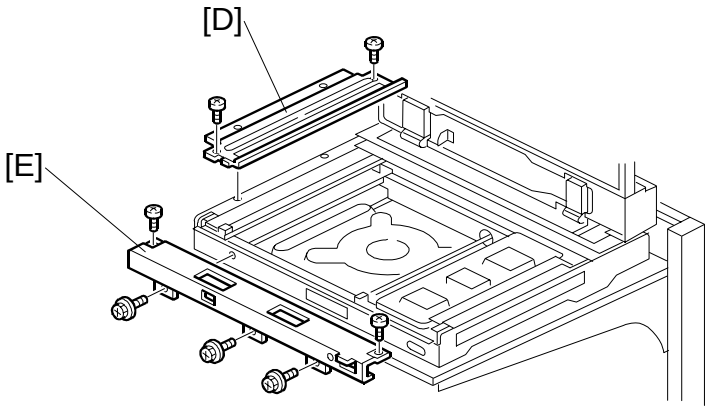
3.4.5 XENON LAMP

1. Exposure glass with left scale (☛ 3.4.1)
2. Rear cover (☛ 3.1.6)
3. Right cover [A] (☞ x 3)
4. Left cover [B] (☞ x 3)
5. Operation panel [C] (☞ x 4, 🖑 x 1)



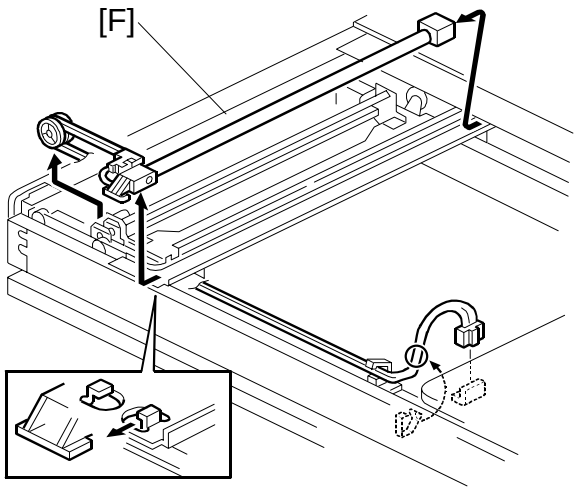
G570R106.WMF

6. Left frame [D] (☞ x 4)
7. Front frame [E] (☞ x 5)



G570R107.WMF

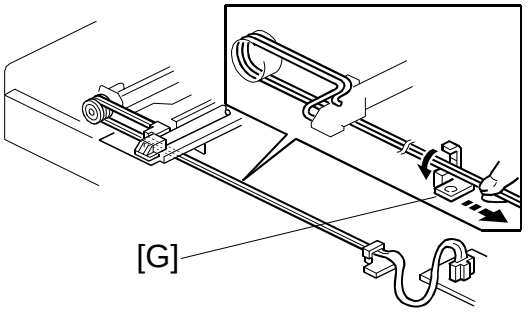
8. Xenon lamp (2 clamps)



G570R108.WMF

Reassembling

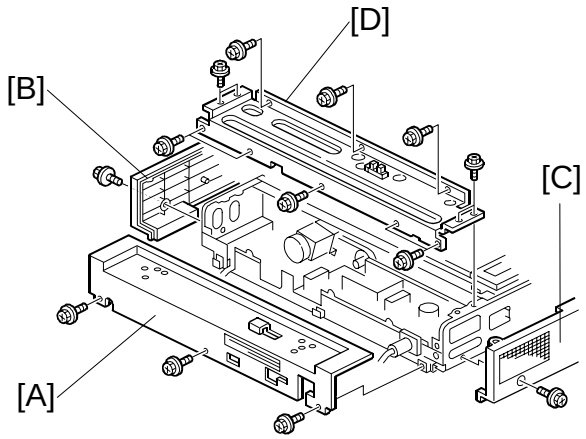
1. Take up the cable slack.
2. Adjust the cable clamp position [G] if necessary.



G570R109.WMF

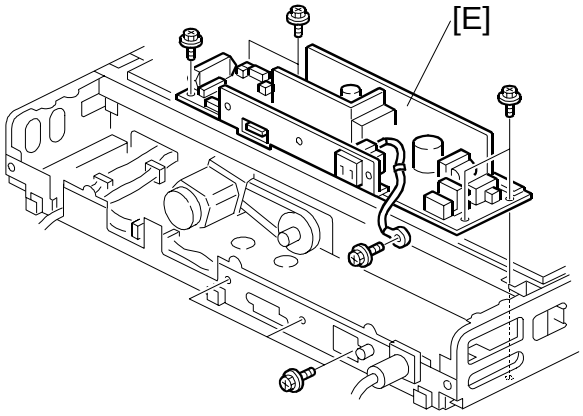
3.4.6 SCANNER POWER SUPPLY UNIT (PSU)

1. Rear cover [A] (x 3)
2. Right cover [B] (x 3)
3. Left cover [C] (x 3)
4. Rear frame [D] (x12, x 2)



G570R110.WMF

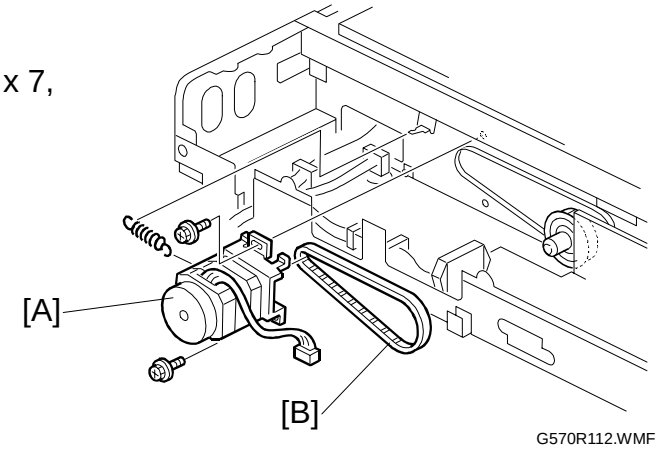
5. Scanner power supply unit [E] (x10, x 7, Ground wire screw x 2)



G570R111.WMF

3.4.7 SCANNER MOTOR

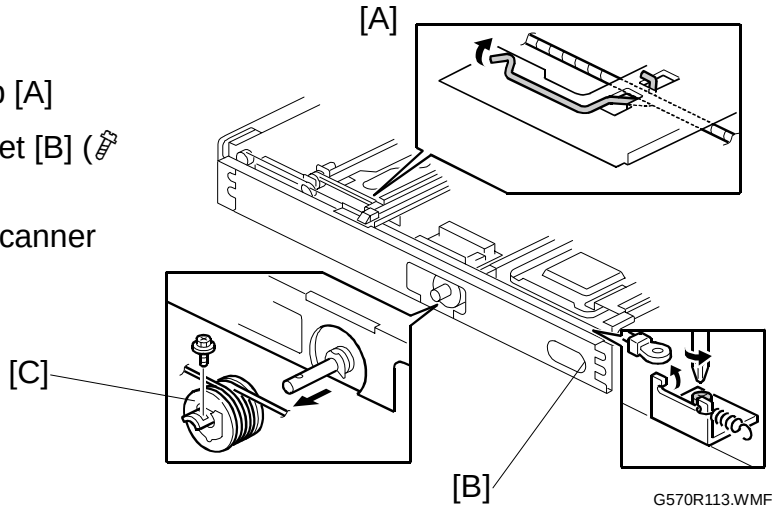
1. Scanner PSU (☛ 3.1.6)
2. Scanner motor [A] (Spring x 1, x 7, x 1)
3. Timing belt [B]



G570R112.WMF

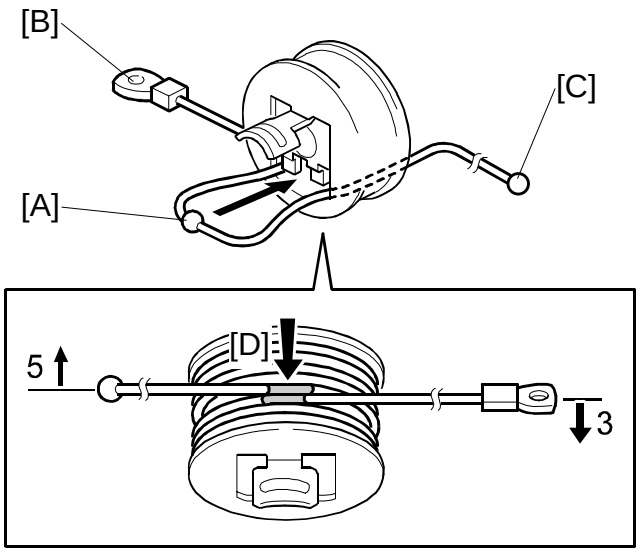
3.4.8 FRONT SCANNER WIRE

1. Front frame (☛ 3.1.5)
2. Front scanner wire clamp [A]
3. Front scanner wire bracket [B] (🔩 x 1)
4. Front scanner wire and scanner drive pulley [C] (🔩 x 1)



Reassembling the Front Scanner Wire

1. Position the center ball [A] in the middle of the forked holder.
2. Pass the right end (with the ring) [B] through the square hole, and the left end (with the ball) [C] through the notch.
3. Wind the right end clockwise (viewed from the machine's front) three times; wind the left end counterclockwise five times.

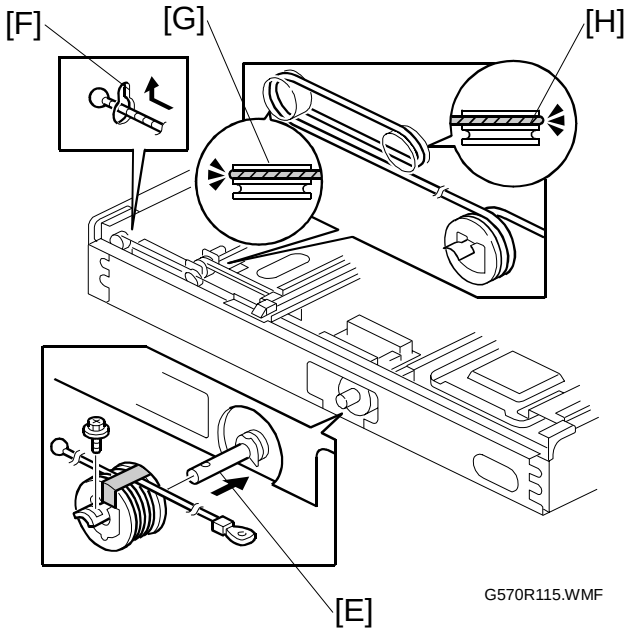


G570R114.WMF

NOTE: The two red marks [D] meet when you have done this. Stick the wire to the pulley with tape, so you can handle the assembly easily during installation.

4. Install the drive pulley on the shaft [E].

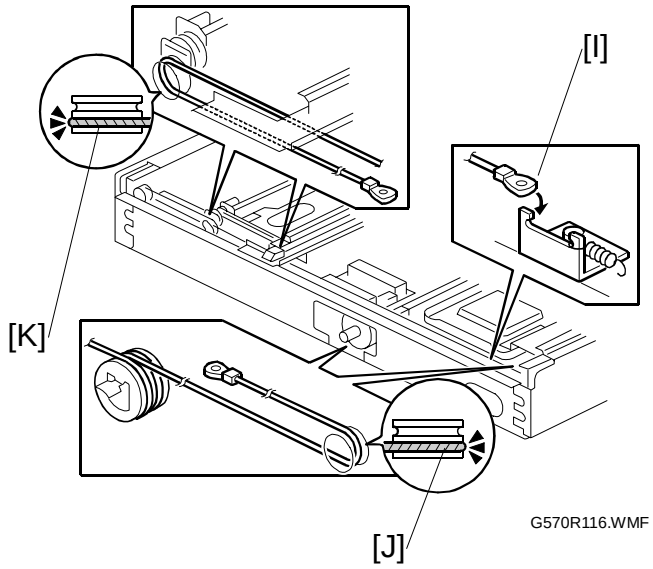
   NOTE: Do not secure the pulley to the shaft with the screw yet.
5. Insert the left end into the slit [F], with the end going via the rear track of the left pulley [G] and the rear track of the movable pulley [H].



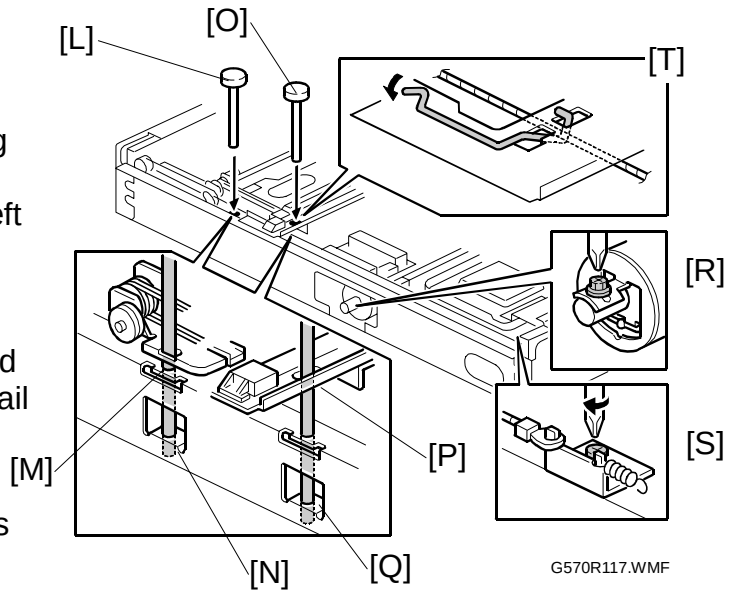
G570R115.WMF

6. Hook the right end onto the front scanner wire bracket [I], with the end going via the front track of the right pulley [J] and the front track of the movable pulley [K].

NOTE: Do not secure the scanner wire bracket with the screw yet.



7. Remove the tape from the drive pulley.
8. Insert a scanner positioning pin [L] through the 2nd carriage hole [M] and the left holes [N] in the front rail. Insert another scanner positioning pin [O] through the 1st carriage hole [P] and the right holes in the front rail [Q].
9. Insert two more scanner positioning pins in the holes in the rear rail.

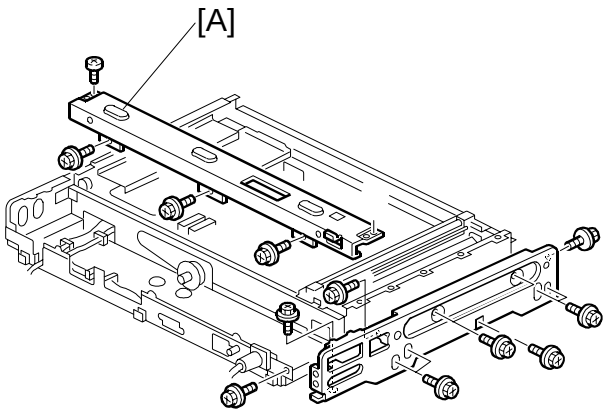


10. Screw the drive pulley to the shaft [R].
11. Screw the scanner wire bracket to the front rail [S].
12. Install the scanner wire clamp [T].
13. Pull out the positioning pins.

NOTE: After removing the positioning pins, make sure the 1st and 2nd carriages move smoothly. If they do not, repeat steps 8 through 13.

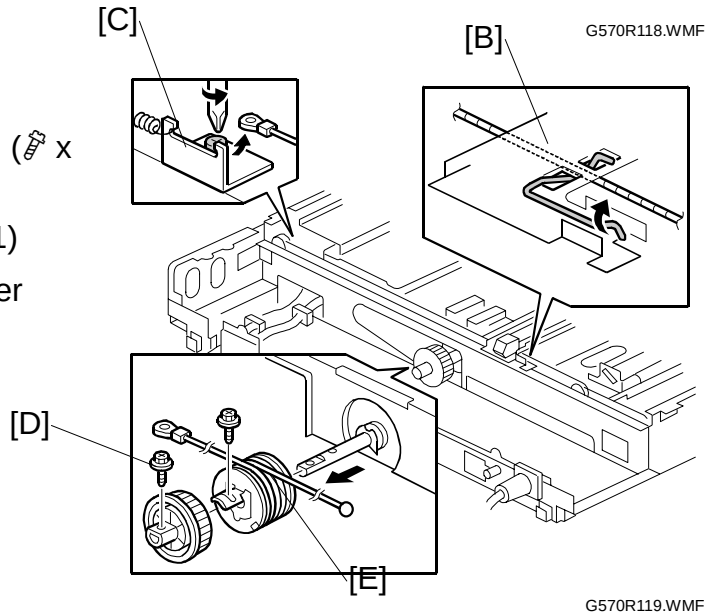
3.4.9 REAR SCANNER WIRE

1. Rear frame (☛ 3.1.6)
2. Rear rail frame [A] (🔩 x 5)



G570R118.WMF

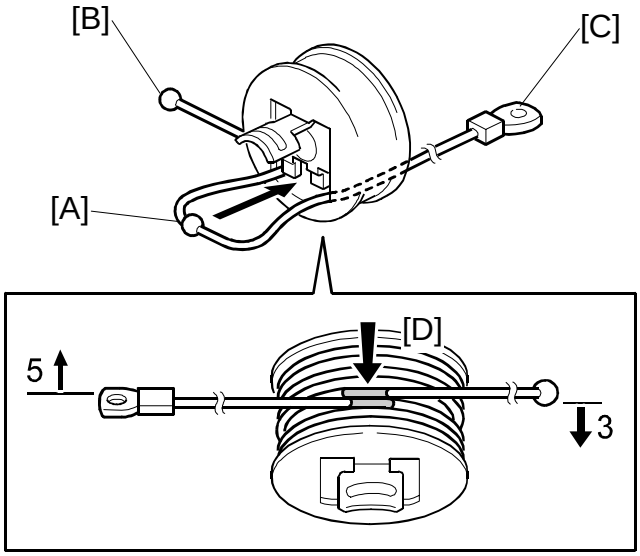
3. Rear scanner wire clamp [B]
4. Rear scanner wire bracket [C] (🔩 x 1)
5. Scanner motor gear [D] (🔩 x 1)
6. Rear scanner wire and scanner drive pulley [E] (🔩 x 1)



G570R119.WMF

Reassembling the Rear Scanner Wire

1. Position the center ball [A] in the middle of the forked holder.
2. Pass the left end (with the ball) [B] through the drive pulley notch, and the right end (with the ring) [C] through the drive pulley hole.
3. Wind the left end counterclockwise (viewed from the machine's front) five times; wind the right end clockwise three times.



G570R120.WMF

NOTE: The two red marks [D] meet when you have done this. Stick the wire to the pulley with tape, so you can handle the assembly easily during installation.

4. Install the drive pulley on the shaft.

   NOTE: Do not secure the pulley on the shaft with the screw yet.

5. Install the wire.
   NOTE: The winding of the wire on the three pulleys at the rear of the scanner should be the same as the winding on the three pulleys at the front, except that it should appear as a mirror image.
   Example: At the front of the machine, the side of the drive pulley with the three windings should face the front of the machine. At the rear of the machine, it should face the rear.
6. Perform steps 7 through 13 in the "Reassembling the Front Scanner Wire" Section.

3.4.10 NVRAM REPLACEMENT PROCEDURE

Make sure you have the SMC report (factory settings) that comes with the printer before beginning the following procedure.

NVRAM on the Controller (IC9)

1. Enter SP mode and print out the SMC reports with SP5-990-1 if possible.
2. Turn off the main switch and unplug the power cord.
3. Replace the NVRAM on the controller and reassemble the machine.
4. Enter the SP and UP mode changes that were made at the factory and in the field.
5. Perform ACC for the copier application.
6. Perform ACC for the printer application.
7. Reset the total counter to 0 (SP 7-825-1) if meter charge mode (SP 5-930-1) is enabled.

NVRAM Expansion Board on the Controller (CN13)

1. Enter SP mode and print out the SMC reports with SP5-990-1 if possible.
2. Export the User Codes from the NVRAM board by using SmartNetMonitor for Admin if the customer has stored them.
3. Turn off the main switch and unplug the power cord.
4. Replace the NVRAM board on the controller and reassemble the machine.
5. Execute a RAM clear for the system settings with SP5-801-3.
6. Execute a RAM clear for the scanner application settings with SP5-801-9.
7. Execute a RAM clear for the network application settings with SP5-801-10.
8. Execute a RAM clear for the IPU settings with SP5-801-12.
9. Reset the system settings.
8. Enter the SP and UP mode changes that were made at the factory and in the field.
10. Import the User Codes to the NVRAM board by using SmartNetMonitor for Admin if the customer has stored them.
11. Perform ACC for the copier application.
12. Perform ACC for the printer application.

NVRAM on the BCU (IC20)

1. Enter SP mode and print out the SMC reports with SP5-990-1 if possible.
2. Turn off the main switch and unplug the power cord.
3. Replace the NVRAM on the BCU and reassemble the machine.
4. Contact your supervisor for details on how to enter the machine's device number and destination code.
   NOTE: SC999 or "Fusing Unit Setting Error" may be displayed until the machine's device number and destination code is programmed properly.
5. Turn the main switch off/on.
6. Reset the settings for meter charge with SP5-930-1 to -5.
7. Enter the SP and UP mode changes that were made at the factory and in the field.
8. Execute the process control self-check.
9. Perform ACC for the copier application.
10. Perform ACC for the printer application.

3.4.11 REQUIRED ACTIONS WHEN REPLACING ITEMS

ITEMS	BEFORE REPLACING	AFTER REPLACING
Scanner unit	None	1. Adjust the registration for the scanner and ARDF. 2. Do ACC for the copier application. 3. Do ACC for the printer application.
Printer mainframe	None	1. Do ACC for the copier application. 2. Do ACC for the printer application.
NVRAM expansion board on the controller	1. Print out the SMC report. 2. Export the User Codes.	1. Execute SP5-801-3. 2. Execute SP5-801-9. 3. Execute SP5-801-10. 4. Execute SP5-801-12. 5. Reset the system settings. 6. Enter the SP and UP mode values from the SMC report. 7. Import the User Codes. 8. Do ACC for the copier application. 9. Do ACC for the printer application.
NVRAM on the controller	Print out the SMC report.	1. Enter the SP and UP mode values from the SMC report. 2. Do ACC for the copier application. 3. Do ACC for the printer application. 4. Reset the total counter to 0 if meter charge mode is enabled.
Controller without NVRAM	None	None
NVRAM on the BCU	Print out the SMC report.	1. Enter the machine's device number and destination code. 2. Reset the settings for meter charge. 3. Enter the SP and UP mode values from the SMC report. 4. Execute the process control self-check. 5. Do ACC for the copier application. 6. Do ACC for the printer application.
BCU without NVRAM	None	None

3.5 PRINTER ENGINE

3.5.1 TONER SUPPLY UNIT

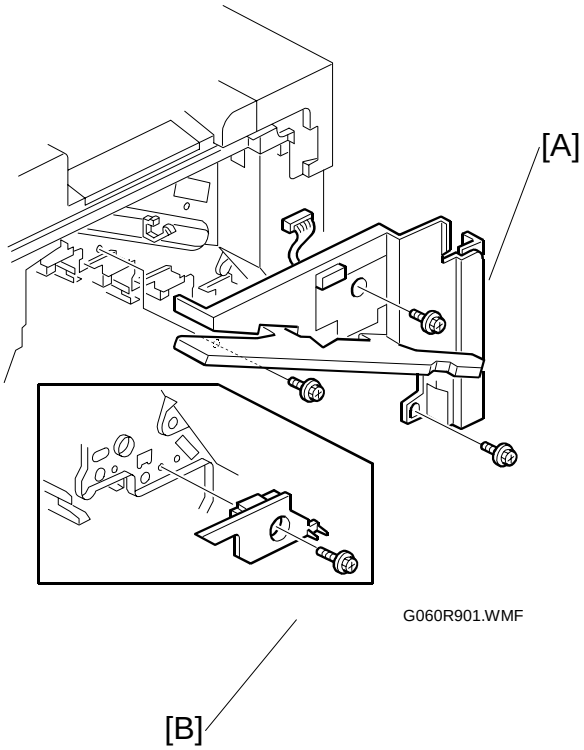
CAUTION: 1) Do not touch the PCU development drums or the transfer belt. Do not let any metal object touch the PCU development sleeves.
2) Having removed the PCUs, cover them with paper or cloth. Keep them in a dark place.

Preparation

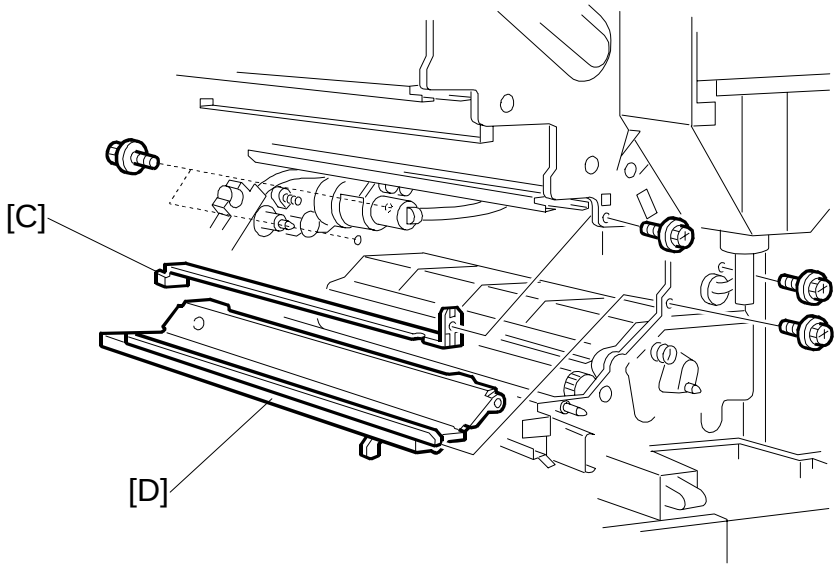
1. Front cover (☛ '3. Removal & Adjustment' in the service manual for the printer mainframe)
2. All development units
3. All PCUs
4. Transfer unit lock bracket
5. Transfer unit
6. Right, rear, and upper rear covers
7. Paper exit tray
8. Laser optics housing unit
9. Development clutch securing plate

M Toner Supply Unit

1. Right inner cover with the drum positioning plate [A] (🔩 x 3)
2. M development unit plate [B] (🔩 x 1)

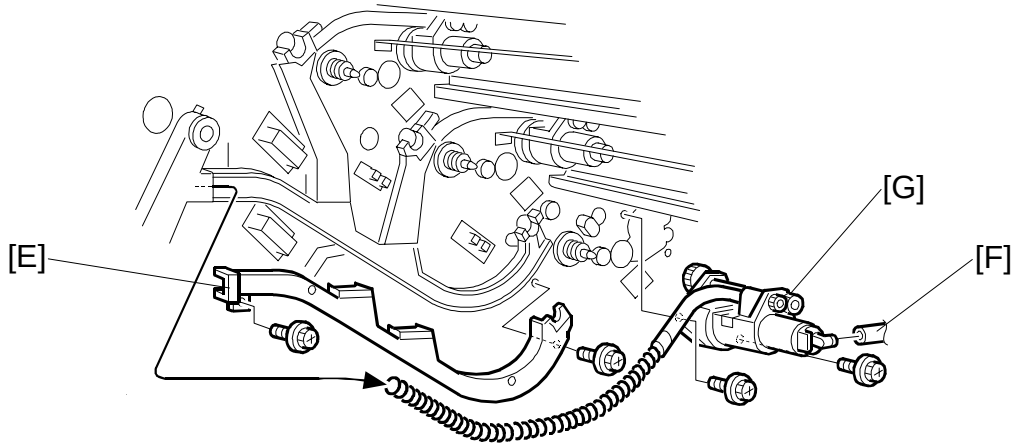


G060R901.WMF



G060R902.WMF

3. Development unit left guide [C] (☞ x 1)
4. Registration upper stay [D] (☞ x 4)

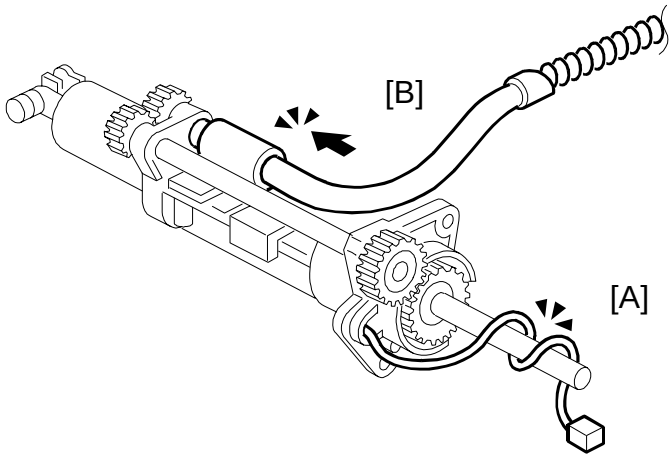


G060R903.WMF

CAUTION: 1) When you remove a toner supply pipe, the toner spills out. Before removing it, place some paper or cloth beneath the toner supply unit and waste toner collection path.
2) After removing a pipe, close it with a paper clip or tape.

5. Toner path cover [E] (☞ x 2)
6. Toner supply pipe [F]
7. Toner supply unit [G] (☞ x 2, ☞ x 1)

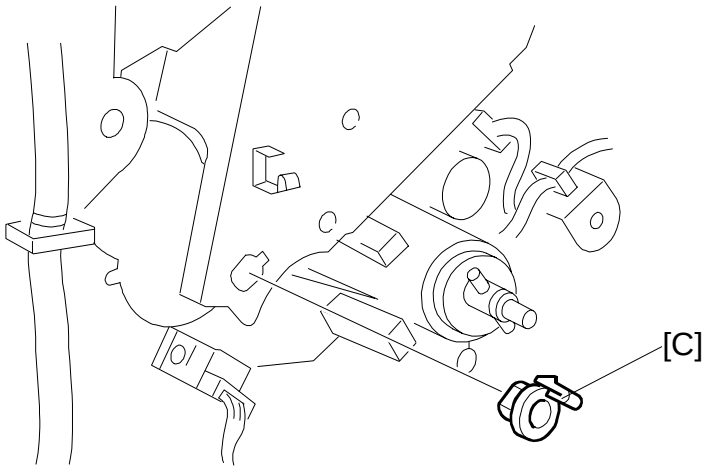
Reinstalling the M Toner Supply Unit



G060R904.WMF

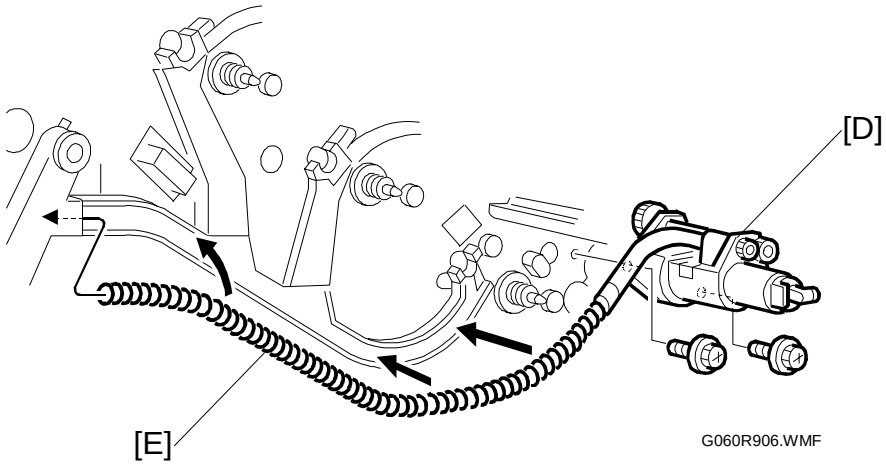
1. Wind the harness [A] on the shaft.
2. Insert the toner collection pipe [B].

NOTE: Check that the pipe does not come off the unit.



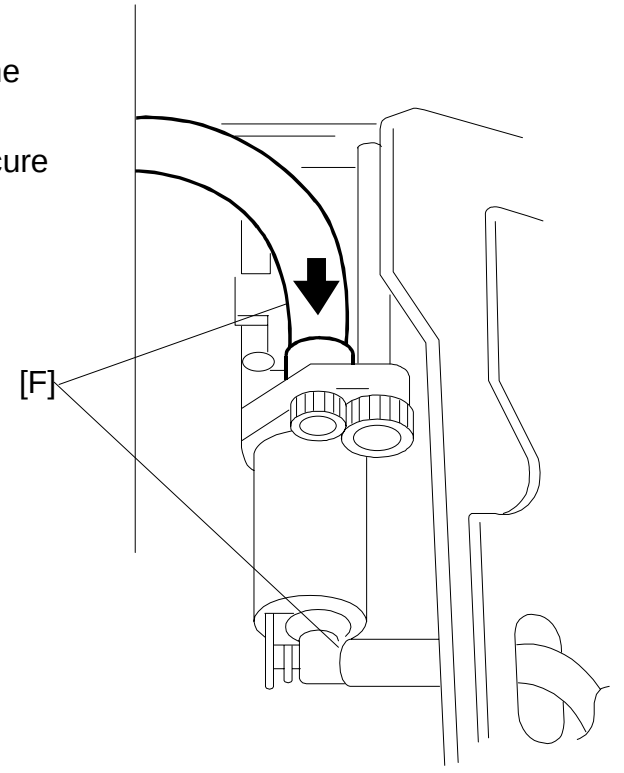
G060R905.WMF

3. Remove the toner supply unit bushing [C].

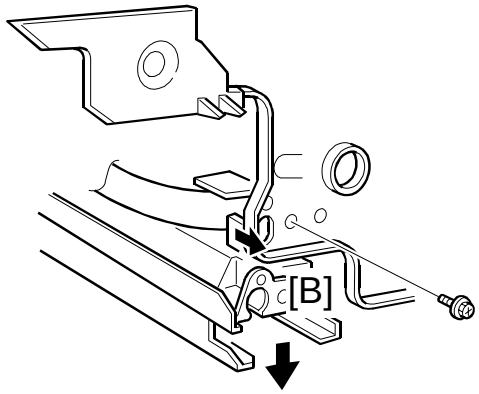


4. Install the unit [D] and secure it with the screws.
5. Unwind the harness and connect it.
6. Install the bushing.
7. Connect the toner supply pipe and the waste toner collection pipe [E].

8. Check that the pipes [F] do not come off the unit.
9. Attach the toner path cover and secure it with screws.
10. Reassemble the machine.



K, C, and Y Toner Supply Units

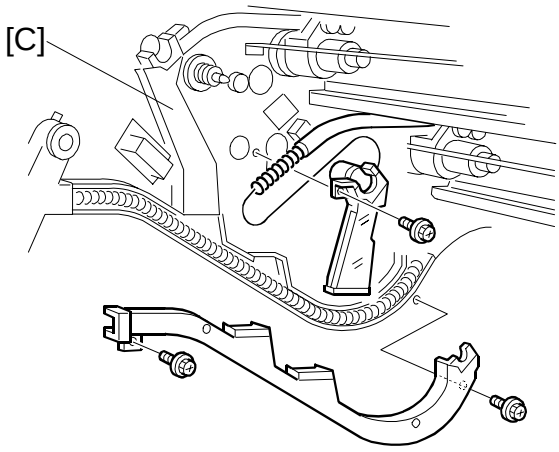


G060R908.WMF

1. Development unit plate and development unit guide (☛ M toner Supply Unit)
2. PCU 3C guide rail [A] (☞ x 1)

[A]

NOTE: Pull the front plate [B] slightly.



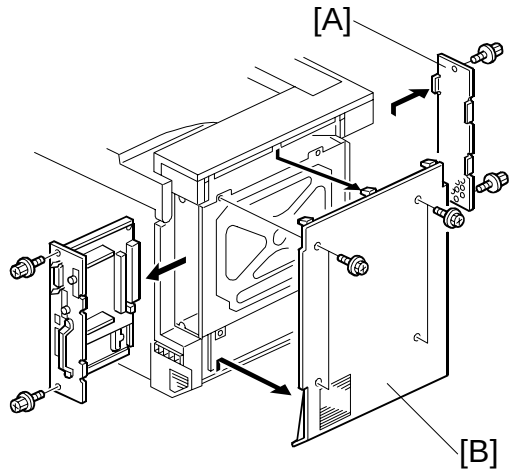
G060R909.WMF

3. Branch toner path cover [C] (☞ x 1)
4. Toner path cover, toner supply pipe, and toner supply unit (☛ M Toner Supply Unit)

3.5.2 BCU

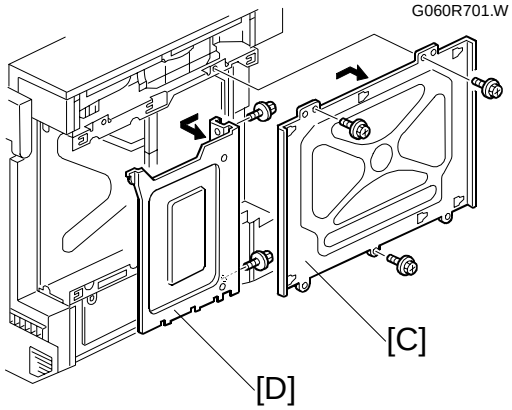
NOTE: 1) After replacing the BCU, remove the NVRAM on the old board and install it on the new board.
2) A DIP switch setting is required, if the new board has a DIP switch.

1. Option bracket [A] (☞ x 2)
2. Rear cover [B] (☞ x 4)



G060R701.WMF

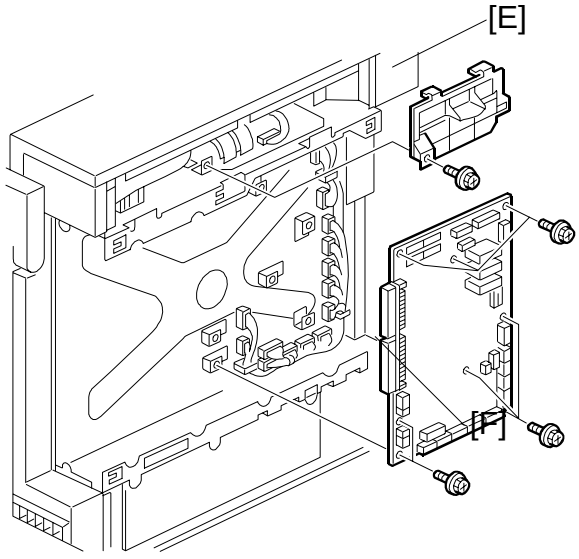
3. Cover bracket [C] (☞ x 3)
4. Inner bracket [D] (☞ x 2)



G060R702.WMF

5. Connector cover [E] (☞ x 1)
6. BCU [F] (☞ x 8, ☞ x 23)

NOTE: After replacing the BCU, remove the NVRAM on the old board and install it on the new board. If the NVRAM on the old board is defective, replace the NVRAM (☛ 3.1.10 NVRAM Replacement Procedure).



G060R703.WMF

DIP switch settings

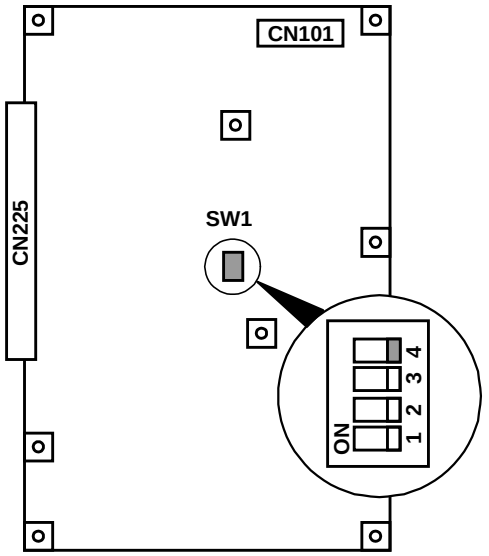
NOTE: This setting is very important. If the switch is not set correctly, a paper jam or fusing problem will occur (☛ **Caution** below)

DIP switch settings (service parts default: All OFF)

DIP SW No.	OFF	ON
4	Fusing clutch is **not** installed.	Fusing clutch **is** installed.
1 to 3	Factory Use Only: Keep these switches OFF.	

Setting Procedure:

1. Make sure all DIP switches on the new BCU board are OFF.
2. If the board already installed in the machine has no DIP SW, simply install the new board as is, i.e. with the DIP SW OFF.
3. However if the board already installed has a DIP SW, set the SW on the new board to match the setting on the old board before installing.
4. After installing the BCU board, make sure the machine is able to normally print out the configuration page.



G570R926.WMF

CAUTION: 1) If the switch is mistakenly turned **OFF** in machines that have the clutch, a paper jam will occur near the fusing unit entrance, since the machine cannot drive the clutch.

2) Similarly, if the switch is mistakenly turned **ON** in machines that do not have the new clutch, fusing problems will occur. This will cause the machine to think that there is a clutch installed. The machine will then release the “Clutch Off” signal to stop the drive to the fusing components, whenever they are not needed. When it does this, the PM counters for the fusing unit and oil supply unit will not count up, even though the parts are actually moving (as the clutch is not there to stop them). As a result, the message for the End of the PM period will come too late, overstressing these parts.

3.6 OTHERS

3.6.1 TOUCH PANEL POSITION ADJUSTMENT

NOTE: It is necessary to calibrate touch panel in the following cases:
- When the operation panel is replaced.
- When the NVRAM expansion board is replaced.
- When the touch panel detection function is not working correctly

NOTE: Do not attempt to use items [2] to [9] on the Self-Diagnostic Menu. These items are for design use only.

1. Press [C], press ①⑨⑨③, and then press C/© 5 times to open the Self-Diagnostics menu.

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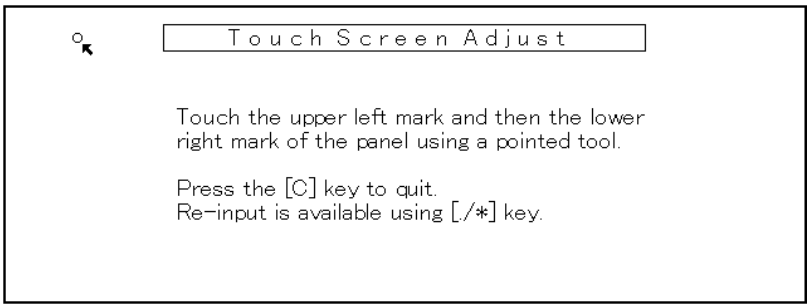
2. On the touch screen press “Touch Screen Adjust” (or press ①).
3. Use a pointed (not sharp!) tool to press the upper left mark ↖.
4. Press the lower right mark ↘ after it appears.
5. Touch a few spots on the touch panel to confirm that the marker (**+**) appears exactly where the screen is touched.

   If the **+** mark does not appear where the screen is touched, press Cancel and



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   repeat from Step 2.
6. When you are finished, press [#] OK on the screen (or press #).
7. Touch [#] Exit on the screen to close the Self-Diagnostic menu and save the calibration settings.

4. TROUBLESHOOTING

4.1 PROCESS CONTROL ERROR CONDITIONS

4.1.1 DEVELOPER INITIALIZATION RESULT

SP-3-005-6 (Developer Initialization Result)

No.	Result	Description	Possible Causes	Action
0	Not performed	Developer initialization is not performed.	When initializing only the black developer, the initialization result becomes “1000”.	When done in SP mode, do the developer initialization again. If the result is the same, reinstall the engine main firmware. When done at unit replacement: • Check if a new unit is installed • Check if the unit detection system is working • Check if SP2-223-1 (auto initialization at unit replacement) is enabled.
1	Successfully completed	Developer initialization is successfully completed.	-	-
2	Forced termination	Developer initialization was forcibly terminated.	A cover was opened or the main switch was turned off during the initialization.	When done in SP mode, do the developer initialization again. If the result is the same, reinstall the engine main firmware. When done at unit replacement, turn the main switch off and on.
3	Vt error	Vt is less than 0.5V and “Reset development unit” is displayed.	1. Check if the drum stay is properly set and secured. 2. Check if the development unit is properly set. 3. If the problem is still the same, check the following: • Poor connection of connectors • TD sensor defective • Harness damage • BCU board failure • Firmware problem (engine main or MUSIC)	

No.	Result	Description	Possible Causes	Action
8	Toner supply error	During toner fill-up mode, Vt does not reach the target value.	1. Check if the toner cartridge is properly set. 2. Check if the amount of toner left in the toner cartridge is insufficient. 3. Check if toner is coagulated. (If yes, shake the toner cartridge well.) 4. Check if the connectors of the following parts are properly set, and/or replace the parts. Toner attraction pump / Air pump / Valves 5. Check if the toner supply tube is bent, caught, or damaged.	
9	Failure	Vt cannot be adjusted within 3.0 ± 0.1V. SC370 - 373 will be displayed. Turning the main switch off and on clears this SC code.	1. Shielding tape is not removed.	1. Remove the shielding tape to supply developer to the unit.
			2. Development unit is not firmly installed, causing poor connection of the TD sensor connector.	2. Reinstall the development unit.
			3. TD sensor defective.	3. Replace the development unit.

NOTE: When the machine detects new development units, it automatically starts developer initialization. If an error other than Error 8 occurs, developer initialization is automatically resumed by opening and closing the front door or turning the main switch off and on.

4.1.2 PROCESS CONTROL SELF-CHECK RESULT

SP3-975-1 (Process Control Self-check Result)

No.	Result	Description	Possible Causes	Action
0	Not performed	Process control self-check is not done.	-	Do the process control self-check again.
1	Successfully completed	Process control self-check successfully completed.	-	-
2	ID sensor adjustment error	Vsg cannot be adjusted within 4.0 ± 0.5V.	1. Dirty ID sensor (toner, dust, or foreign material)	1. Clean the ID sensor.
			2. Dirty transfer belt	2. Check the belt cleaning, and clean or replace the transfer belt.
			3. Scratched or damaged transfer belt	3. Replace the transfer belt.
			4. Defective ID sensor	4. Replace the ID sensor.
3	Vmin error	Vmin is not within the specified range.	Vmin is calculated during the self-check. Even when the calculated Vmin value is out of the specified range, an optimum value is automatically used instead. Therefore, this error code does not usually occur. If no problem is observed with image density and/or development gamma, nothing needs to be done. If an image problem such as low image density is observed, check the following points: Transfer belt / Belt guide plate / ID sensor	
4	Sampling data error	Not enough data can be sampled.	1. ID sensor pattern density is too high or low. 2. Residual image on transfer belt 3. Toner dropped from development unit 4. Scratched or damaged transfer belt	1. Check the image development process and correct toner density if necessary. 2. Check the transfer belt cleaning unit. 3. Clean the development unit and correct toner density. 4. Replace the transfer belt.
5	Gamma error	Gamma is out of range. 0.3 > Gamma, or 6.0 < Gamma		
6	Vk error	Vk is out of range. -150 > Vk or 150 < Vk		
7	Vt error	Vt is out of range. 0.5 > Vt or 4.8 < Vt	1. Development unit not properly installed.	1. Check.
			2. Toner density is too low or high.	2. Check and/or correct toner density.
			3. TD sensor defective.	3. Replace development unit.
8	Sampling data error during LD power correction	Not enough data can be sampled during the LD power correction (if SP3-125-2 is set to “2”).	See the possible causes and action for error codes 4, 5, and 6.	
9	Forced termination	Process control self-check was forcibly terminated.	A cover was opened or the main switch was turned off during the self-check.	Do the process control self-check again.

4.1.3 LINE POSITION ADJUSTMENT RESULT

SP5-993-7 (Line Position Adjustment Result)

No.	Result	Description	Note
01	Successfully completed	Data sampling was correctly done and line position adjustment was successfully completed.	
02	Out of adjustment range (over ±2 mm)	The calculated result for line position correction is greater than ±2 mm.	
03	Calculation Error	Distance between the lines is greater than ±2 mm.	
04	Sampling Error	Data sampling cannot be done properly.	
05	Descending slope error	The ascending or descending slope of the ID sensor signal wave is out of specification.	**(☛ Note below)**
06	Ascending slope error		**(☛ Note below)**
07	Pattern lines mismatch (less than 64 lines)	The detected number of pattern lines is less than 64.	**(☛ Note below)**
08	Sampling time-out	Data sampling cannot be done within the allocated time.	
09	Sampling start error	The start mark cannot be detected within the allocated time.	
10	Pattern length mismatch	The pattern length is shorter or longer than specified.	**(☛ Note below)**
11	Pattern lines mismatch (over 64 lines)	The detected number of pattern lines is over 64.	
12	Magnification mismatch	The calculated magnification value does not match any data in the laser power frequency adjustment data table.	
13	Toner condition	The machine is in the toner near-end or toner end condition.	
17	Not executed	The machine is not ready to do the line position adjustment manually from the user menu.	
18	Potential control error	Line position adjustment cannot be done due to failed potential control.	

Note: Concerning the error codes (05, 06, 07 or 10) which stop sampling data when either the front or rear ID sensor detect an error, the machine may display the error code for both ID sensors in some cases.

Possible causes of errors in the line position adjustment

	Possible Cause	Possible Error Code	Action
1	The pattern does not reach the proper density.		
	1. Dirty ID sensor (toner, dust, or foreign material)	04, 05, 06, 07, 08, 09, 10	1. Clean the ID sensors.
	2. Incorrect toner density Low: ID sensor cannot detect the pattern lines. High: Lines may be partially blank due to improper toner density and/or paper transfer current.		2. Correct the toner density.
	3. Incorrect transfer current		3. Correct the transfer current.
2	The ID sensors are affected by electrical noise or dirt/damage on the transfer belt.		
	1. Scratched or damaged OPC drum	02, 03, 04, 05, 06, 10, 11, 12	1. Replace PCU
	2. Scratched or damaged transfer belt		2. Replace transfer belt
	3. Dirty transfer belt		3. Clean or replace transfer belt
	4. High voltage leak in transfer unit		4. Fix the high voltage leak
	5. Residual image on transfer belt		5. Check transfer belt cleaning and clean the belt
	6. Toner dropped from development unit		6. Clean the development unit and adjust the toner density
	7. Carrier dropped from development unit		7. Clean the development unit and adjust the toner density
3	The transfer belt is covered with toner.		
	Development does not work properly.	All error codes	Check all units and high voltage cable connectors.
4	None of the patterns are developed.		
	Development does not work properly.	09, 04	Check all units and high voltage cable connectors.
5	Some of the patterns are not developed;		
	Development does not work properly.	07, 08	Check all units and high voltage cable connectors.
6	The machine is not in the condition to execute the line position adjustment;		
	The machine is in the toner near end or end condition.	13	Replenish toner.
	The machine is not ready to do the line position adjustment manually from the user menu.	17	Wait until machine becomes the ready condition from the energy saver or auto off mode.
	Line position adjustment cannot be done due to failed potential control.	18	Fix the problem causing the potential control error.
7	The MUSIC CPU is abnormal (1)		
	No error code is displayed. However, the machine keeps displaying “execution” on the screen. In addition, the green LED on the BICU stays on or off under the following condition. 1. The MUSIC CPU resets due to electrical noise generated by a high voltage leak on a damaged OPC drum.	-	1. Fix the bias leak and/or replace PCU

	Possible Cause	Possible Error Code	Action
8	The MUSIC CPU is abnormal (2)		
	No error code is displayed. However, the machine keeps displaying “execution” on the screen. The green LED on the BICU keeps blinking faintly (this is normal) even under one of the following conditions. 1. Poor connection between the toner cartridge detection board and the memory chip on the toner cartridge 2. The memory chip on the toner cartridge fails.	-	1. Check the connection between the detection board and memory chip. 2. Replace the toner cartridge.

4.2 SCANNER TEST MODE

4.2.1 VPU TEST MODE

To make sure the scanner VPU control is functioning, output the VPU test pattern with SP4-907. After you have set the SP mode settings and pressed the start key, the VPU test pattern is printed out.

SP4-907-1 VPU Test Pattern: R

SP4-907-2 VPU Test Pattern: G

SP4-907-3 VPU Test Pattern: B

- If the copy is abnormal and the VPU test pattern is normal, the CCD on the SBU board may be defective.
- If the copy is normal and the VPU test pattern is abnormal, the harness may not connected properly between SBU and IPU, or the IPU or SBU board may be defective.

4.2.2 IPU TEST MODE

You can check the IPU board with the SP mode menu, SP4-904-1 or 2.

If no error is detected, the test ends, and the completion code appears in the operation panel display. If an error is detected, the test is interrupted and an error code is displayed. The table below lists the completion and error codes.

SP4-904-1 Register Write/Read Check Result

	Code	Defective ASIC
Normal end	00	—
Abnormal end	11	ASIC 1
	12	
	13	
	14	ASIC 3
	15	ASIC 2

SP4-904-2 Image Path Check Result

	Code	Error detected in the image data path
Normal end	00	—
Abnormal end	21	ASIC 1 → Field memory
	22	ASIC 1 → ASIC 2 → ASIC 1 → Field memory
	23	ASIC 1 → ASIC 3
	24	ASIC 3 → ASIC 1 → ASIC 2 → ASIC 1 → Field memory

Errors may be caused by the following problems:

1) Short circuit on the signal lines
   - When the IPU board is installed, a pin or two on the ASIC is damaged.
   - Some conductive matter or object is trapped among the pins.
   - Condensation
2) Destruction of circuit elements
   - Overcurrent or a defective element has broken the circuit.
3) Abnormal power supply
   - The required voltage is not supplied to the devices.
4) Overheat/overcooling
   - The board (the scanner unit) is in an inappropriate environment.
5) Static electricity
   - Static electricity of a high voltage occurred during the test.
6) Others
   - Error code 13 may be detected if the write/read check is performed after the image path check. Turn the main switch off and on after the image path check.
   - For codes 21 to 24
     The connector between the scanner unit and the IPU board is not connected, or the LSYNC signals are not input to the IPU board.

4.3 SERVICE CALL CONDITIONS

4.3.1 SUMMARY

There are 2 levels of service call conditions.

Level	Definition	Reset Procedure
A	Fusing unit SCs displayed on the operation panel. The machine is disabled. The user cannot reset the SC.	Turn the main switch off then on before entering SP mode. Reset the SC (set SP5-810 to 1), then turn the main switch off then on again.
B	Turning the operation switch or main power switch off then on resets the SC. Displayed on the operation panel. Re-displayed if they occurred after the main power switch is turned on again.	Turn the operation switch or main power switch off and on.

All SCs are logged.

- The number of SC codes detected can be checked with SP7-902.
- Printing logging data (SP5-990-4) in SP mode can check the latest 10 SC codes detected and total counters when the SC code is detected.

NOTE: 1) If the problem concerns electrical circuit boards, first disconnect then reconnect the connectors before replacing the PCBs.
2) If the problem concerns a motor lock, first check the mechanical load before replacing motors or sensors.

SC Classification

SC codes are classified by section as shown in the following table:

Class 1	Section	SC Code	Detailed section
1XX	Scanning	190 -	Unique for a specific model
2XX	Laser exposure	200 -	Polygon motor
		220 -	Synchronization control
		230 -	FGATE signal related
		240 -	LD control
		260 -	Magnification
		280 -	Unique for a specific model
3XX	Image development 1	300 -	Charge
		330 -	Drum potential
		350 -	Development
		380 -	Unique for a specific model
4XX	Image development 2	400 -	Image transfer
		420 -	Paper separation
		430 -	Cleaning
		440 -	Around drum
		460 -	Unit
		480 -	Others
5XX	Paper feed / Fusing	500 -	Paper feed
		515 -	Duplex
		520 -	Paper transport

Class 1	Section	SC Code	Detailed section
5XX	Paper feed / Fusing	530 -	Fan motor
		540 -	Fusing
		560 -	Others
		570 -	Unique for a specific model
6XX	Communication	600 -	Electrical counters
		620 -	Mechanical counters
		630 -	Account control
		640 -	CSS
		650 -	Network
		670 -	Internal data processing
		680 -	Unique for a specific model
7XX	Peripherals	700 -	Original handling
		710 -	
		730 -	Mail box
		740 -	Finisher
		750 -	Stapler (1)
		760 -	Stapler (2)
		780 -	Unique for a specific model
8XX	Controller	800 -	Error after ready condition
		820 -	Diagnostics error
		860 -	Hard disk
		880 -	Unique for a specific model
9XX	Others	900 -	Counter
		920 -	Memory
		990 -	Others

4.4 SC TABLE

NOTE: "CF" in the SC number column indicates a code related to the CF expander.

SC No.	Item	Definition	Possible Cause	Related SCs	Troubleshooting Procedure	Type
SC 101 (CF)	Exposure lamp error	• The standard white level is not properly detected when scanning the shading plate. (The shading data peak does not reach the specified threshold.)	• Exposure lamp defective • Lamp stabilizer defective • Exposure lamp connector defective • Standard white plate dirty • Scanner mirror or scanner lens out of position or dirty • SBU defective		1. Turn the main switch off and on. 2. Turn the power key off and on. 3. Check and clean the scanner mirror(s) and scanner lens. 4. Check and clean the shading plate. 5. Replace the exposure lamp. 6. Replace the lamp stabilizer. 7. Replace the scanner mirror(s) or scanner lens. 8. Replace the SBU.	B
SC 120 (CF)	Scanner home position error 1	• The scanner home position sensor does not detect the on condition during scanning.	• Scanner PSU or SBU defective • Scanner motor defective • Harness between scanner PSU and scanner motor disconnected • Scanner HP sensor defective • Harness between SBU and HP sensor disconnected • Scanner wire, timing belt, pulley, or carriage defective	SC 121 and 122	1. Turn the main switch off and on. 2. Check the cable connection between the scanner PSU and scanner motor. 3. Check the cable connection between the SBU and HP sensor. 4. Replace the SBU or scanner PSU. 5. Replace the scanner motor. 6. Replace the HP sensor. 7. Replace the scanner wire, timing belt, pulley, or carriage.	B

SC No.	Item	Definition	Possible Cause	Related SCs	Troubleshooting Procedure	Type
SC 121 (CF)	Scanner home position error 2	• The scanner home position sensor does not detect the off condition during scanning.	• Scanner PSU or SBU defective • Scanner motor defective • Harness between scanner PSU and scanner motor disconnected • Scanner HP sensor defective • Harness between SBU and HP sensor disconnected • Scanner wire, timing belt, pulley, or carriage defective	SC 120 and 122	1. Turn the main switch off and on. 2. Check the cable connection between the scanner PSU and scanner motor. 3. Check the cable connection between the SBU and HP sensor. 4. Replace the SBU or scanner PSU. 5. Replace the scanner motor. 6. Replace the HP sensor. 7. Replace the scanner wire, timing belt, pulley, or carriage.	B
SC 122 (CF)	Scanner home position error 3	• The scanner home position sensor does not detect the home position during initialization.	• Scanner PSU or SBU defective • Scanner motor defective • Harness between scanner PSU and scanner motor disconnected • Scanner HP sensor defective • Harness between SBU and HP sensor disconnected • Scanner wire, timing belt, pulley, or carriage defective	SC 120 and 121	1. Turn the main switch off and on. 2. Check the cable connection between the scanner PSU and scanner motor. 3. Check the cable connection between the SBU and HP sensor. 4. Replace the SBU or scanner PSU. 5. Replace the scanner motor. 6. Replace the HP sensor. 7. Replace the scanner wire, timing belt, pulley, or carriage.	B

SC No.	Item	Definition	Possible Cause	Related SCs	Troubleshooting Procedure	Type
SC142 (CF)	White level detection error	• The white level cannot be adjusted within the target during auto gain control.	• Dirty exposure glass or optics section • SBU board defective • IPU board defective • Exposure lamp defective • Lamp stabilizer defective		1. Turn on the main switch off and on. 2. Clean the exposure glass, white plate, mirrors, and lens. 3. Check if the exposure lamp is lit during initialization. 4. Check the harness connection between SBU and IPU. 5. Replace the exposure lamp. 6. Replace the SBU board. 7. Replace the IPU board	B
SC 161 (CF)	IDU error	• After the command is written into the DFID self-diagnosis startup register, the correct value is not stored in the register in the specified duration. **NOTE:** This error is detected when the main switch is turned on. • After the negate interruption of FGATE occurs, IDU is not recognized in the specified duration. **NOTE:** This error is detected during scanning operations.	• IPU board defective (defective connection between ASIC and DFID, or Defective LSYNC)		1. Turn the main switch off and on. 2. Replace the IPU board.	B
SC195	Serial Number Mismatch	• Serial number stored in the memory does not consist of the correct code.	• NVRAM defective • BCU replaced without original NVRAM		Open the front cover and turn on the main switch. Check the serial number with SP5-811-2. If the stored serial number is incorrect, contact your product specialist for details of how to solve the problem.	B

SC No.	Item	Definition	Possible Cause	Related SCs	Troubleshooting Procedure	Type
SC201	Polygon motor error	• The polygon mirror motor does not reach the targeted operating speed within 15 seconds after turning on. • The lock signal does not become low within 15 seconds after turning off the polygon motor. .	• Polygon mirror motor error • Abnormal GAVD behavior • Cable disconnection		1. Turn the main switch off and on. 2. Check the cables. 3. Replace the polygon motor.	B
SC220	Synch. detection signal error 1 220-1: Y 220-2: M 220-3: C 220-4: K0 220-5: K1	The front (for K&Y) or rear (for C&M) laser synchronizing detector board, which is used to determine the start timing of laser writing, does not send a signal while the polygon motor is operating normally and the LD is on.	• Disconnection of the cable between front (K&Y) or rear (C&M) synchronizing detector board and the LD unit • Incorrect installation of front (K&Y) or rear (C&M) synchronizing detector board (the beam does not target the photo detector.) • Defective LD unit • Defective BCU		1. Turn the main switch off and on. 2. Check the cable connection between front (for K&Y) or rear (for C&M) synchronizing detector board and the LD unit. 3. Check or reinstall the front (for K&Y) or rear (for C&M) synchronizing detector board. 4. Replace the front (for K&Y) or rear (for C&M) synchronizing detector board. 5. Replace the LD unit. 6. Replace the BCU.	B

SC No.	Item	Definition	Possible Cause	Related SCs	Troubleshooting Procedure	Type
SC 221	Synch. detection signal error 2 221-1: Y 221-2: M 221-3: C 221-4: K	Main scan length detection is not properly completed ten consecutive times. The front (for C&M) or rear (for K&Y) laser synchronizing detector boards are used for the main scan length detection, which automatically corrects the main-scan magnification.	• Damaged or disconnected cable between front (C&M) or rear (K&Y) laser synchronizing detector board and the LD unit • Incorrect installation of front (C&M) or rear (K&Y) synchronizing detector board (the beam does not target the photo detector.) • Defective front (C&M) or rear (K&Y) synchronizing detector board • Defective LD unit		After doing any of the following, print ten jobs or more to see if the same SC code is displayed: 1. Turn the main switch off and on. 2. Check or replace the cable connecting front (for C&M) or rear (for K&Y) synchronizing detector board and the LD unit. 3. Check or reinstall the front (for C&M) or rear (for K&Y) synchronizing detector board. 4.Replace the front (for C&M) or rear (for K&Y) synchronizing detector board. 5. Replace the LD unit. 6. Replace the BCU. If a synch. detector board cannot be replaced, do the following as a temporary measure: • Disable main scan length detection (SP 2-919-1)	B

SC No.	Item	Definition	Possible Cause	Related SCs	Troubleshooting Procedure	Type
SC 230	FGATE error 230-1: Y 230-2: M 230-3: C 230-4: K	The BCU generates the FGATE signal based on the registration sensor ON timing. Then, it sends the signal to the LD units. The LD units send a feedback signal to the BCU. When the LD units start emitting laser beams, the feedback signal changes from High to Low. The SC code is generated when the BCU receives no feedback signal (stays High) from the LD unit 1 second after paper reaches the position where the laser should start writing.	• Poor connection between BCU and LD units • Defective BCU • Defective LD unit		1. Turn the main switch off and on. 2. Check the cables between the LD units and the BCU. 3. Replace the LD unit. 4. Replace the BCU.	B
SC 231	FGATE timeout 231-1: Y 231-2: M 231-3: C 231-4: K	When LD units emit laser beams to print a job, the feedback signal stays Low and becomes High after laser exposure for a page is completed. The SC code is detected in the following cases: • When the feedback signal stays Low 7 seconds after completing the laser exposure, or • When the feedback signal stays Low until the laser exposure timing for the next page in multi-page print mode.	• Poor connection between BCU and LD units • Defective BCU • Defective LD unit		1. Turn the main switch off and on. 2. Check the cables between the LD units and the BCU. 3. Replace the LD unit. 4. Replace the BCU.	B

SC No.	Item	Definition	Possible Cause	Related SCs	Troubleshooting Procedure	Type
SC 240	LD over 240-1: Y 240-2: M 240-3: C 240-4: K	The power supply for the LD unit exceeds 67 mA.	• LD worn out (current/light output characteristics have changed.) • LD broken (short circuit)		1. Turn the main switch off and on. 2. Replace the LD unit.	B
SC 260	LD HP sensor not switched on (for K only)	During homing, it takes more than five seconds to switch the HP sensor on (the sensor actuator does not cover the sensor).	• Defective motor • Defective sensor • Mechanical problem when switching the actuator • Brown fuse (FU81) on the Power supply unit		1. Turn the main switch off and on. 2. Check the sensor actuator position of the LD positioning motor. 3. Replace the LD positioning motor. 4. Replace the LD home position sensor. 5. Check and/or replace the PSU.	B
SC 261	LD HP sensor not switched off (for K only)	After the laser beam pitch was changed, it takes more than five seconds for the HP sensor to switch off.	• Defective motor • Defective sensor • Mechanical problem when switching the actuator • Brown fuse (FU81) on the Power supply unit		1. Turn the main switch off and on. 2. Check the sensor actuator position of the LD positioning motor. 3. Replace the LD positioning motor. 4. Replace the LD home position sensor. 5. Check and/or replace the PSU.	B

SC No.	Item	Definition	Possible Cause	Related SCs	Troubleshooting Procedure	Type
SC 285	Line position adjustment (MUSIC) error	Line position adjustment fails three consecutive times.	• Pattern sampling error due to insufficient image density of patterns used for the adjustment • Inconsistency in the sampling line position adjustment pattern due to dust on the pattern, damage to the OPC drum, damage or toner dropped on the transfer belt, or a dirty or defective ID sensor		1. Turn the main switch off and on. 2. Check and fix the problem that causes low image density. . 3. Clean or replace the transfer belt and/or the ID sensor. 4. Replace the PCU or clean the development unit that causes toner to drop on the transfer belt.	B
SC 370	TD sensor [K]: Adjustment error	During the developer initialization, the output value of the TD sensor is without the adjustment range (3.0 ± 0.1V).	• Poor connection (TD sensor outputs is less than 0.5V.) • Defective TD sensor		1. Turn the main switch off and on. 2. Reset the related color development unit. 3. Replace the related color development unit.	B
SC 371	TD sensor [Y]: Adjustment error					
SC 372	TD sensor [C]: Adjustment error					
SC 373	TD sensor [M] : Adjustment error					
SC 374	Vt error [K]	During the image development, Vt value is less than 0.5V.	• Poor connection (TD sensor outputs is less than 0.5V.) • Defective TD sensor		1. Turn the main switch off and on. 2. Reset the related color development unit. 3. Replace the related color development unit.	B
SC 375	Vt error [Y]					
SC 376	Vt error [C]					
SC 377	Vt error [M]					

SC No.	Item	Definition	Possible Cause	Related SCs	Troubleshooting Procedure	Type
SC 380	Black development motor error	When the motor speed is within the target level, the motor sends a lock signal (High to Low at CN214-5) to the BCU. SC380 is detected under the following conditions: • The Lock signal stays High 2 seconds after the motor turns on. • The Lock signal stays Low 2 seconds after the motor turns off. • The Lock signal stays High for more than 2 seconds while the motor is on.	• Defective motor • Defective BCU		1. Turn the main switch off and on. 2. Replace the motor. 3. Replace the BCU.	B
SC 381	Color development motor error					
SC 385	ID sensor VSG adjustment error	Vsg is the out of adjustment range during a process control self-check. Adjustment range: 4.0 ± 0.5V	• Defective ID sensor • Dirty ID sensor • ID sensor disconnected • Dirty drum (cleaning incomplete)		1. Turn the main switch off and on. 2. Clean the ID sensor and adjacent parts. 3. Check the drum cleaning condition. 4. Check the ID sensor connector. 5. Replace the ID sensor.	B

SC No.	Item	Definition	Possible Cause	Related SCs	Troubleshooting Procedure	Type
SC 386 SC 387 SC 388 SC 389	Development gamma error K Development gamma error Y Development gamma error C Development gamma error M	Any of the following conditions happens three consecutive times: • When the development gamma is out of the following range: $0.3 \leq \gamma \geq 6.0$ • When Vk is out of the following range: $-150V \leq Vk \geq 150V$ • Development gamma calculation error	• Unsuitable toner density • Toner supply mechanism problem • Laser exposure problem • Image transfer problem		1. Turn the main switch off and on . 2. Check the process control self-check result (SP3-975). If the result is not "1", fix the problem according to the table in section 4.1.2. 3. Print a full color image by disabling SC detection (SP5-809-1) and check if the image quality is OK. If the image quality is not OK, fix the problem. Then, enable the SC detection again.	B
SC 390	Development Bias output error	The high voltage supply board (C/B) monitors the circuit and detects abnormal conditions such as a voltage leak or no output condition. If this happens, the high voltage supply board sends an error signal (High to Low at CN204-A18) to the BCU. The BCU monitors this signal every 2 ms and generates this SC code when the error condition occurs 250 consecutive times.	• Loose connection • Defective power pack C/B output • Damaged cable • Defective development unit • Defective BCU		1. Turn the main switch off and on. 2. Check if the harness and cables are properly connected. 3. Disconnect the high voltage supply cables from the bias terminals on the high voltage supply board C/B. Measure the DC voltage using a multi-meter. • Replace the high voltage supply board if no voltage is supplied. 4. If the result is OK at step 2, check if the high voltage supply cable or development unit is grounded. • Replace the high voltage supply cable if it damages. • Replace the development unit if it damages. 5. Check the PWM signals are sent to the high voltage supplied board from the BCU. Replace the BCU or harness between the BCU and high voltage supply board if the voltage is 0.	B

SC No.	Item	Definition	Possible Cause	Related SCs	Troubleshooting Procedure	Type
SC 391-01	Charge AC: output error 391-01: K 391-02: Y 391-03: M 391-04: C	The high voltage supply board sends the feedback signal (CN228-2 to 5; MCYK). The BCU monitors these feedback signals every 8 ms. If the average of the sampled data is not within the control target 30 consecutive times, this SC code is generated.	• Power pack disconnected • Charge receptacle or terminal • Defective PCU bias input terminal • Incorrect power pack B/C output • Damaged cable • Defective BCU		1. Turn the main switch off and on. 2. Check the connector. 3. Check the PCU charge voltage input (the spring/conducting shaft) or replace the PCU. 4. Replace the power pack B/C. 5. Replace the cable. 6. Replace the BCU.	B
SC 460-001	Thermistor 1 error (open circuit)	When the temperature detected by thermistor 1, which is at the left (fusing unit) side of the laser optics unit, is less than -30°C for 10 seconds consecutively, the BCU determines that the circuit is opened and displays this SC code.	• Thermistor 1 defective • Cable connection error • BCU defect		1. Turn the main switch off and on. 2. Check the cable connections. 3. Replace the thermistor. 4. Replace the BCU.	B
SC 460-002	Thermistor 1 error (short circuit)	When the temperature detected by the thermistor 1, which is at the left (fusing unit) side of the laser optics unit, is higher than 70°C for 10 seconds consecutively, the BCU determines that the circuit is shorted and displays this SC code	• Thermistor 1 defective • Cable connection error • BCU defect		1. Turn the main switch off and on. 2. Check the cable connections. 3. Replace the thermistor. 4. Replace the BCU.	B

SC No.	Item	Definition	Possible Cause	Related SCs	Troubleshooting Procedure	Type
SC 461-001	Thermistor 2 error (open circuit)	When the temperature detected by the thermistor 2, which is at the right (paper feed section) side of the laser optics unit, is less than -30°C for 10 seconds consecutively, the BCU determines that the circuit is opened and displays this SC code.	• Thermistor 2 defective • Cable connection error • BCU defect		1. Turn the main switch off and on. 2. Check the cable connections. 3. Replace the thermistor. 4. Replace the BCU.	B
SC 461-002	Thermistor 2 error (short circuit)	When the temperature detected by the thermistor 2, which is at the right (paper feed section) side of the laser optics unit, is higher than 70°C for 10 seconds consecutively, the BCU determines that the circuit is shorted and displays this SC code	• Thermistor 2 defective • Cable connection error • BCU defect		1. Turn the main switch off and on. 2. Check the cable connections. 3. Replace the thermistor. 4. Replace the BCU.	B
SC 471	Transfer belt H.P. error	The transfer belt HP sensor signal does not change from Low to High (home position) or vice versa 1 second after the transfer belt contact motor turns on.	• Transfer belt unit not set properly • Defective transfer belt H.P. sensor and/or transfer belt set sensor • Defective transfer belt contact motor • Transfer belt unit problem		1. Turn the main switch off and on. 2. Reset the transfer belt unit. 3. Clean or replace the transfer belt H.P. sensor and/or transfer belt set sensor. 4. Replace the transfer belt contact motor. 5. Check the contact and release mechanism of the transfer belt unit.	B

SC No.	Item	Definition	Possible Cause	Related SCs	Troubleshooting Procedure	Type
SC 490	Transfer bias / paper attraction roller bias leak error	The high voltage supply board (T/PA/CL) monitors the circuit and detects current leaks. If this happens, the high voltage supply board sends a SC signal (High to Low at CN213-8) to the BCU. The BCU monitors this signal every 2 ms and generates this SC code when the error condition occurs 250 consecutive times.	• Defective high voltage supply board (T/PA/CL) • Damaged transfer belt • Transfer unit • Damaged high voltage supply cables • Damaged cables between the BCU and high voltage supply board • Defective BCU		1. Turn the main switch off and on. 2. Check the transfer unit and replace the belt and/or the transfer unit if any damage is found. 3. Replace the high voltage supply board (T/PA/CL). 4. Check and/or replace the high voltage supply cables. 5. Check and/or replace the dc cables between the BCT and high voltage supply board. 6. Replace the BCU.	B
SC 501	Paper Tray 1 error	When the tray lift motor is turned on, if the upper limit is not detected within 10 seconds, the machine asks the user to reset the tray. If this condition occurs three consecutive times, the SC is generated.	• Defective paper lift sensor • Defective tray lift motor • Defective bottom plate lift mechanism		1. Turn the main switch off and on. 2. Check if the bottom plate smoothly moves up and down manually. 3. Check and/or replace the paper lift sensor. 4. Check and/or replace the tray lift motor.	B
SC 502	Paper Tray 2 error					

SC No.	Item	Definition	Possible Cause	Related SCs	Troubleshooting Procedure	Type
SC 503-01	Tray 3 error (Paper Feed Unit or LCT)	For the paper feed unit: When the tray lift motor is turned on, if the upper limit is not detected within 18 seconds, the machine asks the user to reset the tray. If this condition occurs three consecutive times, the SC is generated. For the LCT: This SC is generated under the following conditions: • If the upper or lower limit is not detected within 15 seconds when the tray lift motor is turned on to lift up or lower the tray • If the paper stack is not transported within a specific number of pulses after the tray motor and stack transport clutch turn on to transport the paper stack • If the end fence home position sensor stays ON for a specific number of pulses after the tray motor and stack transport clutch turn on to transport the paper stack.	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		1. Turn the main switch off and on. 2. Check the cable connections. 3. Check and/or replace the defective component.	B

SC No.	Item	Definition	Possible Cause	Related SCs	Troubleshooting Procedure	Type
SC 503-02	Tray 3 error (Paper Feed Unit or LCT)	• If the following condition occurs 3 consecutive times, this SC is generated. For the paper feed unit: When the main switch is turned or when the tray is set and if the upper limit is already detected, the lift motor turns on to lower the bottom plate until the lift sensor goes off. If the motor turns on for 7 seconds or more, the machine asks the user to reset the tray. For the LCT: When the main switch is turned on or when the LCT is set, if the end fence is not in the home position (home position sensor ON), the tray lift motor stops.	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		1. Turn the main switch off and on. 2. Check the cable connections. 3. Check and/or replace the defective component.	B
SC 504-01	Tray 4 error (3 Tray Paper Feed Unit)	When the tray lift motor is turned on, if the upper limit is not detected within 18 seconds, the machine asks the user to reset the tray. If this condition occurs three consecutive times, the SC is generated.	• Defective tray lift motor or connector disconnection • Defective lift sensor or connector disconnection		1. Turn the main switch off and on. 2. Check the cable connections. 3. Check and/or replace the defective component.	B

SC No.	Item	Definition	Possible Cause	Related SCs	Troubleshooting Procedure	Type
SC 504-02	Tray 4 error (3 Tray Paper Feed Unit)	When the main switch is turned or when the tray is set and if the upper limit is already detected, the lift motor turns on to lower the bottom plate until the lift sensor goes off. If the motor turns on for 7 seconds or more, the machine asks the user to reset the tray. If this condition occurs 3 consecutive times, this SC is generated.	• Defective tray lift motor or connector disconnection • Defective lift sensor or connector disconnection		1. Turn the main switch off and on. 2. Check the cable connections. 3. Check and/or replace the defective component.	B
SC 530	Fusing fan motor error	The BCU does not receive the lock signal (CN210-B5) 5 seconds after turning on the fusing fan.	• Defective fusing fan motor or connector disconnection • Defective BCU		1. Turn the main switch off and on. 2. Check the connector and/or replace the fusing fan motor. 3. Replace the BCU.	B
SC 541	Heating roller thermistor error	The temperature measured by the heating roller thermistor does not reach 7 °C for ten seconds.	• Loose connection of the heating roller thermistor • Defective heating roller thermistor • Defective BCU		1. Check if the heating roller thermistor is firmly connected. 2. Replace the fusing unit. 3. Replace the BCU.	A
SC 542	Heating roller warm-up error	After the main switch is turned on or the cover is closed, the heating roller temperature does not reach the ready temperature within 60 seconds during fusing unit warm-up.	• Heating roller fusing lamp broken • Defective heating roller thermistor • Defective BCU		1. Check if the heating roller thermistor is firmly connected. 2. Replace the fusing unit. 3. Replace the BCU.	A
SC 543	Heating roller fusing lamp overheat	The detected fusing temperature stays at 200°C or more for five seconds.	• Defective PSU • Defective BCU		1. Replace the PSU. 2. Replace the BCU.	A

SC No.	Item	Definition	Possible Cause	Related SCs	Troubleshooting Procedure	Type
SC 544	Heating roller fusing lamp low temperature error	During stand-by mode or a print job, the detected heating roller temperature stays at 50 °C or less for five seconds.	• Loose connection between the fusing unit and the main frame • Defective heating roller thermistor • Defective PSU • Defective BCU		1. Check the connection between the fusing unit and main frame. 2. Replace the fusing unit. 3. Replace the PSU. 4. Replace the BCU.	A
SC 545	Heating roller fusing lamp consecutive full power	When the fusing unit is not running in the Ready condition, the heating roller fusing lamp keeps on with full power for 30 consecutive seconds.	• Heating roller thermistor out of position		1. Replace the fusing unit.	A
SC 546	Heating roller fusing lamp temperature fluctuation	The heating roller temperature changes by ±20°C or more in one second. This occurs three times in one minute or two consecutive times.	• Loose connection of the thermistor • Loose connection between the fusing unit and main frame		1. Check if the fusing unit is properly set and connected to the main frame. 2. Check if the heating roller thermistor connector is firmly connected. 3. Replace the fusing unit.	A
SC 551	Pressure roller thermistor error	The measured pressure roller temperature does not reach 7°C for 30 seconds.	• Loose connection of pressure roller thermistor • Defective pressure roller thermistor • Defective BCU		1. Check that the pressure roller thermistor is firmly connected. 2. Replace the fusing unit. 3. Replace the BCU.	A
SC 552	Pressure roller warm-up error	After the main switch is turned on or the door is closed, the pressure roller temperature does not reach the ready temperature within 150 seconds during fusing unit warm-up.	• Pressure roller fusing lamp broken • Defective pressure roller thermistor • Defective BCU		1. Check if the pressure roller thermistor is firmly connected. 2. Replace the fusing unit. 3. Replace the BCU.	A

SC No.	Item	Definition	Possible Cause	Related SCs	Troubleshooting Procedure	Type
SC 553	Pressure roller fusing lamp overheat	The detected pressure roller temperature stays at 200°C or more for five seconds.	• Defective PSU • Defective BCU		1. Replace the fusing unit. 2. Replace the PSU. 3. Replace the BCU.	A
SC 554	Pressure roller fusing lamp low temperature error	During stand-by mode or printing, the detected pressure roller temperature stays at 50°C or less for five seconds.	• Loose connection between the fusing unit and the machine • Defective pressure roller thermistor • Defective PSU • Defective BCU		1. Check the connection between the fusing unit and main frame. 2. Replace the fusing unit. 3. Replace the PSU. 4. Replace the BCU.	A
SC 555	Pressure roller fusing lamp consecutive full power	When the fusing unit is not running in the Ready condition, the pressure roller fusing lamp keeps ON with full power for 100 consecutive seconds.	• Pressure roller thermistor out of position		1. Replace the fusing unit.	A
SC 556	Pressure roller fusing lamp temperature fluctuation	The pressure roller temperature changes by ±20°C or more in one second. This occurs three times in one minute or two consecutive times.	• Loose connection of the pressure roller thermistor • Loose connection between the fusing unit and main frame		1. Check if the fusing unit is properly set and connected to the main frame. 2. Check if the pressure roller thermistor connector is firmly connected. 3. Replace the fusing unit.	A
SC 560	Zero cross error	When the main switch is turned on, the machine checks how many zero-cross signals are generated during 500 ms. If the number of zero-cross signal generated is either more than 66 or less than 45 and when this condition is detected 10 consecutive times, this code is displayed.	• Electrical noise in the supply from the power cord		1. Replace the PSU.	A

SC No.	Item	Definition	Possible Cause	Related SCs	Troubleshooting Procedure	Type
SC 620 (CF)	ARDF communication error	• After the ARDF is detected, the break signal occurs or communication timeout occurs.	• Incorrect installation of ARDF • ARDF defective • IPU board defective • External noise		1. Turn the main switch off and on. 2. Check the cable connection of the ARDF. 3. Shut out the external noise. 4. Replace the ARDF. 5. Replace the IPU board.	B
SC 621	Finisher/mailbox communication error	While the BCU communicates with an optional unit, an SC code is displayed if one of following conditions occurs. 1. The BCU receives a signal which is generated by the peripherals only just after the main switch is turned on. 2. When the BCU does not receive an OK signal from a peripheral 100ms after sending a command to it. The BCU resends the command. The BCU does not receive an OK signal after sending the command 3 times.	• Cable problems • BCU problems • PSU problems in the machine • Main board problems in the peripherals		1. Turn the main switch off and on. 2. Check if the cables of peripherals are properly connected. 3. Replace the PSU if no power is supplied to peripherals. 4. Replace the BCU or main board of peripherals.	B
SC 622	Bank communication error					
SC 623	Duplex unit communication error		• Cable problems • BCU problems • PSU problems in the machine • Duplex control board problem		1. Turn the main switch off and on. 2. Check if the cable of the duplex inverter unit is properly connected. 3. Replace the PSU if no power is supplied to the peripherals. 4. Replace the duplex control board in the inverter unit.	B
SC 640	BCU - Controller communication error (check sum error)	The check sum of the interface between the BCU and controller is not the same.	• Defective controller • Defective PCU		1. Turn the main switch off and on. 2. Replace the controller. 3. Replace the BCU.	B
SC 641	BCU – Controller communication error (no response)	The controller does not receive any response from the BCU three consecutive times when sending a signal every 100ms.	• Loose connection • Defective controller • Defective BCU		1. Turn the main switch off and on. 2. Check the connection between the BCU and controller. 3. Replace the controller. 4. Replace the BCU.	B

SC No.	Item	Definition	Possible Cause	Related SCs	Troubleshooting Procedure	Type
SC 642 (CF)	Communication timeout error between controller and operation panel	• The operation panel does not respond to the frame sent from the controller.	• Controller defective • Operation panel defective • External noise • Harness between controller and operation panel disconnected		1. Turn the main switch off an on. 2. Check the cable connection between the controller and the operation panel. 3. Shut out the external noise. 4. Replace the controller. 5. Replace the operation panel.	B
SC 670	No response from BCU at power on	When the main power is turned on or the machine starts warming up from energy-saving mode, the controller does not receive a command signal from the BCU.	• Loose connection • Defective controller • Defective BCU		1. Turn the main switch off and on. 2. Check the connection between the BCU and controller. 3. Replace the controller. 4. Replace the BCU.	B

SC No.	Item	Definition	Possible Cause	Related SCs	Troubleshooting Procedure	Type
SC 672 (CF)	Controller-to-operation panel communication error at startup	• After the machine is powered on, the communication between the controller and the operation panel is not established, or communication with controller is interrupted after a normal startup. • After startup reset of the operation panel, the attention code or the attention acknowledge code is not sent from the controller. • After the controller issues a command to check the communication line with the controller at 30-second intervals, the controller fails to respond twice.	• Controller stalled • Controller board installed incorrectly • Controller board defective • Operation panel connector loose or defective		1. Turn the main switch off and on. 2. Check the condition of the controller board. 3. Check the condition of the operation panel. 4. Replace the controller board. 5. Replace the operation panel.	B
SC 680	BCU/ MUSIC communication error	After the engine CPU sends a message, the Music CPU does not respond within five seconds three consecutive times.	• Toner cartridge memory chip loose connection • Memory chip problem • Memory chip cable wiring problem		1. Turn the main switch off and on. 2. Check if the toner cartridge is installed correctly. 3. Replace the toner cartridge. 4. Check if the harnesses are not damaged. 5. Replace the BCU.	B

SC No.	Item	Definition	Possible Cause	Related SCs	Troubleshooting Procedure	Type
SC 685 (CF)	SBU-IPU communication error	• During data transfer, a checksum error occurs. • During any operation except initialization, the SBU sends a hardware-reset acknowledgement to the IPU.	• Scanner unit cable connector loose • SBU board defective • IPU board defective • External noise		1. Turn the main switch off and on. 2. Shut out the external noise. 3. Check the cable connection of the scanner unit. 4. Replace the SBU board. 5. Replace the IPU board.	B
SC 686 (CF)	BCU-IPU communication error	• After the machine is powered on or recovering from the power save mode, timeout occurs during BCU communication. • The break signal is received after the communication is normally established with the BCU. • Timeout occurs while the communication with the BCU is retried after a communication error.	• Board connector between BCU and controller loose • Board connector between controller and bridge board loose • Board connector between bridge board and IPU loose • BCU board defective • IPU board defective • Controller board defective • Bridge board defective		1. Turn the main switch off and on. 2. Check the cable connection between the board connector and BCU. 3. Check the cable connection between controller and bridge board. 4. Check the cable connection between bridge board and IPU. 5. Replace the BCU board. 6. Replace the IPU board. 7. Replace the controller board. 8. Replace the bridge board.	B
SC 687	Memory address command error	The BCU does not receive a memory address command from the controller 60 seconds after paper is in the position for registration.	• Loose connection • Defective controller • Defective BCU		1. Turn the main switch off and on. 2. Check if the controller is firmly connected to the BCU. 3. Replace the controller. 4. Replace the BCU.	B

SC No.	Item	Definition	Possible Cause	Related SCs	Troubleshooting Procedure	Type
SC 691 (CF)	Scanner startup error	• After the machine is powered on or recovering from the power save mode, the scanner ready signal is not verified.	• Board connector between controller and bridge board loose • Board connector between bridge board and IPU loose • IPU board defective • Controller board defective • Bridge board defective		1. Turn the main switch off and on. 2. Check the cable connection between controller and bridge board. 3. Check the cable connection between bridge board and IPU. 4. Replace the IPU board. 5. Replace the controller board. 6. Replace the bridge board.	B
SC 700 (CF)	ARDF original pick-up malfunction	• After the pick-up motor is turned on, the original stopper HP sensor is not activated.	• Original stopper HP sensor defective • Pick-up motor defective (not rotating) • Timing belt out of position • ARDF main board defective	SC 701	1. Turn the main switch off and on. 2. Replace the HP sensor. 3. Turn the main switch off and on. 4. Replace the pick-up motor. 5. Replace the control board.	B
SC 701 (CF)	ARDF original pick-up/paper lift mechanism malfunction	• The original pick-up HP sensor is not activated after the pick-up motor is turned on.	• Original pick-up HP sensor defective • Pick-up motor defective • ARDF main board defective	SC 700	1. Turn the main switch off and on. 2. Replace the pick-up motor. 3. Replace the control board. 4. Replace the HP sensor.	B

SC No.	Item	Definition	Possible Cause	Related SCs	Troubleshooting Procedure	Type
SC 722	Finisher jogger motor error	• The jogger fences of the finisher donot return to home position within a specific time. • The finisher jogger motor does not leave home position within a given time.	• Defective jogger H.P. sensor • Loose connection • Defective jogger motor		1. Turn the main switch off and on. 2. Check the connection of jogger H.P. sensor and jogger motor connectors 3. Replace the jogger H.P. sensor. 4. Replace the jogger motor.	B
SC 724	Finisher staple hammer motor error	Stapling does not finish within 150 ms after the staple hammer motor turns on.	• Staple jam • Loose connection • Overload caused by stapling too many pages • Defective staple hammer motor		1. Turn the main switch off and on. 2. Check if the staple hammer motor connector is properly connected. 3. Check if the staple jam occurs. 4. Replace the staple hammer motor.	B
SC 725	Finisher stack feed-out motor error	The stack feed-out belt H.P. sensor does not activate within a specified time after the stack feed-out motor turns on.	• Defective stack feed-out H.P. sensor • Loose connection • Stack feed-out motor overload • Defective stack feed-out motor		1. Turn the main switch off and on. 2. Check if the connectors of the stack feed-out H.P. sensor and motor are properly connected. 3. Replace the stack feed-out H.P. sensor. 4. Replace the stack feed-out motor.	B

SC No.	Item	Definition	Possible Cause	Related SCs	Troubleshooting Procedure	Type
SC 726	Finisher shift tray 1 lift motor error	• The upper stack height 1 sensor is activated consecutively (detecting paper) for 15 seconds after the shift tray starts moving up. • The upper stack height sensor 1 is deactivated consecutively (not detecting paper) for 15 seconds after the shift tray starts moving down. • When the upper tray moves from lower paper exit to the upper paper exit, the upper stack height 1 sensor is activated.	• Loose connection • Defective upper stack height 1 sensor • Defective shift tray 1 lift motor • Motor overload		1. Turn the main switch off and on. 2. Check if the connectors of the sensor and motor are properly connected. 3. Replace the upper stack height 1 sensor. 4. Replace the shift tray 1 lift motor.	B
SC 727	Finisher stapler rotation motor error	The stapler cannot return to its home position within a specified time after the stapler rotation motor starts rotating.	• Loose connection • Defective stapler rotation motor • Motor overload		1. Turn the main switch off and on. 2. Check if the stapler rotation motor connector is properly connected. 3. Replace the stapler rotation motor.	B
SC 729	Finisher punch motor error	The punch home position is not detected within 250 ms after the punch clutch turns on.	• Loose connection • Defective punch H.P. sensor • Defective punch clutch • Defective punch hole motor		1. Turn the main switch off and on. 2. Check if the connectors of sensor, clutch and/or motor are properly connected. 3. Replace the punch H.P. sensor. 4. Replace the punch clutch. 5. Replace the punch hole motor.	B
SC 730	Finisher stapler motor error	The stapler home position is not detected within a specified time after the staple motor turns on.	• Loose connection • Defective stapler H.P. sensor • Defective stapler motor		1. Turn the main switch off and on. 2. Check if the connectors of the sensor and motor are properly connected. 3. Replace the stapler H.P. sensor. 4. Replace the stapler motor.	B

SC No.	Item	Definition	Possible Cause	Related SCs	Troubleshooting Procedure	Type
SC 731	Finisher exit guide plate motor error	The exit guide plate open sensor is not activated within a specified time after the exit guide plate motor turns on.	• Loose connection • Defective exit guide plate open sensor • Defective exit guide plate motor		1. Turn the main switch off and on. 2. Check if the connectors of the sensor and motor are properly connected. 3. Replace the exit guide plate open sensor. 4. Replace the exit guide plate motor.	B
SC 732	Finisher tray 1 shift motor error	Tray 1 home position is not detected within a specified time after the tray 1 shift motor turns on.	• Loose connection • Defective tray shift 1 sensor • Defective tray 1 shift motor		1. Turn the main switch off and on. 2. Check if the connectors of the sensor and motor are properly connected. 3. Replace the tray shift 1 sensor. 4. Replace the tray 1 shift motor.	B
SC 733	Finisher tray 2 lift motor error	• The lower stack height 1 sensor is activated consecutively (detecting paper) for 15 seconds after the shift tray starts moving up. • The lower stack height sensor 1 is deactivated consecutively (not detecting paper) for 15 seconds after the shift tray starts moving down.	• Loose connection • Defective lower stack height 1 sensor • Defective tray 2 lift motor • Motor overload		1. Turn the main switch off and on. 2. Check if the connectors of the sensor and motor are properly connected. 3. Replace the lower stack height 1 sensor. 4. Replace the tray 2 lift motor.	B
SC 734	Finisher tray 2 shift motor error	Tray 2 home position is not detected within a specified time after the tray 2 shift motor turns on.	• Loose connection • Defective tray shift 2 sensor • Defective tray 2 shift motor		1. Turn the main switch off and on. 2. Check if the connectors of the sensor and motor are properly connected. 3. Replace the tray shift 2 sensor. 4. Replace the tray 2 shift motor.	B

SC No.	Item	Definition	Possible Cause	Related SCs	Troubleshooting Procedure	Type
SC 804 (CF)	Video input incomplete (K)	• The scanner is requested to transfer video data, but does not issue the video transmission end command within the defined time.	• Board connector between controller and bridge board loose • Board connector between bridge board and IPU loose • IPU board defective • Controller board defective • Bridge board defective		1. Turn the main switch off and on. 2. Check the cable connection between controller and bridge board. 3. Check the cable connection between bridge board and IPU. 4. Replace the IPU board. 5. Replace the controller board. 6. Replace the bridge board.	B
SC 805 (CF)	Video input incomplete (Y)					
SC 806 (CF)	Video input incomplete (M)					
SC 807 (CF)	Video input incomplete (C)					
SC 808 (CF)	Video input incomplete (R)					
SC 809 (CF)	Video input incomplete (G)					
SC 810 (CF)	Video input incomplete (B)					
SC 818	Watch-dog error	While the system program is running, other processes do not operate at all.	• Defective controller • Software error		1. Turn the main switch off and on. 2. Replace the controller. 3. See NOTE 1 at the end of the SC table.	B
SC 819	**Fatal error**					
[696E]	Process error	System completely down	• Defective RAM DIMM • Defective ROM DIMM • Defective controller • Software error		1. Turn the main switch off and on. 2. Check and/or replace the RAM DIMM. 3. Check and/or replace the ROM DIMM. 4. Replace the controller. 5. See **NOTE at the end of the SC table**.	B
[766D]	Memory error	Unexpected system memory size				

SC No.	Item	Definition	Possible Cause	Related SCs	Troubleshooting Procedure	Type
SC820	Self-diagnostics error: CPU [XXXX]: Detailed error code					
[0001] to [06FF]	CPU error	During the self-diagnostic, the controller CPU detects an error. There are 47 types of error code (0001 to 4005) depending on the cause of the error. The CPU detects an error and displays the specific error code with the program address where the error occurs).	• System firmware problem • Defective controller		1. Turn the main switch off and on. 2. Reinstall the controller system firmware. 3. Replace the controller. When the problem cannot be fixed with the above procedure, the following information displayed on the screen needs to be fed back to a technical support center. • SC code • Detailed error code • Program address	B
[0702] [0709] [070A]	CPU/Memory Error		• System firmware problem • Defective RAM-DIMM • Defective controller		1. Turn the main switch off and on. 2. Reinstall the controller system software. 3. Replace the RAM-DIMM. 4. Replace the controller.	B
[0801] to [4005]	CPU error	Same as [0001]				B
SC 821 [0D05]	Self-diagnosis error: ASIC	The CPU checks if the ASIC timer works properly compared with the CPU timer. If the ASIC timer does not function in the specified range, this SC code is displayed.	• System firmware problem • Defective RAM-DIMM • Defective controller		1. Turn the main switch off and on. 2. Reinstall the controller system firmware. 3. Replace the RAM-DIMM. 4. Replace the controller board.	B

SC No.	Item	Definition	Possible Cause	Related SCs	Troubleshooting Procedure	Type
SC822	Self-diagnostic error: HDD (Hard Disk Drive) [XXXX]: Detailed error code					
[3003]	Timeout error	When the main switch is turned on or starting the self-diagnostic, the HDD stays busy for the specified time or more.	• Loose connection • Defective HDD • Defective controller		1. Turn the main switch off and on. 2. Check that the HDD is properly connected to the controller. 3. Replace the HDD. 4. Replace the controller.	B
[3004]	Command error					
SC 823	Self-diagnostic error: NIB [XXXX]: Detailed error code					
[6101]	MAC address check sum error	The result of the MAC address check sum does not match the check sum stored in ROM.	• Defective controller		1. Turn the main switch off and on. 2. Replace the controller.	B
[6104]	PHY IC error	The PHY IC on the controller cannot be properly recognized.				
[6105]	PHY IC loop-back error	An error occurred during the loop-back test for the PHY IC on the controller.				
SC 824 [1401]	Self-diagnosis error: Standard NVRAM	The controller cannot recognize the standard NVRAM installed or detects that the NVRAM is defective.	• Loose connection • Defective standard NVRAM • Defective controller		1. Turn the main switch off and on. 2. Check the standard NVRAM is firmly inserted into the socket. 3. Replace the NVRAM. 4. Replace the controller.	B
SC 826 (CF)	Self-diagnostic Error: RTC/ Optional NVRAM	• An RTC device is recognized, and the difference between the RTC device and the CPU exceeds the defined limit. • No RTC device is recognized.	• RTC defective • NVRAM without RTC installed • Backup battery discharged		1. Turn the main switch off and on. 2. Replace the NVRAM with another NVRAM with an RTC device.	B

SC No.	Item	Definition	Possible Cause	Related SCs	Troubleshooting Procedure	Type
SC 827	Self-diagnostic error: Standard SRAM DIMM [XXXX]: Detailed error code					
[0201]	Verification error	Error detected during a write/verify check for the standard RAM (SRAM DIMM).	• Loose connection • Defective SRAM DIMM • Defective controller		1. Turn the main switch off and on. 2. Replace the SRAM DIMM. 3. Replace the controller.	B
SC 828	Self-diagnostic error : ROM [XXXX]: Detailed error code					
[0101]	Check sum error 1	The boot monitor and OS program stored in the ROM DIMM is checked. If the check sum of the program is incorrect, this SC code is displayed.	• Defective ROM DIMM • Defective controller		1. Turn the main switch on and off. 2. Replace the ROM DIMM 3. Replace the controller.	B
[0104]	Check sum error 2	All areas of the ROM DIMM are checked. If the check sum of all programs stored in the ROM DIMM is incorrect, this SC code is displayed.				
[0105]	ROM error	The ROM DIMM is not of the recognized type.				
SC829	Self-diagnosis error: optional RAM [XXXX]: Detailed error code					
[0302]	Composition error (Slot 0)	The result of checking the composition data of the RAM in Slot 0 (CN5) on the controller is incorrect.	• Not specified RAM DIMM installed • Defective RAM DIMM		1. Turn the main switch off and on. 2. Replace the RAM DIMM. 3. Replace the controller board.	B
[0401]	Verification error (Slot 1)	The data stored in the RAM in Slot 1 does not match the data when reading.				
[0402]	Composition error (Slot 1)	The result of checking the composition data of the RAM in Slot 1 (CN6) on the controller is incorrect.				

SC No.	Item	Definition	Possible Cause	Related SCs	Troubleshooting Procedure	Type
SC 835	Self-diagnosis error: Centronics interface			[XXXX]: Detailed error code		
[1102]	Verification error	The controller detects that the loop-back connector is not properly connected.	• Loose connection • Defective loop-back connector • Defective Centronics connector • Defective controller		1. Turn the main switch off and on. 2. Check the connection between the Centronics connector and loop-back connector. 3. Reconnect the loop-back connector. 4. Replace the controller.	B
[110C]	DMA verification error	A DMA data abnormality is detected even when the loop-back connector is properly set.				
[1120]	Loop-back connector error	The loop-back connector is not set when starting the detailed self-diagnostics.				
SC 836 [1601]	Self-diagnosis error: Font ROM (standard)	The data in the font ROM (standard ROM-DIMM) is damaged. .	• Defective standard ROM-DIMM		1. Turn the main switch off and on. 2. Replace the standard ROM-DIMM.	B
SC 837 [1602]	Self-diagnosis error: Font ROM (option)	The data in the font ROM (optional ROM-DIMM) is damaged.	• Defective optional ROM-DIMM		1. Turn the main switch off and on. 2. Replace the optional ROM-DIMM.	B
SC 850	Network interface error	The network is unusable.	• Defective controller		1. Turn the main switch off and on. 2. Replace the controller.	B
SC 851	IEEE1394 interface error	The 1394 interface is unusable.	• Defective IEEE1394 • Defective controller.		1. Turn the main switch off and on. 2. Replace the IEEE1394 interface board. 3. Replace the controller.	B
SC 860	HDD: Initialization error	The controller detects that the hard disk fails.	• HDD not initialized • Defective HDD		1. Turn the main switch off and on. 2. Reformat the HDD. 3. Replace the HDD.	B
SC 861	HDD: Reboot error	The HDD does not become ready within 30 seconds after the power is supplied to the HDD.	• Loose connection • Defective cables • Defective HDD • Defective controller		1. Turn the main switch off and on. 2. Check the connection between the HDD and controller. 3. Check and replace the cables. 4. Replace the HDD. 5. Replace the controller.	B

SC No.	Item	Definition	Possible Cause	Related SCs	Troubleshooting Procedure	Type
SC 863	HDD: Read error	The data stored in the HDD cannot be read correctly.	• Defective HDD • Defective controller		1. Turn the main switch off and on. 2. Replace the HDD. 3. Replace the controller.	B
SC 864	HDD: CRC error	While reading data from the HDD or storing data in the HDD, data transmission fails.	• Defective HDD		1. Turn the main switch off and on. 2. Replace the HDD.	B
SC 865	HDD: Access error	An error is detected while operating the HDD.	• Defective HDD		1. Turn the main switch off and on. 2. Replace the HDD.	B
SC 900	Electric counter error	Abnormal data is stored in the counters.	• Defective NVRAM • Defective controller		1. Turn the main switch off and on. 2. Check the connection between the NVRAM and controller. 3. Replace the NVRAM. 4. Replace the controller.	B
SC 990	Software performance error	The software makes an unexpected operation.	• Defective software • Defective controller • Software error		1. Turn the main switch off and on. 2. Reinstall the controller and/or engine main firmware. 3. See **NOTE 1 at the end of the SC table**.	B
SC 997 (CF)	Application function selection error	• The application selected by the operation panel key does not start or ends abnormally.	• Software (including the software configuration) defective • An option required by the application (RAM, DIMM, board) is not installed	SC 998	1. Check the devices necessary for the application program. If necessary devices have not been installed, install them. 2. Check that application programs are correctly configured. 3. Take necessary countermeasures specific to the application program. If the logs can be displayed on the operation panel, see the logs.	B
SC 998	Application start error	No applications start within 60 seconds after the power is turned on.	• Loose connection of RAM-DIMM, ROM-DIMM • Defective controller • Software problem		1. Turn the main switch off and on. 2. Check if the RAM-DIMM and ROM-DIMM are properly connected. 3. Reinstall the controller system firmware. 4. Replace the controller.	B

SC No.	Item	Definition	Possible Cause	Related SCs	Troubleshooting Procedure	Type
SC 999 (CF)	Program download error	• The download (program, print data, language data) from the IC card does not execute normally.	• Board installed incorrectly • Engine board defective • IC card defective • Incorrect IC card used (machine type/model, card version) • NVRAM defective • Loss of power during downloading **NOTE 1:** This error is not logged because the error occurs in the download mode (different from the normal operation mode). **NOTE 2:** If the machine loses power while downloading, or if the download does not normally end for some other reason, this could damage the controller board or the target PCB of the downloading and prevent subsequent downloading. If this problem occurs, the damaged PCB must be replaced.		1. Turn the main switch off and on. 2. If you can download necessary programs, do it by using an appropriate card. 3. If you cannot download necessary programs, use the special card and tool for downloading or replace the board having been used for the unsuccessful downloading.	B

NOTE 1: If a problem always occurs in a specific condition (for example. printer driver setting, image file), the problem may be caused by a software error. In this case, the following data and information needs to be sent back to your product specialist.

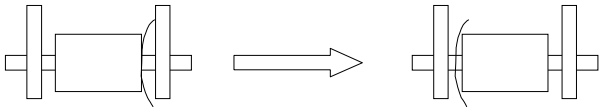
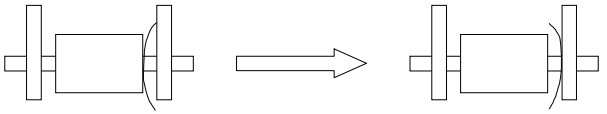
- Symptom / Possible Causes / Action taken
- Summary sheet (SP mode '1 Service', [Print Summary])
- SMC All (SP5-990-1)
- Logging (SP5-990-4)
- Printer driver settings used when the problem occurs
- All data displayed on the screen (SC code, error code, and program address where the problem is logged.)
- Image file which causes the problem, if possible

4.5 TROUBLESHOOTING GUIDE

4.5.1 IMAGE QUALITY

The table below shows the troubleshooting procedure for the following image problems.

- Smeared image for 4C thin lines or White lines in solid image areas
- Dirty background
- Fireflies
- Crow marks
- Image density change
- Toner blasting

Subject	Symptom	Cause	Action
Smeared image for 4C thin lines or white lines in solid image areas	4C thin lines become smeared in the paper feed direction or white lines appear in solid image areas.	Spurs are located just before the fusing section to prevent paper from touching the fusing unit. When paper touches the spurs and the spurs do not rotate, the spurs scratch the mage.	Clean the edges of the spurs and change the position of the spurs as shown below. If 4C thin lines become smeared:  G060T501.WMF If white lines appear in solid image areas:  G060T502.WMF

Subject	Symptom	Cause	Action
Dirty background	Dirty background may continuously appear on the left side (relative to paper feed) under very low temperature and humidity conditions.	When the developer has deteriorated or when prints are made in a very low humidity condition, dirty background may appear continuously.	Perform forced toner refresh mode (SP3-921-1 or 2). The machine automatically does this in the following sequence. (It takes about 20 minutes to complete this mode.) 1. Consumes toner in the development unit without toner supply until toner end is detected. 2. Starts toner recovery mode. 3. Starts process control self-check. **NOTE:** It takes about 20 minutes to complete this mode, to prevent carrier flowing out.
	Dirty background may intermittently appear with originals that have a high image area ratio after making multiple prints of originals with a low image area ratio.	While making prints with a low image area ratio, the toner-carrier attraction tends to increase. Then, when a large amount of toner is supplied under this condition, the supplied toner cannot be properly charged, causing toner to flow out from the development unit.	Change the settings of the following SP modes: SP3-906-1 Job End Process Control Self-check 200 (Default) to 100 SP3-920-3 OPC Refresh – Prints 200 (Default) to 100 SP3-920-6 Toner Refresh Mode 0 (Default: Disable) to 1 (Enable) During the above mode, toner refresh will automatically be done after job end process control self-check, and will consume the coagulated or overcharged toner. SP3-125-3 Auto TD Adjust Default 0 (Disable) to 1 (Initial process control) Making prints with a low image area ratio causes the toner-carrier attraction to increase, resulting in low image density. Activating the Auto TD Adjustment corrects toner density within the target range; however, it takes up to 6 minutes to complete the self-check and Auto TD Adjustment.
Fireflies	Fireflies may appear with originals that have a high image area ratio after making multiple prints of originals with a low image area ratio.	While making prints with a low image area ratio, developer is agitated with less toner supplied. This may cause some toner to coagulate and harden. Then, when switching over to originals with a high image area ratio, this toner may cause fireflies.	

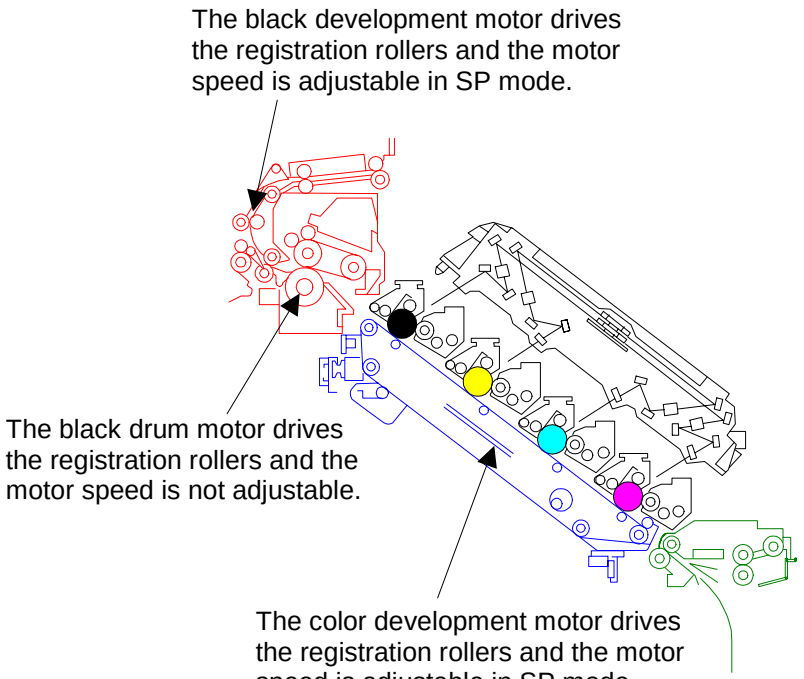
Subject	Symptom	Cause	Action
Crow marks	When making duplex prints in low temperature and humidity conditions, crow marks may appear on black images, especially in halftone areas on the 2nd side.	A charge is applied to the paper at each color station in order to attract each toner onto the paper. Therefore, the initial toner colors will receive multiple charging as they pass each station, which increases the attractive force between the toner and paper. Since black is the last toner to be applied, the attractive force between it and the paper is lowest. Black toner moves on the paper during transport to the fusing section, due to discharge from the toner to the surrounding guide plates.	Using SP2-301 (Transfer Current), increase the paper transfer current for black in the mode in which the problem occurs. **NOTE:** White dotted lines may appear on outputs if the transfer current is increased too much. Therefore, after adjusting the transfer current, it is necessary to check the results by making a solid or halftone image in duplex mode.
Image density change (1)	When the machine is tuned on in the morning (having been unused for a while), the ID of the initial outputs may be relatively low or high, in which case the machine needs to compensate by raising or lowering the ID during machine operation.	When the machine is off, the environmental conditions can begin to affect the machine's development capability. When the main switch is tuned on, the machine starts a process control self-check and adjusts the development parameters to achieve the proper development potential gap without adjusting the toner concentration. Over the course of the print operation, the ID will then get closer and closer to the target level.	If this is often pointed out by users who are very particular about image density, turn on Auto TD Adjustment (SP3-125-3) as a solution. **NOTE:** It takes about 5 minutes to complete the self-check.

Subject	Symptom	Cause	Action
Image density change (2)	Image density is too low or high.	If the machine has never been turned off and Energy Saver 2 (Auto Off mode) is disabled, the machine has never performed the initial process control self-check, causing the image density to become low or high.	Change the settings of the following SP modes: SP3-906-3 Non-use Time 1 0 (Default) to 500 SP3-906-4 Non-use Time 2 30 (Default) to 480 • If Energy Saver 1 is activated (Default: Off), the non-use time process control self-check will not function. Therefore, make sure that Energy Saver 1 is Off (SP5-101-3 or UP mode). • With the above setting, the self-check automatically starts after 500 prints and after no prints have been made for 480 minutes (8 hours). Based on the average daily printing volume of 500 prints, self-check would be performed first thing every morning. These settings are suitable for machines, which are used during the day and then kept On in Ready status throughout the night. Therefore, this SP mode should be set based on the particular way the customer uses the printer.
Toner blasting	Toner may blast, causing smeared text characters and/or lines in 2C or process black mode (depending on the PDL setting or type of paper used.)	An excessive amount of toner is used for development.	Change the toner limit setting in SP mode. • If toner blasted images appear for text or lines in 2C, decrease the setting for Text from 190% to 150 - 170%. • If toner blasted images for text and lines recognized as pure image data (i.e. not processed as text/line data), decrease the setting for Photo from 260% to 170 - 190%. **NOTE:** If the toner limit is lowered too much, it may cause the density of shadow areas to be not smooth.

4.5.2 COLOR SHIFT

The following briefly explain the factors causing color shifts and what to do on the machine to correct it:

- Temperature change causes the optical components in the laser optics housing unit to contract, causing the main scan magnification to change. To correct the line position, the machine automatically does the line position adjustment when the temperature changes by 5°C since the last position adjustment.
  If the line position adjustment functions properly, no color shift occurs. If the line position adjustment fails (result: SP5-993-7), color lines may shift anywhere on the outputs.
- The process speed at each stage (registration roller, transfer belt, and fusing belt/roller) affects the paper transport speed. If the paper transport speed changes during image transfer of a color, the color line being transferred shifts with respect to the color line already transferred to the paper. The registration roller speed (adjusted by color development motor speed) and fusing belt/roller speed (adjusted by black development motor speed) are adjusted by the manufacturer.
  Paper speed may slightly change due to the type of paper used or after replacing the parts related to the drive sections of the registration section, transport unit, and fusing unit. (After replacing the fusing unit, the speed adjustment should be done in the User Program mode.)
  Also, the position where color shift occurs depends on which section starts moving at the incorrect speed.
- Paper skew directly affects the color shift between the front and rear sides. There are several factors. One of them is the position of the side fences.



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As explained on the previous page, there are several types of color shift problem. The following table shows the symptoms, factors, action required, and the page to see for details.

	Symptom	Factors	Action Required	Refer to #
1	Color shift on entire image in main-scan and/or sub-scan directions	• Line position adjustment does not function properly. • Transfer belt unit has just been replaced.	• Check the result of the line position adjustment (SP5-993-7) and solve the problem if an error was detected. • Check which color lines are shifted from black line and adjust the SP modes for registration and magnification.	Page 4-4 Main-scan Page 4-42/43 Sub-scan Page 40/41 Transfer Unit Page 4-46
2	Color shifts only at the leading edge area (sometimes causing shock jitter, magenta or cyan lines)	Registration roller speed is not appropriate.	Adjust the color development motor speed (SP1-004-4, 5, and SP1-005-3) depending on the process speed.	Page 4-40
3	Color shifts only at the trailing edge area	Fusing belt/roller speed is not appropriate.	Adjust the black development motor speed (SP1-004-1, 2, and 7, or “Fuser Adjust” in the User Program mode) depending on the process speed.	Page 4-40
4	Color shifts between the front and rear sides	Paper skew on transfer belt • Side fences are not properly set. • Pressure between the paper attraction roller and transfer belt is not even at the front and rear sides.	Reposition the side fences. Reposition the paper attraction roller unit.	Page 4-43

Adjustment Standard: Max. 200 μm

As a machine capability, maximum amount of color shift is 200 μm. Adjusting the SP modes (motor speed, registration, and magnification) can improve the color shifts level; however, there is a limit.

Preparation

When color shift is reported, the following procedure should be done before adjusting the machine and/or SP modes.

1. Print out the SMC sheets (SP5-990-2).
2. Do the forced line position adjustment (SP5-993-2 or 'Auto Adjust' in the User Program mode).
   NOTE: Make sure that the result (SP5-993-7) is "0101". If not, solve the problem by referring to pages 4-2 and 4-3.
3. Print a 1-dot grid pattern using A3/11" x 17" paper. Refer to the following table for the detailed SP mode settings.

Mode	**SP5-997 (Test Pattern) Setting**				
	Tray selection	Pattern	Color mode	Resolution	Paper size (By-pass)
Normal, color, 600 dpi	2	05	Full Color	600 x 600	—
Normal, color, 1200 dpi	2	05	Full Color	1200 x 1200	—
Thick paper	0	05	Full Color	1200 x 1200	A3 / 11 x 17

   NOTE: When making prints on thick paper from the by-pass tray, the type of paper should be selected in the User Program mode. Any adjustment needs to be done by using the type of paper which the customer normally uses.
4. Check the tendency of color shift in the grid pattern printed in step 3. Sometimes, a magnification scope must be used to measure the amount of color shift between colors.
5. Take the required action explained in each section depending on the type of color shift.
6. Do the 'Auto Adjust' in the User Program mode after the adjustment is done in step 5, and check the result.
7. Repeat steps 3 to 6 until the color shift is acceptable.

Direction	Area	Symptom	Possible Cause	Action Required		Procedure / Remarks
				Output Mode	SP Mode	
Sub-scan	Leading edge	Color shift, especially 100 mm from the leading edge. (☛ pattern 1 on page 4-44 for the symptom)	Registration roller speed is not suitable for the paper used.	Normal Paper 1200 dpi	SP1-004-4	Check the magenta line position against the black line. If the registration roller is too fast or slow, the magenta line appears above or below the black line. Above: Speed is too fast: Decrease speed Below: Speed is too slow: Increase Speed When adjusting the speed, change the setting in 0.1 steps, and check the result by printing the grid pattern. Then, repeat this until the shift between magenta and black is minimized. **NOTE:** If the registration roller is too fast, magenta jitter may appear at 67 mm and/or cyan jitter at 165 mm from the trailing edge. This is caused by the mechanical shock when the trailing edge of the paper passes the registration rollers.
				Normal Paper 600 dpi	SP1-004-5	
				Thick Paper 1200 dpi (by-pass feed)	SP1-005-3	
	Trailing edge	Color shift, especially 100 mm from the trailing edge. (☛ pattern 2 on page 4-44 for the symptom)	Fusing roller speed is not suitable for the paper used.	Normal Paper 1200 dpi	SP1-004-1	Check the magenta line position against the black line. If the fusing roller is too fast or slow, the magenta line appears above or below the black line. Above: Speed is too fast: Decrease speed Below: Speed is too slow: Increase Speed When adjusting the speed, change the setting in 0.1 steps, and check the result by printing the grid pattern. Then, repeat this step until the shift between magenta and black is minimized. **NOTE:** Fusing roller speed can be adjusted with ''Custom Adjust' in Fuser Adjust in the User Program Mode, instead of with SP mode.
				Normal Paper 600 dpi	SP1-004-2	
				Thick Paper 1200 dpi (by-pass feed)	SP1-004-7	

Direction	Area	Symptom	Possible Cause	Action Required		Procedure / Remarks
				Output Mode	SP Mode	
Sub-scan	Entire image	Color shift on the entire image, and the amount of shift from leading to trailing edge is almost the same.	SP mode setting is not suitable for the paper used.	Normal Paper 600 dpi	SP5-993-016 (Y) SP5-993-017 (M) SP5-993-018 (C)	Measure the gap between the black line and other colors (YMC) using a magnification scope. Convert the measured value from [μm] to [dots] with the following formula. Then, add or subtract the calculated dot value in the SP mode. Correction [dots] = Measured value [μm] / 21.2 or 42.4 600 dpi mode: 1 dot = 42.4 μm 1200 dpi mode: 1 dot = 21.2 μm If color (YMC) has shifted up in relation to black, add the above value to the current value. If color (YMC) has shifted down in relation to black, subtract the above value from the current value. **Examples** • If the magenta line has shifted up in relation to black by 40μm in 600dpi mode, add 1 to the current setting of SP5-993-17. Correction [dots] = +(40/42.4) = Approx. +1 • If the magenta line has shifted down in relation to black by 70μm in 600dpi mode, subtract 2 from the current setting of SP5-993-17. Correction [dots] = -(70/42.4) = Approx. –2
				Normal Paper 1200 dpi	SP5-993-019 (Y) SP5-993-020 (M) SP5-993-021 (C)	

Direction	Area	Symptom	Possible Cause	Action Required		Procedure / Remarks
				Output Mode	SP Mode	
Main-scan	Entire image	Color shifts on the entire image, and the amount of shift differs at front, center, and rear. (☛ pattern 3 on page 4-45 for the symptom)	Main-scan magnification is not correctly adjusted.	-	SP5-993-013 (Y) SP5-993-014 (M) SP5-993-015 (C)	Measure the gap between the black line and other colors (YMC) using a magnification scope. Convert the measured value [mm] to [%] with the following formula. Then, add or subtract the calculated value in the SP mode Correction [%] = Measured value [mm] / 287 x 10000 If the color line is enlarged in relation to black, add the correction value to the current setting. If the color line is reduced in relation to black, subtract the correction value from the current setting. **NOTE:** Line position adjustment (SP5-993-2 or 'Auto Adjust' in User Program mode) should be done to check the result after changing the main-scan magnification data. This is because the changes will affect the line position adjustment. **Examples** • If the magenta line is enlarged by 0.1mm in relation to the black line, add "4" to the current setting of SP5-993-14. Correction [%] = (0.1/287) x 10000 = Approx. +4 • If the magenta line is reduced by 0.05 mm in relation to the black line, subtract "2" from the current setting of SP5-993-14. Correction [%] = -(0.05/287) x 10000 = Approx. -2

Direction	Area	Symptom	Possible Cause	Action Required		Procedure / Remarks
				Output Mode	SP Mode	
Main-scan	Entire image	Color shifts on the entire image and amount of shifts is almost the same at front, center, and rear sides. (☛ pattern 4 on page 4-45 for the symptom)	Main-scan registration is not correctly adjusted.	-	SP5-993-010 (Y) SP5-993-011 (M) SP5-993-012 (C)	Measure the gap between the black line and other colors (YMC) using a magnification scope. Convert the measured value [μm] to [dots] with the following formula. Then, add or subtract the calculated dot value in the SP mode. Correction [dots] = Measured value [μm] / 21.2 If color (YMC) has shifted to the left in relation to black, add the above value to the current setting. If color (YMC) has shifted to the right in relation to black, subtract the above value from the current setting. **Examples** • If the magenta line has shifted to the left by 40μm, add 4 to the current setting of SP5-993-011 Correction [dots] = +(40/21.2) = Approx. +2 • If the magenta line has shifted to the right by 70μm, subtract 3 from the current setting of SP5-993-011. Correction [dots] = -(70/21.2) = Approx. -3
	Front or rear	The amount of color shift at the front and rear sides becomes gradually bigger toward the trailing edge.	• Side fence position • Transfer belt position	-	-	• Check if the side fences of the paper trays are properly positioned. If there is clearance between the paper and the side fences, this causes paper to skew during paper transport. • Check if the transfer belt is in correct position, if the tension springs are properly set, or if the paper attraction roller is properly installed.. (☛ 3.7.4 Transfer Belt in the service manual for the printer mainframe)

5. SERVICE TABLES

5.1 SERVICE PROGRAM MODE – CF CONFIGURATION

⚠CAUTION

Before accessing the service menu, do the following:

Confirm that there is no print data in the printer buffer (the Data In LED must not be lit or blinking).
If there is some data in the buffer, wait until all data has been printed.

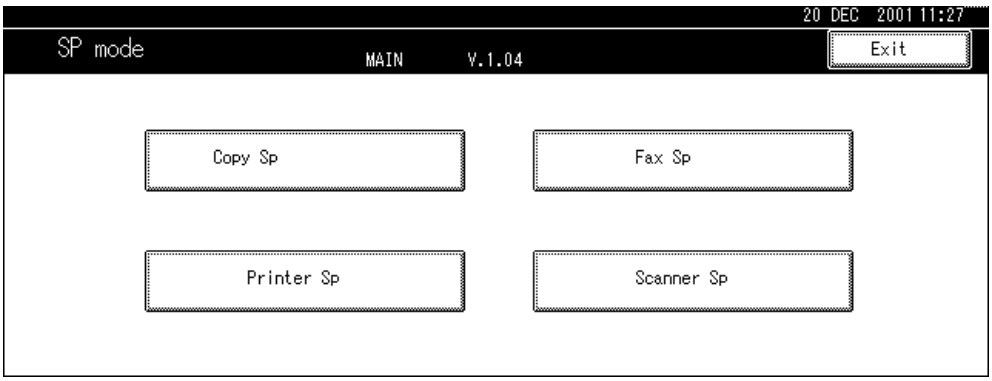
5.1.1 ENABLING AND DISABLING SERVICE PROGRAM MODE

[Clear Mode]	1. Press the Clear Mode key.
1 0 7	2. Use the keypad to enter “107”.
C/Stop	3. Hold down Clear/Stop for at least 3 seconds.
	4. Enter the Service Mode.
Exit	5. Press Exit twice to return to the copy window.

5.1.2 TYPES OF SP MODES

Copy SP	SP modes related to the engine functions
Printer SP	SP modes related to the controller functions
Scanner SP	SP modes related to the scanner functions
Fax SP	SP modes related to the fax functions

After accessing the SP mode, select one of the Service Program modes (Copy, Printer, Scanner, or Fax) from the touch panel as shown in the diagram below. This section explains the functions of the Printer/Copy/Scanner SP modes. Please refer to the Fax service manual for the Fax SP modes.



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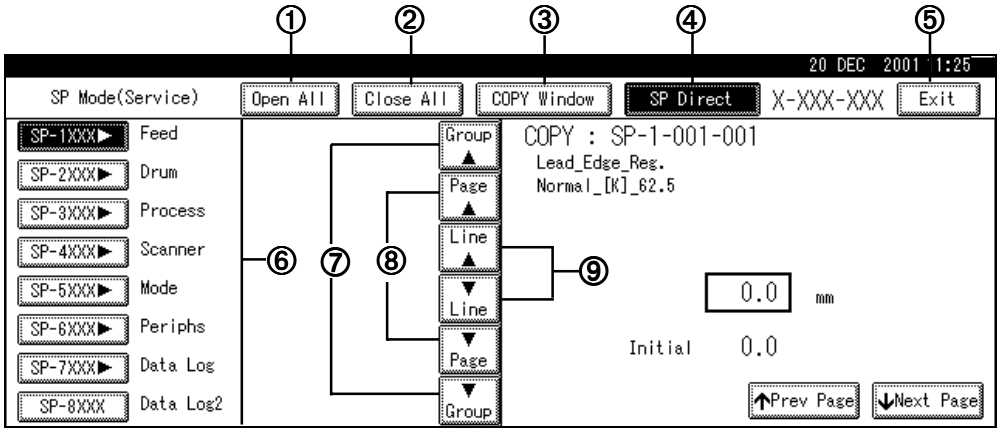
SP Mode Button Summary

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



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① Opens all SP groups and sublevels.

② Closes all open groups and sublevels and restores the initial SP mode display.

③ Opens the copy window (copy mode) so you can make test copies. To return to the SP mode screen, press SP Mode (highlighted) in the copy window.

④ Enter the SP code directly with the number keys if you know the SP number and then press #. (The required SP Mode number will be highlighted when pressing #. If not, just press the required SP Mode number.)

⑤ Press twice to leave the SP mode and return to the copy window to resume normal operation.

⑥ Press any Class 1 number to open a list of Class 2 SP modes.

⑦ Press to scroll the display to the previous or next group.

⑧ Press to scroll to the previous or next display in segments the size of the screen display (page).

⑨ Press to scroll the display to the previous or next line, line by line.

⑩ Press to move the highlight on the left to the previous or next selection in the list.

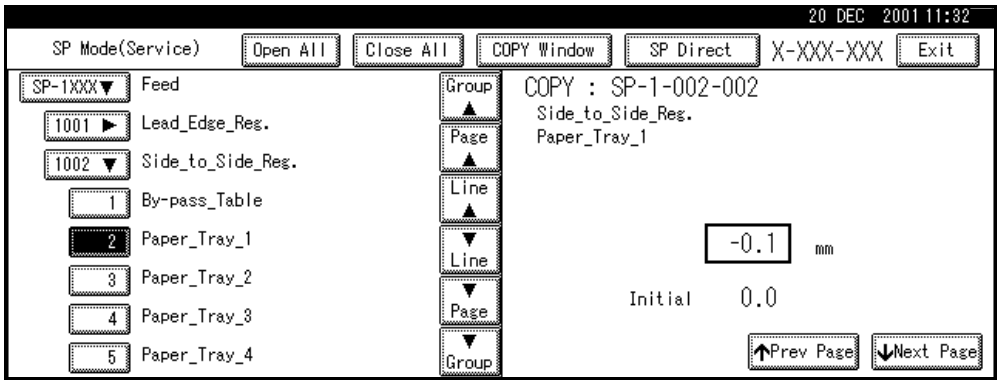
Switching Between SP Mode and Copy Mode for Test Printing

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

Selecting the Program Number

Program numbers have two or three levels.

1. Before you begin, refer to the Service Tables to find the SP that you want to adjust. (☛ 5.3, 5.4, or 5.5)
2. Press the Group number on the left side SP Mode window that contains the SP that you want to adjust.
3. Use the scrolling buttons in the center of the SP mode window to display the SP number that you want to open, and then press that number to expand the list.
4. Use the center touch-panel buttons to scroll to the number and title of the item that you want to set and press. The small entry box on the right is activated and displays the default or the current setting below.



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NOTE: Refer to the Service Tables for the range of allowed settings. (☛5.3, 5.4, or 5.5)

5. To enter a setting:
   - Press ⓒ to toggle between plus and minus and then use the keypad to enter the appropriate number. The number you enter writes over the previous setting.
   - Press ⓗ to enter the setting. (If you enter a number that is out of range, the key press is ignored.)
   - When you are prompted to complete the selection, press Yes.
6. If you need to perform a test print, press Copy Window to open the copy window and select the settings for the test print. Press Start ⓘ, and then press SP Mode (highlighted) in the copy window to return to the SP mode display.
7. When you are finished, press Exit twice to return to the copy window.

Service Tables

Exiting Service Mode

Press the “Exit” key on the touch-panel.

NOTE: To make the following settings effective, you must turn the main switch off and on after exiting service mode.

SP Modes Related to the Engine	SP Modes Related to the Controller
SP2-208-009	SP5-009-001
SP2-213-001	SP5-302-002
SP2-224-001 to 004	SP5-801-003 to 013
SP5-930-001 to 005	SP5-832-001 to 004
SP5-994-001 and 002	SP5-961-001
SP7-905-007 and 009	
SP5-998-001	

NOTE: If the settings of SP modes 5-993-013 to 015 are changed, these changes will affect the next line position adjustment.

5.2 SERVICE MODE

5.2.1 REMARKS

Display on the Touch Panel Screen

Since the maximum number of characters which can be displayed on the touch panel screen is limited (20 characters), the description of SP modes displayed on the screen needs to be abbreviated. The following are the major abbreviations used for the SP modes for which the full description is over 20 characters.

Paper Type
- N: Normal paper
- TH: Thick paper

Color Mode [Color]
- [K]: Black in B&W mode
- [Y], [M], or [C]: Yellow, Magenta, or Cyan in Full Color mode
- [YMC]: Only for Yellow, Magenta, and Cyan
- [FC]: Full Color mode
- [FC, K], [FC, Y], [FC, M], or [FC, C]: Black, Yellow, Magenta, or Cyan in full color mode

Paper Feed Station
- P: Paper tray
- B: By-pass table

Fusing Section
- H: Hot roller
- P: Pressure roller

Print Mode
- S: Simplex
- D: Duplex

Process Speed
- 62.5, 125, 185

As shown in the following table, the process speed (mm/s) depends on the print mode (B&W or Color), resolution, and/or type of paper selected. Some SP mode settings depend on the process speed.

Mode	Resolution (dpi)	Line speed (mm/s)	Print speed (ppm)
B/W	600 x 600 1,200 x 600	185	38
	1,200 x 1,200	125	28
Color	600 x 600 1,200 x 600	125	28
	1,200 x 1,200	62.5	14
OHP/Thick	600 x 600 1,200 x 600 1,200 x 1,200	62.5	10

Others

The following symbols are used in the SP mode tables.

FA: Factory setting
(Data may be adjusted from the default setting at the factory. Refer to the factory setting sheets enclosed, which is located underneath the jammed paper removal decal.)

DFU: Design / Factory Use only
Do not touch the SP mode in the field.

A sharp (#) to the right hand side of the mode number column means that the main switch must be turned off and on to effect the setting change.

An asterisk (*) to the right hand side of the mode number column means that this mode is stored in the EEPROM (Engine) or NVRAM (Printer Controller). If you do a RAM clear, this SP mode will be reset to the default value. ‘BCU’, ‘CTL’, ‘SBU’, and ‘NV’ indicate which NVRAM contains the data.

- BCU: NVRAM on the BCU board
- CTL: NVRAM on the controller board
- SBU: NVRAM on the SBU board (this NVRAM cannot be removed in the field)
- NV: NVRAM on the NVRAM expansion board (user account enhancement kit)

The settings of each SP mode are explained in the right-hand column of the SP table in the following manner.
[Adjustable range / Default setting / Step] Alphanumeric

NOTE: If “Alphanumeric” is written to the right of the bracket as shown above, the setting of the SP mode is displayed on the screen using alphanumeric characters instead of only numbers. However, the settings in the bracket in the SP mode table are explained by using only the numbers.

5.3 PRINTER SP MODE

5.3.1 SP MODES

1	Mode No. (Class 1 and 2)			Function / [Setting]
001	**[Bit Switch]**			
	1	Bit Switch 1 Setting	* CTL	Adjusts bit switch settings. **DFU** **NOTE:** Currently the bit switches are not being used. All data has to be set to "0".
	2	Bit Switch 2 Setting		
	3	Bit Switch 3 Setting		
	4	Bit Switch 4 Setting		
003	**[Clear Setting]**			
	1	Initialize Printer System		Initializes settings in the "System" menu of the user mode.
	2	Clear CSS Counter		**DFU**
004	**[Print Summary]**			
	1	Print Summary		Prints the service summary sheet (a summary of all the controller settings).
005	**[Display Version]**			
	1	Display Version		Displays the version of the controller firmware.
101	**[Data Recall]**			
	1	Factory	* CTL	Recalls a set of gamma settings. This can be either a) the factory setting, b) the previous setting, c) the current setting, or d) the ACC factory setting.
	2	Previous		
	3	Current		
	4	ACC		
102	**[Resolution Setting]**			
	1	*1200x1200 Photo		Selects the printing mode (resolution) for the printer gamma adjustment. When selecting a print mode, an asterisk (*) is displayed in the front of the mode.
	2	600 x 600 Text		
	3	1200 x 600 Text		
	4	600x600 Photo		
	5	1200x600 Photo		
	6	1200x1200 Text		
103	**[Test Page]**			
	1	Color Gray Scale		Prints the test page to check the color balance before and after the gamma adjustment.
	2	Color Pattern		
104	**[Gamma Adjustment]**			
	1	Black: Highlight	* CTL	Adjusts the printer gamma for the mode selected in the "Mode Selection" menu. [0 to 30 / <u>15</u> / 1/step]
	2	Black: Shadow		
	3	Black: Middle		
	4	Black: IDmax		
	21	Cyan: Highlight		
	22	Cyan: Shadow		
	23	Cyan: Middle		
	24	Cyan: IDmax		
	41	Magenta: Highlight		
	42	Magenta: Shadow		
	43	Magenta: Middle		
	44	Magenta: IDmax		
	61	Yellow: Highlight		
	62	Yellow: Shadow		
	63	Yellow: Middle		
	64	Yellow: IDmax		

1	Mode No. (Class 1 and 2)			Function / [Setting]
105	**[Data Save]**			
	1	Data Save		Stores the print gamma adjusted with the "Gamma Adj." menu item as the current setting. Before the machine stores the new 'current setting', it moves the data currently stored as the 'current setting' to the 'previous setting' memory storage location.
106	**[Toner Limit]**			
	1	Toner Limit: Photo	* CTL	Adjusts the maximum toner amount for image development. [100 to 400 / 260 / 1 %/step]
	2	Toner Limit: Text		[100 to 400 / 190 / 1 %/step]

5.3.2 BIT SWITCH PROGRAMMING

NOTE: Currently, the bit switches are not being used.

1. Press the numeral key (0 to 7) corresponding to the bit number you wish to change.
   Pressing the numeral key changes the setting to either "0" or "1".
   NOTE: The left digit on the display is bit 7 and the right digit is bit 0.

2. Press [Enter] to save changes and exit.

5.4 COPY SP MODE

5.4.1 SP MODES

SP1-XXX (Feed)

1	Mode No. (Class 1, 2, and 3)			Function / [Setting]
001	**[Lead Edge Reg.]** Leading Edge Registration (Paper Type, [Color], Process Speed)			
	1	Normal [K] 62.5	* BCU	Adjusts the leading edge registration by changing the registration clutch operation timing for each mode. [-10.0 to 10.0 / <u>0.0</u> / 0.1 mm/step] **FA**
	2	Normal [K] 125		
	3	Normal [K] 185		
	4	Normal [FC] 62.5		
	5	Normal [FC] 125		
	6	Thick [K]		
	7	Thick [FC]		
	8	OHP [K]		
	9	OHP [FC]		
002	**[Side to Side Reg.]** Side-to-Side Registration			
	1	By-pass Table	* BCU	Adjusts the side-to-side registration by changing the laser main scan start position for each mode. [-10.0 to 10.0 / <u>0.0</u> / 0.1 mm/step] **FA**
	2	Paper Tray 1		
	3	Paper Tray 2		
	4	Paper Tray 3		[-10.0 to 10.0 / <u>0.0</u> / 0.1 mm/step]
	5	Paper Tray 4		
	6	Duplex		
003	**[Paper Buckle]** Paper Buckle (**P**aper Tray or **B**y-pass, Paper Type, Process Speed), Paper Type: N: Normal, TH: Thick			
	1	Paper Tray 62.5	* BCU	Adjusts the amount of paper buckle at the registration roller by changing the paper feed timing. [-10 to 10 / <u>0.0</u> / 1 mm/step]
	2	Paper Tray 125		
	3	Paper Tray 185		
	4	By-pass N 62.5		
	5	By-pass N 125		
	6	By-pass N 185		
	7	By-pass TH		
	8	By-pass OHP		
004	**[Dev. Motor Speed]** Development Drive Motor Speed 1 ([Color], Process Speed, Paper Type)			
	1	[K] 62.5 Normal	* BCU	Adjusts the development drive motor speed for correcting color shifts at the leading edge or trailing edge area. Black Motor [K]: Adjusts fusing roller speed for the trailing edge area. Color Motor [YMC]: Adjusts registration roller speed for the leading edge area. [96.0 to 104.0 / <u>100.0</u> / 0.1 %/step] **NOTE:** • SP1-004-002 and 005 is for color mode. Fine adjustment for B&W mode can be done with SP1-005-001 and 002. • SP1-004-004 is for normal paper. Fine adjustment for thick paper can be done with SP1-005-003.
	2	[K] 125		
	3	[K] 185		
	4	[YMC] 62.5		
	5	[YMC] 125		
	6	[YMC] 185		
	7	[K] 62.5 Thick		

1	Mode No. (Class 1, 2, and 3)			Function / [Setting]
005	**[Dev. Motor Speed2]** Development Drive Motor Speed 2 ([Color], Process Speed)			
	1	[K]	* BCU	Adjusts the black development drive motor speed for the B&W 125mm/s process speed. The value stored in this SP mode is different from SP1-004-002 (☛ the note for SP 1-004). At the 125mm/s process speed, the transfer unit position for B&W is different than for color mode. The transfer unit position affects the paper transport quality, causing the paper to flip up at the fusing section if the same speed as color mode is used for B&W mode. To minimize the occurrence of paper flipping up, which causes smeared images in the trailing area, this SP mode can change the motor speed in B&W mode. [-0.2 to 1.0 / 2 / 0.1 %/step]
	2	[YMC]		Adjusts the color development drive motor speed for the B&W 125mm/s process speed. The value stored in this SP mode is different from SP1-004-005 (☛ the note for SP 1-004). At the 125mm/s process speed, the transfer unit position for B&W is different than for color mode. The transfer unit position affects the paper transport speed slightly. This SP mode can adjust the motor speed for B&W mode. [-1.0 to 1.0 / 0 / 0.1 %/step] **FA**
	3	[YMC] Thick		Adjust the color development drive motor speed for thick paper in by-pass mode. The value stored in this SP mode is different from SP1-004-004 (☛ the note for SP 1-004). Normal and thick paper are different types of paper, and this sometime causes color shift due to paper slippage. This SP mode can change the motor speed for thick paper. [-0.3 to 0.3 / 0 / 0.1 %/step]
006	**[Dev. Motor Speed3]** Development Drive Motor Speed 3 ([Color], Process Speed, Paper Type)			
	1	[K] 62.5 Special	* BCU	Adjusts the development motor speed for special paper. [-4.0 to 4.0 / 0 / 0.1 %/step]
	2	[K] 125 Special		
	3	[YMC] 62.5 Special		
	4	[YMC] 125 Special		
007	**[Dev. Motor Speed4]** Development Drive Motor Speed 4 ([Color], Process Speed, Paper Type), Paper Type -> SP: Special			
	1	[YMC] Post Card	* BCU	Adjusts the development motor speed for post cards. [-4.0 to 4.0 / 0 / 0.1 %/step]
104	**[Fusing Control]**			
	1	Control Method	* BCU	Selects the fusing control method. [0 or 1 / 0 / -] Alphanumeric 0: ON/OFF Control 1: Phase Control **NOTE:** This mode can be used only for N. America models.

1	Mode No. (Class 1, 2, and 3)			Function / [Setting]
104	25	Process Speed	* BCU	Selects the power-on default target fusing operation temperature. The target operating fusing temperature depends on the process speed. When the machine is switched on, it starts warming up for the process speed specified in this SP mode. [0 to 4 / 4 / 1/step] Alphanumeric 0: CL (Color) 62.5 mm/s (temperature specified by SP 1-105-8 and 19) 1: CL (Color) 125 mm/s (temperature specified by SP 1-105-9 and 20) 2: OHP / Thick (temperature specified by SP 1-105-13 and 28) 3: B&W 125 mm/s (temperature specified by SP 1-105-4 and 15) 4: B&W 185 mm/s (temperature specified by SP 1-105-5 and 16)
105	**[Fusing Temperature]** (**H**eating or **P**ressure roller: Paper Type, [Color], **S**implex/**D**uplex, Process Speed) Paper Type -> N: Normal, OHP. TH: Thick, SP: Special Some settings of fusing temperature depend on the destination (US or Europe/Asia). US: Setting for US, EU: Setting for Europe/Asia			
	1	H: Ready	* BCU	Sets the heating roller temperature for the printing ready condition. After the main switch has been turned on, the machine enters the print ready condition when the heating roller temperature reaches the temperature specified in this SP mode. When the machine is in the recovery mode from the energy saver or auto off mode, the machine becomes ready when both heating and pressure roller temperatures reach the specified temperature. Ready temperature = (Target temperature specified in SP1-104-25 or 105-3 to 28) – Temperature specified in this SP mode. [10 to 100 / 10 / 1°C/step]
	2	P: Ready		Sets the pressure roller temperature for the printing ready condition. Ready temperature = (Target temperature specified in SP1-104-25 or 105-3 to 28) – Temperature specified in this SP mode NA: [10 to 100 / 10 / 1°C/step] EU: [10 to 100 / 20 / 1°C/step]
	The following SPs set the target operating temperatures of the heating and pressure rollers in various modes. (The default settings are different for N. America and Eur./Asia)			
	4	H:N [K] S 125	* BCU	[100 to 190 / 175 / 5°C/step]
	5	H:N [K] S 185		[100 to 190 / NA: 185 EU: 180 / 5°C/step]
	6	H:N [K] D 125		[100 to 190 / 165 / 5°C/step]
	7	H:N [K] D 185		[100 to 190 / 175 / 5°C/step]
	8	H:N[FC] S 62.5		[100 to 190 / 150 / 5°C/step]
	9	H:N[FC] S 125		[100 to 190 / NA: 175 EU: 180 / 5°C/step]
	10	H:N[FC] D 62.5		[100 to 190 / 145 / 5°C/step]

Service Tables

1	Mode No. (Class 1, 2, and 3)			Function / [Setting]
105	11	H:N[FC] D 125	* BCU	[100 to 190 / NA: 165 EU: 170 / 5°C/step]
	13	H:OHP [FC]		[100 to 190 / 180 / 5°C/step]
	15	P:N [K] S 125		[0 to 190 / NA: 145 EU: 155 / 5°C/step]
	16	P:N [K] S 185		[0 to 190 / NA: 155 EU: 160 / 5°C/step]
	17	P:N [K] D 125		[0 to 190 / NA: 135 EU: 145 / 5°C/step]
	18	P:N [K] D 185		[0 to 190 / NA: 145 EU: 155 / 5°C/step]
	19	P:N[FC] S 62.5		[0 to 190 / NA: 125 EU: 130 / 5°C/step]
	20	P:N[FC] S 125		[0 to 190 / NA: 145 EU: 160 / 5°C/step]
	21	P:N[FC] D 62.5		[0 to 190 / NA: 120 EU:125 / 5°C/step]
	22	P:N[FC] D 125		[0 to 190 / NA: 135 EU:150 / 5°C/step]
	24	P:OHP		[0 to 190 / 160 / 5°C/step]
	26	H:TH		[0 to 190 / 175 / 5°C/step]
	28	P:TH		[0 to 190 / 155 / 5°C/step]
	29	H:Envelop		[0 to 190 / 175 / 5°C/step]
	30	P:Envelop		[0 to 190 / 155 / 5°C/step]
	31	H: Slow Down		Sets the heating roller temperature for the printing start condition when changing the process speed. Fusing temperature must be decreased when the machine changes to a process speed that is slower than the current process speed (for example, when the speed changes from 185 mm/s to 62.5 mm/s). The machine idles while reducing the fusing temperature. When the fusing temperature becomes lower than the ready temperature, the machine starts printing. Ready Temperature = Target temperature + Temperature specified in this SP mode. [1 to 20 / 5 / 1°C/step]
	32	P: Slow Down		Sets the pressure roller temperature for the printing start condition when changing the process speed. [1 to 20 / 10 / 1°C/step]
	33	H:SP 62.5		[-20 to 30 / 0 / 1°C/step]
	34	H:SP 125		[-20 to 30 / 0 / 1°C/step]
	35	H:SP 185		[-20 to 30 / 0 / 1°C/step]
	36	P:SP 62.5		[-20 to 30 / 0 / 1°C/step]
	37	P:SP 125		[-20 to 30 / 0 / 1°C/step]
	38	P:SP 185		[-20 to 30 / 0 / 1°C/step]
106	**[Temperature Display]** Fusing Temperature Display (**H**eating or **P**ressure)			
	1	Heat Roller		Displays the current temperature of the heating and pressure rollers.
	2	Pressure Roller		
902	**[Paper Size]** Tray Paper Size			
	1	Tray 1 A4/LT	* BCU	Specifies the paper size for tray 1. [0 or 1 / 0 / -] Alphanumeric 0: A4 sideways, 1: LT sideways Tray 1 can only use these two sizes. US: 1 **FA**

1	Mode No. (Class 1, 2, and 3)			Function / [Setting]
902	2	Tray 2 B4/LG	* BCU	Specifies the paper size for tray 2. [0 or 1 / 0 / -] Alphanumeric 0: B4 lengthwise, 1: LG lengthwise This specifies which size is detected for a sensor output of 1101 (see section 6 for details). US: 1 **FA**
	3	Tray 2 A4/LT		Specifies the paper size for tray 2. [0 or 1 / 0 / -] Alphanumeric 0: A4 lengthwise, 1: LT lengthwise This specifies which size is detected for a sensor output of 0110 (see section 6 for details). US: 1 **FA**
	4	Tray 2 B5/LT		Specifies the paper size for tray 2. [0 or 1 / 0 / -] Alphanumeric 0: LT, 1: B5 lengthwise This specifies which size is detected for a sensor output of 1011 (see section 6 for details).
910	**[Fusing Idling Time]**			
	1	Fusing Idling Time	* BCU	Specifies the timer for deciding whether to do fusing idling when receiving a print command. When receiving a new job within the time specified in this SP mode after the last job is completed, fusing idling is not done because the fusing section was already warmed up during the last job. [0 to 180 / 1 / 1 minute/step] **DFU**
912	**[Machine Temp. Cor.]** Machine Temperature Correction Th: Threshold, **H**eating or **P**ressure roller			
	Corrects the fusing temperature depending on the temperature inside the machine. If the temperature inside the machine is too high or low, this may cause hot or cold offset image at the fusing section. To avoid the offset image, the fusing temperature is corrected depending on the temperature inside machine, which is monitored by the thermistor located on the right side of the laser optics housing unit. If the temperature inside the machine is detected as high or low (based on the settings of SP1-912-001 or 002), the fusing temperature is decreased or increased by the temperature specified in SP1-912-003 to 006.			
	1	Th:High Temp	* BCU	Sets the threshold for entering the high temperature condition. [0 to 50 / 30 / 1°C/step]
	2	Th:Low Temp		Sets the threshold for entering the low temperature condition. [0 to 50 / 17 / 1°C/step]
	3	H:High Temp		Sets the fusing temperature decrease for the high temperature condition. [0 to 15 / 0 / 1°C/step]
	4	P:High Temp		[0 to 15 / 0 / 1°C/step]
	5	H:Low Temp		Sets the fusing temperature increase for the low temperature condition. [0 to 15 / 5 / 1°C/step]
	6	P:Low Temp		[0 to 15 / 5 / 1°C/step]

1	Mode No. (Class 1, 2, and 3)			Function / [Setting]
913	**[Temperature Cor. 1]** Fusing Temperature Correction (Correction Timing)			
	1	Sheet Setting	* BCU	Specifies the number of sheets to determine whether or not to apply the fusing temperature correction. During a multi print job, the fusing temperature tends to slightly overshoot around the 10th sheet and then stabilize. Temperature overshooting may cause the glossiness to increase. To minimize the overshooting, both fusing and pressure roller temperatures are decreased by the amount specified in SP1-914 at the number of sheets specified in this SP mode, until the end of the job. [1 to 60 / <u>10</u> / 1 sheet/step]
914	**[Temperature Cor. 2]** Fusing Temperature Correction (Temperature Setting)			
	1	Heating	* BCU	Specifies the temperature to be subtracted from the targeted temperatures specified in SP1-105-3 to-24. [0 to 30 / <u>10</u> / 5°C /step]
	2	Pressure		
915	**[Stand-by Time]**			
	1	Job Receiving	* BCU	Specifies the time to shift the machine into the stand-by mode when not receiving a print start command after receiving a print preparation command. [0 to 180 / <u>60</u> / 10 seconds/step] 0: The machine does not shift to the stand-by mode.
	2	Job End		Specifies the time to shift the machine into the stand-by mode after the last job is completed. [0 to 180 / <u>60</u> / 10 seconds/step] 0: The machine does not shift to the stand-by mode.
916	**[Idling Mode]**			
	1	Mode Set	* BCU	Enables or disables fusing unit idling. Idling is done for the time specified in SP1-916-2 after the machine enters the ready condition. [0 or 1/ / <u>0</u> / -] **DFU** 0: OFF <u>1</u>: ON
	2	Idling Time		Specifies the time for the fusing unit idling. [10 to 120 / <u>30</u> / 10 seconds/step] **DFU**
	3	Pre-Job Mode		Enables or disables fusing unit idling for 4 seconds before starting a print job. [0 or 1/ / <u>0</u> / -] **DFU** 0: OFF 1: ON

1	Mode No. (Class 1, 2, and 3)			Function / [Setting]
996	**[OHP/TH Fusing]** OHP/Thick Paper Fusing Temperature Correction (**H**eating or **P**ressure Roller)			
	Specifies the temperature for starting a print job. The fusing section is already warmed up when the last print job was completed. If prints are made on OHP or thick paper at this time, the fusing temperature tends to be higher than the target, causing exit roller marks or a paper jam in the fusing section. To prevent this, the print job will not start if the heating and pressure roller temperatures are higher than the following: (Target temperature specified by SP1-105-12, -13, -23, -24) - (Temperature specified by this SP mode (default: 5°C for heating roller, 10°C for pressure roller))			
	4	H:Print Temp	* BCU	[0 to 20 / 5 / 1°C /step]
	5	P:Print Temp		[0 to 20 / 10 / 1°C /step]

SP2-XXX (Drum)

2	Mode No. (Class 1, 2, and 3)			Function / [Setting]
001	**[Charge Bias]** Charge Roller Bias (**DC** or **AC** component: [Color], Process Speed) U: Upper, L: Lower			
	1	DC:[K] 62.5	* BCU	Adjusts the DC component of the charge roller bias in the various print modes. Charge bias (DC component) is automatically adjusted during process control; therefore, adjusting these settings does not effect while process control mode (SP3-125 Default: ON) is activated. When deactivating process control mode with SP3-125, the values in these SP modes are used for printing. [300 to 1000 / 700 / 10 volts/step] **DFU**
	2	DC:[K] 125		
	3	DC:[K] 185		
	4	DC:[Y] 62.5		
	5	DC:[Y] 125		
	6	DC:[M] 62.5		
	7	DC:[M] 125		
	8	DC:[C] 62.5		
	9	DC:[C] 125		
	10	AC U Limit [K]		Sets the upper limit of the AC component adjustable range for black. During machine initialization and process control self-check, the AC component of the charge roller bias is automatically adjusted within the range specified by SP2-001-010 and 011. [0 to 255 / 103 / 1/step] **DFU**
	11	AC L Limit [K]		Sets the lower limit of the AC component adjustable range for black. [0 to 255 / 97 / 1/step] **DFU**
	12	AC:[K] 62.5		• Displays the AC component of the charge roller bias adjusted during machine initialization or process control self-check. • Sets AC bias in the various print modes for test purposes. If the optimum AC bias cannot be selected because of the upper and lower limits (SP2-001-10 and 11 for K, SP 2-001-21 and 22 for YMC), this may cause white spots on images and black spots on background. (In particular, spots may appear if the room temperature is very low.) Check the printouts after changing the AC bias with these SP modes (SP2-001-12 to 20) and exiting SP mode. If increasing or decreasing the AC bias for relevant color solves the spot problem, shift the AC upper and lower limits (SP2-001-10 and 11 for K, SP 2-001-21 and 22 for YMC) by the value increased or decreased during the test. **NOTE:** The AC upper and lower limits have been optimized by the manufacturer; therefore, these settings should not be adjusted in the field. [0 to 255 / 71 / 1/step] **DFU**
	13	AC:[K] 125		[0 to 255 / 71 / 1/step] **DFU**
	14	AC:[K] 185		[0 to 255 / 148 / 1/step] **DFU**
	15	AC:[Y] 62.5		[0 to 255 / 71 / 1/step] **DFU**
	16	AC:[Y] 125		[0 to 255 / 71 / 1/step] **DFU**
	17	AC:[M] 62.5		[0 to 255 / 71 / 1/step] **DFU**
	18	AC:[M] 125		[0 to 255 / 71 / 1/step] **DFU**
	19	AC:[C] 62.5		[0 to 255 / 71 / 1/step] **DFU**
	20	AC:[C] 125		[0 to 255 / 71 / 1/step] **DFU**

2	Mode No. (Class 1, 2, and 3)			Function / [Setting]
001	21	AC U Limit[FC]	* BCU	Sets the upper limit of the AC component adjustable range for color. During machine initialization and process control self-check, the AC component of the charge roller bias is automatically adjusted within the range specified in the SP2-001-021 and 022. [0 to 255 / 90 / 1/step] **DFU**
	22	AC L Limit[FC]		Sets the lower limit of the AC component adjustable range for color. [0 to 255 / 84 / 1/step] **DFU**
103	**[LD Control]** LD Power Control ([Color Mode, Color], Process Speed, **K** or **C**olor mode) P: Power, M: Magnification			
	Adjusts the laser power by changing the current applied to LD. Laser power is automatically adjusted during process control; therefore, adjusting these data has no effect while Process Control (SP3-125-002 Default : ON) is activated. After selecting "0: Fixed) in SP3-125-002, the values in these SP modes are used for printing. The following is the procedure to check whether or not LD power control functions properly. 1. Set SP3-125-002 to "0: Fixed". 2. Set the LD power to "400" and make a test print. 3. Set the LD power to "900" and make a test print. 4. Check the image density of the test prints made with LD power "400" and "900". 5. If there is no difference between the test prints, check the LD unit. **NOTE:** Do not set the LD power to "300" or lower. This may cause SC220.			
	1	P:[K] 62.5 C	* BCU	[0 to 1023 / 672 / 1/step] **DFU**
	2	P:[K] 125 C		[0 to 1023 / 640 / 1/step] **DFU**
	4	P:[Y] 62.5 C		[0 to 1023 / 672 / 1/step] **DFU**
	5	P:[Y] 125 C		[0 to 1023 / 640 / 1/step] **DFU**
	7	P:[M] 62.5 C		[0 to 1023 / 672 / 1/step] **DFU**
	8	P:[M] 125 C		[0 to 1023 / 640 / 1/step] **DFU**
	10	P:[C] 62.5 C		[0 to 1023 / 672 / 1/step] **DFU**
	11	P:[C] 125 C		[0 to 1023 / 640 / 1/step] **DFU**
	13	P:[K] 62.5 K		[0 to 1023 / 672 / 1/step] **DFU**
	14	P:[K] 125 K		[0 to 1023 / 672 / 1/step] **DFU**
	15	P:[K] 185 K		[0 to 1023 / 601 / 1/step] **DFU**
	26	P:[0 1] 125 K		[0 to 1023 / 672 / 1/step] **DFU**
	27	P:[0 1] 185 K		[0 to 1023 / 601 / 1/step] **DFU**
	Main Scan Magnification ([Color], Laser Exposure Frequency)			
	55	M:[K] 64.3MHz	* BCU	Displays the result of the latest line position adjustment. Changing this affects the main scan magnification; however, this will be automatically corrected at the next line position adjustment. If a fine adjustment is required, it can be done with SP5-993-013 to 015 (this affects the way that the adjustment is done, and will be effective from the next line position adjustment). [0 to 280 / 140 / 1 dot/step] 1 dot = 20μ **DFU** **NOTE:** If the line position adjustment does not work properly, the line position can be adjusted manually with this SP mode as a temporary measure. In this case, the line position adjustment needs to be disabled with SP5-993-001.
	56	M:[Y] 64.3MHz		
	57	M:[M] 64.3MHz		
	58	M:[C] 64.3MHz		
	59	M:[K] 47.6MHz		

Service Tables

2	Mode No. (Class 1, 2, and 3)			Function / [Setting]
103	LD Power Control for CF ([Color Mode, Color]			
	101	CF:[K,K] 1	* BCU	[0 to 1023 / 604 / 1/step] **DFU**
	102	CF:[K,K] 2		[0 to 1023 / 604 / 1/step] **DFU**
	103	CF[FC,K]		[0 to 1023 / 720 / 1/step] **DFU**
	104	CF:[FC:Y]		[0 to 1023 / 720 / 1/step] **DFU**
	105	CF:[FC,M]		[0 to 1023 / 720 / 1/step] **DFU**
	106	CF:[FC,C]		[0 to 1023 / 720 / 1/step] **DFU**
	107	CF:[K] OHP/TH		[0 to 1023 / 590 / 1/step] **DFU**
	108	CF:[Y] OHP/TH		[0 to 1023 / 590 / 1/step] **DFU**
	109	CF:[M] OHP/TH		[0 to 1023 / 590 / 1/step] **DFU**
	110	CF:[C] OHP/TH		[0 to 1023 / 590 / 1/step] **DFU**
109	**[LD Beam Pitch]** LD Beam Pitch			
	Sets the beam pitch for black in 1200 dpi or 600 dpi mode. **NOTE:** After replacing the laser optics housing unit, the data printed on the decal attached to the new unit must be input with this SP mode.			
	2	Pitch 1200	* BCU	[0 to 255 / 50 / 50 pulse/step] **FA**
	3	Pitch 600		[0 to 255 / 42 / 50 pulse/step] **FA**
	5	Display 1200		[0 to 255 / - / 1 pulse/step]
	6	Display 600		[0 to 255 / - / 1 pulse/step]
112	**[Polygon OFF Timing 1]** Polygon Mirror Motor OFF Timing 1			
	1	Warming-up	* BCU	The polygon mirror motor turns off if the machine receives no print start command for the time specified in this SP mode after receiving the print preparation command. [0 to 60 / 10 / 1 second/step] 0: Not turned off except for Energy Saver mode
	2	Job End		The polygon mirror motor turns off if the machine receives no print job for the time specified in this SP mode after the previous job was completed. [0 to 60 / 1 / 1 second/step] 0: Not turned off except for Energy Saver mode
113	**[Polygon OFF Timing 2]** Polygon Mirror Motor OFF 2			
	1	Polygon OFF Timing 2		The polygon mirror motor does not turn on until the printer enters the ready condition even after receiving the print start command. [0 or 1 / 1 / 1 /step] 0: Enable, 1: Disable **NOTE:** When a user complains about high frequency noise, enabling this mode can minimize the noise.
201	**[Development Bias]** ([Color], Process Speed)			
	1	[K] 62.5	* BCU	Adjusts the development bias. Development bias is automatically adjusted during process control; therefore, adjusting these settings has no effect while Process Control (SP3-125 Default: ON) is activated. After deactivating Process Control with SP3-125, the values in these SP modes are used for printing. [200 to 800 / 500 / 10 V/step] **DFU**
	2	[K] 125		
	3	[K] 185		
	4	[Y] 62.5		
	5	[Y] 125		
	6	[M] 62.5		
	7	[M] 125		
	8	[C] 62.5		
	9	[C] 125		

2	Mode No. (Class 1, 2, and 3)			Function / [Setting]
207	**[Forced Toner Supply]** ([Color])			
	1	[K]	* BCU	Forces toner to be supplied to the development unit for the number of times specified by this SP mode. 1 time: The toner supply clutch turns on for 0.7 s and off for 1.3 s. [0 to 3 / 2 / 1/step]
	2	[Y]		
	3	[M]		
	4	[C]		
208	**[Toner Supply Mode]** ([Color])			
	1	[K]	* BCU	Selects the toner supply method. [0 to 2 / 1 / 1/step] Alphanumeric 0: Fixed supply (with the supply rates stored with SP2-208-5 to 8) 1: Fuzzy control supply 2: Proportional control supply (using the Vref values stored with SP2-224-5 to 8)
	2	[Y]		
	3	[M]		
	4	[C]		
	5	Fixed Rate [K]		Sets the toner supply rate used when the toner supply method (SP2-208-1 to 4) is set to '0' (fixed supply mode). [0 to 100 / 5 / 1%/step]
	6	Fixed Rate [Y]		
	7	Fixed Rate [M]		
	8	Fixed Rate [C]		
	9	Upper Limit	* BCU #	Specifies the maximum possible toner supply, expressed as a percentage of the maximum amount of toner that can possibly be supplied for a sheet of paper. If too much toner is supplied to the development unit especially for black or in the low humidity condition, this may cause dirty background due to insufficient agitation. This SP mode limits the maximum possible toner supply for black and only in the low humidity condition for color. [20 to 70 / 42 / 1 %/step] **DFU** **NOTE:** The main switch must be turned off and on to effect the setting change.
	10	LowCoverage[K]	* BCU	Adjusts the toner supply amount (fixed rate) when making multiple prints of pages with low image ratio (coverage). When printing with a low image ratio, toner concentration is controlled only with Vt outputs since pixel count is not done for low image ratios. This may cause the attraction force between toner and carrier to increase, resulting in low image density on outputs. To prevent this, the machine counts the number of pixels and supplies a fixed amount of toner if the accumulated number of pixels becomes greater than the specified level. [0 to 100 / 9 / 1 %/step] **DFU**
	11	LowCoverage[Y]		[0 to 100 / 9 / 1 %/step] **DFU**
	12	LowCoverage[M]		[0 to 100 / 5 / 1 %/step] **DFU**
	13	LowCoverage[C]		[0 to 100 / 9 / 1 %/step] **DFU**
210	**[Toner Supply Counter]** ([Color])			
	5	[K]	* BCU	Displays the total time that the toner supply clutch has been on. This data is stored in the memory chip on each toner cartridge. [0 to 5000 / - / 1 second/step]
	6	[Y]		
	7	[M]		
	8	[C]		

Service Tables

2	Mode No. (Class 1, 2, and 3)			Function / [Setting]
212	**[Toner Near/End]** Toner Near End / End Detection Threshold ([Color])			
	1	Start [K]	* BCU	When the amount of toner amount left in the cartridge becomes less than this value, the machine starts monitoring the Vt values for toner near end detection. [0 to 1000 / 600 / 10 g/step]
	2	Start [YMC]		[0 to 1000 / 300 / 10 g/step]
	5	Near [K]		Specifies the threshold for toner near-end detection. The machine detects toner near-end when the following happens 10 times consecutively. Vt > Vref + Threshold [0 to 5.0 / 0.4 / 0.1 V/step]
	6	Near [YMC]		
	7	End [K]		Specifies the threshold for toner end detection. The machine detects toner end when the following happens 10 times consecutively. Then, the machine stops printing, even during a print job. Vt > Vref + Threshold [0 to 5.0 / 0.8 / 0.1 V/step]
	8	End [YMC]		
	9	Pixel [K]		Specifies the number of sheets with full image coverage that can be printed after toner near-end has been detected. When near-end is detected, the pixels in the images are counted. The machine detects toner end when the following happens, and the machine stops printing even during a print job. Pixel count = 5 A4/LT sheets with full image coverage [0 to 255 / 5 / 1 sheet/step] **NOTE:** The setting of SP2-212-11 has priority for deciding when to stop printing.
	10	Pixel [YMC]		
	11	Min. Print		Specifies the minimum number of sheets that can be printed after toner near-end has been detected. However, when the following happens 10 consecutive times, the machine stops printing even during a print job or if this guaranteed minimum has not been met. Vt > Current Vref value + 1.2V or Vt > 4.8V [0 to 50 / 10 / 1 sheet/step]
213	**[Toner End ON/OFF]** Toner End Detection ON/OFF			
	1	Toner END ON/OFF	* BCU #	Enables or disables toner near-end and end detection (if disabled, the toner supply clutch on time is still counted). [0 or 1 / 1 / -] Alphanumeric, **DFU** 0: Disabled, 1 Enabled **NOTE:** The main switch must be turned off and on to effect the setting change.

2	Mode No. (Class 1, 2, and 3)			Function / [Setting]
223	**[TD Vcnt Control]** TD Sensor Vcnt Control			
	1	Initialization	* BCU	Enables or disables the Vcnt Auto Adjustment when detecting a new development unit. When the machine detects a new development unit, developer initialization automatically starts. During the developer initialization, Vcnt is automatically adjusted so that Vt is within 3.0 ± 0.1V. [0 or 1 / 1 / -] Alphanumeric, **DFU** 0: Disabled 1: Enabled
	2	Humidity		Enables or disables the Humidity Auto Correction. This corrects the Vcnt value for the current humidity. This correction is applied to both the Vcnt values automatically adjusted during developer initialization and manually adjusted with SP2-224-1 to 4. If this correction does not work well under certain environmental conditions or due to a defective humidity sensor, deactivate the Humidity Auto Correction and adjust the Vcnt value in SP2-224-1 to 4 (by trial and error). [0 or 1 / 1 / -] Alphanumeric 0: Disabled 1: Enabled
	3	Toner Fill Up		Activates or deactivates the Toner Fill Up mode, which fills up the toner supply tube with toner during developer initialization. This function is required only at machine installation. Although the default is “0”, the factory setting is “1”. After toner fill-up occurs during machine installation, the setting is changed to “0” automatically. [0 or 1 / 0 / -] Alphanumeric, **DFU** 0: Deactivate 1: Activate
224	**[Vcnt / Vref]** Vcnt / Vref ([Color])			
	Adjusts the Vcnt value manually. The value in this SP mode is effective until after the next process control self-check. To always use this value for some reason, select proportional control supply mode with SP2-208-1 to 4.			
	1	Vcnt [K]	* BCU #	[0 to 220 / 100 / 0.1 V/step] **NOTE:** The main switch must be turned off and on to effect the setting change.
	2	Vcnt [Y]		
	3	Vcnt [M]		
	4	Vcnt [C]		
	Adjusts the Vref value manually. The value in this SP mode is effective until the next process control self-check. To always use this value for some reason, select proportional control supply mode with SP2-208-1 to 4.			
	5	Vref [K]	* BCU	[0 to 50 / 28 / 0.1 V/step]
	6	Vref [Y]		
	7	Vref [M]		
	8	Vref [C]		

Service Tables

2	Mode No. (Class 1, 2, and 3)			Function / [Setting]
301	**[Transfer Current]** Transfer Current ([Color Mode, Color], **P**aper Tray or **B**y-pass, **S**implex or **D**uplex, Process Speed) Paper Type -> TH: Thick Paper, SP: Special Paper			
	Adjusts the transfer current for each color and each print mode. **NOTE:** If the transfer current is increased too much, image offset may occur especially in halftone areas.			
	1	[K]P S 125	* BCU	[0 to 50 / 16 / 1 μA/step]
	2	[K]P S 185		[0 to 50 / 24 / 1 μA/step]
	3	[K]P D 125		[0 to 50 / 16 / 1 μA/step]
	4	[K]P D 185		[0 to 50 / 24 / 1 μA/step]
	5	[K]B S 62.5		[0 to 50 / 8 / 1 μA/step]
	6	[K]B S 125		[0 to 50 / 16 / 1 μA/step]
	7	[K]B S 185		[0 to 50 / 24 / 1 μA/step]
	8	[FC,K]P S 62.5		[0 to 50 / 6 / 1 μA/step]
	9	[FC,K]P S 125		[0 to 50 / 13 / 1 μA/step]
	10	[FC,Y]P S 62.5		[0 to 50 / 6 / 1 μA/step]
	11	[FC,Y]P S 125		[0 to 50 / 11 / 1 μA/step]
	12	[FC,M]P S 62.5		[0 to 50 / 5 / 1 μA/step]
	13	[FC,M]P S 125		[0 to 50 / 10 / 1 μA/step]
	14	[FC,C]P S 62.5		[0 to 50 / 6 / 1 μA/step]
	15	[FC,C]P S 125		[0 to 50 / 11 / 1 μA/step]
	16	[FC,K]P D 62.5		[0 to 50 / 8 / 1 μA/step]
	17	[FC,K]P D 125		[0 to 50 / 16 / 1 μA/step]
	18	[FC,Y]P D 62.5		[0 to 50 / 6 / 1 μA/step]
	19	[FC,Y]P D 125		[0 to 50 / 11 / 1 μA/step]
	20	[FC,M]P D 62.5		[0 to 50 / 5 / 1 μA/step]
	21	[FC,M]P D 125		[0 to 50 / 9 / 1 μA/step]
	22	[FC,C]P D 62.5		[0 to 50 / 6 / 1 μA/step]
	23	[FC,C]P D 125		[0 to 50 / 10 / 1 μA/step]
	24	[FC,K]B S 62.5		[0 to 50 / 6 / 1 μA/step]
	25	[FC,K]B S 125		[0 to 50 / 12 / 1 μA/step]
	26	[FC,Y]B S 62.5		[0 to 50 / 6 / 1 μA/step]
	27	[FC,Y]B S 125		[0 to 50 / 11 / 1 μA/step]
	28	[FC,M]B S 62.5		[0 to 50 / 5 / 1 μA/step]
	29	[FC,M]B S 125		[0 to 50 / 10 / 1 μA/step]
	30	[FC,C]B S 62.5		[0 to 50 / 6 / 1 μA/step]
	31	[FC,C]B S 125		[0 to 50 / 11 / 1 μA/step]
	32	[K]OHP 62.5		[0 to 50 / 6 / 1 μA/step]
	33	[FC,K]OHP 62.5		[0 to 50 / 15 / 1 μA/step]
	34	[FC,Y]OHP 62.5		[0 to 50 / 12 / 1 μA/step]
	35	[FC,M]OHP 62.5		[0 to 50 / 6 / 1 μA/step]
	36	[FC,C]OHP 62.5		[0 to 50 / 9 / 1 μA/step]
	37	[K]TH D 62.5		[0 to 50 / 6 / 1 μA/step]
	38	[FC,K]TH D 62.5		[0 to 50 / 5 / 1 μA/step]
	39	[FC,Y]TH D 62.5		[0 to 50 / 5 / 1 μA/step]
	40	[FC,M]TH D 62.5		[0 to 50 / 5 / 1 μA/step]
	41	[FC,C]TH D 62.5		[0 to 50 / 5 / 1 μA/step]
	42	[K]SP S 62.5		[0 to 50 / 9 / 1 μA/step]
	43	[K]SP S 125		[0 to 50 / 18 / 1 μA/step]
	44	[K]SP S 185		[0 to 50 / 27 / 1 μA/step]
	45	[FC,K]SP S 62.5		[0 to 50 / 8 / 1 μA/step]

2	Mode No. (Class 1, 2, and 3)			Function / [Setting]
301	46	[FC,Y]SP S 62.5	* BCU	[0 to 50 / 7 / 1 μA/step]
	47	[FC,M]SP S 62.5		[0 to 50 / 6 / 1 μA/step]
	48	[FC,C]SP S 62.5		[0 to 50 / 7 / 1 μA/step]
	49	[FC,K]SP S 125		[0 to 50 / 15 / 1 μA/step]
	50	[FC,Y]SP S 125		[0 to 50 / 14 / 1 μA/step]
	51	[FC,M]SP S 125		[0 to 50 / 12 / 1 μA/step]
	52	[FC,C]SP S 125		[0 to 50 / 13 / 1 μA/step]
	57	[K]TH S 62.5		[0 to 50 / 6 / 1 μA/step]
	58	[FC,K]TH S 62.5		[0 to 50 / 6 / 1 μA/step]
	59	[FC,Y]TH S 62.5		[0 to 50 / 6 / 1 μA/step]
	60	[FC,M]TH S 62.5		[0 to 50 / 6 / 1 μA/step]
	61	[FC,C]TH S 62.5		[0 to 50 / 6 / 1 μA/step]
	62	[K]SP D 62.5		[0 to 50 / 9 / 1 μA/step]
	63	[K]SP D 125		[0 to 50 / 18 / 1 μA/step]
	64	[K]SP D 185		[0 to 50 / 27 / 1 μA/step]
	65	[FC,K]SP D 62.5		[0 to 50 / 10 / 1 μA/step]
	66	[FC,Y]SP D 62.5		[0 to 50 / 7 / 1 μA/step]
	67	[FC,M]SP D 62.5		[0 to 50 / 6 / 1 μA/step]
	68	[FC,C]SP D 62.5		[0 to 50 / 7 / 1 μA/step]
	69	[FC,K]SP D 125		[0 to 50 / 18 / 1 μA/step]
	70	[FC,Y]SP D 125		[0 to 50 / 13 / 1 μA/step]
	71	[FC,M]SP D 125		[0 to 50 / 11 / 1 μA/step]
	72	[FC,C]SP D 125		[0 to 50 / 12 / 1 μA/step]
309	**[Current Paper Size]** Transfer Current - Paper Size Correction Paper Type -> N: Normal, TH: Thick, OHP			
	Corrects the transfer current for paper size. When small paper is used for printing, the transfer current flows to the drum at the non image areas where the transfer belt touches the OPC drum. This may cause an abnormal image due to insufficient current at the image areas. To increase the current by 1.5 times, set the SP mode to “15”. **NOTE:** Increase only when an abnormal image (insufficient image transfer) occurs on a small paper size. However, increasing the current too much may cause image offset.			
	5	N LT SEF	* BCU	[10 to 40 / 16 / 0.1/step]
	6	N A5 SEF		[10 to 40 / 22 / 0.1/step]
	7	TH LT SEF		[10 to 40 / 12 / 0.1/step]
	8	TH A5 SEF		[10 to 40 / 30 / 0.1/step]
	9	OHP LT SEF		[10 to 40 / 22 / 0.1/step]
	10	OHP A5 SEF		[10 to 40 / 40 / 0.1/step]

2	Mode No. (Class 1, 2, and 3)			Function / [Setting]
801	**[PA Roller Current]** Paper Attraction Roller Current ([Color], **S**implex or **D**uplex, Process Speed): Current Adjustment (**P**aper or **B**y-pass): Paper Size Correction			
	Adjusts the paper attraction roller current for color printing. If paper misfeeds occur at the transfer unit in color mode, check and/or adjust the paper attraction roller current. **NOTE:** The magenta development section is close to the paper attraction roller. Decreasing the current may not cause paper misfeed. If the current is increased too much, the following image problems may occur depending on the humidity. High humidity: Insufficient image transfer in magenta due to current flow to the magenta OPC drum Low humidity: Offset image in magenta halftone areas due to paper charged positive too much When adjusting the current with this SP mode, the value should be lower than transfer current.			
	6	[FC] S 62.5	* BCU	[0 to 50 / 5 / 1 μA/step]
	7	[FC] S 125		[0 to 50 / 10 / 1 μA/step]
	8	[FC] D 62.5		[0 to 50 / 2 / 1 μA/step]
	9	[FC] D 125		[0 to 50 / 5 / 1 μA/step]
	14	[K] B TH S		[10 to 30 / 5 / 0.1/step]
	15	[FC] B TH S		[10 to 30 / 0 / 0.1/step]
	16	[K] B OHP		[10 to 30 / 10 / 0.1/step]
	17	[FC] B OHP		[10 to 30 / 16 / 0.1/step]
	18	[K] B TH D		[10 to 30 / 5 / 0.1/step]
	19	[FC] B TH D		[10 to 30 / 0 / 0.1/step]
	20	[K] SP S		[10 to 30 / 5 / 0.1/step]
	21	[K] SP D		[10 to 30 / 5 / 0.1/step]
	22	[FC] SP S 62.5		[10 to 30 / 5 / 0.1/step]
	23	[FC] SP S 125		[10 to 30 / 10 / 0.1/step]
	24	[FC] SP D 62.5		[10 to 30 / 2 / 0.1/step]
	25	[FC] SP D 125		[10 to 30 / 5 / 0.1/step]
802	**[PA Current Paper Size]** Paper Attraction Roller Current - Paper Size Correction Paper Type -> N: Normal, TH: Thick, OHP			
	Adjusts the correction, depending on the paper size. When small-width paper is used for printing, the paper attraction roller current flows to the non-image areas of OPC drum where the transfer belt touches the drum. This may cause paper misfeed due to insufficient current. To increase the current by 1.5 times, set the SP mode to “15”. **NOTE:** Adjust only when a paper misfeed occurs with a small paper size. Increasing the current too much may cause image offset in magenta halftone areas.			
	1	N LT SEF	* BCU	[10 to 40 / 15 / 0.1/step]
	2	N A5 SEF		[10 to 40 / 20 / 0.1/step]
	3	TH LT SEF		[10 to 40 / 15 / 0.1/step]
	4	TH A5 SEF		[10 to 40 / 20 / 0.1/step]
	5	OHP LT SEF		[10 to 40 / 24 / 0.1/step]
	6	OHP A5 SEF		[10 to 40 / 40 / 0.1/step]

2	Mode No. (Class 1, 2, and 3)			Function / [Setting]
908	**[Mirror Motor]** Mirror Positioning Motor ([Color])			
	Displays the result of the latest line position adjustment. Changing this affects the mirror position, which corrects the optically skewed image; however, this will be automatically corrected at the next line position adjustment. **NOTE:** If the line position adjustment does not work properly, the line position can be adjusted manually with this SP mode as a temporary measure. In this case, the line position adjustment needs to be disabled with SP5-993-001.			
	2	[C]	* BCU	[-128 to 127 / 0 / 1 pulse/step] **DFU**
	3	[M]		
	4	[Y]		
909	**[Main-scan Reg.]** Main-scan Registration ([Color])			
	Displays the result of the latest line position adjustment. Changing this affects the main scan registration; however, this will be automatically corrected at the next line position adjustment. If a fine adjustment is required, it can be done with SP5-993-010 to 012 (this affects the way that the adjustment is done, and will be effective from the next line position adjustment. **NOTE:** If the line position adjustment does not work properly, the line position can be adjusted manually with this SP mode as a temporary measure. In this case, the line position adjustment needs to be disabled with SP5-993-001. 1 dot = 20μ			
	1	[Y]	* BCU	[-255 to 255 / 0 / 1 dot/step] **DFU**
	2	[M]		
	3	[C]		
	4	[K]		
916	**[Sub-scan Reg.]** Sub-scan Registration ([Color Mode, Color], Resolution)			
	Displays the result of the latest line position adjustment. Changing this affects the sub scan registration; however, this will be automatically corrected at the next line position adjustment. If a fine adjustment is required, it can be done with SP5-993-016 to 021 (this affects the way that the adjustment is done, and will be effective from the next line position adjustment. **NOTE:** If the line position adjustment does not work properly, the line position can be adjusted manually with this SP mode as a temporary measure. In this case, the line position adjustment needs to be disabled with SP5-993-001. 600 dpi: 1 dot = 40μ, 1200dpi: 1 dot = 20μ			
	1	[K] 1200	* BCU	[0 to 20000 / 7510 / 1 dot] **DFU**
	2	[FC,K] 1200		[0 to 20000 / 15038 / 1 dot] **DFU**
	3	[FC,Y] 1200		[0 to 20000 / 10402 / 1 dot] **DFU**
	4	[FC,M] 1200		[0 to 20000 / 1136 / 1 dot] **DFU**
	5	[FC,C] 1200		[0 to 20000 / 5762 / 1 dot] **DFU**
	6	[K] 600		[0 to 20000 / 3755 / 1 dot] **DFU**
	7	[FC,K] 600		[0 to 20000 / 7519 / 1 dot] **DFU**
	8	[FC,Y] 600		[0 to 20000 / 5201 / 1 dot] **DFU**
	9	[FC,M] 600		[0 to 20000 / 568 / 1 dot] **DFU**
	10	[FC,C] 600		[0 to 20000 / 2881 / 1 dot] **DFU**
919	**[Main Scan Lgth Det]** Main-scan Length Detection			
	1	MScan Lgth Det	* BCU	Enables or disables the main-scan length detection. [0 or 1 / 1 / -] Alphanumeric 0: Disable 1: Enable

2	Mode No. (Class 1, 2, and 3)			Function / [Setting]
994	**[Main Scan Reg Cor]** Main-scan Registration Correction ([Color])			
	Specifies the correction to the main-scan length. Main-scan length differs for each machine due to variations in parts used in the laser optics housing unit. Fine adjustment of main-scan length is done at the factory on each unit. This SP mode is DFU except for when replacing the laser optics housing unit. When replacing the unit, the data printed on the label attached to the new unit must be input with this SP mode. **NOTE:** When fine adjustment is required, the adjustment should be done with SP5-993-010 to 012. 1 dot = 20μ			
	1	[Y]	*	[-128 to 127 / 0 / 1 dot/step] **FA DFU**
	2	[M]	BCU	[-128 to 127 / 1 / 1 dot/step] **FA DFU**
	3	[C]		[-128 to 127 / 1 / 1 dot/step] **FA DFU**
	4	[K]		[-128 to 127 / 0 / 1 dot/step] **FA DFU**
995	**[Motor Reset]** Mirror Positioning Motor Reset			
	1	Motor Reset		Rotates the mirror position motors (CMY) by 250 pulses clockwise; then by 125 pulses counterclockwise. This moves the mirrors back to the initial position. Then, the settings of SP2-908-002 to 004 are reset to 0. When the line position adjustment fails, it is one of possible causes when the mirror position motor locks. Performing this SP mode can move the mirrors back to the original position if it locks. Then, do the forced line position adjustment (SP5-993-002).

SP3-XXX (Process)

3	Mode No. (Class 1, 2, and 3)			Function / [Setting]
005	**[TD Initial]** TD Sensor Initialization ([Color])			
	1	[K]		Initializes the developer. **DFU** Press the Enter key to execute the initialization after the machine asks “Execute?”.
	2	[Y]		
	3	[M]		
	4	[C]		
	5	[All Color]		
	6	Result		Displays the developer initialization result. [1 to 9 / - / -] 1: Success 2 to 9: Failure All colors are displayed. Values is displayed in the order K Y C M. e.g., 1 1 2 1: Initialization of Cyan failed but the others succeeded See the troubleshooting section for details.
006	**[Vcnt Initial]** Vcnt Initial Setting Display ([Color])			
	1	[K]		Displays the initial Vcnt value. [0 to 240 / 100 / 0.1/step]
	2	[Y]		
	3	[M]		
	4	[C]		
007	**[Vcnt Current]** Vcnt Current Value Display ([Color])			
	1	[K]		Displays the current Vcnt value. [0 to 240 / - / 0.1/step]
	2	[Y]		
	3	[M]		
	4	[C]		
008	**[Humidity]**			
	1	Humidity		Displays the humidity measured by the humidity/temperature sensor. [0 to 100 / - / 1/step]
107	**[Vsg Display]** Vsg Display (**F**ront or **R**ear)			
	1	Vsg Front	* BCU	Displays the Vsg value of the front ID sensor. [0.00 to 5.00 / - / 0.01V/step] Vsg is normally 4.0 ± 0.5 V. If Vsg is out of the adjustment range and this is detected 3 times consecutively, it leads to SC385.
	2	LED Current Front		Displays the ID sensor LED current adjusted during Vsg adjustment. [0 to 1023 / - / 1]
	3	Vsg Rear		Displays the Vsg value of the rear ID sensor. [0.00 to 5.00 / - / 0.01V/step] Vsg is normally 4.0 ± 0.5 V. If Vsg is out of the adjustment range and this is detected 3 times consecutively, it leads to SC385.
	4	LED Current Rear		Displays the ID sensor LED current adjusted during Vsg adjustment. [0 to 1023 / - / 1]

3	Mode No. (Class 1, 2, and 3)			Function / [Setting]
120	**[Dev. Gamma Target]** Development Gamma Target ([Color])			
	Adjusts the development gamma by changing the Vref value used for toner density control. Vref is automatically corrected so that the gamma measured during the process control self-check becomes "the value set with this SP mode ± 0.15"			
	1	[K]	* BCU	[100 to 300 / 155 / 1 mg/cm^2/KV / step] **DFU**
	2	[Y]		[100 to 300 / 125 / 1 mg/cm^2/KV / step] **DFU**
	3	[M]		
	4	[C]		
121	**[Dev. g Display]** Development Gamma Display ([Color])			
	Displays the development gamma measured during the process control self-check.			
	1	[K]		[0 to 10000 / - / 1 mg/cm2/KV /step] Normal Range: 1.00 to 2.00
	2	[Y]		
	3	[M]		
	4	[C]		
122	**[Vk Display]** Vk Display ([Color])			
	1	[K]		Displays the current Vk value. [-255 to 255 / - / 1/step] Normal Range: -50 to 50
	2	[Y]		
	3	[M]		
	4	[C]		
123	**[Vref Display]** Current Vref Display ([Color])			
	1	[K]		Displays the current Vref value. [0.0 to 5.0 / - / 0.1V/step]
	2	[Y]		
	3	[M]		
	4	[C]		
125	**[Process Control]** Process Control			
	1	ON/OFF	* BCU	Enables or disables process control. [0 or 1 / 1 / 1/step] Alphanumeric 0: OFF (Use the fixed values for VD, VL and VB set with SP2-001, SP2-103, and SP2-201.) 1: ON
	2	LD Control		Selects the LD control mode. [0 to 2 / 1 / 1/step] Alphanumeric 0: Fixed (at the value in SP2-103) 1: Process Control 2: LD Power
	3	Auto TD Adj.		Specifies when to perform the Auto Toner Density Adjustment. When performing the Auto Toner Density Adjustment, the machine supplies or consumes toner so that the development gamma is within ± 0.15 of the gamma target. [0 to 3 / 0 / 1/step] Alphanumeric 0: Disable 1: Initial (& Non-use self-check) 2: Job end (& Non-use self-check) 3: Initial & Job end (& Non-use self-check) *Do not adjust unless advised by senior technical staff.*

3	Mode No. (Class 1, 2, and 3)			Function / [Setting]
125	4	ACC	* BCU	Enables or disables the process control self-check before printing the ACC pattern. [0 to 2 / 2 / 1/step] Alphanumeric 0: Disable 1: Process Control 2: Auto TD Adj. (& Process Control Self-check) **NOTE:** If color balance changes during multi-copy runs after ACC is performed, select 1 or 2. Setting 2 can precisely adjust the image density; however, it takes about 6 minutes. Select 1 or 2 depending on the customer's requirement.
126	**[Forced Self-check] Forced Self-check**			
	1	Forced Self-check		Performs a forced process control self-check.
	2	Forced TD Adj.		Performs a forced auto toner density adjustment. *Do not use unless advised by senior technical staff.*
902	**[Pointer Display]** Pointer Table Display ([Color])			
	1	Printer [K]	* BCU	Displays the number in the pointer table that was selected during the latest process control self-check. [1 to 30 / - / 1/step]
	2	Printer [Y]		
	3	Printer [M]		
	4	Printer [C]		
	5	CF [K]		
	6	CF [Y]		
	7	CF [M]		
	8	CF [C]		
903	**[M/A Target]** M/A Target ([Color])			
	Adjusts the M/A (**M**ass per **A**rea, mg/cm^2) value used during the process control self-check. Adjusting this changes the development bias. This causes the solid ID to increase or decrease. If developer capability causes an ID problem, toner density needs to be adjusted with SP3-120-1 to 4, depending on the color.			
	1	Printer [K]	* BCU	[0 to 1.50 / 0.50 / 0.05 mg/cm^2 /step] **DFU**
	2	Printer [Y]		
	3	Printer [M]		
	4	Printer [C]		
	5	CF [K]		[0 to 1.50 / 0.60 / 0.01 mg/cm^2 /step] **DFU**
	6	CF [Y]		
	7	CF [M]		
	8	CF [C]		
904	**[M/A for LD]** M/A Target for LD Correction ([Color])			
	Adjusts the M/A value used during the LD correction mode. This value is effective when SP3-125-2 "LD Control Selection" is set to "2". Adjusting this data effects the image reproduction especially in highlight areas.			
	1	Printer [K]	* BCU	[0 to 1.00 / 0.10 / 0.01 mg/cm2 /step] **DFU**
	2	Printer [Y]		[0 to 1.00 / 0.12 / 0.01 mg/cm2 /step] **DFU**
	3	Printer [M]		
	4	Printer [C]		
	5	CF [K]		[0 to 1.00 / 0.13 / 0.01 mg/cm2 /step] **DFU**
	6	CF [Y]		[0 to 1.00 / 0.14 / 0.01 mg/cm2 /step] **DFU**
	7	CF [M]		
	8	CF [C]		

Service Tables

3	Mode No. (Class 1, 2, and 3)			Function / [Setting]
906	**[PC Self-check]** Process Control Self-checks			
	1	Job End	* BCU	Specifies the execution timing of the job end process control self-check. [0 to 999 / 200 / 1 print/step] The job end process control self-check is automatically done after a job is completed when 200 prints have been made since the last self-check. The counter for the job end process control self-check resets when one of the following process control self-checks is done. • Initial • Interval: Interrupt • Non-use Time • During Toner End When K prints are made, the number of prints is calculated with the K coefficient in SP3-906-5.
	2	Interrupt		Specifies the execution timing of the interrupt process control self-check. [0 to 999 / 0 / 1 print/step] The interrupt process control self-check is automatically done if the number of prints in the job exceeds the number set in this SP mode. When the print job is completed, the counter is reset, even if the interrupt self check did not occur. When K prints are made, the number of prints is calculated with the K coefficient in SP3-906-5.
	3	Non-use Time 1		Specifies the executing timing of the non-use time process control self-check. [0 to 999 / 0 / 1 print/step] 0: Disable The non-use time process control self-check is automatically done after the number of prints set with this SP mode have been made and no prints have been made for the time set with SP mode 3-906-4 since the last print job. If the conditions are met, the self-check will be done after the print job is completed. The counter is reset when the initial process control self-checks is done or when a print is made.
	4	Non-use Time 2		Specifies the executing timing of the non-use time process control self-check. [0 to 2550 / 480 / 10 minutes/step] 0: Disable
	5	K Coefficient		Sets the coefficient to calculate the counter value for black-and-white prints. [0 to 1.00 / 1.00 / 0.01/step] **DFU** With the default setting (100), counters used for process control count up by 1 when 1 black-and-white print has been made.

3	Mode No. (Class 1, 2, and 3)			Function / [Setting]
910	**[Vmin Display]** Vmin Display ([Color])			
	1	[K]	* BCU	Displays the current Vmin value for K
	2	[Color]		Displays the lowest current Vmin value for the colors (CMY).
911	**[Vt Current Display]** Vt Current Display ([Color])			
	1	[K]	* BCU	Displays the current Vt value. [0.0 to 5.0 / - / 0.1V/step]
	2	[Y]		
	3	[M]		
	4	[C]		
912	**[Vt Average Display]** Vt Average Display ([Color])			
	1	[K]	* BCU	Displays the average Vt value. [0.0 to 5.0 / - / 0.1V/step]
	2	[Y]		
	3	[M]		
	4	[C]		
913	**[Toner Supply Time]** Toner Supply Time Display ([Color])			
	1	[K]	* BCU	Displays the toner supply clutch on time for the most recent page. [0 to 5000 / - / 10 ms/step]
	2	[Y]		
	3	[M]		
	4	[C]		
920	**[OPC Refresh]**			
	1	Temperature	* BCU	This SP determines the temperature threshold for determining whether refresh mode is done just after the machine is switched on. The charge roller generates NOx (nitrogen oxides), and these contaminate the OPC drum surface and may cause a smeared image. Just after the main switch is turned on, if the temperature measured by both the thermistor located at the right side on the laser optics housing unit and the temperature/humidity sensor is greater than the temperature specified in this SP mode, refresh mode is done before initial process control. During refresh mode, toner is developed on the OPC with 50V development potential and cleaned to remove Nox (nitrogen oxides). This cycle is repeated a few times. [10 to 30 / 25 / 1°C /step]
	2	Humidity		This SP determines the humidity threshold for determining whether refresh mode is done just after the machine is switched on. Just after the main switch is turned on, if the humidity measured by the temperature/humidity sensor is greater than the humidity specified in this SP mode, refresh mode is done before the initial process control self-check. [10 to 90 / 75 / 1%/step]
	3	Prints		Specifies how often refresh mode is done. When the total number of prints since the last refresh mode exceeds the number specified in this SP mode, refresh mode is done before the job end process control self-check. [10 to 2550 / 200 / 10 prints/step]

Service Tables

3	Mode No. (Class 1, 2, and 3)			Function / [Setting]
920	4	Mode Set	* BCU	Enables/disables refresh mode. [0 to 2 / 2 / 1/step] Alphanumeric 0: Disabled 1: Mode 1 (Done at power on and toner end recovery) 2: Mode 2 (Done at power on, toner end recovery, and after the specified number of prints.) **NOTE:** Refresh mode is done during the toner end recovery self-check after a new toner cartridge is installed.
	5	Forced		Executes a forced refresh mode. Use this mode when the image is smeared. It takes about 1 minute. Also use after replacing the components of the transfer unit (see section 3).
	6	Auto Toner Refresh		Performs a toner refresh during the OPC refresh mode by changing the development bias from 50V to 400V. [0 or 1 / 0 / -] 0: Disabled 1: Enabled Enable this SP mode when dirty background and/or firefly spots appear intermittently on prints with a low image area ratio. While making prints with a low image area ratio, developer is agitated with less toner supplied. This may cause the toner-carrier attraction force to increase or toner to coagulate. This sometimes causes firefly spots or dirty background when a large amount of toner is supplied. **NOTE:** When enabling this SP mode, the following SP modes should be changed. SP3-906-001 Job End Process Control Self-check 200 (Default) -> 100 SP3-920-003 OPC Refresh Mode / Prints 200 (Default) -> 100
921	**[Forced Toner Ref]** Forced Toner Refresh			
	Perform forced toner refresh mode. When the developer has deteriorated or when prints are made in a very low humidity condition, dirty background may appear continuously. When this kind of dirty background appears, check whether or not the development gamma is within the target (SP3-120 and 121). If the development gamma is not within the target, do this SP mode. The machine automatically does the toner refresh mode in the following sequence. 1. Consumes toner in the development unit without toner supply until toner end is detected 2. Starts toner recovery mode. 3. Starts process control self-check. **NOTE:** If toner is drastically consumed for a short time, this may cause carrier to flow out. To prevent this, toner is consumed over a long period of time. (It takes about 20 minutes to complete this toner refresh mode).			
	1	[K]		
	2	All Color		

3	Mode No. (Class 1, 2, and 3)			Function / [Setting]
975	**[Process Control Result]** Process Control Self-check Result			
	1	P Ctrl Result		Displays the result of the latest process control self-check. [0 to 9999 / - / 1/step] All colors are displayed. The results are displayed in the order “K Y C M” e.g., 1 1 9 1: The self-check for Cyan failed but the others were successful See the troubleshooting section for details.

SP4-XXX (Scanner)

4	Mode No. (Class 1, 2, and 3)			Function / [Setting]
008	**[SubScanMagnification] Sub-scan Magnification Adjustment**			
	1	**SubScanMagnification**	* SBU	Adjusts the sub-scan magnification by changing the scanner motor speed. [-1.0 to 1.0 / 0 / 0.1%/step] **FA**
010	**[Leading Edge Reg.]** Leading Edge Registration Adjustment			
	1	Leading Edge Reg.	* SBU	Adjusts the leading edge registration by changing the scanning start timing in the sub-scan direction. [-3.0 to 3.0 / 0 / 0.1 mm/step] **FA**
011	**[Side-to-Side Reg.]** Side-to-Side registration Adjustment			
	1	Side-to-Side Reg.	* SBU	Adjusts the side-to-side registration by changing the scanning start timing in the main scan direction. [-6.0 to 6.0 / 0 / 0.1 mm/step] **FA**
012	**[Blank Margin]** Blank Margin Adjustment			
	1	Leading Edge	* NV	Sets the blank margin at each side for erasing the original shadow caused by the gap between the original and the scale. [0 to 3.0 / 0 / 0.1 mm/step] **FA**
	2	Trailing Edge		
	3	Left		
	4	Right		
013	**[Scanner Free Run]**			
	1	Lamp: OFF		Performs the scanner free run with the exposure lamp on or off in the following mode. Full color mode / Full Size / A3 or DLT
	2	Lamp: ON		
017	**[Scan Operation]**			
	1	Shading ON		Makes one scan with generating an F-Gate signal and shading on or off in the following mode. Full color mode / Full Size / A3 or DLT Uses this SP mode to check if the F-Gate signal is properly generated (F-Gate tells the engine to start printing data).
	2	Shading OFF		
205	**[Black ADS Level]**			
	1	Black ADS Level	* SBU	Specifies the level for deleting the background density in ADS mode. [0 to 128 / 70 / 1/step]
301	**[APS Operation Check]**			
	1	APS Operation Check		Displays a code that represents the original size detected by the original sensors. (See Input Check Table.)
303	**[APS A5size Check]**			
	1	APS A5size Check	* SBU	Specifies the result of the detection when the outputs from the original sensors are all OFF. [0 or 1 / 0 / -] 0: No original 1: A5 Lengthwise

4	Mode No. (Class 1, 2, and 3)			Function / [Setting]
417	**[IPU Test Pattern]**			
	1	IPU Test Pattern		Selects the IPU test pattern. [0 to 16 / 0 / 1/step] 0: Scanned image 1: Grid pattern 2: Slant grid pattern 3: Gradation main scan1 4: Gradation sub scan1 5: Gradation RBGYMCK 6: UCR pattern 7: Color patch 16 (1) 8: Color patch 16 (2) 9: Color patch 64 10: Grid pattern YMCK 11: Color patch YMCK 12: Gray pattern (1) 13: Gray pattern (2) 14: Gradation main scan2 15: Scanned + Grid pattern 16: Scanned + Gray scale
440	**[Saturation Adj.]** Saturation Adjustment			
	1	Saturation Adj.	* NV	Adjusts the level of saturation for copying. [0 to 5 / 3 / 1/step] 0: High 1: Lowest 2: Lower 3: Default 4: Higher 5: Highest
628	**[R Gain Display]** Gain Adjustment Red			
	1	R EVEN		Displays the gain value of the amplifiers on the scanner SBU for Red.
	2	R ODD		
629	**[G Gain Display]** Gain Adjustment Green			
	1	G EVEN		Displays the gain value of the amplifiers on the scanner SBU for Green.
	2	G ODD		
630	**[B Gain Display]** Gain Adjustment Blue			
	1	B EVEN		Displays the gain value of the amplifiers on the scanner SBU for Blue.
	2	B ODD		
685	**[Reference Adj.: R]** Reference Adjustment Red			
	1	Reference Adj.: R	* SBU	Sets the reference voltage for the A/D converters on the scanner IPU for Red. [0 to 255 / 136 / 1/step] **DFU**
686	**[Reference Adj.: G]** Reference Adjustment Green			
	1	Reference Adj.: G	* SBU	Sets the reference voltage for the A/D converters on the scanner IPU for Green. [0 to 255 / 136 / 1/step] **DFU**
687	**[Reference Adj.: B]** Reference Adjustment Blue			
	1	Reference Adj.: B	* SBU	Sets the reference voltage for the A/D converters on the scanner IPU for Blue. [0 to 255 / 136 / 1/step] **DFU**

4	Mode No. (Class 1, 2, and 3)			Function / [Setting]
688	**[DF: Density Adj.]** DF Density Adjustment			
	1	DF: Density Adj.	* SBU	Adjusts the white shading parameter when scanning an image with the ARDF. [83 to 100 / 86 / 1 %/ step] Adjusts the density level if the ID of outputs made in the DF and Platen mode is different.
800	**[DF: Density Correction]**			
	1	R	* SBU	Sets a coefficient to adjust the image density level when scanning an image with the ARDF. [-20 to 20 / 0 / 1/step] **DFU**
	2	G		
	3	B		
904	**[Scanner IPU Test]**			
	1	Test1:Register Access		Performs a write and read check of the ASICs on the scanner IPU board and displays the result. 00: OK 11, 12, 13, 14, 15: NG
	2	Test2: Image Path		Performs an image path check on the scanner IPU board and displays the result. 00: OK 21, 22, 23, 24: NG
905	**[Dither Selection]**			
	1	Dither Selection	* NV	Changes the parameters for error diffusion. [0 to 255 / 0 / 1/step] **DFU**
907	**[VPU Test Pattern]**			
	1	Test Pattern: R		Selects the test pattern generated by the scanner SBU board. [0 to 4 / 0 / 1 /step] 0: Default (Scanned Image) 1: Cyan pattern 2: White pattern 3: Cyan Pattern 16 steps 4: Line pattern
	2	Test Pattern: G		Selects the test pattern generated by the scanner SBU board. [0 to 4 / 0 / 1 /step] 0: Default (Scanned Image) 1: Magenta pattern 2: White pattern 3: Magenta Pattern 16 steps 4: Line pattern
	3	Test Pattern: B		Selects the test pattern generated by the scanner IPU board. [0 to 4 / 0 / 1 /step] 0: Default (Scanned Image) 1: Yellow pattern 2: White pattern 3: Yellow Pattern 16 steps 4: Line pattern
909	**[Gamma [K] Photo (Mono)] Printer Gamma Adjustment for Black/Photo mode**			
	1	Offset: Highlight	* NV	Adjusts the offset data of the printer gamma for black in B&W and Photo mode. [0 to 30 / 15 / 1 /step] See 'Replacement and Adjustment – Gamma Correction – Copy Mode' for how to use.
	2	Offset: Middle		
	3	Offset: Shadow		
	4	Offset: IDmax		

4	Mode No. (Class 1, 2, and 3)			Function / [Setting]
909	5	Option: Highlight	* NV	Adjusts the option data of the printer gamma for black in the B&W and Photo mode. [0 to 255 / 0 / 1 /step] **DFU**
	6	Option: Middle		
	7	Option: Shadow		
	8	Option: IDmax		
910	[Gamma [K] Letter] Printer Gamma Adjustment for Black/Letter mode			
	1	Offset: Highlight	* NV	Adjusts the offset data of the printer gamma for black in Letter mode. [0 to 30 / 15 / 1 /step] See 'Replacement and Adjustment – Gamma Correction – Copy Mode' for how to use.
	2	Offset: Middle		
	3	Offset: Shadow		
	4	Offset: IDmax		
	5	Option: Highlight		Adjusts the option data of the printer gamma for black in Letter mode. [0 to 255 / 0 / 1 /step] **DFU**
	6	Option: Middle		
	7	Option: Shadow		
	8	Option: IDmax		
911	[Gamma [C] Letter] Printer Gamma Adjustment for Cyan/Letter mode			
	1	Offset: Highlight	* NV	Adjusts the offset data of the printer gamma for cyan in Letter mode. [0 to 30 / 15 / 1 /step] See 'Replacement and Adjustment – Gamma Correction – Copy Mode' for how to use.
	2	Offset: Middle		
	3	Offset: Shadow		
	4	Offset: IDmax		
	5	Option: Highlight		Adjusts the option data of the printer gamma for cyan in Letter mode. [0 to 255 / 0 / 1 /step] **DFU**
	6	Option: Middle		
	7	Option: Shadow		
	8	Option: IDmax		
912	[Gamma [M] Letter] Printer Gamma Adjustment for Magenta/Letter mode			
	1	Offset: Highlight	* NV	Adjusts the offset data of the printer gamma for magenta in Letter mode. [0 to 30 / 15 / 1 /step] See 'Replacement and Adjustment – Gamma Correction – Copy Mode' for how to use.
	2	Offset: Middle		
	3	Offset: Shadow		
	4	Offset: IDmax		
	5	Option: Highlight		Adjusts the option data of the printer gamma for magenta in Letter mode. [0 to 255 / 0 / 1 /step] **DFU**
	6	Option: Middle		
	7	Option: Shadow		
	8	Option: IDmax		
913	[Gamma [Y] Letter] Printer Gamma Adjustment for Yellow/Letter mode			
	1	Offset: Highlight	* NV	Adjusts the offset data of the printer gamma for yellow in Letter mode. [0 to 30 / 15 / 1 /step] See 'Replacement and Adjustment – Gamma Correction – Copy Mode' for how to use.
	2	Offset: Middle		
	3	Offset: Shadow		
	4	Offset: IDmax		
	5	Option: Highlight		Adjusts the option data of the printer gamma for yellow in Letter mode. [0 to 255 / 0 / 1 /step] **DFU**
	6	Option: Middle		
	7	Option: Shadow		
	8	Option: IDmax		
914	[Gamma [K] Letter (Mono)] Printer Gamma Adjustment for Black/Letter mode			
	1	Offset: Highlight	* NV	Adjusts the offset data of the printer gamma for black in B&W and Letter mode. [0 to 30 / 15 / 1 /step] See 'Replacement and Adjustment – Gamma Correction – Copy Mode' for how to use.
	2	Offset: Middle		
	3	Offset: Shadow		
	4	Offset: IDmax		
	5	Option: Highlight		Adjusts the option data of the printer gamma for black in B&W and Letter mode. [0 to 255 / 0 / 1 /step] **DFU**
	6	Option: Middle		
	7	Option: Shadow		
	8	Option: IDmax		

4	Mode No. (Class 1, 2, and 3)			Function / [Setting]
915	[Gamma [K] Photo] Printer Gamma Adjustment for Black/Photo mode			
	1	Offset: Highlight	* NV	Adjusts the offset data of the printer gamma for black in Photo mode. [0 to 30 / 15 / 1 /step] See 'Replacement and Adjustment – Gamma Correction – Copy Mode' for how to use.
	2	Offset: Middle		
	3	Offset: Shadow		
	4	Offset: IDmax		
	5	Option: Highlight		Adjusts the option data of the printer gamma for black in Photo mode. [0 to 255 / 0 / 1 /step] **DFU**
	6	Option: Middle		
	7	Option: Shadow		
	8	Option: IDmax		
916	[Gamma [C] Photo] Printer Gamma Adjustment for Cyan/Photo mode			
	1	Offset: Highlight	* NV	Adjusts the offset data of the printer gamma for cyan in Photo mode. [0 to 30 / 15 / 1 /step] See 'Replacement and Adjustment – Gamma Correction – Copy Mode' for how to use.
	2	Offset: Middle		
	3	Offset: Shadow		
	4	Offset: IDmax		
916	5	Option: Highlight		Adjusts the option data of the printer gamma for cyan in Photo mode. [0 to 255 / 0 / 1 /step] **DFU**
	6	Option: Middle		
	7	Option: Shadow		
	8	Option: IDmax		
917	[Gamma [M] Photo] Printer Gamma Adjustment for Magenta/Photo mode			
	1	Offset: Highlight	* NV	Adjusts the offset data of the printer gamma for magenta in Photo mode. [0 to 30 / 15 / 1 /step] See 'Replacement and Adjustment – Gamma Correction – Copy Mode' for how to use.
	2	Offset: Middle		
	3	Offset: Shadow		
	4	Offset: IDmax		
	5	Option: Highlight		Adjusts the option data of the printer gamma for magenta in Photo mode. [0 to 255 / 0 / 1 /step] **DFU**
	6	Option: Middle		
	7	Option: Shadow		
	8	Option: IDmax		
918	[Gamma [Y] Photo] Printer Gamma Adjustment for Yellow/Photo mode			
	1	Offset: Highlight	* NV	Adjusts the offset data of the printer gamma for yellow in Photo mode. [0 to 30 / 15 / 1 /step] See 'Replacement and Adjustment – Gamma Correction – Copy Mode' for how to use.
	2	Offset: Middle		
	3	Offset: Shadow		
	4	Offset: IDmax		
	5	Option: Highlight		Adjusts the option data of the printer gamma for yellow in Photo mode. [0 to 255 / 0 / 1 /step] **DFU**
	6	Option: Middle		
	7	Option: Shadow		
	8	Option: IDmax		
932	**[Dot Position Cor.]** Main Scan Dot Position Correction			
	1	R: Left	* NV	Corrects the left or right side alignment of the red or blue filter on the CCD. [0 to 9 / 5 / 1 /step] For details on this adjustment, see Replacement and Adjustment – Image Adjustment - Scanner
	2	R: Right		
	3	B: Left		
	4	B: Right		

SP5-XXX (Mode)

<table>
<tr><th>5</th><th colspan="2">Mode No.
(Class 1, 2, and 3)</th><th></th><th>Function / [Setting]</th></tr>
<tr><td>009</td><td colspan="4">[Language Selection]</td></tr>
<tr><td></td><td>1</td><td>Language Selection</td><td>*
#
CTL</td><td>Selects the language for the control panel.
[0 to 16 / 2 / 1/step]
<table><tr><th>Data</th><th>Language</th><th>Data</th><th>language</th></tr><tr><td>0</td><td>No language</td><td>9</td><td>Norwegian</td></tr><tr><td>1</td><td>Japanese</td><td>10</td><td>Danish</td></tr><tr><td>2</td><td>English</td><td>11</td><td>Swedish</td></tr><tr><td>3</td><td>American</td><td>12</td><td>Polish</td></tr><tr><td>4</td><td>French</td><td>13</td><td>Portuguese</td></tr><tr><td>5</td><td>German</td><td>14</td><td>Hungarian</td></tr><tr><td>6</td><td>Italian</td><td>15</td><td>Czech</td></tr><tr><td>7</td><td>Spanish</td><td>16</td><td>Finnish</td></tr><tr><td>8</td><td>Dutch</td><td></td><td></td></tr></table>NOTE: Two languages can be stored in the memory for the touch panel. During installation, the required languages should be stored in the memory.

When changing language, the main switch has to be turned off and on to initialize the system.</td></tr>
<tr><td>024</td><td colspan="4">[mm/inch Selection]</td></tr>
<tr><td></td><td>1</td><td>mm/inch Selection</td><td></td><td>Selects the unit, mm or inch, on the touch panel.
[0 or 1 / 0 for EU/AA, 1 for NA / -]
0: mm, 1: inch</td></tr>
<tr><td>040</td><td colspan="4">[Non Custom Size M-Scan] Non Custom Paper Size Main-scan</td></tr>
<tr><td></td><td>1</td><td>Tray 1</td><td rowspan="5">*
CTL</td><td rowspan="5">No used.</td></tr>
<tr><td></td><td>2</td><td>Tray 2</td></tr>
<tr><td></td><td>3</td><td>Tray 3</td></tr>
<tr><td></td><td>4</td><td>Tray 4</td></tr>
<tr><td></td><td>6</td><td>By-pass Tray</td></tr>
<tr><td>41</td><td colspan="4">[Non Custom Size Sub-Scan] Non Custom Paper Size Sub-scan</td></tr>
<tr><td></td><td>1</td><td>Tray 1</td><td rowspan="5">*
CTL</td><td rowspan="5">Not used.</td></tr>
<tr><td></td><td>2</td><td>Tray 2</td></tr>
<tr><td></td><td>3</td><td>Tray 3</td></tr>
<tr><td></td><td>4</td><td>Tray 4</td></tr>
<tr><td></td><td>6</td><td>By-pass Tray</td></tr>
<tr><td>045</td><td colspan="4">[Counter Method]</td></tr>
<tr><td></td><td>1</td><td>Counter Method</td><td>*
CTL</td><td>Selects the counting method if the meter charge mode is enabled with SP5-930-001.
[0 or 1 / 0 / -]
0: Developments
1: Prints

NOTE: The counting method can be changed only once, regardless of whether the counter value is negative or positive.</td></tr>
</table>

5	Mode No. (Class 1, 2, and 3)			Function / [Setting]
046	**[ROM Update Display]**			
	1	ROM Update	* CTL	Enables or disables the ROM Update utility. When enabled, this utility will be displayed in the user program mode. [0 or 1 / 1 /-] 0: Enable, 1: Disable
104	**[Double Count]**			
	1	Double Count	* CTL	Specifies whether the counter is double clicked for A3/DLT size prints. [0 or 1 / 0 / -] 0: NO, 1: YES
132	**[Application Priority]**			
	1	Application Priority	* CTL	Selects which application has the first priority when jobs from different applications arrive simultaneously. [2 or 3 / 2 / -] 2: Job Queue 3: Copy application
302	**[Set Time]**			
	2	Set Time	* # CTL	Adjusts the RTC (real time clock) time setting for the local time zone. [-1440 to 1440 / 60 / 1 min./step] Examples: For Japan (+9 GMT), enter 540 (9 hours x 60 min.) NA :-300 (New York) EU :+ 60 (Paris) CH :+480 (Peking) TW :+480 (Taipei) AS :+480 (Hong Kong)
404	**[User Code Co. Clear]** User Code Counter Clear			
	1	User Code Co. Clear		Clears the user code counters.
409	**[Password]**			
	1	Password Set	* CTL	Sets the password for the key operator.
	2	Access Area		Specifies the parts of user program mode that can be accessed with the password. [0 to 2 / 0 / 1 /step] 0: None 1: Part of system settings 2: All features and system settings
610	**[ACC Factory Setting]**			
	4	Recall		Recalls the factory settings.
	5	Overwrite		Overwrites the current values onto the factory settings.
	6	Previous Setting		Recalls the previous settings.
611	**[Toner Ratio in 2C] Toner Ratio Setting in 2C mode**			
	1	B-C	* NV	Adjusts the color balance of a single color (blue, green, or red) by changing the proportion of color toner (C, M, and/or Y). [0 to 100 / 90 / 1 %/step]
	2	B-M		[0 to 100 / 80 / 1 %/step]
	3	G-C		[0 to 100 / 90 / 1 %/step]
	4	G-Y		[0 to 100 / 80 / 1 %/step]
611	5	R-M	* NV	[0 to 100 / 100 / 1 %/step]
	6	R-Y		[0 to 100 / 80 / 1 %/step]

5	Mode No. (Class 1, 2, and 3)			Function / [Setting]
801	**[Memory Clear 1]**			
	1	All module	#	Resets all the controller and engine settings to their defaults and the counters to 0. **DFU**
	2	ENG All		Clears all the engine settings and counters. **DFU**
	3	SCS / SRM		Initializes the system settings.
	5	MCS		Not used.
	6	Copy Memory Clr?		Initializes the copy application settings.
	7	Fax		Initializes the fax application settings.
	8	Printer application		Initializes the printer application settings.
	9	Scanner application		Initializes the scanner application settings.
	10	Network application		Deletes the network file application management files and thumbnails, and initializes the job login ID.
	11	NCS		Initializes the system defaults and interface settings (IP addresses also), SmartNetMonitor for Admin, WebStatusMonitor settings, and the TELNET settings.
	12	IPU		Clears the IPU settings
	13	R-FAX		Initializes the job login ID, SmartNetMonitor for Admin, job history, and local storage file numbers.
802	**[Engine Free Run]**			
	1	Engine Free Run		Performs a free run on the printer engine. **NOTE:** • The machine starts free run in the same condition as the sequence of A4/LT printing from the 1st tray. Therefore, paper should be loaded in the 1st 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.
803	**[Input Check]**			See section 5-4-2.
804	**[Output Check]**			See section 5-4-3.
808	**[Destination]** Destination Code Display			
	1	Destination	*BCU	Displays the destination code.
809	**[SC Detection ON/OFF]**			
	1	SC ON/OFF	*BCU	Enable or disables the service call detection (SC codes will be ignored if disabling this SP mode). [0 or 1 / 0 / -] Alphanumeric 0: Enable 1: Disable
810	**[SC Reset]**			
	1	SC Reset	*BCU	Resets a type A service call condition. **NOTE:** Turn the main switch off and on after resetting the SC code.
811	**[Machine Serial No.]** Machine Serial Number Display			
	2	Serial Number Display	*BCU	Displays the machine serial number.
812	**[FAX TEL No.]**			
	1	Telephone	* CTL	Sets the telephone number for a service representative. This number is printed on the Counter List, which can be printed with the user's "Counter" menu. This can be up to 20 characters (both numbers and alphabetic characters can be input).

5	Mode No. (Class 1, 2, and 3)			Function / [Setting]
812	2	Facsimile	* CTL	Sets the fax number for a service representative. This number is printed on the Counter List, which can be printed with the user's "Counter". This can be up to 20 characters (both numbers and alphabetic characters can be input).
828	**[Network Setting]**			
	10	Version	* CTL	Displays the version of NCS.
	11	Mac Address		Displays the Mac Address.
	12	Device Name		Displays the device name.
	13	Comment		Displays the comment.
	14	Operation Mode		Displays the operation mode.
	15	Printer Server Name		Displays the print server name.
	16	File Server Name		Displays the file server name.
	17	NDS Context1:NW		Displays the NDS context.
	18	NDS Context2:NW		
	19	Work Group Name		Displays the workgroup name.
	20	Network Path Name:NB		Displays the network path name.
	25	Software Switch		Sets the reference for the network software. [00000000 to FFFFFFFFh / 00000000h / 1 hex unit/step]
	26	OperationMode:TCP/IP		Sets the TCP/IP operation mode for the network. [00000000 to FFFFFFFFh / 00000000h / 1 hex unit/step]
	27	SyslogServer Address		Sets the syslog server address for the network. [00000000 to FFFFFFFFh / 7F000001h / 1 hex unit/step]
	28	Timer Server Address		Sets the timer server address for the network. [00000000 to FFFFFFFFh / 00000000h / 1 hex unit/step]
	29	DNS Server Address		Sets the DNS server address for the network. [00000000 to FFFFFFFFh / 00000000h / 1 hex unit/step]
	30	Directprint Port No		Sets the directprint port number for the network. [1024 to 65535 / 9100 / 1/step]
	31	IPP Timeout		Sets the IPP timeout for the network. [30 to 65535 / 900 / 1/step]
	32	IPX Address: NW		Sets the IPX Address.
	33	Remote Printer No:NW		Sets the remote printer number for the network. [0 to 254 / 0 / 1/step]
	34	Software Switch: NW		Sets the software switch for the network. [0000 to FFFFh / 0003h / 1 hex unit/step]
	35	Trans.Protocol PS NW		Sets the print server transport protocol for the network. 0001h: TCP & IPX 0100h: TCP& IPX (Priority: IPX) 0102h: TCP Only (Priority: TCP) 0001h: IPX Only
	36	AppleTalk Module		Sets the AppleTalk module for the network. 2: EtherTalk Phase2
	37	Net No: AT		Sets the NetNo of the AppleTalk network.
	38	Object Name: AT		Sets the object name of the AppleTalk Network.

5	Mode No. (Class 1, 2, and 3)			Function / [Setting]
828	39	Apple Talk Type	* CTL	Sets the AppleTalk type for the network.
	40	Working Zone: AT		Sets the AppleTalk working zone for the network.
	47	Job Analysis Timeout		Sets the Centronics job analysis timeout for the network. [0 to 4200 / 3 / 1 sec/step]
	48	Job Timeout		Sets the Centronics job timeout for the network. [0 to 4200 / 0 / 1 sec/step]
	49	Noise Cancel		Sets the noise cancel level for the network. [4 to 7 / 4 / 1 clock/step]
	50	1284 Compatibility		Switches Centronics IEEE1284 compatibility on/off for the network. [0 or 1 / 1 / -] 0: Disabled, 1: Enabled *Selecting "0" disables bi-directional data transmission.*
	51	Data Transfer		Sets the Centronics transfer speed for the network. [0 or 1 / 1 / -] 0: Slow, 1: Fast *If you select "0" there will be a 120 μs delay from the STP signal to the data transfer. (With 1: Fast there is no delay.)*
	52	ECP		Switches the ECP setting for Centronics off/on. [0 or 1 / 1 / -] 0: Disabled, 1: Enabled *With "1" selected, SP5-828-050 must be enabled for 1284 mode compatibility*.
	53	Transmission Speed		Selects the Ethernet transmission speed. [0 to 3 / 0 / 1 /step] 0: Auto 1: 10Base-T 2: 100Base-TX 3: Auto
831	**[Initial Setting Clear]**			
	1	Initial Setting Clear		Clears the system settings, except for the timer and user code settings.
832	**[HDD Init.]** HDD Initialization			
	1	All	#	Initializes the hard disk (the entire disk, or by partitions). Use this SP mode only when there is a hard disk error.
	2	IMF		
	3	NFA		
	4	Job Log		
	5	Printer Fonts		
	9	Debug		**DFU**
833	**[JobLog ON/OFF]**			
	7	JobLog ON/OFF	* CTL	Saves the result of the jobs in the job log. If this mode is enabled, the result is written on the HDD. If no HDD is installed, this feature is disabled even if this SP is set to 'enabled'. [0 or 1 / 0 / -] 0: Disabled 1: Enabled

<table>
<tr><th>5</th><th colspan="3">Mode No.
(Class 1, 2, and 3)</th><th>Function / [Setting]</th></tr>
<tr><td>907</td><td colspan="4">[Plug/Play] Plug & Play Name Selection</td></tr>
<tr><td></td><td>1</td><td>Plug/Play</td><td>*
CTL</td><td>Specifies the manufacturer and model name.
[0 to 7 / 0 / 1/step] FA
<table>
<tr><th></th><th>MF</th><th>Model Name</th><th>NetBeui</th></tr>
<tr><td>0</td><td>Ricoh</td><td>Aficio AP3800C</td><td>AficioAP3800</td></tr>
<tr><td>1</td><td>Ricoh</td><td>ColorLaser AP828</td><td>ColorAP828</td></tr>
<tr><td>2</td><td>Savin</td><td>SLP38c</td><td>SLP38c</td></tr>
<tr><td>3</td><td>Gestetner</td><td>DSc38</td><td>DSc38</td></tr>
<tr><td>4</td><td>NRG</td><td>DSc38</td><td>DSc38</td></tr>
<tr><td>5</td><td>Infotec</td><td>IP 280</td><td>IP280</td></tr>
<tr><td>6</td><td>Lanier</td><td>2138</td><td>2138</td></tr>
</table></td></tr>
<tr><td>919</td><td colspan="4">[ACS Mode]</td></tr>
<tr><td></td><td>1</td><td>ACS Mode</td><td>*
CTL</td><td>Specifies how the machine makes copies of documents (job files) merged in the document server.
[0 or 1 / 0 / -]
0: Normal
1: Performance
Normal:
The transfer belt moves up and down depending on the color (color or B&W) of a document (a job file).
Performance:
The transfer belt moves up for a color copy and keeps the same position until all the merged files have been output, even if next job is a B&W document, in order to increase copy performance.</td></tr>
<tr><td>930</td><td colspan="4">[Meter Charge] Meter Charge Mode</td></tr>
<tr><td></td><td>1</td><td>ON/OFF</td><td>*
#
CTL</td><td>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 / -] Alphanumeric
0: OFF
1: ON</td></tr>
</table>

<table>
<tr><th>5</th><th colspan="3">Mode No.
(Class 1, 2, and 3)</th><th>Function / [Setting]</th></tr>
<tr><td>930</td><td>3</td><td>Menu</td><td>*
#
BCU</td><td>Selects the method for displaying the alert when the life of the parts in a maintenance kit has almost ended.
[0 or 1 / 1 / -] Alphanumeric
0: Click 2
1: Click 1
The following table shows the machine condition when the near end or end condition of each maintenance unit is detected.
In this table, '-' means 'normal operation'
<table><tr><th></th><th colspan="3">Setting: 1 (Click 1)</th><th colspan="3">Setting: 0 (Click 2)</th></tr><tr><th></th><th>Near</th><th>End</th><th>Printing</th><th>Near</th><th>End</th><th>Printing</th></tr><tr><td>A</td><td>-</td><td>Alert</td><td>-</td><td>-</td><td>-</td><td>-</td></tr><tr><td>B</td><td>-</td><td>Alert</td><td>-</td><td>-</td><td>-</td><td>-</td></tr><tr><td>C</td><td>Alert</td><td>Alert</td><td>Stop</td><td>Alert</td><td>Alert</td><td>Stop</td></tr><tr><td>D</td><td>-</td><td>Alert</td><td>-</td><td>-</td><td>-</td><td>-</td></tr><tr><td>E</td><td>Alert</td><td>Alert</td><td>Stop</td><td>Alert</td><td>Alert</td><td>Stop</td></tr><tr><td>F</td><td>-</td><td>Alert</td><td>-</td><td>-</td><td>-</td><td>-</td></tr><tr><td>G</td><td>Alert</td><td>Alert</td><td>Stop</td><td>Alert</td><td>Alert</td><td>Stop</td></tr><tr><td>H</td><td>-</td><td>Note</td><td>-</td><td>-</td><td>-</td><td>-</td></tr></table>A: Color PCU
B: Color Development Unit
C: Fusing Unit
D: Black Development Unit
E: Waste Toner Bottle
F: Black PCU
G: Oil Supply Unit
H: Paper Feed Rollers

NOTE: SP5-930-004 allows the alert for the paper feed roller to be displayed.</td></tr>
<tr><td></td><td>4</td><td>Paper Feed</td><td></td><td>Determines whether to display the alert when the life of the paper feed rollers is nearly ended.
[0 or 1 / 0 / -] Alphanumeric
0: No Alert
1: Alert</td></tr>
<tr><td></td><td>5</td><td>Paper Transfer Unit</td><td></td><td>Determines whether to display the alert when the life of the transfer unit is nearly ended.
[0 or 1 / 0 / -] Alphanumeric
0: No Alert
1: Alert</td></tr>
<tr><td>961</td><td colspan="4">[Finisher Stack] Finisher Maximum Stack</td></tr>
<tr><td></td><td>1</td><td>Finisher Stack</td><td>*
#
BCU</td><td>Enables or disables maximum stack mode for the lower shift tray only in staple mode.
If this is enabled, the upper tray can be used for stacking 500 sheets but it stays at the upper exit (will not be used for stapling mode), and the lower tray is used for stacking up to 2,000 sheets.
If this is disabled, the upper tray can be used for stacking 500 sheets and the lower tray for 1,500 sheets.
[0 or 1 / 1 / -]
0: OFF
1: ON
NOTE: The main switch must be turned off and on to effect the setting change.</td></tr>
</table>

5	Mode No. (Class 1, 2, and 3)			Function / [Setting]
970	**Debug Serial Output**			
	1	Debug Serial Output		**DFU**
971	**[Touch Panel Correction] Touch Panel Correction Log**			
	1	Touch Panel Calibration	* CTL	Displays whether the touch panel has been calibrated after clearing all memory. [0 or 1 / 0 / -] 0: Not calibrated 1: Calibrated
974	**[Cherry Server Setting}**			
	1	Cherry Server Setting	* CTL	Specifies which version of ScanRouter, “Lite” or “Full”, is installed. [0 or 1 / 0 / -] 0: Lite 1: Full
989	**[Loop Back Test]**			
	1	Duplex		Executes a communication test with peripherals by using a special tool (connector) which is unique for each peripheral. The machine checks if the communication with the peripherals is OK or NG; then displays the result. **DFU**
	3	Finisher		
	4	Paper Supply Unit		
990	**[SMC Print]**			
	1	All (Data List)		Prints out the SMC sheets.
	2	SP (Mode Data List)		
	3	User Program		
	4	Logging Data		
	5	Diagnosis Report		
	6	Non-Default		
	7	NIB Summary		
	8	Net File Log		
	21	Copier User Program		
	22	Scanner SP		
	23	Scanner User Program		
991	**[Jam OFF/ON]**			
	Jam ON/OFF			
	1	Jam ON/OFF		Enables or disables jam detection. [0 or 1 / 0 / -] Alphanumeric 0: Enable 1: Disable

5	Mode No. (Class 1, 2, and 3)			Function / [Setting]
993	**[Line Position Adj.]**			
	Line Positioning Adjustment ([Color]) M: Main-scan, S: Sub-scan, Reg.: Registration, Mag.: Magnification For example: M Reg = Main scan registration			
	1	Mode Selection	* BCU	Specifies when the automatic line position adjustment is done. [0 to 2 / 1 / 1/step] Alphanumeric 0: Never done 1: Process Control (Done at a) all process control self checks except after toner end recovery and developer initialization, b) new PCU detected, and c) the temperature has changed by 5°C since the last adjustment) 2: Except Procon (As for setting '1', except it is not done during self-checks. However, it is done at the initial process control self check. The size of the 5°C difference can be changed with SP5-993-3
	2	Execute		Use to make a line position adjustment.
	3	Temperature		Specifies the temperature for starting the line positioning adjustment. [3 to 15 / 5 / 1/°C] The line position adjustment automatically starts when the temperature differs by the amount specified in this SP mode from the temperature when the last adjustment was done. There are two thermistors on the laser optics-housing unit. The thermistor close to the fusing unit monitors the temperature for this adjustment.
	4	Interrupt		Enables or disables the line position adjustment during a print job when the temperature differs by the amount specified in SP5-993-003 from the temperature at the last adjustment. [0 or 1 / 1 / -] Alphanumeric 0: Disabled 1: Enabled
	5	Stand-by		Enables or disables the line position adjustment during stand-by mode when the temperature differs by the amount specified in SP5-993-003 from the temperature at the last adjustment. [0 or 1 / 0 / -] Alphanumeric 0: Disabled 1: Enabled
	6	Job Start		Enables or disables the line position adjustment just before starting a color print job when the temperature differs by the amount specified in SP5-993-003 from the temperature when the machine woke up from energy saver mode. [0 or 1 / 1 / -] 0: Disabled 1: Enabled

5	Mode No. (Class 1, 2, and 3)			Function / [Setting]
993	7	Result	* BCU	Displays the result of the latest line position adjustment in 4 digits. First 2 digits: Error detected on the front ID sensor Last 2 digits: Error detected on the rear ID sensor Refer to the Troubleshooting section for more details about the two-digit codes.
	8	Exe. Counter		Displays how many times the line position adjustment has been executed. Counts up by +1 normally. After a forced adjustment and a PCU replacement, it counts up +3 Also includes adjustments done at the factory.
	9	Error Counter		Displays how many times errors have been detected during the line position adjustment.
	The way that the auto line position adjustment is done can be adjusted using the following SP modes (SP5-993-010 to 021). These are coefficients used for the adjustment. Normally, do not change except if the automatic adjustment gives poor results immediately after installing a new optics housing unit. Change the value then do a forced line position adjustment (SP 5-993-2) to check the effects of the changes. Example: If magenta is always shifted one dot to the left, reduce 5-993-11 by 1.			
	10	M Reg. [Y]	* BCU	A fine adjustment to the main-scan registration. [-128 to 127 / 0 / 1 dot/step] **FA** 1 dot = 20μ
	11	M Reg. [M]		
	12	M Reg. [C]		
	13	M Mag. [Y]		A fine adjustment to the main-scan magnification. [-100 to 100 / 0 / 0.01 %/step] **FA** **NOTE:** The setting changes in this SP mode will be affect the next line position adjustment.
	14	M Mag. [M]		
	15	M Mag. [C]		
	16	S Reg. 600[Y]		A fine adjustment to the sub-scan registration for each color (color registration). [-128 to 127 / 0 / 1 dot/step] FA 600dpi: 1 dot = 40μ 1200 dpi: 1 dot = 20μ
	17	S Reg. 600[M]		
	18	S Reg. 600[C]		
	19	S Reg. 1200[Y]		
	20	S Reg. 1200[M]		
	21	S Reg. 1200[C]		
	22	Interrupt 1		Specifies the number of sheets to be printed before a line position adjustment is done during a print job. [10 to 250 / 100 / 10 sheets/step] SP 5-993-4 must be set to 'enabled'. When the temperature difference meets the conditions specified in SP5-993-3, the machine starts counting the number of prints in the job. The machine interrupts the print job and does the line position adjustment if the number of prints exceeds the number specified in this SP mode. If the counted number of prints does not exceed the number specified, the machine resets the counter, then continues to monitor the temperature and does the line position adjustment next time.

5	Mode No. (Class 1, 2, and 3)			Function / [Setting]
993	23	Interrupt 2	* BCU	Performs the line position adjustment when the number of prints reaches the number specified in this SP mode regardless of the temperature change. [0 to 350 / 200 / 50 prints/step] 0: Disable
	24	Mscan Lgth Det		Performs the main scan length detection when the polygon motor has operated consecutively for the time specified in this SP mode. [100 to 990 / 200 / 50 s/step]
994	**[Unit Detection ON/OFF]** Maintenance Unit Detection ON/OFF			
	1	Dev. Unit/PCU	* # BCU	Enables or disables PCU and development unit detection. [0 or 1 / 0 / -] Alphanumeric 0: Enable 1: Disable **NOTE:** If this mode is disabled, new unit detection also does not function. Use this mode as a temporary measure, only when the micro-switches are defective.
	2	Oil Supply Unit	* # BCU	This is for the oil supply unit only, and not the fusing unit [0 or 1 / 0 / -] Alphanumeric 0: Enable 1: Disable **NOTE:** Use this mode as a temporary measure, only when the unit detection mechanism is defective.
997	**[Test Pattern]**			
	1	Tray Selection		Selects the tray for making a test print. [0 to 4 / 1 / 1/step] 0: By-pass Table 1: Tray 1 2: Tray 2 3: Tray 3 4: Tray 4 **NOTE:** The machine makes a test pattern on the paper size loaded in the selected paper tray.

5	Mode No. (Class 1, 2, and 3)			Function / [Setting]
997	2	Pattern		Selects a test pattern. [0 to 23 / 0 / 1/step] 0: None 1: 1-dot sub-scan line 2: 2-dot sub-scan line 3: 1-dot main-scan line 4: 2-dot main-scan line 5: 1-dot grid pattern (fine) 6: 2-dot grid pattern (fine) 7. 1-dot grid pattern (rough) 8. 2-dot grid pattern (rough) 9. 1-dot slant grid pattern 10. 2-dot slant grid pattern 11. 1-dot pattern 12. 2-dot pattern 13. 4-dot pattern 14. 1-dot trimming pattern 15. 2-dot trimming pattern 16. Cross stitch: sub-scan 17. Cross stitch: main-scan 18. Belt pattern 19. Belt pattern (vertical) 20. Checkered Flag 21. Grey scale (vertical) 22. Grey scale (Horizontal) 23. Solid
	3	Single Color		Selects the color for making a test pattern. [0 to 6 / 6 / 1/step] Alphanumeric 0: Red 1: Green 2: Blue 3: Yellow 4: Magenta 5: Cyan 6: Black
	4	Color Mode		Selects the color mode for making a test print. [0 or 1 / 0 / 1/step] Alphanumeric 0: Full Color 1: Single Color
	5	Resolution		Selects the resolution for making a test print. [0 to 2 / 1 / 1/step] Alphanumeric 0: 600x600 1: 1200x600 2: 1200x1200
	6	By-pass Paper size		Selects the paper size for making a test pattern from the by-pass table. [0 to 3 / 0 / 1/step] Alphanumeric 0: A4 LEF 1: LT LEF 2: A3 3: DLT
	7	Print		Prints the test pattern with the settings specified with SP5-997-001 to 006. **NOTE:** When exiting the SP mode, the test print mode is automatically canceled.
998	**[Memory Clear 2]**			
	1	ENG Setting	#	Clears the engine settings except for counters.
	2	ENG Counter		Clears all counters.

SP6-XXX (Peripherals)

6	Mode No. (Class 1, 2, and 3)			Function / [Setting]
006	**[DF Registration Adj.]** DF Registration Adjustment			
	1	Side-to-Side	* NV	Adjusts the side-to-side and leading registration of originals with the ARDF. [-30 to 30 / 0 / 0.1 mm/step]
	2	Leading Edge		
	3	Buckle: Duplex Front		Adjusts the amount of paper buckle to correct original skew for the front and rear sides. [-4.2 to 4.2 / 0 / 0.1 mm/step]
	4	Buckle: Duplex Rear		
	5	Rear Edge Erase		Adjusts the erase margin at the original trailing edge. [-20 to 10 / 0 / 0.5 mm/step]
007	**[ADF Input Check]**			
	1	Group 1		Displays the signals received from the sensors and switches of the ARDF. (See 5.4.2)
	2	Group 2		
008	**[ADF Output Check]**			
	1	Fee-in Motor Fwd.		Activates the electrical components for functional check. It is not possible to activate more than one component at the same time.
	2	Feed-in Motor Rev.		
	3	Drive Motor Fwd.		
	4	Reverse Motor Fwd.		
	5	Reverse Motor Rev.		
	6	Feed Clutch		
	7	Inverter Solenoid		
	8	Pick-up Motor Fwd.		
	9	Pick-up Motor Rev.		
009	**[DF Free Run]**			
	1	Duplex Mode		Performs a DF free run in duplex mode or stamp mode.
	2	Stamp Mode		
010	**[Stamp Position Adj.]** Fax Stamp Position Adjustment			
	1	Stamp Position Adj.	* NV	Adjusts the horizontal position of the stamp on the scanned originals. [-3.5 to 3.5 / 0 / 0.5 mm/step]
016	**[Original Size Priority]** Original Size Detection Priority			
	1	Original Size Priority	* NV	Specifies the original size for a size detected by the original sensor, since original sensors cannot recognize all sizes. [0 or 1 / 0 / -] 0: Setting 1 1: Setting 2 Setting 1 / Setting 2 Bit 7: A4 (L) / LT (L) Bit 6: 11”x15” / DLT (L) Bit 5: DLT (L) / 11”x15” Bit 4: LT (S) / US Exec (S) Bit 3: LT (L) / 8”x10” (L) Bit 2: LG (L) / F4 (L) Bit 1: A4 (L) / 16K (L) Bit 0: 8K (L) / DLT (L) Bits used for detection differ depending on destination as shown below. Bit 7 to 6: Only for Japan Bit 5 to 2: Only for US Bit 1 to 0: Only for EU/AA

Service Tables

017	**[DF Magnification Adj.]** DF Magnification Adjustment			
	1	DF Magnification Adj.	* NV	Adjusts the magnification in the sub-scan direction for the ARDF. [-5.0 to 5.0 / 0 / 0.1 %/step]
110	**[Punch Position]**			
	1	Punch 1	* BCU	Adjusts the punching position. Punch 1 US: 2 punch holes Europe: 2 punch holes North Europe: 4 punch holes Punch 2 US: 3 punch holes Europe: 4 punch holes Increment: Holes move toward the paper center. Decrement: Holes move toward the paper edge. [-7.5 to 7.5 / 0 / 0.5 mm/step]
	2	Punch 2		
111	**[Staple Position]**			
	1	Staple Position	* BCU	Adjusts the stapling position. Increment: Staple position moves toward the edge of paper. Decrement: Staple position moves toward the center of paper. [-3.5 to 3.5 / 0 / 0.5 mm/step] **NOTE:** Although the adjustable range is ±3.5 mm, the stapling position can be changed only by 1.0 mm when stapling one position at the front or rear side even when the input value is more than 1.0.
901	**[Multi Bin Set]**			
	1	Multi Bin Set	* BCU	Specifies whether or not the optional multi-bin output tray is installed. When installing the multi-bin output tray, this SP mode should be set to “1”. [0 or 1 / 0 / -] 0: Not installed 1: Installed

SP7-XXX (Data Log)

7	Mode No. (Class 1, 2, and 3)			Function / [Setting]
002	**[Original Counters]**			
	1	Total Counter	* CTL	Displays the total original count (number of originals fed) for the selected mode.
	2	Copies		
	3	Fax		
	4	Document Box		
	5	Scanner		
	6	Others		
003	**[M/C Counter] Meter Charge Counter** (**P**rint, **D**evelopment)			
	1	Total	* CTL	Displays the values of the counters. [-9999 to 9999999 / 0 / 1/step]
	2	Copy: B&W		
	3	Copy: Single Color		
	4	Copy: Full Color		
	5	FAX: B&W		
	7	Print: B&W		
	8	Print: Full Color		
	10	Development: CMY		
	11	Development: K		
	12	Copy: Single Color		
	13	Copy: Twin Color		
	14	Print: B&W :Contact		
	15	DocBox: B&W :Contact		
	20	Total: Full Color		
	21	Total: B&W, Single		
	22	Total: Single		
	23	Total: B&W		
	24	Copy: Full Color		
	25	Print: Full Color		
	26	Copy: Color		
	27	Copy: B/W		
	28	Print: Color		
	29	Print: B/W		
	30	Total: Color		
007	**[Other Counter]**			
	1	Duplex	* CTL	Displays counter values. [0 to 9999999 / 0 / 1 sheet/step]
	2	A3/DLT/Over420		
	3	Staple		
101	**[Paper Size Counter]** Paper Size Counter			
	4	A3	* CTL	Displays the counter values for each paper size. [0 to 9999999 / 0 / 1 sheet/step]
	5	A4		
	6	A5		
	13	B4		
	14	B5		
	32	DLT		
	36	LG		
	38	LT		
	44	HLT		
	128	Others		

7	Mode No. (Class 1, 2, and 3)			Function / [Setting]
201	**[Total Scan Counter]**			
	1	Total Scan Counter	* CTL	Displays the total number of scans. [0 to 9999999 / 0 / 1 scan/step]
202	**[D Unit Op Ctr]** Development Unit Operation Counter			
	1	Print: B&W	* CTL	Displays the number of prints made with black development unit operation only. [0 to 9999999 / 0 / 1 print/step]
	2	Print: Color		Displays the number of prints made with color development unit operation. [0 to 9999999 / 0 / 1 print/step]
	3	Development: B&W		Displays the number of developments made with black development unit operation only. [0 to 9999999 / 0 / 1 development/step]
	4	Development: Color		Displays the number of developments made with color development unit operation. [0 to 9999999 / 0 / 1 development/step]
204	**[Paper Tray Counter]**			
	1	Tray 1	* CTL	Displays the number of sheets fed from each paper feed station. [0 to 9999999 / 0 / 1 sheet/step] **NOTE:** The LCT is counted as the 3rd feed station.
	2	Tray 2		
	3	Tray 3/LCT		
	4	Tray 4		
	5	By-pass		
	6	Duplex		
205	**[ADF Total Counter]**			
	1	ADF Total Counter	* CTL	Displays the total number of originals fed by the ARDF.
206	**[Staple Counter]**			
	1	Staple Counter	* CTL	Displays the total number of staples fired.
209	**[Punch Counter]**			
	1	Punch	* CTL	Displays the number of times hole punching has been done.
301	**[Copy Co.: Mag.]** Copy Counter: Magnification			
	1	Reduce 25% <-->49%	* NV	Displays the number of copies made with each magnification ratio.
	2	Reduce 50% <-->99%		
	3	Full Size		
	4	Enlarge 101%<-->200%		
	5	Enlarge 201%<-->400%		
	6	Direct Mag.		
	7	Direct Size Mag.		
	8	Auto reduce/Enlarge		
304	**[Copy Co.: Copy Mode]** Copy Counter: Copy Mode			
	1	Text	* NV	Displays the total number of copies made in the copy mode by each operation mode.
	2	T/P (Glossy Photo)		
	3	T/P (Printed Photo)		
	4	T/P (Copied Photo)		
	5	Photo (Glossy Photo)		
	6	Photo (Printed Photo)		
	7	Photo (Copied Photo)		
	8	Generation Copy		
	9	Pale		
	10	Map		
	11	Punch		
	12	Repeat		

7	Mode No. (Class 1, 2, and 3)			Function / [Setting]
304	13	Sort	*	Displays the total number of copies made in the copy mode by each operation mode.
	14	Staple	NV	
	15	Series		
	16	Erase		
	17	Duplex		
	18	ADF		
	19	Double Copy		
	20	Duplex Original		
	21	Interrupt Copy		
	22	Combined 1 Side		
	23	Combined 2 Side		
	26	Batch		
	27	SADF		
	28	Mixed Sizes		
	30	Cover Page		
	31	Chapter Page		
	32	Color Balance Adjust		
	33	Adjust Color		
	34	Copy Quality		
	35	Erase Color		
305	**[Copy Co.: Set No.]** Copy Counter: Set No.			
	1	1 to 1	*	Displays the total number of multiple copy jobs made in copy mode.
	2	1 to 2 <-> 5	NV	
	3	1 to 6 <-> 10		
	4	1 to 11 <-> 20		
	5	1 to 21 <-> 50		
	6	1 to 51 <-> 100		
	7	1 to 101 <-> 300		
	8	1 to 301 <-> Over		
306	**[Copy Co.: Job Mode]** Copy Counter: Job Mode			
	1	Sort	*	Displays the total number of jobs based on the function selected in copy mode.
	2	Staple	NV	
	3	Punch		
	4	Reverse Copy		
	5	Check Copy		
320	**[DS Co.: Total Scan]** DS Co. : Document Server Counter			
	1	DS Co.: Total Scan	*	Displays the original count stored on the document server.
			NV	
321	**[DS Co.: Scan Size]** DS Co. : Document Server Counter			
	4	A3	*	Displays the number of originals by paper size scanned into the document server.
	5	A4	NV	
	6	A5		
	13	B4		
	14	B5		
	32	DLT		
	36	LG		
	38	LT		
	44	HLT		
	128	Others		
323	**[DS Co.: Copy Size]** DS Co. : Document Server Counter			
	5	A4 (Sideways)	*	Displays the number of copies made from the document server and classed by paper size.
	6	A5 (Sideways)	NV	
	14	B5 (Sideways)		
	38	LT (Sideways)		

7	Mode No. (Class 1, 2, and 3)			Function / [Setting]
323	44	HLT (Sideways)	*	Displays the number of copies made from the document server and classed by paper size.
	128	Others	NV	
	132	A3 (Lengthwise)		
	133	A4 (Lengthwise)		
	134	A5 (Lengthwise)		
	141	B4 (Lengthwise)		
	142	B5 (Lengthwise)		
	160	DLT (Lengthwise)		
	164	LG (Lengthwise)		
	166	LT (Lengthwise)		
	172	HLT (Lengthwise)		
324	**[DS Co.: Job Mode]** DS Co. : Document Server Counter			
	1	Duplex	*	Displays the number of jobs made from the document server and classed by job counter.
	2	Sort	NV	
	3	Staple		
	4	Punch		
	5	Check Copy		
	6	Print 1st Page		
325	**[DS Co.: Page No.]** DS Co. : Document Server Counter			
	1	1-page	*	Displays the number of copy jobs made from the document server and classed by the size of the job.
	2	2-page	NV	
	3	3<->5 pages		
	4	6<->10 pages		
	5	Over 11 pages		
326	**[DS Co.: File No.]** DS Co. : Document Server Counter			
	1	1 file	*	Displays the number of copy jobs made from the document server and classed by number of files.
	2	2 <-> 5 files	NV	
	3	6 <-> 10 files		
	4	Over 11 files		
327	**[DS Co.: Set No.]** DS Co. : Document Server Counter			
	1	1 to 1	*	Displays the number of copy jobs made from the document server and classed by the set sizes.
	2	1 to 2 <-> 5	NV	
	3	1 to 6 <-> 10		
	4	1 to 11 <-> 20		
	5	1 to 21 <-> 50		
	6	1 to 51 <-> 100		
	7	1 to 101 <-> 300		
	8	1 to 301 <-> Over		
328	**[DS Co.: Copy Mode]** DS Co. : Document Server Counter			
	6	Punch	*	Displays the number of copies made from the document server, and classed by the copy mode selected.
	8	Sort	NV	
	9	Staple		
	12	Duplex		
	25	Cover page		
	26	Slip Sheet		
401	**[SC Counter]**			
	1	SC Counter	*	Displays the number of SC codes detected.
			CTL	[0 to 9999 / 0 / 1/step]

7	Mode No. (Class 1, 2, and 3)			Function / [Setting]
403	**[Latest10Sclog]**			
	1	Latest	* CTL	Logs the SC codes detected. The 10 most recently detected SC Codes are not displayed on the screen, but can be seen on the SMC (logging) outputs.
	2	Latest –1		
	3	Latest –2		
	4	Latest –3		
	5	Latest –4		
	6	Latest –5		
	7	Latest –6		
	8	Latest –7		
	9	Latest –8		
	10	Latest –9		
502	**[Paper Jam Counter]**			
	1	Total Jam	* CTL	Displays the total number of jams detected. [0 to 9999 / 0 / 1 sheet/step]
503	**[Original Jam Counter]**			
	1	Original Jam counter	* CTL	Displays the total number of original jams. [0 to 9999 / 0 / 1 original/step]
504	**[Paper Jam Location]** D: Duplex, MB: Mail Box, F; Finisher, E: External, I: Internal ON: On check, OFF: Off Check			
	3	Tray 1:ON	* CTL	Displays the number of jams according to the location where jams were detected. **NOTE:** The LCT is counted as the 3rd feed station.
	4	Tray 2:ON		
	5	Tray 3/LCT:ON		
	6	Tray 4:ON		
	8	Regist.:ON		
	9	E Tray:ON		
	10	I Tray:ON		
	11	D:ON		
	12	D Exit 1:ON		
	13	D Exit 2:ON		
	14	D Exit 3:ON		
	15	D Feed: ON		
	20	MB Upper:ON		
	21	MB Lower:ON		
	51	Tray 1:OFF		
	52	Tray 2:OFF		
	53	Tray 3:OFF		
	54	Tray 4:OFF		
	61	Regist: OFF		
	63	E Tray:OFF		
	64	I Tray:OFF		
	65	D:OFF		
	66	D Exit 1:OFF		
	67	D Exit 2:OFF		
	68	D Exit 3:OFF		
	69	D Feed:OFF		
	100	F Entrance		
	101	F Shift Tray 1		
	102	F Shift Tray 2		
	103	F Staple		
	104	F Exit		
	105	F Drive		
	106	F Tray Up/Down		
	107	F Jogger		

7	Mode No. (Class 1, 2, and 3)			Function / [Setting]
504	108	F Staple	* CTL	Displays the number of jams according to the location where jams were detected.
	109	F Exit		
	110	F Punch		
	111	F Jam Clear		
505	**[Original Jam Detection]**			
	1	At Power On	* CTL	Displays the total number of original jams by location.
	3	Skew Correction Sensor (On Check)		
	4	Interval Sensor (On Check)		
	5	Registration Sensor (On Check)		
	6	Relay Sensor (On Check)		
	7	Inverter Sensor (On Check)		
	53	Skew Correction Sensor (Off Check)		
	54	Interval Sensor (Off Check)		
	55	Registration Sensor (Off Check)		
	56	Relay Sensor (Off Check)		
	57	Inverter Sensor (Off Check)		
506	**[Jam Paper Size]**			
	4	A3	* CTL	Displays the number of jams according to the paper size. [0 to 9999 / 0 / 1 sheet/step]
	5	A4		
	13	B4		
	14	B5		
	32	DLT		
	36	LG		
	38	LT		
	44	HLT		
	128	Others		
507	**[Jam History]**			
	1	Latest	* CTL	Displays the 10 most recently detected paper jams.
	2	Latest-1		
	3	Latest-2		
	4	Latest-3		
	5	Latest-4		
	6	Latest-5		
	7	Latest-6		
	8	Latest-7		
	9	Latest-8		
	10	Latest-9		
508	**[Original Jam History]**			
	1	Latest	* CTL	Displays the 10 most recently detected original jams.
	2	Latest-1		
	3	Latest-2		
	4	Latest-3		
	5	Latest-4		
	6	Latest-5		
	7	Latest-6		
	8	Latest-7		
	9	Latest-8		
	10	Latest-9		
801	**[Firmware Version]**			
	255	Firmware Version		Displays the version of each firmware

7	Mode No. (Class 1, 2, and 3)			Function / [Setting]
803	**[PM Counter]**			
	(**S**heets or **R**otations, Unit, [Color]) Dev.: Development Unit, PF: Paper Feed Rollers, Oil Supply: Oil Supply Unit, Fusing: Fusing Unit, Transfer: Transfer Unit			
	1	S:PCU [K]	* BCU	Displays the number of sheets printed for each current maintenance unit. [0 to 9999999 / 0 / 1 sheet/step] PM counters click up based on the number of A4 (LT) LEF size sheets printed. Therefore, the A3 (DLT) Double Count is activated. The Double Count cannot be deactivated. When a unit is replaced, the machine automatically detects that the new unit is installed. Then, the current PM counter value is automatically moved to the PM Counter - Previous (SP7-906-1 to 9) and is reset to "0". The total number of sheets printed with the last unit replaced can be checked with SP7-906-1 to 9. **NOTE:** The LCT is counted as the 3rd feed station.
	2	S:PCU [Y]		
	3	S:PCU [M]		
	4	S:PCU [C]		
	5	S:Dev. [K]		
	6	S:Dev. [Y]		
	7	S:Dev. [M]		
	8	S:Dev. [C]		
	9	S:Oil Supply		
	10	PF By-pass		
	11	PF Tray 1		
	12	PF Tray 2		
	13	PF Tray 3/LCT		
	14	PF Tray 4		
	15	S:Fusing		
	16	S:Transfer		
	Displays the number of revolutions of motors or clutches for each current maintenance unit. [0 to 9999999 / 0 / 1 revolution/step] When a unit is replaced, the machine automatically detects that the new unit is installed. Then, the current PM counter value is automatically moved to the PM Counter - Previous (SP7-906-10 to 20) and is reset to "0". The total number of revolutions made with the last unit replaced can be checked with SP7-906-10 to 20.			
	17	R:PCU [K]	* BCU	Target Revolution: 550675
	18	R:PCU [Y]		Target Revolution: 591813
	19	R:PCU [M]		Target Revolution: 591813
	20	R:PCU [C]		Target Revolution: 591813
	21	R:Dev. [K]		Target Revolution: 1076103
	22	R:Dev. [Y]		Target Revolution: 1173387
	23	R:Dev. [M]		Target Revolution: 1173387
	24	R:Dev. [C]		Target Revolution: 1173387
	25	R:Oil Supply		Target Revolution: 1861000
	26	R:Fusing		Target Revolution: 9303000
	27	R:Transfer		Target Revolution: 5163000
	28	S:Waste Toner		Displays the number of sheets printed until the waste toner bottle becomes full or toner runs out. [0 to 9999999 / - / 1 sheet/step]
	29	S:Toner [K]		
	30	S:Toner [Y]		
	31	S:Toner [M]		
	32	S:Toner [C]		
	33	TonerSupply[K]		Displays the total operating time for the toner attraction pump. [0 to 9999999 / - / 1 s/step]
	34	TonerSupply[Y]		
	35	TonerSupply[M]		
	36	TonerSupply[C]		

7	Mode No. (Class 1, 2, and 3)			Function / [Setting]
804	**[PM Counter Clear]**			
	(Unit, [Color]) Dev.: Development Unit, PF: Paper Feed Rollers, Transfer: Transfer Unit			
	1	PCU [K]	* BCU	Clears the PM counter. Press the Enter key after the machine asks "Execute?". When a unit is replaced, the machine automatically detects that the new unit is installed. Then, the current PM counter value is automatically moved to the b PM Counter - Previous (SP7-906-1 to 25) and is reset to "0". **NOTE:** The LCT is counted as the 3rd feed station.
	2	PCU [Y]		
	3	PCU [M]		
	4	PCU [C]		
	5	Dev. [K]		
	6	Dev. [Y]		
	7	Dev. [M]		
	8	Dev. [C]		
	9	Oil Supply		
	10	PF By-pass		
	11	PF Tray 1		
	12	PF Tray 2		
	13	PF Tray 3/LCT		
	14	PF Tray 4		
	15	Fusing		
	16	Transfer		
	50	All		
808	**[Counter Clear]**			
	1	Counter Clear		Clears all counters. ☛ **NOTE 1 after the SP table for a list of settings cleared.**
810	**[Access Code Clear]**			
	1	Access Code Clear		Use to clear the access code if the customer forgets the code (password).
816	**[Tray Counter Clear]**			
	1	Tray 1		Clears the counters (SP7-204) for the number of sheets fed from the paper feed stations. **NOTE:** The LCT is counted as the 3rd feed station.
	2	Tray 2		
	3	Tray 3/LCT		
	4	Tray 4		
	6	Duplex		
822	**[Co. Clear: Mag.]** Counter Clear :Magnification			
	1	Co. Clear: Mag.		Clear the copy counters classed by magnification mode (SP7-301).
825	**[Counter Reset]**			
	1	Counter Reset		Rests the total counter values to "0". **NOTE:** This SP mode can be done only once, while the counter values are less than 0.
832	**[Diag. Result]** Diagnostic Result			
	1	Diag. Result		Displays the result of the diagnostics.
833	**[Coverage]** Image Coverage Ratio & No. of Toner Cartridges			
	1	Last [K]	* BCU	Displays the image coverage ratio for each color of the last output. [0 to 100.00 / - / 0.01 %/step]
	2	Last [C]		
	3	Last [M]		
	4	Last [Y]		
	5	Average [K]		Displays accumulated average value of image coverage ratio for each color. [0 to 100.00 / - / 0.01 %/step]
	6	Average [C]		
	7	Average [M]		
	8	Average [Y]		

7	Mode No. (Class 1, 2, and 3)			Function / [Setting]
833	11	Toner [K]	* BCU	Displays the total number of toner cartridges replaced. [0 to 65535 / - / 1 cartridge/step]
	12	Toner [C]		
	13	Toner [M]		
	14	Toner [Y]		
837	**[Co. Clear: Copy: Copy Mode]** Counter Clear: Copy: Copy Mode			
	1	Co. Clear: Copy Mode		Clears the copy counter classed by copy mode (SP7-304).
838	**[Co. Clear: Copy: Set No.]** Counter Clear: Copy: Set No.			
	1	Co. Clear: Set No.		Clears the copy counters classed by set number (SP7-305).
839	**[Co. Clear: Copy: Job Mode]** Counter Clear: Copy: Job Mode			
	1	Co. Clear: Job Mode		Clears the copy counters classed by job mode (SP7-306).
840	**[Co. Clear: DS: Total Scan]** Counter Clear: DS: Total Scan			
	1	Co. Clear: Total Scan		Clears the counter of total scans for the document server (SP7-320).
841	**[Co. Clear: DS: Scan Size]** Counter Clear: DS: Scan Size			
	1	Co. Clear: Scan Size		Clears the counters classed by the original size scanned for the document server (SP7-321).
842	**[Co. Clear: DS: Copy Size]** Counter Clear: DS: Copy Size			
	1	Co. Clear: Copy Size		Clears the counters classed by the size of copies made from the document server (SP7-323).
843	**[Co. Clear: DS: Job Mode]** Counter Clear: DS: Job Mode			
	1	Co. Clear: DS: Job Mode		Clears the counters classed by the job mode of copies made from the document server (SP7-324).
844	**[Co. Clear: DS: Page No.]** Counter Clear: DS: Page No.			
	1	Co. Clear: DS: Page No.		Clears the counters classed by the job size of copies made from the document server (SP7-325).
845	**[Co. Clear: DS: File No.]** Counter Clear: DS: File No.			
	1	Co. Clear: DS: File No.		Clears the counters classed by the file number of copies made from the document server (SP7-326).
846	**[Co. Clear: DS: Set No.]** Counter Clear: DS: Set No.			
	1	Co. Clear: DS: Set No.		Clears the counters classed by the set number of copies made from the document server (SP7-327).
847	**[Co. Clear: DS: Copy Mode]** Counter Clear: DS: Copy Mode			
	1	Co. Clear: DS: Copy Mode		Clears the counters classed by the mode of copies made from the document server (SP7-328).
848	**[Co. Clear: All]** Counter Clear All			
	1	Co. Clear All		Clears all counters of copies made in copy mode and from the document server. SP7-301, 304, 305, 306, 320, 321, 323, 324, 325, 326, 327, and 328
901	**[Asset Info]**			
	1	File Name		Records the location where a problem is detected in the program. The data stored in this SP is used for problem analysis. **DFU**
	2	# of Lines		
	3	Location		

7	Mode No. (Class 1, 2, and 3)			Function / [Setting]
904	**[Print: Printer Gamma]**			
	1	Print: Printer Gamma		Prints all data lists. (same function as SP5-990-001) **DFU**
905	**[Alert Display]**			
	7	Fusing: Alert	* BCU	Specifies the timing for displaying the near-end condition. With the default setting, near-end is detected and the alert lights on the panel 2.5K prints before detecting the end condition. The unit life is 9303K revolutions. Increment: Delays the alert display timing. Decrement: Hastens the alert display timing. 1.0K prints = approximately 93K revolutions [0 to 20000 / 9070 / 1 K revolutions/step]
	9	Oil: Alert		Specifies the timing for displaying the near-end condition. With the default setting, near-end is detected and the alert lights on the panel 2.5K prints before detecting the end condition. The unit life is 1860 revolutions. Increment: Delays the alert display timing. Decrement: Hastens the alert display timing. 1.0K prints = 93 [0 to 10000 / 1628 / 1 K revolutions/step]
906	**[PM Counter-Previous]**			
	(**S**heets or **R**otations, Unit, [Color]), Dev.: Development Unit			
	1	S:PCU [K]	* BCU	Displays the number of sheets printed with the previous maintenance units.
	2	S:PCU [Y]		
	3	S:PCU [M]		
	4	S:PCU [C]		
	5	S:Dev. [K]		
	6	S:Dev. [Y]		
	7	S:Dev. [M]		
	8	S:Dev. [C]		
	9	S:Oil Supply		
	10	S:Fusing		
	11	R:PCU [K]		Displays the number of revolutions for motors or clutches in the previous maintenance units.
	12	R:PCU [Y]		
	13	R:PCU [M]		
	14	R:PCU [C]		
	15	R:Dev. [K]		
	16	R:Dev. [Y]		
	17	R:Dev. [M]		
	18	R:Dev. [C]		
	19	R:Oil Supply		
	20	R:Fusing		
	21	S:Waste Toner		Displays the number of sheets printed with the previous maintenance unit or toner cartridge.
	22	S:Toner [K]		
	23	S:Toner [Y]		
	24	S:Toner [M]		
	25	S:Toner [C]		

7	Mode No. (Class 1, 2, and 3)			Function / [Setting]
907	**[Check Sum]**			
	1	Engine Main	*	Displays the check sum of the firmware.
	2	Engine MUSIC	BCU	

NOTE 1: Memory Clear (SP5-801 & 7-808)
The following tables list the items that are cleared. The serial number information, meter charge setting (SP5-930), and meter charge counters (SP7-003) are not cleared.

5	Mode No. (Class 1, 2, and 3)			SP Modes or User Setting to be cleared
801	**[Memory Clear]**			
	1	All module	#	**DFU**
	2	ENG All		**DFU**
	3	SCS / SRM		SP5-009, 101, 104, 305, 812, 833, 961, and 970 SP7-101, 204, 209, 401, 502, 504, 506, and 507
	5	MCS		Not used.
	6	Copy Memory Clr?		Initializes the copy application settings.
	7	Fax		Initializes the fax application settings.
	8	Printer aplication		The following service settings: • Bit switches • Gamma settings (User & Service) • Toner Limit The following user settings: • Tray Priority • Menu Protect • System Setting except for setting of Energy Saver • I/F Setup (I/O Buffer and I/O Timeout) • PCL Menu
	9	Scanner aplication		Initializes the scanner application settings.
	10	Network aplication		Deletes the network file application management files and thumbnails, and initializes the job login ID.
	11	NCS		Initializes the system defaults and interface settings (IP addresses also), SmartNetMonitor for Admin, WebStatusMonitor settings, and the TELNET settings.
	12	IPU		Clears the IPU settings
	13	R-Fax		Initializes the job login ID, SmartNetMonitor for Admin, job history, and local storage file numbers.
998	1	ENG Setting	#	All engine related SP modes except for the following: • Serial number information • SP modes related to meter charge • Counters and logging data
	2	ENG Counter		All counters and logging data related to engine

7	Mode No. (Class 1, 2, and 3)			SP Modes or User Setting to be cleared
808	**[Counter Clear]**			
	1	Counter Clear		SP7-101, 204, 209, 502, 504, 506, and 507

5.4.2 INPUT CHECK TABLE

Main Frame Input Check: SP5-803

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

SP5-803 -XXX	Bit	Description	Reading	
			0	1
1	**Paper Tray 1**			
	0	Paper End Sensor	Paper end	Paper detected
	1	Paper Lift Sensor	Deactivated	Activated (Actuator not inside sensor)
	2	Paper Height Sensor 1	See Table 1.	
	3	Paper Height Sensor 2		
	4	Tray Set	Not set	Set
2	**Paper Tray 2**			
	0	Paper End Sensor	Paper end	Paper detected
	1	Paper Lift Sensor	Deactivated	Activated (Actuator not inside sensor)
	2	Paper Height Sensor 1	See Table 1. 1: Activated (Actuator inside sensor)	
	3	Paper Height Sensor 2		
	4	Paper Size Switch 1	See Table 2. 1: Pushed	
	5	Paper Size Switch 2		
	6	Paper Size Switch 3		
	7	Paper Size Switch 4		
3	**By-pass Table**			
	0	Paper End Sensor	Paper end	Paper detected
	1	Paper Size 1	See Table 3.	
	2	Paper Size 2		
	3	Paper Size 3		
	4	Paper Size 4		
4	**Doors**			
	0	Front Door Switch	Opened	Closed
	1	Left Door Switch	Opened	Closed
	2	Right Door Switch	Opened	Closed
	3	Vertical Transport Switch	Opened	Closed
	4	Duplex Inverter Unit Switch	Opened	Closed
	5	Right Door Switch (LCT/PFU)	Opened	Closed

SP5-803 -XXX	Bit	Description	Reading	
			0	1
5	**Paper Feed**			
	0	Relay Sensor	Paper not detected	Paper detected
	1	Vertical Transport Sensor	Paper not detected	Paper detected
	2	Upper Relay Sensor (PFU)	Paper not detected	Paper detected
	3	Lower Relay Sensor (PFU)	Paper not detected	Paper detected
	4	Registration Sensor	Paper not detected	Paper detected
	5	Duplex Inverter Sensor	Paper not detected	Paper detected
	6	Duplex Feed Sensor	Paper not detected	Paper detected
6	**Paper Exit**			
	0	Fusing Exit Sensor	Paper not detected	Paper detected
	1	Paper Exit Sensor	Paper not detected	Paper detected
	2	Duplex Exit Sensor 1	Paper not detected	Paper detected
	3	Duplex Exit Sensor 2	Paper not detected	Paper detected
	4	Duplex Exit Sensor 3	Paper not detected	Paper detected
	5	Exit Upper Limit Sensor	Not full	Full
7	**Fusing Unit**			
	0	Fusing Unit (Set)	Not set	Set
	1	Fusing Unit (New)	0 to 1 : New unit installed	
	2	Oil Supply Unit (Set)	Set	Not set
	3	Oil Supply Unit (New)	1 to 0 : New unit installed	
	4	European Version	US	Europe
8	**Motor Lock**			
	0	Development Drive Motor - CMY	Not locked	Locked
	1	Development Drive Motor - K	Not locked	Locked
	2	-	-	-
	3	-	-	-
	4	-	-	-
	5	Fusing Fan Motor	Locked (normal speed)	Low speed or not working
	6	-	-	-
	7	-	-	-
9	**Dev. Unit/ PCU**			
	0	Development Unit - K	Not set	Set
	1	Development Unit - C	Not set	Set
	2	Development Unit - M	Not set	Set
	3	Development Unit - Y	Not set	Set
	4	PCU - K	Not set	Set
	5	PCU - C	Not set	Set
	6	PCU - M	Not set	Set
	7	PCU - Y	Not set	Set
13	**Others**			
	0	LD H.P. Sensor	Not H.P.	H.P.
	1	Transfer Belt Set Sensor	Not contact	Contact
	2	Transfer Belt H.P. Sensor	Not. H.P.	H.P.
	3	Used Toner Sensor	Not full	Full
	4	Used Toner Bottle Set Sensor	Not set	Set
	5	-	-	-
	6	PSU Thermistor	Not high	High

SP5-803 -XXX	Bit	Description	Reading	
			0	1
15	**Mail Box 1**			
	0	Tray 1 Paper Overflow Sensor	Not full	Full
	1	Tray 1 Paper Sensor	Paper not detected	Paper detected
	2	Tray 2 Paper Overflow Sensor	Not full	Full
	3	Tray 2 Paper Sensor	Paper not detected	Paper detected
	4	Tray 3 Paper Overflow Sensor	Not full	Full
	5	Tray 3 Paper Sensor	Paper not detected	Paper detected
	6	Tray 4 Paper Overflow Sensor	Not full	Full
	7	Tray 4 Paper Sensor	Paper not detected	Paper detected
16	**Mail Box 2**			
	0	Vertical Transport Sensor 1	Paper not detected	Paper detected
	1	Vertical Transport Sensor 2	Paper not detected	Paper detected
	2	Door Safety Switch	Opened	Closed

ARDF Input Check: SP6-007

SP6-007 -XXX	Bit	Description	Reading	
			0	1
1	7	Original width sensor 4	Paper not detected	Paper detected
	6	Original width sensor 3	Paper not detected	Paper detected
	5	Original width sensor 2	Paper not detected	Paper detected
	4	Original width sensor 1	Paper not detected	Paper detected
	3	Skew correction sensor	Paper not detected	Paper detected
	2	Original set sensor	Paper not detected	Paper detected
	1	Original length sensor 1	Paper not detected	Paper detected
	0	Original length sensor 2	Paper not detected	Paper detected
2	7	Original stopper HP sensor	Original stopper up	Original stopper down
	6	Pick-up HP sensor	Cover closed	Cover opened
	5	Top cover Sensor	Cover closed	Cover opened
	4	Lift sensor	Pick-up roller up	Pick-up roller down
	3	Inverter sensor	Paper not detected	Paper detected
	2	Exit sensor	Paper not detected	Paper detected
	1	Registration sensor	Paper not detected	Paper detected
	0	Interval Sensor	Paper not detected	Paper detected

Table 1: Paper Height Sensor

Low: Deactivated, High: Activated (actuator inside sensor)

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

Table 2: Paper Size Switch (Tray 2)

0: Not pushed, 1: pushed

Models		Switch Location			
North America	**Europe/Asia**	**1**	**2**	**3**	**4**
11" x 17" SEF	11" x 17" SEF	0	1	0	0
A3 SEF	A3 SEF	1	0	1	0
8 1/2" x 14" SEF *1	B4 SEF *1	1	1	0	1
8 1/2" x 11" SEF *2	A4 SEF *2	0	1	1	0
11" x 8 1/2" LEF *3	11" x 8 1/2" LEF *3	1	0	1	1
A4 LEF	A4 LEF	0	1	0	1
B5 LEF	B5 LEF	0	0	1	0
A5 LEF	A5 LEF	0	0	0	1

1: Pushed

NOTES:

*1: The machine detects either 81/2" x 14" SEF or B4 SEF, depending on the setting of SP 1-902-2

*2: The machine detects either 81/2" x 11" SEF or A4 SEF, depending on the setting of SP 1-902-3

*3: The machine detects either 11" x 81/2" LEF or B5 SEF, depending on the setting of SP 1-902-4

Table 3: Paper Size (By-pass Table)

Models		Bit No.			
North America	**Europe/Asia**	**4**	**3**	**2**	**1**
11" x 17" SEF	11" x 17" SEF	0	0	1	1
A3 SEF	A3 SEF	0	0	0	1
-	B4 SEF	0	0	1	0
8 1/2" x 11" SEF	A4 SEF	0	1	1	0
8" x 13" SEF	F SEF	0	1	0	0
-	A5 SEF	1	1	0	0
5 1/2" x 18 1/2" SEF	B6 SEF	1	0	0	0
Post Card	Post Card	0	0	0	0

Table 4: Original Size Detection

Original Size		Length Sensor			Width Sensor		SP4-301 display
A4/A3 version	**LT/DLT version**	L3	L2	L1	W2	W1	
A3	11" x 17"	O	O	O	O	O	132
B4	10" x 14"	O	O	O	X	O	141
F4	8.5" x 14" (8" x 13")	O	O	O	X	X	165
A4-L	8.5" x 11"	X	O	O	X	X	133
B5-L		X	X	O	X	X	142
A4-S	11" x 8.5"	X	X	X	O	O	5
B5-S		X	X	X	X	O	14
A5-L, A5-S	5.5" x 8.5", 8.5" x 5.5"	X	X	X	X	X	128

5.4.3 OUTPUT CHECK TABLE

CH: Charge
PF: **P**aper **F**eed
TS: **T**oner **S**upply
CW: Clockwise
CCW: Counterclockwise
MB: 4-bin **M**ail**b**ox
DI: **D**uplex **I**nverter

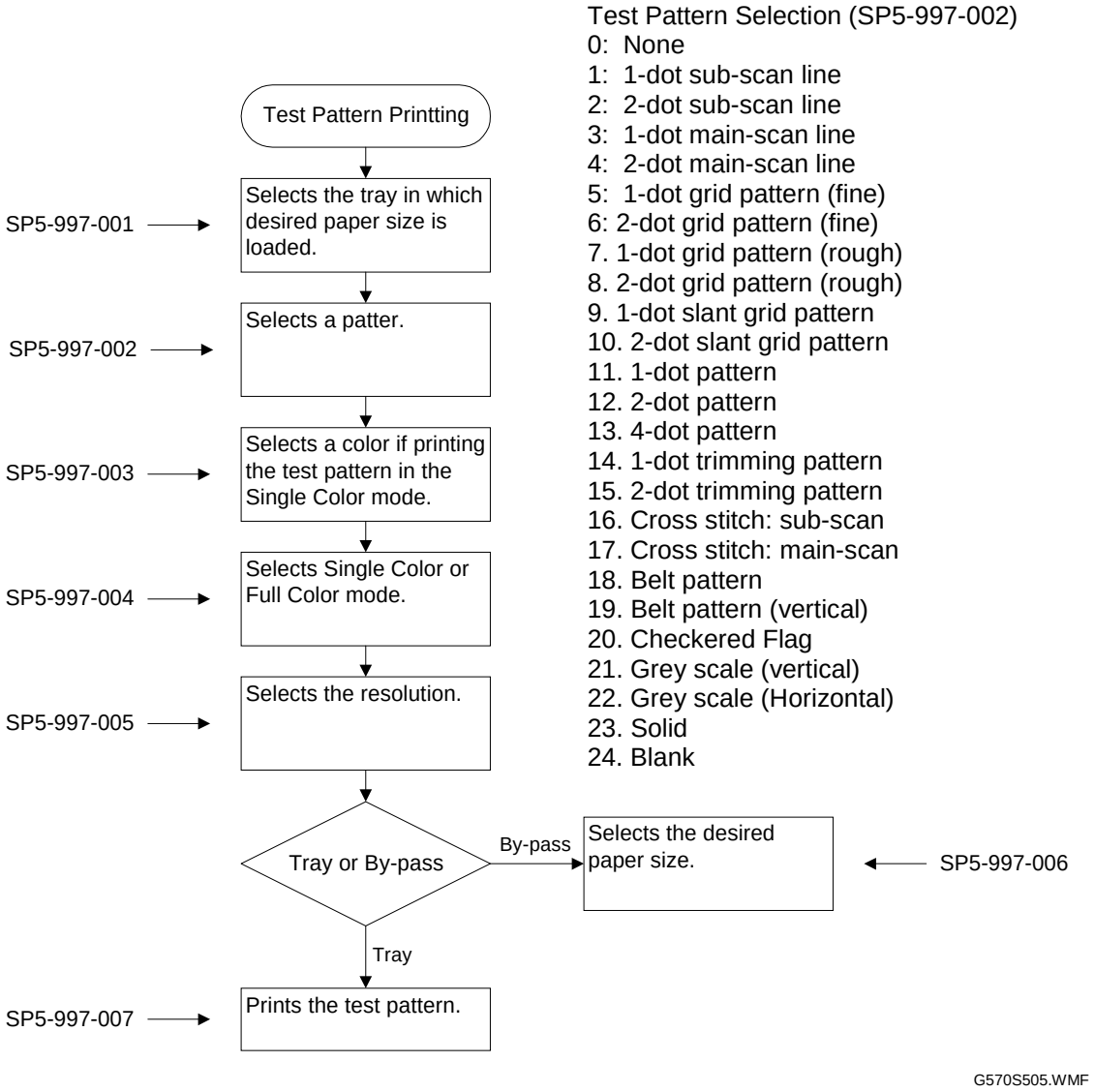
SP5-804-XXX		Description
7	Regist CL	Registration Clutch
8	By-pass CL	By-pass Feed Clutch
9	PF CL (1)	Tray 1 Paper Feed Clutch
10	Pick-up SOL	By-pass Pick-Up Solenoid
11	PF CL (2)	Tray 2 Paper Feed Clutch
12	Lift M UP (1)	Tray 1 Lift Motor / UP
13	Lift M DOWN(1)	Tray 1 Lift Motor / DOWN
14	Lift M UP(2)	Tray 2 Lift Motor / UP
15	Lift M DOWN(2)	Tray 2 Lift Motor / DOWN
17	PSU Fan H	PSU Cooling Fan Motor
19	Fusing Fan H	Fusing Fan Motor / High Speed
20	Fusing Fan L	Fusing Fan Motor / Low Speed
21	M Fan H	Laser Optics Housing Cooling Fan Motor / High Speed
22	M Fan L	Laser Optics Housing Cooling Fan Motor / Low Speed
23	Junction SOL	Exit Junction Gate Solenoid
24	Oil Supply SOL	Oil Supply Unit Solenoid
28	Fusing CL	Fusing Unit Clutch
29	K Dev CL	Development Unit Clutch - K
30	C Dev CL	Development Unit Clutch - C
31	M Dev CL	Development Unit Clutch - M
32	Y Dev CL	Development Unit Clutch - Y
34	Fusing Relay	Fusing Relay
35	Heat Lamp	Heating Roller Fusing Lamp
36	Pressure Lamp	Pressure Roller Fusing Lamp
44	CH DC [Y] 125	Charge DC Bias for Yellow / 125 mm/s
45	CH DC [M] 125	Charge DC Bias for Magenta / 125 mm/s
46	CH DC [C] 125	Charge DC Bias for Cyan / 125 mm/s
47	CH DC [K] 125	Charge DC Bias for Black / 125 mm/s
48	CH AC [FC]125	Charge AC Bias for Color / 125 mm/s
49	CH AC [K] 125	Charge AC Bias for Black / 125 mm/s
50	DevDC [Y]	Development DC Bias for Yellow
51	DevDC [M]	Development DC Bias for Magenta
52	DevDC [C]	Development DC Bias for Cyan
53	DevDC [K]	Development DC Bias for Black
54	DevAC [FC]	Development AC Bias for Color
55	DevAC [K]	Development AC Bias for Black
56	Transfer [Y]	Transfer Current for Yellow
57	Transfer [M]	Transfer Current for Magenta
58	Transfer [C]	Transfer Current for Cyan

SP5-804-XXX		Description
59	Transfer [K]	Transfer Current for Black
60	Cleaning Bias	Transfer Belt Cleaning Roller Bias
61	PA Roller Bias	Paper Attraction Roller Bias
62	TS CL [Y]	Toner Supply Clutch for Yellow
63	TS CL [M]	Toner Supply Clutch for Magenta
64	TS CL [C]	Toner Supply Clutch for Cyan
65	TS CL [K]	Toner Supply Clutch for Black
67	Air Supply [Y]	Air Pump Motor and Valve for Yellow
68	Air Supply [M]	Air Pump Motor and Valve for Magenta
69	Air Supply [C]	Air Pump Motor and Valve for Cyan
70	Air Supply [K]	Air Pump Motor and Valve for Black
71	ID Sensor LED	ID Sensor LED
72	Drum M L CW	Drum Drive Motors (K & CMY) / Low Speed / Clockwise
73	Drum M M CW	Drum Drive Motors (K & CMY) / Middle Speed / Clockwise
74	Drum M H CW	Drum Drive Motors (K & CMY) / High Speed / Clockwise
75	PF M L CW	Paper Feed Motor / Low Speed / Clockwise
76	PF M M CW	Paper Feed Motor / Middle Speed / Clockwise
77	PF M H CW	Paper Feed Motor / High Speed / Clockwise
78	PF M Feed	Paper Feed Motor / Feed Speed / Clockwise
79	TD Vcnt	TD Sensor / Vcnt
80	CH AC[FC]62.5	Charge AC Bias for Color - 62.5
81	CH AC [K]62.5	Charge AC Bias for Black - 62.5
82	CH AC [FC]185	Charge AC Bias for Color - 185
83	CH AC [K]185	Charge AC Bias for Black - 185
84	Dev AC[FC]62.5	Development AC Bias for Color - 62.5
85	Dev AC[K]62.5	Development AC Bias for Black - 62.5
86	Dev AC[FC]185	Development AC Bias for Color - 185
87	Dev AC[K]185	Development AC Bias for Black - 185
91	PA Roller Bias	Paper Attraction Roller Bias
92	Memory Chip	Memory Chip / Power (5V) Supply
97	Belt M CW	Transfer Belt Contact Motor / Clockwise
98	Belt M CCW	Transfer Belt Contact Motor / Counterclockwise
99	Belt M Break	Transfer Belt Contact Motor / Break
120	PF CL PFU(1)	Paper Feed Clutch / Paper Feed Unit / Tray 3
121	PF CL PFU(2)	Paper Feed Clutch / Paper Feed Unit / Tray 4
122	Pick-upSOL LCT	Pick-up Solenoid / Large Capacity Tray
125	PFU M	Paper Feed Unit / Motor
128	Valve SOL [K]	Air Flow Valve solenoid for Black
129	Valve SOL [C]	Air Flow Valve solenoid for Cyan
130	Valve SOL [M]	Air Flow Valve solenoid for Magenta
131	Valve SOL [Y]	Air Flow Valve solenoid for Yellow
132	Toner Supply M	Toner Supply Motor
135	DevAC TRG[FC]	Development AC Trigger for Color
136	DevAC TRG[K]	Development AC Trigger for Black
137	DevPWM TRG[K]	Development PWM Trigger for Black
138	DevPWM TRG[C]	Development PWM Trigger for Cyan

SP5-804-XXX		Description
139	DevPWM TRG[M]	Development PWM Trigger for Magenta
140	DevPWM TRG[Y]	Development PWM Trigger for Yellow
141	CHdcPWM TRG[K]	Charge DC PWM Trigger for Black
142	CHdcPWM TRG[C]	Charge DC PWM Trigger for Cyan
143	CHdcPWM TRG[M]	Charge DC PWM Trigger for Magenta
144	CHdcPWM TRG[Y]	Charge DC PWM Trigger for Yellow
145	CHac1 TRG[FC]	Charge AC1 Trigger for Color
146	Chac2 TRG[FC]	Charge AC2 Trigger for Color
147	Chac3 TRG[FC]	Charge AC3 Trigger for Color
148	CHac1 TRG[K]	Charge AC1 Trigger for Black
149	Chac2 TRG[K]	Charge AC2 Trigger for Black
150	Chac3 TRG[K]	Charge AC3 Trigger for Black
151	MB M	4-bin Mailbox Main Motor
152	MB SOL1	4-bin Mailbox Junction Gate Solenoid 1
153	MB SOL2	4-bin Mailbox Junction Gate Solenoid 2
154	MB SOL3	4-bin Mailbox Junction Gate Solenoid 3
155	Gate SOL	4-bin Mailbox Junction Gate Solenoid 4
160	Duplex SOL	Duplex Junction Gate Solenoid
161	DI M1 62.5CCW	Duplex Inverter Motor 1 / 62.5 / Counterclockwise
162	DI M1 65CCW	Duplex Inverter Motor 1 / 65 / Counterclockwise
163	DI M1 125CCW	Duplex Inverter Motor 1 / 125 / Counterclockwise
164	DI M1 130CCW	Duplex Inverter Motor 1 / 130 / Counterclockwise
165	DI M1 185CCW	Duplex Inverter Motor 1 / 185 / Counterclockwise
166	DI M1 193CCW	Duplex Inverter Motor 1 / 193 / Counterclockwise
168	DI M1 370CCW	Duplex Inverter Motor 1 / 370 / Counterclockwise
169	DI M1 370CW	Duplex Inverter Motor 1 / 370 / Clockwise
170	DI M1 450CW	Duplex Inverter Motor 1 / 450 / Clockwise
171	DI M2 62.5CCW	Duplex Inverter Motor 2 / 62.5 / Counterclockwise
172	DI M2 65CCW	Duplex Inverter Motor 2 / 65 / Counterclockwise
173	DI M2 125CCW	Duplex Inverter Motor 2 / 125 / Counterclockwise
174	DI M2 130CCW	Duplex Inverter Motor 2 / 130 / Counterclockwise
175	DI M2 185CCW	Duplex Inverter Motor 2 / 185 / Counterclockwise
176	DI M2 193CCW	Duplex Inverter Motor 2 / 193 / Counterclockwise
178	DI M2 370CCW	Duplex Inverter Motor 2 / 370 / Counterclockwise
179	DI M2 370CW	Duplex Inverter Motor 2 / 370 / Clockwise
180	DI M2 450CW	Duplex Inverter Motor 2 / 450 / Clockwise
181	DI M12 62.5CCW	Duplex Inverter Motor 1&2 / 62.5 / Counterclockwise
182	DI M12 65CCW	Duplex Inverter Motor 1&2 / 65 / Counterclockwise
183	DI M12 125CCW	Duplex Inverter Motor 1&2 / 125 / Counterclockwise
184	DI M12 130CCW	Duplex Inverter Motor 1&2 / 130 / Counterclockwise
185	DI M12 185CCW	Duplex Inverter Motor 1&2 / 180 / Counterclockwise
186	DI M12 193CCW	Duplex Inverter Motor 1&2 / 193 / Counterclockwise
188	DI M12 370CCW	Duplex Inverter Motor 1&2 / 370 / Counterclockwise
189	DI M12 370CW	Duplex Inverter Motor 1&2 / 370 / Clockwise
190	DI M12 450CW	Duplex Inverter Motor 1&2 / 450 / Clockwise
193	PF M125CCW	Duplex Feed Motor / 125 / Counterclockwise
197	PF M230CCW	Duplex Feed Motor / 230 / Counterclockwise

SP5-804-XXX		Description
198	PF M370CCW	Duplex Feed Motor / 370 / Counterclockwise
202	DI M2 OFF	Duplex Inverter Motor 2 / OFF
204	K Dev M H	Development Motor - K / High Speed
205	K Dev M M	Development Motor - K / Middle Speed
206	K Dev M L	Development Motor - K / Low Speed
207	Color Dev M H	Development Motor - YMC / High Speed
208	Color Dev M M	Development Motor - YMC / Middle Speed
209	Color Dev M L	Development Motor - YMC / Low Speed
210	Polygon M 29	Polygon Motor / 29.528
211	Polygon M 21	Polygon Motor / 21.850
212	LD FC[K]62.5	LD Power for Black in Color Mode / 62.5
213	LD FC[K]125	LD Power for Black in Color Mode / 125
214	LD FC[Y]62.5	LD Power for Yellow in Color Mode / 62.5
215	LD FC[Y]125	LD Power for Yellow in Color Mode / 125
216	LD FC[M]62.5	LD Power for Magenta in Color Mode / 62.5
217	LD FC[M]125	LD Power for Magenta in Color Mode / 125
218	LD FC[C]62.5	LD Power for Cyan in Color Mode / 62.5
219	LD FC[C]125	LD Power for Cyan in Color Mode / 125
220	LD1 [K] 62.5	LD1 Power for Black / 62.5
221	LD1 [K] 125	LD1 Power for Black / 125
222	LD1 [K] 185	LD1 Power for Black / 185
223	LD2 [K] 62.5	LD2 Power for Black / 62.5
224	LD2 [K] 125	LD2 Power for Black / 125
225	LD2 [K] 185	LD2 Power for Black / 185
226	LD [K]62.5	LD Power for Black / 62.5
227	LD [K]125	LD Power for Black / 125
228	LD [K]185	LD Power for Black / 185

5.4.4 TEST PATTERN (SP5-997)



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5.5 SCANNER SP

5.5.1 SP MODES

SP1-xxx (System and Others)

1	Mode No. (Class 1, 2, and 3)			Function / [Setting]
001	**[System]**			
	1	Model Name	* NV	Displays the model name.
	2	Scanner Firmware Version		Displays the scanner firmware version.
	3	Scanner Firmware Number		Displays the firmware's part number.
	4	Detail Model Name		Displays the detail model name.
002	**[Error Log Display]**			
	1	Error Log Display	* NV	Displays the error log data.
003	**[FTP Port Number]**			
	1	FTP Port Number	* NV	Changes the FTP port number. *After changing this value, do the following:* *1. Run the Registry Editor* *2. Access /HKEY_LOCAL_MACHINE/SOFTWARE/ Ricoh/NetworkScanner* 3. *Change the value of 'PortNo' to this SP mode's value* [0 to 65535 / 3670 / 1/step]
004	**[Compression Type]**			
	1	Compression Type	* NV	Selects the compression type for binary picture processing. [1 to 3 / 3 / 1/step] 1: MH, 2: MR, 3: MMR
005	**[Erase margin]**			
	1	Erase Margin	* NV	Creates an erase margin for all edges of the scanned image. *If the machine has scanned the edge of the original, create a margin.* [0 to 5 / 0 / 1 mm/step]
006	**[Auto Reset Timer]**			
	1	Auto Reset Timer	* NV	Adjusts the auto reset timer for the scanner function. *If this is "0", the auto reset function is disabled.* [0 to 99 / 60 / 1 sec/step]

SP2-XXX (Scanning-image quality)

2	Mode Number (Class 1, 2, and 3)			Function / [Setting]
002	**[Text mode settings]**			
	1	MTF Filter Coefficient (Main scan)	* NV	Selects the MTF filter coefficient in the main scan direction for Text mode. *Select a higher number for a stronger filter.* *If this is "0", the MTF filter is not applied.* [0 to 15 / 7 / 1/step] **DFU**
	2	MTF Filter Coefficient (Sub scan)		As above, for sub scan [0 to 13 / 6 / 1/step] **DFU**
	3	Smoothing Filter		Selects the smoothing pattern for Text mode when using binary picture processing mode. *A larger value could cause moiré to appear in the image.* [0 to 7 / 0 / 1/step] **DFU**
	4	Scanner Gamma		Selects the scanner gamma type for Text mode when using binary picture processing mode. [0 to 6 / 4 / 1/step] **DFU** 0: Standard 1: Smooth 2: Clearly 3: Liner 4: Text image for the delivery function 5: Text/photo image for the delivery function 6: Photo image for the delivery function
	5	Notch No.7(Lighter): Brightness		Adjusts the image density for each image density level for Text mode when using binary picture processing mode. [0 to 255 / 104 / 1/step] **DFU**
	6	Notch No.7(Lighter): Contrast		[0 to255 / 128 / 1/step] **DFU**
	7	Notch No.7(Lighter): Threshold		[0 to 255 / 160 / 1/step] **DFU**
	8	Notch No.6: Brightness		[0 to 255 / 128 / 1/step] **DFU**
	9	Notch No.6: Contrast		[0 to 255 / 128 / 1/step] **DFU**
	10	Notch No.6: Threshold		[0 to 255 / 145 / 1/step] **DFU**
	11	Notch No.5: Brightness		[0 to 255 / 128 / 1/step] **DFU**
	12	Notch No.5: Contrast		[0 to 255 / 128 / 1/step] **DFU**
	13	Notch No.5: Threshold		[0 to 255 / 135 / 1/step] **DFU**
	14	Notch No.4(Middle): Brightness		[0 to 255 / 128 / 1/step] **DFU**
	15	Notch No. 4(Middle): Contrast		[0 to 255 / 128 / 1/step] **DFU**
	16	Notch No. 4(Middle): Threshold		[0 to 255 / 128 / 1/step] **DFU**
	17	Notch No.3: Brightness		[0 to 255 / 128 / 1/step] **DFU**

2	Mode Number (Class 1, 2, and 3)			Function / [Setting]
002	18	Notch No.3: Contrast	* NV	Adjusts the image density for each image density level for Text mode when using binary picture processing mode. [0 to 255 / 128 / 1/step] **DFU**
	19	Notch No.3: Threshold		[0 to 255 / 100 / 1/step] **DFU**
	20	Notch No.2: Brightness		[0 to 255 / 128 / 1/step] **DFU**
	21	Notch No.2: Contrast		[0 to 255 / 128 / 1/step] **DFU**
	22	Notch No.2: Threshold		[0 to 255 / 85 / 1/step] **DFU**
	23	Notch No.1(Darker): Brightness		[0 to 255 / 128 / 1/step] **DFU**
	24	Notch No. 1(Darker): Contrast		[0 to 255 / 128 / 1/step] **DFU**
	25	Notch No. 1(Darker): Threshold		[0 to 255 / 70 / 1/step] **DFU**
003	**[Text/Photo mode settings]**			
	1	MTF Filter Coefficient (Main scan)	* NV	Selects the MTF filter coefficient in the main scan direction for Text/Photo mode. *Select a higher number for a stronger filter.* *If this is "0", the MTF filter is not applied.* [0 to 15 / 4 / 1/step] **DFU**
	2	MTF Filter Coefficient (Sub scan)		As above, for sub scan [0-13 / 4 / 1/step] **DFU**
	3	Smoothing Filter		Selects the smoothing pattern for Text/Photo mode when using binary picture processing mode. *A larger value could cause moiré to appear in the image.* [0 to 7 / 0 / 1/step] **DFU**
	4	Scanner Gamma		Selects the scanner gamma type for Text/Photo mode when using binary picture processing mode. [0 to 6 / 5 / 1/step] **DFU**
	5	Notch No.7(Lighter): Brightness		Adjusts the image density for each image density level for Text mode when using binary picture processing mode. [0 to 255 / 128 / 1/step] **DFU**
	6	Notch No.7(Lighter): Contrast		[0 to 255 / 128 / 1/step] **DFU**
	7	Notch No.7(Lighter): Threshold		[0 to 255 / 160 / 1/step] **DFU**
	8	Notch No.6: Brightness		[0 to 255 / 128 / 1/step] **DFU**
	9	Notch No.6: Contrast		[0 to 255 / 128 / 1/step] **DFU**
	10	Notch No.6: Threshold		[0 to 255 / 145 / 1/step] **DFU**
	11	Notch No.5: Brightness		[0 to 255 / 128 / 1/step] **DFU**
	12	Notch No.5: Contrast		[0 to 255 / 128 / 1/step] **DFU**
	13	Notch No.5: Threshold		[0 to 255 / 135 / 1/step] **DFU**
	14	Notch No.4(Middle): Brightness		[0 to 255 / 128 / 1/step] **DFU**

2	Mode Number (Class 1, 2, and 3)			Function / [Setting]
003	15	Notch No. 4(Middle): Contrast	* NV	[0 to 255 / 128 / 1/step] **DFU**
	16	Notch No. 4(Middle): Threshold		[0 to 255 / 128 / 1/step] **DFU**
	17	Notch No.3: Brightness		[0 to 255 / 128 / 1/step] **DFU**
	18	Notch No.3: Contrast		Adjusts the image density for each image density level for Text mode when using binary picture processing mode. [0 to 255 / 128 / 1/step] **DFU**
	19	Notch No.3: Threshold		[0 to 255 / 100 / 1/step] **DFU**
003	20	Notch No.2: Brightness		[0 to 255 / 128 / 1/step] **DFU**
	21	Notch No.2: Contrast		[0 to 255 / 128 / 1/step] **DFU**
	22	Notch No.2: Threshold		[0 to 255 / 85 / 1/step] **DFU**
	23	Notch No.1(Darker): Brightness		[0 to 255 / 128 / 1/step] **DFU**
	24	Notch No. 1(Darker): Contrast		[0 to 255 / 128 / 1/step] **DFU**
	25	Notch No. 1(Darker): Threshold		[0 to -255 / 70 / 1/step] **DFU**
004	**[Photo mode settings]**			
	1	MTF Filter Coefficient (Main scan)	* NV	Selects the MTF filter coefficient in the main scan direction for Photo mode. *Select a higher number for a stronger filter.* *If this is "0", the MTF filter is not applied.* [0 to 15 / 0 / 1/step] **DFU**
	2	MTF Filter Coefficient (Sub scan)		As above, for sub scan [0 to 13 / 0 / 1/step] **DFU**
	3	Smoothing Filter		Selects the smoothing pattern for Photo mode when using binary picture processing mode. *A larger value could cause moiré to appear in the image.* [0 to 7 / 0 / 1/step] **DFU**
	4	Scanner Gamma		Selects the scanner gamma type for Photo mode when using binary picture processing mode. [0 to 6 / 6 / 1/step] **DFU**
	5	Dither Matrix Filter		Selects the dither matrix type for Photo mode when using binary picture processing mode. [1 to 26 / 4 / 1 step] **DFU**
	6	Notch No.7(Lighter): Brightness		Adjusts the image density for each image density level for Text mode when using binary picture processing mode. [0 to 255 / 128 / 1/step] **DFU**
	7	Notch No.7(Lighter): Contrast		[0 to 255 / 128 / 1/step] **DFU**
	8	Notch No.7(Lighter): Threshold		[0 to 255 / 160 / 1/step] **DFU**
	9	Notch No.6: Brightness		[0 to 255 / 128 / 1/step] **DFU**
	10	Notch No.6: Contrast		[0 to 255 / 128 / 1/step] **DFU**

2	Mode Number (Class 1, 2, and 3)			Function / [Setting]
004	11	Notch No.6: Threshold	*	[0 to 255 / 145 / 1/step] **DFU**
	12	Notch No.5: Brightness	NV	[0 to 255 / 128 / 1/step] **DFU**
	13	Notch No.5: Contrast		[0 to 255 / 128 / 1/step] **DFU**
	14	Notch No.5: Threshold		[0 to 255 / 135 / 1/step] **DFU**
	15	Notch No.4(Middle): Brightness		[0 to 255 / 128 / 1/step] **DFU**
	16	Notch No. 4(Middle): Contrast		[0 to 255 / 128 / 1/step] **DFU**
	17	Notch No. 4(Middle): Threshold		[0 to 255 / 128 / 1/step] **DFU**
	18	Notch No.3: Brightness		[0 to 255 / 128 / 1/step] **DFU**
	19	Notch No.3: Contrast		Adjusts the image density for each image density level for Text mode when using binary picture processing mode. [0 to 255 / 128 / 1/step] **DFU**
	20	Notch No.3: Threshold		[0 to 255 / 100 / 1/step] **DFU**
	21	Notch No.2: Brightness		[0 to 255 / 128 / 1/step] **DFU**
	22	Notch No.2: Contrast		[0 to 255 / 128 / 1/step] **DFU**
	23	Notch No.2: Threshold		[0 to 255 / 85 / 1/step] **DFU**
	24	Notch No.1(Darker): Brightness		[0 to 255 / 128 / 1/step] **DFU**
	25	Notch No. 1(Darker): Contrast		[0 to 255 / 128 / 1/step] **DFU**
	26	Notch No. 1(Darker): Threshold		[0 to 255 / 70 / 1/step] **DFU**
005	**[Gray – scale mode settings]**			
	1	MTF Filter Coefficient (Main scan)	* NV	Selects the MTF filter coefficient in the main scan direction when using grayscale processing mode. *Select a higher number for a stronger filter.* *If this is "0", the MTF filter is not applied* [0 to 15 / 0 / 1 step] **DFU**
	2	MTF Filter Coefficient (Sub scan)		As above, for sub scan [0 to 13 / 0 / 1 step] **DFU**
	3	Smoothing Filter		Selects the smoothing pattern when using grayscale processing mode. *A larger value could cause moiré to appear in the image.* [0 to 7 / 0 / 1/step] **DFU**
	4	Scanner Gamma		Selects the scanner gamma type when using grayscale processing mode. [0 to 6 / 3 / 1/step] **DFU**
	5	Notch No.7(Lighter): Brightness		Adjusts the image density for each image density level for Text mode when using binary picture processing mode. [0 to 255 / 128 / 1/step] **DFU**
	6	Notch No.7(Lighter): Contrast		[0 to 255 / 128 / 1/step] **DFU**

2	Mode Number (Class 1, 2, and 3)			Function / [Setting]
005	7	Notch No.7(Lighter): Threshold	* NV	[0 to 255 / 160 / 1/step] **DFU**
	8	Notch No.6: Brightness		[0 to 255 / 128 / 1/step] **DFU**
	9	Notch No.6: Contrast		[0 to 255 / 128 / 1/step] **DFU**
	10	Notch No.6: Threshold		[0 to 255 / 145 / 1/step] **DFU**
	11	Notch No.5: Brightness		[0 to 255 / 128 / 1/step] **DFU**
	12	Notch No.5: Contrast		[0 to 255 / 128 / 1/step] **DFU**
	13	Notch No.5: Threshold		[0 to 255 / 135 / 1/step] **DFU**
	14	Notch No.4(Middle): Brightness		[0 to 255 / 128 / 1/step] **DFU**
	15	Notch No. 4(Middle): Contrast		[0 to 255 / 128 / 1/step] **DFU**
	16	Notch No. 4(Middle): Threshold		[0 to 255 / 128 / 1/step] **DFU**
	17	Notch No.3: Brightness		[0 to 255 / 128 / 1/step] **DFU**
	18	Notch No.3: Contrast		Adjusts the image density for each image density level for Text mode when using binary picture processing mode. [0 to 255 / 128 / 1/step] **DFU**
	19	Notch No.3: Threshold		[0 to 255 / 100 / 1/step] **DFU**
	20	Notch No.2: Brightness		[0 to 255 / 128 / 1/step] **DFU**
	21	Notch No.2: Contrast		[0 to 255 / 128 / 1/step] **DFU**
	22	Notch No.2: Threshold		[0 to 255 / 85 / 1/step] **DFU**
	23	Notch No.1(Darker): Brightness		[0 to 255 / 128 / 1/step] **DFU**
	24	Notch No. 1(Darker): Contrast		[0 to 255 / 128 / 1/step] **DFU**
	25	Notch No. 1(Darker): Threshold		[0 to 255 / 70 / 1/step] **DFU**
006	**[Full Color settings]**			
	1	MTF Filter Coefficient (Main scan)	* NV	Selects the MTF filter coefficient in the main scan direction when using grayscale processing mode. *Select a higher number for a stronger filter.* *If this is "0", the MTF filter is not applied* [0 to 15 / 0 / 1/step] **DFU**
	2	MTF Filter Coefficient (Sub scan)		As above, for sub scan [0 to 13 / 0 / 1/step] **DFU**
	3	Smoothing Filter		Selects the smoothing pattern when using grayscale processing mode. *A larger value could cause moiré to appear in the image.* [0 to 7 / 0 / 1/step] **DFU**
	4	R-Gamma Curve		Adjusts the scanner gamma for RGB. [0 to 9 / 7 / 1 /step] **DFU**
	5	G-Gamma Curve		
	6	B-Gamma Curve		

2	Mode Number (Class 1, 2, and 3)			Function / [Setting]
006	7	Notch No.7(Lighter): R - Brightness	* NV	Adjusts the image density for each image density level for Text mode when using binary picture processing mode. [0 to 255 / 195 / 1/step] **DFU**
	8	Notch No.7(Lighter): G - Brightness		[0 to 255 / 194 / 1/step] **DFU**
	9	Notch No.7(Lighter): B - Brightness		[0 to 255 / 195 / 1/step] **DFU**
	10	Notch No.7(Lighter): R - Contrast		[0 to 255 / 185 / 1/step] **DFU**
	11	Notch No.7(Lighter): G - Contrast		[0 to 255 / 184 / 1/step] **DFU**
	12	Notch No.7(Lighter): B - Contrast		[0 to 255 / 185 / 1/step] **DFU**
	13	Notch No.7(Lighter): R - Threshold		[0 to 255 / 128 / 1/step] **DFU**
	14	Notch No.7(Lighter): G - Threshold		[0 to 255 / 128 / 1/step] **DFU**
	15	Notch No.7(Lighter): B - Threshold		[0 to 255 / 128 / 1/step] **DFU**
	16	Notch No.6: R - Brightness		[0 to 255 / 177 / 1/step] **DFU**
	17	Notch No.6: G - Brightness		[0 to 255 / 174 / 1/step] **DFU**
	18	Notch No.6: B - Brightness		[0 to 255 / 177 / 1/step] **DFU**
	19	Notch No.6: R - Contrast		[0 to 255 / 168 / 1/step] **DFU**
	20	Notch No.6 G - Contrast		[0 to 255 / 164 / 1/step] **DFU**
	21	Notch No.6: B - Contrast		[0 to 255 / 168 / 1/step] **DFU**
	22	Notch No.6: R - Threshold		[0 to 255 / 128 / 1/step] **DFU**
	23	Notch No.6: G - Threshold		[0 to 255 / 128 / 1/step] **DFU**
	24	Notch No.6: B - Threshold		[0 to 255 / 128 / 1/step] **DFU**
	25	Notch No.5: R - Brightness		[0 to 255 / 172 / 1/step] **DFU**
	26	Notch No.5: G - Brightness		[0 to 255 / 165 / 1/step] D**FU**
	27	Notch No.5: B - Brightness		[0 to 255 / 168 / 1/step] **DFU**
	28	Notch No.5: R - Contrast		[0 to 255 / 165 / 1/step] **DFU**
	29	Notch No.5 G - Contrast		[0 to 255 / 161 / 1/step] **DFU**
	30	Notch No.5: B - Contrast		[0 to 255 / 164 / 1/step] **DFU**
	31	Notch No.5: R - Threshold		[0 to 255 / 128 / 1/step] **DFU**

2	Mode Number (Class 1, 2, and 3)			Function / [Setting]
006	32	Notch No.5: G - Threshold	* NV	[0 to 255 / 128 / 1/step] **DFU**
	33	Notch No.5: B - Threshold		[0 to 255 / 128 / 1/step] **DFU**
	34	Notch No.4(Middle): R - Brightness		[0 to 255 / 128 / 1/step] **DFU**
	35	Notch No. 4(Middle): G - Brightness		[0 to 255 / 128 / 1/step] **DFU**
	36	Notch No. 4(Middle): B - Brightness		[0 to 255 / 128 / 1/step] **DFU**
	37	Notch No. 4(Middle): R - Contrast		[0 to 255 / 128 / 1/step] **DFU**
	38	Notch No. 4(Middle) G - Contrast		[0 to 255 / 128 / 1/step] **DFU**
	39	Notch No. 4(Middle): B - Contrast		[0 to 255 / 128 / 1/step] **DFU**
	40	Notch No. 4(Middle): R - Threshold		[0 to 255 / 128 / 1/step] **DFU**
	41	Notch No. 4(Middle): G - Threshold		[0 to 255 / 128 / 1/step] **DFU**
	42	Notch No. 4(Middle): B - Threshold		[0 to 255 / 128 / 1/step] **DFU**
	43	Notch No.3: R - Brightness		[0 to 255 / 125 / 1/step] **DFU**
	44	Notch No.3: G - Brightness		[0 to 255 / 127 / 1/step] **DFU**
	45	Notch No.3: B - Brightness		[0 to 255 / 127 / 1/step] **DFU**
	46	Notch No.3: R - Contrast		[0 to 255 / 136 / 1/step] **DFU**
	47	Notch No.3 G - Contrast		[0 to 255 / 134 / 1/step] **DFU**
	48	Notch No.3: B - Contrast		[0 to 255 / 134 / 1/step] **DFU**
	49	Notch No.3: R - Threshold		[0 to 255 / 128 / 1/step] **DFU**
	50	Notch No.3: G - Threshold		[0 to 255 / 128 / 1/step] **DFU**
	51	Notch No.3: B - Threshold		[0 to 255 / 128 / 1/step] **DFU**
	52	Notch No.2: R - Brightness		[0 to 255 / 124 / 1/step] **DFU**
	53	Notch No.2: G - Brightness		[0 to 255 / 126 / 1/step] **DFU**
	54	Notch No.2: B - Brightness		[0 to 255 / 126 / 1/step] **DFU**
	55	Notch No.2: R - Contrast		[0 to 255 / 140 / 1/step] **DFU**
	56	Notch No.2 G - Contrast		[0 to 255 / 138 / 1/step] **DFU**
	57	Notch No.2: B - Contrast		[0 to 255 / 138 / 1/step] **DFU**

2	Mode Number (Class 1, 2, and 3)			Function / [Setting]
006	58	Notch No.2: R - Threshold	* NV	[0 to 255 / 128 / 1/step] **DFU**
	59	Notch No.2: G - Threshold		[0 to 255 / 128 / 1/step] **DFU**
	60	Notch No.2: B - Threshold		[0 to 255 / 128 / 1/step] **DFU**
	61	Notch No.1(Darker): R - Brightness		[0 to 255 / 124 / 1/step] **DFU**
	62	Notch No. 1(Darker): G - Brightness		[0 to 255 / 125 / 1/step] **DFU**
	63	Notch No. 1(Darker): B - Brightness		[0 to 255 / 126 / 1/step] **DFU**
	64	Notch No. 1(Darker): R - Contrast		[0 to 255 / 144 / 1/step] **DFU**
	65	Notch No. 1(Darker) G - Contrast		[0 to 255 / 144 / 1/step] **DFU**
	66	Notch No. 1(Darker): B - Contrast		[0 to 255 / 142 / 1/step] **DFU**
	67	Notch No. 1(Darker): R - Threshold		[0 to 255 / 128 / 1/step] **DFU**
	68	Notch No. 1(Darker): G - Threshold		[0 to 255 / 128 / 1/step] **DFU**
	69	Notch No. 1(Darker): B - Threshold		[0 to 255 / 128 / 1/step] **DFU**
007	**[Compression ratio of gray-scale]**			
	1	Compression ratio (Normal image)	* NV	Selects the compression ratio for grayscale processing mode (JPEG) for the three settings that can be selected at the operation panel. [5 to 95 / 50 / 1 /step]
	2	Compression ratio (High quality image)		[5 to 95 / 60 / 1 /step]
	3	Compression ratio (Low-quality image)		[5 to 95 / 40 / 1 /step]

SP8-XXX (Delivery)

8	Mode Number			Function and [Setting]
001	**[Delivery]**			
	1	Delivery Server IP Address	* NV	Sets the IP address for the delivery server. [000.000.000.000]
002	**[Delivery Retry]**			
	1	Delivery Re-try (Interval)	* NV	Sets the delivery re-try interval. [60-999 / 300 / 1 sec/step]
	2	Delivery Re-try (Number of re-try)		Sets the number of delivery re-tries. *If this is "0", the machine will not re-try to send an image to the delivery server.* [0-99 / 3 / 1 time/step]
003	**[Ecabinet IP Address]**			
	1	ECabinet IP Address	* NV	Sets the IP address for the eCabinet. [000.000.000.000]

8	Mode Number			Function and [Setting]
004	**[Display timer of N/W error]**			
	1	Display timer of N/W error	* NV	Selects the length of time that the network error message for the scanner utilities is displayed. *If this is "0", the error message is displayed until the error is solved.* [0-999 / 300 / 1 sec/step]

SP9	Mode Number	Function and [Setting]
9001	Not used	

5.6 REBOOT / SYSTEM SETTING RESET

5.6.1 SOFTWARE RESET

The software can be rebooted when the machine hangs up. Use the following procedure.

Turn the main power switch off and on.

-or-

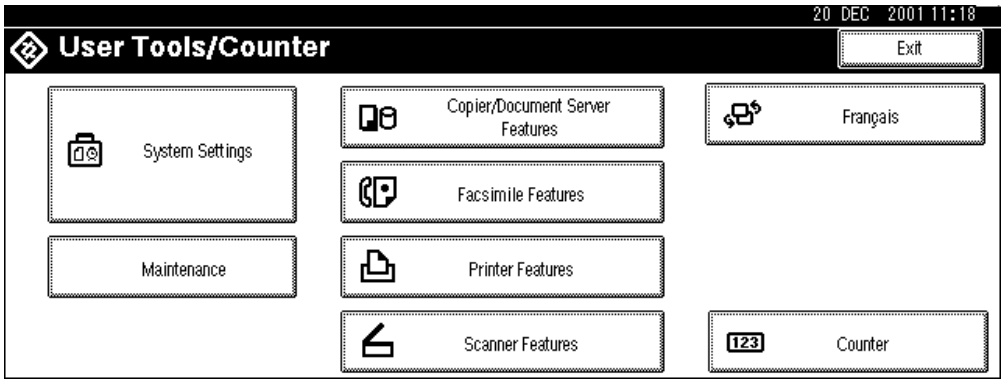
Press and hold down ⓒ (#) together for over 10 seconds. When the machine beeps once, release both buttons. After “Now loading. Please wait” is displayed for a few seconds, the copy window will open. The machine is ready for normal operation.

5.6.2 SYSTEM SETTINGS AND COPY SETTING RESET

System Setting Reset

The system settings in the UP mode can be reset to their defaults. Use the following procedure.

1. Press User Tools/Counter ◈/123.
2. Hold down (#) and then press System Settings.
   NOTE: You must press (#) first.



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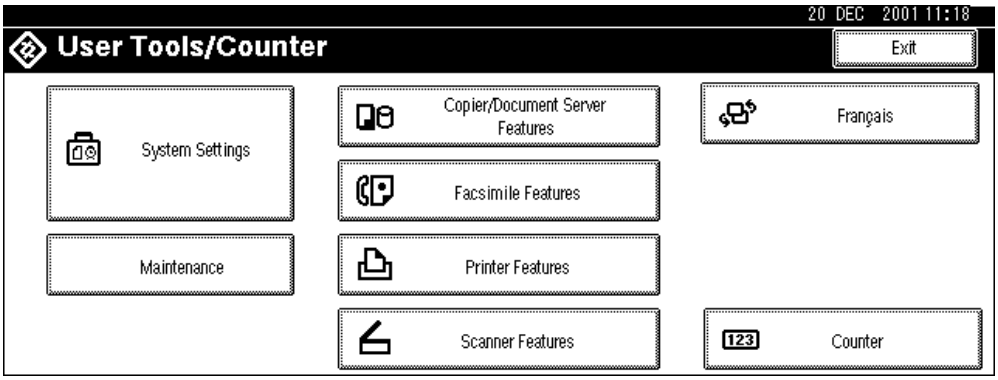
3. When the message prompts you to confirm that you want to reset the system settings, press Yes.
4. When the message tells you that the settings have been reset, press Exit.

Copier Setting Reset

The copy settings in the UP mode can be reset to their defaults. Use the following procedure.

1. Press User Tools/Counter.
2. Hold down # and then press Copier/Document Server Settings.
   NOTE: You must press # first.



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3. When the message prompts you to confirm that you want to reset the Copier Document Server settings, press Yes.
4. When the message tells you that the settings have been reset, press Exit.

5.7 FIRMWARE UPDATE PROCEDURE

5.7.1 TYPE OF FIRMWARE

There are 11 types of firmware as shown below.

Type of firmware	Function	Location of firmware	Message displayed
* Engine - Main	Printer engine control	BCU Flash ROM	Engine (1)
* Engine - Music	Line position adjustment	BCU Flash ROM	Music (1)
• System • Copier Application • Netfile Application	3 different firmware (system and Copier and Netfile applications) is combined.	DIMM 1	Onboard Sys (1)
Printer Application	Feature application	DIMM 2	Onboard Printer (1)
Scanner Application		DIMM 2	Onboard Scn (1)
Fax Application		DIMM 2	Opt DIMM Fax (1)
* NIB	Network Interface	Controller Flash ROM	Network Support (1)
Scanner IPU	Scanner control	IPU Flash ROM	Scanner IPU (1)
Operation Panel	Panel control	Operation Panel	Ope Panel. XX (1)
Fax FCU	Fax control	FCU	Jupi FCU (XXX)-1 (1)
Language (16 languages)	Language firmware Two languages can be selected from 16 languages.	Operation Panel	Download Language

* The firmware with an asterisk mark is used in both the printer (G060) version and CF (G060+G570) version. Other firmware is unique for the CF version. (For example, if you insert the IC card containing controller firmware for the printer version, “Download Error SC999” is displayed.

Refer to “5.4.3 Firmware Upgrade” for the procedure.

5.7.2 ERROR RECOVERY

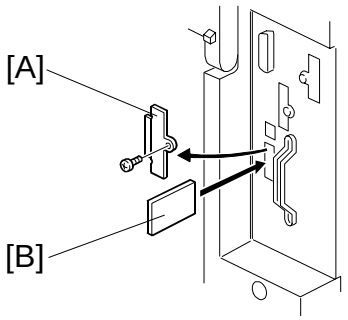
If an error occurs during the firmware update, “NG!” or “ERR” is displayed. In this case, turn the main switch off and retry the firmware update after reinserting the IC card using the procedure described in section 5.6.3.

5.7.3 FIRMWARE UPGRADE

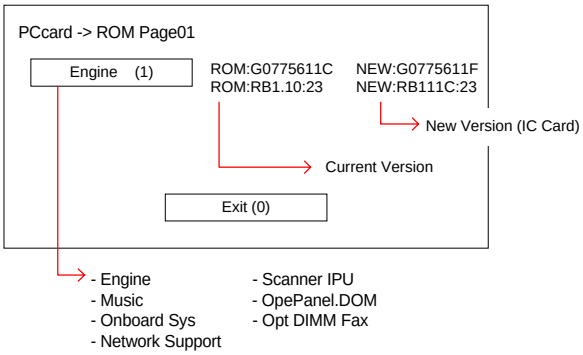
⚠CAUTION

1. Turn off the main switch whenever inserting or removing an IC card.
2. Open the front cover whenever updating the firmware.
3. Do not turn off the machine while downloading the firmware.

1. Make sure that the main switch is turned off.
2. Remove the IC card cover [A].
3. Fully insert the IC card [B] containing the required firmware into the IC card slot on the controller.
4. Turn on the main switch. The following message is displayed. Then, press the button where the firmware description is displayed.

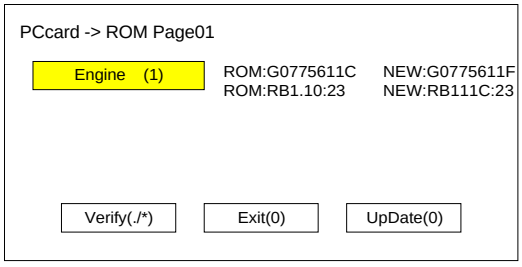


G570S502.WMF

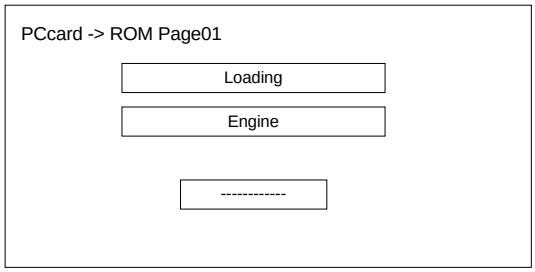


G570S911.WMF

5. Pressing the UpDate button starts updating the firmware. To indicate the progress, bars change to asterisks one by one.

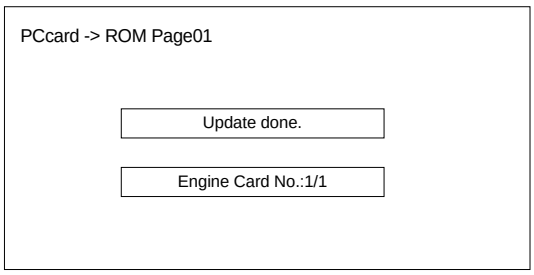


G570S912.WMF



G570S913.WMF

6. After the firmware update is completed, “Update done” or “Power Off On” is displayed. Then, turn off the main switch and remove the IC card.
7. If more firmware needs to be downloaded, make sure that the main switch is turned off and repeat steps 3 to 6.

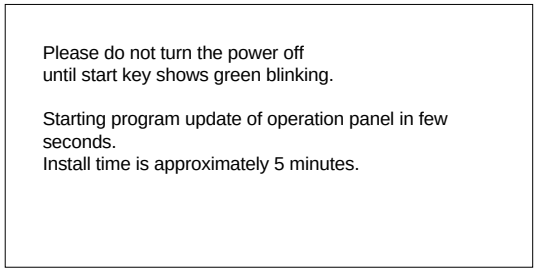


G570S914.WMF

8. When all firmware update is completed, remove the IC card while the machine power is off and reinstall the IC card cover.
9. Turn the main switch on and confirm that the machine starts normally.

NOTE: Operation Panel Firmware Update

While the firmware of the operation panel has been updating, the operation panel cannot display anything (this is the normal condition for firmware update processing and completion).
The following message is displayed for 10 seconds after pressing the Up Date button, then the message disappears and firmware update starts.



G570S915.WMF

You can check the firmware update processing and completion by watching the Start key.

Condition of the Start key

- When the above message disappears, the Start key starts blinking with red. This shows you that the machine has started the firmware update, and it takes about 5 minutes.
- When the firmware update is completed, the Start key starts blinking with green instead of red.

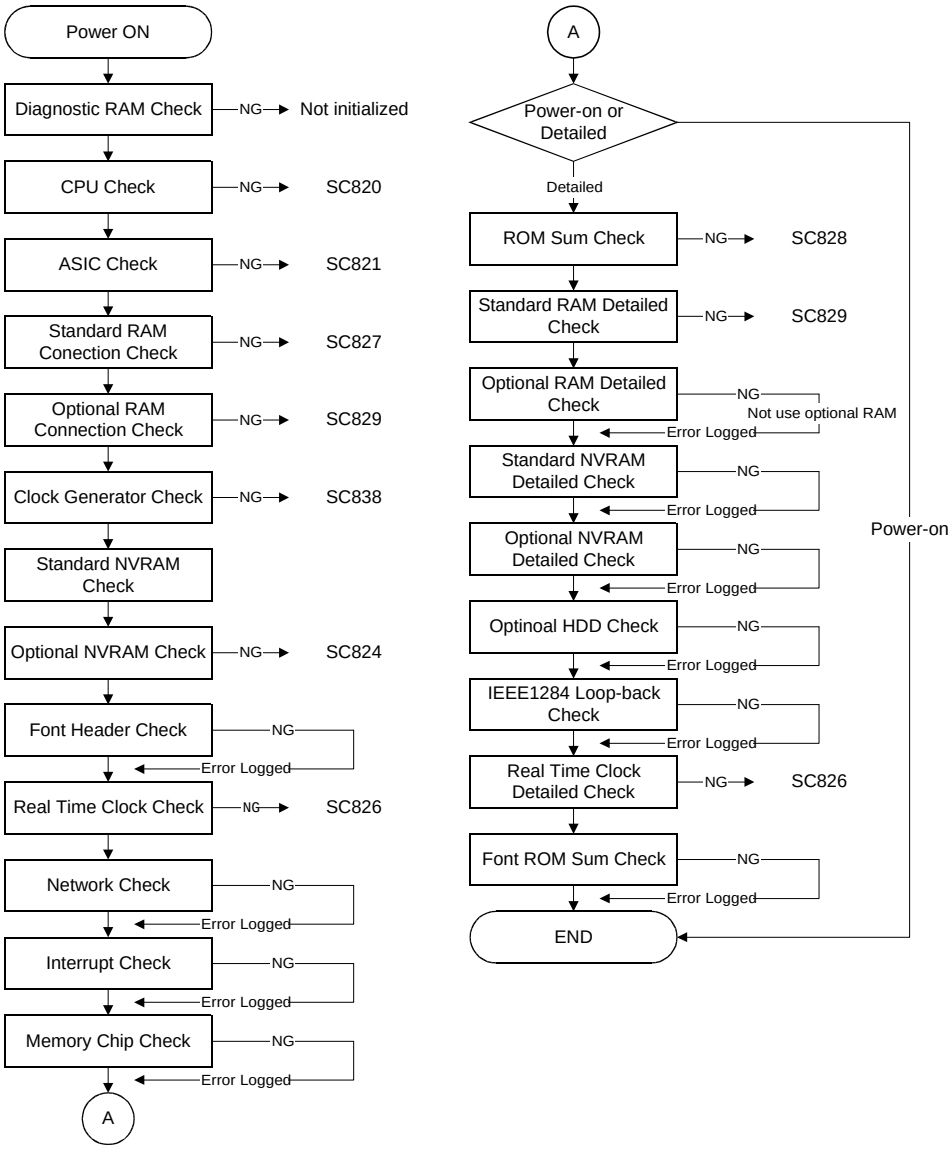
5.8 CONTROLLER SELF-DIAGNOSTICS

5.8.1 OVERVIEW

There are three types of self-diagnostics for the controller.

- Power-on self-diagnostics: The machine automatically starts the self-diagnostics just after the power has been turned on.
- Detailed self-diagnostics: The machine does the detailed self-diagnostics by using a loop-back connector (P/N G0219350)
- SC detection: The machine automatically detects SC conditions at power-on or during operation.

The following shows the workflow of the power-on and detailed self-diagnostics.



G570S503.WMF

5.8.2 DETAILED SELF-DIAGNOSTICS

In addition to the self-diagnostic test initiated every time the main machine is powered on, you can set the machine in a more detailed diagnostic mode manually in order to test other components or conditions that are not tested during self-diagnosis after power on. The following device is required in order to put the machine in the detailed self-diagnosis mode.

No.	Name
G0219350	Parallel Loopback Connector

Executing Detailed Self-Diagnosis

Follow this procedure to execute detailed self-diagnosis.

1. Switch off the machine, and connect the parallel loopback device to the Centronics I/F port.
2. Hold down #, press and hold down *, and then while pressing both keys at the same time, switch on the machine.

   You will see “Now Loading” on the touch-panel, and then you will see the results of the test.
   The machine automatically starts the self-diagnostics and prints the diagnostic report after completing the test.
   - Refer to the diagnostics report for the detected errors. The errors detected during self-diagnostics can be checked with SP7-832-001 (Diag. Result).
   - Refer to section 4.2 for details about the error codes.

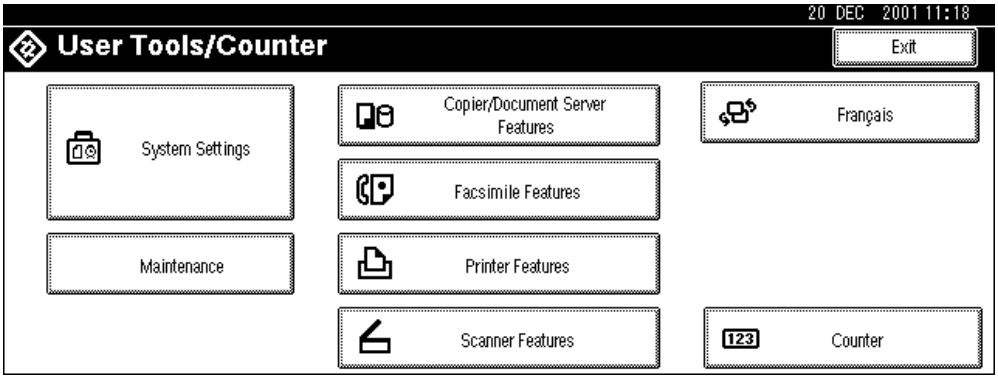
5.9 USER PROGRAM MODE

The user program (UP) mode is accessed by users and operators, and by sales and service staff. UP mode is used to input the copier's default settings. The system/copier settings can be reset at any time by the user. (☛ 5.6)

5.9.1 HOW TO USE UP MODE

UP Mode Initial Screen: User Tools/Counter Display

To enter the UP mode, press User Tools/Counter .

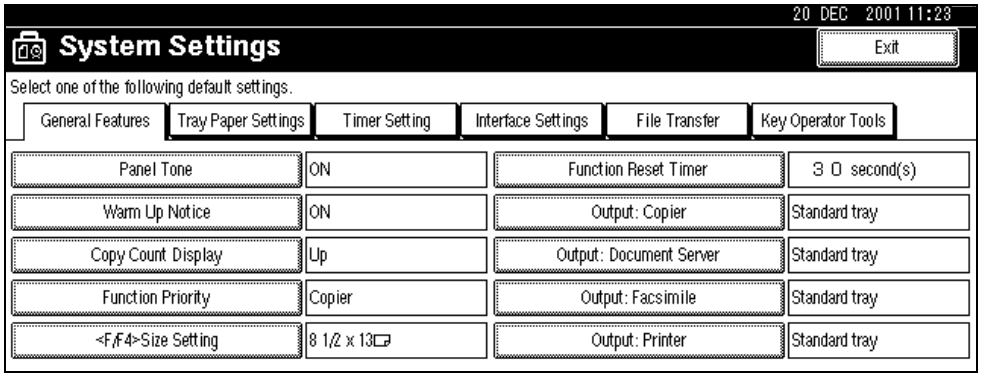


G570S903.WMF

System Settings

In the User Tools/Counter display, press System Settings.

Click a tab to display the settings. If the Next button is lit in the lower right corner, press to display more options. Perform the settings, press Exit to return to the User Tools/Counter display, and then press exit to return to the copy window.

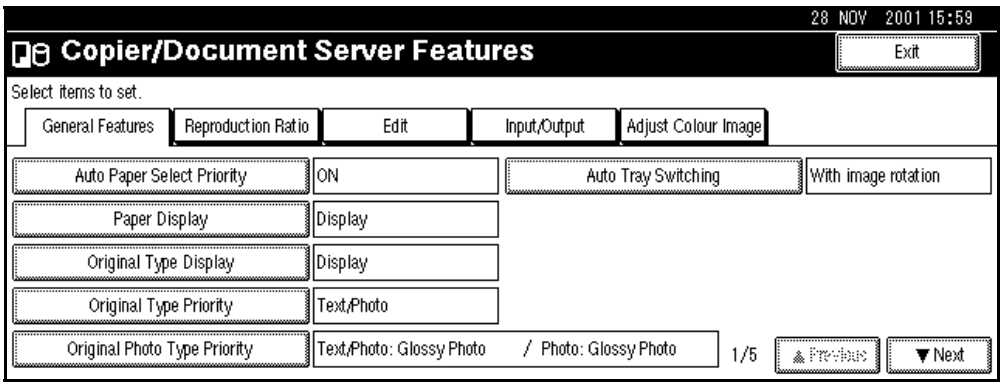


G570S904.WMF

Service Tables

Copier/Document Server Features

In the User/Tools Counter display, press Copy/Document Server Settings.

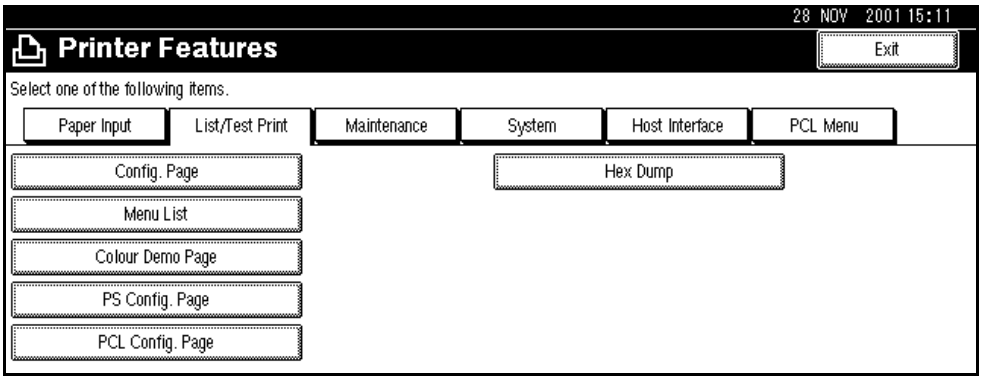


G570S905.WMF

Click a tab to display the settings. If the Next button is lit in the lower right corner, press to display more options. Perform the settings, press Exit to return to the User Tools/Counter display, and then press Exit to return to the copy window.

Printer, Facsimile, Scanner Settings

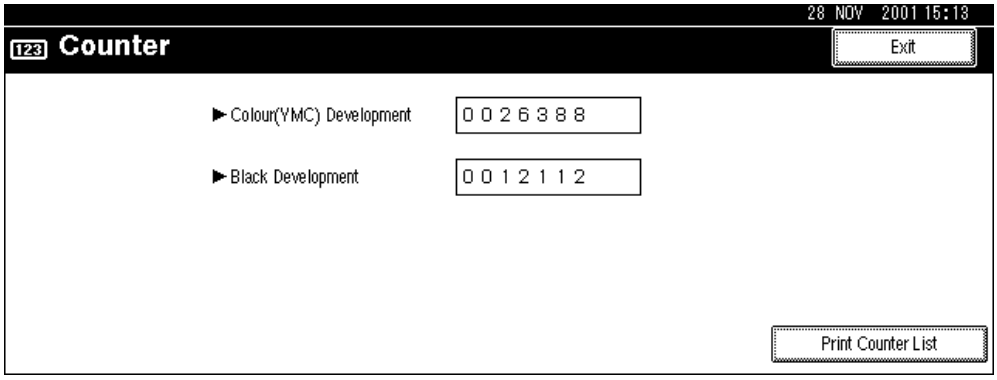
In the User/Tools Counter display, press Printer Settings, Facsimile, or Scanner Settings to open the appropriate screen and then click the tab to display more settings. The screen below shows the Printer Features screen.



G570S906.WMF

Counter

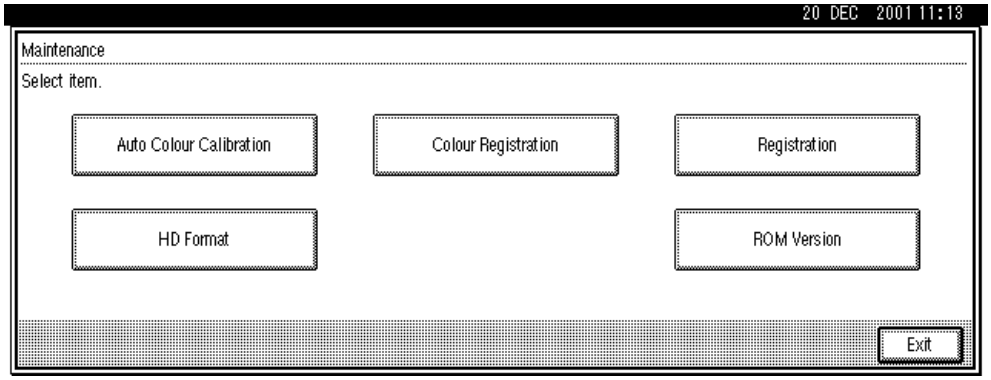
In the User/Tools Counter display, press Counter.



G570S907.WMF

Maintenance

In the User/Tools Counter display, press the Maintenance.



G570S908.WMF

Service Tables

5.10 DIP SWITCHES

Controller Board

DIP SW No.	OFF	ON
1	Boot-up from flash ROM	Boot-up from IC card
2 to 4	Factory Use Only: Keep these switches OFF.	

NOTE: If a download attempt failed, you must boot up the machine from the IC card. To do this, DIP SW 1 on the controller board needs to be ON.

BCU Board

DIP SW No.	OFF	ON
4	Fusing clutch is not installed.	Fusing clutch is installed.
1 to 3	Factory Use Only: Keep these switches OFF.	

The fusing clutch has been added from December '01 production onward. The fusing clutch turns on to operate the fusing unit. It does not turn on during process control self-checks, line position adjustment, and image processing for print/copy jobs. This is to maximize the life of the fusing unit and oil supply unit.

Because of this modification, a DIP switch has been added to the BCU board, and the machine recognizes whether or not the fusing clutch is used according to the DIP switch setting.

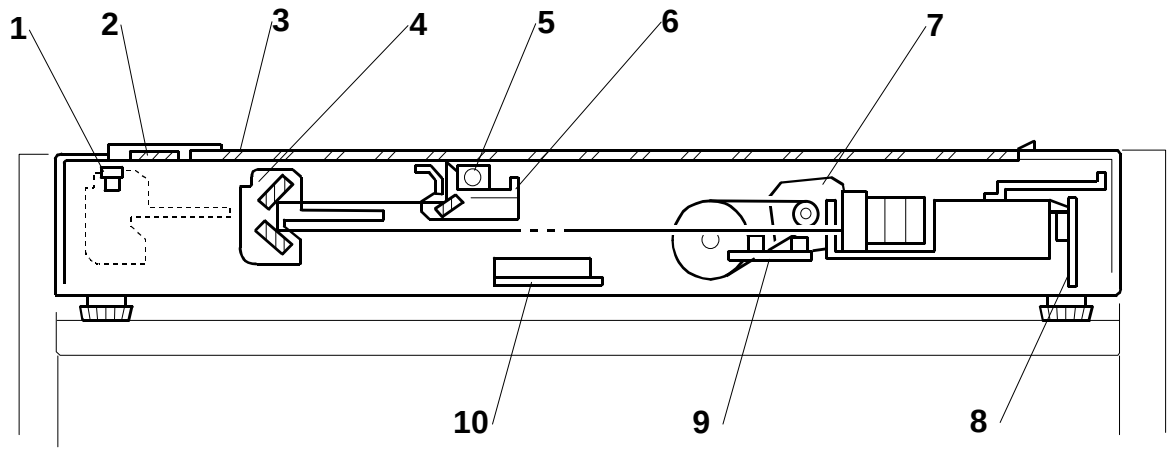
NOTE: When replacing the BCU board, check if the old board has a DIP switch on it.
If there is no DIP switch on the old board, keep the DIP switch on the new board OFF.
If there is a DIP switch on the old board, the DIP switch setting on the new BCU board must be the same as on the old board. Otherwise, the problems in the following table occur.
The default setting of the DIP switch on the service part is OFF.

Fusing Clutch		Not installed	Installed
DIP Switch Setting	**Correct**	**OFF**	**ON**
	Incorrect	ON	OFF
Expected problem if the setting is wrong		The fusing unit is always driven as it was. However, the machine thinks that a fusing clutch is installed. This causes the PM counter of the fusing unit and oil supply unit not to count up when the machine does not send the signal to turn the clutch on (at the process control self check, etc, as mentioned above).	The fusing clutch does not operate and the fusing unit is not driven at all. This causes a paper jam.

6. DETALED DESCRIPTIONS

6.1 SCANNING

6.1.1 OVERVIEW



G570D101.WMF

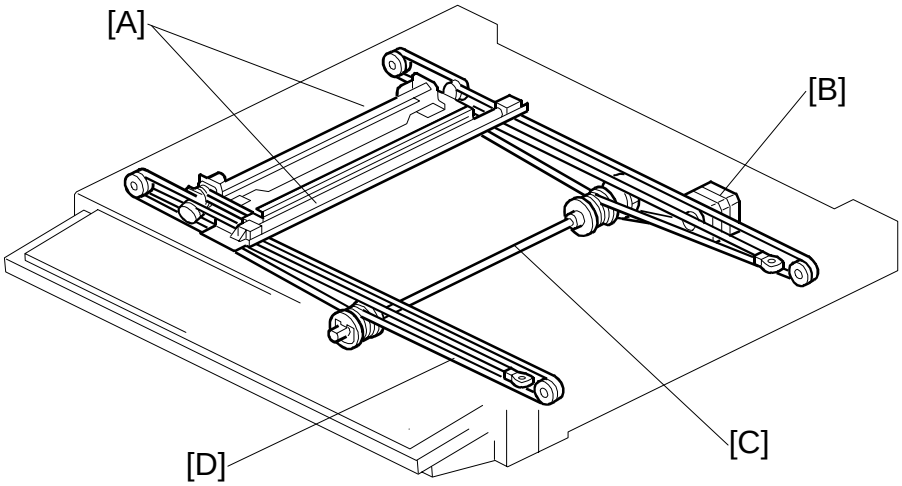
1. Scanner HP sensor
2. ADF exposure glass
3. Exposure glass
4. 2nd scanner (2nd carriage)
5. Scanner lamp
6. 1st scanner (1st carriage)
7. Scanner motor
8. Sensor board unit (SBU)
9. Original length sensor
10. Original width sensor

The original on the exposure glass or ARDF exposure glass reflects the light emitted from the scanner lamp. The reflected light goes to the CCD on the sensor board by way of the 1st and 2nd scanners. The sensor board converts the CCD analog signals into digital signals.

When the original is manually placed on the exposure glass, the scanner motor pulls the 1st and 2nd scanners via mechanical linkage. The original is scanned from left to right as shown above.

When the original is fed from the optional ARDF, it is automatically transported onto the ARDF exposure glass, and to the original exit. The original does not stay on the glass, but keeps going to the exit. The 1st and 2nd scanners stay at their home positions.

6.1.2 SCANNER DRIVE



The 1st and 2nd scanners [A] are driven by the scanner motor [B] through the scanner drive pulley, scanner drive shaft [C], and two scanner wires [D].

- Book mode -

The SBU board controls the scanner drive motor. The 2nd scanner speed is half that of the 1st scanner.

In reduction or enlargement mode, the scanning speed depends on the magnification ratio. The returning speed is always the same, whether in full size or magnification mode. The image length change in the sub scan direction is done by changing the scanner motor speed, and in the main scan direction it is done by image processing on the IPU board.

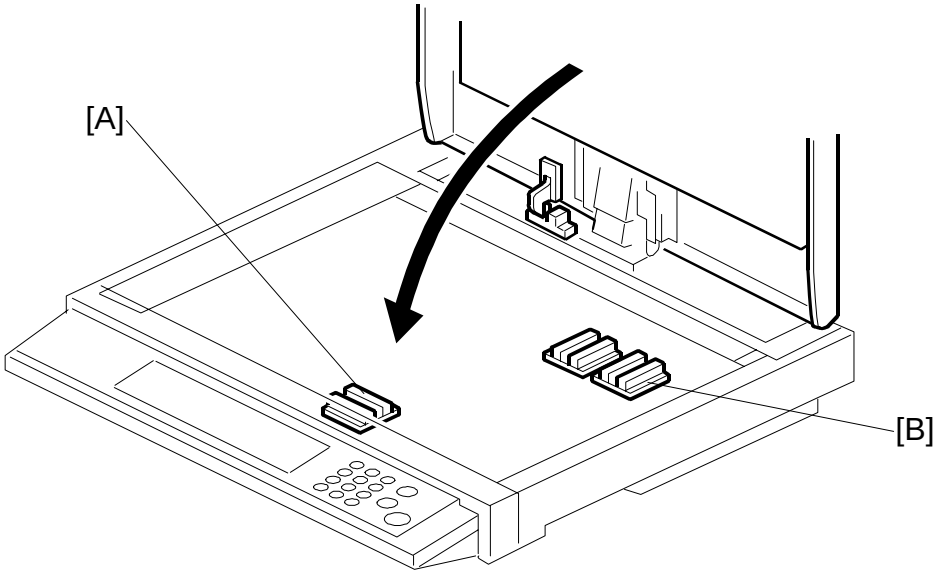
Magnification in the sub-scan direction can be adjusted by changing the scanner motor speed using SP4-008.

- ARDF mode -

The scanners are always kept at their home position (the scanner H.P sensor detects the 1st scanner) to scan the original. The ARDF motor feeds the original through the ARDF. In reduction/enlargement mode, the image length change in the sub-scan direction is done by changing the ARDF motor speed. Magnification in the main scan direction is done in the IPU board, like for book mode.

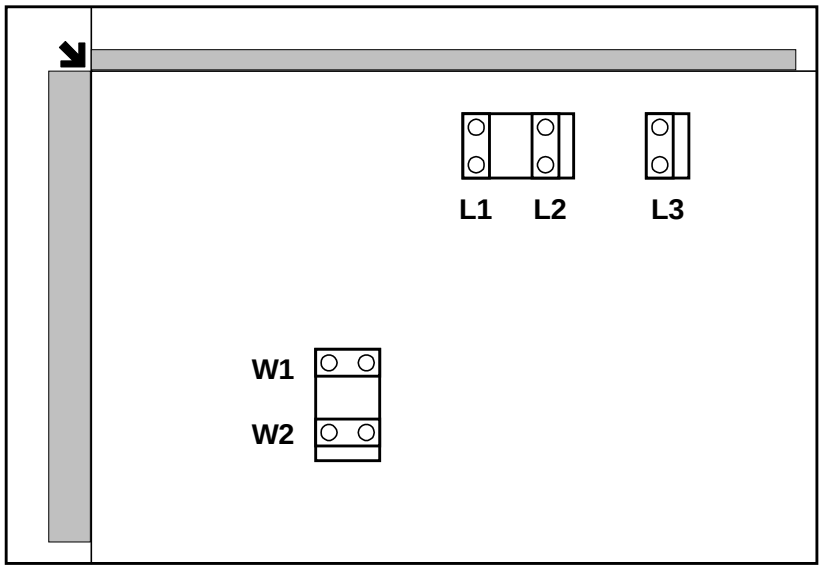
Magnification in the sub-scan direction can be adjusted by changing the ARDF motor speed using SP6-017

6.1.3 ORIGINAL SIZE DETECTION



G570D501.WMF

- The original width sensors [A] detect the original width, and the original length sensors [B] detect the original length.
- The SBU controller on the SBU board checks each sensor status when the platen cover sensor is activated as it is closed. It detects the original size by the on/off signals received from each sensor.
- If the copy is made with the platen cover fully open, the SBU controller on the SBU determines the original size from the sensor outputs after the Start key is pressed.



G570D540.WMF

Original Size		Length Sensor			Width Sensor		SP4-301 display
Metric version	Inch version	L3	L2	L1	W2	W1	
A3	11” x 17”	O	O	O	O	O	132
B4	10” x 14”	O	O	O	X	O	141
F4	8.5” x 14” (8” x 13”)	O	O	O	X	X	165
A4-L	8.5” x 11”	X	O	O	X	X	133
B5-L		X	X	O	X	X	142
A4-S	11” x 8.5”	X	X	X	O	O	5
B5-S		X	X	X	X	O	14
A5-L, A5-S	5.5” x 8.5”, 8.5” x 5.5”	X	X	X	X	X	128

NOTE: L: Lengthwise, S: Sideways, O: Paper present, X: Paper not present

For other combinations, "Cannot detect original size." will be indicated on the operation panel display.

The above table shows the outputs of the sensors for each original size. This original size detection method eliminates the necessity for a pre-scan and increases the machine's productivity.

However, if the by-pass tray is used, note that the machine assumes that the copy paper is lengthwise (L). For example, if A4 sideways paper is placed on the by-pass tray, the machine assumes it is A3 paper and scans a full A3 area, disregarding the original size sensors.

Original size detection using the ARDF is described in the manual for the ARDF (G564)

6.1.4 OTHERS

DC Power Supply

The scanner power supply unit (scanner PSU) supplies power to the scanner unit.

Overcurrent Control

The scanner PSU has an overcurrent control function. The SBU cuts electricity when the current of a specific circuit exceeds its limit. When an overcurrent condition is detected, nothing is displayed on the operation panel because the power to the operation panel is cut off.

The table below shows the controlled circuits and their recovery procedures.

Circuit	Recovery
5V	If the problem is solved, the machine goes to standby after turning the main switch off and on.
24V	
3.3 V	If the problem is solved, the machine immediately goes to standby; there is no need to turn the main switch off/on.
12V	
15V	

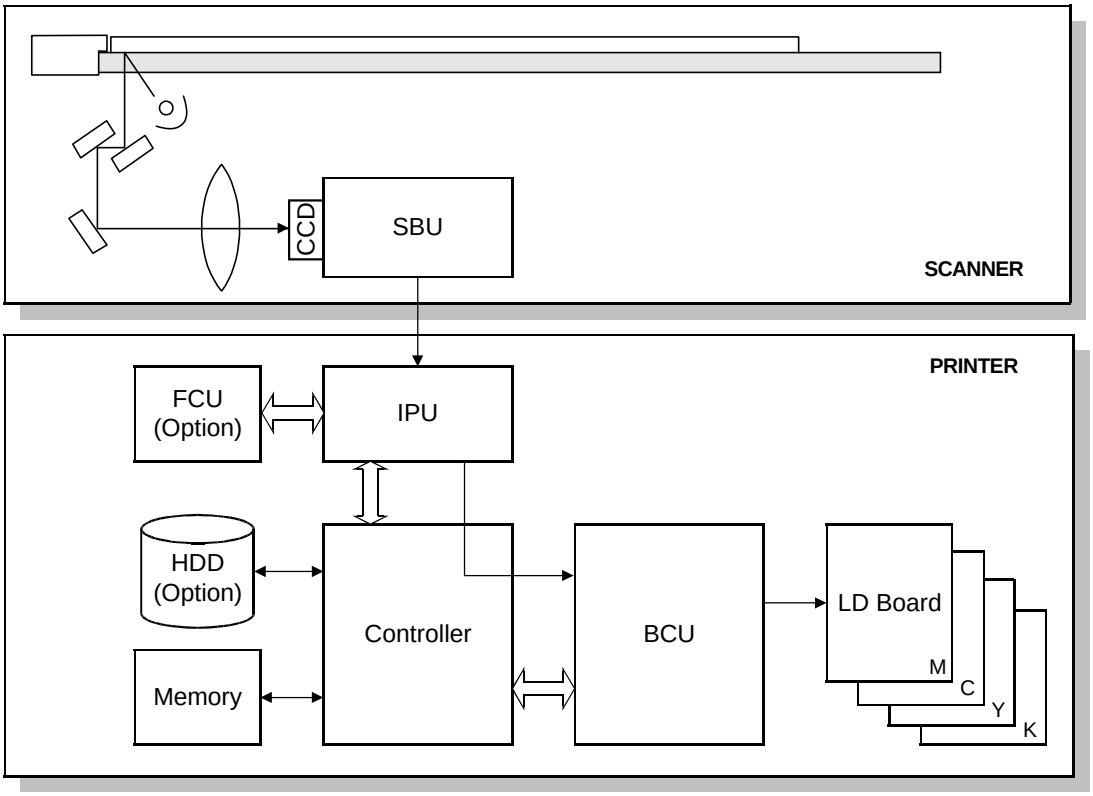
Anti-Condensation Heater

The anti-condensation heater is available as an optional unit. The anti-condensation heater prevents condensation on the mirrors, which may occur when the scanner unit is, for example, carried from a cold room to a warm room. Such condensation can cause abnormal images.

☛ 1.5.6 "Anti-Condensation Heater" for installation

6.2 IMAGE PROCESSING

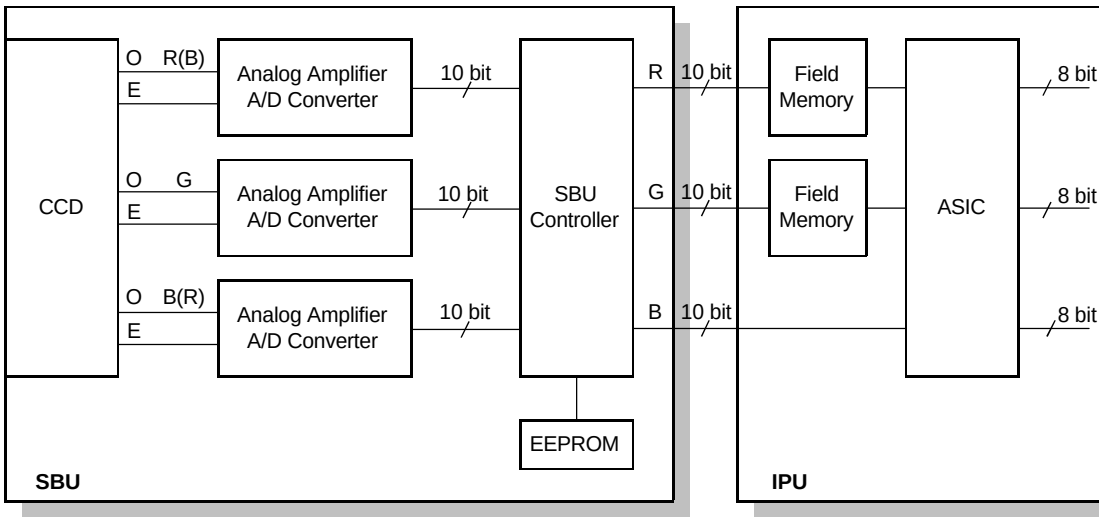
6.2.1 OVERVIEW



G570D900.WMF

- The CCD (Charged Coupled Device) generates three analog video signals.
- The SBU (Sensor Board Unit) converts the three analog signals to 10-bit digital signals. It sends these signals to the IPU (Image Processing Unit).
- The IPU processes the image, then the image data is sent to the controller.

6.2.2 SBU BLOCK DIAGRAM



G570D901.WMF

Signal Processing

1. Signal Amplification
   - Odd-pixel and even-pixel RGB analog signals from the CCD are amplified by operational amplifiers.
2. Signal Composition
   - The amplified signals (even-pixel and odd-pixel for each RGB color) are combined by the MPX circuit after A/D conversion.

A/D Conversion

- The analog signals (CCD output) are converted to 10-bit (1024 gradations) digital signals.

White Level Correction:

- White reference plate scanned before the original.
- Data is updated before each scan.
- Corrects for variations in the white level across the page, including irregularities in the CCD and the optics across the main scan.

Others

The SBU controller exchanges the R and B signals if the original is scanned by using ARDF.

Detailed Descriptions

Black Level Correction

- Improves image reproduction for high-density areas.
- Reads the black video level at black elements on the CCD. These pixels are masked off, and should produce a pure black signal.
- This is subtracted from the value of each pixel.
- Calculated for each scan line.
- Corrects the image data for any changes in black level with time, as the machine scans down the page.

Adjustments

The properties of the scanner unit, which are necessary for controlling the scanner VPU (video processing unit), are not stored in the memory of the printer mainframe. These properties are stored in the EEPROM on the SBU.

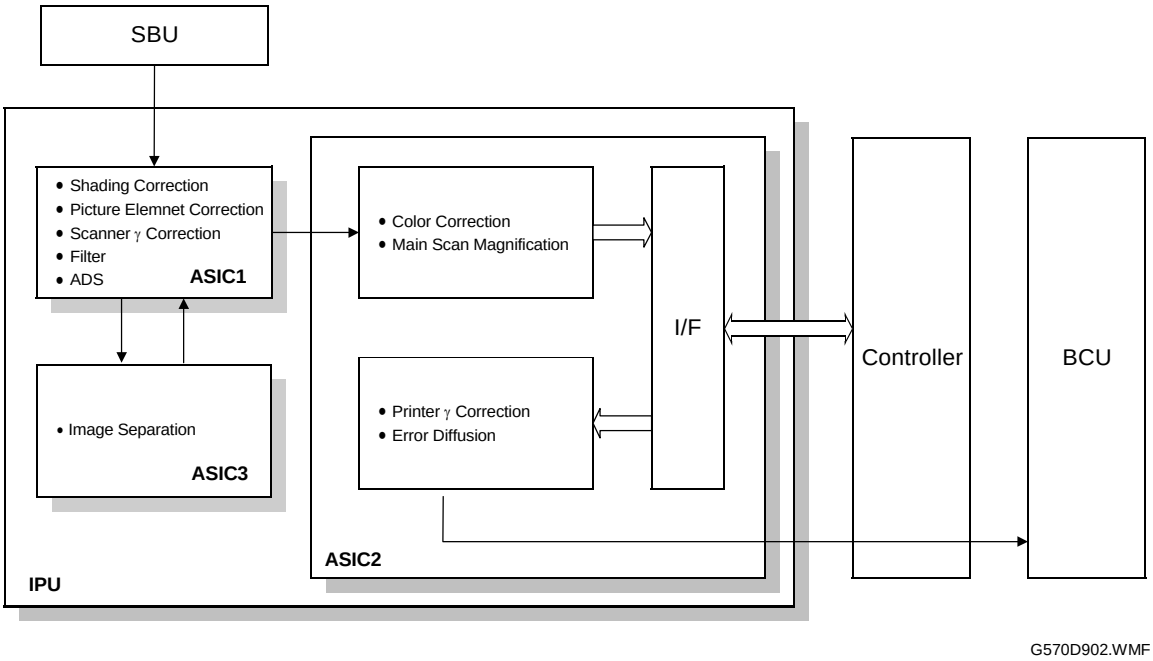
After replacing the SBU, adjust the following:

SP4–008	Scanner sub-scan magnification
SP4–010	Scanner leading edge registration
SP4–011	Scanner side-to-side registration

VPU Test Mode

To make sure the scanner VPU control is functioning, output the VPU test pattern with SP4-907. (☛ “4. Troubleshooting” for details)

6.2.3 IPU BLOCK DIAGRAM



G570D902.WMF

Shading Correction

Auto shading compensates for the possible differences in the amount of light at the edge and center of a scanned image caused by the scanner lens, or variations among pixels of the CCD.

Picture Element (Dot Position) Correction

Picture element correction does two things.

1. Completion of the scan line correction process.
2. Correction if the CCD is not perpendicular to the light.

- The green CCD line is taken as a standard.
- Both ends of the red and blue lines are adjusted to match.
- Use SP 4-932-1 to 4-932-4 to change the vertical line correction level (☛ "3. Replacement and Adjustment – Image Adjustments").

Scan Line Correction

R, G, and B CCD lines are spaced 4 lines apart (8 lines total) when full size magnification is used.

- Scan line correction synchronizes these signals by storing each line in memory.
- The difference between the R, G and B signals depends on the magnification ratio.
- If this calculation does not result in an integer, the corrected data is set to the closest integer, but further correction is needed (☛ "Picture Element Correction").

Image Separation

The machine separates the original image into text and photo (dot screen) areas.

Edge Separation

- Used to locate text and line diagrams
- Locates areas of strong contrast.
- Looks for continuity of black or colored pixels.
- Looks for continuity of white pixels around black or colored pixels.
- Only uses data from the green CCD.

Dot Screen Separation

- If white pixels are not detected around non-white pixels, it is a dot screen area.

Colored Text Separation

- Identifies whether the text area's pixels are black or color.
- Based on:
  1) Differences among the RGB maximum signal levels.
  2) Output levels of the RGB video signals.

Scanner Gamma Correction (RGB Gamma Correction)

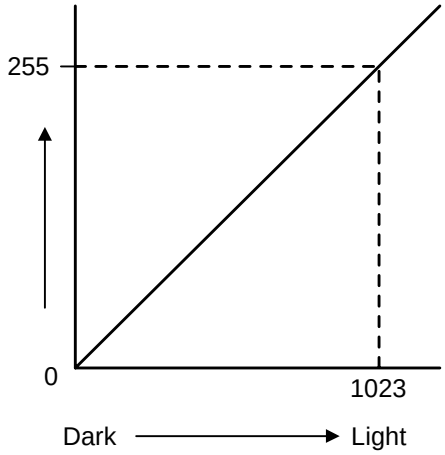


Fig. 1

G570D972.WMF

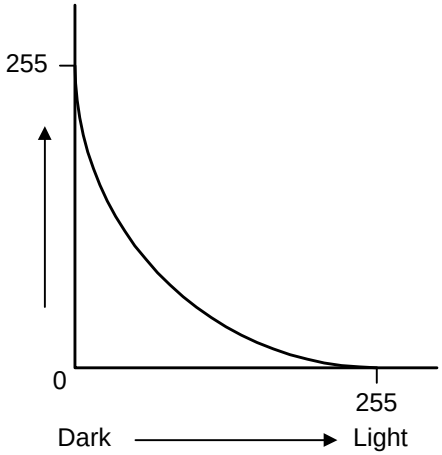


Fig. 2

G570D973.WMF

The RGB video signals from the CCD are sent to the IPU section. This signal is proportional to the intensity of light reflected from the original image (Fig. 1). Scanner gamma correction inverts the video signals. The shading circuit converts the signal from 10-bit to 8-bit.

- The IPU section converts the signal levels as shown in Fig. 2.
- This improves the accuracy of RGB to CMY color conversion (conversion is done later in the image process).
- The same table is used for R, G, and B signals.

Filtering

Appropriate software filters are applied to the RGB video signals.

- Varies depending on the results of auto text/photo separation (or on the selected original mode).
- RGB smoothing is applied to photo areas
- Edge emphasis applied to text areas.

Background Density Control

- Removes low ID image signals (background) that are less than a certain threshold.
- The threshold depends on the color mode (single color or full color).

Users can select a different threshold for each mode.

ADS (Auto Image Density Selection)

- Full color mode
  1) Refers to the RGB data taken from the entire original.
  2) Calculates a threshold for removing the background based on this data.
- Black and white mode
  1) Determines the peak white level.
  2) Peak level data is taken for each scan line.
  3) Removes the peak white level from the image. This produces a white background.
  4) Also uses the peak white level to determine the white reference value for A/D conversion.
  5) Background density is adjusted before data is input to the A/D converter.

Color Conversion

Transparency for each color toner is not ideal. Color conversion compensates for the differences between the ideal and actual characteristics. A matrix converts the RGB video signals into CMYK video signals while the original is scanned once.

Conversion Matrix

The following color conversion table is an example of the results from the matrix operation.

- Simple color copying.
- No special modes applied.
- To represent green, the yellow and cyan toners are used in a 1:1 ratio.

Color Conversion Table

Original Color / Toner	K	R	Y	G	C	B	M	W
Y	1	1	1	1	0	0	0	0
M	1	1	0	0	0	1	1	0
C	1	0	0	1	1	1	0	0
K	1	0	0	0	0	0	0	0

User Program Mode

When the user selects one of the following special modes, the values in this table may fall between 0 and 1.

Photo mode

- Glossy Photo
- Printed Photo
- Copied Photo

Others

- Generation Mode
- Pale Mode
- Map Mode

Two-color mode

- Separates black areas and colored areas.
- Converts black areas to a color selected by the user.
- All other areas are converted to a second color selected by the user.
  (☛ the operator's manual for details)

Main Scan Magnification

While the machine changes the scanner speed to reduce or enlarge the original in the sub-scan direction, the ASIC2 chip on the IPU board handles reduction and enlargement in the main scan direction.

- Scanning and laser writing are done at a fixed pitch (CCD elements cannot be squeezed or expanded).
- Imaginary points are calculated, corresponding to a physical enlargement or reduction.
- Image density is then calculated for each of the imaginary points based on the image data for the nearest two true points.
- The calculated data then becomes the new (reduced or enlarged) image data.

NOTE: The actual calculations for main scan magnification use the polynomial convolution method. This mathematical process is beyond the scope of a service manual and will not be covered here.

Printer Gamma Correction

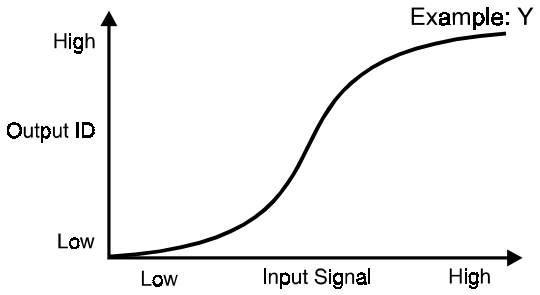


Fig. 1

G570D989.WMF

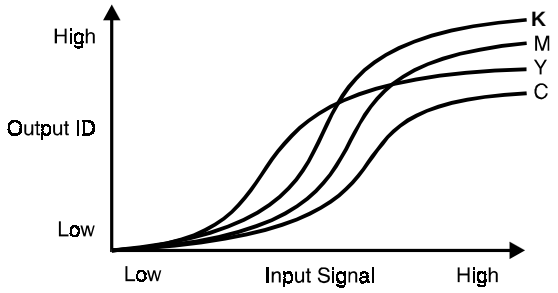


Fig. 2

G570D990.WMF

Ideally, the gamma curves for Yellow, Magenta, Cyan, and Black should be identical, as shown in figure 1. However, slight variations in the electrical components can result in varying gamma curves, as shown in figure 2.

- Printer characteristics are much more variable than the scanner. Printer gamma needs recalibration and adjustment from time to time.
- The Auto Color Calibration (ACC) procedure compensates for any discrepancies in color reproduction.
- ACC makes new gamma curves for each color in each mode (text, photo, and black text).
- After ACC, the gamma curve for each color can be adjusted with service programs (SP4-909 to SP4-918).
- 4 different modes:
  1) ID max.
  2) Shadow (High ID)
  3) Middle (Middle ID)
  4) Highlight (Low ID)
- If the previous gamma curve was better, it can be recalled.
- Factory settings can be loaded using SP 5-610-4.
  NOTE: If the factory settings have been overwritten, this will return the new values, not the actual settings made in the factory. This is deliberate, since some drift is expected. After a time, the original factory settings may no longer be suitable.
- Factory settings can be overwritten by the current gamma settings using SP5-610-5.

ID Max.
This mode adjusts the total image density as shown in figure 3.

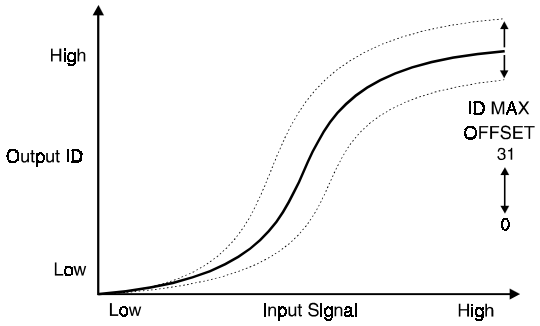


Fig. 3
G570D991.WMF

Shadow (High ID)
The High ID mode adjusts the image density between Level 6 and Level 9 of the color gradation scale on the C-4 test chart (figure 4).

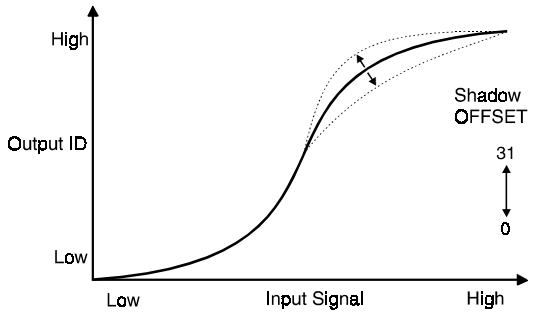


Fig. 4
G570D992.WMF

Middle (Middle ID)
The Middle ID mode adjusts the image density between Level 3 and Level 7 of the color gradation scale on the C-4 test chart (figure 5).

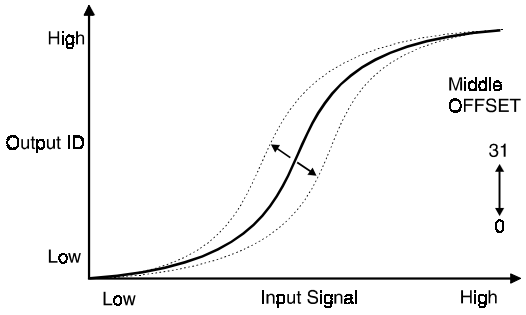


Fig. 5
G570D993.WMF

Highlight (Low ID)
The Low ID mode adjusts the image density between Level 2 and Level 5 of the color gradation scale on the C-4 test chart (figure 6).

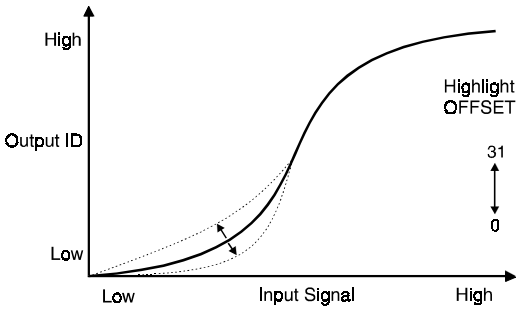
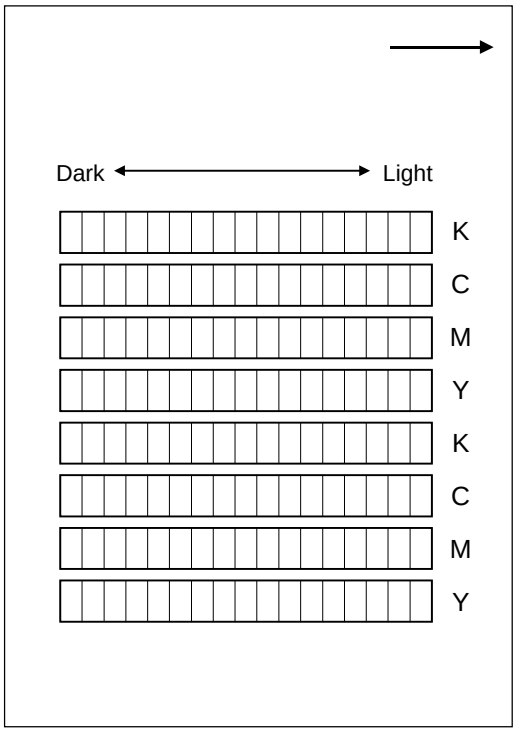


Fig. 6
G570D994.WMF

Auto Color Calibration Test Pattern

The test pattern has eight 17-step gradation scales for each color (CMYK), including background white, for Text and Photo modes.



G570D995.WMF

ACC automatically calibrates the printer gamma curve. The user starts the ACC process.

1. The user prints an ACC Test Pattern.
2. The user places the test pattern on the exposure glass.
3. The copier makes 8 scans to read each color scale.
4. The copier corrects the printer gamma by comparing the ideal settings with the current image density.
5. The copier combines the corrected gamma curve with the Shadow, Middle, and Highlight values currently in memory.
6. The copier then calculates the ID max (amplitude of the gamma curve) based on data from the ACC scan.
7. The corrected printer gamma curves can be adjusted further using SP modes (SP4-909 to SP4-918).

Error Diffusion

Error diffusion reduces the difference in contrast between light and dark areas of a halftone image. Each pixel is corrected using the difference between it and the surrounding pixels. The corrected pixels are then compared with an error diffusion matrix.

IPU Board Test

You can check the IPU board with the SP mode menu, SP4-904-1 or 2.
(☛ “4. Troubleshooting” for details)

6.3 PRINTER ENGINE

6.3.1 DIFFERENCES IN THE PRINTER MAINFRAME

To improve reproduction in copy mode, the machine generates the print image with 2 bits per pixel.

If the CF expander is installed on the printer mainframe, different parameters are used for copy and print modes as shown in the table below.

Function	Copy Mode	Printer Mode
Gradation for printing	2 bits / pixel	1 bit / pixel
LD control	SP2-103-101 to -110	SP2-103-1 to -59
Pointer table display	SP3-902-5 to -8	SP3-902-1 to -4
M/A target	SP3-903-5 to -8	SP3-903-1 to -4
M/A target for LD correction	SP3-904-5 to -8	SP3-904-1 to -4

6.3.2 PAPER FEED LINE SPEED

This machine has three process line speeds (for feed from the registration roller to the fusing unit) depending on the mode.

Mode	Resolution (dpi)	Line speed (mm/s)	Print speed (ppm)
B/W	600	185	38
Color	600	125	28
OHP/Thick	600	62.5	10

6.4 SCANNER FUNCTIONS

6.4.1 IMAGE PROCESSING FOR SCANNER MODE

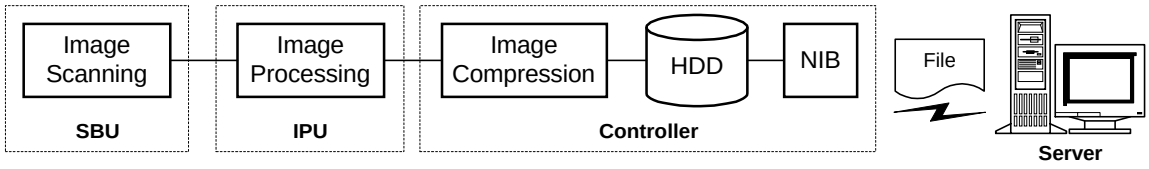
The image processing for scanner mode is done in the IPU chip on the BICU board. The IPU chip chooses the most suitable image processing methods (gamma tables, dither patterns, etc) depending on the settings made in the driver.

The image compression method for binary picture processing can be selected with scanner SP1-004 (either MR, MH, or MMR). For grayscale processing, JPEG is used.

Whether the user selects the image mode using the driver (TWAIN mode) or from the operation panel (Delivery mode), the IPU chip does the image processing using the appropriate image processing methods mentioned above.

Image Data Path

1. Image Store/Image Delivery Mode



G570D905.WMF

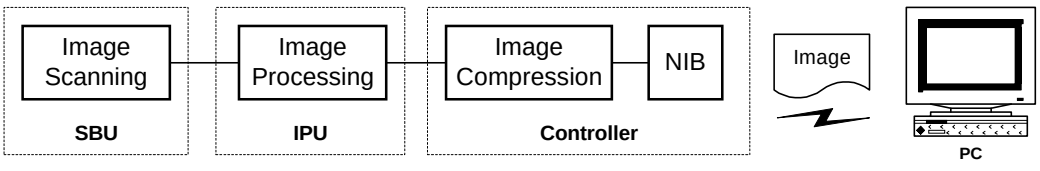
The user can select the following modes from the LCD.

1) Delivery only
2) Store only
3) Store and delivery

After image processing and image compression, all image data for the job are stored in the printer controller HDD using TIFF file format (binary picture processing) or JPEG file format (grayscale processing). The type of TIFF format used depends on the user's scanner settings.

When delivery mode is selected, the controller creates a file which contains the destination and page information, then the controller sends the file to a server.

2. Twain Mode



G570D906.WMF

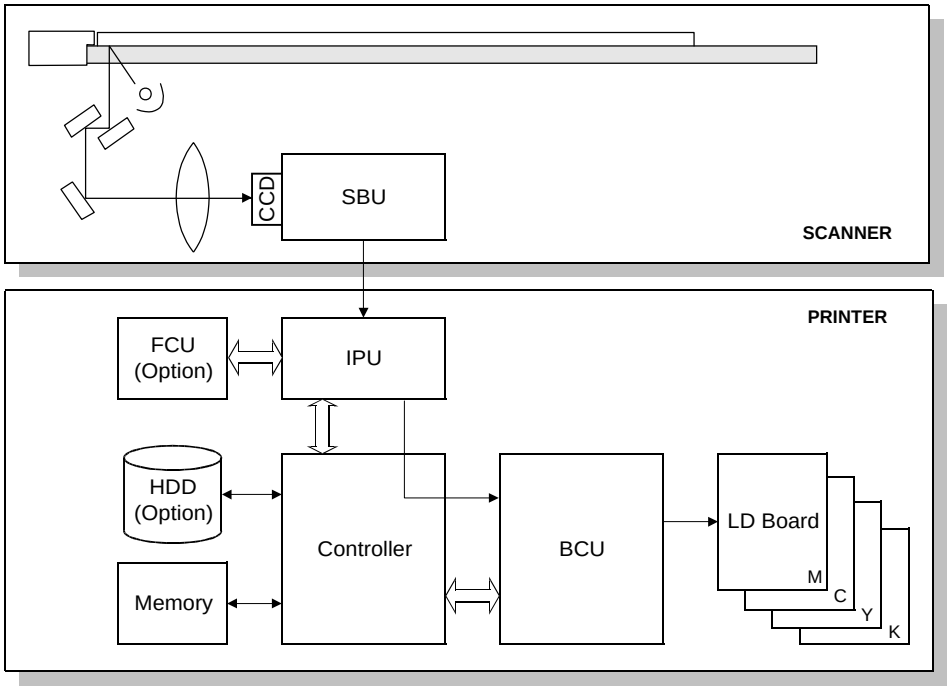
After image processing and image compression, the data (RAW or JPEG) is sent to the scanner Twain driver directory on the computer.

6.5 HARD DISK DRIVES

A 40GB hard disk is provided as an option for the copier feature expander. A 20GB hard disk is only used for printer functions. The hard disks are partitioned as listed in the table.

Partition	40GB HDD	20GB HDD	Function	Comment
Image Local Storage	17,700 MB	---	Document server	Remains stored even after cycling power off/on.
File System 1	500 MB	500 MB	Downloaded fonts, forms.	Remains stored even after cycling power off/on.
File System 2	1,000 MB	1,000 MB	Job spooling area	Erased after power off.
File System 3	2,000 MB	2,000 MB	Work data area	Remains stored even after cycling power off/on.
Image TMP	7,486 MB	7,486 MB	Commonly used area for applications	Erased after power off.
	7,200 MB	---	Copier application	Erased after power off.
	3,440 MB	3,440 MB	Printer application	Erased after power off.
	1,000 MB	---	Scanner application	Erased after power off.
Job Log	10 MB	10 MB	Job log	Remains stored even after cycling power off/on.

6.6 IMAGE DATA PATH



G570D900.WMF

Copier Application

SBU → IPU → Controller (HDD/Memory) → IPU → Controller (straight through) → BCU

Printer Application

Controller → IPU (through) → Controller → BCU

Scanner Application (1 bit/8 bits)

SBU → IPU → Controller (HDD/Memory)

Fax Application (Transmission/Reception)

Transmission: SBU → IPU → FCU

Reception: FCU → IPU → Controller (straight through) → BCU

SPECIFICATIONS

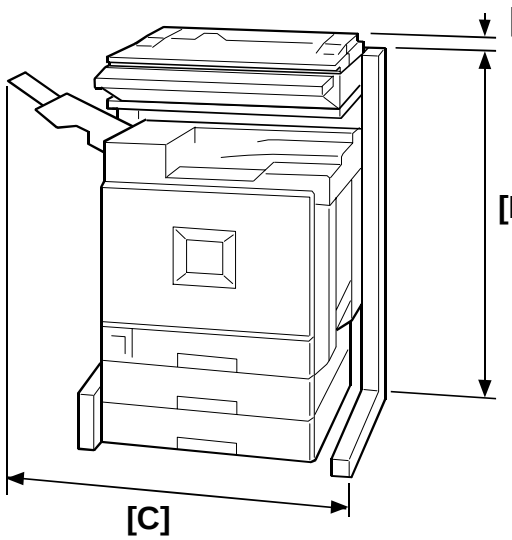
1. GENERAL SPECIFICATIONS (COPY MODE)

Configuration:	Add-on scanner for printer mainframe
Number of scans:	1
Resolution:	Scan: 600 dpi
	Print: 600 dpi
Gradation:	Scan: 8 bits/pixel
	Print: 2 bits/pixel
Original type:	Sheets, book, objects
Maximum original size:	A3/11” x 17”
Original reference position:	Left rear corner
Copy speed:	Normal: 28 cpm (color) or 38 cpm (black & white)
	OHP/thick: 10 cpm (color/black & white)
	ADF 1 to 1: 28 cpm (color) or 38 cpm (black & white)
First copy (normal mode):	Color: 10 seconds or less
	Black & white: 8 seconds or less
Warm-up time:	119 seconds or less (23°C, 50%)
Continuous copy:	Up to 99 sheets
Zoom:	Arbitrary: From 25 to 400% (1% step)
	Fixed:

North America	Europe
85%	82%
78%	75%
73%	71%
65%	65%
50%	50%
25%	25%
121%	115%
129%	122%
155%	141%
200%	200%
400%	400%

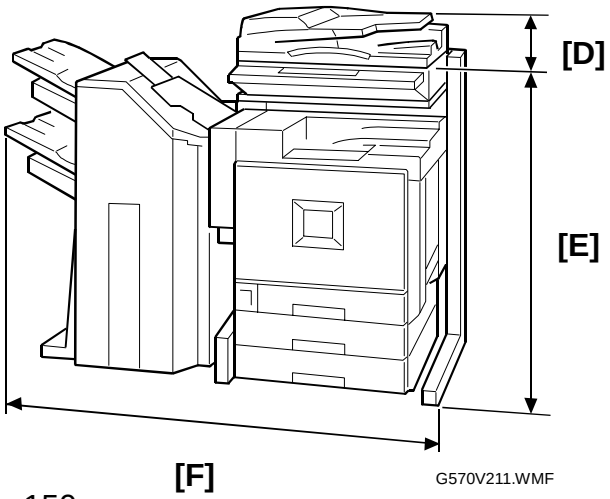
Power source:	System: 120 V, 60 Hz: 12 A (for North America) 220 - 240 V, 50/60 Hz: 8 A (for Europe/Asia) Scanner: 120 V, 60 Hz: 2 A (for North America) 220 - 240 V, 50/60 Hz: 1.1 A (for Europe/Asia)
Maximum power consumption (during copying):	System: 1,440 W or less Scanner: 240 W or less
Dimensions (W x D x H):	System: ☛ the next page Scanner: 570 x 757 x 100 mm (without platen cover or ARDF)
Weight:	Scanner: 15 kg or less
Radio interference	VCCI Class B
Noise emission	Operating: 72 dB or less Waiting: 45 dB or less Standing by: 40 dB or less

1) Printer mainframe with CF Expander, One-tray Paper Feed Unit, and Rack



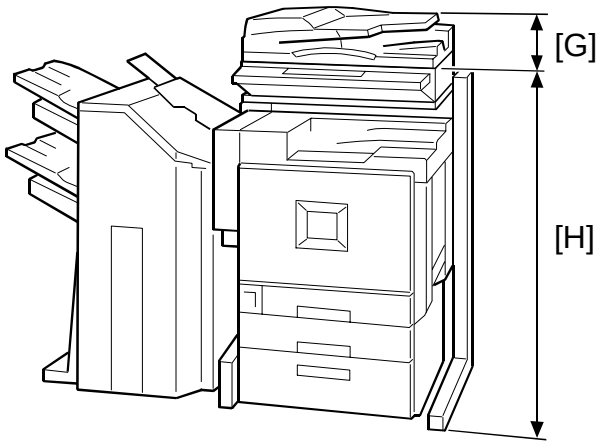
[A]: 45 mm
[B]: 1,100 mm
[C]: 975 mm

2) Printer mainframe with CF Expander, One-tray Paper Feed Unit, Duplex unit, Finisher, and Rack



[D]: 150 mm
[E]: 1,100 mm
[F]: 1,480 mm

3) Printer mainframe with CF Expander, Large Capacity Tray (Two-tray Paper Feed Unit), Duplex unit, Finisher, and Rack



G570V212.WMF

[G]: 150 mm
[H]: 1,200 mm

2. GENERAL SPECIFICATIONS (SCANNER MODE)

Standard Scanner Resolution:	Main scan/Sub scan 600 dpi
Available scanning Resolution Range:	Twain Mode: 100 ~ 1200 dpi Delivery Mode: 100/200/300/400/600 dpi
Grayscales:	1 bit or 8 bits/pixel each for RGB
Scanning Throughput (ARDF mode):	Without 40GB HDD B/W: 21 spm (A4/8 1/2" x 11" SEF, 200 dpi, 1 bit) Color: 11 spm (A4/8 1/2" x 11" SEF, 200 dpi, 8 bits) With 40GB HDD B/W: 30 spm (A4/8 1/2" x 11" SEF, 200 dpi, 1 bit) Color: 20 spm (A4/8 1/2" x 11" SEF, 200 dpi, 8 bits)
Interface:	Ethernet (100 Base-TX/10 Base-T for TCP/IP)
Compression Method:	MH, MR, MMR (Binary Picture Processing) JPEG (Grayscale Processing)

3. SUPPORTED PAPER SIZES

3.1 PLATEN/ARDF ORIGINAL SIZE DETECTION

Size (width x length) [mm]	Platen		ARDF	
	Inches	Metric	Inches	Metric
A3 (297 x 420) L	No	Yes	Yes	Yes
B4 (257 x 364) L	No	Yes	No	Yes
A4 (210 x 297) L	No	Yes	No	Yes**
A4 (297 x 210) S	No	Yes	Yes	Yes
B5 (182 x 257) L	No	Yes	No	Yes
B5 (257 x 182) S	No	Yes	No	Yes
A5 (148 x 210) L	No	No*	No	Yes
A5 (210 x 148) S	No	No	No	Yes
B6 (128 x 182) L	No	No	No	Yes
B6 (182 x 128) S	No	No	No	Yes
11" x 17" (DLT)	Yes	No	Yes**	Yes**
11" x 15"	No	No	Yes**	No
10" x 14"	No	No	Yes	No
8.5" x 14" (LG)	Yes	No	Yes**	No
8.5" x 13" (F4)	No	No	Yes**	Yes
8.25" x 13"	No	No	No	No
8" x 13"(F)	No	Yes	No	No
8.5" x 11" (LT)	Yes	No	Yes**	No
11" x 8.5" (LT)	Yes	No	Yes**	No
8" x 10.5"	No	No	No	No
8" x 10"	No	No	Yes**	No
5.5" x 8.5" (HLT)	No*	No	Yes	No
8.5" x 5.5" (HLT)	No	No	Yes	No
8K (267 x 390)	No	No	No	Yes**
16K L (195 x 267)	No	No	No	Yes**
16K S (267 x 195)	No	No	No	Yes
7.25" x 10.5" (Executive)	No	No	Yes	No
10.5" x 7.25" (Executive)	No	No	Yes**	No

*: When the message “Cannot detect original size” appears, use SP4-303 to detect original sizes as A5 lengthwise/HLT.

**: The machine can detect the paper size depending on the setting of SP6-016-1.

3.2 PAPER FEED

Paper	Size (W x L)	Inches			Metric			By-pass Tray
		Tray 1	Tray 2/3/4	LCT	Tray 1	Tray 2/3/4	LCT	
A3 W	12" x 18"	N	N	N	N	N	N	Y#
A3 SEF	297 x 420 mm	N	Y	N	N	Y	N	Y#
A4 SEF	210 x 297 mm	N	Y#/Y*	N	N	Y	N	Y#
A4 LEF	297 x 210 mm	Y*	Y	Y*	Y	Y	Y	Y#
A5 SEF	148 x 210 mm	N	N	N	N	N	N	Y#
A5 LEF	210 x 148 mm	N	Y	N	N	Y	N	Y#
A6 SEF	105 x 148 mm	N	N	N	N	N	N	Y#
B4 SEF	257 x 364 mm	N	Y#/Y*	N	N	Y	N	Y#
B5 SEF	182 x 257 mm	N	Y#/Y*	N	N	Y#/Y*	N	Y#
B5 LEF	257 x 182 mm	N	Y	N	N	Y	N	Y#
B6 SEF	128 x 182 mm	N	N	N	N	N	N	Y#
Ledger	11" x 17"	N	Y	N	N	Y	N	Y#
Letter SEF	8.5" x 11"	N	Y	N	N	Y#/Y*	N	Y#
Letter LEF	11" x 8.5"	Y	Y	Y	Y*	Y	Y*	Y#
Legal SEF	8.5" x 14"	N	Y	N	N	Y#/Y*	N	Y#
Half Letter SEF	5.5" x 8.5"	N	N	N	N	N	N	Y#
Executive SEF	7.25" x 10.5"	N	Y#	N	N	Y#	N	Y#
Executive LEF	10.5" x 7.25"	N	N	N	N	N	N	Y#
F SEF	8" x 13"	N	Y#	N	N	Y#	N	Y#
Foolscap SEF	8.5" x 13"	N	Y#	N	N	Y#	N	Y#
Folio SEF	8.25" x 13"	N	Y#	N	N	Y#	N	Y#
8K	267 x 390 mm	N	Y#	N	N	Y#	N	Y#
16K SEF	195 x 267 mm	N	Y#	N	N	Y#	N	Y#
16K LEF	267 x 195 mm	N	Y#	N	N	Y#	N	Y#
Custom	Minimum: 90 x 148 mm Maximum: 305 x 458 mm	N	N	N	N	N	N	Y#
Com10 Env.	4.125" x 9.5"	N	N	N	N	N	N	Y#
Monarch Env.	3.875" x 7.5"	N	N	N	N	N	N	Y#
C6 Env.	114 x 162 mm	N	N	N	N	N	N	Y#
C5 Env.	162 x 229 mm	N	N	N	N	N	N	Y#
DL Env.	110 x 220 mm	N	N	N	N	N	N	Y#

Remarks:

Y	Supported: The sensor detects the paper size.
Y#	Supported: The user specifies the paper size.
Y*	Supported: Depends on a technician adjustment
N	Not supported

3.3 PAPER EXIT

Paper	Size (W x L)	Internal Tray (Face Down)	External Tray (Face Up)	Finisher	Multi-bin Output Tray	Duplex
A3 W	12" x 18"	N	Y	N	N	N
A3 SEF	297 x 420 mm	Y	Y	Y	Y	Y
A4 SEF	210 x 297 mm	Y	Y	Y	Y	Y
A4 LEF	297 x 210 mm	Y	Y	Y	Y	Y
A5 SEF	148 x 210 mm	Y	Y	N	N	N
A5 LEF	210 x 148 mm	Y	Y	Y	Y	Y
A6 SEF	105 x 148 mm	Y	Y	N	N	N
B4 SEF	257 x 364 mm	Y	Y	Y	Y	Y
B5 SEF	182 x 257 mm	Y	Y	Y	Y	Y
B5 LEF	257 x 182 mm	Y	Y	Y	Y	Y
B6 SEF	128 x 182 mm	Y	Y	N	N	N
Ledger SEF	11" x 17"	Y	Y	Y	Y	Y
Letter SEF	8.5" x 11"	Y	Y	Y	Y	Y
Letter LEF	11" x 8.5"	Y	Y	Y	Y	Y
Legal SEF	8.5" x 14"	Y	Y	Y	Y	Y
Half Letter SEF	5.5" x 8.5"	Y	Y	N	N	N
Executive SEF	7.25" x 10.5"	Y	Y	Y	Y	Y
Executive LEF	10.5" x 7.25"	Y	Y	N	N	N
F SEF	8" x 13"	Y	Y	Y	Y	Y
Foolscap SEF	8.5" x 13"	Y	Y	Y	Y	Y
Folio SEF	8.25" x 13"	Y	Y	Y	Y	Y
8K	267 x 390 mm	Y	Y	Y	Y	Y
16K SEF	195 x 267 mm	Y	Y	Y	Y	Y
16K LEF	267 x 195 mm	Y	Y	Y	Y	Y
Custom	Minimum: 90 x 148 mm Maximum: 305 x 458 mm	Y	Y	N	N	N
Com10 Env.	4.125" x 9.5"	N	Y	N	N	N
Monarch Env.	3.875" x 7.5"	N	Y	N	N	N
C6 Env.	114 x 162 mm	N	Y	N	N	N
C5 Env.	162 x 229 mm	N	Y	N	N	N
DL Env.	110 x 220 mm	N	Y	N	N	N

Remarks:

Y	Supported
N	Not supported

4. SOFTWARE ACCESSORIES

4.1 SCANNER

The scanner driver and utility software are provided on one CD-ROM.

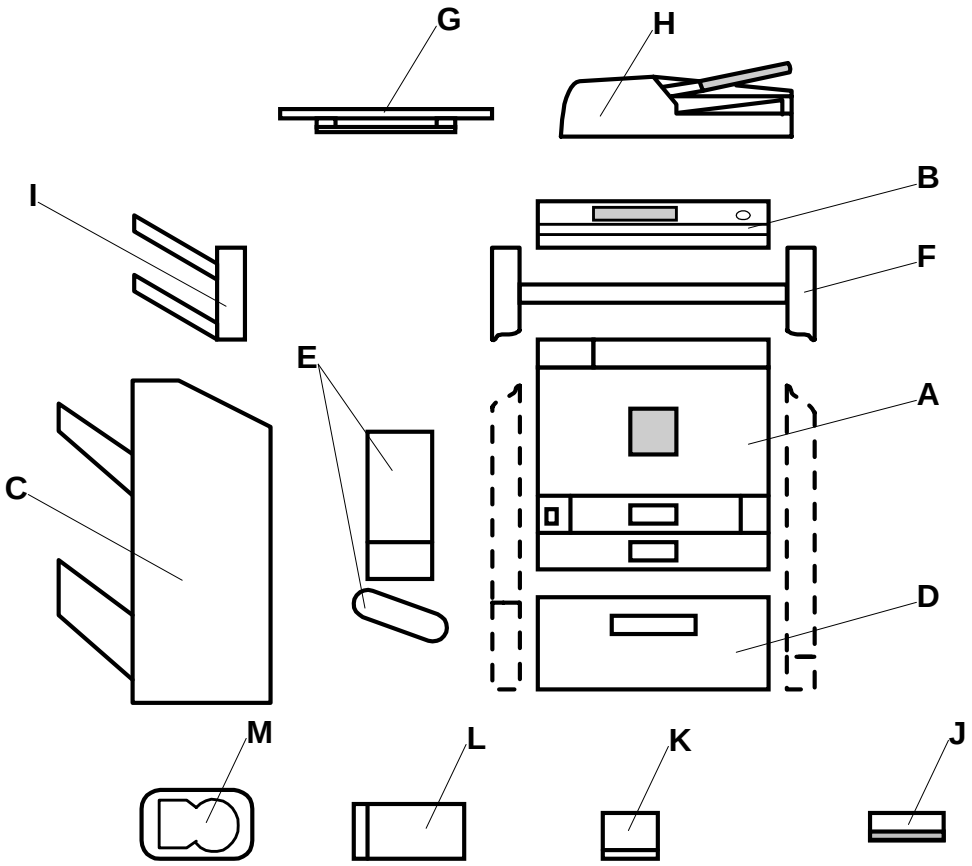
Scanner Drivers

- Network Twain Driver for Win95/98/ME/NT4.0/2000

Scanner Utilities

- Scan Router V2 Lite (Cherry-Lite) for Win95/98/ME/NT4.0/2000
- Desk Top Binder V2 Lite (Plumeria-Lite) for Win95/98/ME/NT4.0/2000

5. MACHINE CONFIGURATION



Item	Machine Code	No.	Remarks
Mainframe			
Printer	G060	A	
Copier Feature Expander	G570	B	
Peripherals			
Finisher	G565	C	Requires the HDD or 128MB DIMM memory, duplex unit, and one of the three paper feed options.
Paper Feed Unit (500 x 1)	G567	D	Install any one of these three units.
Paper Feed Unit (500 x 2)	G568	D	
LCT	G569	D	
Duplex Unit	G571	E	
Punch Unit	B377		Requires the finisher
Rack	G317	F	Requires the CF expander.
Platen Cover	G329	G	Requires the CF expander.
ARDF	G564	H	Requires the CF expander.
Multi-Bin Output Tray	G306	I	Requires the CF expander.

Item	Machine Code	No.	Remarks
Controller Options			
64MB DIMM Memory	G579	J	
128MB DIMM Memory	G580	J	
256MB DIMM Memory	G581	J	
NVRAM Memory	G311	K	
IEEE1394 I/F Board	G590	L	At least 64 MB of DIMM is required
HDD Type 1	G308	M	Only for printer features
HDD Type 2	G309	M	For both printer and copier features

NOTE: The punch unit and copier feature expander (including its options) must be installed by service representatives; the other units can be installed by users.

6. OPTIONAL EQUIPMENT

Rack

Dimensions (W × D × H): 675 mm x 758 mm x 1110 mm (26.6” x 29.8” x 43.7”)

Weight: 30 kg

ARDF

Paper Size/Weight:

Simplex	Size	A3 to B6, DLT to HLT
	Weight	45 to 90 kg (11 to 34 lb.)
Duplex	Size	A3 to B5, DLT to HLT
	Weight	45 to 90 kg (14 to 28 lb.)

Table Capacity: 80 sheets (80 g/m^2, 20 lb)

Original Standard Position: Rear left corner

Separation: Feed belt and separation roller

Original Transport: Roller transport

Original Feed Order: From the top original

Supported Magnification Ratios:

Copy		50 to 200 %
Fax	Color	32.6 to 200 %
	Black & white	48.9 to 200 %

Power Source: DC 24V, 5V from the scanner unit

Power Consumption: 60 W or less

Dimensions (W × D × H): 570 mm x 518 mm x 150 mm (22.4” x 20.4” x 5.9”)

Weight: 12 kg

Multi-bin Output Tray

Number of Bins: 2

Paper Size: Maximum: A3/11" x 17" (SEF)
Minimum: A5 (LEF)/8 1/2" x 11"

Paper Weight: 60 to 105 g/m^2 (16 to 28 lb.)

Stack Capacity (80 g/m^2, 20 lb.):
Tray 1: 100 sheets
Tray 2: 100 sheets (A4/smaller than 8 1/2" x 11")
250 sheets (B4/8 1/2" x 14")

Printing Speed:

	Resolution	Printing Speed
Monochrome	600 x 600 dpi 1200 x 600 dpi Copy mode	26 ppm
	1200 x 1200 dpi	23 ppm
Color	600 x 600 dpi 1200 x 600 dpi Copy mode	23 ppm
	1200 x 1200 dpi	14 ppm