# Gestetner LANIER RICOM SaVIT 



## B070/B071 SERVICE MANUAL <br> 001580MIU

# Gestefner <br> LANIER <br> RTCOM <br> 5ㅋII 



RICOH GROUP COMPANIES

# Gestetner LANIER RICOM Savin 

## B070/B071 SERVICE MANUAL

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## B070/B071

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SEE SECTION B660 FOR DETAILED TABLE OF CONTENTS

## COVER INTERPOSER TRAY (B470)

SEE SECTION B470 FOR DETAILED TABLE OF CONTENTS

## BYPASS-TRAY (B512)

SEE SECTION B512 FOR DETAILED TABLE OF CONTENTS

## MISC. BOARDS (B580/B581/B596/B582/B609)

SEE SECTION B580/B581/B596/B582/B609 FOR DETAILED TABLE OF CONTENTS

## ©IMPORTANT SAFETY NOTICES

## PREVENTION OF PHYSICAL INJURY

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

## HEALTH SAFETY CONDITIONS

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

## OBSERVANCE OF ELECTRICAL SAFETY STANDARDS

1. The copier and its peripherals must be installed and maintained by a customer service representative who has completed the training course on those models.
2. The NVRAM on the controller board has a lithium battery which can explode if replaced incorrectly. Replace the NVRAM only with an identical type. However, the manufacturer recommends replacing the entire NVRAM, not just the battery. Never recharge or incinerate a used NVRAM battery. Dispose of a used NVRAM or NVRAM battery in accordance with local regulations.
3. The danger of explosion exists if the battery on the controller board is incorrectly replaced. Replace the battery only with the equivalent type recommended by the manufacturer. Discard the used controller board battery in accordance with the manufacturer's instructions and local regulations.

## SAFETY AND ECOLOGICAL NOTES FOR DISPOSAL

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

## LASER SAFETY

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

## WARNING

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


## Conventions in this Manual

This manual uses several symbols.

| Symbol | What it means |
| :---: | :---: |
| $\checkmark$ | Refer to section number |
| GTI | See Core Tech Manual for details |
| $\widehat{\xi}^{(1)}$ | Screw |
| E\# | Connector |
| 5 | E-ring |
| (3) | Clip ring |
| NA | North America |
| EUR/A | Europe/Asia |




## INSTALLATION

## 1. INSTALLATION PROCEDURES

### 1.1 INSTALLATION REQUIREMENTS

### 1.1.1 ENVIRONMENT

1. Temperature Range:
$10^{\circ} \mathrm{C}$ to $32^{\circ} \mathrm{C}\left(50^{\circ} \mathrm{F}\right.$ to $\left.89.6^{\circ} \mathrm{F}\right)$
2. Humidity Range:
$15 \%$ to $80 \%$ RH

3. Ambient Illumination: Less than 1,500 lux (do not expose to direct sunlight or strong light)
4. Ventilation:
5. Ambient Dust:

Room air should turn over at least 3 times per hour
Less than $0.075 \mathrm{mg} / \mathrm{m}^{3}$
6. If the place of installation is air-conditioned or heated, do not place the machine where it will be:

1) Subjected to sudden temperature changes
2) Directly exposed to cool air from an air-conditioner
3) Directly exposed to heat from a heater
7. Do not place the machine where it will be exposed to corrosive gases.
8. Do not install the machine at any location over 2,000 m (6,500 feet) above sea level.
9. Place the copier on a strong and level base.
10. Do not place the machine where it may be subjected to strong vibrations.
11. Do not connect the machine to a power source shared with another electrical appliance.
12. The machine can generate an electrical field which could interfere with radio or television reception.

### 1.1.2 MACHINE LEVEL

1. Front to back: Within $5 \mathrm{~mm}\left(0.2^{\prime \prime}\right)$ of level
2. Right to left: Within $5 \mathrm{~mm}\left(0.2^{\prime \prime}\right)$ of level

NOTE: The machine legs may be raised or lowered in order to level the machine. Set a carpenter's level on the exposure glass.

### 1.1.3 MINIMUM SPACE REQUIREMENTS

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

Copier + Finisher + LCT + By-pass Tray

400 mm (16")


Copier + Finisher


NOTE: The controller box door on the back of the machine swings open and can be removed. (-1.2.3) Door removal is required only if the machine cannot pass through a narrow door.

INSTALLATION REQUIREMENTS

### 1.1.4 DIMENSIONS

## Side View



## Top View

730 mm (29")

858.5 mm (34")

### 1.1.5 POWER REQUIREMENTS

## $\triangle$ CAUTION

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

Input voltage level:


NEMA 6-20R

North America:
208 to 240 V, 60 Hz: More than 20 A
Europe/Asia:
220 ~240 V, 50/60 Hz: More than 16 A

Note: For USA installations, standard $220 \mathrm{~V}(+/-10 \%)$ wall voltage is acceptable.

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

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

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

There are two power switches on the machine:

- Main Power Switch.

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

## - Operation Power Switch.

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

### 1.2 COPIER (B070/B071)

### 1.2.1 ACCESSORIES



Check the quantity and condition of the accessories in the box against the following list:
Description Q'ty

1. Operation Panel ..... 1
2. Lower Cover - Operation Unit Holder ..... 1
3. Upper Cover - Operation Unit Holder ..... 1
4. Operating Instruction Holder ..... 1
5. Right Arm Cover ..... 1
6. Operation Unit Arm ..... 1
7. Leveling Shoes ..... 4
8. Optics Dust Filter ..... 1
9. Dust Filter ..... 1
10. Operation Panel Unit Arm ..... 1
11. Paper Size Decals ..... 1
12. Metal Cable Clamp ..... 1
13. Tapping Screw - M $4 \times 12$ ..... 2
14. Philips Pan Head Screw - M4 x 6 ..... 1
15. Tapping Screw - M4 x 8 ..... 25
16. Nylon Harness Clamp ..... 1
17. ADF Exit Tray ..... 1
18. Paper Size Decals ..... 1
19. Paper Loading Decals ..... 1
20. Toner Hopper Drive Gear (White) ..... 1
Model Name Plate (-10, -15, -22 machines) - not shown ..... 1
Operating Instructions - not shown ..... 1

### 1.2.2 INSTALLATION

## . CAUTION

## Rating Voltage for Peripherals

Make sure to plug the cables into the correct sockets.


## External Tape and Retainers

The installation procedure is not packed with the copier. Always bring this service manual with you.

| $\triangle$ CAUTION |
| :--- |
| Before performing the following procedures, make sure that the machine is <br> unplugged from the power source. |



1. Remove all tape from the exterior [A].
2. Remove the tape and retainers from the power cord and cables [B].

NOTE: Keep the shipping retainers after installing the machine. They can be reused if the machine is moved to another location in the future.

3. Remove all tape and retainers from under the ADF $[A]$.
4. Remove A3 paper [B].
5. Set the leveling shoes [C] ( x 4 ) under the feet [D], then level the machine.

## Internal Tape and Retainers



1. Pull out the tandem tray (1st tray), remove the tray lock plate $[A]$ ( $x 1$ ) and remove the cushion $[\mathrm{B}]$.
2. Pull out the 2nd tray and remove the lock plate [C] ( $\hat{\beta}^{3} \times 1$ ).

NOTE: Be sure the re-attach the screw to the same hole. Do not discard the screw.
3. Pull out the 3rd tray and remove the lock plate [D] ( $\mathcal{E}^{2} \times 1$ ).

NOTE: Be sure the re-attach the screw to the same hole. Do not discard the screw.

4. Open the front doors and remove all visible tape and retainers from inside the machine [A].
5. Press down lever $D 2[B]$, pull out the fusing unit [C], and remove all tape and retainers from the fusing unit.

## Developer




1. Remove the inner cover $[A]\left(\mathcal{S}^{2} \times 3\right)$.
2. Rotate the blade release pin $[B]$ clockwise and remove it.
3. Remove the transfer belt lock plate [C] (
4. Remove the development unit support plate [D].
5. Remove the drum plate $[\mathrm{E}]\left(\begin{array}{l}\text { ( }\end{array} \times 1\right.$, knob $\times 1$ ).

6. Separate the upper connector [A] from the frame then disconnect it.
7. Separate the lower connector $[B]$ from the frame then disconnect it.
8. Disconnect the suction hose [C] and set it on the hook [D] to prevent toner leakage.
9. Pull out the development unit [E] (

NOTE: To prevent scratching the drum, push the development unit slightly to the right when pulling it out, and do not pull on the knob.
10. Place the development unit on a clean sheet of paper to prevent foreign matter from being attracted to the sleeve rollers.

11. Remove the toner hopper $[A]$ ( $\hat{\xi} \times 2$ ).
12. Pour in one pack of developer while turning the knob $[B]$. Distribute the developer evenly along the length of the roller.
13. When re-installing the development unit, confirm that:

- All connectors are re-connected.
-The suction hose [C] is re-connected to the development unit.
- The connector cables are re-attached at [D] and [E].


## Operation Panel and Display



1．Remove the right upper cover $[A](\underset{\xi}{\mathcal{E}} \times 4)$ ．
2．Pass the harness through the operation unit arm $[B]$ ，and install the arm（ $⿷_{\mathbb{\#})} \times 2$ ，帠 x 9 ）．
3．Pass the operation unit cable［C］through the support arm and connect it． （気 ${ }^{\|} \times 2$ ）．

4. Secure the harness clamp [A] on the operation unit ( head).
5. Pass the harness $[B]$ through the clamps.

7. Set the nylon clamp [D].
8. Install the right arm cover $[E]\left(\begin{array}{l}\text { 舟 } \times 3\end{array}\right)$.
9. Install the arm upper cover $[F]\left(\mathcal{E}^{2} \times 2\right)$.

## Filters and Original Exit Tray



2. Install the lower cover $[B]\binom{\hat{\xi}}{\times 1}$.
3. Set the dust filter [C].
4. Loosen the bottom knob, adjust the view angle of the operation panel, then tighten the knob.
5. Loosen the side knob, adjust the tilt of the operation panel, then tighten the knob.


6. Set the optics dust filter [A].
7. Loosen the two screws of the bracket [B].
8. Attach the original exit tray at [C] ( $(\mathbb{\xi} \times 2, M 4 \times 12)$ and $[D](\hat{\xi} \times 1, M 4 \times 8)$ NOTE: To prevent damage to moving parts inside the machine, never use these long screws ( $\mathrm{M} 4 \times 12$ ) to fasten any exterior cover.
9. Re-tighten the screws of the bracket $[B]\left({ }^{(1)} \times 1\right)$.
10. Re -attach the right upper cover ( $\hat{\xi}^{2} \times 4$ ).
11. Remove the tape from the operating instructions holder and attach it to one of the front doors.
12. At the back of the machine, connect the ADF to the copier body.
13. Plug in the power cord, turn the main switch on, then follow the instructions printed on the inside cover of the front door to install the toner bottles.

## Initializing Developer Supply

1. When the machine is ready, enter SP mode:
1) Press c/ه.
2) Enter "107".
3) Hold down c/D for more than 3 seconds.
2. Press "Copy SP" on the LCD, and perform the TD initial setting:
1) Select SP2801 (TD Sensor Initial Setting)
2) Use the keys displayed on the screen and the numeric keys on the LCD to enter the developer Lot No., then press $\#$.
NOTE: The Lot No. is embossed on the top edge of the developer packet.
3) Press "Execute" on the LCD.

NOTE: This executes the TD initial setting. After about 1 minute, "Completed" is displayed on the screen, and the execution stops automatically.
3. Start to supply toner from the toner bank to the toner hopper:

1) Select SP2207 002 (Toner Bank Toner Setup).
2) Press the "Start key" on the LCD.

This procedure supplies toner to the toner hopper and the toner transport path. It will stop automatically in about 7 minutes. If SP2207 002 fails after SP2801 is completed (an SC code is displayed), repeat only SP2207 002.
4. Execute SP2962 (Auto Process Control Execution).

NOTE: In step 1, if you enter SP mode immediately after switching the machine on, the system will not execute process control automatically. To ensure that process control calibrates its settings, use this SP to execute process control manually.

## Replacing the Joint Gear



1. Switch the copier off and disconnect it from its power source.
2. Remove the development unit.
3. At the back of the toner hopper unit, remove red Joint Gear $15 Z[A]$ and replace it with the white gear [B] provided in the accessory bag.
NOTE: The red gear is designed to supply toner to the toner hopper only (toner is not supplied to the development roller below). The white gear must be installed in order to supply toner to the development roller below for normal operation.

## $\triangle$ CAUTION

Save the red gear. If the toner hopper is removed at any time and must be refilled with toner again, you must swap the white gear for the red gear, execute SP2207 002, and then remove the red gear and re-install the white gear for normal operation.

## Completing the Installation

1. Set the required paper sizes for all paper trays.

- Tray 1: Use SP5019 002 (Tray Paper Size Selection - 1st Tray)
- Trays 2 and 3: Use the paper size dial
-LCT, top two trays, bypass tray, and cover interposer: Position the fences correctly
-LCT, bottom tray: Use SP5019 007 (Tray Paper Size Selection - 6th Tray)

2. Attach the appropriate paper size decal to each tray (decals are provided in the accessories bag).
3. Attach the face-up decal to the ADF.
4. Check copy quality and machine operation.

NOTE: The first time the ADF is used, dust on the ADF transport belt will transfer to the exposure glass. To remove this dust, perform SP6008-3 (DF Output Check) for 3 minutes, then check the exposure glass for dust and remove it.
5. Initialize the electrical total counter with SP7825 (Total Counter Clear).
6. Input the supply name with SP5841 (Supply Name Settings) 001 (Toner), 005 Staples), and 006 (Staple Bind (for booklet staples).
7. Install the stamp data (SP5853).( -5.10 .5 )

### 1.2.3 CONTROLLER BOX DOOR REMOVAL

NOTE: Do this procedure only if the machine is too large to pass through a narrow door or passageway.


1. Remove the lock screw $[A](\hat{\xi} \times 1)$ and swing the door open.
2. Remove the connector plate $[B]$.
3. Remove the clamps [C] (昰 $\times 2$ ).


4. Remove the upper hinge cover $[F](\hat{\xi} \times 1)$.
5. Remove the lower hinge cover [G] ( $(\underset{\xi}{ } \times 1)$.
6. Lift the door off the hinges and remove it.

### 1.2.4 TRANSPORTING THE COPIER

To prevent blockages in the toner supply path, always follow the procedure below before transporting the copier. If this procedure is not done, SC592 (Toner Bank Motor Error) or SC495 (Toner Bottle Unit Error) may be displayed, requiring replacement of the toner transport hose and screw.

## $\triangle$ CAUTION <br> To prevent damaging the toner supply coil inside the toner hose, never bend the toner hose. If the coil is bent, SC592 will be displayed and the hose must be replaced.

## Before Moving the Copier



1. To prevent cleaning blade deformation during transportation, lock the release lever [A] in the up position.

2. Use SP5804 097 (Upper Bottle) and SP5804 098 (Lower Bottle) to close the toner caps, then remove the toner bottles from the bank.
3. Remove the rear upper and rear lower covers.
4. Remove the left upper cover, left lower cover, and right upper cover.
5. Remove the two screws $[A]$ securing the toner supply cylinder.
6. Cover the end of the toner transport coil tube $[B]$ with a plastic bag.
7. Execute SP5804 070 (Output Check - Toner Bank Motor) and SP5804 071 (Output Check - Toner Supply Coil Clutch) to actuate the toner bank motor and toner supply coil clutch for 2 minutes and remove all toner in the supply hose.
8. Re-install all removed parts except the toner bottles.
9. Make sure that three tubes are connected to the toner supply cylinder when putting it back.

## After Moving the Copier

1. Load the toner bottles in the toner bank.
2. Remove the right upper cover.
3. Open the cylinder top cover, clean the inner surface of the cylinder with a cloth, then close the cover.
4. Execute SP5804 070 (Output Check - Toner Bank Motor) to switch on the toner supply motor.
5. Execute SP5804 068 (Output Check - Upper Toner Bottle Motor) and SP5804 069 (Output Check - Lower Toner Bottle Motor) to switch on the bottle motors for about 5 to 6 seconds.
NOTE: To prevent toner overflow in the toner entrance tank, do not execute these SP commands for longer than 5 to 6 seconds.
6. Execute SP5804 071 (Output Check - Toner Supply Coil Clutch) to switch on the toner supply coil clutch. 50 to 60 seconds later, toner is supplied to the toner supply cylinder. Make sure that toner is properly supplied to the cylinder.
7. Execute SP5804 071 and SP5804 070 to switch off the toner supply coil clutch and toner supply motor.
8. Re-install all removed parts.
9. Move the drum cleaning blade lever down away from the shipping position.

### 1.3 A3/DLT TRAY KIT (B331)

### 1.3.1 ACCESSORIES



Check the quantity and condition of the accessories in the box against the following list:
Description ..... Q'ty

1. $\mathrm{A} 3 / \mathrm{DLT}$ Tray ..... 1
2. Short Connector ..... 1
3. Paper Size Decal ..... 1

### 1.3.2 INSTALLATION



## §CAUTION <br> Switch the machine off and unplug it from the power source before starting the following procedure.

1. Remove the shipping material $[A]$ and metal retainer $[B]\left(\mathcal{F}^{7} \times 1\right)$.
2. Check the position of the front and back side fences and make sure that they are set for DLT or A3.
3. If you need to adjust the positions of the side fences for the paper to be loaded in the tray, remove the front panel [C] ( $\hat{\xi} \times 4$ ).
4. Remove the fences and adjust their positions for the paper to be loaded: front fence $[D](\hat{\xi} \times 1)$, back fence $[E]\left(\hat{\xi}^{3} \times 1\right)$, and end fence $[F](\hat{\xi} \times 1)$

5. Open the front doors.
6. Pull out the tandem feed tray [A] completely.
7. Push the right tandem tray $[B]$ into the machine.


8. From the left tandem tray, remove the front cover $[A]$ ( $\times 2$ ).
9. Remove the safety switch holders $[B](\mathbb{\xi} \times 2)$.
10. Pull out the right tandem tray [C] then remove it. ( $\hat{\xi}^{2} \times 2$ ).


11. Insert the short connector $[A]$ into the socket inside the machine $[B]$. NOTE: Hold the connector as shown in the illustration.
12. Using the screws removed in Steps 8 and 11, install the tray [C] on the right rail [D], center rail [E], left rail [F].
NOTE: You must use the short, silver screws on the left and right rails. If you use one of the longer screws, it will block the movement of the tray on the rails.

13. Re-install the safety switch holders [A] ( $\hat{\xi} \times 2$ ) removed from the left tandem tray in Step 10.
14. Re-install the front cover $[B]\left(\begin{array}{l}\text { ( }\end{array}\right.$ ) removed from the left tandem tray in Step 9.
15. Use SP5019 002 to select the paper size for Tray 1 (A3 or DLT).
16. After selecting the paper size, switch the machine off and on to change the indicator on the operation panel.

### 1.4 LCT (B511)

### 1.4.1 ACCESSORIES



Check the quantity and condition of the accessories in the box against the following list:
Description ..... Q'ty

1. Leveling Shoes ..... 3
2. Upper Joint Pins ..... 2
3. Lower Joint Pins ..... 2
4. Decal - Paper Size ..... 1
5. Decal - Paper Set ..... 3
6. Tab Paper End Fence ..... 1
7. Philips Screw - M4 $\times 8$ ..... 1
8. Installation Procedure - English (not shown) ..... 1

NOTE: The tab paper end fence (6) is located in the LCT unit, mounted on hooks behind the front door.

### 1.4.2 INSTALLATION



## $\triangle$ CAUTION

## Unplug the power cord before starting the following procedure.

1. Remove the strips of tape on the covers (shown in the top illustration) and the packing material (shown in the bottom illustration).
2. Open the LCT door and remove the shipping retainers and strips of tape holding the levers.

3. Remove the covers [A] from the right upper side.
4. Remove the covers $[B]$ from the right lower side.
5. Install the pins with the grooved rings [C] on the right upper cover.
6. Install the other pins [D] on the right lower cover.

7. Pull the connectors and ground wire $[A]$ out of the LCT unit.
8. Remove the two screws that secure the ground plate $[B]$.
9. Turn the ground plate over, reverse it, then fasten it to the same holes [C] ( $\hat{\beta}^{3} \times 2$ ).
10. Open the front door and remove the lock screw [D] from the lock lever [E].

11. Move the LCT to the side of the copier and connect the four connectors [A]
12. Fasten the ground wire screw $[B]\left(\begin{array}{l}\beta\end{array}\right)$.
13. Align the LCT on the joint pins, and dock the LCT with the right side of the copier.
14. Tighten the lock screw to attach the LCT to the copier ([D] in step 10).

NOTE: If the lock lever is not seated correctly, pull the spring loaded lock lever forward and release to lock it into the groove.
15. Insert the leveling shoes ( x 3 ) under the leveling feet and level the LCT.
16. Attach the appropriate decals to the trays.

### 1.4.3 LCT TRAY HEATER (OPTION)

## Installation

## $\triangle$ CAUTION <br> Before doing this procedure, turn off the main switch and unplug the copier power cord.



1. Remove the LCT unit from the main copier.
2. Remove the LCT right cover (
3. Attach the two condensation heaters $[A]$ (
4. Attach the heater cover $[\mathrm{B}]\left(\begin{array}{l}\text { ( }\end{array} \mathrm{x} 2\right)$
5. Attach the two harness clamps [C].
6. Lead the heater harnesses [D] through the harness clamps.
7. Push the connectors [E] through the holes.
8. Connect the interface harness connectors [F] to the connectors pushed through the holes.

9. Replace the wire saddle [A] with the new one included in the optional tray heater kit.
10. Lead the connecting harness $[B]$ as shown.

> | $\leqq$ CAUTION |
| :--- |
| To comply with safety standards, make sure that the connecting |
| harness [B] is not touching the interface harness [C]. |

11. Connect the connector [D] of the interface harness to the mainframe interface.


## . CAUTION <br> All anti-condensation heaters are disconnected from the AC drive board before shipping. Before plugging in the AC harness connector, make sure that the main switch of the copier is switched off and that the power cord is unplugged.

12. Connect the $A C$ harness connector $[A]$ to the $A C$ drive board $[B]$.

NOTE: The main switch must be switched off when the heater AC harness connector is connected to the AC drive board, in order for the transfer anti-condensation drum heater to switch on/off with other optional heaters.
13. Hang the harness on the clamp under the AC drive board.

### 1.5 BYPASS TRAY (B512)

### 1.5.1 ACCESSORIES

Check the quantity and condition of the accessories in the box against the following

Description Q'ty

1. Bracket ..... 1
2. Joint Pins ..... 2
3. Tapping Screws ..... 4
4. Harness Clamps ..... 4
5. Cable Harness ..... 1
6. End Fence ..... 1
7. Tab Fence ..... 1
8. Sponge Strip ..... 1

### 1.5.2 INSTALLATION

## ©CAUTION <br> Switch the machine off and unplug the machine before starting the following procedure.




1. If the LCT is connected to the machine, disconnect it.

CAUTION: To avoid damaging the LCT connectors and ground wire, separate the LCT and copier about 20 cm (8"), and disconnect the connectors ( $⿷^{\|} \times 4$ ) and ground wire ( $\boldsymbol{\xi}^{(1)} \times 1$ ) before pulling the LCT away from the machine.
2. Remove the tab fence from the left top cover [A].
3. Remove all tapes and shipping material from the bypass tray $[B]$.
4. Remove the paper slot cover [C] (
5. Use the edge of a fine tip flathead screwdriver to remove the smaller three covers [D].

6. Screw in the guide pins $[A](\underset{\xi}{(1)} \times 2)$.
7. Attach the bracket $[B]$ provided in the accessories kit ( $\times 1$ ).
8. Grip the bypass tray unit handle [C] and place your hand under the corner [D] diagonal to the handle, lift the unit and set it on top of the LCT.
9. Align the embossed arrows on the top left cover [E] of the bypass tray with the arrows on the LCT top.
10. Fasten the bypass tray to the right bracket $[F](\hat{\xi} \times 1)$.

11. Remove the handle $[A]\left(\hat{\xi}^{3} \times 2\right)$. Save these screws.
12. Remove the bypass tray top left cover $[B]$ ( $\hat{\xi} \times 4$ ).
13. Use the screws removed above to attach the handle to the front frame [C].
14. Fasten the bypass tray rear frame [D] to the LCT (
15. Fasten the bypass tray front frame $[E]$ to the LCT ( $\hat{\xi} \times 1$ ).
16. Re-attach the top left cover $[B](\hat{\beta} \times 4)$.
17. Remove the rear cover $[F](\hat{\xi} \times 6)$.

18. Attach the 4 clamps $[A]$ to the holes in the frame.
19. Connect the cable harness connectors $[B]$ to the bypass tray at the top ( $(\mathbb{E}) \times 4$ ).
 from bottom to top, match the shape of the connector to the slot, and connect to:

- CN531
- CN532
- CN530

NOTE: Insert the connectors gently. If at first you cannot insert the connector, reverse it and try again.
21. Fasten the cable harness [D] to the frame with the 4 clamps attached above.
22. Open the 3 harness clamps [E] ( 2 above and 1 to the left) of the control board then secure the harness cable
CAUTION: Make sure that the cable harness is securely clamped at the 7 clamps. If the cable harness is loose, this could interfere with the moving parts inside the LCT.
23. Re-attach the rear cover.

24. Remove the tape from the sponge strip and attach the strip $[A]$ to the top left cover of the bypass tray. Position the strip in the center above the three roller housings [B].
NOTE: The sponge strip prevents paper or other objects from accidentally falling between the output tray and the left cover.
25. Attach the end fence (follow the instructions on the decal attached to the top of the bypass tray).
NOTE: Open the LCT front door and hang tab sheet fence on the hooks [C] on top of the LCT tab fence. When feeding tab sheets from the bypass tray, follow the decal instructions on the tab fence to install it.

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

### 1.6.1 ACCESSORIES

Check the quantity and condition of the accessories in the box against the following list:
Description Q'ty

1. Rear joint bracket. ..... 1
2. Front joint bracket ..... 1
3. Upper output tray ..... 1
4. Lower output tray ..... 1
5. Tapping screws $-\mathrm{M} 3 \times 6$ ..... 2
6. Tapping screws $-\mathrm{M} 4 \times 8$ ..... 2
7. Tapping screws $-\mathrm{M} 4 \times 14$ ..... 4
8. Cushion (with double-sided tape) ..... 1
9. Ground (earth) plate ..... 1
10. Installation Instructions ..... 1

### 1.6.2 INSTALLATION

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

- B468 Booklet Finisher, capable of punching, shifting, stapling, and saddlestitching with staples. This booklet finisher can be used with the B064/B065 or the B070 (90 cpm). It cannot be used with the B071 (105 cpm).
- B469 Finisher, capable of punching, shifting, and stapling but with no saddlestitching unit. The B469 Finisher can be used with the B064/B065. It cannot be used with the B070 or B071.

NOTE: Differences in the installation procedure are noted as "B468" or "B469".

## Removing Tapes and Retainers

## B468 (B064/B065/B070)



B469 (B064/B065)



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

## B468/B469 Installation

| @CAUTION |
| :--- |
| Switch the machine off and unplug the machine before starting the <br> following procedure. |



1. Install the front $[A]$ and rear $[B]$ joint brackets ( ${ }^{2} \times 2$ each, $M 4 \times 14$ ).
2. Install the ground plate [C] (

3. Attach the cushion [A] to the right side of the upper cover.

NOTE: If you are installing the cover interposer tray, do not attach the cushion here. Attach it to the cover interposer tray. The cover interposer tray must be installed before you dock the finisher and tray to the main machine. For details, see the Cover Interposer Tray B470 installation instructions.
4. Remove the screw $[B]$ to release the lock lever $[C](\hat{\xi} \times 1)$.
5. Slowly and carefully, to avoid bending the entrance guide plates of the finisher, push the finisher against the side of the machine until the brackets enter the slots.
6. Using the screw $[B]$ removed above, secure the lock lever $[C](\hat{\xi} \times 1)$.
7. Connect the plug [D] of the finisher power cord to the connector on the machine.

## $\triangle$ CAUTION <br> Always move the finisher slowly to avoid bending the entrance guide plates. Bent guide plates could interfere with paper transport from the finisher to the machine.

## B468 (B064/B065/B070)

[D]


B469 (B064/B065)
[E]


## B468 (B064/B065/B070)

1. Install the lower output tray $[A]\left(\hat{\xi}^{3} \times 2\right)$.

Note that only the lower output tray has a movable support tray $[B]$.
2. Install the upper output tray [C] (
3. Attach the staple position decal [D] to the ADF.

## B469 (B064/B065)

1. Install the output tray $[E](\mathbb{E} \times 2)$.
2. Attach the staple position decal $[\mathrm{F}]$.

## Selecting the Staple Supply Name

Enter the SP mode and execute the following information.

| 5841* | Supply Name Setting |  | These names appear when the user prints the Inquiry List <br> (B070: Press the Counter key, then press 'Print Inquiry <br> List', B064/B065: Press the Inquiry button in the initial <br> User Tools screen). |
| :--- | :--- | :--- | :--- |
|  |  | $005^{*}$ | Staple Std |
|  |  | Enter the name of the staples in use for normal stapling <br> (not booklet stapling). This setting should be done for both <br> the B468 and B469. |  |

## Enabling Booklet Binding

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

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

This SP adjustment is available but not required at installation. Use this SP to fine adjust the fold/staple position of they are not aligned correctly.

| SP6902 | Staple Position <br> in Center <br> Folding | Use this SP to fine adjust the fold and staple positions if they <br> are not aligned correctly. See "5. Service Tables". |
| :--- | :--- | :--- |
| SP6120 | Staple Jogger <br> Adjustment | Allows fine adjustment of the staple unit jogger fences for <br> different paper sizes, if required. For details, see "4. Service <br> Tables". |

### 1.73000 SHEET FINISHER (B478)

### 1.7.1 ACCESSORIES

Check the quantity and condition of the accessories in the box against the following list:
Description Q'ty

1. Front Joint Bracket ..... 1
2. Rear Joint Bracket ..... 1
3. Entrance Guide Plate ..... 1
4. Shift Tray ..... 1
5. Grounding Plate ..... 1
6. Table Extension ..... 1
7. Cushion ..... 1
8. Tapping Screws - M4 $\times 8$ ..... 2
9. Tapping Screws $-\mathrm{M} 3 \times 6$ ..... 4
10. Tapping Screws - M3 $\times 8$ ..... 4
11. Phillips Screws w/washer - M4 x 14 ..... 4
12. Leveling Shoes ..... 4
13. Installation Procedure ..... 1

### 1.7.2 INSTALLATION



## . CAUTION <br> Unplug the machine power cord before starting the following procedure.

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


NOTE: Set the grounding plate so that there is no gap between the grounding plate and the bottom frame of the finisher (as shown).
5. Install the table extension $[B]$ as shown ( $\mathcal{F}^{-} \times 2$ ) ( $\mathrm{M} 4 \times 8$ ).

NOTE: The edge of the table extension should be aligned with the edge of the finisher (as shown).
7. Attach the cushion [C] to the right side of the upper cover.

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

[C]

9. Attach the shift tray $[A](\hat{\xi} \times 4)(M 3 \times 8)$.
10. Open the front door of the finisher, and remove the screw from the locking lever, then pull out the locking lever [B].
11. Align the finisher on the joint brackets, and lock it in place by pushing in the locking lever [B].
NOTE: Before securing the locking lever, make sure that the top edges of the finisher and the copier are parallel from front to rear as shown [C].
12. Set the leveling shoes [D] ( $x 4$ ) under the feet $[E]$, then level the machine.
13. Secure the locking lever $[B]\left(\begin{array}{l}\text { 信 }\end{array} \times 1\right.$ ) and close the front door.
14. Connect the finisher cable [F] to the copier.

### 1.8 PUNCH UNIT (B377)

### 1.8.1 ACCESSORIES

Check the quantity and condition of the accessories in the box against the following list:
Description Q'ty

1. Punch unit ..... 1
2. Sensor arm ..... 1
3. Hopper ..... 1
4. Step screw ..... 1
5. Spring ..... 1
6. Spacer (2 mm) ..... 1
7. Spacer (1 mm) ..... 1
8. Tapping screw - M3 $\times 8$ ..... 1
9. Tapping screw $-\mathrm{M} 3 \times 10$ ..... 2

### 1.8.2 INSTALLATION PROCEDURE



## $\triangle$ CAUTION

Switch off the main machine and unplug its power cord.

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

4. Remove the plastic knockout [D].
5. Install the sensor bracket arm $[E]\left(\mathcal{N}^{2} \times 1\right)$.

NOTE: Make sure that the sensor arm swings freely on the step screw.
7. Install the spring $[F]$.

8. Remove the shipping bracket $[A](\hat{\xi} \times 2)$.
9. Position the 2 mm spacer $[\mathrm{B}]$ and secure the punch unit ( $\mathrm{S}_{\mathrm{P}} \times 2$ ).
10. Secure the punch unit at the front with the shoulder screw ( $\hat{\xi} \times 1$ [C]).
11. Connect the harnesses [D] and clamp them as shown.
12. Slide the hopper [ $E$ ] into the machine.
13. Fasten the two 1 mm spacers [F] to the rear frame. These may be used during future adjustments.
NOTE: The spacers are used to adjust the horizontal positioning of the holes.
14. Reassemble the finisher and check the punch operation.

### 1.9 PUNCH UNIT (B531/A812)

### 1.9.1 ACCESSORIES

Check the quantity and condition of the accessories in the box against the following list:


## Description <br> Q'ty

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

### 1.9.2 INSTALLATION



## $\triangle$ CAUTION <br> Switch the machine off and unplug the machine before starting the following procedure.

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

7. Remove the paper guide $[A]\left(\hat{\xi}^{2} \times 4\right)$.
8. Install the sensor arm $[B]$ (

NOTE: Make sure that the sensor arm swings freely on the step screw.
9. Attach the spring [C].

10. At the front, secure the punch unit $[A]$ with the large step screw ( $\hat{\xi^{2}} \mathrm{x} 1, \mathrm{M} 4 \mathrm{x}$ 10).
11. At the rear, position the 2 mm spacer $[B]$ and attach the punch unit $[C](\hat{\beta} \times 2$, M4 x 10).
NOTE: At the hole just above the lock lever, use one of the screws from the paper guide removed above to fasten the remaining two spacers to the frame. These extra spacers are used to adjust the horizontal position of the punch holes.
12. At the front, fasten the punch unit knob [D] ( $\mathcal{F}^{(1)}$ ).

13. Connect the PCB harness connector [A] to CN129 of the finisher PCB and to CN600 of the punch unit PCB.
14. Connect the HP Sensor 2 harness connector $[B]$ to CN 130 of the finisher PCB and to HP Sensor 2.
15. Connect the single end of the hopper full sensor connector cable [C] to the
 connectors to HP Sensor 1 [D] and CN620 [E] of the punch PCB.
NOTE: No special DIP switch settings are required for this punch unit. The punch unit sends an identification signal to the machine, so it knows what type of punch unit has been installed.
16. Slide the hopper $[F]$ into the finisher.
17. Re-attach the inner cover and rear cover.
18. Close the front door and re-connect the finisher to the machine.

### 1.10 JOGGER UNIT (B513)

### 1.10.1 ACCESSORIES

Check the quantity and condition of the accessories in the box against the following list:
Description1. Jogger Unit B5131
2. Tapping Screws $-\mathrm{M} 3 \times 6$ ..... 2
3. Installation Procedure ..... 1

### 1.10.2 INSTALLATION



1. Turn the main machine switch off and disconnect the finisher from the main frame.
2. Use the flat head of a screw driver to remove the left upper cover [A] from the finisher and discard it.
3. Remove the cover plate $[B]$ from the jogger unit ( $\mathcal{E}^{(1)} \times 2$ ). Save the screws.
4. With the jogger unit connector on the left side, hook the frame of the jogger unit [C] into the holes on the left and right side of the finisher frame.
5. On the left side, fasten the connector [D] to the socket ( $⿷_{\mathbb{\#} \|}^{\boldsymbol{\#}} \times 1$ ).
6. On the left and right side, attach the jogger unit frame to the side of the finisher with the screws [E] provided ( $(\mathbb{\xi} \times 2)$.
7. Re-attach the jogger unit cover to its frame with the screws removed in step 2 (会 $\times 2$ ).

### 1.11 COVER INTERPOSER TRAY (B470)

### 1.11.1 ACCESSORIES

Check the quantity and condition of the accessories in the box against the following list:

Description Q'ty

1. Front door extension (top) ..... 1
2. Rear cover extension (bottom) ..... 1
3. Shoulder screws ..... 3
4. Tapping screws $-\mathrm{M} 4 \times 8$ ..... 7
5. Tapping screws $-\mathrm{M} 3 \times 8$ ..... 2
6. Tapping screws $-\mathrm{M} 3 \times 6$ ..... 5
7. Ground Plate ..... 1
8. Plate extension (bottom) ..... 1
9. Right rear cover plate (for B478 only) ..... 2
10. Right front corner plate (for B478 only) ..... 2
11. Spacer (B468/B469 only) ..... 1
12. Front door extension (bottom) ..... 1

### 1.11.2 INSTALLATION

This procedure describes installation of the Cover Interposer Tray B470 on the Booklet Finisher B468, 3000 Sheet Finisher 469, and 3000 Sheet Finisher B478.

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


## Removing Tapes and Retainers



1. If the finisher is connected to the machine, disconnect it.
2. Remove all tape and retainers from the cover interposer tray [A].
3. Remove the tape and cardboard [B] from the ground connector.
4. Remove the cover [C] of the relay connector.
5. Loosen the screw of the bracket $[\mathrm{D}]\left(\hat{\xi}^{7} \times 1\right)$ then remove the bracket.

NOTE: If you are installing the cover interposer tray with a previously installed finisher B468/B469/B478, remove the sponge strip [E] from the finisher and save it for re-attachment to the interposer tray.
6. Remove the guide plate [F].

## Attaching the Extensions



## ⒸAUTION <br> Make sure that the finisher is disconnected from the main machine and that the copier is switched off and unplugged before starting the following procedure.

1. Attach the three shoulder screws $[A](\hat{\xi} \times 3)$.
2. Remove the ground plate $[B]$ from the finisher and save the screws
3. Attach the bottom plate $[C](\hat{\xi} \times 2, M 3 \times 6)$ then re-attach the ground plate to the bottom plate ( $\hat{y}^{(1)} \times 2$ ) with the screws removed in Step 2.
4. Attach the bottom front cover extension [D] ( $(\underset{\xi}{ } \times 2, \mathrm{M} 4 \times 8)$.
5. Attach the top front cover extension $[E]\left(\mathcal{N}^{2} \times 2, M 4 \times 8\right)$.
6. Attach the rear cover extension $[F](\hat{\xi} \times 2, M 3 \times 6)$.

## Attaching the Interposer Tray



1. If you are installing cover interposer tray on the B468/B469 finisher, insert the spacer [A] and snap it into position.
NOTE: If you are installing the cover interposer tray on the B478, do not install this spacer. This spacer is for the B468/B469 installation only.
2. Pick up the cover interposer tray, align the keyholes $[B]$ with the shoulder screws [C], then slide the cover interposer down onto the screws.
3. Secure the cover interposer with the screw $[D]\left(\mathcal{S}^{2} \times 1, M 3 \times 6\right)$.

NOTE: 1) If you are installing the cover interposer tray on the B468, skip the next section and go directly to "Docking the Finisher with the Machine" on page 1-74.
2) If you are installing the cover interposer tray on the B478, go to the next section, install the corner plates on the B478, then go to "Docking the Finisher with the Machine" on page 1-74.

## Attaching the Corner Plates for the B478

CAUTION: The corner plates are installed on the B478 only. Attach the cover interposer tray to the finisher before attaching the corner plates.

Right Rear Corner Plate (B478 only)


1. Temporarily attach the screws $[\mathrm{A}]$ (with about two turns) to the right end of the finisher extension table [B] ( ${ }^{2} \times 2$, tapping M4 x 8)
NOTE: The holes are not visible because they are covered with tape. Just punch the screws through the holes.
2. Align the cutouts [C] of the right rear corner plate [D] with the screws and attach the plate.
NOTE: If there is a gap [E] between the plate and the tray extension attached to the side of the finisher, loosen the two screws below the table extension (not shown), align the table extension with the corner of the finisher and plate, then re-tighten the tray extension screws.
3. With a long screw driver inserted through the cutouts in the right rear corner plate [D], tighten the screws to fasten the right rear corner plate to the table extension [B].

## Right Front Corner Plate (B478 only)



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

## Docking the Finisher with the Machine



1. Attach the sponge strip $[A]$ provided with the finisher.

NOTE: If you are installing the cover interposer tray with a previously installed finisher, remove the strip from the finisher and attach it to the cover interposer tray.
2. Attach the guide plate $[B]$ (removed from the finisher) to the cover interposer ( $\mathrm{x} 2)$.
NOTE: Be sure to use the two small tapping screws provided, not the machine screws removed from the finisher with the guide plate.
3. Release the lock lever [C] (
4. Lower the transport guide plate [D].
5. Slowly push the finisher against the side of the machine until the brackets [E] enter the slots.

> | $\triangle$ CAUTION |
| :--- |
| Dock the finisher carefully to avoid bending the entrance guide plates. |
| Bent guide plates could interfere with paper transport from the machine |
| to the finisher. |

6. Secure the lock lever $[C](\mathbb{\xi} \times 1)$.
7. Raise the transport guide plate [D] to close it.
8. Plug the connector $[\mathrm{E}]$ into the copier.
9. Switch on the machine and execute SP5158 $001 \sim 008$ to select the default paper sizes for the cover interposer unit. For details, see the service manual " 5. Service Tables".

### 1.12 INSTALLATION OF MFP CONTROLLER OPTIONS

### 1.12.1 OVERVIEW

To facilitate the installation of MFP options, 6 slots for boards and 3 slots for SD cards are provided on the side of the controller box. Each board or SC card must be inserted into its assigned slot. The slot assignment of each item is listed in the table below, and a decal with the same information is attached to the controller box cover.

MFP Option Slot Assignment

| Slot | Decal Name | Description |
| :---: | :--- | :--- |
| A1 | External CTL | I/F board for an external controller such as EFI |
| A2 | Tandem | Copier Connection Kit B328 |$|$| B1 | File Format Converter |
| :---: | :--- | MLB (Media Link Board) B609

The large slots $[\mathrm{A}]$ are for boards (cards) and the small slots $[B]$ are for the SD cards. Slot C3 [C] is on the other side of the controller box.
[B]

1.12.2 PRINTER/SCANNER KIT (B580)
Accessories
Description Q'ty

1. NIC Board ..... 1
2. IEEE 1284 Centronics ..... 1
3. Caution Decal ..... 1
4. Printer/Scanner SD Card ..... 1
5. Printer Keytops (English/Symbol) ..... 2
6. Scanner Keytops (English/Symbol) ..... 2
7. Ferrite Core (RFC-10) ..... 1
8. EULA Sheet ..... 1
9. FCC Decal ..... 1

NOTE: The optional 256 MB Memory Kit B585 is required for this installation and must be purchased separately. The memory kit is not provided with the Printer/Scanner Kit B580.

## Installation



1. Remove the controller box cover ( ${ }^{(1)} \times 9$ ).
2. Hold the 256 MB memory DIMM [A] with the slot $[B]$ in the edge connector on the left, then insert the DIMM into the slot [C] above the other memory DIMM.
NOTE: To remove the memory DIMM, spread the spring-loaded clips on either end of the DIMM.
3. Re-attach the controller box cover.

4. Remove the cover $[A]$ of Slot B4 ( $\mathcal{Z}^{(1)} \times 2$ ).
5. Insert the NIC board $[B]$ into Slot B4 and fasten it with the screws.
6. Remove the cover [C] of Slot B2 (
7. Insert the Centronics board [D] into Slot B2 and fasten it with the screws.
8. Hold the SD Card [E] with its label facing the as shown above, then insert it into Slot C1.
NOTE: Pushing in the SD Card releases it for removal. Make sure the SD Card is inserted and locked in place. If it is partially out of the slot, push it in gently until it locks in place.

9. Wind the cable $[A]$ one full turn around the ferrite core $[B]$, then clamp the core to lock it.
10. Connect the cable [C] to the NIC board.

11. On the operation panel, remove the slot covers [A] and discard them.
12. Install the "Printer" keytop [B] then the "Scanner" keytop [C]. Select either the English set or Symbol set for installation. The correct order is:

- Printer (upper)
- Scanner (lower)

13. Attach the decal $[D]$ to the main machine.
14. Follow the instructions in the Operation Instructions to complete the installation for the printer/scanner option.

### 1.12.3 PS3 (B613)

## Accessories

Description

1. PostScript3 Emulation SD Card............................................. 1
2. Decal...................................................................................... 1

## Installation



1. Switch the machine off.
2. Insert the PS3 SD Card into Slot C2 [A].

NOTE: Pushing in the SD Card releases it for removal. Make sure the SD Card is inserted and locked in place. If it is partially out of the slot, push it in gently until it locks in place.
3. Switch the machine on.

### 1.12.4 USB 2.0 (B596)

## Accessories

## Description <br> Q'ty

1. USB 2.0 Board....................................................................... 1

## Installation

Only one PCI slot (B3) is available for one of these options:

- USB 2.0
- IEEE 801.11b (Wireless LAN)
- IEEE 1394 (FireWire)

If another card is installed in B3, you must remove it before installing USB 2.0 B596.


1. Switch the machine off.
2. Remove the cover $[A]$ of Slot B3 ( $\mathcal{E}^{2} \times 2$ ).
3. Insert the USB 2.0 board [B] into Slot B3 and fasten it with the screws.
4. Print a configuration page to confirm that the machine recognizes the installed board for USB2.0:
User Tools > Printer Features > List Test Print > Configuration Page

### 1.12.5 IEEE 1394 KIT (B581)

## Accessories

## Description

1. IEEE 1394 Board .................................................................... 1
2. 4-Pin Cable............................................................................. 1
3. 5-Pin Cable............................................................................. 1

## Installation

Only one PCl slot ( B 3 ) is available for one of these options:

- USB 2.0
- IEEE 801.11b (Wireless LAN)
- IEEE 1394 (FireWire)

If another card is installed in B3, you must remove it before installing IEEE 1394 B581.


1. Switch the machine off.
2. Remove the cover $[A]$ of Slot B3 ( $\hat{(1)} \times 2$ )
3. Insert the IEEE 1394 board [B] into Slot B3 and fasten it with the screws.
4. Switch the machine on and print a configuration page to confirm that the machine recognizes the installed board for IEEE 1394 (FireWire):
User Tools> Printer Features> List Test Print> Configuration Page

### 1.12.6 IEEE 802.11B (B582)

## Accessories

## Description Q'ty

1. IEEE 801.11b Board ............................................................... 1
2. PCI Card ................................................................................. 1
3. Antennas ................................................................................ 2
4. Velcro pads .......................................................................... 2

## Installation

Only one PCI slot (B3) is available for one of these options:

- USB 2.0
- IEEE 801.11b (Wireless LAN)
- IEEE 1394 (FireWire)

If another card is installed in B3, you must remove it before installing IEEE 802.11b B582.


1. Switch the machine off.
2. Remove the cover [A] of Slot B3 (
3. Detach the plastic protector $[\mathrm{B}]$ from the PCl card.
4. Insert the PCI card [C] into the wireless LAN board.
5. Insert the wireless LAN board [D] into Slot B3 and fasten it with the screws.

6. Remove the tape from the back of the Velcro patch, attach the patch to the right corner [A] of the controller box, then attach the antenna $[B]$ to the patch.
7. Remove the tape from the back of the Velcro patch, attach the patch to the left corner [C] of the controller box, then attach the antenna [D] to the patch.
8. Pass the connectors through the cover [E].
9. Connect each antenna to a terminal [F] and attach the cover.

NOTE: 1) Attach the antennas as described above. However, if you change the location of either antenna, please remember that the antennas should be separated by at least $40 \sim 60 \mathrm{~mm}(1.5 \sim 2.5$ ").
2) Set up the antennas in an area that is free of interference from electrical equipment that generates a strong electromagnetic field.
3) Always detach the antennas from the corners of the machine and disconnect them before moving the machine.
4) If reception is poor, move the machine and antennas closer to the access point.
10. Switch the machine on and print a configuration page to confirm that the machine recognizes the installed board for IEEE 802.11b (Wireless LAN):
User Tools> Printer Features> List Test Print> Configuration Page

## $\Rightarrow$ 1.12.7 COPIER CONNECTION KIT (B328)

## Accessories

Check the quantity and condition of the accessories in the box against the following list:






7
Description ..... Q'ty
Interface Cable 1394 ..... 3
Repeater Hub 1394 ..... 2
Connection PCB ..... 2
Power Repeater Cable ..... 2
"Other Function" Keytops (NA, EU 1 ea.) ..... 2
"Printer/Other Function" Keytops (NA, EU 1 ea.) ..... 2
SDRAM DIMM 64 MB ..... 2

## Preparation

Before you begin the installation procedure, you must first:

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

Measure the distance between the machines, then decide how many cables and repeater hubs are required.

| DISTANCE | POWER REPEATER HUBS | INTERFACE CABLES |
| :--- | :---: | :---: |
| Up to $4.5 ~ \mathrm{~m}$ <br> $(14.8 \mathrm{ft})$. | None | 1 |
| $4.5 \sim 9.0 \mathrm{~m}$ <br> $(14.8 \sim 29.5 \mathrm{ft})$ | 1 | 2 |
| $9.0 \sim 13.5 \mathrm{~m}$ <br> $(29.5 \sim 112.5 \mathrm{ft}$. | 2 | 3 |

Two sets of keytops (2 per set, 1 for NA, 1 for EU) are provided for each machine, but you need to install only one keytop on each machine.

- Install the key labeled "Printer/Other Function" (or its equivalent symbol keytop for EU) on a machine with the printer/scanner option installed
- Install the key labeled "Other Function" (or its equivalent symbol keytop for EU) on a machine without the printer/scanner option.


## Installation Procedure

## . CAUTION <br> Switch the machine off and unplug the machine before starting the following procedure.



1. Switch the main power switch off.
2. Remove the controller box cover. ( $(\hat{\xi} \times 7$ )
3. Remove the cover [A] from slot A2.
4. Align the PCB with the bottom groove, and push the connection PCB $[B]$ into the slot.
NOTE: Make sure that the edge of the PCB is in the groove before you push the card into the machine.
5. Fasten the PCB with the attached screws [C].
$\Longrightarrow$

6. Connect the power repeater cable [A] to the mother board at CN149.
7. Connect the other end of the power repeater cable the connection PCB [B].
8. Insert the 64 MB SDRAM DIMM [C] into the slot on the mother board.

- Set the edge connector at a 45 degree angle with the slot on the edge connector [D] aligned with the post below.
- Press down slightly then push the DIMM toward the mother board until it snaps into place.
- Make sure that the notches on both sides of the DIMM [E] [F] engage the pawls of the spring loaded arms so the DIMM is perpendicular.

9. Re-attach the controller box cover.
10. Repeat Steps 1 to 9 to install the connection PCB and 64 MB DIMM on the slave machine.

11. Insert one end of the interface cable [A] to the connection PCB inserted in slot A2.
12. If additional interface cables are required, connect the cables $[B]$ with the repeater hubs [C].
13. On the operation panel of the both machines, remove the second cover (or Printer key) from the bottom [D].
14. Install an appropriate key for each machine:

Attach the "Printer/Other Function" key [E] (or its equivalent symbol keytop for EU ) if the printer/scanner option is installed in the machine.
-Or-
Attach the "Other Function" key [E] (or its equivalent symbol keytop for EU) if the printer/scanner is not installed in the machine.
15. Attach the other end of the connection cable to the connection PCB installed in the other machine.
16. The following software must be downloaded onto both the master and slave machine.

- SYSTEM Ver. V3.04.1 (install first) or later
- NCS (NIB) Ver. 4.13.3 or later
- NetFile Ver. 3.04.2 or later
- BCU (Engine) V4.01.1 or later
- LCDC (NA, EU) Ver. 2.09 or later

NOTE: For details about downloading procedures, see Section " 5 . Service Tables" of the Service Manual.

## $\Rightarrow$ 1.12.8 EFI (G353)



1. Switch the machine off.
2. Remove the cover $[A]$ of Slot A1 ( $\mathcal{B}^{2} \times 2$ ).
3. Insert the EFI Board G353 [B] into Slot A1 and fasten it with the screws.

### 1.12.9 MLB (B609)

## Accessories

## Description <br> Q'ty

1. MLB Board.............................................................................. 1
2. Instructions ............................................................................. 1

## Installation



1. Make sure the following firmware versions are already installed:
> LCDC (NA): version 2.09 (B0705374) or later
> BIOS: VK02EL00O (B0705742D) or later
> Printer: version 1.13 (B5806515) or later
> Scanner: version 2.00 (B5806520) or later
> WebSystem: version 2.00 (B0705757) or later
2. Switch the machine OFF.
3. Remove the cover $[A]$ of Slot B1 ( $\hat{\xi}^{3} \times 2$ ).
4. Insert the MLB board $[B]$ into Slot B1 and fasten it with the screws.
5. Switch the machine ON.
6. Install the following firmware together as a set:

- NCS (NIB): (B0705755B) v.4.15
- Netfile: (B0705756B) v3.07.2
- System: (B0705754B) v4.01.4
- Webdocbox: (B0705758B) v1.08

Important: The function will not work properly unless all versions above are installed together.
7. After successfully installing the firmware above, turn the main switch OFF/ON.
8. Set SP5836-003 to a value of 1 , which will enable the print back-up feature.
9. Set the following SP modes to the values shown:

| SP No. | Setting | SP No. | Setting |
| :---: | :---: | :---: | :---: |
| SP5-836 001 | 0 | SP5-836 085 | 1 |
| SP5-836 002 | 0 | SP5-836 086 | 2 |
| SP5-836 072 | 0 | SP5-836 091 | 50 |
| SP5-836 073 | 0 |  |  |

10. Set the following SP modes as necessary, in accordance with the customer's needs.

| SP No. | Setting | Comments |
| :---: | :---: | :---: |
| SP5-836 094 | 2 | Sets JPEG2000 (J2K) as the file format for documents copied from the Document Server to Palm2. <br> Note: Files backed up to Palm2 in J2K format cannot be edited by other software applications. |
|  | 0 | Sets TIFF as the file format for documents copied from the Document Server to Palm2. <br> Note: Use this setting for customers who wish to use other software applications to edit or apply OCR or other processing to backed-up files, and who do not mind the loss in image quality. |
| SP-5836 098 | 1 | Applies a correction for dots, rear-side image catching and background to files copied to Palm2, in order to minimize the size of the file down to its essential parts. <br> Note: This is applied to both J2K and TIFF files, but is particularly useful for customers who wish to copy J2K documents quickly, as they are normally larger, and who do not mind the slight loss in image reproduction. |


| SP No. | Setting | Comments |
| :---: | :---: | :--- |
|  | 0 | Does not apply the above correction to files copied to <br> Palm2. <br> Note: Use this setting for customers who wish to preserve <br> the original reproduction level, especially with J2K files, and <br> do not mind the time and disk space required for copying. |

## $\Rightarrow 1.13$ KEY CARD COUNTER

### 1.13.1 ACCESSORIES

Description ..... Q'ty

1. Key Counter Cover ..... 1
2. Key Counter Plates ..... 2
3. Key Counter Bracket ..... 1
4. Machine screw M3 x 6 ..... 1
5. Shoulder Screw M3 x 4 ..... 1
6. Tapping Screws M4 x 8 ..... 3
7. Machine Screws M3 x 20 ..... 2
8. External Screw M3 x 20 ..... 1
9. Machine Screw (Flathead) M4 x 16 ..... 1
10. Extension Cable (for LCT Installation) ..... 1
11. Extension Cable Clamps (for LCT Installation) ..... 6

## $\Rightarrow$ 1.13.2 INSTALLATION

## Assembling the Key Counter



1. While holding the key counter plates $[A]$ inside the key counter bracket $[B]$, insert the key counter holder [C]
2. Fasten the key counter holder [C] through the bracket plate to the counter plates $[A]$ ( $\hat{\xi}^{2} \times 2$ ).
3. Fasten the cover $[D]$ to the key counter bracket $[B]\left(\mathcal{S}^{2} \times 2\right)$.

## $\Rightarrow$ Attaching the Key Counter to the Copier

Attach the key counter to the copier if the LCT is not installed.


1. On the right side of the copier, remove the small cover [A].
2. Remove the jumper connector $[B]$.
3. Fasten the shoulder screw [C] to the side of the machine.
4. Connect the key count assembly [D].
5. Fit the keyhole of the key counter bracket [E] over the head of the shoulder screw, then slide it back.
6. Fasten the key counter assembly [F] to the copier (
7. Do the User Tool and SP mode settings described at the end of this section.

## $\Rightarrow$ Attaching the Key Counter to the LCT



1. On the LCT right cover, remove the cover [A] (
2. Remove the LCT right cover $[B]\left(\hat{\xi}^{(1)} \times 6\right)$.
3. Remove the LCT rear cover [C] ( $\hat{\xi} \times 3$ ).
4. On the right side of the LCT, attach 2 clamps [D].
5. Attach the extension cable [E] to the 2 clamps.
$\Rightarrow$

6. On the rear side of the LCT, attach 2 clamps [A].
7. Route the cable $[B]$ as shown.
8. On the left side of the LCT, attach 2 clamps [C].
9. Route the cable [D] as shown.
10. If the cable from the right cover is too long, loop it [E] to make it shorter.


11. Re-attach the right LCT cover.
12. Fasten the shoulder screw $[A]$ to the side of the LCT.
13. Connect the key count assembly [B].
14. Fit the keyhole of the key counter bracket [C] over the head of the shoulder screw, then slide it back.
15. Fasten the key counter assembly [D] to the LCT ( $\hat{\beta}^{(1)} \times 1$ ).
16. On the right side of the copier, remove the small cover [E].
17. Remove the jumper connector [F].
$\Rightarrow$

18. Connect the extension cable [A] from the LCT to the copier.
19. Dock the LCT to the copier.

## User Tool and SP Mode Settings

1. Instruct the key operator to enable the key counter with the User Tools setting: User Tools> System Settings> Key Counter Management> then click the ON button for the items you want to enable for the counter (Copier, Document Server, Printer, Scanner).
2. Enter the SP mode and set SP5113 (Optional Counter Type) to 002 (Key Card (Countdown Type)) or 005 (MF Key Card).
NOTE: If the counter is a countdown type, you must select 002.
3. Enter the SP mode and set SP5121 to "0" (Paper Feed Count) or "1" (Paper Exit Count) to determine whether the counter counts at paper feed-in or a paper exit.

## $\Rightarrow 1.14$ TRAY HEATER KITS

### 1.14.1 ACCESSORIES

Description
Q'ty
Upper Tray Heater Kit (P/N B0706291)

- Heater - 240V 18W (AX400151): 1 pcs
- Guide Plate - Upper Heat Sink (A2486103): 1 pcs
- Heat Sink:Hearter:Upper:Fiber (B0706293): 1 pcs
- Tapping Screw - 4x6 (04514006B): 1 pcs

Lower Tray Heater Kit (P/N B0706295)

- Heater - 240V 18W (AX400157): 1 pcs
- Lower Heat Sink (B0656221): 1 pcs
- Philips Pan Head Screw - M4x4 (03140040B) : 2 pcs
- Clamp (11050516): 1 pcs

B0706291


B0706295


### 1.14.2 INSTALLATION

## Installing the Tray Heaters

1. Remove all trays, middle rail for the tandem tray and harness cover as shown.

2. Open the controller box. Then remove the lower rear cover and PSU.

3. Attach the lower tray heater kit and attach it with 3 screws.

$\Longrightarrow 4$. Attach the upper tray heater kit to the middle rail for the tandem tray with 2 screws.

4. Install the middle rail and upper tray heater kit into the main frame.

Front Side: mounted by 3 screws


Rear Side: mounted by 2 screws


Insert the tab of the heat sink into here!!
6. Route the harness for upper and lower heaters as shown.

Note: Clamp the harness for the upper heater at 2 points.

7. Connect both connectors at the rear side of the machine.

Note: There is no difference between connectors.

8. Attach the harness cover.

Note: Make sure not to pinch the harness when the cover is attached.

9. Plug in the connector for the anti-condensation heater to the AC drive board as shown in Fig. 1.

## © CAUTION

All anti-condensation heaters are disconnected from the AC drive board before shipping. Before plugging in the AC harness connector, make sure that the main switch of the copier is switched off and the power cord is unplugged.

Note 1: The connector is hung on the clamp under the AC drive board.
Note 2: The tray heater is ON when the machine is in Auto Off Mode. (Main or operation SW is OFF)

Fig. 1


Fig. 2


If you want the tray heater ON for 24 hours, disconnect the relay connector and set the anti-condensation heater connector as shown Fig. 2
> $\triangle$ CAUTION
> At this time, the heater is always ON when the power plug is connected with the power source. Use caution when you perform machine maintenance.

## PREVENTIVE MAINTENANCE

## 2. PREVENTIVE MAINTENANCE

### 2.1 PM PARTS

The amounts mentioned $(\mathrm{K}=1,000)$ as the PM interval indicate the number of prints or copies unless stated otherwise. These numbers are based on the PM counter.

## Symbol Key for PM Tables

I: Inspect. Clean, replace, or lubricate as needed.
C: Cleaning required.
R: Replacement required.

L: Lubrication required.

| $\triangle$ WARNING |
| :--- |
| Turn off the main power switch and unplug the machine before performing <br> any procedure in this section. Laser beams can seriously damage the eyes. |

2.1.1 MAIN MACHINE

Main Unit PM Parts

|  | 350K | 700K | 1000K | Expected | Note |
| :---: | :---: | :---: | :---: | :---: | :---: |
| OPTICS |  |  |  |  |  |
| Exposure Glass | I | 1 | R |  | Dry cloth. |
| 1st 3rd Mirrors | I | 1 | I |  | Optical cloth. |
| APS Sensor | 1 | I | I |  | Dry cloth. |
| Scanner Rail | 1 | 1 | I |  | Dry cloth |
| Scanner Filter |  | C |  |  | Blower brush. |
| Toner Shield Glass | C | C | C |  | Optical cloth. |


|  | 350K | 400K | 700K | 800K | 1050K | Expected | Note |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| DEVELOPMENT |  |  |  |  |  |  |  |
| Side Seals (x2) | C |  | C |  | C |  | Blower brush, dry cloth |
| Development Unit | 1 |  | 1 |  | 1 | 9300K |  |
| Development Roller | C |  | C |  | C |  | Dry cloth. *1 |
| Development Doctor Blade | C |  | C |  | C |  | Insert the paper dust cleaner behind the blade to rub away the paper dust. *1 |
| Entrance Seal | C |  | C |  | C |  | Blower brush or |
| Toner Hopper (Outside) | 1 |  | 1 |  | 1 |  | dry cloth |
| Gears (All) | 1 |  | 1 |  | I |  | Blower brush |
| Toner Filter (Center) |  | R |  | R |  | 820K |  |
| Toner Filter (front) |  | R |  | R |  | 820K |  |
| Developer | R |  | R |  | R |  | SP2801 (TD Sensor Initial Setting). Before execution, be sure to enter the Lot No. for the new developer. |
| Waste Toner Collection bottle | At 2400 K, inspect, empty and clean. *2 |  |  |  |  |  |  |
| Suction Toner Collection Bottle | At 2500 K replacement is required. ** |  |  |  |  |  |  |
| Development Suction Motor Assy | At 2500 K replacement is required. ** |  |  |  |  |  |  |

${ }^{* 1}$ : Cleaning required when developer is replaced.
${ }^{*}$ : K count assumes copying and printing on A4 LEF.
NOTE: If toner sticks to the development roller, the bias voltage will increase in that area. This may in turn cause dirty background on copies. Therefore, the development rollers should be cleaned whenever the developer is replaced.

|  | 350K | 500K | 700K | 1000K | 1050K | Note |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| AROUND THE DRUM |  |  |  |  |  |  |
| Side Seals | 1 |  | 1 |  | I | Blower brush, dry cloth |
| Ground Plate Screw | 1 |  | 1 |  | 1 | Conductivity check. Alcohol or water |
| Drum Filter | C |  | C |  | C | Blower brush |
| Cleaning Unit | 1 |  | I |  | 1 | Blower brush, dry cloth |
| Cleaning Brush Seal | 1 |  | 1 |  | 1 |  |
| Cleaning Entrance Seal | C |  | C |  | C |  |
| ID Sensor | C |  | C |  | C |  |
| Transfer Unit Entrance Stay | C |  | C |  | C |  |
| Corona Wire Casing | C |  | C |  | C | Dry cloth |
| Drum Potential Sensor | C |  | C |  | C | Blower brush |
| Quenching Lamp | C |  | C |  | C | Blower brush, dry cloth |
| Cleaning Brush | R |  | R |  | R |  |
| Toner Filter Assy | R |  | R |  | R | (Note 2) |
| Transfer Belt Cleaning Blade | C | R | C | R |  | Dry Cloth (Note 3) |
| Cleaning Blade | R |  | R |  | R | (Note 1) |
| Grid Plate | R |  | R |  | R | (Note 4) |
| Charge Corona Wire | R |  | R |  | R |  |
| Wire Cleaner | R |  | R |  | R |  |
| Wire Cushion | R |  | R |  | R |  |
| Pick-Off Pawls | R |  | R |  | R | (Note 5) |
| Transfer Belt |  | R |  | R |  | (Note 3) |
| Transfer Belt Cleaning Bias Roller | C | C | C | C |  | Alcohol |
| Transfer Belt Bias Brush |  | C |  | C |  | Blower brush |
| Rear Casing Guide |  | C |  | C |  | Dry cloth |
| Exit Bias Plate |  | C |  | C |  | Blower brush when transfer belt is replaced. |
| Belt Drive Roller |  | C |  | C |  | Alcohol, when transfer belt is replaced. |
| Belt Roller |  | C |  | C |  |  |
| Cleaning Bias Roller $\dagger 6$ |  | C |  | C |  | Alcohol, when transfer belt is replaced. Apply conductive grease to electrical contacts. |
| Carrier Catcher | 1 |  | 1 |  | 1 |  |

NOTE: 1) Improper cleaning can cause vertical white or black lines.
2) Failure to change the filter could cause complete clogging in the flow of the toner.
3) Failure to replace the cleaning blade could cause toner to cling to the transfer belt, dirty back sides of copies, poor paper separation, or pawl marks on paper.
4) Failure to replace this item could cause the machine to return SC300, SC301, SC303, or SC304 due to a corona housing leak.
5) Failure to replace worn pawls could cause them to wear and sharpen, thus increasing the chance of scouring the drum surface.

PM PARTS

|  | 350K | 500K | 600K | Expected | Note |
| :---: | :---: | :---: | :---: | :---: | :---: |
| FUSING UNIT |  |  |  |  |  |
| Pressure Roller, Cleaning Roller Bearings | I |  |  |  | Inspect only (Note 1) |
| Fusing Lamps (x3) | I |  |  |  | Inspect only |
| Pressure Roller Cleaning Roller | C |  |  |  | Dry cloth (water or alcohol can also be used if necessary) |
| Fusing Entrance Guide Plate | C |  |  |  | Water or alcohol |
| Oil Supply \& Cleaning Web Assembly (Note 8) | R (EUR/A) |  | $\begin{gathered} R \\ \text { (US) } \end{gathered}$ |  | After replacement, reset SP1902 001 (Web Motor Control - Web Consumption) to 0 . |
| Hot Roller $\phi 70$ |  |  | R | 750K |  |
| Hot Roller Strippers | Note 6 |  | Note 2 |  | Dry cloth |
| Pressure Roller Strippers | I |  |  |  | Dry cloth |
| Fusing Exit Roller | I |  |  |  | Water, alcohol |
| Pressure Roller |  | R |  | 600K | When replacing, lubricate with Barrierta 55L or S552R. |
| Web Cleaning Roller |  |  | R | 700K | (Note 3) |
| Hot Roller Ball Bearings |  |  | Note 4 |  | Inspect only |
| Pressure Roller Ball Bearings |  | Note 5 |  |  |  |
| Hot Roller Bushings |  |  | Note 4 |  | When replacing hot roller, lubricate with Barrierta 55L or S552R. |
| Pressure Roller Bushings |  | Note 5 | I |  | Inspect only |
| Hot Roller Gears | L |  |  |  | Lubricate (Barrierta 55L or SS552R) |
| Fusing Exit Guide Plates (Upper, Lower) | 1 |  |  |  | Dry cloth wrapped around a metal scale |
| Cooling Entrance Guide Plate | I |  |  |  |  |
| Fusing Web Brake Pad |  |  | R | 700K | Dry cloth (Note 7) |

NOTE: 1) Clean when servicing pressure roller or cleaning roller.
2) Replace when hot roller is replaced.
3) Replace with when oil supply \& cleaning web is replaced, or after cleaning web end.
4) Inspect when hot roller is replaced.
5) Inspect when pressure roller is replaced.
6) Clean when replacing cleaning web.
7) Use dry cloth to clean oil from stopper when replacing cleaning web.
8) Europe: Near-end $=350 \mathrm{~K}$, US: Near-end $=600 \mathrm{~K}$

|  | 350K | 700K | 1000K | Expected | Note |
| :---: | :---: | :---: | :---: | :---: | :---: |
| PAPER FEED |  |  |  |  |  |
| Grip Rollers | C | C | C |  | Damp cloth |
| Relays Rollers | C | C | C |  |  |
| Paper Feed Guide Plate | 1 | 1 | I |  |  |
| Upper and Lower Registration Rollers | C | C | C |  |  |
| Registration Sensor | C | C | C |  | Blower brush |
| Relay Sensor | C | C | C |  | Remove paper dust. |
| Paper Dust Remover | C | C | C |  |  |
| Paper Feed Sensor | C | C | C |  | Blower brush |
| Paper Feed Rollers |  |  | R |  | Replace together. |
| Pick-Up Rollers |  |  | R |  |  |
| Separation Rollers |  |  | R |  |  |


|  | 350K | 700K | 1050K | Expected | Note |
| :---: | :---: | :---: | :---: | :---: | :---: |
| DUPLEX UNIT |  |  |  |  |  |
| Transport Rollers | C | C | C |  | Damp cloth |
| Feed Rollers | C | C | C |  |  |
| Reverse Transport Roller | C | C | C |  |  |
| Reverse Feed Roller | C | C | C |  |  |
| Inverter Feed Rollers | C | C | C |  |  |
| Inverter Transport Rollers | C | C | C |  |  |
| Entrance Sensor | C | C | C |  | Blower brush |
| Anti-Static Brush | 1 | I | 1 |  |  |
| Duplex Inverter Sensor | C | C | C |  | Blower brush, inspect feeler movement. |
| Duplex Transport Sensor | C | C | C |  | Blower brush |
| Horizontal Transport Feed Roller (Resin Roller) | C | C | C |  | Damp cloth |

## GW CONTROLLER

| Controller Filter | C | C | C |  | Blower brush |
| :--- | :--- | :--- | :--- | :--- | :--- |

NOTE: Paper dust on the duplex transport sensors and the duplex inverter sensor can cause paper jams. Therefore, these sensors should be cleaned with a blower brush at every PM visit.

### 2.1.2 ADF

|  | 80 K |  | 160K | 240K | Note |
| :--- | :---: | :---: | :---: | :---: | :---: |
| The PM interval is for the number of sheets that have been fed. |  |  |  |  |  |
| Transport belt | R | R | R |  |  |
| Feed belt | R | R | R |  |  |
| Separation roller | R | R | R |  |  |
| Pick-up roller | R | R | R |  |  |
| Sensors | I | I | I |  |  |
| Drive gears | I | I | I |  |  |

### 2.1.3 $\mathbf{3 0 0 0}$ SHEET BOOKLET FINISHER B468

|  | EM | $\mathbf{3 0 0 K}$ | $\mathbf{4 5 0 K}$ | $\mathbf{6 0 0 K}$ | Note |  |
| :--- | :---: | :---: | :---: | :---: | :--- | :---: |
| Driver Rollers |  | C | C | C | Dry cloth |  |
| Idle Rollers |  | C | C | C |  |  |
| Discharge Brush |  | C | C | C |  |  |
| Bushings | L |  |  |  | Lubricate with silicone oil if noisy. |  |
| Sensors |  | C | C | C | Blower brush. |  |
| Jogger Fences |  | I | I | I | Make sure screws are tight. |  |

### 2.1.4 COVER INTERPOSER TRAY B470

|  | EM | 60K | 120K | 180K | Note |  |
| :--- | :---: | :---: | :---: | :---: | :--- | :--- |
| The PM interval is for the number of sheets that have been fed. |  |  |  |  |  |  |
| Feed Belt |  | R | R | R | Replace as a set. |  |
| Pick-up Roller |  | R | R | R |  |  |
| Separation Roller |  | R | R | R |  |  |
| Driver Rollers |  | C | C | C | Damp clean cloth. |  |
| Idle Rollers |  | C | C | C |  |  |
| Discharge Brush |  | C | C | C |  |  |
| Bushings | L |  |  |  | Lubricate with silicone oil if noisy. |  |
| Sensors |  | C | C | C | Blower brush. |  |

### 2.1.5 3000-SHEET FINISHER B478

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

### 2.1.6 LCT B511, BYPASS TRAY B512

|  | 1000K | 2000K | 3000K | Expected | Note |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Paper feed roller | R | R | R |  |  |
| Pick-up roller | R | R | R |  |  |
| Separation roller | R | R | R |  |  |
| Transport guide plate |  |  |  |  |  |
| Grip roller |  |  |  |  |  |

### 2.1.7 PUNCH UNIT B377, B531, A812

|  | EM | 300 K | 450 K | 600 K | Note |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Punch Waste Hopper |  | I | I | I | Remove and empty as required. |

## Main Lubrication

Types of Grease

| a | Grease 501 | d | Heat Resisting Grease MT-78 |
| :--- | :--- | :---: | :--- |
| b | Grease Barrierta - JFE 5 5/2 | e | Launa Oil 40 |
| c | Grease - KS660 - SHIN-ETSU |  |  |

## Toner Bank

| No. | Lubrication Point | Type of <br> Grease | Note/Remarks |
| :---: | :---: | :---: | :--- |
| 3 | Shaft holes of driving case | a | Only when the toner bank is <br> disassembled for servicing. |
| 4 | Drive gears for toner chuck | a |  |
| 5 | Vibrating plate link bracket | d | Only when the toner bank is <br> disassembled for servicing. |



## Transfer

| No. | Lubrication Point | Type of Grease |
| :---: | :--- | :---: |
| 5 | Spring plate surface of the transfer unit | d |
| 6 | Both edges of the transport driven roller. Shaft of the <br> drive roller. | c |
| 7 | Upper part of the bias roller terminal | c |



No. 6

No. 6


PM PARTS

PCU

| No. | Lubrication Point | Type of Grease |
| :---: | :---: | :---: |
| 9 | Shaft of the Cleaning Blade Bracket | e |



No. 12
Fusing

| No. | Lubrication Point | Type of Grease |
| :---: | :--- | :---: |
| 10 | Outer, inner surface of bushings, gears | b |
| 11 | Inner surface of pressure roller where contacts the ball <br> bearing | b |
| 12 | Web drive gears | b |
| 13 | Fusing unit drive gears | b |
| 14 | Between shaft, web bracket | b |

No. 10


## No. 14

No. 10



No. 11




## Duplex

| No. | Lubrication Point | Type of <br> Grease |
| :---: | :--- | :---: |
| 14 | Shaft of Entrance Guide | a |
| 15 | Shaft of Duplex Junction Gate | a |
| 16 | Jogger Guide Rod \& Inverter Exit Guide Screw | d |
| 17 | Lock Arm and Release Bracket |  |



No. 16



## Paper Feed

| No. | Lubrication Point | Type of <br> Grease |
| :---: | :--- | :---: |
| 17 | Registration roller bushings | d |
| 18 | Paper feed drive gears | a |
| 19 | Paper feed/transport drive gears | a |



REPLACEMENT AND ADJUSTMENT

## 3. REPLACEMENT AND ADJUSTMENT

### 3.1 GENERAL CAUTIONS

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

### 3.1.1 DRUM

An organic photoconductor (OPC) drum is more sensitive to light and ammonia gas than a selenium drum. Follow the cautions below when handling an OPC drum.

1. Never expose the drum to direct sunlight.
2. Never expose the drum to direct light of more than 1,000 Lux for more than a minute.
3. Never touch the drum surface with bare hands. When the drum surface is touched with a finger or becomes dirty, wipe it with a dry cloth or clean it with wet cotton. Wipe with a dry cloth after cleaning with wet cotton.
4. Never use alcohol to clean the drum; alcohol dissolves the drum surface.
5. Store the drum in a cool, dry place away from heat.
6. Take care not to scratch the drum as the drum layer is thin and is easily damaged.
7. Never expose the drum to corrosive gases such as ammonia gas.
8. Always keep the drum in the protective sheet when keeping the drum unit, or the drum itself, out of the copier. Doing so avoids exposing it to bright light or direct sunlight, and will protect it from light fatigue.
9. Dispose of used drums in accordance with local regulations.
10. When installing a new drum, execute SP2962 (Auto Process Control Execution).

### 3.1.2 DRUM UNIT

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

### 3.1.3 TRANSFER BELT UNIT

1. Never touch the transfer belt surface with bare hands.
2. Take care not to scratch the transfer belt, as the surface is easily damaged.
3. Before installing the new transfer belt, clean all the rollers and the inner part of the transfer belt with a dry cloth to prevent the belt from slipping.

### 3.1.4 SCANNER UNIT

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

### 3.1.5 LASER UNIT

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

### 3.1.6 CHARGE CORONA

1. Clean the corona wires with a dry cloth. Do not use sandpaper or solvent.
2. Clean the charge corona casing with water first to remove NOx based compounds. Then clean it with alcohol if any toner still remains on the casing.
3. Clean the end block with a blower brush first to remove toner and paper dust. Then clean with alcohol if any toner still remains.
4. Do not touch the corona wires with bare hands. Oil stains from fingers may cause uneven image density on copies.
5. Make sure that the wires are correctly between the cleaner pads and that there is no foreign material (iron filings, etc.) on the casing.
6. When installing new corona wires, do not bend or scratch the wire surface. Doing so may cause uneven charge. Also be sure that the corona wires are correctly positioned in the end blocks.
7. Clean the grid plate with a blower brush (not with a dry cloth).
8. Do not touch the charge grid plate with bare hands. Also, do not bend the charge grid plate or make any dent in it. Doing so may cause uneven charge.

### 3.1.7 DEVELOPMENT

1. Be careful not to nick or scratch the development roller.
2. Place the development unit on a sheet of paper after removing it from the copier.
3. Never disassemble the development roller assembly. The position of the doctor plate is set with special tools and instruments at the factory to ensure the proper gap between the doctor blade and the development roller.
4. Clean the drive gears after removing used developer.
5. Dispose of used developer in accordance with local regulations.
6. Never load types of developer and toner into the development unit other than specified for this model. Doing so will cause poor copy quality and toner scattering.
7. Immediately after installing new developer, the TD sensor initial setting procedure should be performed with SP2801 (TD Sensor Initialization) to avoid damage to the copier. Do not perform the TD sensor initial setting with used developer. Do not make any copies before doing the TD sensor initial setting.
8. When using a vacuum cleaner to clean the development unit casing, always ground the casing with your fingers to avoid damaging the toner density sensor with static electricity.
9. When replacing the TD sensor, replace the developer, then execute SP2801 (TD Sensor Initialization) and SP2962 (Auto Process Control Execution).

### 3.1.8 CLEANING

1. When servicing the cleaning section, be careful not to damage the edge of the cleaning blade.
2. Do not touch the cleaning blade with bare hands.
3. Before disassembling the cleaning section, place a sheet of paper under it to catch any toner falling from it.

### 3.1.9 FUSING UNIT

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

### 3.1.10 PAPER FEED

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

### 3.1.11 USED TONER

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

### 3.2 SPECIAL TOOLS AND LUBRICANTS

### 3.2.1 SPECIAL TOOLS

|  | Part No. |
| :---: | :--- |
|  |  |
| A0069104 | Scanner Positioning Pin (4 pcs./set) |
| A2929500 | Test Chart - S5S (10 pcs./set) |
| A0299387 | Digital Multimeter - FLUKE 87 |
|  | B6455010 | SD (Secure Digital) Card - 64 MB 1

### 3.2.2 LUBRICANTS

| Part No. | Description |
| :---: | :--- |
| A2579300 | Grease Barrierta - JFE 5 5/2 |
| 52039502 | Silicon Grease G-501 |

# . CAUTION <br> Turn off the main power switch and unplug the machine before attempting any procedure in this section. 

### 3.3 DOORS AND COVERS

### 3.3.1 FRONT DOORS



1. Open the left door $[A]$.
2. Bracket $[B]\binom{$ 舟 }{$\times 1}$.
3. Lift up the left door and remove it.
4. Open the right door [C].
5. Bracket [D] (
6. Lift up the right door and remove it.

### 3.3.2 RIGHT COVERS



1. Right upper cover $[A]$ ( $\hat{\xi}^{2} \times 4$ ).
2. Right lower cover $[B]\left(\mathcal{S}^{2} \times 4\right)$.

## DOORS AND COVERS

### 3.3.3 LEFT COVERS



1. Disconnect the optional finisher, if it is installed.
2. Remove the front and rear joint brackets $[A]$ ( was installed.
3. Left upper cover $[B]\left(\begin{array}{l}\text { 雨 } \times 4)\end{array}\right.$
4. Left lower cover [C] (

### 3.3.4 REAR COVERS AND CONTROLLER BOX DOOR



## Rear Covers

1. Disconnect the ADF connector [A].
2. Rear upper cover $[B](\hat{\xi} \times 4)$
3. Rear lower cover [C] (

## Opening the Controller Box

1. Remove the screws on the left [D] ( $\hat{\xi} \times 3$ ).
2. Swing open the controller box.

NOTE: To close the controller box door, fasten the top screw first to ensure that the holes for the other two screws are aligned correctly with the holes of the machine frame, then fasten the other two screws.

## DOCUMENT FEEDER

### 3.4 DOCUMENT FEEDER

### 3.4.1 ADF COVERS



1. Front cover $[A](\hat{\xi} \times 2)$.
2. Rear cover $[B](\hat{\xi} \times 2)$.
3. Left cover [C] (
4. Original exit tray. ( -3.5 .5 )

5. Upper exit cover $[E]\left(\begin{array}{l}\text { ( }\end{array}\right.$ )

### 3.4.2 ADF ORIGINAL TRAY



Original Tray

1. Remove the front and rear covers.
2. Original tray $[A](\hat{\xi} \times 4)$.

## Original Table Cover

1. Remove the ADF front and rear covers. (-3.4.1)
2. Remove the original tray $[A]$.
3. Original table cover $[B]\left(\begin{array}{l}\text { 雨 } \times 2)\end{array}\right.$.

## Bottom Plate

1. Remove the ADF front and rear covers. (-3.4.1)
2. Remove the original tray $[A]$.


### 3.4.3 FEED UNIT AND SEPARATION ROLLER



1. Open the left cover.
2. Clip $[A]$.
3. Remove the feed unit $[B]$. Pull the feed unit to the front, release the shaft at the rear, and release the front bushing.
4. Separation roller cover [C].
5. Torque limiter $[D]$ and separation roller $[E]($ ( 53$) \times 1$ ).

### 3.4.4 FEED BELT



1. Feed unit. ( -3.4 .3 )
2. Pick-up roller unit $[\mathrm{A}]$.
3. Feed belt holder $[B]$.

NOTE: The springs [C] come off the feed belt cover easily.
4. Feed belt [D].

NOTE: When reinstalling the pick-up roller unit, make sure that levers [E] and [F] on the front and rear original guides are resting on the pick-up roller unit cover.

### 3.4.5 PICK-UP ROLLER



1. Open the left cover.
2. Feed unit (-3.4.3)
3. Snap rings $[A](\sqrt{3}) \times 2)$.
4. Two bushings [B].
5. Pick-up roller [C].

NOTE: When reinstalling the pick-up roller, make sure that the one-way clutch [D] is not on the gear side.

### 3.4.6 ADF SENSORS

## Entrance Sensor and Length Sensor



1. Left cover.
2. Guide plate $[A]\left(\mathcal{S}^{2} \times 5\right)$.
3. Entrance sensor [B] (E』ll x 1 ).
4. Length sensor bracket $[C](\hat{\xi} \times 2)$.


DOCUMENT FEEDER

## Registration Sensor



1. ADF front cover. (-3.4.1)
2. ADF left cover. (-3.4.1)
3. Release entrance guide $[A]\left(\mathcal{F}^{3} \times 2\right)$.
4. Release transport belt unit $[\mathrm{B}]\left(\begin{array}{l}(\hat{\xi} \times 3) \text {. }\end{array}\right.$
5. Sensor bracket $[C](\mathbb{E} \times 1)$.
6. Registration sensor [D] (

## Width Sensors



1. ADF front cover. (-3.4.1)
2. Feed unit. (-3.4.3)
3. Stopper screw [A].
4. Guide plate $[B](\hat{\xi} \times 2)$.
5. Release the front end of the upper transport roller [C] (bushing $\times 1$, $\xi \times 1$ ).
6. Sensor bracket [D] (雨 $\times 1$ ).
7. Width sensors $[E]$ ( $⿷^{\| l} \times 1$ each $)$.

## DOCUMENT FEEDER

## Exit Sensor, Inverter Sensor



1. Front and rear covers. (-3.4.1)
2. Original paper tray. (-3.5.5)
3. Exit guide unit $[A]\left(\mathcal{E}^{2} \times 5\right.$, $\mathrm{El}_{\mathrm{l}}^{\mathrm{l}} \mathrm{x} 1$ ).
4. Exit sensor $[B](E)=1)$.

NOTE: When reinstalling the exit guide unit, make sure that the guide plate [C] on the exit unit is over the exit gate [D].
5. Right cover $[E]$. ( -3.4 .1 )
6. Guide plate $[F](\hat{G} \times 3)$.
7. Inverter sensor $[G]\left(\mathbb{E}^{\mathbb{H}} \times 1\right)$.

### 3.4.7 TRANSPORT BELT


[D]


1. Front cover. (-3.4.1)
2. Release entrance guide $[A]\left(\hat{E}^{2} \times 2\right)$.
3. Release transport belt unit $[B](\hat{\xi} \times 3)$.
4. Fold the transport belt assembly extension [C].
5. Transport belt [D] and replace it.

NOTE: When installing the transport belt, make sure that the belt passes under the upper and lower belt guide spacers [E].
6. Execute SP6009 (DF Free Run) to do an ADF free run for 3 minutes. After the free run is finished, clean off any dust on the exposure glass.

## DOCUMENT FEEDER

### 3.4.8 ADF MOTORS



## Bottom Plate Motor, Pick-up Motor

1. Rear cover. (-3.4.1)

2. Pick-up motor $[B](\hat{\xi} \times 2$, 気 $\mathrm{E} \times 1)$.

[B]


## Feed-in, Transport, Feed-out Motors

1. Rear cover. (-3.4.1)
2. Feed-in motor $[A]\left(\hat{S}^{(1)} \times 4\right.$, 気 $\mathrm{E} \times 2$ ).
3. Transport motor $[B]\left(\hat{\xi} \times 4\right.$, 気 $\left.\|^{\|} \times 2\right)$.
4. Grounding wire $[C](\hat{\beta} \times 1)$.
5. Feed-out motor assembly [D] (
6. Feed-out motor $[E](\hat{\xi} \times 2)$.

### 3.4.9 FEED-IN CLUTCH



1. Rear cover. (-3.4.1)
2. Remove a screw from the band $[A]$.
3. Timing belt $[\mathrm{B}]$.
4. Pulley $[C]$ and bearing $[D]$ from the feed-in drive shaft ( $\& x 1$, $\operatorname{pin} \times 1$ ).
5. Pulley $[E]$ and bushing $[F]$ from the pick-up roller cam shaft ( $\S \times 1$, $\operatorname{pin} \times 1$ )
6. Bearings $[\mathrm{G}]$ from the feed belt drive shaft $(\xi \times 1)$.


7. Two bearings $[A]$ from the feed-in clutch shaft ( $\& x 1$ each).
8. Pulley $[B](\xi \times 1)$, pin and timing belt $[C]$.
9. Feed-in clutch [D].

NOTE: When re-installing the feed-in clutch, put the stopper screw [E] in the clutch hook.

### 3.5 SCANNER UNIT

### 3.5.1 EXPOSURE GLASS



1. Left scale $[A]\left(\mathcal{S}^{2} \times 3\right)$.
2. Rear scale $[B]$ ( $\times 2$ ). Slide in the direction of the arrow to remove.
3. Exposure glass [C].

NOTE: When positioning the exposure glass for re-installation, make sure that the white dot $[D]$ is at the rear left corner.

### 3.5.2 ORIGINAL SIZE SENSORS



## .CAUTION <br> Turn off the main switch and unplug the machine before performing this procedure. Laser beams can seriously damage the eyes.

1. Exposure glass (-3.5.1).
2. Lens cover $[A](\hat{\xi} \times 6)$.

3. Original width sensor [C] (
4. Original length sensors [D] (
5. After re-assembly, do the scanner and printer copy adjustment. (-3.15)

### 3.5.3 EXPOSURE LAMP



1. Exposure glass. (-3.5.1).
 (-3.5.7)
2. Lamp regulator cover $[A]\left({ }^{2} \times 2\right)$.
3. Exposure lamp $[B]\left(\hat{E}^{3} \times 2\right.$, 妞 $\mathbb{\#} \times 1$ ).

NOTE: When reinstalling the exposure lamp, pass the cable through the opening [C] in the bracket.

### 3.5.4 LAMP REGULATOR



1. Exposure glass. (-3.5.1)
2. Lamp regulator cover $[A]\left({ }^{(1)} \times 2\right)$.
3. Slide the holder $[B]$ in the direction of the arrow. Then disconnect the flat cable [C].
4. Lamp regulator [D] (

### 3.5.5 OPTICS DUST FILTER



1. Original exit tray $[A]\left(\mathcal{E}^{2} \times 3\right)$.
2. Optics dust filter $[B]$.

### 3.5.6 SCANNER H.P. SENSOR



1. Front upper cover. (-3.5.7)
2. Upper right, inner cover $[A]\left(\mathcal{S}^{2} \times 4\right)$.
3. Upper left inner cover $[B](\hat{\xi} \times 3)$.
4. Scanner HP sensor bracket [C] (雨 $\times 1$ ).
5. Scanner HP sensor [D] (E\#ll E 1).

### 3.5.7 SCANNER MOTOR



1. Exposure glass. (-3.5.1).
2. Left upper cover. (-3.3.3).
3. Front upper cover $[A]\left(\hat{\xi}^{2} \times 7\right.$, 気 $\times 1$ ).
4. Scanner motor assembly $[B]$ ( $\mathrm{E}^{\boldsymbol{U}} \mathrm{d} \times 2$, $\times 3$ ).
5. Scanner motor from the bracket [C] ( $\hat{\xi}^{7} \times 3$ ).
6. After reassembly, do the copy image adjustments. ( 3.15)

### 3.5.8 SCANNER DRIVE WIRES

## Preparation




1. Remove the ADF.
2. Original exit tray $[A]\left(\mathcal{E}^{2} \times 3\right)$.


3. Scanner right cover [D] (気 $\times 4$ ).
4. Bracket [E] (会 $\times 4$ ).
5. Scanner frame $[F]\left(\mathcal{F}^{2} \times 10\right)$.

## Front, Rear Scanner Drive Wires




1. Wire tension bracket $[A]\left(\mathcal{S}^{3} \times 1\right)$.
2. Front scanner wire bracket $[B]$.
3. Front scanner wire.

## Reinstallation

1. Scanner wire pulley $[C]\left(\mathcal{N}^{2} \times 1\right)$.
2. While making sure of the direction, place the beads on the middle of the wire on the pulley openings. Then wind the wire (ball side) 3 times and the other side (ring side) once as shown (1). Secure the pulley with tape to keep this condition.
3. Install the pulley on the scanner drive shaft (
4. Wind the end of the wire with the ball as shown (2,(3),(4).
5. Wind the end of the wire with the ring as shown (5),(6,(7).
6. Install the tension spring on the tension bracket, and slightly tighten the tension bracket (気×1).

7. Install the 1st scanner and adjust the position with the positioning tools [A].
8. Secure the 1st scanner with the scanner wire bracket $[B]\left(\mathcal{S}^{-1} \times 1\right)$.
9. Tighten the tension bracket [C] and remove the tape.
10. Remove the positioning tools. After sliding the scanner to the right and left several times, set the positioning tools to check the scanner wire bracket and the tension bracket again.
11. Reassemble the scanner and do the scanner and copy adjustments (-3.15)

### 3.6 LASER UNIT

## $\triangle$ WARNING

- Direct exposure to the eyes can seriously damage the eyes and cause permanent blindness. Always turn off the main power switch and unplug the machine before attempting any of the procedures described below.
- Allow enough time for the machine to cool and for the polygon motor to stop rotating. The polygon motor continues to rotate for about one to three minutes after the machine is switched off.
- Never power on the machine with any of these components removed: 1) LD unit, 2) polygon motor cover, 3) synchronization detector.


### 3.6.1 CAUTION DECALS

Two caution decals are provided for the laser section.


### 3.6.2 LENS BLOCK


$\triangle$ WWARNING
Turn off the main power switch and unplug the machine before performing this procedure. Laser beams can seriously damage the eyes.

1. Exposure glass ( -3.5 .1 ).
2. Lens cover $[A]\left(\hat{\xi}^{7} \times 6\right)$.

3. After reassembly, do the scanner and printer copy adjustment. (-3.15)

NOTE: There are no field adjustments for the lens block.

### 3.6.3 LD UNIT

## $\triangle$ WARNING

Turn off the main power switch and unplug the machine before attempting this procedure. Laser beams can seriously damage the eyes.

NOTE: To avoid damaging the board with static electricity, never touch the printed circuit board.

1. Exposure glass (-3.5.1)



- Before removal, note how the LD [B] unit is inserted into the 4 seams of the optical housing (the thickness is different according to color). This positioning is used for fine adjustment of the LD unit position. Make sure that you install the LD at the same position.
- Be sure to remove the mylar from the underside of the old LD unit
 and attach it to the new one.

4. After installing the LD unit, execute SP2115 001~007 to input the pitch settings for the main scan beams.

NOTE: The correct settings for these SP codes are printed on a decal attached to the mounting bracket [C] of the LD unit.

```
<LD Unit Lot No.>
SP2115 001/SP2115 002/SP2115 003
PS2115 004/SP2115 005/SP2115 006/SP2115 007
```

The 7 numbers printed on the label correspond to the correct settings of the SP codes shown in the diagram above.

To enter these numbers, you would execute:

| SP2115 001 | *(1)(0) | - Press $\circledast^{*}$ to enter the minus sign. |
| :---: | :---: | :---: |
| SP2115 002 | * $\overbrace{}^{(2)}$ | - Press \# after each entry. |
| SP2115 003 | (1)(0) | n. |
| SP2115 004 | *(1)(0) | Here is an example: |
| SP2115 005 | (0) | -10/-2/+10 |
| SP2115 006 | (1)(0) 0 | -100/+0/+100 |
| SP2115 007 | (1)(\#) |  |

CAUTION: This example is for instructional purposes only. When you do this adjustment, you must enter the numbers printed on the label attached to the LD unit.
5. Do SP2962 (Auto Process Control Execution).
6. Make some test copies and check that the magnification is correct. If not correct, please do the printer copy adjustment. ( -3.17 )

## LD Unit Adjustment Procedure

Please perform the following if the spacers attached to the bottom of the LD unit are misplaced or their original positions become unclear at LD unit replacement. This adjustment is necessary to ensure ID variations along the main scan direction do not occur, which result from beam pitch variations along the sub scan direction.

IMPORTANT: Always make sure to turn the machine main power OFF before inserting the spacers into the LD unit.

1. Print out the SP2902-3 No. 22 test pattern without any Mylar spacers attached.

Using the illustration for LD Unit 3.6.3, perform the following two steps until the ID variation along the main scan direction is not visible on the test chart:
2. Attach one $100 \mu \mathrm{~m}$ (milk white) spacer in the rear of the unit. Print out the pattern again and compare with the sample from Step 1.

- If the ID variation along the main scan direction decreases (improves) but is still visible, attach another $100 \mu \mathrm{~m}$ spacer in the same position.
- If the ID variation gets worse, go on to Step 3.

3. Attach one $100 \mu \mathrm{~m}$ spacer in the front of the unit. Print out the pattern again and compare with the sample from Step 2.

- If the ID variation along the mainscan direction decreases (improves) but is still visible, attach another $100 \mu \mathrm{~m}$ spacer in the same position.

NOTE: Refer to Technical Service Bulletin B070/B071 - 014 for more information.

### 3.6.4 POLYGON MIRROR MOTOR



NOTE: To avoid damaging the polygon motor, switch the machine off and wait 3 minutes to allow the motor to stop rotating before removing it.

1. Turn off the main power switch and unplug the machine.
2. Exposure glass (-3.5.1)
3. Lens block cover and lens block. (-3.6.2)

NOTE: You do not need to remove the lens block completely. Lift it gently and move it to the right.

5. Polygon mirror motor $[B]\left(\hat{\beta} \times 3, E_{l}^{\|} \times 1\right)$.

NOTE: 1) When reinstalling, make sure that the polygon mirror opening faces the right.
2) Never touch the glass surface of the polygon mirror motor with bare hands.
$\Rightarrow 7$. After reassembly, do the scanner and printer copy adjustments.

### 3.6.5 LASER SYNCHRONIZATION DETECTOR



1. Turn off the main power switch and unplug the machine.
2. Exposure glass (-3.5.1)
3. Lens block cover and lens block. (-3.6.2)

NOTE: You do no need to remove the lens block completely. Lift it gently and move it to the right.
4. Detector cover $[A](\hat{\xi} \times 2)$.


### 3.7 DRUM UNIT

### 3.7.1 DRUM UNIT

## Drum Removal



### 3.7.2 QUENCHING LAMP



1. Remove the drum. (-3.7.1)

NOTE: Wrap a protective sheet or a few sheets of paper around the drum to protect it from light.
2. Pull up the quenching lamp connector cable [A] slightly, then release the hook [B] at the center of the quenching lamp.
NOTE: Do not pull the wire too strongly.
3. Disconnect [C].

### 3.7.3 GRID PLATE, CHARGE CORONA WIRE, WIRE CLEANER



2. Grid plate $[\mathrm{B}](\mathrm{\xi} \times 1$, hooks $\times 4)$.

- When installing the grid plate, do not over tighten the plastic screw [C].
- Never touch the corona wire and grid plate with bare hands.


3. Remove the front grid terminal $[A]$, then the front block cover $[B]$.
4. Plate [C].
5. Terminal spring [D].
6. Slide the rear grid terminal $[E]$ to the rear and remove it, then remove the rear end block cover [F].
7. Charge corona wire [G].

8. Wire cleaner [A] (佼 $\times 1$ ).
9. Install the wire cleaner and the charge corona wire. NOTE: Put the joint part $[B]$ of the wire in the rear end block.
10. After installing new wires, reset SP codes SP2001 001 to 2001006 (Corona Voltage and Current) to their defaults.
11. Execute SP2962 (Auto Process Control Execution).

### 3.7.4 DRUM POTENTIAL SENSOR



1. Remove the drum unit. ( -3.7 .1 )

NOTE: Before removing the drum potential sensor, put a few sheets of paper between the sensor and the drum to protect the drum surface.
2. Drum potential sensor $[B]$ and the grounding plate $[C]$ (
3. Execute SP2962 (Auto Process Control Execution).

NOTE: After replacing the drum potential sensor, you must always execute SP 2962.

### 3.7.5 DRUM CLEANING BLADE, ID SENSOR



1. Remove the drum unit. ( -3.7 .1 )
2. Cleaning blade $[A](\hat{\xi} \times 2)$.
3. Clean the side seals $[B]$ and cleaning brush [C]. (See 'Vacuum Cleaning' on the next page.)

4. Install the new cleaning blade.

NOTE: 1) To avoid damaging the edge of the blade and causing black lines on copies, never clean the blade with a cloth.
2) Never touch the edge of a new cleaning blade.
3) If setting powder or toner on the blade edge is removed at any point, reapply toner or setting powder at that point. When installing the cleaning blade, do not pinch the side seals.

## Vacuum Cleaning

To protect the electrical parts from static electricity, disconnect the connector on the charge power pack and remove the ID sensor.

1. Disconnect the 12-pin connector [A].
2. Separate the upper and lower drum units.
3. Remove the spur bracket $[B]$ and pick-off pawl bracket $[C](\hat{\xi} \times 2)$.
4. Disconnect the connector [D].
5. Slide the pick-off pawl bracket to the rear, while turning it counterclockwise (as seen from the front). The ID sensor is on this bracket.
6. After installing a new ID sensor, do SP3001 002 (ID Sensor Settings - ID Sensor Initialization).

### 3.7.6 CLEANING BRUSH



1. Cleaning blade. (-3.7.5)
2. Coupling gear $[A](\hat{\xi} \times 1)$.
3. Bushing $[B](\hat{\xi} \times 1)$.
4. Pull the cleaning brush shaft to the rear to release the cleaning brush [C], then remove the cleaning brush.
NOTE: Never touch the cleaning brush with bare hands.
5. After replacement, clean the ID sensor surface.
6. Execute SP3001 002 (ID Sensor Initial Settings - ID Sensor Initialization) to initialize the sensor.

### 3.7.7 PICK-OFF PAWLS



1. Remove the drum unit. ( -3.7 .1 )
2. Spur bracket $[A]$ and pick-off pawl bracket $[B]$ ( $\mathcal{E}^{7} \times 2$ ).
3. Bushing [C] (
4. While pulling the shaft [D] to the rear, turn the pick-off pawl shaft about 45 degrees clockwise (viewed from the front) to move up the pick-off pawl.
5. Pick-off pawl [E].

## Replacement

1. Do not forget to hook the tension spring [F].
2. After replacement, make sure the pick-off pawl moves smoothly.
3. Never touch the edge of the pick-off pawl.

### 3.7.8 DRUM FILTER



1. Open the front doors.

2. Drum filter $[B]$.

### 3.8 DEVELOPMENT AND TONER SUPPLY

### 3.8.1 DEVELOPMENT UNIT REMOVAL



1. Turn off the main switch.
[B]
2. Open the right door.
3. Right inner cover $[A]\left(\hat{\xi}^{3} \times 3\right)$.
4. Development support plate $[B]\left(\begin{array}{l}\text { 压 } \times 1)\end{array}\right.$.
5. Drum stay $[C](\hat{\xi} \times 1$, knob $\times 1)$

6. Disconnect the connectors [A].
7. Disconnect the toner suction hose [B] and set it on the hook provided to keep the hose elevated so it does not leak toner.
8. Grasp the knob [C] of the development unit and pull it out of the machine.

NOTE: 1) To prevent scratches on the drum, press the development unit to the right while pulling it out.
2) After installing the development unit, be sure to re-connect the connectors ( x 2 ) and suction hose.
3) When cleaning the unit with a vacuum cleaner, keep the development unit connector as far as possible away from the development unit.

### 3.8.2 DEVELOPER REPLACEMENT



1. Take out the development unit. (-3.8.1)
2. Place the development unit on a sheet of paper.
3. Toner hopper $[A](\hat{\xi} \times 2)$.
4. Turn over the development unit. Then turn the paddle roller knob $[B]$ counterclockwise to empty the remaining developer onto the sheet
NOTE: Dispose of used developer in accordance with local regulations. Make sure that no developer remains on the development rollers or in the development unit.

5. Remove the entrance seal $[A]\left(\mathcal{E}^{2} \times 2\right)$.
6. Clean the side seals $[B]$.
7. Clean the development sleeve [C].
8. Cover the sleeve rollers [D] with a sheet of paper to prevent the new developer from being attracted to the sleeve rollers.
9. If you are installing a new development unit, go to the next step.
-or-
If you are only replacing the developer, clean the doctor blade before you pour in the developer: (-3-55)
10. Pour in one pack of developer [E] evenly across the width of the development unit, while turning the knob [F].
11. Re-install the toner hopper, then re-assemble the machine.
12. Tilt the toner hopper so that there is toner near the toner hopper sensor.
13. Be sure to connect the connectors after installing the development unit in the machine.
14. Turn on the main switch, then execute SP2801 (TD Sensor Initial Setting).

- Use the keys on the screen to enter the Developer Lot No, then press \#\#. (The Lot No. is embossed on the top edge of the developer packet.)
- Press "Execute" on the LCD.

This executes the TD initial setting. After about 1 minute, "Completed" is displayed on the screen, and the execution stops automatically.
NOTE: Do not make copies with new developer until after executing SP2801; otherwise, toner density control will be abnormal.
15. If the developer initial setting did not complete correctly, you cannot exit the SP mode by pressing the "Quit" key. If this problem occurs, turn the main switch off and on, then perform the initial setting again. If the result is the same, see "SC342" (TD Sensor Error 3) ("4.Troubleshooting").

### 3.8.3 DOCTOR BLADE CLEANING

The doctor blade must be cleaned:

- At every PM visit.
- When replacing developer.

This procedure may need to be done more often if the customer is using paper that contains a large amount of paper dust. The dust tends to collect at the front and on the back side of the blade, causing the doctor gap to become narrower. Cleaning is required when:

- There is toner scatter from both ends of the development unit.
- White lines appear on copies.
- Faint reproduction of the image around the edges of the paper.

To do this procedure, you need a special tool.

| Part Number | Description |
| :--- | :---: |
| A2949560 | Paper Dust Cleaner - 5pcs/set |

NOTE: The tool is made of flexible plastic and can be re-used. However, before you use it, make sure that it is perfectly flat.


1. Remove the development unit from the machine.
2. Pour out the developer.
3. Remove the entrance seal $[A]\left(\mathcal{E}^{2} \times 2\right)$.
4. Flatten the paper dust cleaner [B] before you insert it.
5. Insert the tool into the gap [C] until you cannot see the leaf cutout.
6. Pull the tool back gently so that the leaf [D] hooks on the back of the blade. NOTE: To avoid bending the leaf, making it difficult to remove, do not pull it toward you with too much force.
7. While maintaining a steady, even pressure, slide the tool [E] all the way to the left and right ends of the gap several times.
8. Turn the tool about 45 degrees to either side then remove it.
9. Rotate the development roller about 10 mm (about $1 / 2^{\prime \prime}$ ) toward you, then vacuum away any paper dust or developer that falls away from the roller. NOTE: Be sure to collect all the dust and developer, and do not allow it to touch the development roller surface again.
10. Repeat steps 4 to 8 about 5 times.
11. Hold the development unit upside-down, gently shake the unit to remove any remaining paper dust, then vacuum clean the work area.
12. To complete the procedure, return to Step 10 on page 3-58.

NOTE: Be sure to clean the development sleeve before you proceed.

### 3.8.4 DEVELOPMENT UNIT FILTERS



1. Development unit. (-3.8.1)
2. Dust filter cover [A] (hooks $\times 4$ ).
3. Center development filter $[B]$.
4. Spread the base of the front dust filter cover [C] and remove it.
5. Front dust filter [D].

NOTE: Make sure that the beveled corner of each dust filter fits into the beveled corner of the holder below.

### 3.8.5 DEVELOPMENT UNIT TONER SUCTION PUMP



1. Right upper cover ( $\hat{\xi}^{(1)} \times 4$ ).


### 3.8.6 DEVELOPMENT UNIT WASTE TONER BOTTLE



1. Open the front right door.
2. Tap the hose $[A]$ to clear toner from the opening of the hose.
3. Bracket $[B](\hat{\beta} \times 1)$.
4. Waste toner bottle [C] (hose $\times 1$ ).

NOTE: During transport and disposal of the used bottle, make sure that toner does not spill from top opening [D].

### 3.8.7 DEVELOPMENT ENTRANCE, FRONT, AND REAR SIDE SEALS



1. Remove the developer and save it.
2. Replace the developer entrance seal $[A]$ (
3. Replace the front and rear side seals $[B]$.

NOTE: When re-assembling the development unit, align the edges of the new side seals [C] with the edges [D].

### 3.8.8 TONER DENSITY SENSOR



1. Remove the developer. (-3.8.2)
2. Remove the TD sensor $[A]\left(\mathcal{E}^{2} \times 2\right)$.
3. Thoroughly clean the development unit, so no carrier particles remain in the gap between the TD sensor and the development unit casing.
4. Install the new TD sensor
5. Install new developer and reassemble the development unit. (-3.8.2)
6. Execute SP2801 (TD Sensor Initial Setting). (-3.8.2)
7. Execute SP2962 (Auto Process Control Execution).

NOTE: Do not make any copies until you have executed SP2801 (TD Sensor Initial Setting).

### 3.8.9 TONER HOPPER



1. Take out the development unit. (-3.8.1)
2. Replace the toner hopper (

NOTE: The new toner hopper has a red gear. This red gear is used for Step 3 only.
3. Execute SP2207 002 (Toner Bank Toner Setup).

NOTE: Occasionally, SP2207 002 finishes within a few seconds. If this occurs, execute SP2207 002 again. This operation normally continues for about 5 minutes.
4. Remove the white gear $[A]$ from the old toner hopper.
5. Remove the red gear $[B]$ from the new hopper and replace it with the white gear from the old toner hopper.
NOTE: The white gear is used for machine operation.

### 3.8.10 TONER HOPPER SENSOR



1. Take out the toner hopper. (-3.8.2)
2. Toner hopper sensor $[A]\left(\mathcal{S}^{2} \times 2\right)$.

### 3.8.11 DEVELOPMENT MOTOR



1. Turn off the main switch.
2. Rear upper cover ( $\hat{\xi} \times 4$ ). ( -3.3 .4 )
3. Flywheel (
4. Development motor unit $[A](\hat{\xi} \times 4$, 気具 $\times 2$, hooks $\times 1$ ).

### 3.8.12 DEVELOPMENT ROLLER SHAFT CLEANING



1. Remove the development unit. (-3.8.1)
2. Use Teflon tape to remove toner and developer from the development roller shafts.

### 3.9 TRANSFER BELT UNIT

### 3.9.1 TRANSFER BELT UNIT REMOVAL



1. Turn off the main switch.
2. Remove the right inner cover. (-3.8.1)
3. Remove the transfer belt unit holder $[A](\hat{\xi} \times 1)$.
4. Connector $[B](E \mathbb{E} \times 1)$.
5. While turning the lever [C] counterclockwise, take out the transfer belt unit.

NOTE: 1) Never touch the transfer belt with bare hands.
2) Work carefully to avoid scratching the drum with the transfer belt unit.

## Reassembly:

1. Rotate the lever [C] fully counterclockwise, then install the transfer belt unit.
2. Insert the gear $[D]$ into the opening $[E]$ in the rear frame.
3. Place the slot $[F]$ in the transfer belt unit on the rail.
4. Connect the connector $[B]\left(⿷_{\# \#}^{\#} \times 1\right)$.


5. Attach the transfer belt unit holder [A] ( $\mathbb{Z}^{2} \times 1$ ).

NOTE: Align the three holes $[B]$ with the three projections [C].
6. After installation, check the following points:

- The transfer belt unit must move up and down smoothly.
- Part [D] of the transfer belt unit must be behind the drum stay.
- Part [D] of the transfer belt unit must be set in the indent [E] in the drum unit casing.


### 3.9.2 TRANSFER BELT



1. Remove the transfer belt unit. ( -3.9 .1 )
2. Raise knob $[A]$, then disconnect the connectors $[B]$ ( $\mathrm{E}_{\mathrm{ll}}^{\mathrm{l}} \times 2$ ).
3. Turn the transfer belt upper unit [C] 90 degrees counterclockwise, then raise and remove it.


4. Turn the belt drive roller holder [A] clockwise (front view) and remove the transfer belt [B].
5. Clean both sides of the transfer belt with a dry cloth.

## CAUTION: Do not use alcohol.

## Before Installing or Replacing the Transfer Belt

Clean the following items with alcohol:

- Belt drive roller [C]
- Belt roller [D]
- Bias roller [E]


## Installing the Transfer Belt

1. Position the transfer belt at the center of the belt roller [D] so both marks [F] are visible.
2. Position the transfer belt under the bias terminals [G] (see the previous page).

### 3.9.3 TRANSFER BELT CLEANING BLADE



1. Remove the transfer belt unit. (-3.9.1)
2. Transfer belt cleaning blade $[A]\left(\begin{array}{l}\text { 全 }\end{array} \times 2\right)$.
3. Clean the cleaning bias roller [B].

NOTE: Before vacuuming, remove the power pack connectors [C] to protect the transfer power pack from static electricity.
4. Install the new cleaning blade.

NOTE: Never touch the edge of the cleaning blade. If the setting powder on the blade edge is accidentally removed at some point, apply setting powder or toner at that point before installation.

### 3.9.4 TRANSFER BELT BIAS BRUSH



1. Transfer belt. (-3.9.2)
2. Transfer belt bias brush holder $[A](\hat{\xi} \times 1)$.
3. Transfer belt bias brush [B].

## PAPER FEED

### 3.10 PAPER FEED

### 3.10.1 PAPER TRAYS

## Tandem Tray


[C]

1. Open the front doors.
2. Open the tandem feed tray $[A]$ so the right tandem tray $[B]$ fully separates from the left tray.
3. Push in the right tandem tray.
4. Left tandem tray [C] ( $\left.\hat{\xi}^{2} \times 5\right)$.

5. Right tandem tray $[A]$ (

NOTE: 1) When re-installing the right tandem tray, make sure that the wheels [B] ride on the slide rail [C].
2) When re-installing the right tandem tray, make sure that the tandem tray stopper $[D]$ is set behind the stopper [E] on the copier frame.
3) Use M4 x 4 screws [F] to secure the right tandem tray. Screws longer than 4 mm will prevent the right tandem tray from sliding out and in smoothly.

## PAPER FEED

## Universal Tray



1. Pull open tray 2 or tray $3[A]$.
2. Lift the tray $[B]$ out of the drawer.

### 3.10.2 PAPER FEED ROLLERS



1. Turn off the main switch.
2. Paper tray for the appropriate feed unit. ( -3.10 .1 )
3. Pick-up roller $[A](\mathbb{C}) \times 1)$.

4. Remove separation roller [C] from the torque limiter $[D]($ ( 3$) \times 1)$.

NOTE: 1) The feed rollers of the main machine and the LCT are not interchangeable because they turn in different directions. After replacing a feed roller in the main machine, always make sure that it turns counterclockwise in the direction of paper feed.
2) Do not touch the surface of the rollers with your bare hands.
6. Reset the appropriate counter after installing the new rollers.
4. Service Tables - SP7816 (Print Counter Reset - Paper Trays).

### 3.10.3 PAPER FEED AND VERTICAL TRANSPORT CLUTCHES, TRAY LIFT AND PAPER FEED SENSORS



NOTE: This procedure uses the 1 st feed unit as an example. The procedures for the 2nd and 3rd trays are almost identical.

1. Turn off the main switch.
2. Right front door. (-3.1.1)
3. Right lower cover. (-3.1.2)

NOTE: If the LCT is installed, disconnect it.
4. Toner collection bottle (-3.6.5)
5. Lift the vertical transport guide $[A]$ and remove it.
6. Screw $[B]$ and knob [C].
7. Pull out the 1st tray (tandem tray), then remove the paper tray unit inner cover [D] (刍 $\times 2$ ).

[B]

NOTE: When re-installing the inner vertical transport guide, set the pin [B] of the inner vertical transport guide into the slot [C] on the main body.
9. Disconnect [D] (
10. Paper feed unit $[E]$ ( $\hat{\xi} \times 2$ ).

NOTE: Before removing any paper feed unit, remove the inner vertical transport guide [A]. Otherwise, the paper feed unit may be damaged.


11．Paper feed clutch $[A]$（ $\mathrm{E}_{\mathrm{ll}}^{\mathrm{l}} \times 1$ ）．
12．Vertical transport clutch $[B]$（ $\mathrm{E}_{\mathrm{N}}^{\mathrm{N}} \times 1$ ）．
13．When re－installing the clutches，put the stopper［C］of each clutch on the correct hook on the bracket．

15．Paper feed sensor［E］（令 $\times 1$ ，気喪 $\times 1$ ）．

### 3.10.4 REAR FENCE RETURN SENSOR



1. Turn off the main switch.
2. Pull out the left tandem tray.
3. Rear bottom plate $[A](\hat{\xi} \times 1)$.
4. Rear fence return sensor $[B]\left(⿷^{\mathbb{E}} \mathrm{x} 1\right.$ ).

## PAPER FEED

### 3.10.5 REAR FENCE HP SENSOR



1. Turn off the main switch.
2. Pull out the left tandem tray.
3. Rear bottom plate $[A](\hat{\xi} \times 1)$.
4. Rear fence transport gear $[B](\mathbb{Z} \times 1)$.
5. Move the rear fence [C] to the right.
6. Rear fence HP sensor [D] (E』ll $\times 1$ ).

### 3.10.6 1ST TRAY RIGHT PAPER SENSOR



1. Turn off the main switch.
2. Right tandem tray. (-3.10.1)
3. Inner cover [A] ( $\mathcal{E}^{2} \times 2$ ).
4. Side fences $[B]$ (

NOTE: When re-installing the side fences, make sure that the position of the side fences is correct.
A4: Outer, LT: Inner
5. Bottom plate [C] (央 $\times 4$ ).
6. Right 1st tray paper sensor [D] ( $\hat{\xi^{3} \times 1, ~(\# l l l} \times 1$ ).

### 3.10.7 BOTTOM PLATE LIFT WIRE

NOTE: Before replacing the rear bottom plate lift wire, remove the front bottom plate lift wire. The procedure for the two wires is the same.


1. Right tandem tray. ( -3.10 .1 )
2. Inner cover ( $\hat{\xi}^{(1)} \times 2$ ). ( -3.10 .6 )
3. Sensor bracket $[A](\hat{E} \times 3)$.
4. Slightly lift the front bottom plate and unhook the wire stoppers $[B]$, remove stopper [C] and actuator [D].
5. Wire covers [E] ( $\& \times 1$ each).
6. Bracket $[F]\left(\xi^{8} \times 1\right.$, $\& \times 1$, bushing $\left.\times 1\right)$.
7. Gear [G].
8. Bottom plate lift wire [I].


## Re-installation

When re-installing the bottom plate lift wire:

1. Set the positioning pin $[A]$ in the hole $[B]$.
2. Set the projection [C] in the hole [D].
3. Position the wire as shown [E].

NOTE: Do not cross the wires.

## PAPER FEED

### 3.10.8 PAPER DUST TRAY, REGISTRATION SENSOR CLEANING



## Paper Dust Tray Cleaning

1. Development unit. (-3.6.1)
2. Disconnect $[A]$ ( $\mathrm{E}^{\text {Ul }} \times 1$ ).
3. Release clamp [B].
4. Guide plate $[C](\hat{\xi} \times 2)$
5. Use a clean dry cloth to remove the paper dust in the tray [D].

## Registration Sensor Cleaning

Use a blower brush to clean the registration sensor [E] on the guide plate.

### 3.10.9 2ND AND 3RD TRAY SIZE SWITCHES



1. Rear lower cover. (-3.1.4)
2. Open the controller box ( $\mathcal{\xi}^{(1)} \times 2$ )

3. 2nd tray size switch bracket $[A]\left({ }^{2} \times 2\right)$

4. 3rd tray size switch bracket [C] ( $\hat{\xi} \times 2$ )


## PAPER FEED

### 3.10.10 ST TRAY LIFT MOTOR



1. Rear lower cover. (-3.1.6)
2. PSU-E. (-3.14.4)

3. Tension spring $[A]$.
4. Upper timing belt $[B]$.
5. Connector [C] ( $\mathrm{E}^{2 l l} \times 1$ )
6. 1st tray lift motor [D] ( $\hat{\xi}^{3} \times 3$ ).

### 3.10.11 2ND, 3RD TRAY LIFT MOTORS, LOWER TIMING BELT



## 2nd, 3rd Tray Lift Motors

1. Turn off the main switch.
2. Lower rear cover. (
3. Open the control box door. (-3.1.4)
4. IOB with bracket. (-3.14.3)
5. PSU-E. (-3.14.4)
6. 2nd tray lift motor $[A]$ (忥 $\times 1, \hat{1} \times 2$ ).


## Lower Timing Belt

1. Upper timing belt. (-3.10.10)
2. Tension spring [C].
3. Lower timing belt [D].

### 3.10.12 PAPER FEED MOTOR



1. Upper and lower timing belts. ( $-3.10 .10,3.10 .11$ )

2. Slide the motor $[B]$ to the left (1) then turn it (2).
3. Slide the motor [C] to the front (3) to remove it.

### 3.10.13 RELAY MOTOR, UPPER RELAY CLUTCH, LCT RELAY CLUTCH




1. Rear upper cover. (-3.1.4)
2. Flywheel $[A]\left(\mathcal{E}^{2} \times 3\right)$.

3. Upper relay clutch [C] ( $\& \times 1$, 伟 $\times 1$ ).

4. LCT relay clutch $[A](\& x 1$, 気 $x 1)$.

## Re-assembly

1. To re-install the LCT relay clutch $[A]$, insert the pin of the clutch stopper into the cutout of the clutch.
2. To re-install the relay clutch $[B]$, insert the pin [C] of the of the clutch stopper [D] into the cutout [E] of the clutch.

### 3.10.14 REGISTRATION MOTOR



1. Rear upper cover. (-3.1.4)
2. Flywheel ( $\hat{\xi} \times 3$ ).
3. Timing belt [A].
4. Bracket $[B]$ and motor $\left(\hat{\xi} \times 3, \xi^{\#} \times 1\right)$.
5. Registration motor $[C]$ ( $\hat{\xi^{3}} \times 3$, timing belt $\times 1$, spring $\times 1$ ).

## PAPER FEED

### 3.10.15 DEVELOPMENT FAN MOTORS, COPIER FEED UNIT



1. Right upper inner cover. (-3.1.2)
2. Two fan motors $[A](\hat{\xi} \times 1$, 気 $\mathbb{\|} \times 1$ each $)$.

3. LCT guide plate $[A]$ ( $B 5$ knob). ( $(3) \times 1$ )
4. Draw out the duplex unit about 10 cm .
5. Relay motor. ( -3.10 .13 )
6. LCT guide plate solenoid $[B]$. $\left(\hat{\xi}^{(1)} \times 1, ⿷^{\|} \times 1\right)$
7. Right upper cover. (-3.1.2)
8. Toner suction pump assembly. (-3.6.4)

NOTE: When re-installing, make sure that the hose is not pinched.
9. Copier feed unit [C] ( $\hat{\xi}^{(2)} \times 5$, 気 ${ }^{\|} \times 2$ ).

## PAPER FEED

### 3.10.16 LCT RELAY SENSOR AND RELAY SENSOR



1. Right upper cover ( $\hat{\xi}^{(1)} \times 4$ ).
2. LCT relay sensor bracket $[A](\hat{8} \times 1$, 気 $\mathrm{l} \times 1$ ).
3. LCT relay sensor [B].

4. Relay sensor [D].

### 3.10.17 TANDEM FEED TRAY PAPER SIZE CHANGE

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


1. Open the front cover.
2. Pull out the tandem feed tray $[A]$ and remove the left and right tandem trays. (-3.10.1)

## Setting the Paper Size for the Right Tandem Tray

1. Right tandem inner cover [C]. ( $\hat{\xi} \times 2$ )
2. Re-position the side fences [D] ( 1 each).

NOTE: Outer: A4, Inner: LT.
3. Re-install the right tandem inner cover [C].


## Setting the Paper Size for the Left Tandem Tray

1. Tray cover $[A](\hat{\xi} \times 2)$.

2. Re-position the side fences $[C]$ ( $\hat{\xi}^{2} \times 4$ each). NOTE: Outer: A4, Inner: LT.
3. Re-install the motor cover and the tray cover.

4. Rear bottom plate $[A](\mathbb{E} \times 1)$.
5. Re-position the return position sensor bracket $[B]$ ( $(\underset{\xi}{\mathcal{E}} \times 1$ ). To use the paper tray for A4 size, put the screw in the left hole.
NOTE: For LT size, the screw should be placed on the right.
6. Re-install the rear bottom plate.
7. Change the paper size for the 1st Tray (Tandem Tray) with SP5019 002.

### 3.10.18 TANDEM TRAY SIDE REGISTRATION



Normally the side registration of the image can be adjusted in the SP mode.
If the punch hole positions are not aligned from a particular feed station, however, you can manually adjust the side registration by changing the tray cover position for that tray, and then adjust the side registration of the image with SP1002 001 Side-to-side Registration-1st Tray (Copier Tandem Tray).

1. Pull out the tray and remove the right inner cover [A].
2. Loosen the screws and adjust the position of the plate $[\mathrm{B}]$.

Adjustment range: $0 \pm 2.0 \mathrm{~mm}$ adjustment step: $1.0 \mathrm{~mm} / \mathrm{step}$

### 3.11 FUSING UNIT

### 3.11.1 OIL SUPPLY AND CLEANING WEB UNIT REMOVAL



1. Turn off the machine and wait for the oil supply and web cleaning unit to cool.

## $\triangle$ CAUTION <br> To avoid minor burns, allow sufficient time for fusing unit to cool.

2. Open the front doors and pull out the fusing and exit unit [A].
3. Fusing unit inner cover $[B](\hat{\xi} \times 2)$.
4. Oil supply and cleaning web unit [C] (

NOTE: After re-installing the oil supply and cleaning web unit, confirm that the web take-up roller gear is engaged with the gears of the fusing unit.
SP1902 001 (Web Motor Control - Web Consumption) should be set to "0" every time the oil supply/cleaning web is replaced. This setting will not take effect until the machine is cycled off/on.

### 3.11.2 FUSING UNIT THERMOSTATS AND THERMISTOR



1. Switch off the machine and wait for the fusing unit to cool.
2. Open both front doors and pull out the fusing unit.

## ©CAUTION

To avoid minor burns, allow sufficient time for the fusing unit to cool.
3. Fusing unit inner cover. (-3.9.1)
4. Fusing unit top cover ( $\hat{\xi}^{(1)} \times 1$ ). ( -3.9 .1 )
5. Thermostat cover $[A](\hat{\xi} \times 1)$.
6. Thermostat leads $[B](\hat{\xi} \times 2)$.
7. Thermostats $[C](\hat{\beta} \times 1)$.
8. Thermistor [D] (

### 3.11.3 HOT ROLLER UNIT, PRESSURE ROLLER




1. Remove the oil supply and cleaning web unit. (-3.11.1)
2. Top cover $[A]$ of the fusing unit $(\hat{\xi} \times 1)$.

NOTE: When re-installing this cover, align the cutouts $[B]$ and projections [C] and slide the cover to the right. Make sure that the cover does not pinch the thermistor and thermostat cables against the stay.
3. Fusing unit inner cover $[D](\hat{\xi} \times 2)$.
4. Turn the upper exit guide plate assembly [E] clockwise about $160^{\circ}$ and slide the pivot shaft out of the cutout [F].
5. Release the fusing pressure by turning the pressure lever [G] $1 / 4$ of a turn counterclockwise with a screwdriver.
CAUTION: Be sure to lock the pressure roller lever [G] before re-attaching inner cover [D]. The inner cover cannot be re-attached if the pressure roller lever is not locked.

6. On both sides remove the outer pairs of M5 pan head screws [A]. (

NOTE: On both sides of the fusing unit, do not remove the inner pair of M4 bind screws $[\mathrm{B}]$.
7. Hot Roller unit [C].

NOTE: When re-installing, secure the screws [A] in the following order: rear-left, front-right, rear-right, front-left.

NOTE: Avoid touching the surface of the pressure roller.
9. Pressure roller assembly [E].


6. Shaft $[A]$ (C-ring $x 1$ )
7. Replace the pressure roller, bearings, and bushings $[B]$.

NOTE: Handle the pressure roller carefully to avoid damaging it.
8. Lubricate the inner surface of the new pressure roller [C] and the outer surfaces of the bearings [D] with BARRIERTA L55/2 grease.

### 3.11.4 HOT ROLLER



1. Hot roller unit. ( -3.11 .3 Steps 1 to 6 )
2. Fusing entrance guide plate $[A](\hat{\xi} \times 2)$.
3. Two screws $[B]$ securing the harness terminal bracket, and unhook the bracket.

NOTE: Unhook the thermistor cable [C] and thermostat cable [D] to avoid damaging them.

5. Disconnect the fusing lamp connectors $[F]$ at the front side ( $⿷_{l l}$ l $\times 3$ ).

NOTE: At the front, there is no color coding for the cables. They can be connected in any order.

6. Front lamp holder $[A](\hat{E} \times 1)$.
7. Rear lamp holder $[B]\binom{\hat{\xi}}{\times 1}$.
8. Three fusing lamps [C] one-by-one.

When re-installing the three fusing lamps, check the following points:

- While aligning the three lamps with the cutouts in the front lamp holder, reinstall the front and rear lamp holders.
- The fusing lamp connectors at the front can be connected in any order. However, in order to ensure correct fusing temperature control, the connectors at the back [D] must be connected correctly by matching the color of the connectors of the fusing unit with the colors of the connection points on each lamp.

| NA | EUR/A | Connection |
| :---: | :---: | :--- |
| 800 W | 730 W | Red $\leftarrow \rightarrow$ Red |
| 560 W | 540 W | Blue $\leftarrow \rightarrow$ Blue |
| 530 W | 530 W | Green $\leftarrow \rightarrow$ Green |

- Route the thermistor cable and thermostat cable correctly.
- Make sure that the cables are not pinched and do not contact the gears.


9. Hot roller $[A]$ (gear $\times 1$, (3) $\times 2$, bushings $\times 2$, bearings $\times 2$ ).

CAUTION: Handle the hot roller carefully to avoid damaging its soft surface.
10. Lubricate the inner and outer surfaces of the bushings [B] with BARRIERTA L55/2 grease before re-installing the hot roller.

## Re-assembly

- Before re-installing the hot roller, make sure that the end with long part of the shaft [C] is at the rear on the gear side.
- When re-installing bearings and bushings, make sure that the flanges for the bearings and bushings are placed on the outside.


### 3.11.5 WEB ROLLER AND FILTER



1. Remove the oil supply and cleaning web unit. (-3.11.1)
2. Place the unit on a flat surface as shown.
3. Cover $[A]\left(\mathcal{B}^{2} \times 2\right)$.
4. Note the positions of the blue shaft bushings at the rear and front.

- No e-rings or clips are used to hold these bushings in place.
- The rear side of the cover holds the two rear bushings in place.
- The bushings at the front are held in place by two tabs at the front.

5. Filter $[B]$.
6. Bushing of the web supply roller shaft [C].
7. Oil supply and cleaning web shaft [D] (gear $\times 1$, bushing $\times 1$ ). NOTE: Raise the small tab on the gear to release it.

## FUSING UNIT


8. Web take-up roller gear [A]
9. Bushings $[B]$
10. Web take-up roller [C]

11. Make sure that the feeler $[A]$ for the web end sensor is below the bracket. Otherwise, after turning on the main switch, SC550 (Web End) will be displayed.
12. Make sure the bracket $[B]$ is on top of the web of the take-up roller.
13. If the web is buckled between the web supply roll and web collecting roll, turn the web take-up roller gear [C] clockwise to remove the buckle.
14. Reassemble the fusing unit.

NOTE: After re-attaching the oil supply and cleaning web unit, make sure that the web take-up roller gear engages the gears on the fusing unit exit unit.
15. If a new web is installed, execute SP1902 001 (Web Motor Control - Web Consumption), and set the value to 0 . Switch the machine off/on after changing the setting.

### 3.11.6 WEB CLEANING ROLLER



1. Remove the oil supply and cleaning web.
2. Replace the web cleaning roller [A] (gear $\times 1$, bracket $\times 1$, bushings $\times 2$, springs x 2 ).
NOTE: When re-installing the gear [B], the D-shaped opening in this gear should face the roller shaft side. The circular-shaped opening [C] in the gear should face the bracket side [D].

### 3.11.7 HOT ROLLER STRIPPERS



1. Fusing unit top cover ( $\hat{\xi}^{(1)} \times 1$ ). ( -3.11 .2 )
2. Raise the upper exit guide plate assembly and rotate it clockwise 160 degrees, disconnect the pegs from the cut outs on both sides, then remove the unit.
(-3.11.3)
3. Upper exit guide plate $[A]\left(\mathcal{F}^{2} \times 2\right)$.
4. Spring $[\mathrm{B}]$.
5. Springs [C], [D] hooked to the sides of the stripper.
6. Shaft [E].

### 3.11.8 PRESSURE ROLLER STRIPPER, FUSING EXIT SENSOR



1. Lower exit guide plate assembly. (-3.11.3)
2. Lower exit guide plate $[A]\left(\mathcal{F}^{7} \times 2\right)$.
3. Pressure roller stripper $[B]$ (spring $\times 1$ ).
4. Fusing exit sensor [C].

### 3.11.9 PRESSURE ROLLER CLEANING ROLLER



1. Open both front doors and pull out the fusing unit.
2. Screw $[A]$.
3. Pull out the pressure roller cleaning roller assembly $[B]$ to dislodge it from the pins [C].
4. Two spring plates $[\mathrm{D}]$ ( $\mathrm{E} \times 1$ each).
5. Replace the pressure roller cleaning roller [E] and shaft $[F]$ (bearings $x 1$, spacer x 1).

## Re-assembly

- Fit the holes [G] (rear then front) of the pressure roller cleaning roller unit bracket onto the pins [C].
- While turning the pressure roller cleaning roller assembly counterclockwise, push the pressure roller cleaning roller assembly to the rear until it locks in place, then secure it with the screw $[A]$.


### 3.11.10 FUSING AND EXIT UNIT



## §CAUTION <br> The fusing and exit unit is heavy. Handle it carefully to avoid dropping the fusing and exit unit when removing and installing it.

1. Fusing unit inner cover $[A]\left(\mathcal{S}^{2} \times 2\right)$.
2. Fusing and exit unit $[B]\left(\mathcal{F}^{2} \times 4\right)$.

## Re-assembly

Hook the cutouts [C] onto the projections [D] of the right and left slide rails.

### 3.11.11 FUSING PRESSURE ADJUSTMENT



NOTE: The nip width $11.5 \pm 0.5 \mathrm{~mm}$ (the difference between front and rear measurements should be less than 0.5 mm ).

1. Execute SP1109 (Fusing Nip Band Check) to enter the fusing nip band check mode.
2. Make a copy using an A4/LT OHP sheet. Copying will start. It will stop in the fusing unit for 30 seconds and then will exit.
NOTE: If an OHP sheet is not available, use a solid black copy on plain paper (make the copy with the ADF open - the copy will be all black).
3. Measure the nip band width (the shiny band) at both ends.
4. It the nip band width is not within specifications at both ends, release the fusing pressure and adjust it using the adjustment screw [A] (clockwise increases the pressure, counterclockwise decreases the pressure).
NOTE: Loosen the lock nuts [B] before turning the pressure adjustment screw. Re-tighten the nuts after adjusting.
5. Repeat steps 1 to 4 to check the nip band width.

## FUSING UNIT

### 3.11.12 EXIT SENSOR



1. Pull out the fusing and exit unit.

2. Exit sensor [B].

NOTE: When re-installing the sensor bracket, run the cable through the cutout [C] to slacken the cable.

### 3.12 DUPLEX UNIT

### 3.12.1 DUPLEX UNIT


[C]

1. Open the left and right front doors and pull out the duplex unit [A].
2. Remove the shoulder screws $[B](\hat{\xi} \times 2)$.
3. Lift up the duplex unit.

NOTE: When re-installing the duplex unit, align the cutouts [C] with the slide rail projections [D].

### 3.12.2 DUPLEX UNIT INNER COVER



1. Open both front doors.
2. Pull out the duplex unit.
3. Duplex unit inner cover $[A](\hat{\xi} \times 3$, knob $\times 1)$.

### 3.12.3 JOGGER MOTOR



1. Duplex inner cover. (-3.12.2)
2. Duplex grip $[A](\hat{\xi} \times 2)$.
3. E-ring $[B]$ and slide the duplex grip shaft $[C]$ to the left.
4. Jogger motor assembly [D] (

## Re-assembly

1. Re-install the duplex grip shaft and E-ring first.
2. Next, tighten the screws for the jogger motor assembly.

## DUPLEX UNIT

### 3.12.4 DUPLEX TRANSPORT MOTORS



1. Open both doors and pull out the duplex unit.
2. Duplex unit inner cover ( -3.12 .2 )



3. Transport motor $2[\mathrm{D}](\hat{\xi} \times 2)$.

### 3.12.5 DUPLEX ENTRANCE SENSOR



1. Pull out the duplex unit.
2. Entrance sensor bracket $[A]\left(\mathcal{F}^{-1} \times 2\right)$.
3. Duplex entrance sensor $[B]($ ( $\ddagger \mathbb{\|} x 1)$.

## 3．12．6 DUPLEX TRANSPORT SENSORS 2， 3



1．Open both front doors and pull out the duplex unit．
2．Remove the upper duplex cover screws $[A](\hat{g} \times 2)$ then slide the cover to the right．
NOTE：The front screw is a shoulder screw．
3．Slide the jogger fences to the center，then remove both jogger fences $[B]$（ $(\hat{\xi} \times 2$ each）．

4．Right upper duplex cover［C］（E』ll $x 1$ ）．
5．Duplex transport sensor 2 ［D］（
6．Duplex transport sensor bracket［E］（
7．Duplex transport sensor $3[F](\hat{\xi} \times 1$ ，気县 $\times 1$ ）．

### 3.12.7 DUPLEX TRANSPORT SENSOR 1/DUPLEX INVERTER SENSOR



1. Open both front doors and pull out the duplex unit.
2. Both jogger fences (
3. Right upper duplex cover ( -3.12 .6 ).
4. Reverse roller solenoid $[A]\left(\hat{\xi} \times 1, \xi^{\mathbb{E}} \times 1\right.$, link $\times 1$, spring $\times 1$ ).
5. Reverse trigger roller assembly $[B]$ ( $\mathcal{G} \times 1$, bushings $\times 2$, (3) $\times 1$, links $\times 1$ ).
6. Left upper cover $[C]\left(\hat{\xi^{2}} \times 2\right)$. Slide the left upper cover to the right and remove it. (The front screw is a shoulder screw.)
7. Duplex inverter sensor [D] (E気x 1)


## Re-assembly

Make sure that the cutouts [F] catch the duplex side plate projections and the hooks are below the bracket plate.

## TONER BANK

### 3.13 TONER BANK

### 3.13.1 WASTE TONER BOTTLE



1. Toner bank door $[A]$ (pins $\times 2$ ).
2. Waste toner bottle cover $[B](\hat{\xi} \times 1)$.
3. Waste toner bottle [C].

### 3.13.2 TONER BANK UNIT



NOTE: Work carefully to avoid spilling toner during removal.

1. Execute SP5804 097 (upper bottle) and 098 (lower bottle) to close the caps, then remove the toner bottles from the bank.
2. Upper rear and lower rear covers (-3.1.4).
3. Open the controller box door $(\mathbb{Z} \times 3)(-3.1 .4)$
4. Left lower cover, right upper cover ( $-3.1 .2,3.1 .3$ ).
5. Two screws [A] of the toner supply cylinder. ( NOTE: Work carefully to avoid spilling toner.
6. Cover the end of the toner transport coil tube $[B]$ with a plastic bag.

NOTE: Do not to bend the toner transport coil tube [B]. If it is bent, this can cause the coil inside to be overloaded, locked, or damaged. SC592 will be displayed, and the coil (screw) inside should be replaced.
7. Switch on the machine and execute SP2226 to discharge toner from the toner bank.
8. Turn off the main switch and unplug the power cord.
9. Toner waste bottle. (-3.13.1)


## $\triangle$ CAUTION <br> Make sure that the power cord is unplugged before removing the noise filter in the next step．

10．Harness clamp bracket $[A]$（ $\hat{\xi} \times 1$ ，clamps $\times 2$ ）．
11．Remove the noise filter $[B]\left(\hat{\xi} \times 2\right.$ ，気 $\|^{\|} \times 4$ ）．
NOTE：The top connectors are white，and the bottom connectors are yellow．
12．Toner bank motor［C］（答 $\times 2$ ，気 $\times 1$ ）
13．Connectors［D］（ $\mathrm{E}_{\mathrm{I}}^{\mathrm{l}} \mathrm{x} 3$ ）．


14. Toner transport coil casing $[A]\left({ }^{(1)} \times 2\right)$.
15. Snap ring [B]
16. Slide coupling [C] to the left.

17. Toner bank door [A] (pins $\times 2$ ).
18. Toner bank inner covers $[B]\left(\mathcal{F}^{3} \times 3\right)$.
19. Screw on the left $[C](\hat{\xi} \times 1)$ and screws on the front $[D](\mathbb{S} \times 3)$ securing the toner bank unit.

20. Screw $[A]$ securing the toner recycling and collection casing $[B]$.
21. Lift the toner recycling and collection casing [B], pull out the pin [C] from the hole under the case, then pull out the toner bank unit.
NOTE: When pulling out the toner bank unit, toner may leak out of the junction between the tube and toner bank. Place a cloth on the machine bottom plate so that the plate does not become dirty.

## After Re-installing the Toner Bank Unit

1. Remove the plastic bag from the toner transport coil tube. Re-connect the toner supply cylinder to the toner transport coil tube ( $\hat{\xi} \times 2$, tubes $\times 3$ ).
2. Load the toner bottles into the toner bank.
3. Open the cylinder top cover and clean the inner surface of the cylinder with a cloth, then close the cylinder top cover.
4. Execute SP5804 070 to energize the toner bank motor.
5. Execute SP5804 068, 069 to energize the toner bottle motors for 5 to 6 seconds.
6. Execute SP5804 071 to energize the toner supply coil clutch.
7. About 50 to 60 seconds later, toner is supplied to the toner supply cylinder. Make sure that toner is properly supplied to the cylinder.
8. Turn off the toner supply coil clutch and then the toner bank motor.

NOTE: To prevent overflow at the toner entrance tank, do not energize the toner bottle motors for a long time.

### 3.13.3 TONER SUPPLY PUMP MOTOR, TONER SUPPLY MOTOR SENSOR



1. Right upper cover (

2. Toner supply pump motor sensor $[B]$.
3. Toner supply pump motor $[C](\hat{\xi} \times 2)$.

NOTE: When re-installing the parts, make sure that the hoses are connected at the correct positions, as shown.

### 3.13.4 ACCESS TO INSIDE THE TONER BANK




NOTE: The toner bottle sensors and toner collection bottle sensor are inside the toner bank.

1. Toner bank. (-3.13.2)
2. Toner release link bracket $[A]\left(\mathcal{E}^{(1)} \times 2\right)$.
3. Left side plate $[B]$ (会 $\times 9,2$ links [C]).

NOTE: When re-attaching the links [C], place the front pin [D] under the lock plate [E].
4. Toner bottle bottom plates $[F]$ ( $\hat{\xi}^{(1)} \times 3$ each $)$.

### 3.14 MAIN BOARDS

### 3.14.1 LCDC (LCD CONTROLLER)



1. Original exit tray $[A]\left(\mathcal{S}^{2} \times 3\right)$.
2. Scanner right cover $[B]\left(\begin{array}{l}\text { 为 }\end{array} \times 4\right)$.
3. Optics dust filter [C].
4. Cover [D] ( $\mathrm{S}^{\mathrm{E}} \times 4$ ).
5. LCDC cover bracket $[E]\left({ }^{(1)} \times 3\right)$.
6. LCDC board [F] (

### 3.14.2 BCU BOARD



[B]

1. Rear upper cover ( $\hat{\xi}^{2} \times 4$ ) (-3.1.4).
2. Open the controller box. (-3.1.4)

NOTE: If the 4 screws shown in the diagram are removed, the BCU board [B] swings down. If all 6 screws are removed, the BCU comes off.

### 3.14.3 IOB



1. Rear lower cover (
2. PSU cover ( $\hat{\xi}^{2} \times 2$ ).
3. IOB $[A](E$ 氚 $\times 19$, 会 $\times 6$ ).

### 3.14.4 PSU-E (POWER SUPPLY UNIT-ENGINE)



1. Remove the rear lower cover ( $\left.\hat{\xi}^{(1)} \times 4\right)$. ( -3.1 .4 )
2. Open the controller box door. (-3.1.4)
3. PSU cover $[A]\left(\mathcal{S}^{-} \times 2\right)$.


### 3.14.5 CBG POWER PACK



1. Remove the rear upper cover ( $\times 4$ ). ( -3.1 .4 )
2. CBG power pack [A] (
3. When re-installing, be sure to connect the connectors at the correct points:

- CN753: Orange
- CN755: Green
- CN754: Blue


### 3.14.6 AC DRIVE BOARD



1. Open the controller box door. (-3.1.4)
2. $A C$ drive board $[A]\left(\mathcal{E}^{3} \times 2\right.$, Standoffs $\left.\times 2\right)$

### 3.15 CONTROLLER BOARDS, HDD

### 3.15.1 CONTROLLER BOX COVER



1. Side screws $[A]\left(\hat{\xi}^{3} \times 2\right)$.
2. Rear panel screws $[B]\left(\mathcal{E}^{3} \times 6\right)$.
3. Bottom and left side screws [C] ( $\left(\mathcal{B}^{2} \times 2\right)$
4. Top lock screw [D] ( $(\hat{\xi} \times 1)$

NOTE: When you re-install the control box cover, fasten screw [D] first to ensure that the bottom and left side screw holes align correctly with their holes.

### 3.15.2 CONTROLLER BOARD, NVRAM



1. Controller box cover. (-3.15.1)
2. Left bracket $[\mathrm{A}]\left(\hat{\beta}^{\mathrm{B}} \times 12\right)$
3. Slot cover bracket $[B](\hat{\xi} \times 4)$

NOTE: When re-installing, make sure that board is between the ground plates.
4. Bottom slot covers $[C]\left(\begin{array}{l}\text { 雨 } \times 4)\end{array}\right.$
5. Controller board [D] ( $\hat{\xi}^{\prime} \times 2$ )
6. NVRAM [E].

NOTE: When installing a new controller board, be sure to remove the NVRAM from the old board and attach it to the new board.

CONTROLLER BOARDS, HDD

### 3.15.3 INTERFACE BOARD



1. Controller box cover. (-3.15.1)
2. Slot cover bracket. (-3.15.2)
3. Interface board (

### 3.15.4 IPU (IMAGE PROCESSING UNIT)




1. Controller box cover. (-3.15.1)
2. Controller board. (-3.15.2)
3. Interface board. (-3.15.3)
4. Connector cover $[A]$ (
5. Behind the IPU board, disconnect the connectors $[B]\left(⿷_{\# l}^{\|} \times 6\right)$.
6. Vertical bracket [C] ( $\hat{\xi}^{(1)} \times 2$ ).
7. IPU [D] ( $\mathcal{E}^{\mathrm{E}} \times 7$ ).

CONTROLLER BOARDS, HDD

### 3.15.5 CSS UNIT



1. Remove the controller box cover. (-3.15.1)
2. CSS unit ( $\hat{\beta}^{3} \times 2$, 氟 $\times 2$ ).

### 3.15.6 MB (MOTHER BOARD)



1. Controller box cover. (-3.15.1)
2. Controller board. ( -3.15 .2 )
3. Interface board. (-3.15.3)
4. IPU (-3.15.4)
5. SD card slot board (-3.15.5)
6. Box $[A]$ (

NOTE: Slide to the right to remove. When re-installing, make sure that the hooks are seated correctly in the grooves. If they are not, you will not be able to close the controller box and re-attach the screws.
7. Mother board $[B](\hat{\xi} \times 7$, 気川 $\times 9)$.

### 3.15.7 HARD DISKS


[B]


NOTE: The controller recognizes both disks as one disk unit; therefore, both disks must always be replaced together, or there will be errors.

1. Remove the controller box cover. ( -3.15 .1 )
2. HDD bracket $[A]$ (
3. Hard disks $[B]$ ( $\hat{\beta}^{-1} \times 8$ ).
4. If you intend to re-install the same disks in the machine, confirm the correct connections before disconnecting. After the disks have been formatted, they are not identical, and each disk must be connected to the correct connector.
NOTE: The external terminal connections of HDD_A and HDD_B are, respectively, IDE1 and IDE2. In the Point-to-Point diagram, CN135 is the connection point for IDE1 and CN136 is the connection point for IDE2.
5. Install the new disks.

NOTE: If the disks are new and unformatted, they are both identical, and can be connected in either position.
6. Turn the main switch on and execute 5832001 (HDD Formatting - All) to format the new disks.
7. Install the stamp data using SP5853. (""Stamp Data Installation", 5. Service Tables.)

### 3.15.8 PSU-C (POWER SUPPLY UNIT-CONTROLLER)



1. Controller box cover. (-3.15.1)
2. PSU-C bracket ( 雨 $\times 5$ ). $^{\text {2 }}$
3. PSU-C ( $\hat{\xi}^{(1)} \times 6$, 気 $\mathrm{H} \times 5$ ).

NOTE: Please note that the screw that fastens the ground wire is different. Use the same screw to re-fasten the ground wire.

### 3.16 MOTORS

### 3.16.1 FUSING/EXIT MOTOR REPLACEMENT



1. Upper rear cover. (-3.1.4)
2. Open the controller box. ( -3.1 .4 )
3. Swing down the BCU board. ( -3.14 .2 )
4. Loosen screw $[A]$ to release the belt tension.
5. Timing belt $[\mathrm{B}]$.
6. Fusing/exit motor [C] ( $\hat{(1)} \times 5, \mathbb{E}^{\mathbb{E}} \times 2$, clamps $\times 2$ )

NOTE: Disengage the hooks (x2) [D] to remove.
NOTE: When re-installing the parts, hook up the tension spring (this automatically gives the belt the correct tension), then tighten screw $[A]$.

### 3.16.2 DRUM MOTOR



1. Rear upper cover. (-3.1.4)
2. Open the controller box. (-3.1.4)
3. Flywheel (
4. Swing down the BCU board. (-3.14.2)
5. Loosen the screws $[A]$ to loosen the belts, and remove the three timing belts [B].
6. Drum motor assembly [C] (

## Re-assembly

To place tension on the belt before tightening the screws [A], attach the tension spring.

### 3.17 COPY IMAGE ADJUSTMENT: PRINTING/SCANNING

NOTE: 1) You need to perform these adjustment(s) after replacing any of the following parts:

- Scanner Wires
- Lens Block
- Scanner Motor
- Polygon Mirror Motor
- Paper Side Fences
- Memory All Clear

2) For more details about accessing SP modes, refer to section 4 .

### 3.17.1 PRINTING

NOTE: 1) Make sure the paper is installed correctly in each paper tray before you start these adjustments.
2) Use the Trimming Area Pattern (SP2902 003, No. 27) to print the test pattern for the following procedures.
3) Set SP2902 003 to 0 again after completing these printing adjustments.

## Registration - Leading Edge

1. Check the leading edge registration using the Trimming Area Pattern, and adjust it using SP1001 if necessary. The specification is: $4 \pm 2 \mathrm{~mm}$.

## Registration - Side-to-Side

Do the parallel image adjustment after the side-to-side registration adjustment.

## Using SP Mode

1. Check the side-to-side registration for each paper feed station using the Trimming Area Pattern, and adjust them using the following SP modes if necessary.

|  | SP mode | Specification |
| :---: | :---: | :---: |
| 1st paper feed | SP1002 1 | $2 \pm 1.5 \mathrm{~mm}$ |
| 2nd paper feed | SP1002 2 |  |
| 3rd paper feed (Optional PFU tray 1) | SP1002 3 |  |
| 4th paper feed (LCT) | SP1002 4 |  |
| 5th paper feed (LCT) | SP1002 5 |  |
| 6th paper feed (LCT) | SP1002 6 |  |
| 7th Tray (Bypass) | SPAODe2a才ing Edge Registration |  |
| Duplex | SP40®ine | de Registration |



## Blank Margin

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

1. Check the trailing edge and right side edge blank margins using the Trimming Area Pattern, and adjust them using the following SP modes if necessary.

|  | SP mode | Specification |
| :--- | :---: | :---: |
| Trailing edge | SP2101 2 | $3 \pm 2 \mathrm{~mm}$ |
| Right edge | SP21014 | More than 0.5 mm |
| Leading edge | SP2101 1 | $4 \pm 2 \mathrm{~mm}$ |
| Left edge | SP2101 3 | $2 \pm 1.5 \mathrm{~mm}$ |

A: Trailing Edge Blank Margin
B: Right Edge Blank Margin
C: Leading Edge Blank Margin
D: Left Edge Blank Margin


## Magnification Adjustment



1. Enter SP mode and access SP2902 003.
2. Select pattern 4 (Alternating Dot pattern - 2048 dots) and make a print using A3 (DLT) paper.
3. Check the length between the edges of the black squares. The length should be 130 mm in the sub scan direction.
1) If the magnification in the main scan direction is not within $100 \pm 0.5 \%$, adjust using SP2910.
2) After sub scan adjustment, use SP2909 (Main Scan Magnification) 001 (Copy), 002 (Printer) to adjust main scan magnification for the copy and print images.
3) Next, use SP4008 (Scanner Sub Scan Magnification) to adjust magnification in the sub scan direction.
4) If the magnification in the main scan direction is not within $100 \pm 0.5 \%$, adjust using SP2910.

NOTE: Check the magnification after the paper cools.

### 3.17.2 PARALLELOGRAM IMAGE ADJUSTMENT

If a parallelogram type image is printed while using a trimming area pattern, do the following to adjust the printing registration or the printing margin.

NOTE: 1) The following procedure should be done after adjusting the side-to-side registration for each paper tray.
2) This adjustment is only effective for a parallelogram image caused by the printer. It should not be applied if the skew is caused by the scanner.


1. Check whether a parallelogram image appears as shown on the next page when printing a trimming area pattern (SP2902 003, No. 27). If it appears, do the following.
2. Remove the exposure glass (see Replacement and Adjustment - Exposure Glass Removal).
3. Remove the original exit tray and the scanner right cover. (See Replacement and Adjustment - Scanner Drive Wires)
4. Peel away the mylar [A] covering the opening in the frame.
5. Loosen the three screws $[B]$ that hold the laser unit.

6. Make a note of the position of the laser unit using the scale [A].
7. Adjust the laser unit position using a flat screwdriver $[B]$ as shown. If the right side of the trimming area pattern is down by about 1 mm as shown [C], the laser unit should be rotated about one graduation in the direction of the black arrow. If the opposite side is down, adjust in the opposite direction.
8. Tighten the three screws to secure the laser unit.
9. Print the trimming area pattern to check the image. If it is still the same, repeat steps 2 to 7.

### 3.17.3 SCANNING

NOTE: 1) Before doing the following scanner adjustments, check the printing registration/side-to-side adjustment and the blank margin adjustment.
2) Use an OS-A3 test chart to perform the following adjustments.

## Registration: Platen Mode

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

|  | SP mode |
| :--- | :---: |
| Leading Edge | SP4010 |
| Side-to-side | SP4011 |

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


## Magnification

NOTE: Use an OS-A3 test chart to perform the following adjustment.
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, and adjust it using the following SP mode if necessary. The specification is within $\pm 1 \%$.

|  | SP mode |
| :--- | :---: |
| Scanner Sub Scan Magnification | SP4008 |

A: Sub Scan Magnification


### 3.17.4 ADF IMAGE ADJUSTMENT

## Registration

NOTE: Make a temporary test chart as shown below left, using A3/DLT paper.

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

|  | SP mode |
| :--- | :--- |
| Side-to-side Registration | SP6006 1 |
| Leading Edge Registration (Thin original mode) | SP6006 2 |
| Leading Edge Registration (Single-sided/Duplex: front) | SP6006 3 |
| Leading Edge Registration (Duplex: rear) | SP6006 4 |



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

### 3.17.5 ADJUSTING THE LD UNIT CHANNELS

Small pitch banding could occur with this machine due to:

- Characteristics of the drum
- Variations that occur over time in the amount of light emitted by each channel The quantity of light emitted from each channel of the LD unit is adjusted at the factory. However, SP codes are provided so you can test and adjust the quantity of light emitted from each channel. Patterns No.4~8 generated with SP2902 002 (Test Pattern - IPU Printing Test Pattern) allow you to visually compare channel output, and SP2105 003~010 (LD Power Correction) allows you to do the adjustments.


## Test Patterns and Adjustment

Print the test pattern with SP2902 002, No. 5.
The test pattern is a "caterpillar" pattern printed for every channel on one sheet for A3 paper. The sample on the next page shows a test. Pattern 8 is a pattern for each of the eight channels (0~7). Patterns 1~7 compare each pattern with Ch0.

In the sample pattern on the next page, note the darker appearance of Ch4 in both Pattern 4 and Pattern 8, compared with the uniform appearance in the patterns for the other channel. This indicates that Ch4 requires adjustment.

## Light Quantity Adjustment

Adjust with SP2105 (LD Power Correction) 003 ~ 010. Then print the test pattern again to check the effects of the new settings.
If a pattern is darker or lighter than the others, the quantity of light on that channel should be reduced or increased.
While visually checking, Pattern 8 in the sample is sufficient to detect a difference in the density of the patterns; the other patterns (1~7) allow more detailed comparison with Ch0.
To perform adjustment for the channels, use SP2105 (LD Power Correction) 003 ~ 010.

In the case of the sample print on the next page, we can see that Ch4 requires correction because it is too dark; therefore, the value of SP2105 007 (the SP code for Ch4 adjustment) must be lowered.

Generally, the amount of adjustment required can be determined by increasing or decreasing the SP setting (in this case, reducing the setting for SP2105 007) and then printing the text pattern again to confirm the results of the adjustment. The adjustment should be done until the dark (or light) pattern matches the other patterns.

## Sample: SP2902 002 Test Pattern - IPU Printing Test Pattern, Pattern 5

The numbers in the vertical blocks of the caterpillar patterns indicate the number of the channels compared.


### 3.18 TOUCH SCREEN CALIBRATION

When the touch panel detection mechanism is not working properly, calibrate the touch screen as follows:

1. Press the following keys in sequence to enter operation panel self diagnostic mode.
$\mathbf{1} \rightarrow \mathbf{9} \rightarrow 9 \rightarrow \mathbf{9} \rightarrow \mathbf{9} / \otimes$ Press and hold 5 sec.

2. Select "[1] Touch Screen Adjust".

NOTE: [2] tests the LEDs on the operation unit, not the machine's main operation panel. Keys [3] [4] [5] [6] [7] are for factory use only. Do not use unless directed by senior technical staff.

3. The "Touch Screen Adjustment" calibration screen will appear. Touch the center of the circle in the upper left corner then the lower right corner of the panel using a pointer (but not sharp!) tool.
4. Touch a few spots on the LED touch panel, and confirm that the marker appears on the screen at exactly the same location as where it is touched. If it does not, touch "Re-input" (or press the $\quad \bullet \neq$ key) and repeat the calibration procedure.
5. Touch "OK" on the adjustment screen.
6. Touch "Exit" to exit the self diagnostic mode.

## $\Rightarrow$ 3.19 OPC DRUM CHANGE

### 3.19.1 SETTING POWDER APPLICATION PROCEDURE

1. Apply the setting powder to the drum by tapping the powder bag across the drum surface so the area being applied turns white. Continue applying the setting powder until the entire length of the drum is covered about $1 / 4$ of the total surface of the drum as shown in the illustration.

NOTE: Waste toner can be used if no setting powder is available. Waste toner has a charge and will be attracted to the drum surface. Dirty background may occur if waste toner is used.

2. Install the new drum in the OPC unit so that the powdered area (in bold below) faces the cleaning blade.
3. Rotate the drum once along its normal rotational direction (arrow shown below), so that it stops again at the same position. Be sure not to rotate the drum in the opposite direction.


CAUTION: IF THE SETTING POWDER IS NOT APPLIED, THE DRUM'S CLEANING BLADE MAY TURN OUTWARD, CAUSING A DRUM CLEANING FAILURE.
4. After installing the new style drum (P/N B0709510) on an older B070/B071 machine the following service programs must be changed.

NOTE: These values are already set in the B070/B071 enhanced production machines.

| SP No. | Description | Change to: |  |
| :---: | :---: | :---: | :---: |
|  |  | 90cpm | 105cpm |
| SP3903 | VD Correction Counter | 990 | 990 |
| SP2301 | Transfer Current Adjustment | - | - |
| -1 | 1st Copy Side | 100 | 110 |
| -2 | Thick Paper | 100 | 110 |
| -4 | Translucent Sheet | 100 | 110 |
| -5 | 2nd Copy Side | 100 | 110 |
| SP2940 | Leading Edge Transfer Current | - | - |
| -1 | Tray 1 | 100 | 110 |
| -2 | Tray 2 | 100 | 110 |
| -3 | Tray 3 | 100 | 110 |
| -4 | Tray 4 | 100 | 110 |
| -5 | Tray 5 | 100 | 110 |
| -6 | Tray 6 | 100 | 110 |
| -7 | Tray 7 | 100 | 110 |
| -8 | Duplex Tray | 100 | 110 |

## TROUBLESHOOTING

## 4. TROUBLESHOOTING

### 4.1 SERVICE CALL CONDITIONS

### 4.1.1 SUMMARY

There are 4 levels of service call conditions.

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

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

### 4.1.2 SC CODE DESCRIPTIONS

## SC101: Exposure Lamp Error

Definition [B]
The standard white level was not detected properly when scanning the white plate.
Possible Causes

- Exposure lamp defective
- Lamp stabilizer defective
- Exposure lamp connector defective
- Scanner motor control unit (MCU board) defective
- SBU board defective
- Dirty standard white plate
- Dirty scanner mirror or scanner mirror or lens block out of position


## SC120: Scanner Home Position Error 1

Definition [B]
The scanner home position sensor does not detect the on condition during initialization or copying.

## Possible Causes

- Scanner home position sensor defective
- Poor connection between HP sensor and MCU board
- Scanner motor control unit (MCU board) defective
- Scanner wire, timing belt, pulleys, or carriage out of position
- Scanner motor defective
- Poor connection or defective harness between MCU board and scanner motor


## SC121: Scanner Home Position Error 2

Definition [B]
Scanner home position sensor OFF not detected.

## Possible Causes

- Scanner home position sensor defective
- Poor connection between MCU board and scanner home position sensor
- Harness between MCU board and sensor defective
- MCU board defective
- Scanner wire, timing belt, pulleys, or carriage out of position
- Scanner drive motor defective
- Harness between MCU board and scanner motor disconnected


## SC124: Encoder Signal Error

Definition [B]
The scanner motor encoder connector is not set correctly, or the encoder signal was not input. When the scanner motor encoder connector is not set correctly, or occasionally even if set correctly, this error is detected if there is no input 4 ms after scanning begins.

## Possible Causes

- Scanner motor encoder connector disconnected
- Scanner motor lead connector disconnected
- Scanner motor defective
- MCU board defective (scanner motor control unit)
- Scanner wire, timing belt, pulleys, or carriage installation incorrect
- Power supply connector disconnected (+38V $\pm 12 \mathrm{~V}$ )
- Power supply unit (PSU-E board) defective


## SC125: Scanner Motor Error 2

## Definition [B]

Scanner motor stopped before feedback from scanner HP sensor detected, or motor speed too slow when detected at scanner HP sensor.

Possible Causes

- Scanner motor defective (high torque)
- Overload on scanner drive mechanism
- MCU board defective (scanner motor unit control)


## SC126: Scanner Motor Error 3

Definition [B]
The scanner motor does not stop within 15 mm after the scanner home position sensor turns on when the scanner returns.

Possible Causes

- Scanner motor defective (low torque)
- Overload on scanner drive mechanism
- MCU board defective (scanner motor control unit)


## SERVICE CALL CONDITIONS

## SC127: Scanner Motor Error 4

Definition [B]
The scanner motor rotates in the opposite direction to the signal from the MCU board.

Possible Causes

- Scanner motor defective (motor lead connected incorrectly)
- MCU board defective (scanner motor control unit)


## SC128: Scanner Motor Error 5

Definition [B]
The scanner motor speed does not reach the target speed by the time the scanning start point is reached.

## Possible Causes

- Scanner motor defective
- Overload on scanner mechanisml
- PSU-E board defective
- MCU board defective (scanner motor control unit)


## SC129: Scanner Motor Error 6

Definition [B]
The scanner motor speed is abnormal.
NOTE: The machine will not stop scanning even after the machine detects that motor speed is abnormal.
Possible Causes

- Scanner motor defective
- Scanner drive mechanism defective
- PSU-E board defective
- MCU board defective (scanner motor control unit)


## SC143: SBU (Sensor Board Unit) Error 1

Definition [B]
At power on, the SBU white level adjustment, black level check, and final SBU white level check did not execute.

Possible Causes

- SBU defective
- IPU defective
- BCU defective
- Harness between the SBU and IPU defective
- Standard white plate not installed correctly, or is dirty
- Scanner mirrors and/or lenses are dirty or installed incorrectly


## SC144: SBU (Sensor Board Unit) Error 2

Definition [B]
At power on, the specified SBU ID (GASBUP and LM98513) could not be read after 3 tries

## Possible Causes

- SBU defective
- IPU defective
- BCU defective
- Harness between SBU and IPU defective


## SC300: Charge Corona Output Error 1 (Charge Leakage)

Definition [B]
A high feedback voltage for the charge corona (more than 4.5 V ) was detected from the CBG (charge, bias, grid) power pack 9 times within 60 ms .
Possible Causes

- CBG power pack defective
- Poor charge corona unit connection
- Charge corona unit connector defective


## SC301: Charge Corona Output Error 2 (Circuit Open)

Definition [B]
A low feedback voltage for the charge corona (less than 1.5 V ) was detected from the CBG power pack 9 times for 60 ms .

Possible Causes

- Charge/bias/grid power pack defective
- Poor charge corona unit connection
- Charge corona unit connector defective


## SC303: Charge Grid Output Error 1 (Grid Leakage)

## Definition [B]

A high feedback voltage for the grid (more than 4.5 V ) was detected from the CBG power pack 9 times consecutively for 60 ms .

Possible Causes

- Charge/bias/grid power pack defective
- Poor charge corona unit connection
- Charge corona unit connector defective


## SC304: Charge Grid Output Error 2 (Grip Open)

Definition [B]
A low feedback voltage for the grid (less than 1.0 V ) was detected from the CBG power pack 9 times for 60 ms .

Possible Causes

- Charge/bias/grid power pack defective
- Poor charge corona unit connection
- Charge corona unit connector defective


## SC305: Charge Corona Wire Cleaner Error 1

Definition [D]
The charge corona wire cleaner does not return to its home position, and there is no stop signal 30 s after cleaning starts.

## Possible Causes

- Charge corona wire cleaner lock defective
- Charge corona wire cleaner motor defective
- BCU defective


## SC310: Drum Potential Sensor Error 1

Definition [D]
During drum potential sensor calibration, the output voltages from the drum potential sensor are not within specifications while -200 V then -700 V are applied to the drum.
NOTE: After this SC is issued, the grid voltage changes to the value set with SP2001-001 (Charge Corona Bias Adjustment) and LD power changes to the value set with SP2103 (LD Power Adjustment).

## Possible Causes

- Drum potential sensor defective
- Poor connection between the drum potential sensor and the BCU
- Drum potential sensor defective
- IOB defective
- Poor drum ground connection
- CBG power pack defective


## SC311: Drum Potential Sensor Error 2

## Definition [D]

When calibrating the drum potential sensor during process control initialization, the rate of change of drum potential sensor output with voltage on the drum is out of specification.
NOTE: After this SC is issued, the grid voltage changes to the value set with SP2001-001 (Charge Corona Bias Adjustment) and LD power changes to the value set with SP2103 (LD Power Adjustment).
Possible Causes

- Drum potential sensor defective
- Poor connection between the drum potential sensor and the BCU
- Drum potential sensor defective
- IOB defective
- Poor drum ground connection
- CBG power pack defective


## SERVICE CALL CONDITIONS

## SC312: Drum Potential Sensor Error 3 (Vd Abnormal)

Definition- [D]
When Vd on the surface of the unexposed drum is adjusted during process control initialization, -900 V is applied to the charge grid but Vd is more than -900 .
NOTE: After this SC is issued, the grid voltage changes to the value set with SP2001-001 (Charge Corona Bias Adjustment) and LD power changes to the value set with SP2103 (LD Power Adjustment).
Possible Causes

- Drum potential sensor defective
- Poor drum potential sensor harness connection
- Drum potential sensor connector defective
- IOB defective
- Poor drum ground connection
- Drum disconnected
- Quenching lamp defective
- CBG power pack defective
- Charge corona wire dirty or defective


## SC313: Drum Potential Sensor Error 4 (Vd > Vg)

Definition [D]
When adjusting the drum potential ( Vd ) during process control initialization, the drum potential sensor detects that Vd is more than Vg (grid voltage).
NOTE: After this SC is issued, the grid voltage changes to the value set with SP2001-001 (Charge Corona Bias Adjustment) and LD power changes to the value set with SP2103 (LD Power Adjustment).
Possible Causes

- Drum potential sensor defective
- Drum potential sensor harness defective
- Drum potential sensor connector defective
- IOB defective
- Poor contact at the drum connection
- CBG power pack defective
- Charge corona wire dirty or defective


## SC314: Drum Potential Sensor Error 5 (Vh Abnormal)

Definition [D]
When adjusting the drum potential (Vh) for LD power adjustment during process control initial setting, the first time the Vh pattern is made, the drum potential sensor detects that Vh is more than 600 V .

NOTE: After this SC is issued, the grid voltage changes to the value set with SP2001-001 (Charge Corona Bias Adjustment) and LD power changes to the value set with SP2103 (LD Power Adjustment).
Possible Causes

- Drum worn
- Drum potential sensor defective
- Poor drum potential sensor connection
- Drum potential sensor connector defective
- LD unit requires cleaning
- IOB defective
- Drum unit connector defective
- LDB board defective


## SC315: Drum Potential Sensor Error 6 (Vd Abnormal)

Definition [D]
When adjusting Vd for the unexposed drum during process control initialization, Vd does not reach the voltage set for SP2001 $007 \pm 20 \mathrm{~V}$ even if Vg has been adjusted 5 times.
SP2001 007 (Charge Corona Bias Adjustment - Vd) adjusts the target Vd voltage for process control. Range/Default/Step: [700~1000 / 800 / 5 V$]$.
NOTE: If the Vd adjustment fails, the machine uses the charge grid voltage Vg for the previous adjustment. In this condition, normal ID sensor pattern detection is done.
Possible Causes

- Drum potential sensor defective
- Drum potential sensor harness defective
- Drum potential sensor connector defective
- IOB defective
- Drum unit connector defective
- CBG power pack defective


## SC316: Drum Potential Sensor Error 7 (Vh abnormal

Definition [D]
One of the following occurred:

- When adjusting the drum potential (Vh) for the process control initial setting, the drum potential sensor detects Vh is not within the range $-260+\Delta \mathrm{VIref} \pm 20 \mathrm{~V}$. In this case, the auto process control value is used.
- During retries for LD power modulation to adjust the amount of light, the adjustment was out of range ( -70 to +185 ). In this case, the value of the setting is used.

Possible Causes

- Drum potential sensor defective
- IOB defective
- Drum unit connector defective
- LDB board defective
- Poor drum ground connection
- Drum worn
- Laser optics need cleaning


## SC317: Drum Potential Sensor Error 8

Definition [B]
At auto process control initialization, the VL detected after creation of the ID sensor pattern is greater than 300.

## Possible Causes

- Drum worn
- LD unit dirty
- Poor drum ground connection


## SC322: Laser Synchronization Error

Definition [B]
The laser synchronization signal (DETP) cannot be detected by the synchronization detector even if the laser diodes are activated and the polygon mirror motor is rotating normally.

## Possible Causes

- Laser synchronization detector harness disconnected or defective
- Laser synchronization detector is installed incorrectly out of position
- LDB board, Polygonal mirror motor control PCB defective. After the CPU issues the LD ON command, the LD OFF signal remains HIGH and the laser diodes do not fire
- LDB board, Polygonal mirror motor control PCB defective. After the CPU issues the LD ON command, the LD OFF signal goes low, but the laser diodes still do not fire
$\Rightarrow \quad$ - Front door safety switches are defective.


## SC323: Excessive LD Drive Current

Definition [B]
The value of the LD driver offset current is over the allowed current (about 90 mA ).
Possible Causes

- Poor LDB board harness connection
- LDB defective
- LD unit defective


## SC335: Polygonal Mirror Motor Error 1

Definition [B]
The polygonal mirror motor does not reach its operating speed within 20 s after the polygonal mirror motor turns on, or the polygonal mirror motor speed is changed. (The XSCRDY signal does not go LOW for active.)
Possible Causes

- Poor connection between polygonal mirror motor and I/F harness
- Polygonal mirror motor, LDB, or polygon mirror motor control PCB defective - IPU defective


## Hardware Layout



Polygon mirror motor driver: Polygon mirror motor control PCB

XPMON: Command that switches polygon mirror motor on/off. BCU $\rightarrow$ IPU $\rightarrow$ LDB $\rightarrow$ Polygon mirror motor control PCB
PMCLK: Polygon mirror motor drive clock. BCU $\rightarrow$ IPU $\rightarrow$ LDB $\rightarrow$ Polygon mirror motor control PCB
XSCRDY: Polygon mirror motor ready signal. Polygon mirror motor control PCB $\rightarrow \mathrm{LDB} \rightarrow \mathrm{IPU} \rightarrow \mathrm{BCU}$

## SC336: Polygonal Mirror Motor Error 2

Definition [B]
The XSCRDY signal (polygon mirror motor ready signal) does not go HIGH (inactive) within 20 s after the polygonal mirror motor switches off.
NOTE: For details, see the illustration for SC335.
Possible Causes

- Poor connection between the polygon mirror motor control PCB and I/F harness
- Polygonal mirror motor, polygon mirror motor control PCB, or LDB board defective
- IPU defective


## SC337: Polygonal Mirror Motor Error 3 (SCRDY Signal Error)

Definition [B]
While the polygonal mirror motor is rotating normally, the lock signal (XSCRDY or polygon mirror motor ready signal) is detected HIGH (inactive) even though the motor has not been switched off nor has the motor rotation been changed.
NOTE: For details, see the illustration for SC335.

## Possible Causes

- Electrical noise interfering with the lock signal (XSCRDY)
- Poor connection between polygonal mirror motor control PCB and I/F harness
- Polygonal mirror motor or LDB defective


## SC338: Polygonal Mirror Motor Error 4

## Definition [B]

The XSCRDY signal (polygon mirror motor ready signal) does not stabilize within 20 s when:

- The motor is switched ON or OFF
- After the rotation of the motor has been changed

NOTE: For details, see the illustration for SC335.
Possible Causes

- Poor connection between the polygonal mirror motor control PCB and the I/F harness
- Polygonal mirror motor or LDB defective


## SC340: TD Sensor Error 1 (Vt Measurement Error)

Definition [B]
The TD sensor output voltage is detected less than 0.5 V or more than 4.0 V for 10 continuous copies.

Possible Causes

- TD sensor defective
- TD sensor harness defective
- TD sensor connector defective
- IOB defective
- Toner supply defective; check the toner supply path from the toner bank through to the hopper
- BCU defective


## SC341: TD Sensor Error 2 (TD Sensor Control Voltage Abnormal)

Definition [B]
One of the following TD sensor output voltages is detected during TD sensor initial setting.

- Less than 2.5 V when the maximum PWM (255) is applied to the TD sensor.
- 2.5 V or more when minimum PWM (0) is applied to the TD sensor.

NOTE: When an abnormal condition is detected, " 0 " is displayed for SP2906 (Vcont Manual Setting).
Possible Causes

- TD sensor defective
- TD sensor harness defective
- TD sensor connector defective
- IOB defective
- Toner supply defective; check the toner supply path from the toner bank through to the hopper
- BCU defective


## SERVICE CALL CONDITIONS

## SC342: TD Sensor Error 3 (TD Sensor Adjustment Error)

Definition [B]
The TD sensor output voltage is not adjusted to $2.5 \pm 0.1 \mathrm{~V}$ within 20 s during automatic TD sensor initial setting.
NOTE: When an abnormal condition is detected, " 0 " is displayed for SP2906 (Vcont Manual Setting).
Possible Causes

- TD sensor defective
- TD sensor harness defective
- TD sensor connector defective
- IOB defective
- Toner supply defective; check the toner supply path from the toner bank through to the hopper
- BCU defective


## SC345: Development Bias Leak

Definition [B]
Maximum PWM for the development bias signal was applied 10 times for 60 ms .
Possible Causes

- CBG power pack defective
- Defective or disconnected harness between CBG power pack and development unit
- Defective harness connector


## SC350: ID Sensor Error 1

Definition [D]
One of the following ID sensor output voltages was detected when checking the ID sensor pattern.

- Vsp $\geq 2.5 \mathrm{~V}$
- $\mathrm{Vsp}=0 \mathrm{~V}$

NOTE: 1) $V$ sp is the ID sensor output after checking the ID sensor pattern image.
2) The SC code is not displayed; only the logging data is incremented.
3) Regarding toner supply, if an abnormal condition is detected, then only the toner density sensor output is used, without an updated Vref setting.
4) After an abnormal condition is detected, SP3103 (ID Sensor Output Display) shows Vsp = Vsg (or 5.0V).

## Possible Causes

- ID sensor defective
- ID sensor harness defective
- ID sensor connector defective
- IOB board defective
- LD unit defective
- BCU defective
- CBG power pack defective
- Dirty ID sensor


## SERVICE CALL CONDITIONS

## SC351: ID Sensor Error 2

Definition [D]
One of the following conditions were detected when checking the ID sensor pattern:

1) $\mathrm{Vsg} \leq 2.5 \mathrm{~V}$
2) $V s g=0 V$
3) The ID sensor output voltage $=5.0 \mathrm{~V}$ and PWM signal input to ID sensor $=0$

Vsg is the ID sensor output after checking the erased drum surface
NOTE: 1) Vsp is the ID sensor output after checking the ID sensor pattern image.
2) The SC code is not displayed; only the logging data is incremented.
5) Regarding toner supply, if an abnormal condition is detected, then only the toner density sensor output is used, without an updated Vref setting.
6) After an abnormal condition is detected, SP3103 (ID Sensor Output Display) shows Vsp $=$ Vsg (or 5.0 V ).

Possible Causes

- ID sensor defective
- ID sensor harness defective
- ID sensor connector defective
- IOB defective
- LD unit defective
- BCU defective
- CBG power pack defective
- Dirty ID sensor


## SC352: ID Sensor Error 3

Definition [D]
At the ID sensor pattern check, the ID sensor pattern edge voltage is not detected at 2.5 V for 1.5 seconds.

NOTE: 1) Vsp is the ID sensor output after checking the ID sensor pattern image.
2) The SC code is not displayed; only the logging data is incremented.
3) Regarding toner supply, if an abnormal condition is detected, then only the toner density sensor output is used, without an updated Vref setting.
4) After an abnormal condition is detected, SP3103 (ID Sensor Output Display) shows Vsp $=$ Vsg (or 5.0 V ).
Possible Causes

- ID sensor defective
- ID sensor harness defective
- ID sensor connector defective
- IOB defective
- LD unit defective
- BCU defective
- CBG power pack defective
- Dirty ID sensor


## SC353: ID Sensor Error 4 (Adjustment Error)

## Definition [D]

One of the following ID sensor output voltages is detected at ID sensor initialization.

- VSG < 4.0 V when the maximum PWM input (255) is applied to the ID sensor.
- VSG $\geq 4.0 \mathrm{~V}$ when the minimum PWM input (0) is applied to the ID sensor.

NOTE: 1) The most recent PWM value is used for control.
2) The values displayed with SP3103 (ID Sensor Output Display) are the actual values.

Possible Causes

- ID sensor defective
- ID sensor harness defective
- ID sensor connector defective
- IOB defective
- LD unit defective
- BCU defective
- CBG power pack defective
- Dirty ID sensor


## SERVICE CALL CONDITIONS

## SC354: ID Sensor Error 5

Definition [D]
Vsg is not adjusted to target ( $4.0 \pm 0.2 \mathrm{~V}$ ) within 20 s during VsG checking.
NOTE: 1) The most recent PWM value is used for control.
2) The values displayed with SP3103 (ID Sensor Output Display) are the actual values.

Possible Causes

- ID sensor defective
- ID sensor connector defective
- Poor ID sensor connector connection
- IOB defective
- LD unit defective
- BCU defective
- CBG power pack defective
- Dirty ID sensor


## SC355: ID Sensor Voltage Error

Definition [B]
The ID sensor voltage ( Vp ) exceeds 800 V for 10 continuous counts.

## Possible Causes

- Drum potential sensor defective
- IOB defective
- Poor drum unit connection or connectors defective
- Poor drum ground connection
- LD defective
- Poor drum cleaning ground connection
- Drum worn
- Dirty laser optics


## SC400: Transfer Bias Roller Leak

Definition [B]
After the transfer current begins, the value of the transfer current set with SP2301 (Transfer Current Adjustment) exceeds the specified setting, and feedback voltage lower than 0.75 V is detected for 16 counts (about 100 ms ).

Possible Causes

- CBG power pack defective
- Poor connection between the transfer current terminal and the transfer power pack.


## SC401: Transfer roller open error

Definition [B]
When transfer bias is applied to the bias roller while the main motor is operating, after bias output has started, one of the following conditions exists:

- Input connector is defective
- Output connector is defective


## Possible Causes

- Transfer power pack defective
- Poor connection between the transfer current terminal and the transfer power pack.


## SC430: Quenching Lamp Error

Definition [D]
When finishing the process control initial setting at the end of a job and the drum motor has stopped, the drum potential detected by the drum potential sensor is beyond the normal range.

## Possible Causes

- Quenching lamp defective
- Quenching lamp connector defective
- Poor connection between quenching lamp and CBG power pack


## SC440: Drum Motor Lock

Definition [B]
The drum motor lock signal is longer than 2 s while the drum motor is on.
Possible Causes

- Motor lock due to overload
- BCU defective


## SC441: Development Motor Lock

Definition [B]
While the motor is operating, the motor lock signal remains LOW for 2 s .

## Possible Causes

- Motor lock due to overload
- BCU defective


## SC491: Polygonal Mirror Motor Cooling Fan Motor Lock

Definition [B]
The polygonal mirror motor cooling fan motor lock signal remains HIGH for 5 s while the polygonal mirror motor cooling fan motor is on.

## Possible Causes

- Drive mechanism overload
- Obstruction has stopped the fan
- Fan connector loose


## SC492: Development Unit Suction Motor

## Definition [B]

While the development unit toner suction motor is operating, the lock sensor output does not change for 1 s .

Possible Causes

- Motor lock due to overload
- BCU defective


## SC495: Toner Bottle Unit Error

Definition [B]
The toner hopper sensor cannot detect toner even after the toner supply coil clutch turns on 10 times within 2 s during toner supply during copying.

## Possible Causes

- Toner supply pump motor defective
- Toner supply pump motor connector loose
- Toner supply coil clutch defective
- Toner supply coil clutch connector defective
- Toner near-end sensor (in the toner bank) defective
- Toner near-end sensor (in the toner bank) spring defective
- Toner blockage in the toner supply pump or toner supply path
- Toner hopper sensor defective


## SC496: Toner Collection Bottle Error

Definition [B]
The toner collection bottle sensor or development unit toner suction bottle set sensor remains off for 3 s .

## Possible Causes

- Used toner collection bottle or development unit waste toner suction collection bottle is incorrectly set
- Used toner collection bottle or development unit waste toner suction collection bottle connector is loose or sensor defective


## SC497: Development Unit Toner Suction Bottle Error

## Definition [B]

During machine operation, the development unit toner suction bottle set sensor goes off for 3 s .

Possible Causes

- Bottle is not installed
- Toner suction bottle set sensor connector is loose


## SC501: 1st Tray Lift Malfunction

## Definition [C]

One of the following conditions is detected in the 1st tray (tandem tray) of the main machine:

- The $1^{\text {st }}$ tray lift sensor is not activated for 10 s after the 1 st tray lift motor turned on.
- Upper limit is not detected within 10 s while the paper tray is lifting during paper feed.
- The 1st tray lift sensor is already activated when the 1st tray is placed in the machine.

Possible Causes

- Poor 1st tray lift motor connection
- Remaining paper or another obstruction has stopped the tray and motor
- 1st pick-up solenoid connector is loose
- 1st pick-up solenoid is blocked by an obstruction


## SERVICE CALL CONDITIONS

## SC502: 2nd Tray Lift Malfunction

Definition [C]
One of the following conditions is detected in the 2nd tray of the main machine:

- The 2nd tray lift sensor is not activated for 10 s after the 2nd tray lift motor turned on.
- Upper limit is not detected within 10 s while the paper tray is lifting during paper feed.
- The 2nd tray lift sensor is already activated when the 2 nd tray is placed in the machine.
Possible Causes
- Poor 2nd tray lift motor connection
- Remaining paper or another obstruction has stopped the tray and motor
- 2nd pick-up solenoid connector is loose
- 2nd pick-up solenoid is blocked by an obstruction


## SC503: 3rd Tray Lift Malfunction

Definition [C]
One of the following conditions is detected in the 3rd tray of the main machine:

- The 3rd tray lift sensor is not activated for 10 s after the 3rd tray lift motor turned on.
- Upper limit is not detected within 10 s while the paper tray is lifting during paper feed.
- The 3rd tray lift sensor is already activated when the 3rd tray is placed in the machine.


## Possible Causes

- Poor 3rd tray lift motor connection
- Remaining paper or another obstruction has stopped the tray and motor
- 3rd pick-up solenoid connector is loose
- 3rd pick-up solenoid is blocked by an obstruction


## SC504: 4th Tray (LCT 1st Tray) Lift Malfunction

Definition [C]
One of the following conditions is detected in the $4^{\text {th }}$ tray:

- The LCT 1st lift sensor is not activated for 10 s after the LCT 1st tray lift motor turned on.
- Upper limit is not detected within 10 s while the paper tray is lifting during paper feed.
- The LCT 1st lift sensor is already activated when the LCT 1st tray is placed in the machine.

Possible Causes

- Poor LCT 1st tray lift motor connection
- Remaining paper or another obstruction has stopped the tray and motor
- LCT 1st pick-up solenoid connector is loose
- LCT 1st pick-up solenoid is blocked by an obstruction


## SC505: 5th Tray (LCT 2nd Tray) Lift Malfunction

## Definition [C]

One of the following conditions is detected in the 5th tray:

- The LCT 2nd lift sensor is not activated for 10 s after the LCT 2nd tray lift motor turned on.
- Upper limit is not detected within 10 s while the paper tray is lifting during paper feed.
- The LCT 2nd lift sensor is already activated when the LCT 2nd tray is placed in the machine.


## Possible Causes

- Poor LCT 2nd tray lift motor connection
- Remaining paper or another obstruction has stopped the tray and motor
- LCT 2nd pick-up solenoid connector is loose
- LCT 2nd pick-up solenoid is blocked by an obstruction


## SC506: 6th Tray (LCT 3rd Tray) Lift Malfunction

Definition [C]
One of the following conditions is detected in the 6th tray.

- The LCT 3rd lift sensor is not activated for 20 s after the LCT 3rd tray lift motor turned on.
- Upper limit is not detected within 20 s while the paper tray is lifting during paper feed.
- The LCT 3rd lift sensor is already activated when the LCT 3rd tray is placed in the machine.
Possible Causes
- Poor LCT 3rd tray lift motor connection
- Remaining paper or another obstruction has stopped the tray and motor
- LCT 3rd pick-up solenoid connector is loose
- LCT 3rd pick-up solenoid is blocked by an obstruction


## SERVICE CALL CONDITIONS

## SC507: 7th Tray (Bypass Tray) Lift Mechanism

Definition [C]
One of the following conditions is detected in the optional bypass tray.

- The bypass tray lift sensor is not activated for 10 s after the tray lift motor turned on.
- Upper limit is not detected within 10 s while the paper tray is lifting during paper feed.
- The bypass tray lift sensor is already activated paper is placed in the 7th tray.

Possible Causes

- Poor bypass tray lift motor connection
- Remaining paper or another obstruction has stopped the tray and motor
- Bypass tray pick-up solenoid connector is loose
- Bypass tray pick-up solenoid is blocked by an obstruction


## SC510: Paper Feed Motor Lock

Definition [B]
An abnormal signal is sent from the paper feed motor.

## Possible Causes

- Paper feed motor defective
- Poor paper feed motor connector connection
- Too much load on the drive mechanism


## SC511: LCT Motor Error 1

Definition [B]
The motor overload lock signal for the LCT motor is detected HIGH for more than 500 ms during rotation.

Possible Causes

- LCT motor defective
- Too much load on the drive mechanism


## SC512: Bypass Tray Error 1

Definition [B]
The motor overload lock signal for the optional bypass tray motor is detected HIGH for more than 400 ms during rotation.

## Possible Causes

- Bypass tray motor defective
- Too much load on the drive mechanism


## SC520: Duplex Jogger Motor Error 1

Definition [C]
When the jogger fence moves to the home position, the duplex jogger HP sensor does not turn on even if the jogger motor has moved the jogger fence more than 153.5 mm .

## Possible Causes

- Remaining paper or another obstruction is blocking the side fence
- Jogger motor connection is loose


## SC521: Duplex Jogger Motor Error 2

## Definition [C]

When the jogger fence moves from the home position, the duplex jogger fence HP sensor does not turn off even if the jogger motor has moved the jogger fence more than 153.5 mm .

## Possible Causes

- Remaining paper or another obstruction is blocking the side fence
- Jogger motor connection is loose


## SC531: Fusing/Exit Motor Lock

Definition [B]
A fusing/exit motor lock signal is detected for more than 2 s during operation.
Possible Causes

- Motor lock due to overload
- Motor driver board defective


## SC532: Paper Feed Motor Lock

Definition [C]
Paper feed motor lock signal is detected for more than 2 s during operation.
Possible Causes

- Motor lock due to overload
- Motor driver board defective


## SC541: Fusing Thermistor Open

Definition [A]
The fusing temperature detected by the thermistor was below $7^{\circ} \mathrm{C}$ for 15 s .

## Possible Causes

- Fusing thermistor defective or out of position
- Poor thermistor terminal connection


## SC542: Fusing Temperature Warm-up Error

Definition [A]
One of the following occurred:

- Hot roller did not reach target operation temperature within 6 minutes after the machine was powered or 6 minutes after the doors were closed.
- Fusing temperature rose only $5^{\circ} \mathrm{C}$ toward the fusing temperature within 20 s after the machine was powered on, or after the doors were closed.
- Fusing temperature rose only $5^{\circ} \mathrm{C}$ toward the fusing temperature within 25 s of the start of hot roller rotation.
Possible Causes
- Fusing lamp(s) disconnected
- Thermistor out of position


## SC543: Fusing Overheat Error 1: Software

## Definition [A]

A fusing temperature of over $210^{\circ} \mathrm{C}$ is detected for 5 s by the fusing thermistor. This prevents the fusing lamps from switching on without a fusing lamp trigger signal.

Possible Causes

- AC drive board defective
- BCU defective
- Reload the BCU firmware


## SC544: Fusing Overheat Error 2: Hardware

Definition [A]
The fusing temperature monitoring circuit detects abnormal fusing temperature.
Possible Causes

- AC drive board defective
- BCU defective
- Reload the BCU firmware


## SC545: Fusing Overheat Error 3: Continuous Lamp On

## Definition [A]

After warm-up and while the hot roller is not rotating, the fusing lamps remain on at full power for 90 s .

## Possible Causes

- Fusing thermistor out of position
- One or more fusing lamp is disconnected


## SC546: Fusing Temperature Unstable

Definition [A]
The fusing temperature continues to fluctuate rapidly.

## Possible Causes

- Poor thermistor connector connection
- Poor fusing unit connection


## SC547: Zero Cross Signal Malfunction

Definition [A]
The applied bandwidth is detected above 66 Hz or below 45 Hz , and no zero-cross signal detected for 5 s with the power relay ON.

## Possible Causes

- Noise on the ac power line


## SC550: Oil Supply/Cleaning Web End

Definition [A]
The oil supply/cleaning web end sensor stays on longer than the specified time after the web motor remains ON for 40 s .

Possible Causes

- Oil supply/cleaning web end (web on supply roller used up)
- Oil supply/cleaning web motor defective

NOTE: SP1902 001 (Web Motor Control - Web Consumption) should be set to "0" every time the oil supply/cleaning web is replaced. This setting will not take effect until the machine is cycled off/on.

## SC591: Toner Supply Pump Motor Error

Definition [B]
The toner supply pump motor lock signal did not change within 1 s while the motor is operating.

## Possible Causes

- Motor lock due to overload
- BCU defective


## SC592: Toner Bank Motor Error

Definition [B]
An abnormal signal was received from the toner bank motor.

## Possible Causes

- Toner bank motor defective
- Bank motor connector loose
- Too much load on the drive mechanism


## SC593: Toner Suction Motor Replace

Definition [B]
The operation time of the motor is over 600 hours.
Possible Cause

- Service life of the toner suction motor is finished.

Note: A near-end message is displayed in the LCD when the operation time exceeds 570 hours.

## SC601: Communication Error Between BCU and MCU

Definition [B]
One or more of the following occurred:

- The BCU cannot communicate with the MCU within 0.8 s after power on.
- A BREAK signal was detected after connection between the BCU and MCU.
- After a communication error, three tries to communicate with the MCU failed.

Possible Causes

- Poor connection between BCU and MCU
- BCU defective
- MCU defective


## SC620: Communication Error between BCU and ADF 1

Definition [B']
The TXD and RXD signals between BCU and ADF main board do not stabilize.
Possible Causes

- Poor connection between the BCU board and the ADF main board
- Noise on interface cable


## SC621: Communication Error between BCU and ADF 2

## Definition [ $\mathrm{B}^{\prime}$ ]

The TXD and RXD signals between BCU and ADF main board do not stabilize.

## Possible Causes

- Poor connection between the BCU board and the ADF main board
- ADF main board defective
- BCU board defective


## SC622: Communication Error between BCU and ADF 3

Definition- [B']
Software error after abnormal user operation.
Possible Causes

- Software error; switch the machine off/on


## SC625, 626: Communication Error between BCU and Finisher

## Definition [B]

The BCU cannot communicate with the finisher properly.

## Possible Causes

- Poor connection between the BCU board and the finisher main board
- Finisher main board defective
- BCU board defective
- Noise on the interface cable


## SC630: CSS (RSS) Communication

Definition [B] Japan only

## SC632: Charge Unit Device Error 1

Definition [B] Japan Only

## SC633: Charge Unit Device Error 2

Definition [B] Japan Only

## SERVICE CALL CONDITIONS

## SC670: Engine Startup Error

Definition [B]
Several possible causes for this error:
At power on or after the machine leaves the energy conservation mode:

- /ENGRDY signal does not assert
- IPURDY signal does not assert

After power on and the prescribed time has elapsed:

- No EC response from the engine
- No PC response from the engine
- No SC response from the engine

During machine operation mode:

- Write to Rapi drive failure (could not locate destination on the PCI)
- After the /ENGRDY signal asserts with no effect.

Possible Causes

- BCU $\leftrightarrow$ Controller Board disconnected
- BCU board defective
- Controller board defective
- Mother board defective
- Software error; switch off/on, if that fails, change the engine firmware
- PSU-E or PSU-C defective


## SC672: Controller Startup Error

Definition [B]
The line between the controller board and the operation panel does not open correctly when the machine is powered on, or after the machine was powered on communication between the controller and operation panel is suspended.

The controller board and operation panel could not exchange the handshake (FDH) and acknowledge (FEH) signals within 15 s of the operation panel reset after power on, or after 2 retries there was no response to the transmission line confirmation command issued every 30 s from the operation panel to the controller board.

Possible Causes

- Controller board defective
- Controller board installed incorrectly
- Operation panel harness connection loose or incorrect


## SC701: ADF Pick-up Roller Release Malfunction

Definition [B]
The pick-up roller HP sensor does not activate or de-activate when the pick-up motor turns on.

## Possible Causes

- Pick-up roller HP sensor defective
- Pick-up motor defective
- ADF main control board defective


## SC702: ADF Feed-in Motor Error

## Definition [B]

While the feed motor is operating, the encoder pulse signal is not received within the specified time, or the paper size length encoder signal cannot be detected within the specified time (the encoder is built into the feed-in motor).

## Possible Causes

- Feed-in motor defective
- Paper length sensor
- ADF main control board defective
- Poor connection between the feed-in motor and ADF main board


## SC703: ADF Transport Belt Motor Error

Definition [B]
While the motor is operating, the encoder pulse signal is not received within the specified time and the transport belt motor does not turn properly.

## Possible Causes

- Transport belt motor defective
- Poor connection between the transport motor and ADF main board
- ADF main board defective


## SC704: ADF Feed-out Motor Error

Definition [B]
While the feed-out motor is operating, the encoder pulse signal is not received within the specified time, and the feed-out motor does not turn properly

## Possible Causes

- Feed-out motor defective
- Poor connection between the feed-out motor and ADF main board
- ADF main control board defective


## SERVICE CALL CONDITIONS

## SC705: ADF Original Table Lift Malfunction

Definition [B]
One of the following conditions was detected.

- The bottom plate position sensor does not activate when the bottom plate motor lifts the original table.
- The bottom plate HP sensor does not activate when the bottom plate motor lowers the original table.
Possible Causes
- Bottom plate position sensor defective
- Bottom plate HP sensor defective
- Bottom plate motor defective
- ADF main control board defective


## SC720: Finisher Lower Transport Motor Error

Definition [B]
The encoder pulse signal of the lower transport motor (B478) or stapler transport motor (B468) does not change within the specified time, and the lower transport motor does not turn properly

## Possible Causes

- Lower transport motor/stapler transport motor defective
- Poor connection between the lower transport motor (or stapler transport motor) and finisher main board
- Finisher main control board defective
- Motor overload


## SC722: Finisher Jogger Motor Error

Definition [D]
The jogger fences move out of the home position but the HP sensor output does not change within the specified number of pulses.

## Possible Causes

- Jogger HP sensor (B478)/ jogger fence HP sensor (B468) defective
- Overload on the jogger mechanism
- Jogger motor (B478)/jogger fence motor (B468) defective (not rotating)
- Finisher main control board defective
- Poor connection between the jogger motor and finisher main board


## SC724: Finisher Staple Hammer Motor Error

Definition [B]
Stapling does not finish within the specified time ( 450 ms ) after the staple hammer motor turned on.

Possible Causes

- Staple jam
- Overload because number of sheets exceeds the limit
- Staple hammer motor (B478)/stapler motor (B468) defective
- Poor motor cable connection


## SC725: Finisher Stack Feed-out Motor Error

## Definition [D]

The stack feed-out belt HP sensor does not activate within the specified time after the stack feed-out belt motor turned on.

## Possible Causes

- Stack feed-out HP sensor defective
- Poor stack feed-out belt motor cable connection
- Stack feed-out belt motor defective
- Finisher main control board
- Motor overload


## SC726: Finisher Shift Motor Error (B478 only)

## Definition [D]

The shift tray half-turn sensor status does not change within 1 second after the shift motor turns on.

Possible Causes

- Shift tray half-turn sensor defective
- Poor shift tray half-turn sensor connection or defective harness
- Shift motor defective
- Finisher main control board defective
- Motor overload


## SC727: Finisher Stapler Rotation Motor Error

Definition [D]
The stapler does not return to its home position within the specified time after stapling finished.

## Possible Causes

- Staple rotation HP sensor defective
- Poor stapler rotation motor connection
- Stapler rotation motor defective
- Finisher main board defective
- Motor overload


## SC729: Finisher Punch Motor Error

Definition [B]
The punch HP sensor is not activated within the specified time after the punch motor turned on.

Possible Causes

- Punch HP sensor defective
- Poor punch motor connection
- Punch motor defective
- Finisher main board defective
- Motor overload


## SC730: Finisher Stapler Motor Error

Definition [D]
The stapler HP sensor is not activated within the specified time after the stapler motor turned on.

Possible Causes

- Stapler HP sensor defective
- Poor stapler motor (B478)/stapler movement motor (B468) connection
- Stapler motor (B478)/stapler movement motor (B468) defective
- Finisher main board defective
- Motor overload


## SC731: Finisher Positioning Roller Error (B478 only)

Definition [B]
The positioning roller HP sensor in the finisher is not activated within the prescribed length of time ( 340 pulses) for two counts.

## Possible Causes

If powering the machine off/on does not solve the problem:

- Positioning roller HP sensor defective or disconnected
- Stapler transport motor or positioning roller solenoid defective
- Finisher main control board defective
- Finisher control board defective
- Jam

NOTE: 1) If the motor operates, then check the positioning roller HP sensor.
2) If the motor does not operate, then check the motor and the finisher control board.
3) If the harness connections are secure, the motor may be defective.

## SC732: Finisher Jogger Motor Error

Definition [B]
The jogger HP sensor is not activated within the prescribed length of time.

## Possible Causes

- Jogger HP sensor (B478)/jogger fence HP sensor (B468)/shift jogger HP sensor (optional jogger unit) disconnected or defective
- Jogger motor (B478)/jogger fence motor (B468)/shift jogger motor (optional jogger unit) disconnected or defective
- Finisher main control board defective
- Overload

NOTE: 1) If cycling the machine off/on does not solve the problem, then the HP sensor may be defective.
2) Be sure to check all harness connections.
3) If the motor operates, then the HP sensor is defective.
4) If the motor does not operate, then the motor or the finisher main control board is defective.
5) Make sure that the jogger unit is not overloaded.

## SC735: Finisher Paper Stack Plate Motor Error (B478)

Definition [D]
One of the stack plate HP sensors (front, center, or rear) does not turn on within the prescribed time after the stack plate motor turned on.

## Possible Causes

- One of the stack plate HP sensors is defective
- Poor stack plate motor connection
- One of the stack plate motors is defective
- Finisher main control board defective
- Motor overload


## SC736: Finisher Exit Guide Motor Error (B478 only)

Definition [D]
The exit guide open sensor does not change within the specified time after the exit guide motor is energized.

Possible Causes

- Exit guide open sensor defective
- Poor exit guide motor connection
- Exit guide motor defective
- Finisher main control board defective
- Motor overload


## SC737: Full Finisher Staple Waste Hopper (B478)

Definition [D]
The staple waste hopper is full.
Possible Causes

- Staple waste hopper is full (remove hopper and empty it)


## SC738: Finisher Shift Tray Lift Motor Error (B478)

Definition [B]
The staple mode HP or shift mode HP sensor does not activate within the specified time after the tray lift motor turned on.

Possible Causes

- Staple mode HP or shift mode HP sensor defective
- Staple mode HP or shift mode HP sensor connection loose or broken
- Tray lift motor defective
- Finisher main control board defective
- Motor overload


## SC740: Finisher Upper Tray Lift Motor Error (B468)

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

## Possible Causes

- Upper tray paper height sensor defective
- Upper tray paper height sensor connection loose or broken
- Tray lift motor defective
- Finisher main control board defective
- Motor overload


## SC741: Finisher Lower Tray Lift Motor Error (B468)

Definition [D]
The lower tray paper height sensor does not change its status with the specified time after the tray raises or lowers.

## Possible Causes

- Lower tray paper height sensor defective
- Lower tray paper height sensor connection loose or broken
- Tray lift motor defective
- Finisher main control board defective
- Motor overload


## SC742: Finisher Shift Motor Error (B468)

Definition [D]
Shift motor not detected at the home position within the specified time.
Possible Causes

- Shift roller HP sensor defective
- Shift roller HP sensor connection loose or broken
- Shift motor defective
- Finisher main control board defective
- Motor overload


## SC743: Finisher Pressure Plate Motor Error (B468)

Definition [D]
Pressure plate motor operating but the plate is not detected at the home position within the specified time.

## Possible Causes

- Pressure plate HP sensor defective
- Pressure plate HP sensor connection loose or broken
- Pressure plate motor defective
- Finisher main control board defective
- Motor overload


## SC744: Finisher Exit Guide Motor Error (B468)

Definition [B]
After moving away from the guide plate position sensor, the exit guide is not detected at the home position within the specified time ( 800 ms )
Possible Causes

- Guide plate motor overload
- Motor defective
- Motor harness defective
- Motor connector loose


## SC745: Finisher Folder Plate Motor Error (B468)

Definition [D]
The folder plate moves but is not detected at the home position within the specified time.

Possible Causes

- Folder plate HP sensor defective
- Folder plate HP sensor harness broken or poor connection
- Folder plate motor defective
- Finisher main control board defective
- Motor overload


## SC746: Stapler Unit Saddle Stitch Motor Error 1

Definition [D]
The front stapler unit saddle-stitch motor does not start operation within the specified time ( 450 ms ).

## Possible Causes

- Motor harness defective or connection loose
- Motor defective
- Finisher main controller board defective
- Motor overload


## SC747: Stapler Unit Saddle Stitch Motor Error 2

## Definition [D]

The rear stapler unit saddle-stitch motor does not start operation within the specified time ( 450 ms ).

Possible Causes

- Motor harness defective or connection loose
- Motor defective
- Finisher main controller board defective
- Motor overload


## SC750: Cover Interposer Tray Bottom Plate Motor Error

Definition [D]
One of the following events occurred:

- After the motor starts to raise the bottom plate, the bottom plate position sensor does not detect the plate at the specified time (3 s).
- After the motor starts to lower the bottom plate, the bottom plate HP sensor does not detect the bottom plate.
Possible Causes
- Bottom plate position sensor defective
- Bottom plate HP sensor defective
- Bottom plate lift motor defective
- Cover interposer tray main board defective
- Motor connectors loose or harness defective


## SC800: Video Output Transmission End Error

Definition [B]
A video signal is sent to the engine but no command is received within the prescribed time from the engine to signal the end of transfer - output all black.

Possible Causes

- Controller defective


## SC804: Video Input End Error

Definition [B]
Video transfer is requested from the scanner, but no command is received within the prescribed time from the scanner to signal a response, and output is all black.

## Possible Causes

- Controller board defective


## SC817 Monitor Error

Definition [B]
This is a file detection and electronic file signature check error when the boot loader attempts to read the self-diagnostic module, system kernel, or root system files from the OS Flash ROM, or the items on the SD card in the controller slot are false or corrupted.
Error Codes

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

## Possible Causes

- OS Flash ROM data defective; change the controller firmware
- SD card data defective; use another SD card
- For example:

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

NOTE: 1) Before discarding the SD card, try to update the data on the card. If the error occurs again, the card may be defective.
2) Be sure to use an SD card that contains the correct electronic signature.

## SC818 Watch Dog Error

## Definition [B]

While the system program is running, a bus hold or interrupt program goes into an endless loop, preventing any other programs from executing.
Possible Causes

- System program defective; switch off/on, or change the controller firmware if the problem cannot be solved
- Controller board defective
- Controller option malfunction


## SC819 Fatal kernel error

Definition [B]
RAM overflow occurs during system processing. One of the following messages is displayed on the operation panel.
NOTE: For more details about this SC code error, execute SP5990 to print an SMC report so you can read the error code. The error code is not displayed on the operation panel.

## SMC Report Error Code: 0x696e

init died
SMC Report Error Code: 0x766d
vm_pageout: VM is full
Possible Causes

- Controller board defective
- Software defective; change the controller firmware


## SC821: Self-Diagnostic Error 1: ASIC Not Detected

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

## SMC Report Error Code: OB00

Definition [B]
Error code 0xffff ffff is returned when the register Write \& Verify check is executed on the ASIC mounted on the controller board. The ASIC controls the ROM and buses for other devices.

Possible Causes

- ASIC (Bassoon) defective

NOTE: Replace the controller board.

## SMC Report Error Code: OB06

Definition [B]
ASIC not detected.
Possible Causes

- ASIC (Bassoon) defective
- Poor connection between North Bridge and PCI I/F

NOTE: Replace the controller board.
SMC Report Error Code: 0B10

## Definition [B]

Failed to initialize or could not read connection bus. Data in SHM register incorrect.
Possible Causes

- Connection bus defective
- SHM defective

NOTE: Replace the controller board.

## SC822: Self-Diagnostic Error 2: HDD

NOTE: For more details about this SC code error, execute SP5990 to print an SMC report so you can read the error code. The error code is not displayed on the operation panel.
SMC Report Error Code: 3004
Definition [B]
No response to the self-diagnostic command from the ASIC to the HDDs.
Possible Causes

- One or both HDDs defective


## SMC Report Error Code: 3013

Definition [B]
Mandolin does not respond, the HDD device remains BUSY for more than 31 s , or the BUSY signal does not drop within 6 s after the diagnostic command is issued to the HDDs.

## Possible Causes

- One or both HDDs defective
- HDD connector loose or defective
- Controller defective

SMC Report Error Code: 3014
Definition [B]
Error returned from HDD in response to the self-diagnostic command, Mandolin could not be located due to a read/write error at the HDD register.

## Possible Causes

- One or both HDDs defective

SMC Report Error Code: 3023
Definition [B]
Mandolin does not respond, the HDD device remains BUSY for more than 31 s , or the BUSY signal does not drop within 6 s after the diagnostic command is issued to the HDDs.

## Possible Causes

- One or both HDDs defective
- HDD connector loose or defective
- Controller defective

SMC Report Error Code: 3024
Definition [B]
Error returned from HDD in response to the self-diagnostic command, Mandolin could not be located due to a read/write error at the HDD register.

## Possible Causes

- One or both HDDs defective


## SC824 Self-Diagnostic Error 3: NVRAM

Definition [B]
The NVRAM is not installed or is damaged.
Possible Causes

- NVRAM not installed
- NVRAM defective
- Controller board defective
- Backup battery has discharged


## SC826: Self-Diagnostic Error 4: RTC Backup Battery Error

## Definition [B]

The RTC backup battery has discharged or the voltage of the installed battery is not within the specified range.

## Possible Causes

- NVRAM installed incorrectly
- RTC backup battery defective
- Controller board defective
- NVRAM defective


## SC828 Self-Diagnostic Error 5: ROM Error

Definition [B]
Measuring the CRC for the boot monitor and operating system program results in an error. This check is not executed when booting the machine from an SD card.

## Possible Causes

- SD card defective
- Controller board defective


## SC829 Self-Diagnostic Error 6: Optional RAM

## Definition [B]

A check of the optional RAM installed in Slot 0 on the controller board returned an error.

## Possible Causes

- RAM DIMM installed incorrectly
- RAM DIMM defective
- RAM DIMM slot damaged or defective; replace the controller board

SC833: Self-Diagnostic Error 7: Engine I/F ASIC
NOTE: For more details about this SC code error, execute SP5990 to print an SMC report so you can read the error code. The error code is not displayed on the operation panel.
SMC Report Error Code: 0F30, 0F31
Definition [B]
ASIC (Mandolin) for system control could not be detected. After the PCI is configured, the device ID for the ASIC could not be confirmed.

## Possible Causes

- The ASIC (Mandolin) for system control is defective
- I/F between North Bridge and AGPI is defective

NOTE: Replace the Mother Board.
SMC Report Error Code: 0F41

## Definition [B]

The read/write check conducted for resident RAM mounted on the Mother Board failed.

Possible Causes

- Memory device defective

NOTE: Replace the Mother Board.
SMC Report Error Code: 50B1
Definition [B]
Failed to initialize or read the bus connection.
Possible Causes

- Bus connection defective or loose
- SSCG defective

NOTE: Replace the Mother Board.
SMC Report Error Code: 50B2

## Definition [B]

Value of the SSCG register is incorrect.

## Possible Causes

- Bus connection defective or loose
- SSCG defective
- Replace the Mother Board.


## SC834: Self-Diagnostic Error 8: Optional Memory RAM DIMM

Definition [B]
The write/verify check for the optional RAM chip on the engine I/F board (mother board) returned an error

Possible Causes

- Controller board defective
- Mother board defective


## SC838 Self-Diagnostic Error 9: Clock Generator

Definition [B]
Setup data is read from the clock generator via the I2C bus but differs from the prescribed value due to defects in the clock generator, in the I2C bus, or the I2C bus port for the PCU.

## Possible Causes

- Controller board defective


## SC850: Network I/F Error

## Definition [D]

One of the following conditions exists:

- Duplicate IP addresses
- Illegal IP address
- Driver unstable and cannot be used on the network.

Possible Causes

- IP address setting incorrect
- NIB (PHY) defective
- Controller board defective


## SC851: IEEE 1394 I/F Error

## Definition [D]

Driver setting incorrect and cannot be used by the 1394 I/F.
Possible Causes

- NIB (PHY), LINK module defective; change the Interface Board
- Controller board defective


## SC853: Wireless LAN Error 1

Definition [D]
The board that holds the wireless LAN card can be accessed, but the wireless LAN card ( $802.11 \mathrm{~b} /$ Bluetooth) itself could not be accessed while the machine was starting up.

## Possible Causes

- Wireless LAN card has been removed


## SC854: Wireless LAN Error 2

Definition [D]
The board that holds the wireless LAN card can be accessed, but the wireless LAN card ( $802.11 \mathrm{~b} /$ Bluetooth) itself cannot be could not be accessed while the machine was operating.

## Possible Causes

- Wireless LAN card has been removed


## SC855: Wireless LAN Error 3

Definition [D]
An error is detected for the wireless LAN card (802.11b or Bluetooth).

## Possible Causes

- Wireless LAN card defective
- Wireless card connection not tight


## SC856: Wireless LAN Error 4

Definition [D]
An error is detected for the wireless LAN board (802.11b or Bluetooth).

## Possible Causes

- Wireless LAN card board defective
- PCI connector loose (External controller interface board)


## SC857: USB I/F Error 1

Definition [D]
The USB driver is unstable and generated an error. The USB I/F cannot be used.
Possible Causes

- USB board or controller board defective


## SC860: HDD Error 1

Definition [D]
One of the following occurred:

- The HDD is connected, but the driver detected one of the following errors:

| SS_NOT_READY | One or both HDDs are not ready. |
| :--- | :--- |
| SS_BAD_LABEL | Partition types are different |
| SS_READ_ERROR | Error returned during label read or label check |
| SS_WRITE_ERROR | Error returned during label write or label check |
| SS_FS_ERROR | File system repair failed |
| SS_MOUNT_ERROR | File system mount failed |
| SS_COMMAND_ERROR | Drive does not answer the command |
| SS_KERNEL_ERROR | Kernel internal error |
| SS_SIZE_ERROR | Driver size is too small |
| SS_NO_PARTITION | Specified partition does not exist |
| SS_NO_FILE | Device files do not exist |

- The driver could not acquire the status of the hard disks within 30 s.

Possible Causes

- Hard disks are not formatted
- Hard disk corrupted; reformat the disks with SP mode


## SC861: HDD Error 2: HDD Startup

Definition [B]
The hard disks were detected at power on, but the disks were not detected within 30 s after recovery from the energy conservation mode.

## Possible Causes

- Cable between the hard disks and controller board disconnected or loose
- Hard disk power connector loose
- One of the hard disks is defective
- Controller or mother board defective


## SC862 HDD Error 3: Bad Sectors

Definition [A]
The number of bad sectors on the HDD in the area for storing images exceeds 101.

Possible Causes

- Too many bad sectors accumulated on the HDDs.

NOTE: 1) Execute SP5832 002 (HDD Formatting - IMH) to format the HDD and replace the bad sectors; copy the stamp data after doing this (use SP 5853).
2) HDD replacement is recommended because an HDD unit that generates bad sectors is probably of poor quality and performs poorly.

## SC863: HDD Error 4: HDD Read Error

Definition [B]
The system cannot read the data written on the hard disks.

## Possible Causes

- Sectors on the disks have become corrupted during operation; replace the hard disks


## SC864: HDD Error 5: Data CRC Error

Definition [B]
During HDD operation, the HDD could not respond to a CRC error query.

## Possible Causes

- Mother board defective


## SC865: HDD Error 6: Access Error

Definition [B]
HDD responded to an error during operation for a condition other than those for SC863, 864.

## Possible Causes

- HDD defective


## SERVICE CALL CONDITIONS

## SC866: SD Card Error 1: Confirmation

Definition [B]
The machine detects an electronic license error in the application on the SD card inserted in the controller slot when the machine is powered on.

The program stored on the SD card contains electronic confirmation license data. If the program does not contain this license data, or if the result of the check reveals the license data in the program on the SD card is incorrect, then the checked program cannot execute and this SC code is displayed.
Possible Causes

- Required program missing or incorrect

NOTE: Download the correct program for this machine onto the SD card.

## SC867 SD Card Error 2: SD Card Removed

Definition [B]
The SD card inserted in the boot slot when the machine was powered on was removed while the machine was still switched on.

## Possible Causes

- SD card removed from boot slot on the controller
- Cycle the machine off/on


## SC868 SD Card Error 3: SD Card Access

Definition [B]
An error is returned during an operation using an SD card. Debug console acquires more detailed information about the error.

Possible Causes

- SD card not inserted completely
- SD card defective
- Controller board defective

NOTE: If this SC code is displayed again after cycling the machine off and on, use another SD card. If this does not solve the problem, replace the controller board.

## SC870: Address Book Data Error

Definition [B]
Address book data stored on the hard disk was detected as abnormal when it was accessed from either the operation panel or the network.

The address book data cannot be read from the HDD or SD card where it is stored, or the data read from the media is defective.

## Possible Causes

- Software defective; switch off/on, and change the controller firmware if the problem is not solved
- HDD defective


## Recovery

- Execute SP5846 050 (UCS Settings - Initialize all Directory Info.) to initialize all address book data.
- Initialize the user information with SP5832 006 (HDD Formatting- User Information 1) and SP5832 007 (HDD Formatting - User Information 2).
- Replace the HDDs.
- Boot the machine from the SD card.


## SC880: Media Link Board Error

Definition [B]
A request for access to the Media Link Board was not answered within the specified time.
Possible Causes

- Media Link Board defective


## SERVICE CALL CONDITIONS

## SC900: Electrical Total Counter Error

Definition [A]
The total counter contains data that is not a number.
Possible Causes

- NVRAM disturbed unexpectedly
- NVRAM defective
- NVRAM data corrupted


## SC901: Mechanical Total Counter Error

Definition [B]
The mechanical total counter is disconnected.

## Possible Causes

- User removed the counter while it was operating
- Poor connection
- Mechanical total counter defective

SC910: External Controller Error 1
Definition [D]
Not used.

## SC911: External Controller Error 2

Definition [D]
Not used.

## SC912: External Controller Error 3

Definition [D]
Not used.

## SC913: External Controller Error 4

Definition [D]
Not used.

## SC914: External Controller Error 5

Definition [D]
Not used.

## SC919: External Controller Error 6

Definition [B]
While EAC (External Application Converter), the conversion module, was operating normally, the receipt of a power line interrupt signal from the FLUTE serial driver was detected, or BREAK signal from the other station was detected.

## Possible Causes

- Power outage at the EFI controller
- EFI controller was rebooted
- Connection to EFI controller loose


## SC920: Printer Error 1

Definition [D]
An internal application error was detected and operation cannot continue.
Possible Causes

- Software defective; switch off/on, or change the controller firmware if the problem is not solved
- Insufficient memory


## SC921: Printer Error 2

Definition [D]
When the printer application started, the font to use could not be found on the SD card.

Possible Causes

- The font is not on the SD card


## SC925 NetFile Function Error

Definition [B]
The NetFile file management on the HDD cannot be used, or a NetFile management file is corrupted and operation cannot continue.

The HDDs are defective and they cannot be debugged or partitioned, so the Scan Router functions (delivery of received faxes, document capture, etc.), Web services, and other network functions cannot be used.

HDD status codes displayed on the debug console:

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

Possible Causes

- HDD defective
- Power supply to machine cut occurred while writing data to HDD
- Software error

Recovery

## Procedure 1

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

## Procedure 2

If the machine does not return one of the five HDD errors (SC860~SC865), cycle the machine off and on. If this does not solve the problem, then initialize the NetFile partition on the HDD with SP5832 011 (HDD Formatting - Ridoc I/F).
NetFiles: Jobs printed from the document server using a PC and DeskTopBinder

- Before initializing the NetFile partition on the HDD please inform the client that:
- Received faxes on the delivery server will be lost
- All captured documents will be lost
- DeskTopBinder/Print Job Manager/Desk Top Editor job history will be cleared
- Documents stored on the document server, included scanned documents, will not be lost.
- The first time the network accesses the machine, the management information must be reconfigured (this will require a significant amount of time).
Before initializing the Netfile partition with SP5823 011, do the following:

1. Enter the User Tools mode and execute "Delivery Settings" to print all received fax documents scheduled for delivery and delete them.
2. In the User Tools mode, execute Document Management> Batch Delete Transfer Documents.
3. Execute SP5832 011 then cycle the machine off and on.

## Procedure 3

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

Executing SP5832 001 erases all document and address book data stored on the hard disks. Be sure to consult with the customer before executing this SP code.

## Procedure 4

If "Procedure 4" fails to correct the problem, replace the HDDs.

## SC951: F-GATE Signal Error

Definition [B]
When the IPU has already received the F-GATE signal (laser writing start trigger signal), the IPU receives another F-GATE signal.

## Possible Causes

- Software defective; switch off/on, or change the BCU firmware if this does not solve the problem
- BCU defective


## SC953: Scanner Image Setting Error

## Definition [B]

The settings required for image processing using the scanner are not sent from the IPU.

Possible Causes

- Check the connections between the MCU and LCDC and BCU
- Replace the MCU, BCU, or IPU
- Change the BCU or MCU firmware


## SC954: Printer Image Setting Error

Definition [B]
The settings that are required for image processing using the printer controller are not sent from the IPU.

## Possible Causes

- Check the connections between the IPU and the LDB, and from the LDB to the polygon mirror motor control PCB.
- Change the IPU or LDB
- Change the polygon mirror motor or the polygon mirror motor control PCB
- Change the BCU firmware


## SC955: Memory Setting Error

Definition [B]
The settings that are required for image processing using the memory are not sent from the IPU.

Possible Causes

- Format the hard disks
- Change the hard disks
- Controller defective
- Change the mother board or IPU
- Change the controller firmware or the BCU firmware


## SC964: Scanner Start Error

Definition [B]
During scanned image processing, another command to start scanning was received.

Possible Causes

- Change the BCU firmware


## SC965: Print Start Error

Definition [B]
During print processing, another command to start printing was received.
Possible Causes

- Change the BCU firmware


## SC966: Polygon Mirror Motor Ready Error

Definition [B]
The polygon mirror motor does not reach ready status within 15 s after the copy paper is detected by the registration sensor. ( 15 s after the write request was issued for the IPU, the F-GATE signal remained LOW.)
Possible Causes:

- Polygon mirror motor defective
- Poor connection between polygon mirror motor drive board and BCU
- Polygon mirror motor drive board defective
- BCU defective


## SC970: Scanner Ready Error

Definition [B]
The scan ready signal is not generated by the MCU for more than 10 s after the read start signal is sent to the MCU.

## Possible Causes

- Serial data transfer between MCU and BCU (through the LCDC)
- Change the MCU firmware


## SC990: Software Performance Error 1

Definition [B]
An unexpected operation was encountered by the software.
Possible Causes

- Software crash; reboot the machine


## Procedure 1

If the HDDs have just been replaced, be sure to download the stamp data (SP 5853).

## Procedure 2

With SP5990 004 (SMC Report - Logging Data), print the most recent information for SC990. The SC990 information displays the file name, line number, and value. Report this information to your technical supervisor. For example:

```
Function.c LINE: 123 VAL:0
```


## SERVICE CALL CONDITIONS

## SC991: Software Error 2

Definition [D]
Software attempted to execute an unexpected operation. However, unlike SC990, operation can be recovered.

Possible Causes

- Software crash; reboot the machine


## Recovery

After SC991 has been issued, the machine cannot be used until it is cycled off an on.

## Procedure 1

Cycle the machine off and on.

## Procedure 2

Enter the SP mode and execute SP5990 to print an SMC report, or execute SP7403 to review the "SC History".
-or-
With SP5990 004 (SMC Report - Logging Data), print the most recent information for SC9901. The SC991 information displays the file name, line number, and value. Report this information to your technical supervisor. For example:

```
Function.c LINE: 123 VAL:0
```


## SC992: Software Error 4: Undefined Error

## Definition [B]

Software encountered an unexpected operation. This error is issued if the error cannot be covered by SC990.

## Possible Causes

- Software defective
- An error undetectable by any other SC code occurred


## Recovery

- The machine cannot be used until this error is cleared. Cycle the machine off and on.


## SC997: Application Selection Error

Definition [D]
An application did not start after pressing the appropriate key on the operation panel.
Possible Causes

- Software bug; change the firmware for the application that failed
- A RAM or DIMM option required by the application is not installed or not installed correctly.


## SC998: Application Start Error

## Definition [B]

Register processing does not execute for any application within 60 s after the machine is powered on. No application starts correctly, and all end abnormally.

Possible Causes

- Software defective; change the firmware for the application that failed
- A RAM or DIMM option required by the application is not installed or not installed correctly.

SC999: Program Download Error
Definition [B]
The program download from the SD card does not execute normally. This SC is not logged.

## Possible Causes

- Card installed incorrectly
- BCU defective
- SD card defective
- Controller board defective
- Power down during program downloading
- Wrong type of card inserted (see Section 5 "Service Tables" for downloading procedures)


## SERVICE TABLES

## 5. SERVICE TABLES

### 5.1 SERVICE PROGRAM MODE OPERATION

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

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

## To Enter and Exit the SP Mode

1. Press Clear Modes key 图.
2. On the operation panel keypad, press (1)(0) (7).
3. Hold down Clear key ${ }^{\text {clear }}$ [90 more than 3 seconds.

The Copy SP or PM Counter items are displayed. If the printer or scanner/printer option is installed, the Printer SP and Scanner SP items are also available.
4. Press Copy SP.
5. To exit the SP mode, just press Exit in the upper right corner of the SP mode screen.

## To Switch to the Copy Window for Test Printing

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

## SERVICE PROGRAM MODE OPERATION

## Using the SP Mode

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

## Direct Entry

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

## Button Selection Entry

1. Refer to the SP Mode Tables at the end of this section to find the SP that you want to adjust.
2. Press the Group number on the left side SP Mode window that contains the SP that you want to adjust.
3. Use the scrolling buttons in the center of the SP mode window to display the SP number that you want to open, then, press that number to expand the list.
4. Use the center touch-panel buttons to scroll to the number and title of the item that you want to set, and press Enter key \#. The small entry box on the right is activated and displays the default or the current setting below.
5. To enter a setting

- Press $\circledast$ key to enter a minus sign. Then use the keypad to enter the appropriate number. The number you enter will write over the previous setting.
- Press $\#$ to enter the setting. (If you enter a number that is out of range, the key press is ignored.)
- Press Clear key $\stackrel{\text { cleof }}{\square}$ to cancel the data.

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 © key.
7. Press SP Mode (highlighted) in the copy window to return to the SP mode display.
8. When you are finished, press Exit twice to return to the copy window.

## SP Mode Button Summary

Here is a short summary of the touch-panel buttons.
(1)
(2)
(3)
(4)
(5)

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

### 5.2 SERVICE PROGRAM MODE TABLES

NOTE: The Service Program Mode is for use only by customer engineers so that they can properly maintain product quality. If this mode is used by anyone other than a customer engineer for any reason, data might be deleted or settings might be changed. In such a case image quality can no longer be guaranteed.

## Service Table Key

| Notation | What it means |
| :--- | :--- |
| [range / default / step] | $[-9 \sim+9 /+3.0 / 0.1 \mathrm{~mm}]$ <br> The default setting +3.0 can be adjusted in 0.1 mm steps in the range <br> $\pm 9$. |
| Italics | Comments added for reference. |
| $*$ | An asterisk marks the SP's that are reset to their factory default <br> settings after an NVRAM reset. |
| DFU | Denotes "Design or Factory Use". Do not change this value. |
| Japan only | The feature or item is for Japan only. Do not change this value. |
| SEF | Short Edge Feed |
| LEF | Long Edge Feed |

### 5.2.1 COPIER SERVICE PROGRAM MODE TABLES

## SP1-nnn Feed

| SP |  | Number/Name | Function/[Setting] |
| :---: | :---: | :---: | :---: |
| 1001 | Leading Edge Registration |  | Adjusts the printing leading edge registration for feeding from the trays and duplex tray using the trimming area pattern (SP2-902-3, No.15).] <br> Use the "• / *key to enter the minus (-) before entering the value. <br> The specification is $4 \pm 2 \mathrm{~mm}$. (-3-17) |
|  | 001 | Copier/LCT Paper Tray | B070: $[-9.0 \sim+9.0 /-2.6 / 0.1 \mathrm{~mm}]$ B071: $[-9.0 \sim+9.0 /-4.0 / 0.1 \mathrm{~mm}]$ |
|  | 002 | Duplex Tray | B070: $[-9.0 \sim+9.0 /-\mathbf{0 . 3} / 0.1 \mathrm{~mm}]$ B071: $[-9.0 \sim+9.0 /-\mathbf{0 . 4} / 0.1 \mathrm{~mm}])$ |
|  | 003 | Copier//LCT Paper Tray (Low Speed) | B070: $[-9.0 \sim+9.0 /-3.0 / 0.1 \mathrm{~mm}]$ B071: $[-9.0 \sim+9.0 /-2.0 / 0.1 \mathrm{~mm}]$ |
|  | 004 | Duplex Tray (Low Speed) | [-9.0~+9.0 / 0 / 0.1 mm ] |
| 1002 | Side-to-side Registration |  | Adjusts the printing side-to-side registration from the 1st paper feed station using the trimming area pattern (SP2-902-3, No.15). <br> Use the "• / *key to enter the minus (-) before entering the value. <br> Specification: $0 \pm 2.0 \mathrm{~mm}$. ( $-3-17$ ) |
|  | 001 | 1st Tray (Copier Tandem Tray) | [-9.0~+9.0 / -0.1/0.1 mm] |
|  | 002 | 2nd Tray (Copier) | [-9.0~+9.0 / -0.6/ 0.1 mm$]$ |
|  | 003 | 3rd Tray (Copier) | [-9.0~+9.0 / -0.3/0.1 mm] |
|  | 004 | 4th Tray (LCT Tray 1) | [-9.0~+9.0 / -0.8/0.1 mm] |


| SP |  | Number/Name | Function/[Setting] |
| :---: | :---: | :---: | :---: |
| 1002 | 005 | 5th Tray (LCT Tray 2) | [-9.0~+9.0 / -0.8/0.1 mm] |
|  | 006 | 6th Tray (LCT Tray 3) | [-9.0~+9.0/+0.3/0.1 mm] |
|  | 007 | 7th Tray (Bypass Tray) | [-9.0~+9.0 / -0.3/0.1 mm] |
|  | 008 | Duplex Tray (Copier) | [-9.0~+9.0 / 0 / 0.1 mm$]$ |
| 1003 | Paper Buckle Adjustment (Registration) |  | Adjusts the relay clutch timing at registration. The relay clutch timing determines the amount of paper buckle at registration. (A plus or minus setting increases or decreases the amount of buckle.) |
|  | 001 | Copier Paper Tray | [-9~+9 / +4/1 mm] |
|  | 002 | LCT | $[-9 \sim+9 /+4 / 1 \mathrm{~mm}]$ |
|  | 003 | Duplex Tray | [-9~+9 / +4/1 mm] |
| 1008 |  | Duplex Fence Adjustment | Adjusts the distance between the front and rear duplex fences. $[-2.0 \sim+2.0 / 0 / 0.5 \mathrm{~mm}]$ |
| 1103 |  | Fusing Idling After Energy Saving | Selects whether fusing idling is done or not when recovering from the Energy <br> Saving. [0~1/0/1] <br> 0: Not Done <br> 1: Done |
| 1105 | Fusi | emperature Adjustment |  |
|  | 001 | Fusing Temperature in Waiting Condition | Adjusts the fusing temperature for standby. <br> B070: [120~178/ 168/ 1 deg] <br> B071: [120~178 / 173 / 1 deg] |
|  | 002 | Fusing Temperature Lower Limit | Adjusts the fusing temperature lower limit. When the fusing unit falls below this temperature, the machine stops copying. Copying automatically restarts when the fusing temperature recovers. <br> DFU <br> B070: [100~158 / 148 / 1 deg] <br> B071: [100~158 / 153/ 1 deg] |
|  | 003 | Fusing Temperature Correction (<A4/LT) | Specifies the amount to raise the fusing temperature from standby mode to print on paper smaller than A4/LT LEF. <br> B070: [0~10 / 7 / 1 deg] <br> B071: [0~10 / 10 / 1 deg] |
|  | 004 | Fusing Temperature Correction (>A4 / LT) | Specifies the amount to raise the fusing temperature from standby mode to print on paper of A4/LT width LEF or wider. <br> B070: [0~10 / $2 / 1$ deg] (B070) <br> B071: [0~10 / 5 / 1 deg] (B071) <br> Note: The threshold paper width used for SP1105 003 and 004 depends on SP1105 010. |
|  | 005 | Fusing Temperature Correction (Transparencies) | Specifies the amount to raise or lower fusing temperature from standby mode to print on OHP Transparencies. <br> B070: [-10~+5 / +2 / 1 deg] (B070) <br> B071: [-10~+5 / +5 / 1 deg] (B071) |


| SP |  | Number/Name | Function/[Setting] |
| :---: | :---: | :---: | :---: |
| 1105 | 006 | Fusing Temperature Correction (Translucent Sheets) | Specifies the amount to raise or lower fusing temperature from standby mode to print on Translucent Sheets (tracing paper). <br> B070: $[-10 \sim+5 /+2 / 1$ deg] <br> B071: [-10~+5 / +5 / 1 deg] |
|  | 007 | Fusing Lamp Switching at Warmup | Specifies the fusing temperature when switching from 3 fusing lamps on to 2 fusing lamps on to stabilize the fusing temperature from warm-up. (The fusing lamp that heats the center of the hot roller is turned off.) $\left[20 \sim 140 / 40 / 1^{\circ} \mathrm{C}\right]$ |
|  | 008 | Fusing Temperature Adjustment in Lower Power Mode | Sets the target temperature for the hot roller when the machine enters low power mode. $\begin{aligned} & \text { B070: }\left[101 \sim 178 / 143 / 1^{\circ} \mathrm{C}\right] \\ & \text { B071: }\left[101 \sim 178 / 150 / 1^{\circ} \mathrm{C}\right] \end{aligned}$ |
|  | 009 | Fusing Idling Start Temperature | Sets the start temperature for fusing idling. [100~160 / $\left.150 / 1^{\circ} \mathrm{C}\right]$ |
|  | 010 | Paper Size Selection for Temperature Correction | Determines which threshold paper width is used for SP1105 003 and SP1105 004. $[0 \sim 1 / 0 / 1]$ <br> 0: LT/A4 LEF <br> 1: 257 mm wide (B5 SEF). |
|  | 011 | Fusing Lamp Switching after Low Power Mode | Specifies the fusing temperature to switch from 3 fusing lamps on to 2 fusing lamps on when the machine returns from low power mode: $\text { SP1105-1 - SP1105 } 011 \text { = Actual Temp. }$ $\left[5 \sim 20 / 10 / 1^{\circ} \mathrm{C}\right]$ <br> The third lamp is not switched on to prevent overshooting the target temperature. |
| 1106 |  | Fusing Temperature Display | Displays the fusing temperature. |
| 1107 |  | Fusing Idling Time Setting | Sets the fusing idling time. $[0 \sim 60 / 10 / 1 \mathrm{~s}]$ |
| 1108 | Fusing Adjustment before Ready Condition |  |  |
|  | 001 | Waiting Condition Time Setting | Specifies the length of time to elapse after the target temperature has been reached in order to apply even heat across the length of the hot roller. Only applies when fusing idling is used. [0~180 / 80 / 1s] <br> This SP attempts to reduce the amount of paper wrinkling, especially if the first job is on A3 paper after the machine is started up at the beginning of the workday. |


| SP | Number/Name |  | Function/[Setting] |
| :---: | :---: | :---: | :---: |
| 1108 | 002 | Temperature Correction | Corrects the fusing temperature before reaching standby temperature in order to prevent overshooting standby temperature. DFU $\left[-10 \sim-5 /-8 / 1^{\circ} \mathrm{C}\right]$ |
| 1109 | Fusing Nip Band Check |  | Use OHP to execute this SP and feed 1 sheet between the hot roller and pressure roller where it remains for 30 s and is then fed out so you can measure the nip band width. <br> [OFF, ON] |
| 1902 | Web Motor Control |  |  |
|  | 001 | Web Consumption | Displays how much of the web has been used, expressed as a percentage of the roll consumed. Switch the machine off/on after changing this setting. $\text { [0~107 / } 0 \text { / 1\%] }$ <br> When you install a partially used roll from another machine, read this SP before removal, then input that value with this SP on the next machine. Otherwise, the machine has no way of knowing how much of the partially used roll has been consumed. |
|  | 002 | Web Motor Drive Interval | Determines how often the web motor turns on. <br> B070 <br> EUR/A: [3~130 / 12.6 / 0.1 sec$]$ <br> NA: $\quad[3 \sim 130 / 20.7 / 0.1 \mathrm{sec}]$ <br> B071 <br> EUR/A: [3~130 / 10.4 / 0.1 sec$]$ <br> NA: $\quad[3 \sim 130 / 17.0 / 0.1 \mathrm{sec}]$ |
|  | 003 | Web Motor Drive Time | Changes the time that the web motor is driven. $[0.3 \sim 3.5 / 2.8 / 0.1 \mathrm{~s}]$ |
|  | 004 | Web Near End Setting | Changes the web consumption ratio at which web near end is displayed. <br> EUR/A: [0~100 / 86 / 1\%] <br> NA: [0~100 / 90 / 1\%] |
|  | 005 | Web Motor Drive Interval (Low Speed) | Determines how often the web motor turns on in Low Speed mode. <br> EUR/A: [3~130 / 15.4 / 0.1 s] <br> NA: $\quad[3 \sim 130 / 25.3 / 0.1 \mathrm{~s}]$ |
| 1903 | Web Drive Time |  |  |
|  | 001 | Web Total Time Display (x 200ms) | Displays the total amount of time (seconds) elapsed during web roll feed. |
|  | 002 | Web Actual Time Display (x 100ms) | Displays the total amount of web roll motor operation time (seconds) for feeding the current web roll. |


| SP | Number/Name |  | Function/[Setting] |
| :---: | :---: | :---: | :---: |
| 1906 | 001 | Duplex Stop Position - Right | Changes the paper stop position in the duplex unit after passing duplex transport sensor 2. DFU $[-10 \sim+10 / 0 / 2 \mathrm{~mm}]$ |
| 1907 | Paper Feed Timing Adjustment |  | Specifies when to stop the feed clutch once a sheet of paper reaches the feed sensor and switches it on. $\text { [0~1000 / } 0 \text { / } 100 \text { ms] }$ <br> This SP mode is used as a multi-feed countermeasure. However, copy (print) speed is slightly reduced. |
|  | 001 | Tray 1 |  |
|  | 002 | Tray 2 |  |
|  | 003 | Tray 3 |  |
|  | 004 | Tray 4 (LCT Tray 1) |  |
|  | 005 | Tray 5 (LCT Tray 2) |  |
|  | 006 | Tray 6 (LCT Tray 3) |  |
|  | 007 | Tray 7 (Bypass Tray) |  |
|  | 008 | Translucent Sheets |  |

## SP2-nnn Drum

| SP | Number/Name |  | Function/[Setting] |
| :---: | :---: | :---: | :---: |
| 2001 | Charge Corona Bias Adjustment |  |  |
|  | 001 | Grid Voltage in Imaging Area (Auto Process Control OFF) | Adjusts the voltage applied to the grid plate during copying when auto process control is off. <br> [-600~-1300 / -900 / 10 V$]$ <br> Normally, there is no need to adjust this. However, if there is an ID or TD sensor problem, the machine goes into fixed toner supply mode. After replacing the drum or charge corona wire, reset this value to the default. |
|  | 002 | $\begin{aligned} & \text { Grid Voltage in ID Sensor } \\ & \text { Pattern(Auto Process Control OFF) } \end{aligned}$ | Adjusts the voltage applied to the grid plate when making the ID sensor pattern, when auto process control is switched off. <br> [-600~~1300 / -770 / 10 V ] <br> Normally, there is no need to adjust this. If the user wants high-density copies, the sensor pattern must be lighter, so this voltage must be a higher negative voltage. |
|  | 003 | Grid Voltage in Imaging Area (Auto Process Control ON) | Adjusts the voltage applied to the grid plate during copying when auto process control is switched on. <br> $[-600 \sim-1300 /-1000 / 10 \mathrm{~V}]$ <br> This voltage changes every time auto process control starts up (every time the machine is switched on) |
|  | 004 | Grid Voltage for Transparencies | Adjusts the voltage applied to the grid plate when Transparency mode is selected. $[-600 \sim-1300 /-770 / 10 \mathrm{~V}]$ <br> Use this if there is a copy quality problem when making copies on Transparencies. Normally there is no need to adjust this SP. |
|  | 005 | Total Corona Current | Adjusts the current applied to the charge corona wire except in Photo mode. $[-1000 \sim-2800 /-1400 / 10 u A]$ |
|  | 006 | Total Corona Current (Photo Mode) | Adjusts the current applied to the charge corona wire for Photo mode. <br> [-1000~ $2800 /-1600 / 10 u A]$ |
|  | 007 | Vd (Auto Process Control) | Adjusts the target VD voltage for Process Control Initial Setting. <br> $[-700 \sim-1000 /-800 / 5 \mathrm{~V}]$ |
|  | 008 | Grid Voltage in Imaging Area (Auto Process Control off/Low Speed) | Adjusts the voltage applied to the grid plate during copying when auto process control is switched off and the machine is in the low speed mode. <br> $[-600 \sim-1300 /-850 / 10 \mathrm{~V}]$ |


| SP | Number/Name | Function/[Setting] |  |
| :--- | :--- | :--- | :--- |
| 2001 | 009 | Grid Voltage in ID Sensor Pattern <br> (Auto Process Control off/Low <br> Speed) | Adjusts the voltage applied to the grid <br> plate when making the ID sensor pattern, <br> when auto process control is switched off <br> and the machine is in the low speed <br> mode. <br> [-600~-1300 / -710 / 10 V] |


| SP | Number/Name |  | Function/[Setting] |
| :---: | :---: | :---: | :---: |
| 2105 | 001 | Correction in Printer Mode | If switched ON, this allows each channel to be adjusted for 1200 dpi print output with the SP settings below (LD0 ~ LD7). [0~1/1/1] <br> 0: OFF, 1: ON |
|  | 002 | Correction in Copy Mode | If switched ON, this allows each channel to be adjusted for copy output with the SP settings below (LD0~LD7). $[0 \sim 1 / 0 / 1]$ <br> 0: OFF, 1: ON |
|  | 003 | LD0 Power Correction | Correct the power of LD0 after either SP2105-001 or -002 is switched on. $[-40 \sim+40 /-2 / 1]$ |
|  | 004 | LD1 Power Correction | Corrects the power of LD1 after either SP2105-001 or -002 is switched on. $[-40 \sim+40 /-2 / 1]$ |
|  | 005 | LD2 Power Correction | Corrects the power of LD2 after either SP2105-001 or -002 is switched on. $[-40 \sim+40 /+2 / 1]$ |
|  | 006 | LD3 Power Correction | Corrects the power of LD3 after either SP2105-001 or -002 is switched on. $[-40 \sim+40 /+2 / 1]$ |
|  | 007 | LD4 Power Correction | Corrects the power of LD4 after either SP2105-001 or -002 is switched on. $[-40 \sim+40 /+2 / 1]$ |
|  | 008 | LD5 Power Correction | Corrects the power of LD5 after either SP2105-001 or -002 is switched on. $[-40 \sim+40 /+2 / 1]$ |
|  | 009 | LD6 Power Correction | Corrects the power of LD6 after either SP2105-001 or -002 is switched on. $[-40 \sim+40 /-2 / 1]$ |
|  | 010 | LD7 Power Correction | Corrects the power of LD7 after either SP2105-001 or -002 is switched on. $[-40 \sim+40 /-2 / 1]$ |
| 2111 | FCI Shade Detection |  | Allows shading detection if FCl (Fine Character Adjustment) smoothing is on. With this SP switched on, photos and painted areas are detected, and FCl is not applied in these areas. FCl is used for printer mode output only. |
|  | 001 | Matrix Size (600 dpi) | $\begin{aligned} & {[0 \sim 128 / 18 / 1]} \\ & 0: \text { OFF } \end{aligned}$ |
|  | 002 | Threshold Value (600 dpi) | $\begin{aligned} & {[0 \sim 128 / 4 / 1]} \\ & 0: \text { OFF } \end{aligned}$ |
|  | 003 | Matrix Size (400 dpi) | $\begin{aligned} & {[0 \sim 128 / 18 / 1]} \\ & 0: \text { OFF } \end{aligned}$ |
|  | 004 | Threshold Value (400 dpi) | $\begin{aligned} & {[0 \sim 128 / 4 / 1]} \\ & 0: \text { OFF } \end{aligned}$ |


| SP |  | Number/Name | Function/[Setting] |
| :---: | :---: | :---: | :---: |
| 2114 | Printer Dot Edge Parameter Setting |  | Allows setting a parameter for binary edge processing for the printer application with FCI switched off. This SP allows adjustment of image quality if the desired effect cannot be achieved with the default settings for edge processing. In general, increasing the values produces thicker lines and decreasing them produces thinner lines. However, some settings could cause defective images on white paper. |
|  | 001 | Leading Dot Level Setting (1200 dpi) | [2~8/5/1] |
|  | 002 | Trailing Dot Level Setting (1200 dpi) | [2~8/5/1] |
|  | 003 | Multiple Dot Level Setting (1200 dpi) | [2~8/8/1] |
|  | 004 | Independent Dot Level Setting (1200 dpi) | [2~8/6/1] |
|  | 005 | Leading Dot Level Setting (600 dpi) | [2~16 / 12/ 1] |
|  | 006 | Trailing Dot Level Setting (600 dpi) | [2~16/12/1] |
|  | 007 | Multiple Dot Level Setting (600 dpi) | [2~16 / 16/1] |
|  | 008 | Independent Dot Level Setting (600 dpi) | [2~16/12/1] |
| 2115 | Main Scan Beam Pitch Adjustment |  | A label attached to the LD unit service part lists the correct settings. |
|  | 001 | Pitch Adjustment Between LD0 and LD2 (LDO) | [-100~100 / $0 / 1 \mu \mathrm{~m}$ ] |
|  | 002 | Pitch Adjustment Between LD0 and LD4 (LD0) | [-100~100 / 0 / $1 \mu \mathrm{~m}$ ] |
|  | 003 | Pitch Adjustment Between LD0 and LD6 (LD0) | [-100~100 / 0 / $1 \mu \mathrm{~m}$ ] |
|  | 004 | Pitch Adjustment Between LD1 and LD3 (LD1) | [-100~100 / 0 / $1 \mu \mathrm{~m}$ ] |
|  | 005 | Pitch Adjustment Between LD1 and LD5 (LD1) | [-100~100 / 0 / $1 \mu \mathrm{~m}$ ] |
|  | 006 | Pitch Adjustment Between LD1 and LD7 (LD1) | [-100~100 / 0 / $1 \mu \mathrm{~m}$ ] |
|  | 007 | Pitch Adjustment Between CH 0 and CH1 | [-100~100 / 0 / $1 \mu \mathrm{~m}$ ] |
| 2201 | Development Bias Adjustment |  |  |
|  | 001 | Image Area | Adjusts the development bias for copying [-200~-800 / -550 / 10 V$]$ <br> This can be adjusted as a temporary measure if faint copies appear due to an aging drum. |
|  | 002 | ID Sensor Pattern (Auto Process Control OFF) | Adjusts the development bias for making the ID sensor pattern for VSP measurement when the auto process control is set to off. $\text { [-200~-800 / -400 / } 10 \text { V] }$ <br> This should not be used in the field, because it affects ID sensor pattern density, which affects toner supply. |


| SP | Number/Name |  | Function/[Setting] |
| :---: | :---: | :---: | :---: |
| 2201 | 003 | Transparencies | Adjusts the development bias for copying on Transparencies. $[-200 \sim-800 /-400 / 10 \mathrm{~V}]$ |
|  | 004 | ID Sensor Development Potential | Adjusts the development potential for making the ID sensor pattern for VSP measurement when the auto process control is set on. $\text { [140~380 / } 240 / 10 \mathrm{~V}]$ |
|  | 005 | Image Area (Low Speed) | Adjusts the development bias for copying in low speed mode. <br> B070: [-200~800 / -480 / 10 V$]$ <br> B071: [-200~800 / -450 / 10 V$]$ |
|  | 006 | ID Sensor Pattern (Auto Process Control OFF/Low Speed) | Adjusts the development bias for making the ID sensor pattern for VSP measurement when the auto process control is set to off and the machine is in low speed mode. <br> B070: [-200~800 / -370 / 10 V$]$ <br> B071: [-200~800 / -350 / 10 V$]$ |
|  | 007 | Transparencies (Low Speed) | Adjusts the development bias for copying onto Transparencies in low speed mode. <br> B070: [-200~800 / -370 / 10 V$]$ <br> B071: [-200~800 / -350 / 10 V ] |
|  | 008 | ID Sensor Development Potential (Low Speed) | Adjusts the development potential for making the ID sensor pattern for VSP measurement when the auto process control is set on and the machine is in the low speed mode. <br> B070: [0~200 / 30 / 10 V ] <br> B071: [0~200 / 50 / 10 V] <br> This value is subtracted from the setting of SP2201 004. For example, if 004 is set at 240 and 008 set at 60 , then the value is adjusted to $180(240-60=180)$. |
| 2207 | Toner Supply |  |  |
|  | 001 | Forced Toner Supply | Forces toner supply for 10 seconds from the toner bank through the toner hopper to the development unit. Press Start to force toner supply. <br> This mode finishes automatically after the toner supplied 10 times. Use to determine if toner supply is operating correctly. If forcing toner supply with this SP does not darken the image, then toner supply is not operating correctly. |


| SP | Number/Name |  | Function/[Setting] |
| :---: | :---: | :---: | :---: |
| 2207 | 002 | Toner Bank Toner Setup | Turns on the drum motor, development motor, development bias, toner supply motor and charge corona. Then turns on the toner supply coil clutch to supply toner to the toner hopper, but not to the development unit. Requires about 7 minutes. Remove the white gear from the toner hopper and install the red gear. Press Start. Install the white gear again after finishing with this SP mode. Use this SP to fill the toner transport path with toner after cleaning the toner supply unit, or at installation. |
| 2208 | Toner Supply Mode |  | Selects the toner supply mode: Sensor Control or Image Pixel Count. <br> [0~1 / 0 / 1] <br> 0: Sensor Control <br> 1: Pixel Count <br> Select Image Pixel Count only if the TD sensor has failed and cannot be replaced immediately, so that the customer can use the machine. Return the setting to Sensor Control after replacing the sensor. |
| 2209 | Toner Supply Rate |  |  |
|  | 001 | Normal Speed | Adjust the toner supply amount from the hopper for the normal operation. <br> B070: [100~2000 / 850 / $10 \mathrm{mg} / \mathrm{s}$ ] B071: [100~2000/1000/10 mg/s] Increasing this value reduces the toner supply roller clutch on time. Use a lower value if the user tends to make lots of copies that have a high proportion of black. |
|  | 002 | Low Speed | Allows adjustment of the toner supply amount <br> from the hopper for low speed mode. <br> B070: [100~2000 / $850 / 10 \mathrm{mg} / \mathrm{s}$ ] <br> B071: [100~2000 / $1000 / 10 \mathrm{mg} / \mathrm{s}$ ] |
| 2210 | ID Sensor Pattern Interval |  | Changes the interval for making the ID sensor pattern (VSP/VSG detection). [1~500/10/1 copy] If the user normally makes copies with a high proportion of black, reduce the interval. |


| SP | Number/Name | Function/[Setting] |
| :---: | :---: | :---: |
| 2220 | Vref Manual Setting | Adjusts the TD sensor reference voltage (Vref) manually. $[0 \sim 5.0 / 2.5 / 0.01 \mathrm{~V}]$ <br> Change this value after replacing the development unit with another one that already contains toner. To use a development unit from another machine for test purposes: <br> 1) Check the value of SP2220 and SP2906 in both the machine containing the test unit and the machine that you are going to move it to. <br> 2) Install the test development unit, then input the VREF for this unit into SP2220 and the Vcont for this unit into SP2906. <br> 3) After the test, put back the old development unit, and change SP2220 and SP2906 back to the original value. |
| 2223 | Vt Display | Displays the current TD sensor output voltage. [0~5.0 / 2.5 / 0.01 V] |
| 2226 | Toner Bank Toner Discharge | This SP removes toner from the toner bank and sends it to the toner hopper. After turning the toner supply motor and the toner bank motor on, the toner supply coil clutch turns on and off at 2 second intervals. The motors and clutch stop when the toner near-end sensor (in the toner bank unit) detects no toner. Even if the sensor continues to detect toner, this operation stops when the clutch has been turned on and off 10 times, so this SP may have to be repeated to clean out the system completely. |
| 2227 | Toner Supply Mode Display | Displays the toner supply mode used for the last copy. <br> 1: ID Sensor and TD Sensor (from the 11th copy, using VT - VREF) <br> 2: ID Sensor and TD Sensor (using VSP/VSG) - before the 10th copy of a job <br> 3: TD Sensor - temporary mode when ID sensor output is abnormal <br> 4: Image Pixel Count |
| 2301 | Transfer Current Adjustment | Adjusts the current applied to the transfer belt during copying, depending on the side, media type, and operation mode (normal or low speed). |
|  | 001 1st Copy Side | $\begin{aligned} & \text { B070: }[10 \sim 200 / 100 / 1 \mu \mathrm{~A}] \\ & \text { B071: }[10 \sim 200 / 110 / 1 \mu \mathrm{~A}] \end{aligned}$ |
|  | 002 Thick Paper | $\begin{aligned} & \text { B070: }[10 \sim 200 / 100 / 1 \mu \mathrm{~A}] \\ & \text { B071: }[10 \sim 200 / 110 / 1 \mu \mathrm{~A}] \end{aligned}$ |


|  |  | Number/Name | Function/[Setting] |
| :---: | :---: | :---: | :---: |
| 2301 | 003 | Transparencies | [10~200 / 140 / $1 \mu \mathrm{~A}$ ] |
|  | 004 | Translucent Sheets | $\begin{array}{\|l\|} \hline \text { B070: }[10 \sim 200 / 100 / 1 \mu \mathrm{~A}] \\ \text { B071: }[10 \sim 200 / 110 / 1 \mu \mathrm{~A}] \end{array}$ |
|  | 005 | 2nd Copy Side | $\begin{array}{\|l} \text { B070: }[10 \sim 200 / 100 / 1 \mu \mathrm{~A}] \\ \text { B071: }[10 \sim 200 / 110 / 1 \mu \mathrm{~A}] \end{array}$ |
|  | 006 | Between Papers | [10~200/20/1 $\mu \mathrm{A}]$ |
|  | 007 | 1st Copy Side (Low Speed) | [10~200/80/1 $\mu \mathrm{A}]$ |
|  | 008 | Thick Paper (Low Speed) | [10~200/80/1 $\mu \mathrm{A}]$ |
|  | 009 | Transparencies (Low Speed) | [10~200/90/1 $\mu \mathrm{A}]$ |
|  | 010 | Translucent Sheets (Low Speed) | [10~200/80/1 $\mu \mathrm{A}]$ |
|  | 011 | 2nd Copy Side (Low Speed) | [10~200/80/1 $\mu \mathrm{A}]$ |
|  | 012 | Between Papers (Low Speed) | [10~200/20/1 $\mu \mathrm{A}$ ] |
| 2506 | Cleaning Interval-Multiple Copy |  |  |
|  | 001 | On / Off | Selects whether multiple jobs are stopped at regular intervals in order to 1) reverse the drum to clean the cleaning blade edge, or 2) create an ID sensor pattern to correct toner density control. This SP switches this feature on and off. SP2506 002 sets the interval. <br> [0~1 / 1/1] <br> 0: OFF, 1: ON <br> Use if the drum gets dirty or images get too pale or too dark during long copy jobs. |
|  | 002 | Interval | Selects the interval at which multi copy jobs are stopped for blade cleaning. [ $1 \sim 100 / 30 / 1 \mathrm{~min}$ ] <br> Reduce the value if a large amount of paper dust is causing black lines on the copy. |
| 2602 | PTL Settings |  |  |
|  | 001 | Front - On/Off Setting | Switches the PTL on and off for the front side of the paper passing through the fusing unit at normal speed. <br> Note: When feeding thick paper or OHP transparencies, this setting is always off. $\begin{aligned} & {[0 \sim 1 / 0 / 1]} \\ & 0: \text { Off } \\ & 1: \text { On } \end{aligned}$ <br> PTL timing can be adjusted with SP2602 002. |
|  | 002 | Front - Off Timing Adj. | This SP adjusts the length of the space from the leading edge where the PTL quenching is applied to the front side at normal speed. For example, if you set +5 , 5 mm from the leading edge will be quenched. [-5~10/2/0.1 mm |


| SP | Number/Name |  | Function/[Setting] |
| :---: | :---: | :---: | :---: |
| 2602 | 003 | Back - On/Off Setting | Switches the PTL on and off for the back side of the paper passing through the fusing unit in the duplex mode at normal speed. $[0 \sim 1 / 0 / 1]$ <br> 0: Off <br> 1: On <br> Notes: <br> - When this setting is switched on, make sure that the setting of SP2940 008 is the same as the default setting of SP2940 001. <br> - When feeding thick paper or OHP transparencies, this setting is always off. |
|  | 004 | Back - On/Off Timing Adj. | This SP adjusts the length of the space from the leading edge where the PTL quenching is applied to the back side at normal speed. For example, if you set +5 , 5 mm from the leading edge will be quenched. [-5~10/2/0.1 mm] |
|  | 005 | Front - On/Off Setting: Low Speed Mode | Switches the PTL on and off for the front side of the paper passing through the fusing unit at in the low speed mode. <br> Note: When feeding thick paper or OHP transparencies, this setting is always off. [0~1/0/1] <br> 0 : Off <br> 1: On |
|  | 006 | Front - Off Timing Adj.: Low Speed Mode | This SP adjusts the length of the space from the leading edge where the PTL quenching is applied to the front side in low speed mode. For example, if you set $+5,5 \mathrm{~mm}$ from the leading edge will be quenched. [-5~10/2/0.1 mm] |
|  | 007 | Back- On/Off Setting: Low Speed Mode | Switches the PTL on and off for the back side of the paper passing through the fusing unit in the duplex mode in low speed mode. [0~1/0/1] <br> 0: Off <br> 1: On <br> Notes: <br> - When this setting is switched on, make sure that the setting of SP2940 016 is the same as the default setting of SP2940 009. <br> - When feeding thick paper or OHP transparencies, this setting is always off. |


| SP | Number/Name |  | Function/[Setting] |
| :---: | :---: | :---: | :---: |
| 2602 | 008 | Back - Off Timing Adj.: Low Speed Mode | This SP adjusts the length of the space from the leading edge where the PTL quenching is applied to the back side in slow speed mode. For example, if you set $+5,5 \mathrm{~mm}$ from the leading edge will be quenched. [-5~10/2/0.1 mm] |
| 2801 | TD Sensor Initial Setting |  | Performs the TD sensor initial setting. This SP mode controls the voltage applied to the TD sensor to make the TD sensor output about 2.5 V . After finishing this, the TD sensor output voltage is displayed. Press Start to execute. You must enter the developer lot number. (The lot number is stenciled on the top edge of the developer package.) Use this mode only after changing the TD sensor or the developer. |
| 2803 | Charge Corona Cleaner On |  | Turns on the corona wire cleaner manually. Press Start to execute. When copy density across the paper is uneven, clean the wire with this $S P$. |
| 2804 | Charge Corona Cleaner Setting |  |  |
|  | 001 | Corona Wire Cleaner Operation Setting | Selects when automatic corona wire cleaning is done. [ $0 \sim 2 / 2 / 1$ ] <br> 0: OFF <br> 1: With process control and at intervals selected with SP2804 002 <br> 2: At intervals selected with SP2804 002. |
|  | 002 | Corona Wire Cleaner Interval | Selects the interval for automatic corona wire cleaning. <br> [100~10000 / 5000 / 100 copies] |
| 2902 | Test Pattern |  |  |
|  | 001 | IPU Scanning Test Pattern | Prints the scan test patterns for the IPU chip. [0~17 / 0 / 1] |
|  | 002 | IPU Printing Test Pattern | Prints the print test pattern for the IPU chip. [0~8/0/1] |
| 2902 | 003 | Printing Test Pattern | Prints the printer test patterns. [0~38/0/1] |
| 2906 | 001 | Vcont Manual Setting | Adjusts the TD sensor control voltage (Vcont) manually. <br> [4.0~24.0 / 9.7 / 0.1 V ] <br> Change this value after replacing the development unit with another one that already contains toner. For example, when using a development unit from another machine for test purposes.(See SP2220.) |


| SP | Number/Name |  | Function/[Setting] |
| :---: | :---: | :---: | :---: |
| 2909 | Main Scan Magnification |  |  |
|  | 001 | Copy | Adjusts the magnification in the main scan direction for copy mode. (-3-17) [-2.0~+2.0 / 0 / 0.1\%] <br> Use the "• / *key to enter the minus ( -) before entering the value. |
|  | 002 | Printer | Adjusts the magnification in the main scan direction for printing mode. (-3-17) $[-2.0 \sim+2.0 / 0 / 0.1 \%]$ <br> Use the "• / *key to enter the minus (-) before entering the value. |
| 2910 | Writing Sub Scan Magnification |  | Adjusts the magnification in the sub scan direction. (-3-17) $\text { [-1.0~+1.0 / } 0 / 0.1 \%]$ <br> Use the "• / *key to enter the minus ( -) before entering the value. |
| 2911 | Transfer Current On / Off Timing |  |  |
|  | 001 | La (ON) | Adjusts the transfer current on timing at the leading edge. $[-30 \sim+30 / 0 / 1 \mathrm{~mm}]$ |
|  | 002 | Lb (Switch) | Adjusts the transfer current on/off exchange timing. [0~60/45/1 mm] |
| 2911 | 003 | Lc (OFF) | Adjusts the transfer current off timing (for example: -5 mm is 5 mm after the trailing edge). [-30~+30/0/1 mm] |
| 2912 | Drum Reverse Rotation Interval |  |  |
|  | 001 | 1st Reverse Rotation | Sets the length of time the drum is reversed to clean the drum cleaning blade. [0~7/2 / 20 ms ] |
|  | 002 | Forward Rotation After 1st Reverse Rotation | Sets the length of time the drum is rotated forward after the 1st reverse rotation. $[0 \sim 7 / 0 / 20 \mathrm{~ms}]$ |
|  | 003 | 2nd Reverse Rotation | Sets the length of time the drum is reversed for the 2nd reverse rotation to clean the drum cleaning blade again. [0~7/0/20 ms] |
| 2915 | Drum Heater Adjustment |  | SP 2915 is currently not being used. Do not change the settings. |
|  | 001 | ON Time at Power On ( $<100^{\circ} \mathrm{C}$ ) | $\begin{aligned} & \text { [0~10 / } 0 \text { / } 1 \mathrm{~min} .] \\ & \text { DFU } \end{aligned}$ |
| 2915 | 002 | ON Time at Power On ( $<140^{\circ} \mathrm{C}$ ) | $\begin{aligned} & \text { [0~10 / } 0 \text { / } 1 \text { min.] } \\ & \text { DFU } \end{aligned}$ |
|  | 003 | Drum Temperature | DFU |
|  | 004 | Sensor Output Value (Direct) | DFU |
|  | 005 | Sensor Output Value (Atmosphere) | DFU |
|  | 006 | Forced Heater ON | DFU |
| 2920 | LD Off Check |  | Checks whether the LD turns off or on when the front door is opened. DFU $\begin{aligned} & {[0 \sim 1 / 0 / 0]} \\ & 0: \text { ON } \\ & 1: \text { OFF } \end{aligned}$ |


| SP | Number/Name |  | Function/[Setting] |
| :---: | :---: | :---: | :---: |
| 2940 | Leading Edge Transfer Current |  | Adjusts the leading edge transfer current for each paper feed station at normal and low speed. |
|  | 001 | Tray 1 | Tandem Tray - Copier, Normal Speed <br> B070: [10~200/100/1 1 A] <br> B071: [10~200/110/1 $\mu \mathrm{A}$ ] |
|  | 002 | Tray 2 | Universal Tray - Copier, Normal Speed <br> B070: [10~200/100/1 1 A ] <br> B071: [10~200/110/1 $\mu \mathrm{A}$ ] |
|  | 003 | Tray 3 | Universal Tray - Copier, Normal Speed <br> B070: [10~200/100/1 1 A] <br> B071: [10~200 / $110 / 1 \mu \mathrm{~A}]$ |
|  | 004 | Tray 4 | LCT 1st Tray, Normal Speed B070: [10~200/100/1 1 A] B071: [10~200/110/1 $\mu \mathrm{A}$ ] |
|  | 005 | Tray 5 | LCT 2nd Tray, Normal Speed <br> BO70: [10~200/100/1 1 A] <br> B071: [10~200/110/1 $\mu \mathrm{A}$ ] |
|  | 006 | Tray 6 | LCT 3rd Tray, Normal Speed <br> B070: [10~200/100/1 1 A] <br> B071: [10~200/110/1 $\mu \mathrm{A}]$ |
|  | 007 | Tray 7 (Bypass Tray) | Bypass Tray, Normal Speed B070: [10~200 / 100/ $1 \mu \mathrm{~A}$ ] B071: [10~200/110/1 $\mu \mathrm{A}$ ] |
|  | 008 | Duplex Tray | Duplex Tray - Copier, Normal Speed <br> B070: [10~200/100/1 1 A] <br> B071: [10~200/110/1 $\mu \mathrm{A}$ ] |
|  | 009 | Tray 1 (Low Speed) | $\begin{aligned} & \text { Tandem Tray - Copier, Low Speed } \\ & {[10 \sim 200 / 80 / 1 \mu \mathrm{~A}]} \\ & \hline \end{aligned}$ |
|  | 010 | Tray 2 (Low Speed) | $\begin{aligned} & \text { Universal Tray - Copier, Low Speed } \\ & {[10 \sim 200 / 80 / 1 \mu \mathrm{~A}]} \\ & \hline \end{aligned}$ |
|  | 011 | Tray 3 (Low Speed) | $\begin{aligned} & \text { Universal Tray - Copier, Low Speed } \\ & {[10 \sim 200 / 80 / 1 \mu \mathrm{~A}]} \end{aligned}$ |
|  | 012 | Tray 4 (Low Speed) | LCT 1st Tray, Low Speed [10~200/80/1 $\mu \mathrm{A}$ ] |
|  | 013 | Tray 5 (Low Speed) | LCT 2nd Tray, Low Speed [10~200/80/1 $\mu \mathrm{A}$ ] |
|  | 014 | Tray 6 (Low Speed) | LCT 3rd Tray, Low Speed [10~200/80/1 $\mu \mathrm{A}$ ] |
|  | 015 | Tray 7 (Low Speed) | Bypass Tray, Low Speed $[10 \sim 200 / 80 / 1 \mu \mathrm{~A}]$ |
|  | 016 | Duplex Tray (Low Speed) | $\begin{aligned} & \text { Duplex Tray -Copier, Low Speed } \\ & {[10 \sim 200 / 80 / 1 \mu \mathrm{~A}]} \\ & \hline \end{aligned}$ |


| SP | Number/Name | Function/[Setting] |
| :---: | :---: | :---: |
| 2941 | Recycled Paper Transfer Control | Determines whether recycled paper is handled as plain paper or thick paper. $[0 \sim 1 / 0 / 1]$ <br> 0: Plain paper <br> 1: Thick paper <br> Setting this mode to 1 is effective when the image at the leading edge is not good. <br> To use this SP, "Recycled Paper" should be selected in the Tray Paper Settings screen. <br> Selecting "Thick paper" in the Tray paper Settings screen has the same effect as this SP, but the "Thick Paper" selection does not allow duplexing or punching. |
| 2961 | Developer Initialization (Factory) | DFU |
| 2962 | Auto Process Control Execution | Press Start to execute and automatically adjust the following: <br> 1. Drum potential sensor <br> 2. ID sensor <br> 3. Charge grid voltage Vg (by changing Vd) <br> 4. LD power (by changing Vh ) <br> 5. VL detection. <br> Before using this SP, auto process control should be on (SP3-901). After changing the drum, ID sensor, drum potential sensor, LD unit, charge corona wires, or toner density sensor, this SP should be executed. |
| 2966 | Periodical Auto Process Control | Selects whether auto process control is done after 24 hours have elapsed after the last copy job. $\begin{aligned} & {[0 \sim 1 / 0 / 1]} \\ & 0: \text { OFF } \\ & 1: \text { ON } \end{aligned}$ <br> This setting is required for a customer who keeps the main switch on all day. |
| 2967 | Auto Image Density Adjustment | Selects whether auto image density adjustment is done during machine warm up. This mode is to counter dirty background that occurs when a machine is used in an area that contains ammonia. $[0 \sim 1 / 0 / 1]$ <br> 0 : OFF <br> 1: ON <br> If Periodical Auto Process Control (SP2966) is used, this adjustment is done also after the auto process control is finished. |


| SP | Number/Name | Function/[Setting] |
| :---: | :---: | :---: |
| 2968 | Toner Density Correction | To prevent the image density dropping during continuous copying after a long interval (this is caused by a sudden increase of $\mathrm{Q} / \mathrm{M}$ ), VREF is changed by 0.06 V every ( 100 X [SP2-974 value +1 1]) prints. This correction is applied from when the auto process control is done, until "(the number of prints set in this SP mode) X (SP2-974 value +1 )" has been made. <br> [ $0 \sim 20 / 0 / 1 \mathrm{~K}$ copies] |
| 2969 | ID Sensor Pattern Interval-Multiple Copy | Twenty ID patterns are made in an interval of about 1 minute during a continuous copy process just after process control is completed. Image density will be stabilized. However, printing productivity will be reduced. [ $0 \sim 1 / 0 / 1$ ] <br> 0: OFF <br> 1: ON |
| 2972 | Toner Suction Collection Bottle Operation Time | Displays the total operation time of the development unit toner collection bottle. [ $0 \sim 600 / 0 / 1$ hour] <br> Need to replace soon: 580 hours Need to replace now: 600 hours After the bottle is replaced, reset the value to 0 (zero) by pressing 0 and \# (Enter) keys. |
| 2973 | Toner Suction Motor Operation Time | Displays the total operation time of the development toner suction motor. [0~600 / 0 / 1 hour] <br> Need to replace soon: 570 hours Need to replace now: 600 hours After the motor is replaced, reset the value to 0 (zero) by pressing 0 and \#. |
| 2974 | Toner Supply Interval | Adjusts how often toner is supplied [0~3/0/1] <br> 0: 1/1 (every print) <br> 1: 1/2 (every 2 prints) <br> 2: 1/3 (every 3 prints) <br> 3: 1/4 (every 4 prints) <br> The operation of SP2968 now depends on this SP mode setting. In this machine, the Vref update interval has been changed from "every 100 prints" to "every [100X(SP2-974 value +1)] prints". For example, if set to 1 , toner is supplied every 2 prints, and SP 2-974 value $+1=$ 3. |


| SP |  | Number/Name | Function/[Setting] |
| :---: | :---: | :---: | :---: |
| 2975 | Toner Recycle Cut Counter |  |  |
|  | 001 | ON Counter | Determines how often all recycled toner is discarded. The purpose of this feature is to periodically remove all recycled toner contaminated with paper dust. <br> [0~999 / 200 / 1 K copies] <br> This setting determines when the toner separation solenoid closes the shutter and shunts all toner to the waste toner collection bottle. For details, see "Toner Recycling" in Section 6. |
|  | 002 | OFF Counter | This setting determines how long all toner is shunted to the waste toner collection bottle (no recycling). <br> [0~255 / 25 / 1 K copies] <br> This setting determines when the toner separation solenoid opens the shutter and toner recycling starts. |
| 2980 | Toner Consumption Pattern Interval |  | Use this SP to improve drum cleaning if required. It determines how long the drum turns after the ID sensor pattern is created before the toner consumption pattern is created. <br> [0~30 / 0 / 1 minutes] DFU <br> 0 : No toner consumption pattern created. |

## SP3-nnn Processing

| SP |  | Number/Name | Function/[Setting] |
| :---: | :---: | :---: | :---: |
| 3001 | ID Sensor Initial Setting |  |  |
|  | 001 | ID Sensor PWM Setting | This SP mode recovers the machine when an SC condition occurs because ID Sensor Initial Setting is not done after doing an NVRAM Clear or replacing the NVRAM. Reset this SP to the factory setting in this case. $[0 \sim 255 / 62 / 1]$ <br> The PWM data is stored when ID Sensor Initial Setting is done. |
|  | 002 | ID Sensor Initialization | Performs the ID sensor initial setting. The ID sensor output for the bare drum (VSG) is adjusted to $4.0 \pm 0.2 \mathrm{~V}$. <br> This SP mode should be performed: 1) After replacing or cleaning the ID sensor, 2) After replacing the NVRAM or doing an NVRAM clear. |
| 3103 | ID Sensor Output Display |  |  |
|  | 001 | Vsg | Displays the current value of the ID sensor output after checking the bare drum surface. |
|  | 002 | Vsg Initial | Displays Vsg when the Vsp adjustment is done. |


| $\begin{gathered} \hline \text { SP } \\ 3103 \end{gathered}$ | Number/Name |  | Function/[Setting] |
| :---: | :---: | :---: | :---: |
|  | 003 | Vsp | Displays the current value of the ID sensor output after checking the ID sensor pattern image. |
|  | 004 | Vsgp | Displays the value of the ID sensor output immediately after Vsp is output when the charge potential drops. This reading is used to test and determine characteristics for design. DFU |
| 3901 | Auto Process Control Setting |  |  |
|  | 001 | Auto Process Control Setting | Determines whether machine checks and corrects drum potential (Vd) and LD power when the fusing temperature is lower than $100^{\circ} \mathrm{C}$ at power-on. $[0 \sim 1 / 1 / 1]$ <br> 0: OFF <br> 1: ON <br> This setting attempts to change the Vd setting consistent with the OPC, the charge corona unit, and environment to improve the reliability of the system. |
|  | 002 | VL Correction Control Setting | Determines whether VL detection and correction are performed during process control every 1 K copies. <br> [0~1 / 0/1] DFU <br> 0: OFF <br> 1: ON <br> Even with this SP switched ON, VL detection and correction will not be performed if SP3901 001 is OFF. |
| 3902 | Process Control Data Display |  |  |
|  | 001 | Auto Process Control | Displays whether auto process control is switched on or off [0:Off, 1:On] <br> When auto process control is on and the potential sensor is calibrated correctly, "ON" appears on the operation panel. <br> Auto process control is not executed when this $S P$ is switched off. <br> After RAM is cleared, this SP setting goes off. |
|  | 002 | V D | Displays the drum potential. |
|  | 003 | VH | Displays the standard halftone drum potential, used for laser power adjustment. |
|  | 004 | V G | Displays the charge grid voltage resulting from the latest Vd adjustment. |
|  | 005 | LD Power (Correction) | Displays the LD power correction value as a result of the latest Vh adjustment. |
|  | 006 | V ID | Displays the latest drum surface voltage measured on the ID sensor pattern. |
|  | 007 | V M200 | Displays the acquired value when the potential sensor is calibrated after application of -200 V to the drum. |



## SP4-nnn Scanner

| SP | Number/Name | Function/[Setting] |
| :---: | :---: | :---: |
| 4008 | Scanner Sub Scan Magnification | Adjusts the magnification in the sub scan direction for scanning. If this value is changed, the scanner motor speed is changed. (-3-17) <br> [-0.9~+0.9 / 0 / 0.1 percent] <br> Use the "• / *key to enter the minus (-) before entering the value. <br> Setting a lower value reduces the motor speed and lengthens the image in the sub scan direction (paper direction). Setting a larger value increases the motor speed and shortens the image in the sub scan direction. |



| SP |  | Number/Name | Function/[Setting] |
| :---: | :---: | :---: | :---: |
| 4600 | Read SBU ASIC ID |  | Displays the SBU ID code confirmed by reading the SBU after the SBU adjusts automatically at power on. DFU [0~FFFF / B550 / 0] |
| 4601 | SBU PLL Adjustment |  | Adjusts the PLL bandwidth. DFU [9322~9326 / 9324 / 1] |
| 4605 | Scanner Adjustment |  |  |
|  | 001 | Flag Display | Displays a flag to indicate whether density control adjustment was executed with the standard white board for the CCD. DFU [0~1/0/1] <br> 0 : Not executed <br> 1: Executed |
|  | 002 | Start | Starts the density adjustment for the CCD using the standard white board. Place 10 sheets of A3 plain paper on the exposure glass, then press Execute. A message is displayed to indicate the success or failure of the adjustment. DFU |
| 4610 | 001 | Standard White Level Adjustment | DFU |
| 4613 | 001 | Standard White Level Adjustment Normally | DFU |
| 4616 | 001 | Standard White Level Adjustment at Factory | DFU |
| 4624 | Read Offset Data |  |  |
|  | 001 | FE ch | DFU |
|  | 002 | FO ch | DFU |
| 4624 | 003 | LE ch | DFU |
|  | 004 | LO ch | DFU |
| 4632 | Gain Adjustment |  |  |
|  | 001 | FE ch | DFU |
|  | 002 | FO ch | DFU |
|  | 003 | LE ch | DFU |
|  | 004 | LO ch | DFU |
| 4641 | 001 | White Adjust Loop | DFU |
| 4646 | 001 | SBU Adjustment Error Flag | DFU |
| 4647 | 001 | SBU Hard Error Flag | DFU |
| 4662 | Gain Adjustment Normally |  |  |
|  | 001 | FE ch | DFU |
|  | 002 | FO ch | DFU |
|  | 003 | LE ch | DFU |
|  | 004 | LO ch | DFU |
| 4681 | Gain Adjustment at Factory |  |  |
|  | 001 | FE ch | DFU |
|  | 002 | FO ch | DFU |
|  | 003 | LE ch | DFU |
|  | 004 | LO ch | DFU |
| 4691 | Read Shading Data |  |  |
|  | 001 | FE ch | DFU |
|  | 002 | FO ch | DFU |
|  | 003 | LE ch | DFU |
|  | 004 | LO ch | DFU |


| SP |  | Number/Name | Function/[Setting] |
| :---: | :---: | :---: | :---: |
| 4694 | Offset Adjustment |  |  |
|  | 001 | F side | DFU |
|  | 003 | L side | DFU |
| 4901 | Scan Correction |  |  |
|  | 001 | Shading Correction: AEREF Setting | Changes the AEREF (Automatic Exposure Reference) value used in shading correction for the image scanned from the front side (SBU). DFU [0~63/0/1] |
|  | 002 | Shading Correction: Shading Data Output | Changes the AEREF (Automatic Exposure Reference) value used in digital $A / E$ processing. DFU $[0 \sim 1 / 0 / 1]$ <br> 0 : Normal <br> 1: Output |
|  | 003 | Digital AE: AEREF Setting | Changes the AEREF (Automatic Exposure Reference) value used in digital $A / E$ processing for the image data. DFU [-63~+63/-12 / 1] |
| 4901 | 004 | Digital AE: Low Limit | Sets the low limit at 120 for the value used in digital $A / E$ processing for the image data. DFU <br> [0~1/1/1] <br> 0: No low limit <br> 1: Low limit set |
|  | 020 | Background Erase: Blue Original (Lighter) | Sets the strength of background blue erase when orange original mode is selected. [168~255/180 / 1] <br> A higher setting erases more background and a lower setting less. |
|  | 021 | Background Erase: Blue Original (Normal) | Sets the strength of background blue erase when the green original mode is selected. [131~167 / 155 / 1] <br> A higher setting erases more background and a lower setting less. |
|  | 022 | Background Erase: Blue Original (Darker) | Sets the strength of background blue erase when blue original mode is selected [25~130 / 105 / 1] <br> A higher setting erases more background and a lower setting less. |


| SP |  | Number/Name | Function/[Setting] |
| :---: | :---: | :---: | :---: |
| 4903 | Image Quality Adjustment |  |  |
|  | 001 | Text Mode (25.0-55.0\%) | Adjusts the sharpness and texture of images processed in Text mode. <br> [0~10 / 5 / 1] <br> 0: Softest <br> Soft Mode <br> $\uparrow$ <br> $\uparrow$ <br> $\uparrow$ <br> Normal (Default) <br> $\downarrow$ <br> $\downarrow$ <br> $\downarrow$ <br> 9: Sharp Mode <br> 10: Sharpest |
|  | 002 | Text Mode (55.5-75.0\%) |  |
|  | 003 | Text Mode (75.5-160.0\%) |  |
|  | 004 | Text Mode (160.5-400.0\%) |  |
|  |  |  |  |
|  |  |  |  |
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|  |  |  |  |
|  |  |  |  |
|  | 005 | Photo Mode Dithering (25.055.0\%) | Adjusts the sharpness and texture of images processed in Photo mode with dithering <br> [0~6 / 3 / 1] <br> : Softest <br> $\uparrow$ <br> $\uparrow$ <br> Print Original Mode (Default) <br> $\downarrow$ <br> $\downarrow$ <br> : Sharpest |
|  | 006 | Photo Mode Dithering (55.575.0\%) |  |
|  | 007 | $\begin{aligned} & \hline \text { Photo Mode Dithering (75.5- } \\ & 160.0 \% \text { ) } \\ & \hline \end{aligned}$ |  |
|  | 008 | Photo Mode Dithering (160.5400.0\%) |  |
|  | 009 | $\begin{aligned} & \text { Photo Mode Error Diffusion (25.0- } \\ & 55.0 \% \text { ) } \end{aligned}$ | Adjusts the sharpness and texture of images processed in Photo mode with error diffusion. <br> [0~6 / 1 / 1] <br> 0 Softest <br> Normal (Default) <br> $\uparrow$ <br> $\uparrow$ <br> : $\uparrow$ <br> : Print Original Mode <br> 6: Sharpest |
|  | 010 | Photo Mode Error Diffusion (55.5 75.0\%) |  |
|  | 011 | Photo Mode Error Diffusion (75.5- 160 0\%) |  |
|  | 012 | Photo Mode Error Diffusion (160.5-400.0\%) |  |
|  | 013 | Text / Photo Mode (25.0-55.0\%) | Adjusts the sharpness and texture of images processed in Text/Photo mode. <br> [ $0 \sim 10 / 5 / 1]$ <br> 0: Softest <br> 1: Photo Priority <br> : $\uparrow$ <br> : $\uparrow$ <br> $\uparrow$ <br> Normal (Default) <br> $\downarrow$ <br> $7 \downarrow$ <br> $8 \downarrow$ <br> 9 Text Priority <br> 10 Sharpest |
|  | 014 | Text / Photo Mode (55.5-75.0\%) |  |
|  | 015 | Text / Photo Mode (75.5-160.0\%) |  |
|  | 016 | Text / Photo Mode (160.5- 400.0\%) |  |
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| SP |  | Number/Name | Function/[Setting] |
| :---: | :---: | :---: | :---: |
| 4903 | 017 | Pale Mode (25.0-55.0\%) | Adjusts the sharpness and texture of images processed in Pale mode. <br> [0~10/5/1] <br> Softest <br> Soft Mode $\uparrow$ <br> $\uparrow$ <br> $\uparrow$ <br> Normal (Default) <br> $\downarrow$ <br> $\downarrow$ <br> 8: $\downarrow$ <br> 9: Sharp <br> 10: Sharpest |
|  | 018 | Pale Mode (55.5-75.0\%) |  |
|  | 019 | Pale Mode (75.5-160.0\%) |  |
|  | 020 | Pale Mode (160.5-400.0\%) |  |
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|  | 021 | Generation Mode (25.0-55.0\%) | Adjusts the sharpness and texture of images processed in Generation mode. $[0 \sim 10 / 5 / 1]$ <br> 0 : Softest <br> Soft <br> $\uparrow$ <br> $\uparrow$ <br> Normal (Default) <br> $\downarrow$ <br> $\downarrow$ <br> $\downarrow$ <br> Sharp <br> 10: Sharpest |
|  | 022 | Generation Mode (55.5-75.0\%) |  |
|  | 023 | Generation Mode (75.5-160.0\%) |  |
|  | 024 | Generation Mode (160.5-400.0\%) |  |
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|  | 060 | Independent Dot Erase: Text Mode | Sets the level for independent dot erasure. $\text { [0~14 / } 8 \text { / 1] }$ <br> 0 : Off <br> The higher the setting, the stronger the effect. |
|  | 061 | Independent Dot Erase: Photo Mode | $\begin{aligned} & {[0 \sim 14 / 0 / 1]} \\ & 0: \text { Off } \\ & \hline \end{aligned}$ |
|  | 062 | Independent Dot Erase: Text / Photo Mode |  |
|  | 063 | Independent Dot Erase: Pale Mode |  |
|  | 064 | Independent Dot Erase: Generation Mode | $\begin{aligned} & {[0 \sim 14 / 8 / 1]} \\ & 0: \text { Off } \end{aligned}$ |
|  | 070 | Background Erase: Text Mode | Sets the level for background erase. [0~255 / 0 / 1] <br> The higher the setting, the stronger the effect. |
|  | 071 | Background Erase: Photo Mode |  |
|  | 072 | Background Erase: Text / Photo Mode |  |
|  | 073 | Background Erase: Pale Mode |  |
|  | 074 | Background Erase: Generation Mode |  |
|  | 080 | Line Width Correction: Text Mode Select | Selects the level of line width correction for Text mode. [0~8/2/1] <br> The higher the setting, the thicker the line. |


| SP |  | Number/Name | Function/[Setting] |
| :---: | :---: | :---: | :---: |
| 4903 | 081 | Line Width Correction: Text Mode (Main Scan) | Switches on line width correction in the main scan direction in text mode. $[0 \sim 1 / 1 / 1]$ <br> 0: Line width correction OFF <br> 1: Line width correction ON |
|  | 082 | Line Width Correction: Text Mode (Sub Scan) | Switches on line width correction in the sub scan direction in text mode. <br> [0~1 / 1 / 1] <br> 0: Line width correction OFF <br> 1: Line width correction ON |
|  | 083 | Line Width Correction: Photo Mode Select | Selects the level of line width correction for photo mode. $[0 \sim 8 / 4 / 1]$ <br> The higher the setting, the thicker the line. |
|  | 084 | Line Width Correction: Photo Mode (Main Scan) | Switches on line width processing for the main scan direction in photo mode. $[0 \sim 1 / 1 / 1]$ <br> 0: Line width correction OFF <br> 1: Line width correction ON |
|  | 085 | Line Width Correction: Photo Mode (Sub Scan) | Switches on line width correction in the sub scan direction in Photo mode. <br> [0~1 / 1 / 1] <br> 0 : Line width correction OFF <br> 1: Line width correction ON |
|  | 086 | Line Width Correction: Text / Photo Mode Select | Selects the level of line width processing for text/photo mode. $[0 \sim 8 / 4 / 1]$ <br> The higher the setting, the thicker the line. |
|  | 087 | Line Width Correction: Text / Photo Mode (Main Scan) | Switches on line width processing for the main scan direction in text/photo mode. $[0 \sim 1 / 1 / 1]$ <br> 0: Line width correction OFF <br> 1: Line width correction ON |
|  | 088 | Line Width Correction: Text / Photo Mode (Sub Scan) | Switches on line width processing for the the sub scan direction in text/photo mode. [0~1 / 1 / 1] <br> 0: Line width correction OFF <br> 1: Line width correction ON |
|  | 089 | Line Width Correction: Pale Mode Select | Selects the level of line width processing for pale mode. $[0 \sim 8 / 4 / 1]$ <br> The higher the setting, the thicker the line. |
|  | 090 | Line Width Correction: Pale Mode (Main Scan) | Switches on line width processing for the main scan direction in pale mode. $[0 \sim 1 / 1 / 1]$ <br> 0: Line width correction OFF <br> 1: Line width correction ON |


| SP | Number/Name |  | Function/[Setting] |
| :---: | :---: | :---: | :---: |
| 4903 | 091 | Line Width Correction: Pale Mode (Sub Scan) | Switches on line width processing for the sub scan direction in pale mode $[0 \sim 1 / 1 / 1]$ <br> 0: Line width correction OFF <br> 1: Line width correction ON |
|  | 092 | Line Width Correction: Generation Mode Select | Selects the level of line width processing for generation mode. $[0 \sim 8 / 1 / 1]$ <br> The higher the setting, the thicker the line. |
|  | 093 | Line Width Correction: Generation Mode (Main Scan) | Switches on line width processing for the main scan direction in generation mode. [0~1 / 1 / 1] <br> 0: Line width correction OFF <br> 1: Line width correction ON |
|  | 094 | Line Width Correction: Generation Mode (Sub Scan) | Switches on line width processing for the sub scan direction in generation mode. $[0 \sim 1 / 1 / 1]$ <br> 0: Line width correction OFF <br> 1: Line width correction ON |
| 4904 | Image Quality / Exposure Thin Line |  |  |
|  | 002 | Image Process Setting: Photo Mode | Selects the image processing mode for Photo Mode. <br> [0~3/3/1] <br> 0: 106 line dither processing <br> 1: 141 line dither processing <br> 2: 212 line dither processing <br> 3: Error diffusion processing |
|  | 020 | Text Mode | Selects the line width correction level for Text mode. <br> [0~2 / 0 / 1] <br> 0 : No processing <br> 1: Low (thin) <br> 2. High (thick) |
|  | 021 | Photo Mode | Selects the line width correction level for Photo mode. <br> [0~2 / 0 / 1] <br> 0 : No processing <br> 1: Low (thin) <br> 2: High (thick) |
|  | 022 | Text / Photo Mode | Selects the line width correction level for Text/Photo mode. <br> [0~2 / 0 / 1] <br> 0 : No processing <br> 1: Low (thin) <br> 2: High (thick) |


| SP | Number/Name |  | Function/[Setting] |
| :---: | :---: | :---: | :---: |
| 4904 | 023 | Pale Mode | Selects the line width correction level for Pale mode. $\text { [0~2 / } 0 \text { / 1] }$ <br> 0: No processing <br> 1: Low (thin) <br> 2: High (thick) |
|  | 024 | Generation Mode | Selects the line width correction level for Generation mode. $\text { [0~2 / } 0 \text { / 1] }$ <br> 0: No processing <br> 1: Low (thin) <br> 2: High (thick) |
| 4909 | Image Processing Through |  |  |
|  | 001 | IPU Scan Image Module | $\begin{aligned} & \text { DFU } \\ & {[0 \sim 15 / 0 / 1]} \end{aligned}$ |
|  | 002 | IPU Plotter Image Module | $\begin{aligned} & \text { DFU } \\ & {[0 \sim 127 / 0 / 1]} \end{aligned}$ |

## SP5-nnn Mode

| SP | Number/Name |  | Function/[Setting] |
| :---: | :---: | :---: | :---: |
| 5019 | Tray Paper Size Selection |  |  |
|  | 002 | 1st Tray | Selects the paper size for the 1st tray. <br> [LT LEF: USA version <br> A4 LEF: Other versions\} |
|  | 007 | 6th Tray | Selects the paper size for the 6th tray. [LT LEF: USA version A4 LEF: Other versions\} |
| 5024 | mm / inch Display Selection |  | Selects the unit of measurement. [0~1/0 or 1/1] <br> 0: mm (Default for other versions) <br> 1: inch (Default for USA version) <br> After selection, turn the main power switch off and on |
| 5040 | Custom Size: Vertical |  |  |
|  | 002 | Custom Size: Vertical | Adjusts the vertical dimension of custom size paper for Tray 1. 'Custom size' must be selected with SP 5019-2. $\text { [210.0~305.0 / } 297.0 / 0.1 \mathrm{~mm}]$ |
| 5041 | Custom Size: Horizontal |  |  |
|  | 002 | Custom Size: Horizontal | Adjusts the horizontal dimension of custom size paper for Tray 1. 'Custom size’ must be selected with SP 5019-2. $\text { [210.0~439.0 / } 210.0 / 0.1 \mathrm{~mm}]$ |
| 5047 | Reverse Paper Display |  | Determines whether the tray loaded with paper printed on one side is displayed. [0~1/0/1] <br> 0 : Not displayed <br> 1: Displayed |


| SP | Number/Name | Function/[Setting] |
| :---: | :---: | :---: |
| 5104 | A3/DLT Double Count | Specifies whether the counter is doubled for A3/11"x17" paper. [0~1/0/1] <br> 0 : No <br> 1: Yes <br> If "1" is selected, the total counter and the current user code counter count up twice when $A 3 / 11$ "x17" paper is used. |
| 5106 | ID level Setting |  |
|  | 006 Auto Density Level | Selects the image density levels that are used in ADS mode by assigning a value to the center notch $[1 \sim 9 / 5 / 1]$ |
| 5112 | Non-Standard Paper Selection | Determines whether a non-standard paper size can be input for the universal cassette trays (Tray 2, Tray 3) [0~1/0/1] <br> 0 : No <br> 1: Yes. <br> If " 1 " is selected, the customer will be able to input a non-standard paper size using the UP mode. |
| 5113 | Optional Counter Type | ```Selects the type of key counter: [ \(0 \sim 12 / 0 / 1\) ] 0: None 1: Key card (Japan only) 2: Key card (countdown type) 3: Pre-paid card 4: Not used 5: MF key card 6: \(\quad\) Not used 7: Not used 8: \(\quad\) Not used 9: \(\quad\) Not used 10: Not used 11: Overseas Keycard (Increment) 12 Overseas Keycard (Decrement)``` |
| 5118 | Disable Copying | Temporarily denies access to the machine. Japan Only [0~1/0/1] <br> 0: Release for normal operation <br> 1: Prohibit access to machine. |
| 5120 | Mode Clear Opt. Counter Removal | Do not change. Japan Only [0~2/0/1] <br> 0: Normal reset <br> 1: Resets before job start/after completion <br> 2: Normally no reset |


| SP |  | Number/Name | Function/[Setting] |
| :---: | :---: | :---: | :---: |
| 5121 | Counter Up Timing |  | Determines whether the optional key counter counts up at paper feed-in or at paper exit. [0~1/0/1] <br> 0: Paper Feed Count <br> 1: Paper Exit Count <br> This setting does not affect timing of the copier total counter. |
| 5127 | APS OFF Mode |  | This SP can be used to switch APS (Auto Paper Select) off. This SP only works when a coin lock or pre-paid key card device is connected to the machine. <br> [0~1/0/1] <br> 0 : On <br> 1: Off |
| 5131 | Paper Size Type Selection |  | Selects the paper size type (for originals and copy paper). (The default setting depends on the setting of DIP SW 1 and 2 on BCU.) $\text { [ } 0 \sim 3 / 1 \text { or } 2 \text { or } 3 / 1]$ <br> 0: Japan 1: North America <br> 2: Europe 3. China <br> After changing the value, turn the main power switch off and on. |
| 5158 | Cover Feeder Size Change |  | Determines the paper size for the cover interposer tray. Select the desired paper size and press \#. |
|  | 001 | For all versions | $\begin{aligned} & {[0 \sim 1 / 0 / 1]} \\ & 0: A 3 \\ & 1: 12^{\prime \prime} \times 18^{\prime \prime} \\ & \hline \end{aligned}$ |
|  | 002 | For Europe and China | $\begin{aligned} & {[0 \sim 2 / 0 / 1]} \\ & 0: 81 / 2 \times 13^{\prime \prime} \\ & 1: 8 " \times 13^{\prime \prime} \\ & 2: 81 / 4 \times 13^{\prime \prime} \end{aligned}$ |
|  | 003 | For USA | $\begin{aligned} & {[0 \sim 1 / 0 / 1} \\ & 0: 8 \frac{11 / 2 "}{} \times 14^{\prime \prime} \\ & 1: 8 \frac{1 / 2}{}{ }^{\prime \prime} \times 13^{\prime \prime} \end{aligned}$ |
|  | 004 | For USA | $\begin{aligned} & {[0 \sim 1 / 0 / 1]} \\ & 0: 11^{\prime \prime} \times 81 / 2^{\prime \prime}(\text { LT LEF }) \\ & 1: 101 / 2^{\prime \prime} \times 71 / 2^{\prime \prime} \end{aligned}$ |
|  | 005 | For USA | $\begin{aligned} & {[0 \sim 1 / 0 / 1]} \\ & 0: 81 / /^{\prime \prime} \times 11^{\prime \prime}(\text { LT SEF }) \\ & 1: 8^{\prime \prime} \times 10^{\prime \prime} \end{aligned}$ |
|  | 006 | For Europe and China | [0~1/0/1] <br> 0: 8-Kai (Taiwan) <br> 1: 11" x 17" (Double Letter) |
|  | 007 | For Europe and China | $\begin{array}{\|l\|l\|} \hline[0 \sim 1 / 0 / 1] \\ 0: 16-K a i(T a i w a n) \\ 1: 81 / 2^{\prime \prime} \times 11^{\prime \prime}(L T ~ S E F) \\ \hline \end{array}$ |
|  | 008 | For Europe and China | $\begin{array}{\|l\|l\|} \hline[0 \sim 1 / 0 / 1] \\ 0: 16-K a i ~ L E F \\ 1: 11^{\prime \prime} \times 81 / 2^{\prime \prime}(\text { LT LEF }) \\ \hline \end{array}$ |


| SP | Number/Name |  |  | Function/[Setting] |
| :---: | :---: | :---: | :---: | :---: |
| 5162 | Application Screen Change |  |  | Determines whether the application screen is changed with a hard switch (key top) or a soft switch on the LCD. <br> [ $0 \sim 1 / 0 / 1$ ] <br> 0 : Soft switch <br> 1: Hard switch |
| 5212 | Page Numbering |  |  |  |
|  | 003 | Duplex Printout Right / Left Position |  | Horizontally positions the page numbers printed on both sides during duplexing. <br> [-10~+10/0/1 mm] <br> 0 : Center <br> -: Left <br> + : Right |
|  | 004 | Duplex Printout High / Low Position |  | Vertically positions the page numbers printed on both sides during duplexing [-10~+10/0/1 mm] <br> 0 is center, minus is down, + is up. |
| 5302 | Set Time |  |  |  |
|  | 002 | Time Difference |  | Sets the time clock for the local time. [-1440~+1440/+540/1 min.] |
| 5404 | User Code Count Clear |  |  | Clears all user code counters. Press \# to execute. |
| 5501 | PM Alarm Interval |  |  | Sets the count level for the PM alarm. [0~9999 / 0 / 1] <br> 0 : Alarm disabled <br> The PM alarm goes off when the print count reaches this value multiplied by $1,000$ |
| 5504 | Jam Alarm Interval |  |  | RDS function Japan Only |
| 5505 | Error Alarm |  |  | RDS function Japan Only |
| 5507 | Supply Alarm |  |  |  |
|  | 001 |  | Paper Supply Alarm | Enables or disables the paper supply call function. Japan Only [0~1/0/1] <br> 0 : No call <br> 1: Call <br> If this $S P$ is enabled, use the settings below to set the supply level to initiate a call for each paper size. |
|  | 002 |  | Staple Supply Alarm | Enables or disables the staple supply call function. Japan Only <br> [0~1/0/1] <br> 0: No call <br> 1: Call <br> A staple supply call is issued for every <br> 1,000 staples consumed. |
|  | 003 |  | Toner Supply Alarm | Enables or disables the toner supply call function. Japan Only [0~1/0/1] <br> 0 : No call <br> 1: Call |


| SP | Number/Name |  | Function/[Setting] |
| :--- | :--- | :--- | :--- |
| 5507 | 128 | $\begin{array}{l}\text { Interval: } \\ \text { Others }\end{array}$ | $\begin{array}{l}\text { Sets the level to initiate a paper supply call } \\ \text { for each paper size, if SP 5507 001 is } \\ \text { enabled. Japan Only }\end{array}$ |
|  | 132 | Interval: A3 |  |
|  | [00250~10,000/1,000/1] |  |  |$\}$


| SP | Number/Name |  | Function/[Setting] |
| :---: | :---: | :---: | :---: |
| 5508 | 021 | Jam Operation: Time Length | Determines what happens when a paper jam is left unattended. <br> [0~1/1/1] <br> 0: Automatic Call <br> 1: Audible Warning at Machine <br> This setting is enabled only when SP5508 <br> 004 is enabled (set to 1). |
|  | 022 | Jam Operation: Continuous Count | Determines what happens when continuous paper jams occur. <br> [0~1/1/1] <br> 0: Automatic Call <br> 1: Audible Warning at Machine This setting is enabled only when SP5508 004 is enabled (set to 1). |
|  | 023 | Door Operation: Time Length | Determines what happens if the door remains open. $[0 \sim 1 / 1 / 1]$ <br> 0 : OFF <br> 1: ON. Displays a warning. Pressing the call button will contact the service center. <br> This setting is enabled only when SP5508 004 is enabled (set to 1). |
| 5513 | Parts Alarm Level Count |  | Japan Only |
|  | 001 | Normal | Sets the parts replacement alarm counter to sound for the number of copies. [1~9999 / 350 / 1] |
|  | 002 | DF | Sets the parts replacement alarm counter to sound for the number of scanned originals. [1~9999/350/1] |
| 5514 | Parts Alarm Level |  | Japan Only |
|  | 001 | Normal | [0~1/1/1] |
|  | 002 | DF | [0~1/0/1] |
| 5801 | Memory Clear |  | Clears data from NVRAM, either selectively (002~015), or entirely (001). Before executing this SP, print an SMC Report. (-See 5.6) <br> After executing this SP, turn the main switch off and on. |
|  | 001 | All Clear | Initializes items 002~015. |
|  | 002 | Engine Clear | For details, see 5.7. |
|  | 003 | SCS (System Control Service)/SRM |  |
|  | 004 | IMH |  |
|  | 005 | MCS(Memory Control Service) |  |
|  | 006 | Copier application |  |
|  | 008 | Printer application |  |
|  | 009 | Scanner application |  |
|  | 010 | Network application |  |
|  | 011 | NCS (Network Control Service) |  |
|  | 014 | DCS (Clear DCS Setting) |  |
|  | 015 | UCS (Clear UCS Setting) |  |


| SP | Number/Name |  | Function/[Setting] |
| :---: | :---: | :---: | :---: |
| 5802 | Printer Free Run |  | Makes a base engine free run [0~1/0/1] <br> 0 : Release free run mode <br> 1: Enable free run mode <br> Return this setting to off (0) after testing is completed. <br> Finisher connectors should be disconnected and duplex mode should be off. |
| 5803 | Input Check |  | Displays signals received from sensors and switches. (-5.4.1) |
| 5804 | Output Check |  | Turns on the electrical components individually for testing. (-5.5.1) |
| 5811 | Machine No. Setting |  |  |
|  | 001 | Code Set | Enters the machine serial number. DFU |
| 5812 | Service Tel. No. Setting |  |  |
|  | 001 | Service | Use this to input the telephone number of the CE (displayed when a service call condition occurs.) <br> Press". "to input a pause. Press "Clear modes" to delete the telephone number. |
|  | 002 | Fax | Use this to input the fax number of the CE printed on the SMC print. |
|  | 003 | Supply | Displayed on the initial SP screen. |
|  | 004 | Operation | Allows the service center contact telephone number to be displayed on the initial screen. |
| 5816 | CSS Function |  | Switches the CSS function on/off. Do not change. Japan Only. [0~1/0/1] |
| 5821 | CSS-PI Device Code |  | Do not change. Japan Only. [0~4/0/1] |
| 5824 | NV-RAM Data Upload |  | Uploads the NVRAM data to a SD card. $(-5.10 .6)$ |
| 5825 | NV-RAM Data Download |  | Downloads data from the SD card to the NVRAM in the machine. When downloading this SP mode data, the front door must be open. <br> After downloading is completed, remove the card and cycle the machine off and on. $(-5.10 .6)$ |
| 5828 | Network Setting |  |  |
|  | 012 | Device Name/Host Name |  |
|  | 066 | Job Spooling Clear |  |
|  | 069 | Job Spooling Protocol |  |
|  | 074 | Delete Password | Execute to delete network password. |
|  | 084 | NCS Prints | Prints a list of all NCS related parameters. |


| SP | Number/Name |  | Function/[Setting] |
| :---: | :---: | :---: | :---: |
| 5825 | 090 | TELNET | This setting determines whether Telnet D is started or not. $[0 \sim 1 / 1 / 1]$ <br> 0 : Disabled (Off) <br> 1: Enabled (On) <br> If not started, the Telnet port is closed |
|  | 091 | WEB Network Setting | Determines whether Web is enabled or disabled. <br> [0~1 / 1 / 1] <br> 0 : Disabled (Off) <br> 1: Enabled (On) |
| 5831 | 002 | Initial Setting Mode Clear/Copier Up Application |  |
| 5832 | HDD Formatting |  |  |
|  | 001 | HDD Formatting (ALL) | Enter the SP number for the partition to initialize, then press \#. When execution ends, cycle the machine off and on. |
|  | 002 | HDD Formatting (IMH) |  |
|  | 003 | HDD Formatting (Thumbnail) |  |
|  | 004 | HDD Formatting (Job Log) |  |
|  | 005 | HDD Formatting (Printer Fonts) |  |
|  | 006 | HDD Formatting (User Info1) |  |
|  | 007 | HDD Formatting (User Info2) |  |
|  | 008 | HDD Formatting (Scanner Mail) |  |
|  | 009 | HDD Formatting (Data for a Design) |  |
|  | 011 | HDD Formatting (Ridoc I/F) |  |
| 5833 | 007 | Job Log On/Off |  |
| 5836 | Capture Setting |  |  |
|  | 001 | Capture Function | With this function disabled, the settings related to the capture feature cannot be initialized, displayed, or selected. DFU [0~1/0/1] <br> 0 : Disable 1: Enable |
|  | 002 | Panel Setting | Determines whether each capture related setting can be selected or updated from the initial system screen. [0~1/0/1] <br> 0: Disable 1: Enable <br> The setting for SP5836 001 has priority. |
|  | 003 | Print Back-up Function | Determines whether the print back-up function setting can be changed. <br> [0~1/0/1] <br> 0 : Disable <br> 1: Enable |
|  | 071 | Capture Setting: Resolution Conversion for Color | Determines the resolution conversion ratio when a Color image document is sent to the Document Server via the MLB (Media Link Board). <br> [0~2/0/1] <br> 0: 1 x <br> 1: $1 / 2 x$ <br> 2: $1 / 4 x$ |


| SP | Number/Name |  | Function/[Setting] |
| :---: | :---: | :---: | :---: |
| 5836 | 072 | Capture Setting: Resolution Conversion for Copy Text | Determines the resolution conversion ratio when a Copy Text image document is sent to the Document Server via the MLB <br> (Media Link Board). [0~2/0/1] <br> 0: 1 x <br> 1: $1 / 2 x$ <br> 2: $1 / 4 x$ |
|  | 073 | Capture Setting: Resolution Conversion for Copy (Others) | Determines the resolution conversion ratio when a Copy image document other than Text mode is sent to the Document Server via the MLB (Media Link Board). [0~2/0/1] <br> 0: $1 \times$ <br> 1: $1 / 2 x$ <br> 2: $1 / 4 x$ |
|  | 075 | Capture Setting: Resolution Conversion for Binary Print | Determines the resolution conversion ratio when a binary print image document is sent to the Document Server via the MLB (Media Link Board). [0~2/0/1] <br> 0: 1 x <br> 1: $1 / 2 x$ <br> 2: $1 / 4 \mathrm{x}$ |
|  | 076 | Capture Setting: Resolution Conversion for Dither Print (1200 dpi) | Determines the resolution conversion ratio when the Dither print image document is sent to the Document Server via the MLB (Media Link Board).. [1~3/1/1] <br> 1: $1 / 2 x$ <br> 2: $1 / 4 \mathrm{x}$ <br> 3: $1 / 8 x$ |
|  | 082 | Capture Setting: Format for Copy Text | Determines the image format for Copy Text images sent to the Document Server via the MLB (Media Link Board). [0~3/1/1] <br> 0: JFIF/JPEG <br> 1: TIFF/MMR <br> 2: TIFF/MH <br> 3: TIFF/MR |
|  | 083 | Capture Setting: Format for Copy (Others) | Determines the image format for Copy (other than text) images sent to the Document Server via the MLB (Media Link Board). $[0 \sim 3 / 1 / 1]$ <br> 0: JFIF/JPEG <br> 1: TIFF/MMR <br> 2: TIFF/MH <br> 3: TIFF/MR |
|  | 084 | Format for Printer Color |  |


| SP | Number/Name |  | Function/[Setting] |
| :---: | :---: | :---: | :---: |
| 5836 | 085 | Capture Setting: Format for Binary Print | Determines the image format for Binary Print images sent to the Document Server via the MLB (Media Link Board). <br> [0~3/1/1] <br> 0: JFIF/JPEG <br> 1: TIFF/MMR <br> 2: TIFF/MH <br> 3: TIFF/MR |
|  | 086 | Capture Setting: Format for Dither Print (1200dpi) | Determines the image format for Dither Print images sent to the Document Server via the MLB (Media Link Board). [0~3/1/1] <br> 0: JFIF/JPEG <br> 1: TIFF/MMR <br> 2: TIFF/MH <br> 3: TIFF/MR |
|  | 091 | Capture Setting: Default for JPEG (Page Quality) | Determines the quality level of JPEG images sent to the Document Server via the MLB (Media Link Board). [5~95/50/1] |
| 5839 | IEEE 1394 |  | This SP is displayed only when an IEEE 1394 card is installed. |
|  | 004 | Device Name | Enter the name of the device used on the network. Example: RNP0000000000 |
|  | 007 | Cycle Master | Enables or disables the cycle master function for the 1394 bus standard. [0~1/1/1] <br> 0 : Disable (Off) 1: Enable (On) |
|  | 008 | BCR mode | Determines how BCR (Broadcast Channel Register) operates on the 1394 standard bus when the independent node is in any mode other than IRM. (NVRAM: 2-bits) <br> (Range: Binary settings 0~3) <br> 00: Off. Writes from the IRM. <br> 01: Copies BCR of the IRM after no data is written from the IRM after the prescribed time has elapsed. <br> 10: Reserved. Not used. <br> 11: BCR normally enabled. |
|  | 009 | IRM 1394a Check | Conducts a 1394a check of IRM when the independent node is in any mode other than IRM. [0~1/0/1] <br> 0 : Checks whether IRM conforms to 1394a <br> 1: After IRM is checked, if IRM does not conform then independent node switches to IRM. |


| SP | Number/Name |  | Function/[Setting] |
| :---: | :---: | :---: | :---: |
| 5839 | 010 | Unique ID | Lists the ID (Node_Unique_ID) assigned to the device by the system administrator. [0~1/1/1] <br> 0: Does not list the Node_Unique_ID assigned by the system administrator. Instead, the Source_ID of the GASP header in the ARP is used. <br> 1: The Node_Unique_ID assigned by the system administrator is used, and the Source_ID of the GASP header in the ARP is ignored. Also, when the serial bus is reset, extra bus transactions are opened for the enumeration. |
|  | 011 | Logout | Handles the login request of the login initiator for SBP-2. (1-bit) $[0 \sim 1 / 1 / 1]$ <br> 0 : Disable (refuse login) Initiator retry during login Login refusal on arrival of login request (standard operation) <br> 1: Enable (force logout) Initiator retry during login Login refusal on arrival of login request, and the initiator forces the login. |
|  | 012 | Login | Enables or disables the exclusive login feature (SBP-2 related). [0~1/0/1] <br> 0 : Disables. The exclusive login (LOGIN ORB exclusive it) is ignored. <br> 1: Enables. Exclusive login is in effect. |
|  | 013 | Login MAX | Sets the maximum number of logins from the initiator (6-bits) [0~63/8/1] <br> 0: Reserved <br> 63: Reserved |
| 5840 | IEEE 802.11b. |  |  |
|  | 004 | SSID | Enters an unique ID (up to 32 characters long) to identify the device when it is operating in an area with another wireless LAN network. |
|  | 006 | Channel MAX | Sets the maximum range of the bandwidth for the wireless LAN. This bandwidth setting varies for different countries. <br> NA: [1~11/11/1] <br> EUR/A: [1~13/13/1] |
|  | 007 | Channel MIN | Sets the minimum range of the bandwidth for the wireless LAN. This bandwidth setting varies for different countries. <br> NA: [1~11/1/1] <br> EUR/A: [1~13/1/1] |


| SP | Number/Name |  | Function/[Setting] |
| :---: | :---: | :---: | :---: |
| 5840 | 011 | WEP Key Select | Selects the WEP key. [00~11 / 00 / 1 binary] 00: Key \#1 <br> 01: Key \#2 (Reserved) <br> 10: Key \#3 (Reserved <br> 11: Key \#4 (Reserved |
|  | 020 | WEP Mode |  |
| 5841 | Supply Name Setting |  | These names appear on the Inquiry list (the user can print this by pressing the Counter key on the operation panel, then touching 'Print Inquiry List' on the screen). |
|  | 001 | Toner Name Setting: Black | Enter the name of the toner in use. |
|  | 005 | Staple Standard | Enter the name of the staples in use for normal stapling (not booklet stapling) |
|  | 006 | Staple Bind | Enter the name of the staples in use for booklet stapling. |
| 5842 | Net File Analysis Mode Setting |  | Selects each debut output mode for NetFile processing <br> NetFiles: Jobs printed from the document server using a PC and DeskTopBinder [8 bits / 00111111 / Bit SW] <br> Bit 8 is reserved. Bit 7 is the debug output switch for each mode. |
| 5844 | USB |  |  |
|  | 001 Transfer Rate |  | Sets the speed for USB data transmission. [0x01~0x04 / 0x04 / 0] <br> 0x01: Full Speed (Fixed) <br> 0x04: High Speed/Full Speed (Automatic change) |
|  | 002 | Vendor ID | Sets the vendor ID: <br> DFU <br> [0x0000~0xFFFF/0x05CA/1] <br> Initial Setting: 0x05CA Ricoh Company |
|  | 003 | Product ID | Sets the product ID. DFU [0x0000~0xFFFF/0x0403/1] |
|  | 004 | Device Release Number | Sets the device release number of the BCD (binary coded decimal) display. <br> DFU [0000~9999/0100/1] <br> Enter as a decimal number. NCS converts the number to hexadecimal number recognized as the BCD. |
| 5845 | Delivery Server Setting |  | Provides items for delivery server settings. |
|  | 001 | FTP Port No. | Sets the FTP port number used when image files to the Scan Router Server. [0~65535 / 3670 / 1] |
|  | 002 | IP Address | Use this SP to set the Scan Router Server address. The IP address under the transfer tab can be referenced by the initial system setting. <br> [0~0xFFFFFFFF / 0x00] |


| SP | Number/Name |  | Function/[Setting] |
| :---: | :---: | :---: | :---: |
| 5845 | 003 | Retry Interval | Determines the time interval between retries before the machine returns to standby after an error occurs during an image transfer with the delivery scanner or SMTP server. $\text { [60~900 / } 300 \text { / 1] }$ |
|  | 004 | Number of Retries | Determines the number of retries before the machine returns to standby after an error occurs during an image transfer with the delivery or SMTP server. $\text { [0~99 / } 3 \text { / 1] }$ |
|  | 005 | Capture Server IP Address | Sets the capture server IP address for the capture function. [0~0xFFFFFFFFF / 0x00 / ] <br> MLB2 is required to use this feature. |
|  | 006 | Delivery Error Display Time | Use this setting to determine the length of time the prompt message is displayed when a test error occurs during document transfer with the NetFile application and an external device. $[0 \sim 999 / 300 / 1]$ |
|  | 007 | Delivery Options | Connects to the Scan Router server for delivery of scanned documents. $[0 \sim 1 / 0 / 1]$ <br> 0 : No connection to Scan Router delivery server <br> 1: Connected to Scan Router server for delivery of scanned documents. |
| 5846 | UCS Setting |  |  |
|  | 001 | Machine ID (For Delivery Server) | Displays the unique device ID in use by the delivery server directory. The value is only displayed and cannot be changed. <br> This ID is created from the NIC MAC or IEEE 1394 EUR/AI. <br> The ID is displayed as either 6-byle or 8byte binary. <br> 6-byte: <br> \%02X.\%02X.\%02X.\%02X.\%02X.\%02X <br> 8-byte: <br> \%02X.\%02X.\%02X.\%02X.\%02X.\%02X.\%02X.\%02X |
|  | 002 | Machine IC Clear (For Delivery Server) | Clears the unique ID of the device used as the name in the file transfer directory. Execute this SP if the connection of the device to the delivery server is unstable. After clearing the ID, the ID will be established again automatically by cycling the machine off and on. |
|  | 003 | Maximum Entries | Changes the maximum number of entries that UCS can handle. <br> [2000~50000/2000/1] <br> If a value smaller than the present value is set, the UCS managed data is cleared, and the data (excluding user code information) is displayed. |


| SP |  | Number/Name | Function/[Setting] |
| :---: | :---: | :---: | :---: |
| 5846 | 004 | Delivery Server Model | Changes the model of the transfer server registered for the I/O device. <br> [0~4/0/1] <br> 0 : Not used <br> 1: SG1 Provided <br> 2: SG1 Package <br> 3: SG2 Provided <br> 4: SG2 Package |
|  | 005 | Delivery Server Capability | Changes the capability of the server registered for the I/O device. <br> Bit $7=1$ Comment information <br> Bit $6=1$ Address direct entry possible <br> Bit $5=1$ Mail Rx confirmation possible <br> Bit $4=1$ Address book auto update <br> [0~255 / 0 / 1] |
|  | 006 | Delivery Server Retry Timer | Sets the interval for retry attempts when the delivery server fails to acquire the delivery server address book. [0~255/0/1] |
|  | 007 | Delivery Server Retry Times | Sets the number of retry attempts when the delivery server fails to acquire the delivery server address book. [0~255/0/1] |
|  | 008 | Delivery Server Maximum Entries | Sets the maximum number account entries of the delivery server user information managed by UCS. <br> [ $0 \sim 50000$ / 2000 / 1] |
|  | 050 | Initialize All Directory Info. | Clears all directory information managed by UCS, including all user codes. |
| 5847 | Net File Resolution Reduction |  |  |
|  | 001 | Rate for Copy Color | Changes the default settings of image data transferred externally by the DeskTopBinder page reference function via the MLB (Media Link Board). $[0 \sim 2 / 0 / 1]$ <br> 0: 1x <br> 1: $1 / 2 x$ <br> 2: $1 / 4 x$ |
|  | 002 | Copy : Text (B\&W) |  |
|  | 003 | Copy: Others (B\&W) |  |
|  | 004 | Rate for Printer Color |  |
|  | 005 | Rate for Printer B\&W |  |
|  | 006 | Rate for Printer B\&W HQ | Sets the default for dithered image size sent to the Document Server via the MLB (Media Link Board). $[1 \sim 3 / 1 / 1]$ <br> 1: $1 / 2 x$ <br> 2: $1 / 4 x$ <br> 3: $1 / 8 \mathrm{x}$ |
|  | 021 | Netfile Page Quality Default for JPEG | Sets the default for JPEG image quality of image files handled by DeskTopBinder sent via the MLB (Media Link Board). $\text { [5~95 / } 50 \text { / 1] }$ |



| SP | Number/Name |  | Function/[Setting] |
| :---: | :---: | :---: | :---: |
| 5852 | 006 | SMTP Auth. Encryption | Sets encryption method for the transfer password in SMTP validation. <br> [0~2/0/1] <br> 0: Auto. Allows three methods for encryption in SMTP validation: LOGIN, PLAIN, or CRAM-MD5. <br> 1: Off. Allows two methods for SMTP validation: LOGIN, PLAIN. <br> 2: On. Allows only one method for SMTP validation: CRAM-MD5. |
|  | 007 | POP before SMTP | A flag that determines whether the POP server is connected before connecting to the SMTP server. $[0 \sim 1 / 0 / 1]$ <br> POP <br> 0: OFF <br> 1: On <br> Post Office Protocol (POP)servers are computers that receive mail using SMTP. The mail includes a setting to ensure that it is directed to the POP server. POP servers are used when the user is not permanently connected to the Internet. |
|  | 008 | POP Server Name | Sets the POP server name. |
|  | 009 | POP Port Number | Sets the POP port number. [1~65535/110/1] |
|  | 010 | POP User Name | Set the POP user name. |
|  | 011 | POP Password | Set the POP password. |
|  | 012 | POP Auth. Encryption | Sets the encryption method for the password when 5852 POP Before SMTP is in use. <br> [0~2/0/1] <br> 0: Auto. Allows two methods for encryption: APOP and normal encryption to match the settings of the POP server. <br> 1: Off. Allows only normal encryption. <br> 2: On. Allows only APOP encryption. |
|  | 013 | Time out Setting for POP | Sets the wait time after POP validation until the SMTP mail is sent. <br> [ $0 \sim 10000 / 300 / 1 \mathrm{~ms}$ ] |
| 5853 | Stamp Data Download |  | Use this SP to download the fixed stamp data stored in the controller firmware and save it on the HDD. This SP can be executed as many times as required. This SP must be executed after replacing or formatting the hard disks. <br> This SP can be executed only with the hard disks installed. (-5.10.5) |


| SP | Number/Name |  | Function/[Setting] |
| :---: | :---: | :---: | :---: |
| 5856 | 002 | Remote ROM Update/Local port | When set to "1" allows reception of firmware data via the local port (IEEE 1284) during a remote ROM update. [0~1/0/1] <br> 0 : Not allowed <br> 1: Allowed <br> This setting is reset to zero after the machine is cycled off and on |
| 5857 | Save Debug Log |  |  |
|  | 001 | On/Off (1:ON 0:OFF | Switches on the debug log feature. The debug log cannot be captured until this feature is switched on. $\begin{aligned} & {[0 \sim 1 / 0 / 1]} \\ & 0: \text { OFF } \\ & \text { 1: ON } \end{aligned}$ |
|  | 002 | Target (2: HDD 3: SD Card) | Selects the destination where the debugging information generated by the event selected by SP5858 will be stored if an error is generated $[2 \sim 3 / 2 / 1]$ <br> 2: HDD <br> 3: SD Card |
|  | 005 | Save to HDD | Specifies the decimal key number of the log to be written to the hard disk. ( -5.16 ) |
|  | 006 | Save to SD Card | Specifies the decimal key number of the log to be written to the SD Card. ( -5.16 ) |
|  | 009 | HDD to SD Card (Latest 4 MB ) | Takes the most recent 4 MB of the log written to the hard disk and copies them to the SD Card. ( -5.16 ) <br> A unique file name is generated to avoid overwriting existing file names on the SD Card. Up to $4 M B$ can be copied to an SD Card. 4 MB segments can be copied one by one to each SD Card. |
|  | 010 | HDD to SD Card Latest 4 MB Any Key) | Takes the log of the specified key from the log on the hard disk and copies it to the SD Card. (-5.16) <br> A unique file name is generated to avoid overwriting existing file names on the SD Card. Up to $4 M B$ can be copied to an SD Card. 4 MB segments can be copied one by one to each SD Card. This SP does not execute if there is no log on the HDD with no key specified. |
|  | 011 | Erase Debug Data From HDD | Erases all debug logs on the HDD |
|  | 012 | Erase Debug Data From SD Card | Erases all debug logs on the SD Card. If the card contains only debugging files generated by an event specified by SP5858, the files are erased when SP5857 010 or 011 is executed. <br> To enable this SP, the machine must be cycled off and on. |
| 5857 | 013 | Free Space on SD Card | Displays the amount of space available on the SD card. |


| SP | Number/Name |  | Function/[Setting] |
| :---: | :---: | :---: | :---: |
| 5858 | Debug Save When |  | These SPs select the content of the debugging information to be saved to the destination selected by SP5857 002 |
|  | 001 | Engine SC Error | Stores SC codes generated by copier engine errors |
|  | 002 | Controller SC Error | Stores SC codes generated by GW controller errors |
|  | 003 | Any SC Error | Stores one SC specified by number. $[0 \sim 65535 \text { / } 0 \text { / 1] }$ <br> Refer to Section 4 for a list of SC error codes. |
|  | 004 | Jam |  |
| 5859 | Debug Save Key No. |  | These SP's allow you to set up to 10 keys for log files for functions that use common memory on the controller board.$\text { [-9999999~+9999999 / } 0 \text { / 1] }$ |
|  | 001 | Key 1 |  |
|  | 002 | Key 2 |  |
|  | 003 | Key 3 |  |
|  | 004 | Key 4 |  |
|  | 005 | Key 5 |  |
|  | 006 | Key 6 |  |
|  | 007 | Key 7 |  |
|  | 008 | Key 8 |  |
|  | 009 | Key 9 |  |
|  | 010 | Key 10 |  |
| 5907 | Plug \& Play Maker/Model Name |  | Selects the brand name and the production name for Windows Plug \& Play. This information is stored in the NVRAM. If the NVRAM is defective, these names should be registered again. <br> After selecting, press the "Original Type" key and "\#" key at the same time. When the setting is completed, the beeper sounds five times. |
| 5913 | 002 | Switchover Permission Time/ Print Application | Sets the amount of time to elapse while the machine is in standby mode (and the operation panel keys have not been used) before another application can gain control of the display. $[3 \sim 30 / 3 / 1 \mathrm{~s}]$ |
| 5914 | 001 | Application Counter DIsplay | $\begin{aligned} & \text { Printer Counter } \\ & \text { 0: Off } \\ & \text { 1: On } \end{aligned}$ |
|  | 003 | Copy Counter |  |
| 5915 | Mechanical Counter Detection |  | Displays whether the mechanical counter is installed in the machine. <br> [0~2] <br> 0 : Not detected <br> 1: Detected <br> 2: Unknown |


| SP |  | Number/Name | Function/[Setting] |
| :---: | :---: | :---: | :---: |
| 5917 | GPC Counter Display |  | Displays the GPC counter. [0~1/0/1] Japan Only <br> 0 : No display <br> 1: Display |
| 5918 | A3 / DLT Counter Display |  | Determines whether pressing the counter key displays count confirmation. $[0 \sim 1 / 0 / 1]$ <br> 0: OFF 1: ON <br> This SP affects the display only, and has no effect on SP5104 (A3/DLT Double Count). |
| 5923 | Border Removal Area Switching |  | Selects the standard for edge erase. $[0 \sim 1 / 0 / 1]$ <br> 0 : The margin is erased from the original data. <br> 1: The margin is erased from the data sent to the laser diode. <br> The output resulting from each of the settings will be different when reduction/enlargement is used. |
| 5967 | Copy Server: Disable Function |  | Enables and disables the copier server. $[0 \sim 1 / 0 / 1]$ <br> 0 : Enables 1: Disables <br> Turn the main switch off and on after changing this setting. |
| 5974 | Cherry Server |  | Do not change. Japan Only |
| 5990 | SP Print Mode |  | In the SP mode, press Copy mode to move to the copy screen, select the paper size, then press Start. Select A4/LT LEF or larger to ensure that all the information prints. Return to the SP mode, select the desired print, and press Execute. |
|  | 001 | All (Data List) |  |
|  | 002 | SP (Mode Data List) |  |
|  | 003 | User Program |  |
|  | 004 | Logging Data |  |
|  | 005 | Diagnostic Report |  |
|  | 006 | Non-Default |  |
|  | 007 | NIB Summary |  |
|  | 008 | Net File Log |  |
|  | 021 | Copier User Program |  |
|  | 022 | Scanner SP |  |
|  | 023 | Scanner User Program |  |

## SP6-nnn Peripherals

| SP | Number/Name |  | Function/[Setting] |
| :---: | :---: | :---: | :---: |
| 6006 | DF Registration Adjustment |  |  |
|  | 001 | Side-to-Side | Adjusts the printing side-to-side registration in the ADF mode. <br> $[-3 \sim+3 / 0 / 0.1 \mathrm{~mm}]$ <br> Use the "o/" " key to toggle between + and - |
|  | 002 | Leading Edge (Thin Original) | Adjusts the original stop position. $[-10 \sim+10 / 0 / 0.13 \mathrm{~mm}]$ <br> Use the "o//" key to toggle between + and - |
|  | 003 | Leading Edge (Duplex 1st) | Adjusts the original stop position against the original left scale in one-sided original mode, and the first side of duplex originals. $[-29 \sim+29 / 0 / 0.13 \mathrm{~mm}]$ <br> Use the " $\cdot$ " key to toggle between + and - |
|  | 004 | Leading Edge (Duplex-2nd) | Adjusts the original stop position against the original left scale for the second side of duplex originals. $[-29 \sim+29 / 0 / 0.13 \mathrm{~mm}]$ <br> Use the " $\mathrm{\bullet}$ " key to toggle between + and - . |
| 6007 | ADF Input Check |  |  |
|  | 001 | Group 1 | Displays the signals received from sensors and switches of the ADF. (-5.4.2) |
|  | 002 | Group 2 | Displays the signals received from sensors and switches of the ADF. (-5.4.2) |
|  | 003 | Group 3 | Displays the signals received from sensors and switches of the ADF. (5.4.2) |
| 6008 | ADF Output Check |  | Turns on the ADF electrical components individually for testing. (-5.5.2) |
| 6009 | DF Free Run |  | Performs an ADF free run in two-sided original mode. Press " 1 " to start. <br> This is a general free run controlled from the copier |
| 6016 | ADF Motor Speed Auto Adjustment |  | After pressing the Start key, the machine automatically adjusts the speeds of the ADF motors in the following order: <br> Feed-in motor $\rightarrow$ <br> Transport Motor $\rightarrow$ <br> Feed-out Motor (High) $\rightarrow$ <br> Feed-out Motor (Low) |
| 6105 | Stap | Position Adjustment | Adjusts the stapling position in the main scan direction $[-3.5 \sim+3.5 / 0 / 0.5 \mathrm{~mm}]$ <br> Use the " o " key to toggle between + and A larger value causes the stapling position to shift outward. |


| SP | Number/Name |  | Function/[Setting] |
| :---: | :---: | :---: | :---: |
| 6107 | Finisher Free Run |  |  |
|  | 001 | Staple Mode | The finisher simulates a finisher free run for stapling A4 LEF. $[0 \sim 1 / 0 / 1]$ <br> 0 : Stop <br> 1: Start |
|  | 002 | Shift Mode | The finisher simulates a free run for stapling and tray shifting. $\begin{aligned} & {[0 \sim 1 / 0 / 1]} \\ & 0: \text { Stop } \\ & \text { 1: Start } \end{aligned}$ |
|  | 003 | Back to the Home Position | Sets the machine in standby mode for shipping. $\begin{aligned} & {[0 \sim 1 / 0 / 1]} \\ & 0: \text { Stop } \\ & \text { 1: Start } \end{aligned}$ |
|  | 004 | With Jogger Unit | The finisher simulates a shift mode free run with the optional jogger unit. $\begin{aligned} & \text { [0~1 / o / 1] } \\ & \text { 0: Stop } \\ & \text { 1: Start } \end{aligned}$ |
| 6113 | Punch Hole Position Adjustment |  | Adjusts the punch hole position in the subscan direction for the punch unit. $[-7.5 \sim+7.5 / 0 / 0.5 \mathrm{~mm}]$ <br> Use the "o/*" key to toggle between + and - <br> A larger value shifts the punch holes away from the edge of the paper, a smaller value toward the edge. |
|  | 001 | 2 Holes |  |
|  | 002 | 3 Holes |  |
| 6116 | Sheet Conversion (Thick Paper) |  | Divide the normal limit for stapling by this number to determine the staple limit number for thick paper mode. [1~3/3/1] |
| 6117 | Finisher Input Check |  | Displays the signals received from sensors and switches of the finisher. (-5.4.3) |
|  | 001 | INPUT1 |  |
|  | 002 | INPUT2 |  |
|  | 003 | INPUT3 |  |
|  | 004 | INPUT4 |  |
|  | 005 | INPUT5 |  |
|  | 006 | INPUT6 |  |
| 6118 | Finisher Output Check |  | Turn on the electrical components of the finisher individually for test purposes. <br> (-5.5.3) |
| 6119 | Punch Function Enabled (Thick Paper) |  | Determines whether punch mode is enabled in thick paper mode. [ $0 \sim 1 / 0 / 1$ ] 0: Disabled 1: Enabled |



SP7-nnn Data Logs

| SP | Number/Name |  | Function/[Setting] |
| :---: | :---: | :---: | :---: |
| 7001 | Main Motor Operation Time |  | Displays the total drum rotation time in minutes. |
| 7002 | Original Counter |  | Displays the total number of fed originals for each operation mode |
|  | 001 | Total |  |
|  | 002 | Copy |  |
|  | 004 | Document Server Application |  |
|  | 005 | Scanner |  |
|  | 006 | Others |  |
| 7003 | Print Counter |  | Displays the total number of prints for each operation mode. |
|  | 001 | Total Count |  |
|  | 002 | Copy |  |
|  | 004 | Printer |  |
|  | 005 | Others |  |
| 7006 | GPC Counter Display |  | Japan Only |
|  | 001 | GPC Total |  |
|  | 002 | GPC Copy |  |
|  | 003 | GPC Printer |  |
| 7007 | Other Counter |  |  |
|  | 001 | Duplex Counter | Displays the count total for the selected item. |
|  | 002 | A3/ DLT Counter |  |
|  | 003 | Staple Counter |  |
|  | 004 | Scan Counter |  |
| 7009 | Rental GPC Counter |  | Japan Only |
|  | 001 GPC Total |  |  |
|  | 002 GPC Copy |  |  |
|  | 003 GPC Printer |  |  |
| 7101 | Print Count - Paper Size |  |  |
|  | 005 | A4 LEF | Displays the number of copies by paper size. <br> Display range: 0~9999999 |
|  | 006 | A5 LEF |  |
|  | 014 | B5 LEF |  |
|  | 038 | LT LEF |  |
|  | 044 | HLT LEF |  |
|  | 132 | A3 SEF |  |
|  | 133 | A4 SEF |  |
|  | 134 | A5 SEF |  |
|  | 141 | B4 SEF |  |
|  | 142 | B5 SEF |  |
|  | 160 | DLT SEF |  |
|  | 164 | LG SEF |  |
|  | 166 | LT SEF |  |
|  | 172 | HLT SEF |  |
|  | 255 | Others |  |

## SERVICE PROGRAM MODE TABLES

| SP |  | Number/Name | Function/[Setting] <br> Displays the total number of prints by paper type. A single-sided print counts as 1 and a two-sided print counts as 2. |
| :---: | :---: | :---: | :---: |
| 7105 | Paper Type Counter |  | Displays the total number of prints by paper type. A single-sided print counts as 1 and a two-sided print counts as 2. |
|  | 001 | Normal |  |
|  | 002 | Recycled |  |
|  | 003 | Special |  |
|  | 004 | Colour1 |  |
|  | 005 | Colour2 |  |
|  | 006 | Letterhead |  |
|  | 008 | Thick |  |
|  | 009 | OHP |  |
|  | 010 | Used |  |
|  | 011 | Index |  |
|  | 012 | Tracing |  |
|  | 020 | Yellow |  |
|  | 021 | Green |  |
|  | 022 | Blue |  |
|  | 023 | Purple |  |
|  | 024 | Ivory |  |
|  | 025 | Orange |  |
|  | 026 | Pink |  |
|  | 027 | Red |  |
|  | 028 | Gray |  |
|  | 255 | Others |  |
| 7201 | Total Scan Counter |  | Displays the total number of scanned originals. |
| 7204 | Print Counter - Paper Tray |  | Displays the total number of sheets fed from each paper tray. |
|  | 002 | Tray 1 |  |
|  | 003 | Tray 2 |  |
|  | 004 | Tray 3 |  |
|  | 005 | Tray 4 |  |
|  | 006 | Tray 5 |  |
|  | 007 | Tray 6 |  |
|  | 008 | Tray 7 |  |
|  | 009 | Inserter |  |
| 7205 | Total | DF Counter | Displays the total number of originals fed by the ADF. |
| 7206 | Stapl | Counter | Displays the total number of staples used. |
|  | 002 | Staple Counter (Binding Staple) |  |
| 7301 | Numb | of Pages by Magnification Mode | Displays the total number of prints for each |
|  | 001 | Reduce 25\%<-->49\% | reproduction ratio range. |
|  | 002 | Reduce 50\%<-->99\% | SP7848 clears these counters. |
|  | 003 | Full Size |  |
|  | 004 | Enlarge 101\%<-->200\% |  |
|  | 005 | Enlarge 201\%<-->400\% |  |
|  | 006 | Free Mag.\% |  |
|  | 007 | Free Size Mag. mm (in.) |  |


| SP |  | Number/Name | Function/[Setting] |
| :---: | :---: | :---: | :---: |
| 7301 | 008 | Auto Reduce / Enlarge |  |
| 7304 | Copy: Number of Copies by Mode |  | Displays the total number of copies by original type. SP7837 or SP7848 clears this counter. |
|  | 001 | Text |  |
|  | 002 | Text / Photo |  |
|  | 003 | Photo |  |
|  | 004 | Generation Copy |  |
|  | 005 | Pale |  |
|  | 006 | Punching |  |
|  | 007 | Repeat |  |
|  | 008 | Sort |  |
|  | 009 | Staple |  |
|  | 010 | Series |  |
|  | 011 | Erase |  |
|  | 012 | Duplex |  |
|  | 013 | ADF |  |
|  | 014 | Double Copy |  |
|  | 015 | Duplex Original |  |
|  | 016 | Divided Copy |  |
|  | 017 | Combine 1 Side |  |
|  | 018 | Combine 2 Sides |  |
|  | 019 | Booklet Gathering |  |
|  | 020 | Pamphlet Saddle-Stitching |  |
|  | 021 | Batch |  |
|  | 022 | SADF |  |
|  | 023 | Mixed Sizes |  |
|  | 024 | Stamp |  |
|  | 025 | Cover/Chapter Sheet Switching |  |
|  | 026 | Chapter Page |  |
| 7305 | Copy: Display Jobs by Continuous Output |  |  |
|  | 001 | 1to1 | Displays the total number of multiple print jobs by the size of the sets. SP7838 or SP7848 clears this counter. |
|  | 002 | 1 to $2<-->5$ |  |
|  | 003 | 1 to $6<-->10$ |  |
|  | 004 | 1 to 11<-->20 |  |
|  | 005 | 1 to $21<-->50$ |  |
|  | 006 | 1 to $51<-->100$ |  |
|  | 007 | 1 to 101<-->300 |  |
|  | 008 | 1 to 301<-->over |  |
| 7306 | Copy: Display Jobs by Mode |  |  |
|  | 001 | Sort | Displays the total number of copy jobs by operation mode (stapling, punching, etc.). SP7839 or SP7848 clears this counter. |
|  | 002 | Staple |  |
|  | 003 | Punching |  |
|  | 004 | Reserve Copy |  |
|  | 005 | Check Copy |  |

## SERVICE PROGRAM MODE TABLES

| SP |  | Number/Name | Function/[Setting] |
| :---: | :---: | :---: | :---: |
| 7320 | Doc. Svr - Scanning Counter |  | Displays the total number of pages stored in the document server. SP7840 or SP7848 clears this counter. |
| 7321 | Doc. Svr - Original Size Display |  |  |
|  | 004 | A3 | Displays by paper size the total number of originals stored in the document server. SP7841 or SP7848 clears this counter. |
|  | 005 | A4 |  |
|  | 006 | A5 |  |
|  | 013 | B4 |  |
|  | 014 | B5 |  |
|  | 032 | DLT |  |
|  | 036 | LG |  |
|  | 038 | LT |  |
|  | 044 | HLT |  |
|  | 128 | Others |  |
| 7323 | Doc. | - Print Size Display |  |
|  | 005 | A4 (Sideways) | Displays by paper size the total number of |
|  | 006 | A5 LEF (Sideways) | prints stored in the document server. |
|  | 014 | B5 LEF (Sideways) | SP7842 or SP7848 clears this counter. |
|  | 038 | LT LEF (Sideways) |  |
|  | 044 | HLT LEF (Sideways) |  |
|  | 128 | Other |  |
|  | 132 | A3 (Lengthwise) |  |
|  | 133 | A4 SEF (Lengthwise) |  |
|  | 134 | A5 SEF (Lengthwise) |  |
|  | 141 | B4 (Lengthwise) |  |
|  | 142 | B5 SEF (Lengthwise) |  |
|  | 160 | DLT (Lengthwise) |  |
|  | 164 | LG (Lengthwise) |  |
|  | 166 | LT SEF (Lengthwise) |  |
|  | 172 | HLT SEF (Lengthwise) |  |
| 7324 | Doc. | - Print Job Counter |  |
|  | 001 | Duplex | Displays the total number of jobs executed |
|  | 002 | Sort | from the document server. SP7843 or |
|  | 003 | Staple | SP7848 clears this counter. |
|  | 004 | Punch |  |
|  | 005 | Check Copy |  |
|  | 006 | Print 1st Page |  |
| 7325 | Doc. | - Job Count (Page No) |  |
|  | 001 | Page 1 | Displays the number of pages in jobs |
|  | 002 | Page 2 | executed from the document server. |
|  | 003 | Pages 3 to 5 | SP7844 or SP7848 clears this counter. |
|  | 004 | Pages 6 to 10 |  |
|  | 005 | Pages 11 to End |  |


| SP | Number/Name |  | Function/[Setting] |
| :---: | :---: | :---: | :---: |
| 7326 | Doc. Svr - Job Count (File No) |  |  |
|  | 001 | File 1 | Displays the number of files in jobs executed from the document server. SP7845 or SP7848 clears this counter. |
|  | 002 | Files 1 to 5 |  |
|  | 003 | Files 6 to 10 |  |
|  | 004 | Files 11 to End |  |
| 7327 | Doc. Svr - Job Count (Set No) |  |  |
|  | 001 | 1 to 1 | Displays the number of sets of multiple page print jobs executed from the document server. SP7846 or SP7848 clears this counter. |
|  | 002 | 1 to 2<-->5 |  |
|  | 003 | 1 to 6<-->10 |  |
|  | 004 | 1 to $11<-->20$ |  |
|  | 005 | 1 to $21<->50$ |  |
|  | 006 | 1 to $51<-->100$ |  |
|  | 007 | 1 to 101<-->300 |  |
|  | 008 | 1 to 301<-->over |  |
| 7328 | Doc. Svr - Job Count (Prt Mode) |  |  |
|  | 006 | Punch | Displays the total number of prints in print mode executed from the document server. SP7847 or SP7848 clears this counter. |
|  | 008 | Sort |  |
|  | 009 | Staple |  |
|  | 012 | Duplex |  |
|  | 019 | Booklet |  |
|  | 020 | Magazine |  |
|  | 024 | Stamp |  |
|  | 025 | Cover / Chapter Sheet Switching |  |
|  | 026 | Slip Sheet |  |
| 7330 | Connect Copy - Job Count |  | Displays the number of jobs processed by the master machine when two copiers are connected. |
| 7331 | Connect Copy - Print Count |  | Displays the number of copies when two copiers are connected. Counts the total for both the master and slave machines. |
| 7334 | Connect Copy - Doc. Svr. Print Count |  | Displays the number of copies printed with the document server when two copiers are connected. Counts the total for both the master and slave machines. |
| 7401 | Total SC Counter |  | Displays the total number of SCs logged. Display Range: 0~9999 |
| 7403 | SC History |  | Displays the latest 10 service call codes |
|  | 001 | Latest |  |
|  | 002 | Latest 1 |  |
|  | 003 | Latest 2 |  |
|  | 004 | Latest 3 |  |
|  | 005 | Latest 4 |  |
|  | 006 | Latest 5 |  |
|  | 007 | Latest 6 |  |
|  | 008 | Latest 7 |  |
|  | 009 | Latest 8 |  |
|  | 010 | Latest 9 |  |


| SP |  | Number/Name | Function/[Setting] |
| :---: | :---: | :---: | :---: |
| 7502 | Total Paper Jam Counter |  | Displays the total number of copy jams. Display Range: 0~9999 |
| 7503 | Total Original Jam Counter |  | Displays the total number of original jams. Display Range: 0~9999 |
| 7504 | Paper Jam Counter by Jam Location |  | Displays the list of possible locations where a jam could have occurred. These jams are caused by the failure of a sensor to activate. |
|  | 003 | 1st Paper Tray | These are jams when the paper does not activate the sensor. |
|  | 004 | 2nd Paper Tray |  |
|  | 005 | 3rd Paper Tray |  |
|  | 006 | 4th Paper Tray |  |
|  | 007 | 5th Paper Tray |  |
|  | 008 | 6th Paper Tray |  |
|  | 009 | 7th Paper Tray |  |
|  | 010 | LCT Relay Sensor |  |
|  | 011 | LCT Exit Sensor |  |
|  | 012 | Relay Sensor |  |
|  | 013 | Registration Sensor |  |
|  | 015 | Fusing Exit Sensor |  |
|  | 016 | Exit Sensor |  |
|  | 019 | Duplex Entrance Sensor |  |
|  | 020 | Duplex Transport Sensor 1 |  |
|  | 021 | Duplex Transport Sensor 2 |  |
|  | 022 | Duplex Transport Sensor 3 |  |
|  | 023 | Inverter Tray Paper Sensor |  |
|  | 025 | Entrance Sensor - Fin. |  |
|  | 026 | Upper Tray Exit Sensor - Fin. |  |
|  | 027 | Shift Tray Exit Sensor - Fin. |  |
|  | 028 | Stapler Tray Entrance Sensor Fin. |  |
|  | 029 | Stapler Tray Paper Sensor - Fin. |  |
|  | 030 | Entrance Sensor - FIN Staple Tray |  |
|  | 031 | Stapler Tray Paper Sensor - S.S. Fin |  |
|  | 032 | Saddle Stitch Stapler Sensors S.S. Fin |  |
|  | 033 | Pressure Plate Sensors - S.S. Fin |  |
|  | 034 | Stapler Entrance Sensors - S.S Fin |  |
|  | 035 | Shift Tray Sensors - S.S. Fin |  |
|  | 036 | Jogger Fence HP Sensor - S.S. Fin |  |
|  | 037 | Shift Roller HP Sensor - S.S Fin |  |


| SP |  | Number/Name | Function/[Setting] |
| :---: | :---: | :---: | :---: |
| 7504 | 038 | Stapler HP Sensors - S.S. Fin | These are jams when the paper does not activate the sensor. |
|  | 039 | Stapler Unit Sensor-S.S. Fin |  |
|  | 040 | ```Folder Plate HP Sensor - S.S. Fin``` |  |
|  | 041 | Feed-out Belt HP Sensor - S.S Fin |  |
|  | 042 | Punch HP Sensor-S.S Fin |  |
|  | 043 | Abnormal Signal - S.S Fin |  |
|  | 044 | Paper Feed Sensor - Cover Interposer |  |
|  | 045 | Transport Sensor - Cover Interposer |  |
|  | 046 | Bottom Plate Position Sensor Cover Interposer |  |
|  | 053 | 1st Paper Tray |  |
|  | 054 | 2nd Paper Tray |  |
|  | 055 | 3rd Paper Tray |  |
|  | 056 | 4th Paper Tray |  |
|  | 057 | 5th Paper Tray |  |
|  | 058 | 6th Paper Tray |  |
|  | 059 | 7th Paper Tray |  |
|  | 060 | LCT Relay Sensor (Stay On) |  |
|  | 061 | LCT Exit Sensor (Stay On) |  |
|  | 062 | Relay Sensor |  |
|  | 063 | Registration Sensor (Stay On) |  |
|  | 065 |  |  |
|  | 066 | Paper Jam Count by Location Exit Sensor (Stay On) |  |
|  | 069 | Duplex Sensor (Stay On) |  |
|  | 070 | Duplex Transport Sensor 1 (Stay On) |  |
|  | 071 | Duplex Transport Sensor 2 (Stay On) |  |
|  | 072 | Duplex Transport Sensor 3 (Stay On) |  |
|  | 073 | Inverter Tray Paper Sensor (Stay On) |  |
|  | 100 | Paper Jam Count by Location: Biwacko |  |
| 7505 | Original Jam Counter by Jam Location |  | Displays the list of possible locations where an original jam could have occurred. These jams are caused by the failure of a sensor to activate. |
|  | 003 | ADF Feed-in Sensor |  |
|  | 004 | ADF Feed-out Sensor |  |
| 7506 | Jam Counter by Paper Size |  | Displays the total number of original jams by paper size. |
|  | 005 | A4 LEF |  |
|  | 006 | A5 LEF |  |
|  | 014 | B5 LEF |  |

## SERVICE PROGRAM MODE TABLES

| SP | Number/Name |  | Function/[Setting] |
| :---: | :---: | :---: | :---: |
| 7506 | 038 | LT LEF |  |
|  | 044 | HLT LEF |  |
|  | 132 | A3 SEF |  |
|  | 133 | A4 SEF |  |
|  | 134 | A5 SEF |  |
|  | 141 | B4 SEF |  |
|  | 142 | B5 SEF |  |
|  | 160 | DLT SEF |  |
|  | 164 | LG SEF |  |
|  | 166 | LT SEF |  |
|  | 172 | HLT SEF |  |
|  | 255 | Others |  |
| 7507 | Plotter Jam History |  | Displays the following items for the last 10 copy paper jams: <br> 1) Jam code <br> 2) Paper size <br> 3) Total count when jam occurred <br> 4) Date of jam. |
|  | 001 | Latest |  |
|  | 002 | Latest 1 |  |
|  | 003 | Latest 2 |  |
|  | 004 | Latest 3 |  |
|  | 005 | Latest 4 |  |
|  | 006 | Latest 5 |  |
|  | 007 | Latest 6 |  |
|  | 008 | Latest 7 |  |
|  | 009 | Latest 8 |  |
|  | 010 | Latest 9 |  |
| 7508 | Original Jam History |  | Displays the following items for the Latest 10 original jams: <br> 1) Jam code, <br> 2) Original size, <br> 3) Total count when jam occurred, <br> 4) Date of jam. |
|  | 001 | Latest |  |
|  | 002 | Latest 1 |  |
|  | 003 | Latest 2 |  |
|  | 004 | Latest 3 |  |
|  | 005 | Latest 4 |  |
|  | 006 | Latest 5 |  |
|  | 007 | Latest 6 |  |
|  | 008 | Latest 7 |  |
|  | 009 | Latest 8 |  |
|  | 010 | Latest 9 |  |
| 7617 | Parts PM Counter Display |  |  |
|  | 001 | Copy Paper Standard | Japan Only |
|  | 002 | Original Paper Standard | Japan Only |


| SP | Number/Name |  | Function/[Setting] |
| :---: | :---: | :---: | :---: |
| 7618 | Parts PM Counter Reset |  |  |
|  | 001 | Copy Paper Standard | Clears the counter of SP7617- 001. Japan Only |
|  | 002 | Copy Paper Standard | Clears the counter of SP7617-002 Japan Only |
| 7801 | ROM Version |  |  |
|  | 001 | System/Copy | Displays the ROM versions for these items. (Locate ROM version name within SP 7801255 in order indicated) |
|  | 002 | Engine |  |
|  | 003 | LCDC |  |
|  | 004 | PI |  |
|  | 005 | ADF |  |
|  | 007 | Finisher |  |
|  | 015 | Scanner |  |
|  | 018 | NIB |  |
|  | 020 | Cover Interposer |  |
|  | 022 | BIOS |  |
|  | 100 | Language-1 |  |
|  | 101 | Language-2 |  |
|  | 150 | RPCS |  |
|  | 151 | PS |  |
|  | 152 | RPDL |  |
|  | 153 | R98 |  |
|  | 154 | R16 |  |
|  | 155 | RPGL |  |
|  | 156 | R55 |  |
|  | 157 | RTIFF |  |
|  | 158 | PCL |  |
|  | 159 | PCLXL |  |
|  | 160 | MSIS |  |
|  | 161 | MSIS (Option) |  |
|  | 180 | FONT |  |
|  | 181 | FONT1 |  |
|  | 182 | FONT2 |  |
|  | 183 | FONT3 |  |
|  | 201 | Copy Application |  |
|  | 202 | NetFile Application |  |
|  | 204 | Printer Application |  |
|  | 205 | Scanner Application |  |
|  | 211 | Web System |  |
|  | 212 | WebDocBox |  |
| 7803 | PM Counter Display |  | Displays the PM counter since the last PM. |
| 7804 | PM Counter Reset |  | Resets the PM counter. |
| 7807 | SC / Jam Counter Reset |  | Resets the SC and jam counters. |

## SERVICE PROGRAM MODE TABLES

| SP |  | Number/Name | Function/[Setting] |
| :---: | :---: | :---: | :---: |
| 7808 | Counter Reset |  | Press \# to reset all counters, with the exception of the following counts: <br> - Total electronic count <br> - Copy count <br> - Print count <br> - Duplex count <br> - Staple count <br> - A3/DLT count <br> - P/O count <br> - C/O count. |
| 7810 | Access Code Clear |  | Press \# to clear the key operator code if the customer key operator forgets the code and the machine cannot be used. |
| 7811 | Original Counter Clear |  | Clears the original total display, displayed with SP7-002-***.and SP7205-001 |
| 7816 | Print Counter Reset by Paper Tray |  |  |
|  | 002 | Tray 1 | Resets the total copy counter by paper tray. These SP modes can be used after replacing the pick-up, feed, and separation rollers in the paper feed stations. |
|  | 003 | Tray 2 |  |
|  | 004 | Tray 3 |  |
|  | 005 | Tray 4 |  |
|  | 006 | Tray 5 |  |
|  | 007 | Tray 6 |  |
|  | 008 | Tray 7 |  |
|  | 009 | Inserter |  |
| 7822 | Copy Memory Clear |  | Resets all counters of SP7-301. |
| 7825 | Total Counter Reset |  | Resets the electrical total counter. Usually, this SP mode is done at installation. This SP mode works only once when the counter value is negative. |
| 7826 | MF Error Counter |  |  |
|  | 001 | Error Total | Japan Only |
|  | 002 | Error Staple | Japan Only |
| 7827 | MF Error Counter Clear |  | Japan Only |
| 7829 | Rental GPC Counter Reset |  | Japan Only |
| 7832 | Self-Diagnose Result Display |  | Press \# to display a list of error codes. Nothing is displayed if no errors have occurred. |
| 7833 | Pixel Coverage Ratio |  |  |
|  | 001 | Last Pages | Displays the toner coverage ratio (\%) for the previous page just output. <br> Example: All black solid: 100\% |
|  | 002 | Average Pages | Displays the average toner coverage ratio (\%) for the previous pages just output. |
|  | 003 | Toner Bottle in Use | Displays the number of toner ends. (Total number of times the toner bottle has been used) |


| SP | Number/Name |  | Function/[Setting] |
| :---: | :---: | :---: | :---: |
| 7833 | 004 | Copy Count: Previous Toner Bottle | Display the number of output pages for the last toner bottle. (Toner yield for the last toner bottle) |
|  | 005 | Copy Count: Toner Bottle Before Previous | Display the number of output pages for the toner bottle before last. (Toner yield for the toner bottle before last) |
| 7834 | Clear Pixel Coverage Data |  |  |
|  | 001 | Last \& Average pages | Clears the counters SP7833-001 and -002 |
|  | 002 | Toner Bottle in Use | Clears the counters SP7833-003. |
|  | 003 | Page Counts (2 Prev. Toner Bottles) | Clears the counters SP7833-004 and -005. |
| 7836 | Total Memory Size |  | Press \# to display the contents of the memory on the controller system. |
| 7837 | Copy Clear: Pages by Mode |  | Press execute to clear counters SP7301 (Number of Pages by Magnification Mode) and SP7304 (Copy: Number of Copies by Mode). <br> If the machine has connect copy function, SP7330 (Connect Copy - Job Count )is also cleared. |
| 7838 | Copy Clear: Jobs by Continuous Output |  | Press Execute to clear counter SP7305 (Copy: Display Jobs by Continuous Output.) |
| 7839 | Copy Clear: Jobs by Mode |  | Press Execute to clear counter SP7306.(Copy: Display Jobs by Mode). If the machine has the connect copy function, SP7331 (Connect Copy - Print Count) is also cleared |
| 7840 | LS Clear: Stored Image Logins |  | Press Execute to clear counter SP7320 (Doc. Svr. - Scan Count). |
| 7841 | LS Clear: Originals by Size |  | Press Execute to clear counter SP7321 (Doc. Svr. - Original Size Display) |
| 7842 | LS Clear: Prints by Size |  | Press Execute to clear counter SP7323 <br> (Doc. Svr - Print Size Display). |
| 7843 | LS Clear: Print Job Logins |  | Press Execute to clear counter SP7324 (Doc. Svr. - Print Job Counter). |
| 7844 | LS Clear: Print Job Page Distribution |  | Press Execute to clear SP7325 (Doc. Svr. Job Count (Page No.). |
| 7845 | LS Clear: Print Job File Distribution |  | Press Execute to clear SP7326 (Doc. Svr Job Count (File No.) |
| 7846 | LS Clear: Print Job Copies Distribution |  | Press Execute to clear SP7327 (Doc. Svr. Job Count (Set No. |
| 7847 | LS | r: Number of Pages by Mode | Press Execute to clear SP7328 (Doc. Svr Job Count (Print Mode). <br> If the machine has the connect copy function, SP7334 (Connect Copy - Doc. Svr. Print Cou) is also cleared. |
| 7848 | Copy | oc. Svr. Memory Clear | Press Execute to clear the following SP codes: SP7301, SP7304, SP7305, SP7306, SP7320, SP7321, SP7323, SP7324, SP7325, SP7326, SP7327, SP7328. |


| SP | Number/Name | Function/[Setting] |
| :---: | :--- | :--- |
| 7901 | Assert Info | Displays the following information of SC990. <br> DFU |
|  | 001 | File Name |
|  | 002 | Number of Lines |
|  | 003 | Location |
| 7999 | DFU |  |

### 5.2.2 PRINTER SERVICE TABLE

| SP | Number/Bit SW |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| 1001 | Bit Switch |  | $\mathrm{OOH}$ | Initial |
|  | 001 | Bit SW 1 |  | Adjusts the bit switch settings. Note: These bit switches are currently not being used except for Bit Switch 2 bit 3. See PUB(C)-051 for details. |
|  | 002 | Bit SW 2 |  |  |
|  | 003 | Bit SW 3 | 00H |  |
|  | 004 | Bit SW 4 | 00H |  |
|  | 005 | Bit SW 5 | 00H |  |
|  | 006 | Bit SW 6 | 00H |  |
|  | 007 | Bit SW 7 | 00H |  |
|  | 008 | Bit SW 8 | 00H |  |
| 1003 | Clear | ting |  |  |
|  | 001 | Initialize Printer System |  | es the settings in the printer feature of UP mode. |
|  | 002 | Clear CSS Counter | DFU |  |
|  | 003 | Delete Program | DFU |  |
| 1004 | Print S | mmary | Print | he printer summary sheet. |
| 1005 | Displa | Version. | Disp firm | s the version of the controller e. |

### 5.2.3 SCANNER SERVICE TABLE

| SP | Number/Name |  | Function/[Setting] |
| :---: | :---: | :---: | :---: |
| 1001 | System |  |  |
|  | 001 | Model Name | Displays the model name. |
|  | 002 | Scanner Firmware Version | Displays the scanner firmware version. |
|  | 003 | Scanner Firmware Number | Displays the firmware's part number. |
|  | 004 | Detail Model Name | Displays the detail model name. |
| 1002 | Error Log Display |  | Displays the error log data. |
| 1004 | Compression Type |  | Selects the compression type for binary picture processing. <br> [1-3/1/1] <br> 1: MH, 2: MR, 3: MMR |
| 1005 | Erase Margin |  | Creates an erase margin for all edges of the scanned image. <br> If the machine has scanned the edge of the original, create a margin. $[0-5 / 0 / 1 \mathrm{~mm}]$ |
| 1006 | Auto Reset Timer |  | Adjusts the auto reset timer for the scanner function. <br> If this is " 0 ", the auto reset function is disabled. $[0,10-99 / 60 / 1 \mathrm{~s}]$ |
| 1007 | Store Priority |  | Selects the default setting of the store priority when the main switch is turned on. $[1-3 / 1 / 1]$ <br> 1: Send only <br> 2: Store only <br> 3: Send + Store |
| 2002 | Text Mode Setting |  |  |
|  | 001 | MTF Filter Coefficient (Main scan) | Selects the MTF filter coefficient in the main scan direction for Text mode. <br> Select a higher number for a stronger filter. If this is " 0 ", the MTF filter is not applied. [0~13/7/1] |
|  | 002 | MTF Filter Coefficient (Sub scan) | Selects the MTF filter coefficient in the sub scan direction for Text mode. <br> Select a higher number for a stronger filter. If this is " 0 ", the MTF filter is not applied [0~13/7/1] |
|  | 003 | MTF Filter Strength (Main scan) | Selects the MTF filter strength in the main scan direction for Text mode. Select a higher number for a stronger filter. [0~7/2/1] |
|  | 004 | MTF Filter Strength (Sub scan) | Selects the MTF filter strength in the sub scan direction for Text mode. <br> Select a higher number for a stronger filter. $[0 \sim 7 / 2 / 1]$ |
| 2002 | 005 | Smoothing Filter | Selects the smoothing pattern for Text mode. A larger value is smoother. A smaller value could cause moiré to appear in the image. [0~7/0/1] |


| SP | Number/Name |  | Function/[Setting] |
| :---: | :---: | :---: | :---: |
|  | 006 | Scanner Gamma | Selects the scanner gamma type for Text mode. $[0 \sim 7,11 / 4 / 1]$ <br> 0:Normal, 1:Smooth, 2:Distinct, 3:Sharp, 4:Text, 6:Text/Photo, 7: Photo, 11: Grayscale 4~7 is used for delivery scanner mode. |
|  | 007 | Notch 7(Lighter): Brightness | The following SPs adjust the image density (brightness, contrast, and thresholds) for each image density level (from 7 to 1) for Text mode. The settings are reflected in the gamma table.[1~255/128/1] |
|  | 008 | Notch 7(Lighter): Contrast |  |
|  | 009 | Notch 7(Lighter): Threshold |  |
|  | 010 | Notch 6: Brightness |  |
|  | 011 | Notch 6: Contrast |  |
|  | 012 | Notch 6: Threshold |  |
|  | 013 | Notch 5: Brightness |  |
|  | 014 | Notch 5: Contrast |  |
|  | 015 | Notch 5: Threshold |  |
|  | 016 | Notch 4(Middle): Brightness |  |
|  | 017 | Notch 4 (Middle): Contrast |  |
|  | 018 | Notch 4 (Middle): Threshold |  |
|  | 019 | Notch 3: Brightness |  |
|  | 020 | Notch 3: Contrast |  |
|  | 021 | Notch 3: Threshold |  |
|  | 022 | Notch 2: Brightness |  |
|  | 023 | Notch 2: Contrast |  |
|  | 024 | Notch 2: Threshold |  |
|  | 025 | Notch 1(Darker): Brightness |  |
|  | 026 | Notch 1 (Darker): Contrast |  |
|  | 027 | Notch 1(Darker): Threshold |  |
|  | 028 | Independent Dot Erase | Select the independent dot erase type for Text mode. <br> A larger value is stronger erase. [0~7/0/1] |
|  | 029 | Unevenness Correction | Selects the unevenness correction. $\begin{aligned} & {[0 \sim 1 / 0 / 1]} \\ & 0: \text { OFF } \\ & 1: \text { ON } \end{aligned}$ |
| 2003 | Text/P | hoto Mode Setting |  |
|  | 001 | MTF Filter Coefficient (Main scan) | Selects the MTF filter coefficient in the main scan direction for Text/Photo mode. <br> Select a higher number for a stronger filter. If this is " 0 ", the MTF filter is not applied. $[0 \sim 13 / 6 / 1]$ |
| 2003 | 002 | MTF Filter Coefficient (Sub scan) | Selects the MTF filter coefficient in the sub scan direction for Text/Photo mode. <br> Select a higher number for a stronger filter. If this is " 0 ", the MTF filter is not applied [0~13/6/1] |
|  | 003 | MTF Filter Strength (Main scan) | Selects the MTF filter strength in the main scan direction for Text/Photo mode. Select a higher number for a stronger filter. [0~7/2/1] |



| SP | Number/Name |  | Function/[Setting] |
| :---: | :---: | :---: | :---: |
|  | 003 | MTF Filter Strength (Main scan) | Selects the MTF filter strength in the main scan direction for Photo mode. <br> Select a higher number for a stronger filter. $[0 \sim 7 / 0 / 1]$ |
|  | 004 | MTF Filter Strength (Sub scan) | Selects the MTF filter strength in the sub scan direction for Photo mode. <br> Select a higher number for a stronger filter. [0~7/0/1] |
|  | 005 | Smoothing Level | Selects the smoothing pattern for Photo mode. <br> A larger value is smoother. A smaller value could cause moiré to appear in the image. [0~7/7/1] |
|  | 006 | Gamma Setting | Selects the scanner gamma type for Text/Photo mode. $[0 \sim 7,11 / 7 / 1]$ <br> 0:Normal, 1:Smooth, 2:Distinct, 3:Sharp, 4:Text, 6:Text/Photo, 7: Photo, 11: Grayscale 4~7 is used for delivery scanner mode. |
|  | 007 | Dither Pattern | Selects the dither pattern. [1~11/5/1] <br> 1: $8 \times 445^{\circ}$ <br> 2: $6 \times 690^{\circ}$ <br> 3: $\quad 4 \times 4$ spiral <br> 4: $8 \times 890^{\circ}$, <br> 5: 70 line <br> 6: 95 line <br> 7: 140 line <br> 8: 180 line <br> 9: $16 \times 1690^{\circ}$ <br> 10: $8 \times 8$ spiral <br> 11: 106 line |
|  | 008 | Notch 7(Lighter): Brightness | The following SPs adjust the image density (brightness, contrast, and thresholds) for each image density level (from 7 to 1) for Photo mode. The settings are reflected in the gamma table.[1~255/128/1] |
|  | 009 | Notch 7(Lighter): Contrast |  |
|  | 010 | Notch 7(Lighter): Threshold |  |
|  | 011 | Notch 6: Brightness |  |
|  | 012 | Notch 6: Contrast |  |
|  | 013 | Notch 6: Threshold |  |
| 2004 | 014 | Notch 5: Brightness |  |
|  | 015 | Notch 5: Contrast |  |
|  | 016 | Notch 5: Threshold |  |
|  | 017 | Notch 4(Middle): Brightness |  |
|  | 018 | Notch 4 (Middle): Contrast |  |
|  | 019 | Notch 4 (Middle): Threshold |  |
|  | 020 | Notch 3: Brightness |  |
|  | 021 | Notch 3: Contrast |  |
|  | 022 | Notch 3: Threshold |  |
|  | 023 | Notch 2: Brightness |  |
|  | 024 | Notch 2: Contrast |  |
|  | 025 | Notch 2: Threshold |  |
|  | 026 | Notch 1(Darker): Brightness |  |
|  | 027 | Notch 1 (Darker): Contrast |  |


| SP | Number/Name |  | Function/[Setting] |
| :---: | :---: | :---: | :---: |
|  | 028 | Notch 1 (Darker): Threshold |  |
| 2005 | Grayscale Mode Setting |  |  |
|  | 001 | MTF Filter Coefficient (Main scan) | Selects the MTF filter coefficient in the main scan direction for Grayscale mode. <br> Select a higher number for a stronger filter. If this is " 0 ", the MTF filter is not applied. $[0 \sim 13 / 0 / 1]$ |
|  | 002 | MTF Filter Coefficient (Sub scan) | Selects the MTF filter coefficient in the sub scan direction for Grayscale mode. <br> Select a higher number for a stronger filter. If this is " 0 ", the MTF filter is not applied [0~13/0/1] |
|  | 003 | MTF Filter Strength (Main scan) | Selects the MTF filter strength in the main scan direction for Grayscale mode. Select a higher number for a stronger filter. [0~7/0/1] |
|  | 004 | MTF Filter Strength (Sub scan) | Selects the MTF filter strength in the sub scan direction for Grayscale mode. <br> Select a higher number for a stronger filter. [0~7/0/1] |
|  | 005 | Smoothing Level | Selects the smoothing pattern for Grayscale mode. <br> A larger value is smoother. A smaller value could cause moiré to appear in the image. [0~7/0/1] |
|  | 006 | Gamma Setting | Selects the scanner gamma type for Grayscale mode. $[0 \sim 7,11 / 11 / 1]$ <br> 0:Normal, 1:Smooth, 2:Distinct, 3:Sharp, 4:Text, 6:Text/Photo, 7: Photo, 11: Grayscale $4 \sim 7$ is used for delivery scanner mode. |
| 2005 | 007 | Notch 7(Lighter): Brightness | The following SPs adjust the image density (brightness, contrast, and thresholds) for each image density level (from 7 to 1) for grayscale mode. The settings are reflected in the gamma table.[1~255/128/1] |
|  | 008 | Notch 7(Lighter): Contrast |  |
|  | 009 | Notch 7(Lighter): Threshold |  |
|  | 010 | Notch 6: Brightness |  |
|  | 011 | Notch 6: Contrast |  |
|  | 012 | Notch 6: Threshold |  |
|  | 013 | Notch 5: Brightness |  |
|  | 014 | Notch 5: Contrast |  |
|  | 015 | Notch 5: Threshold |  |
|  | 016 | Notch 4(Middle): Brightness |  |
|  | 017 | Notch 4 (Middle): Contrast |  |
|  | 018 | Notch 4 (Middle): Threshold |  |
|  | 019 | Notch 3: Brightness |  |
|  | 020 | Notch 3: Contrast |  |
|  | 021 | Notch 3: Threshold |  |
|  | 022 | Notch 2: Brightness |  |
|  | 023 | Notch 2: Contrast |  |


| SP | Number/Name |  | Function/[Setting] |
| :---: | :---: | :---: | :---: |
|  | 024 | Notch 2: Threshold |  |
|  | 025 | Notch 1(Darker): Brightness |  |
|  | 026 | Notch 1 (Darker): Contrast |  |
|  | 027 | Notch 1 (Darker): Threshold |  |
| 2006 | Grayscale Compression |  |  |
|  | 001 | Standard | Sets the rate of compression when Standard is selected for handling JPEG files. <br> [5~95/50/1] <br> 95: Low compression (larger file) <br> 5: High compression (smaller file) |
|  | 002 | High Quality | Sets the rate of compression when High is selected for handling JPEG files. <br> [5~95/60/1] <br> 95: Low compression (larger file) <br> 5: High compression (smaller file) |
|  | 003 | Low Quality | Sets the rate of compression when Low is selected for handling JPEG files. [5~95/40/1] <br> 95: Low compression (larger file) <br> 5: High compression (smaller file) |

### 5.3 PRINTING TEST PATTERNS

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

1. Access the SP mode which contains the test pattern you need.
2. Touch the "Copy Window" key on the operation panel to access the copy mode display.
3. Select the paper size.
4. Press the "Start" key to print the test pattern.
5. After checking the test pattern, exit copy mode by touching the "SP Mode" key.
6. Exit the SP mode.

### 5.3.1 IPU SCANNING TEST PATTERN (SP2-902-001)

| No. | Test Pattern |
| :---: | :--- |
| 0 | OFF |
| 1 | Vertical 1-dot Line |
| 2 | Vertical 2-dot Line |
| 3 | Horizontal 1-dot Line |
| 4 | Horizontal 2-dot Line |
| 5 | Independent 1-dot |
| 6 | Cross Stripes 1-dot Lines |
| 7 | Vertical Stripes |
| 8 | Horizontal Grayscale |
| 9 | Vertical Grayscale |
| 10 | 16-step Grayscale |
| 11 | Cross |
| 12 | Slant Cross Stripes |
| 13 | $256-$ Color Density Pattern |
| 14 | 64-Color Density Pattern |
| 15 | Trimming Region |
| 16 | Vertical Frequency Spec. |
| 17 | Horizontal Frequency Spec. |

### 5.3.2 IPU PRINTING TEST PATTERN (SP2-902-002)

| No. | Test Pattern |
| :---: | :--- |
| 0 | OFF |
| 1 | 1200 Date Image 1 |
| 2 | 1200 Date Image 2 |
| 3 | Vertical Grayscale |
| 4 | Caterpillar |
| 5 | LD Channel Adjust 1 |
| 6 | LD Channel Adjust 2 |
| 7 | LD Channel Adjust 3 |
| 8 | LD Channel Adjust 4 |

### 5.3.3 PRINTING TEST PATTERN (SP2-902-003)

| No. | Test Pattern |
| :---: | :---: |
| 0 | None |
| 1 | Alternating Dot Pattern (1-dot) |
| 2 | Alternating Dot Pattern (2-dot) |
| 3 | Alternating Dot Pattern (4-dot) |
| 4 | Alternating Dot Pattern (1024-dot) |
| 5 | Grid Pattern (1-dot): 0ch |
| 6 | Grid Pattern (1-dot): 1ch |
| 7 | Grid Pattern (1-dot): 2ch |
| 8 | Grid Pattern (1-dot): 3ch |
| 9 | Grid Pattern (1-dot): 4ch |
| 10 | Grid Pattern (1-dot): 5ch |
| 11 | Grid Pattern (1-dot): 6ch |
| 12 | Grid Pattern (1-dot): 7ch |
| 13 | Vertical Line (1-dot) |
| 14 | Vertical Line (2-dot) |
| 15 | Horizontal Line (1-dot) |
| 16 | Horizontal Line (2-dot) |
| 17 | Grid Pattern (1-dot pair) |
| 18 | Checker Flag |
| 19 | Argyle Pattern (1-dot) |
| 20 | Argyle Pattern (2-dot) |
| 21 | Cross Stitch (Horizontal): 670 |
| 22 | Cross Stitch (Horizontal): 012 |
| 23 | Full Dot Pattern |
| 24 | Grid Pattern (2-dot) |
| 25 | Black Band (Vertical) |
| 26 | Black Band (Horizontal) |
| 27 | Trimming Line (1-dot) |
| 28 | Trimming Line (2-dot) |
| 29 | Stair |
| 30 | Horizontal Grayscale 20 |
| 31 | Horizontal Grayscale 40 |
| 32 | Vertical Grayscale 20 |
| 33 | Vertical Grayscale 40 |
| 34 | Grayscale-Horizontal 20 (Without Loop) |
| 35 | Blank Image |
| 36 | Grid (1-dot): 0ch (With Outside Data) |
| 37 | Trimming Line (1-dot) (With Outside Data) |
| 38 | Argyle Pattern (With Outside Data) |

### 5.4 INPUT CHECK

### 5.4.1 MAIN MACHINE INPUT CHECK: SP5803

This procedure allows you to test sensors and other components of the machine. After you select one of the categories below by number, you will see a small 8-bit table with the number of the bit and its current setting (0 or 1 ). The bits are numbered 0 to 7 , reading right to left.

1. Enter the SP mode and select SP5803.
2. Enter the class 3 number for the item that you want to check. A small box will be displayed on the SP mode screen with a series of 0's and 1's. The meaning of the display is as follows.

| Bit | 76543210 |
| :--- | :--- |
| Setting | 11001010 |

3. Check the status of each item against the corresponding bit numbers listed in the table below.

| Class 3 <br> No. | $\begin{aligned} & \hline \hline \text { Bit } \\ & \text { No. } \end{aligned}$ | Description | Reading |  |
| :---: | :---: | :---: | :---: | :---: |
|  |  |  | 0 (LOW) | 1 (HIGH) |
| 1 | 7 | Not Used |  |  |
|  | 6 | By-pass Tray Paper End Sensor(7th tray) | Not paper end | Paper end |
|  | 5 | LCT 3rd Paper End Sensor (6th tray) | Not paper end | Paper end |
|  | 4 | LCT 2nd Paper End Sensor (5th tray) | Not paper end | Paper end |
|  | 3 | LCT 1st Paper End Sensor (4th tray) | Not paper end | Paper end |
|  | 2 | 3rd Paper End Sensor | Not paper end | Paper end |
|  | 1 | 2nd Paper End Sensor | Not paper end | Paper end |
|  | 0 | 1st Paper End Sensor | Not paper end | Paper end |
| 2 | 7 | Not Used |  |  |
|  | 6 | By-pass Tray Paper Feed Sensor(7th tray) | Paper detected | No paper |
|  | 5 | LCT 3rd Paper Feed Sensor (6th tray) | Paper detected | No paper |
|  | 4 | LCT 2nd Paper Feed Sensor (5th tray) | Paper detected | No paper |
|  | 3 | LCT 1st Paper Feed Sensor (4th tray) | Paper detected | No paper |
|  | 2 | 3rd Paper Feed Sensor | Paper detected | No paper |
|  | 1 | 2nd Paper Feed Sensor | Paper detected | No paper |
|  | 0 | 1st Paper feed Sensor | Paper detected | No paper |


| Class 3 No. | $\begin{aligned} & \hline \hline \text { Bit } \\ & \text { No. } \end{aligned}$ | Description | Reading |  |
| :---: | :---: | :---: | :---: | :---: |
|  |  |  | 0 (LOW) | 1 (HIGH) |
| 3 | 7 | Key Card Set | Set | Not set |
|  | 6 | Duplex Entrance Sensor | Paper detected | No paper |
|  | 5 | Duplex Jogger H.P. | Not detected | Detected |
|  | 4 | Duplex Transport 3 Sensor | Paper detected | No paper |
|  | 3 | Duplex Transport 2 Sensor | Paper detected | No paper |
|  | 2 | Duplex Transport 1 Sensor | Paper detected | No paper |
|  | 1 | Duplex Inverter Sensor | Paper detected | No paper |
|  | 0 | Duplex Connection | Connected | Not connected |
| 4 | 7 | Not Used |  |  |
|  | 6 | By-pass Tray Lift Sensor (7th tray) | Lifted | No paper |
|  | 5 | LCT 3rd Lift Sensor (6th tray) | Lifted | No paper |
|  | 4 | LCT 2nd Lift Sensor (5th tray) | Lifted | No paper |
|  | 3 | LCT 1st Lift Sensor (4th tray) | Lifted | No paper |
|  | 2 | 3rd Lift Sensor | Lifted | No paper |
|  | 1 | 2nd Lift Sensor | Lifted | No paper |
|  | 0 | 1st Lift Sensor | Lifted | No paper |
| 5 | 7 | Not Used |  |  |
|  | 6 | Not Used |  |  |
|  | 5 | Not Used |  |  |
|  | 4 | Not Used |  |  |
|  | 3 | Drum Unit set | Set | Not set |
|  | 2 | Polygon Motor Cooling Fan Lock | No lock | Lock |
|  | 1 | Toner Hopper Sensor | Toner end | Not toner end |
|  | 0 | Key Counter Set | Set | Not set |
| 6 | 7 | Drum Motor Lock | Lock | Not lock |
|  | 6 | Fusing/Exit Motor Lock | Lock | Not lock |
|  | 5 | Not Used |  |  |
|  | 4 | Not Used |  |  |
|  | 3 | Development Motor Lock | Lock | Not lock |
|  | 2 | Toner Suction Motor Rotation Sensor | Not interrupted | Interrupted |
|  | 1 | Not Used |  |  |
|  | 0 | Toner Supply Pump Motor Sensor | Not interrupted | Interrupted |
| 7 | 7 | Left Front Door Safety Switch | Door closed | Door open |
|  | 6 | Right Front Door Safety Switch | Door closed | Door open |
|  | 5 | Relay Motor Lock | Lock | Not lock |
|  | 4 | Guide Plate Position Sensor | In position | Out of position |
|  | 3 | LCT Relay Sensor | Paper detected | No paper |
|  | 2 | Relay Sensor | Paper detected | No paper |
|  |  | Not Used |  |  |
|  | 0 | Registration Sensor | Paper detected | No paper |


| Class 3 <br> No. | $\begin{aligned} & \hline \text { Bit } \\ & \text { No. } \end{aligned}$ | Description | Reading |  |
| :---: | :---: | :---: | :---: | :---: |
|  |  |  | 0 (LOW) | 1 (HIGH) |
| 8 | 7 | Not Used |  |  |
|  | 6 | Not Used |  |  |
|  | 5 | Not Used |  |  |
|  | 4 | Not Used |  |  |
|  | 3 | Not Used |  |  |
|  | 2 | Not Used |  |  |
|  | 1 | Not Used |  |  |
|  | 0 | Not Used |  |  |
| 9 | 7 | Total Counter Set | Not set | Set |
|  | 6 | Fusing Abnormal Signal | Normal | Abnormal |
|  | 5 | Not Used |  |  |
|  | 4 | Exit Unit Set | Set | Not set |
|  | 3 | Web End Sensor | Not end | End |
|  | 2 | Exit Sensor | Paper detected | No paper |
|  | 1 | Fusing Exit Sensor | No paper | Paper detected |
|  | 0 | Fusing Unit Set | Set | Not set |
| 10 | 7 | Dip SW 8 | ON | OFF |
|  | 6 | Dip SW 7 | ON | OFF |
|  | 5 | Dip SW 6 | ON | OFF |
|  | 4 | Dip SW 5 | ON | OFF |
|  | 3 | Dip SW 4 | ON | OFF |
|  | 2 | Dip SW 3 | ON | OFF |
|  | 1 | Dip SW 2 | ON | OFF |
|  | 0 | Dip SW 1 | ON | OFF |
| 11 | 7 | Not used |  |  |
|  | 6 | Not used |  |  |
|  | 5 | Not used |  |  |
|  | 4 | 2nd Tray Paper Size 5 | See Table 1 |  |
|  | 3 | 2nd Tray Paper Size 4 |  |  |
|  | 2 | 2nd Tray Paper Size 3 |  |  |
|  | 1 | 2nd Tray Paper Size 2 |  |  |
|  | 0 | 2nd Tray Paper Size 1 |  |  |
| 12 | 7 | Not used |  |  |
|  | 6 | Not used |  |  |
|  | 5 | Not used |  |  |
|  | 4 | 3rd Tray Paper Size 5 | See Table 1 |  |
|  | 3 | 3rd Tray Paper Size 4 |  |  |
|  | 2 | 3rd Tray Paper Size 3 |  |  |
|  | 1 | 3rd Tray Paper Size 2 |  |  |
|  | 0 | 3rd Tray Paper Size 1 |  |  |
| 13 | 7 | Not used |  |  |
|  | 6 | Not used |  |  |
|  | 5 | Not used |  |  |
|  | 4 | Rear Fence Return Sensor | Not detected | Return Position |
|  | 3 | Front Side Fence Closed Sensor | Open | Closed |
|  | 2 | Front Side Fence Open Sensor | Open | Closed |
|  | 1 | Rear Side Fence Closed Sensor | Open | Closed |
|  | 0 | Rear Side Fence Open Sensor | Open | Closed |


| Class 3 No. | $\begin{aligned} & \hline \text { Bit } \\ & \text { No. } \end{aligned}$ | Description | Reading |  |
| :---: | :---: | :---: | :---: | :---: |
|  |  |  | 0 (LOW) | 1 (HIGH) |
| 14 | 7 | Not used |  |  |
|  | 6 | Not used |  |  |
|  | 5 | Not Used |  |  |
|  | 4 | Rear Fence HP Sensor | Not detected | Home position |
|  | 3 | Left Tandem Tray Set | Set | Not set |
|  | 2 | Right Tandem Tray Set | Set | Not set |
|  | 1 | Left 1st Tray Paper Sensor | Paper detected | No Paper |
|  | 0 | Right 1st Tray Paper Sensor | No Paper | Paper detected |
| 15 | 7 | Not Used |  |  |
|  | 6 | Not Used |  |  |
|  | 5 | Not Used |  |  |
|  | 4 | Lower Limit Sensor | Not detected | Detected |
|  | 3 | 1st Tray Paper Height 4 | See Table 2 |  |
|  | 2 | 1st Tray Paper Height 3 |  |  |
|  | 1 | 1st Tray Paper Height 2 |  |  |
|  | 0 | 1st Tray Paper Height 1 |  |  |
| 16 | 7 | Not Used |  |  |
|  | 6 | Not Used |  |  |
|  | 5 | Not Used |  |  |
|  | 4 | Paper Feed Motor Lock | Lock | Not lock |
|  | 3 | Not Used |  |  |
|  | 2 | Toner Suction Bottle Set Sensor | Set | Not set |
|  | 1 | 2nd Tray Paper Height Sensor 2 | See Table 3 |  |
|  | 0 | 2nd Tray Paper Height Sensor 1 |  |  |
| 17 | 7 | Not Used |  |  |
|  | 6 | Not Used |  |  |
|  | 5 | Not Used |  |  |
|  | 4 | Toner Near End Sensor | Toner End | Not toner end |
|  | 3 | Toner Collection Bottle Sensor | Set | Not set |
|  | 2 | Toner Bank Motor Lock | Lock | Not lock |
|  | 1 | 3rd Tray Paper Height 2 | See Table 3 |  |
|  | 0 | 3rd Tray Paper Height 1 |  |  |
| 18 | 7 | Not Used |  |  |
|  | 6 | Not Used |  |  |
|  | 5 | Not Used |  |  |
|  | 4 | Toner Overflow Sensor | Stays high/low: Toner Overflow Change status: Not overflow |  |
|  | 3 | Lower Bottle Inner Cap Sensor | Cap closed | Cap opened |
|  | 2 | Upper Bottle Inner Cap Sensor | Cap closed | Cap opened |
|  | 1 | Lower Toner Bottle Sensor | Bottle set | Bottle not set |
|  | 0 | Upper Toner Bottle Sensor | Bottle set | Bottle not set |


| $\text { Class } 3$No. | Bit <br> No. | Description | Reading |  |
| :---: | :---: | :---: | :---: | :---: |
|  |  |  | 0 (LOW) | 1 (HIGH) |
| 19 | 7 | Not Used |  |  |
|  | 6 | Not Used |  |  |
|  | 5 | Not Used |  |  |
|  | 4 | By-pass Tray Paper Height Sensor 2 (7th Tray) | See Table 4 |  |
|  | 3 | By-pass Tray Paper Height Sensor 1 (7th Tray) |  |  |
|  | 2 | LCT 1st Tray Paper Size Switch 3 (4th tray) | See Table 5 |  |
|  | 1 | LCT 1st Tray Paper Size Switch 2 (4th tray) |  |  |
|  | 0 | LCT 1st Tray Paper Size Switch 1 (4th tray) |  |  |
| 20 | 7 | Not Used |  |  |
|  | 6 | Not Used |  |  |
|  | 5 | Not Used |  |  |
|  | 4 | By-pass Tray Paper Length Sensor (7th Tray) | See Table 6 |  |
|  | 3 | By-pass Tray Lower Limit Sensor Paper (7th Tray) | Not detected | Detected |
|  | 2 | LCT 2nd Tray Paper Size Switch 3 (5th tray) | See Table 5 |  |
|  | 1 | LCT 2nd Tray Paper Size Switch 2 (5th tray) |  |  |
|  | 0 | LCT 2nd Tray Paper Size Switch 1 (5th tray) |  |  |
| 21 | 7 | Not Used |  |  |
|  | 6 | Not Used |  |  |
|  | 5 | Not Used |  |  |
|  | 4 | By-pass Tray Motor Lock | Not lock | Lock |
|  | 3 | LCT Motor Lock | Not lock | Lock |
|  | 2 | Not Used |  |  |
|  | 1 | Not Used |  |  |
|  | 0 | LCT 3rd Tray Set (6th Tray) | Set | Not set |
| 22 | 7 | Not Used |  |  |
|  | 6 | Not Used |  |  |
|  | 5 | Not Used |  |  |
|  | 4 | By-pass Tray Set | Set | Not set |
|  | 3 | By-pass Tray Lift SW | Lifted | Not lifted |
|  | 2 | LCT Door Open SW | Door closed | Door open |
|  | 1 | LCT Exit Sensor | Paper detected | No paper |
|  | 0 | LCT Connection | Connected | Not connected |


| Class 3 No. | $\begin{aligned} & \hline \text { Bit } \\ & \text { No. } \end{aligned}$ | Description | Reading |  |
| :---: | :---: | :---: | :---: | :---: |
|  |  |  | 0 (LOW) | 1 (HIGH) |
| 23 | 7 | Not Used |  |  |
|  | 6 | Not Used |  |  |
|  | 5 | Not Used |  |  |
|  | 4 | By-pass Tray Open | Tray closed | Tray open |
|  | 3 | LCT 1st Tray Paper Height sensor 4 (4th tray) | See Table 2 |  |
|  | 2 | LCT 1st Tray Paper Height sensor 3 (4th tray) |  |  |
|  | 1 | LCT 1st Tray Paper Height sensor 2 (4th tray) |  |  |
|  | 0 | LCT 1st Tray Paper Height sensor 1 (4th tray) |  |  |
| 24 | 7 | Not Used |  |  |
|  | 6 | Not Used |  |  |
|  | 5 | Not Used |  |  |
|  | 4 | Not Used |  |  |
|  | 3 | LCT 2nd Tray Paper Height sensor 4 (5th tray) | See Table 2 |  |
|  | 2 | LCT 2nd Tray Paper Height sensor 3 (5th tray) |  |  |
|  | 1 | LCT 2nd Tray Paper Height sensor 2 (5th tray) |  |  |
|  | 0 | LCT 2nd Tray Paper Height sensor 1 (5th tray) |  |  |
| 25 | 7 | Not Used |  |  |
|  | 6 | Not Used |  |  |
|  | 5 | Not Used |  |  |
|  | 4 | Not Used |  |  |
|  | 3 | LCT 3rd Tray Paper Height sensor 4 (6th tray) | See Table 2 |  |
|  | 2 | LCT 3rd Tray Paper Height sensor 3 (6th tray) |  |  |
|  | 1 | LCT 3rd Tray Paper Height sensor 2 (6th tray) |  |  |
|  | 0 | LCT 3rd Tray Paper Height sensor 1 (6th tray) |  |  |
| 26 | 7 | Not Used |  |  |
|  | 6 | Not Used |  |  |
|  | 5 | Not Used |  |  |
|  | 4 | Not Used |  |  |
|  | 3 | By-pass Tray Paper Size SW 4 (7th tray) | See Table 6 |  |
|  | 2 | By-pass Tray Paper Size SW 3 (7th tray) |  |  |
|  | 1 | By-pass Tray Paper Size SW 2 <br> (7th tray) |  |  |
|  | 0 | By-pass Tray Paper Size SW 1 (7th tray) |  |  |

## INPUT CHECK

Table 1: 2nd and 3rd Tray Paper Size Switch Combination (0:Low, 1:High)

| Class 3 <br> No. | $\begin{gathered} \hline \hline \mathrm{Bit} \\ 4 \end{gathered}$ | $\begin{gathered} \hline \hline \text { Bit } \\ 3 \end{gathered}$ | $\begin{gathered} \hline \hline \text { Bit } \\ 2 \end{gathered}$ | $\begin{gathered} \hline \hline \text { Bit } \\ 1 \end{gathered}$ | $\begin{gathered} \hline \hline \mathrm{Bit} \\ 0 \end{gathered}$ | Paper Width |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  | Metric version | Inch version |
| 11, 12 | 1 | 1 | 1 | 1 | 0 | A3 | DLT |
|  | 1 | 1 | 1 | 0 | 0 | 81/4" x 13" | 81/2" x 14" |
|  | 1 | 1 | 0 | 0 | 1 | A4 SEF | LT SEF |
|  | 1 | 0 | 0 | 1 | 0 | A4 LEF | LT LEF |
|  | 0 | 0 | 1 | 0 | 0 | 81/2" x 13" | HLT SEF |
|  | 0 | 1 | 0 | 0 | 0 | A5 SEF | HLT LEF |
|  | 1 | 0 | 0 | 0 | 0 | A5 LEF | 8"X101/2" |
|  | 0 | 0 | 0 | 0 | 1 | 71/4"X101/2" | 71/4"X101/2" |
|  | 0 | 0 | 0 | 1 | 1 | - | 8" x 13" |
|  | 0 | 0 | 0 | 0 | 1 | * | * |

Table 2: 1st, LCT 1st(4th Tray), 2nd(5th Tray) and 3rd (6th Tray) Paper Height Sensor Combination

| Class 3 <br> No. | Bit <br> $\mathbf{3}$ | Bit <br> $\mathbf{2}$ | Bit <br> $\mathbf{1}$ | Bit <br> $\mathbf{0}$ | Paper Height |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $15,23,24$ <br> 25 | 0 | 0 | 0 | 0 | $76 \% \sim 100 \%$ |
|  | 1 | 0 | 0 | 0 | $51 \% \sim 75 \%$ |
|  |  | 1 | 0 | 0 | $26 \% \sim 50 \%$ |
|  |  |  | 1 | 0 | $1 \% \sim 25 \%$ |
|  |  |  | 1 | Near End |  |

Table 3: 2nd and 3rd Tray Paper Height Sensor Combination

| Class 3 <br> No. | Upper <br> Bit | Lower <br> Bit | Paper Height |
| :---: | :---: | :---: | :---: |
| 16,17 | 1 | 1 | $71 \sim 100 \%$ |
|  | 1 | 0 | $31 \sim 70 \%$ |
|  | 0 | 0 | $11 \sim 30 \%$ |
|  | 0 | 1 | $0 \sim 10 \%$ |

Table 4: By-pass Tray (7th tray) Paper Height Sensor Combination

| Class 3 <br> No. | Upper <br> Bit | Lower <br> Bit | Paper Height |
| :---: | :---: | :---: | :---: |
| 19 | 0 | 0 | $91 \sim 100 \%$ |
|  | 0 | 1 | $51 \sim 90 \%$ |
|  | 1 | 1 | $11 \sim 50 \%$ |
|  | 1 | 0 | $0 \sim 10 \%$ |

Table 5 LCT 1st(4th Tray) and 2nd(5th Tray) Paper Size Switch Combination (0:Low, 1:High)

| Class 3 <br> No. | Bit 2 | Bit $\mathbf{1}$ | Bit $\mathbf{0}$ | Paper Size |
| :---: | :---: | :---: | :---: | :---: |
| 19,20 | 1 | 1 | 0 | A4 LEF |
|  | 1 | 0 | 1 | B5 LEF |
|  | 0 | 1 | 0 | A5 LEF |
|  | 1 | 0 | 0 | A5 SEF |
|  | 0 | 0 | 0 | LT LEF |
|  | 0 | 0 | 1 | HLT LEF |
|  | 0 | 1 | 1 | HLT SEF |

Table 6: By-pass Tray (7th Tray) Paper Size Switch Combination (0:Low, 1:High)

| $\begin{gathered} \text { Class } 3 \\ \text { No. } \end{gathered}$ | $\begin{gathered} \mathrm{Bit} \\ 4 \end{gathered}$ | $\begin{gathered} \text { Bit } \\ 3 \end{gathered}$ | $\begin{gathered} \text { Bit } \\ 2 \end{gathered}$ | $\begin{gathered} \text { Bit } \\ 1 \end{gathered}$ | Paper Length Sensor | Paper Width |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  | Metric version | Inch version |
| 20,26 | 0 | 1 | 1 | 1 | 0 | A3 | A3 |
|  | 0 | 1 | 1 | 1 | 1 | A4 LEF | A4LEF |
|  | 0 | 0 | 1 | 1 | 0 | DLT | DLT |
|  | 0 | 0 | 1 | 1 | 1 | LT LEF | LT LEF |
|  | 1 | 0 | 1 | 1 | 0 | B4 | B4 |
|  | 1 | 0 | 1 | 1 | 1 | B5 LEF | B5 LEF |
|  | 1 | 0 | 0 | 1 | 0 | A4 SEF | Lt SEF |
|  | 1 | 0 | 0 | 1 | 1 | A5 LEF | HLT LEF |
|  | 1 | 1 | 0 | 1 | 0 | 8" x 13" | 8" x 13" |
|  | 1 | 1 | 0 | 0 | 1 | A5 SEF | A5 SEF |
|  | 1 | 1 | 1 | 0 | 1 | HLT SEF | HLT SEF |

### 5.4.2 ADF INPUT CHECK: SP6007

| $\begin{aligned} & \hline \text { Class } 3 \\ & \text { No. } \end{aligned}$ | $\begin{aligned} & \text { Bit } \\ & \text { No. } \end{aligned}$ | Description | Reading |  |
| :---: | :---: | :---: | :---: | :---: |
|  |  |  | 0 | 1 |
| 1 | 7 | Inverter Sensor | No original | Original detected |
|  | 6 | Exit Sensor | No original | Original detected |
|  | 5 | Registration Sensor | No original | Original detected |
|  | 4 | Entrance Sensor | No original | Original detected |
|  | 3 | Original Width Sensor 3 | No original | Original detected |
|  | 2 | Original Width Sensor 2 | No original | Original detected |
|  | 1 | Original Width Sensor 1 | No original | Original detected |
|  | 0 | Original Set Sensor | No original | Original detected |
| 2 | 7 | ADF Feed-in Motor Encoder Pulse | Change the " 0 " and " 1 " during rotation |  |
|  | 6 | Pick-up Roller HP Sensor | At home position | Not home position |
|  | 5 | Bottom Plate Position Sensor | Detected | Not detected |
|  | 4 | Bottom Plate HP Sensor | At home position | Not home position |
|  | 3 | Exit Cover Sensor | Close | Open |
|  | 2 | Feed Cover Sensor | Close | Open |
|  | 1 | APS Start Sensor | Start | Off |
|  | 0 | DF Position Sensor | Down | Up |
| 3 | 7 | Not Used |  |  |
|  | 6 | Not Used |  |  |
|  | 5 | Not Used |  |  |
|  | 4 | Not Used |  |  |
|  | 3 | Not Used |  |  |
|  | 2 | Original Length Sensor | No original | Original detected |
|  | 1 | ADF Feed-out Motor Encoder Pulse | Change the " 0 " and " 1 " during rotation |  |
|  | 0 | ADF Transport Motor Encoder Pulse | Change the " 0 " and " 1 " during rotation |  |

## $\Rightarrow$ 5.4.3 FINISHER INPUT CHECK: SP6117

| Class 3 <br> No. | $\begin{aligned} & \hline \hline \text { Bit } \\ & \text { No. } \end{aligned}$ | Description | Reading |  |
| :---: | :---: | :---: | :---: | :---: |
|  |  |  | 0 | 1 |
| 1 | 7 | Stack Feed-Out Belt HP Sensor | Home Position | Not Home Position |
|  | 6 | Not Used |  |  |
|  | 5 | Shift Tray Lower Limit 2 Sensor | Not Detected | Detected |
|  | 4 | Shift Tray Lower Limit 3 Sensor | Not Detected | Detected |
|  | 3 | Stapler Tray Exit Sensor | Paper Not Detected | Paper Detected |
|  | 2 | Shift Tray Exit Sensor | Paper Detected | Paper Not Detected |
|  | 1 | Upper Tray Exit Sensor | Paper Detected | Paper Not Detected |
|  | 0 | Entrance Sensor | Paper Not Detected | Paper Detected |
| 2 | 7 | Not Used |  |  |
|  | 6 | Front Door Safety Switch | Door Closed | Door Open |
|  | 5 | Stapler Tray Paper Sensor | Paper Not Detected | Paper Detected |
|  | 4 | Staple End Sensor | Not End | End |
|  | 3 | Staple Hammer Hp Sensor | Home Position | Not Home Position |
|  | 2 | Stapler Hp Sensor | Not Home Position | Home Position |
|  | 1 | Shift Tray Half-Turn Sensor | Home Position | Not Home Position |
|  | 0 | Jogger Hp Sensor | Not Home Position | Home Position |
| 3 | 7 | Not Used |  |  |
|  | 6 | Staple Cartridge Set Sensor | Set | Not Set |
|  | 5 | Staple Mode Hp Sensor 2 | Not Detected | Detected |
|  | 4 | Staple Mode Hp Sensor 1 | Not Detected | Detected |
|  | 3 | Not Used |  |  |
|  | 2 | Punch Waste Hopper Sensor | Not Full | Full |
|  | 1 | Punch Hp1 Sensor | Home Position | Not Home Position |
|  | 0 | Punch Unit Connection | Connected | Not Connected |
| 4 | 7 | Stapler Ready | Ready | Not Ready |
|  | 6 | Stapler Return Sensor | Not Detected | Detected |
|  | 5 | Exit Guide Open Sensor | Home Position | Not Home Position |
|  | 4 | Stack Plate -Center Hp Sensor | Not Home Position | Home Position |
|  | 3 | Pre-Stack Tray Paper Sensor | Paper Not Detected | Paper Detected |
|  | 2 | Staple Waste Hopper Sensor | Not Full | Full |
|  | 1 | Stapler Rotation Hp Sensor | Not Home Position | Home Position |
|  | 0 | Upper Tray Limit Sensor | Not Full | Full |
| 5 | 7 | Punch Hp 2 Sensor | Home Position | Not Home Position |
|  | 6 | Not Used |  |  |
|  | 5 | Shift Lower Limit - Large Paper Sensor | Not Detected | Detected |
|  | 4 | Shift Mode Hp Sensor | Not Detected | Detected |
|  | 3 | Stacking Roller Hp Sensor | Home Position | Not Home Position |
|  | 2 | Positioning Roller Hp Sensor | Not Home Position | Home Position |
|  | 1 | Stack Plate - Rear Hp Sensor | Not Home Position | Home Position |
|  | 0 | Stack Plate - Front Hp Sensor | Not Home Position | Home Position |

INPUT CHECK

| Class 3 <br> No. | $\begin{aligned} & \hline \text { Bit } \\ & \text { No. } \end{aligned}$ | Description | Reading |  |
| :---: | :---: | :---: | :---: | :---: |
| 6 | 7 | Not Used |  |  |
|  | 6 | Shift Tray Full Sensor - Z-Folding (B706) | Not Full | Full |
|  | 5 | $\begin{aligned} & \begin{array}{l} \text { Bottom Fence Hp Sensor } \\ \text { (B706) } \end{array} \\ & \hline \end{aligned}$ | Not Home Position | Home Position |
|  | 4 | Top Fence Hp Sensor (B706) | Not Home Position | Home Position |
|  | 3 | Emergency Stop Switch | Not Press | Press |
|  | 2 | Shift Jogger Lift Hp Sensor (Optional Jogger Unit) | Home Position | Not Home Position |
|  | 1 | Shift Jogger Hp Sensor (Optional Jogger Unit) | Not Home Position | Home Position |
|  | 0 | Optional Jogger Unit Connection | Connection | Not Connection |

### 5.5 OUTPUT CHECK

### 5.5.1 MAIN MACHINE OUTPUT CHECK: SP5804

NOTE: Motors keep turning in this mode regardless of upper or lower limit sensor signals. To prevent mechanical or electrical damage, do not keep an electrical component on for a long time.

## Main Machine Output Check (SP5-804)

1. Open SP mode 5-804.
2. Select the SP number that corresponds to the component you wish to check. (Refer to the table on the next page.)
3. Press On then press Off to test the selected item.

| No. | Description | No. | Description |
| :--- | :--- | :--- | :--- |
| 001 | 1st Paper Feed Clutch | 027 | LCT 3rd Grip Clutch |
| 002 | 2nd Paper Feed Clutch | 028 | Bypass Grip Clutch |
| 003 | 3rd Paper Feed Clutch | 029 | Relay Clutch |
| 004 | LCT 1st Paper Feed Clutch | 030 | LCT Relay Clutch |
| 005 | LCT 2nd Paper Feed Clutch | 031 | Lower Relay Clutch |
| 006 | LCT 3rd Paper Feed Clutch | 032 | LCT Transport Clutch 1 |
| 007 | Bypass Paper Feed Clutch | 033 | LCT Transport Clutch 2 (By-pass) |
| 008 | 1st Pick-up Solenoid | 034 | LCT Guide Plate Solenoid |
| 009 | 2nd Pick-up Solenoid | 035 | 1st Tray Lift Motor |
| 010 | 3rd Pick-up Solenoid | 036 | 2nd Tray Lift Motor |
| 011 | LCT 1st Pick-up Solenoid | 037 | 3rd Tray Lift Motor |
| 012 | LCT 2nd Pick-up Solenoid | 038 | LCT 1st Tray Lift Motor |
| 013 | LCT 3rd Pick-up Solenoid | 039 | LCT 2nd Tray Lift Motor |
| 014 | Bypass Pick-up Solenoid | 040 | LCT 3rd Tray Lift Motor |
| 015 | 1st Separation Roller Solenoid | 041 | Bypass Tray Lift Motor |
| 016 | 2nd Separation Roller Solenoid | 042 | Rear Fence Drive Motor |
| 017 | 3rd Separation Roller Solenoid | 043 | Tandem Tray Connect Solenoid |
| 018 | LCT 1st Separation Roller <br> Solenoid | 044 | Front Side Fence Solenoid |
| 019 | LCT 2nd Separation Roller <br> Solenoid | 045 | Rear Side Fence Solenoid |
| 020 | LCT 3rd Separation Roller <br> Solenoid | 046 | Left 1st Tray Lock Solenoid |
| 021 | Bypass Separation Roller <br> Solenoid | 047 | Relay Motor |
| 022 | 1st Vertical Transport Clutch | 048 | Paper Feed Motor |
| 023 | 2nd Vertical Transport Clutch | 049 | LCT Motor |
| 024 | 3rd Vertical Transport Clutch | 050 | Bypass Tray Motor |
| 025 | LCT 1st Grip Clutch | 051 | Drum Motor |
| 026 | LCT 2nd Grip Clutch | 052 | Fusing/Exit Motor |


| No. | Description | No. | Description |
| :--- | :--- | :--- | :--- |
| 053 | Registration Motor | 076 | Quenching Lamp |
| 054 | Web Motor | 077 | Charge Corona |
| 055 | Guide Plate Solenoid | 078 | Grid Plate |
| 056 | Inverter Gate Solenoid | 079 | Development Bias |
| 057 | Duplex Transport Motor1 | 080 | Transfer Belt Bias |
| 058 | Duplex Transport Motor2 | 081 | Polygonal Motor Mirror Cooling Fan |
| 059 | Inverter Exit Roller Clutch | 082 | Exhaust Fan (Low) |
| 060 | Duplex Inverter Gate Solenoid | 083 | Exhaust Fan (High) |
| 061 | Reverse Roller Solenoid | 084 | Drum Cooling Fan (Low) |
| 062 | Inverter Guide Plate Solenoid | 085 | Drum Cooling Fan (High) |
| 063 | Toner Recycling Shutter <br> Solenoid | 086 | Paper Cooling Pipe Fan1 |
| 064 | Jogger Motor | 087 | Steam Removal Fan (Low) |
| 065 | Toner Supply Roller Clutch | 088 | Steam Removal Fan (High) |
| 066 | Development Motor | 089 | Development Unit Cooling Fan1 |
| 067 | Toner Supply Pump Motor | 090 | Laser Diode |
| 068 | Upper Toner Bottle Motor | 091 | Development Unit Cooling Fan2 |
| 069 | Lower Toner Bottle Motor | 092 | Duplex Entrance Cooling Fan |
| 070 | Toner Bank Motor | 093 | Paper Cooling Pipe Fan2 |
| 071 | Toner Supply Coil Clutch | 094 | Duplex Cooling Fan |
| 072 | Exposure Lamp | 095 | Toner Suction Motor |
| 073 | Optics Cooling Fan | 096 | Total Counter |
| 074 | ID Sensor LED | 097 | Upper Bottle Cap Motor |
| 075 | Transfer Belt Lift Solenoid | 098 | Lower Bottle Cap Motor |

5.5.2 ADF OUTPUT CHECK: SP6008

| No. | Description | $\mathbf{0}$ | $\mathbf{1}$ |
| :---: | :--- | :---: | :---: |
| 1 | Feed-in Motor (High) | OFF | ON |
| 2 | Feed-in Motor (Low) | OFF | ON |
| 3 | Transport Motor (Forward) | OFF | ON |
| 4 | Transport Motor (Reverse) | OFF | ON |
| 5 | Feed-out Motor | OFF | ON |
| 6 | Exit Gate Solenoid | OFF | ON |
| 7 | Inverter Solenoid | OFF | ON |
| 8 | LEDs (Operation Panel) | OFF | ON |
| 9 | Pick-up Motor | OFF | ON |
| 10 | Bottom Plate Motor | OFF | ON |
| 11 | Feed-in Clutch | OFF | ON |

5.5.3 FINISHER OUTPUT CHECK: SP6118

| No. | Description |
| :---: | :--- |
| 1 | Upper Transport Motor |
| 2 | Shift Tray Exit Motor |
| 3 | Upper Tray Junction Gate Solenoid |
| 4 | Shift Tray Lift Motor |
| 5 | Jogger Motor |
| 6 | Stapler Motor |
| 7 | Staple Hammer Motor (Stapler Unit) |
| 8 | Punch Motor |
| 9 | Stapler Junction Gate Solenoid |
| 10 | Positioning Roller Solenoid |
| 11 | Stack Feed-out Belt Motor |
| 12 | Shift Motor |
| 13 | Stapler Rotation Motor |
| 14 | Lower Transport Motor |
| 15 | Exit Guide Motor |
| 16 | Stack Plate-Center Motor |
| 17 | Pre-stack Junction Gate Solenoid |
| 18 | Pre-stack Paper Stopper Solenoid |
| 19 | Stapler Return Solenoid |
| 20 | Stack Plate- Front Motor |
| 21 | Stack Plate - Rear Motor |
| 22 | Stacking Roller Drag Motor |
| 23 | Stacking Roller Motor |
| 24 | Shift Jogger Motor (Optional Jogger Unit) |
| 25 | Shift Jogger Lift Motor (Optional Jogger Unit) |
| 26 | Jogger Top Fence Motor |
| 27 | Jogger Bottom fence Motor |
|  |  |

### 5.6 SMC LISTS (SYSTEM PARAMETERS AND REPORT DATA)

1. Access the SP mode corresponding to the list that you wish to print.

| SP5-990-1: | All system parameter list |
| :--- | :--- |
| SP5-990-2: | SP mode data list |
| SP5-990-3: | UP mode data list |
| SP5-990-4: | Machine logging data list |
| SP5-990-5: | Self-diagnosis report list |
| SP5-990-7: | NIB summary |
| SP5-990-8: | Net file log |
| SP5-990-21: | Copier user program list |
| SP5-990-22: | Scanner SP list |
| SP5-990-23: | Scanner user program list |

2. Touch the "Copy Window" key to access the copy mode display.
3. Select the paper size and press the "SP Mode" key to retune the SP mode.
4. Press the "Execute" key to print the list.
5. Exit SP mode.

### 5.7 MEMORY ALL CLEAR: SP5801

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

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

| SP7-003-1: | Electrical total counter value |
| :--- | :--- |
| SP5-811-1: | Machine serial number |
| SP5-907: | Plug \& Play Brand Name and Production Name Setting |

1. Execute SP5990 to print out all SMC Data Lists.
2. Open SP5801.
3. Press the number for the item that you want to initialize. The number you select determines which application is initialized. For example, press 1 if you want to initialize all modules.

| No. | What It Initializes | Comments |
| :---: | :--- | :--- |
| 1 | All modules | Initializes items 2 ~ 15 below. |
| 2 | Engine | Initializes all registration settings for the engine and copy <br> process settings. |
| 3 | SCS (System <br> Control Service) <br> IRM | Initializes default system settings, CSS settings, operation <br> display coordinates. |
| 4 | IMH | Initializes the image file system. |
| 5 | MCS (Memory <br> Control Service) | Initializes the automatic delete time setting for stored <br> documents. <br> Initializes all copier application settings. |
| 6 | Copier application | Initializes the printer defaults, programs registered, the printer <br> SP bit switches, and the printer CSS counter. |
| 8 | Printer application | Network application <br> modes. |
| 9 | Initializes all service-mode settings about access to the <br> document server from the DeskTopBinder software on a PC. <br> For example, initializes the resolution of images the PC gets <br> Fsing the image converter board option. |  |
| 10 | NCS (Network <br> Control Service) | Initializes the system defaults and interface settings (IP <br> addresses also), the SmartNetMonitor for Admin settings, <br> WebStatusMonitor settings, and the TELNET settings. |
| 14 | DCS | Initializes the DCS (Delivery \& Receive Control Server) settings. <br> Initializes the UCS (User Directory Control Server) settings. |
| 15 | UCS |  |

4. Press Execute, then follow the prompts on the display to complete the procedure.
5. Make sure that you perform the following settings:

- Do the printer and scanner registration and magnification adjustments. ( -3 -17).
- Execute SP2115 - Main Scan Beam Pitch Adjustment
- Do the touch screen calibration ( Section 3 "Touch Screen Calibration").
- Referring to the SMC data lists, re-enter any values, which had been changed from their factory settings.
- Execute SP 3001002 - ID Sensor Initial Setting
- Switch SP 3901001 (Auto Process Control Setting) to 1 (On), if you wish auto process control to be used.

6. Check the copy quality and the paper path, and do any necessary adjustments.

### 5.8 SOFTWARE AND COPY SETTING RESET (UP MODE)

### 5.8.1 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 $\because \circledast$ 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.

### 5.8.2 RESETTING THE SYSTEM

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

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

### 5.8.3 RESETTING COPYIDOCUMENT SERVER FEATURES ONLY

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

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

### 5.8.4 RESETTING SCANNER FEATURES ONLY

The scanner settings in the UP mode can be reset to their defaults using the following procedure

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

### 5.9 PM COUNTER

## $\Rightarrow$ 5.9.1 ACCESSING THE PM COUNTERS

Each PM part has a counter which counts up at the appropriate time. (For example, the counter for the hot roller counts up every copy, and the counter for a feed roller counts up when paper is fed from the corresponding tray.) These counters should be used as references for part replacement timing.

1) Press the following keys in sequence.

Hold the $\stackrel{\text { clear }}{\square}$ key more than 3 seconds.
The SP mode menu is displayed.

2) Press [PM Counter ] on the display.
3) The following menu appears on the display.


## All PM Parts List

Displays all the counters for PM parts.

| SP Mode (Parts replacement) |  |  |  | Prev. Menu |  | Exit |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| All PM parts list |  |  |  |  |  |  |
| No | Description | PM yield | Current | Target |  |  |
| 001 | Developer | Yes | 0000236 | 0000k | Clear |  |
| 002 | Oil Supply \& Cleaning Web | Yes | 0000236 | 0300k | Clear |  |
| 003 | Web Cleaning Roller | Yes | 0000236 | 0300k | Clear |  |
| 004 | Hot Roller | Yes | 0000236 | 0450K | Clear |  |
| 005 | Pressure Roller | Yes | 0000236 | 0450K | Clear |  |
| 006 | Pressure Roller Cleaning Roller | Yes | 0000236 | 0300k | Clear |  |
| 007 | Hot Roller Strippers | Yes | 0000236 | 0300k | Clear |  |
| 008 | Development Filter | Yes | 0000236 | 0300k | Clear |  |
| 009 | Toner Hopper Filter - Center | Yes | 0000236 | 0300k | Clear |  |
| 010 | Toner Hopper Filter - Front | Yes | 0000236 | 0300k | Clear |  |
| 011 | Feed Roller - Tray 1 | Yes | 0000228 | 0300k | Clear |  |
| 012 | Pick-up Roller - Tray 1 | Yes | 0000228 | 0300k | Clear |  |
| 013 | Separation Roller - Tray 1 | Yes | 0000228 | 0300k | Clear |  |
| 014 | Feed Roller - Tray 2 | Yes | 0000000 | 0300k | Clear | 01/03 |
| 015 | Pick-up Roller - Tray 2 | Yes | 0000000 | 0300k | Clear |  |
| 016 | Separation Roller - Tray 2 | Yes | 0000000 | 0300k | Clear | Previous page |
| 017 | Feed Roller - Tray 3 | Yes | 0000000 | 0300k | Clear |  |
| 018 | Pick-up Roller - Tray 3 | Yes | 0000000 | 0300k | Clear | Next page |

On this screen, the current counter and the target yield of each PM part can be checked.

Additionally, the PM yield indicator setting can be changed. To change the setting press [Yes/No] key in the "PM yield" column.
When "Parts list for PM yield" is selected in the parts replacement menu, only the parts with [Yes] in the "PM yield" are listed.
To clear a counter, press [Clear] on the display. The following appears.


Then press [Yes] to clear the counter.

## PM COUNTER

If one of the keys in the "No" column is pressed, the following appears on the display.


On this screen, the records of the last three part replacements are displayed. When 'Clear current counter' is pressed, the current counter is cleared, the current counter is overwritten to "Latest 1", the Latest 1 counter is overwritten to "Latest 2", and the Latest 2 counter is overwritten to "Latest 3".

Additionally, the target yield can be changed on this screen. To change the target yield setting, do the following:

1) Press [Change target yield] on the screen.
2) Input the target yield using the ten-key pad.
3) Press the \# key.

## Parts List for PM Yield Indicator

| SP Mode (Parts replacement) |  |  |  |  | Prev. Menu | Exit |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Parts list for PM y yield indicator |  |  |  |  |  |  |
| No | Description | Exceed | Current | Target |  |  |
| 001 | Developer |  | 0000236 | 0000k | Clear |  |
| 002 | Oil Supply \& Cleaning Web |  | 0000236 | 0300k | Clear |  |
| 003 | Web Cleaning Roller |  | 0000236 | 0300k | Clear |  |
| 004 | Hot Roller |  | 0000236 | 0450k | Clear |  |
| 005 | Pressure Roller |  | 0000236 | 0450k | Clear |  |
| 006 | Pressure Roller Cleaning Roller |  | 0000236 | 0300k | Clear |  |
| 007 | Hot Roller Strippers |  | 0000236 | 0300k | Clear |  |
| 008 | Development filter |  | 0000236 | 0300k | Clear |  |
| 009 | Toner Hopper Filter - Center |  | 0000236 | 0300k | Clear |  |
| 010 | Toner Hopper Filter - Front |  | 0000236 | 0300k | Clear |  |
| 011 | Feed Roller - Tray 1 |  | 0000228 | 0300k | Clear |  |
| 012 | Pick-up Roller - Tray 1 |  | 0000228 | 0300k | Clear |  |
| 013 | Separation Roller - Tray 1 |  | 0000228 | 0300k | Clear |  |
| 014 | Feed Roller - Tray 2 |  | 0000000 | 0300k | Clear | 01/01 |
| 015 | Pick-up Roller - Tray 2 |  | 0000000 | 0300k | Clear |  |
| 016 | Separation Roller - Tray 2 |  | 0000000 | 0300k | Clear | Previous page |
| 017 | Feed Roller - Tray 3 |  | 0000000 | 0300k | Clear |  |
| 018 | Pick-up Foller - Tray 3 |  | 0000000 | 0300k | Clear | Next Page |

On this screen, only the parts selected in the "All PM parts list" screen are displayed. Normally, the PM parts counters should be checked on this screen.
If the current counter exceeds the target yield, there is a * mark in the "Exceed" column.

Each counter can also be cleared on this screen. To clear all counters on this screen at once, see 'Counter Clear for Parts Exceeding Target Yield’ on the next page.

## Parts Exceeding Target Yield

Only the parts whose counters are exceeding the target yield are displayed. If none of the PM counters is exceeding the target yield, this item cannot be selected from the parts replacement menu.

## PM COUNTER

## Counter Clear for Parts Exceeding Target Yield

Clears all the counters which are exceeding the target yield. When this item is selected, the following appears on the display.


Press [Yes] to clear the counters.

## Clear All PM Settings

Clears all the PM counters and returns all the settings (PM parts list and target yield) to the defaults. When this item is selected, the following appears.


Press [Yes] to clear the settings.

## Counter List Print Out

Prints a list of all the PM part counters. When this item is selected, the following appears on the display.


Press [Print] to print out the counter list.

CSS Calling Setting (RSS Function)
This function is for Japanese machines only.

### 5.10 FIRMWARE UPDATE

To update the firmware for this machine, you must have the new version of the firmware downloaded onto an SD (Secure Digital) Card. The SD Card is inserted into the C3 slot on the right side of the controller box, viewed from the back of the machine.

### 5.10.1 BEFORE YOU BEGIN...

An SD card is a precision device, so always observe the following precautions when handling SD cards:

- Always switch the machine off before inserting an SD card. Never insert the SD card into the slot with the power on.
- After the power has been switched on, never remove the SD card from the service slot.
- Never switch the machine off while the firmware is downloading from the SD card.
- Store SD cards in a safe location where they are not exposed high temperature, high humidity, or exposure to direct sunlight.
- Always handle SD cards with care to avoid bending or scratching them. Never drop an SD card or expose it to other shock or vibration.
Keep the following points in mind while you are using the firmware update software:
- "Upload" means to send data from the machine to the SD card, and "download" means to send data from the SD card to the machine.
- To select an item on the LCD, touch the appropriate button on the soft touchscreen of the LCD, or press the appropriate number key on the 10-key pad of the operation panel. For example, "Exit (0)" displayed on the screen means you can touch the Exit button on the screen, or press the (0) button on the operation panel of the copier.
- Before starting the firmware update procedure, always make sure that the machine is disconnected from the network to prevent a print job for arriving while the firmware update is in progress.


## © Important Notice when updating several firmwares simultaneously

To ensure that error codes do not occur when installing several types of firmware simultaneously, follow the procedure outlined below:

1. Before installing any firmware, install the "System" firmware individually.
2. After successfully installing the "System" firmware, turn the machine main power OFF/ON and confirm that the machine boots up to Ready status normally.
3. The remaining firmware may now be installed simultaneously.

### 5.10.2 UPDATING FIRMWARE

1. On the machine, switch off the main power switch.
2. With the label on the $S D$ card $[A]$ facing as shown in the diagram, insert the SD card into service slot $\mathrm{C} 3[\mathrm{~B}]$ on the right side of the controller box [C]. Slowly push the SD card once into the slot so it locks in place.
3. Make sure the SD card is locked in place.
NOTE: To remove the SD, push it in to unlock the spring lock and then release it so it pops out of the slot.

4. If the machine is connected to a network, disconnect the network cable from the copier.
5. Switch the main power switch on. After about 10 seconds, the initial version update screen appears on the LCD in English.


| KEY | WHAT IT DOES |
| :--- | :--- |
| Firmware (1) | Press this button on the touch-screen (or © $)^{\circ}$ on the 10-key pad) to open <br> the firmware update screen. |
| Language Data (2) | Press this button on the touch-screen (or ${ }^{2}$ ) on the 10-key pad) to open <br> the language update screen. |
| Exit (0) | Press this key on the touch-screen (or © on the 10-key pad) to quit the <br> update procedure and return to normal machine operation. |

## FIRMWARE UPDATE

NOTE: The firmware update and language update cannot be performed during the same session. If you need to do both, do the firmware update, switch the machine off and on to confirm the successful update of the firmware, then do the language update.
6. Touch "Firmware (1)" to open the firmware update screen.


| ROM/NEW | WHAT IT MEANS |
| :---: | :--- |
| ROM: | Tells you the number of the module and name of the version presently <br> installed. The first line is the module number, the second line the version name. |
| NEW: | Tells you the number of the module and name version on the SD card. The first <br> line is the module number, the second line the version name. |

7. On the screen, touch the button or press the corresponding number key on the operation panel to select the item in the menu that you want to update.
8. After pressing the module button, or entering the appropriate number with the 10-key pad to select the module, the "Verify" and "Update" keys appear at the bottom of the screen.
NOTE: The screen below shows only the "Printer" option selected for update.
```
PCcard -> ROM Page01
```

| Printer | (1) | ROM: ROM ( 0.000000 |
| :---: | :---: | :---: |
| Engine | (2) |  |
| OpePanel.DOM | (3) | ROM: ${ }_{\text {ROM }}{ }^{\text {B07 }} 1.225370$ |

NEW: G0000000
NEW: $\begin{gathered}\text { B0705254 } \\ 2.16: 164\end{gathered}$
NEW: 2.0005370

| KEY | WHAT IT DOES |
| :---: | :--- |
| Verify $\left(. I^{*}\right)$ | Press this button (or $\circledast)$ to verify the selected module. |
| Update $(\#)$ | Press this button (or $\#)$ to upgrade the selected module. |
| Exit $(0)$ | Press this button (or $(0)$ to return to the previous screen. |

9. To start the update, touch "UpDate (\#)" (or \#).

After selecting "Update", three lines are displayed on the screen:


The first line tells you what is happening, the second line is the name of the module, and the third line tells you about the progress of the operation. As the update progresses, the underscores ( $\_$) in the progress bar are replaced by asterisks.

The update is finished after all 10 underscores are replaced by asterisks.
NOTE: The progress bar (***** ___ ) is not displayed for the operation panel firmware after you touch "OpePanel". While the LCDC firmware is updating, the power on key flashes on and off at 0.5 s intervals. When the update is finished, the power key flashes on and off slower at 3 s intervals.
When the update is finished, you will see a screen like the one below:


The first line prompts you that the update is finished, and the second line tells you the name of the module that has just been updated.
NOTE: If you have selected more than one module for updating, only the screen for the last module updated will be displayed.
10. When you see the "Update Done" message, switch the copier main power switch off.
11. Press in the SD card to release it, then remove it from the slot.
12. Switch the copier on for normal operation.

## Error Messages

If an error occurs during the download, an error message will be displayed in the first line.


The error code consists of the letter " $E$ " and a number. The example above shows error "E24" displayed. For details, refer to the Error Message Table. (-5.10.8)

## Firmware Update Error

If a firmware update error occurs, this means the update was cancelled during the update because the module selected for update was not on the SD card.


## $\Rightarrow$ Clearing E32 and E44 Codes

Clear E32 and E44 codes with the following procedure and then re-istall the firmware again:

1. Press (1)(4)3) (" 1 ", " 4 ", " 3 " key) on the operation panel when the error codes appear.
2. Press ("Clear" key) three times.

The machine will indicate the error has been cleared with a beep.

## Recovery After Power Loss

If the ROM update is interrupted as a result of accidental loss of power while the firmware is updating, then the correct operation of the machine cannot be guaranteed after the machine is switched on again. If the ROM update does not complete successfully for any reason, then in order to ensure the correct operation of the machine, the ROM update error will continue to be displayed until the ROM is updated successfully.
In this case, just insert the card once again and switch on the machine to continue the firmware download automatically from the card without the menu display.

### 5.10.3 VERIFYING A SUCCESSFUL UPDATE

Follow this procedure to verify that a module has been updated successfully.

1. Switch off the main power switch.
2. If the SD card is not in the machine, insert it into service slot C3.
3. Switch the main power switch on. After about 10 seconds, the initial screen appears on the LCD in English.

4. Press "Firmware (1)" to open the firmware update screen.


## FIRMWARE UPDATE

5. On the touch-screen, touch the button or press the corresponding number key on the operation panel to select the item in the menu that you want to verify
6. After pressing the key, the items selected for verification are displayed in reverse and the "Verify" and "Update" keys appear at the bottom of the screen.
7. To start the verification, touch "Verify (./*" (or press $\because$ ).

After selecting "Verify", two lines are displayed on the screen:


The first line tells you the status of the verification for the item selected from the menu, and the second name tells you the name of the item verified.
NOTE: If you selected more than one item for verification, the "Verify Done" message is displayed only once for the last module verified.
9. When you see the "Verify Done" message, switch the copier main power switch off.
10. Press in the SD card to release it, then remove it from the slot.
11. Switch the copier on for normal operation.

## Error During Verification

If anything abnormal is detected during verification, an error message is displayed:


The second line tells you the name of the module where the error was detected. If an error occurs during verification, switch the printer off and download the firmware from the SD card again.

### 5.10.4 UPDATING THE LCDC FOR THE OPERATION PANEL

Follow this procedure to update the LCDC (LCD Control Board).

1. Turn the copier main switch off.
2. Insert the SD card into service slot C3.
3. Switch the copier main switch on.
4. After about 10 seconds the initial screen opens in English.
5. Touch "OpePanel".

6. Touch "UpDate(\#) (or \#) to start the update.

After about 9 seconds, the downloading starts.
While the data is downloading, the operation panel goes off and the main power on key flashes at 0.5 s intervals. When the update is finished, the same key starts flashing slower at 3 s intervals.
7. Switch the copier main power switch off, remove the SD card, then switch the copier on again.

### 5.10.5 DOWNLOADING STAMP DATA

The stamp data should be downloaded from the controller firmware to the hard disks:

- When the machine is installed.
- After the hard disks have been replaced.

The print data contains the controller software, so execute SP5853 to download the fixed stamp data required by the hard disks.

1. Enter the SP mode.
2. Select SP5853 then press "Execute". The following screen opens while the stamp data is downloading.


The download is finished with the message prompts you to close.

Processing finished. Switch on the main power switch.
Note: May re- set automatically.

## Close

3. Press the "Close" button then cycle the copier off and on again.

### 5.10.6 NVRAM DATA UPLOAD/DOWNLOAD

## Uploading Content of NVRAM to an SD card

Follow this procedure to upload SP code settings from NVRAM to an SD card.
NOTE: This data should always be uploaded to an SD card before the NVRAM is replaced.

1. Before switching the machine off, execute SP5990 001 (SMC Print). You will need a record of the NVRAM settings if the upload fails.
2. Switch the copier main power switch off.
3. Insert the SD card into service slot C3, then switch the copier on.
4. Execute SP5824 001 (NVRAM Data Upload) then press the "Execute" key When uploading is finished, the following files are coped to an NVRAM folder on the SD card. The fileis saved to the path and filename:
NVRAM1<serial number>.NV
Here is an example with Serial Number "B0700017":
NVRAM $\backslash$ B0700017.NV
5. In order to prevent an error during the download, be sure to mark the SD card that holds the uploaded data with the number of the machine from which the data was uploaded.
NOTE: NVRAM data from more than one machine can be uploaded to the same SD card.

## Downloading an SD Card to NVRAM

Follow this procedure to download SP data from an SD card to the NVRAM in the machine.

- If the SD card with the NVRAM data is damaged, or if the connection between the controller and BCU is defective, the NVRAM data down load may fail.
- If the download fails, repeat the download procedure.
- If the second attempt fails, enter the NVRAM data manually using the SMC print you created before uploading the NVRAM data. (-5.10.6)

1. Switch the copier main power switch off.
2. Insert the SD card with the NVRAM data into service slot C3.
3. Switch the copier main power switch on.
4. Execute SP5825 001 (NVRAM Data Download) and press the "Execute" key. NOTE: In order for the NVRAM data to download successfully, the serial number of the file on the SD card must match the serial number of the machine. If the serial numbers do not match, the download will fail.
This procedure downloads the following data to the NVRAM:

- Total Count
- C/O, P/O Count


### 5.10.7 INSTALLING ANOTHER LANGUAGE

Many languages are available for selection, but only two can be selected for switching. Follow this procedure to select the two languages, either of which can be selected for the user interface on the operation panel.

1. Switch the copier main power switch off.
2. Insert the SD card with the language data into service slot C3.
3. Switch the copier main power switch on. The initial screen opens after about 10 seconds.
4. Touch the "Language (2)" on the screen (or press (2)).

5. Touch "LANG. 1(1)" or "LANG 2(2)

| Key | What it does |
| :---: | :--- |
| LANG. 1(1) | Touch this button on the screen (or press (1) on the 10-key pad) to open the next <br> screen so you can select the 1st language. |
| LANG. 1(2) | Touch this button on the screen (or press (2) on the 10-key pad) to open the next <br> screen so you can select the 2nd language. |
| Exit(0) | Touch this key on the screen (or press $(0)$ on the 10-key pad) to quit the update <br> procedure and return to normal screen. |

6. To select the 1st Language, touch "LANG 1(1)".
-or-
To select the 2nd Language, touch "LANG(2)".

7. Touch the appropriate button on the screen (or press the number on the 10keypad) to select a language as the 1st (or 2nd) Language.
If a language is already selected, it will be displayed in reverse.
Touching "Exit(0)" also returns the previous screen.
8. If you do not see the language that you want to select, touch " $\uparrow(7)$ " or " $\downarrow(9)$ " on the screen (or press (7) or ${ }^{(9)}$ ) to display more choices.

After you select a language, the Download Screen opens.
The 1st or 2nd language selected for updating is displayed.
To the right of the selection, the first column displays the language currently selected and the 2nd column displays the language selected to replace that language.
The example below shows that the download will replace "Japanese" with "Italian" as the 1st language.

9. Touch "Update(\#)" on the screen (or press (\#) to start the download.

Another screen with a progress bar is not displayed while the language is downloading.
While the language is downloading:

- The operation panel switches off.
- The LED on the power on key flashes rapidly.

10. After the Start LED begins to flash slowly, switch the copier main power switch off, then remove the SD card from the slot.
11. Switch the copier main power switch on to resume normal operation.

### 5.10.8 HANDLING FIRMWARE UPDATE ERRORS

If an error occurs during a download, an error message will be displayed in the first line. The error code consists of the letter "E" and a number ("E20", for example).
Error Message Table

| CODE | MEANING | SOLUTION |
| :---: | :---: | :---: |
| 20 | Cannot map logical address | Make sure SD card inserted correctly, or use another SD card. |
| 21 | Cannot access memory | HDD connection incorrect or replace hard disks. |
| 22 | Cannot decompress compressed data | Incorrect ROM data on the SD card, or data is corrupted. |
| 23 | Error occurred when ROM update program started | Controller program abnormal. If the second attempt fails, replace controller board. |
| 24 | SD card access error | Make sure SD card inserted correctly, or use another SD card. |
| 30 | No HDD available for stamp data download | HDD connection incorrect or replace hard disks. |
| 31 | Data incorrect for continuous download | Insert the SD card with the remaining data required for the download, the re-start the procedure. |
| 32 | Data incorrect after download interrupted | Execute the recovery procedure for the intended module download, then repeat the installation procedure. See NOTE below. |
| 33 | Incorrect SD card version | Incorrect ROM data on the SD card, or data is corrupted. |
| 34 | Module mismatch - Correct module is not on the SD card) | SD update data is incorrect. Acquire the correct data (Japan, Overseas, OEM, etc.) then install again. |
| 35 | Module mismatch - Module on SD card is not for this machine | SD update data is incorrect. The data on the SD card is for another machine. Acquire correct update data then install again. |
| 36 | Cannot write module - Cause other than E34, E35 | SD update data is incorrect. The data on the SD card is for another machine. Acquire correct update data then install again. |
| 40 | Engine module download failed | Replace the update data for the module on the SD card and try again, or replace the BCU board. |
| 42 | Operation panel module download failed | Replace the update data for the module on the SD card and try again, or replace the LCDC. |
| 43 | Stamp data module download failed | Replace the update data for the module on the SD card and try again, or replace the hard disks. |
| 44 | Controller module download failed | Replace the update data for the module on the SD card and tray again, or replace controller board. See NOTE below. |
| 50 | Electronic confirmation check failed | SD update data is incorrect. The data on the SD card is for another machine. Acquire correct update data then install again. |

$\Rightarrow$ NOTE: Error codes E32 and E44 are sometimes displayed when several type of firmware are installed simultaneously. To clear the error codes follow the procedure described in Clearing E32 and E44 Codes. After clearing the error code, re-install the firmware.

### 5.11 USER PROGRAM MODE

### 5.11.1 ENTERING AND EXITING USER PROGRAM MODE

The user program (UP) mode is accessed by users, and by sales and service staff. UP mode is used to input the copier's default settings.

Press the User Tools/Counter button, then select the UP mode program. After finishing the UP mode program, touch "Exit" key to exit UP mode.

### 5.12 BOARD LEDS

## BCU

| Number | Monitored Signal |
| :---: | :--- |
| LED101 (Green) | Not Used. Normally remains off. |
| LED102 (Red) | Flashes while BCU operating to monitor operation of BCU. |

PSU-E

| Number | Monitored Signal |
| :---: | :--- | :--- |
| LED2 | On: Normal <br> Off: Energy saver mode |
| LED3 | On: Normal <br> Off: Energy saver mode |

## LCDC

| Number | Monitored Signal |
| :---: | :--- |
| LED101 (Red) | Normally OFF. <br> Blinks Slowly: During data download from SD card. <br> Blinks Rapidly: When data download from SD card fails. |
| LED102 (Green) | Normally blinks Green. <br> Blinks Slowly: During data download from SD card. |

## IPU

| Number | Monitored Signal |
| :---: | :--- |
| LED 801 (Green) | Monitors Printer <br> Flashes: ICs operating normally for image processing. <br> Off: Operation failure. |
| LED 802 (Green) | Monitors Printer <br> Flashes: ICs operating normally for image processing. <br> Off: Operation failure. |
| LED 803 (Red) | Monitors Scanner <br> Flashes: ICs operating normally for image processing. <br> Off: Operation failure. |

## I/O Board

| Number | Monitored Signal |
| :---: | :---: |
| LED201 | Turns on when motor/solenoid drive signal is sent from the <br> BCU to IOB (Normally on). |

## Controller Board

This table refers to the appearance of the array LEDs to the left of center on the controller board during the firmware upgrade, viewed from the back of the machine with the controller box cover removed.

| LED | Color | Comments |
| :---: | :---: | :---: |
| Power | Green | Flashes during normal operation. |
| 8 | Red | While upgrading the firmware from the SD card inserted in the controller slot, each LED lights red as the download progresses. All LEDs light and remain on after the download is completed. |
| 7 | Red |  |
| 6 | Red |  |
| 5 | Red |  |
| 4 | Red |  |
| 3 | Red |  |
| 2 | Red |  |
| 1 | Red |  |

ADF Main Board LEDs
O: ON $\quad \Sigma$ : Blinking

| LED100 | LED101 | LED102 |  |
| :---: | :---: | :---: | :---: |
| $\bigcirc$ | - | - | Entrance Sensor Jam |
| - | $\bigcirc$ | - | Registration Sensor Jam |
| $\bigcirc$ | $\bigcirc$ | - | Exit Sensor Jam |
| - | - | O | Inverter Sensor Jam |
| $\bigcirc$ | - | $\bigcirc$ | Jammed paper not removed: <br> Between entrance sensor + registration sensor |
| $\bigcirc$ | O | $\bigcirc$ | Jammed paper not removed: On the exposure glass |
| E | - | - | Feed-in Motor Abnormal |
| - | E | - | Transport Motor Abnormal |
| - | - | i | Feed-out Motor Abnormal |
| E | E | - | Pick-up Motor Abnormal |
| - | E | E | Bottom Plate Motor Abnormal |
| 2 | \% | \% | DF Position (Open) |
| 2 | - | E | APS Sensor ON |
| \% | - | - | Normal |

### 5.13 DIP SW LEDS AND TEST POINT LEDS

### 5.13.1 DIP SWITCHES

BCU

| NO. | NA | EURIA |  |
| :---: | :---: | :---: | :---: |
| 1 | ON | OFF | NA: Only SW1 Set to ON, Others OFF. |
| 2 | OFF | ON | EUR/A: Only SW2 set to ON, Others OFF |
| 3 | OFF | OFF |  |
| 4 | OFF | OFF |  |
| 5 | OFF | OFF |  |
| 6 | OFF | OFF |  |
| 7 | OFF | OFF |  |
| 8 | OFF | OFF |  |

## ADF Main Board

| DPS100 |  |  |  |  |
| :--- | :--- | :---: | :---: | :--- |
| $\mathbf{4}$ | $\mathbf{3}$ | $\mathbf{2}$ | $\mathbf{1}$ |  |
| 0 | 0 | 0 | 0 | Normal operating mode |
| 0 | 0 | 0 | 1 | Motor Test: Transport motor - Forward |
| 0 | 0 | 1 | 0 | Motor Test: Transport motor - Reverse |
| 0 | 0 | 1 | 1 | Motor Speed Adjustment (Automatic) |
| 0 | 1 | 0 | 0 |  |
| 0 | 1 | 0 | 1 | Original stop position adjustment - Single-sided original mode |
| (No original skew correction) |  |  |  |  |
| 1 | 0 | 0 | 0 | Free Run: Single-sided original mode with skew original mode |
| 1 | 0 | 1 | 0 | Free Run: Single-sided original mode without skew correction |
| 0 | 1 | 1 | 0 | Free Run: Double-sided original mode |
| Others |  |  |  | Do not select |

"SADF" LED turns on when one of DIP switch turns on.

IEEE 802.11b (Wireless LAN) (Option)

| NO. | NA | EUR/A | COMMENTS |
| :---: | :---: | :---: | :--- |
| 1 | --- | --- | Not used with this machine. |

IEEE 1394 (FireWire) (Option)

| NO. | NA | EUR/A | COMMENTS |
| :---: | :---: | :---: | :---: |
| 1 | --- | --- | Not used with this machine. |

## MCU

DIP SW No. 1 must be ON, and all others (No. 2 ~ No.4) OFF.

Controller Board
DIP SW No. 5

| NO. |  | COMMENTS |
| :---: | :--- | :--- |
| 1 | OFF | Boot ROM Bank Switching |
| 2 | OFF | Design Use Only |

DIP SW No. 4

| NO. |  | COMMENTS |  |
| :---: | :--- | :--- | :--- |
| 1 | OFF | Never change this setting. |  |
| 2 | ON | ON | Monitor display and BIOS memory check. |
|  |  | Monitor display but no BIOS memory check. Never <br> change this setting. |  |
| 3 | OFF | Design use only. |  |
| 4 | OFF | Never change this setting. |  |
| 5 | OFF | Production use (Jig boot selection 1) |  |
| 6 | OFF | Production use (Jig boot selection 2) |  |
| 7 | OFF | Production use (Jig boot selection 3) |  |
| 8 | OFF | Not used. |  |

### 5.13.2 TEST POINTS

ADF Main Board

| Number | Label | Monitored Signal |
| :---: | :---: | :--- |
| TP100 | TXD | TXD to the copier |
| TP101 | RXD | RXD from the copier |
| TP102 | GND | Ground |
| TP103 | 12 V | +12 V |
| TP104 | 5 V | +5 V |

### 5.14 FUSES

## ADF Main Board

| Number |  |
| :---: | :--- |
| FU100 | Protects the 38 V line |
| FU101 | Protects the 24 V line |

## PSU-E

| Number |  |
| :--- | :--- |
| Fuse101 | Protects AC input line. |

## PSU-C

| Number |  |
| :---: | :--- |
| Fuse 1 | Protects AC input line |

## LCDC

| Number | Description |
| :---: | :---: |
| Fuse 101 | 12V fuse for the FFC cable that connects the SBU. |

## Controller

| Number | Description |
| :---: | :---: |
| Fuse 101 | Monitors 5V line between the mother board and controller. |

## Mother Board

| Number | Description |
| :---: | :---: |
| Fuse 3 | Breakers. Do not require replacement. |
| Fuse 4 |  |
| Fuse 5 |  |

## Centronics (Option)

| Number | Description |
| :---: | :--- |
| Fuse 1 | Monitors 3.3V power supply line from controller. |
| Fuse 2 | Monitors 5V power supply line from controller. |

NIC (Option)

| Number | Description |
| :---: | :---: |
| Fuse 1 | Monitors 3.3V power supply line from controller. |

FUSES

IEEE 802.11b (Wireless LAN) (Option)

| Number | Description |
| :---: | :--- |
| Fuse 2 | Monitors 3.3V power supply line from controller. |
| Fuse 3 | Monitors 5V power supply line from controller. |
| Fuse 4 | Monitors 3.3V power supply line from controller. |

## USB 2.0 (Option)

| Number | Description |
| :---: | :---: |
| Fuse 1 | Monitors 3.3V power supply line from controller. |

## EFI (Option)

| Number | Description |
| :---: | :--- |
| Fuse 1 | Monitors 3.3V power supply line from controller. |

## IEEE 1394 (FireWire) (Option)

| Number | Description |
| :---: | :---: |
| Fuse 1 | Breakers. Do not require replacement. |
| Fuse 2 | Monitors 5V power supply line from controller. |
| Fuse 3 |  |

### 5.15 VARIABLE RESISTORS

## ADF Main Board

| Number | Function |
| :---: | :--- |
| VR100 | Adjusts the original stop position for the single-sided original at no <br> skew correction mode. |
| VR101 | Adjusts the original stop position for the double-sided original. |

## CBG Power Pack

| Number | Function |
| :---: | :--- |
| VR16 | For the charge corona PWM. Do not change the setting in the field. |
| VR101 | For grid PWM. Do not change the setting in the field. |

## Transfer Bias Power Pack

| Number | Function |
| :---: | :--- |
| VR101 | For monitoring transfer voltage. |

## $\Rightarrow$ 5.16 USING THE DEBUG LOG

This machine provides a Save Debug Log feature that allows the Customer Engineer to save and retrieve error information for analysis.

Every time an error occurs, debug information is recorded in volatile memory but this information is lost when the machine is switched off and on.

The Save Debug Log feature provides two main features:

- Switching on the debug feature so error information is saved directly to the HDD for later retrieval.
- Copying the error information from the HDD to an SD card.

When a user is experiencing problems with the machine, follow the procedure below to set up the machine so the error information is saved automatically to the HDD.

### 5.16.1 SWITCHING ON AND SETTING UP SAVE DEBUG LOG

The debug information cannot be saved the until the "Save Debug Log" function has been switched on and a target has been selected.

1. Enter the SP mode and switch the Save Debug Log feature on.

- Press $\widehat{0}$ then use the 10-key pad to enter (1)(0) (7).
- Press and hold down c/ه for more than 3 seconds.
- Touch "Copy SP".
- On the LCD panel, open SP5857.

2. Under " 5857 Save Debug Log", touch " 1 On/Off".
```
COPY : SP-5-857-001
    Save Debug Log
On/Off (1:ON 0:OFF)
```

                    1
    Initial 0
3. On the control panel keypad, press " 1 " then press $\#$. This switches the Save Debug Log feature on.

NOTE: The default setting is " 0 " (OFF). This feature must be switched on in order for the debug information to be saved.
4. Next, select the target destination where the debug information will be saved. Under "5857 Save Debug Log", touch " 2 Target", enter " 2 " with the operation panel key to select the hard disk as the target destination, then press $\#$.

```
COPY : SP-5-857-002
    Save Debug Log
    Target (2:HDD 3:SD Card)
```



```
Initial 2
```

NOTE: Select "3 SD Card" to save the debug information directly to the SD card if it is inserted in the service slot.
5. Now touch " 5858 " and specify the events that you want to record in the debug log. SP5858 (Debug Save When) provides the following items for selection.

| $\mathbf{1}$ | Engine SC Error | Saves data when an engine-related SC <br> code is generated. |
| :---: | :--- | :--- |
| $\mathbf{2}$ | Controller SC Error | Saves debug data when a controller- <br> related SC Code is generated. |
| $\mathbf{3}$ | Any SC Error | Saves data only for the SC code that <br> you specify by entering code number. |
| $\mathbf{4}$ | Jam | Saves data for jams. |

NOTE: More than one event can be selected.

## Example 1: To Select Items 1, 2, 4

Touch the appropriate items(s). Press "ON" for each selection. This example shows "Engine SC Error" selected.

```
COPY : SP-5-858-001
    Debug Save When
    Engine SC Error

\section*{Example 2: To Specify an SC Code}

Touch "3 Any SC Error", enter the 3-digit SC code number with the control panel number keys, then press \(\#\). This example shows an entry for SC670.
```

COPY : SP-5-858-001
Debug Save When
Any SC Error

```

NOTE: For details about SC code numbers, please refer to the SC tables in Section "4. Troubleshooting".
\(\Rightarrow 6\). Next, select the one or more memory modules for reading and recording debug information. Touch "5859".
Under " 5859 " press the appropriate key item for the module that you want to record.

Enter the appropriate 4-digit number, then press \#).
NOTE: Refer to the two tables below for the 4-digit numbers to enter for each key.
The example below shows "Key 1 " with " 2222 " entered.
```

COPY : SP-5-859-001
Debug Save Key No.
Key 1
2222

```

The following keys can be set with the corresponding numbers. (The initials in parentheses indicate the names of the modules.)

4-Digit Entries for Keys 1 to 10
\begin{tabular}{|c|c|c|c|c|}
\hline KEY NO. & COPY & PRINTER & SCANNER & WEB \\
\hline 1 & \multicolumn{4}{|c|}{2222 (SCS)} \\
\hline 2 & \multicolumn{4}{|c|}{2223 (SRM)} \\
\hline 3 & \multicolumn{4}{|c|}{256 (IMH)} \\
\hline 4 & \multicolumn{4}{|c|}{1000 (ECS)} \\
\hline 5 & \multicolumn{4}{|c|}{1025 (MCS)} \\
\hline 6 & 4848 (COPY) & 4400 (GPS) & 5375 (Scan) & 5682 (NFA) \\
\hline 7 & 2224 (BCU) & 4500 (PDL) & 5682 (NFA) & 6600 (WebDB) \\
\hline 8 & & 4600 (GPS-PM) & 3000 (NCS) & 3300 (PTS) \\
\hline 9 & & 2000 (NCS) & 2000 (NCS) & 6666 (WebSys) \\
\hline 10 & & 2224 (BCU) & & 2000 (NCS) \\
\hline
\end{tabular}

NOTE: The default settings for Keys 1 to 10 are all zero ("0").
Key to Acronyms
\begin{tabular}{||l|l|l|l||}
\hline Acronym & \multicolumn{1}{|c|}{ Meaning } & \multicolumn{1}{c|}{ Acronym } & \multicolumn{1}{c|}{ Meaning } \\
\hline ECS & Engine Control Service & NFA & Net File Application \\
\hline GPS & GW Print Service & PDL & Printer Design Language \\
\hline GSP-PM & GW Print Service - Print Module & PTS & Print Server \\
\hline IMH & Image Memory Handler & SCS & System Control Service \\
\hline MCS & Memory Control Service & SRM & \begin{tabular}{l} 
System Resource \\
Management
\end{tabular} \\
\hline NCS & Network Control Service & WebDB & \begin{tabular}{l} 
Web Document Box \\
(Document Server)
\end{tabular} \\
\hline
\end{tabular}

The machine is now set to record the debugging information automatically on the HDD (the target selected with SP5-857-002) for the events that you selected SP5-858 and the memory modules selected with SP5-859.
\(\Rightarrow\) Please keep the following important points in mind when you are doing this setting:
- Note that the number entries for Keys 1 to 5 are the same for the Copy, Printer, Scanner, and Web memory modules.
- The initial settings are all zero.
- These settings remain in effect until you change them. Be sure to check all the settings, especially the settings for Keys 6 to 10. To switch off a key setting, enter a zero for that key.
- You can select any number of keys from 1 to 10 (or all) by entering the corresponding 4-digit numbers from the table.
- You cannot mix settings for the groups (COPY, PRINTER, etc.) for 006~010. For example, if you want to create a PRINTER debug log you must select the settings from the 9 available selections for the "PRINTER" column only.
- One area of the disk is reserved to store the debug log. The size of this area is limited to 4 MB .

\subsection*{5.16.2 RETRIEVING THE DEBUG LOG FROM THE HDD}

Retrieve the debug log by copying it from the hard disk to an SD card.
1. Insert the SD card into the service slot of the copier.
2. Enter the SP mode and execute SP5857 009 (Copy HDD to SD Card (Latest 4 \(\mathrm{MB})\) ) to write the debugging data to the SD card.
3. After you return to the service center, use a card reader to copy the file and send it for analysis to Ricoh by email, or just send the SD card by mail.

\subsection*{5.16.3 RECORDING ERRORS MANUALLY}

Since only SC errors and jams are recorded to the debug log automatically, for any other errors that occur while the customer engineer is not on site, please instruct customers to perform the following immediately after occurrence to save the debug data. Such problems would include a controller or panel freeze.
NOTE: In order to use this feature, the customer engineer must have previously switched on the Save Debug Feature (SP5857-001) and selected the hard disk as the save destination (SP5857-002).
1. When the error occurs, on the operation panel, press \(\stackrel{\text { Clasernodes }}{\checkmark}^{\text {(Clear Modes). }}\)
2. On the control panel, enter " 01 " then hold down \(\mathbf{C} / \boldsymbol{\theta}\) for at least 3 sec. until the machine beeps then release. This saves the debug log to the hard disk for later retrieval with an SD card by the service representatives.
3. Switch the machine off and on to resume operation.

The debug information for the error is saved on the hard disk so the service representatives can retrieve it on their next visit by copying it from the HDD to an SD card.

\section*{DETAILED DESCRIPTION}

\section*{6. DETAILED DESCRIPTION}

\subsection*{6.1 COMPONENT LAYOUT}

\subsection*{6.1.1 COPIER ENGINE}


\subsection*{6.2 PAPER PATH}

1. ADF
2. Bypass Tray
3. Optional LCT
4. Tray 3
5. Tray 2
6. Tray 1
7. Duplex Unit
8. Optional Finisher
9. Inverter Unit
10. Shift Tray
11. Upper Tray
12. Cover Interposer

\subsection*{6.3 COPY PROCESS}


\section*{1. EXPOSURE}

A xenon lamp exposes the original. Light reflected from the original passes to the CCD, where it is converted into an analog data signal. This data is converted to a digital signal, processed, and stored in the memory. At the time of printing, the data is retrieved and sent to the laser diode. For multi-copy runs, the original is scanned once only and stored to the hard disk.

\section*{2. DRUM CHARGE}

An OPC (organic photoconductor) drum is used in this machine. In the dark, the charge corona unit gives a negative charge to the drum. The grid plate ensures that corona charge is applied uniformly. The charge remains on the surface of the drum because the OPC layer has a high electrical resistance in the dark.

\section*{3. LASER EXPOSURE}

The processed data from the scanned original is retrieved from the hard disk and transferred to the drum by four laser beams, which form an electrostatic latent image on the drum surface. The amount of charge remaining as a latent image on the drum depends on the laser beam intensity, which is controlled by the laser diode board (LDB).

\section*{4. DRUM POTENTIAL SENSOR}

The drum potential sensor detects the electric potential on the drum to correct various process control elements.
5. DEVELOPMENT

The magnetic developer brush on the development rollers comes in contact with the latent image on the drum surface. Toner particles are electrostatically attracted to the areas of the drum surface where the laser reduced the negative charge on the drum.
6. IMAGE TRANSFER

Paper is fed to the area between the drum surface and the transfer belt at the proper time to align the copy paper and the developed image on the drum. Then, the transfer bias roller and brush apply a high positive charge to the reverse side of the paper through the transfer belt. This positive charge pulls the toner particles from the drum to the paper. At the same time, the paper is electrically attracted to the transfer belt.

\section*{7. PAPER SEPARATION}

Paper separates from the drum as a result of the electrical attraction between the paper and the transfer belt. The pick-off pawls also help separate the paper from the drum.
8. ID SENSOR

The laser forms a sensor pattern on the drum surface. The ID sensor measures the reflectivity of the pattern. The output signal is one of the factors used for toner supply control.
9. CLEANING

The cleaning brush removes toner remaining on the drum after image transfer and the cleaning blade scrapes off all remaining toner.
10. QUENCHING

The light from the quenching lamp electrically neutralizes the charge on the drum surface.

\subsection*{6.4 DRIVE LAYOUT}

\subsection*{6.4.1 COPIER ENGINE}

1. Drum Motor
2. Scanner Motor
3. Fusing/Duplex Motor
4. Paper Feed Motor
5. Registration Motor
6. Relay Motor
7. Development Motor

\subsection*{6.5 ELECTRICAL COMPONENT DESCRIPTIONS}

Refer to the electrical component layout on the reverse side of the point-to-point diagram for the location of the components using the symbols and index numbers.

\subsection*{6.5.1 COPIER ENGINE}
\begin{tabular}{|c|c|c|}
\hline Number & Name & Description \\
\hline \multicolumn{3}{|l|}{Lamps} \\
\hline L01 & Exposure Lamp & Applies high intensity light to the original for exposure. \\
\hline L02 & Fusing Lamp 1 & Provides heat to the hot roller. \\
\hline L03 & Fusing Lamp 2 & Provides heat to the hot roller. \\
\hline L04 & Fusing Lamp 3 & Provides heat to the hot roller. \\
\hline L05 & Quenching Lamp & Neutralizes any charge remaining on the drum surface after cleaning. \\
\hline & & \\
\hline \multicolumn{3}{|l|}{Magnetic Clutches} \\
\hline MC01 & Toner Supply Coil Clutch & Transfers drive from the toner bank motor to the toner transport coil to transport toner towards the hopper. \\
\hline MC02 & Toner Supply Roller Clutch & Turns the toner supply roller to supply toner from the toner hopper to the development unit. \\
\hline MC03 & 1st Paper Feed Clutch & Starts paper feed from tray 1. \\
\hline MC04 & 2nd Paper Feed Clutch & Starts paper feed from tray 2. \\
\hline MC05 & 3rd Paper Feed Clutch & Starts paper feed from tray 3. \\
\hline MC06 & Inverter Exit Roller Clutch & Releases the drive from the inverter exit roller in the duplex unit. \\
\hline MC07 & 1st Vertical Transport Clutch & Drives the 1st vertical transport rollers. \\
\hline MC08 & 2nd Vertical Transport Clutch & Drives the 2nd vertical transport rollers. \\
\hline MC09 & 3rd Vertical Transport Clutch & Drives the 3rd vertical transport rollers. \\
\hline MC10 & Upper Relay Clutch & Drives the upper relay rollers (between tray 1 and the registration rollers) \\
\hline MC11 & LCT Relay Clutch & Drives the relay rollers for paper feed into the machine from the LCT. \\
\hline MC12 & Lower Relay Clutch & Drives the lower relay rollers (between paper trays 1 and 2 . \\
\hline \multicolumn{3}{|l|}{Motors} \\
\hline M01 & Scanner Motor & Drives the 1st and 2nd scanners. \\
\hline M02 & Polygon Mirror Motor & Drives the polygon mirror in the laser optics unit \\
\hline M03 & Drum Motor & Drives the drum, cleaning unit, and transfer belt unit. \\
\hline M04 & Development Motor & Drives the development unit. \\
\hline M05 & Toner Supply Pump Motor & Mounted between the toner hopper and the toner supply cylinder, this pumps the toner that the supply cylinder has received from the toner bank into the toner hopper. \\
\hline M06 & Toner Bank Motor & Drives the toner transport coil, which feeds fresh toner from the toner bank to the toner supply cylinder. \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|}
\hline Number & Name & Description \\
\hline M07 & Upper Toner Bottle Motor & Rotates the upper toner bottle to supply toner to the toner entrance tank. \\
\hline M08 & Upper Bottle Cap Motor & Opens and closes the inner cap of the upper toner bottle. \\
\hline M09 & Lower Toner Bottle Motor & Rotates the lower toner bottle to supply toner to the toner entrance tank. \\
\hline M10 & Lower Bottle Cap Motor & Opens and closes the inner cap of the lower toner bottle. \\
\hline M11 & Charge Corona Wire Cleaner & Drives the charge corona wire cleaner. \\
\hline M12 & Fusing/Exit Motor & Drives the fusing unit, inverter unit, reverse trigger roller, and paper exit rollers. \\
\hline M13 & Paper Feed Motor & Drives the paper feed, separation, pick-up, lower relay, and vertical transport rollers in the three trays. \\
\hline M14 & Relay & Drives the upper relay roller and the LCT relay roller. \\
\hline M15 & 1st Tray Lift Motor & Raises and lowers the bottom plate in the 1st paper tray. \\
\hline M16 & 2nd Tray Lift Motor & Raises and lowers the bottom plate in the 2nd paper tray. \\
\hline M17 & 3rd Tray Lift Motor & Raises and lowers the bottom plate in the 3rd paper tray. \\
\hline M18 & Registration Motor & Drives the registration rollers. \\
\hline M19 & Web Motor & Drives the oil supply/cleaning web. \\
\hline M20 & Rear Fence Drive Motor & Moves the paper stack in the left tandem tray to the right tandem tray. \\
\hline M21 & Jogger Motor & Drives the jogger fences to square the paper stack in the duplex unit. \\
\hline M22 & Duplex Transport Motor 1 & Drives the duplex transport rollers (transport ). \\
\hline M23 & Duplex Transport Motor 2 & Drives the duplex transport rollers (transport 2). \\
\hline M24 & Toner Suction Motor & Drives the air pump that creates the vacuum to draw loose toner from the development unit to the development unit waste toner collection bottle. \\
\hline M25 & Optics Cooling Fan & Removes heat from the scanner optics unit. \\
\hline M26 & Polygon Mirror Motor Cooling Fan & Removes heat from around the polygon mirror motor. \\
\hline M27 & LDB Cooling Fan & Removes heat from around the LDB. \\
\hline M28 & SBU Cooling Fan & Removes heat from around the SBU. \\
\hline M29 & Drum Cooling Fan & Removes heat from the drum. \\
\hline M30 & Development Unit Cooling Fan 1 & Removes heat from the development unit. \\
\hline M31 & Development Unit Cooling Fan 2 & Removes heat from the development unit. \\
\hline M32 & Paper Cooling Pipe Fan 1 & Removes heat from the paper cooling pipe. \\
\hline M33 & Paper Cooling Pipe Fan 2 & Removes heat from the paper cooling pipe. \\
\hline M34 & Duplex Cooling Fan & Removes heat from the horizontal paper path of the duplex/inverter unit. \\
\hline M35 & Exhaust Fan & Removes heat from around the fusing unit. \\
\hline M36 & Steam Removal Fan & Removes water vapor from around the fusing unit. \\
\hline M37 & Duplex Entrance Cooling Fan 1 & Removes heat from around the entrance to the duplex/inverter unit. \\
\hline
\end{tabular}

ELECTRICAL COMPONENT DESCRIPTIONS
\begin{tabular}{|c|c|c|}
\hline Number & Name & Description \\
\hline M38 & Duplex Entrance Cooling Fan 2 & Removes heat from around the entrance to the duplex/inverter unit. \\
\hline M39 & Controller Board Fan Motor & Removes heat from around the controller board. \\
\hline M40 & Mother Board Fan Motor 1 & Removes heat from around the mother board. \\
\hline M41 & Mother Board Fan Motor 2 & Removes heat from around the mother board. \\
\hline \multicolumn{3}{|l|}{PCBs} \\
\hline PCB01 & \(B C U\) & BCU (Base-Engine Control Unit): Main control board, controls the engine sequence, timing for peripherals, image processing, and the video data path \\
\hline PCB02 & PSU-E & PSU-E (Power Supply Unit-Engine): Supplies DC power for the machine, and controls the anti-condensation heaters. \\
\hline PCB03 & PSU-C & PSU-C (Power Supply Unit-Controller): Supplies DC power for the controller. \\
\hline PCB04 & IOB & IOB (Input/Output Board): Performs three functions (1) Continues conversion done in the BCU of the sensor input from the main unit paper trays, toner supply unit, and LCT, (2) Converts serial data from the BCU to parallel data for control of the man unit paper trays, toner supply unit, and LCT components (motors, solenoids, clutches), (3) Routes the power supply from the PSU in the BCU to the LCT, and routes power interlock power supply to all the motors. \\
\hline PCB05 & SBU & SBU (Sensor Board Unit): Contains the CCD. Converts the CCD output to digital before sensing it to the IPU (Image Processing Unit). \\
\hline PCB06 & MCU & MCU (Main Control Unit): Controls the scanner motor with the commands from the BCU. Also controls fusing lamp on/off timing, APS detection, the fan motors, generation of gate signals, and transmission of serial data. \\
\hline PCB07 & Lamp Regulator & Controls the xenon exposure lamp in the flat bed scanner \\
\hline PCB08 & Polygon Mirror Motor Control Board & Controls the polygon motor. \\
\hline PCB09 & LDB & LDB (Laser Diode Board) controls the laser diodes. It also contains the laser diodes. \\
\hline PCB10 & AC Drive & Drives the ac components (fusing lamps, anti-condensation heaters). \\
\hline PCB11 & Operation Panel & Controls the operation panel and LCD display panel. \\
\hline PCB12 & Operation Switch Board & Switches main power to the machine on/off. \\
\hline PCB13 & Mother Board & MB (Mother Board): Interfaces the controller and the IPU. \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|}
\hline Number & Name & Description \\
\hline PCB14 & Controller & Controls the memory and all peripheral devices. GW architecture allows the board to control all applications, i.e. copying, printing, and scanning. In order to add an option (printer, scanner), the appropriate ROM DIMM must be installed on the controller. \\
\hline PCB15 & LCDC & LCDC (LCD Controller): Controls the operation panel and connects the scanner to the IPU \\
\hline PCB16 & IPU & IPU (Image Processing Unit): Contains large-scale integrated circuits that perform image processing with the digital data sent from the SBU, then sends the processed data to the controller and to the exposure ASIC which sends it to the LD unit. Also relays data transmissions between the controller and LCDC. \\
\hline PCB17 & SD Card Board & Allows SD cards to be connected to the controller. \\
\hline PCB18 & DC Supply Board & Converts the DC current supplied from the PSU to the correct DC voltage for the operation of the Controller. \\
\hline PCB19 & External Controller Interface Board & Interfaces the controller with the IEEE1394 card and other options \\
\hline PCB20 & Laser Synchronization Detector Board & Detects when the laser is about to start another main scan line across the OPC \\
\hline \multicolumn{3}{|l|}{Power Packs} \\
\hline PP01 & CGB (Charge, Grid, Bias) Power Pack & Provides high voltage for the charge corona wires, grid plate, and the development roller. \\
\hline PP02 & Transfer Power Pack & Supplies high voltages to the transfer unit. \\
\hline \multicolumn{3}{|l|}{Sensors} \\
\hline S01 & Scanner HP Sensor & Informs the CPU when the 1st and 2nd scanners are at home position. \\
\hline S02 & Original Width Sensors 1~3 & Detect the width of the original. \\
\hline S03 & Original Length 1 & Detects the original length. \\
\hline S04 & Original Length 2 & Detects the original length. \\
\hline S05 & Drum Potential Sensor & Detects the drum surface potential. \\
\hline S06 & Toner Density Sensor & Measures the concentration of toner in the toner-developer mixture. \\
\hline S07 & Image Density (ID) Sensor & Detects the density of the ID sensor pattern on the drum. \\
\hline S08 & Toner Hopper Sensor & Monitors the level of toner in the toner supply unit. \\
\hline S09 & Toner Supply Pump Motor Sensor & Detects whether the toner supply pump motor is rotating. \\
\hline S10 & Upper Toner Bottle Sensor & Detects when the upper toner bottle is set. \\
\hline S11 & Lower Toner Bottle & Detects when the lower toner bottle is set. \\
\hline S12 & Upper Bottle Inner Cap Sensor & Detects when the inner cap of the upper toner bottle is opened. \\
\hline S13 & Lower Bottle Inner Cap Motor & Detects when the inner cap of the lower toner bottle is opened. \\
\hline S14 & Toner Collection Bottle Sensor & Detects when the waste toner collection bottle is set. \\
\hline
\end{tabular}

ELECTRICAL COMPONENT DESCRIPTIONS
\begin{tabular}{|c|c|c|}
\hline Number & Name & Description \\
\hline S15 & Toner Overflow Sensor & Detects when the waste toner collection bottle is full. \\
\hline S16 & Toner Near End Sensor & Detects toner near end in the toner bank unit. \\
\hline S17 & 1st Paper Feed Sensor & Controls the 1st paper feed clutch on/off timing and the 1st pick-up solenoid off timing. \\
\hline S18 & 2nd Paper Feed Sensor & Controls the 2nd paper feed clutch on/off timing and the 1st pick-up solenoid off timing. \\
\hline S19 & 3rd Paper End & Informs the CPU when tray 3 runs out of paper. \\
\hline S20 & 1st Tray Lift Sensor & Detects the correct paper height for feeding in the 1st tray. \\
\hline S21 & 2nd Tray Lift Sensor & Detects the correct paper height for feeding in the 2nd tray. \\
\hline S22 & 3rd Tray Lift Sensor & Detects the correct paper height for feeding in the 3rd tray. \\
\hline S23 & 1st Paper End Sensor & Informs the CPU when tray 1 runs out of paper. \\
\hline S24 & 2nd Paper End Sensor & Informs the CPU when tray 2 runs out of paper. \\
\hline S25 & 3rd Paper Feed & Controls the 3rd paper feed clutch on/off timing and the 3rd pick-up solenoid off timing. \\
\hline S26 & Rear Fence HP Sensor & Informs the CPU when the tandem tray rear fence is in the home position. \\
\hline S27 & Rear Fence Return Sensor & Informs the CPU when the tandem tray rear fence is in the return position. \\
\hline S28 & Front Side Fence Open Sensor & Detects whether the tandem tray front side fence is opened. \\
\hline S29 & Front Side Fence Closed Sensor & Detects whether the tandem tray front side fence is closed. \\
\hline S30 & Rear Side Fence Open Sensor & Detects whether the tandem tray rear side fence is opened. \\
\hline S31 & Rear Side Fence Closed Sensor & Detects whether the tandem tray rear side fence is closed. \\
\hline S32 & Lower Limit Sensor & After the tandem tray is empty, the tray lowers until this sensor detects the tray. \\
\hline S33 & 1st Tray Paper Height 1 & Detects the paper height in the 1st tray (tandem tray), stage 1. \\
\hline S34 & 1st Tray Paper Height 2 & Detects the paper height in the 1st tray (tandem tray), stage 2. \\
\hline S35 & 1st Tray Paper Height 3 & Detects the paper height in the 1st tray (tandem tray), stage 3. \\
\hline S36 & 1st Tray Paper Height 4 & Detects the paper height in the 1st tray (tandem tray), stage 4. \\
\hline S37 & Left 1st Tray Paper Sensor & Detects whether there is paper in the left side of the 1st tray. \\
\hline S38 & Right 1st Tray Paper Sensor & Detects whether there is paper in the right side of the 1st tray, allowing the tray to lift if paper is present. \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|}
\hline Number & Name & Description \\
\hline S39 & Duplex Inverter Sensor & Detects when to turn the inverter gate and exit gate solenoids off and checks for misfeeds. \\
\hline S40 & Duplex Entrance Sensor & Detects the leading and trailing edges of the paper to determine the reverse roller solenoid on or off timing. \\
\hline S41 & Duplex Transport Sensor 1 & Detects the position of paper in the duplex unit. \\
\hline S42 & Duplex Transport Sensor 2 & Detects the position of paper in the duplex unit. \\
\hline S43 & Duplex Transport Sensor 3 & Detects the position of paper in the duplex unit. \\
\hline S44 & Duplex Jogger HP Sensor & Detects whether the duplex jogger fences are at the home position. \\
\hline S45 & LCT Relay Sensor & Detects misfeeds. \\
\hline S46 & Relay Sensor & Detects misfeeds. \\
\hline S47 & Registration Sensor & Detects misfeeds and controls registration motor on/off timing. \\
\hline S48 & Guide Plate Position Sensor & Detects whether the registration guide plate is open or closed. \\
\hline S49 & Web End Sensor & Detects when the oil supply/cleaning web has been used up. \\
\hline S50 & Fusing Exit Sensor & Detects misfeeds. \\
\hline S51 & Exit Sensor & Detects misfeeds. \\
\hline S52 & Toner Suction Motor Rotation Sensor & Detects whether the development unit toner suction motor is rotating. \\
\hline S53 & Toner Suction Bottle Set Sensor & Detects whether the development unit waste toner bottle is set. \\
\hline \multicolumn{3}{|l|}{Solenoids} \\
\hline SOL01 & Transfer Belt Lift & Controls the up-down movement of the transfer belt unit. \\
\hline SOL02 & 1st Pick-up Solenoid & Controls the up-down movement of the pickup roller in tray 1. \\
\hline SOL03 & 1st Pick-up Solenoid & Controls the up-down movement of the pickup roller in tray 2. \\
\hline SOL04 & 3rd Pick-up Solenoid & Controls the up-down movement of the pickup roller in tray 3. \\
\hline SOL05 & 1st Separation Roller Solenoid & Controls the up-down movement of the separation roller in tray 1. \\
\hline SOL06 & 2nd Separation Roller Solenoid & Controls the up-down movement of the separation roller in tray 2. \\
\hline SOL07 & 3rd Separation Roller Solenoid & Controls the up-down movement of the separation roller in tray 3. \\
\hline SOL08 & Front Side Fence & Opens and closes the front side fence in the tandem tray. \\
\hline SOL09 & Rear Side Fence & Opens and closes the rear side fence in the tandem tray. \\
\hline SOL10 & Tandem Tray Connect & Connects/disconnects the two halves of the tandem tray. \\
\hline
\end{tabular}

ELECTRICAL COMPONENT DESCRIPTIONS
\begin{tabular}{|c|c|c|}
\hline Number & Name & Description \\
\hline SOL11 & Left 1st Tray Lock & Locks the left tandem tray while paper is being transported from left tray to right tray. \\
\hline SOL12 & Duplex Inverter Gate Solenoid & Moves the junction gate to direct copies to the duplex tray or to the paper exit. \\
\hline SOL13 & Reverse Roller & Controls the up-down movement of the reverse roller in the duplex unit. \\
\hline SOL14 & Inverter Guide Plate Solenoid & Controls the up-down movement of the inverter feed guide plate in the duplex unit. \\
\hline SOL15 & Guide Plate Solenoid & Opens the guide plate when a paper misfeed occurs around this area. \\
\hline SOL16 & Inverter Gate Solenoid & Directs paper either straight out or down to the inverter. \\
\hline SOL17 & Toner Recycling Shutter Solenoid & Controls the shutter mechanism in the toner recycling system. \\
\hline SOL18 & LCT Guide Plate SOL & Opens and closes the LCT guide plate between the LCT and the bypass tray. \\
\hline \multicolumn{3}{|l|}{Switches} \\
\hline SW01 & Main Power & Provides power to the machine. If this is off, there is no power supplied to the machine. \\
\hline SW02 & Right Front Door Safety Switch 1 & Cuts the 24 V dc power from the PSU-E to the fusing/exit motor when the door is opened. \\
\hline SW03 & Right Front Door Safety Switch 2 & Cuts the 24 V power from the PSU-E to the IOB when the front right door is opened. \\
\hline SW04 & Right Front Door Safety Switch 3 & Cuts the +5 LD dc power to disable the LD unit when the right door is open. \\
\hline SW05 & Right Front Door Safety Switch 4 & Cuts the +5 LD dc power to disable the LD unit when the right door is open. \\
\hline SW06 & Left Front Door Safety Switch 1 & Cuts the 24 V dc power from the PSU-E to the fusing/exit motor when the door is opened. \\
\hline SW07 & Left Front Door Safety Switch 2 & Cuts the 24 V power from the PSU-E to the IOB when the front left door is opened. \\
\hline SW08 & Left Front Door Safety Switch 3 & Cuts the +5 LD dc power to disable the LD unit when the left door is open. \\
\hline SW09 & Left Front Door Safety Switch 4 & Cuts the +5 LD dc power to disable the LD unit when the left door is open. \\
\hline SW10 & 2nd Tray Paper Size & Determines the size of paper in tray 2. Also detects when the tray has been placed in the machine. \\
\hline SW11 & 3rd Tray Paper Size & Determines the size of paper in tray 3. Also detects when the tray has been placed in the machine. \\
\hline \multicolumn{3}{|l|}{Other} \\
\hline CB01 & Circuit Breaker & Provides back-up high current protection for the electrical components. \\
\hline CS01 & Ext. Control Slot & Factory use only. \\
\hline EN01 & Encoder & Generates pulses for the scanner motor (this motor is a dc motor, not a stepper motor) \\
\hline H01 & Drum Heater & Ensures that the drum operates at a suitable temperature to prevent blurred or uneven copies. \\
\hline
\end{tabular}
\begin{tabular}{||c|l|l||}
\hline Number & \multicolumn{1}{|c|}{ Name } & \multicolumn{1}{c|}{ Description } \\
\hline H02 & \begin{tabular}{l} 
Optics Anti-condensation Heater \\
(option)
\end{tabular} & \begin{tabular}{l} 
Turns on when the main switch is off to keep \\
the scanner unit dry.
\end{tabular} \\
\hline H03 & \begin{tabular}{l} 
Drum Anti-condensation Heater \\
(option)
\end{tabular} & \begin{tabular}{l} 
Turns on when the main switch is off to \\
prevent moisture from forming around the \\
drum.
\end{tabular} \\
\hline H04 & \begin{tabular}{l} 
Tray Anti-Condensation Heater 1 \\
(option)
\end{tabular} & \begin{tabular}{l} 
Turns on when the main switch is off to keep \\
paper dry in the paper trays.
\end{tabular} \\
\hline H05 & \begin{tabular}{l} 
Tray Anti-Condensation Heater 2 \\
(option)
\end{tabular} & \begin{tabular}{l} 
Turns on when the main switch is off to keep \\
paper dry in the paper trays.
\end{tabular} \\
\hline H06 & LCT Anti-Condensation Heater & \begin{tabular}{l} 
Turns on when the main switch is off to keep \\
paper dry in the LCT paper trays. Contains \\
two heaters.
\end{tabular} \\
\hline HDD1 & HDD 1 & \begin{tabular}{l} 
Scanned image data is compressed and \\
held here temporarily.
\end{tabular} \\
\hline HDD2 & HDD 2 & \begin{tabular}{l} 
Scanned image data is compressed and \\
held here temporarily.
\end{tabular} \\
\hline NF1 & Noise Filter & \begin{tabular}{l} 
Comoves noise from the power line. \\
\hline TC1 \\
Total Counter
\end{tabular} \\
\hline TH1 & Fusing Thermistor & \begin{tabular}{l} 
In direct contact number of copies. \\
temperature of the not roller.
\end{tabular} \\
\hline TS01 detects the \\
\hline Thermostat 1 & \begin{tabular}{l} 
One of a pair of wafer thermostats mounted \\
directly above the center of the hot roller to \\
monitor the temperature of the hot roller and \\
signal the CPU to switch it off if it overheats.
\end{tabular} \\
\hline TS02 & Thermostat 2 & \begin{tabular}{l} 
One of a pair of wafer thermostats mounted \\
directly above the center of the hot roller to \\
monitor the temperature of the hot roller and \\
signal the CPU to switch it off if it overheats.
\end{tabular} \\
\hline TS3 & Drum Thermostat & Prevents the drum heater from overheating \\
\hline
\end{tabular}

\subsection*{6.5.2 ADF}
\begin{tabular}{|c|c|c|}
\hline Symbol & Name & Function \\
\hline \multicolumn{3}{|l|}{Motors} \\
\hline M1 & Pick-up & Moves the pick-up roller up and down. \\
\hline M2 & Feed-in & Drives the feed belt, and the separation, pick-up, and transport rollers. \\
\hline M3 & Transport Belt & Drives the transport belt. \\
\hline M4 & Feed-out & Drives the exit and inverter rollers. \\
\hline M5 & Bottom Plate & Moves the bottom plate up and down. \\
\hline \multicolumn{3}{|l|}{Sensors} \\
\hline S1 & APS Start & Informs the CPU when the DF is opened and closed (for platen mode) so that the original size sensors in the copier can check the original size. \\
\hline S2 & DF Position & Detects whether the DF is lifted or not. \\
\hline S3 & Original Set & Detects whether an original is on the table. \\
\hline S4 & Bottom Plate HP & Detects whether the bottom plate is in the down position or not. \\
\hline S5 & Bottom Plate Position & Detects when the original is at the correct position for feeding. \\
\hline S6 & Pick-up Roller HP & Detects whether the pick-up roller is up or not. \\
\hline S7 & Entrance & Detects when to restart the pick-up motor to lift up the pick-up roller, detects when to change the feed motor direction, detects the trailing edge of the original to finish checking the original length, and checks for misfeeds. \\
\hline S8 & Registration & Detects the leading edge of the original to check the original length, detects when to stop the original on the exposure glass, and checks for misfeeds. \\
\hline S9 & Original Width 1 & Detects the original width. \\
\hline S10 & Original Width 2 & Detects the original width. \\
\hline S11 & Original Width 3 & Detects the original width. \\
\hline S12 & Original Length & Detects the original length. \\
\hline S13 & Exit & Detects when to stop the transport belt motor and checks for misfeeds. \\
\hline S14 & Inverter & Detects when to turn the inverter gate and exit gate solenoids off and checks for misfeeds. \\
\hline S15 & Feed Cover & Detects whether the feed cover is open or not. \\
\hline S16 & Exit Cover & Detects whether the exit cover is open or not. \\
\hline \multicolumn{3}{|l|}{Solenoids} \\
\hline SOL1 & Exit Gate & Opens and closes the exit gate. \\
\hline SOL2 & Inverter Gate & Opens and closes the inverter gate. \\
\hline \multicolumn{3}{|l|}{Magnetic Clutches} \\
\hline MC1 & Feed-in & Drives the feed belt, separation roller, and pick-up roller. \\
\hline \multicolumn{3}{|l|}{PCBs} \\
\hline PCB1 & DF Main & Controls the DF and communicates with the main copier boards. \\
\hline PCB2 & DF Indicator & Indicates whether an original has been placed in the feeder, and indicates whether SADF mode has been selected. \\
\hline
\end{tabular}

\subsection*{6.6 ADF}

\subsection*{6.6.1 OVERVIEW}

1. Entrance Sensor
2. Separation Roller
3. Feed Belt
4. Pick-up Roller
5. Original Tray
6. Inverter Junction Gate
7. Inverter Guide Roller
8. Inverter Sensor
9. Feed-out Roller
10. Exit Junction Gate
11. Inverter Roller
12. Exit Sensor
13. Transport Belt
14. Registration Sensor
15. Width Sensors (x3)

\subsection*{6.6.2 PICK-UP ROLLER RELEASE}


When the original set sensor is off (no original on the original tray), the pick-up roller stays in the up position.

When the original set sensor turns on (or when the trailing edge of a page passes the entrance sensor while pages remain on the original tray), the pick-up motor [ A ] turns on. The cam \([B]\) rotates away from the pick-up roller release lever [C]. The lever then rises and the pick-up roller [D] drops onto the original.

When the original reaches the entrance sensor, the pick-up motor turns on again. The cam pushes the lever down, and the pick-up roller rises until the pick-up roller HP sensor [E] detects the actuator [F].

\subsection*{6.6.3 BOTTOM PLATE LIFT}


When an original is placed on the original tray, the original set sensor [A] turns on, the pick-up roller \([B]\) drops on to the original, and the bottom plate position sensor [C] turns off. Then the bottom plate motor [D] turns on and lifts the bottom plate [E] by raising the lift lever [F] until the bottom plate position sensor turns on.
The level of the pick-up roller drops as the stack of originals becomes smaller, and eventually, the bottom plate position sensor [C] turns off. Then, the bottom plate motor turns on and lifts the bottom plate until the bottom plate position sensor turns on. This keeps the original at the correct height for feeding.

\subsection*{6.6.4 PICK-UP AND SEPARATION}


The original separation system is a Feed and Reverse Roller (FRR) system. The pick-up roller [A], feed belt [B], and separation roller [C] are driven by the feed-in motor [D].
To drive this mechanism, the feed-in motor [D] and feed-in clutch [E] turn on.
(G](T) Handling Paper> Handling Originals> Document Feed> FRR with Feed Belt)

\subsection*{6.6.5 ORIGINAL FEED}


When the leading edge of the original turns the entrance sensor [A] on, the feed-in clutch [B] turns off and the drive for the feed belt is released. The original is fed by the transport rollers [C].
At the same time, the pick-up motor starts again and the pick-up roller [D] is lifted up. When the pick-up roller HP sensor turns on, the pick-up motor stops (see Pickup Roller Release).

\subsection*{6.6.6 ORIGINAL SIZE DETECTION}

[E]

The ADF detects the original size by combining the readings of original length sensor [A], and original width sensors-1 [B], \(-2[C]\), and \(-3[D]\).

\section*{Original Length}

The original length sensor and the disk [ \(E\) ] (connected to the transport roller) generate a pulse signal. The CPU counts pulses, starting when the leading edge of the original turns on the registration sensor [F], until the trailing edge of the original turns off the entrance sensor [G].

\section*{Original Width}

The CPU detects original width using three original width sensors \(-1,-2,-3\) as shown above. Three small circles on the diagram indicate the positions of the sensors.

\section*{Original Width Sensor Location}


\section*{Detectable Paper Sizes}

Please refer to the "1.2 ADF" table in "Specifications".

\subsection*{6.6.7 ORIGINAL TRANSPORT}


The transport belt [A] is driven by the transport belt motor [B]. The transport belt motor starts when the copier sends an original feed-in signal.
The pressure rollers inside the transport belt maintain the correct pressure between belt and original. The pressure roller [C] closest to the left original scale is made of rubber for the stronger pressure needed for thick originals. The other rollers are sponge rollers.
Normally, originals are manually placed at the left rear corner, so an original [D] fed from the ADF must also be at this position. But if the original touches the rear scale [E] as it feeds, original skew, jam, or wrinkling may occur.
To prevent such problems, the original transfer position is set to 3.5 mm away from the rear scale as shown. The 3.5 mm gap is compensated for by changing the starting position of the main scan for when the image is exposed on the drum.

\subsection*{6.6.8 ORIGINAL SKEW CORRECTION}


The transport belt motor remains energized to carry the original to the right about 7 mm past the left scale [A]. Then the motor stops and reverses to feed the original 12 mm to the left against the left scale to correct skew. This forces the original to hit the left scale, which aligns the trailing edge to minimize original skew on the exposure glass.
If thin original mode is selected, the original is not forced back against the left scale. This is to prevent damage to the original.
After a two-sided original has been inverted to copy the 2nd side, it is fed in from the inverter against the left scale \([B]\) without skew correction.
NOTE: The bottom drawing applies to duplex scanning; the top two drawings do not apply in this mode.
The amount of reverse feed against the left scale can be adjusted as follows:
- One-sided originals, and side 1 of two-sided originals: SP6006-3 (DF Registration Adjustment - Leading Edge Duplex 1st)
- Side 2 of two-sided originals: SP6006-4 (DF Registration Adjustment - Leading Edge Duplex 2nd).

\subsection*{6.6.9 ORIGINAL INVERSION AND FEED-OUT}

\section*{General Operation}


When the scanner reaches the return position, the copier CPU sends the feed-out signal to the ADF. When the ADF receives the feed-out signal, the transport belt motor and feed-out motor [A] turn on. The original is then fed out to the exit tray or fed back to the exposure glass after reversing in the inverter section.
This ADF has two exit trays. For single-sided original mode, the original is fed out straight out to the right exit tray, but for double-sided original mode, the original is fed out to the upper exit tray.
This causes the originals to be fed out in the correct order on the exit trays and allows the maximum one-to-one copy speed for each mode.

ADF

\section*{Original Inversion}


When the ADF receives the original invert signal from the copier, the transport belt motor, feed-out motor, exit gate solenoid [A], and inverter gate solenoid [B] turn on and the original is fed back to the exposure glass through the inverter roller [C], exit gate [D], inverter guide roller [E], inverter gate [F], and inverter roller.
The transport belt motor reverses shortly after the leading edge of the original turns on the inverter sensor [G], and feeds the original to the left scale.

\section*{Original Exit (Single-Sided Original Mode)}


The exit gate solenoid \([A]\) remains off, the exit gate \([B]\) remains closed, and the original is fed out to the right exit tray.
The speed of the motor is reduced about 30 mm from the trailing edge of the original to ensure the originals stack neatly on the exit tray. This timing is determined by the length of the original, and the time since the exit sensor [C] detected the leading edge.
The transport belt motor turns off after the exit sensor [C] turns off.

ADF

\section*{Original Exit (Double-Sided Original Mode)}


The exit gate solenoid \([A]\) turns on and the exit gate \([B]\) opens.
The inverter gate solenoid [C] remains off, and the original is fed out to the upper tray. The transport belt motor turns off when the trailing edge of the original passes the exit sensor [D].
To stack the originals neatly on the upper tray, the feed-out motor speed is reduced shortly after the trailing edge of the original turns off the inverter sensor [E].

\subsection*{6.6.10 ADF JAM CONDITIONS}

[B]

\section*{Feed-in}
1. The entrance sensor \([A]\) is still off 500 ms after the feed-in motor turned on.
2. The registration sensor \([B]\) is still not off 300 ms after the feed-in motor speed increased.
3. The entrance sensor is still on when the feed-in and transport motors have fed the original 442 mm after the registration sensor turned on.

\section*{Feed-out}
4. The registration sensor is still on when the feed-in and transport motors have fed the original 751 mm after the registration sensor turned on.
5. The exit sensor [C] is still off when the transport and feed-out motors have fed the original 129 mm after the feed-out motor turned on.
6. The exit sensor is still on when feed-out motor has fed the original \(X \mathrm{~mm}\) ( \(\mathrm{X}=\) original length \(\times 1.3\) ) after the exit sensor turned on.

\section*{Inversion}
7. The exit sensor is still off when the transport and exit motors have fed the original 198 mm after the transport motor turned on to feed the original to the inverter section.
8. The exit sensor is still on when the feed-out motor has fed the original X mm ( \(\mathrm{X}=\) original length \(\times 1.3\) ) after the exit sensor turned on.
9. The inverter sensor [D] is still off when the transport and feed-out motors have fed the original 96 mm after the exit sensor turned on.
10. The inverter sensor is still off when the transport and feed-out motors have fed the original 96 mm to the exposure glass after the exit sensor turned off.

\subsection*{6.7 SCANNING}

\subsection*{6.7.1 OVERVIEW}

1. Scanner Motor
2. White Plate (on exposure glass)
3. 2nd Mirror
4. Exposure Lamp (Xenon)
5. Exposure Glass
6. 1st Mirror
7. Lamp Regulator
8. SBU Cooling Fan
9. Optics Cooling Fan
10. LCDC (LCD Control Board)
11. CCD (Charge Coupled Device)
12. Original Length Sensor (APS)
13. Scanner Lens
14. 3rd Mirror
15. Original Width Sensors 1, 2, 3 (APS)
16. Scanner HP Sensor
17. Optics Anti-condensation Heater (option)

One xenon lamp (23W) as the exposure lamp [4] illuminates the original. The image is reflected onto the CCD [11] (600 dpi resolution) via the 1st, 2nd, and 3rd mirrors, and through the lens [13].
The lens, CCD, and SBU are in a single unit, the lens block. The optical axis, focus, and MTF are pre-adjusted, so this lens block requires no adjustment in the field. The 1st scanner consists of the exposure lamp [4], the lamp regulator [7] and the 1st mirror.

Two fans, the optics cooling fan [9] and the SBU cooling fan [8], draw cool air into the scanning unit. The optics cooling fan turns on when the scanner motor starts and turns off 10 seconds after the scanner motor turns off. The SBU cooling fan operates while the operation switch is on. The optional optics anti-condensation heater [17] (if installed as an option) turns on while the main switch is off, to prevent moisture from forming on the optics.

\subsection*{6.7.2 SCANNER DRIVE}


The scanner motor is a dc servo motor. The 1st and 2nd scanners \([A, B]\) are driven by the scanner motor [C] through the timing belt [D], scanner drive pulley [E], scanner drive shaft [F], and two scanner wires [G].
The MCU (Motor Control Unit) board controls the scanner motor. The exposure lamp scans a sheet with \(100 \%\) magnification at \(515 \mathrm{~mm} / \mathrm{s}\) and returns to the scan position for the next scan at \(2500 \mathrm{~mm} / \mathrm{s}\).

\section*{Magnification and Reduction}

Magnification and reduction in the main scan direction are done in the IPU board.
Magnification and reduction in the sub scan direction, however, are done by controlling the speed of the scanner motor in sync with the main scan processing done in the IPU.
- Magnification above \(101 \%\) is done in the IPU. For example, at 200\% magnification, the IPU doubles magnification while the scanner motor speed remains at 100\%.
- Reduction in the range \(51 \%\) to \(100 \%\) is done by the scanner motor.
- Reduction in the range \(25 \%\) to \(50 \%\) is done by the scanner motor, assisted by IPU processing. For example, at \(40 \%\) reduction, the scanner motor speed is \(80 \%\) and the IPU reduces the image by \(1 / 2\).
- Reduction below \(25 \%\) is done by the scanner motor, assisted by IPU processing. For example, at \(24 \%\) reduction the scanner motor speed is \(96 \%\) and the IPU reduces the image by \(1 / 4\).
NOTE: Magnification in the sub scan direction can be adjusted by changing the scanner motor speed with SP4008 (Scanner Sub Scan Magnification).

\subsection*{6.7.3 ORIGINAL SIZE DETECTION}

[D]


There are three reflective sensors at three locations in the optics cavity for original size detection.

The original width sensor [A] detects the original width, and the original length sensor \(1[B]\) and original length sensor \(2[C]\) detect the original length. These are the APS (Auto Paper Select) sensors.
Inside each APS sensor, there is an LED [D] and either three photoelectric devices [E] (for the width sensor) or one photoelectric device (for each length sensor). In the width sensor, the light generated by the LED is separated into three beams and each beam scans a different point of the exposure glass (in each length sensor, there is only one beam). If the original or ADF cover is present over the scanning point, the beam is reflected and each reflected beam exposes a photoelectric device and activates it.

While the main switch is on, these sensors are active and the original size data is always sent to the main CPU. However, the main CPU checks the data only when the ADF is being closed.
The ADF functions as the platen. The DF position sensor [F] (attached to the ADF) detects whether the ADF is open or closed.
The APS start sensor [G] triggers auto paper size detection.

NOTE: The Europe/Asia model has one length sensor (L1), but the North American model has two length sensors (L1, L2)
\begin{tabular}{||c|c|c|c|c|c|c|c||}
\hline \multicolumn{2}{|c|}{ Original Size } & \multicolumn{2}{|c|}{\begin{tabular}{c} 
Length \\
Sensor
\end{tabular}} & \multicolumn{3}{|c|}{ Width Sensor } & \multirow{2}{*}{ SP4301 } \\
Display
\end{tabular}\(|\)

H:High (Paper Present) L: Low
The original size data is taken by the main CPU when the DF position sensor is activated. This is when the ADF is positioned about 12 cm above the exposure glass. At this time, only the sensor(s) underneath the original receive the reflected light and switch on. The other sensor(s) are off. The main CPU recognizes the original size from the on/off signals from the five sensors.
If the copy is made with the ADF open, the main CPU decides the original size from the sensor outputs when the Start key is pressed.

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 productivity.


\subsection*{6.7.4 AUTO IMAGE DENSITY (ADS)}

The area that the CCD uses as a reference for ADS is shown in the following diagram.

( \(\mathbf{G} \mathbf{T}\) Digital Processes> Image Processing> Black and White CCD Systems> Analog Signal Processing> Automatic Image Density)

\subsection*{6.8 BOARD STRUCTURE}

\subsection*{6.8.1 BLOCK DIAGRAM}


\subsection*{6.8.2 COMPONENT DESCRIPTIONS}

This machine employs Ricoh GW (Grand Work) architecture that allows the copier to be expanded as an MFP (Multi-Function Product) by installation of simple modular components (ROM DIMMs) on the controller board.

Here is a summary of the main parts of the board structure.
NOTE: The DIP switch settings and the board should not be changed. For details, please refer to the "Specifications", the last section of this manual.
BCU (Base Engine Control Unit): This is the main control board that controls the engine sequence, timing for peripherals. The BCU also controls:
- High voltage
- Duplexing
- Paper feed
- Paper registration
- Fusing
- Peripheral interfaces
- Drive
- Toner supply

Controller Board: The controller board controls all devices for memory DIMMs, HDD, copying, printing, and scanning. The controller board also provides all the connection points for easy installation of the options (printer, scanner, FireWire, wireless LAN, and so on). The controller board also controls:
- Printer/scanner
- Document server
- Image rotation
- Conversion of all image formats
- Image compression and decompression

Mother Board: Interfaces the controller and the IPU, and installed options.
IPU (Image Processing Unit): Contains large-scale integrated circuits that perform image processing on the digital data sent from the SBU, then sends the processed data to the controller and then to the LD unit. Also relays data transmissions between the controller and LCDC.

SBU (Sensor Board Unit): The SBU receives analog signals from the CCD and converts them into the digital signals that are used for image processing. A/D conversion divides the range between black and white into 256 levels and digitizes the analog signal based on these levels. The 256 levels are called grayscales.

IOB (Input/Output Board): Performs three functions:
- Converts sensor output from the paper bank, toner bank unit, and LCT then sends it to the BCU.
- Converts serial data from the BCU to parallel data for control of the paper bank, toner bank unit, and LCT components (motors, solenoids, clutches).
- Supplies the 24 V power supply from the PSU to the BCU, LCT, and interlock system for the development motor, drum motor, and paper feed motor.

LCDC (LCD Control): The LCDC controls the operation panel and relays the internal signals of the optical system (SBU, MCU \(\leftarrow \rightarrow\) IPU, BCU)

LDB (LD Board): The LDB controls the laser diodes. It also contains the laser diodes.

AC Drive Board: The AC drive board controls AC power for the fusing lamps and the anti-condensation heaters.

MCU (Motor Control Unit): Controls the scanner motor with the commands from the BCU. Also controls Xenon lamp on/off timing, APS detection, the fan motors, generation of gate signals, and transmission of serial data.

Lamp Regulator: Controls the Xenon exposure lamp in the flat bed scanner
Operation Panel: Controls the operation panel and LCD display panel.
Operation Switch Board: Switches main power to the machine on/off.
Polygon Mirror Motor Control Board: Controls the polygon motor.
PSU-C (Power Supply Unit-Controller): Supplies DC power for the controller.
PSU-E (Power Supply Unit-Engine): Supplies DC power for the machine.

\section*{BOARD STRUCTURE}

\section*{HDD (Hard Disk Drive)}

The combined capacity of the HDD's is 80 GB ( \(40 \mathrm{~GB} \times 2\) ) for image storage. They can store up to approximately 3,000 copy images, based on the ITU-T No. 4 Chart.
The ASIC on the controller handles data by dividing each 32-bit word into 16-bit units and writes the high-end bits to one hard disk and the low-end bits to the other hard disk. This effectively reduces the write speed by \(50 \%\) because each half of each 32-bit word is saved simultaneously. Because the data is divided between the two hard disks, replacing only one of the hard disks will cause errors. Therefore, both disks must always be replaced together.
\begin{tabular}{|c|c|c|c|c|c|}
\hline Area & Power Off & Capacity & \multicolumn{2}{|l|}{Control} & Comment \\
\hline Local image storage & Store & 49325 MB & \multicolumn{2}{|l|}{15,000 Copies} & Doc. server storage \\
\hline \multirow{5}{*}{Temporary images} & \multirow{5}{*}{Delete} & 6750 MB & Copies & 3000 & \multirow[t]{5}{*}{Electronic sort, test printing, confidential printing} \\
\hline & & 1350 MB & Allocated Copies & 100 & \\
\hline & & 2100 MB & Printer & 3000 & \\
\hline & & 2100 MB & Sample & 3000 & \\
\hline & & 3375 MB & Scanner & 3000 & \\
\hline FileSystem1 & Store & 500 MB & & & Print font download, form registration \\
\hline FileSystem2 & Delete & 500 MB & 150 jobs & & Job spool area, RTIFF spool area (both cannot be used at same time) \\
\hline FileSystem3 & Store & 2000 MB & & & Desk Top Binder thumbnails, work data area \\
\hline FileSystem4~7 & Store & 1600 MB & & & Email address storage area \\
\hline Debug Log & Store & 100 MB & & & Debug log \\
\hline Job Log & Store & 10 MB & & & \\
\hline Debug & Store & 256 MB & & & Object area \\
\hline Swap & Store & 256 MB & & & Swap area \\
\hline
\end{tabular}

Note the following important points regarding HDD replacement:
- Both HDD's must always be replaced together as one set.
- Replacing the HDD loses all document server documents, and user stamps.
- When the HDD is replaced, the default user stamps must be re-installed, so use SP5853 to copy these files from the controller firmware onto the hard disk.
- The "Scan to Email" addresses are also lost by HDD replacement. However, addresses can be backed up with Smart Net Monitor.
- Print fonts must also be re-entered after HDD replacement.

\subsection*{6.9 IMAGE PROCESSING}

\subsection*{6.9.1 IMAGE PROCESSING STEPS AND RELATED SP MODES}

The following tables describe the image processing path and the related SP modes used for each image processing mode.

The user can adjust many of the image processing parameters with a UP mode (Copy/Document Server Features> General Features> Original Mode Quality Level), using fixed settings such as Sharp, Normal, and Soft. Each of these fixed settings have different parameters, but user changes do not affect the relevant SP mode settings.
If the user is not satisfied with any of the available settings for this UP mode, the technician can adjust the SP modes. However, the SP mode settings are not used unless the user selects 'Service Mode' with the UP Mode.


\subsection*{6.9.2 IMAGE PROCESSING OVERVIEW}


SBU: Photoelectric conversion, Odd/even allocation, Amplification, A/D Conversion (analog to digital), Light intensity detection (scanning)
BCU: Engine control, Scanner control, SBU settings, IPU settings, LDB settings
IPU: Shading correction, Image Processing, Main/Sub scan magnification, Video path switching, Image Compression/ Decompression. The GAVD on this board performs density conversion processing, FCl processing, and edge processing, and also generates the test patterns.

Controller: System control, software application control, image storage control, file compression/decompression

LDB: 8-beam laser exposure, binary-to-grayscale conversion, synchronization detection

\subsection*{6.9.3 IMAGE PROCESSING FLOW}

Image processing is done by the IPU (Image Processing Unit), following the steps shown below.

Overall image processing for this machine is designed to:
- Target edges with filters to improve the angles of text characters and reduce the occurrence of moiré filled areas.
- Improve the evenness of granular areas in images


\subsection*{6.9.4 IMAGE PROCESSING MODES}

The user can select one of the following five modes with the User Tools screen: Text, Text/Photo, Photo, Pale, Generation.

Each mode has four different settings (described below). Each mode has a Custom Setting that can be customized with SP modes to meet special requirements that cannot be covered by the standard settings.

NOTE: To see these settings in the User Tools mode, press the User Tools key, press "Copier/Document Server Functions", then press "Copy Quality".
\begin{tabular}{|c|c|c|}
\hline Mode & Setting & Function \\
\hline \multirow{4}{*}{Text} & Soft & Rough texture background drops out. \\
\hline & Normal & Used for black-and-white printed material and documents that contain mainly text. Easily reads lines as well as text. \\
\hline & Sharp & Use for newspapers, time schedules, or any type of printed material with fine print. Emphasizes black over white. \\
\hline & Custom Setting & Stores SP command settings. \\
\hline \multirow{4}{*}{Tex/Photo} & Photo Priority & \multirow[t]{3}{*}{Used for documents that contain text and color or black-and-white photos, such as catalogs, magazines, maps, etc. Provides more faithful reproduction than the Text mode.} \\
\hline & Normal & \\
\hline & Text Priority & \\
\hline & Custom Setting & Stores SP command settings. \\
\hline \multirow{4}{*}{Photo} & Print Photo & Used for magazines, graphics, for smooth reproduction. Employs dithering. \\
\hline & Normal & Used for copying photographs, graphics, for sharp reproduction. Employs error diffusion. \\
\hline & Glossy Photo & Used for best results in copying glossy photographs for sharp reproduction. Employs error diffusion. \\
\hline & Custom Settings & Stores SP command settings. Employs either error diffusion or dithering, depending on an SP setting. \\
\hline \multirow{4}{*}{Pale} & Soft & \multirow[t]{3}{*}{Used for low density documents with text handwritten in black or color pencil (or carbon copies) such as receipts, invoices, etc.} \\
\hline & Normal & \\
\hline & Sharp & \\
\hline & Custom Setting & Stores SP command settings. \\
\hline \multirow{4}{*}{Generation Copy} & Soft & Used to achieve an image smoother than Normal. \\
\hline & Normal & Used to achieved best reproduction of "copies of copies" by smoothing the image. \\
\hline & Sharp & Used to emphasize lines and text stronger than Normal for better image quality. \\
\hline & Custom Setting & Stores SP command settings. \\
\hline \multirow{3}{*}{Background Dropout} & Strong & Drops out the blue background color of tab sheets or other paper. \\
\hline & Medium & Drops out the green background color of tab sheets or other paper. \\
\hline & Weak & Drops out the orange background color of tab sheets or other paper. \\
\hline
\end{tabular}

\subsection*{6.9.5 IMAGE QUALITY SP ADJUSTMENTS}

Adjustments are easier with this machine, because the parameters have been grouped and no longer have to be adjusted one by one.
In this section, we will cover the custom settings for each of the 5 original modes: These custom settings are:
- Image Quality
- Line Width Correction

Settings adjustable for each original mode will also be covered (these do not just affect the custom settings; they also affect all sub original modes, such as sharp text).
- Independent Dot Erase
- Background Erase

\section*{Custom Settings for Each Mode: Image Quality}

\section*{Custom Setting: Text Mode Image Quality}
\begin{tabular}{|c|c|c|c|c|}
\hline \multicolumn{2}{|c|}{Item} & Range & Default & SP No. \\
\hline \multirow{4}{*}{Text} & 25~55\% & \multirow{4}{*}{0~10} & \multirow{4}{*}{5 Normal} & SP4903 001 \\
\hline & 55.5~75\% & & & SP4903 002 \\
\hline & 75.5~160\% & & & SP4903 003 \\
\hline & 160.5~400\% & & & SP4903 004 \\
\hline
\end{tabular}

If the value is increased, the outlines of lines become sharper but this could cause moiré to appear in dot patterns. If the value is decreased, image patterns become smoother, the occurrence of moiré decreases, but the corners of characters and intersections of lines at acute angles may not be as sharp.
There are two sets of custom settings for photo mode. One is for dithering, and one is for error diffusion. The set of custom settings that will be used depends on the setting of SP4904 002. The possible settings are:
\begin{tabular}{||l|l||}
\hline 0 & Dither (106 line) \\
\hline 1 & Dither (141 line) \\
\hline 2 & Dither (212 line) \\
\hline 3 & Error Diffusion \\
\hline
\end{tabular}

\section*{Custom Setting: Photo Mode (Dithering) Image Quality}
\begin{tabular}{|c|c|c|c|c|}
\hline \multicolumn{2}{|c|}{Item} & Range & Default & SP No. \\
\hline \multirow{4}{*}{Photo} & 25~55\% & \multirow{4}{*}{0~6} & \multirow{4}{*}{3 Print Photo} & SP4903 005 \\
\hline & 55.5~75\% & & & SP4903 006 \\
\hline & 75.5~160\% & & & SP4903 007 \\
\hline & 160.5~400\% & & & SP4903 008 \\
\hline
\end{tabular}

Used for coarse, dithered tone photographs such as newsprint.
If the value is increased, the photo becomes sharper, but blurring could occur in the sub scan direction. If the value is decreased, blurring in the sub scan direction is less obvious but outlines become fuzzy.

\section*{Custom Setting: Photo Mode (Error Diffusion) Image Quality}
\begin{tabular}{|c|c|c|c|c|}
\hline \multicolumn{2}{|c|}{Item} & Range & Default & SP No. \\
\hline \multirow{4}{*}{Photo} & 25~55\% & \multirow{4}{*}{0~6} & \multirow{4}{*}{1 Normal} & SP4903 009 \\
\hline & 55.5~75\% & & & SP4903 010 \\
\hline & 75.5~160\% & & & SP4903 011 \\
\hline & 160.5~400\% & & & SP4903 012 \\
\hline
\end{tabular}

Used for printed materials (magazines, etc.) with photographs to sharp patterns in copies.
If the photos have dithered tones, the image becomes sharper if the value is increased, but blurring could occur in the sub scan direction. If the value is decreased, blurring in the sub scan direction is less obvious but outlines become fuzzy.

Custom Setting: Text/Photo Mode Image Quality
\begin{tabular}{|c|c|c|c|c|}
\hline \multicolumn{2}{|c|}{Item} & Range & Default & SP No. \\
\hline \multirow{4}{*}{Text/Photo} & 25~55\% & \multirow{4}{*}{0~10} & \multirow{4}{*}{5 Normal} & SP4903 013 \\
\hline & 55.5~75\% & & & SP4903 014 \\
\hline & 75.5~160\% & & & SP4903 015 \\
\hline & 160.5~400\% & & & SP4903 016 \\
\hline
\end{tabular}

See the remarks for 'Custom Setting: Text Mode Image Quality' above.

\section*{Custom Setting: Pale Mode Image Quality}
\begin{tabular}{|c|c|c|c|c|}
\hline \multicolumn{2}{|c|}{Item} & Range & Default & SP No. \\
\hline \multirow{4}{*}{Pale} & 25~55\% & \multirow{4}{*}{0~10} & \multirow{4}{*}{5 Normal} & SP4903 017 \\
\hline & 55.5~75\% & & & SP4903 018 \\
\hline & 75.5~160\% & & & SP4903 019 \\
\hline & 160.5~400\% & & & SP4903 020 \\
\hline
\end{tabular}

If the value is increased, low density areas become sharper, but the background could become dirtier. If the value is decreased, the background disappears but the density of low density areas becomes low.

Custom Setting: Generation Mode Image Quality
\begin{tabular}{|c|c|c|c|c|}
\hline \multicolumn{2}{|c|}{Item} & Range & Default & SP No. \\
\hline \multirow{4}{*}{Generation} & 25~55\% & \multirow{4}{*}{0~10} & \multirow{4}{*}{5 Normal} & SP4903 021 \\
\hline & 55.5~75\% & & & SP4903 022 \\
\hline & 75.5~160\% & & & SP4903 023 \\
\hline & 160.5~400\% & & & SP4903 024 \\
\hline
\end{tabular}

See the remarks for 'Custom Setting: Pale Mode Image Quality’ above.

\section*{Custom Settings for Each Mode: Line Width Correction}

\section*{Custom Setting: Text Mode Line Width Correction}
\begin{tabular}{||l|l|c|c|l|c||}
\hline \multicolumn{2}{|c|}{ Selection } & Range & Default & Content & SP No. \\
\hline \multirow{4}{*}{ Item } & \begin{tabular}{l} 
Line Width \\
Correction
\end{tabular} & \(0 \sim 8\) & 2 & 0 (Thin)-4 (Off)-8 (Thick) & SP4903 080 \\
\cline { 2 - 6 } & Main Scan & \(0 \sim 1\) & 1 & \(0:\) OFF 1:ON & SP4903 081 \\
\cline { 2 - 6 } & Sub Scan & \(0 \sim 1\) & 1 & \(0:\) OFF 1:ON & SP4903 082 \\
\hline
\end{tabular}

If the value is made smaller, the line width correction becomes thinner, and if the value is made larger, the line width correction becomes thicker. To switch this feature off, select " 4 ".

If the above settings do not make the lines thin enough, use SP4904 020 (Image Quality Exposure: Thin Line - Text Mode). Normally, SP4904 020 is set to 0 (OFF). As the setting is increased (1~3), the line width correction effect becomes stronger, and lines become thinner. All settings of SP4903 080 will be affected by the same amount.

Custom Setting: Photo Mode Line Width Correction
\begin{tabular}{||c|c|c|c|c||}
\hline \multicolumn{2}{|c|}{ Selection } & Range & Default & Content \\
\hline \multirow{4}{*}{ Item } & \begin{tabular}{l} 
Line Width \\
Correction
\end{tabular} & \(0 \sim 8\) & 4 & 0 (Thin) -4 (Off) -8 (Thick)
\end{tabular} SP4903 083

See the remarks for 'Custom Setting: Text Mode Line Width Correction' above.
If the above settings do not make the lines thin enough, use SP4904 021 (Image Quality Exposure: Thin Line - Photo Mode). Normally, SP4904 021 is set to 0 (OFF). As the setting is increased (1~3) the line width correction effect becomes stronger, and lines become thinner. All settings of SP4903 083 will be affected by the same amount.

Custom Setting: Text/Photo Mode Line Width Correction
\begin{tabular}{||c|c|c|c|c||}
\hline \multicolumn{2}{|c|}{ Selection } & Range & Default & Content \\
SP No. \\
\hline \multirow{4}{*}{ Item } & \begin{tabular}{l} 
Line Width \\
Correction
\end{tabular} & \(0 \sim 8\) & 4 & 0 (Thin) -4 (Off) -8 (Thick)
\end{tabular} SP4903 086

See the remarks for 'Custom Setting: Text Mode Line Width Correction' above. If the above settings do not make the lines thin enough, use SP4904 022 (Image Quality Exposure: Thin Line - Text/Photo Mode). Normally, SP4904 022 is set to 0 (OFF). As the setting is increased (1~3) the line width correction effect becomes stronger, and lines become thinner. All settings of SP4903 086 will be affected by the same amount.

Custom Setting: Pale Mode Line Correction
\begin{tabular}{||c|c|c|c|c||}
\hline \multicolumn{2}{|c|}{ Selection } & Range & Default & \multicolumn{1}{|c|}{ Content } \\
SP No. \\
\hline \multirow{3}{*}{ Item } & \begin{tabular}{l} 
Line Width \\
Correction
\end{tabular} & \(0 \sim 8\) & 4 & 0 (Thin) -4 (Off) -8 (Thick)
\end{tabular} SP4903 089.

See the remarks for 'Custom Setting: Text Mode Line Width Correction' above.
If the above settings do not make the lines thin enough, use SP4904 023 (Image Quality Exposure: Thin Line - Pale Mode). Normally, SP4904 023 is set to 0 (OFF). As the setting is increased (1~3) the line width correction effect becomes stronger, and lines become thinner. All settings of SP4903 089 will be affected by the same amount.

Custom Setting: Generation Copy Line Width Correction
\begin{tabular}{|c|c|c|c|c|c|}
\hline \multicolumn{2}{|r|}{Selection} & Range & Default & Content & SP No. \\
\hline \multirow{3}{*}{Item} & Line Width Correction & 0~8 & 1 & 0 (Thin) - 4 (Off) - 8 (Thick) & SP4903 092 \\
\hline & Main Scan & 0~1 & 1 & 0:OFF 1:ON & SP4903 093 \\
\hline & Sub Scan & 0~1 & 1 & 0:OFF 1:ON & SP4903 094 \\
\hline
\end{tabular}

See the remarks for 'Custom Setting: Text Mode Line Width Correction' above.
If the above settings do not make the lines thin enough, use SP4904 024 (Image Quality Exposure: Thin Line - Generation Mode). Normally, SP4904 024 is set to 0 (OFF). As the setting is increased (1~3) the line width correction effect becomes stronger, and lines become thinner. All settings of SP4903 092 will be affected by the same amount.

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\section*{Settings Adjustable for Each Original Mode}

Independent Dot Erase
\begin{tabular}{|c|c|c|c|}
\hline Item & Range & Default & SP No. \\
\hline Text & \multirow{5}{*}{0~14} & 8 & SP4903 060 \\
\hline Photo & & 0 & SP4903 061 \\
\hline Text/Photo & & 0 & SP4903 062 \\
\hline Pale & & 0 & SP4903 063 \\
\hline Generation Copy & & 8 & SP4903 064 \\
\hline
\end{tabular}

Independent dot erase removes isolated black pixels. As this setting is increased, the greater the number of eliminated isolated pixels. Setting to zero switches this function off.

\section*{Background Erase}
\begin{tabular}{|c|c|c|c|}
\hline Item & Range & Default & SP No. \\
\hline Text & \multirow{5}{*}{0~255} & \multirow{5}{*}{0 (Off)} & SP4903 070 \\
\hline Photo & & & SP4903 071 \\
\hline Text/Photo & & & SP4903 072 \\
\hline Pale & & & SP4903 073 \\
\hline Generation Copy & & & SP4903 074 \\
\hline
\end{tabular}

Background erase attempts to eliminate the heavy background texture from copies of newspaper print or documents printed on coarse paper. Pixels of density below the selected threshold level are eliminated. Setting this feature to zero switches it off. Increasing this setting increases the effect of background erase.

\subsection*{6.9.6 RELATION BETWEEN THE SP AND UP SETTINGS}

The tables below illustrate the relationship between the UP and SP settings for each of the 5 original modes. The scale across the top of the table is the range of settings for the SP modes.
The settings in the gray areas indicate the UP settings overlaid on the SP scale of the table. Words that are not shaded within the tables, such as 'softer', indicate how the image changes if you change the SP setting is a certain direction. The related UP mode is User Tools> Copier Features> General Features> Copy Quality.

Text Mode
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|c|c|}
\hline Setting & 0 & 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 & 10 & SP No. \\
\hline 25\% ~55\% & & \multirow{4}{*}{\[
\begin{aligned}
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& \dot{O}
\end{aligned}
\]} & \multirow[t]{4}{*}{} & \multirow[t]{4}{*}{} & & \multirow{4}{*}{त
E10
2} & \multirow[t]{4}{*}{} & \multirow[t]{4}{*}{} & & \multirow{4}{*}{읓
¢
¢} & & SP4903 001 \\
\hline \(55.5 \sim 75 \%\) & & & & & & & & & & & & SP4903 002 \\
\hline 75.5 ~ 160\% & & & & & & & & & & & & SP4903 003 \\
\hline 160.5 ~ 400\% & & & & & & & & & & & & SP4903 004 \\
\hline
\end{tabular}

Photo Mode (Dithering)
\begin{tabular}{|c|c|c|c|c|c|c|c|c|}
\hline Setting & 0 & 1 & 2 & 3 & 4 & 5 & 6 & SP No. \\
\hline 25\% ~55\% & \multirow{4}{*}{} & & & \multirow{4}{*}{} & & & \multirow{4}{*}{\[
\begin{aligned}
& \grave{凶} \\
& \frac{2}{\sigma} \\
& \frac{5}{\omega}
\end{aligned}
\]} & SP4903 005 \\
\hline \(55.5 \sim 75 \%\) & & & & & & & & SP4903 006 \\
\hline 75.5 ~ 160\% & & & & & & & & SP4903 007 \\
\hline 160.5 ~ 400\% & & & & & & & & SP4903 008 \\
\hline
\end{tabular}

Photo Mode (Error Diffusion)


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Text／Photo Mode
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|c|c|}
\hline Setting & 0 & 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 & 10 & SP No． \\
\hline 25\％～55\％ & & \multirow[t]{4}{*}{\[
\begin{aligned}
& \text { 근 } \\
& \text { 은 } \\
& \text { 융 } \\
& \frac{1}{2}
\end{aligned}
\]} & & & & \multirow{4}{*}{} & & & & \multirow{4}{*}{\[
\begin{aligned}
& \text { 글 } \\
& \text { 흔 } \\
& \stackrel{\rightharpoonup}{㐅}
\end{aligned}
\]} & & SP4903 013 \\
\hline 55.5 ～75\％ & & & & & & & & & & & & SP4903 014 \\
\hline 75．5～160\％ & & & & & & & & & & & & SP4903 015 \\
\hline 160．5～400\％ & & & & & & & & & & & & SP4903 016 \\
\hline
\end{tabular}

\section*{Pale Mode}
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|c|c|}
\hline Setting & 0 & 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 & \multirow[t]{5}{*}{10} & SP No． \\
\hline 25\％～55\％ & & \multirow{4}{*}{¢} & & & & \multirow{4}{*}{तु
n
\％} & & & & \multirow{4}{*}{\[
\begin{aligned}
& \frac{2}{6} \\
& \text { た }
\end{aligned}
\]} & & SP4903 017 \\
\hline 55.5 ～75\％ & & & & & & & & & & & & SP4903 018 \\
\hline 75.5 ～160\％ & & & & & & & & & & & & SP4903 019 \\
\hline 160．5～400\％ & & & & & & & & & & & & SP4903 020 \\
\hline
\end{tabular}

Generation Copy
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|c|c|}
\hline Setting & 0 & 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 & \multirow[t]{5}{*}{10} & SP No． \\
\hline 25\％～55\％ & & \multirow{4}{*}{\[
\begin{gathered}
\text { む } \\
\text { i }
\end{gathered}
\]} & & & & \multirow{4}{*}{} & & & & \multirow{4}{*}{\[
\begin{aligned}
& \frac{2}{6} \\
& \text { ¢ }
\end{aligned}
\]} & & SP4903 021 \\
\hline 55．5～75\％ & & & & & & & & & & & & SP4903 022 \\
\hline 75．5～160\％ & & & & & & & & & & & & SP4903 023 \\
\hline 160．5～400\％ & & & & & & & & & & & & SP4903 024 \\
\hline
\end{tabular}

\section*{Background Color Dropout}
\begin{tabular}{||c|c|c|c||}
\hline SP NO． & \multicolumn{1}{|c|}{ MODE NAME } & \begin{tabular}{c} 
TARGETTED \\
COLOR
\end{tabular} & VALUES \\
\hline 4901020 & Background Dropout－Weak & Orange & \(165 \sim 255\)（Default：180） \\
\hline 4901021 & Background Dropout－Medium & Green & \(115 \sim 164\)（Default：155） \\
\hline 4901022 & Background Dropout－Strong & Blue & \(15 \sim 144\)（Default：105） \\
\hline \hline
\end{tabular}

\subsection*{6.10 LASER EXPOSURE}

\subsection*{6.10.1 OVERVIEW}

1. LD Unit
2. Polygon Mirror Motor Control Board
3. Polygon Mirror Motor
4. F-Theta Lens 1
5. F-Theta Lens 2
6. BTL Lens
7. 2nd Mirror
8. Drum
9. Toner Shield Glass
10. 1st Mirror
11. Laser Synchronization Detector
12. Cylindrical Lens

\subsection*{6.10.2 LASER EXPOSURE MECHANISM}


The LD unit consists of two 4-channel LDA's (Laser Diode Arrays) and two collimating lenses.

Each LDA produces 4 beams [A]. Each collimating lens \([B]\) is a fixed lens, seated in a V-groove and held in place by a spring and a screw.
Four beams from each LDA [C] pass through the collimating lenses, though the apertures [D], then strike the polygonal mirror. Due to this multi-beam writing, the polygonal mirror motor speed can be reduced, thus the noise generated by the polygon mirror motor and the wear on the motor can be reduced.

\section*{Auto Power Control (APC)}

A built-in photo diode detects the light emitted from the LD unit. When the photo diode detects this light, it generates a signal and the feedback of this signal to the LD control board is used to adjust the strength and amount of light in the laser beams.
NOTE: The laser diode array is assembled and adjusted in the factory, and does not require physical position adjustment in the field.
LD drivers control the power output from the laser diodes.
( \(\mathbf{G} \mathbf{T}\) Digital Processes > Printing > Laser Printing > Laser Diode Power Control)
NOTE: The reference levels are adjusted on the production line. Never touch the variable resistors on the LD unit.

\subsection*{6.10.3 LD SAFETY SWITCHES}


To ensure technician and user safety and to prevent the laser beam from inadvertently switching on during servicing, there are four safety switches inside the front cover (these are the 4th front left and 4th front right door safety switches).
When one of the front covers is open, the 5 V line connecting to the LD drivers (LDD) is disconnected.

\subsection*{6.10.4 MULTI-BEAM LINE EXPOSURE}


The LD unit contains two laser diode arrays (LDA) [A], each with one 4-channel array, allowing the LD unit to produce a total of eight beams. This multi-beam exposure mechanism has the following advantages:
- Reduces the number of rotations required of the polygon mirror motor.
- Reduces the amount of noise generated by the polygon mirror motor because it is rotating at lower speed.
- Reduces the need for LD unit replacement.
- Allows production of a more precision beam on a stable platform.

The laser synchronization detector detects only Channel 0 and Channel 1, the uppermost beams of each parallel array.
The main scan pitch of Channels 2 to 7 is determined by setting SP2115 001~006 (Main Scan Beam Pitch Adjustment) at the factory. For this reason, when the LD unit is replaced, these SP codes must be input for the new unit. The correct SP settings are printed on a label attached to the LD unit.
An SC code is issued for a laser synchronization detector error if the LD unit malfunctions and does not emit the laser beams.

\subsection*{6.10.5 POLYGON MIRROR MOTOR}

The polygon mirror reflects the laser beam onto the OPC drum to expose the image line by line in the main scan direction. The polygon mirror motor rotates at a constant speed, even while the copier is in standby mode, but shuts off when the copier enters the energy conservation mode.

The polygon mirror motor has no brake mechanism, so it requires about 3 minutes to stop rotating. Before moving the machine or before servicing the motor or the area around the polygon mirror motor, you should switch off the copier main power switch, disconnect the machine, and wait at least three minutes for the motor to stop rotating.
NOTE: The polygon mirror motor requires about 10 seconds to reach full speed after the machine awakes from the energy conservation mode, or after the machine is switched from the normal mode to low speed mode for printing on thick paper. The machine cannot print during this 10 second interval until it reaches full rotation speed.

\subsection*{6.10.6 1200-DPI RESOLUTION}


The original is scanned at 600 dpi , then the 600 dpi output is boosted to 1200 dpi 1 -bit data during image processing in the IPU.
This machine can produce an image at 1200 dpi by writing each dot twice, possibly with two different values, depending on the results of image processing. This is achieved with the LD unit, which has two laser diode arrays, each with 4 channels which together produce 8 beams. As shown in the illustration above, the beams from each laser diode are emitted in two parallel lines.

For copying, 1200 dpi is used. For printing, the default is 600 dpi , but 1200 dpi can be selected.

The diagram shows how the two sets of four beams are interlaced to produce a sub scan resolution of 1200 dpi.

There are two parallel rows of four beams, separated by 22.3 mm in the main scan direction. In each of these rows, the beams are spaced at 42.3 micrometer intervals (this is the same as 600 dpi ).

The rows are also offset in the sub scan direction by 21.2 micrometers.
The net result is that we have dots at 21.2 micrometer intervals, which is the same as 1200 dpi

\subsection*{6.10.7 OPTICAL PATH}


The output path from the laser diode to the drum is shown above.
The LD unit \([A]\) outputs eight laser beams to the polygonal mirror \([B]\) (six mirror surfaces) through the cylindrical lens [C] and the 1st mirror [D].
Each surface of the polygon mirror reflects eight full main scan lines. The laser beams go to the F-theta lens 1 [E], F-theta lens 2 [F], BTL (barrel toroidal lens) [G], and mirror \([\mathrm{H}]\). Then these laser beams go to the drum through the toner shield glass [I].

The laser synchronizing detector [J] determines the main scan starting position. This sensor sends a synchronization signal when the laser synchronization detector mirror \([\mathrm{K}]\) reflects the laser beam to the detector as the laser beam starts its sweep across the drum.
The laser synchronization detector detects only the beams emitted from Channels 1 and 0 , the uppermost beams of each parallel array.

\subsection*{6.11 DRUM UNIT}

\subsection*{6.11.1 OVERVIEW}


The drum unit consists of the components shown in the above illustration. An organic photoconductor drum (diameter: 100 mm ) is used for this model.
1. OPC Drum
2. Drum Potential Sensor
3. Pick-off Pawl
4. Image Density Sensor
5. Toner Collection Coil
6. Cleaning Brush
7. Cleaning Blade
8. Quenching Lamp
9. Charge Corona Unit

\subsection*{6.11.2 DRUM DRIVE}


The drive from the drum motor \([A]\) is transmitted to the drum and the cleaning unit through timing belts, gears, the drum drive shaft [B], and the cleaning unit coupling [C].

The drum motor has a drive controller, which outputs a motor lock signal when the rotation speed is out of the specified range. The drum speed for the B070 (90 cpm) is \(450 \mathrm{~mm} / \mathrm{s}\) and for the B071 ( 105 cpm ) \(500 \mathrm{~mm} / \mathrm{s}\).
The flywheel [D] on the end of the drum drive shaft stabilizes the rotation speed.

\subsection*{6.11.3 DRUM CHARGE}

\section*{Overview}


This copier uses a double corona wire Scorotron system to charge the drum. Because of the high speed of this copier, two corona wires are needed to give a sufficient, uniform negative charge to the drum surface. The stainless steel grid plate makes the corona charge uniform and controls the amount of negative charge on the drum surface by applying a negative voltage to the grid.
The CBG (Charge, Bias, Grid) power pack [A] supplies a constant corona current to the corona wires, \(-1600 \mu \mathrm{~A}\) for Photo mode and \(-1400 \mu \mathrm{~A}\) for all other modes (Text, Text/Photo, Pale, Generation Copy).
The voltage to the grid plate is automatically controlled to maintain the correct image density in response to changes in drum potential caused by dirt on the grid plate and charge corona casing. (6.11.8)

\section*{Charge Corona Wire Cleaning}


Air flowing around the charge corona wire may deposit toner particles on the corona wires. These particles may interfere with charging and cause low density bands on copies.
The wire cleaner pads [A] automatically clean the wires to prevent such a problem.
The wire cleaner is driven by a dc motor [B]. Normally the wire cleaner [C] is at the front end (the home position). Just after the main switch is turned on, the wire cleaner motor turns on to bring the wire cleaner to the rear and then back to the home position. When the wire cleaner [D] moves from the rear to the home position, the wire cleaner pads swivel, bringing the pads into contact with the wires, and clean the wires as it moves forward.

Cleaning is executed when:
- The machine is switched on and the fusing temperature is less than \(100^{\circ} \mathrm{C}\) while auto process control executes.
- Every 24 hours.
- After every 5,000 copies. This can be adjusted with SP2804 002 (Charge Corona Cleaner Setting - Corona Wire Cleaning Interval).

\subsection*{6.11.4 DRUM CLEANING}

\section*{Overview}


This copier uses a counter blade system to clean the drum. In a counter blade system, the drum cleaning blade \([\mathrm{A}]\) is angled against drum rotation. The counter blade system has the following advantages:
- Less wearing of the cleaning blade edge
- High cleaning efficiency

Due to the high efficiency of this cleaning system, the pre-cleaning corona and cleaning bias are not used for this copier.

The cleaning brush \([B]\) helps the cleaning blade. The brush removes toner from the drum surface and any remaining toner is scraped off by the cleaning blade. Toner on the cleaning brush is scraped off by the mylar [C] and falls onto the toner collection coil [D]. The coil transports the toner to back to the toner entrance tank in the toner bank unit for recycling.
To remove any accumulated toner at the edge of the cleaning blade, the drum turns in reverse for about 40 ms [E] at the end of every copy job. This is also during long copy jobs every 30 min . For details, refer to SP2506 002 (Cleaning Interval Multiple Copy - Inteval) in Section "5. Service Tables".
The accumulated toner is deposited on the drum and is removed by the cleaning brush.

\section*{Cleaning Unit Drive}


Drive from the drum motor is transmitted to the cleaning unit drive gear via the timing belt \([A]\) and the cleaning unit coupling \([B]\). This coupling drives the cleaning brush [C] directly. The cleaning brush then transmits the drive to the gear at the front, which drives the toner collection coil gear [D].

\section*{Cleaning Blade Pressure and Side-to-Side Movement}


The spring \([A]\) always pushes the cleaning blade against the drum. The cleaning blade pressure can be manually released by pushing up the release lever [B]. To prevent cleaning blade deformation during transportation, the release lever must be locked in the pressure release (upper) position.
The guide roller [C] at the rear end of the cleaning blade holder touches the cam gear [D], which moves the blade from side to side. This movement helps to disperse accumulated toner to prevent early blade edge wear.

\subsection*{6.11.5 AIR FLOW AROUND THE DRUM}


The drum cooling fan [A] draws cool air through the filter [B] and sends it to the center of the drum [C], then over the charge corona unit [D].

Holes in the flanges on both ends of the drum allow air to pass through the drum to cool it. After the air has passed through the center of the drum, the exhaust fan [E] draws the air out of the interior of the machine, through the toner filter [ \(F\) ] to remove free floating toner, through the ozone filter [G] to remove ozone, then finally out of the machine.

To keep the temperature inside the machine constant, the drum cooling fan turns slowly during standby, but turns faster during copying.
NOTE: This ozone filter does not require replacement.

\section*{DRUM UNIT}

\subsection*{6.11.6 DRUM PICK-OFF PAWLS}


If the paper does not separate from the drum after image transfer, the drum pick-off pawls strip the paper from the drum.
Pressure from small springs \([A]\) press the pick-off pawls \([B]\) against the surface of the drum.
The shaft [C] and the cam [D] move the pick-off pawls from side to side to ensure that they never remain at the same location (this prevents wear on the drum).

\subsection*{6.11.7 DRUM QUENCHING}


In preparation for the next copy cycle, light from the quenching lamp [A] neutralizes any charge remaining on the drum.

The quenching lamp consists of an array of 16 red LEDs extending across the full width of the drum.

\subsection*{6.11.8 PROCESS CONTROL}

Drum potential gradually changes for the following reasons:
- Dirty optics, exposure glass
- Dirty charge corona casing, grid plate
- Deterioration of drum sensitivity

\section*{What Happens at Power On}

Here is a description of what happens while the fusing temperature is below \(100^{\circ} \mathrm{C}\) immediately after the main power switch is switched on (process control must also be enabled with SP3901 001, or this will not happen).

At any time, this process can also be executed manually by using SP2962. However, process control must be enabled with SP3901 001 and the fusing temperature must be below \(100^{\circ} \mathrm{C}\), or this will not work.
1. Drum potential sensor is calibrated.
2. Drum starts first rotation after fusing temperature reaches \(100^{\circ} \mathrm{C}\).
3. ID sensor is calibrated (Vsg).
\(\Rightarrow 4\). Readout from the drum potential sensor is used to adjust:
- Grid voltage (Vg)
- Laser diode (LD) power.

NOTE: This step occurs only if process control is enabled with SP3901 001 (Auto Process Control On/Off Setting). If this SP is disabled, then:
- Development bias is set to the value stored in SP2201 1
- Grid voltage is set to the value stored in SP2001 1
- Laser power is set to the values stored in SP2103
5. TD sensor is calibrated (Vref).

Any SC codes that are generated during auto process control are logged in the memory and do not appear. The machine will continue to operate.

\section*{Drum Potential Sensor Calibration}

The drum potential sensor output is affected by the distance of the sensor from the OPC, paper dust or other matter on the surface of the sensor, and environmental conditions. For these reasons, the potential sensor is calibrated often, as described below.
1. 100 samples are taken at -200 V and at -700 V , and the readings are averaged.

2. If the readings are within the normal range, then these readings are used to calibrate the drum potential sensor.
If the variations in the readings exceed the specified range, then an SC is logged (Sensor Calibration Error, SC310 to SC312) and automatic process control halts. The charge grid voltage Vg , development bias, and LD power are set as follows.
- Development bias is set to the value stored in SP2201 1
- Grid voltage is set to the value stored in SP2001 1
- Laser power is set to the values stored in SP2103

\section*{Grid Voltage (Vg) Adjustment}

Then, the machine determines the corona grid voltage \((\mathrm{Vg})\) that will be used during copying. This is done as follows:
1. A Vd pattern is unexposed on the drum and the bias for the unexposed area is adjusted.
2. The drum potential sensor reads the Vd potential.
3. Vd should be \(-800 \pm 20 \mathrm{~V}\). If it is within this range, the current value of Vg will be used for copying. If it is not within this range, \(-(\mathrm{Vd}+800) \mathrm{V}\) is added to Vg , and the process starts again from Step 1.
\(\Rightarrow\) NOTE: VD Correction - As the development sleeve accumulates toner over time, the gap between VD and VB decreases, which makes it easier for dirty background to occur. To compensate for this, the machine increases the target VD value to \(-850 \pm 20 \mathrm{~V}\) when the number of copies exceeds the value set with SP3903: VD Correction Counter (default: 200K). As a result, VD increases and the VD-VB gap is maintained
\(\Rightarrow 4\). If Vd cannot be adjusted to this standard within 5 attempts, Vg is set to the value of SP2001-001 (default: -900V) and SC315 (Potential Sensor Calibration Error 3) is logged.

\section*{LD Power Adjustment}

Finally, the machine determines the laser diode power that will be used during copying. This is done as follows.
1. The laser power is changed to the value needed to write a halftone pattern to the drum.
2. The drum potential sensor reads the potential, Vh , from this pattern.

Vh : Standard halftone drum potential
3. Vh should be \(-260 \pm 20 \mathrm{~V}\). If it is within this range, the current value of the laser power will be used for copying.
- If it is not, the laser power changes by 5 units, and the process starts again from step 1.
- The laser power cannot be adjusted within the range -70 to +185 .
4. If Vh cannot be adjusted to this standard within 45 attempts, LD power is set to the most recent value and SC316 (Potential Sensor Error 7) is logged.

\section*{ID Sensor Calibration (Vsg)}

After power-on, Vsg (the ID sensor output from reading the bare drum) is set to \(4.00 \pm 0.2 \mathrm{~V}\) by changing the intensity of the light from the sensor shining on the drum. This can also be done at any time with SP3001 002 (ID Initial Setting - Vsg).

NOTE: If the ID sensor output cannot be adjusted to the standard, then after 20 seconds SC353 or SC354 is issued. Toner supply during copying will then be controlled using the TD sensor only, until the machine is repaired.

\section*{TD Sensor Calibration (Vref)}

Next, Vref (TD sensor reference voltage) is updated using the latest calibration values from the ID sensor.
Vref is updated to stabilize the concentration of toner in the development unit. By shifting the value of Vref, the density of the ID sensor pattern image is controlled. Toner supply control is covered in the Development and Toner Supply section.
Vref is determined from a table in the machine software, using the following values:
- Vsp/Vsg

Vsp: ID sensor output when checking the ID sensor pattern.
Vsg: ID sensor output when checking the bare drum.
- Vref-Vt:

Vref is the TD sensor reference voltage
Vt is the current output voltage of the TD sensor.
NOTE: If the ID sensor could not be calibrated during the latest process control (when measuring Vsg), then the previous ID sensor value is used. If the ID sensor output is abnormal when measuring Vsp, SC350, 351, or 352 is issued, and Vref is not updated (the machine uses the previous value).

\section*{DEVELOPMENT}

\subsection*{6.12 DEVELOPMENT}

\subsection*{6.12.1 OVERVIEW}

1. Hopper Filter
2. Hopper Center Filter
3. Toner Hopper Sensor
4. Agitator
5. Toner Supply Roller
6. Upper Development Roller
7. Doctor Blade
8. Separator
9. Toner Transport Coil
10. Development Agitator
11. TD Sensor
12. Paddle Roller
13. Lower Development Roller

This copier uses a double roller development system and a dual component development process with toner particles \(6.8 \mu \mathrm{~m}\) and developer particles \(50 \mu \mathrm{~m}\). To improve image quality, the width of the magnetic area on the lower development roller has been reduced.

This system differs from single roller development systems in that:
- It develops the image in a narrower area
- It develops the image twice
- The relative speed of each development roller against the drum is reduced.

This machine contains a toner recycling system. Toner recycled from the drum cleaning unit is transferred to the toner hopper with fresh toner, where they are mixed by the toner agitator. (-6.13)

\subsection*{6.12.2 DEVELOPMENT MECHANISM}


Toner and developer are mixed in the toner agitator by the cross-mixing roller [A]. The paddle roller \([B]\) picks up the developer and sends it to the upper development roller [C]. Internal permanent magnets in the development rollers attract the developer to the development roller sleeve. Developer from the upper development roller sleeve is also attracted to the lower development roller [D].
The upper development roller carries the developer past the doctor blade [E] which trims the developer to the desired thickness. Backspill (excess toner) spills over the separator [F] to the toner transport coil [G] which sends the developer from back to front to the cross-mixing roller.

In this machine, black areas of the latent image are at a low negative charge (about -150 V ) and white areas are at a high negative charge (about -800 V ).

The development roller is given a negative bias to attract negatively charged toner to the black areas of the latent image on the drum.

The development rollers continue to turn, carrying the developer to the drum [H]. When the developer brush contacts the drum surface, the low-negatively charged areas of the drum surface attract and hold the negatively charged toner. In this way, the latent image is developed.

\section*{DEVELOPMENT}

\subsection*{6.12.3 DRIVE}


The gears in the development unit are driven by the development drive gear [A] when the development motor [B] (a dc servomotor) turns.
The gears in the toner hopper are driven by the toner supply roller drive gear [C] when the toner supply roller clutch [D] activates.
A one-way clutch on the paddle roller knob [F] prevents counter-clockwise rotation of the paddle roller.

\subsection*{6.12.4 CROSSMIXING}


This copier uses a standard cross-mixing mechanism to keep the toner and developer evenly mixed. It also helps agitate the developer to prevent developer clumps from forming and helps create the triboelectric charge.

The developer on the turning development rollers \([A]\) is split into two parts by the doctor blade \([B]\). The part that stays on the development rollers forms the magnetic brush and develops the latent image on the drum. The part that is trimmed off by the doctor blade goes to the backspill plate [C].
As the developer slides down the backspill plate to the agitator [D], the mixing vanes [E] move it slightly toward the rear of the unit. Part of the developer falls into the auger inlet and is transported to the front of the unit by the auger [F].

\subsection*{6.12.5 DEVELOPMENT BIAS}


The CBG (Charge Bias Grid) power pack [A] applies the negative development bias \((-550 \mathrm{~V})\) to both the lower sleeve roller and upper sleeve roller through the receptacles [B] and the sleeve roller shafts [C].
The development bias prevents toner from being attracted to the non-image areas on the drum where there is residual voltage. In addition, the development bias changes with the image density setting chosen for the copy job by the user.
The development rollers [D] employ fixed shafts that do not rotate. This eliminates friction on the shafts so they never require lubrication.

\subsection*{6.12.6 DEVELOPMENT UNIT TONER SUCTION}


To ensure that the fine-grained toner does not scatter and blacken the interior of the development unit, a toner suction assembly reduces the pressure inside the development unit.

Below the development unit [A] the toner suction pump [B], driven by the toner suction motor [C], draws air out of the development unit along with any airborne toner. The toner is sent to the development unit waste toner bottle [D] on the right side of the machine.

The toner suction motor switches on and off with the development motor.
The toner suction motor and the waste toner bottle both have near-end and end.
When an end alert is issued for either the development unit waste toner bottle or the toner suction motor, a message is displayed on the copier LCD panel. (See the next page.)

DEVELOPMENT
\begin{tabular}{||l|l|l||}
\hline & \multicolumn{1}{|c|}{ Near End } & \multicolumn{1}{|c|}{ End } \\
\hline \begin{tabular}{l} 
Toner Waste Collection \\
Bottle *1
\end{tabular} & \multicolumn{1}{|c|}{ No Alert } & \begin{tabular}{l} 
Displays message on screen: \\
Used toner bottle is full. \\
Please call service.
\end{tabular} \\
\hline Development Unit Toner \\
Waste Collection Bottle & \begin{tabular}{l} 
Displays an alert on bottom \\
line of the LCD: \\
Sucked Toner Collection \\
Bottle is almost full. \\
Call service.
\end{tabular} & \begin{tabular}{l} 
Displays message on screen: \\
Sucked Toner Collection \\
Bottle is full. Please call \\
service.
\end{tabular} \\
\hline Development Unit Toner & \begin{tabular}{l} 
Displays an alert on bottom \\
line of the LCD: \\
Toner suction motor \\
replacement is now \\
necessary. Call service.
\end{tabular} & SC593 \\
Suction Motor
\end{tabular}
*1: The toner waste collection bottle on the left side of the machine.

\subsection*{6.12.7 TONER HOPPER}

\section*{Toner Supply}


The toner supply pump motor pumps toner from the toner bottle into the hopper.

When the toner supply roller clutch [A], inside the development motor unit [B], turns on, the agitator [C] mixes the toner transported by the air tube [G] from the toner bank (the toner from the toner bank is new toner mixed with recycled toner). Then it moves the toner from front to rear and sends it to the toner supply roller.

Toner is caught in the grooves in the toner supply roller [F]. Then, as the grooves turn past the opening, the toner falls into the development unit.
The toner supply roller clutch [A] transfers drive from the development motor to the toner supply roller gear [D], which drives the agitator gear [E].
Toner supply is controlled by the ID sensor and the toner density sensor. (-6.12.8)

\section*{DEVELOPMENT}

\section*{Toner Hopper Empty Detection}


The toner hopper sensor [A] detects whether there is enough toner in the toner hopper.
The toner hopper sensor checks for toner once when the toner supply roller clutch turns on. When there is only a small amount of toner inside the toner hopper and pressure on the toner hopper sensor becomes low, the toner hopper sensor outputs a pulse signal for each copy. Then the toner bank mechanism supplies more toner to the toner hopper, as explained in previous sections.

\subsection*{6.12.8 TONER DENSITY CONTROL}

\section*{Overview}

There are two modes for controlling toner supply: sensor control mode and image pixel count control mode. The mode can be selected with SP2208. The factory setting is sensor control mode. Image pixel count mode should only be used if the TD or ID sensor is defective and cannot be replaced immediately.


\section*{Toner Supply Timing}

After the trailing edge of the image leaves the development area, the machine calculates how long the toner supply clutch should be switched on (based on the TD sensor reading). Then, the toner supply clutch switches on for the time prescribed by the calculation. Until the toner supply clutch switches off, the development motor, main motor, charge, and development bias all remain on.
Regardless of whether the machine is in the sensor control or pixel count toner supply mode, toner is supplied based on the setting for the toner supply interval entered with SP2974 (Toner Supply Interval); the default is every print.
- If the TD sensor malfunctions, then toner is supplied for each copy and the setting for SP2974 is ignored.
- The SP2974 setting has no effect on the ID sensor pattern interval; the ID sensor pattern interval is set with SP2210 (ID Sensor Pattern Interval)

\section*{DEVELOPMENT}

\section*{Sensor Control Mode}

In sensor control mode, the machine varies toner supply for each copy to maintain the correct proportion of toner in the developer and to account for changes in drum reflectivity over time. The adjustment depends on two factors.
- Amount of toner needed to print the page (based on the black pixel amount for the page).
- Readings from the TD sensor and ID sensor.

Sensor control mode has two phases, called 'ID sensor control' and 'TD sensor control'. In ID sensor control, VSP/VsG from the most recent ID sensor pattern check determines the GAIN factor in the toner supply calculation (see later in this section). In TD sensor control mode, GAIN depends on the current TD sensor output also (VT - VREF is used).

The phase that is used depends on the number of copies since the start of the job. See the table below for details.
\begin{tabular}{||c|c|c|}
\hline \hline Number of copies in the job & Copy no. & Control method \\
\hline 10 or fewer & 1 to 10 & ID Sensor Control \\
\hline More than 10 & From 11 & TD Sensor Control \\
\hline
\end{tabular}

\section*{Vref Decision}

When new developer is installed, TD sensor initial setting must be done using SP2801. This sets the sensor output to \(2.5 \pm 0.1 \mathrm{~V}\). This value is used as the TD sensor reference voltage (VREF). Thereafter, a new reference value for the TD sensor is calculated from the ID sensor output (every time the ID sensor pattern is read) and the current TD sensor reading (Vt).

If the sensor output cannot be adjusted to within the standard, SC341 or SC342 is logged and the toner density control is set to the pixel count control.

\section*{VSP and VSG Detection}

The ID sensor detects the following voltages.
- VSG: The ID sensor output when checking the drum surface
- VSP: The ID sensor output when checking the ID sensor pattern

In this way, the reflectivity of both the drum and the pattern on the drum are checked.

The ID sensor pattern is made on the drum with the charge corona and laser diode.

\section*{VREF Update}

To update Vref (the TD sensor reference voltage), VSP/VsG is detected at the end of the copy job, if 10 or more copies have been made since the last VREF update.
This compensates for any variations in the reflectivity of the pattern on the drum or the reflectivity of the drum surface. The 10-copy interval can be changed using SP2210.

VREF is also updated during process control initial setting.
If the reading of the ID sensor becomes abnormal while checking the ID sensor pattern, SC350, SC351, or SC352 is logged and the toner density control is done using TD sensor only.

\section*{VT Detection}

The toner density in the developer is detected once every copy cycle, after the trailing edge of the image passes the development roller.
If the reading from the TD sensor, done for every page in the copy job, becomes abnormal ( \(\mathrm{Vt} \leq 0.5 \mathrm{~V}\) or \(\mathrm{Vt} \geq 4.0 \mathrm{~V}\) ), then the machine holds the GAIN factor constant to allow toner supply to vary with only the pixel count for the rest of the copy job. Then at the end of the job, SC340 is generated and the machine must be repaired.
If the TD sensor needs to be replaced and none is available, the toner supply mode can be set to image pixel count mode using SP2208.

\section*{Image Pixel Count}

For each copy, the CPU adds up the value of each pixel and converts the sum to a value between 0 and 255 . (The value would be 255 if the page was all black.)

\section*{DEVELOPMENT}

\section*{Gain Determination}

GAIN is another factor in the toner supply roller clutch on time calculation. Its value can be \(0,1,1.5,2,3\), or 4 . It is calculated either using VSP/VsG if ID sensor control is being used, or every copy using " \(\mathrm{V} T-\mathrm{VREF}\) " if TD sensor control is being used (see Sensor Control Mode - Overview for more on TD and ID sensor control).
\begin{tabular}{||c|c||}
\hline \multicolumn{2}{|c|}{ ID Sensor Control } \\
\hline VSP/VSG & GAIN \\
\hline\(\leq 3 / 40\) & 0 \\
\hline\(\leq 9 / 100\) & 0 \\
\hline\(\leq 21 / 200\) & 1 \\
\hline\(\leq 1 / 8\) & 1 \\
\hline\(\leq 4 / 25\) & 2 \\
\hline\(\leq 41 / 200\) & 3 \\
\hline\(\leq 1 / 2\) & 4 \\
\hline\(>1 / 2\) & 1 \\
\hline
\end{tabular}
\begin{tabular}{||c|c||}
\hline \multicolumn{2}{|c|}{ TD Sensor Control } \\
\hline \(\mathrm{a}=\mathrm{VT}-\mathrm{VREF}\) & GAIN \\
\hline \(\mathrm{a}<0.00\) & 0 \\
\hline \(0.00 \leq \mathrm{a}<0.06\) & 1 \\
\hline \(0.06 \leq \mathrm{a}<0.10\) & 2 \\
\hline \(0.10 \leq \mathrm{a}<0.20\) & 3 \\
\hline \(0.20 \leq \mathrm{a}\) & 4 \\
\hline
\end{tabular}

\section*{Toner Supply Roller Clutch On Time Calculation}

The toner supply roller clutch on time for each copy is decided using the following formula: (GAIN x Image pixel count \(\times 0.7 \mathrm{mg} / \mathrm{cm}^{2} /\) Toner Supply Rate) +50 ms

When GAIN is " 0 ", the above 50 ms is set to " 0 ".
The toner supply rate can be changed using SP2209.

\section*{Image Pixel Count Control}

This mode should only be use as a temporary countermeasure while waiting for replacement parts, such as a TD sensor. This mode controls the toner supply using the same formula for the toner supply roller clutch on time. However, the GAIN value is fixed at 0.7.

\subsection*{6.13 TONER SUPPLY AND RECYCLING}

\subsection*{6.13.1 OVERVIEW}


Toner is supplied from a toner bank [A] on the left side of the machine and separated from the development unit. The toner bank holds two bottles, but only one bottle operates at a time.

A toner bottle motor turns the bottle [B], causing toner to leave the bottle and drop into the toner entrance tank [C].

The toner transport coil in the toner transport tube [D] transports toner to the toner supply cylinder [E]. Due to the length of the toner supply path, a toner supply pump [F] is needed to draw the toner into the toner hopper [G].
Here are some important points to remember about the toner bank:
- The toner bank holds two toner bottles. This doubles the toner supply capacity for the machine and allows replacement of an empty toner bottle while the machine is operating.
- The machine works even if there is only one bottle installed.
- Toner can be supplied from either the upper or lower toner bottle, but not from both at the same time. When toner runs out in one bottle, toner supply from the other bottle starts automatically.
- After the toner near-end message is displayed for both toner bottles, the toner bottle still has enough toner for about 200 copies.
- Load the lower toner bottle first, then the upper toner bottle. If the upper toner bottle is loaded first, a message will be displayed on the operation panel to request loading the lower toner bottle.
- Handle the toner bottles carefully to avoid shaking them.

\subsection*{6.13.2 TONER BANK}

\section*{Toner Bottle Switching Mechanism}


When the upper toner bottle [A] is supplying toner, the upper bottle cap motor [B] pulls out the toner bottle cap. The upper bottle cap sensor [C] detects the actuator [D] of the toner bottle opening rod, then the motor shuts off to close the cap again.

Toner is supplied from the toner bottle to the toner entrance tank where a toner near end sensor (see the next page) checks for the presence of toner in the toner entrance tank.

When the toner near-end sensor (not shown) can no longer detect any toner, it signals the machine that it is time to switch bottles. The upper bottle cap motor switches on and closes the cap of the top bottle, while the lower bottle cap motor [E] switches on and opens the cap of the lower bottle so it can start supplying toner.

\section*{Toner Near-end, Toner End, Bottle Replacement}


Each toner bottle [A] has an independent toner bottle motor [B]. An empty toner bottle can be replaced during printing.
The toner near-end sensor detects toner as it falls from the toner bottle into the toner entrance tank [C]. If the toner near end sensor [D] detects that no toner has come out of the toner bottle, the toner bottle enters the toner near-end condition.

The toner bottle motor then rotates the toner bottle up to 20 times to try to supply toner to the toner entrance tank. If the sensor detects toner more than 5 times, the near-end condition is cleared. However, if the toner near end sensor fails to detect toner 5 consecutive times, 200 more copies can be made from that bottle, then the machine declares it to be empty.
When the bottle is empty, the machine switches to the second toner bottle. The first toner bottle cap motor closes the bottle cap and the second toner bottle cap motor pulls out the second bottle cap. The motors operate until the first bottle inner cap sensor does not detect the actuator and the second bottle inner cap sensor does detect the actuator.

The second toner bottle is then rotated up to 15 times. If the near-end sensor detects toner after 5 times, the machine can print from that bottle.

Meanwhile, the machine indicates that the first bottle is empty. When the user takes out the old bottle, and puts in a new one, this is detected by the toner bottle sensor. (匹"Toner Bottle Sensors", 6-87) However, this bottle is not tested until the second bottle is empty.
NOTE: If an empty bottle is not replaced, and the other bottle becomes empty (no toner detected 10 consecutive times, as described above), 200 more copies can be made. Then the machine enters the system toner end condition (both bottles are empty), and this is indicated in the operation panel display.
When the second bottle is empty, the machine switches back to the first bottle.
The first bottle is tested now, by rotating it 15 times as usual. If this bottle is also found to be empty, the machine enters the system toner end condition. This time, the machine cannot print until one of the toner bottle sensors detects that a new toner bottle has been inserted (the machine does not allow the 200 extra copies).

When both bottles are empty and a new toner bottle is placed in the toner bank, the new toner bottle is rotated 15 times to supply toner to the toner entrance tank. If the toner near end sensor then detects toner in the toner entrance tank, the system toner end condition is cleared. If the toner near end sensor detects there is still no toner in the toner entrance tank, the bottle cap motor closes the toner bottle cap. The system toner end condition continues and printing is not possible.

\section*{Toner Bottle Sensors}

[B]


When placing a toner bottle in the toner bank, the toner bottle pushes the lock arm [A] downwards. Then the lock arm catches the toner bottle and also pushes down lever [B]. This causes toner bottle sensor [C] to detect that a bottle has been installed (the actuator leaves the toner bottle sensor while the bottle is being inserted in the holder).
When replacing a toner bottle, push the toner bottle release lever [D] to release the lock mechanism. While a toner bottle is supplying toner, the toner bottle opening rod is pulled to the rear and the lock plate [E] is lowered by the link [F] so that the toner bottle release lever cannot be pushed. Therefore, the toner bottle that is supplying toner is always locked in place, and the user cannot pull out the bottle until it is empty.

\subsection*{6.13.3 SUPPLYING TONER TO THE DEVELOPMENT UNIT}


The toner bottle motor turns the toner bottle [A], causing toner to leave the bottle and drop into the toner entrance tank \([B]\).
NOTE: Recycled toner in the tube from the drum cleaning unit also enters the toner entrance tank, and is mixed with fresh toner from the toner bottle.
The toner transport coil [C] in the toner transport tube transports toner to the toner supply cylinder [D]. The toner bank motor [E] drives the toner transport coil via the toner supply coil clutch [F].

The toner supply pump motor [G] creates the suction needed to draw the toner from the toner supply and send it to the toner hopper [H].
The toner hopper has two air pressure release filters and an air return tube [I] connected to the toner supply cylinder. Air returns to the toner supply cylinder from the toner hopper through the air return tube.

If the toner hopper sensor (6.12.7) detects an insufficient amount of toner in the hopper, the toner bank mechanism is started up.
If there is sufficient toner in the toner entrance tank (detected by the toner near end sensor in the toner bank), the toner supply coil clutch turns on for 2 seconds. The toner supply pump motor turns on for 7 seconds at the same time as the toner supply coil clutch.
Next, if the toner hopper sensor still does not detect toner, the toner supply coil clutch turns on for 2 seconds again until the toner hopper sensor detects toner (this is done a maximum of 10 times). When the toner hopper sensor detects toner, the toner supply pump motor turns off 1 second after the toner supply coil clutch turns off.

If the toner hopper sensor does not detect toner in the toner hopper after the toner supply coil clutch has turned on 10 times, the operation panel returns SC495 (Toner Bank Error).

The toner supply pump motor sensor (mounted on the toner supply pump motor) monitors the operation of the pump motor. If the sensor detects that the motor does not rotate during the toner supply process, the operation panel returns SC591 (Toner Supply Motor Lock) and the job halts.

\subsection*{6.13.4 TONER RECYCLING AND WASTE TONER COLLECTION}

\section*{Overview}


To recycle used toner for re-use, the toner recycling coil in the tube [A] transports the toner collected by the drum cleaning to the toner entrance tank for recycling. To collect waste toner that will no longer be used, the toner collection coil in the tube [B] transports the toner collected by the transfer belt unit to the waste toner collection bottle.

The drum motor [C] drives the toner recycling coil [A] via timing belts and gears, whose rotation in return drives the toner collection coil \([B]\) via gears.

\section*{Toner Recycling}


The toner recycling coil in the tube [A] transports the toner collected by the drum cleaning unit to the toner entrance tank \([B]\) for recycling. This toner is dropped into the toner entrance tank and mixed with fresh toner from the toner bottle. The toner bank motor [C] drives the toner transport coil via the toner supply coil clutch [D].
The new toner separation shutter mechanism (toner recycling shutter solenoid [E] and shutter [F]) reduces the amount of paper dust in the toner. During recycling, paper dust gradually collects in the toner, which can cause black dots to appear on copies. At the prescribed interval, the toner separation mechanism purges all toner from the toner supply system and replaces it with new toner, as described below.

Normally during toner recycling, the toner recycling shutter solenoid remains on and the shutter remains open, but when the number of copies exceeds 200 K , the toner recycling shutter solenoid switches off and the shutter closes.
After the solenoid switches off, no toner recycling is done for the next 25K copies, and all used toner is sent to the waste toner collection bottle without recycling. Toner from the toner hopper takes about 20K copies to pass through the recycling path cleaning and collection tubes, so during the 25 K copies after the solenoid switches off, all the toner in the toner supply path is purged from the system and replaced with fresh toner.
NOTE: The timing of this operation can be adjusted with SP2975 001, 002 (Toner Recycle Cut Counter - ON Counter/OFF Counter). SP2975 001 determines how often the toner is purged (default: 200k), and SP2975 002 determines how long the purge is done for (default: 25 k copies)

\section*{Waste Toner Collection}


The toner collection coil in the tube [A] transports the toner collected by the transfer belt unit to the waste toner collection bottle. This toner contains paper dust and cannot be recycled.
The waste toner coil [B] transports the waste toner dropped from the toner collection coil tube to the waste toner collection bottle [C]. The waste toner coil tube has five holes [D] and the end [E] of the tube is open. The waste toner drops from these holes.


When the waste toner collection bottle fills up, the pressure in the bottle increases and the waste toner coil becomes harder to turn. When this occurs, the actuator plate \([A]\) does not rotate because the waste toner coil drive gear [B] has a torque limiter, and the output of the toner overflow sensor [C] becomes constant. In this condition, the operation panel LCD indicates "Waste Toner Full" and printing is stops.

The bottle contains \(1,300 \mathrm{~g}\) to \(1,500 \mathrm{~g}\) of waste toner. About 2,400K copies can be made before the waste toner bottle becomes full.

If the waste toner bottle is not properly installed inside the toner bank, the toner collection bottle sensor [D] detects this condition and the operation panel LCD displays SC496 (Toner Collection Bottle Error).

\subsection*{6.14 PAPER FEED}

\subsection*{6.14.1 OVERVIEW}

1. Duplex Tray
2. Relay Roller
3. Upper Registration Roller
4. Grip Roller
5. Pick-up Roller
6. Feed Roller
7. Separation Roller
8. 3rd Tray (Universal)
9. 2nd Tray (Universal)
10. 1st Tray (Tandem)

This model has three paper tray feed stations. The 1st tray (10), the tandem feed tray, holds 2,000 sheets of paper ( 1,000 sheets \(\times 2\) stacks). The tandem tray also be can be converted to a 1,000-sheet tray for larger paper sizes with the optional A3/DLT Feed Kit B331.
The 2nd tray (9) and 3rd trays (8) are universal trays and each can hold 500 sheets of paper. To allow easy removal, the paper cassettes are not fastened to the trays with screws.

All feed stations use an FRR feed system. Rotation of the pick-up roller (5) drives the top sheet of paper to the feed (6) and separation (7) rollers. These rollers then take over the paper drive. If the pick-up roller feeds more than one sheet, the separation rollers rotate in the opposite direction and prevent all but the top sheet from passing through to the registration rollers. The large grip rollers (4) feed paper from the trays in the vertical paper path.

\subsection*{6.14.2 DRIVE}

1. Paper Feed Motor
2. Paper Feed Clutches 1 to 3
3. Vertical Transport Clutches 1 to 3
4. Lower Relay Clutch
5. Relay Motor

The paper feed motor (1) drives feed, pick-up, and separation rollers in trays 1, 2, and 3 via timing belts, clutches (2), and gears. The paper feed motor also drives the vertical transport rollers and the lower relay roller. Drive is transferred to each of the three vertical transport rollers by a vertical transport clutch (3), and to the lower relay roller by the lower relay clutch (4).
The relay motor (5) drives the upper relay roller and LCT relay roller via gears and clutches (6) and (7).

The 2nd vertical transport clutch has a one-way-gear (8). This prevents the clutch from slipping when the knob (9) is turned to remove jammed paper in the paper feed tray and vertical transport area.

\subsection*{6.14.3 PAPER LIFT - TRAYS 2 \& 3}


The machine detects when a tray has been placed in the machine by a signal from the paper size switch. When this is detected, the tray lift motor [A] turns on. The coupling gear \([B]\) on the tray lift motor engages the pin [C] on the lift arm shaft [D], then it turns the tray lift arm [E] to lift the tray bottom plate [F].

For tray 1, an electrical signal from the tray connector automatically informs the cpu when the tray has been placed in the machine.


When a stack of paper is loaded in the tray, the paper end sensor below the stack (not shown) activates and switches on the pick-up solenoid [A] to lower the pick-up roller [B]. At the same time, the tray lift motor [C] switches on and lifts the bottom plate [D]. This plate pushes the top of the stack up against the pick-up roller until the actuator [E] descends and leaves the tray lift sensor [F] slot. This de-activates the tray lift sensor; the tray is now at the correct feed position so the machine switches off the tray lift motor.

The pick-up roller descends gradually with each sheet fed, so the tray lift sensor actuator ascends until it activates the tray lift sensor. This signals the machine to switch on the tray lift motor to raise the stack to the correct feed height. The tray lift sensor again deactivates to switch off the tray lift motor. This process is repeated to position the top of the stack at the correct feed height.

When the tray is drawn out of the feed unit, the lift motor coupling gear [G] disengages the pin \([\mathrm{H}]\) of the lift arm shaft, then the tray bottom plate drops under its own weight.

\subsection*{6.14.4 PICK-UP AND FEED - TRAYS 1, 2, 3}

\section*{Overview}


Drive from the paper feed motor is transmitted to the gear \([A]\) in the paper feed unit via the timing belt [B].
Then the gear [A] transmits this drive to the pick-up [C], paper feed [D] and separation [E] rollers via gears and the paper feed clutch [F].
The gear [A] also transmits this drive to the vertical transport roller [G] via gears and the vertical transport clutch [H].

\section*{Pick-up and Feed}


If a paper feed station is not selected, its separation roller solenoid [A] de-activates and the separation roller [B] can turn freely in the opposite direction to paper feed.

When the paper feed station is selected and the start key is pressed, the feed clutch [C], separation roller solenoid [A], and the pick-up solenoid [D] all turn on.

When the feed clutch [C] activates to transfer drive to the feed roller [E], the pick-up roller [F] also turns because it is linked to the feed roller by an idle gear [G].

When the separation roller solenoid [A] turns on, the separation roller [B] contacts the paper feed roller [E] and turns with the feed roller in spite of the torque limiter in the separation roller, which forces it in the opposite direction.
When the pick-up solenoid [D] activates, the pick-up roller [F] lowers to contact the top sheet of the paper stack and send it to the paper feed and separation rollers.
When the paper feed sensor \([\mathrm{H}]\) detects the leading edge of the paper, the pick-up solenoid de-energizes to lift the pick-up roller [F], and the vertical transport clutch [I] energizes to feed the paper to the vertical paper feed section.

\section*{Separation Roller Release}


The separation roller \([A]\) is normally away from the feed roller \([B]\). When the paper feed station is selected, the separation roller solenoid [C] contacts the separation roller with the feed roller as explained on the previous two pages.
This contact/release mechanism has the following three advantages:
1. When the paper feed motor turns on, all the separation rollers in the three feed stations rotate. If the separation roller is away from the feed roller, it reduces the load on the paper feed motor and drive mechanism, and it also reduces wear to the rubber surface of the separation roller caused by friction between the separation roller and the feed roller.
2. After paper feed is completed, paper sometimes remains between the feed and separation rollers. If the feed tray is pulled out in this condition, this paper might be torn. When the separation roller is away from the feed roller, the remaining paper can be removed from between the rollers.
3. When paper misfeeds occur around this area, the user can easily pull out the jammed paper between the feed and the separation rollers if the separation roller is away from the feed roller.
After paper feed and the paper feed clutch turns off, the paper feed motor still turns the separation roller [A] in reverse. The separation roller, still contacting the feed roller, turns the feed roller in reverse for 100 ms . Then, the separation solenoid turns off.

\subsection*{6.14.5 REMAINING PAPER/PAPER END DETECTION (TRAY 2, 3)}


\section*{Remaining Paper Detection}

The tray lift motor [A] rotates when the tray is pushed in. The CPU detects the remaining paper by monitoring the lift motor rotation angle (4 levels).

\section*{End Detection}

The paper end sensor \([B]\) is a photo-reflective sensor. While there is paper in the tray, light is reflected back to the sensor, but after the last sheet feeds, the sensor deactivates and signals paper out.

\subsection*{6.14.6 PAPER SIZE DETECTION - TRAY 2, 3}


\section*{North America}
\begin{tabular}{|c|c|}
\hline Paper Size & Paper Size Switch \\
\hline 11" x 17" SEF & 01111 \\
\hline 81/2"x14" SEF & 00111 \\
\hline 81/2"x11" SEF & 10011 \\
\hline 11" \(\times 81 / 2^{\prime \prime}\) LEF & 01001 \\
\hline 51/2"x81/2" SEF & 00100 \\
\hline \(8{ }^{11 / 2} \times 1 \times 1 / 2^{\prime \prime}\) LEF & 00010 \\
\hline 8 "x101/2" SEF & 00001 \\
\hline 71/4"x101/2" SEF & 10000 \\
\hline 8"x13" SEF & 11000 \\
\hline * & 11110 \\
\hline
\end{tabular}

1: HIGH 0: LOW

\section*{Europe/Asia}
\begin{tabular}{|c|c|}
\hline Paper Size & Paper Size Switch \\
\hline A3 SEF & 01111 \\
\hline 81/4"X 13" SEF & 00111 \\
\hline A4 SEF & 10011 \\
\hline A4 LEF & 01001 \\
\hline \(81 / 2\) "x13" SEF & 00100 \\
\hline A5 SEF & 00010 \\
\hline A5 LEF & 00001 \\
\hline 71/4"x101/2" SEF & 10000 \\
\hline * & 11110 \\
\hline
\end{tabular}

1: HIGH 0: LOW

For the 1st feed tray, the paper size has to be stored with SP5019 002.
For the 2nd and 3rd feed tray (universal trays), the paper size switch [A] detects the paper size. The paper size switch contains five microswitches. The paper size switch is actuated by an actuator plate \([B]\) at the rear of the tray. Each paper size has its own unique combination as shown in the table and the CPU determines the paper size by the combination.

Using the asterisk setting (*), a wider range of sizes can be used for custom paper sizes entered by the user (press the Tray Paper Settings key on the operation panel). SP5112 must be set to 1 (Yes).
\begin{tabular}{||c|c|c||}
\hline & Metric version & Inch version \\
\hline Main Scan Direction & \(139.7 \mathrm{~mm} \sim 305 \mathrm{~mm}\) & \(5.5^{\prime \prime} \sim 12 "\) \\
\hline Sub Scan Direction & \(139.7 \mathrm{~mm} \sim 458 \mathrm{~mm}\) & \(5.5^{\prime \prime} \sim 18.0^{\prime \prime}\) \\
\hline
\end{tabular}

\subsection*{6.14.7 TRAY LOCK - TRAY 2, 3}


When the tray is placed in the paper feed unit, the lock lever [A] drops behind the lock plate \([\mathrm{B}]\) on the support bracket to lock the tray in the proper position.

\subsection*{6.14.8 TANDEM FEED - TRAY 1}

\section*{Overview}


1,000 sheets of paper can be set in the left tray \([A]\) and right tray \([B]\) of tray 1 , the tandem paper tray. Paper is fed from the right tray. When the paper in the right tray runs out, the paper stack in the left tray automatically is pushed to the right tray. After the stack is moved from the left tray to the right tray, paper feeding resumes. Normally both the right and the left trays are joined. However, during copying, if there is no paper in the left tray, the left tray can be pulled out to load paper while the right tray stays in the machine so paper feed can continue.
NOTE: After moving the adjustable side fences for a different paper size, be sure to execute SP5019 002 (Tray Paper Size Selection - 1st Tray) to select the correct setting for the paper size loaded in the tandem tray. (The tandem tray cannot detect the paper size automatically.)

\section*{Connecting the Left and Right Sides of the Tray}


Normally the left tray lock lever [A] catches the pin \([B]\) in the right tandem tray. During copying, if there is no paper in the left tray, the tandem tray connect solenoid [C] turns on to release the tray lock lever so the left tray separates from the right tray. Therefore, the left tray can be pulled out to load paper while paper is still being fed into the machine from the right tray.
When the tandem tray is drawn out fully, the projection [D] pushes up the left tray lock lever [A] so that both trays separate for easier paper loading.

\section*{Paper Lift/Remaining Paper Detection: Tray 1}

The machine detects when the 1st tray has been placed in the machine by monitoring the tray set signal through the connector.


When the machine detects the 1st paper tray, the right 1st tray paper sensor [N] (under the tray) checks whether there is paper in the right tandem tray. When paper is detected, the tray lift motor \([A]\) rotates and the coupling gear \([B]\) on the tray lift motor engages the pin [C] of the lift shaft [D].
The tray wires [E] are fixed in the slots [F] at the ends of the tray support rods [G, H]. When the tray lift motor rotates clockwise, the tray support rods and the tray bottom plate [I] rise. The tray rises until stack pushes up the pick-up roller until the tray lift sensor de-activates and switches off the tray lift motor.

As the actuator [K] on the right support rod [G] rises, it de-activates each of the 4 paper height sensors [J] to trigger 5 levels of paper remaining alerts on the operation panel.
\begin{tabular}{||c|c|l||}
\hline Paper Height Sensor & Remaining Paper & \multicolumn{1}{c|}{ Comment } \\
\hline None & \(100 \%\) & Bottom position, no sensors de-activated. \\
\hline 1 & \(75 \%\) & \multirow{3}{*}{ Each sensor de-activates as the actuator rises. } \\
\hline 2 & \(50 \%\) & \\
\hline 3 & \(25 \%\) & Near End \\
\hline 4 & Paper Out & \begin{tabular}{l} 
Detected by the paper sensor [N] below the stack \\
when the last sheet feeds.
\end{tabular} \\
\hline & &
\end{tabular}

When the tray is removed, the coupling gear [B] separates from pin [C], so the tray bottom plate descends. The tray descends until the actuator activates the lower limit sensor [L]. The damper [M] provides resistance so the tray bottom plate descends slowly.

\section*{Feed and Lift: Tray 1}


When the tray lift motor turns on, the pick-up solenoid [A] actuates and lowers the pick-up roller [B]. When the top of the stack reaches the correct height for paper feed, it pushes up the pick-up roller and lowers the actuator [C]. This actuator deactivates the tray lift sensor [D] when it leaves the sensor slot, and this stops the tray lift motor.

After several paper feeds, the pick-up roller descends and the actuator rises and enters the tray lift sensor and activates it. This switches on the tray lift motor again, which raises the stack once again to the correct paper height.

When the tray is pulled out of the feed unit, the lift motor coupling gear [E] disengages the pin [F] on the lift shaft [G], then the tray bottom plate [H] drops. The damper provides resistance so the tray descends slowly.

There is also a paper end sensor for the 1st tray, which works in the same way as the sensor in the 2nd and 3rd trays.

\section*{Side Fence Drive: Tray 1}


The side fences [A] of the right tray are normally closed. They open only when paper in the left tray is moving to the right tray.

The side fence solenoids \([B]\) drive the side fences. When the paper loaded in the left tray transfers to the right tray, the side fence solenoids turn on to open the side fences until the side fence open sensors [C] activate.

When the rear fence in the left tray has pushed the stack of paper into the right tray, the side fence solenoids turn off to close the side fences. Then, when the side fence closed sensors [D] activate, the LCD displays a message advising the user to load some paper into the left side of the tandem tray.

\section*{Rear Fence Drive}


When the left 1st tray paper sensor [A] detects paper but the right 1st tray paper sensor does not, the rear fence drive motor [B] (a DC motor) in the left tray turns counter-clockwise causing the rear fence [C] to push the paper stack into the right tray.

When the actuator on the rear fence activates the rear fence return sensor [D], the rear fence drive motor turns clockwise until the actuator activates the rear fence HP sensor [E].

While the rear fence is moving, the left 1st tray lock solenoid [F] turns on and the lock lever [G] locks the left tray.

\section*{PAPER FEED}

\section*{Tray Positioning}


\section*{Tray Lock}

When the feed tray is set in the paper feed unit, the lock lever [A] drops behind the lock plate \([\mathrm{B}]\) on the Accuride support bracket to lock the tray in the proper position.

\section*{Side-to-side Positioning}

When the feed tray is set in the paper feed unit, the side-to-side positioning plate [C] presses the feed tray against the stopper [D]. By moving the positioning plate, the tray position can be changed to adjust the side-to-side registration.

\subsection*{6.14.9 VERTICAL TRANSPORT}


The vertical transport rollers \([A]\) in each feed unit are all driven by the paper feed motor. The vertical transport rollers and the vertical transport idle rollers [B], on the inner and outer vertical guide plates, transport the paper up from each feed unit towards the relay and registration rollers.
The vertical transport guides [C] can be opened to remove jammed paper in the vertical transport area.

\subsection*{6.14.10 LCT GUIDE PLATE}


When the machine detects a jam at the LCT exit, paper feed stops, and the LCT guide plate solenoid [A] releases the guide plate (labeled 'B5') [B] so that the user can easily remove the jammed paper. After removing the jam, the user must return the B5 lever to its normal position.

\subsection*{6.14.11 PAPER REGISTRATION}

\section*{Overview}


The registration sensor \([A]\) is positioned just before the registration rollers \([B]\).
When the paper leading edge activates the registration sensor, the registration motor is off and the registration rollers are not turning. However, the upper relay roller (or LCT relay roller for feed from the LCT) [C] stays on for a bit longer.
This delay allows time for the paper to press against the registration rollers and buckle slightly to correct skew. Next, the registration motor energizes and the upper relay clutch re-energizes at the proper time to align the paper with the image on the drum. The registration and relay rollers feed the paper to the image transfer section.

The registration sensor is also used for paper misfeed detection, and the LCT relay sensor [E] detects jams at the LCT roller.

\section*{PAPER FEED}

\section*{Registration Drive}

[B]

The registration motor \([A]\) drives the lower registration roller \([B]\) through a timing belt [C] and some gears. Drive is transmitted to the upper registration roller [D] via two gears [E] at the front.

The paper dust remover [F] extends across the length of the paper registration roller [D], where most paper dust is generated.
NOTE: Clean the dust remover every PM visit.

\section*{Jam Removal at Paper Registration}


If a sheet misfeeds between the vertical transport rollers and the registration rollers, the next sheet is already on its way up from the paper tray, and must be stopped, or there will be a pile-up of jammed paper.
To prevent this, when the registration sensor is not activated at a certain jam check timing, the lower paper guide plate [A] automatically opens.
Guide plate solenoid [B] turns on \(\rightarrow\) Lever [C] raises \(\rightarrow\) Lock lever [D] (on the guide plate) releases from pin [E] (on the rear side frame) \(\rightarrow\) Guide plate [A] falls open \(\rightarrow\) Paper coming along the feed path is diverted to the duplex tray.
Actuator [F] on the guide plate activates the guide plate position sensor [G] when the guide plate opens.

The user must remove jammed paper in the feed path, the sheet in the duplex tray, and manually close the guide plate.

To prevent the guide plate from being left open, if the guide plate position sensor is activated, copying is disabled and a caution is displayed on the LCD panel.

\subsection*{6.14.12 JAM DETECTION}


When a jam occurs, a graphic illustration of the main machine, finisher, LCT, and bypass tray appears on the operation panel screen.
The location where the jammed paper remains lights (does not flash) in the graphic illustration.
A jam code is displayed on the operation panel to indicate the cause and location of the jam. For more details, please refer to the tables on the following pages.

\section*{Jam Location Display Tables}

A Trays 1 ~ 3
\begin{tabular}{||l|c||}
\hline \multicolumn{1}{|c|}{ Related Sensors } & Knob/Lever \\
\hline \begin{tabular}{l} 
Between paper feed sensor and relay sensor (Tray 1, 2, 3), excluding relay \\
sensor. A1, A2.
\end{tabular} & A1 \\
\cline { 2 - 2 } & A2 \\
\hline
\end{tabular}

\section*{B Before Registration Roller/Sensor}
\begin{tabular}{||l|c||}
\hline \multicolumn{1}{|c|}{ Related Sensors } & Knob/Lever \\
\hline - Between duplex transport sensor 3 and relay sensor (excluding duplex & B1 \\
\begin{tabular}{l|l||} 
- transport sensor). B1, B2 \\
Between relays sensor and registration sensor. B1, B2 \\
- Between LCT relay sensor and registration sensor (excluding registration \\
sensor). B3, B4
\end{tabular} & B2 \\
& B3 \\
\cline { 2 - 3 } & B4 \\
\hline
\end{tabular}

\section*{C Transfer Unit}
\begin{tabular}{||l|c||}
\hline \multicolumn{1}{|c|}{ Related Sensors } & Knob/Lever \\
\hline \begin{tabular}{l} 
- Between registration sensor and fusing exit sensor (excluding fusing exit \\
sensor) C1, C2
\end{tabular} & \(\mathbf{C 1}\) \\
\cline { 3 - 3 } & \(\mathbf{C 2}\) \\
\hline
\end{tabular}

\section*{D Fusing Exit/Paper Output}
\begin{tabular}{|c|c|}
\hline Related Sensors & Knob/Lever \\
\hline \multirow[t]{6}{*}{\begin{tabular}{l}
- Between fusing exit sensor and duplex entrance sensor (excluding duplex entrance senor). D1, D2 \\
- Between fusing exit sensor and exit sensor (excluding exit sensor). D1, D2 \\
- Between inverter sensor and exit sensor (excluding inverter sensor) D1, D2 \\
- Between registration sensor and fusing exit sensor (excluding fusing exit sensors) D1, D2
\end{tabular}} & D1 \\
\hline & D2 \\
\hline & D3 \\
\hline & D4 \\
\hline & D5 \\
\hline & D6 \\
\hline
\end{tabular}

PAPER FEED

\section*{Z Duplex Unit}
\begin{tabular}{|c|c|}
\hline Related Sensors & Knob/Lever \\
\hline \multirow[t]{5}{*}{\begin{tabular}{l}
- Between duplex entrance sensor and inverter sensor. Z1, Z2 \\
- Between duplex transport sensor 1,2,3 and relay sensor (excluding relay sensor) Z1, Z5
\end{tabular}} & Z1 \\
\hline & Z2 \\
\hline & Z3 \\
\hline & Z4 \\
\hline & Z5 \\
\hline
\end{tabular}

\section*{U LCT (B511)}
\begin{tabular}{|c|c|}
\hline Related Sensors & Knob/Lever \\
\hline \multirow[t]{7}{*}{\begin{tabular}{l}
- Between LCT feed sensor 1 and LCT exit sensor. U1, U2 \\
- Between LCT feed sensor 2 and LCT exit sensor. U3, U4 \\
- Between LCT feed sensor 3 and LCT exit sensor. U3, U5 \\
- Between LCT exit sensor and LCT relay sensor (excluding LCT relay sensor. U6, U7
\end{tabular}} & U1 \\
\hline & U2 \\
\hline & U3 \\
\hline & U4 \\
\hline & U5 \\
\hline & U6 \\
\hline & U7 \\
\hline
\end{tabular}

\section*{V Bypass Tray (B512)}
\begin{tabular}{||l|c||}
\hline \hline Related Sensors & Knob/Lever \\
\hline \begin{tabular}{l} 
- Between bypass tray feed sensor and LCT exit sensor (excluding LCT exit \\
sensor)
\end{tabular} & \(\mathbf{V}\) \\
\hline
\end{tabular}

Jam Error Code Table
\begin{tabular}{|r|l||}
\hline Code & \\
\hline 3 & 1st Tray Feed (Tandem Tray - Main Machine) - no feed \\
\hline 53 & 1st paper tray feed sensor check-out error. \\
\hline 4 & 2nd Tray Feed (Universal Cassette - Main Machine) - no feed \\
\hline 54 & 2nd tray paper feed sensor check-out error. \\
\hline 5 & 3rd Tray Feed (Universal Cassette - Main machine) - no feed \\
\hline 55 & 3rd tray paper feed sensor check-out error \\
\hline 6 & 4th Tray (LCT - Top Tray) no feed \\
\hline 56 & 4th tray paper feed sensor check-out error \\
\hline 7 & 5th Tray (LCT - Middle Tray) no feed \\
\hline 57 & 5th Tray paper feed sensor check-out error \\
\hline 8 & 6th Tray (LCT - Bottom Tray) no feed \\
\hline 58 & 6th Tray paper feed sensor check-out error \\
\hline 9 & Bypass no feed \\
\hline 59 & Bypass feed paper feed sensor check-out error \\
\hline 10 & LCT relay sensor check-in error \\
\hline 60 & LCT relay sensor check-out error \\
\hline 11 & LCT exit sensor check-in error \\
\hline 61 & LCT exit sensor check-out error \\
\hline 12 & Relay sensor check-in error \\
\hline 62 & Relay sensor check-out error \\
\hline 13 & Registration sensor check-in error \\
\hline 63 & Registration sensor check-out error \\
\hline 15 & Fusing exit sensor check-in error \\
\hline 65 & Fusing exit sensor check-out error \\
\hline 16 & Exit sensor check-in error \\
\hline 66 & Exit sensor check-out error \\
\hline 19 & Duplex entrance sensor check-in error \\
\hline 69 & Duplex entrance sensor check-out error \\
\hline 20 & Duplex transport sensor 1 check-in error \\
\hline 70 & Duplex transport sensor 1 check-out error \\
\hline 21 & Duplex transport sensor 2 check-in error \\
\hline 71 & Duplex transport sensor 2 check-out error \\
\hline 22 & Duplex transport sensor 3 check-in error \\
\hline 72 & Duplex transport sensor 3 check-out error \\
\hline 23 & Duplex inverter sensor check-in error \\
\hline 73 & Duplex inverter sensor check-out error \\
\hline
\end{tabular}

Check-out error: Paper fails to leave after prescribed time has elapsed.
Check-in error: Paper fails to arrive after prescribed time has elapsed.

\subsection*{6.14.13 ANTI-CONDENSATION HEATERS (OPTIONS)}


Two optional anti-condensation heaters can be installed below the 1st tray [A] and below the 3rd tray [B].

The anti-condensation heaters switch on when the main switch or operation switch are switched off. The anti-condensation trays prevent moisture from collecting in and around the paper trays when the machine is not in use.
NOTE: The anti-condensation heater connectors are not pre-set at the factory and must be connected correctly before use. For details, see "1. Installation" in the main service manual.

\subsection*{6.15 IMAGE TRANSFER AND PAPER SEPARATION}

\subsection*{6.15.1 OVERVIEW}


The transfer belt unit consists of the following parts:
[A]: Transfer belt
A belt (length: 321 mm ) with high electrical resistance which holds a high positive electrical potential to attract toner from the drum to the paper.
Also, the electrical potential attracts the paper itself and helps the paper to separate from the drum.
[B]: Transfer bias roller and transfer belt bias brush
Applies transfer voltage to the transfer belt.
[C]: Transfer belt lift lever (driven by a solenoid)
Lifts the transfer belt into contact with the drum.
[D]: Transfer power pack
Generates a constant transfer current.
[E]: Cleaning roller and cleaning roller cleaning blade
Removes toner remaining on the transfer belt to prevent the rear side of the paper from getting dirty.
[F]: Transfer belt cleaning blade
Removes toner from the transfer belt. Any toner that is not removed by this blade is removed by the cleaning roller [E].

\subsection*{6.15.2 IMAGE TRANSFER AND PAPER SEPARATION}

The registration rollers [A] feed the paper \([B]\) to the gap between the drum [C] and the transfer belt [D].


As soon as the leading edge of the first sheet reaches the gap between the transfer belt and the drum, the transfer belt lift lever [E] raises the transfer belt into contact with the drum. The lift lever is driven by a solenoid.

Then a positive charge is applied to the transfer bias roller [F] and transfer belt bias brush to attract the negatively charged toner [G] from the drum. It also attracts the paper and separates it from the drum.


After the image transfer is completed, the charge on the transfer belt holds the paper to the transfer belt. After separating the paper from the transfer belt, the transfer belt is discharged by the transfer belt drive roller [A].
The transfer power pack \([\mathrm{B}]\) inside the transfer belt unit monitors the current ( \(I_{1}\) and \(I_{2}\) ) fed back from the drive rollers at each end of the transfer belt to adjust the transfer current.

The power pack then adjusts "It" to keep the current through the drum (I3) constant, even if the paper, environmental conditions, or transfer belt surface resistance change.
The varistor [C] keeps the voltage at the cleaning bias roller [D] constant.

To apply a higher current to the transfer belt without a higher voltage, the bias brush [E] has been incorporated near the nip between drum and belt. This ensures that enough transfer current is applied for this machine, which has a higher copy volume.


\subsection*{6.15.3 TRANSFER BELT UNIT LIFT}


The transfer belt lift solenoid [A] inside the transfer belt unit turns on to raise the transfer belt into contact with the drum. The front lever [B] and the rear lever [C] are connected to the solenoid by links [D], and they push up the stays [ \(E\) ] when the solenoid turns on.

The support spring [F] helps the solenoid to raise the transfer belt.
The solenoid turns off after the copy job is finished.
The transfer belt must be released from the drum for the following reasons:
1. To prevent the ID sensor pattern on the drum from being rubbed off by the transfer belt, because the transfer belt is located between the development unit and the ID sensor.
2. To decrease the load on the bias roller cleaning blade, it is better to prevent toner on non-image areas (for example VD, VH, ID sensor patterns developed during process control data initial setting) from being transferred onto the transfer belt.
3. To prevent drum characteristics from being changed by remaining in contact with the rubber belt.

\subsection*{6.15.4 PAPER TRANSPORTATION AND BELT DRIVE}


The drum motor [A] drives the transfer belt through belts and gears. Since the transfer belt electrically attracts the paper [B], a transport fan is not required.

At the turn in the transfer belt, the transfer belt drive roller [C] discharges the belt to reduce paper attraction, and the paper separates from the belt as a result of its own stiffness.

The tapered parts [D] at both ends of the roller [E] help keep the transfer belt [F] in the center, so that it does not run off the rollers.

\subsection*{6.15.5 TRANSFER BELT CLEANING}


Some toner may adhere to the transfer belt when paper jams occur. The adhered toner must be removed to prevent the rear side of the copy paper from getting dirty.

The cleaning blade [A] scrapes off any toner remaining on the transfer belt. This is a counter blade system.
Even if the toner is not completely removed due to paper dust stuck on the transfer belt cleaning blade [A], the positively charged cleaning bias roller [B] attracts the remaining toner. The bias roller cleaning blade [C] scrapes toner off the cleaning bias roller.

The surface of the transfer belt is coated to make it smooth and prevent the transfer belt from flipping the cleaning blade.
The toner collection coil [D] transports toner cleaned off the transfer belt to the waste toner collection bottle (see Toner Supply and Recycling for more on this).

\subsection*{6.15.6 TONER COLLECTION}


Transfer belt drive is transmitted to the toner collection coil [A] through idle gears [B]. The toner collection coil [C] transports the collected toner to the toner recycling unit [D] and from there it goes to the waste toner collection bottle.
See Toner Supply and Recycling for details.

\subsection*{6.15.7 DRUM ANTI-CONDENSATION HEATER}


The drum anti-condensation heater \([\mathrm{A}]\) is located under the transfer belt unit. It turns on when the main switch is off to prevent moisture from forming on the transfer belt.

The heater is included in the machine at the factory, but the connector is not connected.

\subsection*{6.16 FUSING}

\subsection*{6.16.1 OVERVIEW}


After transferring the image, the copy paper enters the fusing unit. A heat and pressure process using a hot roller \([\mathrm{A}]\) and a pressure roller \([\mathrm{B}]\) fuses the image to the copy paper. There are three fusing lamps of different wattage [C] inside the hot roller. They are turned on and off to maintain the target fusing temperature.
(-6.16.4)
The CPU monitors the hot roller surface temperature through a thermistor [D], which is in contact with the hot roller's surface. A thermostat [E] protects the fusing unit from overheating.

The fusing exit sensor [F] monitors the progress of the copy paper through the fusing unit and acts as a mis-feed detector while the exit rollers drive the copy paper to the inverter section.

The oil supply roller and cleaning web [G] applies a light coat of silicone oil to the hot roller. It also removes the paper dust on the hot roller.

The hot roller and pressure roller have stripper pawls \([\mathrm{H}]\) to prevent wrap-around jams.
The pressure roller is cleaned by a steel cleaning roller [I]. Toner adheres to steel more readily than to silicone rubber.

\subsection*{6.16.2 FUSING ENTRANCE GUIDE}


The entrance guide [A] for this machine is adjustable for thick or thin paper by changing the screw position from the upper to the lower.
With thin paper, set the entrance guide in the upper position. This slightly lengthens the paper path, which prevents the paper from creasing in the fusing unit.

With thick paper, set the entrance guide in the lower position. This is because thick paper does not bend as easily, and is therefore less prone to creasing. In addition, the lower setting allows more direct access to the gap between the hot and pressure rollers. This prevents thick paper from buckling against the hot roller, which can cause blurring at the leading edge of the copy.

In this model, the transfer belt improves paper transport and stabilizes the paper path to the fusing entrance. This reduces the chance of paper creasing due to paper skews in the fusing unit.
Use the screws to adjust the guide plate position. Since there are very few reasons to change the guide plate position, there is no guide plate position adjustment lever for customer use.

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\subsection*{6.16.3 FUSING UNIT DRIVE}


The fusing drive gear \([A]\) transmits drive from the fusing/exit motor \([B]\) to the gear [C], which drives the hot roller gear [D]. Rotation passes from the gear [C] through an idle gear to the exit roller drive section. The pressure roller is driven by the friction between the hot and pressure rollers.

\subsection*{6.16.4 FUSING LAMP AND FUSING TEMPERATURE CONTROL}

\section*{Overview}

This machine controls the fusing temperature of the hot roller by switching the fusing lamps on and off. Three fusing lamps (each of different Wattage) are mounted inside the hot roller.
\begin{tabular}{||l|c|c|c||}
\hline \multirow{2}{*}{ NAME } & \multicolumn{2}{|c|}{ WATTAGE } & \multirow{2}{*}{ FUNCTION } \\
\cline { 2 - 3 } & NA & EUR/A & \\
\hline Fusing Lamp A & 800 W & 730 W & Heats center of the hot roller. \\
\hline Fusing Lamp B & 530 W & 530 W & Heats length of the hot roller. \\
\hline Fusing Lamp C & 560 W & 540 W & Heats ends of the hot roller. \\
\hline \hline
\end{tabular}

The table below shows how the fusing temperature control method depends on the mode.
\begin{tabular}{||l|r|r|l|r||}
\hline \multicolumn{1}{|c|}{ DEFAULT VALUES } & \multicolumn{1}{c|}{ B070 } & \multicolumn{1}{c|}{\(\mathbf{B 0 7 1}\)} & \multicolumn{2}{c|}{ SP No. } \\
\hline Standby Temp. & \(168^{\circ} \mathrm{C}\) & \(173^{\circ} \mathrm{C}\) & SP1105 001 & \(168 \sim 178^{\circ} \mathrm{C}\) \\
\hline Fusing Lower Limit & \(148^{\circ} \mathrm{C}\) & \(153^{\circ} \mathrm{C}\) & SP1105 002 & \(148 \sim 158^{\circ} \mathrm{C}\) \\
\hline Correction for Small Paper Size & \(7^{\circ} \mathrm{C}\) & \(10^{\circ} \mathrm{C}\) & SP1105003 & 0 to \(10^{\circ} \mathrm{C}\) \\
\hline Correction for Normal Paper Size & \(2^{\circ} \mathrm{C}\) & \(5^{\circ} \mathrm{C}\) & SP1105 004 & 0 to \(10^{\circ} \mathrm{C}\) \\
\hline Correction for OHP & \(2^{\circ} \mathrm{C}\) & \(5^{\circ} \mathrm{C}\) & SP1105 005 & -10 to \(+5^{\circ} \mathrm{C}\) \\
\hline Correction for Tracing Paper & \(2^{\circ} \mathrm{C}\) & \(5^{\circ} \mathrm{C}\) & SP1105006 & -10 to \(+5^{\circ} \mathrm{C}\) \\
\hline
\end{tabular}

During long jobs some images may not fuse correctly, depending on variables such as paper and image type, and room temperature. In such circumstances, a lower limit is set to prevent paper feed and copying while a "Please Wait" message is displayed to allow time for fusing temperature control to achieve the correct temperature, then the job is re-started.
In most cases, the three fusing lamps never switch on together or in pairs. Usually, the lamps are switched on and off one-by-one at 1 sec . intervals. When a small paper size (smaller than A4/LT) is selected for a job, two lamps are switched on and off at 4 sec . intervals during the job.

\section*{Warm-up}

Here is a summary of how the machine operates differently during warmup, depending on the temperature of the hot roller.
- Power On at Less Than \(100^{\circ} \mathbf{C}\). If the fusing unit is less than \(100^{\circ} \mathrm{C}\) when the machine is switched on, and auto process control executes.
- Power On at \(100^{\circ} \mathbf{C}\) or Higher. If the fusing unit is \(100^{\circ} \mathrm{C}\) or higher when the machine is switched on, and auto process control does not execute.
- Door Opened Then Closed at Less Than \(100^{\circ} \mathrm{C}\). If one of the front doors is opened to remove a jam or perform another procedure, if the fusing unit is less than \(100^{\circ} \mathrm{C}\) when the door is closed, and auto process control does not execute.
- Door Opened Then Closed at Less Than \(140^{\circ} \mathrm{C}\). If the fusing unit is lower than \(140^{\circ} \mathrm{C}\) when the machine is switched on, or when the front doors are closed, the machine enters the fusing idle warm-up mode. The 3 fusing lamps light until the fusing temperature reaches \(40^{\circ} \mathrm{C}\), then the center fusing lamp switches off, leaving two fusing lamps on (the \(40^{\circ} \mathrm{C}\) target temperature can be adjusted with SP1107 007).
After the fusing unit reaches \(150^{\circ} \mathrm{C}\) (adjustable with SP1105 009), the hot roller rotates for 10 sec . (adjustable with SP1107).
- Door Opened and Closed at Higher Than \(140^{\circ}\) C. If the fusing unit is higher than \(140^{\circ} \mathrm{C}\) when the machine is switched on, or after the front doors are closed, the machine does not enter the fusing idle mode. It warms up in the same way as returning to normal operation from the low power mode (the machine switches off the center lamp when the fusing unit reaches the temperature set with SP1105 001 [ \(168 \mathrm{C}^{\circ} / 173^{\circ} \mathrm{C}\) for the B070/B071] minus \(10^{\circ} \mathrm{C}\) set with SP1105 011).

\section*{Start of Copying}

When the fusing unit warms up without idling (higher than \(140^{\circ} \mathrm{C}\) ), the machine can start copying once it reaches a temperature 5 degrees lower than the pre-target stand-by temperature.

When the fusing unit warms up in the idling mode (less than \(140^{\circ} \mathrm{C}\) ), the machine can start copying 80 sec . after it reaches the temperature 8 degrees lower than the target stand-by temperature.
- The pre-stand-by temperature is \(168^{\circ} \mathrm{C} / 173^{\circ} \mathrm{C}\) for the \(\mathrm{B} 070 / \mathrm{B} 071\) (adjustable with SP1105 001) plus the value with SP2208 002 (Default: \(160^{\circ} \mathrm{C}\), for the B070 and \(165^{\circ} \mathrm{C}\) for the B071)
- The 80 sec. default wait time can be adjusted with SP1108 001.

\section*{Temperature Control for Different Paper}

The machine automatically adjusts fusing temperature control for the size and type of paper or other print media. This is not done to maintain the target fusing temperature, but to account for differences in the type of paper and power supply fluctuation.
- Temperature Control for A4/LT sideways or wider: Three lamps are switched on when copying with A4/LT size paper. In this case, the target fusing temperature, \(168^{\circ} \mathrm{C}\) for the B 070 or \(173^{\circ} \mathrm{C}\) for the B 071 , is raised by adding the setting of SP1105 004 ( \(2^{\circ} \mathrm{C}\) [B070] or \(5^{\circ} \mathrm{C}\) [B071]).
- Temperature Control for paper less wide than A4/LT sideways: Immediately after a copy job starts with small size paper, three fusing lamps are used, then lamp C is switched off. In this case, the target fusing temperature, \(168^{\circ} \mathrm{C}\) for the B070 ( 90 cpm ) or \(173^{\circ} \mathrm{C}\) for the B 071 ( 105 cpm ), is raised by adding the setting of SP1105 003 (7C [B070] or \(10^{\circ} \mathrm{C}\) [B071]).
- Temperature Control for OHP: When copying with OHP transparencies or tracing paper, three lamps are used and no lamp is switched off.

\section*{Temperature Control: General Comments}

The fusing lamps switch on to raise the temperature of the hot roller to the target fusing temperature and switch off when the hot roller is \(2^{\circ} \mathrm{C}\) higher than the target temperature.

If more than one fusing lamp ceases to function during a copy job, the fusing temperature drops, the machine enters the stand-by mode and issues SC542 (Fusing Temperature Warm-up Error).
Fusing temperature control is not affected when:
- The machine operates in the low speed mode.
- When thick paper is selected for copying.
- When thick paper is selected for copying in the low speed mode.

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The table below describes the sequence for switching the lamps on and off to control the fusing temperature.

\begin{tabular}{||c|c|c|c||}
\hline \multirow{2}{*}{ NAME } & \multicolumn{2}{|c|}{ WATTAGE } & \multicolumn{2}{c|}{\multirow{2}{*}{ FUNCTION }} \\
\cline { 2 - 3 } & NA & EUR/A & \\
\hline Fusing Lamp A & 800 W & 730 W & Heats center of the hot roller. \\
\hline Fusing Lamp B & 530 W & 530 W & Heats length of the hot roller. \\
\hline Fusing Lamp C & 560 W & 540 W & Heats ends of the hot roller. \\
\hline
\end{tabular}
\begin{tabular}{||l|c|c|c||}
\hline \multicolumn{1}{|c|}{ CONDITION } & \begin{tabular}{c} 
LAMPS \\
USED
\end{tabular} & \multicolumn{2}{|c|}{ CONTROL SEQUENCE } \\
\hline \begin{tabular}{l} 
Warm up, Re-load (See Note 1) \\
(before the hot roller temperature reaches \\
the hot roller idle rotation start temperature \\
of \(140^{\circ} \mathrm{C}\) )
\end{tabular} & 3 & ON: & \begin{tabular}{c} 
A \(\rightarrow\) B \(\rightarrow\) C \\
(See Note 2)
\end{tabular} \\
\hline \begin{tabular}{l} 
Warm up, Re-load \\
(after the hot holler reaches temperature \\
higher than the hot roller idle rotation start \\
temperature of \(\left.140^{\circ} \mathrm{C}\right)\)
\end{tabular} & 2 & ON: & \(\mathrm{B} \rightarrow \mathrm{C}\) \\
\hline Standby
\end{tabular}

Note 1 Re-load temperature is the temperature while the machine is idling.
Note 2 When a small paper size (smaller than A4/LTR) is selected for the job, all three lamps remain on until the fusing unit reaches the target temperature, then Lamp C switches off to prevent the ends of the hot roller from over heating.

\subsection*{6.16.5 LOW SPEED MODE (CPM DOWN TO 70 PPM)}

The User Tools has a selection that allows the customer to improve the fusing of images and text to thick paper and tracing paper by slowing down the machine (System Settings> General Features> Optimum for Thick Paper: Set to 'On'). For example, the speed is reduced to \(70 \mathrm{cpm}(350 \mathrm{~mm} / \mathrm{s})\) using A4 LEF. With this setting switched on, the machine speed is not only lowered but this setting affects process control as well.
In the low speed mode, the speed of the polygon mirror motor is reduced to about \(20,000 \mathrm{rpm}\), and the initial setting for the speed of the web motor on interval is reduced to 25.3 second (NA) or 15.4 sec . (Europe/Asia).

\section*{Speed Reduction}

\section*{Paper Size and Variable Speeds}
\begin{tabular}{||c|c|}
\hline Size & Speed \\
\hline A3 & 30 cpm \\
\hline B4 & 40 cpm \\
\hline A4 SEF & 40 cpm \\
\hline A4 LEF & 70 cpm \\
\hline B5 SEF & 50 cpm \\
\hline B5 LEF & 70 cpm \\
\hline A5 SEF & 70 cpm \\
\hline A5 LEF & 70 cpm \\
\hline \hline
\end{tabular}

\section*{Process Control}

In low speed mode, the following items are adjusted as described below.
1. Development Line Speed. Does not change.
2. Toner Supply Rate. Uses the settings of SP2209 002 (Toner Supply Rate Low Speed).
3. Transfer Conditions. Uses the settings of SP2301 007~012 (Transfer Current Adjustment) and SP2940 009~016 (Leading Edge Transfer Current)

\section*{4. LD Intensity}

With process control ON, the amount of light emitted by the laser is reduced by:
\[
\begin{aligned}
& \text { LD Adjustment by } \quad \text { x } \quad \text { Line Speed Rate } \\
& \text { Process Control }
\end{aligned}
\]

With process control OFF, the amount of LD adjustment is set to " 0 " and the line speed rate/s and quantity of light are reduced.

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\section*{5 Charge Conditions}

These depend on whether auto process control is switched off or on.

\section*{Process Control Off}

Depends on the settings of the following SP codes:
SP2001 008 Adjusts the voltage applied to the grid plate during copying.
SP2001 009 Adjusts the voltage applied to the grid plate for making the ID sensor pattern.

\section*{Process Control On}

Depends on the voltage setting of SP2001 010.
The current grid voltage as a result of process control can be checked SP3902 004 (Process Control Display - VG). From this value for VG (SP3902 004 - SP2001 010) , the value of the minus VL correction (SP3902 013) and the value of SP2001 010 (the value for the bias grid is determined for line speed of \(350 \mathrm{~mm} / \mathrm{s}\) ) and VL is adjusted for \(350 \mathrm{~mm} / \mathrm{s}\) (low speed mode).

\section*{6 Development Bias Conditions}

The development potential for low speed mode is determined by subtracting the value of SP2201 008 from the value for SP2201 004.

\section*{8 ID Pattern Interval and LD Exposure Level}

Uses the settings of SP2104 002 (LD Power Adjustment for ID Sensor Pattern Low Speed).

\section*{Others}
- Leading edge registration: SP1001 003 and 004
- Fusing unit web motor (how often it turns on): SP1902 005

\subsection*{6.16.6 OIL SUPPLY AND CLEANING}


The oil supply and cleaning web [A] feeds the web felt soaked with silicone oil. Springs [B] hold a roller under the web [C] against the hot roller [D].
This intermediate roller applies a light coat of silicone oil to the hot roller and removes paper dust and toner from the hot roller.
A spring clutch inside the mechanism pulls the web to take up the slack, to prevent it getting pulled in between the fusing rollers.
At prescribed intervals (see below), the web motor [E] switches on for 2.8 sec . to move the oil supply and cleaning web felt.

Web Motor Run Time Intervals
\begin{tabular}{|l|c|c|}
\hline & B070 (90 cpm) & B071 (105 cpm) \\
\hline NA & 20.7 s & 17.0 s \\
\hline EUR/A & 12.6 s & 10.4 s \\
\hline
\end{tabular}

The interval starts when the first copy reaches the fusing exit sensor, and ends 2 sec. after the last copy has passed this sensor. SP1902 002, 003 (Web Motor Control - Web Motor Drive Interval, Web Motor Drive Time) can be used to adjust the motor rotation time and rotation interval. SP1902 004 (Web Motor Control Web Near End Setting) is used to adjust the near end timing for the web (Default: 90\% for NA, 86\% for EUR/A).
The web is 20 m long and lasts for about 600 K copies for NA, or 350 K copies for EUR/A.

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SP1902 001 displays the web consumption. When the web consumption exceeds the value set with SP1-902-4 (Web Near End), the machine indicates web nearend on the operation display.
The machine still operates while the actuator [A] remains above the web end sensor \([B]\) undetected. The actuator arm of the actuator remains in contact with the supply roller [C] and gradually lowers as the amount of web on the supply roller grows smaller as it is fed to the take-up roller [D] above.
When the web runs out, the actuator drops into the web end sensor at [E] and the sensor signal to the CPU displays SC550 on the operation panel display. In this condition, a technician must install a new oil supply and cleaning web, and then reset SP1902 001 to 0 to clear SC550.

SP1902 004 (Web Near End) can be adjusted to change the near-end period. The defaults for and amount of web that remains for copying are different for NA and EUR/A.

\section*{Near-End}
\begin{tabular}{||c|c|c|}
\hline Area & Near-End & Web Remaining \\
\hline NA & \(90 \%\) & 600 K \\
\hline EUR/A & \(86 \%\) & 350 K \\
\hline \hline
\end{tabular}

The table below, provided for your reference, shows approximately how adjustment of SP1902 002 affects the near-end and end displays on the B070 (90 cpm) or B071 (105 cpm).
Note that adjustment of SP1902 002 also affects SP1902 005 (Web Motor Control - Web Motor Drive Interval (Low Speed)).
\begin{tabular}{|c|c|c|c|c|c|c|}
\hline \multicolumn{3}{|c|}{SP1902 \(002{ }^{\text {* }}\)} & \multirow[b]{2}{*}{SP1902 \(004{ }^{* 3}\)} & \multirow[t]{2}{*}{Near-End Display (Sheets)} & \multirow[b]{2}{*}{End Display (Sheets)} & \multirow[b]{2}{*}{Comments} \\
\hline B070 & B071 & \[
\begin{aligned}
& \text { Low } \\
& \text { Speed } \\
& \text { Mode }{ }^{* 2}
\end{aligned}
\] & & & & \\
\hline 20.7 s & 17.0 s & 25.3 s & 90\% & 600K & 670K & NA Default \\
\hline 15.6 s & 12.8 s & 19.0 s & 90\% & 450K & 500K & \\
\hline 12.1 s & 10.0 s & 14.8 s & 90\% & 350K & 385K & \\
\hline 10.4 s & 8.5 s & 12.7 s & 90\% & 300K & 330K & \\
\hline 6.9 s & 5.7 s & 8.5 s & 90\% & 200K & 220K & \\
\hline 12.6 s & 10.4 s & 15.4 s & 86\% & 350K & 410K & EUR/A Default \\
\hline 10.8 s & 9.0 s & 13.2 s & 86\% & 300K & 350K & \\
\hline 7.2 s & 6.0 s & 8.8 s & 86\% & 200K & 230K & \\
\hline
\end{tabular}
*1: SP1902 002 (Web Motor Control - Web Motor Drive Interval)
\({ }^{*}\) *2: SP1902 005 (Web Motor Control - Web Motor Drive Interval (Low Speed))
*3: SP1902 004 (Web Motor Control - Web Near End Setting)
*4: Calculated based on A4 LEF at 100\% magnification.
NOTE: SP1902 003 (Web Motor Control - Web Near End Setting) not adjusted.

\subsection*{6.16.7 PAPER COOLING}

[B]


The paper cooling pipe \([A]\) cools the copy paper \([B]\) after it has gone through the fusing unit. This prevents the temperature around the drum from increasing in duplex mode.
The paper cooling pipe has a hollow metal tube inside. Water capillary tubes run along the inside of the paper cooling pipe, and these transfer heat within the pipe.

The hot paper leaving the fusing unit heats the parts of the cooling pipe that it touches at [C] (black arrows), causing the water in the pipe to vaporize. This creates a high-speed flow of steam to the ends of the pipe, which are cooler, especially to the rear, which is well away from the paper feed path, and has the cooling fins [D] attached to it. When the steam reaches this area, it cools and condenses. Capillary action returns the condensation to the heated part of the pipe.

This heat transfer cycle (vaporization \(\rightarrow\) steam transfer \(\rightarrow\) condensation) repeats continuously. Paper cooling pipe fan 1 [ \(E]\) in the duct at the machine rear side cools the fins and paper cooling fan \(2[F]\) pulls the air around the fins out of the fusing unit.

\subsection*{6.16.8 FUSING PRESSURE}


Fusing pressure is constantly applied between the hot roller [A] and pressure roller \([B]\) by the upper pressure lever [C] and lower pressure lever [D], which are lifted by the fusing unit release lever [E] via the pressure cam [F]. The pressure can be adjusted by using the pressure adjustment screw [G].
The fusing pressure is released by turning the fusing unit release lever counterclockwise.

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\subsection*{6.16.9 HOT ROLLER STRIPPER RELEASE}


For easier jam removal, when the hot roller stripper unit \([A]\) is opened, the stripper pawls \([B]\) turn clockwise to expand the jam removal area.

\subsection*{6.17 PAPER EXIT/DUPLEX}

\subsection*{6.17.1 OVERVIEW}


The printed page from the fusing unit goes either straight through to the output tray or finisher, or downward through to the inverter or duplex unit, depending on the position of the junction gate [A].

If the page is fed out directly, it arrives on the tray face-up. If the user selected face-down output, the page goes to the inverter \([B]\) before being fed out.

If the user selects duplex mode, the page is directed to the duplex tray [C] after inverting, and back to the machine for printing the second side.

\subsection*{6.17.2 PAPER EXIT MECHANISM}


Drive from the fusing/exit motor is transmitted to the paper exit roller [A] and transport rollers [B].

To feed the printed page from the fusing unit straight through to the output tray or finisher, the inverter gate solenoid [C] energizes to open the junction gate [D]. To feed the page to the inverter and duplex unit, the solenoid stays off.

\subsection*{6.17.3 DUPLEX DRIVE MECHANISM}


The duplex drive coupling gear \([A]\) transmits drive from the fusing/exit motor \([B]\) to the duplex unit. This motor drives the inverter and the reverse roller.

The inverter exit roller clutch [C] transmits drive from this motor to the duplex inverter exit section. The inverter exit roller clutch engages the drive (i.e., the roller turns) while the clutch is not energized. This clutch disengages the drive when the clutch is turned on. This prevents the clutch from being energized for a long time.
Duplex transport motors 1 [D] and 2 [E] drive the paper feed rollers in the horizontal paper path of the duplex unit and feed out the paper from the duplex unit.

\subsection*{6.17.4 INVERTER}

\section*{Feed-in and Jogging}

[D]


The inverter feed roller [A] feeds paper to the jogger section. After the trailing edge of the paper passes through the inverter feed roller, the jogger fences [B] move to square the paper. This happens every page.
The jogger motor (a stepper motor) [C] moves the jogger fences \([B]\) inward or outward.

When the main switch is turned on, the jogger motor places the jogger fences at the home position, which is determined by monitoring the signal from the jogger home position sensor [D].

When the start key is pressed, the jogger motor positions the jogger fences 15 mm away from the selected paper size to wait for the paper.

When the paper is delivered to the jogger fences, the jogger fences move inward to square the paper. After this, the jogger fences move back to the previous position ( 15 mm away from the paper).

\section*{Feed-out}


After jogging, the reverse roller solenoid [A] energizes to push down the reverse trigger roller \([B]\). The reverse roller [C] turns counterclockwise continuously, so the paper starts to reverse when the reverse trigger roller is down and catches the paper between the rollers. The inverter guide plate solenoid [D] energizes to lower the inverter guide plate [E], so that the paper is guided by the inverter guide plate. The next sheet waits at the inverter guide plate.

The paper is fed from the reverse roller to the inverter exit roller [F]. After the paper starts to be fed by the inverter exit roller, the reverse trigger roller and inverter guide plate move back up.

\subsection*{6.17.5 DUPLEX TRAY FEED MECHANISM}


In duplex mode, after the paper leaves the inverter, the duplex inverter gate solenoid \([A]\) switches the junction gate \([B]\) to direct the paper to the duplex tray. The paper is fed through the duplex tray by duplex transport rollers 1 [C], 2 [D], 3 [E], and the duplex feed roller [F].
If duplex mode is not selected, the solenoid does not switch the junction gate, and the paper goes to the output tray or finisher face down.

\subsection*{6.17.6 BASIC DUPLEX FEED OPERATION}

To improve the productivity of duplex copying, a non-stacking style duplex mechanism is adopted. This type of mechanism allows more than one page to be processed at once, in a process called 'interleaving'. Examples of this are given below.

For paper lengths up to A4/Letter LEF, the top duplex speed is possible, with the duplex unit processing four sheets of copy paper at the same time.
For paper longer than this, the duplex tray can process two sheets of copy paper at once.

For a single-set duplex copy job, the duplex unit stores only one sheet of copy paper. For a multi-set duplex job, the job is stored first, then the first set is made using interleaving.

\section*{Length up to A4/Letter LEF}

The duplex unit can process four sheets of copy paper
Example: A 14-page copy. The large numbers in the illustration show the order of pages. The small numbers in circles show the order of sheets of copy paper (if shaded, this indicates the second side).

1. The first 4 sheets are fed and printed.
1) 1 st sheet printed (1st page)
2) 2nd sheet printed (3rd page)
3) 3rd sheet printed (5th page)
4) 4th sheet printed (7th page)

2. The back of the 1 st sheet is printed (2nd page).
3. The 2nd, 3rd, 4th sheets (3rd, 5th, and 7th pages) go into the duplex unit.
4. The 5 th sheet (9th page) is fed in.

5. The 5 th sheet is printed ( 9 th page).
6. The 1st sheet is fed out (1st and 2nd pages printed).

7. The 5th sheet (9th page) is directed to the duplex unit.
8. The 6th sheet (11th page) is fed.
9. The back of the 2 nd sheet is printed (4th page).

10. The 2 nd sheet is fed out (3rd and 4th pages printed).
11. The 6th sheet is printed (11th page) and directed to the duplex unit.
12. The back of the 3rd sheet (6th page) is printed.
13. The 7th sheet is fed and printed (13th
 page).
14. The back of the 4 th sheet is printed (8th page) and fed out (7th and 8th page).
15. The back of the 5th sheet is printed (10th page) and fed out (9th and 10th pages).
16. The back of the 6 th sheet is printed (12th page) and fed out (11th and 12th pages).
17. The back of the 7th sheet is printed and fed out (13th and 14th pages).

\section*{Longer than A4/Letter LEF}

The duplex unit can process two sheets of copy paper
Example: 8 pages. The number \([A]\) in the illustration shows the order of pages. The number \([B]\) in the illustration shows the order of sheets of copy paper (if shaded, this indicates the second side).
[A]

[B]
1. The first 2 sheets are fed and printed.
1) 1 st sheet printed (1st page)
2) 2 nd sheet printed (3rd page)

2. The first 2 sheets go into the duplex unit.

3. The back of the 1 st sheet (2nd page) is printed.
4. The 3rd sheet (5th page) is fed and printed.

5. The 1 st sheet ( 1 st and 2 nd pages) is fed out.
6. The back of the 2 nd sheet (4th page) is printed.
7. The 4th sheet (7th page) is fed and printed.

8. The 2 nd sheet (3rd and 4th pages) is fed out.
9. The back of the 3rd sheet (6th page) is printed.

10. The 3rd sheet (5th and 6th pages printed) is fed out.
11. The back of the 4th sheet (8th page) is printed.
12. The 4th sheet (7th and 8th pages) is fed out.

\subsection*{6.18 ENERGY CONSERVATION MODES}

\subsection*{6.18.1 OVERVIEW}


When the machine is not used, the energy saver function reduces power consumption by lowering the fusing temperature.

This machine has four types of energy saver mode as follows.
1) Energy saver mode (called 'panel off mode' in the operation manual)
2) Low power mode (called 'energy saver mode' in the operation manual)
3) Auto off mode (copier configuration only)
4) Night mode (copier/printer/scanner configuration only)

These modes are controlled by the following User Tools:
- Panel off timer
- Energy saver timer
- Auto off timer
- Auto off disabling

The way that the machine operates depends on the combination of installed equipment (copier only, or whether a printer/scanner is installed).

\subsection*{6.18.2 ENERGY SAVER MODE}

\section*{Entering the energy saver mode}

The machine enters energy saver mode when one of the following is done.
- The Energy Saver Key is held down for a second.
- The panel off timer runs out after the last job (User Tools - System Settings Timer Setting - Panel Off Timer: default setting is 60 s ).

\section*{What happens in energy saver mode}

When the machine enters energy saver mode, the fusing lamp drops to a certain temperature and the operation panel indicators are turned off except for the Energy Saver LED and the Power LED.

If the CPU receives the image print out command from an application (e. g. to print data from a PC), the fusing temperature rises to print the data. However, the operation indicators stay off.

\section*{Return to stand-by mode}

If one of the following is done, the machine returns to stand-by mode:
- The Energy Saver Mode key is pressed
- An original is placed in the ADF
- The ADF is lifted
- A sheet of paper is placed in the by-pass feed table
\begin{tabular}{|c|c|c|c|c||}
\hline \begin{tabular}{c} 
Operation \\
Switch
\end{tabular} & \begin{tabular}{c} 
Energy Saver \\
LED
\end{tabular} & Fusing Temp. & \begin{tabular}{c} 
Approx. \\
Recovery Time
\end{tabular} & System +5V \\
\hline On & On & \begin{tabular}{c}
\(168^{\circ} \mathrm{C}(\mathrm{B} 070 / 90 \mathrm{cpm})\) \\
\(173^{\circ} \mathrm{C}(\mathrm{B} 071 / 105 \mathrm{cpm})\)
\end{tabular} & 3 s & On \\
\hline
\end{tabular}

\subsection*{6.18.3 LOW POWER MODE}

\section*{Entering the low power mode}

The machine enters low power mode when:
The energy saver timer runs out after the last job.
(User Tools - System Settings - Timer Setting - Energy Saver Timer: default setting is 15 min )

\section*{What happens in low power mode}

The fusing lamp drops to the prescribed temperature, as shown in the table below (the temperature drops more than that in energy saver mode). The other conditions are the same as for the energy saver mode.

\section*{Return to stand-by mode}

The machine returns to standby mode in the same way as from the energy saver mode.
\begin{tabular}{||c|c|c|c|c||}
\hline \hline \begin{tabular}{c} 
Operation \\
Switch
\end{tabular} & \begin{tabular}{c} 
Energy Saver \\
LED
\end{tabular} & Fusing Temp. & \begin{tabular}{c} 
Approx. \\
Recovery Time
\end{tabular} & System +5V \\
\hline On & On & \begin{tabular}{c}
\(143^{\circ} \mathrm{C}(\mathrm{B} 070 / 90 \mathrm{cpm})\) \\
\(150^{\circ} \mathrm{C}(\mathrm{B} 071 / 105 \mathrm{cpm})\)
\end{tabular} & 40 s & On \\
\hline
\end{tabular}

\subsection*{6.18.4 AUTO OFF MODE}

Auto off mode is used only if no optional printer/scanner unit is installed.

\section*{Entering auto off mode}

The machine enters auto off mode when one of the following is done.
- The auto off timer runs out after the last job (User Tools - System Settings Timer Setting - Auto Off Timer: default setting is 90 min )
- The operation switch is pressed to turn the power off

\section*{What happens in auto off mode}

When the machine enters auto off mode, the fusing lamps and all dc supplies except \(+5 \mathrm{VE} / 12 \mathrm{VE}(+5 \mathrm{~V} / 12 \mathrm{~V}\) for energy saver mode) turn off.

\section*{Returning to stand-by mode}

The machine returns to stand-by mode when the main operation switch is pressed.
\begin{tabular}{|c|c|c|c|c|c||}
\hline \begin{tabular}{c} 
Operation \\
Switch
\end{tabular} & \begin{tabular}{c} 
Energy \\
Saver LED
\end{tabular} & Fusing Temp. & \begin{tabular}{c} 
Approx. \\
Recovery \\
Time
\end{tabular} & \begin{tabular}{c} 
System \\
\(\mathbf{+ 5 V}\)
\end{tabular} & Note \\
\hline Off & Off & \begin{tabular}{c} 
Room Temp. \\
(Fusing lamp off)
\end{tabular} & 360 s & Off & \begin{tabular}{l} 
Only +5VE/+12VE is \\
supplied to the \\
Controller, MB, HDD.
\end{tabular} \\
\hline
\end{tabular}

\section*{Disabling auto off mode}

If the user wishes to disable auto off mode, use the following user tool: User Tools - System Settings - AOF (change the setting to 'OFF').

\subsection*{6.18.5 NIGHT MODE}

This is used instead of auto off mode when an optional scanner/printer unit is installed.

There are two types of night mode: Night Stand-by Mode and Night Mode. The difference between night stand-by mode and night mode is the machine's condition when the machine enters auto off mode.

\section*{Entering night stand-by and night modes}

The machine enters the night stand-by mode and night modes when one of the following is done.
- The operation switch is pressed to turn the power off
- The auto off timer runs out (the operation switch is then turned off, but the main power switch stays on)
If the machine is in one or more of the following conditions, the machine enters night stand-by mode. If not, the machine enters night mode.
- Error or SC condition
- Image data is stored in the memory
- An original is in the ADF
- The ADF is open
- Paper is left in the duplex unit or staple tray

\section*{What happens in night stand-by and night modes}

When the machine enters either of these modes, the fusing lamp and operation switch turn off, and only the main power LED is lit.

\section*{Night stand-by mode}

The system +5 V and +24 V are supplied to all components.

\section*{Night mode}

The system +5 V supply is also turned off. However, \(+5 \mathrm{VE}(+5 \mathrm{~V}\) for energy saver mode) is still activated. When the machine detects a signal from the PC, the machine goes back to night stand-by mode and the system +5 V and +24 V supplies are activated. Then the machine receives the incoming message and prints it.

\section*{Returning to stand-by mode}

The machine returns to stand-by mode when the operation switch is pressed.
\begin{tabular}{||l|c|c|c|c|c||}
\hline \multicolumn{1}{|c|}{ Mode } & \begin{tabular}{c} 
Operation \\
Switch
\end{tabular} & \begin{tabular}{c} 
Energy \\
Saver \\
LED
\end{tabular} & Fusing Temp. & \begin{tabular}{c} 
System \\
\(\mathbf{+ 5 V}\)
\end{tabular} & Note \\
\hline \begin{tabular}{l} 
Night stand- \\
by mode
\end{tabular} & Off & Off & \begin{tabular}{c} 
Room Temp. \\
(Fusing lamp off)
\end{tabular} & On & \\
\hline Night mode & Off & Off & \begin{tabular}{c} 
Room Temp. \\
(Fusing lamp off)
\end{tabular} & Off & \begin{tabular}{l} 
Only +5VE/+12VE is \\
supplied to the \\
controller, MB, HDD.
\end{tabular} \\
\hline
\end{tabular}

\section*{SPECIFICATIONS}

\section*{SPECIFICATIONS}

\section*{1. GENERAL SPECIFICATIONS}

\subsection*{1.1 COPIER ENGINE}

Configuration:
Copy Process:
Originals:
Original Size:

Original Alignment:
Paper Weight:

Console
Dry electrostatic transfer system
Sheet/Book/Object
Max.: A3/11" x 17"
Min.: A5, 51/2" x 81/2" (with ADF)
Rear left corner (for platen mode, ADF mode)
Tray 1~3: \(\quad 52\) to \(163 \mathrm{~g} / \mathrm{m}^{2}\)
Tray 6 (LCT): Bond: 16 to 40 lb .
Cover: 50 to 60 lb .
Index: 90 lb .
Tray 4~5 (LCT): \(\quad 52\) to \(216 \mathrm{~g} / \mathrm{m}^{2}\)
Tray 7 (Bypass): Bond: 16 to 40 lb .
Cover: 50 to 60 lb .
Index: 90 to 110 lb .
Duplex Tray \(\quad 64\) to \(163 \mathrm{~g} / \mathrm{m}^{2}\)
(Possible Bond: 20 to 40 lb .
Weight): Cover: 50 to 60 lb .
Index: 90 lb .
Tray 1 (Tandem): 81/2" x 11" LEF, A4 LEF
Tray 2, Tray 3: \(51 / 2^{\prime \prime} \times 81 / 2^{\prime \prime}\) to \(11^{\prime \prime} \times 17 ", 12 " \times 18 "\)
A5 to A3
Duplex Tray A5 to A3, \(51 / 2^{\prime \prime} \times 81 / 2^{\prime \prime}\) to 11 " x 17",
(Possible Sizes): 12" x 18"
Reproduction Ratios: 7 reduction and 5 enlargement
\begin{tabular}{||l|c|c||}
\hline & Metric Version & Inch Version \\
\hline Enlargement & \(400 \%\) & \(400 \%\) \\
& \(200 \%\) & \(200 \%\) \\
& \(141 \%\) & \(155 \%\) \\
& \(122 \%\) & \(129 \%\) \\
& \(115 \%\) & \(121 \%\) \\
\hline Full Size & \(100 \%\) & \(100 \%\) \\
\hline & \(93 \%\) & \(93 \%\) \\
& \(82 \%\) & \(85 \%\) \\
Reduction & \(75 \%\) & \(78 \%\) \\
& \(71 \%\) & \(73 \%\) \\
& \(65 \%\) & \(65 \%\) \\
& \(50 \%\) & \(50 \%\) \\
& \(25 \%\) & \(25 \%\) \\
\hline
\end{tabular}


Space Requirements
Copier (w x d)
Full System \({ }^{* 1}\) ( \(\mathrm{w} \times \mathrm{d}\) )
\[
1202 \times 858.5 \mathrm{~mm}\left(47.3^{\prime \prime} \times 33.8^{\prime \prime}\right)
\]
\begin{tabular}{||c|l|l||}
\hline Max. & \begin{tabular}{l}
\(2528 \times 858.5 \mathrm{~mm}\) \\
\(99^{\prime \prime} \times 33.7^{\prime \prime}\)
\end{tabular} & \begin{tabular}{l} 
Finisher + Bypass with bypass \\
tray extended for A3 SEF
\end{tabular} \\
\hline Min. & \begin{tabular}{l}
\(2804 \times 858.5 \mathrm{~mm}\) \\
\(110.4^{\prime \prime} \times 33.7^{\prime \prime}\)
\end{tabular} & \begin{tabular}{l} 
Finisher + Bypass with bypass \\
tray extended for A4 LEF.
\end{tabular} \\
\hline
\end{tabular}

Full System: Mainframe + ADF + Finisher B478 + LCT B511 + Cover Interposer Tray B470 + Bypass Tray B512

Power Consumption: North America Version (Unit: W)
\begin{tabular}{||c|c|c|c|c||}
\hline & \multicolumn{2}{|c|}{ Mainframe Only } & \multicolumn{2}{c|}{ Full System* } \\
\cline { 2 - 5 } & B070 & B071 & B070 & B071 \\
\hline Warm-up & 2.20 K & 2.20 K & 2.30 K & 2.30 K \\
\hline Stand-by & 0.65 K & 0.65 K & 0.70 K & 0.70 K \\
\hline Copying & 2.70 K & 2.80 K & 2.80 K & 2.90 K \\
\hline Maximum & 2.80 K & 2.90 K & 2.90 K & 3.00 K \\
\hline
\end{tabular}
*Full System: Mainframe + ADF + LCT + Bypass Tray + Cover Interposer + Finisher \({ }^{1}\)
\({ }^{1}\) Finisher: \(\quad\) B478 + Punch Unit with B071 (105 cpm), B468 + Punch Unit with B070 ( 90 cpm )

Power Consumption: Europe Version (Unit: W)
\begin{tabular}{||c|c|c|c|c||}
\hline \multirow{2}{*}{} & \multicolumn{2}{|c|}{ Mainframe Only } & \multicolumn{2}{c|}{ Full System* } \\
\cline { 2 - 5 } & B070 & B071 & B070 & B071 \\
\hline Warm-up & 2.10 K & 2.10 K & 2.20 K & 2.20 K \\
\hline Stand-by & 0.65 K & 0.65 K & 0.70 K & 0.70 K \\
\hline Copying & 2.50 K & 2.60 K & 2.60 K & 2.70 K \\
\hline Maximum & 2.60 K & 2.70 K & 2.70 K & 2.80 K \\
\hline
\end{tabular}
*Full System: Mainframe + ADF + LCT + Bypass Tray + Cover Interposer + Finisher \({ }^{1}\)
\({ }^{1}\) Finisher: \(\quad\) B478 + Punch Unit with B071 (105 cpm), B468 + Punch Unit with B070 ( 90 cpm )

\section*{Energy Star}
\begin{tabular}{|c|c|c|c|c|c|c|c|c|}
\hline \multirow[t]{3}{*}{} & \multicolumn{4}{|c|}{North America} & \multicolumn{4}{|c|}{Europe} \\
\hline & \multicolumn{2}{|l|}{B071 (105 cpm)} & \multicolumn{2}{|l|}{B070 (90 cpm)} & \multicolumn{2}{|l|}{\[
\begin{gathered}
\text { B071 } \\
(105 \mathrm{cpm})
\end{gathered}
\]} & \multicolumn{2}{|l|}{B070 (90 cpm)} \\
\hline & Basic & MFP & Basic & MFP & Basic & MFP & Basic & MFP \\
\hline \multicolumn{9}{|l|}{Low Power Mode} \\
\hline Power Consumption (W) & 350 & 355 & 340 & 345 & 350 & 355 & 340 & 345 \\
\hline Default Interval (Min.) & 15 & 15 & 15 & 15 & 15 & 15 & 15 & 15 \\
\hline Recovery Time (Sec.) & 40 & 40 & 40 & 40 & 40 & 40 & 40 & 40 \\
\hline \multicolumn{9}{|l|}{Off Mode} \\
\hline Power Consumption (W) & 6 & & 6 & & 6 & & 6 & \\
\hline Default Interval (Min.) & 120 & & 90 & & 120 & & 90 & \\
\hline Recovery Time (Sec.) & \[
\begin{aligned}
& \text { Less } \\
& \text { than } \\
& 360
\end{aligned}
\] & & \[
\begin{aligned}
& \hline \text { Less } \\
& \text { than } \\
& 360
\end{aligned}
\] & & \[
\begin{aligned}
& \text { Less } \\
& \text { than } \\
& 360
\end{aligned}
\] & & \[
\begin{aligned}
& \text { Less } \\
& \text { than } \\
& 360
\end{aligned}
\] & \\
\hline \multicolumn{9}{|l|}{Sleep Mode} \\
\hline \begin{tabular}{l}
Power Consumption \\
(W)
\end{tabular} & & 50 & & 50 & & 50 & & 50 \\
\hline Default Interval (Min.) & & 120 & & 90 & & 120 & & 60 \\
\hline Recovery Time (Sec.) & & \[
\begin{aligned}
& \text { Less } \\
& \text { than } \\
& 360
\end{aligned}
\] & & \[
\begin{aligned}
& \hline \text { Less } \\
& \text { than } \\
& 360 \\
& \hline
\end{aligned}
\] & & \[
\begin{gathered}
\text { Less } \\
\text { than } \\
360 \\
\hline
\end{gathered}
\] & & \[
\begin{aligned}
& \text { Less } \\
& \text { than } \\
& 360
\end{aligned}
\] \\
\hline
\end{tabular}

\section*{Noise Emission}
\begin{tabular}{||l|l|c|c||}
\hline \multicolumn{2}{|c|}{ B070 (90 cpm) } & \multicolumn{2}{c|}{\begin{tabular}{c} 
Sound Power \\
Level db (A)
\end{tabular}} \\
\hline \multirow{2}{*}{ Mainframe } & Stand-by & 60 & \begin{tabular}{c} 
Sound Pressure \\
Level dB (A)
\end{tabular} \\
\cline { 2 - 4 } & Copying & 74 & 45 \\
\hline \multirow{2}{*}{ Full System } & Stand-by & 59 & 60 \\
\cline { 2 - 4 } & Copying & 78 & 46 \\
\hline \multirow{2}{*}{ B070 (105 cpm) } & \begin{tabular}{c} 
Sound Power \\
Level dB (A)
\end{tabular} & \begin{tabular}{c} 
Sound Pressure \\
Level dB (A)
\end{tabular} \\
\hline \multirow{2}{*}{ Mainframe } & Stand-by & 60 & 45 \\
\cline { 2 - 4 } & Copying & 76 & 61 \\
\hline \multirow{2}{*}{ Full System } & Stand-by & 59 & 46 \\
\cline { 2 - 4 } & Copying & 79 & 68 \\
\hline
\end{tabular}

\subsection*{1.2 ADF}
\begin{tabular}{|c|c|c|}
\hline \multirow[t]{3}{*}{Original Size:} & Normal Original Mode: & A3 to B5, \(11^{\prime \prime} \times 17^{\prime \prime}\) to 51/2" \(\times 81 /{ }^{\prime \prime}\) \\
\hline & Thin Original Mode & A3 to B5, \(11^{\prime \prime} \times 17^{\prime \prime}\) to 51/2" \(\times 81 / 2^{\prime \prime}\) \\
\hline & Duplex Original Mode: & A3 to B5, 11" \(\times 17^{\prime \prime}\) to \(51 / 2^{\prime \prime} \times 81 / 2^{\prime \prime}\) \\
\hline \multirow[t]{3}{*}{Original Weight:} & Normal Original Mode: & \(52 \sim 128 \mathrm{~g} / \mathrm{m}^{2}\) (Note 1) \\
\hline & Thin Original Mode & \(40 \sim 128 \mathrm{~g} / \mathrm{m}^{2}\) (Note 1) \\
\hline & Duplex Original Mode: & \(52 \sim 105 \mathrm{~g} / \mathrm{m}^{2}\) (Note 2) \\
\hline Table Capacity: & \multicolumn{2}{|l|}{100 sheets ( \(80 \mathrm{~g} / \mathrm{m}^{2}, 20 \mathrm{lb}\) )} \\
\hline Original Feeding Speed: & \multicolumn{2}{|l|}{75 cpm (A4/81/2" \(\times 11^{\prime \prime}\) LEF, 1 to 1)} \\
\hline Original Standard Position: & \multicolumn{2}{|l|}{Rear left corner (Face-up)} \\
\hline Separation: & \multicolumn{2}{|l|}{FRR} \\
\hline Original Transport: & \multicolumn{2}{|l|}{One flat belt} \\
\hline Original Feed Order: & \multicolumn{2}{|l|}{From the top original} \\
\hline Power Source: & \multicolumn{2}{|l|}{DC 24 V and DC 38 V from the copier} \\
\hline Power Consumption: & \multicolumn{2}{|l|}{Less than 130 W} \\
\hline Dimensions (W x D x H): & \multicolumn{2}{|l|}{\(680 \times 560 \times 150 \mathrm{~mm}\left(26.8{ }^{\prime \prime} \times 22^{\prime \prime} \times 5.9\right.\) )} \\
\hline Weight & \multicolumn{2}{|l|}{Less than 17.5 kg ( 38.5 lb .)} \\
\hline
\end{tabular}

Note \(1: 156 \mathrm{~g} / \mathrm{m}^{2}\) possible, but not guaranteed.
Note \(\mathbf{2 : 1 2 8 ~} \mathrm{g} / \mathrm{m}^{2}\) possible, but not guaranteed.

\section*{SPECIFICATIONS}

\subsection*{1.3 PAPER SIZES BY FEED STATION}

The tables on the next three pages describe how paper size detection operates, depending on the geographical area, namely, North American, Europe/Asia, and China.

Here are important notes and the key for reading these tables.

\section*{General Notes}
\begin{tabular}{|c|c|}
\hline Symbol & Meaning \\
\hline (1) & Tandem Tray \\
\hline 1 & A3/DLT Kit B331 Installed \\
\hline (2) & \\
\hline (3) & Main Machine Universal Trays \\
\hline (4) & \\
\hline (5) & LCT B511 \\
\hline (6) & \\
\hline (7) & Bypass Tray B512 (Installed on LCT B511) \\
\hline
\end{tabular}

Key
Trays (1), (1), (6) are fixed trays and do not support automatic paper size detection.
Use this key for columns (1), (1), ©
\begin{tabular}{|c|l|}
\hline Symbol & Meaning \\
\hline O & Paper size must be selected with an SP code. \\
\hline \(\mathbf{A}\) & A Custom Size must be selected with an SP code. \\
\hline
\end{tabular}

Trays (2), (3), (4), (5) are universal paper cassettes. (2), (3): Paper size can be selected by manually setting the dial on the tray. (4), (5): Paper size depends on the position of the actuator plates. Use this key for columns (2), (3), (4), (5).
\begin{tabular}{||c|l||}
\hline Symbol & Meaning \\
\hline- & Paper size is detected automatically by paper size detection sensors. \\
\hline & \begin{tabular}{l} 
Set dial setting to \(*\), move the fences to the correct positions for the paper \\
size, then select paper size with the Tray Paper Settings button.
\end{tabular} \\
\hline\(\square\) & \begin{tabular}{l} 
Setting the dial to \(*\) and moving the size fences does not detect the paper \\
size. Select paper size with the Tray Paper Settings button.
\end{tabular} \\
\hline
\end{tabular}

Tray (7) is the optional Bypass Tray B512. Use this key for column (7).
\begin{tabular}{|c|l||}
\hline Symbol & Meaning \\
\hline- & \begin{tabular}{l} 
Paper size is detected automatically by the position of the side fence and one \\
paper length sensor.
\end{tabular} \\
\hline O & \begin{tabular}{l} 
Paper size can be detected after the operator selects the bypass tray as the \\
feed source, pushes \# on the operation panel, then select the paper size with \\
the Tray Paper Settings button.
\end{tabular} \\
\hline
\end{tabular}

NOTE: The side fences and end fence can be adjusted freely to accept any paper size. However, only a limited number of standard paper sizes can be detected automatically. For details, refer to Column 8 (7) and the Bypass Tray B512 manual ("Paper Size Detection").

North America
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|}
\hline & & & (1) & (1) & (2) & (3) & (4) & (5) & (6) & (7) \\
\hline A3 & SEF & \(297 \times 420 \mathrm{~mm}\) & & \(\bigcirc\) & 0 & \(\bigcirc\) & & & & \(\bigcirc\) \\
\hline A3 & LEF & \(420 \times 297 \mathrm{~mm}\) & & & & & & & & \\
\hline B4 & SEF & \(257 \times 364 \mathrm{~mm}\) & & O & \(\square\) & \(\square\) & & & & O \\
\hline B4 & LEF & \(364 \times 257 \mathrm{~mm}\) & & & & & & & & \\
\hline A4 & SEF & \(210 \times 297 \mathrm{~mm}\) & & O & O & O & & & & O \\
\hline A4 & LEF & \(297 \times 210 \mathrm{~mm}\) & O & O & \(\bigcirc\) & \(\bigcirc\) & \(\bigcirc\) & \(\bigcirc\) & O & \(\bigcirc\) \\
\hline B5 & SEF & \(182 \times 257 \mathrm{~mm}\) & & & \(\square\) & \(\square\) & & & & O \\
\hline B5 & LEF & \(257 \times 182 \mathrm{~mm}\) & & & \(\square\) & \(\square\) & \(\bigcirc\) & \(\bigcirc\) & \(\bigcirc\) & \(\bigcirc\) \\
\hline A5 & SEF & \(148 \times 210 \mathrm{~mm}\) & & & O & O & - & \(\bigcirc\) & O & \(\bigcirc\) \\
\hline A5 & LEF & \(210 \times 148 \mathrm{~mm}\) & & & O & O & \(\bigcirc\) & \(\bigcirc\) & O & O \\
\hline DLT & SEF & 11 " \(17{ }^{\text {" }}\) & & O & \(\bigcirc\) & \(\bigcirc\) & & & & \(\bigcirc\) \\
\hline DLT & LEF & \(17^{\prime \prime} \times 11{ }^{\text {l }}\) & & & & & & & & \\
\hline LG & SEF & 81/2" \(\times 14 "\) & & O & \(\bigcirc\) & \(\bigcirc\) & & & & O \\
\hline LG & LEF & \(14^{\prime \prime} \times 81 / 2^{\prime \prime}\) & & & & & & & & \\
\hline LT & SEF & 81/2" \(\times 11^{\prime \prime}\) & & O & \(\bigcirc\) & \(\bigcirc\) & & & & \(\bigcirc\) \\
\hline LT & LEF & \(11^{\prime \prime} \times 81 / 2^{\prime \prime}\) & O & \(\bigcirc\) & \(\bigcirc\) & \(\bigcirc\) & \(\bigcirc\) & \(\bigcirc\) & O & \(\bigcirc\) \\
\hline HLT & SEF & 51/2 " \(\times 81 / 2 \mathrm{l}\) & & & \(\bigcirc\) & \(\bigcirc\) & - & \(\bigcirc\) & O & \(\bigcirc\) \\
\hline HLT & LEF & 81/2" \(\times 51 / 2^{\prime \prime}\) & & & \(\bigcirc\) & \(\bigcirc\) & - & \(\bigcirc\) & O & \(\bigcirc\) \\
\hline Executive & SEF & \(71 / 4{ }^{\prime \prime} \times 101 / 2^{\prime \prime}\) & & & \(\bigcirc\) & \(\bigcirc\) & & & & \(\bigcirc\) \\
\hline Executive & LEF & 101/2" \(\times 71 / 4^{\prime \prime}\) & & & & & & & & O \\
\hline F & SEF & 8" \(\times 13^{\prime \prime}\) & & & \(\bigcirc\) & \(\bigcirc\) & & & & \(\bigcirc\) \\
\hline F & LEF & \(13^{\prime \prime} \times 8\) " & & & & & & & & \\
\hline Foolscap & SEF & 81/2" \(\times 13^{\prime \prime}\) & & & O & O & & & & O \\
\hline Foolscap & LEF & \(13^{\prime \prime} \times 81 / 2^{\prime \prime}\) & & & & & & & & \\
\hline Folio & SEF & 81/4" \(\times 13^{\prime \prime}\) & & & O & O & & & & O \\
\hline \multirow{8}{*}{Folio} & LEF & \(13^{\prime \prime} \times 81 / 4 "\) & & & & & & & & \\
\hline & SEF & \(11^{\prime \prime} \times 14{ }^{\prime \prime}\) & & & & & & & & \\
\hline & SEF & \(11^{\prime \prime} \times 15^{\prime \prime}\) & & & O & O & & & & O \\
\hline & SEF & \(10^{\prime \prime} \times 14{ }^{\text {a }}\) & & & \(\bigcirc\) & \(\bigcirc\) & & & & \(\bigcirc\) \\
\hline & SEF & 81/4" x 14" & & & & & & & & \\
\hline & SEF & 8" \(\times 101 / 2^{\prime \prime}\) & & & \(\bigcirc\) & \(\bigcirc\) & & & & \\
\hline & SEF & 8" \(\times 10{ }^{\prime \prime}\) & & & \(\square\) & \(\square\) & & & & \(\bigcirc\) \\
\hline & SEF & \(12^{\prime \prime} \times 18{ }^{\text {" }}\) & & & \(\square\) & \(\square\) & & & & O \\
\hline Custom & Width & \(139 \sim 305 \mathrm{~mm}\) & & & \(\square\) & \(\square\) & & & & O \\
\hline Size & Length & \(139 \sim 458 \mathrm{~mm}\) & & & \(\square\) & \(\square\) & & & & O \\
\hline Custom & Width & \(210 \sim 305 \mathrm{~mm}\) & & \multirow[t]{2}{*}{-} & \multicolumn{6}{|l|}{\multirow[t]{2}{*}{}} \\
\hline Size & Length & \(210 \sim 439 \mathrm{~mm}\) & & & & & & & & \\
\hline
\end{tabular}

\section*{SPECIFICATIONS}

Europe/Asia
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|}
\hline & & & (1) & (1) & (2) & (3) & (4) & (5) & (6) & (7) \\
\hline A3 & SEF & \(297 \times 420 \mathrm{~mm}\) & & O & \(\bigcirc\) & \(\bigcirc\) & & & & \(\bigcirc\) \\
\hline A3 & LEF & \(420 \times 297 \mathrm{~mm}\) & & & & & & & & \\
\hline B4 & SEF & \(257 \times 364 \mathrm{~mm}\) & & O & O & O & & & & \(\bigcirc\) \\
\hline B4 & LEF & \(364 \times 257\) & & & & & & & & \\
\hline A4 & SEF & \(210 \times 297 \mathrm{~mm}\) & & \(\bigcirc\) & \(\bigcirc\) & \(\bigcirc\) & & & & \(\bigcirc\) \\
\hline A4 & LEF & \(297 \times 210 \mathrm{~mm}\) & O & O & \(\bigcirc\) & \(\bigcirc\) & \(\bigcirc\) & \(\bigcirc\) & O & \(\bigcirc\) \\
\hline B5 & SEF & \(182 \times 257 \mathrm{~mm}\) & & & \(\bigcirc\) & \(\bigcirc\) & & & & \(\bigcirc\) \\
\hline B5 & LEF & \(257 \times 182 \mathrm{~mm}\) & & & O & \(\bigcirc\) & \(\bigcirc\) & \(\bigcirc\) & \(\bigcirc\) & \(\bigcirc\) \\
\hline A5 & SEF & \(148 \times 210 \mathrm{~mm}\) & & & \(\bigcirc\) & \(\bigcirc\) & \(\bigcirc\) & \(\bigcirc\) & O & \(\bigcirc\) \\
\hline A5 & LEF & \(210 \times 148 \mathrm{~mm}\) & & & \(\bigcirc\) & \(\bigcirc\) & \(\bigcirc\) & \(\bigcirc\) & O & \(\bigcirc\) \\
\hline DLT & SEF & 11" \(\times 17{ }^{\text {P }}\) & & O & O & O & & & & \(\bigcirc\) \\
\hline DLT & LEF & \(17^{\prime \prime} \times 11{ }^{\text {l }}\) & & & & & & & & \\
\hline LG & SEF & \(81 / 2\) " \(\times 14\) " & & O & O & O & & & & O \\
\hline LG & LEF & \(14 \times 81 / 2^{\prime \prime}\) & & & & & & & & \\
\hline LT & SEF & 81/2" \(\times 11^{\prime \prime}\) & & \(\bigcirc\) & O & \(\bigcirc\) & & & & \(\bigcirc\) \\
\hline LT & LEF & \(11^{\prime \prime} \times 81 / 2^{\prime \prime}\) & O & O & O & \(\bigcirc\) & \(\bigcirc\) & \(\bigcirc\) & O & \(\bigcirc\) \\
\hline HLT & SEF & 51/2" \(\times 81 / 2\) " & & & O & O & \(\bigcirc\) & \(\bigcirc\) & O & \(\bigcirc\) \\
\hline HLT & LEF & \(81 / 2^{\prime \prime} \times 51 / 2^{\prime \prime}\) & & & O & \(\bigcirc\) & \(\bigcirc\) & \(\bigcirc\) & O & \(\bigcirc\) \\
\hline Executive & SEF & 71/4" \(\times 101 / 2^{\prime \prime}\) & & & \(\square\) & \(\square\) & & & & \(\bigcirc\) \\
\hline Executive & LEF & 101/2" \(\times 71 / 4{ }^{\prime \prime}\) & & & & & & & & O \\
\hline F & SEF & 8" \(\times 13^{\prime \prime}\) & & & O & O & & & & \(\bigcirc\) \\
\hline F & LEF & \(13^{\prime \prime} \times 8\) " & & & & & & & & \\
\hline Foolscap & SEF & 81/2" \(\times 13^{\prime \prime}\) & & & \(\bigcirc\) & \(\bigcirc\) & & & & O \\
\hline Foolscap & LEF & \(13^{\prime \prime} \times 81 / 2^{\prime \prime}\) & & & & & & & & \\
\hline Folio & SEF & 81/4" \(\times 13^{\prime \prime}\) & & & \(\bigcirc\) & \(\bigcirc\) & & & & O \\
\hline \multirow{8}{*}{Folio} & LEF & \(13^{\prime \prime} \times 81 / 4^{\prime \prime}\) & & & & & & & & \\
\hline & SEF & 11" \(\times 14\) " & & & & & & & & \\
\hline & SEF & \(11^{\prime \prime} \times 15{ }^{\prime \prime}\) & & & O & \(\bigcirc\) & & & & \(\bigcirc\) \\
\hline & SEF & \(10^{\prime \prime} \times 14{ }^{\prime \prime}\) & & & \(\square\) & \(\square\) & & & & \(\bigcirc\) \\
\hline & SEF & 81/4" x 14" & & & & & & & & \\
\hline & SEF & 8" \(\times 101 / 2^{\prime \prime}\) & & & \(\bigcirc\) & \(\bigcirc\) & & & & \(\bigcirc\) \\
\hline & SEF & 8" \(\times 10\) " & & & \(\square\) & \(\square\) & & & & \(\bigcirc\) \\
\hline & SEF & \(12^{\prime \prime} \times 18{ }^{\prime \prime}\) & & & \(\square\) & \(\square\) & & & & \(\bigcirc\) \\
\hline Custom & Width & \(139 \sim 305 \mathrm{~mm}\) & & & \(\square\) & \(\square\) & & & & O \\
\hline Size & Length & \(139 \sim 458 \mathrm{~mm}\) & & & & \(\square\) & & & & O \\
\hline Custom & Width & \(210 \sim 305 \mathrm{~mm}\) & & \multirow[t]{2}{*}{-} & \multicolumn{6}{|l|}{\multirow[t]{2}{*}{}} \\
\hline Size & Length & \(210 \sim 439 \mathrm{~mm}\) & & & & & & & & \\
\hline
\end{tabular}

China


\section*{SPECIFICATIONS}

\subsection*{1.4 A3/DLT TRAY KIT (B331)}
\begin{tabular}{||l|l||}
\hline Paper Size & \begin{tabular}{l} 
A3 SEF, B4 SEF, 11"x17" SEF, 81/2"x14" SEF, A4 SEF, \\
A4 LEF, \(81 / 2^{\prime " x} 11\) " SEF, 11"x81/2" LEF, \(305 \mathrm{~mm} \times 439 \mathrm{~mm}\)
\end{tabular} \\
\hline Paper Weight & \(52 \sim 163 \mathrm{~g} / \mathrm{m}^{2}\) \\
\hline Tray Capacity & 1,000 sheets \\
\hline Remaining Paper Detection & \(5-\) Step: \(100 \%, 75 \%, 50 \%, 25 \%\), End \\
\hline
\end{tabular}

\subsection*{1.5 LCT (B511)}
\begin{tabular}{|c|c|c|}
\hline \multirow[t]{2}{*}{Paper Weight} & Tray 4, 5 & 52 to \(216 \mathrm{~g} / \mathrm{m}^{2}\) \\
\hline & Tray 6 & 52 to \(216 \mathrm{~g} / \mathrm{m}^{2}\) \\
\hline Paper Size & Tray 4,5,6 & A4 LEF, B5 LEF, 81/2"x11" LEF, A5, 51/2"x81/2" \\
\hline \multirow[t]{2}{*}{Tray Capacity:} & Tray 4, 5 & 1,000 sheets (Thick Paper 0.11 mm ) \\
\hline & Tray 6 & 2,550 sheets (Thick Paper 0.11 mm ) \\
\hline Tab Sheet: & \multicolumn{2}{|l|}{\begin{tabular}{l}
Feed possible from Tray 4 or Tray 5. Requires installation of tab sheet fence. \\
Note: Only A4 LEF, 81/2" \(\times 11^{\prime \prime}\) LEF tab sheets can be fed.
\end{tabular}} \\
\hline Paper Feed System: & \multicolumn{2}{|l|}{FRR} \\
\hline Remaining Paper Detection: & \multicolumn{2}{|l|}{5-Step including Near-End for Trays 4, 5, 6} \\
\hline Power Source: & \multicolumn{2}{|l|}{\(24 \mathrm{Vdc}, 5 \mathrm{Vdc}\) (from copier)} \\
\hline Power Consumption: & \multicolumn{2}{|l|}{55 W} \\
\hline Weight: & \multicolumn{2}{|l|}{Less than 82 kg ( 180.4 lb .)} \\
\hline Size (W x D x H) : & \multicolumn{2}{|l|}{\[
\begin{aligned}
& 540 \mathrm{~mm} \times 730 \mathrm{~mm} \times 980 \mathrm{~mm} \\
& \left(21.3^{\prime \prime} \times 28.7^{\prime \prime} \times 38.6^{\prime \prime}\right)
\end{aligned}
\]} \\
\hline
\end{tabular}

\subsection*{1.6 BYPASS TRAY (B512)}

NOTE: The Bypass Tray is attached to the top of the LCT B511.
\begin{tabular}{||l|l||}
\hline Paper Feed System & FRR \\
\hline Tray Capacity & 500 sheets (Thick Paper 0.11 mm) \\
\hline Remaining Paper Detection & 4-Step: Including Near-End \\
\hline Paper Size & A5 to A3, 51/2" \(\times 81 / 2^{\prime \prime}\) to \(12^{\prime \prime} \times 18^{\prime \prime}\) \\
\hline Tab Sheets & \begin{tabular}{l} 
A4 LEF, \(81 / 2^{\prime \prime} \times 11 "\) LEF (requires attachment of tab \\
fence)
\end{tabular} \\
\hline Paper Weight & 52 to \(216 \mathrm{~g} / \mathrm{m}^{2}\) \\
\hline Weight & Less than \(18 \mathrm{~kg}(39.6 \mathrm{lb})\). \\
\hline Power Source & \(24 \mathrm{Vdc}, 5 \mathrm{Vdc}\) (from copier) \\
\hline Power Consumption & 50 W \\
\hline Dimensions (W \(\times \mathrm{D} \times \mathrm{H})\) & \begin{tabular}{l}
\(680 \times 561 \times 181 \mathrm{~mm}\) \\
\((26.7 \times 21.1 \times 7.1 \mathrm{in})\).
\end{tabular} \\
\hline
\end{tabular}

\subsection*{1.73000 SHEET BOOKLET FINISHER (B468)}

NOTE: The 3000 Sheet Booklet Finisher B468 is used with the B070 ( 90 ppm ) only.

\section*{Upper Tray}
\begin{tabular}{|c|c|c|c|c|}
\hline \multirow[t]{5}{*}{Tray Capacity ( \(80 \mathrm{~g} / \mathrm{m}^{2}\) )} & Unstapled & \multicolumn{3}{|l|}{```
500 sheets (A4, A5 LEF, B5, 81/2"x11")
250 sheets (A3 SEF, B4 SEF, 11"x17" SEF, 81/2"x11",
    12"x18"
100 sheets (A5 SEF, A6 SEF, B6 SEF, 51/2"x81/2")
```} \\
\hline & \multirow[t]{3}{*}{Stapled} & Max docs. & Total sheets & Size \\
\hline & & 50 docs. & 500 sheets & A4 LEF, 81/2"x11" LEF \\
\hline & & 25 docs. & 250 sheets & A3, A4 SEF, B4, B5, 12"x18", 11"x17", 81/2"x11" \\
\hline & Stapled (Mixed Sizes) & 16 docs & 30 sheets & A3 LEF, A4 LEF, B4 LEF, B5 LEF, 11"x17" LEF, 81/2"x11" LEF \\
\hline \multicolumn{2}{|l|}{Paper Size} & \multicolumn{3}{|l|}{A3 ~ A5, A6 SEF, B6 SEF, 12"x18", 11"x17" ~ 51/2"x81/2"} \\
\hline \multicolumn{2}{|l|}{Paper Weight} & \multicolumn{3}{|l|}{\(52 \mathrm{~g} / \mathrm{m}^{2} \sim 216 \mathrm{~g} / \mathrm{m}^{2}\)} \\
\hline
\end{tabular}

\section*{Lower Tray}

Documents selected for booklet finishing (saddle-stitching) are folded, stapled, and output only to the lower tray.
\begin{tabular}{|c|c|c|c|c|}
\hline \multirow[t]{9}{*}{Tray Capacity ( \(80 \mathrm{~g} / \mathrm{m}^{2}\) )} & \multirow[t]{4}{*}{Unstapled} & 2,500 Sheets & \multicolumn{2}{|l|}{A4 LEF, 81/2"x11" LEF} \\
\hline & & 1,250 Sheets & \multicolumn{2}{|l|}{A3 SEF, A4 SEF, B4 SEF, B5, 11 "x17" SEF, 81/2"x14", 81/2"x11" SEF, 12"x18"} \\
\hline & & 500 Sheets & \multicolumn{2}{|l|}{A5 LEF} \\
\hline & & 100 Sheets & \multicolumn{2}{|l|}{A5 SEF, B6 SEF, 51/2"x81/2"} \\
\hline & \multirow[t]{4}{*}{Stapled} & Max docs. & Total sheets & Size \\
\hline & & 50 docs. & 2,500 sheets & A4 LEF, 81/2"x11" LEF \\
\hline & & 50 docs. & 1,250 sheets & A4 SEF, B5, 81/2"x11" SEF \\
\hline & & 30 docs. & 1,250 sheets & A3, B4, 12"x18", 11"x17" \\
\hline & Stapled (Mixed Sizes) & 50 docs. & 30 sheets & A3 LEF, A4 LEF, B4 LEF, B5 LEF, 11"x17" LEF, 81/2"x11" LEF. \\
\hline \multicolumn{2}{|l|}{Paper Size} & \multicolumn{3}{|l|}{A3 ~ A5, A6 SEF, B6 SEF, 12"x18", 11"x17" ~ 51/2"x81/2" LEF} \\
\hline \multicolumn{2}{|l|}{Paper Weight} & \multicolumn{3}{|l|}{\(52 \mathrm{~g} / \mathrm{m}^{2} \sim 216 \mathrm{~g} / \mathrm{m}^{2}\)} \\
\hline
\end{tabular}

\section*{Proof Tray}
\begin{tabular}{||l|l||}
\hline Tray Capacity & \begin{tabular}{l}
250 sheets (A4, 81/2"x11" or smaller) \\
50 sheets (B4, 81/2"x14" or larger)
\end{tabular} \\
\hline Paper Weight & \(52 \mathrm{~g} / \mathrm{m}^{2} \sim 216 \mathrm{~g} / \mathrm{m}^{2}\) \\
\hline
\end{tabular}

\section*{SPECIFICATIONS}

\section*{Staple Specifications}
\begin{tabular}{|c|c|c|}
\hline \multirow[t]{2}{*}{\[
\begin{array}{|l}
\hline \text { Binding Capacity } \\
\left(80 \mathrm{~g} / \mathrm{m}^{2}\right)
\end{array}
\]} & Same Size & \begin{tabular}{l}
50 sheets (A4, 81/2" \(\times 11^{\prime \prime}\) or smaller) \\
30 sheets (B4, 81/2" x 14" or larger)
\end{tabular} \\
\hline & Mixed Sizes & 30 sheets (A3 and A4 LEF, B4 and B5 LEF, 11" x 17"and 81/2" x 11" LEF \\
\hline Paper Size & \multicolumn{2}{|l|}{A3 to B5, 11" \(\times 17^{\prime \prime}\) to 81/2" \(\times 11^{\prime \prime}\)} \\
\hline Paper Weight & \multicolumn{2}{|l|}{\(64 \mathrm{~g} / \mathrm{m}^{2}\) to \(90 \mathrm{~g} / \mathrm{m}^{2}\)} \\
\hline Stapling Position & \multicolumn{2}{|l|}{Front (1), Back (1), Back (1: diagonal), 2 positions} \\
\hline Stapling Capacity & \multicolumn{2}{|l|}{5,000 staples/cartridge} \\
\hline
\end{tabular}

\section*{Booklet Staple Specifications}
\begin{tabular}{|c|c|c|c|}
\hline Binding Capacity ( \(80 \mathrm{~g} / \mathrm{m}^{2}\) ) & \multicolumn{3}{|l|}{15 Sheets} \\
\hline Paper Size & \multicolumn{3}{|l|}{A3 SEF, B4 SEF, A4 SEF, 11" x 17" SEF, 81/2" x 11" SEF} \\
\hline Paper Weight & \multicolumn{3}{|l|}{\(64 \mathrm{~g} / \mathrm{m}^{2} \sim 90 \mathrm{~g} / \mathrm{m}^{2}\)} \\
\hline Stapling Position & \multicolumn{3}{|l|}{Center, 2 Locations} \\
\hline Stapling Capacity & \multicolumn{3}{|l|}{2,000 Staples/Cartridge} \\
\hline Fold Position & \multicolumn{3}{|l|}{Center, Half-Folding} \\
\hline \multirow[t]{7}{*}{Saddle-Stitch Capacity} & Max. Docs. & Total Sheets & Size \\
\hline & 25 & 2~5 & \multirow[t]{3}{*}{\[
\begin{aligned}
& \text { A4 SEF, } \\
& 81 / 2^{\prime \prime} \times 11^{\prime \prime} \text { SEF }
\end{aligned}
\]} \\
\hline & 15 & 6~10 & \\
\hline & 10 & 11~15 & \\
\hline & 30 & 2~5 & \multirow[t]{3}{*}{A3 SEF, B4 SEF, 11" x 17" SEF} \\
\hline & 20 & 6~10 & \\
\hline & 10 & 11~15 & \\
\hline
\end{tabular}

\subsection*{1.8 PUNCH UNIT (B377)}

The Punch Unit B377 is installed in the 3000 Sheet Booklet Finisher B468 connected to the B070 (90 ppm).
\begin{tabular}{|c|c|c|c|c|}
\hline \multirow[t]{3}{*}{Punch Position} & \multicolumn{2}{|l|}{North America (NA)} & 2/3 holes & B377-17 \\
\hline & \multicolumn{2}{|l|}{Europe (E)} & 2/4 holes & B377-27 \\
\hline & \multicolumn{2}{|l|}{Northern Europe (NE)} & 4 holes & B377-31 \\
\hline Punching Allowed & \multicolumn{4}{|l|}{All modes} \\
\hline \multirow[t]{11}{*}{Allowed Paper Sizes} & Holes & Feed & & Paper Size \\
\hline & \multirow[t]{2}{*}{2-hole (EUR/A)} & SEF & A3 ~ A5, & 1" x 17" ~ 51/2" x 81/2" \\
\hline & & LEF & A4 ~ A5, & \(11 / 2^{\prime \prime} \times 11^{\prime \prime}, 51 / 2^{\prime \prime} \times 81 / 2^{\prime \prime}\) \\
\hline & \multirow[t]{2}{*}{2-hole (NA)} & SEF & A3 ~ A5, & \(1{ }^{\prime \prime} \times 17^{\prime \prime} \sim 51 / 2^{\prime \prime} \times 81 / 2^{\prime \prime}\) \\
\hline & & LEF & A4 ~ A5, & 1/2" \(\times 111^{\prime \prime}\) 51/2" \(\times 81 / 2^{\prime \prime}\) \\
\hline & \multirow[t]{2}{*}{3-hole (NA)} & SEF & A3, B4, 1 & " \(17{ }^{\prime \prime}\) \\
\hline & & LEF & A4, B5, 8 & 2" x 11" \\
\hline & \multirow[t]{2}{*}{4-holes ( EUR/A)} & SEF & A3, B4, 1 & x17" \\
\hline & & LEF & A4, B5, 8 & 12 \(\times 11{ }^{\prime \prime}\) \\
\hline & \multirow[t]{2}{*}{4-holes (North Europe)} & SEF & A3 ~ A5, & \(1{ }^{\prime \prime} \times 17{ }^{\text {- }}\) 51/2" x 81/2" \\
\hline & & LEF & A3 ~ A5, & 1/2" \(\times 11\) ", 51/2" \(\times 81 / 2^{\prime \prime}\) \\
\hline \multirow[t]{6}{*}{Allowed Paper Weight} & Holes & & & Weight \\
\hline & 2-hole & \multicolumn{3}{|l|}{\multirow{5}{*}{\[
\begin{aligned}
& 52 \sim 163 \mathrm{~g} / \mathrm{m}^{2} \\
& (14 \sim 43 \mathrm{lb} .)
\end{aligned}
\]}} \\
\hline & 3-hole & & & \\
\hline & 4-hole (E) & & & \\
\hline & 4-hole (NE) & & & \\
\hline & 2-hole (NA) & & & \\
\hline \multirow[t]{3}{*}{Hopper Capacity} & \multicolumn{4}{|l|}{NA (2/3-hole) \(\quad\) More than 6 K prints} \\
\hline & \multirow[t]{2}{*}{\begin{tabular}{l}
EUR/A (4-hole) \\
EUR/A (2-hole)
\end{tabular}} & \multicolumn{3}{|l|}{More than 8 K prints} \\
\hline & & \multicolumn{3}{|l|}{More than 10 K prints} \\
\hline Rated Voltage of Output Connector & \multicolumn{4}{|l|}{Max. DC 24 V} \\
\hline Dimensions (W \(\times \mathrm{D} \times \mathrm{H}\) ) & \multicolumn{4}{|l|}{\(700 \times 620 \times 960 \mathrm{~mm}\) (27.6" \(\times 24.4\) " \(\times 37.8^{\prime \prime}\) )} \\
\hline Weight & \multicolumn{4}{|l|}{Approx. 65 kg ( 143 lb .) (With Finisher)} \\
\hline Power Consumption & \multicolumn{4}{|l|}{72 W ( \(3 \mathrm{~A} / 24 \mathrm{~V}\) )} \\
\hline Power Supply & \multicolumn{4}{|l|}{DC 24 V (From Copier to Finisher)} \\
\hline
\end{tabular}

\subsection*{1.93000 SHEET FINISHER (B478)}
\begin{tabular}{|c|c|c|c|}
\hline \multicolumn{4}{|l|}{UPPER TRAY} \\
\hline \multirow[t]{2}{*}{Paper Capacity ( \(80 \mathrm{~g} / \mathrm{m}^{2}\) )} & \multicolumn{3}{|l|}{500 sheets (A4, 81/2" \(\times 11^{\prime \prime}\) and smaller)} \\
\hline & \multicolumn{3}{|l|}{250 sheets (B4, 81/2" \(\times 14^{\prime \prime}\) and larger)} \\
\hline Paper Size & \multicolumn{3}{|l|}{A3 to A6 SEF, 11" x 17" to 51/2" x 81/2", 12" \(\times 18{ }^{\prime \prime}\)} \\
\hline Paper Weight & \multicolumn{3}{|l|}{52 to \(216 \mathrm{~g} / \mathrm{m}^{2}\)} \\
\hline Upper Tray Full Detection & \multicolumn{3}{|l|}{Provided} \\
\hline \multicolumn{4}{|l|}{SHIFT TRAY} \\
\hline \multirow[t]{4}{*}{Paper Capacity ( \(80 \mathrm{~g} / \mathrm{m}^{2}\) )} & \multicolumn{3}{|l|}{3000 sheets (A4 LEF, B5 LEF, 81/2" \(\times 11{ }^{\text {" LEF }}\) )} \\
\hline & \multicolumn{3}{|l|}{1500 sheets (A3, A4 SEF, B4 and B5 SEF, 11" x 17", 81/2" x 14", 81/2" x 11" SEF, 12" x 18")} \\
\hline & \multicolumn{3}{|l|}{500 sheets (A5 LEF, 51/2" x 81/2" LEF)} \\
\hline & \multicolumn{3}{|l|}{100 sheets (A5 SEF, 51/2" \(\times 81 / 2^{\prime \prime}\) SEF)} \\
\hline Paper Size & \multicolumn{3}{|l|}{A3 to A5, \(11^{\prime \prime} \times 17^{\prime \prime}\) to \(51 / 2^{\prime \prime} \times 81 / 2^{\prime \prime}, 12^{\prime \prime} \times 18^{\prime \prime}\) (including tab paper)} \\
\hline Paper Weight & \multicolumn{3}{|l|}{52 to \(216 \mathrm{~g} / \mathrm{m}^{2}\)} \\
\hline Shift Tray Full Detection & \multicolumn{3}{|l|}{Provided} \\
\hline \multicolumn{4}{|l|}{STAPLER} \\
\hline Stapling Stack Size & \multicolumn{3}{|l|}{\begin{tabular}{l}
A4, B5, 81/2" x 11" (Max. 100 Sheets) \\
A3, B4, 11" \(\times 17^{\prime \prime}, 81 / 2^{\prime \prime} \times 14^{\prime \prime}\) (Max. 50 sheets)
\end{tabular}} \\
\hline Stapling Paper Size & \multicolumn{3}{|l|}{\[
\begin{aligned}
& \text { A3 to B5 } \\
& 11^{\prime \prime} \times 17^{\prime \prime} \text { to } 81 / 2^{\prime \prime} \times 11^{\prime \prime}
\end{aligned}
\]} \\
\hline Stapling Paper Weight & \multicolumn{3}{|l|}{64 to \(80 \mathrm{~g} / \mathrm{m}^{2}\)} \\
\hline \multirow[t]{3}{*}{Staple Position} & \multicolumn{3}{|l|}{4 Modes} \\
\hline & \multicolumn{3}{|l|}{1 Staple: Front, Rear, Rear-Oblique} \\
\hline & \multicolumn{3}{|l|}{2 Stapes: 2 locations} \\
\hline Staple Capacity & \multicolumn{3}{|l|}{5000 staples/cartridge} \\
\hline Staple Supply & \multicolumn{3}{|l|}{Cartridge or Staple Replacement} \\
\hline \multirow[t]{5}{*}{Stapled Stack Size} & Sheets & Sets & Sizes \\
\hline & 10~100 & 200~30 & \multirow[t]{2}{*}{\begin{tabular}{l}
A4 SEF, B5 SEF, 81/2" x 11" SEF \\
A4 LEF, B5 LEF, 81/2" x 11" LEF
\end{tabular}} \\
\hline & \(2 \sim 9\) & 150 & \\
\hline & 10~50 & 150~30 & \multirow[t]{2}{*}{A3, B4, 11" \(\times 17{ }^{\prime \prime}, 81 / 2{ }^{\prime \prime} \times 14{ }^{\prime \prime}\)} \\
\hline & 2~9 & 150 & \\
\hline Trim Waste Staple Capacity & \multicolumn{3}{|l|}{30,000 or more} \\
\hline Waste Staple Hopper Full Detection & \multicolumn{3}{|l|}{Provided} \\
\hline Power Consumption & \multicolumn{3}{|l|}{Less than 100 W} \\
\hline Power Source & \multicolumn{3}{|l|}{DC 24 V (From Mainframe)} \\
\hline Size (W \(\times\) D \(\times\) H) & \multicolumn{3}{|l|}{\[
\begin{aligned}
& 800 \times 730 \times 980 \mathrm{~mm} \\
& 31.5 \times 28.7 \times 38.6 \mathrm{in} .
\end{aligned}
\]} \\
\hline Weight & \multicolumn{3}{|l|}{Less than 65 kg ( 143 lb.\()\)} \\
\hline Compatible Machines & \multicolumn{3}{|l|}{\(\begin{aligned} & \text { B070 (90 cpm), B071 (105 cpm), B064 (60 cpm), B065 } \\ & (75 \mathrm{cpm})\end{aligned}\)} \\
\hline
\end{tabular}

\subsection*{1.10PUNCH UNIT (B531)}

The Punch Unit B531 is installed in the 3000 Sheet Finisher B478.
\begin{tabular}{|c|c|}
\hline \multirow[t]{2}{*}{Punch Hole Positions} & 2/3-hole (North America) \\
\hline & 2/4-hole (Europe) \\
\hline \multicolumn{2}{|l|}{Punch Paper Size} \\
\hline 2-Hole (NA) & \[
\begin{aligned}
& \text { A5 ~ A3 SEF, } 11^{\prime \prime} \times 17^{\prime \prime} \sim 51 / 2^{\prime \prime} \times 81 / 2^{\prime \prime} \text { SEF } \\
& \text { A5 ~ A4 LEF, } 81 / 2^{\prime \prime} \times 11^{\prime 2} \mathrm{LEF}, 51 / 2^{\prime \prime} \times 81 / 2^{\prime \prime} \text { LEF }
\end{aligned}
\] \\
\hline 3-Hole (NA) & A3 SEF, B4 SEF, \(11^{\prime \prime} \times 17{ }^{\prime \prime}\) SEF A4 LEF, B5 LEF, 81/2" x11" LEF \\
\hline 4-Hole ( EUR/A) & A3 SEF, 11" x 17" SEF A4 LEF, 81/2" x 11" LEF \\
\hline \multicolumn{2}{|l|}{Paper Weight} \\
\hline 2-Hole (NA) & \(52 \mathrm{~g} / \mathrm{m}^{2} \sim 163 \mathrm{~g} / \mathrm{m}^{2}\) \\
\hline 3-Hole (NA) & \(52 \mathrm{~g} / \mathrm{m}^{2} \sim 163 \mathrm{~g} / \mathrm{m}^{2}\) \\
\hline 4-Hole ( EUR/A) & \(52 \mathrm{~g} / \mathrm{m}^{2} \sim 128 \mathrm{~g} / \mathrm{m}^{2}\) \\
\hline \multicolumn{2}{|l|}{Punch Waste Hopper Capacity} \\
\hline 2-Hole (NA) & 10K \\
\hline 3-Hole (NA) & 15K \\
\hline 4-Hole ( EUR/A) & 15K \\
\hline Operation Modes & All (Shift, Proof, Staple) \\
\hline
\end{tabular}

\section*{DIP SW Settings}

The correct DIP SW settings of the Punch Unit 531 are provided in the table below for your reference only. The DIP switches of these punch units do not need to be changed at installation, or adjusted for operation.
\begin{tabular}{||l|l|l|l|l|l||}
\hline \multirow{2}{*}{\multicolumn{1}{|c|}{ Punch Unit }} & \multirow{2}{*}{ Unit No. } & \multicolumn{4}{|c|}{ DIP SW Settings } \\
\cline { 3 - 6 } & & \(\mathbf{1}\) & \(\mathbf{2}\) & \(\mathbf{3}\) & \(\mathbf{4}\) \\
\hline \(2 / 3-\) Hole (NA) & B531-17 & 1 & 0 & 1 & 0 \\
\hline \(2 / 4-\) Hole ( EUR/A) & B531-27 & 1 & 0 & 0 & 1 \\
\hline
\end{tabular}

0: OFF
1: ON

\subsection*{1.11 PUNCH UNIT (A812)}

The Punch Unit A812 is installed in the 3000 Sheet Finisher B478.
\begin{tabular}{|c|c|}
\hline Punch Hole Positions & \begin{tabular}{l}
2-hole, 3-hole (NA) \\
4-hole (EUR/A) \\
4-hole (North Europe)
\end{tabular} \\
\hline \multicolumn{2}{|l|}{Punch Paper Size} \\
\hline 2-Hole & \[
\begin{aligned}
& \text { A5 ~ A3 SEF, } 11^{\prime \prime} \times 17^{\prime \prime} \sim 81 / 2^{\prime \prime} \times 11^{\prime \prime} \text { SEF } \\
& \text { A5 ~ A4 LEF, } 81 / 2^{\prime \prime} \times 11^{\prime \prime} \text { LEF }
\end{aligned}
\] \\
\hline 3-Hole (NA) & A3 SEF, B4 SEF, 11" x 17" SEF A4 LEF, B5 LEF, 81/2" x 11" LEF \\
\hline 4-Hole ( EUR/A) & A3 SEF, 11" x 17" SEF A4 LEF, 11" x 17" LEF \\
\hline 4-Hole (North Europe) & \[
\begin{aligned}
& \text { B5 ~ A3 SEF, 81/2" x } 11^{\prime \prime} \text { ~ 11" x } 17^{\prime \prime} \text { SEF } \\
& \text { A5 ~ A4 LEF, } 81 / 2^{\prime \prime} \times 11^{\prime \prime} \text { LEF, } 51 / 2^{\prime \prime} \times 81 / 2^{\prime \prime} \text { LEF }
\end{aligned}
\] \\
\hline \multicolumn{2}{|l|}{Paper Weight} \\
\hline 2-Hole, 3-Hole (NA) & \(52 \mathrm{~g} / \mathrm{m}^{2} \sim 163 \mathrm{~g} / \mathrm{m}^{2}\) \\
\hline 4-Hole (Europe/North Europe) & \(52 \mathrm{~g} / \mathrm{m}^{2} \sim 128 \mathrm{~g} / \mathrm{m}^{2}\) \\
\hline \multicolumn{2}{|l|}{Punch Waste Hopper Capacity} \\
\hline 2-Hole & 40K \\
\hline 3-Hole (NA) & 15K \\
\hline 4-Hole ( EUR/A) & 15K \\
\hline 4-Hole (North Europe) & 15K \\
\hline Power Supply & DC 24 V (From Finisher) \\
\hline Power Consumption & 60 W \\
\hline Weight & Less than 2.4 K (5.3 lb.) \\
\hline Operation Modes & All (Shift, Proof, Staple) \\
\hline
\end{tabular}

\section*{DIP SW Settings}

The correct DIP SW settings of the Punch Unit A812 are provided in the table below for your reference only. The DIP switches of these punch units do not need to be changed at installation, or adjusted for operation.
\begin{tabular}{||l|l|l|l|l|l||}
\hline \multirow{2}{*}{\multicolumn{1}{|c|}{ Punch Unit }} & \multirow{2}{*}{ Unit No. } & \multicolumn{4}{c|}{ DIP SW Settings } \\
\cline { 3 - 6 } & & \(\mathbf{1}\) & \(\mathbf{2}\) & \(\mathbf{3}\) & \(\mathbf{4}\) \\
\hline 2-Hole ( EUR/A) & A812-40/A812-67 & 0 & 0 & 0 & 0 \\
\hline 3-Hole (NA) & A812-57 & 1 & 0 & 0 & 0 \\
\hline 4-Hole ( EUR/A) & A812-30 & 0 & 1 & 0 & 0 \\
\hline 4-Hole (North Europe) & A812-31 & 0 & 0 & 1 & 0 \\
\hline 2-Hole (NA) & A812-32 & 0 & 0 & 0 & 1 \\
\hline
\end{tabular}

0: OFF
1: ON

\subsection*{1.12 JOGGER UNIT B513}

The Jogger Unit B513 is installed above the shift tray of the 3000 Sheet Finisher B478.
\begin{tabular}{|c|c|}
\hline Paper Size & A3 SEF, B4 SEF, 11" x 17" SEF A4 LEF, B5 LEF, 81/2" x 11" LEF \\
\hline Paper Weight & \(52 \mathrm{~g} / \mathrm{m}^{2} \sim 216 \mathrm{~g} / \mathrm{m}^{2}\) \\
\hline Weight & Less than 1.7 kg (3.7 lb.) \\
\hline Dimensions (Wx D x H) & \[
\begin{aligned}
& 125 \mathrm{~mm} \times 450 \mathrm{~mm} \times 100 \mathrm{~mm} \\
& 5^{\prime \prime} \times 17.7^{\prime \prime} \times 4 \text { " }
\end{aligned}
\] \\
\hline Power Supply & DC 24 V , DC 5V (From Finisher) \\
\hline Power Consumption & 24 W \\
\hline
\end{tabular}

\subsection*{1.13COVER INTERPOSER TRAY B470}
\begin{tabular}{||l|l||}
\hline Paper Separation & FRR System with Feed Belt \\
\hline Paper Sizes & A \(3 \sim \mathrm{~A} 5,11 " \times 17^{\prime \prime} \sim 51 / 2^{\prime \prime} \times 81 / 2^{\prime \prime}\) \\
\hline Paper Weight & \(64 \sim 216 \mathrm{~g} / \mathrm{m}^{2}\) \\
\hline Capacity & 200 sheets \(\left(80 \mathrm{~g} / \mathrm{m}^{2}\right)\) \\
\hline \begin{tabular}{l} 
Power Supply \\
(from main machine)
\end{tabular} & \(24 \mathrm{~V} \pm 10 \%, 5 \mathrm{~V} \pm 5 \%\) (From Finisher) \\
\hline Power Consumption & Less than 48 W \\
\hline Dimensions (W x \(\times \mathrm{H})\) & \begin{tabular}{l}
\(500 \times 620 \times 200 \mathrm{~mm}\) \\
\(19.7^{\prime \prime} \times 24.4^{\prime \prime} \times 7.9^{\prime \prime}\)
\end{tabular} \\
\hline Weight & Less than \(12 \mathrm{~kg} \mathrm{(26.4lb)}\). \\
\hline
\end{tabular}

\section*{\(\Rightarrow 1.14\) CONNECTION KIT B328}


\section*{SPECIFICATIONS}

\section*{2. MACHINE CONFIGURATION}

\begin{tabular}{||c|l|l|l||}
\hline No. & \multicolumn{1}{|c|}{ Item } & Machine Code & \multicolumn{1}{c|}{ Comments } \\
\hline 1 & Mainframe & B070/B071 & B070 \((95 \mathrm{cpm})\), B071 \((105 \mathrm{cpm})\). \\
\hline 2 & Bypass Tray & B512 & \\
\hline 3 & LCT & B511 & \\
\hline 4 & A3/DLT Tray Kit**1 & B331 & Replace Tray 1 (tandem tray) inside. \\
\hline 5 & 3000 Sheet Finisher & B478 & \\
\hline 6 & \begin{tabular}{l}
3000 Sheet Booklet \\
Finisher
\end{tabular} & B468 & Attached to B070 only for booklet binding. \\
\hline 7 & Punch Unit & B377 & Inside Finisher B468 \\
\hline 8 & Output Jogger Unit & B513 & Attached to Finisher B478 \\
\hline 9 & Cover Interposer Tray & B470 & Attached to B468 or B478 Finisher. \\
\hline 10 & Punch Unit & B531, A812 & Inside Finisher B478 \\
\hline & Copier Connection Kit & B328 & Not shown. \\
\hline
\end{tabular}

\footnotetext{
\({ }^{1}\) : Replaces Tandem Tray in main unit.
}

FIRMWARE HISTORY

\section*{FIRMWARE HISTORY}

\section*{1. MAIN MACHINE FIRMWARE MODIFICATION HISTORY}
- If no firmware history data is present in the table below, then no data was available at the time of this service manual's printing.
- Please check the http://tsc.ricohcorp.com website for current firmware downloads.
- Accessory firmware modification history is provided in the appropriate accessory section of the service manual.
\begin{tabular}{|c|c|c|c|}
\hline \multicolumn{4}{|c|}{ MAIN MACHINE FIRMWARE MODIFICATION HISTORY } \\
\hline DESCRIPTION OF MODIFICATION & \begin{tabular}{c} 
FIRMWARE \\
LEVEL
\end{tabular} & \begin{tabular}{c} 
SERIAL \\
NUMBER
\end{tabular} & \begin{tabular}{c} 
FIRMWARE \\
VERSION
\end{tabular} \\
\hline & & & \\
\hline & & & \\
\hline & & & \\
\hline & & & \\
\hline & & & \\
\hline & & & \\
\hline & & & \\
\hline & & & \\
\hline
\end{tabular}

B331

\section*{A3/DLT TRAY KIT}

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2.1 BOTTOM PLATE LIFT WIRE REPLACEMENT ..... 
3. DETAILED DESCRIPTIONS ..... 4
3.1 SECTIONAL DESCRIPTION ..... 4

\section*{1. INSTALLATION}

For details about installing the A3/DLT Kit B331, please refer to the instructions you received with the instructions or the "1. Installation" in the main machine service manual.

\section*{2. REPLACEMENT AND ADJUSTMENT}

\subsection*{2.1 BOTTOM PLATE LIFT WIRE REPLACEMENT}

NOTE: Before replacing the rear bottom plate lift wire, remove the front bottom plate lift wire. The procedure for the two wires is the same.

[B]
1. Remove the tray.
2. Remove the inner cover ( 2 screws).
3. Slightly lift the front bottom plate and unhook the wire stoppers [A] (2 stoppers [B]).
4. Remove the wire cover [C] (1 E-ring each).
5. Remove the bracket [D] (1 screw, 1 E-ring, and 1 bushing).
6. Remove the gear [E].
7. Replace the bottom plate lift wire [F].


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

\section*{3. DETAILED DESCRIPTIONS}

\subsection*{3.1 SECTIONAL DESCRIPTION}


This tray mechanism is basically same as the tandem LCT. This tray bottom plate \([A]\) is lifted through the tray wires [B] by the lift motor [C] rotation. There is no remaining paper capacity detection.
The paper remaining sensors [D] trigger messages on the LCD to let the user know how much paper remains in the tray.
The operation panel LCD displays "full" whether there is paper in the tray. Except for the above matter, refer to the main copier tandem LCT section for details.

B511 LCT

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\section*{1. INSTALLATION}

For a details about installing the LCT B511, please refer to the instructions you received with the unit or " 1 . Installation" in the main machine service manual.

\section*{2. PREVENTIVE MAINTENANCE}

For more details about preventive maintenance for the LCT B511, please refer to Section "2. Preventive Maintenance" in the main machine service manual.

\section*{3. REPLACEMENT AND ADJUSTMENT}

\subsection*{3.1 FRONT DOOR AND COVERS}

1. Remove the top cover \([A](\hat{E} \times 4)\).
2. Remove the front door \([B]\) ( \(35 \times 1\) ).

NOTE: While lifting the top cover, remove the snap ring and front door.
3. Remove the rear cover [C] ( \(\hat{\xi} \times 6\) ).
4. Remove the right cover [D] ( \(\mathcal{E}^{2} \times 6\) ).
5. Remove the paper slot cover \([E](\hat{\xi} \times 2)\).

\section*{3．2 INNER COVER，PAPER FEED UNIT}


1．Open the front door and remove the upper inner cover \([A]\)（ \(\hat{\xi} \times 5\) ，knobs \(\times 3\) ）．
2．Open the front door and remove the lower inner cover \([B]\left(\mathcal{E}^{3} \times 3\right.\) ，\(\left.k n o b \times 1\right)\) ．
3．Pull out the tray［C］and remove it（
4．Remove the right cover（ \(\hat{\xi}^{2} \times 6\) ）．（ -3.1 ）
5．Remove the paper feed unit［D］（ \(⿷ 匚 一 亅 ⿻^{\|} \times 2, \hat{\xi} \times 2\) ）．

\section*{3．3 PAPER FEED ROLLER}


1．Remove the right cover（－3．1）．
2．Remove the paper trays．（－3．2）．
3．Remove the pick－up roller \([A](\sqrt{3}) \times 1)\) ．
4．Remove the feed roller \([B]\)（ \((3) \times 1)\) ．
5．Remove the separation roller［C］from the torque limiter［D］（级 \(\times 1\) ）．
NOTE：1）The LCT pick－up and separation rollers are the same as pick－up and separation rollers of the main machine．These rollers are interchangeable．
2）The feed rollers of the LCT and main machine are different because they are designed to rotate in opposite directions．The feed rollers of the LCT and main machine are not interchangeable．
3）Do not touch the surface of the rollers with bare hands．
6．Reset the counters for the new rollers with SP7816 005～007（Print Counter Reset－Paper Trays）

\subsection*{3.4 LCT MOTOR}

1. Remove the rear cover. ( -3.1 )
令 \(\times 6\), spring \(\times 1\) ).
NOTE: The spring \([B]\) is behind the motor. Raise the motor slightly to release the hook [C].

\subsection*{3.5 MAIN DRIVE BELT}

1. Remove the rear cover. (-3.1).
2. Remove the LCT motor ( \(\mathrm{S}^{2} \times 6\) ). ( -3.4 )
3. Remove the main drive belt.
4. Mount the main drive belt \([A]\) as shown in the illustration.

NOTE: If a pulley or gear is removed in the belt path, be sure to re-attach it correctly.

\subsection*{3.6 EXIT SENSOR}

1. Disconnect the LCT from the copier.
2. Remove the bracket \([A](\hat{\xi} \times 1)\).
3. Remove the exit sensor \([B]\) (

\subsection*{3.7 PAPER HEIGHT SENSOR, PAPER SIZE SWITCH}


を高
1. Rear cover. (-3.1)
2. Right cover. (-3.1)

4. Paper height sensors \([B]\) (hooks \(\times 4\) each)
5. Paper size switch \([C]\left(E_{\text {\#l }} \times 1\right)\).

\subsection*{3.8 SIDE REGISTRATION ADJUSTMENT}


Normally the side registration of the image can be adjusted with SP1002 004~006 (Side-to-Side Registration - Tray 4, 5, 6). When the punch hole positions are not aligned from a particular feed station, adjust the side registration by changing the tray cover position for the tray, as described below. Then adjust the side registration of the image with the SP1002.
1. Pull out the tray.
2. Change the screw positions \([A]\) at both the right and left sides as shown. NOTE: Adjustment range: \(0 \pm 2.0 \mathrm{~mm}\) adjustment step: \(1.0 \mathrm{~mm} / \mathrm{step}\)

\section*{4. TROUBLESHOOTING}

For details about LCT-related SC codes, please refer to "4. Troubleshooting" in the main machine service manual.

\section*{5. SERVICE TABLES}

For details about LCT-related SP codes, please refer to " 5 . Service Tables" in the main machine service manual.

\section*{6. DETAILED DESCRIPTIONS}

\subsection*{6.1 PAPER FEED}


This LCT has three paper tray feed stations.
The upper and middle trays can each hold 1,000 sheets of paper. The lower tray can hold 2,550 sheets of paper.
All feed stations use an FRR paper feed system (paper feed roller [A], separation roller [B], pick-up roller [C]), and those rollers are driven by the LCT motor via the paper feed clutch [D].

\subsection*{6.2 PICK-UP AND FEED}

\subsection*{6.2.1 OVERVIEW}


Drive from the LCT motor is transmitted to the gear \([A]\) in the paper feed unit via the timing belt \([B]\).
Then the gear [A] transmits the drive to the pick-up [C], paper feed [D], and separation [E] rollers via gears and the paper feed clutch [F].
The gear [A] also transmits the drive to the grip roller [G] via gears and the grip roller clutch [H].

\subsection*{6.2.2 PICK-UP AND FEED}


When a paper feed station is not selected, its separation roller solenoid [A] is deactivated and the separation roller \([B]\) can turn freely.
When the paper feed station is selected and the Start key is pressed, the feed clutch [C], separation roller solenoid [A], and pick-up solenoid [D] turn on.
When the feed clutch [C] actuates, it drives the feed roller [E], and turns the pick-up roller [F] because it is linked to the feed roller by an idle gear [G].
When the separation roller solenoid \([A]\) turns on, the separation roller \([B]\) contacts the paper feed roller [E] and turns with the feed roller, unless more than one sheet of paper is fed. The three trays of the LCT unit use the standard FRR mechanism.
- CTT Handling Paper> Paper Feed Methods> Forward and Reverse Roller (FRR)

When the pick-up solenoid [D] actuates, the pick-up roller [F] lowers until it contacts the top sheet of the paper stack and then sends it to the paper feed and separation roller.

When the paper feed sensor \([\mathrm{H}]\) detects the leading edge of the paper, the pick-up solenoid de-actuates and lifts the pick-up roller [F], and the grip roller clutch [I] actuates and feeds the paper out of the tray.

\subsection*{6.2.3 SEPARATION ROLLER RELEASE}


The separation roller [A] is normally away from the feed roller [B]. When the paper feed station is selected, the separation roller solenoid [C] contacts the separation roller with the feed roller as explained on the previous two pages.

This contact/release mechanism has the following three advantages:
1. When the LCT motor turns on, all the separation rollers in the three feed stations rotate. If the separation roller is away from the feed roller, it reduces the load on the paper feed motor and drive mechanism, and it also reduces wear to the rubber surface of the separation roller caused by friction between the separation roller and the feed roller.
2. After paper feed is completed, paper sometimes remains between the feed and separation rollers. If the feed tray is removed at this time, this paper might be torn. When the separation roller is away from the feed roller, the remaining paper can be removed from between the rollers.
3. When paper misfeeds occur around this area, the user can easily pull out the jammed paper between the feed and the separation rollers if the separation roller is away from the feed roller.

After paper feed, the paper feed clutch tuns off, but the LCT motor still turns the separation roller [A] in reverse. The separation roller, still contacting the feed roller, turns the feed roller in reverse for 100 ms . Then the separation solenoid turns off.

\subsection*{6.3 PAPER LIFT}

\subsection*{6.3.1 TRAY DETECTION}

When a tray is set in the machine, the tray detection method used depends on the tray:
- The upper tray and middle tray are detected when any one of the paper size switch signals is low.
- The lower tray is detected when the switch 1 signal of the paper size switch is low.


\subsection*{6.3.2 LIFT MECHANISM}

When the machine detects that the paper tray is set in the machine, the tray lift motor \([A]\) rotates and the coupling gear [B] on the tray lift motor engages the pin [C] of the lift drive shaft [D]. The tray drive belts [E] are connected to the tray bottom plate \([\mathrm{F}]\) and are driven by the tray lift motor via the lift drive shaft [D] and tray drive pulleys [G]. When the lift motor turns counterclockwise, the tray bottom plate [F] moves up. The tray goes up until the top of the paper stack pushes up the pick-up roller and the lift sensor in the feed unit is de-activated.

When the actuator \([\mathrm{H}]\) on the rear end of the bottom plate activates the paper height sensors [I], the remaining paper capacity is detected. (6.5)
When pulling out the tray, the coupling gear \([B]\) separates from the pin [C], so that the tray bottom plate moves downward. In the bottom tray, the damper [J] lets the tray bottom plate drop slowly.

\subsection*{6.3.3 LIFT SENSOR}


When the lift motor turns on, the pick-up solenoid [A] activates to lower the pick-up roller [B]. When the top sheet of paper reaches the proper paper feed level, the paper pushes up the pick-up roller and the actuator [C] on the pick-up roller supporter [D] de-activates the lift sensor [E] to stop the lift motor.
After several paper feeds, the paper level gradually lowers, then the lift sensor is activated and the lift motor turns on again until the lift sensor is de-activated again.

\subsection*{6.4 PAPER SIZE DETECTION}

\begin{tabular}{||c|c|c|c|c|c|c|c||}
\hline & A4-LEF & B5-LEF & A5-LEF & A5-SEF & LT-LEF & HLT-LEF & HTL-SEF \\
\hline SW1 & 0 & 1 & 0 & 0 & 0 & 1 & 1 \\
\hline SW2 & 1 & 0 & 1 & 0 & 0 & 0 & 1 \\
\hline SW3 & 1 & 1 & 0 & 1 & 0 & 0 & 0 \\
\hline
\end{tabular}

1: HI 0: LOW

\section*{Top Tray (Tray 1) and Middle Tray (Tray 2)}

For the top and middle trays, the paper size switch [A] detects the paper size. The paper size switch contains three microswitches. The paper size switch is actuated by an actuator plate \([B]\) at the rear of the tray. Each paper size has its own unique combination as shown in the table and the CPU determines the paper size by the combination.

\section*{Bottom Tray (Tray 3)}

The bottom tray has the same switch as the top and middle trays. However, it is only used for detecting when the tray is pushed in.

For the bottom tray, the paper size must be selected in the SP5019-007:

\subsection*{6.5 REMAINING PAPER DETECTION}


The amount of paper remaining in the tray is detected by the three paper height photointerrupter sensors on the left rail as the bottom plate rises. Five states, determined by the position of the actuator are possible.
1. With the actuator [A] below paper height sensor \(1[B]\), no sensor is actuated and the display indicates 100\%.
2. When the actuator passes paper height sensor 1 [B], the display indicates \(75 \%\) of the paper supply remaining.
3. When the actuator passes paper height sensor 2 [C], the display indicates \(50 \%\) of the paper supply remaining.
4. When the actuator passes paper height sensor 3 [D], the display indicates \(25 \%\) of the paper supply remaining.
NOTE: When the actuator enters the gap of the near end sensor [ \(E\) ], the machine signals near end.
Finally, when the last sheet feeds, the paper end sensor signals that the tray is empty. (-6.6)

\subsection*{6.6 PAPER END DETECTION}


The paper end sensor [A] detects the top sheet of the paper in the tray by monitoring the reflected light. When the paper tray runs out of paper, the paper end sensor does not receive the reflected light due to the cutout [B]. Then, the tray lift motor rotates backwards 2 seconds to drop the tray bottom plate.

\section*{7. OVERALL MECHANICAL INFORMATION \\ 7.1 MECHANICAL COMPONENT LAYOUT}

1. Paper Feed Sensor
2. Paper End Sensor
3. Separation Solenoid
4. Paper Tray
5. Paper Height Sensors
6. Tray Drive Belt
7. Pick-up Roller
8. Separation Roller
9. Paper Feed Roller
10. Grip Roller
11. Relay Roller
12. Relay Sensor
13. Feed Slot (Bypass Tray)
14. Pick-up Solenoid
15. Lift Sensor

\subsection*{7.2 ELECTRICAL COMPONENT DESCRIPTIONS}
\begin{tabular}{|c|c|c|}
\hline Symbol & Name & Function \\
\hline \multicolumn{3}{|l|}{Clutches} \\
\hline MC1 & Transport & Drives the transport rollers in the LCT. \\
\hline MC2 & 1st Paper Feed & Drives the paper feed roller in the 1st tray. \\
\hline MC3 & 1st Grip & Drives the grip roller in the 1st tray. \\
\hline MC4 & 2nd Paper Feed & Drives the paper feed roller in the 2nd tray. \\
\hline MC5 & 2nd Grip & Drives the grip roller in the 2nd tray. \\
\hline MC6 & 3rd Paper Feed & Drives the paper feed roller in the 3rd tray. \\
\hline MC7 & 3rd Grip & Drives the grip roller in the 3rd tray \\
\hline \multicolumn{3}{|l|}{Motors} \\
\hline M1 & LCT & Drives all rollers in the LCT. \\
\hline M2 & 1st Lift & Drives the 1st tray up and down. \\
\hline M3 & 2nd Lift & Drives the 2nd tray up and down. \\
\hline M4 & 3rd Lift & Drives the 3rd tray up and down. \\
\hline \multicolumn{3}{|l|}{PCB} \\
\hline PCB1 & LCT Control Board & Controls the LCT and communicates with the copier. \\
\hline \multicolumn{3}{|l|}{Sensors} \\
\hline SN1 & 1st Paper Height 1 & Detects the paper height in the 1st tray. \\
\hline SN2 & 1st Paper Height 2 & Detects the paper height in the 1st tray. \\
\hline SN3 & 1st Paper Height 3 & Detects the paper height in the 1st tray. \\
\hline SN4 & 1st Paper Height 4 & Detects the paper height in the 1st tray. \\
\hline SN5 & 2nd Paper Height 1 & Detects the paper height in the 2nd tray. \\
\hline SN6 & 2nd Paper Height 2 & Detects the paper height in the 2nd tray. \\
\hline SN7 & 2nd Paper Height 3 & Detects the paper height in the 2nd tray. \\
\hline SN8 & 2nd Paper Height 4 & Detects the paper height in the 2nd tray. \\
\hline SN9 & 3rd Paper Height 1 & Detects the paper height in the 3rd tray. \\
\hline SN10 & 3rd Paper Height 2 & Detects the paper height in the 3rd tray. \\
\hline SN11 & 3rd Paper Height 3 & Detects the paper height in the 3rd tray. \\
\hline SN12 & 3rd Paper Height 4 & Detects the paper height in the 3rd tray. \\
\hline SN13 & Exit & Checks for the presence of paper (misfeeds) at the LCT exit. \\
\hline SN14 & 1st Paper Feed & Detects the copy paper coming to the 1st paper feed roller and checks for misfeeds. \\
\hline SN15 & 1st Paper End & Informs the copier when the paper in the 1st tray has run out. \\
\hline SN16 & 1st Lift & Detects when the paper in the 1st tray is at the correct paper feed height. \\
\hline SN17 & 2nd Paper Feed & Detects the copy paper coming to the 2nd paper feed roller and checks for misfeeds. \\
\hline SN18 & 2nd Paper End & Informs the copier when the paper in the 2nd tray has run out. \\
\hline SN19 & 2nd Lift & Detects when the paper in the 2nd tray is at the correct paper feed height. \\
\hline SN20 & 3rd Paper Feed & Detects the copy paper coming to the 3rd paper feed roller and checks for misfeeds. \\
\hline SN21 & 3rd Paper End & Informs the copier when the paper in the 3rd tray has run out. \\
\hline
\end{tabular}

OVERALL MECHANICAL INFORMATION
\begin{tabular}{||c|l|l||}
\hline Symbol & \multicolumn{1}{|c|}{ Name } & \multicolumn{1}{c|}{ Function } \\
\hline SN22 & 3rd Lift & \begin{tabular}{l} 
Detects when the paper in the 3rd tray is at the \\
correct paper feed height.
\end{tabular} \\
\hline Solenoids & \multicolumn{2}{|c|}{} \\
\hline SOL1 & 1st Separation & \begin{tabular}{l} 
Controls up-down movement of the separation \\
roller in the 1st tray.
\end{tabular} \\
\hline SOL2 & 2nd Separation & \begin{tabular}{l} 
Controls up-down movement of the separation \\
roller in the 2nd tray.
\end{tabular} \\
\hline SOL3 & 3rd Separation & \begin{tabular}{l} 
Controls up-down movement of the separation \\
roller in the 3rd tray.
\end{tabular} \\
\hline SOL4 & 1st Pick-up & \begin{tabular}{l} 
Controls up-down movement of the pick-up \\
roller in the 1st tray.
\end{tabular} \\
\hline SOL5 & 2nd Pick-up & \begin{tabular}{l} 
Controls up-down movement of the pick-up \\
roller in the 2nd tray.
\end{tabular} \\
\hline SOL6 & 3rd Pick-up & \begin{tabular}{l} 
Controls up-down movement of the pick-up \\
roller in the 3rd tray.
\end{tabular} \\
\hline Switches & \multicolumn{2}{|c|}{\begin{tabular}{|c|l|||}
\hline SW1 & Front Door Safety
\end{tabular} \begin{tabular}{l} 
Detects whether the tray cover is opened or \\
not.
\end{tabular}} \\
\hline SW2 & 1st Paper Size & \begin{tabular}{l} 
Detects the paper size in the 1st tray, and \\
whether the 1st tray is in the machine.
\end{tabular} \\
\hline SW3 & 2nd Paper Size & \begin{tabular}{l} 
Detects the paper size in the 2nd tray, and \\
whether the 2nd tray is in the machine.
\end{tabular} \\
\hline SW4 & 3rd Paper Size & \begin{tabular}{l} 
Detects whether the 3rd tray is in the machine. \\
The paper size must be input with a user tool.
\end{tabular} \\
\hline \hline
\end{tabular}

\subsection*{7.3 DRIVE LAYOUT}

1. Main Drive Belt
2. Tray Lift Motors
3. LCT Motor
4. Tray Drive Shaft
5. Pick-up Roller
6. Tray Drive Belt
7. Separation Roller
8. Paper Feed Roller
9. Grip Roller
10. Transport Rollers
11. Transport Roller Drive Belt
12. Grip Roller Clutch
13. Paper Feed Clutch
14. Transport Clutch

\section*{B468}

\section*{3000-SHEET BOOKLET FINISHER}

\title{
3000-SHEET BOOKLET FINISHER B468
}

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\section*{1. INSTALLATION}

For details about how to 3000 Sheet Booklet Finisher B468, refer to the instructions you received with the unit or refer to "1. Installation" in the main copier service manual.

\section*{2. REPLACEMENT AND ADJUSTMENT}

\subsection*{2.1 EXTERNAL COVERS}


[B]: Upper tray, lower tray (色 \(\times 2\) each) (See note below)

[D]: Stopper ( \(\mathbf{K}^{(1)} \times 1\) )
[E]: Top cover ( \((\underset{\xi}{\text { ® }} \times 1\) )
[F]: Front door hinge (
[G]: Front door
\([\mathrm{H}]\) : Left side cover ( \(\hat{\xi}^{(1)} \times 2\) )
The trays may be difficult to remove at the up position. Support the tray with your hand, pull out the gear [I] (for the lower tray) or [J] (for the upper tray) to release the tray and lower it slowly.


\subsection*{2.2 POSITIONING ROLLER}

Open the front door.
[A]: Pull out the jogger unit.
[B]: Positioning roller ( (3) \(\times 1\) )
[C]: Positioning roller drive belt


\subsection*{2.3 INNER COVER}
[A]: Inner cover ( \(\hat{\beta}^{(1)} \times 3\) )
[B]: Pull out the jogger unit.


\subsection*{2.4 BRUSH ROLLER}


Open the front door.
Pull out the jogger unit.
Rear cover ( -2.1 )
[A]: Loosen tension bracket ( \(\mathcal{F}^{\boldsymbol{\beta}} \times 1\) )
[B]: Spring
[C]: Brush roller assy ( \(\S \times 1\), bushing \(\times 3\) )
- Remove the e-ring and bushing at [C] before removing the bushings on the back end of the shaft.

\subsection*{2.5 LOWER TRAY PAPER HEIGHT SENSORS 1, 2}

[A]: Paper height sensor cover ( \(\hat{\xi}^{2} \times 1\) )
- Lift the back edge of the cover up. Then pull it toward you slowly to disengage the tabs under the front edge of the cover and remove it.
[B]: Paper height sensor bracket ( \(\hat{\xi}^{(1)} \times 2\), 気 \(\mathrm{E} \times 2\) )
- Mark the one socket and its connector with a felt pen to ensure that you do not reverse the connectors at re-connection.
[C]: Paper height sensor feeler ( \(\boldsymbol{\xi}^{\boldsymbol{\xi}} \times 1\) )
[D]: Paper height sensor 1
[E]: Paper height sensor 2

\subsection*{2.6 PROOF TRAY EXIT AND FULL SENSORS}


Open the front door.
Top cover ( 2.1)
[A]: Guide plate ( \(\mathcal{F}^{2} \times 4\) )
[B]: Sensor bracket (雨 \(\times 1\) )
[C]: Proof tray full sensor (
[D]: Proof tray exit sensor (E)

\subsection*{2.7 EXIT SENSOR}


Open the front door.
Top and rear cover ( -2.1 )



\subsection*{2.8 FINISHER, STAPLER ENTRANCE SENSORS}


Disconnect the finisher from the main unit.
If the Cover Interposer Tray B470 is installed, remove it. Loosen the three shoulder screws, remove one set screw, then lift it off the frame.
[A]: Finisher entrance sensor bracket ( \(\mathbb{Z}^{2} \times 1\) )

[C]: Stapler entrance sensor bracket ( \(\hat{\xi}^{(1)} \times 1\) )
[D]: Stapler entrance sensor and feeler ( \(E_{l}^{\|} \times 1\) )

\subsection*{2.9 SADDLE-STITCH STAPLER REPLACEMENT}
1. Remove the cover \([\mathrm{A}]\left(\hat{\beta}^{3} \times 1\right)\).
2. Remove the staple unit motor mount


3. Remove the old booklet stapler motors (
4. Attach the left booklet stapler motor [C] and right stapler motor [D] ( \({ }^{(1)} \times 3\) each).
NOTE: Do not tighten the screws.

5. Remove the old booklet staplers

6. Attach the booklet stapler [E] and
 each) and tighten the screws.

7. Attach the Teflon jigs \([A]\) and \([B]\).
8. Attach the new booklet stapler motor mount to the frame ( \(\hat{\xi}^{\boldsymbol{\xi}} \times 4\) ).

9. On each motor, with your finger turn the brass gear [C] toward you until it stops then tighten the motor screws [D]. (象 \(\times 3\) )
10. Remove the motor mount board ( \(\hat{\xi}^{2} \times 4\) ) and remove the jigs.
11. Fasten the new motor mount to the frame ( \(\hat{\xi}^{(1)} \times 4\), 気 \(\mathbb{\#} \times 2\) ).


\subsection*{2.10 PUNCH POSITION ADJUSTMENT}

The positions of punch holes can be adjusted in two directions:
- Vertical positon. To adjust the vertical positions of the punch holes, execute SP6113 (Punch Hole Adjustment) to adjust the timing of the punch motor.

- Horizontal position. To adjust the horizontal positions of the punch holes, install or remove the metal spacers. Three spacers are used:
- 1 spacer, 2 mm thick
- 2 spacers, each 1 mm thick.

\section*{Rear cover (2.1)}
[A]: Punch unit ( \({ }^{(1)} \times 2\) )
[B]: Spacer
- Attach or remove the required number of spacers.
- The 2 mm spacer should be installed to set the default punch hole positions. Use the 1 mm spacers to adjust.

\subsection*{2.11 JAM DETECTION}
\begin{tabular}{|c|c|c|}
\hline Mode & Jam & Cause \\
\hline \multirow[b]{2}{*}{Proof/Shift/Staple} & Finisher entrance sensor check in failure & Remains off even after the main machine exit sensor goes OFF and the paper feeds 270 mm . \\
\hline & Finisher entrance sensor check out failure & Remains on even after enough time has elapsed for twice the length of the paper to feed. \\
\hline \multirow[t]{2}{*}{Proof} & Proof tray exit sensor check in failure & Remains OFF even after the entrance sensor goes ON and the paper has fed 380 mm . \\
\hline & Proof tray exit sensor check out failure & Remains OFF even after enough time has elapsed for twice the length of the paper to feed. \\
\hline \multirow[b]{2}{*}{Shift} & Exit sensor check in failure & Remains OFF after the entrance sensor goes ON and the paper has fed 570 mm . \\
\hline & Exit sensor check out failure & Remains ON after enough time has elapsed for twice the length of the paper to feed. \\
\hline \multirow{4}{*}{Staple} & Stapler exit sensor check in failure & Remains OFF after the entrance sensor goes ON and the paper has 760 mm . \\
\hline & Stapler exit sensor check out failure & Remains ON after the stapler tray entrance sensor goes ON, and enough time has elapsed for twice the length of the paper to feed. \\
\hline & Stapler tray sensor check out failure & Remains ON after the feed out belt motor switches ON and pulse count exceeded 466. \\
\hline & Shift tray exit sensor check in failure & Remains OFF after the feed out belt motor switches ON for 1260 ms . \\
\hline
\end{tabular}

\subsection*{2.12 DIP SW 100 (MAIN BOARD)}

The settings of DIP SW 100 on the main finisher board should remain set to OFF (zero in the table below). These settings should not be changed by the customer or the customer engineer during normal operation or testing. These settings are provided for reference only.
\begin{tabular}{||c|c|c|c|l|l||}
\hline \multicolumn{4}{|c|}{ DIP SW 101 } & \multicolumn{2}{c|}{ Mode } \\
\multirow{2}{*}{ Content } \\
\hline \(\mathbf{1}\) & \(\mathbf{2}\) & \(\mathbf{3}\) & \(\mathbf{4}\) & \multicolumn{1}{c|}{} \\
\hline 0 & 0 & 0 & 0 & Default & \\
\hline 1 & 0 & 0 & 0 & Not Used & \\
\hline 0 & 1 & 0 & 0 & Cover Feeder Test & Operation Check \\
\hline 1 & 1 & 0 & 0 & Cover Feeder Test & Operation Check \\
\hline 0 & 0 & 1 & 0 & Move to Shipping Position \({ }^{\text {1 }}\) & See note below. \\
\hline 1 & 0 & 1 & 0 & Cover Feeder Check & Operation Check \\
\hline 1 & 1 & 1 & 0 & Cover Feed Test & Operation Check \\
\hline \hline
\end{tabular}
\({ }^{*}\) : The following procedure repositions the trays to the shipping position.
1) Make sure that the main switch is turned off.
2) Turn on DIP SW101-3.
3) Turn on the main switch. The finisher automatically repositions the trays to the shipping position.
4) After the finisher completes moving the trays, turn off DIP SW101-3.

\section*{3. DETAILS}

\subsection*{3.1 TRAY/STAPLER JUNCTION GATES}


The finishing mode selected for the job determines the direction of the paper in the finisher.
- Proof Tray (Top of the unit): Paper is sent to the top tray.
- Shift: Paper is sent straight to the upper or lower tray.
- Staple:. Paper is sent down to the stapler unit
\begin{tabular}{||c|l|c|c|c|}
\hline \multicolumn{2}{|c|}{ Solenoid/Gate } & \multicolumn{3}{c|}{ Selected Operation Mode } \\
\cline { 2 - 5 } \multicolumn{2}{|c|}{} & Proof & Sort/Stack & Staple \\
\hline\([\mathrm{A}]\) & Stapler junction gate solenoid & OFF & OFF & ON \\
\hline\([B]\) & Stapler junction gate & Closed & Closed & Open \\
\hline\([C]\) & Proof tray junction gate solenoid & ON & OFF & OFF \\
\hline\([D]\) & Proof tray junction gate & Open & Closed & Closed \\
\hline
\end{tabular}

\subsection*{3.2 PRE-STACKING}


During a multiple copy job selected for stapling, the pre-stacking mechanism delays the first two sheets of every set (after the first set) to allow enough time to staple the preceding stack on the stapler tray. Pre-stacking is performed with the first and second sheets for the second and all subsequent sets.

Shortly after the first sheet of the set enters the finisher, the pre-stack junction gate solenoid \([A]\) switches on, opens the pre-stack junction gate \([B]\) and shunts the first sheet to the paper pre-stack tray [C]. When the first sheet passes the pre-stack roller [D], the pre-stack motor switches off and the sheet stops.

Shortly after the trailing edge of the first sheet enters the finisher, the solenoid switches off, and the junction gate closes. This allows the second sheet of the set to pass the closed junction gate and enter the main paper path [E].
At the prescribed time, the pre-stack motor switches on, and the pre-stack transport roller [F] rotates and sends the first sheet to the stapler tray at the same time as the second sheet arrives there.

All subsequent sheets of the same set are sent through the main paper path to the stapler tray for stapling.

\subsection*{3.3 VERTICAL LIFT MECHANISM}

\subsection*{3.3.1 OVERVIEW}


At power on, both trays lower slightly, then the upper tray stops at the feed-out position. The machine is ready for feed out to the upper tray [A]

During printing, the upper [A] or lower tray [B] (whichever is selected) is repeatedly lowered until the stack reaches a certain height and then the job halts. The upper tray holds 500 sheets (A4 LEF), and the lower tray holds 2500 sheets.

Both trays can be used for the normal, shift, and staple modes. However, only the lower tray can be used for the booklet binding (saddle-stitch mode).

\subsection*{3.3.2 UPPER TRAY}

[A]: Upper tray lift motor
[B]: Upper tray paper height sensor
[C]: Upper tray lift solenoid
[D]: Upper tray full sensor
[E]: Upper tray paper sensor
[F]: Upper limit switch (upper tray)

\section*{Just After the Power is Switched on}

At power on, the motor [A] moves the upper tray to the start position just under the feed-out slot. The motor stops when the paper height sensor \([B]\) detects the tray.

\section*{Height Adjustment During Feed-Out}

The upper tray moves up and down on a rack and pinion on a movable side fence that remains locked in place during copying.

When the top of the stack actuates the sensor [B], a solenoid [C] inside the upper tray releases a locked one-way clutch long enough to lower the upper tray a short distance on its track to allow more pages to feed out. This process repeats until the tray is full.

\section*{Upper Tray Full}

When the tray is full, a metal actuator [G] on the side of the upper tray frame actuates the upper tray full sensor [D] and the job stops.

The paper sensor [E] inside the upper tray detects when the stack is removed from the tray, and the tray returns to the initial position at the feed-out slot. The upper limit switch [F] (a micro-switch) is a backup if sensor [B] fails to stop the tray.

\subsection*{3.3.3 LOWER TRAY}

[A]: Upper tray lift motor
[B]: Upper tray upper limit sensor
[C]: Upper limit switch (upper tray)
[D]: Lower tray lift motor
[E]: Lower tray paper height sensor 1
[F]: Lower tray paper height sensor 2

\section*{Just After the Power is Switched on}

At power on, the upper tray moves to the start position under the feed-out slot, as described previously.

\section*{Positioning the Lower Tray for Feed-out}

If the lower tray is selected for a job, the upper tray is moved away from the feedout slot at the start of the job. The motor [A] lifts the side fence and upper tray to upper limit sensor [B], which stops the motor. The upper tray remains locked in position on the side fence (by the upper tray lift solenoid) while the lower tray is in use.
If sensor [B] fails, switch [C] stops the tray.
While the upper tray is being raised, motor [D] lifts the lower tray to the feed-out slot. The motor stops when the upper tray paper height sensor detects the tray.

\section*{Lower Tray Height Adjustment During Feed-out}

Two sensors and a long feeler that contacts the top of the stack control the lower tray height during feed-out.

When the top of the stack is low, the feeler drops and the actuator swings up and actuates height sensor 1 [E]. As the stack grows higher, the feeler is pushed up until it actuates height sensor 2 [F]. After height sensor 2 remains active for 3 seconds, the lift motor [D] switches on and lowers the tray a short distance. This process repeats until the tray is full.

\section*{Lower Tray Full}

[A]: Lower tray full sensor (sort/shift mode)
[B]: Lower tray lift motor
[C]: Lower tray encoder sensor
[D]: Encoder disk
[E]: Lower tray full sensor (saddle-stitch mode)
[F]: Lower tray paper sensor

The sensor that is used depends on which mode the user has selected.
Normal sorting/stapling, without saddle stitching: When the bottom of the tray actuates sensor [A], the lift motor [B] continues to rotate for a certain number of rotations. The rotations are detected using sensor [C] and encoder disk [D]. Then printing stops. If sensor [C] fails, the upper limit switch (lower tray) stops the motor. This switch (not shown in the diagram) is next to the plastic foam roller at the feedout slot.

Saddle-stitch mode: Sensor [A] is not used. The tray is lowered until the actuator on the side of the tray actuates sensor [E]. Then printing stops.
In both modes, when the stack is removed from the tray, sensor [F] de-actuates and returns the lower tray to the initial position at the feed-out slot.

\subsection*{3.4 SHIFT MECHANISM}


The same shift mechanism is used for the upper tray and lower tray.

\section*{Shift Roller Rotation}

The shift roller \([A]\) is turned by the shift roller motor \([B]\).

\section*{Shift Roller Horizontal Movement}

The shift roller is moved from left to right by the shift motor [C] and shift gear disk [D].

When the trailing edge of the copy passes the upper transport roller, the shift motor switches on, moving the shift roller to the left or right via the shift gear disk [D] and the link [E].

After the paper is delivered to the tray [F], the shift roller moves to the home position, detected by the shift HP sensor [G].
The process is repeated for every page of the same set, when the trailing edge of the page passes the transport roller.
For the next set, the shift motor rotates the gear disk in the opposite direction to shift every page of the next stack to the opposite side.

\section*{Exit Guide Plate}

The guide plate motor [H] (a stepper motor) controls the opening and closing of the guide plate [I], via a cam and pin mechanism. The guide plate opens for each sheet to allow the shift, then closes to keep the sheet in the correct position for feed out. Two mylars [J] above the feed-out slot keep the copies straight in the feed path.

The guide plate position sensor \([\mathrm{K}]\) detects whether the guide plate is open or closed.

\subsection*{3.5 PAPER POSITIONING}


\section*{Vertical Alignment}

When the trailing edge of the copy passes the stapler tray entrance sensor [A], the positioning roller solenoid \([B]\) switches on long enough for the selected paper size and pushes the positioning roller [C] onto the paper. The positioning roller and alignment brush roller [D] rotate to push the paper and align the trailing edge of the paper with the stack stopper [E].
The stapler transport motor (not shown in this diagram) drives rollers [C] and [D].

\section*{Horizontal alignment}

When the Start key is pressed, the jogger motor [F] switches on and opens the jogger fences 10 mm wider than the selected paper size.

When the leading edge of the sheet passes the staple unit entrance sensor, for the initial alignment, the jogger motor switches on for the prescribed time and closes the jogger fences 4 mm ( 2 mm closer to either side of the paper)
Next, the jogger motor switches on again for the prescribed time for the horizontal alignment to close the jogger fences 6 mm ( 3 mm to the sides of the paper) for the final alignment correction. The jogger motor switches on again and the fences return to the wait position 10 mm wider than the selected paper size.

\subsection*{3.6 STAPLER}

\subsection*{3.6.1 STAPLING MECHANISM}


Staple firing is driven by the stapler motor [A] inside the stapler unit. The stapler hammer [B] fires the stapler [C].

The cartridge set sensor [D] detects the cartridge at the correct position, or logs an SC if the stapler unit is not at the correct position.
The stapler end sensor [E] detects the staple end condition and logs an SC.

\subsection*{3.6.2 STAPLER MOVEMENT}

The stapler performs horizontal and rotational movement in each of the four staple modes.

\section*{Horizontal Stapler Movement}


The stapler movement motor \([A]\) drives the timing belt \([B]\) which moves stapler [C] left and right on a support bar [D].

When the Start key is pressed, the jogger fences move to the wait position 10 mm wider than the selected paper size, the stapler motor switches on and moves the stapler to the staple position and then switches off. The motor switches on and off for the time needed to position the stapler for the paper size selected for the job.
If the stack is to be stapled at two locations, the stapler moves to the front position first, staples, moves to the back position, staples, and then returns to the home position.
NOTE: SP6120 001~011 (Staple Jogger Adjustment). Use this SP to fine adjust the staple unit jogger fences for different paper sizes. For details, see section " 5 . Service Tables".

\section*{Rotational Stapler Movement}


When the user has selected oblique stapling at one position, first the stapler motor switches on and off for the amount of time needed to move the stapler to the stapling position for the selected paper size.
At the correct time, the stapler rotation motor [A] switches on and via the timing belt [B] rotates the worm gear [C]. The worm gear drives the gear [D] and the lift arm [E], which lifts and positions the stapler unit [F] so the stapler can fire the staple at a 45 degree angle.

\subsection*{3.6.3 FEED OUT}


After a set has been stapled, the stack feed out motor [A] switches on and drives the stack feed out belt [B]. The pawl [C] on the belt lifts the stapled stack and transports it to the exit rollers [D]. There are two pawls on the belt, to increase productivity.
The exit guide plate [E] remains open until the leading edge of the stapled sheets has passed the prescribed distance from the tray exit rollers, then the exit guide plate closes, and the stapled sheets feed out to the tray \([\mathrm{F}]\).

A cam and pin [G], powered by the guide plate motor [H], opens and closes the guide plate.

The stack feed out motor stops for 300 ms to allow the exit rollers to feed out the stapled sheets to the output tray. This pause prevents the copies from pushing out too far onto the tray.

The stack feed out motor switches on again until the pawl actuates the stack feed out belt HP sensor [I].

\subsection*{3.7 BOOKLET FINISHING}

\subsection*{3.7.1 OVERVIEW}

Stapling: Two booklet staplers are used. These are about half way up the stack fed-out path The stack feed-out belt moves the stack to the correct position for stapling.
Folding: This is done in two phases: initial folding and final folding.
- Initial folding: At the top of the stack feed-out belt, a plate pushes the centre of the copy (at the stapled place) through a pair of rollers to give the booklet an initial fold. However, this fold is only a partial fold.
- Final folding: The partially folded copy drops to the lower tray, where it is caught by a pressure plate mechanism, which completes the fold in the booklet before letting it drop onto the lower tray.

\subsection*{3.7.2 BOOKLET STAPLING AND FOLDING}


The sheets are aligned by the jogger fences before stapling. ( -3.5 )
The aligned sheets are sent to the booklet stapler unit and positioned below the booklet staplers [A] for stapling at two locations in the center of the paper.

The stack feed-out belt lifts the booklet until two pawls on the folder plate mechanism (see the next page) catch the staples to position the booklet for folding.

\subsection*{3.7.3 INITIAL FOLDING}


The folder plate motor \([A]\) switches on and drives the folder plate \([B]\) forward to push the center of the booklet into the nip of the folder rollers [C], giving the booklet a partial fold.
This is a detailed cross-section of the operation described above. The timing of the sequence depends on the size of the paper selected for the job.
The stack feed-out belt transports the booklet toward the paper exit [D] and stops when the center of the booklet is opposite the nip of the folder rollers [E].
The folder roller motor starts to turn and the folder rollers [E] start rotating. Then the folder plate motor switches on and pushes the folder plate [F] into the center of the booklet, driving the booklet between the rotating rollers. The booklet [G] (partially folded) then feeds out between the folder rollers.

The booklet exit sensor \([\mathrm{H}]\) detects the booklet when it leaves the folder rollers. This sensor triggers the mechanism for the next phase of the operation.

\subsection*{3.7.4 FINAL FOLDING AND FEED-OUT}


When the finisher is ready to feed out the first stapled booklet, the lower tray [A] descends past the pressure plate slot [J], the spring-loaded arms inside the lower tray snap into the grooves on the side fence, and the springs push the arms against the bottom of the support wing \([B]\) to raise it.

Then, before the first stapled booklet falls from the slot above, the pressure plate motor [E] (stepper motor) rotates the gear and cam [D] counter-clockwise to extend the pressure plate [C]. The lower tray then raises and pushes the pressure plate up until the actuator [F] actuates the pressure plate lift sensor [G] and switches off the lower tray lift motor.

Then, the folded and stapled booklet comes out of the booklet exit slot, actuates the booklet exit sensor, and falls onto the pressure plate below. The actuated booklet exit sensor switches on the pressure plate motor, which rotates the gear and cam clockwise to retract the pressure plate. The motor rotates until the actuator on the rim of the cam actuates the pressure plate HP sensor [H] and stops the motor. Retracting the pressure plate allows the stapled booklet to fall past the pressure plate slot onto the stack below.

Next, the pressure plate motor switches on again to extend the pressure plate, while the lower tray raises and pushes the folded and stapled edges of the booklets up against the pressure plate until the actuator [F] actuates the pressure plate lift sensor [G] and switches off the lower tray lift motor. The booklets remain pressed between the extended pressure plate and lower tray until the next booklet is fed out.

The pressure plate limit switch [ I ] switches off the lower tray lift motor if the pressure plate lift sensor fails.

\subsection*{3.8 PUNCH UNIT B377 (OPTION)}

The punch unit punches holes in printed sheets, one by one. The punch unit is provided with a new punch mechanism to improve the accuracy of punching.
NOTE: The illustrations below show the unit for Europe for \(2 / 4\) hole punching. The North American unit has five holes for \(2 / 3\) hole punching.

\subsection*{3.8.1 PUNCH DRIVE MECHANISM}


The punch motor [A] drives the punch mechanism. At the correct time after the trailing edge of the paper passes the finisher entrance sensor [B], the punch motor turns on and the paper stops. The punch clutch [C] turns and drives the punch heads [D].

The punch HP sensor [E] detects the home position for the actuator. The punch unit switches off when the cut-out in the punch shaft disk [F] enters the punch HP sensor.
NOTE: SP6113 (Punch Hole Adjustment) adjusts the punch hole position in the sub scan direction for two holes (001 2-Hole) or for three holes (002 3Hole). Use the spacers provided with the punch unit to adjust the position of the punch in the main scan direction. For details, refer to the installation of the punch unit in section "1. Installation").


When the finisher has received the command that changes the number of punch holes for the job, the punch hole motor [A] turns on until the actuator disk changes the status of the punch hole switch [B] (until it switches on or off). This indicates that the cover [C] and the punch cam [D] have moved to one side or the other to determine which punchers are used.

\subsection*{3.8.2 PUNCH WASTE COLLECTION}


Waste punchouts are collected in the punch waste hopper [A] below the punch unit inside the finisher.

When the top of the punchout waste in the hopper reaches and actuates the hopper sensor [B], a message will be displayed on the operation panel after the current job is completed.

This sensor also detects whether the punch waste hopper is installed. When the waste hopper is taken out, the arm [C] moves down and this will actuate the sensor and display a message in the operation panel. This message is the same as for the hopper full condition.

\section*{4. OVERALL MACHINE INFORMATION}

\subsection*{4.1 MECHANICAL COMPNENT LAYOUT}

1. Proof Tray
2. Guide Plate Motor
3. Guide Plate
4. Shift Roller
5. Tray Junction Gate
6. Punch Unit
7. Stapler Junction Gate
8. Pre-Stack Tray
9. Stapler Unit
10. Pressure Plate Unit
11. Saddle Stitch Stapler
12. Folder Plate
13. Lower Tray
14. Folder Rollers
15. Upper Tray

\subsection*{4.2 DRIVE LAYOUT}

1. Proof Tray Motor
2. Lower Tray Lift Motor
3. Lower Tray Encoder Disk
4. Upper Tray Lift Motor
5. Pressure Plate Motor
6. Stapler Transport Motor
7. Pre-Stack Motor
8. Exit Motor
9. Entrance Motor
10. Shift Roller Motor
11. Shift Drive Motor
12. Punch Motor

1. Stack Feed Out Belt
2. Folder Roller Motor
3. Folder Plate Motor
4. Feed Out Belt Motor
5. Jogger Fence Motor
6. Jogger Fences
7. Stapler Movement Motor
8. Stapler Rotation Motor

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3000-SHEET FINISHER

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\section*{1. INSTALLATION}

For details about installing the 3000 Sheet Finisher B478, please refer to the instructions you received with the instructions or the "1. Installation" in the main machine service manual.

\section*{2. PREVENTIVE MAINTENANCE}

For details about the 3000 Sheet Finisher B478 PM table, please refer to Section "2. Preventive Maintenance" in the main Service Manual.

\section*{3. REPLACEMENT AND ADJUSTMENT}

\subsection*{3.1 DOOR AND COVER REPLACEMENT}


Front Door
1. Remove the front door screw \([A](\hat{E} \times 1)\).
2. Remove the front door \([B]\).

\section*{Left Inner Cover}
1. Remove the front door.
2. Remove the left inner cover \([C](\hat{Z} \times 1)\).

\section*{Inner Cover}
1. Remove the inner cover [D] ( \(\left(\begin{array}{l}\text { 雨 } \times 3) \text {. }\end{array}\right.\)

\section*{Side Table and Upper Tray}

1. Remove the side table \([A]\) ( \(\mathcal{S}^{2} \times 2\) ). Slide to the right to remove it.
2. Click the release lever \([B]\) and remove the upper tray \([C]\).


\section*{Left Covers}
1. Remove the left upper panel \([A]\).
2. Remove the left upper cover \([B](\hat{\xi} \times 2\), 鱽 \(\times 2\) ).
3. Remove the door and left inner cover. (See "Door and Cover Replacement".)
4. Remove the rear cover \([F](\hat{\xi} \times 2)\).
5. Remove the left lower cover [C] ( \(\hat{\xi} \times 4\) ).

\section*{Rear Cover and Top Cover}
1. Remove the upper tray. (See "Side Table and Upper Tray".)

3. Remove the top cover [E] (
4. Remove the rear cover \([F](\hat{\xi} \times 2)\).

\section*{Shift Tray}
1. If you need to lower the shift tray, support the bottom of the tray with your hand, then pull the gear toward you [G] to release the tray and lower it.
2. Remove the shift tray \([\mathrm{H}]\left(\mathrm{S}^{2} \times 4\right)\).
3. Remove the shift tray rear cover [I] and front cover [J] (

\subsection*{3.2 ROLLERS}

\subsection*{3.2.1 SHIFT POSITIONING ROLLER}

1. Above the shift tray, pull the roller mount \([A]\) out.
2. Remove the rollers \([B]\) and \([C]\) ( (3) \(x 1\) each)

\subsection*{3.2.2 POSITIONING ROLLER}

1. Open the front door.
2. Remove the snap ring \([A]\).
3. Release the rubber belt [B].
4. Replace the positioning roller [C].

\subsection*{3.2.3 ALIGNMENT BRUSH ROLLER}

1. Open the front door and pull out the staple unit.
2. Remove the rear cover.
3. Remove the main board and all connectors (
4. Remove the screw \([A]\) and tension spring \([B]\) for the tension bracket [C], and release the tension of the timing belt.
5. Remove the pulley \([\mathrm{D}]\) and bushing \([\mathrm{E}]\) ( \(\mathcal{G} \times 2\) ).
6. Remove the inner cover \([F]\) ( \({ }^{2} \times 1\) ).
7. Open the guide [G], then remove the alignment brush roller assembly \([H]\) ( \(x\) 1).
8. Remove the alignment brush roller [I] ( (3) \(\times 1\), bushing \(\times 1\) front/back).

\subsection*{3.3 STACK FEED-OUT BELT}

1. Open the front door.
2. Pull out the jogger and stapler unit.
3. Remove the inner cover \([A]\left(\mathcal{E}^{2} \times 2\right)\).

5. Remove the front guide \([C]\left(\mathcal{S}^{2} \times 1\right.\), spring \(\times 1\) ).

NOTE: When re-installing, make sure that the flat end of the shaft is against the plate.
6. Remove the front panel [D] from the stays ( \(\mathcal{F}^{(1)} \times 6\) ).
7. Remove the old belt [E] from the bottom, center, then the top.

NOTE: 1) Make sure the ribbed side of the new belt and pawl [F] are facing down.
2) Make sure the new belt is engaged at all three rollers.

\subsection*{3.4 JOGGER FENCE}

1. Open the front door.
2. Pull out the jogger and stapler unit.
3. Push both fences to the center.
4. Remove the left jogger fence \([A](\hat{\beta} \times 1)\)
5. Remove the right jogger fence \([B](\hat{\xi} \times 1)\).

NOTE: If the screws are difficult to remove or re-attach, remove the jogger fence belt and spring plate.

\subsection*{3.5 SENSORS}

\subsection*{3.5.1 STACK HEIGHT 1, 2 AND EXIT GUIDE OPEN SENSOR}


\section*{Stack Height Sensors 1 and 2}
1. Remove the top cover. (See "Door and Cover Replacement".)
2. Remove the left upper panel and left upper cover (
3. Remove the protector plate \([A]\left(\begin{array}{l}\text { 舟 }\end{array} \times 1\right)\).
4. Remove the sensor feeler \([B]\left(\begin{array}{l}(\hat{\xi} \\ \\ \times 1\end{array}\right)\).
5. Remove the sensor bracket [C] (


\section*{Exit Guide Open Sensor}
1. Remove the sensor bracket \([F](\hat{\xi} \times 1)\).
2. Replace the exit guide open sensor [G] ( \(\mathrm{E}_{\mathrm{I}}^{\mathrm{U}} \mathrm{x} 1\) ).

\subsection*{3.5.2 UPPER TRAY PAPER LIMIT AND EXIT SENSOR}


\section*{Upper Tray Paper Limit Sensor}
1. Remove the top cover.
2. Remove the sensor cover \([A](\hat{\xi} \times 2)\).
3. Remove the sensor bracket \([B](\hat{\xi} \times 1)\).


\section*{Upper Tray Exit Sensor}
5. Remove the sensor bracket \([\mathrm{D}]\left(\begin{array}{l}\text { ( }\end{array} \mathrm{x}\right.\) ).
6. Replace the upper tray exit sensor [E] ( \(⿷^{\| l} \times 1\) ).

\subsection*{3.5.3 SHIFT TRAY EXIT SENSOR}

1. Remove the top cover.
2. Open the front door.
3. Remove the inner cover.
4. Release the upper exit guide springs \([A](x 2)\).
5. Disconnect the link \([B]\) from the cam \((\mathbb{Z} \times 1)\).
6. Remove the upper exit guide [C] (级 \(\times 1, ~\) 鳥 \(\times 1\) ).
7. Remove the guide stay \([\mathrm{D}](\hat{\xi} \times 2)\).
8. Replace the shift tray exit sensor \([E]\left(\mathcal{E}^{2} \times 1\right)\left(E_{l}^{\|} \times 1\right)\).

\subsection*{3.5.4 ENTRANCE AND STAPLER TRAY ENTRANCE SENSORS}

[A]


\section*{Entrance Sensor}
1. Disconnect the finisher from the copier.
2. Remove the sensor bracket \([A](\hat{\xi} \times 1)\).
3. Replace the entrance sensor \([B](\hat{\xi} \times 1)\left(玉_{\|}^{\|} \times 1\right)\).

\section*{Stapler Tray Entrance Sensor}
1. Open the front door.
2. Remove the sensor bracket \([C]\left(\hat{S}^{2} \times 1\right)\).
3. Replace the stapler tray entrance sensor [D] ( \(\hat{\xi}^{(1)} \times 1\) )(Eld \(\times 1\) ).

\subsection*{3.5.5 PRE-STACK PAPER SENSOR}

1. Remove the rear cover.
2. Remove the main board \([A]\) ( \(\hat{\xi} \times 8\), 気 \(\|^{l} x\) all).
3. Release the guide \([B](\mathbb{3}) \times 2)\).
4. Open the front door.
5. Remove the left vertical transport guide [C].
6. Remove the middle vertical transport guide [D] ( \(⿷^{\mathbb{l} \|} \times 1\) ).
7. Replace the pre-stack paper sensor [E] ( \(\mathrm{E}_{\mathrm{ll}}^{\mathrm{l}} \mathrm{x} 1\) ).

\section*{3．5．6 STAPLE WASTE HOPPER SENSOR}


1．Open the front door，pull out the stapler unit，then remove the rear cover．
2．Remove the rear cover（ \(\hat{\xi}^{(1)} \times 2\) ）．
3．Remove the staple waste hopper \([A](\sqrt{3}) \times 1)\) ．
4．Remove the hopper holder \([B]\)（ \(\& x 2)\) ．
5．Replace the staple waste hopper sensor［C］（ \(⿷ 匚 一 ⿻ 上 丨 𣥂 刂 l_{\mathbb{E}}^{x} 1\) ）．

\subsection*{3.5.7 STAPLER ROTATION HP AND STAPLER RETURN SENSORS}

1. Remove the stapler unit. (See next page.)
2. Remove the stapler mount bracket \([A]\left(\mathcal{E}^{2} \times 4\right)\) (Springs \(\times 2\) ).
3. Replace the stapler rotation HP sensor [B] ( \(\xi^{[l l} \times 1\) ).
4. Replace the stapler return sensor [C] ( \(\Xi_{\text {ll }} \times 1\) ).

\subsection*{3.6 STAPLER}

1. Open the front door and pull out the staple tray.
2. Remove the stapler unit harness cover \([A]\).
3. Remove the stapler cover \([B](\hat{\xi} \times 1\), 気 \(ل \| 2\) ).
4. Lift the stapler off of the pegs. [C]

\subsection*{3.7 SHIFT TRAY MOTOR}

1. Do the procedures in Section 3.1 (pp. 3,5) to remove the front door and rear cover


\subsection*{3.7.1 STACKING ROLLE/ROLLER DRAG MOTORS, RETURN HP SENSOR}

1. Do the procedures to remove the front door and all covers, with the exception of the left lower cover and top cover (labeled [C]: and [E]).
NOTE: Be sure to lower the shift tray by pulling the gear toward you. The shift tray must be down.
2. Remove the tray shift motor. ( -3.7 )
3. Remove the left stay \([A]\) ( \(\boldsymbol{\beta}^{2} \times 3\) )
4. Unhook the stay at top \([B]\).
5. Remove the shift tray mounting plate [C] (

6. Remove the end fence \([A]\) and plate \([B]\) ( \((\mathbb{\xi} \times 2)\).
7. Disengage the end fence races [C] from the rollers [D] behind the fence.
8. Remove the upper stay \([E]\left(\mathcal{F}^{2} \times 4\right)\).
9. Remove the lower stay \([F]\) (包 \(\times 4\) ).
10. Remove the cover [G] ( \(\mathcal{S}^{2} \times 4\) ).

NOTE: Make sure the motor and sensor connectors are disconnected before removing.

12. Remove the stacking motor bracket \([A]\) (bushing \(\times 1, \hat{\xi} \times 1\) ).
13. Remove the stacking motor \([B]\left(\mathcal{S}^{2} \times 2\right)\).
14. Remove the roller drag motor bracket [C] (
15. Remove return HP sensor [D].
16. Remove the roller drag motor \([E]\left(\hat{\xi}^{3} \times 1\right)\).

\subsection*{3.8 PUNCH UNIT B531 (OPTION)}

\subsection*{3.8.1 PUNCH POSITION ADJUSTMENT}


The position of the punched holes can be adjusted in two ways.

\section*{Front to Rear Adjustment}

Three spacers \([A]\) are provided with the punch unit for manual adjustment of the hole position in the main scan direction:
- 2 mm (x 1 )
- 1 mm (x 2)

NOTE: One spacer was installed at installation and the remaining spacers were fastened with a screw to the rear frame of the finisher under the rear cover and slightly above the lock bar.

\section*{Right to Left Adjustment}

The position of the punched holes can be adjusted right to left in the sub scan direction with SP6-113 Punch Hole Position Adjustment. The position can be adjusted in the range \(\pm 7.5 \mathrm{~mm}\) in 0.5 mm steps. The default setting is 0 .

Press the \(\bullet \neq\) key to toggle the \(\pm\) selection. \(\mathrm{A}+\mathrm{VE}\) value shifts the punch holes left toward the edge of the paper, and a -VE value shifts the holes right away from the edge.

\subsection*{3.9 JOGGER UNIT B513 (OPTION)}

\subsection*{3.9.1 JOGGER UNIT}

1. Remove the jogger unit cover \([A](\hat{\beta} \times 2)\).
2. Remove the jogger unit \([B](\hat{\xi} \times 2\), 気 \(\mathbb{E} \times 1\) ).

\subsection*{3.9.2 JOGGER UNIT PCB}

1. Remove the jogger unit from the finisher. ( - 3.9.1)


\subsection*{3.9.3 JOGGER UNIT MOTOR}

1. Remove the jogger unit from the finisher. ( - 3.9.1)
2. Remove the shift jogger motor \([A]\left(\hat{\xi} \times 2, ⿷_{\|}^{\|} \times 1\right)\).


\section*{4. TROUBLESHOOTING}

If the machine logs an SC code in the display of the operation panel, see "Section 4 Troubleshooting" of the Service Manual. Section 4 contains a complete list of all service codes and how to troubleshoot the problem.

\section*{5. SERVICE TABLES}

For details about 3000-Sheet Finisher B478 SP codes, please refer to "5. Service Tables" in the main machine service manual.

\subsection*{5.1 DIP SWITCHES}
\begin{tabular}{||c|c|c|c|l||}
\hline \hline \multicolumn{4}{|c|}{ DPS100 } & \multicolumn{1}{c|}{ Description } \\
\hline \(\mathbf{1}\) & \(\mathbf{2}\) & \(\mathbf{3}\) & \(\mathbf{4}\) & \multicolumn{1}{c|}{} \\
\hline 0 & 0 & 0 & 0 & Default \\
\hline 0 & 0 & 1 & 0 & Free run: A4 LEF, staple mode \\
\hline 0 & 0 & 0 & 1 & Free run: staple and tray shift \\
\hline \hline
\end{tabular}

NOTE: Do not use any other settings.

\subsection*{5.2 TEST POINTS}
\begin{tabular}{||c|c|l||}
\hline No. & Label & \multicolumn{1}{c|}{ Monitored Signal } \\
\hline TP100 & (5V) & +5 V \\
\hline TP101 & (GND) & Ground \\
\hline TP102 & (RXD) & RXD \\
\hline TP103 & (TXD) & TXD \\
\hline \hline
\end{tabular}

\subsection*{5.3 FUSES}
\begin{tabular}{||c|ll||}
\hline No. & & Function \\
\hline FU100 & Protects 24 V. & \\
\hline
\end{tabular}

\section*{6. DETAILS}

\subsection*{6.1 TRAY AND STAPLER JUNCTION GATE}


\section*{Sort/Stack Mode}


Staple Mode


Depending on the finishing mode, the copies are directed up, straight through, or down by the combinations of open and closed junction gates.
\begin{tabular}{||c|l|c|c|c||}
\hline \multicolumn{2}{|c|}{ Solenoid/Gate } & \multicolumn{3}{c|}{ Selected Operation Mode } \\
\cline { 3 - 5 } & Upper Tray & Sort/Stack & Staple \\
\hline\([A]\) & Stapler junction gate solenoid & Off & Off & ON \\
\hline\([B]\) & Stapler junction gate & Closed & Closed & OPEN \\
\hline\([C]\) & Tray junction gate solenoid & ON & Off & Off \\
\hline\([D]\) & Tray junction gate & OPEN & Closed & Closed \\
\hline
\end{tabular}

\subsection*{6.2 PAPER PRE-STACKING}


This mechanism improves productivity in staple mode. It is only used when copying on A4, LT, or B5 (all LEF).
During stapling, the copier has to wait. This mechanism reduces the wait by holding the first two sheets of a job while the previous job is still being stapled. It only works during the second and subsequent sets of a multi-set copy job.
The pre-stack junction gate solenoid [A] turns on 120 mm after the 1st sheet of paper turns on the entrance sensor, and this directs the sheet to the pre-stack tray [B]. (This sheet cannot be fed to the stapler yet, because the first set is still being stapled.) The pre-stack paper stopper solenoid [C] turns on 350 mm after the 1st sheet turns on the entrance sensor. The pre-stack paper stopper [D] then stops the paper.
The pre-stack junction gate solenoid turns off 230 mm after the trailing edge of the 1st sheet passes through the entrance sensor, and the 2nd sheet is sent to the paper guide [E]. The pre-stack paper stopper is released about 40 mm after the 2nd sheet turns on the pre-stack stopper sensor [F], and the two sheets of copy paper are sent to the stapler tray. All sheets after the 2nd sheet go to the stapler tray via the paper guide [E].

\subsection*{6.3 JOGGER UNIT PAPER POSITIONING}


In the staple mode, as every sheet of paper arrives in the jogger unit, it is vertically and horizontally aligned, then the staple edge is pressed flat to ensure the edge of the stack is aligned correctly for stapling.

Vertical Paper Alignment: About 60 ms after the trailing edge of the copy passes the staple tray entrance sensor [A], the positioning roller motor [B] is energized to push the positioning roller [C] into contact with the paper. The positioning roller and alignment brush roller [ D ] rotate to push the paper back and align the trailing edge of the paper against the stack stopper [E].

Horizontal Paper Alignment: When the print key is pressed, the jogger motor [F] turns on and the jogger fences [G] move to the wait position about 7.2 mm wider than the selected paper size on both sides. When the trailing edge of the paper passes the staple unit entrance sensor, the jogger motor moves the jogger fences 3.7 mm towards the paper. Next, the jogger motor turns on again for 3.5 mm for the horizontal paper alignment then goes back to the wait position.

Paper Stack Correction: After the paper is aligned in the stapler tray, the left [J], center [K], and right [L] stack plate motors switch on briefly and drive the front stack, center stack, and rear stack plates against the edge of the stack to flatten the edge completely against the staple tray for stapling. When the next copy paper turns on the stapler entrance sensor, the stack plate motor turns on and returns to its home position. The home position is detected by stack plate HP sensor [M].

\subsection*{6.4 STAPLER UNIT MOVEMENT}


\section*{Side-to-Side}

The stapler motor \([A]\) moves the stapler \([B]\) from side to side. After the start key is pressed, the stapler moves from its home position to the stapling position.

If two-staple-position mode is selected, for the first stack the stapler moves to the rear stapling position first, staples, moves to the front position, staples and waits at the front. For the second stack, the stapler staples the front corner first, then moves to the rear corner and staples.
NOTE: For continuous stapling jobs, the corners are stapled rear then front for the odd number stacks and stapled front then rear for even number stacks.

After the job is completed, the stapler returns to its home position. This is detected by the stapler HP sensor [C].


Rotation (1)
In the oblique staple position mode, the stapler rotation motor [A] rotates the stapler units \([B] 45^{\circ}\) to counterclockwise after it moves to the stapling position.

\section*{Rotation (2)}

When the staple end condition arises, the stapler motor moves the stapler to the front and the stapler rotation motor rotates the stapler unit to clockwise to remove the staple cartridge [C]. This allows the user to add new staples.

Once the staples have been installed, and the front door closed, the stapler unit returns to its home position. As the stapler unit is returning to the home position, the stapler return sensor [D] is activated, the return solenoid [E] turns on and it assists the guide roller [F] to return to its guide (this guide directs the stapler during rotation).

\subsection*{6.5 STAPLER}


When the aligned copies are brought to the stapling position by the positioning roller and jogger fences, the staple hammer motor \([A]\) starts stapling.

During stapling, the stapler trims off the excess length \([B]\) of the staples by lowering the cutter [C]. This excess length depends on the number of copies in the set; there will be very little for a stack containing 100 sheets. The staple waste drops into the tray [D] in the stapler. When the stapler unit returns to its home position, the tray hits the shaft [E] and the tray opens. The staple waste drops into the staple waste hopper [F]. When the staple waste hopper is full, the actuator on its base activates the staple waste hopper sensor [G]. An SC737 (Full Finisher Staple Waste Hopper) is displayed.


The stapler has a staple end sensor [A], cartridge set sensor [B] and staple hammer HP sensor [C].
When a staple end or no cartridge condition is detected, a message is displayed advising the operator to install a staple cartridge. If this condition is detected during a copy job, the indication will appear, and the copy job will stop.

The staple cartridge has a clinch area [D] where jammed staples collect. The operator can remove the jammed staples from the clinch area by pressing in the releases [E] on both sides, then lowering the bracket lever [F].

\subsection*{6.6 FEED-OUT}


After the copies have been stapled, the stack feed-out motor [A] starts. The pawl [B] on the stack feed-out belt [C] transports the set of stapled copies up and feeds it to the shift tray exit roller [D]. When stapling starts, the exit guide motor [E] opens the upper exit guide [F], which includes the upper shift tray exit roller [G], in order to feed out the leading edge of the copy set smoothly. The exit guide motor turns on again a certain time after stapling is complete, and the upper exit guide plate is lowered. Then the shift tray exit roller takes over the stack feed-out.
The on-off timing of the exit guide motor is detected by the exit guide open sensor [H].
The stack-feed-out motor turns off when the pawl actuates the stack feed-out belt home position sensor [I].

\subsection*{6.7 PAPER EXIT STACKING}


The stacking roller assembly \([A]\) is fastened to a plate \([B]\) on a shaft by a spring [C]. The cam [D], in contact with the bottom of the plate, is connected to the stacking roller drag motor [E] via a timing belt.

The stacking roller drag motor and timing belt rotate the cam against the bottom of the plate to move the rollers forward and back with each sheet ejected onto the shift tray.

The stacking roller motor [F] drives the shaft [G] that rotates the stacking rollers counter-clockwise as the rollers move back. The simultaneous rotation and backward movement of the roller assembly pulls each sheet back toward the copier to align the edges of the stack on the shift tray.
The actuator \([\mathrm{H}]\) is mounted on the cam and rotating with both rotating clockwise) and detects the roller assembly home position when the actuator leaves the gap of the return drive HP sensor [I] and signals the machine that the rollers are at the home position. The machine uses this information to control paper feed timing and confirm that the mechanism is operating correctly. The cam and actuator make one complete rotation for every sheet fed out of the machine onto the shift tray.

\subsection*{6.8 SHIFT TRAY}

\subsection*{6.8.1 OVERVIEW}


The shift tray lift motor [A] controls the vertical position of the shift tray \([B]\) through gears and timing belts [C].

\section*{Stand-by Mode}

After the main switch is turned on, or when the stack is removed from the tray, the end of the feeler on the tray falls and its actuator [D] rotates up into staple mode HP sensor 2 [E] (S7) and switches it on. This switches on the lift motor, which raises the tray until the tray pushes the actuator out of the sensor [ \(E\) ]. Then, the lift motor stops the shift tray; this is the home position (the actuator [D] is between the two sensors [E] and [F].
The shift tray upper limit switch (SW1) prevents the drive gear from being damaged if stack height sensor 1 [E] fails. In case of a failure, when the shift tray pushes up the actuator [G] and positioning rollers, the switch will cut the power to the shift tray lift motor.

\subsection*{6.8.2 SHIFT TRAY UP/DOWN MOVEMENT}


\section*{Sort/Stack Mode (Shift Mode)}

The shift tray moves to home position, which is when the actuator [F] has just exited the shift mode home position sensor [G] (S12). During feed-out, the tray is lowered automatically at prescribed intervals; sensor [D] (S7) is ignored. When the stack is removed from the tray, the end of the feeler [E] between the arms of the stacking roller falls, and its actuator [F] enters sensor [G] (S12) and switches it on. This switches on the lift motor \([\mathrm{H}]\), which raises the tray until the actuator leaves the sensor. Then, the lift motor stops the tray; this is the home position.

In sort/stack mode, if S12 fails when the tray is being lifted, the shift tray upper limit switch (SW1) prevents the drive gear from being damaged.

\section*{Staple Mode}

The shift tray moves to home position, which is when the actuator \([B]\) is between the staple mode home position sensors [C] and [D]. During feed-out, the shift tray is lowered automatically at prescribed intervals. When the stack is removed from the tray, the tray returns to the home position for stand-by mode. (-6.8.1)

\subsection*{6.8.3 SHIFT TRAY LOWER LIMIT DETECTION}


This machine has two shift tray lower limit sensors: shift lower limit sensor [A] (S9) for large paper (B4 and larger) and shift lower limit sensor [B] (S11) for small paper (smaller than B4).
NOTE: Sensor [C] (S10) is not used.
When the actuator [D] enters sensor [A] while using large paper (about 1500 sheets are on the tray), a message will be displayed and copying will stop.
When the actuator [D] enters sensor [B] while using small paper (about 3,000 sheets are on the tray), a message will be displayed and copying will stop.

\subsection*{6.9 SHIFT TRAY SIDE-TO-SIDE MOVEMENT}

\(\stackrel{\infty}{\stackrel{\infty}{+}}\)

In sort/stack mode, the shift tray [A] moves from side to side to separate the sets of copies.
The horizontal position of the shift tray is controlled by the shift motor [B] and shift gear disk [C]. After one set of copies is made and delivered to the shift tray, the shift motor turns on, driving the shift gear disk and the shaft [D]. The end fence [E] is positioned by the shaft, creating the side-to-side movement.
When the shift gear disk has rotated 180 degrees (when the shift tray is fully shifted across), the cut-out in the shift gear disk turns on the shift tray half-turn sensor [F] and the shift motor stops. The next set of copies is then delivered. The motor turns on, repeating the same process and moving the tray back to the previous position.

\subsection*{6.10 JAM CONDITIONS}
1. The entrance sensor does not turn on when the copier has fed paper 426 mm after the copier exit sensor turned off.
2. The entrance sensor does not turn off when the upper transport motor has fed paper 1.5 times the paper's length after it turned on.
3. The upper tray exit sensor does not turn on when the upper transport motor has fed paper 574 mm after the entrance sensor turned on.
4. The upper tray exit sensor does not turn off when the upper transport motor has fed paper 1.5 times the paper's length after it turned on.
5. In sort/stack mode, the shift tray exit sensor does not turn on when the upper transport motor has fed paper 733 mm after the entrance sensor turned on.
6. In sort/stack mode, the shift tray exit sensor does not turn off when the upper transport motor has fed paper 1.5 times the paper's length after it turned on.
7. In staple mode, the stapler tray entrance sensor does not turn on when the upper and lower transport motor have fed paper 835 mm after the entrance sensor turned on.
8. In staple mode, the stapler tray entrance sensor does not turn off when the upper transport motor has fed paper 1.5 times the paper's length after it turned on.
9. In staple mode, the stapler tray paper sensor does not turn off within 250 pulses of the stack feed-out motor after it started.
10. In staple mode, the shift tray exit sensor does not turn off within \(1,260 \mathrm{~ms}\) after the stack feed-out motor started.

\subsection*{6.11 PUNCH UNIT B531 (OPTION)}

\subsection*{6.11.1 PUNCH UNIT DRIVE}


The punch unit makes 2 or 3 holes at the trailing edge of the paper. The number of holes depends on a selection made on the operation panel.
The cam \([A]\) has 2 punches on one side and 3 punches on the other, and is turned by the punch motor \([B]\). The punch motor turns on immediately after the trailing edge of the paper passes the entrance sensor. The punches on the cam rotate downward and punch holes in the paper.

After punching a sheet of paper, the cam returns to home position and stops. Home position depends on whether 2 holes or 3 holes are being made, so there are two punch HP sensors. Punch HP sensor 1 [C] is used when 2-hole punching is selected, and punch HP sensor \(2[\mathrm{D}]\) is used when 3-hole punching is selected. When the cut-out [E] enters the slot of the punch HP in use (sensor 1 or 2-hole punching or sensor 2 for \(3 / 4\)-hole punching) the motor stops.
The knob (not shown) on the front end of the punch unit can be turned in either direction to clear paper jammed in the punch unit.

\subsection*{6.11.2 PUNCH WASTE COLLECTION}


Punch waste is collected in the punch waste hopper [A] positioned under the punch unit.

When the level of the punch waste in the hopper rises as far as the hole \([B]\) in the hopper, the punch waste sensor [C] turns on, stops the job, and triggers a message on the operation to indicate that the hopper is full and must be removed and emptied.

The job resumes automatically after the hopper is emptied and returned to the finisher.

The punch waste hopper sensor also functions as the hopper set sensor. When the hopper is not in the finisher, or if it is not inserted completely, the spring loaded sensor arm rotates up and to the right with the punch waste sensor away from the hole in the hopper holder and a message is displayed. The message in this case is the same as the hopper full message.

\subsection*{6.12 JOGGER UNIT B513 (OPTION)}

\subsection*{6.12.1 JOGGER UNIT MECHANICAL LAYOUT}

1. Shift Jogger Fence Lift Motor
2. Shift Jogger Motor Timing Belt
3. Shift Jogger Motor
4. Shift Jogger Fence Timing Belt
5. Shift Jogger Fences
6. Shift Jogger HP Sensor
7. Shift Jogger Lift HP Sensor

\subsection*{6.12.2 JOGGER UNIT DRIVE}


At prescribed intervals, the jogger motor [A] switches on and drives the jogger timing belt [B], gear [C] and jogger fence timing belt [D] which drives the shift jogger fences [E] against the sides of the stack to align its edges.
At the end of the job, the jogger fence lift motor [F] switches on and raises the fences until the actuator [G] leaves the slot of the shift jogger fence lift HP sensor \([\mathrm{H}]\) and shuts off the shift jogger fence lift motor.

At the same time, the jogger motor reverses and drives the fences away from the sides of the stack until the actuator [I] deactivates the shift jogger fence HP sensor [J] and switches off the jogger motor.

The jogger fences remain up in the standby position until the next job starts.

\section*{7. OVERALL MACHINE INFORMATION}

\subsection*{7.1 MECHANICAL COMPONENT LAYOUT}

1. Upper Tray
2. Middle Transport Rollers
3. Upper Tray Exit Roller
4. Upper Transport Rollers
5. Tray Junction Gate
6. Stapler Junction Gate
7. Entrance Rollers
8. Punch Unit
9. Pre-stack Junction Gate
10. Punch Waste Hopper
11. Pre-stack Tray
12. Stack Plate
13. Staple Waste Hopper
14. Stapler
15. Alignment Brush Roller
16. Positioning Roller
17. Stack Feed-out Belt
18. Shift Tray Drive Belt
19. Lower Transport Rollers
20. Shift Tray
21. Shift Tray Exit Roller

\subsection*{7.2 ELECTRICAL COMPONENT DESCRIPTION}
\begin{tabular}{|c|c|c|}
\hline Symbol & Name & Function \\
\hline \multicolumn{3}{|l|}{Motors} \\
\hline M01 & Shift Tray Exit & Drives the exit roller for the shift tray. \\
\hline M02 & Shift Tray Lift & Moves the shift tray up or down. \\
\hline M03 & Exit Guide & Opens and closes the upper exit guide. \\
\hline M04 & Lower Transport & Drives the lower transport rollers, the positioning roller and the alignment brush roller \\
\hline M05 & Shift & Moves the shift tray from side to side. \\
\hline M06 & Positioning Roller & Moves the positioning roller into contact with the paper. \\
\hline M07 & Stacking Roller Drag & Moves the stacking roller in and out. \\
\hline M08 & Stacking Roller & Rotates the stacking roller. \\
\hline M09 & Jogger & Moves the jogger fences. \\
\hline M10 & Stack Feed-Out Belt & Drives the stack feed-out belt. \\
\hline M11 & Stack Plate - Center & Presses down the center of the edge for stapling. \\
\hline M12 & Stapler & Moves the staple unit from side to side. \\
\hline M13 & Stack Plate - Front & Presses down the front corner of the edge for stapling. \\
\hline M14 & Stack Plate - Rear & Presses down the rear corner of the edge for stapling. \\
\hline M15 & Stapler Rotation & Rotates the stapler 45 degrees for oblique stapling. \\
\hline M16 & Staple Hammer & Drives the staple hammer. \\
\hline M17 & Punch & Drives the punch shaft and roller. Punch Unit B531 (option). \\
\hline M18 & Upper Transport & Drives the entrance rollers, the middle and upper transport rollers, and upper tray exit roller. \\
\hline M19 & Shift Jogger & Drives the shift jogger fences against the sides of the sheets to align the stack, then reverses to return them to the home position. Jogger Unit B513 (option). \\
\hline M20 & Shift Jogger Lift & Raises the shift jogger fences after aligning the stack, then reverses and lowers them when returning to the home position. Jogger Unit B513 (option). \\
\hline \multicolumn{3}{|l|}{BOARDS} \\
\hline PCB & Main & Controls the finisher and communicates with the copier. \\
\hline PCB & Stapler & Controls the stapler unit. \\
\hline PCB & Punch & Passes signals between the punch unit and the finisher main board. Punch Unit B531 (option). \\
\hline PCB & Jogger & Controls the shift/jogger unit B513 (option). \\
\hline \multicolumn{3}{|l|}{SENSORS} \\
\hline S01 & Entrance & Detects the copy paper entering the finisher and checks for misfeeds. \\
\hline S02 & Upper Tray Exit & Checks for misfeeds at the upper tray. \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|}
\hline Symbol & Name & Function \\
\hline S03 & Upper Tray Limit & Detects when the paper stack height in the upper tray is at its upper limit. \\
\hline S04 & Shift Tray Exit & Checks for misfeeds at the shift tray exit. \\
\hline S05 & Exit Guide Open & Detects whether the guide plate is opened or not. \\
\hline S06 & Staple Mode HP 1 & Detects the shift tray home position for standby mode and for staple mode. \\
\hline S07 & Staple Mode HP 2 & Detects the shift tray home position for standby mode and for staple mode. \\
\hline S09 & Shift Lower Limit - Large Paper & Detects the lower limit for the shift tray when large paper sizes are being used \\
\hline S10 & Shift Tray Lower Limit 2 & Not used. \\
\hline S11 & Shift Tray Lower Limit 3 & Detects when the shift tray is at its lower limit. \\
\hline S12 & Shift Mode HP & Detects the shift tray home position in sort/stack mode. \\
\hline S13 & Stacking Roller HP & Detects when the stacking roller is at home position. \\
\hline S14 & Shift Tray Half-Turn & Detects whether the shift tray is at either the front or home HP. \\
\hline S15 & Pre-Stack Tray Paper & Determines when to turn off the pre-stack paper stopper solenoid. \\
\hline S16 & Stapler Tray Exit & Detects jams at the staple tray exit. \\
\hline S17 & Positioning Roller HP & Detects the home position of the positioning roller. \\
\hline S18 & Stack Feed-Out Belt HP & Detects the home position of the stack feed-out belt \\
\hline S19 & Stapler Tray Paper & Detects the copy paper in the stapler tray. \\
\hline S20 & Jogger HP & Detects the home position of the shift jogger fences. \\
\hline S21 & Stack Plate - Center HP & Detects the home position of the center stack plate. \\
\hline S22 & Stack Plate - Front & Detects the home position of the front stack plate. \\
\hline S23 & Stack Plate - Rear & Detects the home position of the rear stack plate. \\
\hline S24 & Stapler HP & Detects the home position of the staple unit for side-to-side movement. \\
\hline S25 & Stapler Rotation HP & Detects the home position of the stapler unit for 45degree rotation. \\
\hline S26 & Stapler Return & Detects the on timing of the stapler return solenoid. \\
\hline S27 & Staple Waste Hopper & Detects when the staple waste hopper is full. \\
\hline S28 & Punch Waste Hopper & Detects when the punch waste hopper is full and detects when the punch tray is set. Punch Unit B531 (option). \\
\hline S29 & Punch HP 1 & Detects the cam home position for the 2-hole punch. Punch Unit B531 (option). \\
\hline S30 & Punch HP 2 & Detects the cam home position for \(3 / 4\) punch. Punch Unit B531 (option). \\
\hline S31 & Shift Jogger HP & Detects the home position of the jogger unit arms during paper alignment. Jogger Unit B513 (option). \\
\hline S32 & Shift Jogger Lift HP & Detects the when both shift jogger fences are at the lowered position and ready to move against the sides of the stack. Jogger Unit B513 (option). \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|}
\hline Symbol & Name & Function \\
\hline \multicolumn{3}{|l|}{SOLENOIDS} \\
\hline SOL1 & (Upper) Tray Junction Gate & Drives the tray junction gate. \\
\hline SOL2 & Stapler Junction Gate & Drives the stapler junction gate. \\
\hline SOL3 & Pre-Stack Junction Gate & Drives the pre-stack junction gate. \\
\hline SOL4 & Pre-stack Paper Stopper & Drives the stopper pawl of the pre-stacking tray. \\
\hline SOL5 & Stapler Return & Positions the stapler correctly on its return from the staple supply point. \\
\hline \multicolumn{3}{|l|}{SWITCHES} \\
\hline SW1 & Shift Tray Upper Limit & Cuts the power to the shift tray lift motor when the shift tray position is at its upper limit. \\
\hline SW2 & Front Door Safety & Cuts the dc power when the front door is opened. \\
\hline SW3 & Emergency Stop & Switches the current job off and on to allow time for the operator to remove paper from the shift tray. \\
\hline
\end{tabular}

\subsection*{7.3 DRIVE LAYOUT}

1. Upper Transport Roller 2
2. Upper Tray Exit Roller
3. Lower Transport Roller 2
4. Shift Tray Lift Motor
5. Shift Tray Exit Motor
6. Shift Tray Exit Roller
7. Shift Tray
8. Shift Motor
9. Staple Tray Exit Roller
10. Positioning Roller
11. Lower Transport Roller 3
12. Lower Transport Motor
13. Lower Transport Rollers 2
14. Lower Transport Roller 1
15. Transport Roller 1
16. Entrance Roller 2
17. Entrance Roller
18. Upper Transport Roller 1
19. Upper Transport Motor
20. Stack Feed-out Motor
21. Jogger Motor
22. Jogger Fence
23. Stack Plate Motor
24. Stapler Motor
25. Stack Feed-out Belt
26. Stapler Rotation Motor

\section*{B706}

\section*{3000-SHEET FINISHER}

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\section*{1. B706 SERVICE MANUAL DIFFERENCES}

The following is a summary of the differences between the SR840 and SR841 (all other sections are identical to the B478). For information regarding sections not detailed see the B478, 3000 Sheet Finisher Section. The revised sections appear on the following page.

\section*{IMPORTANT NOTES:}
1. To install the Z-Folding Unit (B660) on the enhanced version of the B070/B071 mainframe, it is necessary to first install the new 3000 Sheet Finisher (B706).
2. To install the Z-Folding Unit (B660) unit on existing B070/B071 machines it will be necessary to update to the latest firmware version. These details will be announced as soon as they become available.

\section*{INSTALLATION:}

Auxiliary trays and their holders have been added to the accessory list.

NOTE: As mentioned in the Operating Instructions, auxiliary trays should be attached on top of the proof/shift tray to ensure proper stacking.

\section*{REPLACEMENT AND ADJUSTMENT:}

The replacement procedures for new components have been added.

\section*{DETAILS:}

Explanations for the Z-folding stapling mechanism and new electrical components have been added.

\section*{2. INSTALLATION}

\subsection*{2.1 ACCESSORY CHECK LIST}

Check the quantity and condition of the accessories in the box against the following list:
Description ..... Q'ty
1. Cushion ..... 1
2. Table Extension ..... 1
3. Leveling Shoes ..... 4
4. Rear Joint Bracket ..... 1
5. Front Joint Bracket ..... 1
6. Entrance Guide Plate ..... 1
7. Grounding Plate ..... 1
8. Auxiliary Tray Holder ..... 1
9. Auxiliary Tray - Proof ..... 1
10. Auxiliary Tray - Shift ..... 1
11. Tapping Screws - M4 x 8 ..... 2
12. Tapping Screws - M \(3 \times 6\) ..... 4
13. Tapping Screws - M3 \(\times 8\) ..... 4
14. Phillips Screws w/washer - M4 x 14 ..... 4
15. Shift Tray ..... 1
16. Installation Procedure ..... 1


\section*{3. REPLACEMENT AND ADJUSTMENT}

\subsection*{3.1 Z-FOLD JOGGER UNIT COVER}

1. Open the front door.
2. Pull out the stapler tray unit [A].
3. Remove the Z-fold jogger unit cover \([B]\left(\mathcal{S}^{2} \times 2\right)\)

\subsection*{3.2 JOGGER TOP FENCE MOTOR}

1. Open the front door and pull out the stapler tray unit.
2. Remove the Z-fold jogger unit cover (
3. Remove the motor bracket \([A]\) ( \(\left(\hat{\xi}^{\prime} \times 2\right.\), timing belt \(\times 1\) )


\subsection*{3.3 Z-FOLD JOGGER UNIT}

1. Open the front door and pull out the stapler tray unit.
2. Remove the Z-fold jogger unit cover ( \(\mathbb{E}^{(1)} \times 2\) )


\subsection*{3.4 JOGGER BOTTOM FENCE MOTOR}

1. Open the front door and pull out the stapler tray unit.


\section*{4. DETAILS}

\subsection*{4.1 STAPLING Z-FOLDED PAPER}


Here is the operation sequence for jogging and stapling Z-folded sheets:
(1) The lower jogger fence lifts to receive the \(Z\)-folded sheets.
(2) The top fence moves down, to the horizontal position.
(3) A sheet of paper goes into the stapler tray.
(4) The positioning roller turns when each sheet is fed to the stapler tray.
(5) Each sheet is fed down against the lower jogger fence to align the bottom edge.
(6) After the set number of sheets come in, the jogger top-fence motor switches on and lowers the top fence against the top of the stack. This aligns the stack for stapling.
(7) The bottom fence motor lowers the aligned stack to the stapling position.
(8) The stapler staples the stack.

\subsection*{4.2 ELECTRICAL COMPONENTS}

1. Stack Feed Out Belt Motor
2. Top Fence HP Sensor
3. Jogger Top Fence Motor
4. Jogger Motor
5. Stack Plate Rear HP Sensor
6. Stack Plate Rear Motor
7. Stack Plate Center Motor
8. Stack Plate Center HP Sensor
9. Bottom Fence HP Sensor
10. Stack Plate Front HP Sensor
11. Stack Plate Front Motor
12. Stapler Return Solenoid
13. Stapler Hammer Motor
14. Staple End Sensor
15. Cartridge Set Sensor
16. Staple HP Sensor
17. Stapler HP Rotation Sensor
18. Stapler Return Sensor
19. Stapler HP Sensor
20. Jogger Bottom Fence Motor
21. Stapler Rotation Motor
22. Stack Feed-Out Belt HP Sensor
23. Stapler Motor
24. Stapler Tray Paper Sensor
25. Jogger HP Sensor

NOTE: Items in bold are new to the B706.

\section*{B660}

Z-FOLDING UNIT TYPE 2105

\section*{Conventions Used in this Manual}

This manual uses several symbols.
\begin{tabular}{|c|c|}
\hline Symbol & What it means \\
\hline \(\checkmark\) & Refer to section number \\
\hline GTI & See Core Tech Manual for details \\
\hline \(\mathcal{F}^{\text {F }}\) & Screw \\
\hline E\#ly & Connector \\
\hline ¢ & E-ring \\
\hline (3) & Clip ring \\
\hline 熎 & Clamp \\
\hline
\end{tabular}


Lengthwise, SEF
(Short Edge Feed)


Sideways, LEF (Long Edge Feed)

\section*{Cautions, Notes, etc.}

The following headings provide special information:

\section*{WARNING}

FAILURE TO OBEY WARNING INFORMATION COULD RESULT IN SERIOUS INJURY OR DEATH.

\section*{ⒸAUTION \\ Obey these guidelines to ensure safe operation and prevent minor injuries.}

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

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

\title{
Z-FOLDING UNIT TYPE 2105 B660
}

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\section*{1. INSTALLATION}

\subsection*{1.1 ACCESSORY CHECK}

Check the quantity and condition of the accessories in the box against the following list:
Description ..... Q'ty
1. Lock Bracket - Rear (Cover Sheet Feeder) ..... 1
2. Lock Bracket - Rear ..... 1
3. Lock Bracket - Front (Cover Sheet Feeder)** ..... 1
4. Lock Bracket - Front*1 ..... 1
5. Ground Plate (Cover Sheet Feeder) ..... 1
6. Ground Plate (Z-folding unit) ..... 1
7. Ground Plate (Finisher or Cover Sheet Feeder) ..... 1
8. Right Docking Bracket ..... 1
9. Left Docking Bracket ..... 1
10. Front Spacer ..... 1
11. Rear Spacer ..... 1
12. Power Cord ..... 1
13. Sponge Strip ..... 1
14. Screws M3 \(\times 6\) ..... 8
15. Screws M4 x 6 .....  8
*1 Items 3, 4, are not required for the B706.



\subsection*{1.2 INSTALLATION PROCEDURE}

\section*{. CAUTION \\ Always switch the machine off and unplug the machine before doing any of the following procedures.}

\subsection*{1.2.1 BEFORE YOU BEGIN}
- Do the installation procedure for the finisher but do not dock it to the machine. The Z-folding unit must be installed between the finisher and the main machine.
- Do the installation for the cover sheet feeder (if necessary).
- If the finisher is already installed, disconnect the finisher from the main machine. (If the cover sheet feeder is installed on the finisher, it is not necessary to remove the cover sheet feeder.)

\section*{IMPORTANT NOTES:}
1. To install the Z-Folding Unit (B660) on the enhanced version of the B070/B071 mainframe, it is necessary to first install the new 3000 Sheet Finisher (B706).
2. To install the Z-Folding Unit (B660) unit on existing B070/B071 machines it will be necessary to update to the latest firmware version. These details will be announced as soon as they become available.

\subsection*{1.2.2 UNPACKING}

This installation procedure uses the following symbols. \(\mathcal{E}^{(1)}\) : Screws

1. Detach the \(I / F\) connector \([A]\).
2. Remove all tape from unit.
3. Open the front door \([B]\).
4. Raise the horizontal transport plate [C].
5. Pull out the Z-folding mechanism [D].
6. Remove all tape and shipping material.


\subsection*{1.2.3 DOCKING TO THE FINISHER}

1. Remove the back cover of the finisher ( \(\left(\hat{\xi^{2}} \times 2\right)\).
2. Attach the left docking bracket \([A]\) to the \(Z\)-folding unit ( provided with the finisher).
3. Attach the right docking bracket \([B]\) to the \(Z\)-folding unit ( provided with the finisher).
4. Attach the rear locking bracket (
- Attach the rear large bracket [C] if the cover sheet feeder is installed.
- Attach the rear small bracket [D] if the cover sheet feeder is not installed.
5. Attach the ground plate \([\mathrm{E}]\) to the \(Z\)-folding unit ( \(\mathcal{E}^{(1)} \times 2\) ).

6. Remove the tape from the sponge \([\mathrm{A}]\) and attach it to the \(Z\)-folding unit.
7. Remove the top cover \([B]\left(\begin{array}{l}\text { 册 } \times 4) \text {. }\end{array}\right.\)
8. Attach the front spacer [C].
9. Attach the rear spacer [D].

The spacers align the top of the Z-folding unit with the edge of the main machine.
10. Reattach the top cover \([B]\) ( \(\times 4\) ).

Make sure that the top cover is level with the tops of the front and rear spacers.

. CAUTION
With the support retracted, the Z-folding unit tips easily!
11. At the left bottom edge of the \(Z\)-folding unit, remove the bracket \([A](\hat{\xi} \times 1)\).
12. Push in the support [B].
13. Reattach the bracket \([A]\) ( \((\hat{\xi} \times 1)\).
14. If the cover sheet feeder is attached to the finisher, attach the ground plate [C] to the Z-folding unit (

15. Attach the ground plate [A] ( \(\mathcal{E}^{2} \times 2\) ) to the finisher (or the cover sheet feeder). This is the ground with the flat plate attached with 2 vertical screws.
16. Open the front door of the finisher.
17. Pull out the lock lever [B] of the finisher ( \(\hat{\xi}^{2} \times 1\) ). (If the cover sheet feeder is installed, pull out the lock lever of the cover sheet feeder.)
18. Dock the Z-folding unit to the finisher (or cover sheet feeder).
19. Push in the lock lever \([B]\) of the finisher (or cover sheet feeder) and fasten it ( x 1 ).
20. Above the lock lever [B], fasten the screw [C] ( \({ }^{(1)} \times 1\) ).
21. At the rear of the finisher, in the lower left corner fasten the rear lock bracket [D] (令 \(\times 1\) ).

\subsection*{1.2.4 DOCKING TO THE MAIN FRAME}

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

13. Reattach the finisher rear cover ( \(\hat{\mathcal{E}^{2}} \times 2\) ).
14. Connect the I/F cable [A] of the finisher to the Z-folding unit.
15. Adjust the height of the finisher.

\section*{2. PREVENTIVE MAINTENANCE}

\subsection*{2.1 PM PARTS}

The quantities \((\mathrm{K}=1,000)\) given as the PM interval show the number of prints or copies unless written differently. These numbers are based on the PM counter.

\section*{Symbol Key for PM Tables}

I: Inspect. Clean, replace, or lubricate as necessary.
C: Cleaning necessary.
R: Replacement necessary.
L: Lubrication necessary.
\begin{tabular}{|l|}
\hline\(\boxed{ }\) WARNING \\
\hline \begin{tabular}{l} 
Switch off the main power switch and disconnect the machine's main \\
power cord before you do a procedure in this section.
\end{tabular} \\
\hline
\end{tabular}
2.1.1 Z-FOLDING UNIT TYPE 2105
\begin{tabular}{||l|c|l||}
\hline & As Needed & \multicolumn{1}{|c|}{ Note } \\
\hline Drive Rollers & C & Dry cloth. \\
\hline Idle Rollers & C & Dry cloth. \\
\hline Anti-Static Brush & C & Dry cloth. Replace every 1000 K. \\
\hline Bushings & L & Silicone Oil \\
\hline Sensors & C & Dry cloth. \\
\hline
\end{tabular}

\section*{3. REPLACEMENT AND ADJUSTMENT}

\subsection*{3.1 BEFORE YOU BEGIN}

\begin{tabular}{|l|}
\hline\(\triangle\) CAUTION \\
\hline \begin{tabular}{l} 
The Z-folding unit is not stable, with or without the feet extended. Do your \\
work carefully; do not tilt the unit.
\end{tabular} \\
\hline
\end{tabular}
1. Disengage the Z-folding unit from the machine.
2. Disengage the Z-folding unit from the finisher (or cover sheet feeder).
3. At the bottom on the sides of the \(Z\)-folding unit:
- Remove the lock bracket \([A]\) ( \(\hat{\beta}^{(1)} \times 1\) ).
- Pull out the foot extension [B].
- Re-attach the bracket \([A]\) to lock the foot in the open position ( \(\hat{\xi} \times 1\) ).

\section*{Reinstallation}

Do this procedure in the opposite sequence to retract and lock the extensions below the Z-folding unit.

\subsection*{3.2 COVERS}

[1] Open the front door.
[2] Lift the horizontal transport plate to the left until it locks on the left side.
[3] Pull out the Z-fold mechanism.
[A]: Front door ( ( \(_{(1)} \times 2\) )
[B]: Front cover ( \((\mathbb{E} \times 6)\)
[C]: Top cover ( \((\underset{\text { B }}{ } \times 4)\)
[D]: Left cover ( \(\hat{\xi}^{2} \times 4\) )
[E]: Right cover ( \(\mathrm{K}^{2} \times 5\) )
[F]: Back cover ( \(\boldsymbol{\xi}^{\boldsymbol{\xi}} \times 5\) )

\subsection*{3.3 FEED MOTOR}

1. Pull the Z-folding mechanism out of the unit, but not fully.
2. Remove: (-3.2)
- Left cover
- Right cover
- Back cover
[A]: Motor cover (


\section*{Re-installation}

Make sure that the motor cover is below the leaf springs [C].

\subsection*{3.4 UPPER EXIT SENSOR}


Left cover (-3.2)
[A]: Bracket ( \(\hat{\beta}^{(1)} \times 2\) )
[B]: Upper exit sensor bracket ( \(\mathcal{F}^{(1)} 1\), 包 \(\times 1\) )
[C]: Upper exit sensor ( \(\mathrm{E}^{\mathbb{N}} \mathrm{x}\) 1)

\section*{3．5 UPPER STOPPER MOTOR／HP SENSOR，FEED SENSOR}


Front cover（－3．2）
［A］：Upper stopper motor bracket（ \(\hat{\xi}^{(1)} \times 3\) ，氯 \(\times 2\) ）
［B］：Upper stopper motor HP sensor（ \(\mathrm{E}_{\mathrm{N}}^{\mathrm{U}} \mathrm{x} 1\) ）
［C］：Upper stopper motor（ \(\hat{\xi}^{2} \times 2\) ，気事 \(\times 1\) ）
［D］：Feed sensor bracket（ \({ }^{(1)} \times 1\) ）
［E］：Feed sensor（ \(\mathrm{E}^{\mathbb{E}} \mathrm{x}\) 1）

\subsection*{3.6 FOLD TIMING SENSOR}


Pull the Z-fold mechanism out of the unit. (-3.2)
[A]: Open the right vertical transport unit cover.
[B]: Plate ( \(\hat{\beta}^{(1)} \times 4\) )


\subsection*{3.7 LOWER STOPPER MOTOR/HP SENSOR, RELAY BOARD}


Front cover (-3.2)
[A]: Lower stopper motor bracket ( \(\hat{\mathcal{E}}^{2} \times 3\), 氯 x 1 )
[B]: Lower stopper HP sensor ( \(\mathrm{E}_{\mathrm{Cl}}^{\mathrm{l}} \mathrm{x} 1\) )



\subsection*{3.8 LEADING EDGE SENSOR, LOWER EXIT SENSOR}


Pull out the Z-folding mechanism. (-3.2)
Open the right vertical transport cover [E].
[A]: Left link arm ( \(\hat{\xi} \times 1\) )
[B]: Left corner bracket ( \({ }^{(1)} \times 1\) )
[C]: Right link arm ( \(\hat{\xi}^{\boldsymbol{\xi}} \times 1\) )
[D]: Right corner bracket ( \({ }^{(1)} \times 1\) )
[E]: Vertical transport cover.
[F]: Lower fold roller cover (
[G]: Leading edge sensor bracket (

[I]: Lower exit sensor bracket ( \(\mathcal{E}^{2} \times 1\) )


\subsection*{3.9 ANTI-STATIC BRUSH}

1. Pull out the Z-folding mechanism. (-3.2)
2. Open the left vertical transport cover [A].
3. Open the vertical transport assembly [B].
4. Remove the left link screw [C] of the vertical transport assembly.
5. Remove the right link screw [D] of the vertical transport assembly.
6. Remove the link screw [E] between the plates of the vertical transport assembly.
7. Remove the bracket [F].
8. Remove the anti-static brush [G].

\subsection*{3.10 FOLD ROLLER MOTOR}

1. Pull the Z-folding mechanism out of the unit, but not fully.
2. Remove: (-3.2)
- Left cover
- Right cover
- Back cover
[A]: Motor cover ( \(\hat{\xi}^{2} \times 3\) )


\section*{Reinstallation}

Make sure that the motor cover is below the leaf springs [C].

\subsection*{3.11 MAIN CONTROL BOARD}

1. Remove the rear cover. ( -3.2 )


\subsection*{3.12 PSU}

1. Open the front door. ( -3.2 )
2. Pull the \(Z\)-fold mechanism out of the unit. ( -3.2 )
3. Remove the left cover and right cover. ( -3.2 )
4. Remove the base top cover \([A](\widehat{\xi} \times 3)\).
5. Remove the base left cover \([B](\mathbb{\xi} \times 2)\).
6. Remove the base right cover [C] ( \(\mathrm{C} \times 2\) ).
7. Make a mark at the positions of the connectors, then disconnect them.

IMPORTANT: These connectors do not have different colors. To help you connect them again correctly, make marks on them.
8. Remove the screws of the power supply unit (PSU) [D] ( \(\hat{\xi} \times 4\) ).
9. Pull the power supply unit [D] out of the right side of the bottom.


\section*{4. TROUBLESHOOTING}

For more about troubleshooting (jam removal, etc.), please refer to the Operating Instructions.

\section*{5. SERVICE TABLES}

Two SP codes have been added for the Z-folding unit.


Use these SPs to adjust the locations of the first fold and the second fold.
The illustration shows the position of the sheet while it goes through the lower exit rollers after it has been folded.
\begin{tabular}{||l|l||}
\hline SP6122 001-008 & Fine Adjustment - 1st Fold Position \\
\hline & \begin{tabular}{l}
{\([-4 \sim+4 / 0 / 0.2 \mathrm{~mm}]\)} \\
Adjusts the position of the first fold [A] to decrease or increase the \\
distance \((\mathbf{A})\) between the leading edge \([B]\) and the crease of the 2nd \\
fold [C].
\end{tabular} \\
\hline SP6122 009-016 & \begin{tabular}{l} 
Fine Adjustment - 2nd Fold Position \\
\hline
\end{tabular} \begin{tabular}{l}
{\([-4 \sim+4 / 0 / 0.2 \mathrm{~mm}]\)} \\
Adjusts the position of the 2nd fold [C] to decrease or increase the \\
length (L1) of the sheet between the trailing edge [D] and the 2nd \\
fold.
\end{tabular} \\
\hline
\end{tabular}

OVERVIEW

\section*{6. DETAILS}

\subsection*{6.1 OVERVIEW}

1. Front Door Sensor
2. Junction Gate
3. Feed Rollers
4. Feed Sensor
5. Fold Timing Sensor
6. Pinch Idle Roller
7. Upper Stopper
8. Upper Stopper Path Sensor
9. 3rd Fold Roller
10. 2nd Fold Roller
11. Lower Stopper HP Sensor
12. Lower Exit Rollers
13. Lower Exit Sensor
14. Grip Rollers
15. Lower Stopper
16. Leading Edge Sensor
17. Vertical Feed Rollers - 1
18. Anti-Static Brush
19. 1st Fold Roller
20. Vertical Feed Rollers - 2
21. Upper Stopper HP Sensor
22. Pinch Feed Roller
23. Vertical Feed Rollers - 3
24. Vertical Feed Rollers - 4
25. Upper Exit Sensor
26. Upper Exit Rollers

\subsection*{6.2 Z-FOLDING UNIT PAPER PATH}

\subsection*{6.2.1 PAPER PATH WITH NO FOLDING}


The feed rollers [1] feed the paper from the main machine into the Z-folding unit. If \(Z\)-folding was not used for the job, the sheet feeds above the closed junction gate [2].

The upper exit sensor [3] detects the leading and trailing edge of the unfolded sheet.

The upper exit rollers [4] feed the unfolded sheet out of the Z-folding unit and into the finisher.

\subsection*{6.2.2 PAPER PATH WITH Z-FOLDING}


The feed rollers [1] feed the paper from the main machine into the Z-folding unit.
The junction gate solenoid energizes and opens the junction gate [2]. The junction gate sends the sheet down into the Z-folding paper path.
The upper and lower stopper motors move the upper stopper [3] and lower stopper [4] to the positions for the paper size that was used for the job.
The feed sensor [5] detects the leading edge and trailing edge of the sheet. The pinch idle roller solenoid (upper) pulls the pinch idle roller [6] away from the pinch feed roller [7] and the paper can fall between the pinch rollers.

The anti-static brush [8] removes static electricity from the sheet.
When the fold timing sensor [9] detects the trailing edge of the sheet, it energizes the pinch idle roller solenoid (lower). This pushes the pinch idle roller [6] against the opposite pinch feed roller [7].
The lower stopper [10] stops the sheet and buckles it slightly toward the nip [11] of the 1 st and 2 nd fold rollers.


The pinch feed roller [1] turns and feeds the sheet down against the lower stopper [2]
At the correct time, the fold roller motor switches on and turns the:
- 1st fold roller [3]
- 2nd fold roller [4]
- 3rd fold roller [5]

The sheet continues to buckle until it feeds into the nip [6] of the 1st and 2nd fold rollers. These two rollers fold the sheet.
The leading edge sensor [7] detects the leading edge of the sheet:
- When the leading edge goes by while the paper feeds down (to the lower stopper).
- When the leading edge goes by again while the paper feeds up into the nip of the 1st and \(2 n d\) fold rollers.
If the leading edge sensor does not detect the leading edge at the correct time, this sensor signals a jam.

At the correct time, the pinch idle roller [8] is pulled away from the pinch feed roller [9] by the pinch idle roller solenoid (upper).


The 1st fold roller [1] and 2nd fold roller [2] continue to turn. This feeds the edge of the 1 st fold up until it hits the upper stopper [3].
The sheet lifts the feeler of the upper stopper path sensor [4]. This sensor:
- Detects when the sheet comes to the upper stopper path.
- Detects when the sheet goes out of the upper stopper path.

The upper stopper sensor detects a jam if it does not detect that the sheet comes and goes at the correct times.

When the sheet feeds between the 1st and 2nd fold rollers, this pushes the first fold against the upper stopper. The sheet buckles down into the gap between the 2 nd fold roller [5] and 3rd fold roller [6]. The second fold is made when the sheet feeds between the 2nd and 3rd feed rollers.


The 2nd and 3rd fold rollers [1] continue to turn and feed the sheet down.
The feeler of the upper stopper path sensor [2] falls and the sensor detects that the sheet is gone. The fold rollers feed the folded sheet to the lower exit rollers [3].

The lower exit sensor [4] detects the leading edge and trailing edge of the sheet. If the trailing edge is not detected during the correct time interval, the sensor detects a jam.

The grip rollers [5] feed the folded sheet to the four pairs of vertical feed rollers [6].
The upper exit sensor [7] detects the leading edge and trailing edge of each folded sheet. If the leading and trailing edge are not detected during the correct time interval, this sensor detects a jam.
The upper exit rollers [8] feed the folded sheet into the finisher.
At the correct time:
- The upper stopper motor lifts the upper stopper [9] until the upper stopper sensor [10] detects that the upper stopper is at its home position. This stops the motor.
- The lower stopper motor lowers the lower stopper [11] until the lower stopper sensor [12] detects that the lower stopper is at its home position. This stops the motor.

\section*{SPECIFICATIONS}

\section*{1. HARDWARE}
\begin{tabular}{|c|c|}
\hline \multicolumn{2}{|l|}{Paper Size} \\
\hline No Folding (52-256 g/m \({ }^{2}\) ) & A3, A4, A5, A6 SEF, B4, B5, B6 SEF DLT, LG, LT, HLT, 12" x 18" \\
\hline Folding ( \(64-80 \mathrm{~g} / \mathrm{m}^{2}\) ) & \multirow[t]{2}{*}{\begin{tabular}{l}
A3, B4, A4 SEF \\
DLT, LG, LT SEF, 12" x 18"
\end{tabular}} \\
\hline & \\
\hline Dimensions ( \(\mathrm{w} \times \mathrm{dx} \mathrm{h}\) ) & \multirow[t]{2}{*}{\[
\begin{aligned}
& 177 \times 620 \times 960 \mathrm{~mm} \\
& 7 \times 24.5 \times 37.8 \mathrm{in} .
\end{aligned}
\]} \\
\hline & \\
\hline Weight & 50 kg (110 lb.) \\
\hline Power Consumption & 100 W max. \\
\hline Power Supply & North America 120 V, 60 Hz \\
\hline & Europe/Asia \(220-240 \mathrm{~V}, 50 / 60 \mathrm{~Hz}\) \\
\hline
\end{tabular}

\section*{2. ELECTRICAL COMPONENTS}

1. Upper Exit Sensor
2. Front Door Sensor
3. Junction Gate Solenoid
4. Feed Sensor
5. Pinch Idle Roller Solenoid - Upper
6. Pinch Idle Roller Solenoid - Lower
7. Fold Timing Sensor
8. Upper Stopper Motor
9. Upper Stopper HP Sensor
10. Lower Exit Sensor
11. Lower Stopper HP Sensor
12. Relay Board
13. Lower Stopper Motor
14. Connector Relay
15. Breaker
16. Power Supply Unit
17. Leading Edge Sensor
18. Main Control Board
19. Upper Stopper Path Sensor
20. Fold Roller Motor
21. Feed Motor

\section*{3. DRIVE LAYOUT}

1. Feed Motor
2. Feed Rollers
3. Fold Roller Motor
4. Lower Exit Rollers
5. Grip Rollers
6. 3rd Fold Roller
7. 2nd Fold Roller
8. 1st Fold Roller
9. Vertical Feed Rollers - 1
10. Vertical Feed Rollers - 2
11. Vertical Feed Rollers - 3
12. Vertical Feed Rollers - 4
13. Upper Exit Rollers

B470
COVER INTERPOSER TRAY

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\section*{1. INSTALLATION}

For a details about installing the Cover Interposer Tray B470, please refer to the instructions you received with the unit or "1. Installation" in the main machine service manual.

\section*{2. REPLACEMENT AND ADJUSTMENT}

\subsection*{2.1 EXTERNAL COVERS}

[A]: Open the feed cover.
[B]: Upper front cover ( \(\hat{\xi}^{(1)} \times 2\) )
NOTE: To remove the upper front cover, screw [C] must be removed.
[D]: Rear upper cover (余 \(\times 2\) )

[F]: Rear middle cover (雨 x 2)

\subsection*{2.2 FEED UNIT AND PICK-UP ROLLER}


Open the feed cover.
[A]: Feed unit
- The unit is spring loaded. Push it to the right to release it, then lift it out.
[B]: Pick-up roller ( (3) \(\times 2\), bushings \(\times 2\) )

\subsection*{2.3 FEED BELT}



Feed unit ( -2.2 )
[A]: Pick-up roller unit.
- Pull the unit away from the bushings in the direction of the arrow.
[B]: Feed belt holder
- Hold the feed belt holder by the sides, then lift up to separate from the holder.
- Pull slowly to avoid losing the springs.
[C]: Feed belt.

\section*{Re-assembly}
1. Position the pick-up roller unit \([A]\) and feed belt holder \([B]\) as shown above.
2. On the rear side, slide out the bushing, and rotate [D] until its flat side is parallel with [E], then snap it on.
3. On the front side, rotate [F] until its flat side is parallel with [D], then snap it on. Viewed from the bottom, the plates must be aligned.

\subsection*{2.4 GUIDE PLATE ADJUSTMENT}


Adjust the guide plate if the holes punched in the covers or slip sheets are not correctly aligned with holes punched in the other sheets.
1. Open the feed cover.
2. Loosen the screw \([A]\).
3. Push the table \([B]\) left or right to change its position, then tighten the screw.

NOTE: If you want to see the scale [C], you must remove the rear cover and the support tray.

\subsection*{2.5 MAIN BOARD}


Open the top cover.
Rear cover ( \(\hat{\xi}^{7} \times 1\) )

NOTE: All DIP switch settings on the main board of the cover sheet unit should be set to OFF.

\subsection*{2.6 MOTOR REPLACEMENT}

\subsection*{2.6.1 VERTICAL TRANSPORT MOTOR}


Open the top cover.
Rear cover ( \(\mathcal{Z}^{2} \times 1\) ) ( -2.1 )
[A]: Motor bracket (気 \(\mathbb{\|} \times 1\), harness \(\times 1, \hat{\xi} \times 2\), timing belt \(\times 1\) )


\subsection*{2.6.2 BOTTOM PLATE LIFT MOTOR}


Rear upper cover (2.1)
[A]: Bottom plate lift motor (harness \(\times 2\), 氟 \(\mathrm{Cl} \times 1, \hat{\xi} \times 2\) )

\subsection*{2.6.3 FEED MOTOR, TRANSPORT MOTOR}

[B]
[D]


Rear upper cover ( -1 )
NOTE: When removing the feed gear and transport gear, hold one hand under the gear to catch the pin as it falls from the hole in the shaft.
[A]: Feed gear ( \(\mathcal{G} \times 1\), pin \(\times 1\), timing belt \(\times 1\), bushing \(\times 1\) )
[B]: Transport gear ( \(\varsigma \times 1\), pin \(\times 1\), timing belt \(\times 1\), bushing \(\times 1\) )
[C]: Motor bracket (harness \(\times 5\), \(\overline{\mathcal{E}} \times 4\) )

[E]: Transport motor (E気 \(\times 1\), 笋 \(\times 2\) )

\section*{3. DETAILS}

\subsection*{3.1 PAPER PATH}

1. Pick-up Roller
2. Feed Belt
3. Separation Roller
4. Grip Roller
5. Transport Roller 1
6. Transport Roller 2

The paper feeds from the tray, to the feed belt, then to the grip roller and down into the paper path to the finisher below.

\subsection*{3.2 PAPER FEED}


\section*{Power On}

When paper is placed on the tray, the paper set sensor [A] in the tray actuates and switches on the bottom plate lift motor \([\mathrm{B}]\). The top of the stack raises the pick-up roller unit until the actuator on this unit actuates the pick-up roller position sensor [C] and switches the motor off.

\section*{Paper Separation and Feed}

The pick-up roller [D] picks up the original, and the feed belt [E] feeds the sheet to the grip roller. The separation roller [F] reverses if more than one sheet is fed

\section*{Bottom Tray Lift}

As sheets feed from the top of the stack:
- The pick-up roller unit descends until the actuator on the pick-up roller unit drops out of the pick-up roller position sensor [C].
- The bottom plate lift motor switches on to raise the stack until the actuator enters the pick-up roller unit position sensor again and switches the motor off.
- This repeats until the end of the job or until paper runs out.

\section*{Paper Near-end}

Near-end is detected when the actuator [G] on the bottom plate enters the nearend sensor [H]

\section*{Paper End}

After the last sheet feeds the paper set sensor [A] goes off and signals paper out.

\subsection*{3.3 PAPER SIZE DETECTION}

The width sensors [A] (S1, S2, S3) and length sensors [B] (S4, S5, S6) detect the width and length of the paper on the interposer feed tray.


DETAILS

The table below lists the sensor output for each paper size.
\begin{tabular}{||l|c|c|c|c|c|c||}
\hline & S1 & S2 & S3 & S4 & S5 & S6 \\
\hline A3 & 0 & 1 & 1 & 1 & 1 & 1 \\
\hline B4 & 1 & 1 & 0 & 1 & 1 & 1 \\
\hline A4 SEF & 1 & 0 & 0 & 1 & 1 & 0 \\
\hline A4 LEF & 0 & 1 & 1 & 0 & 0 & 0 \\
\hline B5 SEF & 0 & 0 & 0 & 1 & 0 & 0 \\
\hline B5 LEF & 1 & 1 & 0 & 0 & 0 & 0 \\
\hline A5 SEF & 0 & 0 & 0 & 0 & 0 & 0 \\
\hline A5 LEF & 1 & 0 & 0 & 0 & 0 & 0 \\
\hline \(11 " \times 17^{\prime \prime}\) & 1 & 1 & 1 & 1 & 1 & 1 \\
\hline \(10 " \times 14^{\prime \prime}\) SEF & 1 & 1 & 0 & 1 & 1 & 1 \\
\hline \(81 / 2^{\prime \prime} \times 14^{\prime \prime}\) & 1 & 0 & 0 & 1 & 1 & 1 \\
\hline \(81 / 2^{\prime \prime} \times 13^{\prime \prime}\) & 1 & 0 & 0 & 1 & 1 & 1 \\
\hline \(81 / 2^{\prime \prime} \times 11^{\prime \prime}\) & 1 & 0 & 0 & 1 & 0 & 0 \\
\hline \(11 " \times 81 / 2^{\prime \prime}\) & 1 & 1 & 1 & 0 & 0 & 0 \\
\hline \(8 " \times 10 "\) & 1 & 0 & 0 & 1 & 0 & 0 \\
\hline \(51 / 2^{\prime \prime} \times 81 / 2^{\prime \prime}\) & 0 & 0 & 0 & 0 & 0 & 0 \\
\hline \(81 / 2^{\prime \prime} \times 51 / 2^{\prime \prime}\) & 1 & 0 & 0 & 0 & 0 & 0 \\
\hline \(71 / 2^{\prime \prime} \times 101 / 2^{\prime \prime}\) & 0 & 0 & 0 & 1 & 0 & 0 \\
\hline\((\) US Exec.)
\end{tabular}

The cover interposer tray detects all the paper sizes listed above. However, there are some limitations on the display of the correct paper size.
\begin{tabular}{|c|c|c|c|}
\hline & & North America & Europe/Asia \\
\hline B4 SEF & \(257 \times 364 \mathrm{~mm}\) & Displays 10" \(\times 14{ }^{* 1}\) & \\
\hline B5 SEF & \(182 \times 257\) & Displays "US Exec." \({ }^{1}\) & \\
\hline A5 SEF & \(148 \times 210\) & Displays "HLT SEF"*1 & \\
\hline A5 LEF & \(210 \times 148\) & Displays "HLT LEF"* & \\
\hline DLT SEF & 11" x 17" & & Displays "8K LEF" \({ }^{2}\) \\
\hline LG SEF & 81/2" x 14" & & Displays "F4 SEF" \({ }^{\text {2 }}\) \\
\hline LT SEF & 81/2" x 11" & & Displays "16 K SEF" \({ }^{2}\) \\
\hline LT LEF & \(11^{\prime \prime} \times 81 / 2^{\prime \prime}\) & & Displays "16 K LEF" \({ }^{2}\) \\
\hline
\end{tabular}
\({ }^{*}\) : Cannot be corrected.
\({ }^{*}\) 2: B064/B065: Can be corrected with SP5959 006 (Paper Size - Cover Sheet).

\subsection*{3.3.1 B064/B065: CORRECT PAPER SIZE DISPLAY}

\section*{North America}

Execute SP5959 006 and enter the correct number for the size of the paper loaded for feeding from the cover interposer tray.
\begin{tabular}{||c|c|c|c||}
\hline \hline Loaded & Display (Default) & \begin{tabular}{c} 
To Select for \\
Display
\end{tabular} & Enter \\
\hline \(81 / 2^{\prime \prime} \times 13^{\prime \prime}\) & \(81 / 2^{\prime \prime} \times 14^{\prime \prime}\) & \(81 / 2^{\prime \prime} \times 13^{\prime \prime}\) & 165 \\
\hline \(101 / 2^{\prime \prime} \times 71 / 2^{\prime \prime}\) & \(81 / 2^{\prime \prime} \times 11^{\prime \prime}\) & \(101 / 2^{\prime \prime} \times 71 / 2^{\prime \prime}\) & 173 \\
\hline \(8 " \times 10 "\) & \(81 / 2^{\prime \prime} \times 11^{\prime \prime}\) & \(8 " \times 10^{\prime \prime}\) & 171 \\
\hline
\end{tabular}

\section*{Europe/Asia}

Execute SP5959 006 and enter the correct number for the size of the paper loaded for feeding from the cover interposer tray.
\begin{tabular}{||c|c|c|c||}
\hline Loaded & Display (Default) & \begin{tabular}{c} 
To Select for \\
Display
\end{tabular} & Enter \\
\hline \(11 " \times 17 "\) & 8 K & \(11 " \times 17{ }^{\prime \prime}\) & 160 \\
\hline \(81 / 2^{\prime \prime} \times 11^{\prime \prime}\) & 16 K SEF & \(81 / 2^{\prime \prime} \times 11^{\prime \prime}\) & 166 \\
\hline \(11^{\prime \prime} \times 81 / 2^{\prime \prime}\) & 16 K LEF & \(11^{\prime \prime} \times 81 / 2^{\prime \prime}\) & 38 \\
\hline \(81 / 4 " \times 13^{\prime \prime}\) & \(81 / 2^{\prime \prime} \times 13^{\prime \prime} \mathrm{SEF}\) & \(81 / 4 " \times 13^{\prime \prime}\) & 168 \\
\hline
\end{tabular}

\section*{B070/B071: Paper Size Detection}

Some paper sizes are almost the same and cannot be distinguished by the sensors. To determine which sizes are detected, use SP 5158.

\section*{4. OVERALL MACHINE INFORMATION}

\subsection*{4.1 MAIN LAYOUT}

1. Support tray
2. Slip sheet tray
3. Pick-up roller
4. Feed belt
5. Separation roller
6. Grip roller

\subsection*{4.2 DRIVE LAYOUT}

1. Pick-up Roller
2. Feed Belt
3. Bottom Plate Lift Motor
4. Feed Motor
5. Transport Motor
6. Timing Belt
7. Vertical Transport Motor

B512

\section*{BYPASS TRAY}

\section*{BYPASS TRAY B512}

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\section*{1. INSTALLATION}

For a description of the installation procedure for the bypass tray, refer to " 1 . Installation" of the main machine service manual.

\section*{2. PREVENTIVE MAINTENANCE}

For details about preventive maintenance for the Bypass Tray B512, please refer to Section "2. Preventive Maintenance" in the main service manual.

\section*{3. REPLACEMENT AND ADJUSTMENT}

\subsection*{3.1 OPENING THE BYPASS TRAY}

1. Pull in the direction indicated by the arrow at the front left cover.

\section*{\(\triangle\) CAUTION \\ When moving the LCT with the bypass unit attached, grip and push the body of the LCT unit. To avoid damaging the bypass tray, never attempt to push or rotate the assembled units by pulling or pushing on the bypass tray.}

\subsection*{3.2 BYPASS TRAY COVERS}

1. Open the bypass tray. (-3.1)
2. Front cover \([A]\left(\mathcal{E}^{2} \times 1\right)\).
3. Rear cover \([\mathrm{B}]\left(\mathcal{E}^{\mathrm{E}} \times 3\right)\).

NOTE: Screw [C] is a wide thread screw. Be sure to fasten it here when reattaching the rear cover.
4. Push in the cover [D] to release the hooks from the slots under this side of the cover.
5. Pull off the pick-up roller cover [F].
6. Top cover \([E](\hat{\xi} \times 3)\).

\subsection*{3.3 TRAY LIFT SWITCH, FEED TRAY}

1. Open the bypass tray. (-3.1)
2. Remove the covers. ( -3.2 )
3. Remove the tray lift switch cover [A].

NOTE: Use the tip of a screwdriver to release the hook \([B]\) holding the plate.
4. Remove the tray lift switch \([C]\) ( \(\hat{\xi}^{7} \times 1\), hooks \(\times 2\), standoff \(\times 1\), 気 \(\mathbb{\|} \times 1\) ).
5. Disconnect the lower limit sensor connector [D].
6. Disconnect the paper width switch \([E]\) ( \(\mathrm{E}_{\mathrm{El}}^{\mathrm{E}} \times 1\), harness clamps \(\times 2\) ).
7. Remove the feed tray \([F]\left(\mathcal{E}^{2} \times 4\right)\).

NOTE: Under the tray, disengage the lift motor coupling [G]. Be sure to reengage the coupling when re-attaching the feed tray.

8. Pull out the extension tray \([A]\), disengage the lock hooks \([B]\) under the tray on both sides, then remove the extension tray.
NOTE: The extension tray must be removed to separate the top and bottom of the bypass feed tray.
9. Separate the top [C] and bottom [D] of the feed tray.

\subsection*{3.4 FEED ROLLERS}

1. Pull off the pick-up roller cover \([A]\).
2. Pull off the separation roller cover [B].
3. Remove the pick-up roller [C] ( \((3) \times 1)\).
4. Remove the feed roller [D] ( \((3) \times 1)\).
5. Remove the separation roller \([E]\) ((3) \(x 1\) ).

NOTE: After re-installing the feed roller, make sure that it rotates clockwise.

N

\subsection*{3.5 TRAY MOTOR}

1. Remove the rear cover \([A](\hat{E} \times 3)\).

NOTE: Screw \([B]\) is a wide thread screw. Be sure to fasten it here when reattaching the rear cover.
2. Remove the tray motor [C] ( \(\hat{\xi} \times 3\), 妞 \(\mathrm{E} \times 1\) )

NOTE: To remove the motor, raise it slightly to disengage the hook [D] from the frame.

\subsection*{3.6 BYPASS TRAY PCB}

1. Remove the tray motor. ( -3.5 )

NOTE: Before disconnecting CN704 and CN706, mark either connector with a marker to make sure that you re-connect them correctly. The shapes of these connectors are the same and the wires are the same color.

\subsection*{3.7 GRIP AND PAPER FEED CLUTCHES}

1. Remove the tray motor. ( -3.5 )
2. Remove the grip clutch \([A]\) ( \(\mathrm{E}^{\#} \times 1\), (3) \(\times 1\) )
3. Release and remove the paper feed clutch \([B]\) ( \(E_{l}^{\| l} \times 1\) ).

NOTE: Use the sharp point of a tool to raise the spring release on the shaft to release the clutch from the shaft.

\subsection*{3.8 TRANSPORT CLUTCH}

1. Remove the tray motor. ( -3.5 )
2. Disconnect the transport clutch connector \(\left.[A]\left(⿷^{\| l}\right) \times 1\right)\).
3. Remove the bracket \([B]\) and bushing \([C]\left(\mathcal{E}^{\prime} \times 2\right)\).
4. Remove the paper feed unit. ( \(\hat{\xi}^{2} \times 4\) )
5. Remove the transport clutch [D].

\subsection*{3.9 PAPER FEED AND LIFT SENSORS}


\section*{Sensor Removal}
1. Remove the rear, front, and top covers. ( -3.2 )
2. Remove the paper feed bracket \([A](\hat{\xi} \times 1)\).
3. Remove the paper feed sensor \([B]\) (hooks \(\times 4\), 医 \(\times 1\) )
4. Mark the position of the lift sensor bracket [C] so you can re-attach it at its original position, then remove it ( \({ }^{(1)} \times 1\) ).
5. Remove the lift sensor [D] (hooks x 4).

\section*{Lift Sensor Position Adjustment}

The lift sensor bracket [C] has a slot that allows positioning the lift sensor forward or back. When positioning the bracket for re-installation, note the following points:
1. Position the bracket at the center position at re-installation.
2. If paper does not feed, move the bracket forward and tighten the screw. Moving the bracket forward positions the pick-up roller at a lower position for paper feed.
3. If paper is multiple feeding, move the bracket back and tighten the screw. Moving the bracket back positions the pick-up roller at a higher position for paper feed.

\subsection*{3.10 PICK-UP SOLENOID}

1. Remove the rear, front, and top covers. (-3.2)
2. Remove the pick-up solenoid \([A]\left(\mathcal{F}^{7} \times 2\right.\), 忥 \(\times 1\), harness clamp \(\times 1\) )

NOTE: When re-installing the solenoid, make sure that the arm of the solenoid is positioned above and in contact with the plate of the pick-up roller shaft below. To confirm correct installation, manually move the solenoid to the left and right. When the solenoid plunger is moved, the pick-up roller should move up and down smoothly.
\(N\)
\(\mathbf{N}\)
\(\mathbf{N}\)

\section*{3．11 PAPER WIDTH SWITCH，PAPER END AND PAPER LENGTH SENSORS}


1．Remove the feed tray and separate the top and bottom．（－3．3）
2．Turn over the top half of the feed tray \([A]\) then lay it on a flat surface．
3．Paper width switch \([B]\)（ \({ }^{(1)} \times 1\) ，harness clamp \(\times 1\) ，気 Cl 1 ）．
4．Paper end sensor bracket［C］（tab lock x 1）．
5．Paper end sensor［D］（hooks \(\times 4\) ，氟 \(\mathrm{ll} \times 1\) ）．
6．Paper length sensor bracket［E］（tab lock \(\times 1\) ）．
7．Paper length sensor［F］（hooks \(\times 4\) ，氟 Cl 1 ）．

\subsection*{3.12 LOWER LIMIT SENSOR}

1. Remove the feed tray and separate the top and bottom. (-3.3)
2. Lay the bottom of the feed tray [A] on a flat surface.


\subsection*{3.13 PAPER HEIGHT SENSORS, LIFT MOTOR}

1. Open the bypass tray. ( -3.1 )
2. Remove the bypass tray covers. ( -3.2 )
3. Remove the tray motor. ( -3.5 )
4. Remove the feed tray. (-3.3)

\section*{Paper Height Sensors}
1. Paper Height Sensor 1 [A] (hooks \(\times 4\), \(⿷^{\#} \times 1\) )
2. Paper Height Sensor \(2[B]\) (hooks \(\times 4\), 気 \(\times 1\) )

\section*{Lift Motor}
1. Remove the bypass tray PCB [C] (E\#\# \(\times 11\),

NOTE: Before disconnecting CN704 and CN706, mark either connector with a marker to make sure that you re-connect them correctly. The shapes of these connectors are the same and the wires are the same color.
2. Remove screws [D] and [E] to loosen the frame [F].


\section*{4. TROUBLESHOOTING}

For details about bypass tray related SC codes, please refer to " 4 . Troubleshooting" in the main machine service manual.

\section*{5. SERVICE TABLES}

For details about bypass tray-related SP codes, please refer to " 5 . Service Tables" in the main machine service manual.

\section*{6. DETAILS}

\subsection*{6.1 TRAY LIFT}


When the tray lift switch is pressed, the lift motor [A] switches on and pushes the lift plate \([B]\) against the bottom of the feed tray until the top of the stack is at the correct feed position.
NOTE: If there is paper in the bypass tray when the main machine has just been switched on, the lift motor will turn on and lift the stack to the feed position.
As paper is fed, the pick-up roller [C] lowers until it activates the lift sensor which switches on the lift motor again to raise the stack to the feed level again. (-6.2)
As the bottom plate shaft rotates and raises the bottom plate, the actuator [D] lowers and activates paper height sensor 1 [E] and then paper height sensor 2 [F] as the bottom plate continues to rise. With the tray full, the actuator remains upright and deactivates neither paper height sensor. During continuous feed, the actuator rotates downward through three positions, deactivating the first sensor, then both sensors, then only the second sensor. These states are used to report the amount of paper on the operation panel.
\begin{tabular}{||l|l|l|}
\hline SN1 & SN2 & Paper Remaining Status \\
\hline OFF & OFF & \(100 \%\) (Full) \\
\hline ON & OFF & \(90 \%\) \\
\hline ON & ON & \(50 \%\) \\
\hline OFF & ON & \(25 \%\) \\
\hline \hline
\end{tabular}

After the last sheet feeds, the paper end sensor [G] below the feed tray detects that the tray is empty.
NOTE: When you re-load the tray with paper, be sure to press the tray lift button to raise the bottom of the tray so the stack is at the correct feed position.

\subsection*{6.2 PAPER FEED}


The bypass tray can hold 500 sheets of standard weight paper.
The bypass tray uses the standard FRR (Feed and Reverse Roller) feed system with a pick-up roller, feed roller, and separation (reverse) roller. © \(\mathbf{C T}\) Handling Paper> Paper Feed Methods> Forward and Reverse Roller (FRR)
When the job starts, the feed clutch [A] switches on and rotates the pick-up roller \([B]\). At the same time, the pick-up solenoid [C] switches on and lowers the pick-up roller. The lift motor switches on to raise the stack until the top of the stack reaches the correct feed level and the paper pushes the pick-up roller and actuator [D] down, deactivating the lift sensor [E], which stops the lift motor.
The rotating pick-up roller picks up and feeds the first sheet to the feed roller [F] and separation roller [G]. When the feed sensor [H] detects the leading edge of the sheet, the pick-up solenoid raises the pick-up roller and the feed roller feeds the sheet.
NOTE: Unlike the separation rollers in the LCT, the separation roller [G] always remains in contact with the feed roller above.
When the pick-up roller [B] lowers far enough to deactivate the lift sensor [E], the lift motor switches on to raise the bottom plate until the actuator moves out of the slot of the lift sensor again and switches off the lift motor. This movement is repeated to maintain the correct height of the stack for paper feed.

\subsection*{6.3 PAPER SIZE DETECTION}


The side fences [A] can be adjusted to standard and non-standard paper sizes.
Paper size is measured with the paper width switch \([B]\) and the paper length sensor [C].
When the side fences are moved to match the paper width, four feelers inside the paper width switch \([\mathrm{B}]\) slide along the wiring patterns on the paper width switch terminal plate. The status of each feeler is read to determine whether it is High (in contact with a pattern wire) or Low (not in contact with a wire).
The paper length sensor [C] reading (ON or OFF) is used with the paper width reading to determine the paper size. For more details about how the paper size is determined, see the paper size detection table on the next page.

The paper end sensor [D] de-activates when the last sheet is fed, reports that the paper tray is empty, and halts the job.

Paper Size Detection Table
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|}
\hline \multicolumn{3}{|r|}{\multirow[b]{2}{*}{Paper Size}} & \multicolumn{4}{|c|}{Paper Size SN} & \multirow[t]{2}{*}{Length Sensor} & \multicolumn{2}{|c|}{Area} \\
\hline & & & 1 & 2 & 3 & 4 & & NA & Europe IAsia \\
\hline A3 & SEF & \(297 \times 420 \mathrm{~mm}\) & & & & & L & - & - \\
\hline A4 & LEF & \(297 \times 210 \mathrm{~mm}\) & H & H & H & L & H & - & - \\
\hline DLT & SEF & \(11^{\prime \prime} \times 17^{\prime \prime}\) & & & & & L & - & - \\
\hline LT & LEF & 11 " x 81/2" & H & H & L & L & H & - & - \\
\hline B4 & SEF & \(257 \times 364 \mathrm{~mm}\) & & H & & H & L & - & - \\
\hline B5 & LEF & \(257 \times 182 \mathrm{~mm}\) & H & H & L & H & H & - & - \\
\hline A4 & SEF & \(210 \times 297 \mathrm{~mm}\) & & & & & & O & \(\bigcirc\) \\
\hline LT & SEF & 81/2" x 11" & & & L & H & L & - & \(\bigcirc\) \\
\hline A5 & LEF & \(210 \times 148 \mathrm{~mm}\) & H & L & L & H & & O & \(\bigcirc\) \\
\hline HLT & LEF & 81/2" \(\times\) 51/2" & & & & & H & - & \(\bigcirc\) \\
\hline B5 & SEF & \(182 \times 257 \mathrm{~mm}\) & & & & & & O & O \\
\hline F & SEF & 8" \(\times 13\) " & H & L & H & H & L & - & - \\
\hline A5 & SEF & \(148 \times 210 \mathrm{~mm}\) & L & L & H & H & H & - & - \\
\hline HLT & SEF & 51/2 " \(\times 81 / 2\) " & L & H & H & H & H & - & \(\bigcirc\) \\
\hline
\end{tabular}

Table Key
\begin{tabular}{||c|l||}
\hline \(1,2,3,4\) & \begin{tabular}{l} 
The paper size switch consists of 4 feelers that slide along the wiring patterns \\
of the paper width switch terminal plate when the side fences are manually \\
adjusted to fit the size of the paper loaded in the tray. The H, L status of each \\
feeler is determined by whether the feeler is in contact with the wire of a \\
pattern.
\end{tabular} \\
\hline H & High (5 V) (Inactive) \\
\hline L & Low (0 V) (Active) \\
\hline The machine determines the paper size automatically by reading the output of \\
the paper size switch and the paper length sensor.
\end{tabular}\(|\)\begin{tabular}{l} 
The machine cannot detect the paper size automatically. The user must select \\
the paper size manually before starting the job. See below.
\end{tabular}

\section*{Selecting the Paper Size for Undetectable Sizes}

Press the Tray Paper Settings button on the operation panel to select paper sizes that are not detected automatically by the combination of paper size and paper length sensor readings (marked " \(\bigcirc\) " in the table above and any other paper size not listed that requires pulling out the paper tray extension).
NOTE: Mixed paper sizes cannot be loaded into the bypass tray. Loading paper of different sizes will cause a paper jam.

\section*{7. OVERALL MACHINE INFORMATION}

\subsection*{7.1 MECHANICAL COMPONENT LAYOUT}

1. Transport Roller 2
2. Transport Roller 1
3. Grip Roller
4. Paper Feed Sensor
5. Lift Sensor
6. Feed Roller
7. Pick-up Roller
8. Paper Height Sensor 1
9. Paper Height Sensor 2
10. Lift Plate Actuator
11. Lift Plate
12. Separation Roller

\subsection*{7.2 ELECTRICAL COMPONENT LAYOUT}

1. Paper Feed Sensor
2. Paper End Sensor
3. Lift Sensor
4. Pick-up Solenoid
5. Transport Clutch
6. Grip Clutch
7. Feed Clutch
8. Tray Motor
9. Paper Height Sensor 1
10. Paper Height Sensor 2
11. Lift Motor
12. Paper Length Sensor
13. Paper Width Switch
14. Lower Limit Sensor
15. Tray Lift Switch

\subsection*{7.2.1 ELECTRICAL COMPONENT DESCRIPTIONS}
\begin{tabular}{|c|c|c|}
\hline Symbol & Name & Function \\
\hline \multicolumn{3}{|l|}{Clutches} \\
\hline MC8 & Transport & Drives the transport rollers in the bypass tray. \\
\hline MC9 & Paper Feed & Drives the paper feed roller in the bypass tray. \\
\hline MC10 & Grip & Drives the grip clutch in the bypass tray. \\
\hline \multicolumn{3}{|l|}{Motors} \\
\hline M5 & Tray & Drives all rollers in the bypass tray. \\
\hline M6 & Tray Lift & Lifts and lowers the tray. \\
\hline \multicolumn{3}{|l|}{Sensors} \\
\hline S23 & Paper Feed & Detects the copy paper coming to the paper feed roller and checks for misfeeds. \\
\hline S24 & Lift & Detects when the paper in the bypass tray is at the correct paper feed height. \\
\hline S25 & Lower Limit & Detects when the tray is at its lowest possible position. \\
\hline S26 & Paper End & Informs the copier when the paper in the bypass tray has run out. \\
\hline S27 & Paper Length & Used with the paper width switch to determine paper size. This sensor is activated when paper is set for short edge feed. For example, when the paper width switch detects A4 width and this sensor is off, the machine determines A4 is set for long edge feed. When A4 width is detected and the paper length sensor is on, then the machine determines that A3 is loaded for short edge feed. \\
\hline S28 & Paper Height 1 & Detects the paper height in the bypass tray. \\
\hline S29 & Paper Height 2 & Detects the paper height in the bypass tray. \\
\hline \multicolumn{3}{|l|}{Solenoids} \\
\hline SOL7 & Pick-up & Controls up-down movement of the pick-up roller in the bypass tray. \\
\hline \multicolumn{3}{|l|}{Switches} \\
\hline SW5 & Tray Lift & Switches the tray lift motor on and off to lift and lower the bottom plate of the tray. This switch must be pressed to start paper feed. \\
\hline SW6 & Paper Width & A slide switch connected to the side fences. When the side fences are moved to match the paper width, four feelers inside the paper size switch slide along wiring patterns of a terminal plate. The wire pattern detected determines the paper width. \\
\hline
\end{tabular}

The numbering for the components does not start at 1 because the point-to-point diagram for the bypass tray is included on the diagram for the LCT. For the purpose of component numbering, they are considered together as one unit.

OVERALL MACHINE INFROMATION

\subsection*{7.3 DRIVE LAYOUT}

1. Transport Roller 2
2. Transport Roller 1
3. Grip Roller
4. Grip Clutch
5. Paper Feed Clutch
6. Transport Clutch
7. Tray Motor
8. Lift Motor
9. Lift Plate
10. Pick-up Roller
11. Separation Roller
12. Feed Roller

\title{
B580 Printer/Scanner Unit
}

\author{
B581 \\ IEEE1394 Board
}

B596
USB

B582
IEEE802.11B (Wireless LAN)

B609
Media Link Board

\section*{MISC. BOARDS \\ B580/B581/B596/B582/B609}

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\section*{1. CONTROLLER BOARD SPECIFICATIONS}
\begin{tabular}{ll} 
CPU: & AMD 800 MHz \\
BIOS ROM: & \(1 \mathrm{MB}(512 \mathrm{Kx} 2)\) \\
OS Copy Flash ROM: & 16 MB \\
NVRAM: & 128 KB \\
SDRAM: & 128 MB \\
DDR-SDRAM: & Slot \#1 (Standard): BASIC 128 MB \\
& Slot \#2 (Option): 256 MB \\
PCI Option: & 4 Slots (B1 to B4) \\
SD Card: & 3 Slots (C1 to C3) \\
RAPI Option: & 2 Slots (A1, A2) \\
Power Supply Voltage: & DC 5VE \(\pm 3 \%\) \\
& DC \(12 \mathrm{VE} \pm 5 \%\)
\end{tabular}

\section*{2. ETHERNET BOARD (B580/B594)}

The Ethernet board is provided as a standard feature of this machine.
\begin{tabular}{||l|l||}
\hline \multicolumn{1}{|c|}{ Function Blocks } & \multicolumn{1}{c|}{ Description } \\
\hline PHY (Physical Layer Device) & \begin{tabular}{l} 
Completely standardized physical layer device for the \\
functions of each device in the network.
\end{tabular} \\
\hline EEPROM & Stores the MAC address. \\
\hline
\end{tabular}

The physical layer device, the lowest layer of the OSI reference model, refers to the physical components of the network: cables, connectors, and so on. OSI, the Operating Standard Interface, is a framework upon which networking standards are arranged. It is commonly diagramed as a layered cake.

\subsection*{2.1 ETHERNET BOARD OPERATION}

The NIB is a standard IEEE802.3u type which implements \(10 / 100 \mathrm{Mbps}\) auto negotiation. System initialization sets the network for \(10 \mathrm{Mbps} / 100 \mathrm{Mbps}\).

\begin{tabular}{|c|l|}
\hline \multirow{2}{*}{ LED 1 (Green) } & \multicolumn{2}{|l|}{ Indicates the link status: } \\
& ON Link Safe \\
& OFF \(\quad\) Link Fail \\
\hline \multirow{3}{*}{ LED 2 (Orange) } & Indicates the operation mode: \\
& ON 100 Mbps mode \\
& OFF 10 Mbps mode \\
\hline
\end{tabular}

\section*{3. IEEE1394 BOARD (FIREWIRE) (B581)}

\subsection*{3.1 OVERVIEW}

An IEEE1394 interface board is available as an option for this machine to provide high speed connectivity through what is commonly called Firewire or i.LINK (Sony). Some important advantages of Firewire are:
- High speed data transmission at 400 Mbps .
- Easier connectivity (many devices can be connected without a host).
- Devices in a computer can be connected to external devices on a shared bus.

IEEE1394 supports two printing methods: 1) SCSI Print, and 2) IP Over 1394. IP Over 1394 supports printing by setting an IP address, and SCSI supports printing without an IP address.


NOTE: 1) Windows Me and Windows XP support IP over 1394.
2) Windows XP and 2000 support IEEE1394 SCSI printing.

\section*{OVERVIEW}

When the host computer powers up, it queries all the devices connected to the bus and assigns each one an address, a process called enumeration. Here are some general features of Firewire:
- Firewire is Plug-and-Play.
- Firewire devices are hot pluggable (they can be plugged while the system is operating).
- Firewire uses 64-bit fixed addressing, based on the IEEE 1212 standard. There are three parts to each packet of information sent by a device over FireWire:
- 10-bit Bus ID. Used to determine the Firewire bus where the data came from.
- 6-bit Physical ID. Used to identify the device that sent the data.
- 48-bit Storage Area. Capable of addressing 256 terabytes of information for each node
- The Bus ID and Physical ID comprise the 16-bit Node ID. 64,000 nodes are allowed on each system.
- Up to 16 hops are allowed ( \(4.5 \mathrm{~m} / \mathrm{hop}\) ) for a total of 72 meters devices are daisychained.
- Firewire allows its devices to draw power from the Firewire connection. Two power connectors in the cable can supply power ( 8 to 40 V , 1.5 amp max.)
- An important element of Firewire is its support of isochronous devices. When isochronous devices are in the isochronous mode, data streams between the device and the host in real time with guaranteed bandwidth and no error correction. Essentially, this means that a device like a digital camcorder can request that the host computer allocate enough bandwidth for the camcorder to send uncompressed video in real time to the computer. The camera can sent data via the Firewire connection in a steady flow to the computer without anything disrupting the process. This is one of the main reasons why 1394 has been widely adopted by the consumer electronics industry.

\section*{4. USB (B596)}

\subsection*{4.1 SPECIFICATIONS}

USB connectivity is provided as an option for this machine.
\begin{tabular}{||l|l||}
\hline Interface & USB 1.1, USB 2.0 \\
\hline Data rates & 480 Mbps (high speed), 12 Mbps (full speed), 1.5 Mbps (low speed) \\
\cline { 2 - 3 } & High speed mode is only supported by USB 2.0. \\
\hline \hline
\end{tabular}

\subsection*{4.2 USB 1.1/2.0}

USB (Universal Serial Bus) offers simple connectivity for computers, printers, keyboards, and other peripherals. In a USB environment, terminators, device IDs (like SCSI), and DIP switch settings are not necessary.
USB 1.1 provides the following features:
- Plug \& Play. As soon as a new device is connected via USB, the operating system recognizes it, and the appropriate driver is installed for it automatically if the driver is available. If the driver is not available, a message prompts the user for the driver disk for immediate installation.
- Hot swapping (cables can be connected and disconnected while the computer and other devices are switched on)
- No terminator or device ID required
- Data rates of 12 Mbps (full speed), and 1.5 Mbps (low speed)
- Common connectors for different devices
- Bi-directional data communication between device and host computer via a 4byte header and DEVICE ID.

USB 2.0 is an evolution of the USB 1.1 specification. It uses the same cables, connectors, and software interfaces so the user will see no change. It provides an easy-to-use connection to a wide range of products with a maximum data rate of 480Mbps (high speed).
Up to 127 devices can be connected and 6 cascade connections are allowed. Power is supplied from the computer and the maximum cable length is 5 m .

\subsection*{4.3 USB CONNECTORS}

USB is a serial protocol and a physical link, which transmits all data on a single pair of wires. Another pair provides power to downstream peripherals. The USB standard specifies two types of connectors, type "A" connectors for upstream connection to the host system, and type " \(B\) " connectors for downstream connection to the USB device.

Type " \(A\) " connector


Type "A" connector


\subsection*{4.4 REMARKS ABOUT USB}
- The machine does not print reports specifically for USB.
- Only one host computer is allowed for the USB connection.
- After starting a job using USB, do not switch the printer off until the job has been completed. When a user cancels a print job, if data transmitted to the printer has not been printed at the time of cancellation, the job will continue to print up to the page where the print job was cancelled
- When the controller board is replaced, the host computer will recognize the machine as a different device.

\subsection*{4.4.1 RELATED SP MODE}
"USB Settings" in the printer engine service mode. Data rates can be adjusted to full speed fixed ( 12 Mbps ). This switch may be used for troubleshooting if there is a data transfer error using the high speed mode (480Mbps).
Data rates can also be adjusted using the UP mode "USB Setting" in the Host Interface in the System menu. This mode can be accessed only when the "Enter", "Escape", then "Menu" keys are pressed to enter the UP mode.

\section*{5. IEEE802.11B (WIRELESS LAN) (B582)}

\subsection*{5.1 WIRELESS LAN SPECIFICATIONS}

The IEEE 802.11b wireless LAN interface card is available as an option for this machine.

A wireless LAN is a flexible data communication system used to extend or replace a wired LAN. Wireless LAN employs radio frequency technology to transmit and receive data over the air and minimize the need for wired connections.
- With wireless LANs, users can access information on a network without looking for a place to plug into the network.
- Network managers can set up or expand networks without installing or moving wires.
- Most wireless LANs can be integrated into existing wired networks. Once installed, the network treats wireless nodes like any other physically wired network component.
- Flexibility and mobility make wireless LANs both effective extensions of and attractive alternatives to wired networks.
\begin{tabular}{||l|l|l||}
\hline Standard applied: & \multicolumn{2}{|l|}{ IEEE802.11b } \\
\hline \multirow{4}{*}{ Data transmission rates: } & Speed & Distance \\
\cline { 2 - 3 } & 11 Mbps & \(140 \mathrm{~m}(153 \mathrm{yd})\). \\
\cline { 2 - 3 } & 5.5 Mbps & \(200 \mathrm{~m}(219 \mathrm{yd})\). \\
\cline { 2 - 3 } & 2 Mbps & \(270 \mathrm{~m}(295 \mathrm{yd})\). \\
\cline { 2 - 3 } & 1 Mbps & \(400 \mathrm{~m}(437 \mathrm{yd})\). \\
\hline Network protocols: & TCP/IP, Apple Talk, NetBEUI, IPX/SPX \\
\hline \multirow{2}{*}{ Bandwidth: } & \begin{tabular}{l}
2.4 GHz \\
(divided over 14 channels, 2400 to 2497 MHz for each channel \()\)
\end{tabular} \\
\hline
\end{tabular}

NOTE: The wireless LAN cannot be active at the same time as the Ethernet LAN. The following user tool setting determines which LAN is active: System Settings - Interface Settings - Network - LAN Type.

\section*{LED Indicators}
\begin{tabular}{||c|c|c|c||}
\hline \hline LED & Description & On & Off \\
\hline LED1 (Green) & Link status & Link success & Link failure \\
\hline LED2 (Orange) & Power distribution & Power on & Power off \\
\hline
\end{tabular}

\subsection*{5.2 WIRELESS LAN TRANSMISSION MODES}

Wireless communication has two modes: 1) ad hoc mode, and 2) infrastructure mode.

\subsection*{5.2.1 AD HOC MODE}

The ad hoc mode allows communication between each device (station) in a simple peer-to-peer network. In this mode, all devices must use the same channel to communicate. In this machine, the default transmission mode is ad hoc mode and the default channel is 11 . First, set up the machine in ad hoc mode and program the necessary settings, even if the machine will be
 used in the infrastructure mode.

To switch between ad hoc and infrastructure modes, use the following user tool: Host Interface Menu - IEEE802.11b - Comm Mode

\subsection*{5.2.2 INFRASTRUCTURE MODE}

The infrastructure mode allows communication between each computer and the printer via an access point equipped with an antenna and wired into the network. This arrangement is used in more complex topologies. The wireless LAN client must use the same SSID (Service Set ID) as the access point in order to communicate.


\subsection*{5.3 WIRELESS LAN SECURITY FEATURES}

\section*{SSID (Service Set ID)}

The SSID is used by the access point to recognize the client and allow access to the network. Only clients that share the same SSID with the access point can access the network.

NOTE: 1) If the SSID is not set, clients connect to the nearest access point.
2) The SSID can be set using the web status monitor or telnet.

\subsection*{5.3.1 USING THE SSID IN AD HOC MODE}

When the SSID is used in ad hoc mode and nothing is set, the machine automatically uses "ASSID" as the SSID. In such a case, "ASSID" must also be set at the client.
NOTE: SSID in ad hoc mode is sometimes called "Network Name."
Some devices automatically change from ad hoc mode to infrastructure mode when the same SSID is used in ad hoc mode and infrastructure mode. In such a case, to use the device in ad hoc mode, use a specified SSID in infrastructure mode and use "ASSID" in the ad hoc mode.

\section*{WEP (Wired Equivalent Privacy)}

WEP is a coding system designed to protect wireless data transmission. In order to unlock encoded data, the same WEP key is required on the receiving side. There are 64 bit and 128 bit WEP keys. However, this machine supports only 64 bit WEP. NOTE: The WEP key can be set using the Web Status Monitor or Telnet.

\section*{MAC Address}

When the infrastructure mode is used, access to the network can also be limited at the access points using the MAC address. This setting may not be available with some types of access points.

\subsection*{5.4 WIRELESS LAN TROUBLESHOOTING NOTES}

\section*{Communication Status}

Wireless LAN communication status can be checked with the UP mode "W.LAN Signal" in the Maintenance menu. This can also be checked using the Web Status Monitor or Telnet.
The status is described on a simple number scale.
\begin{tabular}{||c|c||}
\hline Status Display & Communication Status \\
\hline Good & \(76 \sim 100\) \\
\hline Fair & \(41 \sim 75\) \\
\hline Poor & \(21 \sim 40\) \\
\hline Unavailable & \(0 \sim 20\) \\
\hline
\end{tabular}

NOTE: Communication status can be measured only when the infrastructure mode is being used.

\subsection*{5.4.2 CHANNEL SETTINGS}

If a communication error occurs because of electrical noise, interference with other electrical devices, etc., you may have to change the channel settings.

To avoid interference with neighboring channels, it is recommended to change by 3 channels. For example, if there are problems using channel 11 (default), try using channel 8.


\subsection*{5.4.3 TROUBLESHOOTING PROCEDURE}

If there are problems using the wireless LAN, check the following.
1) Check the LED indicator on the wireless LAN card.
2) Check if "IEEE802.11b" is selected in the following user tool:

System Setting> Interface Setting> IEEE 801.11b
NOTE: The "IEEE 801.11b tab is available only after the IEEE 801.11b card has been installed.
3) Check if the channel settings are correct.
4) Check if the SSID and WEP are correctly set.

If infrastructure mode is being used,
1) Check if the MAC address is properly set.
2) Check the communication status.

If the communication status is poor, bring the machine closer to the access point, or check for any obstructions between the machine and the access point.
If the problem cannot be solved, try changing the channel setting.

\subsection*{5.5 IEEE 802.11B SPECIFICATIONS}
\begin{tabular}{||l|l|l||}
\hline Standard applied & \multicolumn{2}{|l|}{ IEEE802.11b } \\
\hline \multirow{4}{*}{ Data transmission rates } & Speed & Distance \\
\cline { 2 - 3 } & 11 Mbps & \(140 \mathrm{~m}(153 \mathrm{yd})\). \\
\cline { 2 - 3 } & 5.5 Mbps & \(200 \mathrm{~m}(219 \mathrm{yd})\). \\
\cline { 2 - 3 } & 2 Mbps & \(270 \mathrm{~m}(295 \mathrm{yd})\). \\
\cline { 2 - 4 } & 1 Mbps & \(400 \mathrm{~m}(437 \mathrm{yd})\). \\
\hline Network protocols & TCP/IP, Apple Talk, NetBEUI, IPXISPX \\
\hline \multirow{3}{*}{ Bandwidth } & \begin{tabular}{l}
2.4 GHz \\
(divided over 14 channels, 2400 to 2497 MHz for each \\
channel)
\end{tabular} \\
\hline
\end{tabular}

\section*{6. MEDIA LINK BOARD (B609)}

Copy and print jobs are stored on the document server (on the copier's hard disk) in a Ricoh proprietary file format.

In previous models (such as A-C2, R-C2), DeskTopBinder could retrieve copy and print jobs from the document server and convert them to TIFF. However, this software-based conversion was slow for many users.
So, for the B070/B071, this conversion has been made hardware-based, using the optional Media Link Board. Without the Media Link Board, copy and print jobs cannot be downloaded to a PC from the document server.
Three common target formats are provided for conversion to files that can be viewed on a computer: JP2 (JPEG2000), JPEG, and TIFF.
NOTE: If the printer/scanner controller is not installed, the optional standalone NIB must be installed in the copier.
SP5847 (Net File Mag. Rate) is provided for use with this feature. For more details about these settings, see Section " 5 . Service Tables" in the main Service Manual.
NOTE: These SP commands are enabled for use only after the MLB has been installed. For details about installing the MLB, see Section "1. Installation" of the main Service Manual.
\begin{tabular}{||l|l|l|l||}
\hline 5847 & 002 & Copy: Text & \begin{tabular}{l} 
Changes the default settings of image data transferred \\
externally by the Desk Top Binder page reference \\
function via the MLB (Media Link Board).
\end{tabular} \\
\hline 5847 & 003 & Copy: Others & ner \\
\hline 5847 & 005 & Print: Binary & \begin{tabular}{l} 
Sets the default for dithered image size sent to the \\
Document Server via the MLB (Media Link Board).
\end{tabular} \\
\hline 5847 & 006 & Print: Dither(1200 dpi) \\
\hline 5847 & 021 & \begin{tabular}{l} 
NetFile Page Quality \\
Default for JPEG
\end{tabular} & \begin{tabular}{l} 
Sets the default for JPEG image quality of image files \\
handled by Desk Top Binder sent via the MLB (Media \\
Link Board).
\end{tabular} \\
\hline
\end{tabular}

\section*{TECHNICAL SERVICE BULLETINS}

\section*{TECHNICAL SERVICE BULLETIN}

\section*{BULLETIN NUMBER: B070/B071-001}

04/24/2003

\section*{APPLICABLE MODEL:}

GESTETNER - 9002/10512
LANIER - LD 090/LD 0105
RICOH - Aficio 2090/Aficio 2105
SAVIN - 4090/40105

\section*{SUBJECT: SC672, SLOW PRINTING SPEED, NETWARE PRINTING ERROR}

\section*{SYMPTOM:}
1. SC672 (controller start-up error)

Note: There are a total of 9 separate causes that can trigger SC672. To cover all possible causes, it is necessary to modify all the firmware.
2. NetWare printing error

Machine will not accept print jobs after a certain amount have been sent via NetWare.
3. Words missing (French/Spanish)

Some words are not displayed in French (missing from wording lists).
4. Printing speed with Standard TCP/IP Port is too slow

\section*{CAUSE:}

Firmware.

\section*{SOLUTION:}

Please perform the firmware upgrade. (Refer to Units Affected table for machine cut-in serial number)
- Controller: B0705734B: V.1.04.4 or higher
- NIC: B0705735B: V.4.03 or higher
- BIOS: B0705742D: K02EL00O or higher
- LCDC: B0705371B (NA): V. 2.07 or higher

\section*{FIRMWARE UPDATE PROCEDURE}
1. Turn the main switch OFF.
2. Insert the SD card into the C3 slot on the right side of the controller box.

3. Turn the main switch ON.

Note: The machine automatically displays the firmware update screen.
4. Select "Network Support", "System", "Op. Panel. NA" and "BIOS" on the operation panel at the same time.
Note: With some machines, "BIOS" is not displayed at this point. In this case, continue onto the next step for the first three firmware types, and then repeat the procedure for BIOS.
5. Press the "Update (\#)" key.

The firmware update will then begin, and the progress bar (***** \(\qquad\) ) will be displayed on the operation panel.
The machine performs the firmware update in the following order:
"Network Support" \(\rightarrow\) "System" \(\rightarrow\) "BIOS" \(\rightarrow\) "Op Panel"

Note:
- While the "Op. panel" firmware is being updated, the panel display will be blank (progress bar not displayed). Also, the Power ON LED will flash as follows:
- During the update: LED flashes on and off at \(\mathbf{0 . 5 s}\) intervals.
- After the update is completed: LED flashes on and off at 3 s intervals.
- It takes about 4 to 4.5 minutes to complete the "Op. panel" firmware update. The total time for all four updates is approximately 9 minutes.
6. Turn the main switch OFF.
7. Remove the SD card from the C3 slot.
8. Turn the main switch ON.
9. Enter SP mode:
1. Press the Clear Modes key
2. Press (1)(1)(7) Keys on the operational panel keypad.
3. Hold down the Clear key \({ }^{\stackrel{\text { clear }}{[ }}\) for more than 3 seconds.
4. Press Copy SP.
10. Check the firmware version to confirm that the firmware has been successfully downloaded (SP7801):

Note: As mentioned above under Step 4, if the BIOS firmware could not be updated at the same time (was not displayed), please repeat the above procedure to update the BIOS.
```

Important:
If the customer does not use NetWare server, please change the "NetWare" setting to
"Invalid" in User Tools.
User Tool --> System Setting --> Interface Setting --> Effective Protocol NetWare -> Select
"Invalid" -> Exit -> Main SW off/on

```

\section*{UNITS AFFECTED:}

All B070/B071 copiers manufactured after the serial numbers listed below will have the new firmware installed during production.
\begin{tabular}{|c|c|}
\hline MODEL NAME & SERIAL NUMBER \\
\hline Gestetner9002 & \(J 7030300126\) \\
\hline Savin 4090 & \(J 7030300126\) \\
\hline Gestetner10512 & \(J 7130300161\) \\
\hline Savin 40105 & J 7130300161 \\
\hline Lanier LD 090 & J 7030300126 \\
\hline Lanier LD 0105 & J 7130300161 \\
\hline Ricoh Aficio 2090 & J 7030300126 \\
\hline Ricoh Aficio 2105 & J 7130300161 \\
\hline
\end{tabular}

The latest Firmware version updates are listed on the first page of this bulletin under SOLUTION and can be downloaded from the Technology Solution Center FTP Site at http://tsc.ricohcorp.com. Be sure to check the README file for important notes and explanations.

NOTE: Refer to Facts Line Bulletin \# FLO02 and Publication Bulletin \#023 for more information about the FTP Internet Web Site and EPROM / Flash Card Exchange program.

\section*{TECHNICAL SERVICE BULLETIN}

BULLETIN NUMBER：B070／B071－ 002
06／19／2003

\section*{APPLICABLE MODEL：}

GESTETNER－9002／10512
ZANIER－LD090／LD0105
RICOH－AFICIO 2090／2105
SAVIN－4090／4105

\section*{SUBJECT：SERVICE MANUAL－INSERT}

The Service Manual pages listed below must be replaced with the pages supplied．
The revised areas have been highlighted by an arrow \(\Rightarrow\) ．

PAGES：
－i thru iii
－viii
－1－20
－1－86 thru 1－98
－3－125
－4－1
－4－28
－5－23 and 5－24
－5－49
－5－128 thru 5－131
－6－11
－6－66
－6－68

Updated Information（Table of Contents）
Updated Information（Table of Contents）
Updated Information（Initializing Developer Supply）
Updated Information（Copier Connection Kit）
Updated Information（Toner Bank Unit）
Updated Information（Troubleshooting）
Updated Information（Toner Suction Motor Replace）
Updated Information（SP－3903， 4012 and 4013）
Updated Information（SP－5857）
Updated Information（Using the Debug Log）
Updated Information（Removed S54）
Updated Information（Process Control）
Updated Information（Grid Voltage Adjustment）

\section*{B070/B071}

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\section*{Initializing Developer Supply}
1. When the machine is ready, enter SP mode:
1) Press c/ه.
2) Enter "107".
3) Hold down c/D for more than 3 seconds.
2. Press "Copy SP" on the LCD, and perform the TD initial setting:
1) Select SP2801 (TD Sensor Initial Setting)
2) Use the keys displayed on the screen and the numeric keys on the LCD to enter the developer Lot No., then press \(\#\).
NOTE: The Lot No. is embossed on the top edge of the developer packet.
3) Press "Execute" on the LCD.

NOTE: This executes the TD initial setting. After about 1 minute, "Completed" is displayed on the screen, and the execution stops automatically.
3. Start to supply toner from the toner bank to the toner hopper:
1) Select SP2207 002 (Toner Bank Toner Setup).
2) Press the "Start key" on the LCD.

This procedure supplies toner to the toner hopper and the toner transport path. It will stop automatically in about 7 minutes. If SP2207 002 fails after SP2801 is completed (an SC code is displayed), repeat only SP2207 002.
4. Execute SP2962 (Auto Process Control Execution).

NOTE: In step 1, if you enter SP mode immediately after switching the machine on, the system will not execute process control automatically. To ensure that process control calibrates its settings, use this SP to execute process control manually.

\section*{\(\Rightarrow\) 1.12.7 COPIER CONNECTION KIT (B328)}

\section*{Accessories}

Check the quantity and condition of the accessories in the box against the following list:






7
Description ..... Q'ty
Interface Cable 1394 ..... 3
Repeater Hub 1394 ..... 2
Connection PCB ..... 2
Power Repeater Cable ..... 2
"Other Function" Keytops (NA, EU 1 ea.) ..... 2
"Printer/Other Function" Keytops (NA, EU 1 ea.) ..... 2
SDRAM DIMM 64 MB ..... 2

\section*{Preparation}

Before you begin the installation procedure, you must first:
- Determine the distance between the machines to be connected.
- Determine whether the printer/scanner option is installed on the machines.

Measure the distance between the machines, then decide how many cables and repeater hubs are required.
\begin{tabular}{||l|c|c||}
\hline \multicolumn{1}{|c|}{ DISTANCE } & POWER REPEATER HUBS & INTERFACE CABLES \\
\hline \begin{tabular}{l} 
Up to \(4.5 ~ \mathrm{~m}\) \\
\((14.8 \mathrm{ft})\).
\end{tabular} & None & 1 \\
\hline \begin{tabular}{l}
\(4.5 \sim 9.0 \mathrm{~m}\) \\
\((14.8 \sim 29.5 \mathrm{ft})\)
\end{tabular} & 1 & 2 \\
\hline \begin{tabular}{l}
\(9.0 \sim 13.5 \mathrm{~m}\) \\
\((29.5 \sim 112.5 \mathrm{ft}\).
\end{tabular} & 2 & 3 \\
\hline \hline
\end{tabular}

Two sets of keytops (2 per set, 1 for NA, 1 for EU) are provided for each machine, but you need to install only one keytop on each machine.
- Install the key labeled "Printer/Other Function" (or its equivalent symbol keytop for EU) on a machine with the printer/scanner option installed
- Install the key labeled "Other Function" (or its equivalent symbol keytop for EU) on a machine without the printer/scanner option.

\section*{Installation Procedure}

\section*{. CAUTION \\ Switch the machine off and unplug the machine before starting the following procedure.}

1. Switch the main power switch off.
2. Remove the controller box cover. ( \((\hat{\xi} \times 7\) )
3. Remove the cover [A] from slot A2.
4. Align the PCB with the bottom groove, and push the connection PCB \([B]\) into the slot.
NOTE: Make sure that the edge of the PCB is in the groove before you push the card into the machine.
5. Fasten the PCB with the attached screws [C].
\(\Longrightarrow\)

6. Connect the power repeater cable [A] to the mother board at CN149.
7. Connect the other end of the power repeater cable the connection PCB [B].
8. Insert the 64 MB SDRAM DIMM [C] into the slot on the mother board.
- Set the edge connector at a 45 degree angle with the slot on the edge connector [D] aligned with the post below.
- Press down slightly then push the DIMM toward the mother board until it snaps into place.
- Make sure that the notches on both sides of the DIMM [E] [F] engage the pawls of the spring loaded arms so the DIMM is perpendicular.
9. Re-attach the controller box cover.
10. Repeat Steps 1 to 9 to install the connection PCB and 64 MB DIMM on the slave machine.

11. Insert one end of the interface cable [A] to the connection PCB inserted in slot A2.
12. If additional interface cables are required, connect the cables \([B]\) with the repeater hubs [C].
13. On the operation panel of the both machines, remove the second cover (or Printer key) from the bottom [D].
14. Install an appropriate key for each machine:

Attach the "Printer/Other Function" key [E] (or its equivalent symbol keytop for EU ) if the printer/scanner option is installed in the machine.
-or-
Attach the "Other Function" key [E] (or its equivalent symbol keytop for EU) if the printer/scanner is not installed in the machine.
15. Attach the other end of the connection cable to the connection PCB installed in the other machine.

\section*{\(\Rightarrow\) 1.12.8 EFI (G353)}

1. Switch the machine off.
2. Remove the cover \([A]\) of Slot A1 ( \(\mathcal{B}^{2} \times 2\) ).
3. Insert the EFI Board G353 [B] into Slot A1 and fasten it with the screws.

\section*{\(\Rightarrow\) 1.12.9 MLB (B609)}

\section*{Accessories}
Description ..... Q'ty
1. MLB Board.............................................................................. 1
2. Instructions .1

\section*{Installation}

1. Switch the machine off.
2. Remove the cover \([A]\) of Slot B1 (
3. Insert the MLB board \([B]\) into Slot B1 and fasten it with the screws.
4. Switch the machine on.

\section*{\(\Rightarrow 1.13\) KEY CARD COUNTER}

\subsection*{1.13.1 ACCESSORIES}
Description ..... Q'ty
1. Key Counter Cover ..... 1
2. Key Counter Plates ..... 2
3. Key Counter Bracket ..... 1
4. Machine screw M3 x 6 ..... 1
5. Shoulder Screw M3 x 4 ..... 1
6. Tapping Screws M4 x 8 ..... 3
7. Machine Screws M3 x 20 ..... 2
8. External Screw M3 x 20 ..... 1
9. Machine Screw (Flathead) M4 x 16 ..... 1
10. Extension Cable (for LCT Installation) ..... 1
11. Extension Cable Clamps (for LCT Installation) ..... 6

\section*{\(\Rightarrow\) 1.13.2 INSTALLATION}

\section*{Assembling the Key Counter}

1. While holding the key counter plates \([A]\) inside the key counter bracket \([B]\), insert the key counter holder [C]
2. Fasten the key counter holder [C] through the bracket plate to the counter plates \([A]\) ( \(\hat{\xi}^{2} \times 2\) ).
3. Fasten the cover \([D]\) to the key counter bracket \([B]\left(\mathcal{S}^{(1)} \times 2\right)\).

\section*{\(\Rightarrow\) Attaching the Key Counter to the Copier}

Attach the key counter to the copier if the LCT is not installed.

1. On the right side of the copier, remove the small cover \([\mathrm{A}]\).
2. Remove the jumper connector \([B]\).
3. Fasten the shoulder screw [C] to the side of the machine.
4. Connect the key count assembly [D].
5. Fit the keyhole of the key counter bracket [E] over the head of the shoulder screw, then slide it back.
6. Fasten the key counter assembly [F] to the copier (
7. Do the User Tool and SP mode settings described at the end of this section.

\section*{\(\Rightarrow\) Attaching the Key Counter to the LCT}

1. On the LCT right cover, remove the cover [A] (
2. Remove the LCT right cover \([B]\left(\hat{\xi}^{(1)} \times 6\right)\).
3. Remove the LCT rear cover [C] ( \(\hat{\xi} \times 3\) ).
4. On the right side of the LCT, attach 2 clamps [D].
5. Attach the extension cable [E] to the 2 clamps.
\(\Rightarrow\)

6. On the rear side of the LCT, attach 2 clamps [A].
7. Route the cable \([B]\) as shown.
8. On the left side of the LCT, attach 2 clamps [C].
9. Route the cable [D] as shown.
10. If the cable from the right cover is too long, loop it [E] to make it shorter.


11. Re-attach the right LCT cover.
12. Fasten the shoulder screw [A] to the side of the LCT.
13. Connect the key count assembly [B].
14. Fit the keyhole of the key counter bracket [C] over the head of the shoulder screw, then slide it back.
15. Fasten the key counter assembly [D] to the LCT (
16. On the right side of the copier, remove the small cover [E].
17. Remove the jumper connector [F].
\(\Rightarrow\)

18. Connect the extension cable [A] from the LCT to the copier.
19. Dock the LCT to the copier.

\section*{User Tool and SP Mode Settings}
1. Instruct the key operator to enable the key counter with the User Tools setting: User Tools> System Settings> Key Counter Management> then click the ON button for the items you want to enable for the counter (Copier, Document Server, Printer, Scanner).
2. Enter the SP mode and set SP5113 (Optional Counter Type) to 002 (Key Card (Countdown Type)) or 005 (MF Key Card).
NOTE: If the counter is a countdown type, you must select 002.
3. Enter the SP mode and set SP5121 to "0" (Paper Feed Count) or "1" (Paper Exit Count) to determine whether the counter counts at paper feed-in or a paper exit.

\subsection*{3.13.2 TONER BANK UNIT}


NOTE: Work carefully to avoid spilling toner during removal.
1. Execute SP5804 097 (upper bottle) and 098 (lower bottle) to close the caps, then remove the toner bottles from the bank.
2. Upper rear and lower rear covers (-3.1.4).
3. Open the controller box door \((\mathbb{Z} \times 3)(-3.1 .4)\)
4. Left lower cover, right upper cover ( \(-3.1 .2,3.1 .3\) ).
5. Two screws [A] of the toner supply cylinder. ( NOTE: Work carefully to avoid spilling toner.
6. Cover the end of the toner transport coil tube \([B]\) with a plastic bag.

NOTE: Do not to bend the toner transport coil tube [B]. If it is bent, this can cause the coil inside to be overloaded, locked, or damaged. SC592 will be displayed, and the coil (screw) inside should be replaced.
7. Switch on the machine and execute SP2226 to discharge toner from the toner bank.
8. Turn off the main switch and unplug the power cord.
9. Toner waste bottle. (-3.13.1)

\section*{4. TROUBLESHOOTING}

\subsection*{4.1 SERVICE CALL CONDITIONS}

\subsection*{4.1.1 SUMMARY}

There are 4 levels of service call conditions.
\begin{tabular}{|c|l|l||}
\hline \hline Level & \multicolumn{1}{|c|}{ Definition } & \multicolumn{1}{c|}{ Reset Procedure } \\
\hline A & \begin{tabular}{l} 
Fusing SCs displayed on the operation panel. \\
The machine is disabled. The user cannot \\
reset the SC.
\end{tabular} & \begin{tabular}{l} 
Enter SP mode, then turn the \\
main power switch off/on.
\end{tabular} \\
\hline B & \begin{tabular}{l} 
SCs that disable only the features that use the \\
defective item. Although these SCs are not \\
shown to the user under normal conditions, \\
they are displayed on the operation panel only \\
when the defective feature is selected.
\end{tabular} & Turn power off/on. \\
\hline C & \begin{tabular}{l} 
SCs that are not shown on the operation \\
panel. They are internally logged.
\end{tabular} & Logging only. \\
\hline D & \begin{tabular}{l} 
Turning the operation switch or main power \\
switch off then on resets SCs. Displayed on \\
the operation panel. These are re-displayed if \\
the error occurs again.
\end{tabular} & \begin{tabular}{l} 
Turn the operation switch or main \\
power switch off and on.
\end{tabular} \\
\hline
\end{tabular}

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

\section*{SC591: Toner Supply Pump Motor Error}

Definition [B]
The toner supply pump motor lock signal did not change within 1 s while the motor is operating.

\section*{Possible Causes}
- Motor lock due to overload
- BCU defective

\section*{SC592: Toner Bank Motor Error}

Definition [B]
An abnormal signal was received from the toner bank motor.

\section*{Possible Causes}
- Toner bank motor defective
- Bank motor connector loose
- Too much load on the drive mechanism

\section*{SC593: Toner Suction Motor Replace}

Definition [B]
The operation time of the motor is over 600 hours.
Possible Cause
- Service life of the toner suction motor is finished.

Note: A near-end message is displayed in the LCD when the operation time exceeds 570 hours.

\section*{SC601: Communication Error Between BCU and MCU}

Definition [B]
One or more of the following occurred:
- The BCU cannot communicate with the MCU within 0.8 s after power on.
- A BREAK signal was detected after connection between the BCU and MCU.
- After a communication error, three tries to communicate with the MCU failed.

Possible Causes
- Poor connection between BCU and MCU
- BCU defective
- MCU defective
\begin{tabular}{|c|c|c|c|c|}
\hline & & & Number/Name & Function/[Setting] \\
\hline & \multirow[t]{15}{*}{3902} & \multicolumn{2}{|l|}{Process Control Data Display} & \\
\hline & & 001 & Auto Process Control & \begin{tabular}{l}
Displays whether auto process control is switched on or off [0:Off, 1:On] \\
When auto process control is on and the potential sensor is calibrated correctly, "ON" appears on the operation panel. \\
Auto process control is not executed when this \(S P\) is switched off. \\
After RAM is cleared, this SP setting goes off.
\end{tabular} \\
\hline & & 002 & V D & Displays the drum potential. \\
\hline & & 003 & V H & Displays the standard halftone drum potential, used for laser power adjustment. \\
\hline & & 004 & V G & Displays the charge grid voltage resulting from the latest Vd adjustment. \\
\hline & & 005 & LD Power (Correction) & Displays the LD power correction value as a result of the latest Vh adjustment. \\
\hline & & 006 & V ID & Displays the latest drum surface voltage measured on the ID sensor pattern. \\
\hline & & 007 & V M200 & Displays the acquired value when the potential sensor is calibrated after application of -200 V to the drum. \\
\hline & & 008 & V M700 & Displays the acquired value when the potential sensor is calibrated after application of -700V. \\
\hline & & 009 & VD Correction & \begin{tabular}{l}
Determines whether VD correction is performed. DFU \\
[0~1 / 0/1] \\
0 : No Correction. Correction with value of SP2001 007 only \\
1: Correction with value of SP2001 007 + 50V
\end{tabular} \\
\hline & & 010 & VL (Auto Process Control) & Displays the value of VL at auto process control initialization. \\
\hline & & 011 & VL Correction (Auto Process Control) & Displays the amount of correction ( \(\Delta\) VLref) according to results of the VL detection at auto process control. \\
\hline & & 012 & VL & Displays the latest value of VL. \\
\hline & & 013 & VL Correction & Displays the amount of correction ( \(\Delta\) VLref) according to the latest VL detection results. \\
\hline & & 014 & VB & Displays the value of the current image development bias output, determined by the results of VL detection. \\
\hline & 3903 & VD C & rection Counter & \begin{tabular}{l}
Adjusts the starting point for the VD Correction. Displays whether the VD correction is being performed. The target value for VD correction is "the value of SP2-001-7 + 50". \\
[0~999 / 200 / 1 K copies] \\
The counter is automatically reset to 0 (zero) when SP2-801 is performed.
\end{tabular} \\
\hline
\end{tabular}

\section*{SP4-nnn Scanner}
\begin{tabular}{|c|c|c|c|}
\hline SP & & Number/Name & Function/[Setting] \\
\hline 4008 & \multicolumn{2}{|l|}{Scanner Sub Scan Magnification} & \begin{tabular}{l}
Adjusts the magnification in the sub scan direction for scanning. If this value is changed, the scanner motor speed is changed. (-3-17) \\
[-0.9~+0.9 / \(0 / 0.1\) percent] \\
Use the "•/ *key to enter the minus ( - ) before entering the value. \\
Setting a lower value reduces the motor speed and lengthens the image in the sub scan direction (paper direction). Setting a larger value increases the motor speed and shortens the image in the sub scan direction.
\end{tabular} \\
\hline 4010 & \multicolumn{2}{|l|}{Scanner Leading Edge Registration} & \begin{tabular}{l}
Adjusts the leading edge registration for scanning. (-3-17)
\[
\text { [-9.0~+9.0 / } 0 \text { / } 0.1 \mathrm{~mm}]
\] \\
Use the "•/ *key to enter the minus ( - ) before entering the value. \\
A minus setting moves in the direction of the leading edge. A larger value shifts the image away from the leading edge, and a smaller value shifts the image toward the leading edge.
\end{tabular} \\
\hline 4011 & \multicolumn{2}{|l|}{Scanner Side-to-Side Registration} & \begin{tabular}{l}
Adjusts the side-to-side registration for scanning. (-3-17) \\
[-3.0~+3.0 / \(0 / 0.1 \mathrm{~mm}]\) \\
\((-)\) : The image disappears at the left side. \\
\((+)\) : The image appears at the left side. \\
Use the "•/ *key to enter the minus ( - ) \\
before entering the value.
\end{tabular} \\
\hline \multirow[t]{6}{*}{4012} & \multicolumn{2}{|l|}{Scanner Erase Margin} & \multirow[t]{6}{*}{Adjusts the erase margin for scanning. The leading, trailing, right and left margins can be set independently. Do not adjust this unless the user wishes to have a scanner margin that is greater than the printer margin.
\[
\text { [0~9.0 / 0.5 / } 0.1 \mathrm{~mm}]
\]} \\
\hline & 001 & Leading Edge & \\
\hline & 002 & Trailing Edge & \\
\hline & 003 & Right & \\
\hline & 004 & Left & \\
\hline & & & \\
\hline \multirow[t]{3}{*}{4013} & \multicolumn{2}{|l|}{Scanner Free Run} & \\
\hline & 001 & Scanner Free Run: Lamp ON & Allows scanner free running with the exposure lamp on. \\
\hline & 002 & Scanner Free Run: Lamp OFF & Allows scanner free running with exposure lamp off. \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|}
\hline SP & & Number/Name & Function/[Setting] \\
\hline \multirow[t]{9}{*}{5857} & \multicolumn{2}{|l|}{Save Debug Log} & \\
\hline & 001 & On/Off (1:ON 0:OFF & Switches on the debug log feature. The debug log cannot be captured until this feature is switched on.
\[
\begin{aligned}
& {[0 \sim 1 / 0 / 1]} \\
& \text { 0: OFF } \\
& \text { 1: ON }
\end{aligned}
\] \\
\hline & 002 & Target (2: HDD 3: SD Card) & Selects the destination where the debugging information generated by the event selected by SP5858 will be stored if an error is generated
\[
\begin{aligned}
& {[2 \sim 3 / 2 / 1]} \\
& \text { 2: HDD } \\
& \text { 3: SD Card }
\end{aligned}
\] \\
\hline & 005 & Save to HDD & Specifies the decimal key number of the log to be written to the hard disk.
\[
(-5.16)
\] \\
\hline & 006 & Save to SD Card & Specifies the decimal key number of the log to be written to the SD Card. (-5.16) \\
\hline & 009 & HDD to SD Card (Latest 4 MB) & \begin{tabular}{l}
Takes the most recent 4 MB of the log written to the hard disk and copies them to the SD Card. (-5.16) \\
A unique file name is generated to avoid overwriting existing file names on the SD Card. Up to \(4 M B\) can be copied to an SD Card. 4 MB segments can be copied one by one to each SD Card.
\end{tabular} \\
\hline & 010 & HDD to SD Card Latest 4 MB Any Key) & \begin{tabular}{l}
Takes the log of the specified key from the log on the hard disk and copies it to the SD Card. (-5.16) \\
A unique file name is generated to avoid overwriting existing file names on the SD Card. Up to 4 MB can be copied to an SD Card. 4 MB segments can be copied one by one to each SD Card. This SP does not execute if there is no log on the HDD with no key specified.
\end{tabular} \\
\hline & 011 & Erase Debug Data From HDD & Erases all debug logs on the HDD \\
\hline & 012 & Erase Debug Data From SD Card & Erases all debug logs on the SD Card. If the card contains only debugging files generated by an event specified by SP5858, the files are erased when SP5857 010 or 011 is executed. To enable this SP, the machine must be cycled off and on. \\
\hline
\end{tabular}

\section*{\(\Rightarrow\) 5.16 USING THE DEBUG LOG}

This machine provides a Save Debug Log feature that allows the Customer Engineer to save and retrieve error information for analysis.

Every time an error occurs, debug information is recorded in volatile memory but this information is lost when the machine is switched off and on.

The Save Debug Log feature provides two main features:
- Switching on the debug feature so error information is saved directly to the HDD for later retrieval.
- Copying the error information from the HDD to an SD card.

When a user is experiencing problems with the machine, follow the procedure below to set up the machine so the error information is saved automatically to the HDD.

\subsection*{5.16.1 SWITCHING ON AND SETTING UP SAVE DEBUG LOG}

The debug information cannot be saved the until the "Save Debug Log" function has been switched on and a target has been selected.
1. Enter the SP mode and switch the Save Debug Log feature on.
- Press \(\widehat{0}\) then use the 10-key pad to enter (1)(0) (7).
- Press and hold down \(\mathrm{c} / \boldsymbol{\square}\) for more than 3 seconds.
- Touch "Copy SP".
- On the LCD panel, open SP5857.
2. Under " 5857 Save Debug Log", touch " 1 On/Off".
```

COPY : SP-5-857-001
Save Debug Log
On/Off (1:ON 0:OFF)

```
                    1
Initial 0
3. On the control panel keypad, press " 1 " then press \(\#\). This switches the Save Debug Log feature on.

NOTE: The default setting is " 0 " (OFF). This feature must be switched on in order for the debug information to be saved.
4. Next, select the target destination where the debug information will be saved. Under "5857 Save Debug Log", touch "2 Target", enter "2" with the operation panel key to select the hard disk as the target destination, then press \(\#\).
```

COPY : SP-5-857-002
Save Debug Log
Target (2:HDD 3:SD Card)

```

```

Initial 2

```

NOTE: Select "3 SD Card" to save the debug information directly to the SD card if it is inserted in the service slot.
5. Now touch " 5858 " and specify the events that you want to record in the debug log. SP5858 (Debug Save When) provides the following items for selection.
\begin{tabular}{|c|l|l||}
\hline \(\mathbf{1}\) & Engine SC Error & \begin{tabular}{l} 
Saves data when an engine-related \\
SC code is generated.
\end{tabular} \\
\hline \(\mathbf{2}\) & Controller SC Error & \begin{tabular}{l} 
Saves debug data when a controller- \\
related SC Code is generated.
\end{tabular} \\
\hline \(\mathbf{3}\) & Any SC Error & \begin{tabular}{l} 
Saves data only for the SC code that \\
you specify by entering code number.
\end{tabular} \\
\hline \(\mathbf{4}\) & Jam & Saves data for jams. \\
\hline
\end{tabular}

NOTE: More than one event can be selected.

\section*{Example 1: To Select Items 1, 2, 4}

Touch the appropriate items(s). Press "ON" for each selection. This example shows "Engine SC Error" selected.
```

COPY : SP-5-858-001
Debug Save When
Engine SC Error

```
                OFF
                        ON

\section*{Example 2: To Specify an SC Code}

Touch "3 Any SC Error", enter the 3-digit SC code number with the control panel number keys, then press \#. This example shows an entry for SC670.
```

COPY : SP-5-858-001
Debug Save When
Any SC Error

```

NOTE: For details about SC code numbers, please refer to the SC tables in Section "4. Troubleshooting".
6. Next, select the one or more memory modules for reading and recording debug information. Touch "5859".
Under " 5859 " press the appropriate key item for the module that you want to record.

Enter the appropriate 4-digit number, then press \#).
NOTE: Refer to the two tables below for the 4-digit numbers to enter for each key.
The example below shows "Key 1 " with " 2222 " entered.
```

COPY : SP-5-859-001
Debug Save Key No.
Key 1
2222

```

The following keys can be set with the corresponding numbers. (The initials in parentheses indicate the names of the modules.)

4-Digit Entries for Keys 1 to 10
\begin{tabular}{|c|c|c|c|c|}
\hline KEY NO. & COPY & PRINTER & SCANNER & WEB \\
\hline 1 & \multicolumn{4}{|c|}{2222 (SCS)} \\
\hline 2 & \multicolumn{4}{|c|}{2223 (SRM)} \\
\hline 3 & \multicolumn{4}{|c|}{256 (IMH)} \\
\hline 4 & \multicolumn{4}{|c|}{1000 (ECS)} \\
\hline 5 & \multicolumn{4}{|c|}{1025 (MCS)} \\
\hline 6 & 4848 (COPY) & 4400 (GPS) & 5375 (Scan) & 5682 (NFA) \\
\hline 7 & 2224 (BCU) & 4500 (PDL) & 5682 (NFA) & 6600 (WebDB) \\
\hline 8 & & 4600 (GPS-PM) & 3000 (NCS) & 3300 (PTS) \\
\hline 9 & & 2000 (NCS) & 2000 (NCS) & 6666 (WebSys) \\
\hline 10 & & 2224 (BCU) & & 2000 (NCS) \\
\hline
\end{tabular}

NOTE: The default settings for Keys 1 to 10 are all zero ("0").
Key to Acronyms
\begin{tabular}{||l|l|l|l||}
\hline Acronym & \multicolumn{1}{|c|}{ Meaning } & \multicolumn{1}{c|}{ Acronym } & \multicolumn{1}{c|}{ Meaning } \\
\hline ECS & Engine Control Service & NFA & Net File Application \\
\hline GPS & GW Print Service & PDL & Printer Design Language \\
\hline GSP-PM & GW Print Service - Print Module & PTS & Print Server \\
\hline IMH & Image Memory Handler & SCS & System Control Service \\
\hline MCS & Memory Control Service & SRM & \begin{tabular}{l} 
System Resource \\
Management
\end{tabular} \\
\hline NCS & Network Control Service & WebDB & \begin{tabular}{l} 
Web Document Box \\
(Document Server)
\end{tabular} \\
\hline
\end{tabular}

The machine is now set to record the debugging information automatically on the HDD (the target selected with SP5-857-002) for the events that you selected SP5-858 and the memory modules selected with SP5-859.
\(\Rightarrow\) Please keep the following important points in mind when you are doing this setting:
- Note that the number entries for Keys 1 to 5 are the same for the Copy, Printer, Scanner, and Web memory modules.
- The initial settings are all zero.
- These settings remain in effect until you change them. Be sure to check all the settings, especially the settings for Keys 6 to 10. To switch off a key setting, enter a zero for that key.
- You can select any number of keys from 1 to 10 (or all) by entering the corresponding 4-digit numbers from the table.
- You cannot mix settings for the groups (COPY, PRINTER, etc.) for 006~010. For example, if you want to create a PRINTER debug log you must select the settings from the 9 available selections for the "PRINTER" column only.
- One area of the disk is reserved to store the debug log. The size of this area is limited to 4 MB .

\subsection*{5.16.2 RETRIEVING THE DEBUG LOG FROM THE HDD}

Retrieve the debug log by copying it from the hard disk to an SD card.
1. Insert the SD card into the service slot of the copier.
2. Enter the SP mode and execute SP5857 009 (Copy HDD to SD Card (Latest 4 \(\mathrm{MB})\) ) to write the debugging data to the SD card.
3. After you return to the service center, use a card reader to copy the file and send it for analysis to Ricoh by email, or just send the SD card by mail.

\subsection*{5.16.3 RECORDING ERRORS MANUALLY}

Since only SC errors and jams are recorded to the debug log automatically, for any other errors that occur while the customer engineer is not on site, please instruct customers to perform the following immediately after occurrence to save the debug data. Such problems would include a controller or panel freeze.
NOTE: In order to use this feature, the customer engineer must have previously switched on the Save Debug Feature (SP5857-001) and selected the hard disk as the save destination (SP5857-002).
1. When the error occurs, on the operation panel, press \(\stackrel{\text { Clasernodes }}{\checkmark}^{\text {(Clear Modes). }}\)
2. On the control panel, enter " 01 " then hold down \(\mathbf{C} / \boldsymbol{\theta}\) for at least 3 sec. until the machine beeps then release. This saves the debug log to the hard disk for later retrieval with an SD card by the service representatives.
3. Switch the machine off and on to resume operation.

The debug information for the error is saved on the hard disk so the service representatives can retrieve it on their next visit by copying it from the HDD to an SD card.
\begin{tabular}{|c|c|c|}
\hline Number & Name & Description \\
\hline S39 & Duplex Inverter Sensor & Detects when to turn the inverter gate and exit gate solenoids off and checks for misfeeds. \\
\hline S40 & Duplex Entrance Sensor & Detects the leading and trailing edges of the paper to determine the reverse roller solenoid on or off timing. \\
\hline S41 & Duplex Transport Sensor 1 & Detects the position of paper in the duplex unit. \\
\hline S42 & Duplex Transport Sensor 2 & Detects the position of paper in the duplex unit. \\
\hline S43 & Duplex Transport Sensor 3 & Detects the position of paper in the duplex unit. \\
\hline S44 & Duplex Jogger HP Sensor & Detects whether the duplex jogger fences are at the home position. \\
\hline S45 & LCT Relay Sensor & Detects misfeeds. \\
\hline S46 & Relay Sensor & Detects misfeeds. \\
\hline S47 & Registration Sensor & Detects misfeeds and controls registration motor on/off timing. \\
\hline S48 & Guide Plate Position Sensor & Detects whether the registration guide plate is open or closed. \\
\hline S49 & Web End Sensor & Detects when the oil supply/cleaning web has been used up. \\
\hline S50 & Fusing Exit Sensor & Detects misfeeds. \\
\hline S51 & Exit Sensor & Detects misfeeds. \\
\hline S52 & Toner Suction Motor Rotation Sensor & Detects whether the development unit toner suction motor is rotating. \\
\hline S53 & Toner Suction Bottle Set Sensor & Detects whether the development unit waste toner bottle is set. \\
\hline \multicolumn{3}{|l|}{Solenoids} \\
\hline SOL01 & Transfer Belt Lift & Controls the up-down movement of the transfer belt unit. \\
\hline SOL02 & 1st Pick-up Solenoid & Controls the up-down movement of the pickup roller in tray 1. \\
\hline SOL03 & 1st Pick-up Solenoid & Controls the up-down movement of the pickup roller in tray 2. \\
\hline SOL04 & 3rd Pick-up Solenoid & Controls the up-down movement of the pickup roller in tray 3. \\
\hline SOL05 & 1st Separation Roller Solenoid & Controls the up-down movement of the separation roller in tray 1. \\
\hline SOL06 & 2nd Separation Roller Solenoid & Controls the up-down movement of the separation roller in tray 2. \\
\hline SOL07 & 3rd Separation Roller Solenoid & Controls the up-down movement of the separation roller in tray 3. \\
\hline SOL08 & Front Side Fence & Opens and closes the front side fence in the tandem tray. \\
\hline SOL09 & Rear Side Fence & Opens and closes the rear side fence in the tandem tray. \\
\hline SOL10 & Tandem Tray Connect & Connects/disconnects the two halves of the tandem tray. \\
\hline
\end{tabular}

\subsection*{6.11.8 PROCESS CONTROL}

Drum potential gradually changes for the following reasons:
- Dirty optics, exposure glass
- Dirty charge corona casing, grid plate
- Deterioration of drum sensitivity

\section*{What Happens at Power On}

Here is a description of what happens while the fusing temperature is below \(100^{\circ} \mathrm{C}\) immediately after the main power switch is switched on (process control must also be enabled with SP3901 001, or this will not happen).

At any time, this process can also be executed manually by using SP2962. However, process control must be enabled with SP3901 001 and the fusing temperature must be below \(100^{\circ} \mathrm{C}\), or this will not work.
1. Drum potential sensor is calibrated.
2. Drum starts first rotation after fusing temperature reaches \(100^{\circ} \mathrm{C}\).
3. ID sensor is calibrated (Vsg).
\(\Rightarrow 4\). Readout from the drum potential sensor is used to adjust:
- Grid voltage (Vg)
- Laser diode (LD) power.

NOTE: This step occurs only if process control is enabled with SP3901 001 (Auto Process Control On/Off Setting). If this SP is disabled, then:
- Development bias is set to the value stored in SP2201 1
- Grid voltage is set to the value stored in SP2001 1
- Laser power is set to the values stored in SP2103
5. TD sensor is calibrated (Vref).

Any SC codes that are generated during auto process control are logged in the memory and do not appear. The machine will continue to operate.

\section*{Grid Voltage (Vg) Adjustment}

Then, the machine determines the corona grid voltage \((\mathrm{Vg})\) that will be used during copying. This is done as follows:
1. A Vd pattern is unexposed on the drum and the bias for the unexposed area is adjusted.
2. The drum potential sensor reads the Vd potential.
3. Vd should be \(-800 \pm 20 \mathrm{~V}\). If it is within this range, the current value of Vg will be used for copying. If it is not within this range, \(-(\mathrm{Vd}+800) \mathrm{V}\) is added to Vg , and the process starts again from Step 1.
\(\Rightarrow\) NOTE: VD Correction - As the development sleeve accumulates toner over time, the gap between VD and VB decreases, which makes it easier for dirty background to occur. To compensate for this, the machine increases the target VD value to \(-850 \pm 20 \mathrm{~V}\) when the number of copies exceeds the value set with SP3903: VD Correction Counter (default: 200K). As a result, VD increases and the VD-VB gap is maintained
\(\Rightarrow 4\). If Vd cannot be adjusted to this standard within 5 attempts, Vg is set to the value of SP2001-001 (default: -900V) and SC315 (Potential Sensor Calibration Error 3) is logged.

\section*{LD Power Adjustment}

Finally, the machine determines the laser diode power that will be used during copying. This is done as follows.
1. The laser power is changed to the value needed to write a halftone pattern to the drum.
2. The drum potential sensor reads the potential, Vh , from this pattern.

Vh : Standard halftone drum potential
3. Vh should be \(-260 \pm 20 \mathrm{~V}\). If it is within this range, the current value of the laser power will be used for copying.
- If it is not, the laser power changes by 5 units, and the process starts again from step 1.
- The laser power cannot be adjusted within the range -70 to +185 .
4. If Vh cannot be adjusted to this standard within 45 attempts, LD power is set to the most recent value and SC316 (Potential Sensor Error 7) is logged.

\section*{ID Sensor Calibration (Vsg)}

After power-on, Vsg (the ID sensor output from reading the bare drum) is set to \(4.00 \pm 0.2 \mathrm{~V}\) by changing the intensity of the light from the sensor shining on the drum. This can also be done at any time with SP3001 002 (ID Initial Setting - Vsg).

NOTE: If the ID sensor output cannot be adjusted to the standard, then after 20 seconds SC353 or SC354 is issued. Toner supply during copying will then be controlled using the TD sensor only, until the machine is repaired.

\section*{BULLETIN NUMBER: B070/B071-003}

06/19/2003
APPLICABLE MODEL:
GESTETNER - 9002/10512
LANIER - LD090/LD0105
RICOH - AFICIO 2090/2105
SAVIN - 4090/4105

\section*{SUBJECT: PARTS CATALOG CORRECTIONS}

\section*{GENERAL:}

The following parts were incorrectly listed in your B070/B071 Parts Catalog. Please correct your parts catalog with the following information. The following parts corrections are being issued for all B070/B071

\begin{tabular}{|c|c|c|c|c|c|}
\hline & & & & \multicolumn{2}{|l|}{REFERENCE} \\
\hline \[
\begin{gathered}
\text { INCORRECT } \\
\text { PART NO. }
\end{gathered}
\] & \begin{tabular}{l}
CORRECT \\
PART NO.
\end{tabular} & DESCRIPTION & QTY & PAGE & ITEM \\
\hline AA060742 \(=\) & & Tension Spring & \multirow[t]{2}{*}{1} & \multirow[t]{2}{*}{129} & \multirow[t]{2}{*}{11} \\
\hline & AA060806 & Spring & & & \\
\hline \multirow[t]{2}{*}{AA063255} & & Exit Roller Spring & \multirow[t]{2}{*}{2} & \multirow[t]{2}{*}{129} & \multirow[t]{2}{*}{17} \\
\hline & AA063666 & Compression Spring: Pressure: Duplex & & & \\
\hline
\end{tabular}

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B070/B071 - 004
06/20/2003

\section*{APPLICABLE MODEL:}

GESTETNER - 9002/10512
LANIER - LD090/LD0105
RICOH - AFICIO 2090/2105
SAVIN - 4090/4105

\section*{SUBJECT: SERVICE MANUAL - INSERT}

The Service Manual pages listed below must be replaced with the pages supplied.

PAGES:

Updated Information (Table of Contents)
Updated Information (Installation of MFP Controller Options)
Updated Information (Connection Kit B328)

\section*{SPECIFICATIONS}
SPECIFICATIONS ..... 7-1
1. GENERAL SPECIFICATIONS ..... 7-1
1.1 COPIER ENGINE ..... 7-1
1.2 ADF ..... 7-5
1.3 PAPER SIZES BY FEED STATION ..... 7-6
North America ..... 7-7
Europe/Asia ..... 7-8
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1.4 A3/DLT TRAY KIT (B331) ..... 7-10
1.5 LCT (B511) ..... 7-10
1.6 BYPASS TRAY (B512) ..... 7-10
1.73000 SHEET BOOKLET FINISHER (B468) ..... 7-11
Upper Tray ..... 7-11
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Staple Specifications ..... 7-12
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1.8 PUNCH UNIT (B377) ..... 7-13
1.93000 SHEET FINISHER (B478) ..... 7-14
1.10 PUNCH UNIT (B531) ..... 7-15
1.11 PUNCH UNIT (A812) ..... 7-16
1.12 JOGGER UNIT B513 ..... 7-17
1.13 COVER INTERPOSER TRAY B470 ..... 7-17
1.14 CONNECTION KIT B328 ..... 7-17
2. MACHINE CONFIGURATION ..... 7-18
FIRMWARE HISTORY
FIRMWARE HISTORY ..... 8-1
1. MAIN MACHINE FIRMWARE MODIFICATION HISTORY ..... 8-1
A3/DLT TRAY KIT (B331)
SEE SECTION B331 FOR DETAILED TABLE OF CONTENTS
LCT (B511)
SEE SECTION B511 FOR DETAILED TABLE OF CONTENTS
3000-SHEET BOOKLET FINISHER (B468)
SEE SECTION B468 FOR DETAILED TABLE OF CONTENTS
3000-SHEET FINISHER (B478)
SEE SECTION B478 FOR DETAILED TABLE OF CONTENTS

11. Insert one end of the interface cable [A] to the connection PCB inserted in slot A2.
12. If additional interface cables are required, connect the cables \([B]\) with the repeater hubs [C].
13. On the operation panel of the both machines, remove the second cover (or Printer key) from the bottom [D].
14. Install an appropriate key for each machine:

Attach the "Printer/Other Function" key [E] (or its equivalent symbol keytop for EU ) if the printer/scanner option is installed in the machine.
-Or-
Attach the "Other Function" key [E] (or its equivalent symbol keytop for EU) if the printer/scanner is not installed in the machine.
15. Attach the other end of the connection cable to the connection PCB installed in the other machine.
16. The following software must be downloaded onto both the master and slave machine.
- SYSTEM Ver. V3.04.1 (install first) or later
- NCS (NIB) Ver. 4.13.3 or later
- NetFile Ver. 3.04.2 or later
- BCU (Engine) V4.01.1 or later
- LCDC (NA, EU) Ver. 2.09 or later

NOTE: For details about downloading procedures, see Section " 5 . Service Tables" of the Service Manual.

\subsection*{1.12 JOGGER UNIT B513}

The Jogger Unit B513 is installed above the shift tray of the 3000 Sheet Finisher B478.
\begin{tabular}{|c|c|}
\hline Paper Size & A3 SEF, B4 SEF, 11" x 17" SEF A4 LEF, B5 LEF, 81/2" x 11" LEF \\
\hline Paper Weight & \(52 \mathrm{~g} / \mathrm{m}^{2} \sim 216 \mathrm{~g} / \mathrm{m}^{2}\) \\
\hline Weight & Less than 1.7 kg (3.7 lb.) \\
\hline Dimensions (Wx D x H) & \[
\begin{aligned}
& 125 \mathrm{~mm} \times 450 \mathrm{~mm} \times 100 \mathrm{~mm} \\
& 5^{\prime \prime} \times 17.7^{\prime \prime} \times 4 \text { " }
\end{aligned}
\] \\
\hline Power Supply & DC 24 V , DC 5V (From Finisher) \\
\hline Power Consumption & 24 W \\
\hline
\end{tabular}

\subsection*{1.13COVER INTERPOSER TRAY B470}
\begin{tabular}{||l|l||}
\hline Paper Separation & FRR System with Feed Belt \\
\hline Paper Sizes & A3 \(\sim \mathrm{A} 5,11 " \times 17^{\prime \prime} \sim 51 / 2^{\prime \prime} \times 81 / 2^{\prime \prime}\) \\
\hline Paper Weight & \(64 \sim 216 \mathrm{~g} / \mathrm{m}^{2}\) \\
\hline Capacity & 200 sheets \(\left(80 \mathrm{~g} / \mathrm{m}^{2}\right)\) \\
\hline \begin{tabular}{l} 
Power Supply \\
(from main machine)
\end{tabular} & \(24 \mathrm{~V} \pm 10 \%, 5 \mathrm{~V} \pm 5 \%\) (From Finisher) \\
\hline Power Consumption & Less than 48 W \\
\hline Dimensions (W \(\times \mathrm{D} \times \mathrm{H})\) & \begin{tabular}{l}
\(500 \times 620 \times 200 \mathrm{~mm}\) \\
\(19.7 " \times 24.4^{\prime \prime} \times 7.9 "\)
\end{tabular} \\
\hline Weight & Less than \(12 \mathrm{~kg} \mathrm{(26.4lb)}\). \\
\hline
\end{tabular}

\section*{\(\Rightarrow 1.14\) CONNECTION KIT B328}


\section*{TECHNICAL SERVICE BULLETIN}

\section*{BULLETIN NUMBER: B070/B071-005}

06/23/2003
APPLICABLE MODEL:
GESTETNER - 9002/10512
LANIER - LD090/LD0105
RICOH - AFICIO 2090/2105
SAVIN - 4090/4105

\section*{SUBJECT: UPDATE FOR "0" COUNTER \& SMTP AUTHENTICATION}

\section*{IMPORTANT:}

Before installing the firmware in the table below, the LCDC and BIOS versions must already be installed.
- LCDC (NA): V. 2.07 (B0705371B) or higher
- BIOS: V.K02EL00O (B0705742D) or higher

NOTE: These versions were released as a countermeasure for SC672. (Refer to TSB B070/B071 -001.)

\section*{GENERAL:}

The following firmware has been released for the " 0 " counter and SMTP Authentication modifications.
\begin{tabular}{|c|c|c|c|c|}
\hline \multicolumn{5}{|l|}{Mainframe (B070/B071)} \\
\hline Software & Software P/N & Version & \multicolumn{2}{|c|}{Notes} \\
\hline NCS (NIB) & B0705755 & V4.11 & *1 & *2 \\
\hline Netfile & B0705756 & V2.11.3 & *1 & *2 \\
\hline System & B0705754 & V2.12.7 & *1, *4 & *2, *4 \\
\hline Webdocbox & B0705758 & V1.06 & *1, *4 & *2, *4 \\
\hline Websys & B0705757 & V2.00 & *1, *4 & *2, *4 \\
\hline LCDC (NA) & B0705374 & V2.09 & & \\
\hline LCDC (EU) & B0705375 & V2.09 & & \\
\hline \multicolumn{5}{|l|}{Printer/Scanner (B580)} \\
\hline Printer & B5806515 & V1.13 & *3 & *2 \\
\hline Scanner & B5806520 & V2.00 & *3 & *2 \\
\hline
\end{tabular}

Note:
*1. These must be updated together as a set for the "0" counter modification.
*2. These must be updated together as a set for the SMTP modification.
*3. If installing the P/S Kit, for the " 0 " counter modification, printer version 1.13 and scanner version 2.00 or higher are necessary in addition to the mainframe versions listed above.
*4. System firmware version 2.12.7 or higher must be installed first, before the Webdocbox or Websys.

\section*{UNITS AFFECTED:}

All B070/B071 copiers manufactured after the serial numbers listed below will have the new style firmware installed during production.
\begin{tabular}{|c|c|}
\hline MODEL NAME & SERIAL NUMBER \\
\hline Gestetner 9002 & J7030400001 \\
Lanier LD090 \\
Ricoh Aficio 2090 \\
Savin 4090
\end{tabular}\(\quad\).

\section*{THE "0" COUNTER MODIFICATION}

Please refer to bulletin Pub(C) 047 for details.

\section*{THE SMTP AUTHENTICATION MODIFICATION}

The following SP modes are added for SMTP authentication after updating to the firmware versions listed above (5852-002 is an existing SP mode).

\section*{IMPORTANT:}
- Make sure to print out the NIB Summary Report before updating the firmware.
- Make sure to perform the update with the procedure described below, which includes manually inputting the defaults for the new SP modes.
\begin{tabular}{|c|c|c|c|}
\hline \multirow[t]{5}{*}{5852} & \multicolumn{2}{|l|}{SMTP} & Simple Mail Transfer Protocol. The protocol for communication between Internet main MTAs (Message Transfer Agents) \\
\hline & 002 & Port Number & Sets the port number
[1~65535 / 25 / 1] \\
\hline & 003 & Authorization & \begin{tabular}{l}
Validates the SMTP function. SMTP (Simple Mail Transfer Protocol) is the protocol for communication between Internet main MTAs (Message Transfer Agents). \\
[ON/OFF] \\
ON Enables SMTP \\
OFF Disables SMTP
\end{tabular} \\
\hline & 004 & User Name & Sets the SMTP user name. \\
\hline & 005 & Password & Sets the SMTP password. \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|}
\hline \multicolumn{4}{|l|}{5852 continued} \\
\hline & 006 & SMTP Auth. Encryption & \begin{tabular}{l}
Sets encryption method for the transfer password in SMTP validation. \\
[0~2 / \(0 / 1\) ] \\
0: Auto. Allows three methods for encryption in SMTP validation: LOGIN, PLAIN, or CRAM-MD5. \\
1: Off. Allows two methods for SMTP validation: LOGIN, PLAIN. \\
2: On. Allows only one method for SMTP validation: CRAM-MD5.
\end{tabular} \\
\hline & 007 & POP before SMTP & \begin{tabular}{l}
A flag that determines whether the POP server is connected before connecting to the SMTP server.
\[
\text { [0~1 / } 0 \text { / 1] }
\] \\
POP \\
0: OFF \\
1: On \\
Post Office Protocol (POP) servers are computers that receive mail using SMTP. The mail includes a setting to ensure that it is directed to the POP server. POP servers are used when the user is not permanently connected to the Internet.
\end{tabular} \\
\hline & 008 & POP Server Name & Sets the POP server name. \\
\hline & 009 & POP Port Number & \begin{tabular}{l}
Sets the POP port number. \\
[1 65535/110/1]
\end{tabular} \\
\hline & 010 & POP User Name & Sets the POP user name. \\
\hline & 011 & POP Password & Sets the POP password. \\
\hline & 012 & POP Auth. Encryption & \begin{tabular}{l}
Sets the encryption method for the password when 5852 POP Before SMTP is in use. \\
[0~2 / 0 / 1] \\
0 : Auto. Allows two methods for encryption: APOP and normal encryption to match the settings of the POP server. \\
1: Off. Allows only normal encryption. \\
2: On. Allows only APOP encryption.
\end{tabular} \\
\hline & 013 & Time out Setting for POP & Sets the wait time after POP validation until the SMTP mail is sent.
[0~10000/300/1 ms] \\
\hline
\end{tabular}

\section*{Procedure for Firmware Update and Manual Input of New SP Defaults}

After updating the firmware, it is necessary to manually set some of the new SP modes to their new defaults. This is necessary not only to enable SMTP authentication, but also to prevent errors that can occur with the Scan to e-mail function while the values above are still at " 0 ".

To set SP5852-003 to 013 to their new defaults:
1.Print out the NIB summary report (SP5-990-007).
2. Update the firmware to the versions specified above.
3. Check to see that the SMTP server name displayed in the following screen is the same as the name on the NIB summary report:

User Tools \(\rightarrow\) System Settings \(\rightarrow\) File transfer Tab.
4. Check or change the SP value in accordance with the following table.
\begin{tabular}{|c|c|}
\hline SP Number & Check / Change \\
\hline 5852-002 & \begin{tabular}{l}
Check: The port number should be the same as the port number on the NIB summary report. If they are different, change the port number in this SP to the number on the NIB summary report. \\
NOTE: This is just a confirmation, as the firmware update itself will not change the SMTP port number.
\end{tabular} \\
\hline 5852-003 & Change: to 0 \\
\hline 5852-004 & Check: Should be blank. \\
\hline 5852-005 & Check: Should be blank. \\
\hline 5852-006 & Check: Should be 0. \\
\hline 5852-007 & Check: Should be 0. \\
\hline 5852-008 & Check: Should be blank. \\
\hline 5852-009 & Change: to 110 \\
\hline 5852-010 & Check: Should be blank. \\
\hline 5852-011 & Check: Should be blank. \\
\hline 5852-012 & Check: Should be 0. \\
\hline 5852-013 & Change: to 300 \\
\hline
\end{tabular}
5. Print out the NIB summary report again and confirm the above SP settings.

NOTE: For security purposes, the user name and password do not appear on the list.

\section*{TECHNICAL SERVICE BULLETIN}

BULLETIN NUMBER: B070/B071-006
06/25/2003

\section*{APPLICABLE MODEL:}

GESTETNER - 9002/10512
LANIER - LD090/LD0105
RICOH - AFICIO 2090/2105
SAVIN - 4090/4105

\section*{SUBJECT: PARTS CATALOG UPDATES}

\section*{GENERAL:}

The following parts updates are being issued for all B070/B071 Parts Catalogs.
- UPDATE 1:

Transport Screw: T=20 - The Transport Screw has been registered for individual replacement in the field. Please update your B070/B071 Parts Catalog with the following information.

\begin{tabular}{|c|c|c|c|c|c|}
\cline { 3 - 6 } \multicolumn{2}{c|}{} & \multicolumn{2}{c|}{ REFERENCE } \\
\hline NEW PART NUMBER & DESCRIPTION & QTY & PAGE & ITEM \\
\hline B0703119 & Transport Screw: \(T=20\) & 1 & 89 & 20 * \\
\hline
\end{tabular}

\footnotetext{
* DENOTES NEW ITEM NUMBER
}
- UPDATE 2: DC Harness - The DC Harness was omitted from your B070/B071 Parts Catalog. Please update your B070/B071 Parts Catalog with the following information.

\begin{tabular}{|c|lc|c|c|c|}
\cline { 3 - 6 } \multicolumn{2}{c|}{} & \multicolumn{2}{c|}{ REFERENCE } \\
\hline NEW PART NUMBER & DESCRIPTION & QTY & PAGE & ITEM \\
\hline B3015430 & DC Harness & & 1 & 29 & 36 * \\
\hline
\end{tabular}
* DENOTES NEW ITEM NUMBER
- UPDATE 3: Paper Feed Connecting Harness - The Paper Feed Connecting Harness was incorrectly listed as the DC Relay Harness in your B070/B071 Parts Catalog. Please update your B070/B071 Parts Catalog with the following information.

\begin{tabular}{|c|c|c|c|c|c|c|}
\hline & & & & & \multicolumn{2}{|l|}{REFERENCE} \\
\hline INCORRECT PART NO. & CORRECT PART NO. & DESCRIPTION & QTY & INT & PAGE & ITEM \\
\hline B3015455 & - & DC Relay Harness & 1 & - & 31 & 14 \\
\hline & -B3015410 & Harness: Connecting: Paper Feed & 1 & - & 31 & 14 \\
\hline
\end{tabular}

UPDATE 4: \(\quad\) DC Relay Harness - The DC Relay Harness was incorrectly listed as the Paper Feed Connecting Harness in your B070/B071 Parts Catalog. Please update your B070/B071 Parts Catalog with the following information.

- UPDATE 5: DC Harness - The DC Harness was incorrectly listed and the DF Harness illustration was incorrect. Please update your B070/B071 Parts Catalog with the following information.


Correct


Item 17: Corrected illustration Item 21: Deleted
\begin{tabular}{|c|lc|c|c|c|}
\hline \multicolumn{2}{c|}{} & \multicolumn{2}{c|}{ REFERENCE } \\
\hline PART NUMBER & & DESCRIPTION & QTY & PAGEE & ITEM \\
\hline B3015430 & DC Harness & & \(1 \rightarrow 0\) & 41 & 21 \\
\hline
\end{tabular}

\section*{TECHNICAL SERVICE BULLETIN}

\section*{BULLETIN NUMBER: B070/B071-007}

07/23/2003

\section*{APPLICABLE MODEL:}

GESTETNER - 9002/10512
LANIER - LD090/LD0105
RICOH - AFICIO 2090/2105
SAVIN - 4090/4105

\section*{SUBJECT: PARTS CATALOG UPDATES}

\section*{GENERAL:}

The following parts updates are being issued for all B070/B071 Parts Catalogs.
- UPDATE 1: Drum Stay Plate - The drum stay plate was omitted form the parts catalog please add the drum stay plate to your parts catalog.

\begin{tabular}{|c|c|c|c|c|c|}
\cline { 3 - 6 } \multicolumn{2}{c|}{} & \multicolumn{2}{c|}{ REFERENCE } \\
\hline NEW PART NUMBER & DESCRIPTION & QTY & PAGE & ITEM \\
\hline B0703060 & Plate Drum Stay Ass'y & 1 & 93 & \(31^{*}\) \\
\hline
\end{tabular}

\footnotetext{
* DENOTES NEW ITEM NUMBER
}
- UPDATE 2: Duplex Unit Springs - The part number and description for item \#11 \& 17 on page 129 are incorrect in the part catalog. Refer to the table below.

\begin{tabular}{|c|c|c|c|c|c|}
\hline & & & & \multicolumn{2}{|l|}{REFERENCE} \\
\hline OLD PART NO. & NEW PART NO. & DESCRIPTION & QTY & PAGE & ITEM \\
\hline AA060742 & & Tension Spring & 1 & 129 & 11 \\
\hline & AA060806 & Spring & 1 & 129 & 11 \\
\hline \multirow[t]{2}{*}{AA063255} & & Exit Roller Spring & 2 & 129 & 17 \\
\hline & AA063666 & Compression Spring: Pressure: Duplex & 2 & 129 & 17 \\
\hline
\end{tabular}
- UPDATE 3: Pressure Springs - The reverse pressure spring has been changed as follows to improve paper feed performance.
1) Pressure was increased
2) Diameter increased from 0.45 mm to 0.5 mm
3) Pre-attachment length increased from 18.0 mm to 21.4 mm

\begin{tabular}{|c|c|c|c|c|c|c|}
\hline & & & & & \multicolumn{2}{|l|}{REFERENCE} \\
\hline OLD PART NO. & NEW PART NO. & DESCRIPTION & QTY & INT & PAGE & ITEM \\
\hline AA063950 & & Pressure Spring & \multirow[t]{2}{*}{3-3} & \multirow[t]{2}{*}{1} & \multirow[t]{2}{*}{67} & \multirow[t]{2}{*}{10} \\
\hline & AA060941 & Spring: Pressure: Reverse & & & & \\
\hline
\end{tabular}

\section*{UNITS AFFECTED:}

All B070/B071 copiers manufactured after the serial numbers listed below will have the new style part installed during production.
\begin{tabular}{|c|c|}
\hline MODEL NAME & SERIAL NUMBER \\
\hline Ricoh Aficio 2090 & \\
Savin 4090 & \\
Gestetner 9002 & J7030100001 \\
Lanier LD 090 & \\
\hline \begin{tabular}{c} 
Ricoh Aficio 2105 \\
Savin 4015 \\
Gestetner 10512 \\
Lanier LD 0105
\end{tabular} & J7130100001 \\
\hline
\end{tabular}

\section*{- UPDATE 4:}

\section*{Development Unit Gears -}

The development unit gears have been changed to allow the gear teeth to engage more smoothly, providing smoother rotation.

\begin{tabular}{|c|c|c|c|c|c|}
\hline & & & & \multicolumn{2}{|l|}{REFERENCE} \\
\hline \begin{tabular}{c|c}
\hline OLD PART & NEW PART \\
NO. & NO.
\end{tabular} & DESCRIPTION & QTY & INT & PAGE & ITEM \\
\hline B0703100 B0703101 & Development Unit: Ass'y & 1-1 & 3 & 87 & * \\
\hline A24730817 & Gear - 17Z & 2-2 & 3/S & 87 & 6 \\
\hline B0703180 & Gear: Development Roller: Z21: M=0.8 & 2-2 & 3/5 & 87 & 6 \\
\hline AB013786 7 & Gear - 18Z & & & & \\
\hline -B0703181 & Gear: Idler: Z23: M=0.8: Ass'y & 1-1 & 3/5 & 87 & 7 \\
\hline AB013788 & Gear - 23Z & & & & \\
\hline B0703184 & Gear: Idler: Z29: M=0.8: Ass'y & 1-1 & 3/5 & 87 & 8 \\
\hline AB013790 \({ }^{\text {a }}\) & Gear - 25Z & & & & \\
\hline -B0703186 & Gear: Transport Screw: Z31: M=0.8 & 1-1 & 3/5 & 87 & 9 \\
\hline A2473074 & Gear - 34Z & & 3/S & 87 & 10 \\
\hline -B0703183 & Gear: Paddle: Joint: Z42: M=0.8 & 1-1 & 3/5 & 87 & 10 \\
\hline
\end{tabular}

CAUTION: THE NUMBER OF TEETH ON THE GEARS HAS BEEN INCREASED, WHEN INSTALLING ANY OF THE NEW GEARS FOR THE FIRST TIME, IT IS NECESSARY TO INSTALL ALL GEARS TOGETHER AS A SET OR DAMAGE TO THE GEARS MAY OCCUR.

\section*{UNITS AFFECTED:}

All B070/B071 copiers manufactured after the serial numbers listed below will have the new style parts installed during production.
\begin{tabular}{|c|c|}
\hline MODEL NAME & SERIAL NUMBER \\
\hline Ricoh Aficio 2090 & \\
Savin 4090 \\
Gestetner 9002 \\
Lanier LD 090 & J7030500047 \\
\hline Ricoh Aficio 2105 & \\
Savin 40105 \\
Gestetner 10512 \\
Lanier LD 0105 & J7130500035 \\
\hline
\end{tabular}

\section*{INTERCHANGEABILITY CHART:}
\begin{tabular}{|c|l|c|l|}
\hline 0 & \begin{tabular}{l} 
OLD and NEW parts can be used in both OLD and \\
NEW machines.
\end{tabular} & 2 & \begin{tabular}{l} 
NEW parts CAN NOT be used in OLD machines. \\
OLD parts can be used in OLD and NEW machines.
\end{tabular} \\
\hline 1 & \begin{tabular}{l} 
NEW parts can be used in OLD and NEW machines. \\
OLD parts CAN NOT be used in NEW machines.
\end{tabular} & 3 & \begin{tabular}{l} 
OLD parts CAN NOT be used in NEW machines. \\
NEW parts CAN NOT be used in OLD machines.
\end{tabular} \\
\hline \(3 / S\) & \begin{tabular}{l} 
Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or \\
previously modified, use the new part numbers individually.
\end{tabular} \\
\hline
\end{tabular}

\section*{BULLETIN NUMBER：B070／B071－008}

07／24／2003

\section*{APPLICABLE MODEL：}

GESTETNER－9002／10512
LANIER－LD090／LD0105
RICOH－AFICIO 2090／2105
SAVIN－4090／40105

\section*{SUBJECT：PARTS CATALOG UPDATES}

\section*{GENERAL：}

The following parts updates are being issued for all B070／B071 Parts Catalogs．
－UPDATE 1：
AC Drive Board－The AC drive board has been changed to minimized the flow of over current through the board．

\begin{tabular}{|c|c|c|c|c|c|c|}
\hline & & & & & \multicolumn{2}{|l|}{REFERENCE} \\
\hline OLD PART NO． & NEW PART NO． & DESCRIPTION & QTY & INT & PAGE & ITEM \\
\hline A2945410 & & AC Drive Board & 1－0 & 1 & 145 & 6 \\
\hline & B0705410 & AC Control Board：Ass＇y & 0－1 & 1 & 145 & 6 \\
\hline
\end{tabular}

\section*{UNITS AFFECTED:}

All B070/B071 copiers manufactured after the serial numbers listed below will have the new style part installed during production.
\begin{tabular}{|c|c|}
\hline MODEL NAME & SERIAL NUMBER \\
\hline Ricoh Aficio 2090 & \\
Savin 4090 & Jestetner 9002 \\
Lanier LD 090 & \\
\hline \begin{tabular}{c} 
Ricoh Aficio 2105 \\
Savin 40105 \\
Gestetner 10512 \\
Lanier LD 0105
\end{tabular} & J71302000001 \\
\hline \multicolumn{2}{l}{}
\end{tabular}

\section*{- UPDATE 2:}

Insulating Sheet - An insulating sheet has been added to prevent contact between the control board bracket and the wire leads on the board.

\begin{tabular}{|c|c|l|c|c|c|c|}
\hline \begin{tabular}{c} 
OLD PART \\
NO.
\end{tabular} & \begin{tabular}{c} 
NEW PART \\
NO.
\end{tabular} & \multicolumn{1}{|c|}{ DESCRIPTION } & REFERENCE \\
\hline B0706865 & & Bracket: Control Board: Sub Ass'y & QTY & INT & PAGE & ITEM \\
\hline & B0706864 & Bracket: Control Board: Sheet Ass'y & \(1-0\) & 1 & 153 & 28 \\
\hline & B0706868 & Insulating Sheet: Large & 1 & 153 & 28 \\
\hline & B0706869 & Insulating Sheet: Small & \(0-1\) & -- & 153 & \(14^{*}\) \\
\hline
\end{tabular}

\footnotetext{
* DENOTES NEW ITEM NUMBER
}

\section*{UNITS AFFECTED:}

All B070/B071 copiers manufactured after the serial numbers listed below will have the new style parts installed during production.
\begin{tabular}{|c|c|}
\hline MODEL NAME & SERIAL NUMBER \\
\hline Ricoh Aficio 2090 & \\
Savin 4090 & J7030400001 \\
Gestetner 9002 & \\
\hline Lanier LD 090 & \\
Ricoh Aficio 2105 & \\
Savin 40105 \\
Gestetner 10512 & J7130400031 \\
\hline
\end{tabular}
- UPDATE 3:

Transfer Unit Gears - The following gears have been changed to minimize vibration from the transfer belt unit drive section.

\section*{SECTION 43. TRANSFER BELT UNIT 1 (B070/B071); PAGE 101}


\section*{SECTION 44. TRANSFER BELT UNIT 2 (B070/B071); PAGE 103}


SECTION 59. DRIVE SECTION 2 (B070/B071); PAGE 133

\begin{tabular}{|c|c|c|c|c|c|c|}
\hline & & & & & \multicolumn{2}{|l|}{REFERENCE} \\
\hline OLD PART NO. & NEW PART NO. & DESCRIPTION & QTY & INT & PAGE & ITEM \\
\hline A2943871 & A2933871 & Gear - 20Z & 1-1 & 0 & 101 & 11 \\
\hline AB014104 & & Cleaning Roller Gear & 1-1 & 3 & & 9 \\
\hline & AB014175 & Gear - 50Z & 1-1 & 3 & 101 & 9 \\
\hline AB014093 & & Cleaning Roller Gear & 1-1 & 3 & 103 & 22 \\
\hline & AB014176 & Cam Gear - 37 Z & 1-1 & 3 & 103 & 22 \\
\hline A2941141 & & Gear - \(24 Z\) & 1-1 & 1 & 133 & 10 \\
\hline & - AB014163 & Drive Gear - Transfer Belt & & & & \\
\hline
\end{tabular}

\section*{UNITS AFFECTED:}

All B070/B071 copiers manufactured after the serial numbers listed below will have the new style parts installed during production.
\begin{tabular}{|c|c|}
\hline MODEL NAME & SERIAL NUMBER \\
\hline Ricoh Aficio 2090 & \\
Savin 4090 & J7030300209 \\
Gestetner 9002 & \\
\hline Lanier LD 090 & \\
Ricoh Aficio 2105 & \\
Savin 40105 & \\
Gestetner 10512 & Lanier LD 0105
\end{tabular}

\section*{INTERCHANGEABILITY CHART:}
\begin{tabular}{|c|l|c|l|}
\hline 0 & \begin{tabular}{l} 
OLD and NEW parts can be used in both OLD and \\
NEW machines.
\end{tabular} & 2 & \begin{tabular}{l} 
NEW parts CAN NOT be used in OLD machines. \\
OLD parts can be used in OLD and NEW machines.
\end{tabular} \\
\hline 1 & \begin{tabular}{l} 
NEW parts can be used in OLD and NEW machines. \\
OLD parts CAN NOT be used in NEW machines.
\end{tabular} & 3 & \begin{tabular}{l} 
OLD parts CAN NOT be used in NEW machines. \\
NEW parts CAN NOT be used in OLD machines.
\end{tabular} \\
\hline \(3 / S\) & \begin{tabular}{l} 
Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or \\
previously modified, use the new part numbers individually.
\end{tabular} \\
\hline
\end{tabular}

\section*{TECHNICAL SERVICE BULLETIN}

BULLETIN NUMBER：B070／B071－009
07／25／2003
APPLICABLE MODEL：
GESTETNER－9002／10512
LANIER－LD090／LD0105
RICOH－AFICIO 2090／2105
SAVIN－4090／40105

SUBJECT：FILE FORMAT CONVERTER ADDS CAPTURE FUNCTION

GENERAL：
B070／B071 mainframes require file format converter to capture directly to eCabinet．

\section*{NECESSARY HARDWARE CONFIGURATIONS：}
－Basic：Capture from Copier and Document Server modes
－Printer／Scanner：Capture from Printer，Scanner \＆Copier and Document Server modes
\begin{tabular}{|l|c|c|}
\hline & Basic & Printer／Scanner \\
\hline Mainframe & \(\checkmark\) & \(\checkmark\) \\
\hline File Format Converter & \(\checkmark\) & \(\checkmark\) \\
\hline 256Mb Memory Option & & \(\checkmark\) \\
\hline Printer／Scanner Option & & \(\checkmark\) \\
\hline
\end{tabular}

NECESSARY FIRMWARE UPGRADES FOR MAINFRAMES／OPTIONS：
\begin{tabular}{|l|c|c|c|}
\hline Firmware＊（Standard） & Version & Basic & Printer／Scanner \\
\hline System & 4.01 .4 & \(\checkmark\) & \(\checkmark\) \\
\hline BCU & 4.011 & \(\checkmark\) & \(\checkmark\) \\
\hline Language & 2.99 & \(\checkmark\) & \(\checkmark\) \\
\hline LCDC & 2.09 & \(\checkmark\) & \(\checkmark\) \\
\hline NIB & 4.15 & \(\checkmark\) & \(\checkmark\) \\
\hline Web System & 2.00 & \(\checkmark\) & \(\checkmark\) \\
\hline Net File & 3.07 .02 & \(\checkmark\) & \(\checkmark\) \\
\hline Web Doc Box & 1.08 & \(\checkmark\) & \(\checkmark\) \\
\hline Scanner & 2.00 & & \(\checkmark\) \\
\hline Printer & 1.13 & & \(\checkmark\) \\
\hline
\end{tabular}
＊All the firmware versions listed above must be installed as a set．

\section*{TECHNICAL SERVICE BULLETIN}

BULLETIN NUMBER: B070/B071 - 009 REISSUE \(\star\)
08/08/2003

\section*{APPLICABLE MODEL:}

GESTETNER - 9002/10512
LANIER - LD090/LD0105
RICOH - AFICIO 2090/2105
SAVIN - 4090/40105

\section*{SUBJECT: ECABINET CAPTURE FUNCTION}

\section*{GENERAL:}

B070/B071 mainframes require file format converter to capture directly to eCabinet from copier, document server, and printer mode. The file format converter is a hardware option for the copier which must be purchased separately.

\section*{1. Overview of the Capture Function:}

Once the B070/B071 series is configured for the eCabinet, the Capture function enables users to store copier, scanner and printer documents there with such ID attributes as Owner, Name and Date. A web browser is used from the client PC to access documents stored in the eCabinet.

Even while the B070/B071 series is engaged in Capture file transfer, it is still possible to use all original B070/B071 series functions (copier, printer, Document Server). In addition, note that the Document Server can be used in place of the eCabinet in the setup shown below.


\section*{2. HARDWARE CONFIGURATIONS:}
- Basic: Capture from Copier and Document Server modes
- Printer/Scanner: Capture from Printer, Scanner \& Copier and Document Server modes
\begin{tabular}{|l|c|c|}
\hline & Basic & Printer/Scanner \\
\hline Mainframe & \(\checkmark\) & \(\checkmark\) \\
\hline File Format Converter & \(\checkmark\) & \(\checkmark\) \\
\hline 256Mb Memory Option & & \(\checkmark\) \\
\hline Printer/Scanner Option & & \(\checkmark\) \\
\hline
\end{tabular}

\section*{3. FIRMWARE UPGRADES FOR MAINFRAMES/OPTIONS:}
\begin{tabular}{|l|c|c|c|}
\hline Firmware* (Standard) & Version & Basic & Printer/Scanner \\
\hline System & 4.01 .4 & \(\checkmark\) & \(\checkmark\) \\
\hline BCU & 4.011 & \(\checkmark\) & \(\checkmark\) \\
\hline Language & 2.99 & \(\checkmark\) & \(\checkmark\) \\
\hline LCDC & 2.09 & \(\checkmark\) & \(\checkmark\) \\
\hline NIB & 4.15 & \(\checkmark\) & \(\checkmark\) \\
\hline Web System & 2.00 & \(\checkmark\) & \(\checkmark\) \\
\hline Net File & 3.07 .02 & \(\checkmark\) & \(\checkmark\) \\
\hline Web Doc Box & 1.08 & \(\checkmark\) & \(\checkmark\) \\
\hline Scanner & 2.00 & & \(\checkmark\) \\
\hline Printer & 1.13 & & \(\checkmark\) \\
\hline
\end{tabular}
* All the firmware versions listed above must be installed as a set.

\section*{4. SP SETTINGS:}

\section*{SP Modes}

\section*{SP5-836-1 (Capture Function).}

Enables/disables the Capture function.
When enabled, the setting called capture server IP address shows up under user tools, system settings, file transfer.

0: Disabled (default) 1: Enabled

\section*{UP Mode:}

Users need to perform the necessary settings (Capture server IP address, etc.) from inside:
[Use Tools/Counter] \(\rightarrow\) [System Settings]
1. On the copier go to; user tools, system settings, file transfer, Capture server IP address, to enter eCabinet IP address.
2. On the copier go to; user tools, system settings, key op tools, next button, capture priority and set to customer's preferences.
3. On the copier go to; user tools, system settings, timer settings and set to customer's preference.

\section*{EXPLANATION:}
- "OFF": Normal mode - eCabinet window does not pop up and there is no capture to eCabinet.
- Default "OFF": - eCabinet window pops up, select ecab user, and choose capture "ON" or OFF".
- Default "ON": - eCabinet window pops up, user must be selected, and capture mode is "ON" or OFF".
- "ON": - eCabinet window pops up, user must be selected, and capture mode is "ON" and cannot be changed.
- "ON" (NO DISPLAY): - eCabinet window and capture happens behind the scenes. Default user setup on.

\section*{Example:}

\section*{Problem:}

The customer wants to make copies and send an electronic copy to the eCabinet, but the customer does not want every copy to be sent to the eCabinet.

\section*{Solution:}

The capture priority for copier mode should be set to Default "ON."

\section*{TO CONFIGURE THE ECABINET:}
1. Install the eCabinet, and make sure that it has the same IP address that you used when you set the Capture Server IP address on the copier.
2. From a web browser, log in to the eCabinet as adminNOA.
3. On the toolbar, click Settings.

The Settings page appears.
4. Click Network and Device Configuration.

The Network and Device Configuration page appears.
5. Click Copiers.

The Copiers page appears.
6. Click New.

The Copiers - New Copier Information page appears.
7. Enter the Copier IP Address.
8. Click Merge eCabinet user list into user list on copier to keep any existing users that are on the copier.

NOTE: Step 8 is not necessary if using eCabinet v3.
9. Click Save.

NOTE 1: The MFP requires its own device name to be resolved on the DNS server. If it cannot resolve its own name, the FTP process to the eCabinet may be rejected.

NOTE 2: eCabinet Software version 2.1 or later is required.

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B070/B071-010
07/31/2003

\section*{APPLICABLE MODEL:}

GESTETNER - 9002/10512
LANIER - LD090/LD0105
RICOH - AFICIO 2090/2105
SAVIN - 4090/4105

\section*{SUBJECT: SERVICE MANUAL - INSERT}

The Service Manual pages listed below must be replaced with the pages supplied.

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\subsection*{1.12.9 MLB (B609)}

\section*{Accessories}

\section*{Description \\ Q'ty}
1. MLB Board.............................................................................. 1
2. Instructions ............................................................................. 1

\section*{Installation}

1. Make sure the following firmware versions are already installed:
> LCDC (NA): version 2.09 (B0705374) or later
> BIOS: VK02EL00O (B0705742D) or later
> Printer: version 1.13 (B5806515) or later
> Scanner: version 2.00 (B5806520) or later
> WebSystem: version 2.00 (B0705757) or later
2. Switch the machine OFF.
3. Remove the cover \([A]\) of Slot B1 ( \(\hat{\xi}^{3} \times 2\) ).
4. Insert the MLB board \([B]\) into Slot B1 and fasten it with the screws.
5. Switch the machine ON.
6. Install the following firmware together as a set:
- NCS (NIB): (B0705755B) v.4.15
- Netfile: (B0705756B) v3.07.2
- System: (B0705754B) v4.01.4
- Webdocbox: (B0705758B) v1.08

Important: The function will not work properly unless all versions above are installed together.
7. After successfully installing the firmware above, turn the main switch OFF/ON.
8. Set SP5836-003 to a value of 1 , which will enable the print back-up feature.
9. Set the following SP modes to the values shown:
\begin{tabular}{||c|c||c|c||}
\hline \hline SP No. & Setting & SP No. & Setting \\
\hline SP5-836 001 & 0 & SP5-836 085 & 1 \\
\hline SP5-836 002 & 0 & SP5-836 086 & 2 \\
\hline SP5-836 072 & 0 & SP5-836 091 & 50 \\
\hline SP5-836 073 & 0 & & \\
\hline
\end{tabular}
10. Set the following SP modes as necessary, in accordance with the customer's needs.
\begin{tabular}{|c|c|c|}
\hline SP No. & Setting & Comments \\
\hline SP5-836 094 & 2 & \begin{tabular}{l}
Sets JPEG2000 (J2K) as the file format for documents copied from the Document Server to Palm2. \\
Note: Files backed up to Palm2 in J2K format cannot be edited by other software applications.
\end{tabular} \\
\hline & 0 & \begin{tabular}{l}
Sets TIFF as the file format for documents copied from the Document Server to Palm2. \\
Note: Use this setting for customers who wish to use other software applications to edit or apply OCR or other processing to backed-up files, and who do not mind the loss in image quality.
\end{tabular} \\
\hline SP-5836 098 & 1 & \begin{tabular}{l}
Applies a correction for dots, rear-side image catching and background to files copied to Palm2, in order to minimize the size of the file down to its essential parts. \\
Note: This is applied to both J2K and TIFF files, but is particularly useful for customers who wish to copy J2K documents quickly, as they are normally larger, and who do not mind the slight loss in image reproduction.
\end{tabular} \\
\hline
\end{tabular}
\begin{tabular}{||c|c|l||}
\hline SP No. & Setting & \multicolumn{1}{c|}{ Comments } \\
\hline & 0 & \begin{tabular}{l} 
Does not apply the above correction to files copied to \\
Palm2. \\
Note: Use this setting for customers who wish to preserve \\
the original reproduction level, especially with J2K files, and \\
do not mind the time and disk space required for copying.
\end{tabular} \\
\hline
\end{tabular}

\section*{\(\Rightarrow 1.13\) KEY CARD COUNTER}

\subsection*{1.13.1 ACCESSORIES}
Description ..... Q'ty
1. Key Counter Cover ..... 1
2. Key Counter Plates ..... 2
3. Key Counter Bracket ..... 1
4. Machine screw M3 x 6 ..... 1
5. Shoulder Screw M3 x 4 ..... 1
6. Tapping Screws M4 x 8 ..... 3
7. Machine Screws M3 x 20 ..... 2
8. External Screw M3 x 20 ..... 1
9. Machine Screw (Flathead) M4 x 16 ..... 1
10. Extension Cable (for LCT Installation) ..... 1
11. Extension Cable Clamps (for LCT Installation) ..... 6

\section*{\(\Rightarrow\) 1.13.2 INSTALLATION}

\section*{Assembling the Key Counter}

1. While holding the key counter plates \([A]\) inside the key counter bracket \([B]\), insert the key counter holder [C]
2. Fasten the key counter holder [C] through the bracket plate to the counter plates \([A]\) ( \(\hat{\xi}^{2} \times 2\) ).
3. Fasten the cover \([D]\) to the key counter bracket \([B]\left(\mathcal{S}^{2} \times 2\right)\).

\section*{\(\Rightarrow\) Attaching the Key Counter to the Copier}

Attach the key counter to the copier if the LCT is not installed.

1. On the right side of the copier, remove the small cover [A].
2. Remove the jumper connector \([B]\).
3. Fasten the shoulder screw [C] to the side of the machine.
4. Connect the key count assembly [D].
5. Fit the keyhole of the key counter bracket [E] over the head of the shoulder screw, then slide it back.
6. Fasten the key counter assembly [F] to the copier (
7. Do the User Tool and SP mode settings described at the end of this section.

\section*{\(\Rightarrow\) Attaching the Key Counter to the LCT}

1. On the LCT right cover, remove the cover [A] (
2. Remove the LCT right cover \([B]\left(\hat{\xi}^{(1)} \times 6\right)\).
3. Remove the LCT rear cover [C] ( \(\hat{\xi} \times 3\) ).
4. On the right side of the LCT, attach 2 clamps [D].
5. Attach the extension cable [E] to the 2 clamps.
\(\Rightarrow\)

6. On the rear side of the LCT, attach 2 clamps [A].
7. Route the cable \([B]\) as shown.
8. On the left side of the LCT, attach 2 clamps [C].
9. Route the cable [D] as shown.
10. If the cable from the right cover is too long, loop it [E] to make it shorter.


11. Re-attach the right LCT cover.
12. Fasten the shoulder screw \([A]\) to the side of the LCT.
13. Connect the key count assembly [B].
14. Fit the keyhole of the key counter bracket [C] over the head of the shoulder screw, then slide it back.
15. Fasten the key counter assembly [D] to the LCT ( \(\hat{\beta}^{(1)} \times 1\) ).
16. On the right side of the copier, remove the small cover [E].
17. Remove the jumper connector [F].
\(\Rightarrow\)

18. Connect the extension cable [A] from the LCT to the copier.
19. Dock the LCT to the copier.

\section*{User Tool and SP Mode Settings}
1. Instruct the key operator to enable the key counter with the User Tools setting: User Tools> System Settings> Key Counter Management> then click the ON button for the items you want to enable for the counter (Copier, Document Server, Printer, Scanner).
2. Enter the SP mode and set SP5113 (Optional Counter Type) to 002 (Key Card (Countdown Type)) or 005 (MF Key Card).
NOTE: If the counter is a countdown type, you must select 002.
3. Enter the SP mode and set SP5121 to "0" (Paper Feed Count) or "1" (Paper Exit Count) to determine whether the counter counts at paper feed-in or a paper exit.

\section*{TECHNICAL SERVICE BULLETIN}

\section*{BULLETIN NUMBER：B070／B071－011}

08／08／2003

\section*{APPLICABLE MODEL：}

GESTETNER－9002／10512
LANIER－LD090／LD0105
RICOH－AFICIO 2090／2105
SAVIN－4090／40105

\section*{SUBJECT：AUTO PROCESS CONTROL SUMMARY}

\section*{SCOPE：}

The following is a summary of Auto Process Control on the B070／B071．Please note that the information supplied in this TSB is also relevant for the A294／A295／A294II／A295II．

Please note the following abbreviations are used throughout this bulletin：
\begin{tabular}{|l|l|}
\hline Vsp & ID sensor output when reading the solid image areas of the ID sensor pattern． \\
\hline Vsg & ID sensor output when reading the bare drum around the ID sensor pattern． \\
\hline Vt & TD sensor output \\
\hline VL & \begin{tabular}{l} 
Drum potential sensor output when reading the solid image exposed areas on the \\
drum．
\end{tabular} \\
\hline VH & Drum potential sensor output when reading the halftone exposed areas on the drum． \\
\hline VD & \begin{tabular}{l} 
Drum potential sensor output when reading the unexposed areas on the charged \\
drum
\end{tabular} \\
\hline VG & Grid voltage（charge voltage） \\
\hline VB & Development bias \\
\hline Vref & The threshold value used for supplying toner to the development unit． \\
\hline
\end{tabular}

\section*{GENERAL：}

The purpose of Auto Process Control is to calibrate the ID and drum potential sensors and update the values of Vref，VG and LD light intensity so that the machine is able to maintain the proper image density during normal operation．

\section*{Auto Process Control: B070/B071}

NOTE: The following explanation applies to the B070/B071 and A294/A295/A294II/A295II, except for the values that differ from model to model mentioned in Section 4.

\section*{(1) EXECUTION CONDITIONS}

There are three separate cases in which the machine performs Auto Process Control:
1. When it is executed manually from SP2962 (Auto Process Control Execution).
2. When SP3901-001 (Auto Process Control Setting) has been set to ON, and the fusing temperature is detected at \(100^{\circ} \mathrm{C}\) or less at power up.

NOTE: If the fusing temperature is higher than \(100^{\circ} \mathrm{C}\) at this time, the previous auto process control data is used.
3. When all of the following conditions have been met:
a.) SP2966 (Periodical Auto Process Control) has been set to ON
b.) 24 hrs has passed since the last time Auto Process Control was performed
c.) The main power has been ON during this 24 hr period
* Auto Process Control is then performed at the end of the job following the 24 hr mark.
(2) WHAT HAPPENS DURING AUTO PROCESS CONTROL

Auto Process Control is performed in the following order (Steps 1-5).
\begin{tabular}{|c|c|c|c|c|c|c|c|}
\hline Step & Item & Purpose & What Happens & SC Issued If Fails & Related Display SP & Reference Manual Page & Comments \\
\hline 1 & Drum potential sensor calibration & To calibrate the drum potential sensor so that it will correctly detect VD and VH in Steps 3 and 4. & The machine applies -200 V then 700 V to the OPC surface, and the drum potential sensor takes readings both times. & SC310, 311 & SP3902-7: VM200
SP3902-8: VM700 & P6-67 & \\
\hline 2 & ID sensor adjustment & To adjust Vsg to within the target range for Vref calculation in Step 5. & Adjusts Vsg to within \(4 \pm 0.2 \mathrm{~V}\). & SC353, 354 & SP3001-1: ID Sensor PWM Setting SP3103-2: Vsg Initial & P6-68 & \\
\hline 3 & VG adjustment & \begin{tabular}{l}
To determine the VG (grid voltage) that will be used during copying\printing. \\
This is necessary as the sensitivity of the OPC surface can change when not used for an extended period, and because the charge casing and grid plate can become dirtied.
\end{tabular} & Adjusts VG until VD falls within \(800 \pm 20 \mathrm{~V}\). & \[
\begin{aligned}
& \hline \text { SC312, } \\
& 313,315
\end{aligned}
\] & \[
\begin{aligned}
& \text { SP3902-2: VD } \\
& \text { SP3902-4: VG } \\
& \text { SP3902-9: VD } \\
& \text { Correction }
\end{aligned}
\] & P6-68 & VD target value is the value of SP2001-7 (default: 800), plus 50 V when VD correction is applied. (See Note below) \\
\hline
\end{tabular}
\begin{tabular}{|l|l|l|l|l|l|c||}
\hline \hline Step & \multicolumn{1}{|c|}{ Item } & \multicolumn{1}{c|}{ Purpose } & \multicolumn{1}{c|}{ What Happens } & \begin{tabular}{c} 
SC Issued \\
If Fails
\end{tabular} & \begin{tabular}{l} 
Related Display \\
SP
\end{tabular} & \begin{tabular}{c} 
Reference \\
Manual Page
\end{tabular} \\
\hline 4 & \begin{tabular}{l} 
LD power \\
adjustment
\end{tabular} & \begin{tabular}{l} 
Co determine the \\
LD light intensity \\
that will be used \\
for halftone areas \\
during \\
copying/printing.
\end{tabular} & \begin{tabular}{l} 
Adjusts the LD light intensity until VH \\
falls within 260 \(\pm 20 \mathrm{~V}\).
\end{tabular} & SC314, 316 & \begin{tabular}{l} 
SP3902-3: VH \\
SP3902-5: LD \\
Power (Correction)
\end{tabular} & P6-68 \\
\hline 5 & \begin{tabular}{l} 
ID pattern \\
creation, \\
detection
\end{tabular} & \begin{tabular}{l} 
To update Vref \\
for accurate toner \\
density control.
\end{tabular} & \begin{tabular}{l} 
An ID sensor pattern is created on the \\
drum surface (exposed and developed). \\
The ID sensor then checks the image \\
density of the developed areas \\
(output=Vsp) and bare drum \\
(output=Vsg), and the TD sensor \\
checks the toner concentration in the \\
developer (output=Vt). Vref is then \\
recalculated based on these values.
\end{tabular} & \begin{tabular}{l} 
SC350, \\
351,352, \\
340
\end{tabular} & \begin{tabular}{l} 
SP3902-6: V ID \\
SP3103-1: Vsg \\
SP3103-3: Vsp \\
SP2223: Vt Display
\end{tabular} & P6-69 \\
\hline
\end{tabular}

\section*{NOTE ON VD CORRECTION:}

As the development sleeve accumulates toner over time, the gap between VD and VB decreases, which makes it easier for dirty background to occur. To compensate for this, the machine increases the target VD value to \(-850 \pm 20 \mathrm{~V}\) when the number of copies exceeds the value set with SP3903-1: VD Correction Counter, (default: 200K). As a result, VD increases and the VD-VB gap is maintained. This value is cleared when the developer is replaced and initialized.

\section*{(3) CONFIRMING THE SUCCESS OR FAILURE OF PROCESS CONTROL}

Use SP3902-1 (Process Control Data Display - Auto Process Control) to
determine whether automatic process control has succeeded or failed:
- If this SP returns a " 0 " (OFF), auto process control has failed.
- If this SP returns a " 1 " (ON), auto process control has succeeded

\section*{(4) VALUES THAT DIFFER AMONG MODELS}

Please note the following differences in the target values for process control parameters:
\begin{tabular}{|l|c|c|c|}
\hline \multicolumn{1}{|c|}{ SP Mode } & A294/A295 & A294II/A295II & \\
\hline SP2001-7: VD & -970 & -850 & \\
\hline SP2201-1: VB & -530 & -650 & -650 \\
\hline \begin{tabular}{l} 
SP2201-3: Development bias for OHP \\
transparencies
\end{tabular} & -530 & -800 \\
\hline \begin{tabular}{l} 
SP2201-4: VBp (development bias used \\
when creating the ID sensor pattern)
\end{tabular} & -280 & -280 & -400 \\
\hline Target VH & \(-290 \pm 20\) & \(-290 \pm 20\) & -240 \\
\hline
\end{tabular}

BULLETIN NUMBER: B070/B071-012
09/11/2003

\section*{APPLICABLE MODEL:}

GESTETNER - 9002/10512
LANIER - LD090/LD0105
RICOH - AFICIO 2090/2105
SAVIN - 4090/4105

\section*{SUBJECT: NVRAM - ZERO COUNTER}

\section*{GENERAL:}

The NVRAM - Zero Counter was omitted in your B070/B071 Parts Catalog. Please update your parts catalog with the following information. The following part updates are being issued for all B070/B071 Parts Catalogs.

\begin{tabular}{|c|c|c|c|c|}
\cline { 3 - 6 } & \multicolumn{2}{c|}{ REFERENCE } \\
\hline PART NUMBER & DESCRIPTION & QTY & PAGE & ITEM \\
\hline B0709590 & NVRAM - Zero Counter & 1 & 153 & 16 * \\
\hline
\end{tabular}
* DENOTES NEW ITEM NUMBER

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B070/B071-013
10/07/2003

\section*{APPLICABLE MODEL:}

GESTETNER - 9002/10512
LANIER - LD090/LD0105
RICOH - AFICIO 2090/2105
SAVIN - 4090/40105

\section*{SUBJECT: SERVICE MANUAL - INSERT}

The Service Manual pages listed below must be replaced with the pages supplied.

The revised areas have been highlighted by an arrow \(\Rightarrow\).

PAGES:
- 5-67

Updated Information (Printer Service Table)
5.2.2 PRINTER SERVICE TABLE


\section*{TECHNICAL SERVICE BULLETIN}

\section*{BULLETIN NUMBER: B070/B071-014}

10/18/2003

\section*{APPLICABLE MODEL:}

GESTETNER - 9002/10512
LANIER - LD090/LD0105
RICOH - AFICIO 2090/2105
SAVIN - 4090/40105

\section*{SUBJECT: LD UNIT SPACER REPLACEMENT}

\section*{GENERAL:}

This bulletin discusses the LD unit spacer replacement procedure. The table below shows the P/N (location) and color for the four spacers attached to the bottom of the LD unit.
- Whenever replacing the LD unit, please be sure and remove the spacers from the old unit and attach them to the same positions on the new unit.
- However if any of the spacers are misplaced or the positions/quantities of spacers becomes uncertain during unit replacement, follow the procedure below to realign the LD unit and eliminate variations in image density.
\begin{tabular}{|l|l|l|l|l|l|}
\hline Part No & Description & Thickness & Color & Page & Item \\
\hline B0701921 & Spacer: Laser Diode Unit: 25 & \(25 \mu \mathrm{~m}\) & Dark brown & 53 & 44 \\
\hline B0701922 & Spacer: Laser Diode Unit: 50 & \(50 \mu \mathrm{~m}\) & Black & 53 & 44 \\
\hline B0701923 & Spacer: Laser Diode Unit: 75 & \(75 \mu \mathrm{~m}\) & Clear & 53 & 44 \\
\hline B0701924 & Spacer: Laser Diode Unit: 100 & \(100 \mu \mathrm{~m}\) & Milk-white & 53 & 44 \\
\hline
\end{tabular}

\section*{LD UNIT ADJUSTMENT PROCEDURE}

Please perform the following if the spacers attached to the bottom of the LD unit are misplaced or their original positions become unclear at LD unit replacement. This adjustment is necessary to ensure ID variations along the main scan direction do not occur, which result from beam pitch variations along the sub scan direction.

IMPORTANT: Always make sure to turn the machine main power OFF before inserting the spacers into the LD unit.
1. Print out the SP2902-3 No. 22 test pattern without any Mylar spacers attached.

Perform the following two steps until the ID variation along the main scan direction is not visible on the test chart:
2. Attach one \(100 \mu \mathrm{~m}\) (milk white) spacer in the rear of the unit. Print out the pattern again and compare with the sample from Step 1.
- If the ID variation along the main scan direction decreases (improves) but is still visible, attach another \(100 \mu \mathrm{~m}\) spacer in the same position.
- If the ID variation gets worse, go on to Step 3.
3. Attach one \(100 \mu \mathrm{~m}\) spacer in the front of the unit. Print out the pattern again and compare with the sample from Step 2.
- If the ID variation along the mainscan direction decreases (improves) but is still visible, attach another \(100 \mu \mathrm{~m}\) spacer in the same position.


TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER：B070／B071－015
10／18／2003
APPLICABLE MODEL：
GESTETNER－9002／10512
LANIER－LD090／LD0105
RICOH－AFICIO 2090／2105
SAVIN－4090／40105

\section*{SUBJECT：SERVICE MANUAL－INSERT}

The Service Manual pages listed below must be replaced with the pages supplied．

The revised areas have been highlighted by an arrow \(\Rightarrow\) ．

PAGES：
－3－36 through 3－38
Updated Information（Laser Unit）

\subsection*{3.6.3 LD UNIT}

\section*{\(\triangle\) WARNING}

Turn off the main power switch and unplug the machine before attempting this procedure. Laser beams can seriously damage the eyes.

NOTE: To avoid damaging the board with static electricity, never touch the printed circuit board.
1. Exposure glass (-3.5.1)

3. LD unit \([B]\) (雨 \(\times 2\), 卧 \(\times 5\) ).
- Before removal, note how the LD unit is inserted into the 4 seams of the optical housing (the thickness is different according to color). This positioning is used for fine adjustment of the LD unit position. Make sure that you install the LD at the same position.
- Be sure to remove the mylar from the underside of the old LD unit
 and attach it to the new one.
4. After installing the LD unit, execute SP2115 001~006 to input the pitch settings for the main scan beams.
NOTE: The correct settings for these SP codes are printed on a decal attached to the mounting bracket [C] of the LD unit.
```

<LD Unit Lot No.>
SP2115 001/SP2115 002/SP2115 003
PS2115 004/SP2115 005/SP2115 006

```

The 6 numbers printed on the label correspond to the correct settings of the SP codes shown in the diagram above.

Here is an example:
\[
\begin{aligned}
& -10 /-2 /+10 \\
& -100 /+0 /+100
\end{aligned}
\]

To enter these numbers, you would execute:
\begin{tabular}{|c|c|c|}
\hline SP2115 001 & *(1)(0) & - Press \(\overbrace{}^{*}\) to enter the minus sign. \\
\hline SP2115 002 & *(2) \({ }^{(1)}\) & - Press \# after each entry. \\
\hline SP2115 003 & (1) 0 \# & - A key press is not required for the plus sign. \\
\hline SP2115 004 & *(1)(0) & \\
\hline SP2115 005 & (0) & \\
\hline SP2115 006 & (1)(0) 0 ( & \\
\hline
\end{tabular}

CAUTION: This example is for instructional purposes only. When you do this adjustment, you must enter the numbers printed on the label attached to the LD unit.
5. Do SP2962 (Auto Process Control Execution).
6. Make some test copies and check that the magnification is correct. If not correct, please do the printer copy adjustment. (-3.17)

\section*{\(\Rightarrow\) LD Unit Adjustment Procedure}

Please perform the following if the spacers attached to the bottom of the LD unit are misplaced or their original positions become unclear at LD unit replacement. This adjustment is necessary to ensure ID variations along the main scan direction do not occur, which result from beam pitch variations along the sub scan direction.

IMPORTANT: Always make sure to turn the machine main power OFF before inserting the spacers into the LD unit.
1. Print out the SP2902-3 No. 22 test pattern without any Mylar spacers attached.

Using the illustration for LD Unit 3.6.3, perform the following two steps until the ID variation along the main scan direction is not visible on the test chart:
2. Attach one \(100 \mu \mathrm{~m}\) (milk white) spacer in the rear of the unit. Print out the pattern again and compare with the sample from Step 1.
- If the ID variation along the main scan direction decreases (improves) but is still visible, attach another \(100 \mu \mathrm{~m}\) spacer in the same position.
- If the ID variation gets worse, go on to Step 3.
3. Attach one \(100 \mu \mathrm{~m}\) spacer in the front of the unit. Print out the pattern again and compare with the sample from Step 2.
- If the ID variation along the mainscan direction decreases (improves) but is still visible, attach another \(100 \mu \mathrm{~m}\) spacer in the same position.
NOTE: Refer to Technical Service Bulletin B070/B071 - 014 for more information.

\subsection*{3.6.4 POLYGON MIRROR MOTOR}


NOTE: To avoid damaging the polygon motor, switch the machine off and wait 3 minutes to allow the motor to stop rotating before removing it.
1. Turn off the main power switch and unplug the machine.
2. Exposure glass (-3.5.1)
3. Lens block cover and lens block. (-3.6.2)

NOTE: You do not need to remove the lens block completely. Lift it gently and move it to the right.

5. Polygon mirror motor \([B]\left(\hat{8} \times 3\right.\), 気 \(\|^{l} \times 1\) ).

NOTE: 1) When reinstalling, make sure that the polygon mirror opening faces the right.
2) Never touch the glass surface of the polygon mirror motor with bare hands.
\(\Rightarrow 7\). After reassembly, do the scanner and printer copy adjustments.

TECHNICAL SERVCE BULLEIIN

BULLETIN NUMBER: B070/B071-016
11/14/2003
APPLICABLE MODEL:
GESTEINER - 9002/10512
LANIER - LD090/LD0105
RICOH - AFICIO 2090/2105
SAMN - 4090/40105

\section*{SUBJECT: SERVICE MANUAL - INSERT}

The Service Manual pages listed below must be replaced with the pages supplied.

An arrow has highlighted the revised areas \(\Rightarrow\).

PAGES:
- 5-54

Updated Information (SP6120 STAPLE JOGGER ADJUSTMENT)
\begin{tabular}{|c|c|c|c|}
\hline SP & & Number/Name & Function/[Setting] \\
\hline 6119 & \multicolumn{2}{|l|}{Punch Function Enabled (Thick Paper)} & \begin{tabular}{l}
Determines whether punch mode is enabled in thick paper mode. \\
[ \(0 \sim 1 / 0 / 1\) ] \\
0 : Disabled \\
1: Enabled
\end{tabular} \\
\hline \multirow[t]{12}{*}{6120} & \multicolumn{2}{|l|}{Staple Jogger Adjustment} & \\
\hline & 001 & A3 (Lengthwise) & \multirow[t]{11}{*}{\begin{tabular}{l}
Adjusts the staple jogger positions for each paper size. The higher the setting, the narrower the jogger span.
\[
[-1.5 \sim+1.5 / 0 / 0.5 \mathrm{~mm}]
\] \\
Firmware requirements \\
The following firmware combinations are required to activate the SP modes: \\
- BCU (B0705254A) 4.01.1 or later \\
- GW (B0705754A) 3.04.1 or later \\
- EP- ROM (B4685132 or later)
\end{tabular}} \\
\hline & 002 & B4 (Lengthwise) & \\
\hline & 003 & A4 (Lengthwise) & \\
\hline & 004 & A4 (Sideways) & \\
\hline & 005 & B5 (Lengthwise) & \\
\hline & 006 & B5 (Sideways) & \\
\hline & 007 & DLT (Lengthwise) & \\
\hline & 008 & LG (Lengthwise) & \\
\hline & 009 & LT SEF (Lengthwise) & \\
\hline & 010 & LT LEF (Sideways) & \\
\hline & 011 & Other & \\
\hline 6121 & \multicolumn{2}{|l|}{Staple Jogging Repeat Setting} & \begin{tabular}{l}
Determines whether jogging is executed once or twice for each sheet.
\[
[1 \sim 2 / 1 / 1]
\] \\
1: Once \\
2: Twice \\
This SP applies to the B478 finisher only.
\end{tabular} \\
\hline 6902 & Fold & Position Adjustment & \begin{tabular}{l}
Use the 10-key pad to adjust the staple position in center folding. \\
\([-3.5 \sim+3.5 / 0 / 0.5 \mathrm{~mm}]\) \\
Use the "0/*" key to toggle between + and -. \\
A larger value decreases the length of trailing edges, a smaller value increases the length of trailing edges.
\end{tabular} \\
\hline
\end{tabular}

\section*{TECHNICAL SERVCE BULLEIIN}

BULLETIN NUMBER：B070／B071－017
12／11／2003
APPLICABLE MODEL：
GESTETNER－9002／10512
LANIER－LD090／LD0105
RICOH－AFICIO 2090／2105
SAVN－4090／40105

\section*{SUBJECT：SERVICE MANUAL－INSERT}

The Service Manual pages listed below must be replaced with the pages supplied．
An arrow has highlighted the revised areas \(\Rightarrow\) ．

PAGES：
－6－137
The letter E callout was missing from the graphic．（Updated Information）

\subsection*{6.16.6 OIL SUPPLY AND CLEANING}


The oil supply and cleaning web [A] feeds the web felt soaked with silicone oil. Springs [B] hold a roller under the web [C] against the hot roller [D].
This intermediate roller applies a light coat of silicone oil to the hot roller and removes paper dust and toner from the hot roller.
A spring clutch inside the mechanism pulls the web to take up the slack, to prevent it getting pulled in between the fusing rollers.
At prescribed intervals (see below), the web motor [E] switches on for 2.8 sec . to move the oil supply and cleaning web felt.

Web Motor Run Time Intervals
\begin{tabular}{|l|c|c|}
\hline & B070 (90 cpm) & B071 (105 cpm) \\
\hline NA & 20.7 s & 17.0 s \\
\hline EUR/A & 12.6 s & 10.4 s \\
\hline \hline
\end{tabular}

The interval starts when the first copy reaches the fusing exit sensor, and ends 2 sec. after the last copy has passed this sensor. SP1902 002, 003 (Web Motor Control - Web Motor Drive Interval, Web Motor Drive Time) can be used to adjust the motor rotation time and rotation interval. SP1902 004 (Web Motor Control Web Near End Setting) is used to adjust the near end timing for the web (Default: 90\% for NA, 86\% for EUR/A).
The web is 20 m long and lasts for about 600 K copies for NA, or 350 K copies for EUR/A.

BULLETIN NUMBER: B070/B071-018
12/29/2003

\section*{APPLICABLE MODEL:}

GESTETNER - 9002/10512
LANIER - LD090/LD0105
RICOH - AFICIO 2090/2105
SAVIN - 4090/40105

\section*{SUBJECT: JAM CODE 53}

\section*{SYMPTOM:}

Jam Code 53 sometimes occurs when LT LEF is fed from the tandem tray 1.
NOTE:
- Jam code 53: The tandem tray paper feed sensor detects the presence of paper past the predetermined time period (a certain number of ms after detecting the paper's leading edge).
- This symptom only occurs in under the conditions described above, and not with any other paper sizes or feeding trays.

\section*{CAUSE:}

The paper sometimes slips and does not clear the paper feed sensor in time. This allows the next sheet fed to catch up with it and cause the Jam Code 53.

\section*{SOLUTION:}

Update the BCU firmware to version 4.10 or later. BCU Firmware version 4.10 or later can be downloaded at the Technology Solution Center FTP Site at http://tsc.ricohcorp.com. Be sure to check the README file for important notes and explanations. Refer to Technical Service Bulletin B070/B071 Firmware History dated 11/07/2003 or later for more information concerning BCU Firmware version 4.10.

See page 2 for Tandem Tray Paper Feed Sensor Jam for details:

\section*{Tandem Tray Paper Feed Sensor Jam}
\(\star\) Symptom: Feed sensor jam from mis-feed of 3 or more sheets.
Before the trailing edge of the first sheet clears the feed/reverse rollers, the pickup roller, (already rotating) from drive supplied through the feed roller, lowers and begins feeding the next sheet. Then the trailing edge of the first sheet crosses with the leading edge of the next sheet around the area of the feed sensor.

B070/B071 Jam Code 53 Timing Chart (LT LEF - Tray 1)


With multi-feeds of 3 sheets or more, the previous sheet stops at the registration section and then next sheet (blue) is fed to the feed sensor via the inertia of the feed roller. The paper feed sensor then turns ON, followed by the pick-up solenoid a certain number of ms later. If the paper slips at all on the way to the grip roller, it can collide with the previous sheet around the feed sensor (which detects presence of paper and triggers jam).
Note: This symptom occurs only for LT LEF fed from Tray 1.

Grip Roller


\section*{NOTE:}
\(\star\) Pickup solenoid ON/OFF timing (ON: pickup roller contacts paper, OFF: separates):
-The solenoid turns OFF when the paper's leading edge reaches the feed sensor.
-The solenoid turns ON Xms after the paper has reached the feed sensor (extended 10 mm worth).

\section*{TECHNICAL SERVICE BULLETIN}

\section*{BULLETIN NUMBER: B070/B071-019}

01/09/2004

\section*{APPLICABLE MODEL:}

GESTETNER - 9002/10512
LANIER - LD090/LD0105
RICOH - AFICIO 2090/2105
SAVIN - 4090/40105

\section*{SUBJECT: PARTS CATALOG UPDATES}

\section*{GENERAL:}

The following parts updates are being issued for all B070/B071 Parts Catalogs.
- UPDATE 1: Drum Shields- The shape and width of the drum shields have been changed to:
- Improve developer sealing
- Ensure that they do not come in contact with the drum and development roller surfaces, which can occur because the photoconductor gap (PG) is narrower on the B070/B071 than that of the A294/A295.
Please update your B070/B071 Parts Catalog with the following information.
\begin{tabular}{|c|c|c|c|c|c|c|}
\hline & & & & & \multicolumn{2}{|l|}{REFERENCE} \\
\hline OLD PART NO. & NEW PART NO. & DESCRIPTION & QTY & INT & PAGE & ITEM \\
\hline B0703161 & B0703173 & Shield:Drum:Front & 1 & 1 & 89 & 9 \\
\hline B0703163 & B0703169 & Shield:Drum:Rear & 1 & 1 & 89 & 15 \\
\hline
\end{tabular}

\section*{UNITS AFFECTED:}

All B070/B071 copiers manufactured after the serial numbers listed below will have the new style Drum Shields installed during production.
\begin{tabular}{|c|c|}
\hline MODEL NAME & SERIAL NUMBER \\
\hline \begin{tabular}{c} 
Gestetner 9002 \\
Lanier LD090 \\
Ricoh Aficio 2090 \\
Savin 4090
\end{tabular} & J7030500047 \\
\hline \begin{tabular}{c} 
Gestetner 10512 \\
Lanier LD0105 \\
Ricoh Aficio 2105 \\
Savin 40105
\end{tabular} & \\
\hline
\end{tabular}
- UPDATE 2: Bias Transfer Terminal - The Terminal:Bias:Transfer has been added to provide greater latitude in satisfying internal electrical noise standards. Please update your B070/B071 Parts Catalog with the following information.
\begin{tabular}{|c|c|c|c|c|}
\cline { 3 - 6 } \multicolumn{2}{l|}{} & \multicolumn{2}{c|}{} & REFERENCE \\
\hline NEW PART NUMBER & DESCRIPTION & QTY & PAGE & ITEM \\
\hline B0703870 & Terminal:Bias:Transfer & 1 & 101 & \(26^{*}\) \\
\hline
\end{tabular}
* DENOTES NEW ITEM NUMBER

NOTE: Please see the attachment position as shown in the pictures below.
1. The following two parts are already attached as shown below (no change).

2. The new part is then attached over these parts as shown.

3. Finally, the Rear Frame Spring Plate shown below is attached.


\section*{UNITS AFFECTED:}

All B070/B071 copiers manufactured after the serial numbers listed below will have the new Terminal:Bias:Transfer installed during production.
\begin{tabular}{|c|c|}
\hline MODEL NAME & SERIAL NUMBER \\
\hline \begin{tabular}{c} 
Gestetner 9002 \\
Lanier LD090 \\
Ricoh Aficio 2090 \\
Savin 4090
\end{tabular} & J7030100001 \\
\hline \begin{tabular}{c} 
Gestetner 10512 \\
Lanier LD0105 \\
Ricoh Aficio 2105 \\
Savin 40105
\end{tabular} & J 7130100001 \\
\hline
\end{tabular}

\section*{INTERCHANGEABILITY CHART:}
\begin{tabular}{|c|l|c|l|}
\hline 0 & \begin{tabular}{l} 
OLD and NEW parts can be used in both OLD and \\
NEW machines.
\end{tabular} & 2 & \begin{tabular}{l} 
NEW parts CAN NOT be used in OLD machines. \\
OLD parts can be used in OLD and NEW machines.
\end{tabular} \\
\hline 1 & \begin{tabular}{l} 
NEW parts can be used in OLD and NEW machines. \\
OLD parts CAN NOT be used in NEW machines.
\end{tabular} & 3 & \begin{tabular}{l} 
OLD parts CAN NOT be used in NEW machines. \\
NEW parts CAN NOT be used in OLD machines.
\end{tabular} \\
\hline \(3 / S\) & \begin{tabular}{l} 
Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or \\
previously modified, use the new part numbers individually.
\end{tabular} \\
\hline
\end{tabular}

\section*{TECHNICAL SERVICE BULLETIN}

\section*{BULLETIN NUMBER：B070／B071－020}

01／09／2004

\section*{APPLICABLE MODEL：}

GESTETNER－9002／10512
LANIER－LD090／LD0105
RICOH－AFICIO 2090／2105
SAVIN－4090／40105

\section*{SUBJECT：TRAY HEATER KITS}

\section*{GENERAL：}

The Tray Heater Kits have been newly registered for the B070／B071 Optional Tray Heaters．See below for kit components．The following parts updates are being issued for all B070／B071 Parts Catalogs．


Page 162

\begin{tabular}{|c|c|c|c|c|c|c|}
\hline OLD PART NO． & NEW PART NO． & \multicolumn{1}{|c|}{ DESCRIPTION } & QTY & INT & PAGE & ITEM \\
\hline- & B0706291 & Upper Tray Heater Kit & 1 & - & 165 & \(32^{*}\) \\
\hline- & B0706295 & Lower Tray Heater Kit & 1 & - & 163 & \(18^{*}\) \\
\hline
\end{tabular}

\section*{＊DENOTES NEW ITEM NUMBER}

NOTE：Each kit consists of the following parts：
Upper Tray Heater Kit（P／N B0706291）
－Heater－240V 18W（AX400151）： 1 pcs
－Guide Plate－Upper Heat Sink（A2486103）： 1 pcs
－Heat Sink：Hearter：Upper：Fiber（B0706293）： 1 pcs
－Tapping Screw－4x6（04514006B）： 1 pcs

\section*{Lower Tray Heater Kit（P／N B0706295）}
－Heater－240V 18W（AX400157）： 1 pcs
－Lower Heat Sink（B0656221）： 1 pcs
－Philips Pan Head Screw－M4x4（03140040B）： 2 pcs
－Clamp（11050516）： 1 pcs

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B070/B071-021
01/09/2004

\section*{APPLICABLE MODEL:}

GESTETNER - 9002/10512
LANIER - LD090/LD0105
RICOH - AFICIO 2090/2105
SAVIN - 4090/40105

\section*{SUBJECT: SERVICE MANUAL - INSERT}

The Service Manual pages listed below must be replaced with the pages supplied.

PAGES:
Updated Information (Table of Contents)
- 1-101 through 105

New Information (Tray Heater Kits)
Attaching the Key Counter to the LCT ..... 1-97
User Tool and SP Mode Settings ..... 1-100
1.14 TRAY HEATER KITS ..... 1-101
1.14.1 ACCESSORIES ..... 1-101
PREVENTIVE MAINTENANCE
2. PREVENTIVE MAINTENANCE ..... 2-1
2.1 PM PARTS ..... 2-1
2.1.1 MAIN MACHINE ..... 2-1
Main Unit PM Parts ..... 2-1
2.1.2 ADF ..... 2-6
2.1.3 3000 SHEET BOOKLET FINISHER B468 ..... 2-6
2.1.4 COVER INTERPOSER TRAY B470 ..... 2-6
2.1.5 3000-SHEET FINISHER B478 ..... 2-6
2.1.6 LCT B511, BYPASS TRAY B512 ..... 2-7
2.1.7 PUNCH UNIT B377, B531, A812 ..... 2-7
Main Lubrication ..... 2-8
REPLACEMENT AND ADJUSTMENT
3. REPLACEMENT AND ADJUSTMENT ..... 3-1
3.1 GENERAL CAUTIONS ..... 3-1
3.1.1 DRUM ..... 3-1
3.1.2 DRUM UNIT ..... 3-1
3.1.3 TRANSFER BELT UNIT ..... 3-2
3.1.4 SCANNER UNIT ..... 3-2
3.1.5 LASER UNIT ..... 3-2
3.1.6 CHARGE CORONA ..... 3-3
3.1.7 DEVELOPMENT ..... 3-3
3.1.8 CLEANING ..... 3-4
3.1.9 FUSING UNIT ..... 3-4
3.1.10 PAPER FEED ..... 3-4
3.1.11 USED TONER ..... 3-4
3.2 SPECIAL TOOLS AND LUBRICANTS ..... 3-5
3.2.1 SPECIAL TOOLS ..... 3-5
3.2.2 LUBRICANTS ..... 3-5
3.3 DOORS AND COVERS ..... 3-6
3.3.1 FRONT DOORS ..... 3-6
3.3.2 RIGHT COVERS ..... 3-7
3.3.3 LEFT COVERS ..... 3-8
3.3.4 REAR COVERS AND CONTROLLER BOX DOOR ..... 3-9
Rear Covers ..... 3-9
Opening the Controller Box ..... 3-9
3.4 DOCUMENT FEEDER ..... 3-10
3.4.1 ADF COVERS ..... 3-10
3.4.2 ADF ORIGINAL TRAY ..... 3-11
Original Tray ..... 3-11
Original Table Cover ..... 3-11

\section*{\(\Rightarrow 1.14\) TRAY HEATER KITS}

\subsection*{1.14.1 ACCESSORIES}

Description
Q'ty
Upper Tray Heater Kit (P/N B0706291)
- Heater - 240V 18W (AX400151): 1 pcs
- Guide Plate - Upper Heat Sink (A2486103): 1 pcs
- Heat Sink:Hearter:Upper:Fiber (B0706293): 1 pcs
- Tapping Screw - 4x6 (04514006B): 1 pcs

Lower Tray Heater Kit (P/N B0706295)
- Heater - 240V 18W (AX400157): 1 pcs
- Lower Heat Sink (B0656221): 1 pcs
- Philips Pan Head Screw - M4x4 (03140040B) : 2 pcs
- Clamp (11050516): 1 pcs

B0706291


B0706295


\subsection*{1.14.2 INSTALLATION}

\section*{Installing the Tray Heaters}
1. Remove all trays, middle rail for the tandem tray and harness cover as shown.

2. Open the controller box. Then remove the lower rear cover and PSU.

3. Attach the lower tray heater kit and attach it with 3 screws.

\(\Longrightarrow 4\). Attach the upper tray heater kit to the middle rail for the tandem tray with 2 screws.

5. Install the middle rail and upper tray heater kit into the main frame.

Front Side: mounted by 3 screws


Rear Side: mounted by 2 screws


Insert the tab of the heat sink into here!!
6. Route the harness for upper and lower heaters as shown.

Note: Clamp the harness for the upper heater at 2 points.

7. Connect both connectors at the rear side of the machine.

Note: There is no difference between connectors.

8. Attach the harness cover.

Note: Make sure not to pinch the harness when the cover is attached.

9. Plug in the connector for the anti-condensation heater to the AC drive board as shown in Fig. 1.

\section*{© CAUTION}

All anti-condensation heaters are disconnected from the AC drive board before shipping. Before plugging in the AC harness connector, make sure that the main switch of the copier is switched off and the power cord is unplugged.

Note 1: The connector is hung on the clamp under the AC drive board.
Note 2: The tray heater is ON when the machine is in Auto Off Mode. (Main or operation SW is OFF)

Fig. 1


Fig. 2


If you want the tray heater ON for 24 hours, disconnect the relay connector and set the anti-condensation heater connector as shown Fig. 2
> \(\triangle\) CAUTION
> At this time, the heater is always ON when the power plug is connected with the power source. Use caution when you perform machine maintenance.

\section*{TECHNICAL SERVICE BULLETIN}

\section*{BULLETIN NUMBER：B070／B071－022}

01／12／2003

\section*{APPLICABLE MODEL： \\ GESTETNER－9002／10512 \\ LANIER－LD090／LD0105 \\ RICOH－AFICIO 2090／2105 \\ SAVIN－4090／40105}

\section*{SUBJECT：PICK－UP ROLLER}

\section*{GENERAL：}

Due to parts standardization with a newer model，the Pick－Up Roller（One－Way Clutch Assembly）has been separated into an individual pick－up roller and clutch．The following parts updates are being issued for all B023 Parts Catalogs．Please update your parts catalog with the following information．

NOTE：Initially both of these parts must be replaced as a set，but can be replaced individually thereafter．

\begin{tabular}{|c|c|c|c|c|c|c|}
\hline & & & & & \multicolumn{2}{|l|}{REFERENCE} \\
\hline OLD PART NO． & NEW PART NO． & DESCRIPTION & QTY & INT & PAGE & ITEM \\
\hline A8061321 & & Pick－up Roller & \multirow[t]{2}{*}{1} & \multirow[t]{2}{*}{3／S} & \multirow[t]{2}{*}{29} & \multirow[t]{2}{*}{31} \\
\hline & B4772225 & Pick－up Roller & & & & \\
\hline & －B4772226 & Pick－up Roller：Coupling & 1 & 3／S & 29 & 37＊ \\
\hline
\end{tabular}
＊DENOTES NEW ITEM NUMBER

\section*{UNITS AFFECTED：}

The serial number cut－in information was not available at time of this publication．

\section*{INTERCHANGEABILITY CHART：}
\begin{tabular}{|c|l|c|l|}
\hline 0 & \begin{tabular}{l} 
OLD and NEW parts can be used in both OLD and \\
NEW machines．
\end{tabular} & 2 & \begin{tabular}{l} 
NEW parts CAN NOT be used in OLD machines． \\
OLD parts can be used in OLD and NEW machines．
\end{tabular} \\
\hline 1 & \begin{tabular}{l} 
NEW parts can be used in OLD and NEW machines． \\
OLD parts CAN NOT be used in NEW machines．
\end{tabular} & 3 & \begin{tabular}{l} 
OLD parts CAN NOT be used in NEW machines． \\
NEW parts CAN NOT be used in OLD machines．
\end{tabular} \\
\hline \(3 / S\) & \begin{tabular}{l} 
Must be installed as a set on units manufactured prior to the S／N cut－in．On units manufactured after the S／N cut－in or \\
previously modified，use the new part numbers individually．
\end{tabular} \\
\hline
\end{tabular}

BULLETIN NUMBER: B070/B071-023
01/15/2004

\section*{APPLICABLE MODEL:}

GESTETNER - 9002/10512
LANIER - LD090/LD0105
RICOH - AFICIO 2090/2105
SAVIN - 4090/40105

\section*{SUBJECT: TONER RECYCLING PIPE \& CASE}

\section*{GENERAL:}

To further minimize noise form the toner recycling area the following parts have been changed.
The following parts update is being issued for all B070/B071 Parts Catalogs.

\begin{tabular}{|c|c|c|c|c|c|c|}
\hline & & & & & \multicolumn{2}{|l|}{REFERENCE} \\
\hline OLD PART NUMBER & NEW PART NUMBER & DESCRIPTION & QTY & INT & PAGE & ITEM \\
\hline A2943612 & B0703614 & Case: Toner Recycling: Upper & 1 & 3/S & 135 & 14 \\
\hline A2943613 & B0703615 & Case: Toner Recycling: Lower: Ass'y & 1 & 3/S & 135 & 8 \\
\hline B0703622 & B0703628 & Pipe: Toner Recycling - M14mm & 1 & 3/S & 135 & 28 \\
\hline A2943623 & B0703623 & Pipe: Discharge Used Toner - M14mm & 1 & 3/5 & 135 & 26 \\
\hline
\end{tabular}

\section*{UNITS AFFECTED:}

All B070/B071 copiers manufactured after the serial numbers listed below will have the new parts installed during production.
\begin{tabular}{|l|c|}
\hline \multicolumn{1}{|c|}{ MODEL NAME } & SERIAL NUMBER \\
\hline Ricoh Aficio 2090 & \\
Savin 4090 \\
Gestetner 9002 & J7030600149 \\
Lanier LD 090 & \\
\hline Ricoh Aficio 2105 & \\
Savin 40105 \\
Gestetner 10512 \\
Lanier LD 0105 & J7130600098 \\
\hline
\end{tabular}

\section*{INTERCHANGEABILITY CHART:}
\begin{tabular}{|c|l|c|l|}
\hline 0 & \begin{tabular}{l} 
OLD and NEW parts can be used in both OLD and \\
NEW machines.
\end{tabular} & 2 & \begin{tabular}{l} 
NEW parts CAN NOT be used in OLD machines. \\
OLD parts can be used in OLD and NEW machines.
\end{tabular} \\
\hline 1 & \begin{tabular}{l} 
NEW parts can be used in OLD and NEW machines. \\
OLD parts CAN NOT be used in NEW machines.
\end{tabular} & 3 & \begin{tabular}{l} 
OLD parts CAN NOT be used in NEW machines. \\
NEW parts CAN NOT be used in OLD machines.
\end{tabular} \\
\hline \(3 / S\) & \begin{tabular}{l} 
Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or \\
previously modified, use the new part numbers individually.
\end{tabular} \\
\hline
\end{tabular}

\section*{TECHNICAL SERVICE BULLETIN}

\section*{BULLETIN NUMBER：B070／B071－024}

01／20／2004

\section*{APPLICABLE MODEL： \\ GESTETNER－9002／10512 \\ LANIER－LD090／LD0105 \\ RICOH－AFICIO 2090／2105 \\ SAVIN－4090／40105}

\section*{SUBJECT：TONER SCATTERING}

\section*{SYMPTOMS：}

1．Toner scattering in the rear of the machine
2．Toner scattering from the filters of the toner hopper

\section*{CAUSES：}

\section*{1．Toner Scattering In The Rear Of The Machine}
a）Poor shielding at the connecting area between drum cleaning unit and toner recycling case．
b）The opening in the toner recycling case that joins with the toner collection pipe of the transfer unit is not an airtight connection．

\section*{2．TONER SCATTERING FROM THE FILTERS OF THE TONER HOPPER}
a）Poor shielding at the connecting area between the cylinder case and the toner transport coil tube．
b）Toner clogs occur in the tube located between the toner hopper and the cylinder case．

\section*{SOLUTIONS：}

IMPORTANT：Check the following items before performing the solution below．
1．Check the toner filter \([A]\) and drum filter \([B]\) ，and clean or replace them as necessary．
NOTE：The toner filter should be replaced every 350k（B070／B071）．
The above cleaning／replacements are also effective in maintaining proper machine internal temperature， which is key in minimizing scattering since slight rises in temperature can cause scattering to occur more easily．


2．If toner scattering still occurs，clean the toner transport path．

Please perform the following if the symptom still occurs, even after performing the above checks.

\section*{1. Toner Scattering In The Rear Of The Machine}
a) Attach the new seal ( \(\mathrm{P} / \mathrm{N}\) B0703617) to the drum cleaning unit pipe as shown below, in order to seal the connection between the drum cleaning unit and toner recycling case.

b) Attach the Mylar ( \(\mathrm{P} / \mathrm{N} \operatorname{B0703618\text {)tothetopofthetonerrecyclingcaseasshownbelow.Thiswillprevent}}\) toner scattering at the connection between the transfer unit toner collection pipe and recycling case.

Attaching position: Rear Side View

c) Attach the new seal (P/N B0703619) as shown below to the opening in the rear side plate. This will prevent toner scattering in the fusing and duplex areas. Rear Side View


\section*{2. Toner Scattering From The Filters Of The Toner Hopper}
a) The material of the cylinder case seal (P/N A2943476) has been changed to one with higher reliability (from August 2002 production).

NOTE: It is more convenient to replace the entire cylinder case ( \(P / N\) A2943485).
b) Clean the tube ( \(\mathrm{P} / \mathrm{N}\) A2943071) between the toner hopper and the cylinder case (procedure below).


Tube: P/N A2943071

Tube Cleaning Procedure
1. Remove the development unit.
2. Remove the right upper cover and cylinder case bracket.
3. Disconnect the tube (P/N A2943071) from the cylinder case.

4. Remove any clogged toner through the upper hole of the tube joint using a vacuum cleaner.


\section*{UNITS AFFECTED:}

All B070/B071 copiers manufactured after the serial numbers listed below will have the new Seals, Mylars, and Filters installed during production.
\(\left.\begin{array}{|c|c|}\hline \text { MODEL NAME } & \text { SERIAL NUMBER } \\ \hline \text { Gestetner 9002 } & \text { J7030900139 } \\ \text { Lanier LD090 } \\ \text { Ricoh Aficio 2090 } \\ \text { Savin 4090 }\end{array}\right]\)

\section*{TECHNICAL SERVICE BULLETIN}

\section*{BULLETIN NUMBER：B070／B071－ 024 REISSUE \(\star\)}

01／27／2004

\section*{APPLICABLE MODEL：}

GESTETNER－9002／10512
LANIER－LD090／LD0105
RICOH－AFICIO 2090／2105
SAVIN－4090／40105

\section*{SUBJECT：TONER SCATTERING}

\section*{SYMPTOMS：}

1．Toner scattering in the rear of the machine
2．Toner scattering from the filters of the toner hopper

\section*{CAUSES：}

\section*{1．Toner Scattering In The Rear Of The Machine}
a）Poor shielding at the connecting area between drum cleaning unit and toner recycling case．
b）The opening in the toner recycling case that joins with the toner collection pipe of the transfer unit is not an airtight connection．

\section*{2．TONER SCATTERING FROM THE FILTERS OF THE TONER HOPPER}
a）Poor shielding at the connecting area between the cylinder case and the toner transport coil tube．
b）Toner clogs occur in the tube located between the toner hopper and the cylinder case．

\section*{SOLUTIONS：}

IMPORTANT：Check the following items before performing the solution below．
1．Check the toner filter \([A]\) and drum filter \([B]\) ，and clean or replace them as necessary．
NOTE：The toner filter should be replaced every 350k（B070／B071）．
The above cleaning／replacements are also effective in maintaining proper machine internal temperature， which is key in minimizing scattering since slight rises in temperature can cause scattering to occur more easily．


2．If toner scattering still occurs，clean the toner transport path．

Please perform the following if the symptom still occurs, even after performing the above checks.

\section*{1. Toner Scattering In The Rear Of The Machine}
a) Attach the new seal (P/N B0703617) to the drum cleaning unit pipe as shown below, in order to seal the connection between the drum cleaning unit and toner recycling case.

b) Attach the Mylar (P/N B0703618) to the top of the toner recycling case as shown below. This will prevent toner scattering at the connection between the transfer unit toner collection pipe and recycling case.

Attaching position: Rear Side View

c) Attach the new seal ( \(\mathrm{P} / \mathrm{N}\) B0703619) as shown below to the opening in the rear side plate. This will prevent toner scattering in the fusing and duplex areas.

Rear Side View


\section*{2. Toner Scattering From The Filters Of The Toner Hopper}
a) The material of the cylinder case seal (P/N A2943476) has been changed to one with higher reliability (from August 2002 production).

NOTE: It is more convenient to replace the entire cylinder case (P/N A2943485).
b) Clean the tube ( \(\mathrm{P} / \mathrm{N}\) A2943071) between the toner hopper and the cylinder case (procedure below).


Tube: P/N A2943071

Tube Cleaning Procedure
1. Remove the development unit.
2. Remove the right upper cover and cylinder case bracket.
3. Disconnect the tube (P/N A2943071) from the cylinder case.

4. Remove any clogged toner through the upper hole of the tube joint using a vacuum cleaner.


\section*{\(\star\) GENERAL:}

The following parts updates are being issued for all B070/B071 Parts Catalogs. Please update your parts catalog with the following information.
\begin{tabular}{|c|l|c|c|c|}
\cline { 3 - 6 } \multicolumn{2}{c|}{} & \multicolumn{2}{c|}{ REFERENCE } \\
\hline NEW PART NUMBER & \multicolumn{1}{c|}{ DESCRIPTION } & QTY & PAGEE & ITEM \\
\hline B0703618 & Cover: Case: Toner Recycling & 1 & 135 & \(45^{*}\) \\
\hline B0703619 & Shield: Toner: Side Plate: Rear & 1 & 135 & \(46^{*}\) \\
\hline B0703617 & Shield: Frame: Drum & 1 & 99 & \(31^{*}\) \\
\hline
\end{tabular}

\section*{* DENOTES NEW ITEM NUMBER}

\section*{UNITS AFFECTED:}

All B070/B071 copiers manufactured after the serial numbers listed below will have the new Seals, Mylars, and Filters installed during production.
\begin{tabular}{|c|c|}
\hline MODEL NAME & SERIAL NUMBER \\
\hline \begin{tabular}{c} 
Gestetner 9002 \\
Lanier LD090 \\
Ricoh Aficio 2090 \\
Savin 4090
\end{tabular} & J7030900139 \\
\hline \begin{tabular}{c} 
Gestetner 10512 \\
Lanier LD0105 \\
Ricoh Aficio 2105 \\
Savin 40105
\end{tabular} & J7130900066 \\
\hline \multicolumn{1}{|c|}{} \\
\hline
\end{tabular}

\section*{TECHNICAL SERVICE BULLETIN}

BULLETIN NUMBER：B070／B071－025
01／21／2004

\section*{APPLICABLE MODEL：}

GESTETNER－9002／10512
LANIER－LD090／LD0105
RICOH－AFICIO 2090／2105
SAVIN－4090／40105

\section*{SUBJECT：SERVICE MANUAL－INSERT \＆POINT TO POINT CORRECTION}

The Service Manual pages listed below must be replaced with the pages supplied．

The revised areas have been highlighted by an arrow \(\Rightarrow\) ．

PAGES：
－4－10
－PTP－2

Updated Information（Service Code Conditions－SC322）
Updated Information（Point to Point CN406－3）See illustration below．


\section*{SC316: Drum Potential Sensor Error 7 (Vh abnormal}

Definition [D]
One of the following occurred:
- When adjusting the drum potential (Vh) for the process control initial setting, the drum potential sensor detects Vh is not within the range \(-260+\Delta \mathrm{V}\) Iref \(\pm 20 \mathrm{~V}\). In this case, the auto process control value is used.
- During retries for LD power modulation to adjust the amount of light, the adjustment was out of range ( -70 to +185 ). In this case, the value of the setting is used.
Possible Causes
- Drum potential sensor defective
- IOB defective
- Drum unit connector defective
- LDB board defective
- Poor drum ground connection
- Drum worn
- Laser optics need cleaning

\section*{SC317: Drum Potential Sensor Error 8}

Definition [B]
At auto process control initialization, the VL detected after creation of the ID sensor pattern is greater than 300.

\section*{Possible Causes}
- Drum worn
- LD unit dirty
- Poor drum ground connection

\section*{SC322: Laser Synchronization Error}

Definition [B]
The laser synchronization signal (DETP) cannot be detected by the synchronization detector even if the laser diodes are activated and the polygon mirror motor is rotating normally.

\section*{Possible Causes}
- Laser synchronization detector harness disconnected or defective
- Laser synchronization detector is installed incorrectly out of position
- LDB board, Polygonal mirror motor control PCB defective. After the CPU issues the LD ON command, the LD OFF signal remains HIGH and the laser diodes do not fire
- LDB board, Polygonal mirror motor control PCB defective. After the CPU issues the LD ON command, the LD OFF signal goes low, but the laser diodes still do not fire
\(\Rightarrow \quad\) - Front door safety switches are defective.
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APPLICABLE MODEL:
GESTETNER - 9002/10512
LANIER - LD090/LD0105
RICOH - AFICIO 2090/2105
SAVIN - 4090/40105

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\section*{SUBJECT: SEAL IMPROVEMENTS IN THE TONER BANK UNIT}

\section*{SYMPTOM:}

The following conditions may occur:
1. Misdetection of the Waste Toner Bottle Full Condition.
2. The Toner Bottle cannot be pulled out from the Toner Bank Unit.

\section*{CAUSE:}
1. Misdetection of the Waste Toner Bottle Full Condition

Toner may fall onto the outer portion of the toner bank unit when the toner bottle chuck opens the toner bottle. The falling toner covers the detection area of the toner over flow sensor, causing it to misdetect the Waste Toner Bottle Full Condition.
2. Toner bottle cannot be pulled out from the Toner Bank Unit

When toner is supplied to the toner bank unit, it may leak out from the bottle and gradually accumulate in the chuck area, eventually preventing the bottle-holding mechanism on the chuck from releasing the bottle.

\section*{SOLUTION:}

The following updates have been applied from October '03 production.

\section*{Misdetection of the Waste Toner Bottle Full Condition}
1. A toner catcher has been molded into the toner bank case as shown below.

2. A seal has been added to the toner bank base plate, preventing toner from scattering out of this area. - P/N: B0703364 (Shield: Bracket Chuck)
- Attachment position: Refer to Parts Catalog, pg. 78


\section*{\(\underline{2}\) :Toner bottle cannot be pulled out from the Toner Bank Unit}

Two types of shields have been added to ensure toner does not leak out from the toner bottle. They are P/N: B0703293 (Shield Slider), and B0703294 (Shield Slider Short).
- Attachment position:


Side view:


The following parts updates are being issued for all B070/B071 Parts Catalogs.
\begin{tabular}{|c|l|c|c|c|}
\cline { 3 - 6 } \multicolumn{2}{c|}{} & \multicolumn{2}{c|}{ REFERENCE } \\
\hline NEW PART NUMBER & \multicolumn{1}{c|}{ DESCRIPTION } & QTY & PAGE & ITEM \\
\hline B0703293 & Shield Slider Short & 2 & 82 & \(35^{*}\) \\
\hline B0703294 & Shield Slider Short & 2 & 82 & \(36^{*}\) \\
\hline B0703364 & Shield: Bracket Chuck & 1 & 79 & \(21^{*}\) \\
\hline
\end{tabular}

\section*{* DENOTES NEW ITEM NUMBER}

\section*{UNITS AFFECTED:}

All B070/B071 copiers manufactured after the serial numbers listed below will have the new style B0703293 Shield Slider, B0703294 Shield Slider Short and Shield Bracket Chuck installed during production.
\begin{tabular}{|c|c|}
\hline MODEL NAME & SERIAL NUMBER \\
\hline \begin{tabular}{c} 
Gestetner 9002 \\
Savin 4090
\end{tabular} & J 7031000183 \\
\hline \begin{tabular}{c} 
Gestetner 10512 \\
Savin 40105
\end{tabular} & J 7131000062 \\
\hline Lanier LD 090 & J 7031000183 \\
\hline Lanier LD 0105 & \\
\hline Ricoh Aficio 2090 & J 7031000183 \\
\hline Ricoh Aficio 2105 & J 7131000062 \\
\hline
\end{tabular}

\section*{INTERCHANGEABILITY CHART:}
\begin{tabular}{|c|l|c|l|}
\hline 0 & \begin{tabular}{l} 
OLD and NEW parts can be used in both OLD and \\
NEW machines.
\end{tabular} & 2 & \begin{tabular}{l} 
NEW parts CAN NOT be used in OLD machines. \\
OLD parts can be used in OLD and NEW machines.
\end{tabular} \\
\hline 1 & \begin{tabular}{l} 
NEW parts can be used in OLD and NEW machines. \\
OLD parts CAN NOT be used in NEW machines.
\end{tabular} & 3 & \begin{tabular}{l} 
OLD parts CAN NOT be used in NEW machines. \\
NEW parts CAN NOT be used in OLD machines.
\end{tabular} \\
\hline \(3 / S\) & \begin{tabular}{l} 
Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or \\
previously modified, use the new part numbers individually.
\end{tabular} \\
\hline
\end{tabular}

\section*{TECHNICAL SERVICE BULLETIN}

\section*{BULLETIN NUMBER: B070/B071 - 027}

01/28/2004

\section*{APPLICABLE MODEL:}

GESTETNER - 9002/10512
LANIER - LD090/LD0105
RICOH - AFICIO 2090/2105
SAVIN - 4090/40105

\section*{SUBJECT: PARTS CATALOG UPDATES}

\section*{GENERAL:}

The following parts updates are being issued for all B070/B071 Parts Catalogs.
- UPDATE 1: Bracket: Hinge: C/T Box-Due to part standardization with other models, the Bracket: Hinge: C/T Box has been changed. Please update your B070/B071 Parts Catalog with the following information.

\begin{tabular}{|c|c|c|c|c|c|c|}
\hline OLD PART NO. & NEW PART NO. & DESCRIPTION & QTY & INT & PAGEFERENCE & ITEM \\
\hline B0706836 & B0706837 & Bracket: Hinge: C/T Box & 1 & 1 & 155 & 23 \\
\hline
\end{tabular}

\section*{UNITS AFFECTED:}

All B070/B071 copiers manufactured after the serial numbers listed below will have the new style Bracket: Hinge: C/T Box installed during production.
\begin{tabular}{|c|c|}
\hline MODEL NAME & SERIAL NUMBER \\
\hline Gestetner 9002 & J7030700189 \\
Lanier LD090 \\
Ricoh Aficio 2090 \\
Savin 4090
\end{tabular}\(\quad\).
- UPDATE 2: Power Supply Unit - Control - To increase the margin against excess current, a capacitor has been changed in the PSU. In accordance with change, the part number for the PSU has also been changed. Please update your B070/B071 Parts Catalog with the following information.

\begin{tabular}{|c|c|c|c|c|c|c|}
\hline & & & & & \multicolumn{2}{|l|}{REFERENCE} \\
\hline OLD PART NO. & NEW PART NO. & DESCRIPTION & QTY & INT & PAGE & ITEM \\
\hline AZ230105 & AZ230145 & Power Supply Unit: Control & 1 & & 155 & 16 \\
\hline
\end{tabular}

\section*{UNITS AFFECTED:}

All B070/B071 copiers manufactured after the serial numbers listed below will have the new style Power Supply Unit: Control installed during production.
\begin{tabular}{|c|c|}
\hline MODEL NAME & SERIAL NUMBER \\
\hline Gestener 9002 & J7030500195 \\
Lanier LD090 \\
Ricoh Aficio 2090 \\
Savin 4090
\end{tabular}\(\quad\).

UPDATE 3: Shielding Plate: SD Card - To cover and protect the Printer Scanner and PS3 option SD card slots, a shielding plate has been added as shown below. Please update your B070/B071 Parts Catalog with the following information.

\begin{tabular}{|c|c|c|c|c|c|c|}
\hline & & & & & \multicolumn{2}{|l|}{REFERENCE} \\
\hline OLD PART NO. & NEW PART NO. & DESCRIPTION & QTY & INT & PAGE & ITEM \\
\hline - & B0706900 & Shielding Plate: SD Card & 1 & - & 153 & 17* \\
\hline - & 08072089 & Washer - 10mm & 2 & - & 153 & 103 * \\
\hline
\end{tabular}
* DENOTES NEW ITEM NUMBER

\section*{UNITS AFFECTED:}

All B070/B071 copiers manufactured after the serial numbers listed below will have the new Shielding Plate: SD Card installed during production.
\begin{tabular}{|c|c|}
\hline MODEL NAME & SERIAL NUMBER \\
\hline Gestetner 9002 & J7030700291 \\
Lanier LD090 \\
Ricoh Aficio 2090 \\
Savin 4090
\end{tabular}\(\quad\).
- UPDATE 4: Right Front Side Plate - If approximately 150 sheets are improperly placed in the left side of the tandem tray, the paper stack may hit the lower part of the front end fence, and possibly damage it. To prevent this, a new End Fence Cover Front has been added as shown below. Please update your B070/B071 Parts Catalog with the following information.

B0706667: End Fence Cover

NOTE: The Side Plate: Tandem: Right Front and the End Fence Cover Front must be replaced as a set


\section*{* DENOTES NEW ITEM NUMBER}

\section*{UNITS AFFECTED:}

All B070/B071 copiers manufactured after the serial numbers listed below will have the new Right Front Side Plate and End Fence Cover installed during production.
\begin{tabular}{|c|c|}
\hline MODEL NAME & SERIAL NUMBER \\
\hline Gestetner 9002 & J7030600038 \\
Lanier LD090 \\
Ricoh Aficio 2090 \\
Savin 4090
\end{tabular}\(\quad\).
- UPDATE 5: Joint Holder - The shape of the Joint Holder has been changed to ensure that the Lever Rack Joint does not slip during operation. Please update your B070/B071 Parts Catalog with the following information.


\section*{UNITS AFFECTED:}

All B070/B071 copiers manufactured after the serial numbers listed below will have the new style Joint Holder installed during production.
\begin{tabular}{|c|c|}
\hline MODEL NAME & SERIAL NUMBER \\
\hline Gestetner 9002 & J7030700191 \\
Lanier LD090 \\
Ricoh Aficio 2090 \\
Savin 4090
\end{tabular}\(\quad\).
- UPDATE 6: Transfer Bias Brush - Due to a vender assembly process change, the

Transfer Bias Brush has also been changed. Please update your B070/B071 Parts Catalog with the following information.

\begin{tabular}{|c|c|c|c|c|c|}
\cline { 4 - 8 } \multicolumn{9}{c|}{} & \multicolumn{3}{c|}{ REFERENCE } \\
\hline OLD PART NO. & NEW PART NO. & DESCRIPTION & QTY & INT & PAGE \\
\hline ITEM \\
\hline A2943872 & B0703880 & Transfer Bias Brush & 1 & 0 & 101 \\
\hline
\end{tabular}

\section*{UNITS AFFECTED:}

All B070/B071 copiers manufactured after the serial numbers listed below will have the new style Transfer Bias Brush installed during production.
\(\left.\begin{array}{|c|c|}\hline \text { MODEL NAME } & \text { SERIAL NUMBER } \\ \hline \text { Gestetner 9002 } & \text { J7040100018 } \\ \text { Lanier LD090 } \\ \text { Ricoh Aficio 2090 } \\ \text { Savin 4090 }\end{array}\right]\)

\section*{INTERCHANGEABILITY CHART:}
\begin{tabular}{|c|l|c|l|}
\hline 0 & \begin{tabular}{l} 
OLD and NEW parts can be used in both OLD and \\
NEW machines.
\end{tabular} & 2 & \begin{tabular}{l} 
NEW parts CAN NOT be used in OLD machines. \\
OLD parts can be used in OLD and NEW machines.
\end{tabular} \\
\hline 1 & \begin{tabular}{l} 
NEW parts can be used in OLD and NEW machines. \\
OLD parts CAN NOT be used in NEW machines.
\end{tabular} & 3 & \begin{tabular}{l} 
OLD parts CAN NOT be used in NEW machines. \\
NEW parts CAN NOT be used in OLD machines.
\end{tabular} \\
\hline \(3 / S\) & \begin{tabular}{l} 
Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or \\
previously modified, use the new part numbers individually.
\end{tabular} \\
\hline
\end{tabular}

\section*{TECHNICAL SERVICE BULLETIN}

\section*{BULLETIN NUMBER：B070／B071－028}

01／29／2004
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APPLICABLE MODEL:
GESTETNER - 9002/10512
LANIER - LD090/LD0105
RICOH - AFICIO 2090/2105
SAVIN - 4090/40105

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\section*{SUBJECT：SHIELD：CASE：LOWER：RIGHT}

\section*{GENERAL：}

To prevent the Shield：Case：Lower：Right（seal）from peeling off，the size of the seal has been increased． The following part update is being issued for all B070／B071 Parts Catalogs．Please update your parts catalog with the following information．

\begin{tabular}{|c|c|c|c|c|c|c|}
\hline & & & & & \multicolumn{2}{|l|}{REFERENCE} \\
\hline OLD PART NO． & NEW PART NO． & DESCRIPTION & QTY & INT & PAGE & ITEM \\
\hline B0703237 & B0703239 & Shield：Case：Lower：Right & 1 & 1 & 85 & 36 \\
\hline
\end{tabular}

\section*{UNITS AFFECTED:}

All B070/B071 copiers manufactured after the serial numbers listed below will have the new style Shield: Case: Lower: Right installed during production.
\begin{tabular}{|c|c|}
\hline MODEL NAME & SERIAL NUMBER \\
\hline Gestetner 9002 & J7031000183 \\
Lanier LD090 \\
Ricoh Aficio 2090 \\
Savin 4090
\end{tabular}\(\quad\).

\section*{INTERCHANGEABILITY CHART:}
\begin{tabular}{|c|l|c|l|}
\hline 0 & \begin{tabular}{l} 
OLD and NEW parts can be used in both OLD and \\
NEW machines.
\end{tabular} & 2 & \begin{tabular}{l} 
NEW parts CAN NOT be used in OLD machines. \\
OLD parts can be used in OLD and NEW machines.
\end{tabular} \\
\hline 1 & \begin{tabular}{l} 
NEW parts can be used in OLD and NEW machines. \\
OLD parts CAN NOT be used in NEW machines.
\end{tabular} & 3 & \begin{tabular}{l} 
OLD parts CAN NOT be used in NEW machines. \\
NEW parts CAN NOT be used in OLD machines.
\end{tabular} \\
\hline \(3 / S\) & \begin{tabular}{l} 
Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or \\
previously modified, use the new part numbers individually.
\end{tabular} \\
\hline
\end{tabular}

\section*{TECHNICAL SERVICE BULLETIN}

BULLETIN NUMBER：B070／B071－029
03／01／2004

\section*{APPLICABLE MODEL： \\ GESTETNER－9002／10512 \\ LANIER－LD090／LD0105 \\ RICOH－AFICIO 2090／2105 \\ SAVIN－4090／40105}

\section*{SUBJECT：BUSHING－M6}

\section*{GENERAL：}

The following Bushing－M6＇s have been changed to minimize the load on the Transport Motor．The following parts updates are being issued for all B070／B071 Parts Catalogs．Please update your parts catalog with the following changes．


Page 122

\begin{tabular}{|c|c|c|c|c|c|c|}
\hline & & & & & \multicolumn{2}{|l|}{REFERENCE} \\
\hline OLD PART NO. & NEW PART NO. & DESCRIPTION & QTY & INT & PAGE & ITEM \\
\hline \multirow[t]{2}{*}{50530447} & & Bushing - 6mm & \multirow[t]{2}{*}{2} & \multirow[t]{2}{*}{1} & \multirow[t]{2}{*}{122} & \multirow[t]{2}{*}{12} \\
\hline & AA082118 & Bushing - M6 & & & & \\
\hline
\end{tabular}

Page 126


NOTE: One of the original bushings (Item 7-P/N 50530447) remains in use. Only the four shown in the illustration below are changed on Duplex Unit 5 (page 128).


\section*{* DENOTES NEW ITEM NUMBER}

\section*{UNITS AFFECTED:}

All B070/B071 copiers manufactured after the serial numbers listed below will have the new style Bushing M6 installed during production.
\begin{tabular}{|c|c|}
\hline MODEL NAME & SERIAL NUMBER \\
\hline Gestetner 9002 & J7030400065 \\
Lanier LD 090 & \\
Ricoh Aficio 2090 & \\
Savin 4090 & \\
\hline Gestetner 10512 & J 7130400031 \\
Lanier LD 0105 & \\
Ricoh Aficio 2105 & \\
Savin 40105 & \\
\hline
\end{tabular}

\section*{INTERCHANGEABILITY CHART:}
\begin{tabular}{|c|l|c|l|}
\hline 0 & \begin{tabular}{l} 
OLD and NEW parts can be used in both OLD and \\
NEW machines.
\end{tabular} & 2 & \begin{tabular}{l} 
NEW parts CAN NOT be used in OLD machines. \\
OLD parts can be used in OLD and NEW machines.
\end{tabular} \\
\hline 1 & \begin{tabular}{l} 
NEW parts can be used in OLD and NEW machines. \\
OLD parts CAN NOT be used in NEW machines.
\end{tabular} & 3 & \begin{tabular}{l} 
OLD parts CAN NOT be used in NEW machines. \\
NEW parts CAN NOT be used in OLD machines.
\end{tabular} \\
\hline \(3 / S\) & \begin{tabular}{l} 
Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or \\
previously modified, use the new part numbers individually.
\end{tabular} \\
\hline
\end{tabular}

\section*{TECHNICAL SERVICE BULLETIN}

BULLETIN NUMBER: B070/B071-030
03/02/2004

\section*{APPLICABLE MODEL:}

GESTETNER - 9002/10512
LANIER - LD090/LD0105
RICOH - AFICIO 2090/2105
SAVIN - 4090/40105

\section*{SUBJECT: FUSING UPPER COVER}

\section*{GENERAL:}

A new insulation sheet has been added between the Fusing Upper Cover and the Fusing Exit Guide Plate. This will help to decrease the temperature of the Fusing Exit Guide Plate.

NOTE: The new insulation sheet is attached on the side of Fusing Upper Cover.
The following parts updates are being issued for all B070/B071 Parts Catalogs.

\begin{tabular}{|c|c|l|c|c|c|c|}
\hline OLD PART NO. & NEW PART NO. & DESCRIPTION & QTY & INT & PAGEE & ITEM \\
\hline A2944451 & B0704151 & Fusing Upper Cover & 1 & 1 & 105 & 2 \\
\hline- & B0704153 & Heat Insulation: Fusing & 1 & - & 105 & \(28^{*}\) \\
\hline
\end{tabular}

\footnotetext{
* DENOTES NEW ITEM NUMBER
}

\section*{UNITS AFFECTED:}

All B070/B071 copiers manufactured after the serial numbers listed below will have the new style Fusing Upper Cover with insulation sheet (Heat Insulation: Fusing) installed during production.
\begin{tabular}{|c|c|}
\hline MODEL NAME & SERIAL NUMBER \\
\hline Gestenter 9002 & J7040100001 \\
Lanier LD 090 \\
Ricoh Aficio 2090 \\
Savin 4090 & \\
\hline \begin{tabular}{c} 
Gestetner 10512 \\
Lanier LD 0105 \\
Ricoh Aficio 2105 \\
Savin 40105
\end{tabular} & \\
\hline \multicolumn{2}{|c|}{J 7140100001} \\
\hline
\end{tabular}

\section*{INTERCHANGEABILITY CHART:}
\begin{tabular}{|c|l|c|l|}
\hline 0 & \begin{tabular}{l} 
OLD and NEW parts can be used in both OLD and \\
NEW machines.
\end{tabular} & 2 & \begin{tabular}{l} 
NEW parts CAN NOT be used in OLD machines. \\
OLD parts can be used in OLD and NEW machines.
\end{tabular} \\
\hline 1 & \begin{tabular}{l} 
NEW parts can be used in OLD and NEW machines. \\
OLD parts CAN NOT be used in NEW machines.
\end{tabular} & 3 & \begin{tabular}{l} 
OLD parts CAN NOT be used in NEW machines. \\
NEW parts CAN NOT be used in OLD machines.
\end{tabular} \\
\hline \(3 / S\) & \begin{tabular}{l} 
Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or \\
previously modified, use the new part numbers individually.
\end{tabular} \\
\hline
\end{tabular}

\section*{TECHNICAL SERVICE BULLETIN}

BULLETIN NUMBER：B070／B071－031

\section*{APPLICABLE MODEL：}

GESTETNER－9002／10512
LANIER－LD090／LD0105
RICOH－AFICIO 2090／2105
SAVIN－4090／40105

\section*{SUBJECT：DECAL：POWER SOURCE}

\section*{GENERAL：}

A new decal has been attached on the upper cover as shown below．

The following part update is being issued for all B070／B071 Parts Catalogs．
＜Attachment Position＞


* DENOTES NEW ITEM NUMBER

\section*{UNITS AFFECTED:}

All B070/B071 copiers manufactured after the serial numbers listed below will have the new style Decal installed during production.
\begin{tabular}{|c|c|}
\hline MODEL NAME & \multicolumn{1}{|c|}{ SERIAL NUMBER } \\
\hline \begin{tabular}{c} 
Gestetner 9002 \\
Savin 4090
\end{tabular} & J 7030800182 \\
\hline \begin{tabular}{c} 
Gestetner10512 \\
Savin40105
\end{tabular} & J 7130900001 \\
\hline Lanier LD 090 & J 7030800182 \\
\hline Lanier LD 0105 & J 7130900001 \\
\hline Ricoh Aficio 2090 & J 7030800182 \\
\hline Ricoh Aficio 2105 & J 7130900001 \\
\hline
\end{tabular}

\section*{INTERCHANGEABILITY CHART:}
\begin{tabular}{|c|l|c|l|}
\hline 0 & \begin{tabular}{l} 
OLD and NEW parts can be used in both OLD and \\
NEW machines.
\end{tabular} & 2 & \begin{tabular}{l} 
NEW parts CAN NOT be used in OLD machines. \\
OLD parts can be used in OLD and NEW machines.
\end{tabular} \\
\hline 1 & \begin{tabular}{l} 
NEW parts can be used in OLD and NEW machines. \\
OLD parts CAN NOT be used in NEW machines.
\end{tabular} & 3 & \begin{tabular}{l} 
OLD parts CAN NOT be used in NEW machines. \\
NEW parts CAN NOT be used in OLD machines.
\end{tabular} \\
\hline \(3 / S\) & \begin{tabular}{l} 
Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or \\
previously modified, use the new part numbers individually.
\end{tabular} \\
\hline
\end{tabular}

\section*{TECHNICAL SERVICE BULLETIN}

BULLETIN NUMBER：B070／B071－032
05／12／2004
APPLICABLE MODEL：
GESTETNER－9002／10512
LANIER－LD090／LD0105
RICOH－AFICIO 2090／2105
SAVIN－4090／40105

\section*{SUBJECT：UPPER FUSING ENTRANCE GUIDE PLATE}

\section*{GENERAL：}

The following part update is being issued for all B070／B071 Parts Catalogs．

\begin{tabular}{|c|c|c|c|c|c|}
\cline { 3 - 6 } \multicolumn{8}{c|}{ REFERENCE } \\
\hline OLD PART NO． & NEW PART NO． & DESCRIPTION & QTY & PAGE & ITEM \\
\hline B0704111 & B0704321 & Fusing Entrance Guide Plate：Upper & 1 & 105 & 5 \\
\hline
\end{tabular}

\section*{TECHNICAL SERVICE BULLETIN}

\section*{BULLETIN NUMBER：B070／B071－033}

05／13／2004

\section*{APPLICABLE MODEL：}

GESTETNER－9002／10512
LANIER－LD090／LD0105
RICOH－AFICIO 2090／2105
SAVIN－4090／40105

\section*{SUBJECT：E32 OR E44 OCCUR DURING FIRMWARE UPDATE}

\section*{SYMPTOM：}

Error codes E32 and E44 are sometimes displayed when several firmwares are installed simultaneously．
NOTE：These codes cannot be cleared powering the unit OFF／ON．

\section*{CAUSE：}

A firmware transmission error may occur when installing several types of firmware simultaneously．Since the error data is saved to the NVRAM，the machine is unable to boot up normally，even after the main switch is turned OFF／ON．

\section*{SOLUTION：}

Clear the error code with the following procedure and re－install the firmware again．
1．Press（1）（4）（＂1＂，＂ 4 ＂，＂ 3 ＂key）on the operation panel when the error codes appear．
2．Press C（＂Clear＂key）three times．
The machine will indicate the error has been cleared with a beep．

\section*{\(\triangle\) Important Notice}

To ensure the above error codes do not occur，please be sure to follow the procedure below whenever installing several kinds of firmware at the same time：

1．Before installing any firmware，install the＂System＂firmware individually．
2．After successfully installing the＂System＂firmware，turn the machine main power OFF／ON and confirm that the machine boots up to Ready status normally．

3．The remaining firmware may now be installed simultaneously．

\section*{TECHNICAL SERVICE BULLETIN}

BULLETIN NUMBER: B070/B071-034
05/14/2004

\section*{APPLICABLE MODEL:}

GESTETNER - 9002/10512
LANIER - LD090/LD0105
RICOH - AFICIO 2090/2105
SAVIN - 4090/40105

\section*{SUBJECT: SERVICE MANUAL - INSERT}

The Service Manual pages listed below must be replaced with the pages supplied.

An arrow has highlighted the revised areas \(\Rightarrow\).

PAGES:
- 5-102
- 5-108
- 5-119

Updated Information (Important Notice Updating Firmware)
Updated Information (Firmware Update Errors)
Updated Information (Handling Firmware Update Errors)

\subsection*{5.10 FIRMWARE UPDATE}

To update the firmware for this machine, you must have the new version of the firmware downloaded onto an SD (Secure Digital) Card. The SD Card is inserted into the C3 slot on the right side of the controller box, viewed from the back of the machine.

\subsection*{5.10.1 BEFORE YOU BEGIN...}

An SD card is a precision device, so always observe the following precautions when handling SD cards:
- Always switch the machine off before inserting an SD card. Never insert the SD card into the slot with the power on.
- After the power has been switched on, never remove the SD card from the service slot.
- Never switch the machine off while the firmware is downloading from the SD card.
- Store SD cards in a safe location where they are not exposed high temperature, high humidity, or exposure to direct sunlight.
- Always handle SD cards with care to avoid bending or scratching them. Never drop an SD card or expose it to other shock or vibration.
Keep the following points in mind while you are using the firmware update software:
- "Upload" means to send data from the machine to the SD card, and "download" means to send data from the SD card to the machine.
- To select an item on the LCD, touch the appropriate button on the soft touchscreen of the LCD, or press the appropriate number key on the 10-key pad of the operation panel. For example, "Exit (0)" displayed on the screen means you can touch the Exit button on the screen, or press the (0) button on the operation panel of the copier.
- Before starting the firmware update procedure, always make sure that the machine is disconnected from the network to prevent a print job for arriving while the firmware update is in progress.

\section*{© Important Notice when updating several firmwares simultaneously}

To ensure that error codes do not occur when installing several types of firmware simultaneously, follow the procedure outlined below:
1. Before installing any firmware, install the "System" firmware individually.
2. After successfully installing the "System" firmware, turn the machine main power OFF/ON and confirm that the machine boots up to Ready status normally.
3. The remaining firmware may now be installed simultaneously.

\section*{Firmware Update Error}

If a firmware update error occurs, this means the update was cancelled during the update because the module selected for update was not on the SD card.


\section*{\(\Rightarrow\) Clearing E32 and E44 Codes}

Clear E32 and E44 codes with the following procedure and then re-istall the firmware again:
1. Press (1)(4) 3 (" 1 ", " 4 ", " 3 " key) on the operation panel when the error codes appear.
2. Press ("Clear" key) three times.

The machine will indicate the error has been cleared with a beep.

\section*{Recovery After Power Loss}

If the ROM update is interrupted as a result of accidental loss of power while the firmware is updating, then the correct operation of the machine cannot be guaranteed after the machine is switched on again. If the ROM update does not complete successfully for any reason, then in order to ensure the correct operation of the machine, the ROM update error will continue to be displayed until the ROM is updated successfully.
In this case, just insert the card once again and switch on the machine to continue the firmware download automatically from the card without the menu display.

\subsection*{5.10.8 HANDLING FIRMWARE UPDATE ERRORS}

If an error occurs during a download, an error message will be displayed in the first line. The error code consists of the letter "E" and a number ("E20", for example).
Error Message Table
\begin{tabular}{|c|c|c|}
\hline CODE & MEANING & SOLUTION \\
\hline 20 & Cannot map logical address & Make sure SD card inserted correctly, or use another SD card. \\
\hline 21 & Cannot access memory & HDD connection incorrect or replace hard disks. \\
\hline 22 & Cannot decompress compressed data & Incorrect ROM data on the SD card, or data is corrupted. \\
\hline 23 & Error occurred when ROM update program started & Controller program abnormal. If the second attempt fails, replace controller board. \\
\hline 24 & SD card access error & Make sure SD card inserted correctly, or use another SD card. \\
\hline 30 & No HDD available for stamp data download & HDD connection incorrect or replace hard disks. \\
\hline 31 & Data incorrect for continuous download & Insert the SD card with the remaining data required for the download, the re-start the procedure. \\
\hline 32 & Data incorrect after download interrupted & Execute the recovery procedure for the intended module download, then repeat the installation procedure. See NOTE below. \\
\hline 33 & Incorrect SD card version & Incorrect ROM data on the SD card, or data is corrupted. \\
\hline 34 & Module mismatch - Correct module is not on the SD card) & SD update data is incorrect. Acquire the correct data (Japan, Overseas, OEM, etc.) then install again. \\
\hline 35 & Module mismatch - Module on SD card is not for this machine & SD update data is incorrect. The data on the SD card is for another machine. Acquire correct update data then install again. \\
\hline 36 & Cannot write module - Cause other than E34, E35 & SD update data is incorrect. The data on the SD card is for another machine. Acquire correct update data then install again. \\
\hline 40 & Engine module download failed & Replace the update data for the module on the SD card and try again, or replace the BCU board. \\
\hline 42 & Operation panel module download failed & Replace the update data for the module on the SD card and try again, or replace the LCDC. \\
\hline 43 & Stamp data module download failed & Replace the update data for the module on the SD card and try again, or replace the hard disks. \\
\hline 44 & Controller module download failed & Replace the update data for the module on the SD card and tray again, or replace controller board. See NOTE below. \\
\hline 50 & Electronic confirmation check failed & SD update data is incorrect. The data on the SD card is for another machine. Acquire correct update data then install again. \\
\hline
\end{tabular}
\(\Rightarrow\) NOTE: Error codes E32 and E44 are sometimes displayed when several type of firmware are installed simultaneously. To clear the error codes follow the procedure described in Clearing E32 and E44 Codes. After clearing the error code, re-install the firmware.

\section*{TECHNICAL SERVICE BULLETIN}

BULLETIN NUMBER：B070／B071－035
05／26／2004

\section*{APPLICABLE MODEL：}

GESTETNER－9002／10512
LANIER－LD090／LD0105
RICOH－AFICIO 2090／2105
SAVIN－4090／40105

\section*{SUBJECT：B070／B071 ENHANCED VERSION DIFFERENCES}

\section*{GENERAL：}

This bulletin describes the differences between the B070／B071 and the B070／B071 Enhanced Version with a mass－production date of March 2004.

NOTE：The model name，machine code，and EDP code are the same for the enhanced versions．

\section*{1．NEW OPC DRUM：}

The OPC drum layer has been increased，and the yield has changed from 360K to 700K．The new drum has been installed on the B070／B071 Enhanced Version machines during production．

NOTE：This drum can also be used on the current B070／B071 in the field as a replacement part．

\section*{NEW OPC DRUM IDENTIFICATION：}

B070／B071 New Enhanced Version Drum Part Number：B0709510 Lot Number．On The Drum Flange：


NOTE：The B070／B071 production drum lot number has 12 digits（ \(X X X X X X X X X X X X\) ）．

A red circular sticker has been attached to the B070／B071 Enhanced Version OPC drum stay at the factory for easy identification of the drum unit．


\section*{NEW DRUM INSTALLATION CURRENT \& ENHANCED MACHINES:}

\section*{CAUTION: THIS DRUM CANNOT BE INSTALLED ON THE A294/A295 MODELS.}

Setting Powder (54429101) must be applied to the drum surface whenever replacing the drum.

\section*{Application Procedure for Drum Setting Powder:}
1. Apply the setting powder to the drum by tapping the powder bag across the drum surface so the area being applied turns white. Continue applying the setting powder until the entire length of the drum is covered about \(1 / 4\) of the total surface of the drum as shown in the illustration.

NOTE: Waste toner can be used if not setting powder is available. Waste toner is charged and will be attracted to the drum surface. Dirty background may occur if waste toner is used.
2. Rotate the drum once along its normal rotational direction (arrow shown below), so that it stops again at the same position.

NOTE: Be sure not to rotate the drum in the opposite direction.


\section*{CAUTION: IF THE SETTING POWDER IS NOT APPLIED, THE DRUM'S CLEANING BLADE MAY TURN OUTWARD, CAUSING A DRUM CLEANING FAILURE.}
3. After installing the new style drum ( \(\mathrm{P} / \mathrm{N} \operatorname{B0709510\text {)onanolder}\mathrm {B}070/\mathrm {B}071\text {machinethefollowingservice}}\) programs must be changed.

NOTE: These values are already set in the B070/B071 enhanced production machaines.
\begin{tabular}{|r|l|c|c|}
\hline \multirow{2}{*}{ SP No. } & \multicolumn{1}{|c|}{ Description } & \multicolumn{2}{c|}{ Change to: } \\
\cline { 3 - 4 } & & 90cpm & 105cpm \\
\hline SP3903 & VD Correction Counter & 990 & 990 \\
\hline SP2301 & Transfer Current Adjustment & - & - \\
\hline \(\mathbf{- 1}\) & 1st Copy Side & 100 & 110 \\
\hline \(\mathbf{- 2}\) & Thick Paper & 100 & 110 \\
\hline \(\mathbf{- 4}\) & Translucent Sheet & 100 & 110 \\
\hline \(\mathbf{- 5}\) & 2nd Copy Side & 100 & 110 \\
\hline SP2940 & Leading Edge Transfer Current & - & - \\
\hline \(\mathbf{- 1}\) & Tray 1 & 100 & 110 \\
\hline \(\mathbf{- 2}\) & Tray 2 & 100 & 110 \\
\hline \(\mathbf{- 3}\) & Tray 3 & 100 & 110 \\
\hline \(\mathbf{- 4}\) & Tray 4 & 100 & 110 \\
\hline \(\mathbf{- 5}\) & Tray 5 & 100 & 110 \\
\hline \(\mathbf{- 6}\) & Tray 6 & 100 & 110 \\
\hline \(\mathbf{- 7}\) & Tray 7 & 100 & 110 \\
\hline \(\mathbf{- 8}\) & Duplex Tray & 100 & 110 \\
\hline
\end{tabular}

\section*{2. LASER DIODE UNIT:}

To increase the accuracy of the laser diode beam pitch service program 2115-007 has been added. When replacing the laser diode unit in the field it is necessary to manually enter all the values on the decal on the replacement laser diode unit.

New Decal On The LD Unit:


\section*{3. FUSING TEMPERATURE RANGE:}

The adjustable temperature range for the fusing unit has been changed as follows.
\begin{tabular}{|c|l|l|}
\hline SP & \multicolumn{1}{|c|}{ Old Function/[Setting] } & \multicolumn{1}{c|}{ New Function/[Setting] } \\
\hline SP1105-001 & \begin{tabular}{l} 
B070: \([168 \sim 178 / 168 / 1 \mathrm{deg}]\) \\
B071: \([168 \sim 178 / 173 / 1 \mathrm{deg}]\)
\end{tabular} & \begin{tabular}{l} 
B070E: \([120 \sim 178 / 168 / 1 \mathrm{deg}]\) \\
B071E: \([120 \sim 178 / 173 / 1 \mathrm{deg}]\)
\end{tabular} \\
\hline SP1105-002 & \begin{tabular}{l} 
B070: \([148 \sim 158 / 148 / 1 \mathrm{deg}]\) \\
B071: \([148 \sim 158 / 153 / 1 \mathrm{deg}]\)
\end{tabular} & \begin{tabular}{l} 
B070E: \([100 \sim 158 / 148 / 1 \mathrm{deg}]\) \\
B071E: \([100 \sim 158 / 153 / 1 \mathrm{deg}]\)
\end{tabular} \\
\hline
\end{tabular}

NOTE: The default value for the of the new enhanced versions have not changed

\section*{4. NEW PRE-TRANSFER LAMP:}

A new pre-transfer lamp (PTL) has been added to the B070/B071 enhanced models. The PTL has been added to aid in poor drum separation problems, but if the PTL is used a blurred image may appear on the leading edge of the paper. Therefore, the default setting for the PTL is set to "Off."

The following service programs have been added for the new pre-transfer lamp.
\begin{tabular}{|c|c|c|}
\hline SP2602 & \multicolumn{2}{|l|}{PTL Settings} \\
\hline 001 & Front - On/Off Setting & \begin{tabular}{l}
Switches the PTL on and off for the front side of the paper passing through the fusing unit at normal speed. \\
Note: When feeding thick paper or OHP transparencies, this setting is always off.
[0~1/0/1] \\
0 : Off \\
1: On \\
PTL timing can be adjusted with SP2602 002.
\end{tabular} \\
\hline 002 & Front - Off Timing Adj. & This SP adjusts the length of the space from the leading edge where the PTL quenching is applied to the front side at normal speed. For example, if you set \(+5,5 \mathrm{~mm}\) from the leading edge will be quenched.
[-5~10/2/0.1 mm] \\
\hline 003 & Back - On/Off Setting & \begin{tabular}{l}
Switches the PTL on and off for the back side of the paper passing through the fusing unit in the duplex mode at normal speed.
[0~1/0/1] \\
0 : Off \\
1: On \\
Note: \\
- When this setting is switched on, make sure that the setting of SP2940 008 is the same as the default setting of SP2940 001. \\
- When feeding thick paper or OHP transparencies, this setting is always off.
\end{tabular} \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|}
\hline SP2602 & \multicolumn{2}{|l|}{PTL Settings} \\
\hline 004 & Back - On/Off Timing Adj. & This SP adjusts the length of the space from the leading edge where the PTL quenching is applied to the back side at normal speed. For example, if you set \(+5,5 \mathrm{~mm}\) from the leading edge will be quenched.
[-5~10/2/0.1 mm ] \\
\hline 005 & Front - On/Off Setting: Low Speed Mode & \begin{tabular}{l}
Switches the PTL on and off for the front side of the paper passing through the fusing unit at in the low speed mode. \\
Note: When feeding thick paper or OHP transparencies, this setting is always off.
\[
[0 \sim 1 / 0 / 1]
\] \\
0 : Off \\
1: On
\end{tabular} \\
\hline 006 & Front - Off Timing Adj.: Low Speed Mode & This SP adjusts the length of the space from the leading edge where the PTL quenching is applied to the front side in low speed mode. For example, if you set \(+5,5 \mathrm{~mm}\) from the leading edge will be quenched.
[-5~10/2/0.1 mm] \\
\hline 007 & Back- On/Off Setting: Low Speed Mode & \begin{tabular}{l}
Switches the PTL on and off for the back side of the paper passing through the fusing unit in the duplex mode in low speed mode.
\[
[0 \sim 1 / 0 / 1]
\] \\
0 : Off \\
1: On \\
Note: \\
- When this setting is switched on, make sure that the setting of SP2940 016 is the same as the default setting of SP2940 009. \\
- When feeding thick paper or OHP transparencies, this setting is always off.
\end{tabular} \\
\hline 008 & Back - Off Timing Adj.: Low Speed Mode & This SP adjusts the length of the space from the leading edge where the PTL quenching is applied to the back side in slow speed mode. For example, if you set \(+5,5 \mathrm{~mm}\) from the leading edge will be quenched.
[-5~10/2/0.1 mm] \\
\hline
\end{tabular}

\section*{NEW PRE-TRANSFER LAMP PARTS INFORMATION:}

The BCU board and drum harness have been changed to accommodate the new PTL.
The following parts updates are being issued for all B070/B071 Parts Catalogs

\begin{tabular}{|c|c|c|c|c|c|c|}
\hline & & & & & \multicolumn{2}{|l|}{REFERENCE} \\
\hline OLD PART NO. & NEW PART NO. & DESCRIPTION & QTY & INT & PAGE & ITEM \\
\hline B0703510 & B0703511 & PCU:Lower:Ass'y & 1 & 1 & 97 & * \\
\hline B0705466 & B0705469 & Harness:PCU & 1 & 1 & 99 & 11 \\
\hline A2943559 & B0703602 & Upper Stay - Transfer Unit & 1 & 1 & 99 & 13 \\
\hline - & A0965320 & Quenching Lamp & 1 & - & 99 & 32 \\
\hline - & B1402382 & Pre-transfer Lamp Case Ass'y & 1 & - & 99 & 33 \\
\hline - & 09513008B & Philips Screw With Flat Washer M3x8 & N+1 & - & 99 & 101 \\
\hline - & 52062684 & Shoulder Screw - M3 & 1 & - & 99 & 34* \\
\hline B0705453 & B0705468 & Harness:Drum:Machine Or Copier & 1 & 1 & \[
\begin{aligned}
& 135 \\
& 143
\end{aligned}
\] & \[
\begin{aligned}
& 10 \\
& 17
\end{aligned}
\] \\
\hline B0706701 & B0706716 & PCB:BCU:NA:Ass'y & 1 & 1 & \[
\begin{aligned}
& 143 \\
& 175
\end{aligned}
\] & 16
\(*\) \\
\hline
\end{tabular}
- DENOTES NEW ITEM NUMBER

\section*{UNITS AFFECTED:}

All copiers listed below and manufactured after the serial numbers provided will have the new parts installed during production.
\begin{tabular}{|c|c|}
\hline MODEL NAME & SERIAL NUMBER \\
\hline \begin{tabular}{c} 
Gestetner9002 \\
Savin4090
\end{tabular} & J 7040100339 \\
\hline \begin{tabular}{c} 
Gestetner10512 \\
Savin40105
\end{tabular} & J 7140200011 \\
\hline Lanier LD 090 & J 7040100339 \\
\hline Lanier LD 0105 & J 7140200011 \\
\hline Ricoh Aficio 2090 & J 7040100339 \\
\hline Ricoh Aficio 2105 & J 7140200011 \\
\hline
\end{tabular}

\section*{5. FINISHER /Z-FOLDING SP MODES:}

The following service program modes have been added for the SR841 Finisher (B706) and "Z-folding Unit Type 2105" (B660).

\section*{New SP modes for the Z-Folding Unit Type 2105:}

\begin{tabular}{|l|l|}
\hline SP6122 001-008 & Fine Adjustment - 1st Fold Position \\
\hline & \begin{tabular}{l}
{\([-4 \sim+4 / 0 / 0.2 \mathrm{~mm}]\)} \\
Adjusts the position of the first fold \([\mathrm{A}]\) to decrease or \\
increase the distance (A) between the leading edge [B] \\
and the crease of the 2nd fold [C].
\end{tabular} \\
\hline SP6122 009-016 & Fine Adjustment - 2nd Fold Position \\
\hline & \begin{tabular}{l}
{\([-4 \sim+4 / 0 / 0.2 \mathrm{~mm}]\)} \\
Adjusts the position of the 2nd fold [C] to decrease or \\
increase the length (L1) of the sheet between the \\
trailing edge [D] and the 2nd fold.
\end{tabular} \\
\hline
\end{tabular}

\section*{New SR841 Finisher Input/Output Checks:}

Finisher Input Check: SP6117.
\begin{tabular}{|c|c|c|c|c|}
\hline \multirow[t]{2}{*}{\[
\begin{gathered}
\hline \text { Class } \\
3 \\
\text { No. }
\end{gathered}
\]} & \multirow[t]{2}{*}{\begin{tabular}{l}
Bit \\
No.
\end{tabular}} & \multirow[b]{2}{*}{Description} & \multicolumn{2}{|c|}{Reading} \\
\hline & & & 0 & 1 \\
\hline \multirow{8}{*}{6} & 7 & Not Used & & \\
\hline & 6 & Shift Tray Full Sensor - Z-folding & Not full & Full \\
\hline & 5 & Bottom Fence HP Sensor & Not home position & Home position \\
\hline & 4 & Top Fence HP Sensor & Not home position & Home position \\
\hline & 3 & Emergency Stop Switch & Not press & Press \\
\hline & 2 & Shift Jogger Lift HP Sensor (Optional Jogger Unit) & Home position & Not home position \\
\hline & 1 & Shift Jogger HP Sensor (Optional Jogger Unit) & Not home position & Home position \\
\hline & 0 & Optional Jogger Unit Connection & Connection & Not connection \\
\hline
\end{tabular}

NOTE: The Sensors In Bold Have Been Added.

Finisher Output Check: SP6118
\begin{tabular}{|l|l|}
\hline 26 & Jogger Top Fence Motor \\
\hline 27 & Jogger Bottom Fence Motor \\
\hline
\end{tabular}

NOTE: The motors in bold have been added.

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B070/B071-036
APPLICABLE MODEL:
GESTETNER - 9002/10512
LANIER - LD090/LD0105
RICOH - AFICIO 2090/2105
SAVIN - 4090/40105

\section*{SUBJECT: SERVICE MANUAL - INSERT}

The Service Manual pages listed below must be replaced with the pages supplied.

PAGES:
- xiv
- Tab Page
- 1 to 7
- 1 to 33

Table of Contents Page
Tab Page B706 \& B660 Added
3000-Sheet Finisher (B706) Section Added
Z-Folding Unit Type 2105 (B660) Section Added

\section*{3000-SHEET FINISHER (B706)}

SEE SECTION B706 FOR DETAILED TABLE OF CONTENTS

\section*{Z-FOLDING UNIT TYPE 2105 (B660)}

SEE SECTION B660 FOR DETAILED TABLE OF CONTENTS

\section*{COVER INTERPOSER TRAY (B470)}

SEE SECTION B470 FOR DETAILED TABLE OF CONTENTS

\section*{BYPASS-TRAY (B512)}

SEE SECTION B512 FOR DETAILED TABLE OF CONTENTS

\section*{MISC. BOARDS (B580/B581/B596/B582/B609)}

SEE SECTION B580/B581/B596/B582/B609 FOR DETAILED TABLE OF CONTENTS


\section*{B706}

\section*{3000-SHEET FINISHER}

\section*{3000-SHEET FINISHER B706 TABLE OF CONTENTS}
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\section*{1. B706 SERVICE MANUAL DIFFERENCES}

The following is a summary of the differences between the SR840 and SR841 (all other sections are identical to the B478). For information regarding sections not detailed see the B478, 3000 Sheet Finisher Section. The revised sections appear on the following page.

\section*{IMPORTANT NOTES:}
1. To install the Z-Folding Unit (B660) on the enhanced version of the B070/B071 mainframe, it is necessary to first install the new 3000 Sheet Finisher (B706).
2. To install the Z-Folding Unit (B660) unit on existing B070/B071 machines it will be necessary to update to the latest firmware version. These details will be announced as soon as they become available.

\section*{INSTALLATION:}

Auxiliary trays and their holders have been added to the accessory list.

NOTE: As mentioned in the Operating Instructions, auxiliary trays should be attached on top of the proof/shift tray to ensure proper stacking.

\section*{REPLACEMENT AND ADJUSTMENT:}

The replacement procedures for new components have been added.

\section*{DETAILS:}

Explanations for the Z-folding stapling mechanism and new electrical components have been added.

\section*{2. INSTALLATION}

\subsection*{2.1 ACCESSORY CHECK LIST}

Check the quantity and condition of the accessories in the box against the following list:
Description ..... Q'ty
1. Cushion ..... 1
2. Table Extension ..... 1
3. Leveling Shoes ..... 4
4. Rear Joint Bracket ..... 1
5. Front Joint Bracket ..... 1
6. Entrance Guide Plate ..... 1
7. Grounding Plate ..... 1
8. Auxiliary Tray Holder ..... 1
9. Auxiliary Tray - Proof ..... 1
10. Auxiliary Tray - Shift ..... 1
11. Tapping Screws - M4 x 8 ..... 2
12. Tapping Screws - M \(3 \times 6\) ..... 4
13. Tapping Screws - M3 \(\times 8\) ..... 4
14. Phillips Screws w/washer - M4 x 14 ..... 4
15. Shift Tray ..... 1
16. Installation Procedure ..... 1


\section*{3. REPLACEMENT AND ADJUSTMENT}

\subsection*{3.1 Z-FOLD JOGGER UNIT COVER}

1. Open the front door.
2. Pull out the stapler tray unit [A].
3. Remove the Z-fold jogger unit cover \([B]\left(\mathcal{S}^{2} \times 2\right)\)

\subsection*{3.2 JOGGER TOP FENCE MOTOR}

1. Open the front door and pull out the stapler tray unit.
2. Remove the Z-fold jogger unit cover (
3. Remove the motor bracket \([A]\) ( \(\left(\hat{\xi}^{\prime} \times 2\right.\), timing belt \(\times 1\) )


\subsection*{3.3 Z-FOLD JOGGER UNIT}

1. Open the front door and pull out the stapler tray unit.
2. Remove the Z-fold jogger unit cover ( \(\mathbb{E}^{(1)} \times 2\) )


\subsection*{3.4 JOGGER BOTTOM FENCE MOTOR}

1. Open the front door and pull out the stapler tray unit.


\section*{4. DETAILS}

\subsection*{4.1 STAPLING Z-FOLDED PAPER}


Here is the operation sequence for jogging and stapling Z-folded sheets:
(1) The lower jogger fence lifts to receive the \(Z\)-folded sheets.
(2) The top fence moves down, to the horizontal position.
(3) A sheet of paper goes into the stapler tray.
(4) The positioning roller turns when each sheet is fed to the stapler tray.
(5) Each sheet is fed down against the lower jogger fence to align the bottom edge.
(6) After the set number of sheets come in, the jogger top-fence motor switches on and lowers the top fence against the top of the stack. This aligns the stack for stapling.
(7) The bottom fence motor lowers the aligned stack to the stapling position.
(8) The stapler staples the stack.

\subsection*{4.2 ELECTRICAL COMPONENTS}

1. Stack Feed Out Belt Motor
2. Top Fence HP Sensor
3. Jogger Top Fence Motor
4. Jogger Motor
5. Stack Plate Rear HP Sensor
6. Stack Plate Rear Motor
7. Stack Plate Center Motor
8. Stack Plate Center HP Sensor
9. Bottom Fence HP Sensor
10. Stack Plate Front HP Sensor
11. Stack Plate Front Motor
12. Stapler Return Solenoid
13. Stapler Hammer Motor
14. Staple End Sensor
15. Cartridge Set Sensor
16. Staple HP Sensor
17. Stapler HP Rotation Sensor
18. Stapler Return Sensor
19. Stapler HP Sensor
20. Jogger Bottom Fence Motor
21. Stapler Rotation Motor
22. Stack Feed-Out Belt HP Sensor
23. Stapler Motor
24. Stapler Tray Paper Sensor
25. Jogger HP Sensor

NOTE: Items in bold are new to the B706.

\section*{B660}

Z-FOLDING UNIT TYPE 2105

\section*{Conventions Used in this Manual}

This manual uses several symbols.
\begin{tabular}{|c|c|}
\hline Symbol & What it means \\
\hline \(\checkmark\) & Refer to section number \\
\hline GTI & See Core Tech Manual for details \\
\hline \(\mathcal{F}^{\text {F }}\) & Screw \\
\hline E\#ly & Connector \\
\hline ¢ & E-ring \\
\hline (3) & Clip ring \\
\hline 熎 & Clamp \\
\hline
\end{tabular}


Lengthwise, SEF
(Short Edge Feed)


Sideways, LEF (Long Edge Feed)

\section*{Cautions, Notes, etc.}

The following headings provide special information:

\section*{WARNING}

FAILURE TO OBEY WARNING INFORMATION COULD RESULT IN SERIOUS INJURY OR DEATH.

\section*{ⒸAUTION \\ Obey these guidelines to ensure safe operation and prevent minor injuries.}

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

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

\title{
Z-FOLDING UNIT TYPE 2105 B660
}

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\section*{1. INSTALLATION}

\subsection*{1.1 ACCESSORY CHECK}

Check the quantity and condition of the accessories in the box against the following list:
Description ..... Q'ty
1. Lock Bracket - Rear (Cover Sheet Feeder) ..... 1
2. Lock Bracket - Rear ..... 1
3. Lock Bracket - Front (Cover Sheet Feeder)** ..... 1
4. Lock Bracket - Front*1 ..... 1
5. Ground Plate (Cover Sheet Feeder) ..... 1
6. Ground Plate (Z-folding unit) ..... 1
7. Ground Plate (Finisher or Cover Sheet Feeder) ..... 1
8. Right Docking Bracket ..... 1
9. Left Docking Bracket ..... 1
10. Front Spacer ..... 1
11. Rear Spacer ..... 1
12. Power Cord ..... 1
13. Sponge Strip ..... 1
14. Screws M3 \(\times 6\) ..... 8
15. Screws M4 x 6 .....  8
*1 Items 3, 4, are not required for the B706.



\subsection*{1.2 INSTALLATION PROCEDURE}

\section*{. CAUTION \\ Always switch the machine off and unplug the machine before doing any of the following procedures.}

\subsection*{1.2.1 BEFORE YOU BEGIN}
- Do the installation procedure for the finisher but do not dock it to the machine. The Z-folding unit must be installed between the finisher and the main machine.
- Do the installation for the cover sheet feeder (if necessary).
- If the finisher is already installed, disconnect the finisher from the main machine. (If the cover sheet feeder is installed on the finisher, it is not necessary to remove the cover sheet feeder.)

\section*{IMPORTANT NOTES:}
1. To install the Z-Folding Unit (B660) on the enhanced version of the B070/B071 mainframe, it is necessary to first install the new 3000 Sheet Finisher (B706).
2. To install the Z-Folding Unit (B660) unit on existing B070/B071 machines it will be necessary to update to the latest firmware version. These details will be announced as soon as they become available.

\subsection*{1.2.2 UNPACKING}

This installation procedure uses the following symbols. \(\mathcal{E}^{(1)}\) : Screws

1. Detach the \(I / F\) connector \([A]\).
2. Remove all tape from unit.
3. Open the front door \([B]\).
4. Raise the horizontal transport plate [C].
5. Pull out the Z-folding mechanism [D].
6. Remove all tape and shipping material.


\subsection*{1.2.3 DOCKING TO THE FINISHER}

1. Remove the back cover of the finisher ( \(\left(\hat{\xi^{2}} \times 2\right)\).
2. Attach the left docking bracket \([A]\) to the \(Z\)-folding unit ( provided with the finisher).
3. Attach the right docking bracket \([B]\) to the \(Z\)-folding unit ( provided with the finisher).
4. Attach the rear locking bracket (
- Attach the rear large bracket [C] if the cover sheet feeder is installed.
- Attach the rear small bracket [D] if the cover sheet feeder is not installed.
5. Attach the ground plate \([\mathrm{E}]\) to the \(Z\)-folding unit ( \(\mathcal{E}^{(1)} \times 2\) ).

6. Remove the tape from the sponge \([\mathrm{A}]\) and attach it to the \(Z\)-folding unit.
7. Remove the top cover \([B]\left(\begin{array}{l}\text { 册 } \times 4) \text {. }\end{array}\right.\)
8. Attach the front spacer [C].
9. Attach the rear spacer [D].

The spacers align the top of the Z-folding unit with the edge of the main machine.
10. Reattach the top cover \([B]\) ( \(\times 4\) ).

Make sure that the top cover is level with the tops of the front and rear spacers.

. CAUTION
With the support retracted, the Z-folding unit tips easily!
11. At the left bottom edge of the \(Z\)-folding unit, remove the bracket \([A](\hat{\xi} \times 1)\).
12. Push in the support [B].
13. Reattach the bracket \([A]\) ( \((\hat{\xi} \times 1)\).
14. If the cover sheet feeder is attached to the finisher, attach the ground plate [C] to the Z-folding unit (

15. Attach the ground plate [A] ( \(\mathcal{E}^{2} \times 2\) ) to the finisher (or the cover sheet feeder). This is the ground with the flat plate attached with 2 vertical screws.
16. Open the front door of the finisher.
17. Pull out the lock lever [B] of the finisher ( \(\hat{\xi}^{2} \times 1\) ). (If the cover sheet feeder is installed, pull out the lock lever of the cover sheet feeder.)
18. Dock the Z-folding unit to the finisher (or cover sheet feeder).
19. Push in the lock lever \([B]\) of the finisher (or cover sheet feeder) and fasten it ( x 1 ).
20. Above the lock lever [B], fasten the screw [C] ( \({ }^{(1)} \times 1\) ).
21. At the rear of the finisher, in the lower left corner fasten the rear lock bracket [D] (令 \(\times 1\) ).

\subsection*{1.2.4 DOCKING TO THE MAIN FRAME}

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

13. Reattach the finisher rear cover ( \(\hat{\mathcal{E}^{2}} \times 2\) ).
14. Connect the I/F cable [A] of the finisher to the Z-folding unit.
15. Adjust the height of the finisher.

\section*{2. PREVENTIVE MAINTENANCE}

\subsection*{2.1 PM PARTS}

The quantities \((\mathrm{K}=1,000)\) given as the PM interval show the number of prints or copies unless written differently. These numbers are based on the PM counter.

\section*{Symbol Key for PM Tables}

I: Inspect. Clean, replace, or lubricate as necessary.
C: Cleaning necessary.
R: Replacement necessary.
L: Lubrication necessary.
\begin{tabular}{|l|}
\hline\(\boxed{ }\) WARNING \\
\hline \begin{tabular}{l} 
Switch off the main power switch and disconnect the machine's main \\
power cord before you do a procedure in this section.
\end{tabular} \\
\hline
\end{tabular}
2.1.1 Z-FOLDING UNIT TYPE 2105
\begin{tabular}{||l|c|l||}
\hline & As Needed & \multicolumn{1}{|c|}{ Note } \\
\hline Drive Rollers & C & Dry cloth. \\
\hline Idle Rollers & C & Dry cloth. \\
\hline Anti-Static Brush & C & Dry cloth. Replace every 1000 K. \\
\hline Bushings & L & Silicone Oil \\
\hline Sensors & C & Dry cloth. \\
\hline
\end{tabular}

\section*{3. REPLACEMENT AND ADJUSTMENT}

\subsection*{3.1 BEFORE YOU BEGIN}

\begin{tabular}{|l|}
\hline\(\triangle\) CAUTION \\
\hline \begin{tabular}{l} 
The Z-folding unit is not stable, with or without the feet extended. Do your \\
work carefully; do not tilt the unit.
\end{tabular} \\
\hline
\end{tabular}
1. Disengage the Z-folding unit from the machine.
2. Disengage the Z-folding unit from the finisher (or cover sheet feeder).
3. At the bottom on the sides of the \(Z\)-folding unit:
- Remove the lock bracket \([A]\) ( \(\hat{\beta}^{(1)} \times 1\) ).
- Pull out the foot extension [B].
- Re-attach the bracket \([A]\) to lock the foot in the open position ( \(\hat{\xi} \times 1\) ).

\section*{Reinstallation}

Do this procedure in the opposite sequence to retract and lock the extensions below the Z-folding unit.

\subsection*{3.2 COVERS}

[1] Open the front door.
[2] Lift the horizontal transport plate to the left until it locks on the left side.
[3] Pull out the Z-fold mechanism.
[A]: Front door ( ( \(_{(1)} \times 2\) )
[B]: Front cover ( \((\mathbb{E} \times 6)\)
[C]: Top cover ( \((\underset{\text { B }}{ } \times 4)\)
[D]: Left cover ( \(\hat{\xi}^{2} \times 4\) )
[E]: Right cover ( \(\mathrm{K}^{2} \times 5\) )
[F]: Back cover ( \(\boldsymbol{\xi}^{\boldsymbol{\xi}} \times 5\) )

\subsection*{3.3 FEED MOTOR}

1. Pull the Z-folding mechanism out of the unit, but not fully.
2. Remove: (-3.2)
- Left cover
- Right cover
- Back cover
[A]: Motor cover (


\section*{Re-installation}

Make sure that the motor cover is below the leaf springs [C].

\subsection*{3.4 UPPER EXIT SENSOR}


Left cover (-3.2)
[A]: Bracket ( \(\hat{\beta}^{(1)} \times 2\) )
[B]: Upper exit sensor bracket ( \(\mathcal{F}^{(1)} 1\), 包 \(\times 1\) )
[C]: Upper exit sensor ( \(\mathrm{E}^{\mathbb{N}} \mathrm{x}\) 1)

\section*{3．5 UPPER STOPPER MOTOR／HP SENSOR，FEED SENSOR}


Front cover（－3．2）
［A］：Upper stopper motor bracket（ \(\hat{\xi}^{(1)} \times 3\) ，氯 \(\times 2\) ）
［B］：Upper stopper motor HP sensor（ \(\mathrm{E}_{\mathrm{N}}^{\mathrm{U}} \mathrm{x} 1\) ）
［C］：Upper stopper motor（ \(\hat{\xi}^{2} \times 2\) ，気事 \(\times 1\) ）
［D］：Feed sensor bracket（ \({ }^{(1)} \times 1\) ）
［E］：Feed sensor（ \(\mathrm{E}^{\mathbb{E}} \mathrm{x}\) 1）

\subsection*{3.6 FOLD TIMING SENSOR}


Pull the Z-fold mechanism out of the unit. (-3.2)
[A]: Open the right vertical transport unit cover.
[B]: Plate ( \(\hat{\beta}^{(1)} \times 4\) )


\subsection*{3.7 LOWER STOPPER MOTOR/HP SENSOR, RELAY BOARD}


Front cover (-3.2)
[A]: Lower stopper motor bracket ( \(\hat{\mathcal{E}}^{2} \times 3\), 氯 x 1 )
[B]: Lower stopper HP sensor ( \(\mathrm{E}_{\mathrm{Cl}}^{\mathrm{l}} \mathrm{x} 1\) )



\subsection*{3.8 LEADING EDGE SENSOR, LOWER EXIT SENSOR}


Pull out the Z-folding mechanism. (-3.2)
Open the right vertical transport cover [E].
[A]: Left link arm ( \(\hat{\xi} \times 1\) )
[B]: Left corner bracket ( \({ }^{(1)} \times 1\) )
[C]: Right link arm ( \(\hat{\xi}^{\boldsymbol{\xi}} \times 1\) )
[D]: Right corner bracket ( \({ }^{(1)} \times 1\) )
[E]: Vertical transport cover.
[F]: Lower fold roller cover (
[G]: Leading edge sensor bracket (

[I]: Lower exit sensor bracket ( \(\mathcal{E}^{2} \times 1\) )


\subsection*{3.9 ANTI-STATIC BRUSH}

1. Pull out the Z-folding mechanism. (-3.2)
2. Open the left vertical transport cover [A].
3. Open the vertical transport assembly [B].
4. Remove the left link screw [C] of the vertical transport assembly.
5. Remove the right link screw [D] of the vertical transport assembly.
6. Remove the link screw [E] between the plates of the vertical transport assembly.
7. Remove the bracket [F].
8. Remove the anti-static brush [G].

\subsection*{3.10 FOLD ROLLER MOTOR}

1. Pull the Z-folding mechanism out of the unit, but not fully.
2. Remove: (-3.2)
- Left cover
- Right cover
- Back cover
[A]: Motor cover ( \(\hat{\xi}^{2} \times 3\) )


\section*{Reinstallation}

Make sure that the motor cover is below the leaf springs [C].

\subsection*{3.11 MAIN CONTROL BOARD}

1. Remove the rear cover. ( -3.2 )


\subsection*{3.12 PSU}

1. Open the front door. ( -3.2 )
2. Pull the \(Z\)-fold mechanism out of the unit. ( -3.2 )
3. Remove the left cover and right cover. ( -3.2 )
4. Remove the base top cover \([A](\widehat{\xi} \times 3)\).
5. Remove the base left cover \([B](\mathbb{\xi} \times 2)\).
6. Remove the base right cover [C] ( \(\mathrm{C} \times 2\) ).
7. Make a mark at the positions of the connectors, then disconnect them.

IMPORTANT: These connectors do not have different colors. To help you connect them again correctly, make marks on them.
8. Remove the screws of the power supply unit (PSU) [D] ( \(\hat{\xi} \times 4\) ).
9. Pull the power supply unit [D] out of the right side of the bottom.


\section*{4. TROUBLESHOOTING}

For more about troubleshooting (jam removal, etc.), please refer to the Operating Instructions.

\section*{5. SERVICE TABLES}

Two SP codes have been added for the Z-folding unit.


Use these SPs to adjust the locations of the first fold and the second fold.
The illustration shows the position of the sheet while it goes through the lower exit rollers after it has been folded.
\begin{tabular}{||l|l||}
\hline SP6122 001-008 & Fine Adjustment - 1st Fold Position \\
\hline & \begin{tabular}{l}
{\([-4 \sim+4 / 0 / 0.2 \mathrm{~mm}]\)} \\
Adjusts the position of the first fold [A] to decrease or increase the \\
distance \((\mathbf{A})\) between the leading edge \([B]\) and the crease of the 2nd \\
fold [C].
\end{tabular} \\
\hline SP6122 009-016 & \begin{tabular}{l} 
Fine Adjustment - 2nd Fold Position \\
\hline
\end{tabular} \begin{tabular}{l}
{\([-4 \sim+4 / 0 / 0.2 \mathrm{~mm}]\)} \\
Adjusts the position of the 2nd fold [C] to decrease or increase the \\
length (L1) of the sheet between the trailing edge [D] and the 2nd \\
fold.
\end{tabular} \\
\hline
\end{tabular}

OVERVIEW

\section*{6. DETAILS}

\subsection*{6.1 OVERVIEW}

1. Front Door Sensor
2. Junction Gate
3. Feed Rollers
4. Feed Sensor
5. Fold Timing Sensor
6. Pinch Idle Roller
7. Upper Stopper
8. Upper Stopper Path Sensor
9. 3rd Fold Roller
10. 2nd Fold Roller
11. Lower Stopper HP Sensor
12. Lower Exit Rollers
13. Lower Exit Sensor
14. Grip Rollers
15. Lower Stopper
16. Leading Edge Sensor
17. Vertical Feed Rollers - 1
18. Anti-Static Brush
19. 1st Fold Roller
20. Vertical Feed Rollers - 2
21. Upper Stopper HP Sensor
22. Pinch Feed Roller
23. Vertical Feed Rollers - 3
24. Vertical Feed Rollers - 4
25. Upper Exit Sensor
26. Upper Exit Rollers

\subsection*{6.2 Z-FOLDING UNIT PAPER PATH}

\subsection*{6.2.1 PAPER PATH WITH NO FOLDING}


The feed rollers [1] feed the paper from the main machine into the Z-folding unit. If \(Z\)-folding was not used for the job, the sheet feeds above the closed junction gate [2].

The upper exit sensor [3] detects the leading and trailing edge of the unfolded sheet.

The upper exit rollers [4] feed the unfolded sheet out of the Z-folding unit and into the finisher.

\subsection*{6.2.2 PAPER PATH WITH Z-FOLDING}


The feed rollers [1] feed the paper from the main machine into the Z-folding unit.
The junction gate solenoid energizes and opens the junction gate [2]. The junction gate sends the sheet down into the Z-folding paper path.
The upper and lower stopper motors move the upper stopper [3] and lower stopper [4] to the positions for the paper size that was used for the job.
The feed sensor [5] detects the leading edge and trailing edge of the sheet. The pinch idle roller solenoid (upper) pulls the pinch idle roller [6] away from the pinch feed roller [7] and the paper can fall between the pinch rollers.

The anti-static brush [8] removes static electricity from the sheet.
When the fold timing sensor [9] detects the trailing edge of the sheet, it energizes the pinch idle roller solenoid (lower). This pushes the pinch idle roller [6] against the opposite pinch feed roller [7].
The lower stopper [10] stops the sheet and buckles it slightly toward the nip [11] of the 1 st and 2 nd fold rollers.


The pinch feed roller [1] turns and feeds the sheet down against the lower stopper [2]
At the correct time, the fold roller motor switches on and turns the:
- 1st fold roller [3]
- 2nd fold roller [4]
- 3rd fold roller [5]

The sheet continues to buckle until it feeds into the nip [6] of the 1st and 2nd fold rollers. These two rollers fold the sheet.
The leading edge sensor [7] detects the leading edge of the sheet:
- When the leading edge goes by while the paper feeds down (to the lower stopper).
- When the leading edge goes by again while the paper feeds up into the nip of the 1st and \(2 n d\) fold rollers.
If the leading edge sensor does not detect the leading edge at the correct time, this sensor signals a jam.

At the correct time, the pinch idle roller [8] is pulled away from the pinch feed roller [9] by the pinch idle roller solenoid (upper).


The 1st fold roller [1] and 2nd fold roller [2] continue to turn. This feeds the edge of the 1 st fold up until it hits the upper stopper [3].
The sheet lifts the feeler of the upper stopper path sensor [4]. This sensor:
- Detects when the sheet comes to the upper stopper path.
- Detects when the sheet goes out of the upper stopper path.

The upper stopper sensor detects a jam if it does not detect that the sheet comes and goes at the correct times.

When the sheet feeds between the 1st and 2nd fold rollers, this pushes the first fold against the upper stopper. The sheet buckles down into the gap between the 2 nd fold roller [5] and 3rd fold roller [6]. The second fold is made when the sheet feeds between the 2nd and 3rd feed rollers.


The 2nd and 3rd fold rollers [1] continue to turn and feed the sheet down.
The feeler of the upper stopper path sensor [2] falls and the sensor detects that the sheet is gone. The fold rollers feed the folded sheet to the lower exit rollers [3].

The lower exit sensor [4] detects the leading edge and trailing edge of the sheet. If the trailing edge is not detected during the correct time interval, the sensor detects a jam.

The grip rollers [5] feed the folded sheet to the four pairs of vertical feed rollers [6].
The upper exit sensor [7] detects the leading edge and trailing edge of each folded sheet. If the leading and trailing edge are not detected during the correct time interval, this sensor detects a jam.
The upper exit rollers [8] feed the folded sheet into the finisher.
At the correct time:
- The upper stopper motor lifts the upper stopper [9] until the upper stopper sensor [10] detects that the upper stopper is at its home position. This stops the motor.
- The lower stopper motor lowers the lower stopper [11] until the lower stopper sensor [12] detects that the lower stopper is at its home position. This stops the motor.

\section*{SPECIFICATIONS}

\section*{1. HARDWARE}
\begin{tabular}{|c|c|}
\hline \multicolumn{2}{|l|}{Paper Size} \\
\hline No Folding (52-256 g/m \({ }^{2}\) ) & A3, A4, A5, A6 SEF, B4, B5, B6 SEF DLT, LG, LT, HLT, 12" x 18" \\
\hline Folding ( \(64-80 \mathrm{~g} / \mathrm{m}^{2}\) ) & \multirow[t]{2}{*}{\begin{tabular}{l}
A3, B4, A4 SEF \\
DLT, LG, LT SEF, 12" x 18"
\end{tabular}} \\
\hline & \\
\hline Dimensions ( \(\mathrm{w} \times \mathrm{dx} \mathrm{h}\) ) & \multirow[t]{2}{*}{\[
\begin{aligned}
& 177 \times 620 \times 960 \mathrm{~mm} \\
& 7 \times 24.5 \times 37.8 \mathrm{in} .
\end{aligned}
\]} \\
\hline & \\
\hline Weight & 50 kg (110 lb.) \\
\hline Power Consumption & 100 W max. \\
\hline Power Supply & North America 120 V, 60 Hz \\
\hline & Europe/Asia \(220-240 \mathrm{~V}, 50 / 60 \mathrm{~Hz}\) \\
\hline
\end{tabular}

\section*{2. ELECTRICAL COMPONENTS}

1. Upper Exit Sensor
2. Front Door Sensor
3. Junction Gate Solenoid
4. Feed Sensor
5. Pinch Idle Roller Solenoid - Upper
6. Pinch Idle Roller Solenoid - Lower
7. Fold Timing Sensor
8. Upper Stopper Motor
9. Upper Stopper HP Sensor
10. Lower Exit Sensor
11. Lower Stopper HP Sensor
12. Relay Board
13. Lower Stopper Motor
14. Connector Relay
15. Breaker
16. Power Supply Unit
17. Leading Edge Sensor
18. Main Control Board
19. Upper Stopper Path Sensor
20. Fold Roller Motor
21. Feed Motor

\section*{3. DRIVE LAYOUT}

1. Feed Motor
2. Feed Rollers
3. Fold Roller Motor
4. Lower Exit Rollers
5. Grip Rollers
6. 3rd Fold Roller
7. 2nd Fold Roller
8. 1st Fold Roller
9. Vertical Feed Rollers - 1
10. Vertical Feed Rollers - 2
11. Vertical Feed Rollers - 3
12. Vertical Feed Rollers - 4
13. Upper Exit Rollers

\section*{TECHNICAL SERVICE BULLETIN}

\section*{BULLETIN NUMBER：}

B070／B071－037
06／09／2004

\section*{APPLICABLE MODEL：}

GESTETNER－9002／10512
LANIER－LD090／LD0105
RICOH－AFICIO 2090／2105
SAVIN－4090／40105

\section*{SUBJECT：ENHANCED FIRMWARE UPDATE REMARKS}

\section*{IMPORTANT NOTES REGARDING FIRMWARE UPGRADE FOR THE OLDER B070／B070 TO THE B070／B071 ENHANCED VERSION：}

As described in Technical Service Bulletin B070／B071－035；the B070／B071 enhanced version copier is an updated version of the older B070／B071 model．The B070／B071 enhanced model utilizes the following updated firmware levels listed in the table below．

This enhanced firmware is the latest and can be uses on all new and older B070／B071 models．Any future firmware updates on this model will be based on this enhanced firmware．

The B070／B071 Enhanced Firmware is available on the TSC Web Site．

\section*{IMPORTANT STEPS：}

When updating an older B070／B071 field machine to the current B070／B071 enhanced version firmware，all of the following firmware levels need to be upgraded as a set．

Use the following procedure to update to the firmware to the current B070／B071 Enhanced Version：
1．First，install the＂System＂firmware only．
2．After successfully installing the＂System＂firmware，turn the machine main power Off／On and confirm that the machine boots up normally to Ready Condition．
3．Install the remaining firmware simultaneously．
Change the values for SP5165－001 to 008 to 2.5 mm
Firmware for the B070／B071 Enhanced Version
\begin{tabular}{|c|c|c|}
\hline Software & Software P／N & Version \\
\hline System & B0705774 & V5．04．2 \\
\hline NCS（NIB） & B0705775 & V4．51 \\
\hline Netfile & B0705776 & V4．00 \\
\hline Websystem & B0705777 & V2．04 \\
\hline Webdocbox & B0705778 & V2．03 \\
\hline LCDC & B0705374B & V2．18 \\
\hline Language & B0705350B & V3．10 \\
\hline BCU（Engine） & B0705254D & V5．14：34 \\
\hline Printer & B5806516 & V2．07 \\
\hline Scanner & B5806521 & V 3.02 \\
\hline
\end{tabular}

\section*{TECHNICAL SERVICE BULLETIN}

\section*{BULLETIN NUMBER: B070/B071 - 037 REISSUE \(\star\)}

06/11/2004
APPLICABLE MODEL:
GESTETNER - 9002/10512
LANIER - LD090/LD0105
RICOH - AFICIO 2090/2105
SAVIN - 4090/40105

\section*{SUBJECT: ENHANCED FIRMWARE UPDATE REMARKS}

\section*{IMPORTANT NOTES REGARDING FIRMWARE UPGRADE FOR THE OLDER B070/B070 TO THE B070/B071 ENHANCED VERSION:}

As described in Technical Service Bulletin B070/B071-035; the B070/B071 enhanced version copier is an updated version of the older B070/B071 model. The B070/B071 enhanced model utilizes the following updated firmware levels listed in the table below.

This enhanced firmware is the latest and can be uses on all new and older B070/B071 models. Any future firmware updates on this model will be based on this enhanced firmware.

The B070/B071 Enhanced Firmware is available on the TSC Web Site.

\section*{IMPORTANT STEPS:}

When updating an older B070/B071 field machine to the current B070/B071 enhanced version firmware, all of the following firmware levels need to be upgraded as a set.

Use the following procedure to update the firmware to the current B070/B071 Enhanced Version:
1. First, insert the firmware SD Card and update the "System" firmware only.
2. After successfully updating the "System" firmware, turn the machine main power "OFF."
3. Remove the firmware and Printer/Scanner SD Card and confirm that the machine boots up normally to a Ready Condition (If the Printer/Scanner SD Card is not removed during this step an SC990 will occur). This SC990 condition will be cleared when the "Printer" firmware is updated in the next step.
4. Re-insert the firmware and the Printer/Scanner SD Card and update the "Printer" firmware only. The Service Call Indicator LED will illuminate on the operation panel, wait until the "Update Menu" appears on the operation panel display (approximately 1 minute). This Service Call Indication will not re-occur after the "Printer" firmware is updated to level V2.07.
5. Update the remaining firmware individually. When updating the "LCDC" firmware. DO NOT TURN THE MACHINE "OFF" UNTIL THE "LCDC" FIRMWARE UPDATE IS COMPLETE. If the machine is powered "OFF" before the "LCDC" firmware update is complete, damage to the operation panel will occur.

Tech Service Bulletin No. B070/B071-037 Reissue \(\star\)
6. When all the firmware have been updated. Change the values for SP5165-001 to 008 to 2.5 mm .

Firmware for the B070/B071 Enhanced Version
\begin{tabular}{|c|c|c|}
\hline \multicolumn{2}{|c|}{ Software } & Software P/N \\
\hline System & B0705774 & Version \\
\hline NCS (NIB) & B0705775 & V4.51 \\
\hline Netfile & B0705776 & V4.00 \\
\hline Websystem & B0705777 & V2.04 \\
\hline Webdocbox & B0705778 & V2.03 \\
\hline LCDC & B0705374B & V2.18 \\
\hline Language & B0705350B & V3.10 \\
\hline BCU (Engine) & B0705254D & V5.14:34 \\
\hline Printer & B5806516 & V2.07 \\
\hline Scanner & B5806521 & V3.02 \\
\hline
\end{tabular}

\section*{TECHNICAL SERVICE BULLETIN}

BULLETIN NUMBER：B070／B071－038
6／24／2004
APPLICABLE MODEL：
GESTETNER－9002／10512
LANIER－LD090／LD0105
RICOH－AFICIO 2090／2105
SAVIN－4090／40105

\section*{SUBJECT：SERVICE MANUAL－INSERT}

The Service Manual pages listed below must be replaced with the pages supplied．

The revised areas have been highlighted by an arrow \(\Rightarrow\) ．

PAGES：
－vii
－3－5
－3－36 \＆3－37
－3－40
－3－159 \＆3－160
－5－4 to 5－54
－5－85 to 5－90
－5－96

OPC Drum Change Added
Additional Information
Additional Information
Additional Information for New Drum
New OPC Drum Change Procedure
New Service Programs \＆Changes to SP Settings for New Drum
New Input and Output Checks
Correction to PM Counter Page
Registration: Platen Mode ..... 3-153
Magnification ..... 3-153
3.17.4 ADF IMAGE ADJUSTMENT ..... 3-154
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3.17.5 ADJUSTING THE LD UNIT CHANNELS ..... 3-155
3.18 TOUCH SCREEN CALIBRATION ..... 3-157
3.19 OPC DRUM CHANGE ..... 3-159
3.19.1 SETTING POWDER APPLICATION PROCEDURE ..... 3-159
TROUBLESHOOTING
4. TROUBLESHOOTING ..... 4-1
4.1 SERVICE CALL CONDITIONS ..... 4-1
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To Switch to the Copy Window for Test Printing ..... 5-1
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SP1-nnn Feed ..... 5-4
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\subsection*{3.2 SPECIAL TOOLS AND LUBRICANTS}

\subsection*{3.2.1 SPECIAL TOOLS}
\begin{tabular}{||c|l||}
\hline & Part No. \\
\hline & \multicolumn{1}{c|}{} \\
\hline A0069104 & Scanner Positioning Pin (4 pcs./set) \\
\hline A2929500 & Test Chart - S5S (10 pcs./set) \\
\hline A0299387 & Digital Multimeter - FLUKE 87 \\
\hline & B6455010
\end{tabular} SD (Secure Digital) Card - 64 MB 1

\subsection*{3.2.2 LUBRICANTS}
\begin{tabular}{||c|l|}
\hline Part No. & \multicolumn{1}{|c|}{ Description } \\
\hline A2579300 & Grease Barrierta - JFE 5 5/2 \\
\hline 52039502 & Silicon Grease G-501 \\
\hline
\end{tabular}

\subsection*{3.6.3 LD UNIT}

\section*{\(\triangle\) WARNING}

Turn off the main power switch and unplug the machine before attempting this procedure. Laser beams can seriously damage the eyes.

NOTE: To avoid damaging the board with static electricity, never touch the printed circuit board.
1. Exposure glass (-3.5.1)


- Before removal, note how the LD unit is inserted into the 4 seams of the optical housing (the thickness is different according to color). This positioning is used for fine adjustment of the LD unit position. Make sure that you install the LD at the same position.
- Be sure to remove the mylar from the underside of the old LD unit
 and attach it to the new one.
4. After installing the LD unit, execute SP2115 001~007 to input the pitch settings for the main scan beams.

NOTE: The correct settings for these SP codes are printed on a decal attached to the mounting bracket [C] of the LD unit.
```

<LD Unit Lot No.>
SP2115 001/SP2115 002/SP2115 003
PS2115 004/SP2115 005/SP2115 006/SP2115 007

```

The 7 numbers printed on the label correspond to the correct settings of the SP codes shown in the diagram above.

To enter these numbers, you would execute:
\begin{tabular}{|c|c|c|}
\hline SP2115 001 & *(1)(0) & - Press \(\circledast^{*}\) to enter the minus sign. \\
\hline SP2115 002 & * \(\overbrace{}^{2}\) \# & - Press \# after each entry. \\
\hline SP2115003 & (1)(0) & - A key press is not required for the plus sign. \\
\hline SP2115 004 & *(1)(0) 0 & Here is an example: \\
\hline SP2115 005 & (0) & -10/-2/+10 \\
\hline SP2115006 & (1)(0) \({ }^{(1)}\) & -100/+0/+100 \\
\hline SP2115 007 & (1)(0) & \\
\hline
\end{tabular}

CAUTION: This example is for instructional purposes only. When you do this adjustment, you must enter the numbers printed on the label attached to the LD unit.
5. Do SP2962 (Auto Process Control Execution).
6. Make some test copies and check that the magnification is correct. If not correct, please do the printer copy adjustment. ( -3.17 )

\section*{LD Unit Adjustment Procedure}

Please perform the following if the spacers attached to the bottom of the LD unit are misplaced or their original positions become unclear at LD unit replacement. This adjustment is necessary to ensure ID variations along the main scan direction do not occur, which result from beam pitch variations along the sub scan direction.

IMPORTANT: Always make sure to turn the machine main power OFF before inserting the spacers into the LD unit.
1. Print out the SP2902-3 No. 22 test pattern without any Mylar spacers attached.

Using the illustration for LD Unit 3.6.3, perform the following two steps until the ID variation along the main scan direction is not visible on the test chart:
2. Attach one \(100 \mu \mathrm{~m}\) (milk white) spacer in the rear of the unit. Print out the pattern again and compare with the sample from Step 1.
- If the ID variation along the main scan direction decreases (improves) but is still visible, attach another \(100 \mu \mathrm{~m}\) spacer in the same position.
- If the ID variation gets worse, go on to Step 3.
3. Attach one \(100 \mu \mathrm{~m}\) spacer in the front of the unit. Print out the pattern again and compare with the sample from Step 2.
- If the ID variation along the mainscan direction decreases (improves) but is still visible, attach another \(100 \mu \mathrm{~m}\) spacer in the same position.

NOTE: Refer to Technical Service Bulletin B070/B071 - 014 for more information.

\subsection*{3.7 DRUM UNIT}

\subsection*{3.7.1 DRUM UNIT}

\section*{Drum Removal}


NOTE: If the Lot Number for the new drum is "_L_xxxxxxxxx" -3.19 OPC Drum Change. If not, follow the procedure below.
1. Remove the development unit. ( -3.8 .1 )
2. Lower the transfer belt unit lever
3. Grip the drum unit by the handle [A] then remove it.

NOTE: 1) Keep the drum unit covered with a sheet of paper while it is out of the machine.
2) Never touch the drum surface [D] with bare hands.
3) If it is difficult to re-insert the drum into the machine because the gear is disengaged, push in the drum unit while holding down the cleaning blade release lever [E].

5. Open the upper drum unit \([C](\hat{\xi} \times 2)\).

\section*{\(\Rightarrow\) 3.19 OPC DRUM CHANGE}

\subsection*{3.19.1 SETTING POWDER APPLICATION PROCEDURE}
1. Apply the setting powder to the drum by tapping the powder bag across the drum surface so the area being applied turns white. Continue applying the setting powder until the entire length of the drum is covered about \(1 / 4\) of the total surface of the drum as shown in the illustration.

NOTE: Waste toner can be used if no setting powder is available. Waste toner has a charge and will be attracted to the drum surface. Dirty background may occur if waste toner is used.

2. Install the new drum in the OPC unit so that the powdered area (in bold below) faces the cleaning blade.
3. Rotate the drum once along its normal rotational direction (arrow shown below), so that it stops again at the same position. Be sure not to rotate the drum in the opposite direction.


CAUTION: IF THE SETTING POWDER IS NOT APPLIED, THE DRUM'S CLEANING BLADE MAY TURN OUTWARD, CAUSING A DRUM CLEANING FAILURE.
4. After installing the new style drum (P/N B0709510) on an older B070/B071 machine the following service programs must be changed.

NOTE: These values are already set in the B070/B071 enhanced production machines.
\begin{tabular}{|c|c|c|c|}
\hline \multirow[t]{2}{*}{SP No.} & \multirow[t]{2}{*}{Description} & \multicolumn{2}{|c|}{Change to:} \\
\hline & & 90cpm & 105cpm \\
\hline SP3903 & VD Correction Counter & 990 & 990 \\
\hline SP2301 & Transfer Current Adjustment & - & - \\
\hline -1 & 1st Copy Side & 100 & 110 \\
\hline -2 & Thick Paper & 100 & 110 \\
\hline -4 & Translucent Sheet & 100 & 110 \\
\hline -5 & 2nd Copy Side & 100 & 110 \\
\hline SP2940 & Leading Edge Transfer Current & - & - \\
\hline -1 & Tray 1 & 100 & 110 \\
\hline -2 & Tray 2 & 100 & 110 \\
\hline -3 & Tray 3 & 100 & 110 \\
\hline -4 & Tray 4 & 100 & 110 \\
\hline -5 & Tray 5 & 100 & 110 \\
\hline -6 & Tray 6 & 100 & 110 \\
\hline -7 & Tray 7 & 100 & 110 \\
\hline -8 & Duplex Tray & 100 & 110 \\
\hline
\end{tabular}

\subsection*{5.2 SERVICE PROGRAM MODE TABLES}

NOTE: The Service Program Mode is for use only by customer engineers so that they can properly maintain product quality. If this mode is used by anyone other than a customer engineer for any reason, data might be deleted or settings might be changed. In such a case image quality can no longer be guaranteed.

\section*{Service Table Key}
\begin{tabular}{||l|l||}
\hline \multicolumn{1}{|c|}{ Notation } & \multicolumn{1}{c|}{ What it means } \\
\hline [range / default / step] & \begin{tabular}{l}
{\([-9 \sim+9 /+3.0 / 0.1 \mathrm{~mm}]\)} \\
The default setting +3.0 can be adjusted in 0.1 mm steps in the range \\
\(\pm 9\).
\end{tabular} \\
\hline Italics & Comments added for reference. \\
\hline\(*\) & \begin{tabular}{l} 
An asterisk marks the SP's that are reset to their factory default \\
settings after an NVRAM reset.
\end{tabular} \\
\hline DFU & Denotes "Design or Factory Use". Do not change this value. \\
\hline Japan only & The feature or item is for Japan only. Do not change this value. \\
\hline SEF & Short Edge Feed \\
\hline LEF & Long Edge Feed \\
\hline
\end{tabular}

\subsection*{5.2.1 COPIER SERVICE PROGRAM MODE TABLES}

\section*{SP1-nnn Feed}
\begin{tabular}{|c|c|c|c|}
\hline SP & & Number/Name & Function/[Setting] \\
\hline \multirow[t]{5}{*}{1001} & \multicolumn{2}{|l|}{Leading Edge Registration} & \begin{tabular}{l}
Adjusts the printing leading edge registration for feeding from the trays and duplex tray using the trimming area pattern (SP2-902-3, No.15).] \\
Use the "• / *key to enter the minus (-) before entering the value. \\
The specification is \(4 \pm 2 \mathrm{~mm}\). (-3-17)
\end{tabular} \\
\hline & 001 & Copier/LCT Paper Tray & B070: \([-9.0 \sim+9.0 /-2.6 / 0.1 \mathrm{~mm}]\)
B071: \([-9.0 \sim+9.0 /-4.0 / 0.1 \mathrm{~mm}]\) \\
\hline & 002 & Duplex Tray & B070: \([-9.0 \sim+9.0 /-\mathbf{0 . 3} / 0.1 \mathrm{~mm}]\)
B071: \([-9.0 \sim+9.0 /-\mathbf{0 . 4} / 0.1 \mathrm{~mm}])\) \\
\hline & 003 & Copier//LCT Paper Tray (Low Speed) & B070: \([-9.0 \sim+9.0 /-3.0 / 0.1 \mathrm{~mm}]\)
B071: \([-9.0 \sim+9.0 /-2.0 / 0.1 \mathrm{~mm}]\) \\
\hline & 004 & Duplex Tray (Low Speed) & [-9.0~+9.0 / 0 / 0.1 mm ] \\
\hline \multirow[t]{5}{*}{1002} & \multicolumn{2}{|l|}{Side-to-side Registration} & \begin{tabular}{l}
Adjusts the printing side-to-side registration from the 1st paper feed station using the trimming area pattern (SP2-902-3, No.15). \\
Use the "• / *key to enter the minus (-) before entering the value. \\
Specification: \(0 \pm 2.0 \mathrm{~mm}\). ( \(-3-17\) )
\end{tabular} \\
\hline & 001 & 1st Tray (Copier Tandem Tray) & [-9.0~+9.0 / -0.1/0.1 mm] \\
\hline & 002 & 2nd Tray (Copier) & [-9.0~+9.0 / -0.6/ 0.1 mm\(]\) \\
\hline & 003 & 3rd Tray (Copier) & [-9.0~+9.0 / -0.3/0.1 mm] \\
\hline & 004 & 4th Tray (LCT Tray 1) & [-9.0~+9.0 / -0.8/0.1 mm] \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|}
\hline SP & & Number/Name & Function/[Setting] \\
\hline \multirow[t]{4}{*}{1002} & 005 & 5th Tray (LCT Tray 2) & [-9.0~+9.0 / -0.8/0.1 mm] \\
\hline & 006 & 6th Tray (LCT Tray 3) & [-9.0~+9.0/+0.3/0.1 mm] \\
\hline & 007 & 7th Tray (Bypass Tray) & [-9.0~+9.0 / -0.3/0.1 mm] \\
\hline & 008 & Duplex Tray (Copier) & [-9.0~+9.0 / 0 / 0.1 mm\(]\) \\
\hline \multirow[t]{4}{*}{1003} & \multicolumn{2}{|l|}{Paper Buckle Adjustment (Registration)} & Adjusts the relay clutch timing at registration. The relay clutch timing determines the amount of paper buckle at registration. (A plus or minus setting increases or decreases the amount of buckle.) \\
\hline & 001 & Copier Paper Tray & [-9~+9 / +4/1 mm] \\
\hline & 002 & LCT & \([-9 \sim+9 /+4 / 1 \mathrm{~mm}]\) \\
\hline & 003 & Duplex Tray & [-9~+9 / +4/1 mm] \\
\hline 1008 & & Duplex Fence Adjustment & Adjusts the distance between the front and rear duplex fences.
\[
[-2.0 \sim+2.0 / 0 / 0.5 \mathrm{~mm}]
\] \\
\hline 1103 & & Fusing Idling After Energy Saving & \begin{tabular}{l}
Selects whether fusing idling is done or not when recovering from the Energy \\
Saving. [0~1/0/1] \\
0: Not Done \\
1: Done
\end{tabular} \\
\hline 1105 & Fusi & emperature Adjustment & \\
\hline & 001 & Fusing Temperature in Waiting Condition & \begin{tabular}{l}
Adjusts the fusing temperature for standby. \\
B070: [120~178/ 168/ 1 deg] \\
B071: [120~178 / 173 / 1 deg]
\end{tabular} \\
\hline & 002 & Fusing Temperature Lower Limit & \begin{tabular}{l}
Adjusts the fusing temperature lower limit. When the fusing unit falls below this temperature, the machine stops copying. Copying automatically restarts when the fusing temperature recovers. \\
DFU \\
B070: [100~158 / 148 / 1 deg] \\
B071: [100~158 / 153/ 1 deg]
\end{tabular} \\
\hline & 003 & Fusing Temperature Correction (<A4/LT) & \begin{tabular}{l}
Specifies the amount to raise the fusing temperature from standby mode to print on paper smaller than A4/LT LEF. \\
B070: [0~10 / 7 / 1 deg] \\
B071: [0~10 / 10 / 1 deg]
\end{tabular} \\
\hline & 004 & Fusing Temperature Correction (>A4 / LT) & \begin{tabular}{l}
Specifies the amount to raise the fusing temperature from standby mode to print on paper of A4/LT width LEF or wider. \\
B070: [0~10 / \(2 / 1\) deg] (B070) \\
B071: [0~10 / 5 / 1 deg] (B071) \\
Note: The threshold paper width used for SP1105 003 and 004 depends on SP1105 010.
\end{tabular} \\
\hline & 005 & Fusing Temperature Correction (Transparencies) & \begin{tabular}{l}
Specifies the amount to raise or lower fusing temperature from standby mode to print on OHP Transparencies. \\
B070: [-10~+5 / +2 / 1 deg] (B070) \\
B071: [-10~+5 / +5 / 1 deg] (B071)
\end{tabular} \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|}
\hline SP & & Number/Name & Function/[Setting] \\
\hline \multirow[t]{6}{*}{1105} & 006 & Fusing Temperature Correction (Translucent Sheets) & \begin{tabular}{l}
Specifies the amount to raise or lower fusing temperature from standby mode to print on Translucent Sheets (tracing paper). \\
B070: [-10~+5 / +2 / 1 deg] \\
B071: [-10~+5 / +5 / 1 deg]
\end{tabular} \\
\hline & 007 & Fusing Lamp Switching at Warmup & Specifies the fusing temperature when switching from 3 fusing lamps on to 2 fusing lamps on to stabilize the fusing temperature from warm-up. (The fusing lamp that heats the center of the hot roller is turned off.)
\[
\left[20 \sim 140 / 40 / 1^{\circ} \mathrm{C}\right]
\] \\
\hline & 008 & Fusing Temperature Adjustment in Lower Power Mode & Sets the target temperature for the hot roller when the machine enters low power mode.
\[
\begin{aligned}
& \text { B070: }\left[101 \sim 178 / 143 / 1^{\circ} \mathrm{C}\right] \\
& \text { B071: }\left[101 \sim 178 / 150 / 1^{\circ} \mathrm{C}\right]
\end{aligned}
\] \\
\hline & 009 & Fusing Idling Start Temperature & Sets the start temperature for fusing idling. [100~160 / \(150 / 1^{\circ} \mathrm{C}\) ] \\
\hline & 010 & Paper Size Selection for Temperature Correction & \begin{tabular}{l}
Determines which threshold paper width is used for SP1105 003 and SP1105 004
\[
\text { [0~1 / } 0 \text { / 1] }
\] \\
0: LT/A4 LEF \\
1: 257 mm wide (B5 SEF).
\end{tabular} \\
\hline & 011 & Fusing Lamp Switching after Low Power Mode & \begin{tabular}{l}
Specifies the fusing temperature to switch from 3 fusing lamps on to 2 fusing lamps on when the machine returns from low power mode: \\
SP1105-1 - SP1105 011 = Actual Temp. [5~20 / \(10 / 1^{\circ} \mathrm{C}\) ] \\
The third lamp is not switched on to prevent overshooting the target temperature.
\end{tabular} \\
\hline 1106 & & Fusing Temperature Display & Displays the fusing temperature. \\
\hline 1107 & & Fusing Idling Time Setting & Sets the fusing idling time.
\[
[0 \sim 60 / 10 / 1 \mathrm{~s}]
\] \\
\hline \multirow[t]{2}{*}{1108} & \multicolumn{3}{|l|}{Fusing Adjustment before Ready Condition} \\
\hline & 001 & Waiting Condition Time Setting & \begin{tabular}{l}
Specifies the length of time to elapse after the target temperature has been reached in order to apply even heat across the length of the hot roller. Only applies when fusing idling is used.
\[
\text { [0~180 / } 80 / 1 \mathrm{~s}]
\] \\
This SP attempts to reduce the amount of paper wrinkling, especially if the first job is on A3 paper after the machine is started up at the beginning of the workday.
\end{tabular} \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|}
\hline SP & \multicolumn{2}{|r|}{Number/Name} & Function/[Setting] \\
\hline 1108 & 002 & Temperature Correction & Corrects the fusing temperature before reaching standby temperature in order to prevent overshooting standby temperature. DFU
\[
\left[-10 \sim-5 /-8 / 1^{\circ} \mathrm{C}\right]
\] \\
\hline 1109 & \multicolumn{2}{|l|}{Fusing Nip Band Check} & \begin{tabular}{l}
Use OHP to execute this SP and feed 1 sheet between the hot roller and pressure roller where it remains for 30 s and is then fed out so you can measure the nip band width. \\
[OFF, ON]
\end{tabular} \\
\hline \multirow[t]{6}{*}{1902} & \multicolumn{3}{|l|}{Web Motor Control} \\
\hline & 001 & Web Consumption & \begin{tabular}{l}
Displays how much of the web has been used, expressed as a percentage of the roll consumed. Switch the machine off/on after changing this setting.
\[
\text { [0~107 / } 0 \text { / 1\%] }
\] \\
When you install a partially used roll from another machine, read this SP before removal, then input that value with this SP on the next machine. Otherwise, the machine has no way of knowing how much of the partially used roll has been consumed.
\end{tabular} \\
\hline & 002 & Web Motor Drive Interval & \begin{tabular}{l}
Determines how often the web motor turns on. \\
B070 \\
EUR/A: [3~130 / 12.6 / 0.1 sec\(]\) \\
NA: \(\quad[3 \sim 130 / 20.7 / 0.1 \mathrm{sec}]\) \\
B071 \\
EUR/A: [3~130 / 10.4 / 0.1 sec\(]\) \\
NA: \(\quad[3 \sim 130 / 17.0 / 0.1 \mathrm{sec}]\)
\end{tabular} \\
\hline & 003 & Web Motor Drive Time & Changes the time that the web motor is driven.
\[
[0.3 \sim 3.5 / 2.8 / 0.1 \mathrm{~s}]
\] \\
\hline & 004 & Web Near End Setting & \begin{tabular}{l}
Changes the web consumption ratio at which web near end is displayed. \\
EUR/A: [0~100 / 86 / 1\%] \\
NA: [0~100 / 90 / 1\%]
\end{tabular} \\
\hline & 005 & Web Motor Drive Interval (Low Speed) & \begin{tabular}{l}
Determines how often the web motor turns on in Low Speed mode. \\
EUR/A: [3~130 / 15.4 / 0.1 s] \\
NA: \(\quad[3 \sim 130 / 25.3 / 0.1 \mathrm{~s}]\)
\end{tabular} \\
\hline \multirow[t]{3}{*}{1903} & \multicolumn{3}{|l|}{Web Drive Time} \\
\hline & 001 & Web Total Time Display (x 200ms) & Displays the total amount of time (seconds) elapsed during web roll feed. \\
\hline & 002 & Web Actual Time Display (x 100ms) & Displays the total amount of web roll motor operation time (seconds) for feeding the current web roll. \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|}
\hline SP & \multicolumn{2}{|r|}{Number/Name} & Function/[Setting] \\
\hline 1906 & 001 & Duplex Stop Position - Right & Changes the paper stop position in the duplex unit after passing duplex transport sensor 2. DFU
\[
[-10 \sim+10 / 0 / 2 \mathrm{~mm}]
\] \\
\hline \multirow[t]{9}{*}{1907} & \multicolumn{2}{|l|}{Paper Feed Timing Adjustment} & \begin{tabular}{l}
Specifies when to stop the feed clutch once a sheet of paper reaches the feed sensor and switches it on. \\
[0~1000 / \(0 / 100 \mathrm{~ms}\) ] \\
This SP mode is used as a multi-feed countermeasure. However, copy (print) speed is slightly reduced.
\end{tabular} \\
\hline & 001 & Tray 1 & \\
\hline & 002 & Tray 2 & \\
\hline & 003 & Tray 3 & \\
\hline & 004 & Tray 4 (LCT Tray 1) & \\
\hline & 005 & Tray 5 (LCT Tray 2) & \\
\hline & 006 & Tray 6 (LCT Tray 3) & \\
\hline & 007 & Tray 7 (Bypass Tray) & \\
\hline & 008 & Translucent Sheets & \\
\hline
\end{tabular}

\section*{SP2-nnn Drum}
\begin{tabular}{|c|c|c|c|}
\hline SP & \multicolumn{2}{|r|}{Number/Name} & Function/[Setting] \\
\hline \multirow[t]{9}{*}{2001} & \multicolumn{2}{|l|}{Charge Corona Bias Adjustment} & \\
\hline & 001 & Grid Voltage in Imaging Area (Auto Process Control OFF) & \begin{tabular}{l}
Adjusts the voltage applied to the grid plate during copying when auto process control is off. \\
[-600~-1300 / -900 / 10 V\(]\) \\
Normally, there is no need to adjust this. However, if there is an ID or TD sensor problem, the machine goes into fixed toner supply mode. After replacing the drum or charge corona wire, reset this value to the default.
\end{tabular} \\
\hline & 002 & \[
\begin{aligned}
& \text { Grid Voltage in ID Sensor } \\
& \text { Pattern(Auto Process Control OFF) }
\end{aligned}
\] & \begin{tabular}{l}
Adjusts the voltage applied to the grid plate when making the ID sensor pattern, when auto process control is switched off. \\
[-600~~1300 / -770 / 10 V ] \\
Normally, there is no need to adjust this. If the user wants high-density copies, the sensor pattern must be lighter, so this voltage must be a higher negative voltage.
\end{tabular} \\
\hline & 003 & Grid Voltage in Imaging Area (Auto Process Control ON) & \begin{tabular}{l}
Adjusts the voltage applied to the grid plate during copying when auto process control is switched on. \\
\([-600 \sim-1300 /-1000 / 10 \mathrm{~V}]\) \\
This voltage changes every time auto process control starts up (every time the machine is switched on)
\end{tabular} \\
\hline & 004 & Grid Voltage for Transparencies & \begin{tabular}{l}
Adjusts the voltage applied to the grid plate when Transparency mode is selected.
\[
[-600 \sim-1300 /-770 / 10 \mathrm{~V}]
\] \\
Use this if there is a copy quality problem when making copies on Transparencies. Normally there is no need to adjust this SP.
\end{tabular} \\
\hline & 005 & Total Corona Current & Adjusts the current applied to the charge corona wire except in Photo mode.
\[
[-1000 \sim-2800 /-1400 / 10 u A]
\] \\
\hline & 006 & Total Corona Current (Photo Mode) & \begin{tabular}{l}
Adjusts the current applied to the charge corona wire for Photo mode. \\
[-1000~ \(2800 /-1600 / 10 u A]\)
\end{tabular} \\
\hline & 007 & Vd (Auto Process Control) & \begin{tabular}{l}
Adjusts the target VD voltage for Process Control Initial Setting. \\
\([-700 \sim-1000 /-800 / 5 \mathrm{~V}]\)
\end{tabular} \\
\hline & 008 & Grid Voltage in Imaging Area (Auto Process Control off/Low Speed) & \begin{tabular}{l}
Adjusts the voltage applied to the grid plate during copying when auto process control is switched off and the machine is in the low speed mode. \\
\([-600 \sim-1300 /-850 / 10 \mathrm{~V}]\)
\end{tabular} \\
\hline
\end{tabular}
\begin{tabular}{||l|l|l|l||}
\hline SP & \multicolumn{1}{|c|}{ Number/Name } & \multicolumn{1}{c|}{ Function/[Setting] } \\
\hline 2001 & 009 & \begin{tabular}{l} 
Grid Voltage in ID Sensor Pattern \\
(Auto Process Control off/Low \\
Speed)
\end{tabular} & \begin{tabular}{l} 
Adjusts the voltage applied to the grid \\
plate when making the ID sensor pattern, \\
when auto process control is switched off \\
and the machine is in the low speed \\
mode. \\
[-600~-1300 / -710 / 10 V]
\end{tabular} \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|}
\hline SP & \multicolumn{2}{|r|}{Number/Name} & Function/[Setting] \\
\hline \multirow[t]{10}{*}{2105} & 001 & Correction in Printer Mode & \begin{tabular}{l}
If switched ON, this allows each channel to be adjusted for 1200 dpi print output with the SP settings below (LD0 ~ LD7). [0~1/1/1] \\
0: OFF, 1: ON
\end{tabular} \\
\hline & 002 & Correction in Copy Mode & \begin{tabular}{l}
If switched ON, this allows each channel to be adjusted for copy output with the SP settings below (LD0~LD7).
\[
[0 \sim 1 / 0 / 1]
\] \\
0: OFF, 1: ON
\end{tabular} \\
\hline & 003 & LD0 Power Correction & Correct the power of LD0 after either SP2105-001 or -002 is switched on.
\[
[-40 \sim+40 /-2 / 1]
\] \\
\hline & 004 & LD1 Power Correction & Corrects the power of LD1 after either SP2105-001 or -002 is switched on.
\[
[-40 \sim+40 /-2 / 1]
\] \\
\hline & 005 & LD2 Power Correction & Corrects the power of LD2 after either SP2105-001 or -002 is switched on.
\[
[-40 \sim+40 /+2 / 1]
\] \\
\hline & 006 & LD3 Power Correction & Corrects the power of LD3 after either SP2105-001 or -002 is switched on.
\[
[-40 \sim+40 /+2 / 1]
\] \\
\hline & 007 & LD4 Power Correction & Corrects the power of LD4 after either SP2105-001 or -002 is switched on.
\[
[-40 \sim+40 /+2 / 1]
\] \\
\hline & 008 & LD5 Power Correction & Corrects the power of LD5 after either SP2105-001 or -002 is switched on.
\[
[-40 \sim+40 /+2 / 1]
\] \\
\hline & 009 & LD6 Power Correction & Corrects the power of LD6 after either SP2105-001 or -002 is switched on.
\[
[-40 \sim+40 /-2 / 1]
\] \\
\hline & 010 & LD7 Power Correction & Corrects the power of LD7 after either SP2105-001 or -002 is switched on.
\[
[-40 \sim+40 /-2 / 1]
\] \\
\hline \multirow[t]{5}{*}{2111} & \multicolumn{2}{|l|}{FCI Shade Detection} & Allows shading detection if FCl (Fine Character Adjustment) smoothing is on. With this SP switched on, photos and painted areas are detected, and FCl is not applied in these areas. FCl is used for printer mode output only. \\
\hline & 001 & Matrix Size (600 dpi) & \[
\begin{aligned}
& {[0 \sim 128 / 18 / 1]} \\
& 0: \text { OFF }
\end{aligned}
\] \\
\hline & 002 & Threshold Value (600 dpi) & \[
\begin{aligned}
& {[0 \sim 128 / 4 / 1]} \\
& 0: \text { OFF }
\end{aligned}
\] \\
\hline & 003 & Matrix Size (400 dpi) & \[
\begin{aligned}
& {[0 \sim 128 / 18 / 1]} \\
& 0: \text { OFF }
\end{aligned}
\] \\
\hline & 004 & Threshold Value (400 dpi) & \[
\begin{aligned}
& {[0 \sim 128 / 4 / 1]} \\
& 0: \text { OFF }
\end{aligned}
\] \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|}
\hline & & Number/Name & Function/[Setting] \\
\hline & \multicolumn{2}{|l|}{Printer Dot Edge Parameter Setting} & Allows setting a parameter for binary edge processing for the printer application with FCl switched off. This SP allows adjustment of image quality if the desired effect cannot be achieved with the default settings for edge processing. In general, increasing the values produces thicker lines and decreasing them produces thinner lines. However, some settings could cause defective images on white paper. \\
\hline & 001 & Leading Dot Level Setting (1200 dpi) & [2~8/5/1] \\
\hline & 002 & Trailing Dot Level Setting (1200 dpi) & [2~8/5/1] \\
\hline & 003 & Multiple Dot Level Setting ( 1200 dpi ) & [2~8/8/1] \\
\hline & 004 & Independent Dot Level Setting (1200 dpi) & [2~8/6/1] \\
\hline & 005 & Leading Dot Level Setting (600 dpi) & [2~16/12/1] \\
\hline & 006 & Trailing Dot Level Setting (600 dpi) & [2~16/12/1] \\
\hline & 007 & Multiple Dot Level Setting ( 600 dpi ) & [2~16/16/1] \\
\hline & 008 & Independent Dot Level Setting (600 dpi) & [2~16 / 12/1] \\
\hline & \multicolumn{2}{|l|}{Main Scan Beam Pitch Adjustment} & A label attached to the LD unit service part lists the correct settings. \\
\hline & 001 & Pitch Adjustment Between LD0 and LD2 (LD0) & [-100~100/0/1 \(\mu \mathrm{m}\) ] \\
\hline & 002 & Pitch Adjustment Between LD0 and LD4 (LD0) & [-100~100 / 0 / 1 mm] \\
\hline & 003 & Pitch Adjustment Between LD0 and LD6 (LD0) & [-100~100 / 0 / \(1 \mu \mathrm{~m}\) ] \\
\hline & 004 & Pitch Adjustment Between LD1 and LD3 (LD1) & [-100~100 / 0 / \(1 \mu \mathrm{~m}\) ] \\
\hline & 005 & Pitch Adjustment Between LD1 and LD5 (LD1) & [-100~100 / 0 / \(1 \mu \mathrm{~m}\) ] \\
\hline & 006 & Pitch Adjustment Between LD1 and LD7 (LD1) & [-100~100/0/1 \(\mu \mathrm{m}]\) \\
\hline & 007 & Pitch Adjustment Between CHO and CH1 & [-100~100 / 0 / \(1 \mu \mathrm{~m}\) ] \\
\hline & \multicolumn{3}{|l|}{Development Bias Adjustment} \\
\hline & 001 & Image Area & \begin{tabular}{l}
Adjusts the development bias for copying [-200~-800 / -550 / 10 V ] \\
This can be adjusted as a temporary measure if faint copies appear due to an aging drum.
\end{tabular} \\
\hline & 002 & ID Sensor Pattern (Auto Process Control OFF) & \begin{tabular}{l}
Adjusts the development bias for making the ID sensor pattern for VSP measurement when the auto process control is set to off.
\[
[-200 \sim 800 /-400 / 10 \mathrm{~V}]
\] \\
This should not be used in the field, because it affects ID sensor pattern density, which affects toner supply.
\end{tabular} \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|}
\hline SP & \multicolumn{2}{|r|}{Number/Name} & Function/[Setting] \\
\hline \multirow[t]{6}{*}{2201} & 003 & Transparencies & Adjusts the development bias for copying on Transparencies.
\[
\text { [-200~-800 / -400 / } 10 \mathrm{~V}]
\] \\
\hline & 004 & ID Sensor Development Potential & Adjusts the development potential for making the ID sensor pattern for VSP measurement when the auto process control is set on.
\[
\text { [140~380 / } 240 / 10 \mathrm{~V}]
\] \\
\hline & 005 & Image Area (Low Speed) & \begin{tabular}{l}
Adjusts the development bias for copying in low speed mode. \\
B070: [-200~800 / -480 / 10 V ] \\
B071: [-200~800 / -450 / 10 V\(]\)
\end{tabular} \\
\hline & 006 & ID Sensor Pattern (Auto Process Control OFF/Low Speed) & \begin{tabular}{l}
Adjusts the development bias for making the ID sensor pattern for VSP measurement when the auto process control is set to off and the machine is in low speed mode. \\
B070: [-200~800 / -370 / 10 V\(]\) \\
B071: [-200~800 / -350 / 10 V ]
\end{tabular} \\
\hline & 007 & Transparencies (Low Speed) & \begin{tabular}{l}
Adjusts the development bias for copying onto Transparencies in low speed mode. \\
B070: [-200~800 / -370 / 10 V ] \\
B071: [-200~800 / -350 / 10 V ]
\end{tabular} \\
\hline & 008 & ID Sensor Development Potential (Low Speed) & \begin{tabular}{l}
Adjusts the development potential for making the ID sensor pattern for VSP measurement when the auto process control is set on and the machine is in the low speed mode. \\
B070: [0~200 / 30 / 10 V ] \\
B071: [0~200 / 50 / 10 V ] \\
This value is subtracted from the setting of SP2201 004. For example, if 004 is set at 240 and 008 set at 60 , then the value is adjusted to \(180(240-60=180)\).
\end{tabular} \\
\hline \multirow[t]{2}{*}{2207} & \multicolumn{3}{|l|}{Toner Supply} \\
\hline & 001 & Forced Toner Supply & \begin{tabular}{l}
Forces toner supply for 10 seconds from the toner bank through the toner hopper to the development unit. Press Start to force toner supply. \\
This mode finishes automatically after the toner supplied 10 times. Use to determine if toner supply is operating correctly. If forcing toner supply with this SP does not darken the image, then toner supply is not operating correctly.
\end{tabular} \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|}
\hline SP & \multicolumn{2}{|r|}{Number/Name} & Function/[Setting] \\
\hline 2207 & 002 & Toner Bank Toner Setup & Turns on the drum motor, development motor, development bias, toner supply motor and charge corona. Then turns on the toner supply coil clutch to supply toner to the toner hopper, but not to the development unit. Requires about 7 minutes. Remove the white gear from the toner hopper and install the red gear. Press Start. Install the white gear again after finishing with this SP mode. Use this SP to fill the toner transport path with toner after cleaning the toner supply unit, or at installation. \\
\hline 2208 & \multicolumn{2}{|l|}{Toner Supply Mode} & \begin{tabular}{l}
Selects the toner supply mode: Sensor Control or Image Pixel Count. \\
[0~1 / 0 / 1] \\
0: Sensor Control \\
1: Pixel Count \\
Select Image Pixel Count only if the TD sensor has failed and cannot be replaced immediately, so that the customer can use the machine. Return the setting to Sensor Control after replacing the sensor.
\end{tabular} \\
\hline \multirow[t]{3}{*}{2209} & \multicolumn{3}{|l|}{Toner Supply Rate} \\
\hline & 001 & Normal Speed & \begin{tabular}{l}
Adjust the toner supply amount from the hopper for the normal operation. \\
B070: [100~2000 / 850 / \(10 \mathrm{mg} / \mathrm{s}\) ] B071: [100~2000/1000/10 mg/s] Increasing this value reduces the toner supply roller clutch on time. Use a lower value if the user tends to make lots of copies that have a high proportion of black.
\end{tabular} \\
\hline & 002 & Low Speed & \begin{tabular}{l}
Allows adjustment of the toner supply amount \\
from the hopper for low speed mode. \\
B070: [100~2000 / \(850 / 10 \mathrm{mg} / \mathrm{s}\) ] \\
B071: [100~2000 / \(1000 / 10 \mathrm{mg} / \mathrm{s}\) ]
\end{tabular} \\
\hline 2210 & \multicolumn{2}{|l|}{ID Sensor Pattern Interval} & Changes the interval for making the ID sensor pattern (VSP/VSG detection). [1~500/10/1 copy] If the user normally makes copies with a high proportion of black, reduce the interval. \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|}
\hline SP & \multicolumn{2}{|r|}{Number/Name} & Function/[Setting] \\
\hline 2220 & \multicolumn{2}{|l|}{Vref Manual Setting} & \begin{tabular}{l}
Adjusts the TD sensor reference voltage (Vref) manually.
\[
[0 \sim 5.0 / 2.5 / 0.01 \mathrm{~V}]
\] \\
Change this value after replacing the development unit with another one that already contains toner. To use a development unit from another machine for test purposes: \\
1) Check the value of SP2220 and SP2906 in both the machine containing the test unit and the machine that you are going to move it to. \\
2) Install the test development unit, then input the VREF for this unit into SP2220 and the Vcont for this unit into SP2906. \\
3) After the test, put back the old development unit, and change SP2220 and SP2906 back to the original value.
\end{tabular} \\
\hline 2223 & \multicolumn{2}{|l|}{Vt Display} & Displays the current TD sensor output voltage. [0~5.0 / 2.5 / 0.01 V] \\
\hline 2226 & \multicolumn{2}{|l|}{Toner Bank Toner Discharge} & This SP removes toner from the toner bank and sends it to the toner hopper. After turning the toner supply motor and the toner bank motor on, the toner supply coil clutch turns on and off at 2 second intervals. The motors and clutch stop when the toner near-end sensor (in the toner bank unit) detects no toner. Even if the sensor continues to detect toner, this operation stops when the clutch has been turned on and off 10 times, so this SP may have to be repeated to clean out the system completely. \\
\hline 2227 & \multicolumn{2}{|l|}{Toner Supply Mode Display} & \begin{tabular}{l}
Displays the toner supply mode used for the last copy. \\
1: ID Sensor and TD Sensor (from the 11th copy, using VT - VREF) \\
2: ID Sensor and TD Sensor (using VSP/VSG) - before the 10th copy of a job \\
3: TD Sensor - temporary mode when ID sensor output is abnormal \\
4: Image Pixel Count
\end{tabular} \\
\hline \multirow[t]{3}{*}{2301} & \multicolumn{2}{|l|}{Transfer Current Adjustment} & Adjusts the current applied to the transfer belt during copying, depending on the side, media type, and operation mode (normal or low speed). \\
\hline & \multirow[t]{2}{*}{\begin{tabular}{l}
001 \\
\hline 002
\end{tabular}} & 1st Copy Side & \[
\begin{aligned}
& \text { B070: }[10 \sim 200 / 100 / 1 \mu \mathrm{~A}] \\
& \text { B071: }[10 \sim 200 / 110 / 1 \mu \mathrm{~A}]
\end{aligned}
\] \\
\hline & & Thick Paper & \[
\begin{aligned}
& \text { B070: }[10 \sim 200 / 100 / 1 \mu \mathrm{~A}] \\
& \text { B071: }[10 \sim 200 / 110 / 1 \mu \mathrm{~A}]
\end{aligned}
\] \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|}
\hline & & Number/Name & Function/[Setting] \\
\hline \multirow[t]{10}{*}{2301} & 003 & Transparencies & [10~200 / 140 / \(1 \mu \mathrm{~A}\) ] \\
\hline & 004 & Translucent Sheets & \[
\begin{array}{|l|}
\hline \text { B070: }[10 \sim 200 / 100 / 1 \mu \mathrm{~A}] \\
\text { B071: }[10 \sim 200 / 110 / 1 \mu \mathrm{~A}]
\end{array}
\] \\
\hline & 005 & 2nd Copy Side & \[
\begin{array}{|l}
\text { B070: }[10 \sim 200 / 100 / 1 \mu \mathrm{~A}] \\
\text { B071: }[10 \sim 200 / 110 / 1 \mu \mathrm{~A}]
\end{array}
\] \\
\hline & 006 & Between Papers & [10~200/20/1 \(\mu \mathrm{A}]\) \\
\hline & 007 & 1st Copy Side (Low Speed) & [10~200/80/1 \(\mu \mathrm{A}]\) \\
\hline & 008 & Thick Paper (Low Speed) & [10~200/80/1 \(\mu \mathrm{A}]\) \\
\hline & 009 & Transparencies (Low Speed) & [10~200/90/1 \(\mu \mathrm{A}]\) \\
\hline & 010 & Translucent Sheets (Low Speed) & [10~200/80/1 \(\mu \mathrm{A}]\) \\
\hline & 011 & 2nd Copy Side (Low Speed) & [10~200/80/1 \(\mu \mathrm{A}]\) \\
\hline & 012 & Between Papers (Low Speed) & [10~200/20/1 \(\mu \mathrm{A}\) ] \\
\hline \multirow[t]{3}{*}{2506} & \multicolumn{3}{|l|}{Cleaning Interval-Multiple Copy} \\
\hline & 001 & On / Off & \begin{tabular}{l}
Selects whether multiple jobs are stopped at regular intervals in order to 1) reverse the drum to clean the cleaning blade edge, or 2) create an ID sensor pattern to correct toner density control. This SP switches this feature on and off. SP2506 002 sets the interval. \\
[0~1 / 1/1] \\
0: OFF, 1: ON \\
Use if the drum gets dirty or images get too pale or too dark during long copy jobs.
\end{tabular} \\
\hline & 002 & Interval & \begin{tabular}{l}
Selects the interval at which multi copy jobs are stopped for blade cleaning. [ \(1 \sim 100 / 30 / 1 \mathrm{~min}\) ] \\
Reduce the value if a large amount of paper dust is causing black lines on the copy.
\end{tabular} \\
\hline \multirow[t]{3}{*}{2602} & \multicolumn{3}{|l|}{PTL Settings} \\
\hline & 001 & Front - On/Off Setting & \begin{tabular}{l}
Switches the PTL on and off for the front side of the paper passing through the fusing unit at normal speed. \\
Note: When feeding thick paper or OHP transparencies, this setting is always off.
\[
\begin{aligned}
& {[0 \sim 1 / 0 / 1]} \\
& 0: \text { Off } \\
& 1: \text { On }
\end{aligned}
\] \\
PTL timing can be adjusted with SP2602 002.
\end{tabular} \\
\hline & 002 & Front - Off Timing Adj. & This SP adjusts the length of the space from the leading edge where the PTL quenching is applied to the front side at normal speed. For example, if you set +5 , 5 mm from the leading edge will be quenched.
\[
[-5 \sim 10 / 2 / 0.1 \mathrm{~mm}]
\] \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|}
\hline SP & \multicolumn{2}{|r|}{Number/Name} & Function/[Setting] \\
\hline \multirow[t]{5}{*}{2602} & 003 & Back - On/Off Setting & \begin{tabular}{l}
Switches the PTL on and off for the back side of the paper passing through the fusing unit in the duplex mode at normal speed.
[0~1/0/1] \\
0: Off \\
1: On \\
Notes: \\
- When this setting is switched on, make sure that the setting of SP2940 008 is the same as the default setting of SP2940 001. \\
- When feeding thick paper or OHP transparencies, this setting is always off.
\end{tabular} \\
\hline & 004 & Back - On/Off Timing Adj. & This SP adjusts the length of the space from the leading edge where the PTL quenching is applied to the back side at normal speed. For example, if you set +5 , 5 mm from the leading edge will be quenched. [-5~10/2/0.1 mm] \\
\hline & 005 & Front - On/Off Setting: Low Speed Mode & \begin{tabular}{l}
Switches the PTL on and off for the front side of the paper passing through the fusing unit at in the low speed mode. \\
Note: When feeding thick paper or OHP transparencies, this setting is always off.
\[
\begin{aligned}
& {[0 \sim 1 / 0 / 1]} \\
& 0: \text { Off } \\
& 1: \text { On }
\end{aligned}
\]
\end{tabular} \\
\hline & 006 & Front - Off Timing Adj.: Low Speed Mode & This SP adjusts the length of the space from the leading edge where the PTL quenching is applied to the front side in low speed mode. For example, if you set \(+5,5 \mathrm{~mm}\) from the leading edge will be quenched. [-5~10/2/0.1 mm] \\
\hline & 007 & Back- On/Off Setting: Low Speed Mode & \begin{tabular}{l}
Switches the PTL on and off for the back side of the paper passing through the fusing unit in the duplex mode in low speed mode.
[0~1/0/1] \\
0 : Off \\
1: On \\
Notes: \\
- When this setting is switched on, make sure that the setting of SP2940 016 is the same as the default setting of SP2940 009. \\
- When feeding thick paper or OHP transparencies, this setting is always off.
\end{tabular} \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|}
\hline SP & \multicolumn{2}{|l|}{Number/Name} & Function/[Setting] \\
\hline 2602 & 008 & Back - Off Timing Adj.: Low Speed Mode & This SP adjusts the length of the space from the leading edge where the PTL quenching is applied to the back side in slow speed mode. For example, if you set \(+5,5 \mathrm{~mm}\) from the leading edge will be quenched. [-5~10/2/0.1 mm] \\
\hline 2801 & \multicolumn{2}{|l|}{TD Sensor Initial Setting} & Performs the TD sensor initial setting. This SP mode controls the voltage applied to the TD sensor to make the TD sensor output about 2.5 V . After finishing this, the TD sensor output voltage is displayed. Press Start to execute. You must enter the developer lot number. (The lot number is stenciled on the top edge of the developer package.) Use this mode only after changing the TD sensor or the developer. \\
\hline 2803 & \multicolumn{2}{|l|}{Charge Corona Cleaner On} & Turns on the corona wire cleaner manually. Press Start to execute. When copy density across the paper is uneven, clean the wire with this SP. \\
\hline \multirow[t]{3}{*}{2804} & \multicolumn{3}{|l|}{Charge Corona Cleaner Setting} \\
\hline & 001 & Corona Wire Cleaner Operation Setting & \begin{tabular}{l}
Selects when automatic corona wire cleaning is done. [0~2/2/1] \\
0: OFF \\
1: With process control and at intervals selected with SP2804 002 \\
2: At intervals selected with SP2804 002 .
\end{tabular} \\
\hline & 002 & Corona Wire Cleaner Interval & \begin{tabular}{l}
Selects the interval for automatic corona wire cleaning. \\
[100~10000 / 5000 / 100 copies]
\end{tabular} \\
\hline \multirow[t]{3}{*}{2902} & \multicolumn{3}{|l|}{Test Pattern} \\
\hline & 001 & IPU Scanning Test Pattern & Prints the scan test patterns for the IPU chip. [0~17 / 0 / 1] \\
\hline & 002 & IPU Printing Test Pattern & Prints the print test pattern for the IPU chip. [0~8/0/1] \\
\hline 2902 & 003 & Printing Test Pattern & Prints the printer test patterns.
[0~38/0/1] \\
\hline 2906 & 001 & Vcont Manual Setting & \begin{tabular}{l}
Adjusts the TD sensor control voltage (Vcont) manually. \\
[4.0~24.0 / 9.7 / 0.1 V ] \\
Change this value after replacing the development unit with another one that already contains toner. For example, when using a development unit from another machine for test purposes.(See SP2220.)
\end{tabular} \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|}
\hline SP & \multicolumn{2}{|l|}{Number/Name} & Function/[Setting] \\
\hline \multirow[t]{3}{*}{2909} & \multicolumn{3}{|l|}{Main Scan Magnification} \\
\hline & 001 & Copy & \begin{tabular}{l}
Adjusts the magnification in the main scan direction for copy mode. (-3-17) [-2.0~+2.0 / 0 / 0.1\%] \\
Use the "• / *key to enter the minus ( -) before entering the value.
\end{tabular} \\
\hline & 002 & Printer & \begin{tabular}{l}
Adjusts the magnification in the main scan direction for printing mode. (-3-17)
\[
[-2.0 \sim+2.0 / 0 / 0.1 \%]
\] \\
Use the "• / *key to enter the minus (-) before entering the value.
\end{tabular} \\
\hline 2910 & \multicolumn{2}{|l|}{Writing Sub Scan Magnification} & \begin{tabular}{l}
Adjusts the magnification in the sub scan direction. (-3-17)
\[
\text { [-1.0~+1.0 / } 0 / 0.1 \%]
\] \\
Use the "• / *key to enter the minus ( -) before entering the value.
\end{tabular} \\
\hline \multirow[t]{3}{*}{2911} & \multicolumn{3}{|l|}{Transfer Current On / Off Timing} \\
\hline & 001 & La (ON) & Adjusts the transfer current on timing at the leading edge.
\[
[-30 \sim+30 / 0 / 1 \mathrm{~mm}]
\] \\
\hline & 002 & Lb (Switch) & Adjusts the transfer current on/off exchange timing. [0~60/45/1 mm] \\
\hline 2911 & 003 & Lc (OFF) & Adjusts the transfer current off timing (for example: -5 mm is 5 mm after the trailing edge). [-30~+30/0/1 mm] \\
\hline \multirow[t]{4}{*}{2912} & \multicolumn{3}{|l|}{Drum Reverse Rotation Interval} \\
\hline & 001 & 1st Reverse Rotation & Sets the length of time the drum is reversed to clean the drum cleaning blade. [0~7/2 / 20 ms ] \\
\hline & 002 & Forward Rotation After 1st Reverse Rotation & Sets the length of time the drum is rotated forward after the 1st reverse rotation.
\[
[0 \sim 7 / 0 / 20 \mathrm{~ms}]
\] \\
\hline & 003 & 2nd Reverse Rotation & Sets the length of time the drum is reversed for the 2nd reverse rotation to clean the drum cleaning blade again.
[0~7/0/20 ms] \\
\hline \multirow[t]{2}{*}{2915} & \multicolumn{2}{|l|}{Drum Heater Adjustment} & SP 2915 is currently not being used. Do not change the settings. \\
\hline & 001 & ON Time at Power On ( \(<100^{\circ} \mathrm{C}\) ) & \[
\begin{aligned}
& \text { [0~10 / } 0 \text { / } 1 \mathrm{~min} .] \\
& \text { DFU }
\end{aligned}
\] \\
\hline \multirow[t]{5}{*}{2915} & 002 & ON Time at Power On ( \(<140^{\circ} \mathrm{C}\) ) & \[
\begin{aligned}
& \text { [0~10 / } 0 \text { / } 1 \text { min.] } \\
& \text { DFU }
\end{aligned}
\] \\
\hline & 003 & Drum Temperature & DFU \\
\hline & 004 & Sensor Output Value (Direct) & DFU \\
\hline & 005 & Sensor Output Value (Atmosphere) & DFU \\
\hline & 006 & Forced Heater ON & DFU \\
\hline 2920 & \multicolumn{2}{|l|}{LD Off Check} & Checks whether the LD turns off or on when the front door is opened. DFU
\[
\begin{aligned}
& {[0 \sim 1 / 0 / 0]} \\
& 0: \text { ON } \\
& 1: \text { OFF }
\end{aligned}
\] \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|}
\hline SP & \multicolumn{2}{|r|}{Number/Name} & Function/[Setting] \\
\hline \multirow[t]{17}{*}{2940} & \multicolumn{2}{|l|}{Leading Edge Transfer Current} & Adjusts the leading edge transfer current for each paper feed station at normal and low speed. \\
\hline & 001 & Tray 1 & \begin{tabular}{l}
Tandem Tray - Copier, Normal Speed \\
B070: [10~200/100/1 1 A] \\
B071: [10~200/110/1 \(\mu \mathrm{A}\) ]
\end{tabular} \\
\hline & 002 & Tray 2 & \begin{tabular}{l}
Universal Tray - Copier, Normal Speed \\
B070: [10~200/100/1 1 A ] \\
B071: [10~200/110/1 \(\mu \mathrm{A}\) ]
\end{tabular} \\
\hline & 003 & Tray 3 & \begin{tabular}{l}
Universal Tray - Copier, Normal Speed \\
B070: [10~200/100/1 1 A] \\
B071: [10~200 / \(110 / 1 \mu \mathrm{~A}]\)
\end{tabular} \\
\hline & 004 & Tray 4 & LCT 1st Tray, Normal Speed B070: [10~200/100/1 1 A] B071: [10~200/110/1 \(\mu \mathrm{A}\) ] \\
\hline & 005 & Tray 5 & \begin{tabular}{l}
LCT 2nd Tray, Normal Speed \\
BO70: [10~200/100/1 1 A] \\
B071: [10~200/110/1 \(\mu \mathrm{A}\) ]
\end{tabular} \\
\hline & 006 & Tray 6 & \begin{tabular}{l}
LCT 3rd Tray, Normal Speed \\
B070: [10~200/100/1 1 A] \\
B071: [10~200/110/1 \(\mu \mathrm{A}]\)
\end{tabular} \\
\hline & 007 & Tray 7 (Bypass Tray) & Bypass Tray, Normal Speed B070: [10~200 / 100/ \(1 \mu \mathrm{~A}\) ] B071: [10~200/110/1 \(\mu \mathrm{A}\) ] \\
\hline & 008 & Duplex Tray & \begin{tabular}{l}
Duplex Tray - Copier, Normal Speed \\
B070: [10~200/100/1 1 A] \\
B071: [10~200 / \(110 / 1 \mu \mathrm{~A}]\)
\end{tabular} \\
\hline & 009 & Tray 1 (Low Speed) & \[
\begin{aligned}
& \text { Tandem Tray - Copier, Low Speed } \\
& {[10 \sim 200 / 80 / 1 \mu \mathrm{~A}]} \\
& \hline
\end{aligned}
\] \\
\hline & 010 & Tray 2 (Low Speed) & \[
\begin{aligned}
& \text { Universal Tray - Copier, Low Speed } \\
& {[10 \sim 200 / 80 / 1 \mu \mathrm{~A}]} \\
& \hline
\end{aligned}
\] \\
\hline & 011 & Tray 3 (Low Speed) & \[
\begin{aligned}
& \text { Universal Tray - Copier, Low Speed } \\
& {[10 \sim 200 / 80 / 1 \mu \mathrm{~A}]}
\end{aligned}
\] \\
\hline & 012 & Tray 4 (Low Speed) & LCT 1st Tray, Low Speed [10~200/80/1 \(\mu \mathrm{A}\) ] \\
\hline & 013 & Tray 5 (Low Speed) & LCT 2nd Tray, Low Speed [10~200/80/1 \(\mu \mathrm{A}\) ] \\
\hline & 014 & Tray 6 (Low Speed) & LCT 3rd Tray, Low Speed [10~200/80/1 \(\mu \mathrm{A}\) ] \\
\hline & 015 & Tray 7 (Low Speed) & Bypass Tray, Low Speed
\[
[10 \sim 200 / 80 / 1 \mu \mathrm{~A}]
\] \\
\hline & 016 & Duplex Tray (Low Speed) & \[
\begin{aligned}
& \text { Duplex Tray -Copier, Low Speed } \\
& {[10 \sim 200 / 80 / 1 \mu \mathrm{~A}]} \\
& \hline
\end{aligned}
\] \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|}
\hline SP & Number/Name & Function/[Setting] \\
\hline 2941 & Recycled Paper Transfer Control & \begin{tabular}{l}
Determines whether recycled paper is handled as plain paper or thick paper.
\[
[0 \sim 1 / 0 / 1]
\] \\
0: Plain paper \\
1: Thick paper \\
Setting this mode to 1 is effective when the image at the leading edge is not good. \\
To use this SP, "Recycled Paper" should be selected in the Tray Paper Settings screen. \\
Selecting "Thick paper" in the Tray paper Settings screen has the same effect as this SP, but the "Thick Paper" selection does not allow duplexing or punching.
\end{tabular} \\
\hline 2961 & Developer Initialization (Factory) & DFU \\
\hline 2962 & Auto Process Control Execution & \begin{tabular}{l}
Press Start to execute and automatically adjust the following: \\
1. Drum potential sensor \\
2. ID sensor \\
3. Charge grid voltage Vg (by changing Vd) \\
4. LD power (by changing Vh ) \\
5. VL detection. \\
Before using this SP, auto process control should be on (SP3-901). After changing the drum, ID sensor, drum potential sensor, LD unit, charge corona wires, or toner density sensor, this SP should be executed.
\end{tabular} \\
\hline 2966 & Periodical Auto Process Control & \begin{tabular}{l}
Selects whether auto process control is done after 24 hours have elapsed after the last copy job.
\[
\begin{aligned}
& {[0 \sim 1 / 0 / 1]} \\
& 0: \text { OFF } \\
& 1: \text { ON }
\end{aligned}
\] \\
This setting is required for a customer who keeps the main switch on all day.
\end{tabular} \\
\hline 2967 & Auto Image Density Adjustment & \begin{tabular}{l}
Selects whether auto image density adjustment is done during machine warm up. This mode is to counter dirty background that occurs when a machine is used in an area that contains ammonia.
\[
[0 \sim 1 / 0 / 1]
\] \\
0: OFF \\
1: ON \\
If Periodical Auto Process Control (SP2966) is used, this adjustment is done also after the auto process control is finished.
\end{tabular} \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|}
\hline SP & Number/Name & Function/[Setting] \\
\hline 2968 & Toner Density Correction & \begin{tabular}{l}
To prevent the image density dropping during continuous copying after a long interval (this is caused by a sudden increase of Q/M), VREF is changed by 0.06 V every ( 100 X [SP2-974 value +1 1]) prints. This correction is applied from when the auto process control is done, until "(the number of prints set in this SP mode) X (SP2-974 value +1)" has been made. \\
[0~20 / 0 / 1K copies]
\end{tabular} \\
\hline 2969 & ID Sensor Pattern Interval-Multiple Copy & \begin{tabular}{l}
Twenty ID patterns are made in an interval of about 1 minute during a continuous copy process just after process control is completed. Image density will be stabilized. However, printing productivity will be reduced. [0~1 / 0/1] \\
0: OFF \\
1: ON
\end{tabular} \\
\hline 2972 & Toner Suction Collection Bottle Operation Time & \begin{tabular}{l}
Displays the total operation time of the development unit toner collection bottle. [ \(0 \sim 600 / 0 / 1\) hour] \\
Need to replace soon: 580 hours Need to replace now: 600 hours After the bottle is replaced, reset the value to 0 (zero) by pressing 0 and \# (Enter) keys.
\end{tabular} \\
\hline 2973 & Toner Suction Motor Operation Time & \begin{tabular}{l}
Displays the total operation time of the development toner suction motor. [ \(0 \sim 600\) / 0 / 1 hour] \\
Need to replace soon: 570 hours Need to replace now: 600 hours After the motor is replaced, reset the value to 0 (zero) by pressing 0 and \#.
\end{tabular} \\
\hline 2974 & Toner Supply Interval & \begin{tabular}{l}
Adjusts how often toner is supplied [0~3/0/1] \\
0: 1/1 (every print) \\
1: 1/2 (every 2 prints) \\
2: 1/3 (every 3 prints) \\
3: 1/4 (every 4 prints) \\
The operation of SP2968 now depends on this SP mode setting. In this machine, the Vref update interval has been changed from "every 100 prints" to "every [100X(SP2-974 value +1)] prints". For example, if set to 1 , toner is supplied every 2 prints, and SP 2-974 value \(+1=\) 3.
\end{tabular} \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|}
\hline SP & & Number/Name & Function/[Setting] \\
\hline \multirow[t]{3}{*}{2975} & \multicolumn{3}{|l|}{Toner Recycle Cut Counter} \\
\hline & 001 & ON Counter & \begin{tabular}{l}
Determines how often all recycled toner is discarded. The purpose of this feature is to periodically remove all recycled toner contaminated with paper dust. \\
[0~999 / 200 / 1 K copies] \\
This setting determines when the toner separation solenoid closes the shutter and shunts all toner to the waste toner collection bottle. For details, see "Toner Recycling" in Section 6.
\end{tabular} \\
\hline & 002 & OFF Counter & \begin{tabular}{l}
This setting determines how long all toner is shunted to the waste toner collection bottle (no recycling). \\
[0~255 / 25 / 1 K copies] \\
This setting determines when the toner separation solenoid opens the shutter and toner recycling starts.
\end{tabular} \\
\hline 2980 & \multicolumn{2}{|l|}{Toner Consumption Pattern Interval} & \begin{tabular}{l}
Use this SP to improve drum cleaning if required. It determines how long the drum turns after the ID sensor pattern is created before the toner consumption pattern is created. \\
[0~30 / 0 / 1 minutes] DFU \\
0 : No toner consumption pattern created.
\end{tabular} \\
\hline
\end{tabular}

\section*{SP3-nnn Processing}
\begin{tabular}{|c|c|c|c|}
\hline SP & & Number/Name & Function/[Setting] \\
\hline \multirow[t]{3}{*}{3001} & \multicolumn{3}{|l|}{ID Sensor Initial Setting} \\
\hline & 001 & ID Sensor PWM Setting & \begin{tabular}{l}
This SP mode recovers the machine when an SC condition occurs because ID Sensor Initial Setting is not done after doing an NVRAM Clear or replacing the NVRAM. Reset this SP to the factory setting in this case.
\[
[0 \sim 255 / 62 / 1]
\] \\
The PWM data is stored when ID Sensor Initial Setting is done.
\end{tabular} \\
\hline & 002 & ID Sensor Initialization & \begin{tabular}{l}
Performs the ID sensor initial setting. The ID sensor output for the bare drum (VSG) is adjusted to \(4.0 \pm 0.2 \mathrm{~V}\). \\
This SP mode should be performed: 1) After replacing or cleaning the ID sensor, 2) After replacing the NVRAM or doing an NVRAM clear.
\end{tabular} \\
\hline \multirow[t]{3}{*}{3103} & \multicolumn{3}{|l|}{ID Sensor Output Display} \\
\hline & 001 & Vsg & Displays the current value of the ID sensor output after checking the bare drum surface. \\
\hline & 002 & Vsg Initial & Displays Vsg when the Vsp adjustment is done. \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|}
\hline \multirow[t]{3}{*}{\[
\begin{gathered}
\hline \text { SP } \\
3103
\end{gathered}
\]} & \multicolumn{2}{|r|}{Number/Name} & Function/[Setting] \\
\hline & 003 & Vsp & Displays the current value of the ID sensor output after checking the ID sensor pattern image. \\
\hline & 004 & Vsgp & Displays the value of the ID sensor output immediately after Vsp is output when the charge potential drops. This reading is used to test and determine characteristics for design. DFU \\
\hline \multirow[t]{3}{*}{3901} & \multicolumn{3}{|l|}{Auto Process Control Setting} \\
\hline & 001 & Auto Process Control Setting & \begin{tabular}{l}
Determines whether machine checks and corrects drum potential (Vd) and LD power when the fusing temperature is lower than \(100^{\circ} \mathrm{C}\) at power-on.
\[
[0 \sim 1 / 1 / 1]
\] \\
0: OFF \\
1: ON \\
This setting attempts to change the Vd setting consistent with the OPC, the charge corona unit, and environment to improve the reliability of the system.
\end{tabular} \\
\hline & 002 & VL Correction Control Setting & \begin{tabular}{l}
Determines whether VL detection and correction are performed during process control every 1 K copies. \\
[0~1/0/1] DFU \\
0: OFF \\
1: ON \\
Even with this SP switched ON, VL detection and correction will not be performed if SP3901 001 is OFF.
\end{tabular} \\
\hline \multirow[t]{8}{*}{3902} & \multicolumn{3}{|l|}{Process Control Data Display} \\
\hline & 001 & Auto Process Control & \begin{tabular}{l}
Displays whether auto process control is switched on or off [0:Off, 1:On] \\
When auto process control is on and the potential sensor is calibrated correctly, "ON" appears on the operation panel. \\
Auto process control is not executed when this \(S P\) is switched off. \\
After RAM is cleared, this SP setting goes off.
\end{tabular} \\
\hline & 002 & V D & Displays the drum potential. \\
\hline & 003 & VH & Displays the standard halftone drum potential, used for laser power adjustment. \\
\hline & 004 & V G & Displays the charge grid voltage resulting from the latest Vd adjustment. \\
\hline & 005 & LD Power (Correction) & Displays the LD power correction value as a result of the latest Vh adjustment. \\
\hline & 006 & V ID & Displays the latest drum surface voltage measured on the ID sensor pattern. \\
\hline & 007 & V M200 & Displays the acquired value when the potential sensor is calibrated after application of -200 V to the drum. \\
\hline
\end{tabular}


\section*{SP4-nnn Scanner}
\begin{tabular}{|c|c|c|}
\hline SP & Number/Name & Function/[Setting] \\
\hline 4008 & Scanner Sub Scan Magnification & \begin{tabular}{l}
Adjusts the magnification in the sub scan direction for scanning. If this value is changed, the scanner motor speed is changed. (-3-17) \\
[-0.9~+0.9 / 0 / 0.1 percent] \\
Use the "• / *key to enter the minus (-) before entering the value. \\
Setting a lower value reduces the motor speed and lengthens the image in the sub scan direction (paper direction). Setting a larger value increases the motor speed and shortens the image in the sub scan direction.
\end{tabular} \\
\hline
\end{tabular}

\begin{tabular}{|c|c|c|c|}
\hline SP & & Number/Name & Function/[Setting] \\
\hline 4600 & \multicolumn{2}{|l|}{Read SBU ASIC ID} & Displays the SBU ID code confirmed by reading the SBU after the SBU adjusts automatically at power on. DFU [0~FFFF / B550 / 0] \\
\hline 4601 & \multicolumn{2}{|l|}{SBU PLL Adjustment} & Adjusts the PLL bandwidth. DFU [9322~9326 / 9324 / 1] \\
\hline \multirow[t]{3}{*}{4605} & \multicolumn{3}{|l|}{Scanner Adjustment} \\
\hline & 001 & Flag Display & \begin{tabular}{l}
Displays a flag to indicate whether density control adjustment was executed with the standard white board for the CCD. DFU [0~1/0/1] \\
0 : Not executed \\
1: Executed
\end{tabular} \\
\hline & 002 & Start & Starts the density adjustment for the CCD using the standard white board. Place 10 sheets of A3 plain paper on the exposure glass, then press Execute. A message is displayed to indicate the success or failure of the adjustment. DFU \\
\hline 4610 & 001 & Standard White Level Adjustment & DFU \\
\hline 4613 & 001 & Standard White Level Adjustment Normally & DFU \\
\hline 4616 & 001 & Standard White Level Adjustment at Factory & DFU \\
\hline \multirow[t]{3}{*}{4624} & \multicolumn{3}{|l|}{Read Offset Data} \\
\hline & 001 & FE ch & DFU \\
\hline & 002 & FO ch & DFU \\
\hline \multirow[t]{2}{*}{4624} & 003 & LE ch & DFU \\
\hline & 004 & LO ch & DFU \\
\hline \multirow[t]{5}{*}{4632} & \multicolumn{3}{|l|}{Gain Adjustment} \\
\hline & 001 & FE ch & DFU \\
\hline & 002 & FO ch & DFU \\
\hline & 003 & LE ch & DFU \\
\hline & 004 & LO ch & DFU \\
\hline 4641 & 001 & White Adjust Loop & DFU \\
\hline 4646 & 001 & SBU Adjustment Error Flag & DFU \\
\hline 4647 & 001 & SBU Hard Error Flag & DFU \\
\hline \multirow[t]{5}{*}{4662} & \multicolumn{2}{|l|}{Gain Adjustment Normally} & \\
\hline & 001 & FE ch & DFU \\
\hline & 002 & FO ch & DFU \\
\hline & 003 & LE ch & DFU \\
\hline & 004 & LO ch & DFU \\
\hline \multirow[t]{5}{*}{4681} & \multicolumn{3}{|l|}{Gain Adjustment at Factory} \\
\hline & 001 & FE ch & DFU \\
\hline & 002 & FO ch & DFU \\
\hline & 003 & LE ch & DFU \\
\hline & 004 & LO ch & DFU \\
\hline \multirow[t]{5}{*}{4691} & \multicolumn{2}{|l|}{Read Shading Data} & \\
\hline & 001 & FE ch & DFU \\
\hline & 002 & FO ch & DFU \\
\hline & 003 & LE ch & DFU \\
\hline & 004 & LO ch & DFU \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|}
\hline SP & & Number/Name & Function/[Setting] \\
\hline \multirow[t]{3}{*}{4694} & \multicolumn{3}{|l|}{Offset Adjustment} \\
\hline & 001 & F side & DFU \\
\hline & 003 & L side & DFU \\
\hline \multirow[t]{4}{*}{4901} & \multicolumn{3}{|l|}{Scan Correction} \\
\hline & 001 & Shading Correction: AEREF Setting & Changes the AEREF (Automatic Exposure Reference) value used in shading correction for the image scanned from the front side (SBU). DFU
\[
[0 \sim 63 / 0 / 1]
\] \\
\hline & 002 & Shading Correction: Shading Data Output & \begin{tabular}{l}
Changes the AEREF (Automatic Exposure Reference) value used in digital \(A / E\) processing. DFU
\[
[0 \sim 1 / 0 / 1]
\] \\
0 : Normal \\
1: Output
\end{tabular} \\
\hline & 003 & Digital AE: AEREF Setting & Changes the AEREF (Automatic Exposure Reference) value used in digital \(A / E\) processing for the image data. DFU [-63~+63/-12 / 1] \\
\hline 4901 & 004 & Digital AE: Low Limit & \begin{tabular}{l}
Sets the low limit at 120 for the value used in digital \(A / E\) processing for the image data. DFU \\
[0~1/1/1] \\
0: No low limit \\
1: Low limit set
\end{tabular} \\
\hline & 020 & Background Erase: Blue Original (Lighter) & \begin{tabular}{l}
Sets the strength of background blue erase when orange original mode is selected. [168~255/180 / 1] \\
A higher setting erases more background and a lower setting less.
\end{tabular} \\
\hline & 021 & Background Erase: Blue Original (Normal) & \begin{tabular}{l}
Sets the strength of background blue erase when the green original mode is selected. [131~167 / 155 / 1] \\
A higher setting erases more background and a lower setting less.
\end{tabular} \\
\hline & 022 & Background Erase: Blue Original (Darker) & \begin{tabular}{l}
Sets the strength of background blue erase when blue original mode is selected [25~130 / 105 / 1] \\
A higher setting erases more background and a lower setting less.
\end{tabular} \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|}
\hline SP & & Number/Name & Function/[Setting] \\
\hline \multirow[t]{31}{*}{4903} & \multicolumn{3}{|l|}{Image Quality Adjustment} \\
\hline & 001 & Text Mode (25.0-55.0\%) & \multirow[t]{10}{*}{\begin{tabular}{l}
Adjusts the sharpness and texture of images processed in Text mode. \\
[0~10 / 5 / 1] \\
0: Softest \\
Soft Mode \\
\(\uparrow\) \\
\(\uparrow\) \\
\(\uparrow\) \\
Normal (Default) \\
\(\downarrow\) \\
\(\downarrow\) \\
\(\downarrow\) \\
9: Sharp Mode \\
10: Sharpest
\end{tabular}} \\
\hline & 002 & Text Mode (55.5-75.0\%) & \\
\hline & 003 & Text Mode (75.5-160.0\%) & \\
\hline & 004 & Text Mode (160.5-400.0\%) & \\
\hline & & & \\
\hline & & & \\
\hline & & & \\
\hline & & & \\
\hline & & & \\
\hline & & & \\
\hline & 005 & Photo Mode Dithering (25.055.0\%) & \multirow[t]{4}{*}{\begin{tabular}{l}
Adjusts the sharpness and texture of images processed in Photo mode with dithering \\
[0~6 / 3 / 1] \\
Softest \\
\(\uparrow\) \\
\(\uparrow\) \\
Print Original Mode (Default) \\
\(\downarrow\) \\
\(\downarrow\) \\
Sharpest
\end{tabular}} \\
\hline & 006 & Photo Mode Dithering (55.575.0\%) & \\
\hline & 007 & Photo Mode Dithering (75.5-
\(160.0 \%\) )
P & \\
\hline & 008 & Photo Mode Dithering (160.5400.0\%) & \\
\hline & 009 & Photo Mode Error Diffusion (25.0-
\(55.0 \%\) ) & \multirow[t]{4}{*}{\begin{tabular}{l}
Adjusts the sharpness and texture of images processed in Photo mode with error diffusion. \\
[0~6/1/1] \\
0 Softest \\
Normal (Default) \\
: \(\uparrow\) \\
\(\uparrow\) \\
4: \(\uparrow\) \\
: Print Original Mode \\
6: Sharpest
\end{tabular}} \\
\hline & 010 & Photo Mode Error Diffusion (55.575.0\%) & \\
\hline & 011 & Photo Mode Error Diffusion (75.5-
\(160.0 \%\) ) & \\
\hline & 012 & Photo Mode Error Diffusion (160.5-400.0\%) & \\
\hline & 013 & Text / Photo Mode (25.0-55.0\%) & \multirow[t]{12}{*}{\begin{tabular}{l}
Adjusts the sharpness and texture of images processed in Text/Photo mode. \\
[ \(0 \sim 10 / 5 / 1]\) \\
0: Softest \\
1: Photo Priority \\
: \(\uparrow\) \\
: \(\uparrow\) \\
\(\uparrow\) \\
Normal (Default) \\
\(\downarrow\) \\
\(7 \downarrow\) \\
\(8 \downarrow\) \\
9 Text Priority \\
10 Sharpest
\end{tabular}} \\
\hline & 014 & Text / Photo Mode (55.5-75.0\%) & \\
\hline & 015 & Text / Photo Mode (75.5-160.0\%) & \\
\hline & 016 & Text / Photo Mode (160.5-
400.0\%) & \\
\hline & & & \\
\hline & & & \\
\hline & & & \\
\hline & & & \\
\hline & & & \\
\hline & & & \\
\hline & & & \\
\hline & & & \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|}
\hline SP & & Number/Name & Function/[Setting] \\
\hline \multirow[t]{29}{*}{4903} & 017 & Pale Mode (25.0-55.0\%) & \multirow[t]{8}{*}{\begin{tabular}{l}
Adjusts the sharpness and texture of images processed in Pale mode. \\
[ \(0 \sim 10\) / 5 / 1] \\
Softest \\
Soft Mode \(\uparrow\) \\
\(\uparrow\) \\
Normal (Default) \\
\(\downarrow\) \\
\(\downarrow\) \\
\(\downarrow\) \\
Sharp \\
10: Sharpest
\end{tabular}} \\
\hline & 018 & Pale Mode (55.5-75.0\%) & \\
\hline & 019 & Pale Mode (75.5-160.0\%) & \\
\hline & 020 & Pale Mode (160.5-400.0\%) & \\
\hline & & & \\
\hline & & & \\
\hline & & & \\
\hline & & & \\
\hline & 021 & Generation Mode (25.0-55.0\%) & \multirow[t]{10}{*}{\begin{tabular}{l}
Adjusts the sharpness and texture of images processed in Generation mode. \\
[ \(0 \sim 10 / 5 / 1]\) \\
0: Softest \\
Soft \\
\(\uparrow\) \\
\(\uparrow\) \\
\(\uparrow\) \\
Normal (Default) \\
\(\downarrow\) \\
\(\downarrow\) \\
\(\downarrow\) \\
9: Sharp \\
10: Sharpest
\end{tabular}} \\
\hline & 022 & Generation Mode (55.5-75.0\%) & \\
\hline & 023 & Generation Mode (75.5-160.0\%) & \\
\hline & 024 & Generation Mode (160.5-400.0\%) & \\
\hline & & & \\
\hline & & & \\
\hline & & & \\
\hline & & & \\
\hline & & & \\
\hline & & & \\
\hline & 060 & Independent Dot Erase: Text Mode & \begin{tabular}{l}
Sets the level for independent dot erasure.
\[
\text { [0~14 / } 8 \text { / 1] }
\] \\
0 : Off \\
The higher the setting, the stronger the effect.
\end{tabular} \\
\hline & 061 & Independent Dot Erase: Photo Mode & \multirow[t]{3}{*}{\[
\begin{aligned}
& {[0 \sim 14 / 0 / 1]} \\
& 0: \text { Off } \\
& \hline
\end{aligned}
\]} \\
\hline & 062 & Independent Dot Erase: Text / Photo Mode & \\
\hline & 063 & Independent Dot Erase: Pale Mode & \\
\hline & 064 & Independent Dot Erase: Generation Mode & \[
\begin{aligned}
& {[0 \sim 14 / 8 / 1]} \\
& 0: \text { Off }
\end{aligned}
\] \\
\hline & 070 & Background Erase: Text Mode & \multirow[t]{5}{*}{\begin{tabular}{l}
Sets the level for background erase. [0~255 / 0 / 1] \\
The higher the setting, the stronger the effect.
\end{tabular}} \\
\hline & 071 & Background Erase: Photo Mode & \\
\hline & 072 & Background Erase: Text / Photo Mode & \\
\hline & 073 & Background Erase: Pale Mode & \\
\hline & 074 & Background Erase: Generation Mode & \\
\hline & 080 & Line Width Correction: Text Mode Select & \begin{tabular}{l}
Selects the level of line width correction for Text mode.
[0~8/2/1] \\
The higher the setting, the thicker the line.
\end{tabular} \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|}
\hline SP & & Number/Name & Function/[Setting] \\
\hline \multirow[t]{10}{*}{4903} & 081 & Line Width Correction: Text Mode (Main Scan) & \begin{tabular}{l}
Switches on line width correction in the main scan direction in text mode.
\[
[0 \sim 1 / 1 / 1]
\] \\
0: Line width correction OFF \\
1: Line width correction ON
\end{tabular} \\
\hline & 082 & Line Width Correction: Text Mode (Sub Scan) & \begin{tabular}{l}
Switches on line width correction in the sub scan direction in text mode.
\[
[0 \sim 1 / 1 / 1]
\] \\
0: Line width correction OFF \\
1: Line width correction ON
\end{tabular} \\
\hline & 083 & Line Width Correction: Photo Mode Select & \begin{tabular}{l}
Selects the level of line width correction for photo mode.
\[
[0 \sim 8 / 4 / 1]
\] \\
The higher the setting, the thicker the line.
\end{tabular} \\
\hline & 084 & Line Width Correction: Photo Mode (Main Scan) & \begin{tabular}{l}
Switches on line width processing for the main scan direction in photo mode.
\[
[0 \sim 1 / 1 / 1]
\] \\
0: Line width correction OFF \\
1: Line width correction ON
\end{tabular} \\
\hline & 085 & Line Width Correction: Photo Mode (Sub Scan) & \begin{tabular}{l}
Switches on line width correction in the sub scan direction in Photo mode. \\
[0~1 / 1 / 1] \\
0 : Line width correction OFF \\
1: Line width correction ON
\end{tabular} \\
\hline & 086 & Line Width Correction: Text / Photo Mode Select & \begin{tabular}{l}
Selects the level of line width processing for text/photo mode.
\[
[0 \sim 8 / 4 / 1]
\] \\
The higher the setting, the thicker the line.
\end{tabular} \\
\hline & 087 & Line Width Correction: Text / Photo Mode (Main Scan) & \begin{tabular}{l}
Switches on line width processing for the main scan direction in text/photo mode.
\[
\text { [0~1 / } 1 \text { / 1] }
\] \\
0: Line width correction OFF \\
1: Line width correction ON
\end{tabular} \\
\hline & 088 & Line Width Correction: Text / Photo Mode (Sub Scan) & \begin{tabular}{l}
Switches on line width processing for the the sub scan direction in text/photo mode. [0~1 / 1 / 1] \\
0: Line width correction OFF \\
1: Line width correction ON
\end{tabular} \\
\hline & 089 & Line Width Correction: Pale Mode Select & \begin{tabular}{l}
Selects the level of line width processing for pale mode.
\[
\text { [0~8 / } 4 \text { / 1] }
\] \\
The higher the setting, the thicker the line.
\end{tabular} \\
\hline & 090 & Line Width Correction: Pale Mode (Main Scan) & \begin{tabular}{l}
Switches on line width processing for the main scan direction in pale mode.
\[
[0 \sim 1 / 1 / 1]
\] \\
0: Line width correction OFF \\
1: Line width correction ON
\end{tabular} \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|}
\hline SP & \multicolumn{2}{|r|}{Number/Name} & Function/[Setting] \\
\hline \multirow[t]{4}{*}{4903} & 091 & Line Width Correction: Pale Mode (Sub Scan) & \begin{tabular}{l}
Switches on line width processing for the sub scan direction in pale mode
\[
[0 \sim 1 / 1 / 1]
\] \\
0: Line width correction OFF \\
1: Line width correction ON
\end{tabular} \\
\hline & 092 & Line Width Correction: Generation Mode Select & \begin{tabular}{l}
Selects the level of line width processing for generation mode.
\[
[0 \sim 8 / 1 / 1]
\] \\
The higher the setting, the thicker the line.
\end{tabular} \\
\hline & 093 & Line Width Correction: Generation Mode (Main Scan) & \begin{tabular}{l}
Switches on line width processing for the main scan direction in generation mode. [0~1 / 1 / 1] \\
0: Line width correction OFF \\
1: Line width correction ON
\end{tabular} \\
\hline & 094 & Line Width Correction: Generation Mode (Sub Scan) & \begin{tabular}{l}
Switches on line width processing for the sub scan direction in generation mode.
\[
[0 \sim 1 / 1 / 1]
\] \\
0: Line width correction OFF \\
1: Line width correction ON
\end{tabular} \\
\hline \multirow[t]{5}{*}{4904} & \multicolumn{3}{|l|}{Image Quality / Exposure Thin Line} \\
\hline & 002 & Image Process Setting: Photo Mode & \begin{tabular}{l}
Selects the image processing mode for Photo Mode. \\
[0~3/3/1] \\
0: 106 line dither processing \\
1: 141 line dither processing \\
2: 212 line dither processing \\
3: Error diffusion processing
\end{tabular} \\
\hline & 020 & Text Mode & \begin{tabular}{l}
Selects the line width correction level for Text mode. \\
[0~2 / 0 / 1] \\
0 : No processing \\
1: Low (thin) \\
2. High (thick)
\end{tabular} \\
\hline & 021 & Photo Mode & \begin{tabular}{l}
Selects the line width correction level for Photo mode. \\
[0~2 / 0 / 1] \\
0 : No processing \\
1: Low (thin) \\
2: High (thick)
\end{tabular} \\
\hline & 022 & Text / Photo Mode & \begin{tabular}{l}
Selects the line width correction level for Text/Photo mode. \\
[0~2 / 0 / 1] \\
0 : No processing \\
1: Low (thin) \\
2: High (thick)
\end{tabular} \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|}
\hline SP & \multicolumn{2}{|r|}{Number/Name} & Function/[Setting] \\
\hline \multirow[t]{2}{*}{4904} & 023 & Pale Mode & \begin{tabular}{l}
Selects the line width correction level for Pale mode.
\[
\text { [0~2 / } 0 \text { / 1] }
\] \\
0: No processing \\
1: Low (thin) \\
2: High (thick)
\end{tabular} \\
\hline & 024 & Generation Mode & \begin{tabular}{l}
Selects the line width correction level for Generation mode.
\[
\text { [0~2 / } 0 \text { / 1] }
\] \\
0: No processing \\
1: Low (thin) \\
2: High (thick)
\end{tabular} \\
\hline \multirow[t]{3}{*}{4909} & \multicolumn{3}{|l|}{Image Processing Through} \\
\hline & 001 & IPU Scan Image Module & \[
\begin{aligned}
& \text { DFU } \\
& {[0 \sim 15 / 0 / 1]}
\end{aligned}
\] \\
\hline & 002 & IPU Plotter Image Module & \[
\begin{aligned}
& \text { DFU } \\
& {[0 \sim 127 / 0 / 1]}
\end{aligned}
\] \\
\hline
\end{tabular}

\section*{SP5-nnn Mode}
\begin{tabular}{|c|c|c|c|}
\hline SP & \multicolumn{2}{|r|}{Number/Name} & Function/[Setting] \\
\hline \multirow[t]{3}{*}{5019} & \multicolumn{3}{|l|}{Tray Paper Size Selection} \\
\hline & 002 & 1st Tray & \begin{tabular}{l}
Selects the paper size for the 1st tray. \\
[LT LEF: USA version \\
A4 LEF: Other versions\}
\end{tabular} \\
\hline & 007 & 6th Tray & Selects the paper size for the 6th tray. [LT LEF: USA version A4 LEF: Other versions\} \\
\hline 5024 & \multicolumn{2}{|l|}{mm / inch Display Selection} & \begin{tabular}{l}
Selects the unit of measurement. [0~1/0 or 1/1] \\
0: mm (Default for other versions) \\
1: inch (Default for USA version) \\
After selection, turn the main power switch off and on
\end{tabular} \\
\hline \multirow[t]{2}{*}{5040} & \multicolumn{3}{|l|}{Custom Size: Vertical} \\
\hline & 002 & Custom Size: Vertical & Adjusts the vertical dimension of custom size paper for Tray 1. 'Custom size' must be selected with SP 5019-2.
\[
\text { [210.0~305.0 / } 297.0 / 0.1 \mathrm{~mm}]
\] \\
\hline \multirow[t]{2}{*}{5041} & \multicolumn{3}{|l|}{Custom Size: Horizontal} \\
\hline & 002 & Custom Size: Horizontal & Adjusts the horizontal dimension of custom size paper for Tray 1. 'Custom size’ must be selected with SP 5019-2.
\[
\text { [210.0~439.0 / } 210.0 / 0.1 \mathrm{~mm}]
\] \\
\hline 5047 & \multicolumn{2}{|l|}{Reverse Paper Display} & \begin{tabular}{l}
Determines whether the tray loaded with paper printed on one side is displayed.
[0~1/0/1] \\
0 : Not displayed \\
1: Displayed
\end{tabular} \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|}
\hline SP & Number/Name & Function/[Setting] \\
\hline 5104 & A3/DLT Double Count & \begin{tabular}{l}
Specifies whether the counter is doubled for A3/11"x17" paper.
[0~1/0/1] \\
0 : No \\
1: Yes \\
If "1" is selected, the total counter and the current user code counter count up twice when \(A 3 / 11\) "x17" paper is used.
\end{tabular} \\
\hline \multirow[t]{2}{*}{5106} & \multicolumn{2}{|l|}{ID level Setting} \\
\hline & 006 Auto Density Level & Selects the image density levels that are used in ADS mode by assigning a value to the center notch
\[
[1 \sim 9 / 5 / 1]
\] \\
\hline 5112 & Non-Standard Paper Selection & \begin{tabular}{l}
Determines whether a non-standard paper size can be input for the universal cassette trays (Tray 2, Tray 3)
[0~1/0/1] \\
0 : No \\
1: Yes. \\
If " 1 " is selected, the customer will be able to input a non-standard paper size using the UP mode.
\end{tabular} \\
\hline 5113 & Optional Counter Type & ```
Selects the type of key counter:
[ \(0 \sim 12 / 0 / 1\) ]
0: None
1: Key card (Japan only)
2: Key card (countdown type)
3: Pre-paid card
4: Not used
5: MF key card
6: \(\quad\) Not used
7: Not used
8: \(\quad\) Not used
9: \(\quad\) Not used
10: Not used
11: Overseas Keycard
    (Increment)
12 Overseas Keycard
    (Decrement)
``` \\
\hline 5118 & Disable Copying & \begin{tabular}{l}
Temporarily denies access to the machine. Japan Only [0~1/0/1] \\
0: Release for normal operation \\
1: Prohibit access to machine.
\end{tabular} \\
\hline 5120 & Mode Clear Opt. Counter Removal & \begin{tabular}{l}
Do not change. Japan Only [0~2/0/1] \\
0: Normal reset \\
1: Resets before job start/after completion \\
2: Normally no reset
\end{tabular} \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|}
\hline SP & & Number/Name & Function/[Setting] \\
\hline 5121 & \multicolumn{2}{|l|}{Counter Up Timing} & \begin{tabular}{l}
Determines whether the optional key counter counts up at paper feed-in or at paper exit. [0~1/0/1] \\
0: Paper Feed Count \\
1: Paper Exit Count \\
This setting does not affect timing of the copier total counter.
\end{tabular} \\
\hline 5127 & \multicolumn{2}{|l|}{APS OFF Mode} & \begin{tabular}{l}
This SP can be used to switch APS (Auto Paper Select) off. This SP only works when a coin lock or pre-paid key card device is connected to the machine. \\
[0~1/0/1] \\
0 : On \\
1: Off
\end{tabular} \\
\hline 5131 & \multicolumn{2}{|l|}{Paper Size Type Selection} & \begin{tabular}{l}
Selects the paper size type (for originals and copy paper). (The default setting depends on the setting of DIP SW 1 and 2 on BCU.)
\[
\text { [ } 0 \sim 3 / 1 \text { or } 2 \text { or } 3 / 1]
\] \\
0: Japan 1: North America \\
2: Europe 3. China \\
After changing the value, turn the main power switch off and on.
\end{tabular} \\
\hline \multirow[t]{9}{*}{5158} & \multicolumn{2}{|l|}{Cover Feeder Size Change} & Determines the paper size for the cover interposer tray. Select the desired paper size and press \#. \\
\hline & 001 & For all versions & \[
\begin{aligned}
& {[0 \sim 1 / 0 / 1]} \\
& 0: A 3 \\
& 1: 12^{\prime \prime} \times 18^{\prime \prime} \\
& \hline
\end{aligned}
\] \\
\hline & 002 & For Europe and China & \[
\begin{aligned}
& {[0 \sim 2 / 0 / 1]} \\
& 0: 81 / 2 \times 13^{\prime \prime} \\
& 1: 8 " \times 13^{\prime \prime} \\
& 2: 81 / 4 \times 13^{\prime \prime}
\end{aligned}
\] \\
\hline & 003 & For USA & \[
\begin{aligned}
& {[0 \sim 1 / 0 / 1} \\
& 0: 8 \frac{11 / 2 "}{} \times 14^{\prime \prime} \\
& 1: 8 \frac{1 / 2}{}{ }^{\prime \prime} \times 13^{\prime \prime}
\end{aligned}
\] \\
\hline & 004 & For USA & \[
\begin{aligned}
& {[0 \sim 1 / 0 / 1]} \\
& 0: 11^{\prime \prime} \times 81 / 2^{\prime \prime}(\text { LT LEF }) \\
& 1: 101 / 2^{\prime \prime} \times 71 / 2^{\prime \prime}
\end{aligned}
\] \\
\hline & 005 & For USA & \[
\begin{aligned}
& {[0 \sim 1 / 0 / 1]} \\
& 0: 81 / /^{\prime \prime} \times 11^{\prime \prime}(\text { LT SEF }) \\
& 1: 8^{\prime \prime} \times 10^{\prime \prime}
\end{aligned}
\] \\
\hline & 006 & For Europe and China & \begin{tabular}{l}
[0~1/0/1] \\
0: 8-Kai (Taiwan) \\
1: 11" x 17" (Double Letter)
\end{tabular} \\
\hline & 007 & For Europe and China & \[
\begin{array}{|l|l|}
\hline[0 \sim 1 / 0 / 1] \\
0: 16-K a i(T a i w a n) \\
1: 81 / 2^{\prime \prime} \times 11^{\prime \prime}(L T ~ S E F) \\
\hline
\end{array}
\] \\
\hline & 008 & For Europe and China & \[
\begin{array}{|l|l|}
\hline[0 \sim 1 / 0 / 1] \\
0: 16-K a i ~ L E F \\
1: 11^{\prime \prime} \times 81 / 2^{\prime \prime}(\text { LT LEF }) \\
\hline
\end{array}
\] \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|c|}
\hline SP & \multicolumn{3}{|c|}{Number/Name} & Function/[Setting] \\
\hline 5162 & \multicolumn{3}{|l|}{Application Screen Change} & \begin{tabular}{l}
Determines whether the application screen is changed with a hard switch (key top) or a soft switch on the LCD. \\
[ \(0 \sim 1 / 0 / 1\) ] \\
0 : Soft switch \\
1: Hard switch
\end{tabular} \\
\hline \multirow[t]{3}{*}{5212} & \multicolumn{4}{|l|}{Page Numbering} \\
\hline & 003 & \multicolumn{2}{|l|}{Duplex Printout Right / Left Position} & \begin{tabular}{l}
Horizontally positions the page numbers printed on both sides during duplexing. \\
[-10~+10/0/1 mm] \\
0 : Center \\
-: Left \\
+ : Right
\end{tabular} \\
\hline & 004 & \multicolumn{2}{|l|}{Duplex Printout High / Low Position} & \begin{tabular}{l}
Vertically positions the page numbers printed on both sides during duplexing [-10~+10/0/1 mm] \\
0 is center, minus is down, + is up.
\end{tabular} \\
\hline \multirow[t]{2}{*}{5302} & \multicolumn{3}{|l|}{Set Time} & \\
\hline & 002 & \multicolumn{2}{|l|}{Time Difference} & Sets the time clock for the local time. [-1440~+1440/+540/1 min.] \\
\hline 5404 & \multicolumn{3}{|l|}{User Code Count Clear} & Clears all user code counters. Press \# to execute. \\
\hline 5501 & \multicolumn{3}{|l|}{PM Alarm Interval} & \begin{tabular}{l}
Sets the count level for the PM alarm. [0~9999 / 0 / 1] \\
0 : Alarm disabled \\
The PM alarm goes off when the print count reaches this value multiplied by
\[
1,000
\]
\end{tabular} \\
\hline 5504 & \multicolumn{3}{|l|}{Jam Alarm Interval} & RDS function Japan Only \\
\hline 5505 & \multicolumn{3}{|l|}{Error Alarm} & RDS function Japan Only \\
\hline \multirow[t]{4}{*}{5507} & \multicolumn{4}{|l|}{Supply Alarm} \\
\hline & \multicolumn{2}{|l|}{001} & Paper Supply Alarm & \begin{tabular}{l}
Enables or disables the paper supply call function. Japan Only
[0~1/0/1] \\
0 : No call \\
1: Call \\
If this \(S P\) is enabled, use the settings below to set the supply level to initiate a call for each paper size.
\end{tabular} \\
\hline & \multicolumn{2}{|l|}{002} & Staple Supply Alarm & \begin{tabular}{l}
Enables or disables the staple supply call function. Japan Only \\
[0~1/0/1] \\
0: No call \\
1: Call \\
A staple supply call is issued for every \\
1,000 staples consumed.
\end{tabular} \\
\hline & \multicolumn{2}{|l|}{003} & Toner Supply Alarm & \begin{tabular}{l}
Enables or disables the toner supply call function. Japan Only
[0~1/0/1] \\
0 : No call \\
1: Call
\end{tabular} \\
\hline
\end{tabular}
\begin{tabular}{||l|l|l|l||}
\hline SP & \multicolumn{2}{|c|}{ Number/Name } & \multicolumn{1}{c|}{ Function/[Setting] } \\
\hline 5507 & 128 & \(\begin{array}{l}\text { Interval: } \\
\text { Others }\end{array}\) & \(\begin{array}{l}\text { Sets the level to initiate a paper supply call } \\
\text { for each paper size, if SP 5507 001 is } \\
\text { enabled. Japan Only }\end{array}\) \\
& 132 & Interval: A3 \\
& [00250~10,000/1,000/1]
\end{tabular}\(\}\)
\begin{tabular}{|c|c|c|c|}
\hline SP & \multicolumn{2}{|r|}{Number/Name} & Function/[Setting] \\
\hline \multirow[t]{3}{*}{5508} & 021 & Jam Operation: Time Length & \begin{tabular}{l}
Determines what happens when a paper jam is left unattended. \\
[0~1/1/1] \\
0: Automatic Call \\
1: Audible Warning at Machine \\
This setting is enabled only when SP5508 \\
004 is enabled (set to 1).
\end{tabular} \\
\hline & 022 & Jam Operation: Continuous Count & \begin{tabular}{l}
Determines what happens when continuous paper jams occur. \\
[0~1/1/1] \\
0: Automatic Call \\
1: Audible Warning at Machine This setting is enabled only when SP5508 004 is enabled (set to 1).
\end{tabular} \\
\hline & 023 & Door Operation: Time Length & \begin{tabular}{l}
Determines what happens if the door remains open. \([0 \sim 1 / 1 / 1]\) \\
0 : OFF \\
1: ON. Displays a warning. Pressing the call button will contact the service center. \\
This setting is enabled only when SP5508 004 is enabled (set to 1).
\end{tabular} \\
\hline \multirow[t]{3}{*}{5513} & \multicolumn{2}{|l|}{Parts Alarm Level Count} & Japan Only \\
\hline & 001 & Normal & Sets the parts replacement alarm counter to sound for the number of copies.
[1~9999 / 350 / 1] \\
\hline & 002 & DF & Sets the parts replacement alarm counter to sound for the number of scanned originals. [1~9999/350/1] \\
\hline \multirow[t]{3}{*}{5514} & \multicolumn{2}{|l|}{Parts Alarm Level} & Japan Only \\
\hline & 001 & Normal & [0~1/1/1] \\
\hline & 002 & DF & [0~1/0/1] \\
\hline \multirow[t]{13}{*}{5801} & \multicolumn{2}{|l|}{Memory Clear} & \begin{tabular}{l}
Clears data from NVRAM, either selectively (002~015), or entirely (001). Before executing this SP, print an SMC Report. (-See 5.6) \\
After executing this SP, turn the main switch off and on.
\end{tabular} \\
\hline & 001 & All Clear & Initializes items 002~015. \\
\hline & 002 & Engine Clear & \multirow[t]{11}{*}{For details, see 5.7.} \\
\hline & 003 & SCS (System Control Service)/SRM & \\
\hline & 004 & IMH & \\
\hline & 005 & MCS(Memory Control Service) & \\
\hline & 006 & Copier application & \\
\hline & 008 & Printer application & \\
\hline & 009 & Scanner application & \\
\hline & 010 & Network application & \\
\hline & 011 & NCS (Network Control Service) & \\
\hline & 014 & DCS (Clear DCS Setting) & \\
\hline & 015 & UCS (Clear UCS Setting) & \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|}
\hline SP & \multicolumn{2}{|r|}{Number/Name} & Function/[Setting] \\
\hline 5802 & \multicolumn{2}{|l|}{Printer Free Run} & \begin{tabular}{l}
Makes a base engine free run
[0~1/0/1] \\
0 : Release free run mode \\
1: Enable free run mode \\
Return this setting to off (0) after testing is completed. \\
Finisher connectors should be disconnected and duplex mode should be off.
\end{tabular} \\
\hline 5803 & \multicolumn{2}{|l|}{Input Check} & Displays signals received from sensors and switches. (-5.4.1) \\
\hline 5804 & \multicolumn{2}{|l|}{Output Check} & Turns on the electrical components individually for testing. (-5.5.1) \\
\hline \multirow[t]{2}{*}{5811} & \multicolumn{3}{|l|}{Machine No. Setting} \\
\hline & 001 & Code Set & Enters the machine serial number. DFU \\
\hline \multirow[t]{5}{*}{5812} & \multicolumn{3}{|l|}{Service Tel. No. Setting} \\
\hline & 001 & Service & \begin{tabular}{l}
Use this to input the telephone number of the CE (displayed when a service call condition occurs.) \\
Press". "to input a pause. Press "Clear modes" to delete the telephone number.
\end{tabular} \\
\hline & 002 & Fax & Use this to input the fax number of the CE printed on the SMC print. \\
\hline & 003 & Supply & Displayed on the initial SP screen. \\
\hline & 004 & Operation & Allows the service center contact telephone number to be displayed on the initial screen. \\
\hline 5816 & \multicolumn{2}{|l|}{CSS Function} & Switches the CSS function on/off. Do not change. Japan Only.
[0~1/0/1] \\
\hline 5821 & \multicolumn{2}{|l|}{CSS-PI Device Code} & Do not change. Japan Only.
[0~4/0/1] \\
\hline 5824 & \multicolumn{2}{|l|}{NV-RAM Data Upload} & Uploads the NVRAM data to a SD card.
\[
(-5.10 .6)
\] \\
\hline 5825 & \multicolumn{2}{|l|}{NV-RAM Data Download} & \begin{tabular}{l}
Downloads data from the SD card to the NVRAM in the machine. When downloading this SP mode data, the front door must be open. \\
After downloading is completed, remove the card and cycle the machine off and on.
\[
(-5.10 .6)
\]
\end{tabular} \\
\hline \multirow[t]{6}{*}{5828} & \multicolumn{3}{|l|}{Network Setting} \\
\hline & 012 & Device Name/Host Name & \\
\hline & 066 & Job Spooling Clear & \\
\hline & 069 & Job Spooling Protocol & \\
\hline & 074 & Delete Password & Execute to delete network password. \\
\hline & 084 & NCS Prints & Prints a list of all NCS related parameters. \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|}
\hline SP & \multicolumn{2}{|r|}{Number/Name} & Function/[Setting] \\
\hline \multirow[t]{2}{*}{5825} & 090 & TELNET & \begin{tabular}{l}
This setting determines whether Telnet D is started or not.
\[
[0 \sim 1 / 1 / 1]
\] \\
0 : Disabled (Off) \\
1: Enabled (On) \\
If not started, the Telnet port is closed
\end{tabular} \\
\hline & 091 & WEB Network Setting & \begin{tabular}{l}
Determines whether Web is enabled or disabled. \\
[0~1/1/1] \\
0 : Disabled (Off) \\
1: Enabled (On)
\end{tabular} \\
\hline 5831 & 002 & Initial Setting Mode Clear/Copier Up Application & \\
\hline \multirow[t]{11}{*}{5832} & \multicolumn{3}{|l|}{HDD Formatting} \\
\hline & 001 & HDD Formatting (ALL) & \multirow[t]{10}{*}{Enter the SP number for the partition to initialize, then press \#. When execution ends, cycle the machine off and on.} \\
\hline & 002 & HDD Formatting (IMH) & \\
\hline & 003 & HDD Formatting (Thumbnail) & \\
\hline & 004 & HDD Formatting (Job Log) & \\
\hline & 005 & HDD Formatting (Printer Fonts) & \\
\hline & 006 & HDD Formatting (User Info1) & \\
\hline & 007 & HDD Formatting (User Info2) & \\
\hline & 008 & HDD Formatting (Scanner Mail) & \\
\hline & 009 & HDD Formatting (Data for a Design) & \\
\hline & 011 & HDD Formatting (Ridoc I/F) & \\
\hline 5833 & 007 & Job Log On/Off & \\
\hline \multirow[t]{5}{*}{5836} & \multicolumn{3}{|l|}{Capture Setting} \\
\hline & 001 & Capture Function & \begin{tabular}{l}
With this function disabled, the settings related to the capture feature cannot be initialized, displayed, or selected. DFU [0~1/0/1] \\
0 : Disable 1: Enable
\end{tabular} \\
\hline & 002 & Panel Setting & \begin{tabular}{l}
Determines whether each capture related setting can be selected or updated from the initial system screen.
[0~1/0/1] \\
0: Disable 1: Enable \\
The setting for SP5836 001 has priority.
\end{tabular} \\
\hline & 003 & Print Back-up Function & \begin{tabular}{l}
Determines whether the print back-up function setting can be changed. \\
[0~1/0/1] \\
0 : Disable \\
1: Enable
\end{tabular} \\
\hline & 071 & Capture Setting: Resolution Conversion for Color & \begin{tabular}{l}
Determines the resolution conversion ratio when a Color image document is sent to the Document Server via the MLB (Media Link Board). \\
[0~2/0/1] \\
0: 1 x \\
1: \(1 / 2 x\) \\
2: \(1 / 4 x\)
\end{tabular} \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|}
\hline SP & \multicolumn{2}{|r|}{Number/Name} & Function/[Setting] \\
\hline \multirow[t]{7}{*}{5836} & 072 & Capture Setting: Resolution Conversion for Copy Text & \begin{tabular}{l}
Determines the resolution conversion ratio when a Copy Text image document is sent to the Document Server via the MLB \\
(Media Link Board).
[0~2/0/1] \\
0: 1 x \\
1: \(1 / 2 x\) \\
2: \(1 / 4 x\)
\end{tabular} \\
\hline & 073 & Capture Setting: Resolution Conversion for Copy (Others) & \begin{tabular}{l}
Determines the resolution conversion ratio when a Copy image document other than Text mode is sent to the Document Server via the MLB (Media Link Board).
[0~2/0/1] \\
0: \(1 \times\) \\
1: \(1 / 2 x\) \\
2: \(1 / 4 x\)
\end{tabular} \\
\hline & 075 & Capture Setting: Resolution Conversion for Binary Print & \begin{tabular}{l}
Determines the resolution conversion ratio when a binary print image document is sent to the Document Server via the MLB (Media Link Board).
[0~2/0/1] \\
0: 1 x \\
1: \(1 / 2 x\) \\
2: \(1 / 4 \mathrm{x}\)
\end{tabular} \\
\hline & 076 & Capture Setting: Resolution Conversion for Dither Print (1200 dpi) & \begin{tabular}{l}
Determines the resolution conversion ratio when the Dither print image document is sent to the Document Server via the MLB (Media Link Board)..
[1~3/1/1] \\
1: \(1 / 2 x\) \\
2: \(1 / 4 \mathrm{x}\) \\
3: \(1 / 8 x\)
\end{tabular} \\
\hline & 082 & Capture Setting: Format for Copy Text & \begin{tabular}{l}
Determines the image format for Copy Text images sent to the Document Server via the MLB (Media Link Board).
[0~3/1/1] \\
0: JFIF/JPEG \\
1: TIFF/MMR \\
2: TIFF/MH \\
3: TIFF/MR
\end{tabular} \\
\hline & 083 & Capture Setting: Format for Copy (Others) & \begin{tabular}{l}
Determines the image format for Copy (other than text) images sent to the Document Server via the MLB (Media Link Board).
\[
[0 \sim 3 / 1 / 1]
\] \\
0: JFIF/JPEG \\
1: TIFF/MMR \\
2: TIFF/MH \\
3: TIFF/MR
\end{tabular} \\
\hline & 084 & Format for Printer Color & \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|}
\hline SP & \multicolumn{2}{|r|}{Number/Name} & Function/[Setting] \\
\hline \multirow[t]{3}{*}{5836} & 085 & Capture Setting: Format for Binary Print & \begin{tabular}{l}
Determines the image format for Binary Print images sent to the Document Server via the MLB (Media Link Board). \\
[0~3/1/1] \\
0: JFIF/JPEG \\
1: TIFF/MMR \\
2: TIFF/MH \\
3: TIFF/MR
\end{tabular} \\
\hline & 086 & Capture Setting: Format for Dither Print (1200dpi) & \begin{tabular}{l}
Determines the image format for Dither Print images sent to the Document Server via the MLB (Media Link Board).
[0~3/1/1] \\
0: JFIF/JPEG \\
1: TIFF/MMR \\
2: TIFF/MH \\
3: TIFF/MR
\end{tabular} \\
\hline & 091 & Capture Setting: Default for JPEG (Page Quality) & Determines the quality level of JPEG images sent to the Document Server via the MLB (Media Link Board). [5~95/50/1] \\
\hline \multirow[t]{5}{*}{5839} & \multicolumn{2}{|l|}{IEEE 1394} & This SP is displayed only when an IEEE 1394 card is installed. \\
\hline & \multicolumn{2}{|l|}{004 Device Name} & Enter the name of the device used on the network. Example: RNP0000000000 \\
\hline & 007 & Cycle Master & \begin{tabular}{l}
Enables or disables the cycle master function for the 1394 bus standard.
[0~1/1/1] \\
0 : Disable (Off) 1: Enable (On)
\end{tabular} \\
\hline & 008 & BCR mode & \begin{tabular}{l}
Determines how BCR (Broadcast Channel Register) operates on the 1394 standard bus when the independent node is in any mode other than IRM. (NVRAM: 2-bits) \\
(Range: Binary settings 0~3) \\
00: Off. Writes from the IRM. \\
01: Copies BCR of the IRM after no data is written from the IRM after the prescribed time has elapsed. \\
10: Reserved. Not used. \\
11: BCR normally enabled.
\end{tabular} \\
\hline & 009 & IRM 1394a Check & \begin{tabular}{l}
Conducts a 1394a check of IRM when the independent node is in any mode other than IRM. [0~1/0/1] \\
0 : Checks whether IRM conforms to 1394a \\
1: After IRM is checked, if IRM does not conform then independent node switches to IRM.
\end{tabular} \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|}
\hline SP & \multicolumn{2}{|r|}{Number/Name} & Function/[Setting] \\
\hline \multirow[t]{4}{*}{5839} & 010 & Unique ID & \begin{tabular}{l}
Lists the ID (Node_Unique_ID) assigned to the device by the system administrator. [0~1/1/1] \\
0: Does not list the Node_Unique_ID assigned by the system administrator. Instead, the Source_ID of the GASP header in the ARP is used. \\
1: The Node_Unique_ID assigned by the system administrator is used, and the Source_ID of the GASP header in the ARP is ignored. Also, when the serial bus is reset, extra bus transactions are opened for the enumeration.
\end{tabular} \\
\hline & 011 & Logout & \begin{tabular}{l}
Handles the login request of the login initiator for SBP-2. (1-bit)
\[
[0 \sim 1 / 1 / 1]
\] \\
0 : Disable (refuse login) Initiator retry during login Login refusal on arrival of login request (standard operation) \\
1: Enable (force logout) Initiator retry during login Login refusal on arrival of login request, and the initiator forces the login.
\end{tabular} \\
\hline & 012 & Login & \begin{tabular}{l}
Enables or disables the exclusive login feature (SBP-2 related).
\[
[0 \sim 1 / 0 / 1]
\] \\
0 : Disables. The exclusive login (LOGIN ORB exclusive it) is ignored. \\
1: Enables. Exclusive login is in effect.
\end{tabular} \\
\hline & 013 & Login MAX & \begin{tabular}{l}
Sets the maximum number of logins from the initiator (6-bits)
[0~63/8/1] \\
0: Reserved \\
63: Reserved
\end{tabular} \\
\hline \multirow[t]{4}{*}{5840} & \multicolumn{3}{|l|}{IEEE 802.11b.} \\
\hline & 004 & SSID & Enters an unique ID (up to 32 characters long) to identify the device when it is operating in an area with another wireless LAN network. \\
\hline & 006 & Channel MAX & \begin{tabular}{l}
Sets the maximum range of the bandwidth for the wireless LAN. This bandwidth setting varies for different countries. \\
NA: [1~11/11/1] \\
EUR/A: [1~13/13/1]
\end{tabular} \\
\hline & 007 & Channel MIN & \begin{tabular}{l}
Sets the minimum range of the bandwidth for the wireless LAN. This bandwidth setting varies for different countries. \\
NA: [1~11/1/1] \\
EUR/A: [1~13/1/1]
\end{tabular} \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|}
\hline SP & \multicolumn{2}{|r|}{Number/Name} & Function/[Setting] \\
\hline \multirow[t]{2}{*}{5840} & 011 & WEP Key Select & \begin{tabular}{l}
Selects the WEP key. [00~11 / 00 / 1 binary] 00: Key \#1 \\
01: Key \#2 (Reserved) \\
10: Key \#3 (Reserved \\
11: Key \#4 (Reserved
\end{tabular} \\
\hline & 020 & \multicolumn{2}{|l|}{WEP Mode} \\
\hline \multirow[t]{4}{*}{5841} & \multicolumn{2}{|l|}{Supply Name Setting} & These names appear on the Inquiry list (the user can print this by pressing the Counter key on the operation panel, then touching 'Print Inquiry List' on the screen). \\
\hline & 001 & Toner Name Setting: Black & Enter the name of the toner in use. \\
\hline & 005 & Staple Standard & Enter the name of the staples in use for normal stapling (not booklet stapling) \\
\hline & 006 & Staple Bind & Enter the name of the staples in use for booklet stapling. \\
\hline 5842 & \multicolumn{2}{|l|}{Net File Analysis Mode Setting} & \begin{tabular}{l}
Selects each debut output mode for NetFile processing \\
NetFiles: Jobs printed from the document server using a PC and DeskTopBinder [8 bits / 00111111 / Bit SW] \\
Bit 8 is reserved. Bit 7 is the debug output switch for each mode.
\end{tabular} \\
\hline \multirow[t]{5}{*}{5844} & \multicolumn{3}{|l|}{USB} \\
\hline & \multicolumn{2}{|l|}{001 Transfer Rate} & \begin{tabular}{l}
Sets the speed for USB data transmission.
[0x01~0x04 / 0x04 / 0] \\
0x01: Full Speed (Fixed) \\
0x04: High Speed/Full Speed (Automatic change)
\end{tabular} \\
\hline & 002 & Vendor ID & \begin{tabular}{l}
Sets the vendor ID: \\
DFU \\
[0x0000~0xFFFF/0x05CA/1] \\
Initial Setting: 0x05CA Ricoh Company
\end{tabular} \\
\hline & 003 & Product ID & Sets the product ID. DFU [0x0000~0xFFFF/0x0403/1] \\
\hline & 004 & Device Release Number & \begin{tabular}{l}
Sets the device release number of the BCD (binary coded decimal) display. \\
DFU
[0000~9999/0100/1] \\
Enter as a decimal number. NCS converts the number to hexadecimal number recognized as the BCD.
\end{tabular} \\
\hline \multirow[t]{3}{*}{5845} & \multicolumn{2}{|l|}{Delivery Server Setting} & Provides items for delivery server settings. \\
\hline & 001 & FTP Port No. & Sets the FTP port number used when image files to the Scan Router Server. [0~65535 / 3670 / 1] \\
\hline & 002 & IP Address & \begin{tabular}{l}
Use this SP to set the Scan Router Server address. The IP address under the transfer tab can be referenced by the initial system setting. \\
[0~0xFFFFFFFF / 0x00]
\end{tabular} \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|}
\hline SP & \multicolumn{2}{|r|}{Number/Name} & Function/[Setting] \\
\hline \multirow[t]{5}{*}{5845} & 003 & Retry Interval & Determines the time interval between retries before the machine returns to standby after an error occurs during an image transfer with the delivery scanner or SMTP server.
\[
\text { [60~900 / } 300 \text { / 1] }
\] \\
\hline & 004 & Number of Retries & Determines the number of retries before the machine returns to standby after an error occurs during an image transfer with the delivery or SMTP server.
\[
\text { [0~99 / } 3 \text { / 1] }
\] \\
\hline & 005 & Capture Server IP Address & \begin{tabular}{l}
Sets the capture server IP address for the capture function. [0~0xFFFFFFFFF / 0x00 / ] \\
MLB2 is required to use this feature.
\end{tabular} \\
\hline & 006 & Delivery Error Display Time & Use this setting to determine the length of time the prompt message is displayed when a test error occurs during document transfer with the NetFile application and an external device.
\[
[0 \sim 999 / 300 / 1]
\] \\
\hline & 007 & Delivery Options & \begin{tabular}{l}
Connects to the Scan Router server for delivery of scanned documents.
\[
[0 \sim 1 / 0 / 1]
\] \\
0: No connection to Scan Router delivery server \\
1: Connected to Scan Router server for delivery of scanned documents.
\end{tabular} \\
\hline \multirow[t]{4}{*}{5846} & \multicolumn{3}{|l|}{UCS Setting} \\
\hline & 001 & Machine ID (For Delivery Server) & \begin{tabular}{l}
Displays the unique device ID in use by the delivery server directory. The value is only displayed and cannot be changed. \\
This ID is created from the NIC MAC or IEEE 1394 EUR/AI. \\
The ID is displayed as either 6-byle or 8byte binary. \\
6-byte: \\
\%02X.\%02X.\%02X.\%02X.\%02X.\%02X \\
8-byte: \\
\%02X.\%02X.\%02X.\%02X.\%02X.\%02X.\%02X.\%02X
\end{tabular} \\
\hline & 002 & Machine IC Clear (For Delivery Server) & Clears the unique ID of the device used as the name in the file transfer directory. Execute this SP if the connection of the device to the delivery server is unstable. After clearing the ID, the ID will be established again automatically by cycling the machine off and on. \\
\hline & 003 & Maximum Entries & \begin{tabular}{l}
Changes the maximum number of entries that UCS can handle. \\
[2000~50000/2000/1] \\
If a value smaller than the present value is set, the UCS managed data is cleared, and the data (excluding user code information) is displayed.
\end{tabular} \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|}
\hline SP & & Number/Name & Function/[Setting] \\
\hline \multirow[t]{6}{*}{5846} & 004 & Delivery Server Model & \begin{tabular}{l}
Changes the model of the transfer server registered for the I/O device. \\
[0~4/0/1] \\
0 : Not used \\
1: SG1 Provided \\
2: SG1 Package \\
3: SG2 Provided \\
4: SG2 Package
\end{tabular} \\
\hline & 005 & Delivery Server Capability & \begin{tabular}{l}
Changes the capability of the server registered for the I/O device. \\
Bit \(7=1\) Comment information \\
Bit \(6=1\) Address direct entry possible \\
Bit \(5=1\) Mail Rx confirmation possible \\
Bit \(4=1\) Address book auto update \\
[0~255 / 0 / 1]
\end{tabular} \\
\hline & 006 & Delivery Server Retry Timer & Sets the interval for retry attempts when the delivery server fails to acquire the delivery server address book.
[0~255/0/1] \\
\hline & 007 & Delivery Server Retry Times & Sets the number of retry attempts when the delivery server fails to acquire the delivery server address book.
[0~255/0/1] \\
\hline & 008 & Delivery Server Maximum Entries & \begin{tabular}{l}
Sets the maximum number account entries of the delivery server user information managed by UCS. \\
[ \(0 \sim 50000\) / 2000 / 1]
\end{tabular} \\
\hline & 050 & Initialize All Directory Info. & Clears all directory information managed by UCS, including all user codes. \\
\hline \multirow[t]{8}{*}{5847} & \multicolumn{3}{|l|}{Net File Resolution Reduction} \\
\hline & 001 & Rate for Copy Color & \multirow[t]{5}{*}{\begin{tabular}{l}
Changes the default settings of image data transferred externally by the DeskTopBinder page reference function via the MLB (Media Link Board). \\
[0~2 / 0 / 1] \\
0: 1x \\
1: \(1 / 2 x\) \\
2: \(1 / 4 x\)
\end{tabular}} \\
\hline & 002 & Copy : Text (B\&W) & \\
\hline & 003 & Copy: Others (B\&W) & \\
\hline & 004 & Rate for Printer Color & \\
\hline & 005 & Rate for Printer B\&W & \\
\hline & 006 & Rate for Printer B\&W HQ & \begin{tabular}{l}
Sets the default for dithered image size sent to the Document Server via the MLB (Media Link Board).
\[
[1 \sim 3 / 1 / 1]
\] \\
1: \(1 / 2 \mathrm{x}\) \\
2: \(1 / 4 x\) \\
3: \(1 / 8 \mathrm{x}\)
\end{tabular} \\
\hline & 021 & Netfile Page Quality Default for JPEG & Sets the default for JPEG image quality of image files handled by DeskTopBinder sent via the MLB (Media Link Board).
\[
\text { [5~95 / } 50 \text { / 1] }
\] \\
\hline
\end{tabular}

\begin{tabular}{|c|c|c|c|}
\hline SP & \multicolumn{2}{|r|}{Number/Name} & Function/[Setting] \\
\hline \multirow[t]{8}{*}{5852} & 006 & SMTP Auth. Encryption & \begin{tabular}{l}
Sets encryption method for the transfer password in SMTP validation. \\
[0~2/0/1] \\
0: Auto. Allows three methods for encryption in SMTP validation: LOGIN, PLAIN, or CRAM-MD5. \\
1: Off. Allows two methods for SMTP validation: LOGIN, PLAIN. \\
2: On. Allows only one method for SMTP validation: CRAM-MD5.
\end{tabular} \\
\hline & 007 & POP before SMTP & \begin{tabular}{l}
A flag that determines whether the POP server is connected before connecting to the SMTP server.
\[
[0 \sim 1 / 0 / 1]
\] \\
POP \\
0: OFF \\
1: On \\
Post Office Protocol (POP)servers are computers that receive mail using SMTP. The mail includes a setting to ensure that it is directed to the POP server. POP servers are used when the user is not permanently connected to the Internet.
\end{tabular} \\
\hline & 008 & POP Server Name & Sets the POP server name. \\
\hline & 009 & POP Port Number & Sets the POP port number.
\[
[1 \sim 65535 / 110 / 1]
\] \\
\hline & 010 & POP User Name & Set the POP user name. \\
\hline & 011 & POP Password & Set the POP password. \\
\hline & 012 & POP Auth. Encryption & \begin{tabular}{l}
Sets the encryption method for the password when 5852 POP Before SMTP is in use. \\
[0~2/0/1] \\
0: Auto. Allows two methods for encryption: APOP and normal encryption to match the settings of the POP server. \\
1: Off. Allows only normal encryption. \\
2: On. Allows only APOP encryption.
\end{tabular} \\
\hline & 013 & Time out Setting for POP & \begin{tabular}{l}
Sets the wait time after POP validation until the SMTP mail is sent. \\
[ \(0 \sim 10000 / 300 / 1 \mathrm{~ms}\) ]
\end{tabular} \\
\hline 5853 & \multicolumn{2}{|l|}{Stamp Data Download} & \begin{tabular}{l}
Use this SP to download the fixed stamp data stored in the controller firmware and save it on the HDD. This SP can be executed as many times as required. This SP must be executed after replacing or formatting the hard disks. \\
This SP can be executed only with the hard disks installed. (-5.10.5)
\end{tabular} \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|}
\hline SP & \multicolumn{2}{|r|}{Number/Name} & Function/[Setting] \\
\hline 5856 & 002 & Remote ROM Update/Local port & \begin{tabular}{l}
When set to "1" allows reception of firmware data via the local port (IEEE 1284) during a remote ROM update.
\[
[0 \sim 1 / 0 / 1]
\] \\
0: Not allowed \\
1: Allowed \\
This setting is reset to zero after the machine is cycled off and on
\end{tabular} \\
\hline \multirow[t]{9}{*}{5857} & \multicolumn{3}{|l|}{Save Debug Log} \\
\hline & 001 & On/Off (1:ON 0:OFF & Switches on the debug log feature. The debug log cannot be captured until this feature is switched on.
\[
\begin{aligned}
& {[0 \sim 1 / 0 / 1]} \\
& \text { 0: OFF } \\
& \text { 1: ON }
\end{aligned}
\] \\
\hline & 002 & Target (2: HDD 3: SD Card) & \begin{tabular}{l}
Selects the destination where the debugging information generated by the event selected by SP5858 will be stored if an error is generated
\[
[2 \sim 3 / 2 / 1]
\] \\
2: HDD \\
3: SD Card
\end{tabular} \\
\hline & 005 & Save to HDD & Specifies the decimal key number of the log to be written to the hard disk. (-5.16) \\
\hline & 006 & Save to SD Card & Specifies the decimal key number of the log to be written to the SD Card. (-5.16) \\
\hline & 009 & HDD to SD Card (Latest 4 MB ) & \begin{tabular}{l}
Takes the most recent 4 MB of the log written to the hard disk and copies them to the SD Card. ( -5.16 ) \\
A unique file name is generated to avoid overwriting existing file names on the SD Card. Up to \(4 M B\) can be copied to an SD Card. 4 MB segments can be copied one by one to each SD Card.
\end{tabular} \\
\hline & 010 & HDD to SD Card Latest 4 MB Any Key) & \begin{tabular}{l}
Takes the log of the specified key from the log on the hard disk and copies it to the SD Card. (-5.16) \\
A unique file name is generated to avoid overwriting existing file names on the SD Card. Up to 4 MB can be copied to an SD Card. 4 MB segments can be copied one by one to each SD Card. This SP does not execute if there is no log on the HDD with no key specified.
\end{tabular} \\
\hline & 011 & Erase Debug Data From HDD & Erases all debug logs on the HDD \\
\hline & 012 & Erase Debug Data From SD Card & \begin{tabular}{l}
Erases all debug logs on the SD Card. If the card contains only debugging files generated by an event specified by SP5858, the files are erased when SP5857 010 or 011 is executed. \\
To enable this SP, the machine must be cycled off and on.
\end{tabular} \\
\hline 5857 & 013 & Free Space on SD Card & Displays the amount of space available on the SD card. \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|}
\hline SP & \multicolumn{2}{|r|}{Number/Name} & Function/[Setting] \\
\hline \multirow[t]{5}{*}{5858} & \multicolumn{2}{|l|}{Debug Save When} & These SPs select the content of the debugging information to be saved to the destination selected by SP5857 002 \\
\hline & 001 & Engine SC Error & Stores SC codes generated by copier engine errors \\
\hline & 002 & Controller SC Error & Stores SC codes generated by GW controller errors \\
\hline & 003 & Any SC Error & \begin{tabular}{l}
Stores one SC specified by number.
\[
[0 \sim 65535 \text { / } 0 \text { / 1] }
\] \\
Refer to Section 4 for a list of SC error codes.
\end{tabular} \\
\hline & 004 & Jam & \\
\hline \multirow[t]{11}{*}{5859} & \multicolumn{2}{|l|}{Debug Save Key No.} & \multirow[t]{11}{*}{These SP's allow you to set up to 10 keys for log files for functions that use common memory on the controller board.
\[
\text { [-9999999~+9999999 / } 0 \text { / 1] }
\]} \\
\hline & 001 & Key 1 & \\
\hline & 002 & Key 2 & \\
\hline & 003 & Key 3 & \\
\hline & 004 & Key 4 & \\
\hline & 005 & Key 5 & \\
\hline & 006 & Key 6 & \\
\hline & 007 & Key 7 & \\
\hline & 008 & Key 8 & \\
\hline & 009 & Key 9 & \\
\hline & 010 & Key 10 & \\
\hline 5907 & \multicolumn{2}{|l|}{Plug \& Play Maker/Model Name} & \begin{tabular}{l}
Selects the brand name and the production name for Windows Plug \& Play. This information is stored in the NVRAM. If the NVRAM is defective, these names should be registered again. \\
After selecting, press the "Original Type" key and "\#" key at the same time. When the setting is completed, the beeper sounds five times.
\end{tabular} \\
\hline 5913 & 002 & Switchover Permission Time/ Print Application & Sets the amount of time to elapse while the machine is in standby mode (and the operation panel keys have not been used) before another application can gain control of the display.
\[
[3 \sim 30 / 3 / 1 \mathrm{~s}]
\] \\
\hline 5914 & 001 & Application Counter DIsplay & \[
\begin{aligned}
& \text { Printer Counter } \\
& \text { 0: Off } \\
& \text { 1: On }
\end{aligned}
\] \\
\hline & 003 & Copy Counter & \\
\hline 5915 & \multicolumn{2}{|l|}{Mechanical Counter Detection} & \begin{tabular}{l}
Displays whether the mechanical counter is installed in the machine. \\
[0~2] \\
0: Not detected \\
1: Detected \\
2: Unknown
\end{tabular} \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|}
\hline SP & & Number/Name & Function/[Setting] \\
\hline 5917 & \multicolumn{2}{|l|}{GPC Counter Display} & \begin{tabular}{l}
Displays the GPC counter. [0~1/0/1] Japan Only \\
0: No display \\
1: Display
\end{tabular} \\
\hline 5918 & \multicolumn{2}{|l|}{A3 / DLT Counter Display} & \begin{tabular}{l}
Determines whether pressing the counter key displays count confirmation.
\[
[0 \sim 1 / 0 / 1]
\] \\
0: OFF 1: ON \\
This SP affects the display only, and has no effect on SP5104 (A3/DLT Double Count).
\end{tabular} \\
\hline 5923 & \multicolumn{2}{|l|}{Border Removal Area Switching} & \begin{tabular}{l}
Selects the standard for edge erase.
\[
[0 \sim 1 / 0 / 1]
\] \\
0 : The margin is erased from the original data. \\
1: The margin is erased from the data sent to the laser diode. \\
The output resulting from each of the settings will be different when reduction/enlargement is used.
\end{tabular} \\
\hline 5967 & \multicolumn{2}{|l|}{Copy Server: Disable Function} & \begin{tabular}{l}
Enables and disables the copier server.
\[
[0 \sim 1 / 0 / 1]
\] \\
0 : Enables 1: Disables \\
Turn the main switch off and on after changing this setting.
\end{tabular} \\
\hline 5974 & \multicolumn{2}{|l|}{Cherry Server} & Do not change. Japan Only \\
\hline \multirow[t]{12}{*}{5990} & \multicolumn{2}{|l|}{SP Print Mode} & In the SP mode, press Copy mode to move to the copy screen, select the paper size, then press Start. Select A4/LT LEF or larger to ensure that all the information prints. Return to the SP mode, select the desired print, and press Execute. \\
\hline & 001 & All (Data List) & \\
\hline & 002 & SP (Mode Data List) & \\
\hline & 003 & User Program & \\
\hline & 004 & Logging Data & \\
\hline & 005 & Diagnostic Report & \\
\hline & 006 & Non-Default & \\
\hline & 007 & NIB Summary & \\
\hline & 008 & Net File Log & \\
\hline & 021 & Copier User Program & \\
\hline & 022 & Scanner SP & \\
\hline & 023 & Scanner User Program & \\
\hline
\end{tabular}

\section*{\(\Rightarrow\) 5.4.3 FINISHER INPUT CHECK: SP6117}
\begin{tabular}{|c|c|c|c|c|}
\hline \multirow[t]{2}{*}{\begin{tabular}{l}
Class 3 \\
No.
\end{tabular}} & \multirow[t]{2}{*}{\[
\begin{aligned}
& \hline \hline \text { Bit } \\
& \text { No. }
\end{aligned}
\]} & \multirow[b]{2}{*}{Description} & \multicolumn{2}{|r|}{Reading} \\
\hline & & & 0 & 1 \\
\hline \multirow{8}{*}{1} & 7 & Stack Feed-Out Belt HP Sensor & Home Position & Not Home Position \\
\hline & 6 & Not Used & & \\
\hline & 5 & Shift Tray Lower Limit 2 Sensor & Not Detected & Detected \\
\hline & 4 & Shift Tray Lower Limit 3 Sensor & Not Detected & Detected \\
\hline & 3 & Stapler Tray Exit Sensor & Paper Not Detected & Paper Detected \\
\hline & 2 & Shift Tray Exit Sensor & Paper Detected & Paper Not Detected \\
\hline & 1 & Upper Tray Exit Sensor & Paper Detected & Paper Not Detected \\
\hline & 0 & Entrance Sensor & Paper Not Detected & Paper Detected \\
\hline \multirow{8}{*}{2} & 7 & Not Used & & \\
\hline & 6 & Front Door Safety Switch & Door Closed & Door Open \\
\hline & 5 & Stapler Tray Paper Sensor & Paper Not Detected & Paper Detected \\
\hline & 4 & Staple End Sensor & Not End & End \\
\hline & 3 & Staple Hammer Hp Sensor & Home Position & Not Home Position \\
\hline & 2 & Stapler Hp Sensor & Not Home Position & Home Position \\
\hline & 1 & Shift Tray Half-Turn Sensor & Home Position & Not Home Position \\
\hline & 0 & Jogger Hp Sensor & Not Home Position & Home Position \\
\hline \multirow{8}{*}{3} & 7 & Not Used & & \\
\hline & 6 & Staple Cartridge Set Sensor & Set & Not Set \\
\hline & 5 & Staple Mode Hp Sensor 2 & Not Detected & Detected \\
\hline & 4 & Staple Mode Hp Sensor 1 & Not Detected & Detected \\
\hline & 3 & Not Used & & \\
\hline & 2 & Punch Waste Hopper Sensor & Not Full & Full \\
\hline & 1 & Punch Hp1 Sensor & Home Position & Not Home Position \\
\hline & 0 & Punch Unit Connection & Connected & Not Connected \\
\hline \multirow{8}{*}{4} & 7 & Stapler Ready & Ready & Not Ready \\
\hline & 6 & Stapler Return Sensor & Not Detected & Detected \\
\hline & 5 & Exit Guide Open Sensor & Home Position & Not Home Position \\
\hline & 4 & Stack Plate -Center Hp Sensor & Not Home Position & Home Position \\
\hline & 3 & Pre-Stack Tray Paper Sensor & Paper Not Detected & Paper Detected \\
\hline & 2 & Staple Waste Hopper Sensor & Not Full & Full \\
\hline & 1 & Stapler Rotation Hp Sensor & Not Home Position & Home Position \\
\hline & 0 & Upper Tray Limit Sensor & Not Full & Full \\
\hline \multirow{8}{*}{5} & 7 & Punch Hp 2 Sensor & Home Position & Not Home Position \\
\hline & 6 & Not Used & & \\
\hline & 5 & Shift Lower Limit - Large Paper Sensor & Not Detected & Detected \\
\hline & 4 & Shift Mode Hp Sensor & Not Detected & Detected \\
\hline & 3 & Stacking Roller Hp Sensor & Home Position & Not Home Position \\
\hline & 2 & Positioning Roller Hp Sensor & Not Home Position & Home Position \\
\hline & 1 & Stack Plate - Rear Hp Sensor & Not Home Position & Home Position \\
\hline & 0 & Stack Plate - Front Hp Sensor & Not Home Position & Home Position \\
\hline
\end{tabular}

INPUT CHECK
\begin{tabular}{|c|c|c|c|c|}
\hline \begin{tabular}{l}
Class 3 \\
No.
\end{tabular} & \[
\begin{aligned}
& \text { Bit } \\
& \text { No. }
\end{aligned}
\] & Description & \multicolumn{2}{|c|}{Reading} \\
\hline \multirow{8}{*}{6} & 7 & Not Used & & \\
\hline & 6 & Shift Tray Full Sensor - Z-Folding (B706) & Not Full & Full \\
\hline & 5 & Bottom Fence Hp Sensor (B706) & Not Home Position & Home Position \\
\hline & 4 & Top Fence Hp Sensor (B706) & Not Home Position & Home Position \\
\hline & 3 & Emergency Stop Switch & Not Press & Press \\
\hline & 2 & Shift Jogger Lift Hp Sensor (Optional Jogger Unit) & Home Position & Not Home Position \\
\hline & 1 & Shift Jogger Hp Sensor (Optional Jogger Unit) & Not Home Position & Home Position \\
\hline & 0 & Optional Jogger Unit Connection & Connection & Not Connection \\
\hline
\end{tabular}

\subsection*{5.5 OUTPUT CHECK}

\subsection*{5.5.1 MAIN MACHINE OUTPUT CHECK: SP5804}

NOTE: Motors keep turning in this mode regardless of upper or lower limit sensor signals. To prevent mechanical or electrical damage, do not keep an electrical component on for a long time.

\section*{Main Machine Output Check (SP5-804)}
1. Open SP mode 5-804.
2. Select the SP number that corresponds to the component you wish to check. (Refer to the table on the next page.)
3. Press On then press Off to test the selected item.
\begin{tabular}{||l|l|l|l||||||}
\hline No. & \multicolumn{1}{|c|}{ Description } & No. & \multicolumn{1}{|c|}{ Description } \\
\hline 001 & 1st Paper Feed Clutch & 027 & LCT 3rd Grip Clutch \\
\hline 002 & 2nd Paper Feed Clutch & 028 & Bypass Grip Clutch \\
\hline 003 & 3rd Paper Feed Clutch & 029 & Relay Clutch \\
\hline 004 & LCT 1st Paper Feed Clutch & 030 & LCT Relay Clutch \\
\hline 005 & LCT 2nd Paper Feed Clutch & 031 & Lower Relay Clutch \\
\hline 006 & LCT 3rd Paper Feed Clutch & 032 & LCT Transport Clutch 1 \\
\hline 007 & Bypass Paper Feed Clutch & 033 & LCT Transport Clutch 2 (By-pass) \\
\hline 008 & 1st Pick-up Solenoid & 034 & LCT Guide Plate Solenoid \\
\hline 009 & 2nd Pick-up Solenoid & 035 & 1st Tray Lift Motor \\
\hline 010 & 3rd Pick-up Solenoid & 036 & 2nd Tray Lift Motor \\
\hline 011 & LCT 1st Pick-up Solenoid & 037 & 3rd Tray Lift Motor \\
\hline 012 & LCT 2nd Pick-up Solenoid & 038 & LCT 1st Tray Lift Motor \\
\hline 013 & LCT 3rd Pick-up Solenoid & 039 & LCT 2nd Tray Lift Motor \\
\hline 014 & Bypass Pick-up Solenoid & 040 & LCT 3rd Tray Lift Motor \\
\hline 015 & 1st Separation Roller Solenoid & 041 & Bypass Tray Lift Motor \\
\hline 016 & 2nd Separation Roller Solenoid & 042 & Rear Fence Drive Motor \\
\hline 017 & 3rd Separation Roller Solenoid & 043 & Tandem Tray Connect Solenoid \\
\hline 018 & \begin{tabular}{l} 
LCT 1st Separation Roller \\
Solenoid
\end{tabular} & 044 & Front Side Fence Solenoid \\
\hline 019 & \begin{tabular}{l} 
LCT 2nd Separation Roller \\
Solenoid
\end{tabular} & 045 & Rear Side Fence Solenoid \\
\hline 020 & \begin{tabular}{l} 
LCT 3rd Separation Roller \\
Solenoid
\end{tabular} & 046 & Left 1st Tray Lock Solenoid \\
\hline 021 & \begin{tabular}{l} 
Bypass Separation Roller \\
Solenoid
\end{tabular} & 047 & Relay Motor \\
\hline 022 & 1st Vertical Transport Clutch & 048 & Paper Feed Motor \\
\hline 023 & 2nd Vertical Transport Clutch & 049 & LCT Motor \\
\hline 024 & 3rd Vertical Transport Clutch & 050 & Bypass Tray Motor \\
\hline 025 & LCT 1st Grip Clutch & 051 & Drum Motor \\
\hline 026 & LCT 2nd Grip Clutch & 052 & Fusing/Exit Motor \\
\hline \hline
\end{tabular}
\begin{tabular}{||l|l|l|l||}
\hline No. & \multicolumn{1}{|c|}{ Description } & No. & \multicolumn{1}{|c|}{ Description } \\
\hline 053 & Registration Motor & 076 & Quenching Lamp \\
\hline 054 & Web Motor & 077 & Charge Corona \\
\hline 055 & Guide Plate Solenoid & 078 & Grid Plate \\
\hline 056 & Inverter Gate Solenoid & 079 & Development Bias \\
\hline 057 & Duplex Transport Motor1 & 080 & Transfer Belt Bias \\
\hline 058 & Duplex Transport Motor2 & 081 & Polygonal Motor Mirror Cooling Fan \\
\hline 059 & Inverter Exit Roller Clutch & 082 & Exhaust Fan (Low) \\
\hline 060 & Duplex Inverter Gate Solenoid & 083 & Exhaust Fan (High) \\
\hline 061 & Reverse Roller Solenoid & 084 & Drum Cooling Fan (Low) \\
\hline 062 & Inverter Guide Plate Solenoid & 085 & Drum Cooling Fan (High) \\
\hline 063 & \begin{tabular}{l} 
Toner Recycling Shutter \\
Solenoid
\end{tabular} & 086 & Paper Cooling Pipe Fan1 \\
\hline 064 & Jogger Motor & 087 & Steam Removal Fan (Low) \\
\hline 065 & Toner Supply Roller Clutch & 088 & Steam Removal Fan (High) \\
\hline 066 & Development Motor & 089 & Development Unit Cooling Fan1 \\
\hline 067 & Toner Supply Pump Motor & 090 & Laser Diode \\
\hline 068 & Upper Toner Bottle Motor & 091 & Development Unit Cooling Fan2 \\
\hline 069 & Lower Toner Bottle Motor & 092 & Duplex Entrance Cooling Fan \\
\hline 070 & Toner Bank Motor & 093 & Paper Cooling Pipe Fan2 \\
\hline 071 & Toner Supply Coil Clutch & 094 & Duplex Cooling Fan \\
\hline 072 & Exposure Lamp & 095 & Toner Suction Motor \\
\hline 073 & Optics Cooling Fan & 096 & Total Counter \\
\hline 074 & ID Sensor LED & 097 & Upper Bottle Cap Motor \\
\hline 075 & Transfer Belt Lift Solenoid & 098 & Lower Bottle Cap Motor \\
\hline \hline
\end{tabular}
5.5.2 ADF OUTPUT CHECK: SP6008
\begin{tabular}{||c|l|c|c||}
\hline No. & \multicolumn{1}{|c|}{ Description } & \(\mathbf{0}\) & \(\mathbf{1}\) \\
\hline 1 & Feed-in Motor (High) & OFF & ON \\
\hline 2 & Feed-in Motor (Low) & OFF & ON \\
\hline 3 & Transport Motor (Forward) & OFF & ON \\
\hline 4 & Transport Motor (Reverse) & OFF & ON \\
\hline 5 & Feed-out Motor & OFF & ON \\
\hline 6 & Exit Gate Solenoid & OFF & ON \\
\hline 7 & Inverter Solenoid & OFF & ON \\
\hline 8 & LEDs (Operation Panel) & OFF & ON \\
\hline 9 & Pick-up Motor & OFF & ON \\
\hline 10 & Bottom Plate Motor & OFF & ON \\
\hline 11 & Feed-in Clutch & OFF & ON \\
\hline
\end{tabular}
5.5.3 FINISHER OUTPUT CHECK: SP6118
\begin{tabular}{||c|l||}
\hline No. & \multicolumn{1}{|c|}{ Description } \\
\hline 1 & Upper Transport Motor \\
\hline 2 & Shift Tray Exit Motor \\
\hline 3 & Upper Tray Junction Gate Solenoid \\
\hline 4 & Shift Tray Lift Motor \\
\hline 5 & Jogger Motor \\
\hline 6 & Stapler Motor \\
\hline 7 & Staple Hammer Motor (Stapler Unit) \\
\hline 8 & Punch Motor \\
\hline 9 & Stapler Junction Gate Solenoid \\
\hline 10 & Positioning Roller Solenoid \\
\hline 11 & Stack Feed-out Belt Motor \\
\hline 12 & Shift Motor \\
\hline 13 & Stapler Rotation Motor \\
\hline 14 & Lower Transport Motor \\
\hline 15 & Exit Guide Motor \\
\hline 16 & Stack Plate-Center Motor \\
\hline 17 & Pre-stack Junction Gate Solenoid \\
\hline 18 & Pre-stack Paper Stopper Solenoid \\
\hline 19 & Stapler Return Solenoid \\
\hline 20 & Stack Plate- Front Motor \\
\hline 21 & Stack Plate - Rear Motor \\
\hline 22 & Stacking Roller Drag Motor \\
\hline 23 & Stacking Roller Motor \\
\hline 24 & Shift Jogger Motor (Optional Jogger Unit) \\
\hline 25 & Shift Jogger Lift Motor (Optional Jogger Unit) \\
\hline 26 & Jogger Top Fence Motor \\
\hline 27 & Jogger Bottom fence Motor \\
\hline &
\end{tabular}

\subsection*{5.9 PM COUNTER}

\section*{\(\Rightarrow\) 5.9.1 ACCESSING THE PM COUNTERS}

Each PM part has a counter which counts up at the appropriate time. (For example, the counter for the hot roller counts up every copy, and the counter for a feed roller counts up when paper is fed from the corresponding tray.) These counters should be used as references for part replacement timing.
1) Press the following keys in sequence.

Hold the \(\stackrel{\text { clear }}{\square}\) key more than 3 seconds.
The SP mode menu is displayed.

2) Press [PM Counter ] on the display.
3) The following menu appears on the display.


\section*{TECHNICAL SERVICE BULLETIN}

\section*{BULLETIN NUMBER：B070／B071－039}

07／19／2004

\section*{APPLICABLE MODEL： \\ GESTETNER－9002／10512 \\ LANIER－LD090／LD0105 \\ RICOH－AFICIO 2090／2105 \\ SAVIN－4090／40105}

\section*{SUBJECT：DRUM SHAFT GROUNDING}

\section*{GENERAL：}

The drum shaft stay has been added to further ensure proper grounding of the drum．The new grounding plate should be installed on to the drum shaft stay．The following part update is being issued for all B070／B071 Parts Catalogs．

\begin{tabular}{|c|c|c|c|c|c|}
\cline { 3 - 6 } \multicolumn{2}{c|}{} & \multicolumn{2}{c|}{ REFERENCE } \\
\hline NEW PART NUMBER & DESCRIPTION & QTY & PAGE & ITEM \\
\hline B0703685 & Drum Shaft Ground Plate & 1 & 133 & \(33^{*}\) \\
\hline
\end{tabular}

\footnotetext{
＊DENOTES NEW ITEM NUMBER
}

\section*{UNITS AFFECTED:}

All copiers listed below and manufactured after the serial numbers provided will have the new parts installed during production.
\begin{tabular}{|l|c|}
\hline \multicolumn{1}{|c|}{ MODEL NAME } & SERIAL NUMBER \\
\hline Ricoh Aficio 2090 & \\
Savin 4090 & J7040300127 \\
Gestetner 9002 & \\
Lanier LD 090 & \\
\hline Ricoh Aficio 2105 & \\
Savin 40105 \\
Gestetner 10512 \\
Lanier LD 0105 & J7140200198 \\
\hline
\end{tabular}

\title{
LANMER' \\  \\ saVITi
}

\section*{TECHNICAL SERVICE BULLETIN}

BULLETIN NUMBER: B070/B071-040
09/22/2004

\section*{APPLICABLE MODEL:}

GESTETNER - 9002/10512
LANIER - LD090/LD0105
RICOH - AFICIO 2090/2105
SAVIN - 4090/40105

\section*{SUBJECT: OPC DRUM}

\section*{GENERAL:}

The OPC drum has been changed. Refer to TSB B070/B071- 035 for details on the Enhanced Version Drum.

The following part update is being issued for all B070/B071 Parts Catalogs.

\begin{tabular}{|c|c|c|c|c|c|c|}
\cline { 4 - 9 } & \multicolumn{4}{c|}{ REFERENCE } \\
\hline OLD PART NO. & NEW PART NO. & DESCRIPTION & QTY & INT & PAGE & ITEM \\
\hline A2949510 & B0709510 & OPC Drum & 1 & 0 & 95 & 16 \\
\hline
\end{tabular}
* DENOTES NEW ITEM NUMBER

\section*{UNITS AFFECTED:}

All copiers listed below and manufactured after the serial numbers provided will have the new enhanced OPC Drum installed during production.
\begin{tabular}{|l|c|}
\hline \multicolumn{1}{|c|}{ MODEL NAME } & SERIAL NUMBER \\
\hline Ricoh Aficio 2090 & \\
Savin 4090 \\
Gestetner 9002 \\
Lanier LD 090 & J7040300127 \\
\hline \hline Ricoh Aficio 2105 \\
Savin 40105 \\
Gestetner 10512 \\
Lanier LD 0105 & \\
\hline
\end{tabular}

\section*{INTERCHANGEABILITY CHART:}
\begin{tabular}{|c|l|c|l|}
\hline 0 & \begin{tabular}{l} 
OLD and NEW parts can be used in both OLD and \\
NEW machines.
\end{tabular} & 2 & \begin{tabular}{l} 
NEW parts CAN NOT be used in OLD machines. \\
OLD parts can be used in OLD and NEW machines.
\end{tabular} \\
\hline 1 & \begin{tabular}{l} 
NEW parts can be used in OLD and NEW machines. \\
OLD parts CAN NOT be used in NEW machines.
\end{tabular} & 3 & \begin{tabular}{l} 
OLD parts CAN NOT be used in NEW machines. \\
NEW parts CAN NOT be used in OLD machines.
\end{tabular} \\
\hline \(3 / S\) & \begin{tabular}{l} 
Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or \\
previously modified, use the new part numbers individually.
\end{tabular} \\
\hline
\end{tabular}

\section*{TECHNICAL SERVICE BULLETIN}

BULLETIN NUMBER：B070／B071－041
09／29／2004

\section*{APPLICABLE MODEL： \\ GESTETNER－9002／10512 \\ LANIER－LD090／LD0105 \\ RICOH－AFICIO 2090／2105 \\ SAVIN－4090／40105}

\section*{SUBJECT：LCDC FIRMWARE UPDATE FAILURE}

Please use the following procedure to bring the machine back on line if the following symptom occurs during the LCDC firmware update．

IMPORTANT：A common cause of firmware update failure is when the main power is turned OFF during the firmware update．Please make sure to wait until the Main Power ON Key LED flashes at intervals of about 3 seconds，and then turn the main power OFF．

\section*{SYMPTOM：}

The LCDC firmware update is interrupted，and the following message appears when the machine is powered back ON．
```

Warning
Install failure of operation panel program
Turn machine off
Set SD card of operation panel and turn on

```

\section*{CAUSES：}

1．The main power switch is turned OFF before the LCDC firmware update is completed．
2．A power failure occurs during the LCDC firmware update．

\section*{SOLUTION：}

Ensure that the Main power is not turned OFF prior to completion of the LCDC firmware update．If the above symptom occurs，use the LCDC Recovery Procedure on page 2 to perform a firmware recovery．

\section*{LCDC Recovery Procedure}

IMPORTANT: If you are updating the machine from a B070/B071 non enhanced to a B070/B071 enhanced, this recovery procedure will not work. In this case, the LCDC board must be replaced.
- Reason: The firmware recovery program is overwritten only when you update from the B070/B071 non enhanced to B070/B071 enhanced.
- See TSB B070/B071 - 037R for details about the B070/B071 firmware.
1. Insert the SD card that contains the LCDC firmware.
2. Turn the main power ON. The operation panel will display the following message:
```

Warning
Install failure of operation panel program
Turn machine off
Set SD card of operation panel and turn on

```
3. Make sure to wait for the update to begin. This will take about one minute.

\section*{TECHNICAL SERVICE BULLETIN}

\section*{BULLETIN NUMBER: B070/B071 - 042}

10/28/2004

\section*{APPLICABLE MODEL:}

GESTETNER - 9002/10512
LANIER - LD090/LD0105
RICOH - AFICIO 2090/2105
SAVIN - 4090/40105

\section*{SUBJECT: PARTS CATALOG UPDATES}

GENERAL:
The following parts updates are being issued for all B070/B071 Parts Catalogs.
- UPDATE 1: \(\quad\) Bushing - \(\mathbf{6 m m}\) - To reduce noise and increase durability, the material of the 6 mm Bushing has been changed. Please update your B070/B071 Parts Catalog with the following information.

\begin{tabular}{|c|c|c|c|c|c|c|}
\hline OLD PART NO. & NEW PART NO. & DESCRIPTION & QTY & INT & PAGE & ITEM \\
\hline 50530447 & AA082118 & Bushing -6 mm & 3 & 1 & 67 & 7 \\
\hline
\end{tabular}

\section*{UNITS AFFECTED:}

All B070/B071 copiers listed below and manufactured after the serial numbers provided will have the new Bushing - 6 mm installed during production.
\(\left.\begin{array}{|c|c|}\hline \text { MODEL NAME } & \text { SERIAL NUMBER } \\ \hline \text { Gestetner 9002 } & \text { J7040200001 } \\ \text { Lanier LD 090 } \\ \text { Ricoh Aficio 2090 } \\ \text { Savin 4090 }\end{array}\right]\)
- UPDATE 2: Front Left Door - The Front Left Door and the Misfeed Removal Decal have been changed to incorporate misfeed removal with the addition of the Z-Fold unit. Please update your B070/B071 Parts Catalog with the following information.

\begin{tabular}{|c|c|c|c|c|c|c|}
\hline & & & & & \multicolumn{2}{|l|}{REFERENCE} \\
\hline OLD PART NO. & NEW PART NO. & DESCRIPTION & QTY & INT & PAGE & ITEM \\
\hline B0701278 & B0701277 & Door: Front Left: DOM: Ass'y & 1 & 1 & 17 & 1 \\
\hline B0701300 & B0701299 & Decal: Misfeed Removal & 1 & 1 & 17 & 6 \\
\hline B0701300 & B0701299 & Decal: Misfeed Removal & 1 & 1 & 211A & 5 \\
\hline
\end{tabular}

\section*{UNITS AFFECTED:}

All B070/B071 copiers listed below and manufactured after the serial numbers provided will have the new Front Left Door and the Misfeed Removal Decal installed during production.
\begin{tabular}{|c|c|}
\hline MODEL NAME & SERIAL NUMBER \\
\hline Gestetner 9002 & J7040200001 \\
Lanier LD 090 \\
Ricoh Aficio 2090 & \\
Savin 4090 & \\
\hline \begin{tabular}{c} 
Gestetner 10512 \\
Lanier LD 0105 \\
Ricoh Aficio 2105 \\
Savin 40105
\end{tabular} & \(\mathbf{J 7 1 4 0 2 0 0 0 1 1}\) \\
\hline
\end{tabular}

Pick-Up Arm - The Pick-Up Arm and Paper Feed Unit have been changed to improve reliability. Please update your B070/B071 Parts Catalog with the following information.

\begin{tabular}{|c|c|c|c|c|c|c|}
\hline \multicolumn{4}{c|}{} & \multicolumn{9}{c|}{ REFERENCE } \\
\hline OLD PART NO. & NEW PART NO. & DESCRIPTION & QTY & INT & PAGE & ITEM \\
\hline B0706320 & B0706322 & Paper Feed Unit:Paper Bank & 2 & 1 & 63 & \(*\) \\
\hline A1342860 & B0706669 & Pick-up Arm & 1 & 1 & 65 & 9 \\
\hline B0706321 & B0706323 & Paper Feed Unit:Paper Bank:No2 & 1 & 1 & 63 & \(*\) \\
\hline
\end{tabular}

\section*{UNITS AFFECTED:}

All B070/B071 copiers listed below and manufactured after the serial numbers provided will have the new Pick-Up Arm and Paper Feed Unit installed during production.
\begin{tabular}{|c|c|}
\hline MODEL NAME & SERIAL NUMBER \\
\hline Gestetner 9002 & J7040500001 \\
Lanier LD 090 \\
Ricoh Aficio 2090 \\
Savin 4090
\end{tabular}\(\quad\).

\section*{INTERCHANGEABILITY CHART:}
\begin{tabular}{|c|l|c|l|}
\hline 0 & \begin{tabular}{l} 
OLD and NEW parts can be used in both OLD and \\
NEW machines.
\end{tabular} & 2 & \begin{tabular}{l} 
NEW parts CAN NOT be used in OLD machines. \\
OLD parts can be used in OLD and NEW machines.
\end{tabular} \\
\hline 1 & \begin{tabular}{l} 
NEW parts can be used in OLD and NEW machines. \\
OLD parts CAN NOT be used in NEW machines.
\end{tabular} & 3 & \begin{tabular}{l} 
OLD parts CAN NOT be used in NEW machines. \\
NEW parts CAN NOT be used in OLD machines.
\end{tabular} \\
\hline \(3 / S\) & \begin{tabular}{l} 
Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or \\
previously modified, use the new part numbers individually.
\end{tabular} \\
\hline
\end{tabular}

\section*{TECHNICAL SERVICE BULLETIN}

\section*{BULLETIN NUMBER: B070/B071-043}

11/17/2004

\section*{APPLICABLE MODEL:}

GESTETNER - 9002/10512
LANIER - LD090/LD0105
RICOH - AFICIO 2090/2105
SAVIN - 4090/40105

\section*{SUBJECT: POSITIONING BRACKET GUIDE}

\section*{GENERAL:}

In order to ensure safety while working on the machine, a protective cover has been added to the entire area surrounding the positioning bracket on the controller box. The following parts updates are being issued for all B070/B071 Parts Catalogs. Please update your parts catalog with the following information.

\begin{tabular}{|c|l|c|c|c|}
\cline { 3 - 5 } \multicolumn{2}{c|}{} & \multicolumn{2}{c|}{ REFERENCE } \\
\hline NEW PART NUMBER & \multicolumn{1}{c|}{ DESCRIPTION } & QTY & PAGE & ITEM \\
\hline B0706849 & Guide: Positioning & 1 & 155 & 32 * \\
\hline 04513006 B & Tapping Screw - M3x6 & - & 155 & 101 \\
\hline
\end{tabular}
* DENOTES NEW ITEM NUMBER

\section*{UNITS AFFECTED:}

All B070/B071 copiers manufactured after the serial numbers listed below will have the new style Positioning Bracket Guide installed during production.
\(\left.\begin{array}{|c|c|}\hline \text { MODEL NAME } & \text { SERIAL NUMBER } \\ \hline \text { Gestetner 9002 } & \text { J7040200001 } \\ \text { Lanier LD090 } \\ \text { Ricoh Aficio 2090 } \\ \text { Savin 4090 }\end{array}\right]\)

\section*{APPLICABLE MODEL:}

GESTETNER - FILE FORMAT CONVERTER for 9002/10512
LANIER - FILE FORMAT CONVERTER for LD090/LD0105
RICOH - FILE FORMAT CONVERTER for AFICIO 2090/2105
SAVIN - FILE FORMAT CONVERTER for 4090/40105

\section*{SUBJECT: FILE FORMAT CONVERTER SUPPORTS DTB V2}

\section*{GENERAL:}

Please note the following regarding File Format Converter (Media Link Board - MLB) used on the B070/B071 and DeskTopBinder compatibility:

The File Format Converter (MBL) supports DeskTopBinder V2 Lite/Professional from version 3.0.0.0. If prior versions of DeskTopBinder V2 Lite are used with the File Format Converter, an "Insufficient Memory Error" will be displayed. The current version of DeskTopBinder V2 Lite/Professional is 3.1.1.1. Please go to the software download website and download the latest version.

FIRMWARE HISTORY

\section*{FIRMWARE HISTORY}

\section*{PRODUCT CODE： \\ B070／B071}

\section*{APPLICABLE MODEL：}

GESTETNER－9002／10512
LANIER－LD090／LD0105
RICOH－AFICIO 2090／2105
SAVIN－4090／40105

\section*{GENERAL：}

The latest firmware version can be downloaded at the Technology Solutions Center FTP Site at http：／／tsc．ricohcorp．com．Be sure to check the README file for important notes and explanations．

NOTE：Refer to Facts Line Bulletin \＃FL002 and Publication Bulletin \＃023 for more information about the FTP Internet Web Site and EPROM／Flash Card Exchange program．

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\section*{SYSTEM FIRMWARE:}
\begin{tabular}{|c|c|c|c|}
\hline PART NUMBER & VERSION & CHECK SUM & PRODUCTION \\
\hline B0705734 & V1.02.1 & - & 1st Mass Prod. \\
\hline A & V1.04.2 & 8C1D & February '03 Prod \\
\hline B & V1.04.4 & 180D & March '03 Prod \\
\hline B0705754 & V2.12.7 & B6C1 & April '03 Prod \\
\hline A & V3.04.1 & C258 & May '03 Prod \\
\hline B & V4.01.4 & EE90 & June '03 Prod \\
\hline C & V4.02.1 & 7065 & July '03 Prod \\
\hline D & V.4.03.3 & \(1 B 79\) & September '03 Prod \\
\hline E & V.4.04.1 & \(7 B 40\) & November 03 Prod \\
\hline
\end{tabular}

\section*{SYSTEM FIRMWARE HISTORY:}
\begin{tabular}{|c|c|}
\hline Symptom Corrected & Version \\
\hline \begin{tabular}{l}
1. SC672 (controller start-up error). \\
2. NetWare printing error: Machine will not accept print jobs after a certain amount have been sent via NetWare. \\
3. Words missing (French/Spanish): Some words not displayed in French (missing from wording lists). \\
4. Slow printing speed with Standard TCP/IP port. \\
IMPORTANT: To ensure the above symptoms do not occur, it is also necessary to update to the following firmware versions or later: \\
- BIOS: B0705742D: K02EL00O \\
- NIB: B0705735B: V.4.03 \\
- LCDC: B0705371B (NA): V.2.07
\end{tabular} & B \\
\hline \begin{tabular}{l}
1. Supports 0-counter change \\
2. Supports SMTP Authentication
\end{tabular} & B0705754 \\
\hline \begin{tabular}{l}
1. Modified for use with Copy Connector Kit. \\
2. SC997/SC998 occurs with frequent use of New Job. \\
3. The Printer function is given priority when the Copier is set as the priority function. \\
4. Modified to further minimize multifeeds for certain paper types. \\
5. Paper is stacked in shift tray 2 when center stapling is disabled and the job resumed following a center staple End condition.
\end{tabular} & A \\
\hline
\end{tabular}
\begin{tabular}{|ll|c|}
\hline \multicolumn{1}{|c|}{ Symptom Corrected } & Version \\
\hline 1. & Modified for use with the MLB option (File Format Converter). & B \\
2. & New default value for SP5-836-098 (Back Projection Removal): 1 & \\
3. & "Please Wait" display does not clear when turning the power ON after installing a new & \\
& HDD. & \\
4. & "Please Wait" display does not clear during warm-up. & \\
5. & Key sound and subsequent screen change for Designate key is slow. & \\
6. & Incorrect PM interval: cleaning blade, cleaning brush, feed roller, fusing roller cleaning felt &
\end{tabular}
6. Incorrect PM interval: cleaning blade, cleaning brush, feed roller, fusing roller cleaning felt (EU).
7. If the finisher tray reaches capacity at the completion of a New Job, the next New Job in the queue will not start, even when the copies are removed from the tray.
8. New Jobs cannot be programmed up to specification maximum on either the main or sub Copy Connection machines.
9. It was possible to clear SC861 (HDD failure) with the operation switch.
10. Copy Connection: Job may not be performed correctly if initiated while the sub machine is in Night Mode.
11. SC818 sometimes occurs on one Copy Connection machine if the power is turned off on the other machine while both contain New Jobs filled up to capacity.
12. Thumbnails are not created for some files when storing/capturing 2500 Printer files into the Document Server at once.
13. SC995 sometimes occurs with large-volume printer jobs or when the machine receives simultaneous job requests from multiple machine functions.
14. Image is not printed out correctly if Interrupt Copy is used while printing out a Document Server file.
Specification change:
Estimated job completion times added to New Job table for the Printer function.
1. Modified for use with the EB-105EX controller (EFI).
2. Error in storing debug log data when the function is set for engine log storage (2224) of paper jams.
1. The image is sometimes positioned incorrectly when printing a file from the Document Server to custom-sized paper using Double Copies and Centering/Cornering.
2. 32k bytes of a scanned image is sometimes lost on the trailing edge.
3. The image is sometimes printed in the wrong orientation when Reserve Job is set to "Previous Job" and the paper type for the selected tray is set to "Tab Stock".
4. The "Please Wait" display does not clear if the HDD installed is defective.
5. SC819 sometimes occurs with Copier Connector mode.
6. 1200dpi image data sometimes does not appear correctly after being transferred from the MFP hard drive to Desk Top Editor for Production (or vice-versa).
IMPORTANT: To ensure the symptoms listed above do not occur, it is also necessary to update to the following firmware versions or later:
- Netfile V. 3.08 (B0705756D)
\begin{tabular}{|c|c|}
\hline Symptom Corrected & Version \\
\hline \begin{tabular}{l}
1. Modified for use of the EB-105EX in combination with Desk Top Editor for Production. \\
2. SC955 may occur when printing out a Document Server file from the operation panel in Magazine mode if the file 1) contains blank page(s), and 2) was originally stored to the Document Server via a GW controller. \\
3. SC672 may occur on units with an MLB installed when storing a file containing blank page(s) to the Document Sever via a GW controller. \\
4. When retrieving a stored copier document at the same time as sending a print job, an SC955 error occurs. \\
5. Sometimes, JPEG 2000 images cannot be retrieved by the Desk Top Editor for Production from the MFP HDD. \\
6. The EB-105EX stalls if turned Off/On more than 100 times while the Bellini-C2 main power is on (memory control related). \\
IMPORTANT: To ensure the above symptoms do not occur, it is also necessary to update to the following firmware version or later: \\
- Netfile V. 3.09 (B0705756E)
\end{tabular} & E \\
\hline
\end{tabular}

\section*{BIOS FIRMWARE:}
\begin{tabular}{|c|c|c|c|}
\hline PART NUMBER & VERSION & CHECK SUM & PRODUCTION \\
\hline B0705742C & K02ELO0L & - & 1st Mass Prod. \\
D & K02EL00O & \(86 B 9\) & March '03 Prod \\
E & K02ELOOS & 1813 & May '03Prod \\
\hline
\end{tabular}

\section*{BIOS FIRMWARE HISTORY:}
\begin{tabular}{|c|c|}
\hline Symptom Corrected & Suffix \\
\hline \begin{tabular}{l}
1. SC672 (controller start-up error). \\
2. NetWare printing error: Machine will not accept print jobs after a certain amount have been sent via NetWare. \\
3. Words missing (French/Spanish): Some words not displayed in French (missing from wording lists). \\
4. Printing speed with Standard TCP/IP Port is too slow. \\
IMPORTANT: To ensure the above symptom does not occur, it is also necessary to update to the following versions or later: \\
- SYSTEM: B0705734B: V.1.04.4 \\
- NIB: B0705735B: V.4.03 \\
- LCDC: B0705371B: V.2.07
\end{tabular} & D \\
\hline 1. The 128 MB memory is incorrectly detected as 64 MB memory. & E \\
\hline
\end{tabular}

\section*{BCU FIRMWARE:}
\begin{tabular}{|c|c|c|c|}
\hline PART NUMBER & VERSION & CHECK SUM & PRODUCTION \\
\hline B0705254 & V3.02 & 3359 & 1st Mass Prod. \\
A & V4.01.1 & \(19 E 9\) & May '03 Prod \\
B & V4.05 & 5BAB & July '03 Prod \\
C & V.4.10 & 77C6 & October '03 Prod \\
\hline
\end{tabular}

\section*{BCU FIRMWARE HISTORY:}
\begin{tabular}{|l|l|c|}
\hline \multicolumn{2}{|c|}{ Symptom Corrected } & Version \\
\hline 1st Mass Production & - \\
\hline 1. & Copy speed returns to normal after performing forced process control in SP mode, even while \\
low speed mode is enabled. & A \\
2. & Paper remaining in the duplex unit cannot be exited by forced feed. \\
3. & SC990 is displayed when the front door is opened/closed following jam recovery. \\
4. & "Waste toner bottle full" display cannot be cleared. \\
5. & SC670 occurs or the panel display freezes when the development bias is set to its maximum \\
value. & \\
6. & Staple jam occurs at second set with Mixed Sizes/Stapling. & \\
7. & Changed the step interval for SP1907 from 100 to 10. & \\
8. & Modified for use with Copy Connector Kit. & \\
\hline 1. & Lower toner bottle cap motor remains ON, even after power Off/On following motor output \\
check with the upper and lower bottles removed. & B \\
2. & Display for remaining sheets in left tandem tray remains at full, even when transferring the \\
sheets to the right tray. & \\
3. & V-jam alert for the Bypass tray (jam at feed sensor) is not cleared after the paper is removed \\
and the tray slide is opened/closed, but is cleared when the mainframe right door is & \\
opened/closed. & \\
4. & Modified for use with the EB-105EX controller (EFI). & \\
\hline A misfeed of three sheets or more sometimes triggers a Jam Code 53 when LT paper is fed LEF \\
from the 1st tandem tray. The pick-off solenoid ON timing (feed timing of the next sheet) has been \\
delayed to prevent the jam. & C \\
NOTE: & & \\
1. & \begin{tabular}{l} 
Jam code \(53: ~ F e e d ~ s e n s o r ~ f o r ~ t h e ~ 1 s t ~ t a n d e m ~ t r a y ~ d e t e c t s ~ t h e ~ p r e s e n c e ~ o f ~ p a p e r ~ a f t e r ~ t h e ~\)
\end{tabular} \\
predetermined interval has expired. & \\
2. & This symptom only occurs under the conditions specified above, i.e. it does not occur with any \\
other tray or paper size. & & \\
\hline
\end{tabular}

Firmware History for B070/B071

\section*{LCDC FIRMWARE:}
\begin{tabular}{|c|c|c|c|}
\hline PART NUMBER & VERSION & CHECK SUM & PRODUCTION \\
\hline B0705371A & V2.06 & - & 1st Mass Prod. \\
\hline B & V 2.07 & 851 E & February '03 Prod \\
\hline B0705374 & V 2.09 & 5267 & April '03 Prod \\
\hline A & V 2.12 & 1E50 & July '03 Prod \\
\hline
\end{tabular}

\section*{LCDC FIRMWARE HISTORY:}
\begin{tabular}{|c|c|}
\hline Symptom Corrected & Version \\
\hline \begin{tabular}{l}
1. SC672 (controller start-up error). \\
2. NetWare printing error: Machine will not accept print jobs after a certain amount have been sent via NetWare. \\
3. Words missing (French/Spanish): Some words not displayed in French (missing from wording lists). \\
4. Slow printing speed with Standard TCP/IP port. \\
IMPORTANT: To ensure the above symptoms do not occur, it is also necessary to update to the following firmware versions or later: \\
- SYSTEM: B0705734B: V.1.04.4 \\
- BIOS: B0705742D: K02EL00O \\
- NIB: B0705735B: V.4.03
\end{tabular} & B \\
\hline \begin{tabular}{l}
1. Supports 0 -counter change \\
2. Supports SMTP Authentication
\end{tabular} & B0705374 \\
\hline 1. Modified for use with the EB-105EX controller (EFI). & A \\
\hline
\end{tabular}

Firmware History for B070/B071

\section*{SCANNER FIRMWARE:}
\begin{tabular}{|c|c|c|c|}
\hline PART NUMBER & VERSION & CHECK SUM & PRODUCTION \\
\hline B5806420 & V1.02 & - & 1st Mass Prod. \\
\hline B5806520 & V 2.00 & 4982 & March '03 Prod \\
\hline
\end{tabular}

\section*{SCANNER FIRMWARE HISTORY:}
\begin{tabular}{|l|c|c|}
\hline \multicolumn{1}{|c|}{ Symptom Corrected } & Version \\
\hline 1. & Supports 0-counter change & B5806520 \\
2. & Supports SMTP Authentication & \\
\hline
\end{tabular}

\section*{NCS (NIB) FIRMWARE:}
\begin{tabular}{|c|c|c|c|}
\hline PART NUMBER & VERSION & CHECK SUM & PRODUCTION \\
\hline B0705735 & V4.01 & - & 1st Mass Prod. \\
\hline A & V4.02 & 0CDB & February '03 Prod \\
\hline B & V4.03 & 20B5 & March '03 Prod \\
\hline B0705755 & V4.11 & AAE6 & April '03 Prod \\
\hline A & V4.13.3 & 6E90 & May '03 Prod \\
\hline B & V4.15 & 301D & June '03 Prod \\
\hline
\end{tabular}

\section*{NCS (NIB) FIRMWARE HISTORY:}
\begin{tabular}{|c|c|}
\hline Symptom Corrected & Version \\
\hline \begin{tabular}{l}
1. SC672 (controller start-up error). \\
2. NetWare printing error: Machine will not accept print jobs after a certain amount have been sent via NetWare. \\
3. Words missing (French/Spanish): Some words not displayed in French (missing from wording lists). \\
4. Slow printing speed with Standard TCP/IP port. \\
IMPORTANT: To ensure the above symptoms do not occur, it is also necessary to update to the following firmware versions or later: \\
- BIOS: B0705742D: K02EL00O \\
- SYSTEM: B0705734B: V.1.04.4 \\
- LCDC: B0705371B (NA): V.2.07
\end{tabular} & B \\
\hline \begin{tabular}{l}
1. Supports 0-counter change \\
2. Supports SMTP Authentication
\end{tabular} & B0705755 \\
\hline \begin{tabular}{l}
1. Not possible to access the NIB from SmartNetMonitor (IPX environments only). \\
2. Not possible to access the network when an NVRAM clear is performed with the IEEE1394 board installed. \\
3. The NIB is not able to limit access from the WeblmageMonitor document server or DeskTopBinder V2 Professional in accordance with the Access Control ranges specified in WeblmageMonitor (only when these settings have been specified). \\
4. Modified for use with Copy Connector Kit.
\end{tabular} & A \\
\hline \begin{tabular}{l}
1. Modified for use with the MLB option (File Format Converter). \\
2. Hop count was mistakenly set at 4 , making it impossible to obtain an auto IP address when there are four or more routers between the unit and DHCP server (Hop count corrected to 64).
\end{tabular} & B \\
\hline
\end{tabular}

NETFILE FIRMWARE:
\begin{tabular}{|c|c|c|c|}
\hline PART NUMBER & VERSION & CHECK SUM & PRODUCTION \\
\hline B0705736 & V 1.01 & - & 1st Mass Prod. \\
\hline B0705756 & V 2.11 .3 & BF73 & April '03 Prod \\
\hline A & V 3.04 .2 & 45DA & May '03 Prod \\
\hline B & V 3.07 .2 & 79ED & June '03 Prod \\
\hline D & V .3 .08 & D929 & September '03 Prod \\
\hline E & V .3 .09 & 33C9 & November '03 Prod \\
\hline
\end{tabular}

\section*{NETFILE FIRMWARE HISTORY:}
\begin{tabular}{|c|c|}
\hline Symptom Corrected & Version \\
\hline 1st Mass Production & B0705736 \\
\hline \begin{tabular}{l}
1. Supports 0 -counter change \\
2. Supports SMTP Authentication
\end{tabular} & B0705756 \\
\hline Modified for use with Copy Connector Kit. & A \\
\hline Modified for use with the MLB option (File Format Converter). & B \\
\hline \begin{tabular}{l}
IMPORTANT: To ensure the symptoms listed below do not occur, it is also necessary to update to the following firmware version or later: \\
- System Version V.4.03.3 (B0705754D) \\
1. Image data to which a new section has been added, does not appear correctly after sending the data to the MFP HDD from Desk Top Editor for Production. \\
2. Excel data set at 1200 dpi does not appear correctly after being retrieved from the MFP HDD to Desk Top Editor for Production. \\
3. A device error occurs when send the data that contains Printer document and Copier document to the MFP HDD from Desk Top Editor for Production.
\end{tabular} & D \\
\hline \begin{tabular}{l}
IMPORTANT: To ensure the symptoms listed below do not occur, it is also necessary to update to the following firmware version or later: \\
- System Version V.4.04.1 (B0705754E) \\
1. Modified for use of the EB-105EX in combination with Desk Top Editor for Production. \\
2. Cannot retrieve a 1200dpi document from the HDD to Desktop Editor for production using TIFF \(100 \%\) if the file contains blank page(s).
\end{tabular} & E \\
\hline
\end{tabular}

\section*{PS3 FIRMWARE:}
\begin{tabular}{|c|c|c|c|}
\hline PART NUMBER & VERSION & CHECK SUM & PRODUCTION \\
\hline B6136470 & V1.00 & D7DA & 1st Mass Prod. \\
\hline
\end{tabular}

\section*{PS3 FIRMWARE HISTORY:}
\begin{tabular}{|l|c|}
\hline Symptom Corrected & Version \\
\hline 1st Mass Production & - \\
\hline
\end{tabular}

\section*{WEBSYSTEM FIRMWARE:}
\begin{tabular}{|c|c|c|c|}
\hline PART NUMBER & VERSION & CHECK SUM & PRODUCTION \\
\hline B0705737 & V1.02 & - & 1st Mass Prod. \\
\hline B0705757 & V2.00 & 5759 & April 03 Prod \\
\hline
\end{tabular}

\section*{WEBSYSTEM FIRMWARE HISTORY:}
\begin{tabular}{|l|c|}
\hline \multicolumn{1}{|c|}{ Symptom Corrected } & Version \\
\hline 1st Mass Production & B0705737 \\
\hline 1. Supports 0-counter change & B0705757 \\
2. Supports SMTP Authentication & \\
\hline
\end{tabular}

\section*{WEBDOCBOX FIRMWARE:}
\begin{tabular}{|c|c|c|c|}
\hline PART NUMBER & VERSION & CHECK SUM & PRODUCTION \\
\hline B0705738 & V1.03 & - & 1st Mass Prod. \\
\hline B0705758 & V1.06 & 1329 & April '03 Prod \\
\hline A & V1.07 & D8B3 & May '03 Prod. \\
\hline B & V1.08 & 9E5E & June '03 Prod. \\
\hline
\end{tabular}

\section*{WEBDOCBOX FIRMWARE HISTORY:}
\begin{tabular}{|l|c|}
\hline \multicolumn{1}{|c|}{ Symptom Corrected } & Version \\
\hline 1st Mass Production & B0705738 \\
\hline 1. \(\quad\) Supports 0-counter change & B0705758 \\
2. Supports SMTP Authentication & A \\
\hline \begin{tabular}{l} 
If the machine shifts from night mode to off mode at the same time the document server is \\
being accessed from a PC, after that it is not possible to access the document server from the \\
PC.
\end{tabular} & B \\
\hline 1. \begin{tabular}{l} 
Modified for use with the MLB option (File Format Converter). \\
2. \\
\begin{tabular}{l} 
Document Server file list cannot be displayed from the client station if there are Scanner \\
files stored on the server, due to a mainframe memory leak that occurs when attempting \\
to display the screen.
\end{tabular}
\end{tabular} & B \\
\hline
\end{tabular}

\section*{LANGUAGE FIRMWARE:}
\begin{tabular}{|c|c|c|c|}
\hline PART NUMBER & VERSION & CHECK SUM & PRODUCTION \\
\hline B 0705350 & V 2.99 & D 92 D & 1st Mass Prod. \\
\hline A & V 3.02 & 1473 & July '03 Prod \\
\hline
\end{tabular}

\section*{LANGUAGE FIRMWARE HISTORY:}
\begin{tabular}{|l|c|}
\hline \multicolumn{1}{|c|}{ Symptom Corrected } & Version \\
\hline 1st Mass Production & - \\
\hline Modified for use with the EB-105EX Controller (EFI). & A \\
\hline
\end{tabular}

\section*{PRINTER FIRMWARE:}
\begin{tabular}{|c|c|c|c|}
\hline PART NUMBER & VERSION & CHECK SUM & PRODUCTION \\
\hline B5806415 & V1.00 & - & 1st Mass Prod. \\
\hline B5806515 & V1.13 & 2D42 & April '03 Prod \\
\hline
\end{tabular}

PRINTER FIRMWARE HISTORY:
\begin{tabular}{|c|c|}
\hline \multicolumn{1}{|c|}{ Symptom Corrected } & Version \\
\hline 1st Mass Production & B5806415 \\
\hline 1. & 0 counter \\
2. & SMTP Authentication
\end{tabular}

\section*{FIRMWARE HISTORY}

PUBLISHED DATE：10／27／2004

\section*{PRODUCT CODE：B706 \\ APPLICABLE MODEL： \\ GESTETNER－SR841 FINISHER for 9002／10512 \\ LANIER－SR841 FINISHER for LD090／LD0105 \\ RICOH－SR841 FINISHER for AFICIO 2090／2105 \\ SAVIN－SR841 FINISHER for 4090／40105}

\section*{GENERAL：}

Flash
Memory
Memory

The latest firmware version can be downloaded at the Technology Solutions Center FTP Site at http：／／tsc．ricohcorp．com．Be sure to check the README file for important notes and explanations．

NOTE：Refer to Facts Line Bulletin \＃FL002 and Publication Bulletin \＃023 for more information about the FTP Internet Web Site and EPROM／Flash Card Exchange program．

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1．1 SR841 FIRMWARE HISTORY：．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．． 2

\section*{1. SR841 FIRMWARE:}
\begin{tabular}{|c|c|c|c|l|}
\hline VERSION & ROM NUMBER & MAIN PCB NO. & CHECK SUM & \multicolumn{1}{|c|}{ PRODUCTION DATE } \\
\hline V1.10 & B7065105 & B7065130 & 3208 & First Mass Production \\
\hline V1.11 & B7065106 & B7065131 & 7899 & Not available \\
\hline
\end{tabular}

\subsection*{1.1 SR841 FIRMWARE HISTORY:}
\begin{tabular}{|l|c|}
\hline \multicolumn{1}{|c|}{ SYMPTOM CORRECTED } & VERSION \\
\hline Initial Production Release & V1.10 \\
\hline Corrects the following: & V1.11 \\
- The B070/B071 did not detect the Plockmatic (SR90), which is connected via the SR841. & \\
Some signal-control codes for communication with the Plockmatic were missing from the & \\
SR841 EPROM firmware. The firmware was modified (coding error corrected). & \\
\hline
\end{tabular}```

