## Gestetner RロCOM SaVIn

## A258/A259/A260 B017/B018 <br> SERVICE MANUAL

## Gestetner RTCOMT 53VII



RICOH GROUP COMPANIES

# Gestetner RICOM SEMII 

A258/A259/A260 B017/B018 SERVICE MANUAL

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## LEGEND

| PRODUCT CODE | COMPANY |  |  |
| :---: | :---: | :---: | :---: |
|  | GESTETNER | RICOH | SAVIN |
| A258 | CS206 | Aficio 3006 | SDC306 |
| A259 | CS206D | Aficio 4006 | SDC306A |
| A260 | CS206DE | Aficio 4106 | SDC306E |
| B017 | CS231 | Aficio 4506 | SDC326A |
| B018 | CS225 | Aficio 3506 | SDC326 |

## DOCUMENTATION HISTORY

| REV. NO. | DATE | COMMENTS |
| :---: | :---: | :--- |
| $*$ | $4 / 99$ | Original Printing |
| 1 | $10 / 2000$ | B017/B018 Addition |
|  |  |  |
|  |  |  |

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## © IMPORTANT SAFETY NOTICES

## PREVENTION OF PHYSICAL INJURY

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

## HEALTH SAFETY CONDITIONS

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

## OBSERVANCE OF ELECTRICAL SAFETY STANDARDS

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

## 1. SAFETY AND ECOLOGICAL NOTES FOR DISPOSAL

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




## OVERALL INFORMATION

## 1. OVERALL MACHINE INFORMATION

### 1.1 SPECIFICATIONS

### 1.1.1 MACHINE CONFIGURATION

|  | A258 | A259 | A260 |
| :---: | :---: | :---: | :---: |
| Operation Panel | 40-digit 4-line LCD <br> Hard Key Type | $144 \mathrm{~mm} \times 192 \mathrm{~mm}$ (10.4 inch) <br> Color Touch Panel Display |  |
| Paper Tray Unit | 500 sheets | Duplex |  |
| Edit Function | No | No | Yes |



Paper Tray Unit ( 500 sheets per tray)


### 1.1.2 GENERAL SPECIFICATIONS

Configuration: Desktop
Copy Process: Dry electrostatic transfer system
Resolution: 400 dpi; Printer mode 600 dpi
Gradations: 256 gradations
Originals: Sheet/Book/Object
Original Size: Maximum 11" x 17" /A3
Copy Paper Size:

|  | Maximum | Minimum |
| :--- | :--- | :--- |
| Paper Tray Feed <br> (A258 only) | $11^{\prime \prime} \times 17^{\prime \prime} / \mathrm{A} 3$ | $51 / 2 \times 81 / 2 / \mathrm{A} 5(\mathrm{~L})$ |
| Bypass Feed | $12^{\prime \prime} \times 18 " / 305 \mathrm{~mm} \times 457 \mathrm{~mm}$ | A6(L) |

Copy Paper Weight:

| Paper Tray Feed | 17 to 28 lbs. | 64 to $105 \mathrm{~g} / \mathrm{m}^{2}$ |
| :--- | :--- | :--- |
| Bypass Feed | 14 to 43 lbs. | 52 to $160 \mathrm{~g} / \mathrm{m}^{2}$ |
| Auto Duplex Tray | 17 to 28 lbs. | 64 to $105 \mathrm{~g} / \mathrm{m}^{2}$ |

Reproduction Ratios:

|  | 81/2" $\times 11 " L T / 11 " \times 17 " D L T$ <br> version | A4/A3 version |
| :--- | :--- | :--- |
| Enlargement | $121,129,155,200,400 \%$ | $115,122,141,200,400 \%$ |
| Full size | $100 \%$ | $100 \%$ |
| Reduction | $25,50,65,73,78,85,93 \%$ | $25,50,65,71,75,82,93 \%$ |
| Programmable | 2 user ratios | 2 user ratios |

Zoom: From $25 \%$ to 400 \% in $1 \%$ steps.

Copying Speed:

|  | 81/2" x 11" (S) /A4 | 11" x 17"/A3 |
| :---: | :---: | :---: |
| Normal Mode |  |  |
| Full Color (4 scans) | 6 cpm | 3 cpm |
| Single Color (C, M Y, K) | $\begin{gathered} \text { A258: } 21 \mathrm{cpm} \\ \text { A259/260: } 28 \mathrm{cpm} \\ \hline \end{gathered}$ | $\begin{gathered} \text { A258: } 11 \mathrm{cpm} \\ \text { A259/260: } 14 \mathrm{cpm} \\ \hline \end{gathered}$ |
| Single Color (B, G) | 9 cpm | 4.5 cpm |
| Single Color (R) | 7 cpm | 3.5 cpm |
| OHP/Thick Paper Mode |  |  |
| Full Color (4 scans) | 3 cpm | 1.5 cpm |
| Single Color (C, M Y, K) | 5 cpm | 2.5 cpm |
| Single Color (G, B) | 4 cpm | 2 cpm |
| Single Color (R) | 3.5 cpm | 1.5 cpm |

Duplexing: Same as Normal Mode speed in the above table
Printer Speed: $2 / 3$ the speeds shown in the above table

First Copy Time (A258/259/260):

|  |  |
| :--- | :---: |
| Normal Mode | 81/2" $\times$ 11" (S) /A4 |
| Full Color (4 scans) | 22.4 seconds |
| Single Color (K) | 8 seconds |
| Single Color (C, M, Y) | 10 seconds |
| Single Color (B, G, R) | 16 seconds |
| OHP/Thick Paper Mode |  |
| Full Color (4 scans) | 35 seconds |
| Single Color (K) | 23 seconds |
| Single Color (C, M, Y) | 25 seconds |
| Single Color (B, G, R) | 27 seconds |

Warm-up Time: Approx. 7 minutes (at $68^{\circ} \mathrm{F} / 20^{\circ} \mathrm{C}$ )

Duplexing:

Basic Manual Duplex Model (A258):
Basic Auto Duplex Model (A259):
Edit Auto Duplex Model (A260):

Manual duplexing in full color and single color modes
Manual \& auto duplexing in full color and single color modes
Manual \& auto duplexing in full color and single color modes

Duplexing can be done on $64-105 \mathrm{~g} / \mathrm{m}^{2}$ (17 to 28lbs.) paper.

Manual duplexing can be done through the bypass table only, and the user should press the Duplex Side 2 key before copying the reverse side.

Non-Reproduction Area:

Leading Edge:
Side:
Trailing Edge:
Copy Number Input:
Copy Number Input (Auto Duplex):

Image Density:
Automatic Reset:
Paper Capacity:
$0.2 " \pm 0.08$ " $(5 \mathrm{~mm} \pm 2 \mathrm{~mm})$
0.08 " $\pm 0.08$ " $(2 \mathrm{~mm} \pm 2 \mathrm{~mm})$ /

Total less than 0.16 " ( 4 mm )
$2.0 \mathrm{~mm}+2.0 /-1.5 \mathrm{~mm}$
Number keys, 1 to 99
Number keys
Single Color - 1 to 50: smaller than A3, 11" x 17" 1 to 30 : A3, 11" $\times 17{ }^{\prime \prime}$
Full Color $\quad 1$ to 20 : all sizes
Auto/Manual (9 steps)
Yes (10 to 990 seconds or Off)
Tray:
500 sheets x 1 tray
(Basic Manual Duplex Model: A258)
Bypass:
Normal paper ( $80 \mathrm{~g} / \mathrm{m}^{2} / 20 \mathrm{lb}$ ) 50 sheets
OHP 20 sheets
Adhesive paper 1 sheet
Toner Replenishment: Toner Addition (K, Y, C, M) (220 g/cartridge)
Copy Tray Capacity:
Power Source:

Maximum Power
100 sheets (11" x 17"/A3 and smaller)
US: 120V/12A/60Hz,
Europe/Asia: 220-240V/8A/50,60 Hz
Taiwan: $110 \mathrm{~V} / 12 \mathrm{~A} / 60 \mathrm{~Hz}$

Consumption:

Dimensions (without Platen Cover):

|  | Width | Depth | Height |
| :---: | :---: | :---: | :---: |
| A258 | 620 mm | 680 mm | 602 mm |
|  | $24.4^{\prime \prime}$ | $26.8^{\prime \prime}$ | $23.7^{\prime \prime}$ |
| A259 | 620 mm | 757 mm | 602 mm |
|  | $24.4^{\prime \prime}$ | $29.8^{\prime \prime}$ | $23.7^{\prime \prime}$ |
| A260 | 620 mm | 757 mm | 602 mm |
|  | $24.4^{\prime \prime}$ | $29.8^{\prime \prime}$ | $23.7^{\prime \prime}$ |

Height: $1,018 \mathrm{~mm}$ with optional paper tray unit

Weight: Manual Duplex: 105 kg (231.3 lbs.)
Auto Duplex: 108 kg (237.9 lbs.)
Optional Equipment: Automatic Document Feeder (ARDF): A663
Sorter Stapler: A555 (10 bins), A834 (20 bins),
Sorter: A849 (3 bins)
Film Projector: A846
Holder for Film Projector Unit: A702-19
Paper Tray Unit: A832 (2 trays), A833 (3 trays)
Key Counter
Platen Cover: A749-00
Original Tray: A430-07 (Type F)

### 1.1.3 PLATEN/ARDF ORIGINAL SIZE DETECTION

| Size (width x length) [mm] | Platen |  | ARDF |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Inches | Metric | Inches | Metric |
| A3 (297 x 420) L | No | Yes | No | Yes |
| B4 (257 x 364) L | No | Yes | No | Yes |
| A4 (210 x 297) L | No | Yes | Yes | Yes |
| A4 (297 x 210) S | No | Yes | Yes | Yes |
| B5 (182 x 257) L | No | Yes | No | Yes |
| B5 (257 x 182) S | No | Yes | No | Yes |
| A5 (148 x 210) L | No | No* | No | Yes |
| A5 (210 $\times 148$ ) S | No | No | No | Yes |
| B6 (128 x 182) L | No | No | No | Yes |
| B6 (182 x 128) S | No | No | No | Yes |
| 11" x 17" (DLT) | Yes | No | Yes | Yes |
| $11^{\prime \prime} \times 15{ }^{\prime \prime}$ | No | No | Yes | No |
| $10^{\prime \prime} \times 14$ | No | No | Yes | Yes |
| 8.5" x 14" (LG) | Yes | No | Yes | No |
| 8.5" $\times 13^{\prime \prime}$ (F4) | No | No | Yes | Yes |
| 8.25 " $\times 13$ " | No | No | No | No |
| 8" $\times 13$ "(F) | No | Yes | Yes | No |
| 8.5 " x 11" (LT) | Yes | No | Yes | Yes |
| 11" x 8.5" (LT) | Yes | No | Yes | Yes |
| 8" x 10.5" | No | No | No | No |
| 8" $\times 10$ | No | No | Yes | No |
| $5.5^{\prime \prime} \times 8.5$ (HLT) | No* | No | Yes | No |
| $8.5{ }^{\prime \prime} \times 5.5$ (HLT) | No | No | Yes | No |
| A6 (105 x 148) L | No | No | No | No |

*: For A5 lengthwise/HLT, SP4-303 can be used to select "Cannot detect original size" or "A5 lengthwise/5.5" x 8.5 "(HLT)".

### 1.1.4 COPY PAPER SIZE

| Size(width x length) | Trays in the main body |  |  |  | Bypass | Optional S.Stapler |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Paper Tray (A258) |  | Duplex Tray (A259/A260) |  | Allversions(A258/259/260) |  |
|  | Inches | Metric | Inches | Metric |  |  |
| A3 (297 x 420) L | No | Yes | Yes | Yes | Yes | Yes |
| B4 (257 x 364) L | No | Yes | Yes | Yes | Yes | Yes |
| A4 $(210 \times 297)$ L | Yes | Yes | Yes | Yes | Yes | Yes |
| A4 (297 x 210) S | Yes | Yes | Yes | Yes | Yes | Yes |
| B5 (182 x 257) L | No | Yes | No | Yes | Yes | Yes |
| B5 (257 x 182) S | No | Yes | No | Yes | Yes | Yes |
| A5 $(148 \times 210) \mathrm{L}$ | No | Yes | No | No | Yes | Yes (1) |
| A5 (210 $\times 148)$ S | No | No | Yes | Yes | Yes | Yes (2) |
| B6 (128 x 182) L | No | No | No | No | Yes | Yes (1) |
| B6 (182 x 128) S | No | No | No | No | No | No |
| $12^{\prime \prime} \times 18{ }^{\prime \prime}$ | No | No | No | No | Yes | Yes (3) |
| 11" x 17" (DLT) | Yes | Yes | Yes | Yes | Yes | Yes |
| $11^{\prime \prime} \times 15^{\prime \prime}$ | Yes | No | Yes | No | Yes | Yes |
| $10^{\prime \prime} \times 14{ }^{\prime \prime}$ | Yes | No | Yes | No | Yes | Yes |
| 8.5" x 14" (LG) | Yes | No | Yes | No | Yes | Yes |
| 8.5" $\times 13^{\prime \prime}$ (F4) | Yes | Yes | Yes | Yes | Yes | Yes |
| 8.25 " $\times 13^{\prime \prime}$ | No | No | Yes | Yes | Yes | Yes |
| 8" $\times 13$ "(F) | No | No | Yes | Yes | Yes | Yes |
| 8.5 " x 11" (LT) | Yes | Yes | Yes | Yes | Yes | Yes |
| $11^{\prime \prime} \times 8.5{ }^{\prime \prime}$ (LT) | Yes | Yes | Yes | Yes | Yes | Yes |
| 8" $\times 10.5$ " | No | No | Yes | No | Yes | Yes |
| 8" $\times 10$ | Yes | No | Yes | Yes | Yes | Yes |
| $5.5 \mathrm{\prime} \mathrm{\prime} \times 8.5$ " (HLT) | No | No | No | No | Yes | Yes (1) |
| 8.5 " x 5.5" (HLT) | Yes | No | Yes | Yes | Yes | Yes (2) |
| A6 (105 x 148) L | No | No | No | No | Yes | Yes (2) |

Yes (1): Stapling is not allowed.
Yes (2): Using the proof tray only. Sorter bins cannot be used.
Yes (3): 20-bin sorter (A834): Stapling is not allowed.
10-bin sorter (A555): Not available

### 1.1.5 APS PAPER SIZES AVAILABLE

## - For metric machines -

|  | $\begin{gathered} \hline 200 \\ \sim \\ 174 \end{gathered}$ | $\begin{gathered} \hline 173 \\ \sim \\ 164 \end{gathered}$ | $\begin{gathered} \hline 163 \\ \sim \\ 142 \end{gathered}$ | $\begin{gathered} \hline \hline 141 \\ \sim \\ 123 \end{gathered}$ | $\begin{gathered} \hline \hline \underset{\sim}{122} \end{gathered}$ | $\begin{gathered} 115 \\ \sim \\ 101 \end{gathered}$ | $\begin{gathered} 100 \\ \sim \\ 94 \end{gathered}$ | $\begin{gathered} \hline \hline \\ \sim \\ 88 \end{gathered}$ | $\begin{gathered} \hline \hline 87 \\ \sim \\ 83 \end{gathered}$ | $\begin{gathered} \hline \hline \underset{\sim}{76} \\ 76 \end{gathered}$ | $\begin{gathered} \hline 75 \\ \sim \\ 72 \end{gathered}$ | $\begin{gathered} 71 \\ \sim \\ 66 \end{gathered}$ | $\begin{gathered} \hline 65 \\ \sim \\ 62 \end{gathered}$ | $\begin{gathered} \hline 61 \\ \sim \\ 58 \end{gathered}$ | $\begin{aligned} & \hline 57 \\ & \sim \\ & 51 \end{aligned}$ | $50$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| A3 | - | - | - | - | - | - | A3 | - | B4 | - | - | A4L | $\begin{array}{r} 8.5 \\ \times 13 \end{array}$ | B5L | - | A5L |
| B4 | - | - | - | - | - | A3 | B4 | - | - | A4L | $\begin{array}{r} 8.5 \\ \times 13 \end{array}$ | B5L | - | - | A5L | - |
| A4L | - | - | - | A3 | B4 | - | A4L | $\begin{array}{r} 8.5 \\ x 13 \end{array}$ | B5L | - | - | A5L | - | - | - | - |
| B5L | - | - | A3 | B4 | - | A4L | B5L | - | - | A5L | - | - | - | - | - | - |
| A5L | A3 | B4 | - | A4L | B5L | - | A5L | - | - | - | - | - | - | - | - | - |
| A4S | - | - | - | - | - | - | $\begin{array}{r} \text { A4 } \\ \mathrm{S} \end{array}$ | - | $\begin{array}{r} \text { B5 } \\ \text { S } \end{array}$ | - | - | $\begin{array}{r} \text { A5 } \\ \text { S } \end{array}$ | - | - | - | - |
| B5S | - | - | - | - | - | $\begin{array}{r} \mathrm{A} 4 \\ \mathrm{~S} \end{array}$ | $\begin{array}{r} \text { B5 } \\ \text { S } \end{array}$ | - | - | $\begin{array}{r} \text { A5 } \\ \text { S } \end{array}$ | - | - | - | - | - | - |
| A5S | - | - | - | $\begin{array}{r} \text { A4 } \\ \text { S } \end{array}$ | $\begin{array}{r} \text { B5 } \\ \text { S } \end{array}$ | - | $\begin{array}{r} \text { A5 } \\ \text { S } \end{array}$ | - | - | - | - | - | - | - | - | - |
| $\begin{aligned} & \hline 8.5 \\ & \times 11 \end{aligned}$ | - | - | - | - | - | - | $\begin{array}{r} 8.5 \\ \mathrm{x} 11 \end{array}$ | - | - | - | - | - | - | - | - | - |
| $\begin{gathered} 11 \\ \times 8.5 \end{gathered}$ | - | - | - | - | - | - | $\begin{gathered} 11 \\ \times 8.5 \end{gathered}$ | - | - | - | - | - | - | - | - | - |
| $\begin{aligned} & 8.5 \\ & \times 13 \end{aligned}$ | - | - | - | - | A3 | - | $\begin{array}{r} 8.5 \\ \times 13 \end{array}$ | - | - | A4L | B5L | - | - | - | - | A5L |
| $\begin{gathered} 11 \\ \times 15 \end{gathered}$ | - | - | - | - | - | - | $\begin{array}{r} 11 \\ \times 15 \\ \hline \end{array}$ | - | - | - | - | - | - | - | - | - |

: Not allowed in platen cover mode. L: Lengthwise S: Sideways

## - For standard machines (in inches)-

|  | $\begin{gathered} \hline \hline 200 \\ \tilde{177} \end{gathered}$ | $\begin{gathered} \hline 176 \\ \tilde{156} \end{gathered}$ | $\begin{gathered} 155 \\ \tilde{130} \end{gathered}$ | $\begin{gathered} \hline 129 \\ \tilde{122} \end{gathered}$ | $\begin{gathered} 121 \\ \tilde{101} \end{gathered}$ | $\begin{gathered} \hline 100 \\ \tilde{94} \end{gathered}$ | $\begin{aligned} & \hline 93 \\ & \tilde{86} \end{aligned}$ | $\begin{gathered} \hline 85 \\ \tilde{78} \end{gathered}$ | $\begin{gathered} 77 \\ 75 \end{gathered}$ | $\begin{gathered} \hline 74 \\ \tilde{66} \end{gathered}$ | $\begin{aligned} & \hline 65 \\ & \tilde{51} \end{aligned}$ | $\stackrel{50}{\sim}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 11x17 | - | - | - | - | - | 11x17 | 11x17 | 11x15 | $\begin{array}{r} 8.5 \\ \times 14 \end{array}$ | - | $\begin{array}{r} 8.5 \\ \times 11 \end{array}$ | $\begin{gathered} 5.5 \\ \times 8.5 \end{gathered}$ |
| 11x15 | - | - | - | - | - | 11x15 | $11 \times 15$ | - | $\begin{array}{r} 8.5 \\ \times 14 \end{array}$ | $\begin{aligned} & 8.5 \\ & \times 11 \end{aligned}$ | - | $\begin{array}{r} 5.5 \\ \times 8.5 \end{array}$ |
| 8.5x14 | - | - | - | - | $\begin{gathered} 11 \\ \times 17 \end{gathered}$ | $\begin{array}{r} 8.5 \\ \times 14 \end{array}$ | - | - | $\begin{aligned} & 8.5 \\ & \times 11 \end{aligned}$ | - | - | $\begin{array}{r} 5.5 \\ \times 8.5 \end{array}$ |
| 8.5x11 | - | - |  | 11x17 | - | $\begin{aligned} & 8.5 \\ & \text { x11 } \end{aligned}$ | - | - | - | - | $\begin{array}{r} 5.5 \\ \times 8.5 \end{array}$ | - |
| $\begin{gathered} 5.5 \\ \times 8.5 \end{gathered}$ | $\begin{gathered} 11 \\ \times 17 \end{gathered}$ | $\begin{gathered} 11 \\ \times 15 \end{gathered}$ | $\begin{array}{r} 8.5 \\ \times 14 \end{array}$ | $\begin{aligned} & 8.5 \\ & \times 11 \end{aligned}$ | - | $\begin{array}{r} 5.5 \\ \times 8.5 \end{array}$ | - | - | - | - | - | - |
| $\begin{gathered} 8.5 \\ \times 5.5 \end{gathered}$ | - | - | - | $\begin{gathered} 11 \\ \times 8.5 \end{gathered}$ | - | $\begin{array}{r} 8.5 \\ \times 5.5 \end{array}$ | - | - | - | - | - | - |
| 11x8.5 | - | - | - | - | - | $\begin{gathered} 111 \\ \times 8.5 \end{gathered}$ | - | - | - | - | $\begin{array}{r} 8.5 \\ \times 5.5 \end{array}$ | - |
| $8 \times 10$ | - | - | - | 11x17 | 10x14 | 8x10 | - | - | - | - | $\begin{array}{r} 5.5 \\ \times 8.5 \end{array}$ | - |
| 10x14 | - | - | - | - | - | 10x14 | - | $\begin{aligned} & 8.5 \\ & \times 14 \end{aligned}$ | $\begin{aligned} & 8.5 \\ & \times 11 \end{aligned}$ | - | - | $\begin{aligned} & 5.5 \\ & \times 14 \end{aligned}$ |
| $8 \times 13$ | - | - | - | 11x17 | - | $8 \times 13$ | - | - | - | - | $\begin{array}{r} 5.5 \\ \times 8.5 \\ \hline \end{array}$ | - |

: Not allowed in platen cover mode.

NOTE: 1) The tables indicate the copy paper size for each original for 50 to $200 \%$ zoom ratios.
2) After specifying a zoom ratio, APS automatically selects a paper size that guarantees the quality of the magnified copy image, if there is a paper size available for the equivalent standard reproduction ratio.
3) If there is no paper that corresponds to the detected size, the machine displays the message "Set xx paper in tray" and stops the job (copying is still possible).
4) For "-" in the above tables, the machine displays the message "Cannot detect original size" and stops the job (copying is still possible). The selected paper feed tray does not change.
5) When less than $49 \%$ or more than $201 \%$ is selected, APS behaves in accordance with note 4 above.
6) APS also supports the by-pass feed table (except for non-standard paper sizes). When the paper size selected by APS can only be fed from the by-pass feed table, the machine displays a warning to instruct the user to use the by-pass feed table.
7) APS does not support A6, B6, and A5.

### 1.1.6 NOISE EMISSION

## Sound pressure level

The measurements were made in accordance with ISO 7779 at the operator positions.

| Copier only | Full system* |
| :---: | :---: |
| Less than $38.5 \mathrm{~dB}(\mathrm{~A})$ | Less than $55 \mathrm{~dB}(\mathrm{~A})$ |

*: Full system: Copier with document feeder, 500 sheets x 3 trays unit, FPU, and a sorter stapler.
Sound power level
The measurements were made in accordance with ISO 7779.

|  | Copier only | Full system* |
| :---: | :---: | :---: |
| Stand-by | Less than 55 dB (A) | Less than 59 dB (A) |
| Copying (This value is for the black copy mode.) | Less than 68 dB (A) | Less than 72 dB (A) |

*: Full system: Copier with document feeder, 500 sheets $\times 3$ trays unit, FPU, and a sorter stapler.

### 1.1.7 POWER CONSUMPTION

(1) Maximum power consumption
1.5 kVA
(2) Average power consumption

|  | A258/A259/A260 Copiers |
| :---: | :--- |
| Standby | 0.4 kW |
| Warm-up | 1.3 kW |
| Copying | 1.1 kW (B/W A4 D ) |
|  | 0.6 kW (full color A4 $\mathrm{\sigma}$ ) |
| Energy Saver Mode | Value for standby minus 25 W |

### 1.1.8 DISPLAY EDITOR SPECIFICATIONS

| Scanned image | - The copier's scanner scans the image. <br> - Maximum A3/DLT (11" x 17"): Reduced image display |
| :--- | :--- |
| Displayed image | - $144 \times 192 \mathrm{~mm}, 256$ colors (8 bits/dot) |
|  | - $640 \times 480$ dots, $0.33 \mathrm{~mm} /$ dot <br> Reduces the dpi of scanned images to approximately 25 <br> dpi and displays the entire image |
|  | - Zoom display: 4 levels (200\%,264\%,400\%,528\%) |

### 1.2 MECHANISM OVERVIEW

### 1.2.1 IMAGE GENERATION PROCESS



## (1) Drum charge

The charge corona applies a negative charge to the OPC drum and the grid ensures that this charge is even.

## (2) Quenching

After cleaning, the OPC is fully exposed to light from an array of red LEDs, quenching the residual charge on the OPC drum in preparation for the next copy cycle.

## (3) Drum Cleaning

The cleaning brush increases drum cleaning efficiency by applying lubricant to the OPC drum. The cleaning blade scrapes the residual toner off the OPC drum.

## (4) PCC (Pre-cleaning corona)

The PCC discharges the photoconductor drum and applies AC and negative DC to reduce the charge holding the residual toner to the drum, thereby improving the efficacy of the cleaning brush.

## (5) Belt transfer

Positive charge applied to the back of the transfer belt transfers the toner image on the OPC drum to the transfer belt.

## (6) Paper transfer

The negatively charged toner image is transferred to the paper by giving a positive charge to the back of the paper while the paper and transfer belt are held in close contact.

## (7) Paper separation corona

After transfer, the separation corona quenches the negative charge on the paper to reduce the attraction between the belt and paper. The curvature of the belt causes the paper to separate from the transfer belt.

## (8) Belt cleaning unit and lubricant application brush

The brush applies lubricant, which makes it easier for the counter blade to scrape excess toner off the transfer belt.

## (9) ID sensor

The ID sensor detects the density of the sensor patches developed on the OPC drum. The signal from the ID sensor is used for process control and toner supply control.

## (10) Development

The latent image on the drum attracts the negatively charged toner. Toner is preferentially attracted to those places on the drum surface where the laser reduced the negative charge. The development units for each color are included in the revolver unit.
(11) Potential sensor

The potential sensor detects the electrical potential (the strength of the electric field) on the photoconductor drum for process control.

## (12) Laser exposure

The polygon mirror reflects the laser beam emitted from the laser diode and projects it onto the drum through the f-theta lens, drum mirror, and toner shield glass. The laser output varies in intensity to correspond to the image data, and this forms a latent image on the drum.

### 1.3 MAJOR UNIT LAYOUT AND PAPER FEED PATH


(1) Scanner

1. 400 dpi, 10-bit scanning in both main and sub-scan directions
2. 3 -line CCD
3. Halogen exposure lamp
4. 5-phase stepper motor drive
5. Dual-side continuous scan (A4) support (in continuous copy mode)
(2) Operation panel (A259, A260)
6. 10.4 -inch $(640 \times 480)$ color LCD ( 8 -bit) touch-panel
7. An additional operation panel is installed when the printer controller is installed.

## (3) Laser unit

1. Optics: 6 -sided polygon mirror +2 f-theta lenses + BTL
2. Polygon mirror motor ( 16535 rpm ) with ball bearing
3. 400 dpi ( 8 bits per pixel for each color) in copy mode 600 dpi ( 8 bits per pixel for each color) in printer mode
4. Modulation: PM + PWM
(4) Transfer belt
5. Transfer belt: Always in contact with the drum
6. Belt transfer: Indirect application of voltage with a roller
7. Paper transfer: Roller transfer
8. Registration: Synchronization by the transfer belt H.P. sensor
9. Drive: Synchronized with the drum (same motor)
10. Separation: Curvature separation + corona unit
11. Transfer cycle: 1 belt rotation/A4, 2 rotations/A3
12. Belt cleaning: Counter blade
13. Lubrication: Brush roller with lubricant bar
(5) Paper feed/transport system
14. Paper feed (A258)

- Front loading 500 sheets, 1-layer tray + by-pass feed

2. Transport: Transport belt + fan
3. Duplexing: Duplex unit installed as a standard component (A259/A260 only)
4. Paper tray (optional): Holds 500 sheets $x 2$ trays or 500 sheets $\times 3$ trays.
(6) Fusing and paper exit
5. Fusing: Silicone roller fusing
6. Oil application method: Double roller system
7. Cleaning: Cleaning rollers (for hot and pressure rollers)

Europe/Asia: Cleaning roller for hot roller, cleaning blade for pressure roller
4. OHP/thick paper speed change

## (7) Development and toner supply

1. Development: Two-component magnetic brush development
2. Development switching: Revolver system
3. Image density control: ID sensor + process control
4. Toner supply: Screw-in bottle ( 220 g )
5. Toner supply unit: Front of developer unit (rotation type)

## (8) Drum unit

1. The drum unit contains the photoconductor drum, charge corona unit, and cleaning unit.
2. Charge corona unit: Single-wire scorotron
3. Quenching lamp: LED array
4. Drive: Synchronized with the transfer belt (DC brushless motor + flywheel)
5. Potential sensor included

### 1.4 PARTS LAYOUT

### 1.4.1 MECHANICAL COMPONENT LAYOUT



1. Paper Tray (A258)/Duplex Tray (A259/A260)
2. Pressure Roller
3. Hot Roller
4. 2nd Scanner
5. Revolver Development Unit
6. 1st Scanner
7. Drum Mirror
8. Toner Shield Glass
9. BTL (Barrel Torroidal Lens)
10. Charge Corona Unit
11. Scanner Lens
12. 2nd F-theta Lens
13. CCD Board
14. 1st F-theta Lens
15. Polygon Mirror
16. Drum Cleaning Unit
17. OPC Drum
18. Transfer Belt
19. By-pass Feed Table
20. Transfer Belt Unit
21. Registration Roller
22. Transfer Belt Bias Roller
23. Paper Transfer Unit
24. Belt Cleaning Unit
25. Transport Belt

### 1.4.2 ELECTRICAL COMPONENT LAYOUT



## Diagram 1

1. Scanner Motor Drive Board
2. Scanner Motor
3. Platen Cover Position Sensor
4. IDU Board
5. Original Length Sensor
6. Lamp Regulator
7. Scanner Exhaust Fan
8. CCD Board (SBU)
9. Scanner IPU Board
10. Main Control Board
11. LD (Laser Diode) Main Control Board
12. Laser Synchronizing Detector Board 2
13. Polygon Motor Drive Board
14. Polygon Motor
15. LD (Laser Diode) Drive Board
16. Laser Synchronizing Detector Board 1
17. Optics Anti-condensation Heater
18. Original Width Sensor
19. Exposure Lamp
20. Optics Cooling Fan
21. Scanner H.P. Sensor
22. Thermostat
23. Original Length Sensor-Sub


Diagram 2

1. Main Power Switch
2. Belt Cleaning H.P. Sensor
3. Paper Tray Detector Switch
4. Transfer Belt Home Position Sensor
5. Transfer Belt Heater
6. Paper Height Sensor-1
7. Paper Height Sensor-2
8. Paper Transfer H.P. Sensor
9. Paper Transfer Unit Heater
10. Counters
11. Transport Fan
12. Front Door Switch
13. Paper Exit Door Switch (A259/A260 only)
14. Junction Gate Solenoid (A259/A260 only)


## Diagram 3

1. Paper Transfer Positioning Clutch
2. Paper Feed Motor
3. Registration Clutch
4. Relay Clutch
5. By-pass Feed Clutch
6. Paper Feed Clutch
7. By-pass Paper Width Detection Board
8. Vertical Transport Switch
9. By-pass Pick-up Solenoid
10. Upper Limit Sensor
11. Paper End Sensor
12. Relay Sensor
13. By-pass Paper End Sensor
14. By-pass Feed Table Switch
15. Registration Sensor
16. Temperature and Humidity Sensor


## Diagram 4

1. Operation Panel
2. Paper Separation Corona Unit
3. Pressure Roller Thermofuse
4. Pressure Roller Fusing Lamp
5. Paper Exit Sensor
6. Oil End Sensor
7. Hot Roller Thermistor
8. Hot Roller Fusing Lamp
9. Hot Roller Thermofuse
10. Pressure Roller Thermistor
11. Duplex Entrance Sensor
12. Duplex Turn Sensor
13. Duplex Paper End Sensor
14. Duplex Feed Motor
15. Side Fence Jogger HP Sensor
16. Duplex Side Fence Jogger Motor
17. Duplex End Fence Jogger Motor
18. Duplex Control Board
19. End Fence Jogger HP Sensor


## Diagram 5

1. Charge Corona Unit
2. Quenching Lamp
3. PCC (Pre-cleaning Corona)
4. ID Sensor
5. Charge Corona Fan
6. Toner Cartridge Sensor
7. Revolver H.P. Sensor
8. Toner End Sensor
9. High Voltage Supply Board: B
10. Potential Sensor


Diagram 6

1. Development Clutch
2. Toner Supply Motor
3. Revolver Motor
4. Belt Lubricant Clutch
5. Fusing Motor
6. Fusing Clutch
7. Belt Cleaning Clutch
8. Tray Lift Motor
9. Drum Motor

10. High Voltage Supply Board: C, G
11. Rear Cooling Fan
12. Fusing Unit Fan
13. PSU (Power Supply Unit)
14. High Voltage Supply Board: T2, D
15. CSS/Bank Interface Board
16. Revolver Motor Drive Board
17. Used Toner Sensor
18. High Voltage Supply Board: T1, PCC
19. Main Exhaust Fan
20. I/O (Input/Output) Control Board
21. PSU Fan

### 1.4.3 DRIVE LAYOUT



Five motors drive the mechanical components for this machine. The drive sections driven by these five motors are listed below.

1. Scanner Drive
2. Development/Drum/Transfer Belt

Drive
3. Paper Feed/Registration/Paper Transfer/Transport Belt Drive
4. Fusing Unit/Paper Exit Drive
5. Revolver Drive

### 1.4.4 AIR FLOW



1. Optics Cooling Fan
2. Fusing Unit Fan
3. Rear Cooling Fan
4. Scanner Exhaust Fan
5. Main Exhaust Fan
6. Transport Fan
7. Charge Corona Fan
8. PSU Fan

### 1.4.5 ELECTRICAL COMPONENT DESCRIPTIONS

Printed Circuit Boards

| Symbol | Name | Function | Index-No | Location |
| :---: | :---: | :---: | :---: | :---: |
| PCB1 | PSU | Supplies AC and DC power. | 7-4 | K4 |
| PCB 2 | Lamp regulator | Supplies DC power to the exposure lamp. | 1-6 | O7 |
| PCB3 | SBU | Converts the light reflected from the original into video signals. | 1-8 | J9 |
| PCB4 | Scanner IPU board | Converts the RGB image signal from the CCD to a KCMY signal and sends it to the LD main control board. | 1-9 | L8 |
| PCB 5 | Scanner motor drive board | Supplies DC power to the scanner motor. | 1-1 | M7 |
| PCB6 | I/O control board | Interfaces the sensors, clutches, solenoids, and motors in the printer module with the main control board. | 7-11 | D14 |
| PCB7 | High voltage supply board: C, G | Supplies power to the charge corona wire and grid. | 7-1 | A14 |
| PCB8 | High voltage supply board: T1, PCC | Supplies power to the transfer belt and pre-cleaning corona unit. | 7-9 | A2 |
| PCB9 | High voltage supply board: T2, D | Supplies power to the paper transfer bias roller and paper separation corona unit. | 7-5 | A1 |
| PCB10 | High voltage supply board: B | Supplies power to the development rollers. | 5-9 | A3 |
| PCB11 | Main control board | Controls the printer sequence. | 1-10 | J12 |
| PCB12 | Laser synchronizing detector board 1 | Detects laser main scan synchronization while the latent image is being written to the drum. | 1-16 | 015 |
| PCB13 | Laser synchronizing detector board 2 | Detects laser main scan synchronization while the latent image is being written to the drum. | 1-12 | 015 |
| PCB14 | Revolver motor drive board | Controls the revolver motor. | 7-7 | F5 |
| PCB15 | Interface board: CSS/Bank | Connects to the CSS unit and optional paper tray unit. | 7-6 | J9 |
| PCB16 | LD drive board | Drives the laser diode. | 1-15 | O17 |
| PCB17 | LD main control board | Controls the laser power, main scan synchronizing sensors, and process control gamma correction. | 1-11 | M16 |
| PCB18 | By-pass paper width detection board | Detects the paper width on the by-pass feed table. | 3-7 | A10 |
| PCB19 | Operation panel board | Used to operate the copier. | 4-1 | H19 |
| PCB20 | Duplex control board | Controls the duplex unit. | 4-18 | $\begin{array}{\|c\|} \hline \text { F20 } \\ \text { (A259/A260 } \\ \text { copiers only) } \\ \hline \end{array}$ |
| PCB21 | IDU | Analyzes images for anti-counterfeiting. | 1-4 | M14 |
| PCB22 | Polygon mirror motor drive board | Controls the polygon mirror motor. | 1-13 | O15 |
| PCB23 | Temperature and humidity sensor board | Detects the ambient temperature and humidity. | 3-16 | E19 |

## Motors

| Symbol | Name | Function | Index-No | Remarks |
| :---: | :---: | :---: | :---: | :---: |
| M1 | Scanner motor | Drives the scanner. | 1-2 | M6 |
| M2 | Polygon mirror motor | Drives the polygon mirror (laser unit). | 1-14 | O15 |
| M3 | Revolver drive motor | Rotates the revolver unit. | 6-3 | G5 |
| M4 | Duplex feed motor | Drives the paper feed roller in the duplex unit. | 4-14 | G20 (A259/A260 copiers only) |
| M5 | Duplex Side fence jogger motor | Drives the duplex unit side fences. | 4-16 | G21 <br> (A259/A260 <br> copiers only) |
| M6 | Duplex End fence jogger motor | Drives the duplex unit end fences. | 4-17 | G21 (A259/A260 copiers only) |
| M7 | Paper feed motor | Drives the paper feed unit and transport unit. | 3-2 | A12 |
| M8 | Tray lift motor | Lifts the tray bottom plate. | 6-8 | A12 (A258 models only) |
| M9 | Toner supply motor | Supplies toner. | 6-2 | A7 |
| M10 | Drum motor | Drives the drum, the development unit currently at the development position, and the transfer belt. | 6-9 | A19 |
| M11 | Fusing motor | Drives the fusing unit and exit rollers. | 6-5 | E8 |

Fan Motors

| Symbol | Name | Function | Index-No | Remarks |
| :---: | :--- | :--- | :---: | :---: |
| FM1 | Transport fan | Attracts copy paper to the transport belt. | $2-11$ | A11 |
| FM2 | Optics cooling fan | Cools the scanner unit | $1-20$ | O14 |
| FM3 | Charge corona fan | Cools the charge corona unit. | $5-5$ | A6 |
| FM4 | Scanner exhaust fan | Cools the scanner unit. | $1-7$ | P7 |
| FM5 | Fusing unit fan | Cools the fusing unit. | $7-3$ | E1 |
| FM6 | Main exhaust fan | Sucks air from the charge and transfer <br> areas out of the machine. | $7-10$ | A17 |
| FM7 | Rear cooling unit fan | Cools the rear section of the copier. | $7-2$ | E10 |
| FM8 | PSU fan | Cools the PSU. | $7-12$ | A7 |

Sensors

| Symbol | Name | Function | Index-No | Remarks |
| :---: | :---: | :---: | :---: | :---: |
| S1 | Toner end sensor | Detects the presence or absence of toner in a cartridge. | 5-8 | A4 |
| S2 | Toner cartridge sensor | Detects the presence or absence of toner cartridges. | 5-6 | A4 |
| S3 | Revolver H.P. sensor | Detects if the revolver is at the home position. | 5-7 | A4 |
| S4 | Potential sensor | Detects the potential of the drum surface. | 5-10 | A5 |
| S5 | ID sensor | Detects the density of toner on the developed ID sensor patch on the drum. | 5-4 | A5 |
| S6 | Belt cleaning H.P. sensor | Detects if the belt cleaning unit is at the home position. | 2-2 | A8 |
| S7 | By-pass feed paper end sensor | Detects if there is paper on the by-pass feed table. | 3-13 | A8 |
| S8 | Upper limit sensor | Detects the upper limit position of the tray bottom plate. | 3-10 | A13 (A258 models only) |
| S9 | Relay sensor | Detects paper jams at the relay section. | 3-12 | A13 (A258 models only) |
| S10 | Tray paper end sensor | Detects if there is paper in the paper feed tray. | 3-11 | G13 (A258 models only) |
| S11 | Relay Sensor | Detects a paper jam at the relay section | 3-12 | $\begin{array}{\|c\|} \hline \text { A14 } \\ \text { (A259/A260 } \\ \text { models only) } \\ \hline \end{array}$ |
| S12 | Used toner sensor | Detects if the used toner tank is full | 7-8 | A15 |
| S13 | Paper transfer H.P. sensor | Detects if the paper transfer unit is at the home position. | 2-8 | A15 |
| S14 | Paper height sensor 1 | Detects the amount of paper in the tray. | 2-6 | A16 (A258 models only) |
| S15 | Paper height sensor 2 | Detects the amount of paper in the tray. | 2-7 | A16 (A258 models only) |
| S16 | Transfer belt H.P. sensor | Detects the mark on the transfer belt. | 2-4 | A18 |
| S17 | Registration H.P. sensor | Detects paper jams at the registration section. | 3-15 | A19 |
| S18 | Paper exit sensor | Detects paper jams at the paper exit. | 4-5 | F1 |
| S19 | Oil end sensor | Detects if there is silicone oil in that tank. | 4-6 | G1 |
| S20 | Original length sensor | Detects the length of the original. | 1-5 | N7 |
| S21 | Platen cover position sensor | Detects if the platen cover is opened or closed. | 1-3 | O7 |
| S22 | Original length sensorsub | Detects the length of the original | 1-23 | P7 |
| S23 | Scanner H.P. sensor | Detects the scanner home position. | 1-21 | P14 |
| S24 | Original width sensor | Detects the width of the original. | 1-18 | P14 |
| S25 | Side fence jogger HP sensor | Detects the home position of the duplex unit side fence. | 4-15 | $\begin{array}{\|c\|} \hline \text { G22 } \\ \text { (A259/A260 } \\ \text { models only) } \\ \hline \end{array}$ |

## PARTS LAYOUT

| Symbol | Name | Function | Index-No | Remarks |
| :---: | :--- | :--- | :---: | :---: |
| S26 | End fence jogger HP <br> sensor | Detects the home position of the <br> duplex unit end fence. | $4-19$ | G22 <br> (A259/A260 <br> models only) |
| S27 | Duplex paper end <br> sensor | Detects if there is paper in the duplex <br> unit. | $4-13$ | G22 <br> (A259/A260 <br> models only) |
| S28 | Duplex entrance <br> sensor | Detects when copy paper comes into <br> the duplex unit. | $4-11$ | G23 <br> (A259/A260 <br> models only) |
| S29 | Duplex turn sensor | Detects when copy paper is being <br> reversed in the duplex unit. | $4-12$ | G23 <br> (A259/A260 <br> models only) |

## Switches

| Symbols | Name | Function | Index-No | Remarks |
| :---: | :--- | :--- | :---: | :---: |
| SW1 | Main power switch | Turns the power to the copier on or off. | $2-1$ | M1 |
| SW2 | Front door switch | Cuts the DC line to the high voltage <br> supply board when the front door is <br> open. | $2-12$ | E11 |
| SW3 | Paper exit door switch | Detects if the paper exit door is open or <br> closed. | $2-13$ | A7 <br> (A259/A260 <br> models only) |
| SW4 | By-pass feed table <br> switch | Detects if the by-pass feed table is open <br> or closed. | $3-14$ | A8 |
| SW5 | Paper tray detector <br> switch | Detects the presence or absence of a <br> paper tray. | $2-3$ | A16 <br> (A258 <br> models only) |
| SW6 | Vertical transport <br> switch | Detects if the vertical transport door is <br> open or closed. | $3-8$ | A17 |

## Clutches

| Symbols | Name | Function | Index-No | Remarks |
| :---: | :--- | :--- | :---: | :---: |
| CL1 | By-pass feed clutch | Transmits drive to the by-pass feed <br> mechanism. | $3-5$ | A9 |
| CL2 | Paper feed clutch | Transmits drive to the paper feed <br> mechanism. | $3-6$ | A17 |
| CL3 | Registration clutch | Transmits drive to the registration <br> rollers. | $3-3$ | A18 |
| CL4 | Paper transfer <br> positioning clutch | Transmits drive to the paper transfer <br> unit. | $3-1$ | A11 |
| CL5 | Development clutch | Transmits drive to the development <br> mechanism. | $6-1$ | E3 |
| CL6 | Relay clutch | Transmits drive to the relay rollers. | $3-4$ | A18 |
| CL7 | Belt cleaning clutch | Transmits drive to the belt cleaning unit. | $6-7$ | E2 |
| CL8 | Fusing clutch | Transmits drive to the fusing unit. | $6-6$ | E1 |
| CL9 | Belt lubricant clutch | Transmits drive to the belt lubricant <br> mechanism. | $6-4$ | E2 |

Solenoids

| Symbols | Name | Function | Index-No | Remarks |
| :---: | :--- | :--- | :---: | :---: |
| SOL1 | By-pass pickup <br> solenoid | Lowers the by-pass pick-up roller. | $3-9$ | A9 |
| SOL2 | Junction gate solenoid | Raises the junction gate for the duplex <br> tray. | $2-14$ | A7 <br> (A259/A260 <br> copiers only $)$ |

## Lamps

| Symbol | Name | Function | Index-No | Remarks |
| :---: | :--- | :--- | :---: | :---: |
| L1 | Hot roller fusing lamp | Provides heat to the hot roller. | $4-7$ | H1 |
| L2 | Pressure roller fusing <br> lamp | Provides heat to the pressure roller. | $4-4$ | G1 |
| L3 | Exposure lamp | Applies high intensity light to the original <br> for exposure. | $1-19$ | O5 |
| L4 | Quenching lamp | Neutralizes any charge remaining on the <br> photoconductor. | $5-2$ | A6 |

## Heaters

| Symbol | Name | Function | Index-No | Remarks |
| :---: | :--- | :--- | :---: | :---: |
| H1 | Paper transfer unit <br> heater | Prevents moisture from forming around <br> the paper transfer unit. | $2-9$ | J1 |
| H2 | Transfer belt heater | Used to stabilize the temperature <br> around the transfer belt. | $2-5$ | K1 |
| H3 | Optics anti- <br> condensation heater | Prevents moisture from forming on the <br> optics. | $1-17$ | L1 |

## Thermistors

| Symbol | Name | Function | Index-No | Remarks |
| :---: | :--- | :--- | :---: | :---: |
| TH1 | Pressure roller <br> thermistor | Controls the temperature of the <br> pressure roller. | $4-3$ | F1 |
| TH2 | Hot roller thermistor | Controls the temperature of the hot <br> roller. | $4-9$ | G1 |

Thermofuses

| Symbol | Name | Function | Index-No | Remarks |
| :---: | :--- | :--- | :---: | :---: |
| TF1 | Hot roller thermofuse | Protects the hot roller from overheating. | $4-8$ | H1 |
| TF2 | Pressure roller <br> thermofuse | Protects the pressure roller from <br> overheating. | $4-3$ | H1 |

## Thermostat

| Symbol | Name | Function | Index-No | Remarks |
| :---: | :---: | :---: | :---: | :---: |
| TS1 | Thermostat | Prevents the exposure lamp from <br> overheating when it is on for a long time. | $1-22$ | O6 |

PARTS LAYOUT

## Counter

| Symbol | Name | Function | Index-No | Remarks |
| :---: | :--- | :--- | :---: | :---: |
| CO1 | Upper mechanical <br> counter | Indicates the total number of <br> development cycles made using the C, <br> M, and Y development units; | $2-10$ | A9 |
| CO2 | Lower mechanical <br> counter | Shows the total number of black <br> developments. | $2-10$ | A10 |

## DETAILED DESCRIPTIONS

## 2. DETAILED DESCRIPTIONS

### 2.1 PROCESS CONTROL

### 2.1.1 OVERVIEW

This copier provides the following forms of process control:

- Potential control (done every process control self check)
- Process control gamma calibration (done every process control self check, after potential control)
- Toner supply control (done every copy)

The components used for process control are:

- Potential sensor (a new type of sensor is used, known as a 'feedback measurement potential sensor'). This sensor detects the surface potential of the drum.
- ID sensor (a new type of sensor is used, known as a 'diffused reflection ID sensor'). The ID sensor detects the amount of toner on the drum.



### 2.1.2 POTENTIAL CONTROL

## Overview

Potential control is the process of controlling the development potential to maintain the density of the toner image on the drum. It does this by compensating for variations in drum chargeability and toner chargeability.
The machine uses the image density (ID) sensor to measure drum reflectivity and the density of a standard sensor pattern. It uses the potential sensor to detect the potential on the standard sensor pattern (before the pattern is developed). These tests are done during the process control self check, which is done at specific times (such as after replacing the developer).
The ID and potential sensor outputs are used to calculate the development potential. This is the difference between the development bias voltage and the voltage of areas of the drum that have been discharged by laser exposure at full power. If changes in this potential are not accounted for, the color balance will be poor.

Depending on the development potential that is calculated, the machine uses a look-up table in memory (called a pointer table) to adjust the following:

- VD: Drum potential without exposure - to adjust this, the machine adjusts the charge corona grid voltage (VG)
- VL: Drum potential with the strongest exposure - to adjust this, the machine adjusts the laser diode input current (ILD)
- VB: Development bias

Potential control controls the development potential so that the maximum amount of toner applied to the drum is kept constant. However, the medium (greyscale) range is ignored. To improve this situation, a new process called 'process control gamma correction' is done after potential control. This process defines LD output for all 256 grades of the greyscale (development bias and charge corona grid potential are not affected).

## Potential Control Timing

The machine carries out potential control and process control gamma correction during the 'process control self check'. There are four types of process control self checks, categorized according to their execution times. Process control takes approximately 3 minutes.

## (1) Forced process control self check

After replacing the drum, the technician must do the forced process control procedure (SP3-126). There is no need to use SP3-126 at installation, because forced process control is included in the developer initialization process (SP2-225).
(See 6.6.3 Developer Collection Procedure for details.)

## (2) Initial process control self check

The initial process control starts automatically when the power is turned on (or when the machine returns to standby mode from sleep mode), but only if the hot roller in the fusing unit is less than 100 degrees centigrade. This process control is done only when SP3-125 (Set Potential Control Method) is set to "0 (Auto)."

## (3) Interval process control self check

The interval process control starts automatically at the end of a copy job during which the total number of copies exceeds a preset value.
The preset value can be defined using SP3-973 (Set Process Control Self Check Interval). The factory setting is 150 sheets. The maximum possible interval is 500 sheets. Using a shorter interval reduces the machine's average copying speed. Setting the process control interval to 0 disables the interval process control.

## (4) Timed process control self check

The timer is reset to 6 hours after a process control self check, at the end of a copy job, when the power is switched on, after toner end recovery, or if the front door is opened and closed.
The 6-hour interval can be adjusted with SP 3-972.

### 2.1.3 PROCESS CONTROL SELF CHECK

## Flow Chart



## Step 1: Vsg Adjustment

The type of ID sensor used in this machine responds differently for black and color, so there are two VsG values, one for black toner and one for CMY toner.

The type of ID sensor used in this machine is very sensitive, and outputs some voltage even if there is no light being reflected off the drum. This output is known as the 'offset'. It is about 1 V for black and about 0.2 V for color, but is different for each sensor. For more details on this sensor (known as a 'diffused reflection ID sensor'), see 'Step 4: Sensor Pattern Density Detection'.
The ID sensor checks the bare drum's reflectivity and the machine calibrates the output of the ID sensor as follows. This voltage is known as VSG:

- Black: $(1.8+$ offset $) \pm 0.1 \mathrm{~V}$
- Color: Must be between 0.2 and 3 V

This calibration compensates for the drum's condition (due to ageing) and the ID sensor condition, such as dirt on the surface of the drum or ID sensor.
Note that VSG for black is less than half that in previous models. This is due to the new type of ID sensor.

## Step 2: ID Sensor Pattern Generation

The machine makes a 16-grade pattern on the drum for each toner color. Each grade is made by changing the LD power. At this stage, the patterns are not developed; they remain as latent images.


## Step 3: Sensor Pattern Potential Detection

## Process

The potential sensor detects the potential on each grade of the 16 -grade sensor pattern latent image, for each colour, and the output is stored in memory.

Feedback Type Potential Sensor


This copier uses a feedback potential sensor. A description of the principles of feedback potential sensors follows.

The detector [A] detects the strength of electric fields emitted from the drum surface, which depend on the surface potential of the drum. The feedback circuit applies voltage to the probe [B] until the electric field strength is offset at the detector. The level of this voltage determines the magnitude of the surface potential on the drum surface and is presented as output.

The major features of this measurement method are:

- Even if the distance [d] between the drum (1) and the potential sensor (2) fluctuates, the measurement of the drum surface potential is still accurate.
- The potential sensor does not have to be calibrated before the process control self check, so the calibration step required for previous models can be skipped.
- Residual potential affected the calibration for the older type of sensor, so before process control self checks, the machine had to wait 10 minutes in standby mode for the residual voltage to disappear. For this new sensor, calibration is not needed, so the influence of residual potential on the drum can be ignored.


## Step 4: Sensor Pattern Density Detection

## Process

The development rollers of the respective colors develop the sensor pattern latent images for K, Y, C, and M generated in Step (2). In Step (4), the ID sensor detects the densities of the 16 patch patterns for each color. This data goes to memory.

Diffused Reflection ID Sensor


This copier uses a diffused reflection ID sensor. In addition to the ray directly reflected from the drum, there are diffuse beams reflected at all angles from the toner on the drum. This sensor detects image density by receiving some of these diffuse beams, not by receiving the beam directly reflected from the toner.

Using this type of sensor improves the measurement accuracy of the sensor pattern densities particularly for $\mathrm{Y}, \mathrm{C}$, and M toners. The following explains why.

## Color (Y, C, M) toners


(1): Component of light reflected from the drum
(2): Component of light reflected from C, M, or Y toner

Figure A Relationship between the output of the normal reflection type ID sensor and the amount of toner on the drum for $\mathrm{C}, \mathrm{M}$, and Y toners


Figure B Relationship between the output of the diffused reflection ID sensor and the amount of toner on the drum for $\mathrm{C}, \mathrm{M}$, and Y toners


Figure C Relationship between the output of the diffused reflection ID sensor and the amount of toner on the drum for K toner

Figure A shows the relationship between the output of the normal reflection ID sensor and the amount of $\mathrm{Y}, \mathrm{C}$, or M toner attached to the drum. This shows that the ID sensor output (Vsp) results from not only the light reflected from the toner but also the component of light reflected from the drum.

With this old sensor type, the machine was unable to accurately detect high values of $M / A$ for colored toner (i.e., to the right of the minimum in the VSP curve at Vmin.

The diffused reflection ID sensor, on the other hand, picks up little light that is reflected from the drum. So, the relationship between the diffused reflection ID sensor output and the amount of toner on the drum is linear, as shown in Figure B. This means that high densities of colored toner can be measured accurately.

## K toner

The ID sensor output for K toner tends to decrease as the density of toner on the drum increases. Therefore, the relationship between the ID sensor output and the amount of K toner on the drum is as shown in Figure C .

## Step 5: Toner Amount Calculation

The amount of toner on the drum ( $\mathrm{M} / \mathrm{A}$, mass per unit area, $\mathrm{mg} / \mathrm{cm}^{2}$ ) is calculated for each of the 16 grades of the sensor pattern from the ID sensor output value $(\mathrm{Vsp})$ from each grade of the pattern.

## Step 6: Development Potential Calculation



The development potential (VDP) is the capability to attract toner to the drum and can be shown as: VB - VL

- VB: Development bias
- VL: Drum potential after full laser exposure

See the above drawing for two examples.
The machine calculates the approximate current development potential from the sensor readings. This consists of the following steps:

1. The machine converts the gradation pattern densities (from the ID sensor) into an actual toner amount on the drum ( $\mathrm{M} / \mathrm{A}$ ) for each grade of the pattern.
2. From the potential and ID sensor outputs, the machine then determines the relationship between the drum potential and the amount of toner developed on the drum. This is known as the development gamma factor, or $\gamma \mathrm{MA}$.
3. The machine can now calculate the development potential (VDP) that would be required to obtain the ideal toner density (known as M/A max) on an area of the drum developed with full laser power, under the machine's present conditions.


NOTE: For $Y$, C, and M toners, the new type of ID sensor allows higher densities of toner to be measured accurately (refer to the descriptions in Step 4, Sensor Pattern Density Detection). This permits the calculation of $\gamma \mathrm{M} / \mathrm{A}$ at a higher accuracy than a normal reflection ID sensor, because the measurements at higher densities (M/A values) are more reliable.

## Step 7: Selecting the Optimum VD, VB, VL

The machine now adjusts VD, VB, and VL to try to bring the development potential VDP to the ideal value. To do this, it uses a pointer table. This is a look-up table in ROM of VDP against VD, VB, and VL.

The machine takes the value of VDP calculated in the previous section, and looks for the value of VDP in the pointer table that is closest to this. The machine reads the values of $V D, V B$, and $V L$ that are in this row of the pointer table.
The machine will then use these values of $V_{D}, V_{B}$, and $V L$ during copying until the next process control self check. These values are designed to bring the actual VDP to the optimum value for the machine's current condition.

- VD: Drum potential without exposure - to adjust this, the machine adjusts the charge corona grid voltage (VG)
- VL: Drum potential with the strongest exposure - to adjust this, the machine adjusts the laser diode input current (ILD)
VB: Development bias


### 2.1.4 PROCESS CONTROL $\gamma$ CORRECTION

## What is process control $\gamma$ ?

After process control, the proper values for VD, VB, VL have been defined for the maximum laser power. However, the medium (greyscale) range is ignored. To improve this situation, a new process called 'process control gamma correction' is done after potential control. This process defines a suitable LD output for all 256 grades of the greyscale.
Process control gamma correction takes about 30 seconds.

## How is it done?



Based on the maximum laser power just defined during the process control self check, the machine writes another 16-grade sensor pattern on the drum.
NOTE: This is different from the sensor pattern made during potential control that pattern always uses 16 fixed laser power levels.
The ID sensor detects the density developed on these patterns and compares them with the target densities in ROM. The target densities and the actual densities can be plotted as shown in the diagram above left.
NOTE: To make the curve of actual densities, the machine draws a curve through the density points read from the 16 -grade pattern made for process control gamma.
From this, the machine determines how much to correct the LD power when attempting to write a certain density on the drum.
In the example in the diagram, for a laser power of A, the machine expected an ID of $B$. However, the actual result was C. To get an ID of B, the machine has to use a laser power of $D$. The expected ID can be plotted against the actual ID as shown in the diagram above right; this is the process control gamma curve.

Process control $\gamma$ target values are stored in the NV-RAM on the main control board. The CPU calculates the process control $\gamma$ on this board. The results of the process control $\gamma$ calculation go to the LD main control board to compensate the LD input data.
The process control gamma obtained cannot be adjusted in SP mode.

PROCESS CONTROL

## Process control gamma correction timing

The machine automatically does process control gamma correction at the end of every process control self check.

### 2.2 TONER SUPPLY CONTROL

### 2.2.1 TONER SUPPLY CONTROL METHOD

This machine has two toner supply control methods: fuzzy control mode, and fixed supply mode.

Normally this machine uses fuzzy control. The fixed supply method is used only when abnormal conditions occur during the process control self check.

### 2.2.2 FUZZY CONTROL MODE



First, the machine assesses the amount of toner per unit area on the drum (M/A). This is determined from two sensor inputs: Vsg, and Vsp(toner).
The fuzzy logic algorithm then uses the most recent M/A values to assess current toner density conditions.

The output from the fuzzy logic process is then combined with the image area ratio obtained from the image data signal coming from the IPU board. The result of this calculation is the amount of toner required, and from this, the machine determines the time that the toner supply motor must stay on in order to supply the correct amount of toner.

### 2.2.3 VSP DETECTION FOR TONER SUPPLY CONTROL

The copier generates an ID sensor pattern using a standard laser diode power. The copier generates this pattern between the K, C, M, and Y images, and then detects the density using the ID sensor. The result is known as 'VSP for toner supply control', or 'VSP (toner)' to distinguish it from the other VSP, measured during potential control.


This process is done after

- Each color development cycle for odd-numbered copies when making continuous copies of A4/LT landscape size or smaller.
- Each color development cycle, every copy in all other modes.


### 2.2.4 CALCULATING THE AMOUNT OF TONER ON THE DRUM



Y, M, C toner


K toner

First, the machine calculates a value from the current VSP (toner) value. Then, it refers to a table in the ROM to determine the toner density on the drum (M/A).

- M/A: Toner amount per unit area on the drum ( $\mathrm{mg} / \mathrm{cm}^{2}$ )

The target M/A for toner supply control is $0.4 \mathrm{mg} / \mathrm{cm} 2$ for the $\mathrm{C}, \mathrm{M}$, and Y toners and $0.3 \mathrm{mg} / \mathrm{cm}^{2}$ for the K toner. $\mathrm{M} / \mathrm{A}$ is calculated in the same way as for potential control.

## Fuzzy Logic Algorithm

The fuzzy logic algorithm has two input factors which are related to the amount of toner on the drum. These are:

- The difference between the average of the previous $10 \mathrm{M} / \mathrm{As}$ and the target $\mathrm{M} / \mathrm{A}$
- The tendency of the previous $10 \mathrm{M} / \mathrm{As}$


## Image Area Ratio

This is a measure of how much toner will be needed for each color on a page. From the image data from the image processing unit (IPU), the machine determines the total amount of the color on the page. It takes into account the grayscale values for each pixel for that color.

### 2.2.5 FIXED SUPPLY MODE

In fixed supply mode, the machine adds a fixed amount of toner to the developer every copy. Readings from the ID sensor are ignored.
SP 2-208-005 to 008 define the toner supply ratios for each color in fixed supply mode.

### 2.2.6 TONER SUPPLY IN ABNORMAL SENSOR CONDITIONS

The machine detects that the ID sensor is abnormal if the detected VsG value is out of the required range three consecutive times during process control. After that SC 385 is displayed and logged. Switching the main switch off/on recovers the machine and the toner supply method falls back to fixed supply mode.
If the abnormal condition is recovered during a process control, the machine automatically selects the fuzzy control mode again.

### 2.2.7 DETECTING TONER NEAR END/END



YMC Toner


K Toner

## Toner Near-end

For the $\mathrm{Y}, \mathrm{C}$, and M toners, the copier first detects toner near-end using the toner end sensor (see 'Development - Toner End Detection'). The toner end sensor detects the toner end condition during development. Then, VSP is checked. If both toner end sensor and VSP indicate near-end, the machine indicates a near-end condition for that color.

For K toner, the copier detects the toner near end condition using the ID sensor only. Light cannot pass through K toner as well as $\mathrm{C}, \mathrm{M}$, or Y . So toner adhering to the window inside the toner hopper blocks the light returning to the sensor.
Therefore the copier cannot accurately detect how much K toner remains using the toner end sensor.

## Toner End

After a toner near-end condition is generated, the copier uses the write mode pixel counter and sheet counter to detect toner end. This is done in the same way for all colors (K, C, M, and Y).

## Toner near end detection

## Toner end sensor

The toner end sensor detects light reflected from a mirror inside the toner hopper (see 'Development - Toner End Detection'). There are two levels of output, namely High ( 5 V : no reflection/toner present) and Low ( 0 V : reflection detected/no toner).

For $\mathrm{C}, \mathrm{M}$, and Y toners, the toner near end detection routine using VSP begins when the toner end sensor detects four consecutive low signals.

This sensor does not work for K toner because toner adhering to the window blocks reflection back to the sensor. For K toner, only VsP is used.

## Toner near end detection routine using VSP

Toner near end is displayed on the operation panel when the amount of toner ( $\mathrm{M} / \mathrm{A}$ ) calculated during toner supply control is less than the target supply ( 0.4 $\mathrm{mg} / \mathrm{cm}^{2}$ for $\mathrm{C}, \mathrm{M}$, and $Y ; 0.25 \mathrm{mg} / \mathrm{cm}^{2}$ for K ) five times in succession.

## Toner end detection

When a color reaches the toner near-end condition, 10 more pages can be made with that color.

Then, if during those 10 pages, the pixel count for the color in question reached $500 \%$, the copier displays toner end for that color and that color cannot be used. ( $100 \%$ is defined as one A4 image with the color in question covering the whole page at full strength.)
If the pixel count has not yet reached $500 \%$ after 10 pages, copying can continue until the pixel count reaches $500 \%$. Then, the copier displays toner end for that color and that color cannot be used.

If the pixel count reaches $500 \%$ during the first 10 pages, copying is not stopped, but that color toner may appear pale on the output.

This process is the same for the $\mathrm{K}, \mathrm{C}, \mathrm{M}$, and Y toners.

## Toner end recovery

The copier enters the recovery process in the following cases:

1. The front door is opened and a toner cartridge is removed or inserted.

This is regarded as an ordinary replacement procedure for the toner cartridge.

- When the door is opened, the copier moves the next-to-be-replaced color toner cartridge to the replacement position.
$\downarrow$
- Replace the toner cartridge. $\downarrow$
- The copier enters the toner replenishment confirmation mode after the toner cartridge is replaced.

NOTE: If recovery is needed for two colors, the copier proceeds with the next color if the door is opened or if the user specifies at the operation panel that the first color should be skipped.
2. If the copier is turned off and on, it assumes that toner cartridges for all colors have been replaced and enters the toner replenishment confirmation mode for all colors.

## Toner replenishment confirmation mode

1. For color toners, the copier moves the toner cartridge of the first color to be subject to toner replenishment confirmation to the toner end sensor detection position (K, then Y, then C, then M). The copier does not use the toner end sensor for the K toner (it uses VSP). However, it moves the revolver to the toner end sensor when confirming toner replenishment for the K toner.
2. The copier rotates the toner cartridge for a certain period.
3. The machine checks whether toner is present. For the $C, M$, and $Y$ toners, the copier uses the toner end sensor. For the K toner, the copier measures VsP.
4. The copier moves the toner cartridge for the next color to the toner end sensor detection position and performs steps 2) and 3).
5. When the toner replenishment confirmation cycle ends, the copier moves the toner cartridges to the detection position for the toner end sensor. The copier then checks again whether toner is present. If toner is found to be not present, the copier returns that cartridge to what it was before the toner recovery procedure started (toner near end or toner end).
6. The copier resets the toner near end and toner end states and resets the toner end related counters (pixel and sheet counters) for cartridges which the machine detects to be full.
Toner replenishment confirmation mode takes several seconds for the $\mathrm{C}, \mathrm{M}$, and Y toners and 20 to 30 seconds for the K toner.

### 2.3 DRUM UNIT

### 2.3.1 OVERVIEW



The drum unit is to the right of the drawer unit. It can easily be removed by pulling out the drawer unit.
The drum unit consists of the OPC drum [A], the charge corona unit [B], a quenching lamp [C], the drum potential sensor [D], the ID sensor [E], the carrier catcher $[\mathrm{F}]$, and a cleaning unit [G]. The cleaning unit is integrated in the drum unit to prevent toner from spilling out into the machine.
The cleaning unit is made up of the cleaning blade [ H ], the lubricant bar [ $I$, the cleaning brush [J], and the pre-cleaning corona (PCC) [K].
The drum turns counterclockwise as viewed in this drawing.

## DRUM UNIT

### 2.3.2 DRIVE MECHANISM



The drum motor [ A ] (a brushless motor) drives the drum via gears and a timing belt. This motor also drives the cleaning unit using a timing belt [C].
This motor contains a drive controller circuit, which controls the drum rotation.
Since the drum shaft does not pass all the way through the drum from front to rear, a flywheel $[\mathrm{D}]$ is mounted on the shaft at the rear of the drum to eliminate uneven drum rotation.

### 2.3.3 DRUM CHARGE



This copier uses a single wire scorotron corona unit to charge the drum.
The single corona wire applies a negative charge to the drum surface ( -670 V is the standard voltage). The stainless steel grid plate [A] makes the corona charge uniform.

The high voltage supply $-\mathrm{C}, \mathrm{G}[\mathrm{B}]$ supplies a constant voltage ( -5 kV ) to the corona wire, and controls the grid voltage.
The charge corona unit contains a cleaner. The wire and grid can be cleaned by sliding the charge corona unit forward and backward.
The main exhaust fan $[C]$ at the rear of the copier causes air to flow through the charge corona unit from front to rear. This prevents uneven charging. The air also flows over the ID sensor, keeping it clean.

### 2.3.4 DRUM CLEANING



Pressure is continuously applied to the lubricant bar above the cleaning brush by a spring $[A]$. The cleaning brush $[B]$ spreads out the toner remaining on the drum, which makes it easier for the cleaning blade to remove. The brush collects toner from the drum surface and the cleaning blade [C] scrapes off the remaining toner on the drum. The toner falls onto the toner collection coil [D]. The toner collection coil transports the toner to the used toner tank.

The cleaning blade is angled against drum rotation for improved cleaning efficiency. The spring [E] maintains a constant downward pressure on the cleaning blade.

### 2.3.5 PCC



The PCC [A] removes uneven charge on the drum, which means that it is not necessary to make one extra drum rotation before charging. This reduces the copy time for the first sheet of paper.

### 2.3.6 QUENCHING



The quenching lamp $[A]$ is a row of LEDs. It turns on immediately after the Start key is pressed and the drum motor starts. The light is red, to protect the drum from optical fatigue.

### 2.3.7 CARRIER CATCHER



There is a magnet [A] below the ID sensor. This removes weakly-magnetic worn carrier particles from the drum, preventing them from falling onto the copy paper and causing copy quality problems such as firefly spots.

### 2.4 SCANNER UNIT

### 2.4.1 OVERVIEW



An image of the original illuminated by the exposure lamp $[\mathrm{A}]$ (a halogen lamp) is reflected onto a color CCD [B] (Charge Coupled Device) via the 1st [C], 2nd [D], and 3rd $[E]$ mirrors, filter, and lens. The filter removes infra-red from the light reflected off the original; this is particularly important for glossy photos with black areas, which can appear reddish in copies.

The number of scans depends on the copy mode (black, full color, auto color select, or single color). The scanner moves 4 times at most, once for each development cycle. The order of the cycles is black, yellow, cyan, and magenta. The CCD is a one-chip color CCD with an RGB color filter. The scanning resolution is 400 dpi ( 5,000 pixels).

### 2.4.2 SCANNER



The 1st scanner consists of the exposure lamp [A], main and sub reflectors $[B]$, and 1 st mirror [C]. This model uses a halogen lamp with nine elements. The frosted surface of the exposure lamp ensures even exposure in the main scan direction.
The exposure lamp is energized by a dc supply to avoid uneven light intensity caused by power fluctuations while the 1st scanner moves in the sub-scan direction. The sub reflector is shaped so that light will expose the original evenly. This reduces shadows on pasted originals.
The 1st [C], 2nd [D], and 3rd [E] mirrors have glass on the reverse sides to increase their weight. This prevents the mirrors from vibrating.
The thermostat $[F]$ in the 1st scanner protects against overheating. It will break at around $140^{\circ} \mathrm{C}$ and cannot be reset.

### 2.4.3 SCANNER DRIVE



A five-phase stepper motor [A] drives the scanner. This motor drives the 1st [B] and 2nd [C] scanners via two scanner wires. The wires at the front side and the rear side are the same, for easy assembly.

In full size mode, the 1st scanner speed is $156 \mathrm{~mm} /$ s during scanning, and 1638 $\mathrm{mm} / \mathrm{s}$ when the scanner returns. The 2 nd scanner speed is half that of the 1 st scanner.

|  | Forward Speed | Returning Speed |
| :--- | :---: | :---: |
| Full Size Mode | $156(\mathrm{~mm} / \mathrm{s})$ | $1638(\mathrm{~mm} / \mathrm{s})$ |
| Reduction or <br> Enlargement Mode | $156 / \mathrm{M}(\mathrm{mm} / \mathrm{s})$ | $1638(\mathrm{~mm} / \mathrm{s})$ |

In reduction or enlargement mode, the scanning speed depends on the magnification ratio ( $\mathrm{M}: 0.25$ to 4.00 ) i.e., $156 / \mathrm{M} \mathrm{mm} / \mathrm{s}$. The returning speed is always the same ( $1638 \mathrm{~mm} / \mathrm{s}$ ). The image length is changed in the sub-scan direction by changing the scanner speed, and in the main scan direction by image processing on the scanner IPU board.
The number of scans depends on the color selection mode as shown in the following table:

| Mode |  | Number of <br> Scans | Development Order |  |
| :--- | :--- | :---: | :--- | :---: |
| Black and <br> White |  | 1 | K |  |
| Auto Color <br> Selection | For Black and White <br> Originals | 1 | K |  |
|  | For Colored Originals | 4 | $\mathrm{~K} \rightarrow \mathrm{Y} \rightarrow \mathrm{C} \rightarrow \mathrm{M}$ |  |
| Single Color | For Y, C, or M | 1 | $\mathrm{Y}, \mathrm{C}, \mathrm{M}$ |  |
|  | For G, R, or B | 2 | $\mathrm{Y} \rightarrow \mathrm{C}, \mathrm{Y} \rightarrow \mathrm{M}, \mathrm{C} \rightarrow \mathrm{M}$ |  |
| Full Color |  |  |  |  |

### 2.4.4 COLOR CCD



The color CCD converts light reflected from the original into three analog signals, one for each of the three basic colors Red, Green, and Blue. The signals are called the R, G, and B signals. Each of the four scans (for toner colors YMCK) generates a separate set of three signals (RGB).

The CCD consists of three lines of 5000 elements at a resolution of 400 dpi (15.7 dots $/ \mathrm{mm}$ ). To make the $R, G$, and $B$ signals, each line has a color separation filter ( $\mathrm{R}, \mathrm{G}$, or B ). The lines are spaced 4 pixels apart for full size magnification. To correct for the spacing, the $R, G$, and $B$ signals must be synchronized. This is done by delaying the signals in memory buffers on the scanner IPU board (the Image Processing section contains more details).
The CCD is mounted on the board with the lens block (the assembly is known as the SBU (Sensor Board Unit). Therefore, to replace the CCD, replace the SBU.

### 2.4.5 WHITE PLATE SCANNING



There is a white plate [A] for auto shading, stuck on the exposure glass $[B]$ underneath the left scale. When this white plate is scanned, the output from all the CCD elements in a line should in theory be equal, but actually it is not, for the following reasons:

- Variations in sensitivity between elements of the CCD
- Variations in characteristics of lens and mirror reflectivity
- Loss of brightness toward the ends of the exposure lamp

To correct for this uneven output from the CCD elements, the light reflected from the white reference plate is scanned. This is known as auto shading.
Auto shading is done every copy cycle at the scanner home position before starting the first scan.

### 2.4.6 SCANNER IPU BOARD

The scanner IPU board processes the RGB signal received from the CCD board and controls the following under the control of the main control board.

1. Controls exposure lamp on/off switching and voltage
2. Controls the speed of the scanner drive motor
3. Detects the original paper size
4. Controls on/off switching for the scanner exhaust and optics cooling fans
5. Supplies the clock signals for the CCD board
6. Detects when the scanner is at home position

### 2.4.7 ORIGINAL SIZE DETECTION



There are three APS sensors (reflective photosensors) in the optics cavity for original size detection. The original width sensor [A] detects the original width, while the original length sensors [B] and [C] detect the original length.

The original width sensor $[A]$ and the original length sensor $[B]$ have two internal beams. Each beam scans a different point of the exposure glass. The other original length sensor [C] uses only one beam.

If the original or platen cover is present over the scanning point for a particular sensor, the beam is reflected, and each reflected beam activates a photoelectric device.

| Original Size |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| A4/A3 <br> Version <br> (metric) | LT/DLT <br> Version <br> (inch) | APS1 | APS2 | APS3 | APS4 | APS5 |  |
| A3 | $11 \times 17$ | -- | 1 | 1 | -- | -- |  |
| B4 | $10 \times 14$ | 1 | 0 | 1 | -- | -- |  |
| F4 | $81 / 2 \times 14$ | 0 | -- | -- | -- | 1 | Metric: F4, F, or <br> Folio, depending <br> on SP5-126-001 |
| A4-L | $81 / 2 \times 11$ | 0 | -- | -- | 1 | -- |  |
| A4-S | $11 \times 81 / 2$ | -- | 1 | 0 | -- | -- |  |
| B5-S | $11 \times 81 / 2$ | 1 | 0 | 0 | -- | -- |  |
| B5-L | $81 / 2 \times 11$ | 0 | -- | 1 | -- | -- |  |
| A5-L | $51 / 2 \times 81 / 2$ | 0 | -- | 0 | -- | -- | See Note |

L: Lengthwise S: Sideways
0: No paper, 1: Paper present, --: Don't care
The diagram on the next page shows where the APS sensors are.

The machine cannot recognize the size of the original on the exposure glass if it is A5 lengthwise/HLT or smaller. Therefore, when all sensor outputs are off, the machine either will detect A5 lengthwise/HLT or will display an error message stating that it cannot detect the size of the original (this depends on SP 4-303).


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 platen cover is open.
The check starts when the platen cover position sensor ([D] on the previous page) turns on; this is when the platen is about 15 cm above the exposure glass. At this time, only the sensors beneath the original receive the reflected light and are on; all other sensors are off.

The main CPU can recognize the original size from the signals from the sensors. If a copy is made with the platen open, the main CPU determines the size of the original from the sensor output at the time that the start key is pressed.
This original size detection method eliminates the necessity for pre-scanning, which increases the productivity of the machine.

### 2.4.8 OTHERS



## Anti-condensation Heater

There is an anti-condensation heater [ A ] on the left side of the optical base plate. It turns on when the main switch is off (if the machine is plugged into the wall outlet), to prevent moisture from forming on the optics.

## Fans

## Optics Cooling Fan

The optics cooling fan $[B]$ is on the left side of the optics cavity. The fan sends air into the optics cavity to prevent the exposure lamp and optics cavity from overheating during copy cycles. This fan is on only when the exposure lamp is on.

## Optics Exhaust Fan

The optics exhaust fan [C] is on the right rear side of the optics cavity. This fan moves air out of the optics cavity to keep it from overheating. This fan is always on when the main switch is on. During the ready condition, the rotation of the fan drops to $2 / 3$ of the full speed.

### 2.5 IMAGE PROCESSING

### 2.5.1 OVERVIEW



The light from the exposure lamp is reflected by the original onto the CCD board. The CCD board has a CCD (Charge Coupled Device) with a three-line (RGB) filter. The reflected light is converted to analog image data signals, and these are transferred to the scanner IPU board.

The scanner IPU board does the following: A/D conversion (to 10-bit data), shading, D/A conversion for shading compensation, scan line correction, and image processing. In the IPU section, image data (10 bit) is converted to 8-bit data. This 8-bit data is sent from the scanner IPU board to the LD main control board.

### 2.5.2 SCANNER SECTION BLOCK DIAGRAM



AGC (Auto Gain Control): Controls the amplification factor for the signals, using the white level signal that is fed back from the shading circuit.

### 2.5.3 SCANNER SECTION

## Photoelectric Conversion (by the CCD)

The color CCD converts the light reflected from the original into RGB analog signals (6.615 MHz for each signal: even-pixel and odd-pixel). Each CCD line has 5,000 pixels and a resolution of 400 dpi ( 15.7 pixels $/ \mathrm{mm}$ ).

## Signal Processing (in the Analog ASIC)

(1) Signal Amplification

Operational amplifiers boost odd-pixel and even-pixel RGB analog signals from the CCD.
(2) Signal Composition

For each color, the two amplified signals (even-pixel and odd-pixel) are combined by the multiplexer inside the Analog ASIC before A/D conversion.
(3) Feedback

The CPU on the scanner IPU board receives the white level and black level from the shading circuits. Then it feeds this data to the clamps and the operational amplifiers inside the Analog ASIC through the D/A converter (see D/A Conversion). The CPU updates the black and white level every time the main switch is turned on.

## A/D Conversion

The A/D Converter converts the analog signals (for each RGB color) to 10-bit digital signals ( 1024 grades) per pixel.

## Shading Circuit



## (1) Shading Compensation

Before scanning each original, the machine generates a reference white waveform (also known as "white shading data") by scanning 5 mm of the white reference plate $[A]$ in the sub-scan direction (this equals 79 lines at 100\% magnification).

The white shading data is calculated for each pixel across the main scan. To do this for a particular pixel, the machine takes the white levels for that pixel on each of the main scan lines taken from the white reference plate, and calculates a value from these. The white waveform is made by repeating this process for each pixel across the main scan.

To improve image reproduction for high-density areas, the machine also measures the black shading data. It does this by reading the black video level at the first 4 pixels of the CCD, which should be black because these pixels are masked off. The average of the 4 pixels is represented as the black shading data for one CCD scan line.


The shading circuit corrects the video signal for each pixel obtained during image scanning as follows:


The white shading data is updated before every first scanning (2C and 4C mode) or every scanning (1C mode). The black shading data is updated every scan line. The white shading data is used to correct the image data for irregularities in the CCD and in the optics across the main scan. The black shading data is used to correct the image data for any changes in black level with time, while the machine scans down the page.

## (2) Main Scan Timing

The shading circuit generates the CCD timing signals, and the timing signals for feeding back the black and white level data from the shading circuit to the Analog ASIC.

## (3) Sub-scan Timing

The shading circuit also generates the synchronization signal for scan line correction (see the next page for details on this process).

## D/A Conversion

The CPU monitors the digital feedback signals from the shading circuits and calculates correction factors. Then the D/A circuit converts the signals from the CPU into analog signals and feeds them back to the operational amplifiers and the clamps inside the Analog ASICs. Black shading data is fed back to the clamps to provide a black level reference. This is done for every CCD pixel to calibrate the black level, and avoid drifts in the signal with time.

## Scan Line Correction

The three CCD lines providing the RGB signals are spaced 4 lines apart on the original image (when the user selects full size magnification). To compensate for this discrepancy, the scan line correction circuits synchronize the output timing of the RGB signals with the IPU section by storing the scan data for each line in memory. As the discrepancy between RGB video signals changes depending on the magnification ratio, the correction data is calculated as follows:


B: Standard (No correction)
G: (4 lines) $x$ (Magnification ratio)
$R$ : (8 lines) $x$ (Magnification ratio)
If this calculation does not result in an integer, the correction data is set to the closest integer, but further correction is needed (refer to IPU Section - Picture Element Correction).

IMAGE PROCESSING

### 2.5.4 IPU SECTION BLOCK DIAGRAM



### 2.5.5 IPU SECTION

## Picture Element Correction and Scanner Gamma Correction

(1) Picture Element Correction


Picture Element Correction

The Picture Element Correction circuit does two things.

## 1. Completion of the Scan Line Correction process

The discrepancy in the spacing of the RGB signals from the CCD in the sub-scan direction is corrected by the line correction circuit in the scanner section (refer to Scanner Section - Scan Line Correction). However, if the correction data corresponding to the magnification ratio is not an integer, then further correction is needed to synchronize the RGB signals.

## 2. Correction if the CCD is not perpendicular to the light

If the CCD board is not perpendicular to the light axis, the position of each pixel is different from the original image position. This difference becomes larger towards the ends. Under this condition, vertical black lines (in the sub-scan direction) at the left and right edges of the original are colored because the $\mathrm{Y}, \mathrm{M}$, and C toner dots are not properly positioned. (This can be checked by looking at the vertical lines at the right and left edges of a copy of the C4 color chart.)
Therefore, the CCD line spacing is also corrected here. The target areas for this correction are shown above. The green CCD line is taken as a standard, and the ends of the red and blue lines are corrected.

Adjust SP modes 4-932-001 to 4-932-004 to change the vertical line correction level.

## (2) Scanner Gamma Correction (RGB Gamma)



Fig. 1 A259X008.WMF


Fig. 2

The RGB video signals from the CCD are converted to 10-bit digital signals in the scanner section and sent to the IPU section. These signals are proportional to the intensity of light reflected from the original image (Fig. 1). However, the IPU section converts the signal levels as shown in figure 2 by using a gamma $(\gamma)$ correction table in order to improve the accuracy of RGB to CMY color conversion, which is done later in the image process. The same table is used for $R, G$, and $B$ signals.
The scanner gamma $(\gamma)$ correction inverts the video signals and converts the signal from 10 -bit to 8 -bit as outlined in the following table:

|  | Dark (Black) $\longrightarrow$ | $\longrightarrow$ |
| :---: | :---: | :---: |
| Scanner Input (RBG) <br> After $\gamma$ Correction (RGB) <br> $\downarrow$ | 0 | $\longrightarrow$ |
| (White) <br> Color Conversion <br> $\downarrow$ | $255 \longrightarrow 023$ |  |
| Printer Output (CMYK) |  |  |

## ACS (Auto Color Selection)



Detailed
Descriptions

Auto color selection mode determines if an original is black/white or color. Then black copy mode or full color mode is automatically selected to match the original.
To recognize if the original has a color area or not, the RGB video signals are compared. If the maximum difference among RGB signal levels (MAX-MIN in the above diagram) is within a certain range, the pixel is considered black and white.
During the 1st scanning cycle, the latent image is developed with the amount of black toner specified by the gamma $(\gamma)$ corrected RGB video signals. If the original does not have any color areas, the 2nd scanning is aborted and the developed image is transferred from the transfer belt to the copy paper. Then the black and white copy comes out. If the original has a color area, copying resumes in the full color copy mode (4 scans).
Users can maximize the quality of their output by selecting priority for Bk or full color original in ACS mode, using a User Tool (the default is Bk). The Bk setting prevents the UCR process from reducing the image density too much in low image density photo areas. This is explained in more detail in the section on UCR.

## Auto Letter/Photo Separation



In auto text/photo mode, the original image is separated into text and photo areas (dot screen areas).
"Text" refers to an original or area of an original that contains text and/or line drawings.

Generally, text areas have strong contrast between the image and the background. However, photo areas (dot screen areas) have a less extreme range of contrast levels.

Using these characteristics, the original image is separated into black text areas, colored text areas, and photo areas. The machine uses the following three separation methods to detect the different data areas, and the final evaluation circuit analyzes the output from these three processes to determine the result.


## (1) Edge separation

The edges of text and line diagram elements are identified by using the following characteristics: strong contrast, continuity of black or color pixels, continuity of white pixels around the black or color pixels
The machine can do this by only referring to the green signal.

## (2) Dot screen separation

Dot screen areas are separated from non-dot screen areas (mainly text).
The machine determines that if white pixels are not detected around the non-white pixels, it is a dot screen area.
The machine can do this by only referring to the green signal.
(3) Colored text separation

Black pixels and color pixels in text areas are identified by determining the difference among the RGB maximum signal levels and the output levels of the RGB video signals.

## (4) Final evaluation circuit

The separation signal accompanies the data as it passes to the further stages of image processing. The separation signal tells the image processing circuits whether the data is black text, color text, or photo. The text areas are processed in text mode and the photo areas are processed in photo mode in the subsequent image processing steps.

Auto text/photo separation is mostly effective only for small characters or thin line diagram elements. If there are large characters or solid line drawing elements in the original, only the edges of these are processed using text mode; the inner regions are processed using photo mode.

## Filtering and Color Conversion

(1) RGB Smoothing Filter


Depending on the results of auto text/photo separation (or depending on the selected original mode), the appropriate software filters are applied to the RGB video signals. The RGB smoothing filter is applied to photo areas; an edge emphasis filter is applied to text areas.
(2) Background Density Control and ADS (Auto Image Density Selection)
a. Background Density Control



This function removes low ID image signals (background) that are less than a certain threshold. The threshold that is applied depends on the color mode (single color or full color). For each of these modes, the user can select a different threshold.

## b. ADS (Auto Image Density Selection)



In ADS mode, the user does not set the threshold; the machine calculates it, guided by input from the user for F/C and 2C mode (there are 5 settings in the "User Tools" menu).

In full color mode, after the first scanning (Bk) the machine calculates the threshold for removing background by referring to the RGB data taken from the entire original.

In black and white mode, the machine detects the background level for the original, also known as the peak white level, and removes this from the image, to make a white background. Peak level data is taken for each scan line to correct for changes in background density down the page. From the peak white level, the machine determines the white reference value for A/D conversion. Therefore, in black and white mode the background density is controlled before data is input to the A/D converter.

## (3) Positive/Negative Reverse

In the positive/negative mode, colors are changed to their complements as shown.

```
Red }\leftrightarrow\mathrm{ Cyan
Green \leftrightarrow Magenta
Blue }\leftrightarrow\mathrm{ Yellow
```



## (4) Color Conversion



A matrix converts the RGB video signals from each scanning cycle into YMCK video signals. The content of the matrix depends on the selected mode. The transparency for each color toner is not ideal, as shown above. Color conversion compensates for the difference between ideal and actual characteristics.
The following modes affect the matrix: color conversion mode (this is a user mode, not to be confused with the color conversion process described in this section), pastel mode, color balance mode, original mode (press print glossy photo, 2nd generation), RGB toner correction mode.

The following color conversion table is an example of the results from the matrix operation, for simple color copying without any special modes applied. For example, to represent green, the yellow and cyan toners are used in a proportion of $1: 1$.

| Original <br> Color <br> Toner | $\mathbf{K}$ | $\mathbf{R}$ | $\mathbf{Y}$ | $\mathbf{G}$ | $\mathbf{C}$ | $\mathbf{B}$ | $\mathbf{M}$ | W |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Y | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 |
| M | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 |
| C | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 |
| K | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

## Color Conversion Table

If the user selects a special mode, some of the values in this table may be between 0 and 1 . The following page briefly explains the effects of some modes.

## A. Color conversion mode

Color conversion mode is a user feature, not to be confused with color conversion (RGB to CMYK) described above. In color conversion mode, a selected color ( $\mathrm{C} / \mathrm{M} / \mathrm{Y} / \mathrm{R} / \mathrm{G} / \mathrm{B} / \mathrm{K} / \mathrm{W}$ ) on an original that falls within the recognized thresholds for that color is converted into a different color on the copy. Up to 4 colors can be converted at one time. Convertible colors include $\mathrm{C} / \mathrm{M} / \mathrm{Y} / \mathrm{R} / \mathrm{G} / \mathrm{B} / \mathrm{K} / \mathrm{W} / \mathrm{Yellow}$ Green/Orange/Marine Blue/Beige/Pink/Purple, and 15 user colors (the user colors are for A259/A260 only). Changing the matrix parameters enables color conversion to occur.

For example, when changing Yellow to Black, the coefficients for the Yellow video signal in the color conversion table become: Y: 1, M: 1, C: 1, Bk: 1

## B. Pastel mode

In pastel mode, the matrix parameters change, and the output of the combined YMCK data shifts to a value between $100 \%$ and $25 \%$. There are 9 steps, and the value used depends on the user's selection.

## C. Color balance mode

In color balance mode, the data output for each color (YMCK) can be changed independently by changing the matrix parameters. There are nine possible values for each color.

## D. Original mode

There are three modes within photo mode (Press Print, Glossy Photo, and 2nd Generation) and three types of special original mode (Marker Pen, Inkjet, Map). The machine selects the most suitable matrix for the original type that is selected by the user at the operation panel.

For inkjet mode, the user can select one of three different inkjet gamma ( $\gamma$ ) tables to emulate the output of three different types of inkjet printer. (This is done with the User Tools.)

## E. RGB toner correction mode

The toner mixing ratios for $R, G$, and $B$ are adjustable (SP 5-611-001 to 5-611006 ). The adjustments are valid for $2 \mathrm{C}(\mathrm{R}, \mathrm{G}$, or B$)$ copy mode only.

## F. Twin color mode

Twin color mode separates black areas and colored areas. The machine then converts black to one color (that was selected by the user) and all the color areas another color(also selected by the user) so the output has only two colors. For A258, there are 12 selectable colors. For the A259/A260, there are 15 user colors in addition to this.

## (5) UCR (Under Color Removal)

## Principle



Obtaining the right colors using YMC toner addition does not always work perfectly. For example, if the same quantity of toner for each color (YMC) is put on the paper, ideally the image should become black, but in reality it becomes a dark color, such as dark blue.

To compensate for this, an equal portion of the common ID value for each color is subtracted. This reduces the amount of color toner on the paper, and a proportional amount of black toner is added. This process is known as UCR.

The UCR ratio is the percentage of the common ID value for YMC that is subtracted and converted to black. In the above example, where the UCR ratio is $100 \%$; the entire common ID value is subtracted from $Y, M$, and $C$, and converted to K.

In actual use, the UCR ratio depends on the color mode and the image density. For example, when the UCR ratio is $95 \%, 95 \%$ of the entire common ID value is subtracted from $\mathrm{Y}, \mathrm{M}$, and C , and converted to K .


In this example, the UCR ratio is $70 \%$.

## For a Black Image

When copying a black image, the ID values for all colors are equal (figure 1). For each color, the ID value is reduced by the amount of the UCR ratio ( $70 \%$ in the example). A black ID value equal to the $70 \%$ reduction is added to compensate for the color ID reduction (figure 2).

## For a Color Image

When copying a color image, the color ID values differ from one another (figure 3). It is treated in two steps.

The ID value for this image is broken down into two parts (figures $4 \& 5$ ): a set of values equal to the lowest color ID value, and the remainders of the two higher values.

The part with equal values is treated as a black image (see figures 1 and 2), using the $70 \%$ UCR ratio. The resulting amounts are then added to the remainders from step 1 (figure 6). The result gives us the ID value for each color and for black (figure 8).

Changes in UCR Ratio with Image Density and Copy Mode


- RGB Signal After Scanner $\gamma$ Correction -



## - Text Areas -

The UCR ratio in text areas is always 100\%.

## - Photo Areas, with ACS Priority set to Bk -

In photo areas, when the user sets the ACS priority to Bk , UCR begins to replace color toner with Bk toner at low image densities (when the RGB common value [ MIN ] is about 13). This prevents excessive reduction of the image density in low image density areas.

At this point, the UCR ratio is zero. As shown in the graph at the top right of the page, it gradually rises with the image density, and the UCR ratio is about $100 \%$ when MIN is 255.

## - Photo Areas, with ACS Priority set to Full Color -

When the user sets the ACS priority to Full Color, the UCR process does not begin to replace color toner with Bk toner until a low-medium image density (when MIN is about 102).
At this point, the UCR ratio is zero. It gradually rises with image density, and the UCR ratio is about $95 \%$ when MIN is 255 .

## UCA (Under Color Addition)

Using only UCR processing, the copy lacks depth. So, a specified ratio of toner is always added for each color (YMC only). The amount of additional toner is proportional to the density of that color on the copy.

## Main Scan Magnification



The machine changes the scanner speed to reduce or enlarge the original in the sub-scan direction. However, an LSI on the IPU Board handles reduction and enlargement in the main scan direction.
Scanning and laser writing are done at a fixed pitch (the CCD elements cannot be squeezed or expanded). So, to reduce or enlarge an image, imaginary points are calculated that would correspond to a physical enlargement or reduction of the image. The correct image density is then calculated for each of the imaginary points based on the image data for the nearest two true points. The calculated image data then becomes the new (reduced or enlarged) image data.
NOTE: The actual calculations for main scan magnification use the polynomial convolution method. This mathematical process is beyond the scope of a service manual and will not be covered here.

## Mirror Image



Each line of video data is transferred to the laser unit in reverse (the end of the line is written on the OPC first).

## Gamma ( $\gamma$ ) Correction (Printer Gamma)



Fig. 1


Fig. 2

## (1) KCMY Gamma

Ideally, the gamma curves for Yellow, Magenta, Cyan, and Black are identical, as shown in figure 1. However, they are not because electrical components always vary slightly, resulting in varying gamma curves, as shown in figure 2.

The Auto Color Calibration (ACC) procedure can compensate for any discrepancies in color reproduction. ACC makes new gamma curves for each color in each mode (text, photo, Bk text). After ACC, the gamma curve for each color can be adjusted with service programs (see Replacement and Adjustment, Copy Image Adjustment)
Using these programs, each gamma curve can be adjusted using 4 different modes: ID max., High ID, Middle ID, and Low ID, as shown on the following page.
If the previous gamma curve was better, the customer can recall it. Alternatively, the factory settings can be loaded using SP 5-610-004. In addition, the factory settings can be overwritten by the current gamma settings using SP5-160-005.

- ID max. -

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

## - High ID -

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


Fig. 3
Detailed
Descriptions


Fig. 4

## - Middle ID -

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


Fig. 5

## - Low ID -

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


Fig. 6

## (2) ACC Test Pattern



The IPU board firmware has a test pattern that has eight 17-step gradation scales for each color (KCMY), including background white, for Text and Photo modes.

## (3) ACC (Auto Color Calibration)

This machine automatically calibrates the printer gamma curve when the user selects ACC.

When ACC is activated, the machine prints out an ACC Test Pattern. The user puts the test pattern on the exposure glass, then the machine scans the test pattern. The machine scans eight lines, one for each color (KCMY) in text mode, and one for each color in photo mode.

The machine corrects the printer gamma by comparing the ideal settings with the current image density. Then the machine combines the corrected gamma curve with the High, Middle, and Low ID values currently in memory (these are not reset to the defaults first, as in some earlier models).
The machine the calculates the ID max (amplitude of the gamma curve) based on data from the ACC scan.

The corrected printer gamma curves can be adjusted further using SP mode, as discussed on the previous page (see Replacement and Adjustment, Copy Image Adjustment).
(4) Gradation Treatment (Dither Processing)


This machine has two kinds of dither patterns in copier mode.
In Text mode, the dither patterns are made with $1 \times 1$ dot units, to obtain fine resolution.

In Photo mode, the dither patterns are made with $2 \times 1$ dot units. Using the larger unit, the resolution is less fine, but the output is not sharply focused, which is more suitable for Photo mode.

## Area Editing

In area editing mode, the pre-scanned image ( 8 bits) is transferred directly to the operation panel using the VRAM on the main control board. After designating the area on the display, the area data is sent to the IPU section and the scanned image is treated in the Area Treatment ASIC in accordance with the area data.

## CPU

The CPU (32-bit) controls the image data and the timing in the scanner and IPU sections.

## IPU Board Test

The scanner IPU board contains some LSIs, DRAM, SRAM, and other parts that control these.

In SP mode, there are test programs to check if the board is defective or not (SP 4-904-001, 002: 0=OK, other = NG).

SP4-904-001: Read/write check for each ASIC
SP4-904-002: Generates patterns from the ASICs, writes them in the field memory and tests them.

### 2.5.6 LASER EXPOSURE

### 2.5.6.1 OVERVIEW



| A: Laser Diode Unit (LDU) | F: Laser Synchronization Detector Board-2 <br> (LSDB-2) |
| :--- | :--- |
| B: F-theta Lenses | G: Polygon Mirror |
| C: Barrel Toroidal Lens (BTL) | H: Cylindrical Lens |
| D: Drum Mirror | I: OPC Drum |
| E: Laser Synchronization Detector Board-1 | J: Toner Shield Glass |
| (LSDB-1) |  |

This machine uses a laser diode to produce electrostatic images on an OPC drum [I]. The laser diode unit converts image data from the LD main control board into laser pulses, and the optical components direct these pulses to the drum.
To produce a high quality copy image, there are 256 gradations for each pixel for each color. These gradations are produced by power modulation and pulse width modulation on the laser signal.

The laser beam writes the latent image on the drum. The laser beam makes the main scan while the drum rotation controls the sub-scan.

The strength of the beam is about 0.76 mW on the drum surface at a wavelength of 780 nm . (The rated output of the laser diode is 15 mW ).

### 2.5.6.2 OPTICAL PATH

## Overview



The output path from the laser diode to the drum is shown above.
The LD unit [A] sends a laser beam to the polygon mirror [G] through the cylindrical lens [H].

Each side of the polygon mirror reflects a full main scan line. The laser beam goes through the f-theta lens $[B]$ and $B T L[C]$. The drum mirror [D] reflects the laser beam onto the drum [I] through the toner shield glass [J].
The laser synchronizing detector boards $[E, F]$ determine the main scan starting position, and detect variations in the time required to make a main scan.


## Cylindrical Lens

The cylindrical lens $[A]$ focuses the laser beam and sends it to the polygon mirror.

## Polygon Mirror

The polygon mirror assembly consists of the polygon mirror motor $[\mathrm{B}]$ and the polygon mirror itself [C].

As the mirror rotates, it reflects the laser beam across the drum, via the f-theta lens, BTL, and drum mirror. The beam reflected from one face of the polygon mirror makes one main scan line.

The mirror is precisely ground for high reflectivity and to prevent pixel misalignment on the drum in both the main scan and sub-scan directions.
The polygon mirror motor rotates at $24,567 \mathrm{rpm}$. One rotation corresponds to six main scans.

## F-theta Lenses and the BTL




The angles between pixels are equal. However, if the beam were to go directly to the drum as shown in the upper illustration, the spacing between pixels would depend on the angle of the beam. The pixels near the end of the drum would be further apart than the ones near the middle, and slightly thicker toward the ends of the drum than in the middle.

The f-theta lenses $[A]$ and barrel toroidal lens (BTL) [B] correct for this by deflecting the beam slightly inward to ensure uniform pixel spacing and diameter. The f-theta lenses and BTL also correct for irregularities in the polygon mirror face, focusing irregular beams onto the correct part of the drum.

## Laser Synchronizing Detector Boards



Some of the optical components are made of plastic, and may expand and contract with changes in temperature. If this happens, the number of pulses in the laser main scan across the drum will vary. To counteract the effects of this, the machine adjusts the gap between laser pixels to keep the number of laser pulses in each main scan constant.

To do this, the machine has two laser synchronizing detector boards. They determine the number of clock pulses between the start and end of each main scan. (These clock pulses are from the base clock, which is at a much higher frequency than the laser pixel frequency.)

The laser synchronizing detector board-1 [A] synchronizes the main scan start timing. At the other side, the laser synchronizing detector board- $2[\mathrm{~B}]$ counts the number of clock pulses since detector board-1 was activated; from this count and from the current laser pixel frequency, the machine can calculate how many laser pixels there were across the main scan.

## Gradation Control (Laser Pulse Width and Laser Power Modulation)




To make the latent image, the laser beam illuminates the image area on the drum surface. The longer the laser is on and the more intense it is, the darker the developed pixel becomes. Modulating (changing) the width of the pulse makes the length of time that the laser is on longer or shorter. There are eight possible pulse width levels in this model.

While the laser is on to make one dot, the intensity of the laser is controlled by power modulation (PM). The laser's intensity is controlled by the amount of current sent to the laser diode. Modulating the power makes the laser brighter or dimmer. There are 32 possible power levels, or laser intensity levels.
The laser engine can use the 8 pulse width levels and 32 power levels to create the 256 possible grayscale values for each pixel for each color.
The power is modulated ONLY at the end of the active part of the on/off cycle of the laser pulse. For example (see the diagram above), to make a pixel with a grayscale value of 48, the laser pulse width level for that pixel will be 2. The first period of the pulse will be at the full power (32), and the second period will be at power 16 to make up the remainder of the $48(32+16=48)$.

The LD power for each grade is defined by process control.

## LASER EXPOSURE

## 600 DPI Writing

In printer mode, the resolution is 600 dpi (in copier mode: 400 dpi). The LD writing frequency in printer mode shifts from 16.06 MHz (copier mode) to 24.08 MHz (printer mode), which is about 1.5 times. For the sub-scan, the drum motor speed shifts from $156 \mathrm{~mm} / \mathrm{s}$ to $104 \mathrm{~mm} / \mathrm{s}$ ( $2 / 3$ speed).

## Auto Power Control (APC)



Even if a constant electric current is applied to the laser diode, the intensity of the output light changes with the temperature. The intensity of the output decreases as the temperature increases.
In order to keep the output level constant, the output light intensity is monitored through a photodiode (PD) enclosed in the laser diode. The photodiode passes an electrical current that is proportional to the light intensity. The output is not affected by temperature, so it faithfully reflects the changes in the LD output, without adding anything itself.
Just after the main switch is turned on, the current control IC on the LD drive board excites the laser diode at full power (power level 32) and stores the output of the photodiode as a reference. The current control IC monitors the current passing through the photodiode. Then it increases or decreases the current to the laser diode as necessary, comparing it with the reference level. Such auto power control is done during printing while the laser diode is active.
The laser power level is adjusted on the production line. Do NOT touch the variable resistors on the LD unit in the field.

## LASER EXPOSURE

## LD Safety Switches



The front door switch ensures that the laser beam does not accidentally switch on during servicing, while the front door is open. These switches are installed in series on the LD 5V line coming from the power supply board (PSU).

When the front cover is opened, the power supply to the laser diode is interrupted.

### 2.6 DEVELOPMENT UNIT

### 2.6.1 OVERVIEW



The development unit is a revolver type. The revolver rotates counter-clockwise to develop colors in the order of K, Y, C, and M. The development and drum units are in the drawer unit.
There is no sub-hopper; each color toner is supplied directly to the development unit from the toner bottle.

1. Development roller
2. Mixing augers
3. Revolver H.P. sensor
4. Drawer unit slide rail
5. Toner end sensor
6. Toner supply auger
7. Toner cartridge
8. Toner cartridge set sensor

### 2.6.2 REVOLVER MECHANISM

## Overview



The revolver unit is composed of four development units, one for each color (KYCM). It develops colors by rotating the revolver counter-clockwise (as viewed from the front of the copier), 90 degrees at a time, in the order of $\mathrm{K}, \mathrm{Y}, \mathrm{C}$, and M .

In printer mode, development is carried out in the order of $\mathrm{Y}, \mathrm{C}, \mathrm{M}$, and K . Developing K last improves the reproduction of black letters.
The development units for each color can be removed easily.

## Revolver Drive



The revolver drive motor [A] turns the revolver unit around the revolver shaft [B].
The revolver rotates counter-clockwise as viewed from the front of the copier in 90degree steps. The revolver unit home position lies 22.5 degrees before the K development position, so the revolver is turned 22.5 degrees before starting development.

The revolver drive motor is a two-phase stepper motor.

## DEVELOPMENT UNIT

## Revolver Home Position Detection



The revolver H.P. sensor $[A]$ is at the front of the drawer unit. The actuator $[B]$ is attached to the revolver shaft. The revolver is at home position when the edge of the actuator just enters the sensor.
For both copy and printer mode, the home position is 22.5 degrees before the K development position. This clearance between the development sleeve and the drum prevents the drum surface from becoming dirty and minimizes toner wastage when development is not taking place.
Whenever a copy job ends, the copier returns the revolver to home position. It also does this when the copier is turned on and when the front door is opened or closed.

The toner bottle is locked so that it cannot be removed or installed. However, when there is a toner near end or toner end condition, the revolver stops at a different position in standby mode so that the toner bottle can be changed. Then, when the user makes a copy, the revolver goes to home position first, before the copy is made.

SC361 is generated when a revolver H.P. sensor error occurs.

### 2.6.3 DEVELOPMENT MECHANISMS

## Overview



The developer ( 380 g ) in each development unit is supplied to the development roller [A] by the two mixing augers [B] and attracted onto the roller surface by the magnets inside the development roller.

The attracted developer is trimmed to the desired thickness by the magnetic doctor [C], and then carried out to the drum [D] where the latent image is developed. The magnetic doctor blade reduces the developer setting time. It also maintains the image density more effectively than a non-magnetic doctor blade.

The uniform clearance (photoconductor gap: PG) between the development roller $[A]$ and the drum $[D]$ is guaranteed because the cover around the development unit shaft fits into the drawer tightly at the front and at the rear.

## Development Drive



The revolver unit contains four development mechanisms. At any one time, only one development mechanism is driven (the one for the color that is being developed).
The drum motor drives the development roller and screws via the timing belt [ A ] and development clutch $[\mathrm{B}]$, and rotates the toner bottle through gears (see Toner Agitation).

## Developer Agitation



The two transfer augers [C] circulate the developer forward and backward to agitate the developer. This is a more compact system than the paddle mechanism in older models.

Developer is agitated during the process control self check, during toner supply, and during development (only for the color being used).

## Toner Agitation



When the drum motor drives the development mechanism that is at the development position, it also turns the toner bottle through gears, and this agitates the toner.

## DEVELOPMENT UNIT

## Development Bias



This is a revolver development mechanism, so there is only one bias terminal.
When a development unit is at the development position, the development input shaft [D] is in contact with the bias terminal [E] at the front of the drawer unit. At this time, voltage passes from the high voltage supply board - B [A] to the development roller shaft [B] through a spring plate [C]

The bias terminal has a spring to push against the development input shaft to prevent poor terminal contact when the development unit reaches the development position.

In this model, there is both ac and dc bias. The ac bias improves toner transfer to the drum.

- AC: Peak-to-peak $1.4 \mathrm{kV}, 2 \mathrm{kHz}$
- DC: Center - 500V (depending on the process control self check)

At the beginning and end of revolver rotation, the ac bias is turned off to prevent toner from transferring to the drum, and only the dc bias is applied.
SC360: Development bias (high-voltage power supply - B) error

## Toner Supply Mechanism



The toner supply motor [A] supplies toner in the development unit that is at the development position via gears that are behind the supply auger $[B]$.
Toner is fed forward as the toner bottle rotates, and it falls into the toner supply section [C]. The supply auger [B] transfers the toner in the toner supply section [C] to the development unit [D].

The development shutter [E] in the development unit closes under its own weight when the revolver rotates, preventing toner backflow.

For more details on toner supply, see Toner Supply Control earlier in this section.

## DEVELOPMENT UNIT

## Toner Cartridge Detection



The toner cartridge sensor [A] detects the metallic mark on the toner bottle. This sensor is on the upper front side of the drawer unit.

## Incorrect Toner Installation Prevention



Each toner cartridge has pins $[A]$ to prevent it from being installed in the wrong place. The pins are at different positions for each color.

## Toner End Detection



## Overview

There are two toner end detection mechanisms in this machine.

- Toner end sensor ( $C, M$, and $Y$ toners)
- ID sensor (K, C, M, and Y toners)

Black toner near-end is detected by the ID sensor only. For $C, M$, and $Y$, the machine detects near-end only if both the ID sensor and the toner end sensor detect it.

After entering the toner near-end condition, 10 more copies can be made before the machine enters a toner end condition. (Pixel count is also included in this process; for details see Toner Supply Control - Detecting Toner Near-end/End.)

## Toner End Sensor

The toner end sensor [A] monitors the level of toner in the toner bottle through the reflective window in the toner feed hopper. If there is toner in the bottle, the path of light is blocked. The copier detects toner near end when the toner end sensor detects a low signal from the toner end sensor four consecutive times.
Black toner adhering to the window makes it difficult to detect the toner level in this way. Therefore, the ID sensor is used to detect black toner near-end.

## ID Sensor

The copier displays a toner near end condition for the next and subsequent copies when the calculated toner during toner supply control Vsp detection is less than the target ( $0.4 \mathrm{mg} / \mathrm{cm}^{2}$ for $\mathrm{C}, \mathrm{M}$, and Y toners, $0.3 \mathrm{mg} / \mathrm{cm}^{2}$ for K toner) five times in a row.

For full details about toner near-end/end detection, see Toner Supply Control Detecting Toner Near-end/End.

### 2.7 TRANSFER BELT UNIT

### 2.7.1 OVERVIEW

Each color toner is individually placed on the transfer belt, which in turn transfers the combined toner image to the paper.


1. Bias roller (transfer belt)
2. Transfer belt
3. Belt tension roller
4. Transfer belt home position sensor
5. Lubricant bar (paper transfer)
6. Cleaning blade (paper transfer)
7. Toner collection tray
8. Bias roller (paper transfer)
9. Paper separation corona unit
10. Paper transfer counter roller (grounded)
11. Belt drive roller (grounded)
12. Cleaning blade (transfer belt)
13. Lubricant brush
14. Lubricant bar (transfer belt)
15. Tension roller

### 2.7.2 BELT TRANSFER MECHANISMS

## Transfer Belt Drive



The drum motor $[\mathrm{A}]$ drives the transfer belt $[\mathrm{B}]$ via gears. The coupling gear $[\mathrm{C}]$ transfers drive from the motor to the belt drive roller [D] and secures the rear of the unit. The transfer belt is always in contact with the drum, and rotates in one direction only.
The speed of the transfer belt motor is reduced in OHP/thick paper or printer mode.

- Copier OHP/thick paper mode: The speed of the transfer belt is half of normal paper mode when transferring the image to paper.
- Printer output mode: The speeds of the drum, transfer belt, paper feed, and fusing sections are all reduced to $2 / 3$ of the normal paper mode speed. This is at all times, not just during paper transfer.
- Printer OHP/thick paper mode: The speed of the transfer belt goes down to half the normal paper mode speed for copying during paper transfer.


## Transfer Belt Release Lever



The transfer belt unit has a release lever [A] at the front. This is because the transfer belt always contacts the drum during copying (the nip band width is about 18 mm ), but must be moved away from the drum to remove the transfer belt unit.

Moving the release lever rotates the release lever cam [B]. The tension bracket [C] and tension roller [D] are moved by the cam, and this makes a gap of about 2 mm between the drum and the transfer belt.

There are three pressure release lever positions: transfer belt unit install/uninstall [E] (this is also the shipping position), drum contact [F], and transfer belt replacement [G].

## Belt Transfer Bias



The belt transfer bias mechanism uses a bias roller [A] to minimize the toner scattering around the transfer belt (scattering is reduced because lower voltages are used in this type of system than with a corona wire transfer system).
The high voltage supply board - T1, PCC [B] applies a voltage to the transfer belt through the bias roller, which is inside the transfer belt.
Color toners are superimposed on the transfer belt one at a time. The transfer voltage is increased as they are superimposed.
The transfer voltage is reduced between images to prolong the life of the belt cleaning unit (less dust and loose toner is attracted to the belt between images).
$\Longrightarrow$ In the printer mode, the speed of the belt is reduced by $1 / 3$, so the transfer voltage is adjusted to a value that matches the belt speed.
SC400: Belt transfer bias PP (high-voltage power supply: T1, PCC) error

## Belt Mark Detection



The machine uses the transfer belt home position sensor [A] to align the position of the image on the belt for each color by detecting the belt mark [ B ].
The FGATE signal is generated when the belt mark is detected, and this signal allows image data to be written to the drum.
SC452 is generated when the copier fails to detect the belt mark at the required time.

## Transfer Belt Cleaning Mechanism



## (1) Contact/release mechanism

At the end of a copy job, the belt cleaning clutch [A] (a half-turn clutch) transfers drive from the fusing motor to the belt cleaning cams $[B]$ in the cleaning unit. These cams move the cleaning blade [C], the entrance seal [D], and the lubricant brush into contact with the transfer belt.

## (2) Contact/release detection

The blade contact state is detected when the actuator [ E ] on the half-turn clutch enters the belt cleaning HP sensor.
If the actuator is not detected at the end of a copy job, SC457 (transfer belt cleaning unit position error) is generated and the copier stops.


## (3) Contact/release timing

The entrance seal $[A]$ contacts the belt before the cleaning blade $[B]$. This prevents toner from falling onto the paper. The entrance seal contact/release lever [C] controls the contact and release timing of these components.

The lubricant brush [D] makes contact and releases at the same time as the blade.

## (4) Dirty leading edge prevention

In 1C mode, the blade always contacts the transfer belt, so toner may build up on the edge of the blade.
The belt cleaning mechanism performs two contact/release operations at the end of a 1C-copy job to remove the toner accumulated at the edge of the blade. If toner builds up on the blade, it will fall onto the belt when the blade contacts the transfer belt. As a result of the timing of the mechanism, this toner appears at the leading edge of the copy.

## (5) Belt lubricant mechanism



Normal machine use generates a film of toner on the belt. Toner filming reduces the ability of toner to separate from the belt. To solve this problem, the lubricant brush [A] applies a small amount of lubricant to the transfer belt.
The lubricant brush applies lubricant to the transfer belt when the blade [B] comes in contact with the transfer belt.
The drum motor drives the lubricant brush through the belt lubricant clutch [C].
(6) Toner collection mechanism


In the transfer belt unit, the toner collection coil [A] at the front of the transfer belt unit transports the toner removed from the transfer belt cleaning unit to the used toner tank [B].

In the drum area, the toner collection coil [C] in the drum cleaning unit transfers the toner removed from the drum cleaning unit to the used toner tank.
The used toner sensor [D] (a piezoelectric sensor) is inside the used toner tank. After this sensor detects that the tank is full, the used toner lamp on the operation panel blinks. Then, after 100 copies, the machine stops the copy job.

### 2.7.3 PAPER TRANSFER MECHANISM

## Paper Transfer Unit Contact/Release Mechanism



## General Mechanism

When the paper is about 10 mm before the paper transfer nip, the paper transfer positioning clutch [A] (a half-turn clutch) turns on, rotating the paper transfer cam $[B]$ by half a turn. This elevates the paper transfer unit, causing the paper transfer bias roller to contact the transfer belt. The nip band width between paper transfer bias roller [C] and transfer belt [D] is about 2 mm .
When the paper transfer bias roller contacts the transfer belt, the actuator enters the paper transfer home position sensor [E] (at the rear of the copier, behind the paper transfer unit).

When paper transfer ends, the paper transfer positioning clutch turns on again to rotate the paper transfer cam a half turn, which releases the paper transfer bias roller from the transfer belt.

If a paper transfer home position sensor error occurs, SC456 (paper transfer unit set error) appears on the LCD and the copier stops.

## 2C and 4C modes

The paper transfer unit stays away from the transfer belt until it is time to transfer the accumulated toner image to the paper.

## Double-page transfer mode

For certain smaller paper sizes (A4/LT or smaller), two pages are transferred to the transfer belt at the same time.
The machine generates an ID sensor pattern between every page. Therefore, there is one between the two images in double page transfer mode. Because of this, the paper transfer bias roller separates from the transfer belt between the images so that the pattern will not adhere to the paper transfer roller. When the ID sensor pattern has passed over, the paper transfer bias roller comes back into contact with the transfer belt.

1C (K, Y, C, M) mode
The bias roller always stays in contact with the transfer belt. In between the images, however, the voltage is at 0 to prevent scattered toner on the belt from adhering to the paper transfer roller.

## Paper Transfer Bias Roller Drive



The paper feed motor [A] drives the paper transfer bias roller through some gears.
The paper transfer assembly pivots about pin [B] when it moves into contact with or away from the belt. This means there is no connection/disconnection between the paper transfer unit and the paper feed motor, and this prevents shock generated by the contact or release of the unit from being conveyed to the transfer belt.

This also means that the bias roller [C] always rotates when the paper feed motor is on, even when the copier is not doing a paper transfer operation.

## Paper Transfer Bias Roller Cleaning



The cleaning blade [A] scrapes off the toner on the paper transfer bias roller [B]. To improve cleaning efficiency, spring plates press the lubricant bar [C] against the bias roller and the bar applies lubricant to the bias roller.
The toner collection tray [D] under the paper transfer unit stores the paper dust and toner scraped off by the blade.

## Paper Transfer Bias

In this machine, paper transfer voltage is applied using a bias roller and constant current. The high voltage supply board - T2, D [A] applies bias voltage to the paper transfer bias roller $[B]$ and the paper separation corona unit [C].
The bias terminal $[D]$ moves up and down while the transfer unit repeats the contact/release operations, so it always remains connected.


The machine changes the paper transfer current, depending on the following six parameters:

1. Absolute humidity

Under low temperature/low humidity conditions, the current depends on the absolute humidity. The temperature and humidity sensors at the rear of the machine (see the diagram on the next page) measure absolute humidity.
2. Paper size

Since a constant-current system is used to generate the paper transfer bias, the current is adjusted according to the paper size to compensate for the leak of current around the edges of the paper.
3. At the leading and trailing edges of the paper

To prevent poor paper transfer at the leading and trailing paper edges, there are SP modes to change the current that is used within about 15 mm from the edges.

4. Paper feed speed

There are SP modes to adjust the current used for different paper types, such as OHP or thick paper.
5. Duplex mode: For the front and back sides of the paper

There are SP modes to adjust the current used for the front and back sides of the paper.
6. Copy mode or printer mode

There are SP modes to adjust the current used for these two modes.

SP2-310 (Set Paper Transfer Bias) sets the paper transfer bias values.
SP3-313 to 2-315: Corrections for paper type, paper size, leading edge, and trailing edge
SC450 (paper transfer bias power supply error)
SC495 (temperature sensor error)
SC496 (humidity sensor error)

### 2.7.4 PAPER SEPARATION MECHANISM



The separation corona unit pulls the paper off the transfer belt. In addition, the paper separates from the belt as a result of the curvature of the belt.

The corona unit also improves copy quality at low humidity.

### 2.8 PAPER FEED AND REGISTRATION

### 2.8.1 OVERVIEW



1. Paper tray detector switch
2. Tray bottom plate
3. Tray bottom plate lift arm
4. Tray pick-up roller
5. Tray separation roller
6. Tray paper feed roller
7. Relay roller
8. By-pass separation roller
9. By-pass pick-up roller
10. By-pass paper width detection board
11. By-pass paper end sensor
12. By-pass feed table switch
13. By-pass feed roller
14. Grip roller
15. Upper registration roller
16. Lower registration roller
17. Tray paper height sensors

### 2.8.2 PAPER TRAY

## Paper Feed/Separation

The paper tray feed station uses a feed and reverse roller system. The paper feed unit is made up of a pick-up roller, a paper feed roller, a separation roller, and a relay roller. Behind the separation roller is a torque limiter.

## Separation and Pick-Up Roller Release



When the paper tray [A] is not inside the machine, the separation roller [B] is away from the paper feed roller [C] and the pick-up roller [D] stays in the upper position.
When the paper tray is pushed into the machine, it pushes the release lever [E].
This causes the pick-up roller [D] to go down and the separation roller [B] to move up into contact with the paper feed roller.

## Paper Lift



The paper tray detector switch $[A]$ detects when the paper tray $[B]$ is placed in the machine. When the machine detects that the paper tray is in the machine, the tray lift motor [C] turns on and the coupling gear [D] on the tray lift motor engages the pin $[E]$ on the lift arm shaft [F]. Then the tray lift arm [G] lifts the tray bottom plate [H].
When the tray is pulled out, the coupling between the tray lift motor and the coupling gear is disengaged, causing the tray bottom plate to fall down under its own weight.

## Paper End Detection



If there is some paper in the paper tray, the paper stack raises the paper end feeler $[A]$ and the paper end sensor $[B]$ is deactivated.
When the paper tray runs out of paper, the paper end feeler drops into the cutout [C] in the tray bottom plate and the paper end sensor is activated.

When the tray is pulled out, the pick-up roller is released, and this lifts the paper end sensor actuator to prevent it from being damaged while the tray is being pulled out.

## Paper Size Setting

The paper sizes for all trays must be set with "User Tools/System Settings/Tray Paper Size." When changing a paper size, it is necessary to move the side and end fences as well as to change the default settings of this user tool.
The paper sizes are set at the factory as follows for all trays, including optional paper trays:

- Copier settings: A4 sideways
- Tray side fence position: A4 sideways

The end fence for each paper tray is stored at the factory at the front left of the tray. The customer must install it at the A4 sideways position, or set up the machine to use another paper size.

## Tray Paper Height Sensor

This copier can detect the remaining volume of paper in the paper tray. However, there is no indication of this on the operation panel, and the sensors are only used by the printer controller so that the PC user can check how much paper is left.

As the remaining paper decreases, the tray lift arm [A] goes up, as does the sensor actuator [B], which is fitted on the same shaft as the tray lift arm. The relationship between the positions of this actuator and the tray paper height sensor signals is shown in the table below.

Full


Nearly full

[Near-end


Almost empty


| Remaining Paper | Paper Height Sensor 2 [C] | Paper Height <br> Sensor 1 [D] |
| :---: | :---: | :---: |
| Full | OFF | ON |
| Nearly full | OFF | OFF |
| Near-end | ON | OFF |
| Almost empty | ON | ON |

### 2.8.3 BY-PASS TRAY

## By-pass Table Mechanism



The by-pass feed table switch [A] detects when the by-pass feed table is open. Then the CPU turns on the by-pass feed indicator on the operation panel.
The by-pass table can hold up to 50 sheets of paper.

## Paper Feed/Separation



The by-pass feed mechanism uses an FRR system.
The paper feed motor [A] drives the paper feed roller [B] via the by-pass paper feed clutch [C].

## Paper End Detection



The paper end sensor actuator [A] is next to the pick-up roller. When there is paper in the tray, the paper lifts the actuator out of the by-pass paper end sensor $[B]$.

When paper is all used up, the actuator falls on its own weight, entering the bypass paper end sensor, and the machine detects that the tray is empty.

## Paper Size Detection



The by-pass paper width detection board [A] monitors the paper width. The rear side fence is connected to the terminal plate $[B]$. When the side fences are being moved to match the paper width, the terminal plate slides along the wiring patterns on the detection board. The patterns for each paper width on the paper width detection board are unique. Therefore, the machine determines which paper width has been placed in the by-pass feed table by the signal output from the board.

This machine does not have a paper length sensor, so the paper length is selected by user operation when the by-pass feed table is open. (The user also selects the lengthwise/sideways orientation.)
The user also can select a non-standard paper size, but this must have been specified in advance with a user tool (default: $432 \times 297 \mathrm{~mm}$ ).

## Pick-up Roller



The pick-up roller $[A]$ is normally held up by the springs $[B]$ on the pick-up solenoid arm. When it is time to feed the paper, the pick-up solenoid [C] turns on, causing the pick-up roller to contact the paper.

### 2.8.4 REGISTRATION MECHANISM AND PAPER FEED DRIVE



The paper feed motor $[A]$ drives the upper registration roller $[B]$ via the registration clutch [C], gears and timing belt.
The grip rollers [D] feed the paper to the registration rollers. They also ensure correct registration when the by-pass table is being used. Without these rollers, the paper would sag into the space below the feed path, and this would prevent the paper's leading edge from staying at the registration roller during registration.
The paper feed motor drives the other paper feed mechanisms motor via gears and a timing belt.

### 2.9 PAPER TRANSPORT, FUSING, AND PAPER EXIT

### 2.9.1 MAJOR COMPONENTS



1. Hot roller
2. Hot roller thermofuse
3. Oil supply roller
4. Oil supply sub-roller
5. Oil supply pad
6. Hot roller blade
7. Hot roller thermistor
8. Pressure screw
9. Pressure spring
10. Transport belt
11. Transport fan
12. Pressure roller fusing lamp
13. Pressure roller
14. Pressure roller thermistor
15. Pressure roller thermofuse
16. Paper exit sensor
17. Fusing exit roller
18. Fusing exit sub-roller
19. Exit roller
20. Exit sub-roller
21. Hot roller fusing lamp
22. Scraper
23. Hot roller cleaning roller
24. Pressure roller cleaning roller (US models only)
25. Pressure roller cleaning blade (Europe/Asia models only)
26. Pressure roller cleaning pad (Europe/Asia models only)

### 2.9.2 DRIVE MECHANISM



The fusing motor $[A]$ drives the fusing and paper exit units. The fusing clutch $[B]$ transmits drive to the fusing drive gear [C]. When the CPU detects that the front door is opened (by the signal from the front door switch), it turns off the clutch, which releases the drive gear [B].

There are also gears [D] at the front of the hot and pressure rollers to reduce creasing.

The paper feed motor [E] drives the transport belt [F].

### 2.9.3 FUSING UNIT

## Fusing Mechanism



The hot and pressure rollers each have a fusing lamp: $800 \mathrm{~W}[\mathrm{~A}]$ for the hot roller $[B]$ and $400 \mathrm{~W}[\mathrm{C}]$ for the pressure roller [D]. The hot roller thermistor [ E$]$ and pressure roller thermistor [F] control the temperature of these lamps.
Temperature control is accomplished normally by turning the fusing lamps on and off. Phase control can be selected using an SP mode (SP1-104).
The hot roller thermofuse [G] blows at $184^{\circ} \mathrm{C}$ and the pressure roller thermofuse [H] blows at $167^{\circ} \mathrm{C}$. These thermofuses prevent the temperature in the fusing section from rising to dangerous levels.

## Fusing Temperature Control

The fusing temperature depends on the selected copy modes, as shown below. The defaults indicated in the table can be adjusted with SP modes.

| State/Mode <br> Rollers | Stand-by Mode | Copy Mode |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Normal |  | OHP/Thick Paper |  |
|  |  | Single Color | Full Color | Single Color | Full Color |
| Fusing: simplex, duplex side 1 | $165{ }^{\circ} \mathrm{C}$ | $160{ }^{\circ} \mathrm{C}$ | $165{ }^{\circ} \mathrm{C}$ | $150{ }^{\circ} \mathrm{C}$ | $160{ }^{\circ} \mathrm{C}$ |
| Fusing: , duplex side 2 | $165{ }^{\circ} \mathrm{C}$ | $160{ }^{\circ} \mathrm{C}$ | $165{ }^{\circ} \mathrm{C}$ | $150{ }^{\circ} \mathrm{C}$ | $160{ }^{\circ} \mathrm{C}$ |
| Pressure: simplex, duplex side 1 | $150{ }^{\circ} \mathrm{C}$ | $150{ }^{\circ} \mathrm{C}$ |  | $150{ }^{\circ} \mathrm{C}$ |  |
| Pressure: , duplex side 2 | $150{ }^{\circ} \mathrm{C}$ | $150{ }^{\circ} \mathrm{C}$ |  | $150{ }^{\circ} \mathrm{C}$ |  |

## Fusing/Pressurization Mechanism



The hot and pressure rollers are silicone rollers. The oil supply mechanism makes it easier for paper to separate from the rollers after fusing.
Springs [C] and a bracket press the pressure roller [A] against the hot roller [B]. When disassembling the fusing unit, pressure between the rollers is released by unscrewing the pressure release screw [D] and lowering the pressure lever [E].

## Oil Supply Mechanism



The gear $[A]$ and cam gear $[B]$ on the fusing knob shaft at the front of the fusing unit are always engaged. The actuator [C] for the oil pump roller is in contact with this cam gear.

When the fusing drive gear rotates causing the fusing knob to rotate, the gear and cam gear on the fusing knob shaft rotate. This rotates the roller of the actuator following the cam about pin [J], thus pressing the oil pump sleeve [F] to supply oil to the oil supply pad [D]. Excess oil is collected in the oil tank [E].
At both ends of the oil pump sleeve [F] are valves, which prevent oil from flowing back.
The oil supply roller [G] copier applies oil to the hot roller by pressing the oil supply pad $[\mathrm{H}]$ against the supply roller. The fusing oil blade [I] prevents oil from being applied unevenly.

## Cleaning Mechanism



The cleaning roller [A] cleans the hot roller [B]. Toner and dust on the hot roller adheres to the cleaning roller. Then the scraper [C] scrapes off the toner and dust on the cleaning roller.

## - US models -

The pressure roller cleaning roller [D] cleans the pressure roller [E].

## - European/Asian models -

The pressure roller blade [F] removes paper dust from the pressure roller [E].
To prevent the pressure roller from catching on the blade, there is a pressure roller pad [G] under the pressure roller.

### 2.9.4 INVERTER AND PAPER EXIT MECHANISMS

## Paper Exit



The paper exit roller [A] supports the paper fed from the fusing unit to improve the ability of the paper to stack.

## Junction Gate Mechanism (A259/A260 Only)



After fusing, the junction gate $[B]$ feeds paper either to the paper exit tray or the inverter and duplex tray. The junction gate solenoid [C] controls the junction gate as follows.

- To feed paper to the paper exit tray [D]: The junction gate solenoid is off.
- To feed paper to the duplex tray [E]: The junction gate solenoid is on.


## Paper Exit Door Mechanism (A259/A260 Only)



The paper exit door [A] opens to help remove paper jams in the inverter. The relay rollers [B] are released when the paper exit door opens.
The paper exit door switch [C] detects whether the paper exit door is open or closed.

### 2.10 DUPLEX TRAY (A259/A260 COPIERS ONLY)

### 2.10.1 OVERVIEW



1. End fence
2. End fence jogger H.P. sensor
3. Side fence jogger
4. Side fence jogger H.P. sensor
5. Bottom plate
6. Duplex paper end sensor
7. Separation roller
8. Vertical transport roller
9. Paper feed roller
10. Duplex turn sensor
11. Transport path
12. Duplex entrance roller
13. Duplex entrance sensor

### 2.10.2 DRIVE MECHANISM



The duplex feed motor $[A]$ drives all the rollers in the duplex tray using a series of gears and a timing belt $[B]$. Helical gears are used to reduce noise. The duplex feed motor also drives the duplex bottom plate up and down.

### 2.10.3 PAPER FEED INTO THE DUPLEX TRAY

The duplex feed motor is a stepper motor. The direction that the motor turns depends on whether the duplex unit is stacking or feeding.

## 1. Duplex Stacking



Paper enters the duplex unit passing the entrance sensor [A], the duplex turn sensor $[B]$, the paper feed roller [C], and the separation roller [D]. Then, it is stacked while the bottom plate [E] is in the lower position.

## 2. Paper Feed from the Duplex Tray



The paper stacked in the duplex unit is in contact with the paper feed roller [A] after the bottom plate $[B]$ is lifted up. Then, the paper feed roller feeds the paper to the registration rollers in the copier main body via the vertical transport roller [C].
The separation roller [D] has a one-way clutch. During paper stacking, the separation roller turns with the paper feed roller. During paper feed, the separation roller does not turn, so that it can separate the sheets of paper.

## 3. Duplex Entrance To Duplex Tray



The duplex feed motor [A] starts after the leading edge of the paper activates the paper exit sensor. This motor drives the duplex feed rollers [B] and the duplex entrance rollers [C]. These rollers direct the paper from the junction gate into the duplex tray.
The tip of the flip mylar [D] moves to the left (front view) when the duplex feed rollers rotate to feed the copy into the duplex tray. The mylar presses the paper against the duplex feed rollers, ensuring that the trailing edge of the paper clears the guide plate.


The duplex turn sensor [E] detects the trailing edge of the paper as it enters the tray.

### 2.10.4 JOGGER MECHANISM



There are two motors for driving the fences. The side fence jogger motor [A] drives the side jogger fences. The end fence jogger motor [B] drives the end jogger fence. Using two separate motors for the side and end fences allows the duplex tray to handle all paper sizes from $A 3 / 11^{\prime \prime} \times 17^{\prime \prime}$ to A5/ 81/2" x 51/2" sideways.

There are two home position sensors. One is for the side jogger fences [C], and the other is for the end fence [D]. When the main switch turns on, the side fence jogger motor and the end fence jogger motor move the side jogger fences and the end fence to their home positions.

When the registration clutch turns on, the side fences move 10.5 mm , and the end fence moves 7 mm away from the selected paper size. Then when the copy paper is delivered to the duplex tray, the jogger fences move inward to square the paper. (This is done 500 ms after the duplex turn sensor detects the trailing edge of the paper. The duplex turn sensor [E] is in the diagram on the previous page.) Shortly after this, the jogger fences move back to their previous positions. After the last copy of the first side copy run enters the duplex tray, the jogger fences remain against the paper stack.

There are two end fences. One [F] is for A3/ $11 \times 17$ " size paper. The other [G] is for sizes smaller than B4. They are included as a unit. When A3/11 x 17 " size paper is in the duplex tray, the end fence unit moves to the left and the B4 end fence rotates down as it is pressed against the end fence stopper $[\mathrm{H}]$.

### 2.10.5 PAPER FEED FROM THE DUPLEX TRAY

## Bottom Plate Lift Mechanism



While the first side is being copied, the duplex feed motor [A] turns clockwise and the cam clutch gear [B] turns counter-clockwise (see the above drawing). Then all copies are stacked in the duplex tray unit.
After the first side copies are done, the duplex feed motor [A] changes direction, and the cam clutch gear [B] turns clockwise. The cam clutch [C] also turns clockwise because of a spring inside the clutch. The pin [D] on the clutch lifts up the duplex lever [ E ] through a spring, raising the duplex bottom plate [F].
Then the duplex feed rollers feed the stacked copies to begin reverse side copying.

## Paper Feed-out mechanism



While paper is stacking in the duplex tray, the paper flatteners $[A]$ correct curl at the leading edge of the paper.
After all the paper is stacked in the duplex tray, the jogger fences square the paper and the duplex feed motor turns counter-clockwise briefly to prepare to feed the paper from the duplex tray. At this time, the bottom plate rises and the duplex feed rollers [B] move the flip mylars [C] back to the right (front view).
The duplex paper feed system consists of three sets of duplex feed rollers and a separation roller [D]. The separation roller has a one-way bearing inside, so it rotates freely during paper stacking and locks during paper feeding. The duplex feed rollers can feed only the top sheet of the stack because the separation roller functions in the same way as a friction pad does.
After the duplex tray runs out the final copy, the paper end feeler [E] drops through a slot in the duplex bottom plate. The duplex paper end actuator [F], which is on the same shaft as the duplex paper end feeler, pivots into the duplex paper end sensor [G]. Then the sensor signals the CPU to stop the next paper feed cycle.

### 2.11 OTHERS

### 2.11.1 SYSTEM CONFIGURATION



The main control board CPU manages the scanner, operation panel, and printer engine to control the entire copier system.

The scanner IPU board CPU controls the scanner motor and image data processing. Both the main control board and the scanner IPU board have flash memory so that their programs can be replaced using a flash ROM card.

The main control board controls the printer controller through the CIVIC interface (this is Ricoh's proprietary parallel colour video interface).

## OTHERS

### 2.11.2 POWER STATES

## Energy Saver Mode

In energy saver mode, all indicators on the operation panel except the Main Power indicator and the LED on the Energy Saver key are turned off and the fusing lamps are held in the standby state.

## Power-off (Sleep) State

The power-off state of this copier conforms to the International Energy Star standard (sleep mode). Of the DC outputs (VAA, VCA, VCB, VCC1, and VCC2) from the PSU, only VCC1 is turned on; all of the other outputs are held off. In this state, power is applied only to the main control board and the operation switch, so that the machine can detect when the operation switch is pressed. In this state, the fusing lamps are off.
When the main board detects that the operation switch was pressed, the machine goes back to standby mode.

## Main Power Switch Off State

When the main power switch is off, all power is shut off except the following heaters, which are always on whenever the power cord is connected to the outlet.

- Optics anti-condensation heater
- Transfer belt heater
- Paper transfer unit heater


## Power State Transition Diagram

The following diagram shows the conditions in which the machine changes from one state to another.

*: LCD panel off mode
**: Power lines are cut except for 5V line

The timers are all programmed by the user.

## OTHERS

### 2.11.3 TOUCH PANEL (A259/A260 MACHINES ONLY)

This copier contains a large full-color LCD ( $640 \times 480$ dots) operation panel. The CPU (LCD controller) on the main control board controls this operation panel.

Using DMA, the scanner IPU stores the display image data generated during area manipulation in the VRAM on the main control board before it is transferred to the operation panel. Image data can be displayed in 256 colors using the 8 -bit color scheme ( 3 bits for R, 3 bits for G , and 2 bits for B ).
The area editing information that the user specifies at the operation panel is sent to the area treatment section in the scanner IPU and used for image processing in synchronization with the scanned data from the original.
The following table shows the resolution of the data. For example, if the user selects Zoom 1, the scale of the display in the editor window on the operation panel is $200 \%$, so the machine generates 50 dpi data to display in the editor window.

|  | Scale |
| :---: | :---: |
| Full display | $100 \%$ |
| Zoom 1 | $200 \%$ |
| Zoom 2 | $264 \%$ |
| Zoom 3 | $394 \%$ |
| Zoom 4 | $528 \%$ |

### 2.11.4 BUS SWITCH BOARD (OPTIONAL)



The printer controller is an option for this copier. The bus switch board interfaces the copier with the controller.

The CIVIC interface between the controller unit and the bus switch board transfers image data on an 8-bits/pixel basis for each color.

The FCI (Fine Character and Image) chip performs image smoothing and line correction. When the user selects smoothing, the FCl converts the image data (8 bits) to 7 bits of image and 1 bit of pixel positioning data, which simulates 1200 dpi resolution across the page.

## INSTALLATION

## 3. INSTALLATION PROCEDURE

### 3.1 INSTALLATION REQUIREMENTS



INSTALLATION REQUIREMENTS

### 3.1.1 DIMENSIONS



### 3.1.2 ENVIRONMENTAL REQUIREMENTS

To ensure the optimum copy quality, the following environmental requirements need to be observed. When installing this copier at the customer site, make sure that the location meets the following requirements.

1. Avoid an area which is exposed to direct sunlight or is excessively illuminated (the illumination should not exceed 2000 lux.).
2. Avoid areas that are too hot and humid or too cold and dry. Standard temperature range: $10^{\circ} \mathrm{C}$ to $32^{\circ} \mathrm{C}$ Standard humidity range: $15 \%$ to $80 \%$
3. Avoid areas near fire or heat.
4. Avoid areas that are exposed to sudden temperature changes. This includes areas where the machine will not be directly exposed to:
1) Cool air from an air conditioner
2) Heat from a heater.
5. Avoid a dusty area (maximum allowable amount of dust: $0.10 \mathrm{mg} / \mathrm{m}^{3}$ ).
6. Avoid a poorly-ventilated area (required minimum ventilation: $30 \mathrm{~m} / \mathrm{hr} / \mathrm{man}$
7. Do not place the machine where it will be exposed to corrosive gases.
8. Place the machine on a level floor (the inclination on any side should be no more than 5 mm ).
9. Do not place the machine where it may be subjected to strong vibrations.
10. Do not install the machine at any location over $2,000 \mathrm{~m}$ ( 6,500 feet) above sea level.
11. If the machine is installed close to other electronic equipment, they may interfere with each other. To avoid this problem:
1) Keep the machine as far away as possible from television sets or radios.
2) Reorient the receiving antenna of television sets and radios as needed.
3) Use a separate outlet for the machine.

## $\triangle$ CAUTION

1. Do not install the machine in a very humid or dusty area.
2. Do not install the machine on a shaky or inclined floor.
3. Completely pull out and hold all four handles when moving the machine. If the handles are not fully pulled out, or if you hold other parts of the machine, your fingers may be caught in the machine and get seriously hurt.
4. Do not lift the A259/260 copier by grasping the operation panel; it may be damaged.
5. When installing the optional paper tray unit, lock the caster wheels. If this is not done, the paper tray unit may fall and hurt someone.
6. When moving the machine after installing the paper tray unit, do not apply force to the upper part of the machine. The copier may fall off the paper tray unit.

### 3.1.3 MINIMUM SPACE REQUIREMENTS

Provide clearance for the copier, as shown below. If one or more options (such as the ADF or sorter stapler) are added to the copier, this clearance should be provided around the entire system.


70 cm (27.5") or more

NOTE: A space of at least $10 \mathrm{~cm}\left(3.9^{\prime \prime}\right)$ at the rear of the machine is important for machine ventilation.

### 3.1.4 POWER REQUIREMENTS

## 

1. Install the machine as close to the outlet as possible. Firmly plug in the machine after installation.
2. Avoid multi-wiring.
3. The power cord should be placed where it cannot be stepped on or flattened by the machine. When installing the machine, route the power cord out of the way of general traffic.
4. Be sure to connect the power cord's grounding wire.
5. Input voltage level:

US Model: $120 \mathrm{~V}, 60 \mathrm{~Hz}$ : More than 12 A
Europe/Asia Model: 220 V to $240 \mathrm{~V}, 50 / 60 \mathrm{~Hz}$ : More than 8 A
Taiwan Model: $110 \mathrm{~V}, 60 \mathrm{~Hz}$ : More than 12 A
2. Permissible voltage fluctuation: $\pm 10 \%$
3. Do not set anything on the power cord.

### 3.2 COPIER INSTALLATION

### 3.2.1 ACCESSORY CHECK

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

## Q'ty

1. Paper Size Decal ..... 1
2. Operating Instructions (not -26/-27 machines) ..... 1
3. Quick Guide (not -26/-27 machines) ..... 1
4. New Equipment Condition Report (-17, -19, -27, -29 machines only) ..... 1
5. User Survey Card (-17 machines only) ..... 1
6. Exit Tray ..... 1
7. Holder for Operating Instructions ..... 1
8. Logging Data Sheet ..... 1
9. Instruction Procedure Sheet (Prevention against counterfeiting) ..... 1
10. Favorite Key Decal (A258 only) ..... 1
11. Precaution Decal (not -26/-27 machines) ..... 1
12. Screw Driver (A258 only) (Keep in the paper tray) ..... 1
13. Editor Pen (A259/A260 only) ..... 1

### 3.2.2 COPIER INSTALLATION PROCEDURE

## Tape Removal



1. Remove the strips of filament tape indicated in the above diagram.

- A258 only -


1. Remove the clamping materials $[A]$ from the paper tray.

- A259/A260 only -


1. Remove the protectors $[B]$ from the metal rollers.
2. Peel off the two pieces of filament tape [C] from the duplex unit and remove the protective sheet [D].
3. While lifting the lower guide plate [E] on the duplex unit, take out the protective sheet [F].

Removing the Inner Transfer Cover and Paper Transfer Locking Screw

[E]



NOTE: Place a mat on the floor to keep the floor clean before doing this procedure.

1. Open the front cover and remove the revolver locking screw [A] and the inner cover [B] (2 screws). Keep revolver locking screw [A] on the drawer unit front panel, for future use.
2. Remove the inner transfer cover [C] (2 screws).
3. Remove the paper transfer locking screw [D]. NOTE: Keep screw [D] for transportation.
4. Remove the charge coronal unit duct cover [E].
5. Remove the charge corona unit with corona cleaner [F] (2 screws).
6. Remove the transfer belt lock stay [G] (1 screw).
7. Remove the transfer belt stay $[\mathrm{H}]$ ( 5 screws).
8. Pull out the drawer unit [I] (2 screws).

NOTE: After pulling out the drawer unit, take one of the following actions to prevent the drum unit from being exposed to external light:

- Pull out the drum unit and shield it with a black sheet or 5 (or more) white sheets of paper (see the next page for a diagram).


## Developer Installation



NOTE: 1) If the drawer unit [A] is left out, the drum is exposed to light. This may cause optical fatigue, resulting in image anomalies (see the Troubleshooting section 7.4). Therefore, after pulling out the drawer unit, remove the drum unit ( 2 connectors $[\mathrm{B}]$ ) and cover it with a black sheet or 5 (or more) white sheets of paper.
2) The revolver unit rotates counterclockwise. Do NOT try to turn it in the other direction.


1. Remove the left revolver stopper [A] from its storage place in the drawer unit (1 screw) and put it in the rear hole $[B]$ in the revolver side panel and in the notch [C] on the drawer unit stay.

## $\triangle$ CAUTION

If you do not install the revolver stopper before removing the development unit, the revolver may rotate, causing permanent damage to the development unit or its holder.
2. Open the locks [D] at both ends of the development unit [E] (1 screw each) and remove the development unit [E].

NOTE: When attaching and detaching the development unit, be sure to turn it in the direction shown in the diagram. Turning the development unit in the wrong direction may cause developer to spill from the toner hopper.

| $\$$ CAUTION |
| :--- |
| Remove the development units one color at a time (never remove two or |
| more development units from the revolver at the same time). Removing two |
| or more development units at the same time may upset the balance of the |
| revolver. This will cause the revolver to revolve by itself and personal |
| injury may occur. |

[^0]
## $\Rightarrow$

3. Remove the developer cover $[A]$ (2 screws).
4. Place the development unit [B] in the developer installation position [C] and pour in 1 bag ( 380 g ) of developer [D].
NOTE: Pour developer into the auger from the development roller side. This speeds the agitation of the developer and prepares it for use more quickly.
5. Place the development unit in the developer scoop-up position [E], rotate the sleeve in the direction of arrow [F] to scoop up developer, then check that the roller is evenly coated with developer from front to rear.
NOTE: Always place developer unit on a level surface.


NOTE: When attaching the developer cover [A], set the cover by pressing both sides [G] as shown below and make sure that the cover is positioned properly. There are 3 cutouts $[\mathrm{H}]$ on the developer cover. When positioning the cover on the development unit, each projection [I] on the development unit should be set into each cutout properly. If the developer cover is not set properly, developer may leak from the gap between the cover and development unit.


6. Replace the developer cover (2 screws) and put the development unit [A] in the drawer unit (2 lock screws [B]).

## $\triangle$ CAUTION

1. When replacing the developer cover, do not apply excessive force to the center [E] of the development unit. The doctor gap will bend, altering the developer scooping efficiency. Hold both sides [D].
2. Make sure that the developer locks (front and rear) are secured with screws before rotating the revolver. This protects the developer assembly and locks from damage.
3. Tighten the developer lock screws firmly. Loose lock screws will cause the PG (Photoconductor Gap) to fluctuate.
4. Remove the revolver stopper [C], rotate the revolver to the next color, then follow the developer installation procedure from step 1.

NOTE: The revolver unit rotates counterclockwise. Do NOT try to turn it in the other direction.

## $\triangle$ CAUTION

If you do not install the revolver stopper before removing the development unit, the revolver may rotate, causing permanent damage to the development unit or its holder.

8. After all the color developers have been installed, return the revolver stopper to the front stay of the drawer unit.
9. Reinstall the drum unit (2 connectors).
10. Close the drawer unit (2 screws).
11. Rotate the revolver unit until the cartridge replacement position with the provided screwdriver tool [A]. This tool is at the front of the paper tray (A258) or in the carton (A259/A260).
12. Remove the dummy toner cap $[B]$.
13. Hold the new toner cartridge horizontally and shake it 5 or 6 times.
14. Remove the seal on the toner cartridge.
15. Insert the toner cartridge with the " $\uparrow$ " mark pointing up [C].
16. Turn the knob clockwise to the " $\boldsymbol{\Delta}$ " mark until it clicks [D]. (Use the other end of the provided screwdriver tool, as shown in the diagram.)
17. Repeat steps 11 to 16 for all colors.

NOTE: 1) Do NOT rotate the revolver unit between removing the dummy toner cap and installing the toner cartridge. Otherwise, toner and developer will spill out from the development unit.
2) The revolver unit rotates counterclockwise. Do NOT try to turn it in the other direction.

## Pressure Release Lever Set-up




1. Install the charge corona unit $[A]$ with the corona cleaner $[B]$ (2 screws).
2. Reinstall the transfer belt stay ( 5 screws).
3. Set up the pressure release lever [C] as follows:
1) Remove the snap ring [E] from the transfer unit.
2) Turn the pressure release lever counterclockwise.
3) Fit the pressure release lever on the pin [D].
4) Secure the pressure release lever with the snap ring [E].
4. Install the inner transfer cover [F] (2 screws).
5. Install the inner cover (see Removing the Inner Transfer Cover and Paper Transfer Locking Screw).

## Installing Fusing Silicone Oil



1. Draw the fusing unit [A] half-way out of the main unit and remove the oil cap [B].
2. Pour in silicone oil [C].
3. Close the oil cap and push the fusing unit back in.
4. Close the front cover.


#### Abstract

$\triangle$ CAUTION Take care not to spill silicone oil on the floor. If silicone oil spills on the floor, wipe it up completely; otherwise, the floor will become slippery and someone could slip and fall.


## Initialization and Function Checks

1. Open the front cover and turn on the main switch.
2. When "Close the Front Cover" is displayed, close the front cover, then enter SP mode. $\left[\boxed{\square} \rightarrow\left(\rightarrow 0 \rightarrow\left(7 \rightarrow{ }^{\circ}\right.\right.\right.$ ]
3. Perform the developer setup procedure for all colors using SP2-225-005, "All Colors." Press 1 and Enter to start this process.
4. When the end-of-setup message appears, look at the code displayed on the operation panel or enter SP mode 3-964 (A258 only) to check that the result is "1" (successful).
NOTE: If the result code is a number other than 1 , consult the error code chart (see the Troubleshooting section).
5. Select the tray paper size (see "Setting the Tray Paper Size" on the next page).
6. After the warm-up procedure ends, check the copy quality in each of the following modes: Text, Photo and Text/Photo.
7. If necessary, do the ACC (Auto Color Calibration) in the User Tools ("Copy Features" $\rightarrow$ "Image Adjustment") to make sure that the chart is printed normally.

## $\triangle$ CAUTION

It is not necessary to adjust the Auto Color Calibration (ACC) unless the customer is unsatisfied with the copy samples. The ACC was factory adjusted. For the detailed auto color calibration procedure, refer to the User Tools section of the Operating Instructions manual for the customer.
8. When using the optional paper tray unit, adjust the registration for each tray if required (see "Replacement and Adjustment - Paper Feed and Registration Copy Image Area Adjustment").

## Setting the Tray Paper Size

First, change the position of the side fences and the end fence in each tray to match the paper size you will be using. Then set the paper size for each tray at the operation panel using the following procedure.

1. Press the "User Tools" key.
2. Make sure that the 'System Settings' menu is selected, then press the "OK" key.
3. Press the "NEXT" key until "Tray Paper Size" is displayed.
4. Press the "OK" key.
5. Select the tray with the $\Delta \square$ keys, then press the "OK" key.
6. Select the required size with the $\Delta \bullet$ • keys, then press the "OK" key.
7. Repeat steps 5 and 6 for each paper feed tray.
8. Press the "User Tools" key to exit the User Tools.
9. Make sure that the paper size in the trays matches the size that you just set up with the user tools.

## Setting the Language and Unit of Measurement

When the required language is other than English, French, German, Italian and Spanish, the main program for that language must be downloaded to the main control board. Then, the desired language can be selected. (Replacement and Adjustment - System and Electronics - Main Program Downloading)

- SP5-009-001 -

| Setting Value | Language | Setting Value | Language |
| :---: | :--- | :---: | :--- |
| 0 | Japanese (not <br> available) | 8 | Danish |
| 1 | English | 9 | Swedish |
| 2 | French | 10 | Norwegian |
| 3 | German | 11 | Czech |
| 4 | Spanish | 12 | Polish |
| 5 | Italian | 13 | Russian |
| 6 | Portuguese | 14 | Brazilian <br> Portuguese |
| 7 | Dutch | 15 | Taiwan Chinese |

The following procedure outlines how to change the machine language.

1. Enter SP mode.
2. Enter SP5-009-001 "Display Language".
3. Enter the appropriate value from the above table.
4. If necessary, change the measurement to either Standard (inches) or Metric (millimeters) with SP5-009-002.
0 : Metric (mm) 1: Standard (inches)
NOTE: By using SP5-009-002, the display for the unit measurement and the Enlargement/Reduction ratio shifts.
5. Turn the machine off/on and check the language and unit measurement on the LCD.

## Resetting the Counter

1. Enter the SP mode.
2. Enter SP7-825, "Total Counter 0 Reset."
3. Quit SP mode and make sure that the counter shows zero using the [Counter] key on the operation panel.
4. If necessary change the value of SP 7-008 to 2 to change the counter value from developments to copies

### 3.2.3 RELOCATION PROCEDURE



1. Remove the inner transfer cover [A] and release the belt pressure as shown:
1) Take off the snap ring (1) and pull the lever off the pin (2).
2) Move the lever down (3) and put the snap ring back on (4).
2. Reinstall the transfer unit bracket and the inner transfer cover.
3. Install the revolver locking screw [B] into the development unit through the H.P detector board using the special screwdriver tool [C] stored in the paper tray.
4. Install the paper transfer locking screw [D].
5. Reinstall the transfer unit bracket.

| $\$$ CAUTION |
| :--- | :--- |
| After removing the lock screws after reinstallation, keep them in a safe <br> location, because you will need them later. |

### 3.3 PAPER TRAY UNIT (A832/A833)

### 3.3.1 ACCESORY CHECK

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

1. Right Support Bracket ..... 1
2. Left Support Bracket ..... 1
3. Screw Driver (in the first tray) ..... A832: 1
A833: 1
4. Joint Screw ..... 2
5. Screw - M4 x 8 ..... 4
6. Installation Procedure ..... 1

### 3.3.2 INSTALLATION



## . CAUTION

Unplug the copier power cord before starting the following procedure.

1. Remove the strips of tape as shown.
2. Set the copier $[A]$ on the paper tray unit $[B]$.


3. Open the right door $[\mathrm{A}]$ of the paper tray unit.
4. Secure the copier to the paper tray unit with the joint screw [B].
5. Remove the connector cover [C] from the rear cover of the copier ( 1 screw).
6. Connect the cable [D].
7. Secure the copier to the paper tray unit with the joint screw [E].
8. Attach the connector cover [C] to the rear cover of the copier ( 1 screw).

9. Attach the support brackets $[A]$ to the bottom of the paper tray unit as shown (4 screws).

## $\triangle$ CAUTION <br> If you do not attach the support brackets, the machine may fall forwards when the paper trays are pulled open.

10. Pull out the paper tray and load paper into it. (The paper size and direction for each tray should be designated by the customer.) Position the side and rear fences properly.
11. Turn on the main switch.
12. Enter the proper paper size for each tray by following the procedure in the copier's manual.
13. Attach the appropriate tray decals [B] which are included in the accessory box with the main copier.

## TRAY HEATER (OPTION)




1. Remove all the trays (A832: 2 trays, A833: 3 trays).
2. A832 only: Remove the lower front cover ( 2 screws).
3. Remove the rear cover ( 4 screws).
4. Install the heater $[A]$ ( 3 screws and 1 clamp [B]).

NOTE: The heater should be installed at the right side on the frame.
5. Install the radiator plate [C] (1 screw).
6. Install the 9 clamps [D] as shown.
7. Connect the cable [E] to the heater and the copier ( 9 clamps and 2 screws).

NOTE: After replacing the paper tray, adjust the side-to-side registration (see Replacement and Adjustment - Paper Feed and Registration).

### 3.4 PLATEN COVER (A749-01)



1. Cut the platen holder cover $[A]$ out of the upper rear cover $[B]$ with wire cutters.
2. Insert the platen holders [C] as shown (1 screw for each).
3. Install the platen cover [D] as shown.
4. Attach the caution decal [E] which comes with the copier as shown.

### 3.5 ARDF (A663)

### 3.5.1 ACCESSORY CHECK

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

1. New Equipment Condition Report ..... 1
2. Installation Procedure ..... 1
3. Stud Screw ..... 1
4. Philips Screw with Flat Washer $-\mathrm{M} 4 \times 10$ ..... 2
5. Sponge Retainer ..... 1

### 3.5.2 INSTALLATION



## . CAUTION

Unplug the copier power cord before starting the following procedure.

1. Remove the strips of tape $[A]$.
2. Stick the sponge retainer $[B]$ on the top cover of the copier as shown.
3. Tighten the two stud screws [C].
4. Mount the ARDF by aligning the holes [D] in the ARDF and the stud screws [C], then slide the ARDF towards the front as shown.
NOTE: When mounting the ARDF, hold it by hand as shown in the illustration. Holding it in another way may damage the ARDF.
5. Screw the two stud screws $[E]$ into the holes $[F]$ and tighten them.
6. Connect the connectors [G] into the socket on the rear of the copier.
7. Attach the symbol explanation decal $[\mathrm{H}]$, the combine originals explanation decal [I], and the caution decal [J] which comes with the copier to the ARDF as shown.
3.6 20-BIN SORTER STAPLER (A834)
3.6.1 ACCESSORY CHECK
Check the quantity and condition of the accessories in the box with the following list:
Description ..... Q'ty
8. Staple Position Decal ..... 1
9. Chain ..... 1
10. Cap Remover ..... 1
11. Stepped Screw. ..... 6
12. Installation Procedure ..... 1

### 3.6.2 INSTALLATION



## .CAUTION <br> Unplug the copier power cord before starting the following procedure. When handling the sorter stapler, make sure to hold the parts shown [A]. Otherwise, the resulting damage may cause paper jams at the entrance.

NOTE: 1) Keep the shipping retainers after installing the machine. They will be reused if the machine will be transported to another location.
2) Proper reinstallation of the shipping retainers is required in order to avoid any transport damage.

1. Remove the strips of tape and the shipping retainers, as shown.
2. Open the front door $[B]$ and remove the pieces of cardboard $[C]$ and the strip of tape [D] from the staple unit. Close the front door.

[A]

3. Remove the two plastic caps [A] from the copier left cover with nippers or a small screw driver.
4. Release lever $[B]$ on the sorter stapler and remove the sorter stapler mounting frame [C], as shown.

5. Mount the sorter stapler mounting frame [A] on the copier, as shown (5 screws M4 x 20).
When hooking the sorter stapler mounting frame on the left side of the copier, make sure that the positioning hooks $[\mathrm{B}]$ on the frame are properly inserted in the positioning holes [C] in the copier.

6. Install the sorter stapler [A] on the frame (2 hinge pins at the rear), as shown.
7. Tighten the $\mathrm{M} 4 \times 20$ screw [B].

NOTE: This screw prevents the sorter stapler from falling down.
8. Connect the cable [C] and the optic cable [D].
9. Install the chain $[E]$ as shown.
10. Attach the staple position decal [F], as shown.
11. Plug in the copier.
12. Turn on the main switch of the copier and test the operation of the sorter stapler.
NOTE: The copier automatically recognizes that the sorter stapler has been installed.

### 3.7 10-BIN SORTER STAPLER (A555)

### 3.7.1 ACCESSORY CHECK

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

1. Misfeed Removal Decal ..... 1
2. Staple Position Decal ..... 1
3. Chain ..... 1
4. Cap Remover ..... 1
5. Philips Pan Head Screw $4 \times 8$ ..... 1
6. Philips Pan Head Screw $4 \times 14$ ..... 4
7. New Equipment Condition Report ..... 1
8. Installation Procedure ..... 1

### 3.7.2 INSTALLATION



> $\triangle$ CAUTION
> Unplug the copier power cord before starting the following procedure.
> Do not lift the sorter stapler by holding the entrance
> guide [A]. Otherwise, the resulting damage may cause paper jams to occur at the entrance.

1. Remove the strips of tape.
2. Remove the cardboard pieces $[B]$ and the foam blocks $[C]$.

[C]


3. Remove the caps $[A]$ with nippers, and remove the mounting frame $[B]$ from the sorter stapler by releasing the lever [C].
4. Remove the exit paper guide $[D]$ from the mounting frame $[B]$.

5. Fit the hooks $[A]$ on the sorter stapler mounting frame into the holes $[B]$. Then tighten four M4 x 14 screws.

6. Install the sorter stapler [A] on the frame ( 1 screw M4 x 8).

NOTE: Do not lift the sorter stapler by holding the entrance guide [B] when installing it.
7. Tighten the $\mathrm{M} 4 \times 8$ screw [C].

NOTE: This screw prevents the sorter stapler from falling down.
8. Connect the cable [D] and the optic cable [E].
9. Install the chain $[F]$ as shown.
10. Attach the misfeed removal decal [G] and the staple position decal [H] as shown above.

11. Open the front door $[A]$ of the sorter stapler and swing the stapler unit $[B]$ down.
12. Remove the green plastic clip [C] from the staple cartridge and correct the position of the staple sheet [D] if necessary.
13. Install the cartridge [ $E$ ] in the stapler while holding the stapler unit.
14. Put the stapler unit back to the original position, close the sorter stapler front door, and plug in the copier.
15. Turn on the main switch, and test the operation of the sorter stapler.

NOTE: The stapler will not be stapling for the first 5 or so copies until the first staple comes to the proper position from the cartridge.
3.8 3-BIN SORTER (A849)
3.8.1 ACCESSORY CHECK
Check the quantity and condition of the accessories in the box against the followinglist.
Description ..... Q'ty

1. Installation Procedure ..... 1
2. Connecting Bracket ..... 1
3. Arm Bracket ..... 1
4. Copy Tray ..... 4
5. Decal - Paper Size Detector ..... 1
6. Tapping Screw - M4X10. ..... 2
7. Snap Ring ..... 1
8. Shoulder Screw ..... 1

### 3.8.2 INSTALLATION



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

1. Remove the strips of tape.
2. Remove the connecting bracket from the side of the sorter.
3. Remove the two caps from the copier left cover with nippers or a small screwdriver.
4. Install the connecting bracket $[A]$ as shown (4 screws).
5. Remove the front cover [B] (3 screws) and rear cover [C] (3 screws).
6. Install the tray [D] with 2 tapping screws $-\mathrm{M} 4 \times 10$.

NOTE: When you install the tray, make sure it is flush with the metal brackets as shown [E]. If it is not flush, the stack height sensor will not detect the upper position of the bin correctly. Then the machine might display SC732 (tray lift motor error).

7. Install the sorter unit $[A]$ on the frame.
8. Install the shoulder screw $[B]$ to lock the sorter unit in place.
9. Mount the arm bracket [C] with 1 clip [D].
10. Install the trays [E].
11. Reinstall the front and rear covers.
12. Connect the cable [F] and the optic cable [G].
13. Turn the copier's main switch on and check the sorter operation.

### 3.9 FILM PROJECTOR TABLE (A702-19)



1. Remove the upper right cover $[A]$ ( 1 screw).
2. Install the table $[B]$ (7 screws).

3. Install the lower cover [A] (2 screws).
4. Install the table cover [B].
5. Install the joint cover [C].

### 3.10 FILM PROJECTOR UNIT (A846)

### 3.10.1 ACCESSORY CHECK

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

1. Mirror Unit ..... 1
2. Power Cord ..... 1
3. Film Strip Holder ..... 1
4. Slide Holder ..... 1
5. Glass Mount Holder ..... 1
6. Base Film (Fuji, Kodak, Agfa) ..... 3
7. Slide Mount ..... 1
8. Correction Filter (P, N) ..... 2
9. Blower Brush ..... 1
10. Projection Lamp ..... 1
11. Film Position Sheet ..... 2
12. Philips Pan Head Screw -M3 $\times 12$ ..... 5
13. Installation Procedure ..... 1

### 3.10.2 INSTALLAITON



## $\triangle$ CAUTION

Unplug the copier power cord before starting the following procedure.
NOTE: The film projector table (A702-19) must be installed before starting the following procedure.

1. Place the projector unit $[A]$ on the table by aligning the holes in the projector base plate with the positioning pins [B]. Then secure the projector unit with five M3 $\times 12$ screws.

2. Remove the lamp cover [A] (1 screw) and open the reflector cover [B]. Then, plug the projector lamp [C] into the socket. Then close the reflector cover. NOTE: The projector lamp should be inserted horizontally until it stops.
3. Remove the cover [D] (2 rubber caps, 4 screws).
4. Remove the inner cover [E] (2 screws).

5. Connect the optical fiber cable $[A]$ to the copier.
6. Connect the power cord $[B]$ to the power inlet and plug it into the wall outlet.

| $\triangle$ WARNING |
| :--- |
| After plugging the power cord into the wall outlet, do not touch the <br> electrical components inside the projector unit. Otherwise, you might <br> receive an electrical shock. |


7. Place the film position sheet [A] on the exposure glass, aligning it at the rear left corner.
NOTE: "D" is written at the corner mark [D] on the film position sheet for the A258/A259/A260 copiers.
8. Put the mirror unit $[\mathrm{B}]$ on the exposure glass by aligning the holes with the positioning pins [C] on the lens cover.

9. Set the film strip holder $[A]$ into the film projector unit at the base film setting position.
NOTE: Push the film strip holder lightly to confirm that the film strip holder is set correctly.
10. Turn on the test switch $[B]$ on the projector control board and turn on the projector unit main switch [C].
> $\triangle$ CAUTION
> The lamp housing and reflector [D] will become very hot. The lamp cooling fan [E] will start turning suddenly when the lamp housing temperature becomes high. Keep hands away from these components to avoid any injury.
11. Loosen the wing nut [F].
12. Adjust the position of the projected light by turning the dial [G] with a hexagon wrench $[\mathrm{H}]$ until it is at the center of the $4^{\prime \prime} \times 5$ " frame [I] which is reflected in the mirror unit.
13. Tighten the wing nut [F].
14. Turn off the projector main switch and the test switch.
15. Reinstall the lamp cover and other covers.

16. Adjust the angle [ A ] of the mirror unit as follows:

1) Turn on the copier main switch and wait for the ready condition.
2) Open the lens cover and position the mirror unit on the exposure glass.
3) Set the correction filter $[B]$ for positive films in the filter slot.
4) Turn on the projector main switch and press the Option key.
5) Perform shading using the positive 35 mm slides mode.
6) Set one of the orange base films in the slide holder and position it in the projector unit.
7) Make a copy of the orange film.
8) Check if the orange image is even or not. If the image is uneven, adjust the mirror angle as follows:
8-1) When the leading part is dark [C].
a) Move the front and rear arm guides [D] to the left so that the mirror angle is increased (2 screws each).
NOTE: Position the arm guides at the same location at front and rear, using the ruler decals. This prevents the mirror from being twisted.
b) Make a copy of the orange film.
c) Repeat $a$ ) and b) until the orange image becomes even.


8-2) When the trailing part is dark [A].
a) Move the front and rear arm guides [B] to the right so that the mirror angle is increased (2 screws each).
NOTE: Position the arm guides at the same location at front and rear, using the ruler decals. This prevents the mirror from being twisted.
b) Make a copy of the orange film.
c) Repeat $a$ ) and b) until the orange image becomes even.
17. Check some copies made from positive or negative films.

### 3.11 CONTROLLER INTERFACE TYPE E (A848)




## \. CAUTION

Unplug the copier power cord before starting the following procedure.

1. Remove the lower rear cover [A] (3 screws).
2. Remove the upper rear cover $[B]$ ( 4 screws).
3. Remove the rear right cover [C] (1 screw).
4. Remove the right cover [D] (1 screw).
5. A259/A260 only: Remove the shield cover [L] (3 screws).
6. Attach the I/F bracket [E] to the right rear side of copier ( 1 screw, 1 screw with washer [F]).
7. Attach the I/F unit [G] to the I/F bracket [H] (1 snap ring [I]).

NOTE: Route the power supply cord $[\mathrm{K}]$ to the rear side of copier (1 clamp [J]).

8. Attach 2 clamps $[A]$ to the rear bracket of the copier.
9. Connect the power supply cord [B].
10. Remove the main board [C] (A258: 11 connectors and 7 screws, A259/A260:14 connectors and 7 screws).
11. Remove the shorting cable [D].

NOTE: Store this cable somewhere inside the machine because it may be needed again.
12. Connect the 100 pin shield cable [E] to the LD main board (1 grounding wire [H], 1 clamp [I]).
13. Reinstall the main board [C] (14 connectors, 7 screws).
14. Connect the I/F cable [F] to CN305 on the main board and clamp it as shown (1 grounding wire [J] and 1 clamp).
15. Install the cable shield plate [G] (2 M4 $\times 6$ screws [K] and $1 \mathrm{M} 3 \times 6$ screw [L]).


16. Remove the operation panel [A] (A258: 2 screws, 1 connector and 1 grounding wire (European model), A259/260: 2 screws, 2 connectors, 2 grounding wires, and 1 flat cable).
17. Remove the LCD cover [B].
18. Install the LCD panel [C].
19. Connect the LCD cable [D] to the LCD panel and CN314 on the main board and clamp it (3 clamps, 1 grounding wire [E]).
[B]


20. Secure the I/F unit [A] to the copier ( 3 screws, 1 screw with washer $[B]$ ).
21. Install the printer controller [C] in the I/F unit [A]. (4 screws)
22. Reinstall the operation panel ( 2 screws), the right cover ( 1 screw ), and rear right cover (1 screw).
23. Install the I/F cover [D] (4 screws).
24. Reinstall the lower rear cover (3 screws).

NOTE: When the machine is equipped with an ARDF, install the clamp from the interface kit accessories on the top of the interface cover [D] to prevent the fibre optic cable from being cut.
$\Rightarrow 25$. Turn on the machine.
If the machine is A259 or A260, skip the remainder of this step.
For A258 machines, use SP7-801-000 to confirm that the firmware version of the main control board is v.6.43 or later. If it's not, the copier's firmware must be upgraded (for the controller connection).
26. Change SP3-125-000 from 0 (Default) to 2.
27. Enter SP3-126-000 then: press 1 and \# for the A258 OR press ON for A259/260.
28. After doing the forced process control self check, check that the result is " 1 " (successful) using SP3-975. (A259/260 machine automatically displays the result on the screen.) If the result code is a number other than 1 , consult the error code chart (see the troubleshooting section of the service manual).
29. Do the ACC for printer. If necessary, do the AutoCal of the controller calibration.
30. Check SP6-910-000. The setting should be "1" for the controller.

In order for the copier to function properly as a printer, the following settings must be made:

- AOF (Keep it on) set to OFF keeps the copier from going off in the middle of an operation.
- Interleave Print set to ON allows copier to switch automatically between copy and print.
- Control Panel Off set to OFF keeps the copier from blanking out.
- System Reset set to OFF keeps the copier from resetting in the middle of an operation. le. calibration


### 3.12 OTHERS

### 3.12.1 ORIGINAL TABLE INSTALLATION PROCEDURE



1. Remove two caps [A] from the main unit cover.
2. Insert the shoulder screws [B]. Do not tighten them yet.
3. Mount the original table [C] so that it hangs on the shoulder screws.
4. Tighten the shoulder screws.

### 3.12.2 KEY COUNTER HOLDER INSTALLATION PROCEDURE



1. Remove the right front cover from the main unit (1 screw).
2. Cut away a section $[A]$.
3. Plug in the connector $[B]$ for the key counter holder.
4. Secure the key counter holder on the main unit (2 screws).
5. Replace the right front cover ( 1 screw ).
6. To enable the key counter function, enter "2" in SP5-113.

## SERVICE TABLES

## 4. SERVICE TABLES

### 4.1 SERVICE PROGRAM (SP) MODES

### 4.1.1 HOW TO ENTER SP MODE

Follow the procedure shown below to enter SP mode.
(1)

(7)
©

1) Press the clear modes key and enter 107.
2) Then hold down the clear/stop key for more than 3 seconds.

A service program number is composed of first, second, and third level numbers (Class 1, Class 2, and Class 3). Class 1 is 1 digit and the other classes are 3 digits. You can enter the complete 7-digit number with the numeric keypad and the enter key to display an SP mode menu directly. You can also use the selection keys under the LCD to change the class and to select a menu item.

## Reference

Use the $\approx \mp$ key when making a copy in an SP mode. To return to SP mode after making a copy, press the $<\square$ key again.

### 4.2 SP MODE TYPES

The SP modes for this copier are divided into the following seven groups:

1. Paper feed/transport/fusing
2. Drum unit
3. Process control
4. Scanner
5. Operating mode/system
6. Peripheral
7. Logged data
8. Special mode set-up

### 4.3 SP MODE TABLE

See Appendix B.

### 4.4 SP MODE ADDITIONAL NOTES

### 4.4.1 SP5-804 OUTPUT CHECK

| No. for Class 3 | Load Name | Actual Display | A258 | A259/A260 |
| :---: | :---: | :---: | :---: | :---: |
| 001 | Drum motor, standard speed, forward | DRUM MT 1ST CW | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 002 | Drum motor, half speed, forward | DRUM MT 2ND CW | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 003 | Drum motor, standard speed, backward | DRUM MT 1ST CCW | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 004 | Drum motor, 2/3 speed | DRUM MT 3RD CW | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 005 | Fusing motor, standard speed | FUSER MT 1ST | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 006 | Fusing motor, half speed | FUSER MT 2ND | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 007 | Fusing motor, 2/3 speed | FUSER MT 3RD | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 008 | Paper feed motor, standard speed | PAPER FEED MT 1ST | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 009 | Paper feed motor, half speed | PAPER FEED MT 2ND | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 010 | Paper feed motor, $2 / 3$ speed | PAPER FEED MT 3RD | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 014 | High voltage supply board: T1 PCC | PCC BS | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 015 | Quenching Lamp | QL | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 016 | Charge corona/grid | MAIN GC | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 017 | Development bias AC | DEV BS AC | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 018 | Development bias DC | DEV BS DC | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 019 | Development bias AC + DC | DEV BS AC DC | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 021 | ID sensor LED | P SEN LED | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 022 | Development clutch | DEV CL | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 023 | Paper transfer positioning clutch | P TRNS SET CL | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 024 | Fusing clutch | FUSER CL | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 025 | Toner supply motor | TONER ADD MT | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 026 | Revolver current during rotation | REV CRNT ROTA | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 027 | Revolover current during development | REV CRNT DEV | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 028 | Revolver current during standby | REV CRNT WAIT | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 029 | Revolver 90-degree rotation | REV MT 90 | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 030 | Revolver 45-degree rotation | REV MT 45 | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 035 | Belt transfer bias | B TRNS BS | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 036 | Belt cleaning clutch | BELT CLN SET CL | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 037 | Lubricant brush clutch | SWEEP SET CL | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 041 | Paper transfer bias | P TRNS BS | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 043 | Polygon motor | PLY MT 600DPI | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 044 | Power relay | PRT POWER RELAY | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 045 | Fusing roller heater | FUSER UPPER HT | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 046 | Pressure roller heater | FUSER LOWER HT | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 047 | Rear cooling fan motor | MC FAN | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 048 | Transport fan motor | FF FAN | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |


| No. for Class 3 | Load Name | Actual Display | A258 | A259/A260 |
| :---: | :---: | :---: | :---: | :---: |
| 049 | Main exhaust fan motor | EXH FAN | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 050 | Fusing fan motor, high speed | FUSER FAN H SPD | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 051 | Fusing fan motor, half speed | FUSER FAN L SPD | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 053 | Charge corona fan motor | PLY FAN | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 059 | By-pass feed clutch | PF MAN CL | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 060 | By-pass pick-up solenoid | PICK UP MAN SOL | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 063 | 1st tray paper feed clutch | PF 1ST CL | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 066 | 2nd tray paper feed clutch | PF 2ND CL | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 069 | 3rd tray paper feed clutch | PF 3RD CL | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 072 | 4th tray paper feed clutch | PF 4TH CL | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 075 | 1st tray lift motor, forward | TRAY UP 1ST MT UP | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 076 | 1st tray lift motor, backward | TRAY UP 1ST MT DOWN | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 077 | 2nd tray lift motor, forward | TRAY UP 2ND MT UP | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 078 | 2nd tray lift motor, backward | TRAY UP 2ND MT DOWN | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 079 | 3rd tray lift motor, forward | TRAY UP 3RD MT UP | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 080 | 3rd tray lift motor, backward | TRAY UP 3RD MT DOWN | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 081 | 4th tray lift motor, forward | TRAY UP 4TH MT UP | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 082 | 4th tray lift motor, backward | TRAY UP 4TH MT DOWN | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 086 | Registration clutch | REG CL | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 087 | Relay clutch | PF MID CL | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 088 | Junction gate solenoid | SEP SOL | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 089 | Duplex feed motor, forward, standard speed | DPLX FEED MT CW | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 090 | Duplex feed motor, forward, 2/3speed | DPLX FEED MT 2P3CW | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 091 | Duplex feed motor, backward, standard speed | DPLX FEED MT CCW | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 092 | Duplex feed motor, backward, $2 / 3$ speed | DPLX FEED MT 2P3CCW | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 093 | Duplex side fence jogger motor, forward | DPLX SF MT CW | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 094 | Duplex side fence jogger motor, backward | DPLX SF MT CCW | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 095 | Duplex end fence jogger motor, forward | DPLX EF MT CW | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 096 | Duplex end fence jogger motor, backward | DPLX EF MT CCW | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 097 | PSU fan motor | EXHAUST FAN | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 100 | Optics cooling fan motor | SCN FAN0 | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 101 | Scanner exhaust fan motor | SCN FAN1 | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 104 | Scanner motor | SCN REIGI OFF | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 105 | Exposure lamp | SCN SP LAMP | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 106 | Power relay: scanner | SCN PWR RELAY | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 107 | FPU lamp | SCN SP FPU LAMP | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 120 | Sorter main motor | SS PROOF MT | $\begin{gathered} \mathrm{ON}=1, \mathrm{OFF}=0 \\ \mathrm{SRC} \end{gathered}$ | ON, OFF SRC |


| No. for Class 3 | Load Name | Actual Display | A258 | A259/A260 |
| :---: | :---: | :---: | :---: | :---: |
| 124 | Bin lift motor | SS BIN LIFT MT | $\begin{gathered} \mathrm{ON}=1, \mathrm{OFF}=0 \\ \mathrm{SRC} \end{gathered}$ | ON, OFF SRC |
| 127 | Grip motor | SS CHACK MT | $\begin{gathered} \mathrm{ON}=1, \mathrm{OFF}=0 \\ \mathrm{SR} \end{gathered}$ | ON, OFF SR |
| 129 | Stapler motor | SS STAPLER MT | $\begin{gathered} \mathrm{ON}=1, \mathrm{OFF}=0 \\ \mathrm{SR} \end{gathered}$ | ON, OFF SR |
| 131 | Jogger motor | SS JOGGER MT | $\begin{gathered} \mathrm{ON}=1, \mathrm{OFF}=0 \\ \mathrm{SR} \end{gathered}$ | ON, OFF SR |
| 132 | Tray shift motor | SS SIFT MT | $\begin{gathered} \mathrm{ON}=1, \mathrm{OFF}=0 \\ \mathrm{C} \end{gathered}$ | ON, OFF C |
| 133 | Junction gate solenoid | SS JOGGER MT | $\begin{gathered} \mathrm{ON}=1, \mathrm{OFF}=0 \\ \mathrm{C} \end{gathered}$ | ON, OFF C |
| 134 | 2 bin gate solenoid | SS 2BIN SOL | $\begin{gathered} \mathrm{ON}=1, \mathrm{OFF}=0 \\ \mathrm{C} \end{gathered}$ | ON, OFF C |
| 135 | 3 bin gate solenoid | SS 3BIN SOL | $\begin{gathered} \mathrm{ON}=1, \mathrm{OFF}=0 \\ \mathrm{C} \end{gathered}$ | ON, OFF C |
| 150 | ADF feed-in motor, forward | ADF IMOTOR F | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 151 | ADF feed-in motor, backward | ADF IMOTOR R | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 152 | ADF belt drive motor, forward | ADF BMOTOR F | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 153 | ADF belt drive motor, backward | ADF BMOTOR R | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 154 | ADF feed-out motor, forward | ADF OMOTER F | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 155 | ADF inverter solenoid | ADF SOL | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |
| 156 | ADF display LED | ADF LED DIS | $\mathrm{ON}=1, \mathrm{OFF}=0$ | ON, OFF |

S : 10 BIN SORTER
R : 20 BIN SORTER
C : 3 BIN SORTER

### 4.4.2 SP5-803 INPUT CHECK

## Printer

| No. for <br> Class 3 | Sensor/Switch Name | Actual Display | Condition |  |
| :---: | :--- | :--- | :--- | :---: |
| 001 | Drum motor lock | SEN DRUM MT LOCK |  | 0 (Lock) |
| 002 | Fusing motor lock | SEN FUSER M LOCK |  | 0 (Lock) |
| 003 | Paper feed motor lock | SEN PF MT LOCK |  | 0 (Lock) |
| 006 | Polygon motor lock | SEN PLY MT LOCK | 1 (Lock) |  |
| 009 | Toner cartridge | SEN T CARTRIGE |  | 0 (Set) |
| 010 | Toner end | SEN TE |  | 0 (End) |
| 011 | Paper transfer home position | SEN BERT MARK | 1 (Contact) | 0 (Release) |
| 012 | Belt cleaning home position | SEN BTCLN POSTN | 1 (Release) | 0 (Contact) |
| 013 | Used toner | SEN DUST TONER | 1 (Full) | 0 |
| 014 | 1st tray upper limit | SEN TRAY1 UP | 1 (ON) |  |
| 015 | 2nd tray upper limit | SEN TRAY2 UP | 1 (ON) |  |
| 016 | 3rd tray upper limit | SEN TRAY3 UP | 1 (ON) |  |
| 017 | 4th tray upper limit | SEN TRAY4 UP | 1 (ON) |  |
| 019 | 2nd vertical transport | SEN PAPER TX2 |  | 0 (PE) |

## SP MODE ADDITIONAL NOTES

| No. for Class 3 | Sensor/Switch Name | Actual Display | Condition |  |
| :---: | :---: | :---: | :---: | :---: |
| 020 | 3rd vertical transport | SEN PAPER TX3 |  | 0 (PE) |
| 021 | 4th vertical transport | SEN PAPER TX4 |  | 0 (PE) |
| 022 | Relay | SEN PAPER TX1 | 1 (PE) |  |
| 023 | 1st tray paper end | SEN TRAY1 PE |  | 0 (PE) |
| 024 | 2nd tray paper end | SEN TRAY2 PE | 1 (PE) |  |
| 025 | 3rd tray paper end | SEN TRAY3 PE | 1 (PE) |  |
| 026 | 4th tray paper end | SEN TRAY4 PE | 1 (PE) |  |
| 027 | By-pass feed paper end | SEN MANFEED PE |  | 0 (PE) |
| 038 | By-pass paper width detection SW 1 | SEN SIZ SW MAN 1 | 1 (ON) |  |
| 039 | By-pass paper width detection SW 2 | SEN SIZ SW MAN 2 | 1 (ON) |  |
| 040 | By-pass paper width detection SW 3 | SEN SIZ SW MAN 3 | 1 (ON) |  |
| 041 | By-pass paper width detection SW 4 | SEN SIZ SW MAN 4 | 1 (ON) |  |
| 047 | Paper height sensor 1 | SEN STACK SW 11 | 1 (ON) |  |
| 048 | Paper height sensor 2 | SEN STACK SW 12 | 1 (ON) |  |
| 049 | Paper tray detector switch | SEN TRAY1 SET |  | 0 (Set) |
| 051 | By-pass feed table switch | SEN MANNFEED SET | 1 (Open) |  |
| 052 | Registration | SEN REGIST |  | 0 (PE) |
| 053 | Duplex unit side fence jogger home position | SEN DPLX SIDE HP |  | 0 (HP) |
| 054 | Duplex unit end fence jogger home position | SEN DPLX END HP |  | 0 (HP) |
| 055 | Duplex entrance | SEN DPLX IN | 1 (PE) |  |
| 056 | Duplex turn | SEN DPLX RVS |  | 0 (PE) |
| 057 | Duplex paper end | SEN DPLX PE |  | 0 (PE) |
| 058 | Duplex unit set | SEN DPLX SET |  | 0 (Set) |
| 059 | Paper exit | SEN FUSER EXIT | 1 (PE) |  |
| 060 | Fusing oil end | SEN OIL END |  | 0 (End) |
| 062 | Front door switch | SEN FRONT DOOR |  | 0 (Open) |
| 063 | Vertical transport switch | SEN BANK DOOR |  | 0 (Open) |
| 065 | Paper exit door | SEN EXIT DOOR |  | 0 (Open) |
| 066 | PCC leak | SEN PCC LEAK |  | 0 (Leak) |
| 067 | Separation charge corona leak | SEN SEP CHG LEAK |  | 0 (Leak) |
| 068 | Charge corona leak | SEN MAIN CH LEAK |  | 0 (Leak) |
| 072 | Key counter | SEN KEY COUNTER |  | 0 (OK) |
| 073 | Key card | SEN KEY CARD |  | 0 (OK) |
| 074 | Counter check 1 | SEN ELC CHECK1 |  | 0 (Check) |
| 075 | Counter check 2 | SEN TOTAL CNT2 |  | 0 (Check) |
| 076 | 2nd tray detector switch | SEN TRAY2 SET | 1 (Set) |  |
| 077 | 3rd tray detector switch | SEN TRAY3 SET SEN | 1 (Set) |  |
| 078 | 4th tray detector switch | SEN TRAY4 SET SEN | 1 (Set) |  |

Scanner

| No.for <br> Class 3 | Sensor/Switch Name | Actual Display | Condition |  |
| :---: | :--- | :--- | :--- | :--- |
| 100 | Scanner home position | HOME SENCER | 1 (Set) |  |
| 101 | Platen cover position | ATSUBAN SENSER | 1 (Set) |  |

## Sorter

| No. for Class 3 | Name | Actual Display | Sorter type | Condition |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 120 | Entry | SEN SS ENTER SEN | C | $\begin{aligned} & 1 \text { (Paper } \\ & \text { empty) } \end{aligned}$ |  |
| 121 | Proof (1 bin paper exit) | $\begin{aligned} & \text { SEN SS PROOF EX } \\ & \text { SEN } \end{aligned}$ | C |  | $\begin{gathered} 0 \text { (Paper } \\ \text { empty) } \\ \hline \end{gathered}$ |
| 122 | Entry (2-bin paper exit) | SEN SS ENTRY SEN | SRC |  | $\begin{gathered} 0 \text { (Paper } \\ \text { empty) } \\ \hline \end{gathered}$ |
| 123 | Bin (3-bin paper exit) | SEN SS PAPER EXST SEN | SRC |  | $\begin{aligned} & 0 \text { (Paper } \\ & \text { empty) } \end{aligned}$ |
| 124 | Bin home (lift lower limit) | SEN SS BIN HP SEN | SRC | 1 (HP) |  |
| 125 | Bin rotation | SEN SS BIN ROTA SEN | SR | 1 (HP) |  |
| 128 | Jogger home (shift position) | $\begin{aligned} & \text { SEN SS JOGGER HP } \\ & \text { SEN } \end{aligned}$ | SRC | 1 (HP) |  |
| 129 | Grip home | $\begin{array}{lrr} \hline \text { SEN SS } & \text { CHACK } \\ \text { MOVE HP } & \end{array}$ | SR | 1 (HP) |  |
| 131 | Stapler home | $\begin{aligned} & \text { SEN SS STPL MOVE } \\ & \text { HP } \end{aligned}$ | SR | 1 (HP) |  |
| 132 | Stapler end | SEN SS STPL END SEN | SR | $\begin{gathered} 1 \text { (Stapler } \\ \text { end) } \\ \hline \end{gathered}$ |  |
| 133 | Stapler paper | SEN SS PAPER BIND SEN | SRC |  | $\begin{aligned} & \hline 0 \text { (Paper } \\ & \text { empty) } \\ & \hline \end{aligned}$ |
| 134 | Door safety switch | $\begin{aligned} & \text { SEN SS DOOR OPEN } \\ & \text { SEN } \end{aligned}$ | SRC | 1 (Open) |  |
| 135 | Encoder | SEN SS ENCORDER SEN | SR |  | 0 (Normal) |
| 136 | Inverter | SEN SEN | C |  | 0 (Paper empty) |

## ARDF

| No. for <br> Class 3 | Name | Actual Display | Condition |  |
| :---: | :--- | :---: | :---: | :---: |
| 150 | Width small | ADF_SIZE_SMALL | 1 (ON) |  |
| 151 | Width medium | ADF_SIZE_MIDDLE | 1 (ON) |  |
| 152 | Size large | ADF_SIZE_LARGE | 1 (ON) |  |
| 153 | Registration | ADF_REGIST_SEN | 1 (Paper present) |  |
| 154 | Paper exit | ADF_OUT_SEN | 1 (Paper present) |  |
| 155 | Lift-up | ADF_LIFT_SEN | 1 (Set) |  |
| 156 | APS | ADF_APS_SEN |  | 0 |
| 157 | Paper feed cover | ADF_ICVR_SEN |  | 0 (Open) |
| 158 | Paper exit cover | ADF_OCVR_SEN |  | 0 (Open) |

### 4.4.3 SP5-955-018 TEST PATTERN SELECTION

| Setting Value | Pattern Name |
| :--- | :--- |
| 1 | Print margin pattern |
| 2 | Print out all fonts |
| 3 | 1 dot/line grid pattern |
| 4 | Belt pattern |
| 5 | 16 -gradation with blank |
| 6 | Solid |
| 7 | 1 dot pattern (2x2) |
| 8 | 1 dot pattern (4x4) |
| 9 | 1 dot sub-scan line |
| 10 | 2 dot sub-scan line |
| 11 | 1 dot main scan line |
| 12 | 2 dot main scan line |
| 13 | Color patch at trailing edge |
| 14 | Grid pattern with scanner image |
| 15 | 2 dot line grid pattern |
| 16 | 16 -gradation pattern |
| 17 | 256 -gradation pattern |

### 4.4.4 5-955-001 LD_PWM (DOT, LINE)

Defines the LD value for dots and lines on the following test patterns: SP5-955018: 1-4, 6-15

### 4.4.5 5-955-002 TO 5-955-016 LD_PWM (16-GRADATION)

Defines the LD values for the 16 -gradations printed on test patterns SP5-955-018: 5, 16.
002: 1/15 (for the second grade)
003: $2 / 15$ (for the third grade)
004: 3/15 (for the fourth grade)
005: 4/15 (for the fifth grade)
006: $5 / 15$ (for the sixth grade)
007: 6/15 (for the seventh grade)
008: 7/15 (for the eighth grade)
009: 8/15 (for the ninth grade)
010: $9 / 15$ (for the tenth grade)
011: 10/15 (for the eleventh grade)
012: 11/15 (for the twelfth grade)
013: 12/15 (for the thirteenth grade)
014: 13/15 (for the fourteenth grade)
015: 14/15 (for the fifteenth grade)
016: 15/16 (for the sixteenth grade)

### 4.4.6 5-995-017 LD_PWM (COLOR PATCHES)

Defines the LD value for the color patch at the trailing edge of the test pattern (for SP5-955-018: 13)

## $\Rightarrow$ 4.4.7 5-114-000 ACCOUNT COLOR MODE SETUP

When the key counter has been installed, it is possible to select color mode(s) which are only accessible by using the key counter. The default for this SP is 15. This means that the key counter is always required when making copies.

| Setting | Black/White | Single Color | Twin Color | Full Color |
| :---: | :---: | :---: | :---: | :---: |
| 1 | Counter |  |  |  |
| 2 |  | Counter |  |  |
| 3 | Counter | Counter | Counter |  |
| 4 |  |  | Counter |  |
| 5 | Counter |  | Counter |  |
| 6 |  | Counter | Counter |  |
| 7 | Counter | Counter |  |  |
| 8 |  |  |  | Counter |


$\Longrightarrow$| Setting | Black/White | Single Color | Twin Color | Full Color |
| :---: | :---: | :---: | :---: | :---: |
| 9 | Counter |  |  | Counter |
| 10 |  | Counter |  | Counter |
| 11 | Counter | Counter |  | Counter |
| 12 |  |  | Counter | Counter |
| 13 | Counter |  | Counter | Counter |
| 14 |  | Counter | Counter | Counter |
| 15 | Counter | Counter | Counter | Counter |

Counter: A key counter is required to make copies. The number is then counted up by the key counter.
No Mark: Copies can be made without a key counter.

1. Before setting SP5-114-000, SP5-113-000 Key Counter must be selected. For example, set to 2 (= Key Counter) when you use Key Counter.
2. When SP5-104-000 (A3/DLT Double Count) is set to 1 (Double Count), the electrical counters of the operation panel, the mechanical counters and also a key counter count up double for A3/DLT (Ver 1.612 Firmware or greater).

### 4.5 USER TOOL

### 4.5.1 USER TOOL MENU

## System settings

| Menu |  |
| :---: | :---: |
| Panel Tone |  |
| Ready/Tone |  |
| Copy Count Display |  |
| System Reset |  |
| Function Reset |  |
| Control Panel Off |  |
| Auto Timer |  |
| Tray Paper Size |  |
| Tray Priority |  |
| Auto Tray Switch |  |
| Interleave Print |  |
| Output Tray Prio. <br> (For 3-bin sorter only) |  |
| Display Contrast |  |
| 3 Side Full Bleed |  |
| Bypass Custom Size |  |
| Key Operator Tools | Key Op. Access |
|  | Program Key Op Code |
| AOF (Keep it on) | Pre |

## COPY FEATURES

| Menu |  |  |
| :---: | :---: | :---: |
| General Features | APS Priority |  |
|  | ADS Priority (FC) |  |
|  | ADS Prio. (B\&K/SC) |  |
|  | Orig. Mode Priority |  |
|  | Orig. Type Priority |  |
|  | Col. Mode Priority |  |
|  | Photo Type (Auto) | - |
|  | Copy Reset |  |
|  | Max. Copy Q'ty |  |
|  | Original Tone |  |
|  | Margin Adjustment |  |
|  | Set User Ratio |  |
|  | Initial Mode Set |  |
|  | Key Operator Tools | Accessible Modes |
|  |  | Counter Reset |
|  |  | Clear Code \& Counter |
|  |  | Program User Code |
|  |  | Chg/Del User Code |
|  |  | Counter List Print |
| Image Adjustment | A.D.S. (FC) | - |
|  | A.D.S. (B\&K/SC) |  |
|  | A.C.S. Priority |  |
|  | Color Sensitivity |  |
|  | Auto Color Cal. |  |
|  | IJ Printer Select |  |
| ADF/Sorter | SADF Auto Reset | - |
|  | Thin Paper Mode |  |
|  | ADF Mixed Sizes |  |
|  | ADF Auto Paper Select |  |
|  | FC Copy Sorting |  |
|  | Auto Sort Mode |  |
| Set Favorite keys | - | - |
| Special Modes | - | - |

### 4.5.2 SYSTEM SETTINGS

| Menu | Description |
| :---: | :---: |
| Panel Tone | The beeper (key tone) sounds when a key is pressed. This beeper can be turned on or off. <br> Note <br> $\square$ Default: On |
| Ready/Tone | Choose whether the machine beeps when it becomes ready for a copy run after power up. <br> Note <br> $\square$ Default: On <br> $\square$ When the "Panel Tone" is set to Off, the beeper does not sound even if the "Ready/Tone" is set to On. |
| Copy Count Display | The copy counter can be set to show the number of copies made (Count Up), or the number of copies remaining to be made (Count Down). <br> Note <br> I Default: Count Up |
| System Reset | The machine returns to its prioritized mode automatically after your job is finished, after the selected time. This function is called "System Reset". The time can be set from 10 to 990 seconds (in 10 seconds steps), or off. <br> 1. Select [On] or [Off] with the keys. <br> 2. When you select [On], enter the system reset time with the Number keys. Then press the [OK] key. <br> Note <br> $\square$ Default: On ( 60 seconds) |
| Function Reset | How long the machine waits before switching to the default mode if no operation has been performed after an operation has finished. The time can be set from 10 to 990 seconds (in 10 seconds steps), or off. <br> 1. Select [On] or [Off] with the $\Delta \square$ keys. <br> 2. When you select [On], enter the time with the [Number] keys. Then press the [OK] key. <br> Note <br> $\square$ Default: On (60 seconds) |
| Control Panel Off | The machine enters Energy Saver mode automatically after your job is finished, after the selected time. The time can be set from 10 to 990 seconds (in 10 seconds steps), or off. In Energy Saver mode, the panel display turns off. <br> 1. Select [On] or [Off] with the $\Delta \square$ keys. <br> 2. When you select [On], enter the time with the [Number] keys. Then press the [OK] key. <br> Note <br> $\square$ Default: On (60 seconds) |
| Auto Timer | The machine turns itself off automatically to conserve energy after your job is finished, after the selected time. This function called "Auto Off". The time can be set from 1 to 120 minutes. <br> Note <br> a Default: 60 minutes |


| Menu | Description |
| :---: | :---: |
| Tray Paper Size | Select the size of the copy paper set in the paper tray. <br> Note <br> $\square$ If the specified paper size differs from the size of paper actually set in the paper tray, a paper misfeed might occur because the paper size is not detected correctly. <br> Reference <br> You can select the paper tray which will be selected as a default in the following conditions: <br> - When the main power switch or operation switch is turned on. <br> - When System Reset or Auto Reset mode is turned on. <br> - When the [Clear Modes] key is pressed. <br> - When the Auto Paper Select mode is not selected. <br> Note <br> ㅁ Default: Tray 1 <br> $\square$ Tray 2, Tray 3, and Tray 4 are options. |
| Auto Tray Switch | If you load paper of the same size in two or more trays, the machine auto-matically shifts another tray when the tray in use runs out of paper. You can set or cancel this setting. <br> Note <br> a Default: Off |
| Interleave Print | By default, you can make the interrupt copies. You can cancel this setting. <br> Note <br> $\square$ Default: On |
| Output Tray <br> Prio. (For 3-bin sorter only) | You can specify a bin to which documents are delivered for each feature (copy and printer). <br> 1. Select [Copy] or [Printer] with the $\Delta \square$ keys. Then press the [OK] key. <br> 2. Select a bin with the $\Delta \square$ keys. Then press the [OK] key. Note <br> व Default: Copy: First bin <br> Printer: First bin |
| Display Contrast | You can adjust the brightness of the panel display. <br> Note <br> - Default: level 4 |


| Menu | Description |
| :---: | :---: |
| $\begin{aligned} & \text { 3 Side Full } \\ & \text { Bleed } \end{aligned}$ | When this mode is off, narrow margins on all 4 sides of the original are not copied. <br> $1: 2 \pm 2 \mathrm{~mm}, 0.08 " \pm 0.08^{\prime \prime}$ <br> 2: $2 \pm 2 /-1.5 \mathrm{~mm}$, <br> 0.08 "+0.08"/-0.06" <br> 3: $2 \pm 2 \mathrm{~mm}, 0.08 " \pm 0.08 "$ <br> A259M500.WMF <br> $4: 5 \pm 2 \mathrm{~mm}, 0.2^{\prime \prime} \pm 0.08^{\prime \prime}$ <br> When you turn it on, margins 1, 2 and 3 are copied. <br> Note <br> I Default: Off <br> $\square$ You cannot cancel the leading edge margin (margin 4). |
| Bypass Custom Size | You can register the non-standard size paper when you make copies with the bypass tray. <br> 1. Select [Custom1], [Custom2], or [Custom3] with the keys. <br> 2. Press the $[\mathrm{OK}]$ key. <br> 3. Enter the vertical size with the [Number] keys, then press the [\#] key. <br> 4. Enter the horizontal size with the [Number] keys, then press the [OK] key. <br> Note <br> $\square$ Adjustment value: <br> Metric version: Vertical: 100-305mm <br> Horizontal: $140-457 \mathrm{~mm}$ <br> Inch version: Vertical: 3.9"-12.0" <br> Horizontal: 5.5" - 18.0" <br> $\square$ To clear the custom paper size, select the [Delete] key. |
| Key Operator Tools <br> Use these tools to manage use of the machine. <br> Note <br> $\square$ Enter a previously registered key operator code with the [Number] keys. |  |
| Key Op. Access | If you select "On", only operators who know the key operator code can access the "Key Operator Tools" in the System Settings and Copy Features. <br> Note <br> I Default: Off <br> I If you select "On", you should register the key operator code. |


| Menu | Description |
| :--- | :--- |
|  | Program Key |
| Op Code |  |$\quad$ Use to register or change the key operator code (up to 8 digits).

### 4.5.3 COPY FEATURES

## General Features

| Menu | Description |
| :--- | :--- |
| APS Priority | As a default setting, the Auto Paper Select is selected just after the <br> machine is turned on or when modes are cleared. You can cancel <br> this setting. <br> Note <br> a Default: On |
| ADS Priority (FC) | As a default setting, the Manual Image Density is selected in Full <br> Color mode just after the machine is turned on or when modes are <br> cleared. You can cancel this setting so that the Auto Image Density <br> is selected. <br> Note <br> a Default: Off |
| ADS Prio. <br> As a default setting, the Auto Image Density is selected in Black, <br> Single Color, and Twin Color mode just after the machine is turned <br> on or when modes are cleared. You can cancel this setting. <br> Note <br> a Default: On |  |
| Orig. Mode <br> Priority | You can select the original image type (Auto Text/Photo mode, <br> Text mode, Photo mode, or Special Original mode) that is selected <br> automatically just after the machine is turned on or when modes <br> are cleared. <br> Note <br> a Default: Auto Text/Photo mode |
| Orig. Type <br> Priority | You can select the special original type (Marker Pen, Inkjet, or <br> Map) that is selected automatically just after the machine is turned <br> on or when modes are cleared. <br> Note <br> a Default: Marker Pen |
| Col. Mode Priority |  |$|$| You can select the color mode (Auto Color Selection mode, Full |
| :--- |
| Color mode, or Black mode) that is selected automatically just after |
| the machine is turned on or when modes are cleared. |
| Note |
| a Default: Auto Color Select |


| Menu | Description |
| :---: | :---: |
| Copy Reset | The machine returns to its initial condition automatically after your job is <br> finished. The time can be set from 10 to 300 seconds, or off. <br> 1. Select [On] or [Off] with the $\Delta \square$ keys. <br> 2. When you select [On], enter the time with the [Number] keys. Then press the [OK] key. <br> Note <br> $\square$ Default: 60 seconds |
| Max. Copy Q'ty | The maximum copy quantity can be set from 1 to 99 . Note <br> I Default: 99 |
| Original Tone | The beeper (key tone) sounds when you forgot to remove originals after copying. <br> Note <br> $\square$ Default: On <br> $\square$ When the "Panel Tone" is set to Off, the beeper does not sound even if the "Original Tone" is set to On. |
| Margin Adjustment | You can adjust the margin width that is selected as a default in Margin Adjust mode. You can change this setting as follows: <br> 1. Select the margin direction with the $\Delta \square \bullet$ keys. <br> 2. Enter the margin width with the [Number] keys. Then press the [OK] key. <br> - Metric version: left/20mm - right/20mm in 1 mm steps <br> - Inch version: left/0.8" - right/0.8" in 0.1 " steps <br> Note <br> $\square$ Default: <br> - Metric version: left/10mm <br> - Inch version: left/0.4" |
| Set User Ratio | Up to 2 reproduction ratios which you frequently use can be registered. <br> 1. Select [Ratio 1] or [Ratio 2] with the $\Delta \square$ keys. <br> 2. Enter your desired ratio with the [Number] keys. Then press the [OK] key. <br> Note <br> I Default: 100 \% |
| Initial Mode Set | You can set the machine to recall program setting when the machine is turned on or when modes are cleared. <br> Note <br> $\square$ Default: Normal <br> $\square$ Your service representative can store the program setting. <br> $\square$ Your service representative can select whether the program setting is recalled when the machine is turned on or when modes are cleared. |
| Key Operator Tools <br> Use these tools to manage use of the machine. <br> Note <br> $\square$ Enter a previously registered key operator code with the [Number] keys. |  |


| Menu | Description |
| :--- | :--- |
| Accessible |  |
| Modes | You can assign user codes to each color mode. Operators must <br> input their user codes before using each color mode (Full Color, <br> Black, Single Color, and Twin Color). The machine keeps count of <br> the number of copies made under each user code. <br> 1. |
| 2. Select your desired color mode with the |  |
| 3. Press the [Select] key. |  |
| Note |  |

## Image Adjustment

| Menu | Description |
| :---: | :---: |
| Program User Code | You can register your user code (8 digits). <br> 1. Input your desired user code with the [Number] keys. <br> 2. Press the [OK] key. <br> 3. Select the color mode you want to use with the new code with the keys. <br> 4. Press the [Select] key. <br> 5. Press the [Exit] key. <br> Note <br> $\square$ Repeat steps 3 and 4 until you finished designating color modes. $\square$ Up to 50 user codes can be registered. |
| Chg/Del User Code | You can change or delete your user code or the color mode you assign your user code. <br> Changing your user code <br> 1. Input user code you want to change with the Number keys. Then press the [\#] key. <br> 2. Press the [Change] key. <br> 3. Input new user code with the [Number] keys. <br> 4. Press the $[\mathrm{OK}]$ key. <br> 5. Select the color mode you want to use with the new code with the keys. <br> 6. Press the [Select] key. <br> 7. Press the [Exit] key. <br> Note <br> $\square$ Repeat steps 5 and 6 until you finished designating color modes. <br> Deleting your user code <br> 1. Input user code you want to delete with the [Number] keys. Then press the [\#] key. <br> 2. Press the [Delete] key. <br> 3. Press the [Yes] key. <br> Note <br> $\square$ The number of copies made under the deleted code is also deleted. |
| A.D.S. (FC) | The Auto Image Density levels in Full Color mode can be made lighter or darker ( 5 levels). <br> Note <br> I Default: level 3 |
| A.D.S. (B\&K/SC) | The Auto Image Density levels in Black mode, Single Color mode, or Twin Color mode can be made lighter or darker ( 5 levels). <br> Note <br> $\square$ Default: level 3 |
| A.C.S. Priority | You can select color images or black \& white images that are priority detected <br> in Auto Color Selection mode. <br> Note <br> a Default: Full Color |


| Menu | Description |
| :---: | :---: |
| A.C.S. Priority | You can select color images or black \& white images that are priority detected <br> in Auto Color Selection mode. <br> Note <br> $\square$ Default: Full Color |
| Color Sensitivity | When in Color Erase or Color Conversion mode, the function can be made more or less sensitive to the color to be erased or converted. It can be adjusted within 5 levels ("Narrow" to "Wide"). For example, if red is selected as the color to be erased or converted, "Narrow" will result in only red being erased or converted, and "Wide" will result in other colors close to red being erased or converted. <br> Note <br> - Default: level 3 |
| Auto Color Cal. | When the tone of a specific color is strong or the color tone of copies is different from that of originals, perform this function. This function adjusts the balance of the 4 basic colors. <br> 1. If your machine has the printer option installed, select [Copy Mode] or [Printer Mode] with the $\Delta \square \bullet$ keys. Then press the [OK] key. <br> 2. Make sure that $\mathrm{A} 4 \mathrm{D}, 81 / 2^{\prime \prime} \times 11^{\prime \prime} \mathrm{\square}, \mathrm{~B} 4 \square, \mathrm{~A} 3 \square$, or $11^{\prime \prime} \times 17^{\prime \prime}$ $\square$ is set in trays. Then press the [Print] key. <br> Note <br> $\square$ The test pattern is delivered to the copy tray. <br> 1. Set the test pattern on the exposure glass (platen glass). Then press the [Scan] key. <br> Limitation <br> $\square$ You cannot set the test pattern in the document feeder. <br> Note <br> $\square$ To return to the previous setting, repeat steps 1 to 3 and press the [Previous] key. |
| IJ Printer Select | You can select the type of inkjet printer if your originals are printed with inkjet printer. <br> Note <br> I Default: 1 |
| SADF Auto Reset | When you set one original at a time in the document feeder, the Auto Feed indicator lights for a selected time after an original is fed to show that the document feeder is ready for another original. The time can be set from 1 second to 99 seconds. <br> Note <br> $\square$ Default: 5 seconds |
| Thin Paper Mode | Use when changing the type of originals to be fed. Select this function to avoid damaging thin originals ( $40-52 \mathrm{~g} / \mathrm{m}^{2}, 11-14 \mathrm{lb}$ ) set in the document feeder. <br> Note <br> I Default: Off |


| Menu | Description |
| :--- | :--- |
| ADF Mixed Sizes | By default, you cannot set originals of different sizes at one time in <br> the document feeder. You can cancel this setting. <br> Note <br> $\square$ Default: Off <br> a If you select [On], the copying speed will be reduced. <br> $\square$ When setting different length originals, all originals must be flush <br> with the back fence of the document feeder. <br> $\square$ Smaller size originals might be skewed a little. |
| ADF Auto Paper <br> Select | By default, the Auto Paper Select is selected when you set <br> originals in the document feeder. You can cancel this setting. <br> Note <br> a Default: On |
| FC Copy Sorting | You can disable sorting, stacking, or stapling in Full Color mode to <br> maximize quality of full color copies. <br> Note <br> a Default: Available (Sorting, stacking, or stapling can be used in <br> Full Color mode.) |
| Auto Sort Mode | You can have the machine select Sort mode automatically when <br> you insert two or more originals in the document feeder and make <br> two or more copies from each original. <br> Note <br> a Default: On |

## Set Favorite Keys

You can register up to 4 frequently used functions in [Favorite] keys.

1. Press the [Favorite] key you want to store the function.
2. Select the function you want to store with the $\Delta \square$ keys.
3. Press the [OK] key.

## Note

$\square$ Default:

1) Combine 2 Originals
2) Series Copies
3) Margin Adjustment
4) Directional Size Magnification (mm)
$\square$ You can check the functions that are registered in the [Favorite] keys with the [Status] key.

## Special Modes

Use to recall the special modes set by your service representative.

## Note

$\square$ Default: Off
$\square$ The special modes are set by your service representative. If you want to use this function, contact your service representative.

### 4.6 TP/SW/LED/FUSE

### 4.6.1 MAIN CONTROL BOARD TEST POINTS



| TP No. | Signal | Description | Ready (V) | Remarks | TP Implementation |
| :---: | :---: | :---: | :---: | :---: | :---: |
| TP154 | UPHT_TH | Analog input from the fusing thermistor (upper) | 0 to 5.0 |  | Yes |
| TP155 | /IACK | Used to get an interrupt vector. | 0 to 5.0 | $\mathrm{ON}=$ "L". | Yes |
| TP156 | LWHT_TH | Analog input from the fusing thermistor (lower) | 0 to 5.0 |  | Yes |
| TP157 | FB_T2 | Feedback sense terminal for the secondary transfer bias | 0 to 5.0 |  | Yes |
| TP158 | FB_T1 | Feedback sense terminal for the primary transfer bias | 0 to 5.0 |  | Yes |
| TP160 | FB_G | Feedback sense terminal for the grid bias | 0 to 5.0 |  | Yes |
| TP162 | FB_C | Feedback sense terminal for the charge corona unit bias | 0 to 5.0 |  | Yes |
| TP167 | FB_BDC | Feed back sense terminal for the development bias (DC) | 0 to 5.0 |  | Yes |
| TP168 | HUM | Humidity sensor analog input | 0 to 5.0 |  | Yes |
| TP170 | /Z_CROSS | Zero-cross interrupt input | 0 to 5.0 | $\mathrm{ON}=$ "L". | Yes |
| TP172 | TMP | Temperature sensor analog input | 0 to 5.0 |  | Yes |
| TP173 | P_SEN2 | Density sensor color output | 0 to 5.0 |  | Yes |
| TP174 | P_SEN1 | Density sensor black output | 0 to 5.0 |  | Yes |
| TP176 | V_SEN | Potential sensor analog input | 0 to 5.0 |  | Yes |
| TP178 | ENGY | Enable signal for transition to the Energy Star mode | 0 to 5.0 | $\mathrm{ON}=$ "L". | Yes |
| TP182 | ANGND | Analog ground | 0 |  | Yes |
| TP185 | GND | Ground | 0 |  | Yes |
| TP186 | +5V | +5V | 5.0 |  | Yes |
| TP187 | GND | Ground | 0 |  | Yes |

### 4.6.2 SCANNER IPU BOARD TEST POINTS

| TP No. | Signal | Description | Ready (V) | Remarks | $\begin{array}{c\|} \hline \text { TP } \\ \text { Implementation } \\ \hline \end{array}$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
| TP01 | GND | Ground | 0 |  | Yes |
| TP02 | IFGATEL | Frame gate signal | 0 to 3.3 | $\mathrm{ON}=$ "L". | No |
| TP03 | GND | Ground | 0 |  | Yes |
| TP04 | ILSYNCL | Line Sync. signal | 0 to 3.3 | $\mathrm{ON}=$ "L". | No |
| TP07 | GND | Ground | 0 |  | Yes |
| TP09 | AGND | Analog ground | 0 |  | No |
| TP10 | AGND | Analog ground | 0 |  | No |
| TP13 | AGND | Analog ground | 0 |  | No |
| TP14 | +5VA | Analog +5V power source | 5.0 |  | No |
| TP15 | AGND | Analog ground | 0 |  | No |
| TP17 | +12VA | Analog +12V power source | 12.0 |  | No |
| TP20 | Vpeak | Samples and holds the image's background level. | 3.0 to 4.0 |  | No |
| TP21 | +5V | 5 V power source | 5.0 |  | No |
| TP22 | GND | Ground | 0 |  | Yes |
| TP23 | GND | Ground | 0 |  | Yes |

### 4.6.3 LD MAIN CONTROL BOARD TEST POINTS

|  | TP No. | Signal | Description | Ready (V) | Remarks | TP Implementation |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | TP601 | GND | Ground | 0 |  | No |
| $\Longrightarrow$ | TP602 | LDON | Shortening this terminal to ground causes the LD to stay on in full mode during the polygon ON period. | 0 to 5.0 | $\mathrm{ON}=$ "L". | No |
| $\Longrightarrow$ | TP603 | XWD7 | Least significant bit of the LD control image data ( $1 / 8$ bits) | 5 | $\mathrm{ON}=$ "L". | No |
| $\Longrightarrow$ | TP604 | LDCLK | LD control pixel clock used to latch data. | 5 | $\mathrm{ON}=$ " H ". | No |
| $\Rightarrow$ | TP605 | LDLVL | Defines the LD control reference voltage. 0 to 2 V , normally 1 V . | 0 to 2.0 | Normally held at 1V. | No |
|  | TP606 | BTRIG | Belt mark signal. Set when a transfer belt mark is sensed. | 0 to 5.0 | Set low when a transfer belt mark is sensed. | No |
| $\Longrightarrow$ | TP607 | XPM | PMSYNC. Line sync. signal. | 0 to 5.0 | Approx. $407.05 \mu \mathrm{~s}$. $\mathrm{ON}=$ " L ". | No |
| $\Longrightarrow$ | TP608 | XWFG | WFGATE. Externally referenced frame sync. signal. Controlled by the scanner in the copy mode and by the controller in the print mode. | 0 to 5.0 | Under control of the scanner in the copy mode and of the controller in the print mode. $\mathrm{ON}=$ " L ". | No |
| $\Rightarrow$ | TP609 | XBFG | BFGATE. Write frame sync. signal. Set by a belt mark or software trigger. Source signal for XSFG. | 0 to 5.0 | Triggered by a belt mark or software trigger. Source signal for XSFG. ON = "L". | No |
|  | TP610 | GND | Ground | 0 |  | No |
| $\Longrightarrow$ | TP611 | XSLS | SLSYNC. Scanner or controller line sync. signal. | 0 to 5.0 | $\mathrm{ON}=$ "L". | No |
| $\Longrightarrow$ | TP612 | XSFG | SFGATE. Scanner or controller frame sync. signal. | 0 to 5.0 | $\mathrm{ON}=$ "L". | No |

### 4.6.4 I/O CONTROL BOARD TEST POINTS

| TP No. | Signal | Description | Ready (V) | Remarks | $\begin{gathered} \text { TP } \\ \text { Implementation } \\ \hline \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
| TP201 | RP_SEN2 | Paper height sensor signal 1 (right) | 0 to 5.0 | Blocked "H" | No |
| TP202 | RP_SEN1 | Paper height sensor signal 2 (left) | 0 to 5.0 | Blocked "H" | No |
| TP203 | T2_SEN | Secondary transfer unit contact/release sensor signal | 0 to 5.0 | Contact "H" | No |
| TP204 | XFEED_PE | Paper tray (single side) paper end sensor signal | 0 to 5.0 | Paper end "L" | No |
| TP205 | XMID_SEN | Middle sensor signal | 0 to 5.0 | Detect a paper "L" | No |
| TP206 | FUD_SEN | Paper tray lift sensor signal | 0 to 5.0 | Upper position " H " | No |
| TP207 | IMP_CLK | Drum motor speed control clock | 0 to 5.0 |  | No |
| TP208 | PWM_T2 | Secondary transfer high-voltage output control signal | 0 to 5.0 |  | No |
| TP209 | PWM_T1 | Primary transfer high-voltage output control signal | 0 to 5.0 |  | No |
| TP210 | BLTPTN | Belt mark sensor signal | 0 to 5.0 | $\begin{aligned} & \text { Mark sensed = } \\ & \text { "H" } \end{aligned}$ | No |
| TP211 | XREV_HP | Revolver HP sensor signal | 0 to 5.0 | Home position = "H" | No |
| TP212 | XRGT_SEN | Registration sensor signal | 0 to 5.0 | Paper present = "L" | No |
| TP213 | AGND | Power ground | 0 |  | Yes |
| TP214 | RM_A | Revolver phase excitation signal | 0 to 5.0 | 4 1/phase excitation signals | No |
| TP215 | FEED_CLK | Paper feed motor speed control clock | 0 to 5.0 |  | No |
| TP216 | XIORST | I/O expander reset signal | 0 to 5.0 | Reset = "L" | No |
| TP217 | IOCLK | Address/data bus clock | 0 to 5.0 |  | No |
| TP218 | XST | Address/data bus start signal | 0 to 5.0 |  | No |
| TP219 | DIR | Data bus direction control signal | 0 to 5.0 |  | No |
| TP220 | FB_T2 | Secondary transfer high-voltage feedback voltage | 0 to 5.0 |  | No |
| TP221 | FB_T1 | Primary transfer high-voltage output control signal | 0 to 5.0 |  | No |
| TP222 | HUM_SEN | Humidity sensor output | 0 to 5.0 |  | No |
| TP223 | TMP_SEN | Temperature sensor output | 0 to 5.0 |  | No |
| TP224 | FB_C | Charge corona output feedback voltage | 0 to 5.0 |  | No |
| TP225 | V_SEN | Potential sensor output | 0 to 5.0 |  | No |
| TP226 | FB_G | Grid output feedback voltage | 0 to 5.0 |  | No |
| TP227 | P_SEN1 | Black density output | 0 to 5.0 |  | No |
| TP228 | FB_BDC | Development bias feedback voltage | 0 to 5.0 |  | No |
| TP229 | P_SEN2 | Color (cyan, magenta, yellow) density output | 0 to 5.0 |  | No |
| TP230 | LWHT_TH | Pressure roller thermistor output | 0 to 5.0 |  | No |
| TP231 | UPHT_TH | Hot roller thermistor output | 0 to 5.0 |  | No |
| TP232 | CGNDA | Analog signal ground | 0 |  | Yes |
| TP233 | CGND | Digital signal ground | 0 |  | Yes |
| TP234 | PWM_BDC | Development bias voltage control signal | 0 to 5.0 |  | No |
| TP235 | FUS_CLK | Fusing motor speed control signal | 0 to 5.0 |  | No |


| TP No. | Signal | Description | Ready (V) | Remarks | $\begin{gathered} \hline \hline \text { TP } \\ \text { Implementation } \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
| TP236 | PWM_C | Charge corona current control signal | 0 to 5.0 |  | No |
| TP237 | PWM_G | Grid voltage control signal | 0 to 5.0 |  | No |
| TP239 | VCC2A | Analog +5V power source | 5.0 |  | Yes |
| TP240 | VCC2 | Digital +5 V power source | 5.0 |  | Yes |
| TP241 | AGND | Power ground | 0 |  | Yes |
| TP242 | VAA2 | +24V power source | 24.0 |  | Yes |
| TP243 | VCA | +12V power source | 12.0 |  | Yes |
| TP244 | VCB | -12V power source | -12.0 |  | Yes |
| TP245 | CGNDA | Analog signal ground | 0 |  | Yes |
| TP247 | CGND | Digital signal ground | 0 |  | Yes |
| TP248 | XEXIT_SEN | Paper exit sensor signal | 0 to 5.0 | Paper present = "L" | No |
| TP249 | XFUS_FAN | Fusing fan ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP250 | XZ_CROSS | Zero-cross signal | 0 to 5.0 | Zero-cross section = "L" | No |
| TP251 | ENGY_ON | Energy Star sleep signal ON/OFF signal | 0 to 5.0 | $\begin{aligned} & \text { Sleep mode = } \\ & \text { "H" } \end{aligned}$ | No |
| TP252 | PLED | ID sensor LED luminous quantity control voltage | 0 to 5.0 |  | No |
| TP254 | BC_SEN | Belt cleaning blade contact/release sensor | 0 to 5.0 | Contact = "H" | No |
| TP256 | XDEV_CL | Development clutch ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP257 | XDUP_SOL | Duplex solenoid o ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP258 | XT_CNT2 | Total counter 2 count signal | 0 to 24.0 | $\begin{aligned} & 1 \text { count }=1 \mathrm{~L} \\ & \text { pulse } \end{aligned}$ | No |
| TP259 | XKCOUNT | Key counter count signal | 0 to 24.0 | $\begin{aligned} & 1 \text { count }=1 \mathrm{~L} \\ & \text { pulse } \end{aligned}$ | No |
| TP260 | XBPF_CL | By-pass paper feed clutch ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP263 | XCH_FAN | Charge corona fan ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP264 | XQL | QL ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP265 | XT_CNT1 | Total counter 1 count signal | 0 to 24.0 | $\begin{aligned} & 1 \text { count = } 1 \mathrm{~L} \\ & \text { pulse } \end{aligned}$ | No |
| TP266 | XT_MTR | Toner supply motor ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP267 | XRA_PRT | Fusing/pressure roller lamp power relay ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP268 | XTRG_D | Separation charge corona unit output ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP269 | RM_108A | Revolver motor current 0.8 A drive signal | 0 to 5.0 | $0.8 \mathrm{~A}=$ " H " | No |
| TP270 | RM_I15A | Revolver motor current 1.5 A drive signal | 0 to 5.0 | $1.5 \mathrm{~A}=$ " H " | No |
| TP271 | XIMP_TRG | Drum motor ON/OFF signal | 0 to 5.0 | ON = "L" | No |
| TP272 | XTRG_PCC | PCC output ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP273 | XTRG_BAC | Development bias AC component ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP274 | FUMTR- | Tray lift motor down signal | 0 to 24.0 | Down = "H | No |
| TP275 | XTRP_FAN | Transport fan ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP278 | XRGT_CL | Registration clutch ON/OFF signal | 0 to 24.0 | $\mathrm{ON}=$ "L" | No |
| TP279 | XMID_CL | Relay clutch ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP280 | XEXU_FAN | Exhaust fan ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP281 | FUMTR+ | Tray lift motor up signal | 0 to 24.0 | Upper Position " H " | No |
| TP282 | XSWP_CL | Sweeper clutch ON/OFF signal | 0 to 24.0 | ON = "L" | No |


|  | TP No. | Signal | Description | Ready (V) | Remarks | $\begin{gathered} \text { TP } \\ \text { Implementation } \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\Rightarrow$ | TP283 | XFUS_CL | Fusing clutch ON/OFF signal | 0 to 24.0 | ON = "L" | No |
|  | TP284 | XBC_CL | Belt cleaning clutch ON/OFF signal | 0 to 24.0 | ON = "L" | No |
|  | TP285 | XFEED_CL | Paper feed clutch ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| $\Rightarrow$ | TP286 | XT2_CL | Secondary transfer contact/release clutch ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| $\Rightarrow$ | TP287 | XIMP_CW | Drum motor forward/backward control signal | 0 to 5.0 | Forward = "L" | No |
|  | TP288 | XFEED_TRG | Paper feed motor ON/OFF signal | 0 to 5.0 | ON = "L" | No |
|  | TP289 | XFUS_TRG | Fusing motor ON/OFF signal | 0 to 5.0 | ON = "L" | No |
|  | TP290 | XFDOPEN | Front door open sensor signal | 0 to 5.0 | Open = "L" | No |
| $\Rightarrow$ | TP291 | XFEEDOPEN | Vertical transport door open sensor signal | 0 to 5.0 | Open = "L" | No |
|  | TP292 | XEXITOPEN | Paper exit door open sensor signal | 0 to 5.0 | Open = "L" | No |
| $\Rightarrow$ | TP293 | XLEAK_D | Separation charge corona unit leak sensor signal | 0 to 5.0 | Leak = "L" | No |
| $\Rightarrow$ | TP294 | XLEAK_PCC | PCC leak sensor signal | 0 to 5.0 | Leak = "L" | No |
| $\Rightarrow$ | TP295 | XIMP_LOCK | Drum motor lock state sensor signal | 0 to 5.0 | Lock = "L" | No |
|  | TP296 | XBPFSIZE0 | By-pass paper width sensor signal (bit 0) | 0 to 5.0 |  | No |
|  | TP297 | XFEED_LOCK | Paper feed motor lock state sensor signal | 0 to 5.0 | Lock = "L" | No |
|  | TP301 | XBPFSIZE3 | By-pass paper width sensor signal (bit 3) | 0 to 5.0 |  | No |
|  | TP302 | XBPFSIZE2 | By-pass paper width sensor signal (bit 2) | 0 to 5.0 |  | No |
|  | TP303 | XBPFSIZE1 | By-pass paper width sensor signal (bit 1) | 0 to 5.0 |  | No |
| $\Rightarrow$ | TP306 | XOILEND | Oil end sensor signal | 0 to 5.0 | Oil end = "L" | No |
|  | TP308 | XFUS_LOCK | Fusing motor lock state sensor signal | 0 to 5.0 | Lock = "L" | No |
|  | TP309 | XRA_SCN | Lamp regulator power relay | 0 to 24.0 | ON = "L" | No |
|  | TP310 | XLWHT_TRG | Pressure roller lamp ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| $\Rightarrow$ | TP311 | XUPHT_TRG | Fusing lamp ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| $\Rightarrow$ | TP312 | XBPF_SOL | By-pass clutch ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| $\Rightarrow$ | TP313 | XEXU_FAN2 | Exhaust fan 2 ON/OFF signal | 0 to 24.0 | ON = "L" | No |

### 4.6.5 SWITCH SPECIFICATIONS

## Scanner IPU Board

| No. | Description | Remarks |
| :---: | :--- | :--- |
| SW2 |  |  |
| SW2-1 | 1 scan |  |
| SW2-2 | Motor excitation off |  |
| SW2-3 | Lamp on |  |
| SW2-4 | Free-running | ON: External image input <br> OFF: Scanner image input |
| SW2-5 | IPU input select |  |
| SW2-6 | Not used. |  |

### 4.6.6 LED SPECIFICATIONS

| No. | Function Outline | Remarks |
| :---: | :---: | :---: |
| Main control board |  |  |
| LED105 | Flashes if the board is starting. |  |
| SCN_IPU board |  |  |
| LED1 | First NG due to black level O/E difference correction error | Turns on and off repeatedly at 400 ms intervals. |
|  | Second NG due to black level O/E difference correction error | Turns on and off repeatedly at 1.6 s intervals. |
| LED2 | First NG due to black level correction error | Turns on and off repeatedly at 400 ms intervals. |
|  | Second NG due to black level correction error | Turns on and off repeatedly at 1.6 s intervals. |
| LED3 | NG due to white level correction error | Turns on and off repeatedly at 400 ms intervals. |
| LED4 | Flashes while the CPU is running. |  |
| LED5 | Flashes while image signal is being sent to the LD unit. |  |
| LED6 | Flashes while FGATE is active (scanning). |  |

### 4.6.7 FUSE SPECIFICATIONS

## PSU (US model)

| FUSE <br> No. | Rating | Use | Replaceable | Vendor Name | Model No. | R Parts <br> No. |
| :--- | :--- | :--- | :---: | :--- | :--- | :--- |
| FU101 | 15 A <br> $125 / 250 \mathrm{Vac}$ | AC input main fuse | Yes | SOC CORP or <br> LITTELFUSE <br> INC | CES6-15AN1 or <br> 314015 | 11070629 |
| FU102 | 8 A <br> $125 / 250 \mathrm{Vac}$ | PSU AC input fuse | Yes | SOC CORP or <br> LITTELFUSE <br> INC | ULTSC-8AN1 or <br> $237008(M B 000)$ | 11070393 |
| FU103 | 3.15 A 125 Vac | AC output <br> dehumidification <br> heater fuse | No | WICKMANN- <br> WERKE GMBH | K19396/3.15A or <br> K19374/3.15A | (11070724) |

When one of the fuses below blows, the machine indicates the following conditions:

- FU101: The machine does not work. The PSU does not supply any power to the electrical components.
- FU102: The machine does not work. The PSU supplies power only to the anticondensation heaters.
- FU1, FU2: The machine displays that the front door is opened.
- FU3: The machine displays SC101 (Exposure Lamp Error).
- FU4: One of the peripheral devices will not run (a paper jam or paper empty condition is displayed).
- FU83: The machine displays SC171 (Black Level Correction Error).

PSU (European/Asian Model)

| $\begin{aligned} & \hline \hline \text { FUSE } \\ & \text { No. } \end{aligned}$ | Rating | Use | Replaceable | Vendor Name | Model No. | R Parts No. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| FU102 | $\begin{aligned} & 5 \mathrm{~A} \\ & 125 / 250 \mathrm{Vac} \end{aligned}$ | PSU AC input fuse | Yes | LITTELFUSE INC or BUSSMANN | $\begin{aligned} & 215005 \text { or } \\ & \text { A505-5A } \end{aligned}$ | 11070879 |
| FU103 | $\begin{aligned} & \text { 2A 125Vac/ } \\ & 250 \mathrm{~V} \end{aligned}$ | AC output dehumidification heater fuse | No | WICKMANNWERKE GMBH | K19372/2A | (11070621) |
| FU1 | $\begin{aligned} & \hline 4 \mathrm{~A} \\ & 125 / 250 \mathrm{Vac} \end{aligned}$ | Vaa(+24) output fuse | Yes | SOC CORP or LITTELFUSE INC | $\begin{aligned} & \text { UL-ET-4A or } \\ & 218004 \text { (MB000) } \end{aligned}$ | 11070921 |
| FU2 | $\begin{aligned} & \hline 4 \mathrm{~A} \\ & 125 / 250 \mathrm{Vac} \end{aligned}$ | Vaa(+24) output fuse | Yes | SOC CORP or LITTELFUSE INC | $\begin{aligned} & \text { UL-ET-4A or } \\ & 218004 \text { (MB000) } \end{aligned}$ | 11070921 |
| FU3 | $\begin{aligned} & \text { 4A } \\ & 125 / 250 \mathrm{Vac} \end{aligned}$ | Vaa(+24) output fuse | Yes | SOC CORP or LITTELFUSE INC | $\begin{aligned} & \text { UL-ET-4A or } \\ & 218004 \text { (MB000) } \end{aligned}$ | 11070921 |
| FU4 | $\begin{aligned} & \hline 4 \mathrm{~A} \\ & 125 / 250 \mathrm{Vac} \end{aligned}$ | Vaa(+24) output fuse | Yes | SOC CORP or LITTELFUSE INC | $\begin{aligned} & \text { UL-ET-4A or } \\ & 218004 \text { (MB000) } \end{aligned}$ | 11070921 |
| FU31 | $\begin{aligned} & \text { 2A 125Vac/ } \\ & 250 \mathrm{~V} \end{aligned}$ | +5V safety regulation compliant protective fuse | No | WICKMANNWERKE GMBH | K19370/2A | (11070658) |
| FU71 | $\begin{aligned} & \text { 2A } 125 \mathrm{Vac} / \\ & 250 \mathrm{~V} \end{aligned}$ | -12V safety regulation compliant protective fuse | No | WICKMANNWERKE GMBH | K19372/2A | (11070621) |
| FU81 | $\begin{aligned} & 3.15 \mathrm{~A} 125 \mathrm{Vac} / \\ & 250 \mathrm{~V} \end{aligned}$ | +12/+15V safety regulation compliant fuse | No | WICKMANNWERKE GMBH | K19372/3.15A | (11070622) |
| FU83 | $\begin{array}{\|l\|} \hline 2 \mathrm{~A} \\ 125 / 250 \mathrm{Vac} \end{array}$ | Vcd(+15V) output fuse | Yes | SOC CORP or LITTELFUSE INC | $\begin{aligned} & \text { UL-ET-2A or } \\ & 218002 \text { (MB000) } \end{aligned}$ | 11070936 |

When one of the fuses below blows, the machine indicates the following conditions:

- FU102: The machine does not work. The PSU supplies power only to the anticondensation heaters.
- FU1, FU2: The machine displays that the front door is opened.
- FU3: The machine displays SC101 (Exposure Lamp Error).
- FU4: One of the peripheral devices will not run (a paper jam or paper empty condition is displayed).
- FU83: The machine displays SC171 (Black Level Correction Error).


## PREVENTIVE MAINTENANCE

## 5. PREVENTIVE MAINTENANCE

### 5.1 PM PROCEDURES

### 5.1.1 PM-RELATED COUNTERS

The major PM related counters available in the SP modes are summarized below. After performing a PM procedure, clear the PM counters.

## SP7-803 (Show PM Counter)

SP7-803-001: Counter for preventive maintenance

## SP7-804 (Clear PM Counter)

SP7-804-001: Counters for 60 kD preventive maintenance parts
SP7-804-002: Counters for 120 kD preventive maintenance parts
SP7-804-003: Clears 7-803-001

## SP7-202 (Show Development Counters)

Shows the number of times each color has been developed.
SP7-202-001: Total
SP7-202-002: Black
SP7-202-003: Cyan
SP7-202-004: Magenta
SP7-202-005: Yellow

## SP7-818 (Clear Development Counters)

Clears the development counters indicated in SP7-202.
SP7-818-001: Black
SP7-818-002: Cyan
SP7-818-003: Magenta
SP7-818-004: Yellow

## PM PROCEDURES

## SP7-203 (Show Image Production Counters)

Shows the usage of major components by number of images produced.

## SP7-207 (Show Cleaning Counters)

Shows the number of uses of the cleaning-related parts.

## SP7-210 (Show Fusing Counters)

Shows the number of uses of the fusing related parts

## SP 7-910 (paper separation corona counters)

Shows the number of uses of the separation corona

## SP 7-911 (duplex tray counters)

Shows the number of uses of the duplex tray related parts

## SP 7-912 (exposure lamp counter)

Shows the number of uses of the exposure lamp

### 5.1.2 REGULAR PREVENTIVE MAINTENANCE FLOW DIAGRAM

NOTE: To replace the developer and the drum, the procedure to use depends on the combination of developers and drum to be replaced (See Section 6.6 Development Unit)





### 5.2 REGULAR PM ITEMS

Regular PM items: To be performed every 60,000 developments in accordance with the following table.

## Regular PM Table

NOTE: To wipe off toner, use a dry cloth. If toner is mixed with alcohol, it solidifies.

O: Inspect $\Delta$ : Lubricate $\square$ : Replace © Clean $\mathbf{A}$ : Adjust


|  | PM item | EM | Schedule |  |  |  |  |  | Remarks |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | 60 | 120 | 180 | 240 | 300 | 360 |  |
|  |  |  | kD | kD | kD | kD | kD | kD |  |
|  | Development unit toner catch pan |  | $\bullet$ | $\bullet$ | - | $\bullet$ | $\bullet$ | - | Wipe with a dry cloth or clean with a vacuum cleaner. |
|  | Developer (K) |  |  |  |  |  |  |  | Developer life is 60 kD . |
|  | Developer (C, M, Y) |  |  |  |  |  |  |  | Developer life is 45 kD for each color. Replace the three colors at the same time. |
|  | Development unit (including covers and gears) |  | - | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | - | Cover: wipe with a dry cloth. Gear: Clean with a blower brush. |
|  | Side <br> seal/entrance <br> seal |  | $\bigcirc$ | O | O | O | $\bigcirc$ | O | Visually check. Replace if cracks, warps, or breakage are found. |
|  | Color toner set sensor | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | - | Clean with a blower brush, then wipe with a dry cloth. |
|  | Toner end sensor |  | - | - | $\bullet$ | $\bullet$ | - | $\bullet$ | Clean with a blower brush, then wipe with a dry cloth. |
|  | Bias terminal on the development unit. |  | $\bullet$ | $\bullet$ | - | $\bullet$ | $\bullet$ | - | Wipe with a dry cloth (should be free of oil or foreign matters). |
|  | Bias terminal on the copier/sealdevelopment bias. |  | - | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | - | Wipe with a dry cotton cloth (should be free of oil or foreign matters). |
|  |  |  |  |  |  |  |  |  |  |
| $\begin{aligned} & \text { 름 } \\ & \text { D } \\ & \frac{1}{訁} \\ & \frac{0}{4} \end{aligned}$ | PCC |  | - | $\bullet$ | $\bullet$ | $\bullet$ | - | - | Wipe with a dry cloth. |
|  | PCC wire |  | - | $\square$ | $\bullet$ | $\square$ | $\bullet$ | $\square$ | Wipe with a dry cloth. |
|  | Cleaning blade |  | $\square$ | $\square$ | $\square$ | - | $\square$ | $\square$ | When replacing, apply setting powder. |
|  | Lubricant bar |  | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ |  |
|  | Cleaning brush |  |  | $\square$ |  | $\square$ |  | $\square$ |  |
|  | Cleaning unit and entrance mylar |  | - | $\bullet$ | - | $\bullet$ | $\bullet$ | - | Clean with a blower brush or wipe with a dry cloth. |
|  | Drum unit (including QL and potential sensor) |  | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | Wipe with a dry cloth. |
|  | Drawer unit (including ID sensor and carrier catcher) |  | - | $\bullet$ | - | $\bullet$ | $\bullet$ | $\bullet$ | Wipe with a dry cloth. |
|  | Charge corona unit casing | $\bullet$ | - | $\bullet$ | - | - | - | - | Wipe with a dry cloth. |
|  | Charge corona wire | - | - | $\square$ | - | - | $\bullet$ | $\square$ | Wipe with a damp cloth, then with a dry cloth. |
|  | Charge corona grid | - | - | $\square$ | - | - | - | $\square$ | Wipe with a damp cloth, then with a dry cloth. |
|  | Dust filter |  | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ |  |
|  |  |  |  |  |  |  |  |  |  |

REGULAR PM ITEMS


|  | PM item | EM | Schedule |  |  |  |  |  | Remarks |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | 60 | 120 | 180 | 240 | 300 | 360 |  |
|  |  |  | kD | kD | kD | kD | kD | kD |  |
|  | Pressure cleaning roller |  |  | $\bullet$ |  | $\bullet$ |  | $\bullet$ | Wipe with a dry cotton cloth. (US model only) |
|  | Pressure roller blade |  |  | $\square$ |  | $\square$ |  | $\square$ | Europe/Asia model only |
|  | Pressure roller pad |  | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | Europe/Asia model only |
|  | Fusing unit bottom frame |  |  | - |  | $\bullet$ |  | - | Wipe with a dry cloth Europe/Asia model only |
|  | Upper thermistor |  | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | - | - | Clean with a suitable solvent and apply silicone oil over the contact surface. |
|  | Lower thermistor |  |  | $\bullet$ |  | $\bullet$ |  | - | Clean with a suitable solvent and apply silicone oil to the contact surface. |
|  | Pressure roller |  |  | $\square$ |  | $\square$ |  | $\square$ |  |
|  | Fusing cleaning roller |  | $\bullet$ | - | $\bullet$ | $\bullet$ | - | - | Wipe with a dry cotton cloth or clean with a suitable solvent. |
|  | Heat isolating bushing |  | $\Delta$ | $\Delta$ | $\Delta$ | $\Delta$ | $\Delta$ | $\Delta$ | Wipe with a dry cotton cloth, then apply grease (Barrietta JFE552). |
|  | Hot roller |  | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ |  |
|  | Entrance guide plates (upper and lower) | $\bullet$ | $\bullet$ | - | $\bullet$ | $\bullet$ | $\bullet$ | - | Wipe with a dry cloth. |
|  | Hot roller blade |  |  | $\square$ |  | $\square$ |  | $\square$ |  |
|  | Oil supply pad |  | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ |  |
|  | Cleaning roller scraper |  | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | - | - | Wipe with a dry cotton cloth or clean with a suitable solvent. |
|  | Silicone oil | $\bigcirc$ | $\Delta$ | $\Delta$ | $\Delta$ | $\Delta$ | $\Delta$ | $\Delta$ | After removing paper dust precipitated in the oil tank with a pipette, supply silicone oil. |
|  |  |  |  |  |  |  |  |  |  |
|  | Transfer roller blade |  | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ |  |
|  | Paper discharge corona casing |  | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | - | Wipe with a dry cloth. |
|  | Paper discharge corona wire |  | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ |  |
|  | Toner collection case |  | $\bullet$ | - | $\bullet$ | $\bullet$ | - | - | Wipe with a dry cloth. |
|  | Lubricant bar |  | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ |  |
|  |  |  |  |  |  |  |  |  |  |


|  | PM item | EM | Schedule |  |  |  |  |  | Remarks |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | 60 | 120 | 180 | 240 | 300 | 360 |  |
|  |  |  | kD | kD | kD | kD | kD | kD |  |
|  | Paper feed separation roller |  | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ |  |
|  | Paper feed roller |  | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ |  |
|  | Duplex tray bottom plate pad | $\bullet$ |  | $\bullet$ |  | $\bullet$ |  | $\bullet$ | Wipe with a dry cloth. |
|  | Duplex trays (mylar and feeler) | $\bullet$ |  | $\bullet$ |  | $\bullet$ |  | $\bullet$ | Wipe with a dry cloth. |
|  |  |  |  |  |  |  |  |  |  |

O: Inspect $\Delta$ : Lubricate
D: Replace
Clean

| $\begin{aligned} & \text { 등 } \\ & \frac{0}{\omega} \end{aligned}$ | PM Item |  |  |  |  |  |  |  | Action Post-maintenance action |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | 60 | 120 | 180 | 240 | 300 | 360 |  |
|  |  |  | kD | kD | kD | kD | kD | kD |  |
|  | Paper feed roller: Feed |  |  |  |  |  | $\square$ |  | Clean each paper tray with a dry or damp cloth (cotton cloth). Guideline: Every 200,000 normal sheets |
|  | Roller: Follower |  |  |  |  |  | $\bullet$ |  | Clean each paper tray with a dry or damp cloth (cotton cloth). Guideline: Every 200,000 normal sheets |
|  | Transport roller: Drive |  |  |  |  |  | $\bullet$ |  | Clean each paper tray with a dry or damp cloth (cotton cloth). Guideline: Every 200,000 normal sheets |
|  | Psf: Tray bottom plate |  |  |  |  |  | $\bullet$ |  | Clean each paper tray with a dry or damp cloth (cotton cloth). Guideline: Every 200,000 normal sheets |
|  | Electromagneti c SL: Relay |  |  |  |  |  | O |  | Guideline: Every 200,000 normal sheets |
|  | Electromagneti c SL: Paper feed |  |  |  |  |  | O |  | Check each paper tray. Guideline: Every 200,000 normal sheets |
|  | Paper feed roller: Pick-up |  |  |  |  |  | $\square$ |  | Each paper tray Guideline: Every 200,000 normal sheets |
|  | Paper feed roller: Reverse |  |  |  |  |  | $\square$ |  | Each paper tray Guideline: Every 200,000 normal sheets |
|  |  |  |  |  |  |  |  |  |  |
| $\begin{aligned} & \text { 夏 } \end{aligned}$ | Transport belt | $\bullet$ |  | $\square$ |  | $\square$ |  | $\square$ | Wipe with a damp cotton cloth. <br> Guideline: Every 80,000 normal sheets |
|  | Separation belt | $\bullet$ |  | $\square$ |  | $\square$ |  | $\square$ | Wipe with a damp cotton cloth. Guideline: Every 80,000 normal sheets |
|  | Separation roller | $\bullet$ |  | $\square$ |  | $\square$ |  | $\square$ | Wipe with a damp cotton cloth. Guideline: Every 80,000 normal sheets |
|  | Registration sensor |  |  | $\bullet$ |  | $\bullet$ |  | - | Clean with a blower brush. Guideline: Every 80,000 normal sheets |
|  | Size sensor |  |  | $\bullet$ |  | $\bullet$ |  | - | Clean with a blower brush. Guideline: Every 80,000 normal sheets |
|  | Paper exist sensor |  |  | $\bullet$ |  | $\bullet$ |  | - | Clean with a blower brush. Guideline: Every 80,000 normal sheets |
|  |  |  |  |  |  |  |  |  |  |


| $\begin{aligned} & \text { 듬 } \\ & \frac{0}{0} \end{aligned}$ | PM Item |  |  |  |  |  |  |  | Action Post-maintenance action |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | 60 | 120 | 180 | 240 | 300 | 360 |  |
|  |  |  | kD | kD | kD | kD | kD | kD |  |
|  | Transport roller | $\bigcirc$ |  |  |  |  |  |  | Clean with alcohol or cotton cloth if stained. |
|  | Follower roller | $\bigcirc$ |  |  |  |  |  |  | Clean with alcohol or cotton cloth if stained. |
|  | Bin | $\bigcirc$ |  |  |  |  |  |  | Clean with alcohol or cotton cloth if stained. |
|  | Bin/stapler sensor | $\bigcirc$ |  |  |  |  |  |  | Clean with a blower brush |
|  | Bearing | $\Delta$ |  |  |  |  |  |  | Lubricate if abnormal sound is heard (resin grease, G-501). |
|  | Bin slider, spiral or helical, guide groove | $\Delta$ |  |  |  |  |  |  | Lubricate if abnormal sound is heard (resin grease, G-501). |
|  | Stapler | O |  |  |  |  |  |  | Stapler life: 100,000 staples |
|  |  |  |  |  |  |  |  |  |  |
|  | Transport roller | O |  |  |  |  |  |  | Clean with alcohol or cotton cloth if contaminated. |
|  | Follower roller | O |  |  |  |  |  |  | Clean with alcohol or cotton cloth if contaminated. |
|  | Bin | O |  |  |  |  |  |  | Clean with alcohol or cotton cloth if contaminated. |
|  | Entrance, bin, and stapler sensors | O |  |  |  |  |  |  | Clean with a blower brush. |
|  | Bin slider section | $\bigcirc$ |  |  |  |  |  |  | Lubricate if abnormal sound is heard (resin grease, G-501). |
|  | Bearing | $\bigcirc$ |  |  |  |  |  |  | Lubricate if abnormal sound is heard (silicone oil or Launa oil). |
|  | Stapler | O |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  | Transport roller | $\bigcirc$ |  |  |  |  |  |  | Clean with alcohol or cotton cloth if stained. |
|  | Follower roller | $\bigcirc$ |  |  |  |  |  |  | Clean with alcohol or cotton cloth if stained. |
|  | Reflection type sensor | $\bigcirc$ |  |  |  |  |  |  | Clean with a blower brush |
|  | Bearing | $\Delta$ |  |  |  |  |  |  | Lubricate if abnormal sound is heard (silicone oil or Launa oil). |
|  | Follower roller | $\Delta$ |  |  |  |  |  |  | Lubricate if abnormal sound is heard (silicone oil or Launa oil). |
|  | Worm, worm wheel | $\Delta$ |  |  |  |  |  |  | Lubricate if abnormal sound is heard (resin grease, G-501). |
|  |  |  |  |  |  |  |  |  |  |

## REPLACEMENT AND ADJUSTMENT

## 6. REPLACEMENT AND ADJUSTMENT

### 6.1 COVERS, FANS, AND FILTERS

### 6.1.1 FRONT, INNER, AND INNER TRANSFER COVERS



1. Remove the chain $[A]$ from the hook.
2. Remove the pins $[B]$ (two) from the hinges.
3. Remove the front cover.
4. Remove the inner cover [C] (2 screws).
5. Remove the inner transfer cover [D] (2 screws).

### 6.1.2 REAR COVERS



NOTE: When removing the covers, follow the step order. When installing the covers, follow the removal procedure in reverse.

1. Remove the used toner cover [A] (3 screws).
2. Remove the rear cover $[B]$.
3. Remove the left rear cover [C] (3 screws).

### 6.1.3 RIGHT COVERS



1. Open the front cover.
2. Remove the right front cover [A] (1 screw).
3. Remove the right cover $[B]$ (1 screw).
4. Remove the used toner and rear covers (see "Rear Covers").
5. Remove the right rear cover [C] (1 screw).

### 6.1.4 LEFT COVERS



1. Remove the left center cover [A] (1 screw).
2. Open the front cover and pull out the fusing unit slightly.
3. Remove the left rear cover [B] (see "Rear Covers").
4. Remove the left cover [C] (2 screws).

### 6.1.5 EXPOSURE GLASS



1. Remove the vertical scale $[A]$ (2 screws).
2. Remove the horizontal scale $[B]$ ( 3 screws).
3. Remove the exposure glass [C].

NOTE: When reinstalling the exposure glass, ensure that the white plate faces down and to the left.

### 6.1.6 OPERATION PANEL

## - A258 only -

1. Remove the operation panel $[\mathrm{H}]$ ( 2 screws and 1 connector).

## - A259/A260 only -

1. Remove the operation panel [D] ( 2 screws, 2 grounding wires, and 3 connectors).
NOTE: Perform the touch panel calibration procedure after replacing the operation panel (see "Touch Panel Calibration").

### 6.1.7 UPPER COVERS

1. Remove the upper right cover [E] (1 screw).
2. Remove the upper left cover [F] (1 screw).
3. Remove the upper rear cover [G] (1 screw).

### 6.1.8 USED TONER TANK



NOTE: Place a mat on the floor to keep the floor clean before doing this procedure.

1. Remove the used toner cover [A] (3 screws).
2. Disconnect used toner transport tube.
3. Pull out the used toner tank [B].
4. Disconnect the cable [C] and remove the cap [D].

### 6.1.9 CHARGE CORONA FAN FILTER



1. Remove the inner cover [A] (2 screws).
2. Pull out the charge corona fan filter $[B]$.

NOTE: Handle the filter by the frame only.

### 6.1.10 MAIN EXHAUST FAN FILTER



1. Remove the used toner cover [A] (3 screws).
2. Pull out the main exhaust fan filter $[B]$.

### 6.1.11 SCANNER EXHAUST FAN FILTER



1. Remove the left center cover [A] (1 screw).
2. Remove the scanner exhaust fan filter $[B]$.

### 6.1.12 MAIN EXHAUST FAN



NOTE: Place a mat on the floor to keep the floor clean before doing this procedure.

1. Remove the used toner rear cover and rear cover (see "Rear Covers").
2. Remove the right rear cover (see "Right Covers").
3. Remove three mounting screws [A] from the I/O control board.
4. Remove the mounting screw $[B]$ from the rear cover bracket.
5. Remove the main exhaust fan filter top cover [C] (1 claw) and the main exhaust fan filter [D].
6. Remove the main exhaust fan mounting (2 screws [E]) and remove the main exhaust fan [F] with the main exhaust fan dust filter bracket [G] (while disengaging the connector for the fan.

### 6.2 DRUM UNIT

| $\boxed{ } \uparrow$ WARNING |
| :--- |
| Turn off the power and unplug the machine before attempting any of the <br> procedures in this section. Laser beams can seriously damage your eyes. |

## CAUTION DECAL LOCATIONS

Two caution decals are located as shown below.


## .DANGER

Be sure to turn off the main switch and disconnect the power plug from the power outlet before attempting any disassembly or adjustment of the laser unit. This copier uses a class 1 laser beam with a wavelength of 780 nm and an output of 15 mW . The laser can seriously damage your eyes.

## $\triangle$ CAUTION



DO NOT TOUCH the revolver unit, the toner cartridge, the toner end sensor, or the toner cartridge sensor, while the front door switch is actuated. This is because the revolver might rotate automatically due to a timed process control self check, or if the start key is pressed.
To disable the timed process control self check, SP 3-972 should be 0 . The default is 6 (hours). If you change this SP mode setting, you should reset it to 6 after finishing your work.

### 6.2.1 PULLING OUT THE REVOLVER/DRUM DRAWER


$\Rightarrow$ NOTE: Place a mat on the floor to keep the floor clean before performing these procedures.

1. Remove the following covers in the indicated order (see "Covers, Fans, and Filters"):
1) Front cover
2) Inner transfer cover [A]
3) Inner cover [B] (See "Charge Corona Fan Filter Removal".)

$$
[\mathrm{B}]
$$


2. Release the transfer belt tension [C] (1 clamp) and remove the transfer belt stay [D] (5 screws).
3. Remove the charge duct cover [E] and the charge corona unit [F] with the corona cleaner [G] (2 screws).
4. Pull out the drawer unit $[\mathrm{H}]$ (2 screws).

## REINSTALLATION REMARKS:

Install the drum stay [I] while pressing portion [J]. The Transfer Belt Unit will then be secured in the proper position by the pressure of spring [K]. If portion [J] is not pressed while the screws are fastened (NOTE: In any order), the drum stay will not be fixed in the proper position due to the pressure from the spring. This will cause the PG (Photoconductor Gap) to slightly
 shift.

NOTE: 1) After pulling out the drawer unit, pull out the drum unit (2 connectors) and shield the drum unit from light with a black sheet or 5 (or more) white sheets of paper.
2) If the drawer unit is left out, the drum is exposed to light. This may cause optical fatigue, resulting in image anomalies (see "Troubleshooting - Drum Light Fatigue"). Therefore after pulling out the drawer unit, remove the drum unit (2 connectors) and cover it with a black sheet or 5 (or more) white sheets of paper.
3) When the revolver unit is rotated without removing the drum unit, the development sleeve may come in contact with the drum surface. This may cause damage to the drum and result in dotted spots on the copies. This is due to the fact that normally, the PG (gap between the drum and sleeve) is properly maintained when the drawer unit is in the machine. Therefore, please make sure that the drum unit is removed whenever servicing the revolver section.
4) Before installing the drum unit $[A]$ in the drawer unit, the revolver unit should be rotated so that the actuator $[B]$ is positioned in the sensor within the dotted lines as shown in the insert diagram below.
5) Release the transfer belt pressure whenever pulling out the drawer unit from the machine. If the drawer unit is pulled out without releasing the pressure, the drum and/or belt may be damaged.
6) Before closing the drawer unit, ensure that the revolver unit is in the home position as shown in the insert diagram below (within the dotted lines).

[B]

### 6.2.2 DRUM REPLACEMENT



1. Remove the connectors $[B](2)$ and lift out the drum unit $[A]$.
2. Turn the drum unit upside down, so that it rests as shown in the bottom left diagram, and remove the 2 screws.
NOTE: When placing the drum unit in the work area, it is important to turn it in the direction of the arrow as shown [D]. This prevents toner spillage.
3. Open the drum unit and remove the drum.
4. Install the new drum and apply setting powder [C] to the entire drum surface.

NOTE: Be sure to apply the setting powder over the entire drum. This prevents the cleaning blade from catching on the drum surface.
5. Rotate the drum forward two or three times to settle the setting powder between the drum surface and cleaning blade by applying pressure to the cleaning blade.
NOTE: Do NOT touch the drum more than 10 mm from either edge.
6. Install the drum unit in the reverse order of disassembly.

1. After replacing the drum, be sure to perform the process control self-check on the new drum. See 6.6.2. "Post Developer Collection Procedure" for instructions.

NOTE: 1) After replacing the drum or the cleaning blade, rotate the drum forward two or three times to settle the setting powder between the drum surface and the cleaning blade.
2) When installing the cleaning blade [A], make sure that the front and rear ends of the blade do not rest over the cleaning unit side seal [B].


### 6.2.3 CLEANING BLADE AND PCC WIRE REPLACEMENT


2. Remove the drum unit $[A]$ and place it in the work area (see "Drum Replacement").
3. Remove the cleaning unit $[B]$ from the drum unit (2 screws).
4. Remove the cleaning blade [E] from the cleaning unit [C] (2 screws).
5. Remove the PCC [D] from the cleaning unit (1 screw).
6. Remove the front and rear end blocks [F] from the PCC.
7. Replace the PCC wire [G].

NOTE: Apply setting powder to the drum surface after replacing the cleaning blade. Be sure to apply the setting powder over the entire drum. This prevents the cleaning blade from catching on the drum surface.
8. Assemble the drum unit in the reverse order of disassembly.

NOTE: 1. After replacing the drum or the cleaning blade, rotate the drum forward two or three times to settle the setting powder between the drum surface and the cleaning blade.
2. When installing the cleaning blade, make sure that the front and rear ends of the blade do not rest over the cleaning unit side seal.

### 6.2.4 CLEANING BRUSH REPLACEMENT



1. Remove the drum unit and place it in the work area (see "Drum Replacement").
2. Remove the cleaning unit from the drum unit ( 2 screws) (see "Cleaning Blade and PCC Wire Replacement").
3. Remove the coupling gear $[A]$ from the rear of the cleaning unit (1 hook).
4. Remove the snap ring $[B]$ and gear $[C]$ securing the front side.
5. By pushing the front end of the brush shaft towards the rear, remove the rear panel [D] from the cleaning unit, then remove the cleaning brush [E] (1 screw).

### 6.2.5 LUBRICANT BAR REPLACEMENT



1. Remove the drum unit and place it in the work area (see "Drum Replacement").
2. Remove the cleaning unit from the drum unit (2 screws) (see "Cleaning Blade and PCC Wire Replacement).
3. Remove the cleaning blade (see "Cleaning Blade and PCC Wire Replacement").
4. Turn up the pressure release lever $[\mathrm{A}]$ ( 1 spring).
5. Remove the lubricant holder [B] (2 screws).
6. Slide out the front end of the holder [D] and remove the lubricant bar [C].

NOTE: The lubricant bar springs [E] can be installed in two positions. When installing a new lubricant bar, place the springs in the deeper position. If cleaning problem should occur. Change the position of the springs to compensate for the wear of the lubricant bar.


### 6.2.6 CHARGE CORONA GRID AND WIRE REPLACEMENT



1. Remove the charge corona duct cover [A].
2. Remove the charge corona unit [B] with the corona cleaner ( 2 screws).
3. Replace the grid.
1) Unscrew the screw [C] (1 screw).
2) Remove the grid [D] and replace it.
4. Remove the corona wire.
1) Remove the front $[E]$ and rear end $[F]$ covers from the corona unit $[H]$.
2) Replace the corona wire [G].

NOTE: 1) Do NOT touch the corona wire directly. Skin oils can damage the corona wire over time, causing uneven charging.
2) Do NOT bend the corona wire. If the wire is bent, it will not discharge uniformly. This causes uneven charging.
3) Put both ends of the corona wire in the end block slots.
4) Replace the front end block cover first. If the rear end block cover is replaced before the front cover, the corona wire may catch on the corona wire case slot. This may damage the wire.

## DRUM UNIT

### 6.2.7 POTENTIAL SENSOR REPLACEMENT



NOTE: The potential sensor consists of a sensor element and a control board. You must replace both the sensor and the control board at the same time.

1. Remove the drum (see "Drum Replacement").
2. Replace the potential sensor $[A]$.
3. Remove the charge corona fan $[B]$ from the drawer unit ( 1 screw, 1 connector).
4. Replace the potential sensor control board [C] (1 connector).

### 6.3 SCANNER UNIT

### 6.3.1 EXPOSURE LAMP REPLACEMENT



1. Remove the exposure glass (see "Covers, Fans, and Filters").
2. Move the first scanner next to the opening in the frame.
3. Push the exposure lamp terminal $[A]$ in the direction shown, and remove the lamp [B].
4. Install the new lamp in the reverse order of disassembly.

NOTE: Do NOT touch the glass surface of the new lamp.
Ask the user to do the ACC procedure after replacing the lamp.

### 6.3.2 SBU REPLACEMENT




1. Remove the exposure glass (see Covers, Fans, and Filters).
2. Remove the upper right cover [ A ] (see Covers, Fans, and Filters).
3. Remove the scanner inner cover [B] (9 screws).
4. Remove the operation panel [C] (see Covers, Fans, and Filters).
5. Remove the upper right stay [D] (4 screws).
6. Disconnect the SBU [E] and APS sensor connectors.
7. Remove the SBU [E] (4 screws).
8. Do the user mode ACC procedure. If necessary adjust the ACC targets and/or the KCMY color balance.

### 6.3.3 SCANNER IPU BOARD REPLACEMENT



1. Remove the right cover (see section 6.1).
2. A259/A260 only: Remove the shield plate [A] (3 screws).
3. Remove the Flash ROM card cover [B] (3 screws).
4. Disconnect the LD flat cable [C] and connector [D] (also disconnect CN312 [E] on the main control board for A260).
NOTE: Open the connector of the LD flat cable carefully by using a small blade screw driver. When the connector is opened by hand, it breaks easily.
5. Pull out the IPU base slightly [F] (2 screws).
6. Disconnect CN404, CN407, and CN408 on the scanner IPU board (3 connectors).
$\Rightarrow \quad$ NOTE: Open CN408 carefully by using a small blade screwdriver.
7. Pull out the IPU base further and unplug 6 more connectors.
8. Fully pull out the IPU base [F], and unscrew the 8 screws on the scanner IPU board [G].
9. Take out the scanner IPU board [G] while turning it toward you, and disconnect the IDU connector $[\mathrm{H}]$.

### 6.3.4 SCANNER WIRE/SCANNER MOTOR REPLACEMENT



1. Remove the exposure glass and the exterior covers.
2. Remove the upper right stay [A] (4 screws) and the upper left stay [B] (4 screws).
3. To change the front scanner wire: Remove the wire cover [C] (2 screws). To change the rear scanner wire: Do the following.
a) Disconnect the platen cover position sensor [D] and remove the platen cover frame [E] (4 screws).
b) Remove the lamp regulator [F] ( 2 screws, 3 connectors) and scanner drive board [G] (4 screws, 3connectors).

4. Remove the scanner motor [A] (1 connectors, 1 ground wire, 4 screws, 1 tension spring [B], 1 timing belt [C].
NOTE: When reinstalling the scanner motor, pull the timing belt taut with the tension spring.

5. Loosen the wire clamp screw [A] and remove the scanner wire. Then loosen the clamp screw on the side where the wire will not be replaced.
6. Route the new scanner wire as shown. Take care to thread the wire on the pulley the correct way round. One end of wire has a ball attached to it, and the other end has a ring.
1) Secure the first and second carriages on the scanner with 4 scanner locking pins [B] (2 on each side).
NOTE: The correct scanner locking position is such that the scanner locking pins slide out smoothly.
2) Loosen the wire tension bracket retaining screw [C] and remove the spring [D] then secure the tension bracket retaining screw temporarily.
3) Place the ball located at the center of the wire in the groove on the pulley (1) and wind the wire the number of turns shown in the drawing on the right [E].
NOTE: Winding procedure: Wind two turns outward (clockwise) from the ball at the center of the wire (up to the red mark [F]), then 4 turns inward (counterclockwise) (up to the black mark [G]). Wind a total of 7 turns including the one for the center ball.
4) Route the end of the wire that has the ball through the pulleys as shown (2) and (3), then fit the ball into the slot in the frame (4).
5) Route the end of the wire that has the ring through the pulleys as shown (5), (6), (7), and (8), then hook the ring onto the wire tension bracket (9).

7. Hook the spring $[A]$ onto the wire tension bracket $[B]$, then loosen and retighten the screw permanently.
8. Secure the wire with the scanner wire clamp [C].
9. Remove the scanner locking pins [D].
10. Replace all the parts removed earlier, except for those removed in step 1.
11. After tensioning the wire by executing a scanner free run (SP mode 4-013-001), reset the scanner locking pins [D]. If the pins do not properly fit into the holes, loosen and reset the scanner wire clamp [C] so that the pins properly fit into the holes.
12. Replace the parts removed in step 1.

### 6.3.5 APS SENSORS



1. Remove the exposure glass.
2. Replace the APS sensors [A] ( 1 screw and 1 connector).
3. Remove the upper right cover [B] (1 screw) and the scanner inner cover [C] (9 screws).
4. Remove the APS sensor [D] (1 screw and 1 connector).

### 6.3.6 SCANNER HP SENSOR



1. Remove the exposure glass (see section 6.1.).
2. Remove the upper left cover (see section 6.1.).
3. Remove the scanner HP sensor [ $E$ ] ( 1 screw, 1 connector).

### 6.4 COPY IMAGE ADJUSTMENT

### 6.4.1 PRINTER GAMMA ADJUSTMENT

## Setting the KCMY standard values

Use the auto color calibration function (see the Operating Instructions).

## Gamma Data Print Out

Use SP 7-904 to print the current printer gamma settings for copier and printer mode.

SP 7-904-1 prints a list for copier mode. SP 7-904-2 prints a list for printer mode.
NOTE: This list cannot be printed on paper shorter than A4/LT length.

## KCMY color balance adjustment

The printer gamma curve created during the auto color calibration can be modified using SP mode. Use only the offset adjustments.
NOTE: Do not use the 'option' adjustments.
The greater the value of low ID, middle ID, high ID, and ID max, the higher the density is.

| Low ID | Levels 2 through 5 in the C4 chart 10-level scale |
| :---: | :--- |
| Middle ID | Levels 3 through 7 in the C4 chart 10-level scale |
| High ID | Levels 6 through 9 in the C4 chart 10-level scale |
| IDmax | Level 10 in the C4 chart 10-level scale (affects the entire range <br> of image density) |

SP7-904 (printer gamma printout) can be used to print the current values.

There are three adjustable modes:

- Text mode
- Photo mode
- B/W text mode

Also, there are separate adjustments for copier and printer mode.

Copy mode

|  |  | $\mathbf{K}$ | $\mathbf{C}$ | $\mathbf{M}$ | $\mathbf{Y}$ |
| :--- | :--- | :---: | :---: | :---: | :---: |
| Text mode | Low ID | $4-910-001$ | $4-911-001$ | $4-912-001$ | $4-913-001$ |
|  | Middle ID | $4-910-002$ | $4-911-002$ | $4-912-002$ | $4-913-002$ |
|  | High ID | $4-910-003$ | $4-911-003$ | $4-912-003$ | $4-913-003$ |
|  | IDmax | $4-910-004$ | $4-911-004$ | $4-912-004$ | $4-913-004$ |
| Photo | Low ID | $4-915-001$ | $4-916-001$ | $4-917-001$ | $4-918-001$ |
|  | Middle ID | $4-915-002$ | $4-916-002$ | $4-917-002$ | $4-918-002$ |
|  | High ID | $4-915-003$ | $4-916-003$ | $4-917-003$ | $4-918-003$ |
|  | IDmax | $4-915-004$ | $4-916-004$ | $4-917-004$ | $4-918-004$ |
| B/W text | Low ID | $4-914-001$ |  |  |  |
|  | Middle ID | $4-914-002$ |  |  |  |
|  | High ID | $4-914-003$ |  |  |  |
|  | IDmax | $4-914-004$ |  |  |  |

Printer mode

|  |  | $\mathbf{K}$ | $\mathbf{C}$ | $\mathbf{M}$ | $\mathbf{Y}$ |
| :---: | :--- | :---: | :---: | :---: | :---: |
| Text mode | Low ID | $4-919-001$ | $4-920-001$ | $4-921-001$ | $4-922-001$ |
| and photo | Middle ID | $4-919-002$ | $4-920-002$ | $4-921-002$ | $4-922-002$ |
| mode | High ID | $4-919-003$ | $4-920-003$ | $4-921-003$ | $4-922-003$ |
|  | IDmax | $4-919-004$ | $4-920-004$ | $4-921-004$ | $4-922-004$ |
|  |  |  |  |  |  |

## Adjustment procedure

1. Copy a C-4 chart in text mode. Compare the copy with the chart.
2. Enter SP mode.
3. Open SP 4-XX-X for text mode (see the above tables for the SP numbers).
4. Adjust the offset values until the copy quality conforms to the standard. (The diagrams at the end of this procedure explain the ID ranges affected by each setting.)
5. Copy a C-4 chart in photo mode. Compare the copy with the chart.
6. Open SP 4-XX-X for photo mode (see the above tables for the SP numbers).
7. Adjust the offset values until the copy quality conforms to the standard.
8. Copy the C-4 chart in auto text/photo mode.
9. Examine the photo part (lower half of the image) on the C-4 chart. Compare the copy with the chart. Proceed to the next step if color displacement errors are found. Terminate the adjustment if the check proves normal.
10. Adjust the offset for low ID within the range of + _ 2 .

## Standard Copy Quality

IDmax: (K, C, M, and Y)
Adjust the offset value so that the density of level 10 matches the C-4 chart.

## Middle ID: (K, C, M, and Y)

Adjust the offset value so that the density of level 6 matches the C-4 chart.

High ID: (K, C, M, and Y)
Adjust the offset value so that the density of level 8 matches the C-4 chart.

Low ID: (K, C, M, and Y)
Adjust the offset value so that level 2 is just visible in the copy image and the density of level 3 matches the C-4 chart.

K Low ID: (C, M, and Y) - Do for photo mode only

Adjust the offset value so that the color balance of black scale levels 3 through 5 in

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |

 the copy is seen as gray.

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### 6.4.3 MAIN SCAN DOT POSITION CORRECTION

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

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

NOTE: Be sure to copy in the photo mode. This is because color displacement cannot be checked properly in text mode .
4. Check the yellow and cyan vertical lines. (Use a Magnification Scope to do this.) If they exactly overwrite the black line at the edges of the copy, exit the SP mode to end the adjustment. If the yellow and cyan lines significantly extend beyond the black line, proceed to the next step.
5. Press the Interrupt key to return to the SP mode and open SP4-932. Compare the current values against the table.

| $4-932-001$ | Dot correction R left edge |
| :--- | :--- |
| $4-932-002$ | Dot correction R right edge |
| $4-932-003$ | Dot correction B left edge |
| $4-932-004$ | Dot correction B right edge |

6. Referring to the diagram lower down the page, change the values in accordance with the following rules:

Case 1. When the yellow line is to the left of the black line, and the cyan line is to the right of the black line.

- If the edges of the yellow and cyan lines deviate evenly from the black line, select the value in the middle row that is immediately to the left of the current value.
- If the cyan line's edge is farther from the black line than the yellow line's edge, select the value in the top row that is immediately to the left of the current value.
- If the yellow line's edge is the farther from the black line than the cyan line's edge, select the value in the bottom row that is immediately to the left of the current value.
Case 2. When the cyan line is to the left of the black line, and the yellow line is to the right of the black line.
- If the edges of the yellow and cyan lines deviate evenly from the black line, select the value in the middle row that is immediately to the right of the current value.
- If the cyan line's edge is the farther from the black line than the yellow line's edge, select the value in the top row that is immediately to the right of the current value.
- If the yellow line's edge is the farther from the black line than the cyan line's edge, select the value in the bottom row that is immediately to the right of the current value.


In the above diagram:

- The first digit represents the value of the red correction (4-932-001: R left, 4-932002: R right)
- The second digit represents the value of the blue correction (4-932-003: B left, 4-932-004: B right)


### 6.5 LASER OPTICS SECTION

| $\boxed{\text { W WARNING }}$ |
| :--- |
| Turn off the power and unplug the machine before attempting any of the |
| procedures in this section. Laser beams can seriously damage your eyes. |

## CAUTION DECAL LOCATIONS

Two caution decals are located in the laser section as shown below.


[^1]
### 6.5.1 POLYGON MIRROR MOTOR REPLACEMENT



1. Remove the following covers (see "Covers, Fans, and Filters").

- Right cover (1 screw)
- Operation panel (A259/A260: 2 screws, 3 connectors, and 2 grounding wires A258: 2 screws, 1 connector, and 1 grounding wire [Europe only])
- Upper rear cover (3 screws)
- Upper left cover (1 screw)

2. Remove the IC card cover [A] (3 screws).
3. Disconnect 2 connectors $[B]$.
4. A259/A260 only: Remove the shield cover [C] (3 screws).
5. A260 only: Disconnect connector [D] (CN312).
6. Unscrew the scanner clamp screws [E] (4 screws).
7. Remove the support rod [F].
8. Tilt the scanner and set the support rod as shown [G].

| $\boxed{\text { CAUTION }}$ |
| :--- | :--- |
| Do not remove the support rod while the scanner unit is tilted. |
| Disengagement of the support bar may cause the scanner unit to fall down. |


9. Disconnect 3 connectors $[A]$.
10. Remove the optical housing unit [B] (4 screws).
11. Remove the optical housing cover [C] (10 hooks).
12. Remove the polygon mirror motor [D] (4 screws and 1 connector).

## $\triangle$ CAUTION

1. Do NOT attempt to trigger the LD with the optical housing cover open.
2. After reassembly, make sure that the optical housing cover is closed completely.

### 6.5.2 LASER SYNCHRONIZING DETECTOR BOARD AND LD UNIT REPLACEMENT



1. Remove the optical housing unit (see "Polygon Mirror Motor Replacement").
2. Replace the laser synchronizing detector boards $[A]$ ( 2 screws and 1 connector each).
3. Replace the LD unit [B] (2 screws and 1 connector).

### 6.5.3 SQUARENESS ADJUSTMENT



This procedure finely adjusts the image obliqueness caused by the laser unit.
NOTE: This procedure is used to finely adjust the inclination of horizontal lines in the image (across the page) by turning the laser unit, which tilts the scanning line of the laser beam.

1. Print the SP mode test pattern number 1 of SP5-955-018 and measure the inclination of the horizontal lines on the printout in relation to the normal position.
NOTE: When the laser unit is not squared, lines in the horizontal scanning direction are inclined and lines in the feed direction (vertical lines) stand upright.
2. Loosen the four screws securing the optical housing unit.
3. Remove the pin $[A]$ at the front left side of the optical housing unit.
4. Turn the optical housing unit in the direction of arrow $A$ or arrow $B$, depending on the inclination of the lines in the horizontal scanning direction you measured (see the diagram on the following page for guidelines).
5. Tighten the screws again (4 screws).


Turning in the direction of arrow A: This tilts horizontal lines in the image clockwise.

Turning in the direction of arrow B: This tilts horizontal lines in the image counterclockwise.

Amount of inclination:
The inclination of horizontal lines on the image is almost equal to the angle by which the scanner unit is turned.

Standard value:
The amount of inclination for a 240 mm scanning line must not be more than 0.5 mm .

### 6.6 DEVELOPMENT UNIT

### 6.6.1 REPLACING THE DEVELOPER

## Developer Collection Procedure



NOTE: Place a protective sheet on the floor. Take care not to spill developer on the customer's floor.

1. Remove the left and right inner covers, transfer belt stay, and charge corona unit, then pull out the drawer unit (2 screws).
NOTE: Before drawing out the drawer unit when there is no transfer belt unit, place a sheet of paper $[A]$ on the registration roller [B]. This is required because toner will spill from the rear end of the toner collection coil for the drum onto the registration roller.
2. Remove the drum unit [C] (2 connectors) and cover the drum with paper.

NOTE: Cover the drum with a sheet of black paper or 5 or more sheets of white paper. Otherwise, the drum will be exposed to light, subjecting the drum to optical fatigue (see "Troubleshooting - Drum Light Fatigue").

3. Remove the left revolver stopper [A] from its storage location on the drawer unit ( 1 screw) and fit it into the slot [B] at the rear of the revolver side panel and in the notch [C] on the drawer unit stay.

## $\triangle$ CAUTION <br> If you do not install the revolver stopper before removing the development unit, the revolver may rotate, causing permanent damage to the development unit or its holder.

4. Open the locks [D] at both ends of the development unit [E] (1 screw each) and remove the development unit [E].

NOTE: When attaching and detaching the development unit, be sure to turn it in the direction shown in the diagram. Turning the development unit in the wrong direction may cause developer to spill from the toner hopper.


#### Abstract

$\triangle$ CAUTION Remove the development units one color at a time (never remove two or more development units from the revolver at the same time). Removing two or more development units at the same time may upset the balance of the revolver. This will cause the revolver to revolve by itself, catching, hitting or trapping your fingers inside the unit.



5. Remove the developer cover [A] (2 screws).
6. Hold the development unit upside down in the developer collection bag, then rotate the sleeve in the forward direction $[B]$ to collect the developer.
NOTE: When rotating the sleeve in the forward direction, keep the sleeve side facing up so that the developer will not be scooped up onto the sleeve.
7. Repeat the forward rotation/collection cycle until developer does not appear on the sleeve.
8. Rotate the sleeve in the opposite direction, then hold the development unit upside down again to collect the developer attached to the sleeve surface.

## Installing New Developer



1. Place the development unit $[A]$ in the developer installation position $[B]$ and pour in 1 bag ( 380 g ) of developer [C].
NOTE: 1) When installing new developer, place the development unit on a flat space.
2) When pouring developer, fill up the space between the development roller and the first auger first. Then fill up the space between the two augers. This speeds the agitation of the developer and prepares it for use more quickly.
2. Place the development unit in the developer scoop-up position [D]. Check that the developer is not flowing out of the development unit casing while rotating the sleeve in the forward direction.

## $\triangle$ CAUTION

1. If the developer is not installed on a flat place, the development unit casing may bend and cause developer to fall when the sleeve is rotated. If this occurs, remove and reinstall the developer.
2. Do not rotate the development sleeve in the reverse direction.

3. Replace the developer cover (2 screws) and put the development unit [A] in the drawer unit (2 lock screws [B]).

## $\triangle$ CAUTION

1. When replacing the developer cover and development unit, do not apply excessive force to the center of the development unit. The doctor gap will bend, altering the developer scooping efficiency.
2. When replacing the developer cover, first press both ends of the cover to confirm that the cover is properly set, and then secure it with the screws. If the ends of the cover are not properly set, developer may fall from the gap.
3. When installing the development unit in the drawer unit, hold the front and rear end of the development unit. Holding the center of the development unit may cause the development unit casing to bend, and developer may spill. If this occurs, remove then reinstall the developer.
4. Make sure that the developer locks (forward and rear) are secured with screws before rotating the revolver. This protects the developer assembly and locks from damage.
5. Tighten the developer lock screws firmly. Loose lock screws will cause the PG (Photoconductor Gap) to fluctuate.

6. Remove the revolver stopper [A], rotate the revolver to the next color, then follow the developer installation procedure from step 1.
NOTE: The revolver unit rotates counterclockwise. Do NOT try to turn it in the other direction.

## $\triangle$ CAUTION <br> If you do not install the revolver stopper before removing the development unit, the revolver may rotate, causing permanent damage to the development unit or its holder.

### 6.6.2 DRUM/DEVELOPER REPLACEMENT SP MODES

Follow the procedure in the flow chart shown below during the post developer collection procedure.

Also use this flowchart after replacing the drum.


After the end, adjust the image quality. (Do the user mode ACC procedure. If necessary adjust the KCMY color balance.)

### 6.6.3 DEVELOPMENT UNIT REPLACEMENT



The development unit $[A]$ service part is the same for each of the KYCM colors. Each unit has four pins.
When replacing a development unit, cut off one of the pins [B].
For example, when installing a new development unit for black, cut off the pin marked Bk.

### 6.6.4 TONER COLLECTION TRAY CLEANING



NOTE: Place a protective sheet on the floor. Take care not to spill developer on the customer's floor.

1. Remove the left and right inner covers, transfer belt stay, and charge corona unit, then pull out the drawer unit [A] (2 screws).
NOTE: Before drawing out the drawer unit when the transfer belt unit has been removed, place a sheet of paper [B] on the registration roller [C]. This is required because toner will spill from the rear end of the toner collection coil from the drum onto the registration roller.
2. Remove the drum unit [D] (2 connectors) and cover the drum with paper.

NOTE: Cover the drum with a sheet of black paper or 5 or more sheets of white paper. Otherwise, the drum will be exposed to light, subjecting it drum to optical fatigue (see "Troubleshooting - Drum Light Fatigue").
3. Remove the toner collection tray [E] (2 screws) and clean it.

### 6.7 TRANSFER BELT UNIT

### 6.7.1 TRANSFER BELT SECTION

## Transfer Belt and Cleaning Unit


[B]


NOTE: Take care not to get the customer site dirty. Put down a floor mat before removing the cleaning unit.

1. Remove the right inner cover ( 2 screws).
2. Turn the transport release lever [A].
3. Remove the paper transfer unit positioning stay $[B]$ ( 2 screws) and pull out the paper transfer unit [C].
4. Remove the snap ring [D] and set the belt tension release lever to the "Transfer Belt Unit Install/Uninstall [E]". Then put the snap ring back on.
5. Remove the transfer belt stay [F] (5 screws) and pull out the transfer belt unit [G].

6. Remove the cleaning unit retainers [A] from the cleaning unit (2 snap rings) and remove the cleaning unit [B].
7. Lift up the belt unit and detach the upper part of the transfer belt bracket ( 2 screws). Lower the bracket [C], as shown.
8. Turn the belt tension release lever in the direction shown, to set it to the "Transfer Belt Replacement" position.
9. Pull and turn the transfer belt [D], to remove it.

NOTE: 1) Hold the transfer belt at its edge. Never touch the belt surface. Any dirt on the belt might cause poor copy quality.
2) After removing the transfer belt, clean each roller with water or alcohol. When using alcohol, set the rollers aside for about 10 minutes to dry. If alcohol remains on the rollers when the belt is replaced, the rollers may adhere to the belt.

10. Replace the transfer belt and reset the transfer belt bracket.

NOTE: When installing a new transfer belt, make sure that the belt rims at both ends are past the ends of the roller.
11. Turn the transfer belt release lever in the direction shown above [A], and apply setting powder $[\mathrm{B}]$ to the entire belt surface, before putting back the cleaning unit [C].
12. Attach the cleaning unit to the transfer belt unit and turn the joint section of the cleaning unit [D] in the direction shown above, to pressurize the blade.
13. After pressurizing the blade, rotate the belt one turn in the direction shown above [ E ] to orient the belt with the blade.
NOTE: Failure to execute steps 11 to 13 may cause the belt to catch on the blade. This will cause the LCD to display SC452 (transfer belt home position detection error) or the blade bracket may become bent.
$\Rightarrow$ 14. Set the belt tension release lever to the "Transfer Belt Install/Uninstall Position $[F]$ " and reinstall the transfer belt unit.

## Hint for reinstalling the transfer belt unit.

When installing the transfer belt unit, hold it up with one hand underneath at the rear and slide it in along the rails. If it is not held up, it will not engage the coupling gears properly.

## Cleaning Blade Replacement

NOTE: Take care not to get the customer site dirty. Put down a floor mat before removing the cleaning unit.
[E]

[B]

[D]


1. Turn the lubricant bracket $[A]$ as shown (unhook 2 springs $[B]$ at both ends).
2. Remove the blade [C] (2 screws).

NOTE: Do not touch the rubber area of the blade.
3. After replacing the blade, turn the transfer belt release lever [D] in the direction shown, and apply setting powder [E] to the entire belt surface, before installing the cleaning unit.
4. Attach the cleaning unit to the transfer belt unit and turn the joint section [F] of the cleaning unit [G] in the direction shown above [H], to pressurize the blade.
5. After pressurizing the blade, rotate the belt one turn in the direction shown above [I], to orient the belt with the blade.
NOTE: Failure to execute steps 3 to 5 may cause the belt to catch on the blade. This will cause the LCD to display SC452 (transfer belt home position detection error) or the blade bracket may become bent.

## Lubricant Bar and Lubricant Brush Replacement



1. Remove the lubricant bracket $[A]$ ( 2 screws and 2 springs $[B]$ ).
2. Remove the lubricant bar [C].
3. Remove the lubricant brush [D] (2 snap-rings [E], 2 bearings, and 1 gear).

NOTE: When reinstalling the lubricant bar, make sure that the springs [F] are set properly.

### 6.7.2 PAPER TRANSFER UNIT

## Lubricant Bar And Blade Replacement



1. Remove the paper transfer guide plate (2 screws).
2. Remove the lubricant bar [A].
3. Remove the blade $[B]$ (3 screws).

## Paper Separation Corona Wire Replacement



1. Remove the paper separation corona unit [A] (2 screws).
2. Remove the paper separation corona guide [B].
3. Remove the corona wire [C] (1 spring).

NOTE: 1) When reinstalling the corona wire, make sure to reinstall the ring [D] in the middle of the corona wire.
2) Make sure the corona wire is properly set in place in the V-shaped notch at the rear.

## Transfer Roller Replacement



1. Remove the paper transfer guide plate [A] (2 screws).
2. Remove the drive gear $[B]$.
3. Remove the front and rear bearings [C] (1 E-ring).

### 6.8 PAPER FEED AND REGISTRATION SECTION

### 6.8.1 BY-PASS FEED TABLE REMOVAL



1. Remove the right cover (see "Covers, Fans, and Filters").
2. Disconnect the connector $[A]$.
3. Remove the front snap ring [B].
4. Tilt the by-pass feed table [C] by about 20 degrees, then remove it by pushing it toward the rear.

### 6.8.2 BY-PASS PAPER WIDTH DETECTION BOARD REPLACEMENT



1. Remove the by-pass feed table.
2. Remove the by-pass feed cover [A] (2 screws).
3. Remove the by-pass feed paper width detection board $[B]$ (1 screw).

NOTE: When installing the board, take care not to bend the terminal plate [C].

### 6.8.3 BY-PASS FEED, PICK-UP AND SEPARATION ROLLERS, AND TORQUE LIMITER REPLACEMENT



1. Remove the by-pass feed table.
2. Open the vertical transport door [A].
3. Remove the snap rings and replace the rollers.

NOTE: Clean the pick-up [B], feed [C], and separation rollers [D] with a moistened cloth.

### 6.8.4 BY-PASS FEED UNIT REPLACEMENT



1. Remove the following covers (see "Covers, Fans, and Filters"):

- Right front cover
- Right cover
- Right rear cover

2. Open the vertical transport door $[A]$.
3. Remove the by-pass feed table (1 connector, 1 snap ring).
4. Remove the by-pass feed unit [B] (2 screws and 1 connector).

### 6.8.5 REGISTRATION SENSOR REPLACEMENT



1. Remove the transfer belt unit.
2. Remove the registration sensor bracket $[A]$ ( 1 screw).
3. Remove the registration sensor $[B]$ ( 1 screw and 1 connector).

### 6.8.6 VERTICAL TRANSPORT DOOR REPLACEMENT



1. Open the vertical transport door [A].
2. Remove the bracket $[B]$ ( 1 screw).
3. Push in hinge [C], and remove the vertical transport door.

### 6.8.7 PAPER TRAY PICK-UP, PAPER FEED, AND SEPARATION ROLLER REPLACEMENT



1. Remove the paper tray.
2. Remove the paper feed roller [A] (1 snap ring), separation roller [B] (1 snap ring), and pick-up roller [C].

NOTE: Clean the pick-up, feed, and separation rollers with a moistened cloth.

### 6.8.8 PAPER FEED UNIT AND CLUTCH REPLACEMENT



1. Remove the following covers (see "Covers, Fans, and Filters"):
1) Used toner cover
2) Rear cover
3) Right rear cover
2. Remove the vertical transport door.
3. Remove the main exhaust fan.
4. Remove the paper feed clutch bracket $[A]$ ( 1 screw).
5. Remove the paper feed clutch $[B]$ (1 bearing and 1 connector).
6. Remove the three paper feed unit drive gears [C] (1 drive belt [D]).
7. Remove the paper feed unit [E] (2 screws and 1 connector).

### 6.8.9 COPY IMAGE AREA ADJUSTMENT

Adjust the leading edge registration for each paper type and line speed (normal paper, OHP, thick paper, $2 / 3$ speeds) to determine the leading edge margin. Also adjust the side to side registration for each paper feed station, to determine the left and right edge margins.
NOTE: When adjusting the leading edge registration, be sure the machine has been connected to the power outlet for more than 3 hours.
The leading edge margin should be $5 \pm 2 \mathrm{~mm}$. The adjustment procedure is described below.

## Preparation

1. Place the type of paper for the registration adjustment in the paper feed tray.
2. Enter SP mode and ensure that all the values of SP2-101 are 0.0 (default value).
3. Generate the trim patterns using the procedure shown below.
1) Select SP5-955-018 (Printer in Pattern).
2) Press "1" in "Data Input" on the screen at the ten-key pad and press \# (Enter key). "1" appears in the "Set Data" field.
3) Press the Interrupt key to temporarily exit the SP mode screen, select "B/W Mode" and the paper feed tray for the test, then press the Start key to generate the trim pattern.
4) Press the Interrupt key again to return to the SP mode screen.

## PAPER FEED AND REGISTRATION SECTION

## Leading Edge Registration

Standard value: $5 \pm 2 \mathrm{~mm}$

1. Enter SP mode 1-1 (leading edge registration adjustment).
2. Select the level 3 SP mode for the condition you wish to adjust.

- 1. Normal (wooden pulp paper)
- 2. OHP
- 3. Thick paper
- 4. 2/3 speed (printer mode)

3. Type a number in "Data Input" on the screen at the ten-key pad.

Input value range: - 5.0 to 5.0
After entering a number, press the \# (Enter key) to save the number in "Set Data."

To increase the leading edge margin [A]: Increase the stored value.
To decrease the leading edge margin: Reduce the stored value.
NOTE: To enter a negative number, press the 图 key before typing the value of the negative number.
4. Repeat printing and testing with the interrupt key until the margin $[A]$ in the trim pattern falls within the specified range.


## Side-to-side Registration

Standard value: $2 \pm 2 \mathrm{~mm}$

1. Enter SP mode 1-2 (side-to-side registration adjustment).
2. Select the paper feed unit to test.

- Manual feed (by-pass feed table)
- Tray 1 (Copier paper feed tray): A258 only
- Tray 2 (Optional paper feed unit, first tray)
- Tray 3 (Optional paper feed unit, second tray)
- Tray 4 (Optional paper feed unit, third tray)
- Duplex $2^{\text {nd }}$ side (Duplex unit): A259/A260 only

NOTE: Any value entered for Tray 1 is ignored in duplex models.
3. Type a number in "Data Input" on the screen at the ten-key pad. Input value range: -5.0 to 5.0
After entering a number, press the \# (Enter key) to save the number in "Set Data."

To move the image to the right (when viewing towards the direction of paper feed): Increase the stored value.

To move the image to the left (when viewing towards the direction of paper feed): Decrease the stored value.
NOTE: To enter a negative number, press the 图 key before typing the value of the negative number.
4. Repeat step 3) until the distance $[B]$ in the trim pattern (see the previous page) falls within the specified range.

NOTE: After the registration adjustment, reset the value of SP5-955-18 to "0" to resume normal copy operation.

### 6.9 PAPER TRANSPORT, FUSING, AND PAPER EXIT SECTIONS

### 6.9.1 FUSING UNIT REMOVAL



## $\triangle$ CAUTION

1. Be careful when handling the fusing unit. It is very hot.
2. Take care not to spill silicone oil on the floor. If silicone oil spills on the floor, immediately clean it up with a suitable solvent. Silicone oil is very slippery and can cause someone to fall.
3. Remove the front door (see "Covers, Fans, and Filters").
4. Lower the release lever [A], pull out the fusing unit, and unscrew the stopper [B] (1 screw).
NOTE: Hold the bottom of the fusing unit when you pull it out.

### 6.9.2 TRANSPORT UNIT REMOVAL



1. Remove the fusing unit.
2. Remove the transport unit lever $[A]$ ( 1 screw).
3. Remove the inner cover $[B]$ ( 1 screw).
4. Remove the mounting bracket [C] (1 screw).
5. Unplug the connector [D] and remove the transport unit [E].

### 6.9.3 FUSING UNIT TOP COVER REMOVAL



1. Remove the fusing unit knob $[A]$ (1 screw).
2. Remove the fusing unit top cover $[B]$ (2 screws).

### 6.9.4 OIL SUPPLY PAD AND OIL BLADE REPLACEMENT



1. Remove the fusing unit top cover.
2. Remove the oil supply pad $[A]$ (5 screws).
3. Remove the oil supply unit mounting screws (2 screws) and release the oil supply unit $[B]$ from the top of the fusing unit.
4. Clean the oil supply roller [C], sub-roller [D], and hot roller blade with a dry cloth.
5. Remove the oil supply roller unit [E] (2 springs and 2 screws).
6. Remove the hot roller blade bracket [F] (4 screws).
7. Remove the hot roller blade [G] (3 screws).

### 6.9.5 HOT ROLLER THERMOFUSE REPLACEMENT



1. Remove the top cover.
2. Remove the hot roller thermofuse $[A]$ ( 1 screw and 2 connectors).

### 6.9.6 FUSING UNIT DISASSEMBLY



1. Remove the top cover.
2. Remove the oil supply pad (see Oil Supply Pad Replacement).
3. Remove the oil supply unit (see Pressure Roller and Pressure Roller Fusing Lamp Removal).
4. Open the paper exit door behind the fusing unit $[A]$.
5. Turn the pressure release screws $[B]$ clockwise to release the pressure roller pressure.
6. Disconnect the oil end sensor connector [C].
7. Remove two lock screws [D].
8. Remove the upper fusing unit assembly [E]

### 6.9.7 CLEANING ROLLER SCRAPER CLEANING

$Q$

[B]


1. Remove the top cover.
2. Remove the lock lever [A] (1 step screw).
3. Remove the cleaning roller scraper [B] (2 screws).
4. Clean the cleaning roller scraper with a dry cloth.

### 6.9.8 HOT ROLLER THERMISTOR REPLACEMENT



1. Disassemble the fusing unit (see Fusing Unit Disassembly).
2. Remove the oil sump $[A]$ ( 1 screw).
3. Replace the hot roller thermistor $[B]$ ( 1 screw and 1 connector).

### 6.9.9 HOT ROLLER FUSING LAMP REPLACEMENT



1. Disassemble the fusing unit (see Fusing Unit Disassembly).
2. Remove the front and rear lamp holders [A] (1 screw each).
3. Replace the fusing lamp (2 connectors).

NOTE: The hot roller fusing lamp is an 800 W lamp. The rating is printed on one end of the lamp.

### 6.9.10 HOT ROLLER AND CLEANING ROLLER REPLACEMENT AND CLEANING



1. Disassemble the fusing unit (see Fusing Unit Disassembly).
2. Remove the hot roller fusing lamp.
3. Remove the front $[A]$ and rear $[B]$ roller stoppers ( 1 screw each).
4. Remove the hot roller [C] and hot roller shaft bearings [D] (2 C-rings [E], 2 bushings [F], 2 gears [G]).
NOTE: Apply grease to the inner and outer surfaces of the bushings.

## . CAUTION <br> Be sure to apply the grease to the bushings [F] after they have cooled. The grease vaporizes when heated. The resulting gas is harmful if inhaled.

5. Clean the cleaning roller with a suitable solvent or replace the cleaning roller [I] (2 E-rings).

### 6.9.11 PRESSURE ROLLER AND PRESSURE ROLLER FUSING LAMP



1. Disassemble the fusing unit into two parts (See Fusing Unit Disassembly, Section 6.9.6).
2. Remove the oil tank [A].
3. Remove the oil supply unit assembly [B] (3 screws).
4. Remove the entrance guide plate [C] (2 screws).
5. Remove the front lamp holder [D] (1 screw).
6. Remove the front and rear connectors [E].
7. Disconnect the rear connector [ $E$ ] while keeping the other connectors in place (2 screws).
8. Slide the rear connector under the stay as shown [F].
9. Remove the pressure roller together with the pressure roller lamp [G].
10. Remove and replace the pressure roller lamp.
11. Replace the pressure roller and pressure roller bearings $[\mathrm{H}]$.

NOTE: The pressure roller fusing lamp is a 400 W lamp. The rating is printed on one end of the lamp.

### 6.9.12 PRESSURE ROLLER THERMOFUSE AND THERMISTOR REPLACEMENT



1. Remove the paper exit door [A] (1 snap ring).
2. Replace the pressure roller thermofuse $[B]$ ( 1 screw and 2 connectors).
3. Replace the pressure roller thermistor [C] ( 1 screw and 2 connectors).

### 6.9.13 NIP BAND WIDTH ADJUSTMENT



NOTE: 1) Check and adjust the nip band width AFTER the copier has warmed up.
2) Place an OHP sheet on the by-pass feed table before starting this procedure.
3) Use only A4/LT sideways (other sizes of OHP sheet may cause a paper jam).
4) If a sorter is connected to the copier, disconnect the sorter connector and remove the sorter, otherwise a paper jam will occur after ejecting the OHP sheet.

1. Enter SP mode and measure the fusing nip band width (SP1-109).
2. When the OHP sheet is ejected, measure the nip width of the bands.
1) Use a rule to measure the width of the slightly opaque area on the OHP sheet.
2) If the slightly opaque area has notched boundaries, measure the narrowest width.
3) For both edges of the OHP sheet, measure the width 10 mm away from the edge.
3. Check that the average width of the three bands (front, rear, and center) matches the standard value.

## Standard value

Center: $8.7 \pm 0.3 \mathrm{~mm}$
Edge deviation: 0.5 mm maximum
4. If the measured nip width does not correspond to the standard value, adjust the nip width using the pressure roller screw [A].
Then repeat steps 1 to 4 until the width is correct.

### 6.9.14 CAUTIONS TO BE TAKEN WHEN USING A FUSING UNIT THAT HAS BEEN IN STOCK FOR A LONG PERIOD

NOTE: When using a fusing unit that has been in stock for an extended period, press the pump with your fingers to check whether an adequate amount of oil is pumped up.

Reason: A fusing unit that has been stocked unused for a long time may have a clogged pump or valve in the oil supply unit. Such a fusing unit will not run smoothly. This may result in an oil supply shortage and the hot roller will fail earlier than normal.

### 6.10 DUPLEX UNIT

### 6.10.1 DUPLEX UNIT REMOVAL



1. Open the duplex unit $[A]$.
2. Remove the duplex unit (4 screws).

### 6.10.2 SEPARATION ROLLER REPLACEMENT



1. Remove the duplex unit (see procedure 10.1).
2. Remove the separation roller assembly $[A]$ (2 screws).
3. Remove the spring $[\mathrm{B}]$.
4. Replace the separation roller [C] (2 E-rings and 2 bearings).

NOTE: Be sure to install the separation roller (one-way clutch) so that the clutch is visible.

### 6.10.3 FEED ROLLER REPLACEMENT



1. Open the duplex unit.
2. Remove the guide rail $[A]$ ( 1 screw and 1 snap-ring).
3. Remove the upper guide plate $[B]$ and lower guide plate [C] (1 snap-ring).
4. Remove the inner cover [D] (2 screws).
5. Remove the 2 snap-rings [E] from both ends of the feed roller shaft.
6. Slide the bearings $[F]$ inward.
7. Replace the feed roller [G] (2 E-rings, 2 paper flatteners [H], and 1 guide roller [I]).

NOTE: 1) Be sure to install the feed and guide rollers correctly.
2) The feed roller is made of silicone rubber and is not compatible with the non-silicone rubber feed rollers used in some previous models.

### 6.10.4 DUPLEX FEED MOTOR REPLACEMENT



1. Perform steps 1 through 4 of Feed Roller Replacement.
2. Remove the bracket $[A]$ ( 1 screw).
3. Remove the feed roller shaft assembly [B] (2 snap-rings).
4. Remove the pulley [C] and the timing belt [D].
5. Remove the pressure spring [E].

6. Disconnect the connector $[A]$ of the duplex feed motor $[B]$.
7. Close the side fences [C] and remove the duplex feed assembly [D] (5 screws).
8. Remove the duplex feed motor assembly (3 screws).
9. Replace the duplex feed motor (2 screws).

NOTE: 1) When installing the duplex feed assembly [D] on the base unit, place the bottom plate [F], with the mylar strip [E], over the bracket tabs [G].
2) Ensure the base unit's mylar strip $[\mathrm{H}]$ is placed against the guide plate [I], as shown. It must not go under the guide plate.

### 6.11 SYSTEM AND ELECTRONICS

## Flash ROM card handling precautions:

- Never insert or remove a Flash ROM card with the main power switch on.
- Do not turn the main power switch off during the software installation process.
- Since the Flash ROM card is a precision part, it must not be exposed to high temperature, humidity, or direct sunlight.
- Never bend, scratch, or apply excessive shock to a Flash ROM card.


### 6.11.1 IPU PROGRAM DOWNLOADING



1. Turn off the main power switch on the copier.
2. Remove the right cover [A] (see "Covers, Fans, and Filters").
3. Remove the scanner IPU box cover [B] (2 screws) and flash ROM cover [C] (2 screws).
4. Insert the Flash ROM card [D] that contains the new IPU software.

NOTE: Insert the Flash ROM card with side "A" facing up.
5. Turn on the main power switch. When the system starts, the program in the

Flash ROM card automatically is downloaded to the scanner IPU board.
NOTE: Do not remove the Flash ROM card from the copier or disconnect the power cord while the system is loading. When downloading the program, LED3 on the scanner IPU board lights. It takes about 30 seconds to finish downloading.
6. After downloading, LED3 turns off and LED4 starts blinking.

NOTE: SC 690 might be displayed on the LCD. This is normal for this machine.
7. Turn off the main switch, then remove the Flash ROM card.
8. Turn on the main switch again.
9. When the copier is in standby mode, check the program version with SP 7-801002. If the download failed, repeat the procedure.

### 6.11.2 MAIN PROGRAM DOWNLOADING



1. Turn off the main power switch on the copier.
2. Open the front cover and remove the transfer inner cover (see "Covers, Fans, and Filters").
3. Insert the Flash ROM card [A] that contains the new main program.

NOTE: Insert the Flash ROM card with side "B" facing right when viewed from the front.
4. Turn on the main power switch while keeping the front door open. This will force the machine to skip the process control initialization. When the system starts and the LCD displays the normal menu, close the front cover and go to SP5-827 to download the main program.
5. Select "OK" to start. Press " 1 " then "Enter" to download.
6. Wait until end of processing is indicated on the screen (approximately 3 minutes, depending on the size of the software).
7. When an end of processing message appears, turn the main power switch off and remove the Flash ROM card.
8. Replace all covers and turn on the main power switch.
9. Check the version of the software using SP7-801-001.

NOTE: If the download fails and the LCD does not display an "OK" message, turn the main power switch off again, remove and insert the Flash ROM card, then re-execute the download procedure. If it fails again, reprogram the Flash ROM card and re-execute the download procedure.

### 6.11.3 NV-RAM UPLOADING AND DOWNLOADING

With SP mode, copier settings can be uploaded to a Flash ROM chip on the main board from the NV-RAM, or downloaded from a Flash ROM chip to the NV-RAM.

## SP5-824: Upload

Executing an upload saves the copier settings (including the main counter value and serial number) onto a Flash ROM chip on the main control board.

## SP5-825: Download

Executing a download loads copier settings (excluding the main counter value and serial number) from a Flash ROM chip on the main control board into the NV-RAM.

## Upload/Download Procedure

1. Print out the copier settings that have been modified from their defaults, using SP7-902.
2. Turn the main power switch off and insert the Flash ROM card into the main control board (see Main Program Downloading).
3. Turn the main power switch on and start one of the following SP modes.

- Upload: SP5-824
- Download: SP5-825

4. To start uploading or downloading:

A258: Input " 1 " and "\#".
A259/A260: Press "ON".
5. Wait until end of processing is indicated on the screen (approximately a few seconds, depending on the size of the software).
6. When an end of processing message appears, turn the main power switch off and remove the Flash ROM card.
7. Replace all covers and turn on the main power switch.
8. Using the settings list printed in step 1 using SP7-902, input the values that were different from the factory settings (after downloading).

### 6.11.4 RAM CLEAR

## RAM Clear Procedure

NOTE: Clearing the RAM resets all SP and UP values to the defaults, except the serial number and main counter value. Therefore, it is important to clear the RAM using the procedure shown below.

1. Before clearing the RAM, execute SP7-902 to output the SP mode values that have been changed from their default values.
2. Upload the settings from the NV-RAM onto a Flash ROM card using SP5-824 (see "NV-RAM uploading and downloading").
3. Use SP5-801 to clear the RAM.
4. Run the forced process control self-check (this is required since RAM clearing also initializes the process control data).
5. Enter the SP mode changes that were printed in step 1, or download the NVRAM values from the Flash ROM card (see the download procedure).
6. Perform the auto color calibration (ACC) procedure.
7. If the color balance after the ACC is not satisfactory for the customer, adjust the ACC target using SP4-502 (for copier mode) and SP4-503 (for printer mode), and/or adjust the KCMY colour balance.
8. A259/A260: Calibrate the touch panel.

## Precautions when replacing the NV-RAM



The NV-RAM stores the counter value and the copier settings.
The procedure for replacing the NV-RAM on the main control board is given below.
Make sure you have the factory settings that come with the copier before beginning the following procedure:

1. Print the SP mode values that have been modified from their default values, using SP7-902.
2. Turn the main power switch off and unplug the power cord.
3. Remove the right upper cover $[A]$ ( 1 screw).
4. A259/A260 only: Remove the shield plate [B] (3 screws)().
5. Replace the NV-RAM [C] at IC106 (for A258) or IC104 (for A259/A260) on the main control board.
6. Assemble the machine in the reverse order of disassembly.
7. Turn on the main power and enter the machine's device number in the factory set mode (consult your executive for details).
8. Execute SP5-801 (RAM Clear).
9. Enter the SP mode changes you printed in step 1.
10. Perform the auto color calibration (ACC) procedure.
11. If the color balance after the ACC is not satisfactory for the customer, adjust the ACC target using SP4-501 (for copier mode) and SP4-502 (for printer mode), and/or do the KCMY color balance adjustment.
12. A259/A260: Calibrate the touch panel.

### 6.11.5 TOUCH PANEL CALIBRATION (A259/A260 ONLY)



It is necessary to calibrate the touch panel in the following cases:

- After the operation panel is replaced.
- The touch panel coordinates are illegible or misaligned.
- After the NVRAM is cleared.

1. Press the $\approx=\square$ key, then press and hold the ${ }^{c / 8}$ key (for 3 seconds or longer). The calibration screen will appear.
2. Gently touch the screen with the tip of a pen in the sequence indicated by the arrow, which appears on the screen (from upper left to lower right).
3. Touch any location with the touch pen to verify the current coordinates.
4. Terminate the calibration with the almost match the point you touched. If the coordinates disagree, rerun the calibration with the key.

NOTE: Do not use too sharp a tip in this procedure. The touch panel might be damaged.

### 6.12 OTHER

### 6.12.1 DRIVE SECTION REMOVAL PROCEDURE

1. Remove side covers (right and left).
2. Remove the rear covers.
3. Remove the fly-wheel one screw [A].
4. Remove the stay $[B]$.
5. Remove the screws that secure the PSU [C], drive PCB [D], motor drive PCB [F] and I/O board [D]; then open them a little.
6. Disconnect the connector [E] on the drum motor.
7. Rotate the drum motor counterclockwise manually so that the screw on the drum pulley [G] faces downward.
8. Remove the tension spring $[\mathrm{H}]$ and loosen screw [I].
9. Remove the drum motor [J] (4 screws and 1 connector) and drum pulley [G].

10. Disconnect the connectors from the drum drive unit [A] and remove it (4 screws [B] and 2 stud screws [C]).

NOTE: Before you open the drive unit, take note of the drive belt routing.
[A]
[B]

[B]

## TROUBLESHOOTING

## 7. TROUBLESHOOTING

### 7.1 SERVICE CALL (SC) ERRORS

### 7.1.1 SC TYPES AND RESETTING PROCEDURES

| Type | Display Method | How to Reset |
| :---: | :---: | :---: |
| A | SCs displayed on the operation panel. The machine is disabled. The user cannot reset the SC. | Turn the main switch off then on before entering SP mode. Reset the SC (set SP5-810 to 1), then turn the main switch off then on again. |
| B | SCs that disable only the features that use the defective item. Although these SCs are not shown to the user under normal conditions, they are displayed on the operation panel only when the defective feature is selected. | Turn power off/on. |
| C | SCs that are not shown on the operation panel. They are internally logged. | Logging only |
| D | Turning the operation switch or main power switch off then on resets the SC. Displayed on the operation panel. Re-displayed if they occurred after the main power switch is turned on again. | Turn the operation switch or main power switch off and on. |

All SCs are logged.

### 7.2 SC TABLE

See APPENDIX-C.

### 7.3 PROCESS CONTROL ERROR CONDITIONS

### 7.3.1 PROCESS CONTROL SELF-CHECK RESULTS (SP3-975-00)

Self-check results 03-975-00

| Displayed <br> Value | Item | Related <br> SP No. | Major Cause | Remarks |
| :---: | :--- | :--- | :--- | :--- |
| 1 | Successful | None |  |  |
| 99 | Forced termination (door <br> opened, etc.) | None | Power is turned off during self- <br> check. <br> Temporary main power failure |  |
| 100 | ID sensor offset error | ID sensor connector <br> disconnected | SC385 is <br> indicated. |  |
| 110 | Vsg adjustment error | $3-107$ | Dirty ID sensor, dirty drum, <br> foreign materials or flaws on the <br> drum | SC385 is <br> indicated. |
| 120 | Coating weight calculation <br> error | None | ID sensor noise interference, <br> defective development unit, <br> incorrect charge control unit <br> setup, development bias error |  |
| 130 | Vmin error | ID sensor noise interference, K <br> toner density too low |  |  |
| $20^{*}$ | $\gamma$ calculation error, invalid $\gamma$ <br> or Vk value | $3-122-$-xx | Development unit error, mixed <br> colors |  |
| 300 | Residual potential error <br> $31^{*}$ | $3-111-00$ | Drum anomaly, faulty LD unit, <br> poor grounding |  |
| $32^{*}$ | Vpl adjustment error | None | Drum deterioration, optical <br> fatigue |  |
| $40^{*}$ | Self-check process control $\gamma$ <br> (gamma) $\gamma$ <br> calculate) | None (unable to | Drum anomaly, faulty LD unit |  |
| $41^{*}$ | Self-check process control $\gamma$ <br> (gamma) error (out of range <br> condition) |  |  |  |

NOTE: 1:K, 2:Y, 3:C, and 4:M are displayed for the respective colors for items identified by an asterisk in the 'Displayed value' column of the table.

### 7.3.2 DEVELOPER SETUP RESULTS (SP3-964-00)

| Displayed Value | Item | Related SP No. | Major Cause | Remarks |
| :---: | :---: | :---: | :---: | :---: |
| 1 | Successful |  |  |  |
| 20* | Unable to perform calculation, invalid $\gamma$ (gamma) or Vk value |  | Development unit error, mixed colors |  |
| 31* | Vd adjustment error |  | Drum deterioration, optical fatigue |  |
| 32* | Vpl adjustment error |  | Drum anomaly, faulty LD unit |  |
| 40* | Self-check process control $\gamma$ (gamma) error (unable to calculate) |  | Same as process control selfcheck result. |  |
| 41* | Self-check process control $\gamma$ (gamma) error (out of range condition) |  | Same as process control selfcheck result. |  |
| 50* | Toner end condition, etc. |  | Toner end sensor actuated, toner end condition | Toner end condition detected during developer replenishment. |
| 51* | Toner supply error ( $\gamma$ (gamma) value will not go up when toner is replenished.) |  | Developer/toner supply mechanism error, toner supply motor cable disconnected | Re-run. |
| 52* | PS potential calculation error |  | Developer error, ID sensor or potential sensor error |  |
| 99 | Forced termination (door open, etc.) |  | Power turned off during selfcheck, temporary main power failure |  |
| 100 | ID sensor offset error |  | ID sensor cable disconnected |  |
| 110 | Vsg adjustment error |  | Dirty ID sensor, dirty drum, foreign materials or flaws on the drum |  |
| 120 | Coating weight calculation error |  | ID sensor noise interference, defective development unit, incorrect charge control unit setup, development bias error |  |
| 130 | Vmin error |  | ID sensor noise interference, BK toner density too low |  |
| 300 | Residual potential error |  | Drum anomaly, faulty LD unit, poor grounding |  |

[^2]
### 7.3.3 SELF-CHECK PROCESS CONTROL RELATED SCs

## (1) SC385: Vsg adjustment error

The LCD displays SC385 when the output from the ID sensor is outside $1.8+$ offset $\pm 0.05 \mathrm{~V}$ during Vsg adjustment.
Turning the power off then on resets this condition. However, SC385 is lit again after the end of each copy job even when this SC condition is reset by turning the power off then on. Toner is still supplied by using fixed supply mode, until a subsequent Vsg adjustment succeeds.

NOTE: Vsg adjustment timing:

- After a process control self-check (forced, power-on time, or fixed interval).
- After developer initialization (SP2-225-1 to SP2-225-5)
- When the output differs from the Vsg value measured during the preceding Vsg adjustment by more than $\pm 0.05 \mathrm{~V}$.


## (2) SC386: ID sensor pattern error

The LCD displays SC386 when the M/A is out of the target range ( 0.2 to 0.4 $\mathrm{mg} / \mathrm{cm}^{2}$ for $\mathrm{C}, \mathrm{M}$, and Y toners, 0.1 to $0.3 \mathrm{mg} / \mathrm{cm}^{2}$ for K toner). For example, if an $\mathrm{M} / \mathrm{A}$ less than $0.2 \mathrm{mg} / \mathrm{cm}^{2}$ is detected five times successively for $\mathrm{C}, \mathrm{M}$, and Y toners (or $0.1 \mathrm{mg} / \mathrm{cm}^{2}$ for K toner), the machine will display an SC386.
Turning the power off then on resets this SC. Subsequently, the toner supply is carried out in normal supply mode (fuzzy control).

There are cases in which SC385 occurs before SC386 (abnormal ID sensor) output is generated because of a faulty ID sensor.

NOTE: Differences between SC385 and SC386 in their use

- SC385 is detected only when a Vsg adjustment is being performed. Consequently, it can never be detected in continuous copy mode (until selfcheck process controls are performed at a fixed interval or the establishment of an end of copy job condition).
- SC386 is detected during toner supply control, which is done every image production. Consequently, it is designed to be detected when abnormal toner density occurs during the development process in continuous copy mode.


### 7.4 DRUM LIGHT FATIGUE

Leaving the drum exposed to direct sunlight will cause it damage. This damage creates light fatigue on the drum, an effect that will be visible on the print out. When the drawer unit is slid out, even if the drum remains in the drawer unit, it will be exposed to direct and reflected light. Light fatigue will occur if the drum is exposed for more than 2 minutes.
This section will show how to determine where light fatigue occurred on the image.
Making a print test pattern with SP mode 5-955-18 enables you to determine whether the drum has light fatigue. Follow this procedure to make a test pattern with A3 (DTL) in 1C (single color) mode using SP mode.

1. Enter SP mode 5-955.
2. Set SP 5-955-018 to 6 to select the Solid test pattern.
3. Set SP 5-955-001 to 51 to select the LD writing value, 51 .
4. Press the $\approx=$ key to change the LD.
5. Select A3 (DTL) size and B/W mode (or another 1C mode).
6. Press the ${ }^{()}$key to make a test pattern.
7. Check whether the image has a dark uneven area.
8. If the darker area location is similar to the following figure, replace the drum.
9. After replacing the drum, set SP5-955-001 to 128 and 5-955-018 to 0 .

Feed direction


## AUTO REVERSE DOCUMENT FEEDER A663

## 1. SPECIFICATIONS

| Original Size and Weight: |  |
| :---: | :---: |
| Original Feed: | Automatic feed - ADF mode Manual feed one by one - SADF mode Auto Reverse Feed - ARDF mode |
| Original Table Capacity: | 50 sheets at $80 \mathrm{~g} / \mathrm{m}^{2}$ (21 lbs.) |
| Original Placement: | Face up, first sheet on top |
| Original Separation: | Feed Roller and Friction Belt |
| Original Transport: | One flat belt |
| Power Consumption: | 45 W |
| Power Source: | $24 \mathrm{~V} \pm 10 \%$ from the copier, 1.8 A |
| Dimensions (W x D x H) : | $610 \times 507 \times 130 \mathrm{~mm}$ (24.0" $\times 20.0{ }^{\prime \prime} \times 5.1{ }^{\prime \prime}$ ) |
| Weight: | Approximately 10.5 kg (23.2 lbs.) |
| Original Transport Speed | $555 \mathrm{~mm} / \mathrm{s}$ |
| Time Needed for Original Replacement (A4 sideways) | 590 ms <br> (thin original mode) <br> 690 ms <br> (thick original mode) |

## 2. COMPONENT LAYOUT

### 2.1 MECHANICAL COMPONENTS



1. Original Stopper
2. Press Lever
3. Original Table
4. Exit Rollers
5. Inverter Pawls
6. Inverter Rollers
7. Transport Belt
8. Pick-up Rollers
9. Pull-out Roller
10. Feed Roller
11. Friction Belt

### 2.2 ELECTRICAL COMPONENTS



13

1. Original set sensor
2. Feed -in Cover Open Sensor
3. Stopper Solenoid
4. Indicator Panel Lamps
5. Feed-in Motor
6. Belt Drive Motor
7. DF Main Board
8. Inverter Solenoid
9. Feed-out Cover Open Sensor
10. Feed-out Motor
11. Feed-out Sensor
12. APS Start Sensor
13. DF Position Sensor
14. Original width Sensor-1
15. Original width Sensor-2
16. Original Width Sensor-3
17. Registration Sensor

## 3. ELECTRICAL COMPONENT DESCRIPTION

| Symbol | Name | Function | Index No. |
| :---: | :---: | :---: | :---: |
| Motors |  |  |  |
| M1 | Feed-in | Drives the feed-in system (pick-up feed and pull-out rollers separation belt) | 5 |
| M2 | Belt Drive | Drives the transport belt | 6 |
| M3 | Feed-out | Drives the feed-out and the inverter system | 10 |
| Sensors |  |  |  |
| S1 | Original Set | Detects whether originals have been placed on the original table | 1 |
| S2 | Feed-in Cover Open | Informs whether the feed-in cover is open or not | 2 |
| S3 | Feed-out Cover Open | Informs whether the feed-out cover is open or not | 9 |
| S4 | Feed-out | Checks for original misfeeds and determines original stop timing when in auto-reverse mode | 11 |
| S5 | APS Start | Informs the CPU that it is time to detect the original size (in platen mode) | 12 |
| S6 | DF Position | Informs the CPU whether the DF is in the up or down position | 13 |
| S7 | Original Width-1 | Detects the width of the original | 14 |
| S8 | Original Width-2 | Detects the width of the original | 15 |
| S9 | Original Width-3 | Detects the width of the original | 16 |
| S10 | Registration | Determines original stop timing and measures the length of the original | 17 |
| Solenoids |  |  |  |
| SOL1 | Stopper | Lifts the original stopper and lowers the feed-in lever to feed the set of originals to the feed roller | 3 |
| SOL2 | Inverter | Energizes to invert the original when copying two-sided originals | 8 |
| PCB |  |  |  |
| PCB1 | DF Main Board | Controls all DF functions | 7 |
| Indicators (Lamps) |  |  |  |
| L1 | Ready | Informs the operator that the DF is in the down position. | 4 |
| L2 | Auto | Informs the operator that the auto feed mode is available. | 4 |

## 4. DETAILED DESCRIPTIONS

### 4.1 ORIGINAL PICK-UP MECHANISM



When an original is placed on the table, the leading edge is stopped by the stopper [A], and the feeler activates the original set sensor [B]. The Insert Original indicator light goes out and the DF informs the copier's CPU that the originals have been set.

When the Print key is pressed, the stopper solenoid [C] activates to raise the stopper to allow the originals to be fed in, and to lower the press lever [D] to press the originals against the pick-up rollers [E].
An anti-static brush [F] is installed to eliminate static electricity caused during the original pick-up process.

### 4.2 SEPARATION AND PAPER FEED MECHANISM



Originals are separated using the friction belt $[A]$ and the feed roller $[B]$. When the copier sends a signal to the DF to feed in the original, the feed-in motor [C] starts rotating (clockwise) to drive the pick-up [D], feed and pull-out [E] rollers. A one-way bearing stops the friction belt from rotating. Originals are separated and fed in one by one because the resistance of the stationary friction belt is greater than the friction between pages of the original.
When the registration sensor [F] detects the separated first original, the feed-in motor reverses (counter clockwise), and the drive is transmitted only to the pull-out rollers due to a one-way bearing. In this condition, the pull-out rollers are still rotating in the same direction, and they feed the original to the exposure glass. The motor turns off when the trailing edge of the 1st original has finished passing over the sensor.

To prepare the next original, the feed-in motor turns clockwise to separate the second original and the motor turns off when the registration sensor detects the second original. When it is time for the second original to be fed to the exposure glass, the feed-in motor turns counter clockwise.

### 4.3 FRICTION BELT DRIVE MECHANISM



The feed-in motor [ A ] drives the friction belt $[\mathrm{B}]$ through timing belts and gears. The one-way bearing allows the belt to rotate in the direction shown only when the feed-in motor is rotating counterclockwise. (The feed-in motor rotates counterclockwise when the original is passing over the registration sensor, and only the pull-out rollers are rotating to feed the paper to the exposure glass.)

As a result of this operation, the part of the friction belt that contacts the feed roller [C] or the original changes. This prevents multiple feeding or causing originals to become dirty.

The reverse movement of the friction belt will not affect the next original because the pressure of the press lever holds the originals in place.

### 4.4 ORIGINAL SIZE DETECTION



The DF detects original width using three original width sensors-1 [A], $-2[B]$ and -3 [C]. It also detects the original length using the registration sensor.

The DF CPU counts the feed-in motor's drive pulses during the on timing of the registration sensor. Based on this pulse count, the CPU determines the original length.
The machine detects the original size by the total combination of all four sensors.

### 4.5 PAPER TRANSPORT MECHANISM



An independent motor called the belt drive motor [A] (a dc stepper motor) drives the transport belt [B]. The belt drive motor starts rotating soon after the copier sends an original feed-in signal.
Inside the transport belt are four pressure roller shafts, which achieve the proper amount of pressure between the belt and the original. The pressure roller shaft [C] closest to the left original scale is made of rubber for the stronger pressure that is required when in the thick original mode (this is the mode used for normal paper). The other rollers are sponge rollers.

Since the copier's original alignment position is at the left rear corner (not in the center), the originals fed from the DF must also be at this position. But if the original was to be fed along the rear scale, unnecessary original skew, jam or wrinkling may occur.

To prevent such problems, the original transfer position is set 3.5 mm away from the rear scale as shown. The correction for this 3.5 mm gap is compensated for by the position of the lens unit.

### 4.6 THICK/THIN ORIGINAL MODES



Fig. 1


Fig. 3

This document feeder has two different ways of stopping originals at the correct position on the exposure glass. The technician can select one of these using a copier SP mode. The user can also select the mode.

1. Thick Original Mode (Normal Paper Mode)

This mode is the factory set mode. The belt drive motor remains energized to carry the original approximately 7 mm pass the left scale (Figures 1 and 2).
Then the motor pauses and reverses to feed the original back against the left scale (Fig. 3). This forces the original to hit against the left original scale [A] and thus aligns the trailing edge to minimize the original skew on the exposure glass.
2. Thin Original Mode

To protect originals from being damaged by the movements of the transfer belt, thin original mode can be selected. The belt drive motor stops shortly after the original trailing edge passes the registration sensor. This stops the original at the correct position on the exposure glass.

### 4.7 ORIGINAL FEED-OUT MECHANISM



When the scanner reaches the return position, the copier's CPU sends the feed-out signal to the DF CPU. When the DF receives the feed-out signal, the belt drive and feed-out motors [A] turn on.

The feed-out sensor $[B]$ installed in the feed-out section counts the number of pulses to calculate how long the feed-out motor must stay on to feed the original out of the machine completely.

### 4.8 TWO-SIDED ORIGINAL FEED MECHANISM



Unlike one-sided original feed, the backside of the original must be copied first to keep the originals and copies in the correct order.
During original feed-in, the sequence is the same as for one-sided feed. However, the belt drive motor continues rotating until the original reaches the inverter section. The DF CPU also energizes the feed-out motor and the inverter solenoid [A] for a short time to lift the inverter pawls [B].
After the inverter mechanism inverts the original, the belt drive motor reverses and the original is fed towards the original scale. It is stopped at the correct position on the exposure glass, and the DF CPU sends the copy start signal.

When the scanner reaches the return position, the copier's CPU sends the invert original signal to the DF CPU in order to make a copy of the front side. The original is inverted in the same way as for copying the backside, as explained earlier on this page.

## 5. TIMING CHARTS

### 5.1 A4 SIDEWAYS: 1 SIDED ORIGINAL



### 5.2 COMBINE 2 ORIGINAL MODE



### 5.3 A4 SIDEWAYS: DUPLEX



## 6. SERVICE TABLES

### 6.1 DIP SWITCHES

| DPS 101 |  |  |  | Function |
| :--- | :---: | :---: | :---: | :--- |
| 1 | $\mathbf{2}$ | $\mathbf{3}$ | $\mathbf{4}$ | ^ |
| 0 | 0 | 0 | 0 | Normal setting |
| 1 | 0 | 0 | 0 | One-sided thin original mode free run with paper |
| 0 | 1 | 0 | 0 | One-sided thick original mode (normal mode) free <br> run with paper |
| 1 | 1 | 0 | 0 | One-sided thick original mode (normal mode) fee run <br> without paper |
| 0 | 0 | 1 | 0 | Two-sided mode free run with paper |
| 1 | 0 | 1 | 0 | Two-sided mode free run without paper |
|  |  | 0 | 1 | One-sided thin original mode free run with paper |
| 1 | 0 | 0 | 1 | One-sided thick original mode (normal mode) free <br> run with paper |
| 0 | 1 | 0 | 1 | Two-sided mode free run with paper |
| 0 | 0 | 1 | 1 | Not used |
| 1 | 0 | 1 | 1 |  |
|  |  | 1 | 0 | 1 |$|$| Solenoid test |
| :--- |
| 1 |

NOTE: 1) Paper will automatically feed after 3 seconds when the "with paper" free run modes are selected.
2) To prevent the friction belt from wearing, open the feed-in cover when performing the "without paper" free run modes.

## To make a free run

1. Set up dip switches 1 to 4 for the required free run mode the test begins automatically.
2. To stop the free run, put the dip switches back to 0 .

### 6.2 VARIABLE RESISTORS

| VR No. | Function |
| :---: | :--- |
| 101 | Adjusts the registration in one-sided thin original mode. |
| 102 | Adjusts the registration in two-sided original mode. |

### 6.3 LED

| LED No. | Function |
| :---: | :---: |
| 101 | Monitors the communication with the copier. |

### 6.4 FUSE

| FUSE No. | Function |
| :---: | :--- |
| 101 | Protects the 24 V line. |

## 7. REPLACEMENT AND ADJUSTMENT <br> 7.1 TRANSPORT BELT REPLACEMENT



1. Turn off the main switch and lift up the DF.
2. Remove the grip [A] (3 screws).
3. Remove the 6 screws securing the transport belt assembly [B].

NOTE: Remove the two lower screws [C] first.

1. Bend the transport belt assembly and pull out the transport belt [D] as shown.

NOTE: 1) When installing the transport belt, make sure that the belt runs under the belt guide spacers [E].
2) When securing the transport belt assembly with the 6 screws, make sure to secure the four upper screws first.

### 7.2 FEED ROLLER REPLACEMENT



1. Turn off the main switch and open the feed-in cover [A].
2. Remove the feed roller assembly $[B]$ by pulling it towards the front.
3. Replace the feed roller.

NOTE: When installing the feed roller assembly, make sure the pins [C, D] on both sides are fixed properly.

### 7.3 FRICTION BELT REPLACEMENT



1. Turn off the main switch and open the feed-in cover [A].
2. Gently pull up the friction belt assembly $[B]$ and remove it from the shaft.
3. Replace the friction belt [C].

### 7.4 ORIGINAL SET AND WIDTH SENSOR REPLACEMENT



1. Turn off the main switch.
2. Remove the upper cover [A] (7 screws).
3. Remove the pick-up solenoid spring [B].
4. Remove the stopper/pressure lever shaft [C] (2 E-rings).
5. Remove both front [D] and rear [E] feed-in cover magnet catches ( 1 screw each).
6. Remove the feed-in guide plate [F] (4 screws).
7. Remove the original set sensor assembly [G] (1 screw).
8. Remove the original width sensor assembly [H] (1 screw).
9. Replace the required sensor.

### 7.5 VERTICAL REGISTRATION ADJUSTMENT

### 7.5.1 ONE SIDED THIN ORIGINAL MODE

NOTE: 1) After replacing the DF main board, always do the Rough Adjustment using VR101 first. Then do the Fine Adjustment procedure.
2) At other times, just do the Fine Adjustment procedure.
3) After finishing the adjustment, be sure to turn off the dipswitch.


## - Rough Adjustment (Using VR101) -

1. Remove the small cover $[A]$ at the rear of the DF upper cover ( 1 screw).
2. Turn on dipswitch 101-1 [B].
3. Place a sheet of $A 4 / 81 / 2^{\prime \prime} \times 11^{\prime \prime}$ sideways paper ( $64 \mathrm{~g} / \mathrm{m}^{2}, 17 \mathrm{lbs}$.) on the original table. (The paper will feed automatically.)
4. After the original stops on the exposure glass, raise the DF carefully so that the original does not move.
5. Check that the gap between the trailing edge of the paper and the left original scale is $0 \pm 2.5 \mathrm{~mm}$.
6. If the gap is not within this specification, adjust the registration with VR101 [C]. (Turning VR101 counter-clockwise will increase the gap.)

## - Fine Adjustment (Using a Copier SP Mode) -

1. Perform steps 1 through 5 of the rough adjustment procedure.
2. If the gap is larger than 2.5 mm , adjust the registration with the copier SP mode SP6-006-02 for the DF Registration Adjustment in one-sided original mode. (Increasing the setting will increase the gap.)

### 7.5.2 TWO SIDED ORIGINAL MODE

NOTE: 1) After replacing the DF main board, always do the Rough Adjustment using VR102 first. Then do the Fine Adjustment procedure.
2) At other times, just do the Fine Adjustment procedure.
3) After finishing the adjustment, be sure to turn off the dipswitch.


## - Rough Adjustment (Using VR102) -

1. Remove the copier's left original scale (2 screws).
2. Remove the small cover [A] at the rear of the DF upper cover (1 screw).
3. Turn on dip switch 101-3 [B].
4. Place a sheet of $A 4 / 81 / 2^{\prime \prime} \times 11^{\prime \prime}$ sideways paper ( $64 \mathrm{~g} / \mathrm{m}^{2}, 17 \mathrm{lbs}$.) on the original table. (The paper will feed automatically.)
5. After the original stops on the exposure glass, raise the DF carefully so that the original does not move.
6. Check that the gap between the trailing edge of the paper and the left edge of the original rear scale is $10 \pm 2 \mathrm{~mm}$.
7. If the gap is not within this specification, adjust the registration with VR102 [C]. (Turning VR102 counter-clockwise will increase the gap.)

## - Fine Adjustment (Using a Copier SP Mode 6-006) -

1. Perform steps 1 through 6 of the rough adjustment procedure.
2. If the gap is not within specification, adjust the registration with the copier SP mode 6-006-04 for the DF Registration Adjustment in two-sided original mode. (Increasing the setting will increase the gap.)

### 7.6 SIDE-TO-SIDE REGISTRATION (DF POSITIONING) ADJUSTMENT

NOTE: 1) First, adjust the DF side-to-side registration using the copier SP mode for this (see Replacement and Adjustment - Side-to-side Registration Adjustment in the copier manual).C
2) Do the following adjustment only when the registration cannot be brought within the specification ( $0 \pm 2 \mathrm{~mm}$ ) using the above mentioned SP mode.

SPECIFICATION (Original position from the rear scale)

| Thick (Normal) Paper <br> Original Mode | $3.5 \pm 2 \mathrm{~mm}(3.5 \pm 3 \mathrm{~mm}$ for B6 lengthwise) |
| :---: | :--- |
| Thin Original Mode | $3.5 \pm 2 \mathrm{~mm}$ |
| Two Sided Original Mode | $3.5 \pm 3 \mathrm{~mm}$ |

1. Place a sheet of $A 4 / 81 / 2^{\prime \prime} \times 11$ " sideways paper ( $64 \mathrm{~g} / \mathrm{m}^{2}, 17 \mathrm{lbs}$.) on the original table and press the Print key.
2. After the original stops on the exposure glass, raise the DF carefully so that the original does not move.
3. Check if the gap between the rear edge of the paper and the rear original scale is within the specification listed above.
4. If it is out of specification, reposition the 2 screws [A] securing the DF hinge to the long screw hole as shown.

5. Repeat steps 1 to 3 .
6. Secure the DF unit at the position where the gap falls within specification.
7. Check the copy quality and adjust the ADF side-to-side registration with the copier SP mode if it is not within the $0 \pm 2 \mathrm{~mm}$ specification (see Replacement and Adjustment - Side-to-side Registration Adjustment in the copier manual).

## PAPER TRAY UNIT A832/833

## 1. PRODUCT OVERVIEW

### 1.1 SPECIFICATIONS

| Item | Specification | Remarks |
| :---: | :---: | :---: |
| Type | Front loading paper feed trays (A832: 2 trays, A833: 3 trays) |  |
| Paper feed system | FRR system |  |
| Paper size | A5 ¢ to A3 ロ, HLT P to DLT $\square$ |  |
| Paper weight | 64 to $105 \mathrm{~g} / \mathrm{m}^{2}, 17$ to 28 lbs . |  |
| Tray Capacity | 500 sheets for each tray ( $100 \mathrm{~g} / \mathrm{m}^{2}, 26.6$ lbs.) or Height up to $5.8 \mathrm{~cm}, 2.28$ " |  |
| Anti-condensation heater | Option, powered directly by the main unit (EU/Asia: AC220 to $240 \mathrm{~V}, 15 \mathrm{~W} \times 1$, USA: AC120V, $15 \mathrm{~W} \times 1$ ) |  |
| Weight | A832: Approx. 32kg., 70.6 lbs . A833: Approx. 37kg., 81.6 lbs . |  |
| Dimensions | $\begin{aligned} & \text { A832/A833: } 620 \times 680 \times 390 \mathrm{~mm} \text {, } \\ & 24.5^{\prime \prime} \times 26.8 " \times 15.4^{\prime \prime} \end{aligned}$ |  |
| Maximum Power Consumption | 50W (The main frame supplies the power) |  |

### 1.2 COMPONENT DESCRIPTION

### 1.2.1 PAPER FEED MECHANISM

The paper feed units are the same for all trays (an FRR system is used).


### 1.3 COMPONENT LAYOUTS

### 1.3.1 ELECTRICAL COMPONENT LAYOUT



1. Bottom plate lift motor 1
2. Relay clutch
3. Paper feed clutches
4. Transport switch
5. Bottom plate lift motor 2 (three-tray type only)
6. Vertical transport sensor
7. Paper end sensor
8. Upper limit sensor
9. Main board
10. Tray set switch
11. Bank paper feed motor
12. Paper height sensors

### 1.3.2 DRIVE LAYOUT



1. Paper feed clutches
2. Separation roller
3. Pick-up roller
4. Paper feed roller
5. Bank paper feed motor
6. Relay clutch

### 1.3.3 DISASSEMBLY AND ADJUSTMENT PROCEDURES

## (1) Pick-up, paper feed, and separation rollers

Replace the pick-up, paper feed, and separation rollers in the same way as for the main unit (see "Replacement and Adjustment - Paper Feed and Registration").

## (2) Bank paper feed and tray lift motors



1. Remove the rear cover [A] (4 screws).
2. Remove the bank paper feed motor assembly $[B]$ ( 6 screws and 1 connector).
3. Remove bank tray lift motor 1 [C] ( 2 screws and 1 connector).
4. Three-tray type only: Remove bank tray lift motor 2 [D] (2 screws and 1 connector).
(3) Paper feed clutch


The procedure is the same for each tray.

1. Remove the rear cover (4 screws).
2. Remove the solenoid clutch brackets [A] (2 screws each).
3. Remove the paper feed clutch $[B]$ (1 bearing and 1 connector).

## (3) Relay clutch



1. Remove all paper feed clutches.
2. Remove the solenoid clutch bracket [A] (2 screws).
3. Remove the relay clutch [B] (1 bearing and 1 connector).

COMPONENT LAYOUTS

## (4) Paper feed unit



1. Remove the upper front cover (2 screws).
2. Remove all trays.
3. A832 only: Remove the lower front cover (2 screws).
4. Remove the front right cover $[A]$ ( 1 screw) for the bank.
5. Remove the rear right cover $[B]$ ( 2 screws) for the bank.
6. Remove the solenoid clutch and bracket.

Continued on the next page

## First paper feed unit



1. Remove the lock shaft [A] (1 snap-ring).
2. Remove the timing pulley [B], feed gear [C], and separator gear [D] from the rear.
3. Remove the first paper feed unit [E] (2 screws).

## Second and third paper feed units



1. Remove the vertical transport guide plate $[\mathrm{A}]$ (2 shafts and 3 snap-rings).
2. Remove the gears in the same way as for the first paper feed unit, and then remove the paper feed unit.

## 20-BIN SORTER STAPLER A834

## 1. OVERALL MACHINE INFORMATION

### 1.1 SPECIFICATIONS

Paper Size for Bins

Paper Weight for Bins:

Bin capacity:

Stapler Capacity:
Proof Tray Capacity:
Number of Bins:
Stapling Position:
Sort/Stack Modes: Lengthwise: A6 to A3 51/2" x 81/2" (HLT) to 12" 18"
Sideways: A5 to A4
51/2" x 81/2" (HLT) to 81/2" x 11" (LT)
Sorting: $52 \sim 160 \mathrm{~g} / \mathrm{m}^{2}(14 \sim 43 \mathrm{lb})$
Stacking: $52 \sim 160 \mathrm{~g} / \mathrm{m}^{2}(14 \sim 43 \mathrm{lb})$
Stapling: 52 ~ $160 \mathrm{~g} / \mathrm{m}^{2}(14 \sim 43 \mathrm{lb})$
Sorting:
A4, $81 / 2 \times 11^{\prime \prime}$ or smaller:
30 copies ( $80 \mathrm{~g} / \mathrm{m}^{2}, 20 \mathrm{lb}$ )
B4, $81 / 2 \times 14$ " or larger:
25 copies $\left(80 \mathrm{~g} / \mathrm{m}^{2}, 20 \mathrm{lb}\right)$
Stacking:
A4, $81 / 2 \times 11$ " or smaller:
25 copies ( $80 \mathrm{~g} / \mathrm{m}^{2}, 20 \mathrm{lb}$ )
B4, $81 / 2 \times 14$ " or larger:
20 copies ( $80 \mathrm{~g} / \mathrm{m}^{2}, 20 \mathrm{lb}$ )
2 ~ 30 copies ( $80 \mathrm{~g} / \mathrm{m}^{2}, 20 \mathrm{lb}$ )
100 sheets $\left(80 \mathrm{~g} / \mathrm{m}^{2}, 20 \mathrm{lb}\right)$
20 bins + proof tray
$a=6 \pm 3 \mathrm{~mm} \quad \mathrm{~b}=6 \pm 3 \mathrm{~mm}$


## SPECIFICATIONS

Staple Replenishment: Cartridge exchange (2,000 staples/cartridge)
Power Source:
DC 24 V (from the copier)
Power Consumption:
Average: less than 35 W
Average for Sorting: less than 30 W
Average for Stapling: less than 33 W
Weight:
Dimensions (W x D x H):
$20.5 \mathrm{~kg}(45.2 \mathrm{lb})$
$430 \times 570 \times 680 \mathrm{~mm}$ (17.0" x 22.5" x 26.8")

- Specifications are subject to change without notice.


### 1.2 COMPONENT LAYOUT

### 1.2.1 MECHANICAL COMPONENT LAYOUT



1. Helical Wheels
2. Jogger Plate
3. Grip Assembly
4. Transport Rollers
5. Staple Unit
6. Bins
7. Proof Tray

### 1.2.2 DRIVE LAYOUT



1. Jogger Drive Belt
2. Transport Roller
3. Wheel Drive Belts
4. Helical Wheels

### 1.2.3 ELECTRICAL COMPONENT DESCRIPTION

Refer to the electrical component layout on the reverse side of the point to point diagram (on waterproof paper).

| Symbol | Name | Function | Index No. |
| :---: | :---: | :---: | :---: |
| Motors |  |  |  |
| M1 | Main Drive | Drives the transport roller | 16 |
| M2 | Jogger | Drives the jogger plate to square the copies | 9 |
| M3 | Bin Drive | Drives the bins | 14 |
| M4 | Stapler | Drives the stapler hammer | 7 |
| M5 | Grip | Drives the grippers forwards and back into the bin to grip the copies and bring them to the stapling position | 3 |
| Sensors |  |  |  |
| S1 | Bin <br> (Phototransistor) | Detects whether there is any paper in the bins (light receiving element) | 1 |
| S2 | Grip Home Position | Detects when the grip assembly cam gear has rotated once | 6 |
| S3 | Bin Home Position | Detects whether the bins are at home position | 11 |
| S4 | Sorter Entrance | Detects paper jams | 2 |
| S5 | Jogger Home Position | Detects whether the jogger plate is in its home position | 13 |
| S6 | Wheel | Detects the bin position. | 12 |
| S7 | Bin (LED) | Detects whether there is paper in the bins (light emitting element) | 10 |
| S8 | Stapler Paper | Detects whether any copies are under the staple hammer. | 4 |
| S9 | Staple End | Detects when the staples have run out | 18 |
| S10 | Staple Hammer Home Position | Detects whether the staple hammer is at home position | 17 |
| Switches |  |  |  |
| SW1 | Door Safety | Cuts the $\mathrm{dc}+24 \mathrm{~V}$ supply when either the unit or the stapler cover is opened. | 5 |
| SW2 | Stapler | Cuts the signals +24 V supply to the stapler only. | 8 |
| Circuit Board |  |  |  |
| PCB1 | Main | Controls all sorter/stapler functions | 15 |
|  |  |  |  |

## 2. DETAILED DESCRIPTIONS

### 2.1 BASIC OPERATION

### 2.1.1 NORMAL MODE AND SORT/STACK MODE



Copies exiting the copier pass through the entrance guide plate [A]. The transport roller will send copies either to the proof tray or to each bin, depending on the selected mode.

During copying, all rollers in the sorter stapler transport the paper at a speed which depends on the copier. When the trailing edge of the copy passes the fusing exit sensor, the speed of the rollers changes to $600 \mathrm{~mm} / \mathrm{s}$. This makes enough time for the jogger plate to square the stack of paper and to stack the paper smoothly into the bins.

## Normal (Proof) Mode

When the "Start" key is pressed, the transport motor [B] energizes to rotate the transport rollers [C]. The transport rollers send copies to the proof tray directly.

## Sort Mode

When sort mode is selected, the bin drive motor [D] energizes to rotate the helical wheels. The helical wheels [E] rotate twice to move the top bin to the transport roller position, then the first copy is delivered to the top bin.
After the first copy of the first original has been fed to the top bin, the bin drive motor moves the bins up one step (the helical wheels rotate once) so that the second copy of the first original will be delivered to the next bin.
The jogger plate [F] squares the copies after each copy has been fed to a bin. After all the copies of the first original have been delivered to each bin, the sorter stapler maintains its status (the bin drive motor does not rotate).

The first copy of the second original is delivered to the final bin that was used for the first original, then the final bin descends one step. The bins descend each time a copy of the second original is delivered.
The direction of motion of the bins alternates for each page of the original until the copy run is finished.

## Stack Mode



When stack mode is selected, the top bin advances to the transport roller position in the same way as in sort mode.
After the first copy is delivered to the top bin, the jogger plate [A] moves across to square the copy. The jogger plate squares the copies after each copy has been fed to a bin.
After one set of copies for the first original has been delivered to the top bin, the bin drive motor moves the bins up one step. Then, one set of copies of the second original will be delivered to the next bin.

### 2.1.2 STAPLE MODE



## Mechanism

The stapler is only available in sort mode.
When the jogger plate has squared the final set of copies, the grip arms [A] move inside the front side frame and catch the paper. The grip assembly brings the copies into the stapler $[B]$, and the stapler staples the copies.
After stapling, the grip assembly [C] brings the stapled copies back to the bin and releases the copies. Then the grip assembly goes back to the normal position. The bin either advances or descends one step [D] (depending on whether the page is an odd or even numbered page of the original).

When the final set of copies has been stapled, the bins go back to the standby position.

There are two staple modes.

## Automatic Stapling

In ADF mode, when staple mode is selected before pressing the "Start" key, copies will be delivered to each bin and stapled automatically.

## Manual Stapling

In platen cover mode, after the copies have been sorted into the bins, the staple mode LED starts to blink. If the sort key is pressed while this LED is blinking, the copies will be stapled.

### 2.1.3 BIN DRIVE MECHANISM


[B]

The bin drive mechanism moves the bins up and down to receive copies.
There are four pins on each bin. Two pins fit into the slots [A] in both the front and rear side frames; the pins slide up and down in these slots. The other two pins fit into the slot in the helical wheels; as the helical wheels turn, these pins move up and down, and the other pins move up and down in the slots at the other end of the bin.

The bin drive motor [B] drives the helical wheels [C] through timing belts as shown. When the motor rotates clockwise, the bins lift; when it rotates counterclockwise, the bins lower. There is a wheel sensor [D] located under the actuator [E] on the rear helical wheel; the actuator has a slot which detects when the helical wheel has rotated once.
When the bins are advanced, the helical wheels rotate once for each step. As the pitch of the spiral on the helical wheel is greater when the bins are at the stapling and paper exit area than when the bins are elsewhere, the amount of bin shift is greater when the bins are at the stapling and paper exit area. This leaves enough space to staple and stack the copies. Also, this reduces the total machine height.

### 2.1.4 BIN HOME POSITION



The bin home position sensor [A] ensures that the proof tray is lower than the transport roller when the bins are in the home position.
When the main switch is turned on, the sorter stapler initializes itself to check whether the component parts work or not. At this time, the bin drive motor raises the bins for a few moments, then it lowers the bins until the bottom bin actuates the bin home position sensor.

### 2.1.5 JOGGER MECHANISM



The jogger motor [A] drives the jogger plate $[B]$ through the timing belts [C].
The jogger is at home position when the actuator on the jogger plate goes into the jogger home position sensor [D].
In standby mode, the jogger plate is at the home position. When the "Start" key is pressed, the copier sends the paper size information to the sorter stapler.
In sort, staple, and stack modes, the jogger moves three times to square the stack of paper. First, when the paper has been fed completely into the bin (at the proper time after the copy has passed through the entrance sensor [E], depending on the paper length), the jogger motor moves the jogger plate out of the jogger home position. Then, the jogger motor drives the jogger plate to the width of the copy. Finally, the jogger plate moves inward to push all the copies against the front side frame, which squares the sheets of paper. Then the jogger plate returns to the home position.

### 2.1.6 GRIP ASSEMBLY



The grip assembly consists of the grip motor [A], the timing belt [B], the drive gear [C], the grip home position sensor [D], and the cam gear [E].

The grip motor drives the cam gear through the timing belt and drive gear. Cam gear rotation drives the mechanism that catches the copies and moves the grip arm unit [F]. When the cam gear rotates clockwise one full turn, the grip arm moves to catch the copies and returns to the home position to prepare for stapling. After stapling, the cam gear rotates counterclockwise once so that the stapled copies go back to the bin, and the cam gear returns to its home position.
When the cam pushes the roller [G] on the lever [H] and the lever pushes the grip arm, the grip arm can catch the copies.
A pin [I] on the cam gear fits into the slot in the grip arm unit. So, when the cam gear rotates, the slot moves the grip arm unit inward and outward.
The actuator [J] on the cam gear activates the grip home position sensor once every rotation of the cam gear. This allows the sorter stapler to determine that the cam gear has rotated once.

### 2.1.7 STAPLER UNIT



The stapler motor $[A]$ drives the staple hammer [B] using the gears [C] and the cam [D].
The roller [E] feeds the staple sheets under the hammer.
When the grip unit brings the aligned copies to the staple position, the stapler motor starts rotating and the copies are stapled. When the cam completes one rotation, the staple hammer home position sensor [F] is deactuated and the stapler motor stops.
When the stapler paper sensor [G] in the grip assembly does not detect any copies under the hammer, the stapler motor does not rotate.
When the trailing edge of the last staple sheet passes through the staple end sensor [H], the sorter stapler enters the staple near end condition. After the current job is completed, the Add Staples indicator lights on the operation panel. Then the copier cannot be used whenever the staple mode is selected.

### 2.1.8 STAPLER SWITCH



The stapler switch [A] below the grip assembly cuts the dc +24 V supply to the stapler. In proof mode, all bins lower and push the lever [B]. This opens the stapler switch so that the signal to the stapler is cut. In sort and staple modes, all bins are advanced and the switch is closed so that the signal can be supplied to the stapler.

## Staple Mode Disabling Conditions

1. Under the following conditions, staple mode is disabled.

- If there is paper in a bin before the main switch is turned on.
- If the selected paper size does not match the stapling specifications.
- If the paper is fed from the by-pass feed table.
- If the stack or interrupt modes are selected.

2. Under the following conditions, staple mode is canceled if it had been selected.

- If paper is inserted into a bin by hand while the staple mode is selected.
- If only one sheet is delivered to the bin.
- If the number of sheets to be stapled exceeds the stapler capacity.


### 2.1.9 PAPER FEED AND MISFEED DETECTION TIMING

Proof Mode A4 sideways, five copies, $150 \mathrm{~mm} / \mathrm{s}$

*1: The value of the low speed depends on the copier.

Sorter Mode A4 sideways, two copies a of two-page original, $150 \mathrm{~mm} / \mathrm{s}$

*1: The start times of the bin drive and the jogger motors depend on the paper size as shown in the following table.
*2: Bin No.

| Paper Size | Bin drive <br> motor timing | Jogger <br> motor timing | Paper Size | Bin drive <br> motor timing | Jogger <br> motor timing |
| :---: | :---: | :---: | :---: | :---: | :---: |
| A3/11" $\times 177^{\prime \prime}$ | 80 ms | 270 ms | A4 <br> lengthwise/ <br> $81 / 2^{\prime \prime} \times 11 "$ | 24 ms | 96 ms |
| B4 | 160 ms | 190 ms | B5 sideways | 160 ms | 190 ms |
| A4 sideways/ <br> $11 " \times 81 / 2^{\prime \prime}$ | 80 ms | 270 ms | B5 <br> lengthwise | 310 ms | 40 ms |

Staple Mode A4 sideways, two copies of a two-page original, after sorting, $150 \mathrm{~mm} / \mathrm{s}$


### 2.1.10 JAM DETECTION

## Paper Jam A4 sideways



J 1 : The sorter entrance sensor does not turn on within 2 s after the paper exit sensor has turned on.

J2: The paper exit sensor does not turn off within 11.4 s after the sorter entrance sensor has turned on.
J3: The sorter entrance sensor does not turn off within 1 s after the paper exit sensor has turned off.

## Staple Jam

In the following conditions, a staple jam will occur and the sorter jam indicator on the operation panel will light.

1. If the stapler paper sensor is on just after the main switch is turned on or just as the stapler cover is closed.
2. If the stapler paper sensor stays on after the stapling job has been finished.

## 3. REPLACEMENT AND ADJUSTEMENT

### 3.1 EXTERIOR COVER REMOVAL



### 3.1.1 FRONT COVER

1. Remove the front cover [A] (2 screws).

### 3.1.2 REAR COVER

1. Remove the rear cover $[B]$ (3 screws).

### 3.1.3 TOP COVER

1. Remove the rear cover $[B]$.
2. Remove the top cover support bracket [C] (1 screw).
3. Remove the top cover [D] (1 screw).

### 3.1.4 LOWER COVER

1. Remove the front cover $[A]$ and the rear cover $[B]$.
2. Remove the lower cover [E].

### 3.2 STAPLER UNIT REMOVAL



1. Remove the front cover. (See Exterior Cover Removal.)
2. Loosen the screws $[A]$.
3. Remove the stapler unit $[B]$, as shown ( 1 screw and 1 connector).

### 3.3 GRIP ARM REPLACEMENT



1. Remove the front cover. (See Exterior Cover Removal.)
2. Remove the grip assembly [A] (4 screws, 2 connectors, and 1 grounding wire).
3. Remove the spring $[\mathrm{B}]$ and remove the slider $[\mathrm{C}]$.
4. Remove the grip arm unit [D] (1 screw and 1 clip).
5. Remove the grip arm plate [E] (2 screws).
6. Replace the grip arms [F].

### 3.4 BIN REMOVAL



1. Remove the front, rear, and top covers. (See Exterior Cover Removal.)
2. Remove the upper stay bracket [A] (4 screws and 1 connector).
3. Loosen the two screws $[B]$, then remove the timing belt $[C]$.
4. Remove the brackets [D] (3 screws each).
5. While moving the helical wheels $[E]$ outward, remove the bins $[F]$.

### 3.5 TRANSPORT MOTOR REMOVAL



1. Remove the sorter stapler ( 1 screw and 1 chain).
2. Remove the rear cover. (See Exterior Cover Removal.)
3. Remove the transport motor $[A]$ (2 screws).

## 10-BIN SORTER STAPLER A555

## 1. SPECIFICATIONS

Paper Size for Bins:<br>Paper Weight for Bins:

Sort/Stack Modes:
Maximum: A3, $11 \times 17{ }^{\prime \prime}$
Minimum: B5, $81 / 2 \times 11 "$
Paper Weight for Bins: Sorting:
$52 \sim 157 \mathrm{~g} / \mathrm{m}^{2}$ ( 14 ~ 42 lbs .)
Stacking:

$$
52 \sim 157 \mathrm{~g} / \mathrm{m}^{2}(14 \sim 42 \mathrm{lbs} .)
$$

Stapling:

$$
52 \sim 80 \mathrm{~g} / \mathrm{m}^{2}(14 \sim 21 \mathrm{lbs} .)
$$

## Bin Capacity:

Bin Capacity:
Proof Tray Capacity:
Sorting:
A4, $81 / 2 \times 11$ " or smaller: 30 copies ( $80 \mathrm{~g} / \mathrm{m} 2$, 20lbs.)
B4, 81/2 x 14" or larger: 25 copies ( $80 \mathrm{~g} / \mathrm{m} 2,20 \mathrm{lbs}$.)
Stacking:
A4, $81 / 2 \times 11$ " or smaller: 25 copies ( $80 \mathrm{~g} / \mathrm{m} 2$, 20lbs.)


B4, $81 / 2 \times 14$ " or larger: 20 copies ( $80 \mathrm{~g} / \mathrm{m} 2,20 \mathrm{lbs}$.)
Stapler Capacity: 2 ~ 20 copies ( $80 \mathrm{~g} / \mathrm{m} 2$, 20lbs.)
100 copies ( $52 \sim 80 \mathrm{~g} / \mathrm{m}^{2} / 14 \sim 21 \mathrm{lbs}$.)
50 copies $\quad\left(81 \sim 128 \mathrm{~g} / \mathrm{m}^{2} / 22 \sim 34 \mathrm{lbs}\right.$.)
30 copies $\quad\left(129 \sim 157 \mathrm{~g} / \mathrm{m}^{2} / 35 \sim 42 \mathrm{lbs}\right.$.)
Number of Bins:
10 bins + proof tray

Stapling Position:
$\mathrm{a}=6 \pm 3 \mathrm{~mm}$
$\mathrm{b}=6 \pm 3 \mathrm{~mm}$


Staple Replenishment: Cartridge exchange (2,000 staples/cartridge)
Power Source:
DC $24 \mathrm{~V}, 5 \mathrm{~V}$ (from the copier)
Power Consumption
Average: less than 33 W Average for Sorting: less than 25 W Average for Stapling: less than 33 W
Weight:
Dimensions (W x D x H): 12.4 kg ( 27.4 lbs .)
$381 \times 548 \times 443 \mathrm{~mm}\left(15.0^{\prime \prime} \times 21.6^{\prime \prime} \times 17.5^{\prime \prime}\right)$

## 2. COMPONENT LAYOUT

### 2.1 MECHANICAL COMPONENT LAYOUT



1. Helical wheels
2. Jogger plate
3. Grip assembly
4. Transport rollers
5. Staple unit
6. Bins
7. Proof tray

### 2.2 DRIVE LAYOUT



1. Jogger drive belt
2. Transport roller
3. Helical wheels
4. Transport motor
5. Jogger motor
6. Wheel drive belts
7. Bin Drive motor
8. Jogger plate

### 2.3 ELECTRICAL COMPONENT DESCRIPTION

Refer to the electrical component layout on the reverse side of the Point to Point Diagram (on waterproof paper).

| Symbol | Index No. | Description | Note |
| :---: | :---: | :---: | :---: |
| Motors |  |  |  |
| M1 | 14 | Transport | Drives the transport roller |
| M2 | 9 | Jogger | Drives the jogger plate to square the copies |
| M3 | 16 | Bin drive | Drives the bins |
| M4 | 6 | Stapler | Drives the stapler hammer |
| M5 | 3 | Grip | Drives the grips forward and back into the bin to grip the copies and bring them to the stapling position |
| Sensors |  |  |  |
| S1 | 1 | Bin <br> (Phototransistor) | Detects whether there is any paper in the bins (light receiving element) |
| S2 | 2 | Sorter entrance | Detects paper jams |
| S3 | 15 | Jogger H.P. | Detects whether the jogger plate is in its home position |
| S4 | 13 | Timing | Provides pulses to the sorter stapler main board. |
| S5 | 4 | Stapler paper | Detects whether any copies are under the hammer. |
| S6 | 5 | Grip H.P. | Detects when the grip assembly cam gear has rotated once |
| S7 | 11 | $\begin{aligned} & \begin{array}{l} \operatorname{Bin} \\ (L E D) \end{array} \\ & \hline \end{aligned}$ | Detects whether there is paper in the bins (light emitting element) |
| S8 | 10 | Wheel | Detects the bin position. |
| S9 | 12 | Bin H.P. | Detects whether the bins are at the home position |
| S10 | 18 | Staple H.P. | Detects whether the stapler hammer is at home position |
| S11 | 19 | Staple end | Detects when the staples run out |
| Switches |  |  |  |
| SW1 | 8 | Door safety | Cuts the dc +24 V supply when either the unit or the stapler cover is opened. |
| SW2 | 7 | Stapler | Cuts the signals to the stapler. |
| Circuit Board |  |  |  |
| PCB1 | 17 | Main | Controls all sorter/stapler functions |

## 3. BASIC OPERATION

### 3.1 NORMAL MODE AND SORT/STACK MODE



Copies exiting the copier pass through the entrance guide plate [A]. The transport roller will send copies either to the proof tray or to each bin, depending on the selected mode.

During copying, all rollers in the sorter stapler transport the paper at a speed that depends on the copier. When the trailing edge of the copy passes the paper exit sensor, the speed of the rollers changes to $600 \mathrm{~mm} / \mathrm{s}$. This makes enough time for the jogger plate to square the stack of paper and to stack the paper smoothly into the bins.

- Normal (proof) mode -

When the Start key is pressed, the transport motor [B] energizes to rotate the transport roller. The transport roller then sends the copies directly to the proof tray.

## - Sort mode -

When sort mode is selected, the bin drive motor [C] energizes to rotate the helical wheels. The helical wheels [D] rotate twice to move the top bin to the transport roller position, then the first copy is delivered to the top bin.

After the first copy for the first original feeds into the top bin, the bin drive motor moves the bins up one step (the helical wheels rotate once) so that the second copy of the first original will be delivered to the next bin.
The jogger plate [E] squares the copies after each copy has been fed to a bin. After the copies of the first original have been delivered to each bin, the sorter stapler maintains its position (the bin drive motor does not rotate).

The first copy of the second original is delivered to the final bin used for the first original, then the final bin descends one step. The bins descend each time a copy of the second original is delivered.
The bins directional motion alternates for each original page until the copy run finishes.

## - Stack mode -



When stack mode is selected, the top bin advances to the transport roller position in the same way as in sort mode.

After the first copy is delivered to the top bin, the jogger plate [A] moves across to square the copy. The jogger plate squares the copies after each copy has been fed to a bin.

After one set of copies for the first original has been delivered to the top bin, the bin drive motor moves the bins up one step. Then, one set of copies of the second original will be delivered to the next bin.

### 3.2 STAPLE MODE



The stapler is only available in sort mode.
When the jogger plate has squared the final set of copies, the grip arms [A] move inside the front side frame and catch the paper. The grip assembly brings the copies into the stapler $[B]$, and the stapler staples the copies.

After stapling, the grip assembly [C] brings the stapled copies back to the bin and releases the copies. Then the grip assembly goes back to normal position. The bin either advances or descends one step depending on whether the number of originals is odd or even [D].
When the final set of copies has been stapled, the bins go back to standby position.

There are two staple modes.

## Automatic Stapling

In ADF mode, when staple mode is selected before pressing the Start key, copies will be delivered to each bin and stapled automatically.

## Manual Stapling

In platen cover mode, after the copies have been sorted into the bins, the staple mode LED starts to blink. If the sort key is pressed while this LED is blinking, the copies will be stapled.

### 3.3 BIN DRIVE MECHANISM



The bin drive mechanism moves the bins up and down to receive copies.
There are four pins on each bin. Two pins fit into the slots [A] in both the front and rear side frames; the pins slide up and down in these slots. The other two pins fit into the slot in the helical wheels; as the helical wheels turn, these pins move up and down, and the other pins move up and down in the slots at the other end of the bin.

The bin drive motor $[B]$ drives the helical wheels through four timing belts [C]. When the motor rotates clockwise, the bins lift; when it rotates counterclockwise, the bins lower. There is a wheel sensor actuator [D] on the front helical wheel; the actuator has a slot that detects when the helical wheel has rotated once.

When the bins are advanced, the helical wheels rotate once for each step. As the pitch of the spiral on the helical wheel is greater when the bins are at the staple and paper exit area than when the bins are elsewhere, the amount of bin shift is greater when the bins are at the staple and paper exit area. This leaves enough space to staple and stack the copies. Also, this reduces the total machine height.

### 3.4 BIN HOME POSITION



The home position sensor for the bin [A] ensures that the proof tray is lower than the transport roller when the bins are in the home position.
When the main switch is turned on, the sorter stapler initializes itself to check whether the component parts work or not. At this time, the bin drive motor raises the bins for a few moments, then it lowers the bins until the bottom bin actuates the bin home position sensor.

### 3.5 JOGGER MECHANISM



The jogger motor $[A]$ drives the jogger plate $[B]$ through the timing belts [C].
The jogger is at home position when the actuator on the jogger plate goes into the home position sensor for the jogger [D].
At standby, the jogger plate is at the home position. When the Start key is pressed, the copier sends the paper size information to the sorter stapler.
In sort, staple, and stack modes, the jogger moves three times to square the stack of paper. First, when the paper has been fed completely into the bin (at the proper time after the copy has passed through the entrance sensor [E], depending on the paper length), the jogger motor moves the jogger plate out of the jogger home position. Then, the jogger motor drives the jogger plate to the width of the copy. Finally, the jogger plate moves inward to push all the copies against the front side frame, which squares the sheets of paper. Then the jogger plate returns to the home position.

### 3.6 GRIP ASSEMBLY



The grip assembly consists of the grip motor [A], the timing belt [B], the drive gear [C], the home position sensor for the grip [D], and the cam gear [E].

The grip motor drives the cam gear through the timing belt and drive gear. Cam gear rotation drives the mechanism that catches the copies and moves the grip arm unit [F]. When the cam gear rotates clockwise one full turn, the grip arm moves to catch the copies and returns to the home position to prepare for stapling. After stapling, the cam gear rotates counterclockwise once so that the stapled copies go back to the bin, and the cam gear returns to its home position.
When the cam pushes the roller [G] on the lever [H] and the lever pushes the grip arm, the grip arm can catch the copies.
A pin [l] on the cam gear fits into the slot in the grip arm unit. So, when the cam gear rotates, the slot moves the grip arm unit inward and outward.
The actuator [J] on the cam gear activates the home position sensor for the grip once every rotation of the cam gear. This allows the sorter stapler to determine that the cam gear has rotated once.

### 3.7 STAPLER UNIT



The stapler motor $[A]$ drives the staple hammer [B] using the gears [C] and the eccentric cam [D].
The roller [E] feeds the staple sheets under the hammer.
When the aligned copies are brought to the staple position by the grip unit, the stapler motor starts rotating and the copies are stapled. When the cam completes one rotation, the staple home position sensor [F] is de-actuated and the stapler motor stops.

When the stapler paper sensor [G] in the grip assembly does not detect any copies under the hammer, the stapler motor does not rotate.
When the trailing edge of the last staple sheet pass through the staple end sensor [H], the sorter stapler enters the staple near end condition. After the current job is completed, the Add Staples indicator lights on the operation panel. Then the copier cannot be used whenever the staple mode is selected.

### 3.8 STAPLER SWITCH



The stapler switch [A] below the grip assembly cuts the signal to the stapler. In proof mode, all bins lower and push the lever [B]. This opens the stapler switch so that the signal to the stapler is cut. In sort and staple modes, all bins are advanced and the switch is closed so that the signal can be supplied to the stapler.

## - Staple Disabling Conditions -

1. Under the following conditions, staple mode is disabled:

If there is paper in a bin before the main switch is turned on.
If the selected paper size does not match the stapling specifications.
If the paper is fed from the by-pass feed table.
If the stack or interrupt modes are selected.
2. Under the following conditions, staple mode is canceled if it had been selected:

If paper is inserted into a bin by hand while the staple mode is selected.
If only one sheet is delivered to the bin.
If the number of sheets to be stapled exceeds the stapler capacity.

### 3.9 PAPER FEED AND MISFEED DETECTION TIMING

— Proof Mode -

*1: The value of the low speed depends on the copier.


## - Sorter Mode -

*1: The start timing of the bin drive and the jogger motors depend on the paper size as shown in the following table.
*2: Bin No.

| Paper Size | Bin drive <br> motor timing | Jogger <br> motor timing | Paper Size | Bin drive <br> motor timing | Jogger <br> motor timing |
| :---: | :---: | :---: | :---: | :---: | :---: |
| A3/11"x17" | 138 ms | 292 ms | A4 $\square$ <br> $81 / 2 " x 11 "$ | 312 ms | 118 ms |
| B4 | 218 ms | 212 ms | B5 $\square$ | 218 ms | 212 ms |
| A4 $\square$ <br> $\mathbf{1 1 " x 8 1 / 2 " ~}$ | 138 ms | 292 ms | B5 $\square$ | 368 ms | 62 ms |

## - Staple Mode -

A4 sideways, two copies of a two-page original, after sorting, $150 \mathrm{~mm} / \mathrm{s}$


### 3.10 JAM DETECTION

- Paper Jam -


J1: The sorter entrance sensor does not turn on within 2 s after the fusing exit sensor has turned on.
J2: The fusing exit sensor does not turn off within 11.4 s after the sorter entrance sensor has turned on.

J3: The sorter entrance sensor does not turn off within 1 s after the fusing exit sensor has turned off.

## - Staple Jam -

In the following conditions, a staple jam will occur and the sorter jam indicator on the operation panel will light.

1. If the stapler paper sensor is on when the main switch turns on or just as the stapler cover is closed.
2. If the stapler paper sensor stays on after the stapling job has been finished.

## 4. SERVICE TABLES

### 4.1 DIP SWITCHES

## DIP SW100

| Switch No. |  |  |  |  | Function |  |
| :---: | :---: | :---: | :---: | :---: | :--- | :---: |
| $\mathbf{1}$ | $\mathbf{2}$ | $\mathbf{3}$ | $\mathbf{4}$ | $\mathbf{5}$ |  |  |
| Off | Off | Off | Off | Off | Normal Setting |  |
| On | On | Off | Off | Off | Sorter Free Run |  |
| On | Off | On | Off | Off | Staple Free Run |  |
| On | On | On | Off | Off | System Free Run |  |
| Off | Off | Off | Off | On | Bin Jam Sensor Adjustment <br> (see section 6.6) |  |

## Using a Free Run Mode

1. Select the type of free run that you need using switches 2 and 3 .
2. Set switch 1 to 1 . The free run starts.
3. To stop the free run, set switch 1 to 0 .
4. Return switches 2 and 3 to their factory settings.

## Free Run Mode Types

## - Sorter Free Run Mode -

This mode advances and lowers the bins, moves the jogger plate, and changes the roller rotation speed from low to high for each bin.

## - Staple Free Run Mode -

This mode performs the jogger plate, grip assembly, and staple movements for each bin.

## - System Free Run Mode -

This mode performs both sorter free run and staple free run modes.

### 4.2 TEST POINTS

| Number | Function |
| :---: | :---: |
| TP100 | +24 V |
| TP101 | +5 V |
| TP102 | GND |

### 4.3 LED

| Number | Function |
| :---: | :---: |
| LED100 | Bin jam sensor status |

### 4.4 VARIABLE RESISTOR

| Number | Function |
| :---: | :---: |
| VR100 | Bin jam sensor (LED) adjustment (see Bin Jam Sensor Adjustment) |

## 5. REPLACEMENT AND ADJUSTMENT

### 5.1 EXTERIOR COVER REMOVAL



1. Rear cover [A] (2 screws)
2. Front cover [B] (3 screws)
3. Lower cover [C] (1 screw)
4. Top cover [D] (2 screws)

### 5.2 STAPLE UNIT REMOVAL



A555R501.WMF

1. Remove the front cover (see Exterior Cover Removal).
2. Swing up the staple unit [A].
3. Remove the staple unit (1 connector, 1 ground wire, 1 clip).

## GRIP ARM REPLACEMENT

### 5.3 GRIP ARM REPLACEMENT



1. Remove the front cover (see Exterior Cover Removal).
2. Remove the grip assembly [A] (4 screws, 2 connectors, 1 grounding wire).
3. Remove the holder bracket [B] (1 screw).
4. Remove the spring [C] and remove the slider [D].
5. Remove the grip arm unit [E] (1 screw, 1 clip).
6. Remove the grip arm plate [F] (2 screws).
7. Replace the grip arms [G].

### 5.4 BIN REPLACEMENT



1. Remove the front, rear, and top covers (see Exterior Cover Removal).
2. Remove the spring $[A]$ and the grip cover $[B]$ ( 2 screws).
3. Remove the upper stay bracket $[C]$ ( 6 screws, 1 grounding wire, 1 connector).
4. Remove the timing belt [D].
5. Remove the jogger guide plate [E] (4 screws).
6. Remove the wheel sensor bracket $[F]$ ( 1 screw).
7. Remove the bushings [G] (1 clip each).
8. Remove the actuators $[\mathrm{H}]$, belts [ $I]$, and the gears [J] (1 clip on each side).
9. Remove the helical wheels $[\mathrm{K}]$.
10. Remove the bins [L].

NOTE: When putting back the helical wheels at both the front and rear of the machine, the parts labeled (A) should be pointing directly away from the machine.

### 5.5 TRANSPORT MOTOR REPLACEMENT



1. Remove the sorter stapler [A] (1 screw, 1 chain).
2. Remove the lower plate $[B]$ ( 3 screws).
3. Remove the entrance guide [C] (4 screws).
4. Remove the transport motor unit [D].
5. Remove the collar [E].
6. Remove the transport roller [F] (2 bushings, 1 gear).
7. Remove the transport motor cover [G].
8. Remove the transport motor $[\mathrm{H}]$ (3 screws).

### 5.6 BIN JAM SENSOR ADJUSTMENT



After replacing the sorter main board, perform the bin jam sensor adjustment as follows.

1. Turn on the main switch.
2. Remove any copies from the bins.
3. Set switch 5 of DIP SW 100 on the sorter main board to the ON position.
4. Turn VR 100 until LED 100 goes off.

## 3-BIN SORTER A849

## 1. SPECIFICATIONS

| Paper Size for Bins: | Sort/Stack Modes: <br> Lengthwise: A6 to A3 $51 / 2^{\prime \prime} \times 81 / 2^{\prime \prime}(\mathrm{HTL}) \text { to } 12 \text { " x } 18 \text { " }$ <br> Sideways: A5 to A4 $51 / 2^{\prime \prime} \times 81 / 2^{\prime \prime}(H T L)$ to $81 / 2^{\prime \prime} \times 11^{\prime \prime}$ (LT) |
| :---: | :---: |
| Paper Weight for Bins: | ```Face up: 1st bin: 52 ~ 160 g/m}\mp@subsup{}{2}{2}(14~42 lbs. 2nd/3rd bins: 52 ~ 105 g/m Face down: All bins: 64 ~ 105 g/m}\mp@subsup{}{2}{(17 ~ 28 lbs.)``` |
| Bin Capacity: | 1st bin: <br> A4, $81 / 2^{\prime \prime} \times 11^{\prime \prime}$ or smaller: <br> 500 copies ( $80 \mathrm{~g} / \mathrm{m}^{2}, 20 \mathrm{lbs}$. ) <br> B4, 81/2" x 13 " or larger: <br> 250 copies ( $80 \mathrm{~g} / \mathrm{m}^{2}, 20 \mathrm{lbs}$.) <br> 2nd/3rd bins: <br> A4, $81 / 2^{\prime \prime} \times 11^{\prime \prime}$ : or smaller: <br> 250 copies ( $80 \mathrm{~g} / \mathrm{m}^{2}, 20 \mathrm{lbs}$.) <br> B4, 81/2" x 13" or larger: <br> 125 copies ( $80 \mathrm{~g} / \mathrm{m}^{2}, 20 \mathrm{lbs}$. ) |
| Number of Bins: | 3 copy trays 1 inverter tray |
| Power Source: | DC $24 \mathrm{~V}, 5 \mathrm{~V}$ (from the main machine) |
| Power Consumption: | Average: Less than 30 W |
|  | Weight: 13 kg (28.7 lbs.) |
| Weight: | 14 kg (30.9 lbs.) |
| Dimensions (W x D x H): | $361 \times 483 \times 427 \mathrm{~mm}$ (14.3" x 19.1" x 16.9") |

## 2. COMPONENT LAYOUT

### 2.1 MECHANICAL COMPONENT LAYOUT



1. Tray Lift Belt
2. 2nd Bin Gate
3. 2nd Exit Sensor
4. 3rd Bin Gate
5. Entry Sensor
6. Junction Gate
7. Feed Roller
8. Return Pinch Roller
9. Inverter Sensor
10. 3rd Exit Sensor
11. Inverter Bin
12. 3rd Bin
13. 2nd Bin
14. Tray Lower Limit Sensor
15. 1st Bin

### 2.2 DRIVE LAYOUT



1. Entry Roller
2. Feed Roller
3. Entrance Motor
4. 1st Exit Roller
5. 2nd Exit Roller
6. 3rd Exit Roller
7. Inverter Roller
8. Return Pinch Roller
9. Exit Motor

## ELECTRICAL COMPONENT DESCRIPTION

### 2.3 ELECTRICAL COMPONENT DESCRIPTION

Refer to the electrical component layout on the reverse side of the point-to- point diagram (on waterproof paper).

| Symbol | Index No. | Description | Note |
| :---: | :---: | :---: | :---: |
| Motors |  |  |  |
| M1 | 13 | Entrance | Drives the feed roller and the entry roller. |
| M2 | 14 | Exit | Drives the inverter roller and the exit rollers. |
| M3 | 18 | Tray Shift | Moves the 1st bin from side to side. |
| M4 | 16 | Tray Lift | Moves the 1st bin up or down. |
| Solenoids |  |  |  |
| SOL1 | 4 | 2nd Bin Gate | Opens and closes the 2nd bin gate to direct the copies into either the 2nd bin or 1st bin. |
| SOL2 | 5 | 3rd Bin Gate | Opens and closes the 3rd bin gate to direct the copies into either the 3rd bin or the other bins. |
| SOL3 | 6 | Junction Gate | Opens and closes the junction gate to direct copies into either the inverter area or other exits. |
| SOL4 | 7 | Pinch Roller | In face down mode, contacts the return pinch roller with the copy to deliver the copy to bin 1, 2, or 3. |
| Sensors |  |  |  |
| S1 | 2 | Stack Height | Detects when the copy paper stack is at the correct height, and detects when the 1st bin is at its upper limit position. |
| S2 | 17 | Tray Half-turn | Detects complete side-to-side movement of the 1 st bin. |
| S3 | 1 | 1st Exit | Detects paper jams at the 1st bin. |
| S4 | 8 | 2nd Exit | Detects paper jams at the 2nd bin. |
| S5 | 9 | 3rd Exit | Detects paper jams at the 3rd bin. |
| S6 | 10 | Inverter | Detects misfeeds and synchronizes the inverter gate. |
| S7 | 11 | Entry | Detects misfeeds and copy paper entry. |
| S8 | 15 | Tray Lower Limit | Detects when the 1st bin is at its lower limit position. |
| Switches |  |  |  |
| SW1 | 3 | Sorter Set | Detects when the sorter is attached to the main machine. |
| Circuit Board |  |  |  |
| PCB1 | 12 | Control | Controls all sorter functions. |

## 3. DETAILED SECTION DESCRIPTIONS

### 3.1 BASIC OPERATION

### 3.1.1 FACE-UP MODE



Copies exiting the copier pass through the entrance guide plate [A]. The entry roller will send copies either to the inverter bin or to each bin, depending on the selected mode.

When the sorter receives the feed-out signal from the main machine, the entrance motor and exit motor energize to rotate all the rollers in the sorter. During copying, all rollers transport the paper at a speed that depends on the copier. When the leading edge of the copy passes the entry sensor [B], the speed of the rollers changes to $550 \mathrm{~mm} / \mathrm{s}$.

## - 1st, 2nd and 3rd bins -

When the junction gate [C] is closed as shown above, the copies pass through the upper part of the junction gate. For 1 st bin output mode, the copy goes straight up from the junction gate directly to the bin. For the 2nd and 3rd bins, the copies from the junction gate are delivered to these bins, as directed by the 2nd bin gate [D] and 3rd bin gate [E].

### 3.1.2 FACE-DOWN MODE



When the junction gate $[A]$ is opened, the copy goes to the inverter bin $[B]$ through the lower part of the junction. When the trailing edge of the copy passes through the inverter sensor [C], the return pinch rollers [D] lower to contact the copy, then the copy is fed back in by the rollers. The copy is fed out to any output bin and it arrives face down.

### 3.2 1ST BIN UP/DOWN MECHANISM



The tray lift motor (a dc motor) [A] controls the vertical position of the 1 st bin [B] through gears. When the main switch is turned on, the 1st bin is initialized at the upper position. The bin's upper position is detected by the stack height sensor [C]. The 1st bin activates the stack height sensor, then the 1st bin lowers until it is at the correct height to receive the copy. This initialization is performed before every copy job.
During copying, when the stack of paper activates the stack height sensor, the 1st bin lowers until the stack height sensor is deactivated.

When the 1st bin reaches its lower limit, actuator [D] enters the lower limit sensor [E], and copying stops. After copying ends, the machine stops.

### 3.3 1ST BIN SIDE-TO-SIDE SHIFT MECHANISM



In the sort/stack mode, the 1st bin [A] moves from side-to-side to separate the sets of copies.

The tray shift motor (a DC motor) [B] and the shift cam [C] control the horizontal position of the shift tray. After one set of copies is delivered to the bin, the tray shift motor starts rotating, driving the shift cam through gears. The link [D] connected between the shift cam and the tray shift plate [E] creates the side-to-side movement required to separate the copy sets.
When the shift cam has rotated 180 degrees (when the tray is fully shifted across), the tray half-turn sensor [F] is activated by the slot [G] in the actuator plate $[\mathrm{H}]$, which is attached to the shift cam, and the tray shift motor stops. The next set of copies is then delivered. The motor rotates, repeating the same process and moving the bin back to the previous position.

### 3.4 PAPER FEED AND MISFEED DETECTION TIMING

- Normal Mode -

*1: This speed depends on the copier.

PAPER FEED AND MISFEED DETECTION TIMING
— Inverter Mode -

*1: This speed depends on the copier.

### 3.5 JAM DETECTION

## - Paper Jams -

J1: The entry sensor does not turn on within 2 s after the feed out signal has turned on.

J2: The entry sensor does not turn off within 610 ms after the feed out signal has turned off or the entry sensor stays on over 2.8 s .
J3: The following exit sensors do not turn on within the specified time after the entry sensor has turned on.

1st exit sensor: 2.4 s
2nd exit sensor: 1.4 s
3rd exit sensor: 740 ms
J4: The following exit sensors do not turn off within the specified time after the entry sensor has turned off.

1st exit sensor: 870 ms
2nd exit sensor: 500 ms
3rd exit sensor: 270 ms
J5: The inverter sensor does not turn off within 4.56 s after the inverter sensor has turned on.

J6: The inverter sensor does not turn on again within 380 ms after the inverter sensor has turned off.

J7: The inverter sensor does not turn off within 1.14 s after the inverter sensor has turned on again.
J8: The following exit sensors do not turn on within the specified time after the inverter sensor has turned on again.

1st exit sensor: 770 ms
2nd exit sensor: 430 ms
3rd exit sensor: 250 ms
J9: The following exit sensors do not turn off within the specified time after the inverter sensor turned off again.

1st exit sensor: 770 ms
2nd exit sensor: 430 ms
3rd exit sensor: 250 ms

## 4. REPLACEMENT AND ADJUSTMENT

### 4.1 EXTERIOR COVER AND BIN REMOVAL



1. Rear Cover [A] (3 screws)
2. Front Cover [B] (3 screws)
3. Top Cover [C] (2 screws)
4. Bins [D] (1st bin: 2 screws)

### 4.2 TRAY LIFT/SHIFT MOTOR ASSEMBLY REMOVAL



1. Remove the rear cover (see Exterior Cover and Bin Removal).
2. Remove the clip $[A]$.
3. Remove the motor assembly [B] (3 screws, 3 connectors).

### 4.3 ENTRANCE MOTOR REPLACEMENT



1. Remove the rear cover (see Exterior Cover and Bin Removal).
2. Remove the control board $[A]$ (9 connectors, 4 clamps).
3. Remove the motor bracket [B] (2 screws).
4. Remove the exit motor [C] (2 screws).

### 4.4 EXIT MOTOR REPLACEMENT



1. Remove the rear cover (see Exterior Cover and Bin Removal).
2. Remove the motor bracket [A] (2 screws, 1 connector).
3. Remove the exit motor [B] (2 screws, 1 connector).

### 4.5 STACK HEIGHT SENSOR AND 1ST EXIT SENSOR REPLACEMENT



1. Remove the front, rear, and top covers (see Exterior Cover and Bin Removal).
2. Remove all bins (see Exterior Cover and Bin Removal).
3. Remove the 3-bin sorter.
4. Remove the middle guide plate [A] (1 clip).
5. Remove the motor assembly [B] (see Tray Lift/Tray Shift Motor Assembly Removal).
6. Remove the upper guide plate [C] (4 screws).

7. Remove the middle shift guide plate [D] (3 screws).
8. Remove the stack height sensor [E] (1 connector).
9. Remove the 1 st exit sensor [F] ( 1 screw, 1 connector).

### 4.6 2ND / 3RD EXIT SENSOR AND INVERTER SENSOR REPLACEMENT



1. Remove the front cover and rear cover (see Exterior Cover Removal).
2. Remove all bins.
3. Remove four tray brackets $[A]$ (1 screw each).
4. Remove the upper exit cover $[B]$ ( 2 screws).
5. Remove the lower exit cover [C] (2 screws).
6. Remove the sensor bracket [D] (1 screw) and replace the 2nd exit sensor [E] (1 screw, 1 connector).
7. Remove the sensor bracket [F] (1 screw) and replace the 3rd exit sensor [G] (1 screw, 1 connector).
8. Replace the inverter sensor [H] (1 screw, 1 connector).

## FILM PROJECTOR UNIT A846

## 1. SPECIFICATIONS

| Acceptable Film Types: | Type:Positive film/Negative film |
| :---: | :---: |
|  | $\begin{aligned} & \text { Size: } 35 \mathrm{~mm} \text { - Approx. } 140 \times 210 \mathrm{~mm} \\ & \text { Others: } 45 \times 60 \mathrm{~mm}, 60 \times 60 \mathrm{~mm} \\ & 60 \times 70 \mathrm{~mm}, 60 \times 80 \mathrm{~mm} \\ & 60 \times 90 \mathrm{~mm}, 4 " \times 5 " \end{aligned}$ |
|  | Max: $142 \times 210 \mathrm{~mm}$ or 5.6 " x 8.2" |
|  | Mount: Yes (Up to 5 frames can be set in the film holder.) |
|  | Strip: $\quad$ Yes (A series of 6 frames can be set in the film holder.) |
| Focusing: | Fixed/Manual |
| Effective Film Area: | 35 mm : Approx. $21.5 \times 33.0 \mathrm{~mm}$ |
|  | Other Sizes: Full Size |
| Projection Ratio | 35 mm : Approx. x 6 |
|  | Other Sizes: x 1 |
| Copy Image Size | 35 mm mount: $120.8 \times 192.7 \mathrm{~mm}$ |
|  | 35 mm strip: $129.3 \times 198.6 \mathrm{~mm}$ |
|  | Other Sizes: Full Size |
| All the reproduction features of the copier are available. |  |
| Power Source: | 120 V 60 Hz , more than 0.9 A <br> 220 ~ $240 \mathrm{~V} 50 / 60 \mathrm{~Hz}$, more than 0.5 A |
| Dimensions (W x D $\times$ H): | $\text { Projector: } \begin{aligned} & 300 \times 442 \times 212 \mathrm{~mm} \\ & 11.8^{\prime \prime} \times 17.4^{\prime \prime} \times 8.35^{\prime \prime} \end{aligned}$ |
|  | $\begin{aligned} \text { Mirror Unit: } 298 \times 232 \times 50 \mathrm{~mm} \\ 11.73^{\prime \prime} \times 9.13^{\prime \prime} \times 1.97 " \end{aligned}$ |
| Weight: | Projector: $10 \mathrm{~kg}, 22.1 \mathrm{lb}$ <br> Mirror unit: $5 \mathrm{~kg}, 11.1 \mathrm{lb}$ |

Remarks: The holder is required for installation.

## 2. ELECTRICAL COMPONENT LAYOUT AND DESCRIPTIONS



| Symbol | Name | Function | Index No. |
| :---: | :---: | :---: | :---: |
| PCB1 | Projector Lamp Regulator | Supplies dc voltage to the projector lamp and lamp cooling fan. | 4 |
| PCB2 | Projector Control Board | Controls the projector unit, communicating with the copier main board. | 5 |
| PCB3 | Noise Filter Board (220-240V machine only) | Removes electrical noise. | 3 |
| M1 | Lamp Cooling Fan | Blows air to the projector lamp section. | 2 |
| SW1 | Projector Switch | Provides power to the projector unit. | 1 |
| L1 | Projector Lamp | Applies light to the film for exposure. | 7 |
| TH1 | Lamp Thermistor | Detects the temperature around the projector lamp to control the lamp cooling fan. | 8 |
| TF1 | Lamp Thermofuse | Opens the projector lamp circuit if the projector lamp section overheats. | 9 |
| TR1 | Transformer | Steps down the wall voltage to 17 $\sim 18 \mathrm{~V}$ ac. | 6 |

## 3. SECTIONAL DESCRIPTIONS

### 3.1 OVERVIEW



This film projector unit allows copying from the following kinds of films:
35 mm positive slides (both mount films and glass mount films)
35 mm negative or positive strip films
Positive or negative films of a wide size
$(45 \times 60 / 60 \times 60 / 60 \times 70 / 60 \times 80 / 60 \times 90 \mathrm{~mm} / 4 \mathrm{l} \times 5 \mathrm{5} /$
Maximum size of $142 \times 210 \mathrm{~mm}$ or $5.6^{\prime \prime} \times 8.2^{\prime \prime}$ )
The light from the projector lamp $[A]$ is reflected by the reflector $[B]$ and reaches the film ( 35 mm ) in the film/slide holder [C] through the non-spherical lens [D], heat filter [E], and condenser lenses [F]. The projected film image reaches the mirror [G] through the correction filter (positive or negative) [H] and projection lens [I]. Then the mirror reflects the image onto the exposure glass through the Fresnel lens [J]. The first scanner moves under the exposure glass to read the projected film image and the light of the image is converted to $R / G / B$ electrical signals by the $C C D[K]$.
The 35 mm film's image is enlarged about 6 times when projected onto the exposure glass.

For wide films, the first scanner reads the film placed on the exposure glass directly using the light from the projector lamp.

The lamp cooling fan turns on and off depending on the temperature of the projector lamp section detected by the lamp thermistor. It turns on at around $45^{\circ} \mathrm{C}$ and turns off at around $44^{\circ} \mathrm{C}$.

### 3.2 SHADING

When the projector unit is selected, shading should be done after selecting the type of film. The shading should be done with a base film and the N -correction filter for the negative films and with the P-correction filter (without base film) for the positive films.
The N -correction filter corrects the color and intensity of the projected light. The Pcorrection filter corrects the light intensity of the projected light so that it becomes similar to that for the negative films.

When "Shading" is performed, the first scanner moves and stops under the mirror unit. Then AGC (Auto Gain Control) for the light intensity from the projector lamp is performed. Shading for black and white levels is also performed after the AGC.

This "Shading" should be performed whenever the type of film is changed or the mirror unit is moved.

### 3.3 MIRROR UNIT



The film image projected through the projection lens $[\mathrm{A}]$ is reflected to the Fresnel lens $[B]$ by the mirror $[C]$.
The Fresnel lens consists of two components, a circular-pitch Fresnel lens [D] and a parallel-pitch Fresnel lens [ E ]. The circular-pitch Fresnel lens changes divergent light to paralle light. The parallel-pitch Fresnel lens collects the light from the circular-pitch Fresnel lens in the main scan direction so that all the light reaches the color CCD lens [F].

The use of these two types of Fresnel lens makes the most of the light intensity from the projector lamp.

## APPENDIX-A

## TIMING CHARTS

## A4 SIZE B/W MODE

A4 BN( mm )
Print Start


A4 SIZE FULL COLOR MODE

## A4 SIZE FULL COLOR MODE



## A3 SIZE B/W MODE

A3 B/W(mm)


## A3 SIZE FULL COLOR MODE

A3 FC (mm)


## APPENDIX-B <br> SP MODE TABLE

## SP TABLE

| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \hline \hline \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1. Paper feed/transport/fusing units [Feed] |  |  |  |  |  |  |
| 01-001: Leading edge registration adjustment [Lead Edge Regist] |  |  |  |  |  |  |
| 01-001-01 | [Normal Paper] | 0 mm | -5.0 to 5.0 mm | 0.1 | Yes | Adjusts the registration at the leading edge position by changing the registration clutch operation timing for each mode 2/3 speed: Printer mode |
| 01-001-02 | [OHP] | 0 mm | -5.0 to 5.0 mm | 0.1 | Yes |  |
| 01-001-03 | [Thick Paper] | 0 mm | -5.0 to 5.0 mm | 0.1 | Yes |  |
| 01-001-04 | [2/3 Speed] | 0 mm | -5.0 to 5.0 mm | 0.1 | Yes |  |
| [2/3 Speed] |  |  |  |  |  |  |
| 01-002: Side-to-side registration adjustment [Side to Side Reg] |  |  |  |  |  |  |
| 01-002-01 | [By-pass] | 0 mm | -5.0 to 5.0 mm | 0.1 | Yes | Adjusts the side-to-side registration by changing the laser main scan start position for each feed station. |
| 01-002-02 | [Tray 1] | 0 mm | -5.0 to 5.0 mm | 0.1 | Yes |  |
| 01-002-03 | [Tray 2] | 0 mm | -5.0 to 5.0 mm | 0.1 | Yes |  |
| 01-002-04 | [Tray 3] | 0 mm | -5.0 to 5.0 mm | 0.1 | Yes |  |
| 01-002-05 | [Tray 4] | 0 mm | -5.0 to 5.0 mm | 0.1 | Yes |  |
| 01-002-06 | Duplex: Side 2 [Duplex] | 0 mm | -5.0 to 5.0 mm | 0.1 | Yes |  |
|  |  |  |  |  |  |  |
| 01-003: Paper feed timing [P.Feed Tmg] |  |  |  |  |  |  |
| 01-003-01 | Normal paper, by-pass [Normal Paper/By-ps] | 0.0 mm | -5.0 to 5.0 mm | 0.1 | Yes | Adjusts the amount of paper buckle at the registration roller by changing the time from when the registration sensor is activated until the relay clutch is turned off. |
| 01-003-02 | Tray paper feed [Tray Feed] | 0.0 mm | -5.0 to 5.0 mm | 0.1 | Yes |  |
| 01-003-03 | $\begin{aligned} & \text { By-pass OHP } \\ & \text { [OHP/By-ps] } \end{aligned}$ | 0.0 mm | -5.0 to 5.0 mm | 0.1 | Yes |  |
| 01-003-04 | By-pass: Thick paper [Thick Paper/By-ps] | 2.0 mm | -5.0 to 7.0 mm | 0.1 | Yes |  |
| 01-003-05 | Duplex: Side 2 [Dplx Feed] | 0.0 mm | -5.0 to 5.0 mm | 0.1 | Yes | Adjusts the amount of paper buckle at the registration roller by changing the time from when the registration sensor is activated until the relay clutch is turned off. |


| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \hline \hline \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1-101: Oil End Sensor [Oil End Sensor] |  |  |  |  |  |  |
| 1-101-000 | [Fuser Oil End Check] | 1 | $\begin{aligned} & 0=\text { Not used } \\ & 1=\text { Used } \end{aligned}$ | 1 | Yes | Specifies whether the oil end sensor is used. |
| 01-104: |  |  |  |  |  |  |
| 01-104-00 | Fusing control method selection [Fusing Control] | 1 | 0 : Phase control <br> 1: On/off control | 1 | Yes | Selects the fusing temperature control mode. On/off control minimizes the radio noise generated when the fusing lamp is turned on. <br> Phase control should only be selected if a user has problems with electrical noise or interference, such as a flickering fluorescent lamp or main power supply voltage drops. <br> The main switch needs to be turned off and on when the setting is changed. <br> $0=$ Phase control <br> 1 = ON/OFF control. |
| 01-105: Hot/pressure roller temperature settings [Roller.Tmp Set] |  |  |  |  |  |  |
| 01-105-01 | Hot roller, 1st side, Idling [Hot RIIr/ Idling] | $163{ }^{\circ} \mathrm{C}$ | 100 to $200{ }^{\circ} \mathrm{C}$ | 1 | Yes | Sets the temperature at which idling starts. Idling starts for 2 minutes when the temperature becomes over the target - $15^{\circ} \mathrm{C}$. <br> If the temperature is higher than $50^{\circ} \mathrm{C}$ when the power relay turns on, idling is not executed. |


| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \hline \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 01-105-02 | Hot roller, 1st side, Standby mode [Hot RIIr/ Standby] | $165{ }^{\circ} \mathrm{C}$ | 100 to $200{ }^{\circ} \mathrm{C}$ | 1 | Yes | Sets the target operating temperatures of the hot and pressure rollers in various modes. |
| 01-105-03 | Hot roller, 1st side, Copy mode, Normal paper, FC <br> [Hot RIIr/ NrmI: FC] | $165^{\circ} \mathrm{C}$ | 100 to $200{ }^{\circ} \mathrm{C}$ | 1 | Yes |  |
| 01-105-04 | Hot roller, 1st side, Copy mode, Normal paper, 1C <br> [Hot RIIr/ Nrml: SC] | $160{ }^{\circ} \mathrm{C}$ | 100 to $200^{\circ} \mathrm{C}$ | 1 | Yes |  |
| 01-105-05 | Hot roller, 1st side, Copy mode, OHP/Thick paper, FC [Hot RIIr/ OHP/Thick: FC] | $160{ }^{\circ} \mathrm{C}$ | 100 to $200^{\circ} \mathrm{C}$ | 1 | Yes |  |
| 01-105-06 | Hot roller, 1st side, Copy mode, OHP/Thick paper, 1C [Hot RIIr/ OHP/Thick: SC] | $150{ }^{\circ} \mathrm{C}$ | 100 to $200^{\circ} \mathrm{C}$ | 1 | Yes |  |
| 01-105-07 | Pressure roller, 1st side, Standby mode <br> [Pressure RIIr/ Standby] | $150{ }^{\circ} \mathrm{C}$ | 100 to $200{ }^{\circ} \mathrm{C}$ | 1 | Yes |  |
| 01-105-08 | Pressure roller, 1st side, Copy mode, Normal paper, FC <br> [Pressure RIIr/ NrmI: FC] | $150{ }^{\circ} \mathrm{C}$ | 100 to $200{ }^{\circ} \mathrm{C}$ | 1 | Yes |  |
| 01-105-09 | Pressure roller, 1st side,: Copy mode, Normal paper, 1C [Pressure RIIr/ Nrml: SC] | $150{ }^{\circ} \mathrm{C}$ | 100 to $200^{\circ} \mathrm{C}$ | 1 | Yes |  |
| 01-105-10 | Pressure roller, 1st side, Copy mode, <br> OHP/Thick paper, FC <br> [Pressure RIIr/ OHP/Thick: FC] | $150{ }^{\circ} \mathrm{C}$ | 100 to $200^{\circ} \mathrm{C}$ | 1 | Yes |  |
| 01-105-11 | Pressure roller, 1st side, Copy mode, OHP/Thick paper, 1C <br> [Pressure RIIr/ OHP/Thick: SC] | $150{ }^{\circ} \mathrm{C}$ | 100 to $200^{\circ} \mathrm{C}$ | 1 | Yes |  |
| 01-105-12 | Hot roller, 2nd side, Standby mode [Hot RIIr/ Standby: Dplx] | $165{ }^{\circ} \mathrm{C}$ | 100 to $200^{\circ} \mathrm{C}$ | 1 | Yes |  |
| 01-105-13 | Hot roller, 2nd side, Copy mode, Normal paper, FC <br> [Hot RIIr/ Nrml: FC: Dplx] | $165^{\circ} \mathrm{C}$ | 100 to $200^{\circ} \mathrm{C}$ | 1 | Yes |  |


| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \hline \hline \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 01-105-14 | Hot roller, 2nd side, Copy mode, Normal paper, 1C <br> [Hot RIIr/ Nrml: SC: Dplx] | $160{ }^{\circ} \mathrm{C}$ | 100 to $200{ }^{\circ} \mathrm{C}$ | 1 | Yes | Sets the number of forced toner supply operations. |
| 01-105-15 | Hot roller, 2nd side, Copy mode, OHP/Thick paper, FC <br> [Hot RIIr/ OHP/Thick: FC: Dplx] | $160{ }^{\circ} \mathrm{C}$ | 100 to $200{ }^{\circ} \mathrm{C}$ | 1 | Yes | Sets the target operating temperatures of the hot and pressure rollers in various modes. |
| 01-105-16 | Hot roller, 2nd side, Copy mode, OHP/Thick paper, 1C [Hot RIIr/ OHP/Thick: SC: Dplx] | $150{ }^{\circ} \mathrm{C}$ | 100 to $200^{\circ} \mathrm{C}$ | 1 | Yes |  |
| 01-105-17 | Pressure roller, 2nd side, Standby mode <br> [Pressure RIIr/ Standby: Dplx] | $150{ }^{\circ} \mathrm{C}$ | 100 to $200{ }^{\circ} \mathrm{C}$ | 1 | Yes |  |
| 01-105-18 | Pressure roller, 2nd side, Copy mode, Normal paper, FC <br> [Pressure RIIr/ Nrml: FC: Dplx] | $150{ }^{\circ} \mathrm{C}$ | 100 to $200{ }^{\circ} \mathrm{C}$ | 1 | Yes |  |
| 01-105-19 | Pressure roller, 2nd side, Copy mode, Normal paper, 1C <br> [Pressure RIIr/ Nrml: SC: Dplx] | $150{ }^{\circ} \mathrm{C}$ | 100 to $200^{\circ} \mathrm{C}$ | 1 | Yes |  |
| 01-105-20 | Pressure roller, 2nd side, Copy mode, OHP/Thick paper, FC [P RIIr/ OHP/Thick: FC: Dplx] | $150{ }^{\circ} \mathrm{C}$ | 100 to $200{ }^{\circ} \mathrm{C}$ | 1 | Yes |  |
| 01-105-21 | Pressure roller, 2nd side, Copy mode, OHP/Thick paper, 1C [P RIIr/ OHP/Thick: SC: Dplx] | $150{ }^{\circ} \mathrm{C}$ | 100 to $200{ }^{\circ} \mathrm{C}$ | 1 | Yes |  |


| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 01-106: Fusing temperature display [Roller Tmp. Display] |  |  |  |  |  |  |
| 01-106-01 | Lower roller <br> [Pressure Roller Temp] | ${ }^{\circ} \mathrm{C}$ | to ${ }^{\circ} \mathrm{C}$ |  |  | Displays the surface temperature at the center of the pressure roller (lower roller) in ${ }^{\circ} \mathrm{C}$. |
| 01-106-02 | Upper roller [Hot Roller Temp] | ${ }^{\circ} \mathrm{C}$ | to ${ }^{\circ} \mathrm{C}$ |  |  | Displays the surface temperature at the center of the hot roller (upper roller) in ${ }^{\circ} \mathrm{C}$. |
|  |  |  |  |  |  |  |
| 1-108: Fusing unit detection [Fusing Unit Set] |  |  |  |  |  |  |
| 01-108-00 | [Fusing Unit Set] | 0 | 0: Detection 1: No detection | 1 |  | Set to 1 during PM as described in the PM flow chart, to save time during PM. After the main switch is turned off/on, this setting goes back to the default, " 0 " automatically. |
|  |  |  |  |  |  |  |
| 01-109: [Fusing nip width measurement] |  |  |  |  |  |  |
| 01-109-00 | [Fusing Nip Band Wdth] |  | $\begin{gathered} \text { 0: OFF } \\ \text { 1: ON } \end{gathered}$ | - |  | Feeds an OHP sheet and stops 3 times for 2 seconds in between the hot and pressure rollers. Measure the width of the three roller traces that are developed on the OHP sheet because of these pauses. Set this SP to ' 1 ' and press the Enter key to start feeding. See Replacement \& Adjustment - Nip Band Width Adjustment for how to use this SP mode. |
|  |  |  |  |  |  |  |
| 01-801: Motor speed adjustments [Motor Speed Adjustment] |  |  |  |  |  |  |
| 01-801-01 | Fusing motor speed adjustment: Standard speed [Fusing Mt: Normal Spd] | 0.0\% | -0.1 to 1.0\% | 0.1 |  | Do not adjust the factory settings. |
| 01-801-02 | Paper feed motor speed adjustment: Standard speed <br> [P Feed Mt: Normal Spd] | 0.1\% | -0.1 to 1.0\% | 0.1 |  |  |
| 01-801-03 | Drum motor speed adjustment: Standard speed [Drum Mt: Normal SpdI] | -0.8\% | -0.1 to 1.0\% | 0.1 |  |  |

## SP TABLE

| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \hline \text { SP7- } \\ & 902 / 3 \\ & \hline \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 01-801-04 | Fusing motor speed adjustment: Half speed <br> [Fusing Mt: Half Spd] | 0.0\% | -0.1 to 1.0\% | 0.1 |  | Do not adjust the factory settings. |
| 01-801-05 | Paper feed motor speed adjustment: Half speed <br> [P Feed Mt: Half Spd] | 0.1\% | -0.1 to 1.0\% | 0.1 |  |  |
| 01-801-06 | Drum motor speed adjustment: Half speed <br> [Drum Mt: Half Spd] | -0.8\% | -0.1 to 1.0\% | 0.1 |  | Do not adjust the factory settings. |
| 01-801-07 | Fusing motor speed adjustment: 2/3 speed <br> [Fusing Mt: 2/3 Spd] | 0.0\% | -0.1 to 1.0\% | 0.1 |  |  |
| 01-801-08 | Paper feed motor speed adjustment: 2/3 speed <br> [P Feed Mt: 2/3 Spd] | 0.1\% | -0.1 to 1.0\% | 0.1 |  |  |
| 01-801-09 | Drum motor speed adjustment: 2/3 speed <br> [Drum Mt: 2/3 Spd] | -0.8\% | -0.1 to 1.0\% | 0.1 |  |  |
|  |  |  |  |  |  |  |
| 01-901 Fence Position [Fence Position] |  |  |  |  |  |  |
| 01-901-01 | Duplex side fence spacing adjustment [Dplx Side Fence Adjust] | 0.0 mm | -5.0 to 5.0 mm | 0.1 | Yes | Adjusts the side fence stop position of the duplex unit. |
| 01-901-02 | Duplex end fence spacing adjustment [Dplx End Fence Adjust] | 0.0 mm | -5.0 to 5.0 mm | 0.1 | Yes | Adjusts the end fence stop position of the duplex unit. |


| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \hline \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 2. Drum unit [Drum] |  |  |  |  |  |  |
| 02-101: Feed and scanning margin adjustments [BInk Mrgn] |  |  |  |  |  |  |
| 02-101-01 | Feed margin adjustment: Leading edge: Normal paper <br> [Lead Edge: Normal] | 0 mm | -4.0 to 4.0 mm | 0.1 | Yes | Adjusts the margins in the feed (sub-scan) direction. |
| 02-101-02 | Feed margin adjustment: Leading edge: Thick paper [Lead Edge: Thick] | 0 mm | -4.0 to 4.0 mm | 0.1 | Yes |  |
| 02-101-04 | Feed margin adjustment: Leading edge: OHP <br> [Lead Edge: OHP] | 0 mm | -4.0 to 4.0 mm | 0.1 | Yes |  |
| 02-101-05 | Feed margin adjustment: Trailing edge: Normal paper <br> [Trail Edge: Normal] | 0 mm | -3.0 to 10.0 mm | 0.1 | Yes |  |
| 02-101-06 | Feed margin adjustment: Trailing edge: Thick paper <br> [Trail Edge: Thick] | 0 mm | -3.0 to 10.0 mm | 0.1 | Yes | Adjusts the margins in the feed (sub-scan) direction. |
| 02-101-08 | Feed margin adjustment: Trailing edge: OHP <br> [Trail Edge: OHP] | 0 mm | -3.0 to 10.0 mm | 0.1 | Yes |  |
| 02-101-09 | Scanning margin adjustment: Front edge <br> [Main Scan Head Side] | 0 mm | -2.0 to 5.0 mm | 0.1 | Yes | Adjusts the margins in the main scan direction. |
| 02-101-10 | Scanning margin adjustment: Rear edge <br> [Main Scan Rear Side] | 0 mm | -2.0 to 5.0 mm | 0.1 | Yes |  |
| 02-101-11 | Feed margin adjustment: Auto duplex: 1st side <br> [Trail Edge: Auto Dplx 1side] | 0 mm | -3.0 to 10.0 mm | 0.1 | Yes | Adjusts the margins in the feed (sub-scan) direction for duplex mode. |
| 02-101-12 | Feed margin adjustment: Auto duplex: 2nd side <br> [Trail Edge: Dplx 2 side] | 0 mm | -3.0 to 10.0 mm | 0.1 | Yes |  |


| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \hline \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 02-112: Main-scan magnification adjustment (adjusts the laser diode clock frequency) [Main Scn Mag] |  |  |  |  |  |  |
| 02-112-01 | Copy mode (400 DPI) [Lsync Mag Adj COPY] | 0\% | -1.00 to 1.00\% | 0.01 | Yes | Adjusts the magnification in the main-scan direction for copier mode. <br> For copier mode, keep this at the factory settings. |
| 02-112-02 | Print mode (600 DPI) [Lsync Mag Adj PRINTER] | 0\% | -1.00 to 1.00\% | 0.01 | Yes | Adjusts the magnification in the main-scan direction for printer mode. <br> For how to use this SP mode, see SP 2-113-02. |
|  |  |  |  |  |  |  |
| 02-113: Sub-scan magnification adjustment (adjusts the polygon mirror motor speed) [Sub Scn Mag] |  |  |  |  |  |  |
| 02-113-01 | Copy mode (400 DPI) [Fsync Mag Adj COPY] | 0\% | -1.0 to 1.0\% | 0.1 | Yes | Adjusts the magnification in the sub-scan direction for copier mode. <br> For copier mode, keep this at the factory settings. To adjust the sub scan magnification, use SP 4-008 to adjust the scanner motor speed. |
| 02-113-02 | Print mode (600 DPI) [Fsync Mag Adj PRINTER] | 0\% | -1.0 to 1.0\% | 0.1 | Yes | Adjusts the magnification in the sub-scan direction for printer mode. <br> To use this SP mode, do the following: <br> Print the trim pattern using pattern 1 in SP5-955-018. Then check that the margins on the trim pattern are as follows: <br> Lead edge: 5 mm (target) $+/-2 \mathrm{~mm}$ <br> Trailing edge: 2 mm (target) $+2 \mathrm{~mm} /-1.5 \mathrm{~mm}$ <br> Side (target): 1.5 mm , Side (specification): $2+/-2 \mathrm{~mm}$. <br> Adjust the magnification in the sub scan direction first using SP 2-113-02. Then print the trim pattern again. Then adjust the magnification in the main scan direction with 2-113-01. <br> Adjust SP2-113-02 (sub scan) first and print the trim pattern again before adjusting 2-112-02 (main scan), because SP2-113-02 also affects the main scan magnification <br> Note: Do not adjust SP2-113-002 by more than +/$0.5 \%$ at any one time. |


| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 02-207: Forced toner supply [Forced Toner Splly] |  |  |  |  |  |  |
| 02-207-01 | [K] | 0 | 0: OFF, 1: ON | - |  | Moves the toner cartridge of the selected color to the development position and forces toner to be supplied in accordance with the settings of SP2-208. |
| 02-207-02 | [C] | 0 | 0: OFF, 1: ON | - |  |  |
| 02-207-03 | [M] | 0 | 0: OFF, 1: ON | - |  |  |
| 02-207-04 | [Y] | 0 | 0: OFF, 1: ON | - |  |  |

## 02-208: Toner supply [Toner Supply]

| 02-208-01 | Forced toner supply count setup: K <br> [Forced: Times: K] | 5 | 1 to 50 | 1 | Sets the number of forced toner supply operations. |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 02-208-02 | Forced toner supply count setup: C [Forced: Times: C] | 5 | 1 to 50 | 1 |  |
| 02-208-03 | Forced toner supply count setup: M [Forced: Times: M] | 5 | 1 to 50 | 1 |  |
| 02-208-04 | Forced toner supply count setup: Y <br> [Forced: Times: Y] | 5 | 1 to 50 | 1 | Sets the number of forced toner supply operations. |
| 02-208-05 | Fixed supply mode toner supply rate: K [Fixed: Ratio: K] | 5\% | 0 to 100\% | 1 | Sets the toner supply rate to be used when the toner supply method SP2-208-09 is set to 0 (fixed supply mode). |
| 02-208-06 | Fixed supply mode toner supply rate: C [Fixed: Ratio: C] | 5\% | 0 to 100\% | 1 |  |
| 02-208-07 | Fixed supply mode toner supply rate: M <br> [Fixed: Ratio: M] | 5\% | 0 to 100\% | 1 |  |
| 02-208-08 | Fixed supply mode toner supply rate: Y <br> [Fixed: Ratio: Y] | 5\% | 0 to 100\% | 1 |  |
| 02-208-09 | Toner supply method [Mode: 0:FIX, 1:PRP, 2:FZY] | 2 | 0 to 2 | 1 | Selects the toner supply method. 0 : Fixed supply, 1: Proportional control supply (Not available for A258/A259/A260), 2: Fuzzy control supply. Do not set to 1. |


| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \hline \hline \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 2-212: Toner near-end threshold [Toner Near End Thd] |  |  |  |  |  |  |
| 2-212-001 | Black toner [bBkMATnNEnd] | $0.05 \mathrm{mg} / \mathrm{cm}^{2}$ | 0.000 to 1.00 | 0.001 |  | Do not change the factory settings unless directed by technical support staff.. |
| 2-212-002 | CMY toner [bCIMATnNEnd] | $0 \mathrm{mg} / \mathrm{cm}^{2}$ | 0.000 to 1.00 | 0.001 |  |  |
|  |  |  |  |  |  |  |
| 02-225: Developer setup execution [Dev. Agitation] |  |  |  |  |  |  |
| 02-225-01 | [K] |  | $\begin{gathered} \text { 0: OFF } \\ 1: \text { ON } \end{gathered}$ | 1 |  | Performs developer initialization and forced process control self-check for the selected colour and displays the operation result. <br> Do this at installation and after changing the developer. <br> $0=$ Failure <br> 1 = Success <br> Also see SP 3-964 for the results. |
| 02-225-02 | [C] |  | $\begin{gathered} \text { 0: OFF } \\ 1: \text { ON } \end{gathered}$ | 1 |  |  |
| 02-225-03 | [M] |  | $\begin{gathered} \text { 0: OFF } \\ 1: \text { ON } \end{gathered}$ | 1 |  |  |
| 02-225-04 | [Y] |  | $\begin{gathered} \text { 0: OFF } \\ 1: \text { ON } \end{gathered}$ | 1 |  |  |
| 02-225-05 | [All Color] |  | $\begin{gathered} \text { 0: OFF } \\ \text { 1: ON } \end{gathered}$ | 1 |  |  |
| 02-225-06 | [CMY] |  | $\begin{gathered} \text { 0: OFF } \\ 1: \text { ON } \end{gathered}$ | 1 |  |  |



| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \hline \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 02-310: Paper transfer bias setup [Belt transfer bias] |  |  |  |  |  |  |
| 02-310-01 | Paper transfer forced environment switchover <br> [Paper transfer bias] | 1 | 0 to 3 | 1 |  | Specifies whether the transfer bias is to be switched according to the detected value from the humidity sensor, or whether it is to stay fixed at the values for normal or low humidity (these values depend on the settings of SP2-316). <br> 0: No environment switching, kept at standard conditions <br> 1: Conditions depend on the sensor (default) <br> 2: No environment switching, kept at low humidity conditions <br> 3: No environment switching, kept at high humidity conditions |
| 02-310-02 | Image area: Normal paper: 1C [NRML 1C] | $10 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes | Adjusts the paper transfer belt bias for various paper types and modes. <br> 3C mode: Used in twin colour modes ( $\mathrm{Bk} / \mathrm{R}, \mathrm{Bk} / \mathrm{G}$, or Bk/B) <br> Adjust only if there are problems with insufficient transfer in the image area of the copy for a particular paper type or mode, or in response to field problems as directed by technical support staff. |
| 02-310-03 | Image area: Normal paper: 2C [NRML 2C] | $18 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-310-04 | Image area: Normal paper: 4C [NRML 3C] | $18 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-310-05 | Image area: Normal paper: 1C [NRML 4C] | $18 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-310-06 | Image area: Thick paper: 1C [THICK 1C] | $8 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-310-07 | Image area: Thick paper: 2C [THICK 2C] | $10 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-310-08 | Image area: Thick paper: 3C [THICK 3C] | $10 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-310-09 | Image area: Thick paper: 4C [THICK 4C] | $10 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-310-10 | $\begin{aligned} & \text { Image area: OHP:1C } \\ & \text { [OHP 1C] } \end{aligned}$ | $8 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-310-11 | $\begin{aligned} & \text { Image area: OHP:2C } \\ & \text { [OHP 2C] } \end{aligned}$ | $10 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes |  |


| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \hline \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 02-310-12 | $\begin{aligned} & \text { Image area: OHP:3C } \\ & \text { [OHP 3C] } \end{aligned}$ | $10 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes | Adjusts the paper transfer belt bias for various paper types and modes. |
| 02-310-13 | $\begin{aligned} & \text { Image area: OHP:4C } \\ & \text { [OHP 4C] } \end{aligned}$ | $10 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes | 3C mode: Used in twin colour modes (Bk/R, Bk/G, or |
| 02-310-14 | Image area: $2 / 3$ speed: 1C [NRML_2/3 1C] | $10 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes | Bk/B) |
| 02-310-15 | Image area: 2/3 speed: 2C [NRML_2/3 2C] | $18 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes | Adjust only if there are problems with insufficient transfer in the image area of the copy for a particular |
| 02-310-16 | Image area: $2 / 3$ speed: 3 C [NRML_2/3 3C] | $18 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes | paper type or mode, or in response to field problems as directed by technical support staff. |
| 02-310-17 | Image area: 2/3 speed: 4C <br> [NRML_2/3 4C] | $18 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-310-18 | Image area: Normal paper, back side: 1C <br> [NRML Back 1C] | $12 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-310-19 | Image area: Normal paper, back side: 2C <br> [NRML Back 2C] | $15 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-310-20 | Image area: Normal paper, back side: 3C <br> [NRML Back 3C] | $15 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-310-21 | Image area: Normal paper, back side: 4C <br> [NRML Back 4C] | $15 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-310-22 | Image area: Thick paper: back side: 1C <br> [THICK Back 1C] | $7 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-310-23 | Image area: Thick paper: back side: 2C <br> [THICK Back 2C] | $9 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-310-24 | Image area: Thick paper: back side: 3C <br> [THICK Back 3C] | $9 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes |  |


| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \hline \hline \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 02-310-25 | Image area: Thick paper: back side: 4C <br> [THICK Back 4C] | $9 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes | Adjusts the paper transfer belt bias for various paper types and modes. <br> 3C mode: Used in twin colour modes (Bk/R, Bk/G, or Bk/B) <br> Adjust only if there are problems with insufficient transfer in the image area of the copy for a particular paper type or mode, or in response to field problems as directed by technical support staff. |
| 02-310-26 | Image area: $2 / 3$ speed: back side: 1C [NRML_2/3 Back 1C] | $10 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-310-27 | Image area: $2 / 3$ speed: back side: 2C [NRML_2/3 Back 2C] | $15 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-310-28 | Image area: 2/3 speed: back side: 3C [NRML_2/3 Back 3C] | $15 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-310-29 | Image area: $2 / 3$ speed: back side: 4 C [NRML_2/3 Back 4C] | $15 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes |  |
|  |  |  |  |  |  |  |
| 02-311: [Fo | ced Belt Cleaning] |  |  |  |  |  |
| 02-311-00 | Lubricant application |  |  | $\begin{gathered} \text { 0: OFF } \\ \text { 1: ON } \end{gathered}$ | - | Lubricates the image transfer belt. Do this when a partially blank printout occurs. |
|  |  |  |  |  |  |  |
| 02-313: Рар | er transfer paper size correction [P.T.B.: | per Size | rrection] |  |  |  |
| 02-313-01 | Normal paper: LT Sideways or larger [NRML over LT Sideways] | 100\% | 10 to 400\% | 1 |  | Paper transfer bias correction factors for various paper types and sizes. |
| 02-313-02 | Normal paper: B4 or larger [NRML over B4] | 100\% | 10 to 400\% | 1 |  | Adjust only if there are problems with insufficient transfer for a particular paper type, or in response to |
| 02-313-03 | Normal paper: A4 Lengthwise or larger [NRML over A5 Lengthwise] | 200\% | 10 to 400\% | 1 |  | field problems as directed by technical support staff. |
| 02-313-04 | Normal paper: Less than A4 Lengthwise <br> [NRML under A5 Lengthwise] | 250\% | 10 to 400\% | 1 |  |  |
| 02-313-05 | Thick paper: LT Sideways or larger [THICK over LT Sideways] | 100\% | 10 to 400\% | 1 |  |  |
| 02-313-06 | Thick paper: B4 or larger [THICK over B4] | 100\% | 10 to 400\% | 1 |  |  |
| 02-313-07 | Thick paper: A4 Lengthwise or larger [THICK over A5 Lengthwise] | 250\% | 10 to 400\% | 1 |  |  |


| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \hline \hline \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 02-313-08 | Thick paper: Less than A4 Lengthwise [THICK under A5 Lengthwise] | 300\% | 10 to 400\% | 1 |  | Paper transfer bias correction factors for various paper types and sizes. <br> Adjust only if there are problems with insufficient transfer for a particular paper type, or in response to field problems as directed by technical support staff. |
| 02-313-09 | OHP:LT Sideways or larger [OHP over LT Sideways] | 100\% | 10 to 400\% | 1 |  |  |
| 02-313-10 | OHP:B4 or larger [OHP over B4] | 100\% | 10 to 400\% | 1 |  |  |
| 02-313-11 | OHP:A4 Lengthwise or larger [OHP over A5 Lengthwise] | 270\% | 10 to 400\% | 1 |  |  |
| 02-313-12 | OHP: Less than A4 Lengthwise [OHP under A5 Lengthwise] | 270\% | 10 to 400\% | 1 |  |  |
|  |  |  |  |  |  |  |
| 02-314: Pap | transfer leading edge area correction | per Tran | ias: Leading | dge] |  |  |
| 02-314-01 | Normal paper: 1C [NRML 1C] | $0 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes | For the paper leading edge, this correction value is added to the paper transfer image area setting. |
| 02-314-02 | Normal paper: 2C [NRML 2C] | $0 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes | Adjust only if there are problems with insufficient transfer at the leading edge of the copy for a |
| 02-314-03 | $\begin{aligned} & \text { Normal paper: 3C } \\ & \text { [NRML 3C] } \\ & \hline \end{aligned}$ | $0 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes | particular paper type or mode, or in response to field problems as directed by technical support staff. |
| 02-314-04 | $\begin{aligned} & \text { Normal paper: 4C } \\ & \text { [NRML 4C] } \\ & \hline \end{aligned}$ | $0 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes | 3C mode: Used in twin colour modes (Bk/R, Bk/G, or |
| 02-314-05 | Thick paper: 1C [THICK 1C] | $3 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes | Bk/B) |
| 02-314-06 | Thick paper: 2C [THICK 2C] | $0 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-314-07 | Thick paper: 3C [THICK 3C] | $0 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-314-08 | Thick paper: 4C [THICK 4C] | $0 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-314-09 | $\begin{aligned} & \mathrm{OHP}: 1 \mathrm{C} \\ & \text { [OHP 1C] } \end{aligned}$ | $0 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-314-10 | $\begin{aligned} & \mathrm{OHP}: 2 \mathrm{C} \\ & \text { [OHP 2C] } \end{aligned}$ | $0 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |


| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 02-314-11 | $\begin{aligned} & \mathrm{OHP:} \mathrm{3C} \\ & \text { [OHP: 3C] } \end{aligned}$ | $0 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes | For the paper leading edge, this correction value is added to the paper transfer image area setting. |
| 02-314-12 | $\begin{aligned} & \mathrm{OHP:} \mathrm{4C} \\ & \text { [OHP: 4C] } \end{aligned}$ | $0 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes | Adjust only if there are problems with insufficient transfer at the leading edge of the copy for a |
| 02-314-13 | 2/3 speed: 1C [NRML_2/3 1C] | $0 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes | particular paper type or mode, or in response to field problems as directed by technical support staff. |
| 02-314-14 | 2/3 speed: 2C [NRML_2/3 2C] | $0 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes | 3C mode: Used in twin colour modes ( $\mathrm{Bk} / \mathrm{R}, \mathrm{Bk} / \mathrm{G}$, or |
| 02-314-15 | 2/3 speed: 3C [NRML_2/3 3C] | $0 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes | Bk/B) |
| 02-314-16 | 2/3 speed: 4C [NRML_2/3 4C] | $0 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-314-17 | Normal paper: back side: 1C [NRML Back 1C] | $0 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-314-18 | Normal paper: back side: 2C [NRML Back 2C] | $2 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-314-19 | Normal paper: back side: 3C [NRML Back 3C] | $2 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-314-20 | Normal paper: back side: 4C [NRML Back 4C] | $2 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-314-21 | Thick paper: back side: 1C [THICK Back 1C] | $2 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-314-22 | Thick paper: back side: 2C [THICK Back 2C] | $4 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-314-23 | Thick paper: back side: 3C [THICK Back 3C] | $4 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-314-24 | Thick paper: back side: 4C [THICK Back 4C] | $4 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-314-25 | 2/3 speed: back side: 1C [NRML_2/3 Back 1C] | $0 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-314-26 | 2/3 speed: back side: 2C [NRML_2/3 Back 2C] | $0 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |


| SP No. | Item <br> [Display] | Default <br> Value | Value Range | Step | SP7- <br> 902/3 | Description |
| :---: | :--- | :---: | :---: | :---: | :---: | :--- |
| 02-314-27 | 2/3 speed: back side: 3C <br> [NRML_2/3 Back 3C] | $0 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes | For the paper leading edge, this correction value is <br> added to the paper transfer image area setting. |
| 02-314-28 | 2/3 speed: back side: 4C <br> [NRML_2/3 Back 4C] | $0 \mu \mathrm{~A}$ | -20 to 40 $\mu \mathrm{A}$ | 1 | Yes | Adjust only if there are problems with insufficient <br> transfer at the leading edge of the copy for a <br> particular paper type or mode, or in response to field <br> problems as directed by technical support staff. |
| 3C mode: Used in twin colour modes (Bk/R, Bk/G, or |  |  |  |  |  |  |


| 02-315: Paper transfer trailing edge correction [Paper Trans Bias: Trail Edge] |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 02-315-01 | Normal paper: 1C [NRML 1C] | $-1 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes | For the paper trailing edge, this correction value is added to the paper transfer image area setting. Adjust only if there are problems with insufficient transfer at the trailing edge of the copy for a particular paper type or mode, or in response to field problems as directed by technical support staff. <br> 3C mode: Used in twin colour modes ( $\mathrm{Bk} / \mathrm{R}, \mathrm{Bk} / \mathrm{G}$, or Bk/B) |
| 02-315-02 | Normal paper: 2C [NRML 2C] | $-1 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-315-03 | Normal paper: 3C [NRML 3C] | $-1 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-315-04 | Normal paper: 4C [NRML 4C] | -1 $\mu \mathrm{A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-315-05 | Thick paper: 1C [THICK 1C] | -1 $\mu \mathrm{A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-315-06 | Thick paper: 2C [THICK 2C] | -1 $\mu \mathrm{A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-315-07 | Thick paper: 3C [THICK 3C] | -1 $\mu \mathrm{A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-315-08 | Thick paper: 4C [THICK 4C] | $-1 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-315-09 | $\begin{aligned} & \mathrm{OHP}: 1 \mathrm{C} \\ & \text { [OHP 1C] } \end{aligned}$ | -1 $\mu \mathrm{A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-315-10 | $\begin{aligned} & \mathrm{OHP}: 2 \mathrm{C} \\ & \text { [OHP 2C] } \end{aligned}$ | $-1 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-315-11 | $\begin{aligned} & \mathrm{OHP}: 3 \mathrm{C} \\ & \text { [OHP 3C] } \end{aligned}$ | -1 $\mu \mathrm{A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |


| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \hline \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 02-315-12 | $\begin{aligned} & \text { OHP: 4C } \\ & \text { [OHP 4C] } \end{aligned}$ | -1 $\mu \mathrm{A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes | For the paper trailing edge, this correction value is added to the paper transfer image area setting. |
| 02-315-13 | $\begin{aligned} & \text { 2/3 speed: } 1 \mathrm{C} \\ & {[\text { NRML_2/3 1C] }} \end{aligned}$ | -1 $\mu \mathrm{A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes | Adjust only if there are problems with insufficient transfer at the trailing edge of the copy for a particular |
| 02-315-14 | $\begin{aligned} & \text { 2/3 speed: 2C } \\ & \text { [NRML_2/3 2C] } \end{aligned}$ | -1 $\mu \mathrm{A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes | paper type or mode, or in response to field problems as directed by technical support staff. |
| 02-315-15 | $\begin{aligned} & \text { 2/3 speed: 3C } \\ & \text { [NRML_2/3 3C] } \end{aligned}$ | -1 $\mu \mathrm{A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes | 3C mode: Used in twin colour modes ( $\mathrm{Bk} / \mathrm{R}, \mathrm{Bk} / \mathrm{G}$, or |
| 02-315-16 | 2/3 speed: 4C [NRML_2/3 4C] | -1 $\mu \mathrm{A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes | Bk/B) |
| 02-315-17 | Normal paper: back side: 1C [NRML Back 1C] | -1 $\mu \mathrm{A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-315-18 | Normal paper: back side: 2C [NRML Back 2C] | -1 $\mu \mathrm{A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-315-19 | Normal paper: back side: 3C [NRML Back 3C] | -1 $\mu \mathrm{A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-315-20 | Normal paper: back side: 4C [NRML Back 4C] | -1 $\mu \mathrm{A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-315-21 | Thick paper: back side: 1C [THICK Back 1C] | -1 $\mu \mathrm{A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-315-22 | Thick paper: back side: 2C [THICK Back 2C] | -1 $\mu \mathrm{A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-315-23 | Thick paper: back side: 3C [THICK Back 3C] | -1 $\mu \mathrm{A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-315-24 | Thick paper: back side: 4C [THICK Back 4C] | -1 $\mu \mathrm{A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-315-25 | 2/3 speed: back side: 1C [NRML_2/3 Back 1C] | -1 $\mu \mathrm{A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-315-26 | 2/3 speed: back side: 2C [NRML_2/3 Back 2C] | -1 $\mu \mathrm{A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-315-27 | 2/3 speed: back side: 3C [NRML_2/3 Back 3C] | -1 $\mu \mathrm{A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |


| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \hline \hline \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 02-315-28 | 2/3 speed: back side: 4C [NRML_2/3 Back 4C] | $0 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes | For the paper trailing edge, this correction value is added to the paper transfer image area setting. Adjust only if there are problems with insufficient transfer at the trailing edge of the copy for a particular paper type or mode, or in response to field problems as directed by technical support staff. <br> 3C mode: Used in twin colour modes (Bk/R, Bk/G, or Bk/B) |
| 02-316: Paper transfer bias: environmental correction [P.T.B.Correction:Humidity] |  |  |  |  |  |  |
| 02-316-01 | [Low-Hum NRML 1C] | 100 | 10 to 400 |  |  | Corrects the paper transfer belt bias for the type of paper and copy mode depending on the humidity. Adjust if there are transfer problems for all modes in a certain humidity condition. <br> These settings are used in conjunction with SP 2-310-1. <br> 2/3 speed: Printer mode |
| 02-316-02 | [Low-Hum NRML 4C] | 89 | 10 to 400 |  |  |  |
| 02-316-03 | [Low-Hum THICK 1C] | 100 | 10 to 400 |  |  |  |
| 02-316-04 | [Low-Hum THICK 4C] | 100 | 10 to 400 |  |  |  |
| 02-316-05 | [Low-Hum OHP 1C] | 75 | 10 to 400 |  |  |  |
| 02-316-06 | [Low-Hum OHP 4C] | 89 | 10 to 400 |  |  |  |
| 02-316-07 | [Low-Hum NRML_2/3 1C] | 100 | 10 to 400 |  |  |  |
| 02-316-08 | [Low-Hum NRML_2/3 4C] | 89 | 10 to 400 |  |  |  |
| 02-316-09 | [Low-Hum NRML Back 1C] | 70 | 10 to 400 |  |  |  |
| 02-316-10 | [Low-Hum NRML Back 4C] | 70 | 10 to 400 |  |  |  |
| 02-316-11 | [Low-Hum THICK Back 1C] | 100 | 10 to 400 |  |  |  |
| 02-316-12 | [Low-Hum THICK Back 4C] | 100 | 10 to 400 |  |  |  |
| 02-316-13 | [Low-Hum NRML_2/3 Back 1C] | 95 | 10 to 400 |  |  |  |
| 02-316-14 | [Low-Hum NRML_2/3 Back 4C] | 70 | 10 to 400 |  |  |  |
| 02-316-21 | [High-Hum NRML 1C] | 100 | 10 to 400 |  |  |  |
| 02-316-22 | [High-Hum NRML 4C] | 100 | 10 to 400 |  |  |  |
| 02-316-23 | [High-Hum THICK 1C] | 100 | 10 to 400 |  |  |  |
| 02-316-24 | [High-Hum THICK 4C] | 100 | 10 to 400 |  |  |  |
| 02-316-25 | [High-Hum OHP 1C] | 125 | 10 to 400 |  |  |  |
| 02-316-26 | [High-Hum OHP 4C] | 100 | 10 to 400 |  |  |  |
| 02-316-27 | [High-Hum NRML_2/3 1C] | 100 | 10 to 400 |  |  |  |


| SP No. | Item <br> [Display] | Default <br> Value | Value Range | Step | SP7- <br> $\mathbf{9 0 2 / 3}$ | Description |
| :--- | :--- | :---: | :---: | :---: | :---: | :---: |
| $02-316-28$ | [High-Hum NRML_2/3 4C] | 100 | 10 to 400 |  |  | Corrects the paper transfer belt bias for the type of <br> paper and copy mode depending on the humidity. <br> Adjust if there are transfer problems for all modes in |
| $02-316-29$ | [High-Hum NRML Back 1C] | 100 | 10 to 400 |  | a certain humidity condition. |  |


| 02-912: Temperature and Humidity Display:[Temperature Display] |  |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| 02-912-01 | [Temperature] |  | 0,1 | Displays the temperature currently detected by the <br> temperature sensor. |  |
| $02-912-02$ | [Humidity] |  |  | 0,1 | Displays the relative humidity currently detected by <br> the humidity sensor. |


| 02-913: Used toner sensor presence/absence [Toner Overflow Sensor] |  |  |  |  |
| :--- | :--- | :---: | :---: | :---: | :---: | :---: |
| [1-913-00 | [1:Sensor On, 0: Sensor Off] | 1 | 0: No sensor <br> $1:$ Sensor <br> present | Sets the presence or absence of the used toner <br> sensor. |


| 02-920: Resolution: Printer Mode, Test Patterns only [Resolution: Printer Mode] |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: |
| 02-920-00 | Printer mode resolution <br> [0: 400dpi, 1: 600dpi] | 0 | 0 to 1 | Set this to 1 to generate the 600 DPI test patterns for <br> the printer. $0=400 \mathrm{DPI}$ (default); $1=600 \mathrm{DPI}$ |

## 02-951: [Toner End Detection]

| [02-951-00 Detection, 1: No Detection] | 0 | $0:$ Detected <br> $1:$ Not detected | 1 | Enables/disables the toner end detection function for <br> all colors. <br> Note: Reenter 0 after temporarily resetting this mode. |
| :--- | :--- | :---: | :---: | :---: | :---: | :---: |

02-953: Maximum supply ratio [Max Toner Recovery Ratio]

| $02-953-01$ | $[\mathrm{~K}]$ | $100 \%$ | 0 to $100 \%$ | 1 |  | Adjusts the maximum toner supply ratio in the fuzzy |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| supply mode. |  |  |  |  |  |  |


| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \hline \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 02-955: Method of detecting the transition from toner near-end to toner end [Toner End Detection Count] |  |  |  |  |  |  |
| 02-955-00 | 0: Pixel count and number of pages <br> 1: Number of pages only | 0 | 0 or 1 | 1 |  | Selects the method for determining the number of copies which can be made between toner near-end and toner end. <br> $0=$ Determined by monitoring both the image coverage ratio (number of pixels) and the number of copies. <br> 1 = Number of copies only |
|  |  |  |  |  |  |  |
| 2-999: [Belt Cleaning Release] |  |  |  |  |  |  |
| 2-999-00 | [1: Release] | 0 | 0 to 1 | 1 |  | This separates the cleaning blade and entrance seal from the belt, using the fusing motor and belt cleaning clutch. |



| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \hline \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 03-125: Process control method [Potential Control] |  |  |  |  |  |  |
| 03-125-00 | Process control method [0:Auto. 1:FIX, 2:Auto+2/3 Spd] | 0 | 0 to 2 | 1 | Yes | Specifies whether process control is to be executed. 0 : Automatic - process control enabled (keep the machine at this setting in normal cases) <br> 1: Fixed <br> Grid voltage VG, development bias VB, and max LD power are all fixed values <br> 2: Process control done at $2 / 3$ speed, for printer mode. |
|  |  |  |  |  |  |  |
| 03-126: Forced Process Control Self Check [Forced P-Ctrl Self Chk] |  |  |  |  |  |  |
| 03-126-01 | Self check: Execute |  | 0 to 1 | 1 |  | Does the forced process control self check. See SP 3-975 for the results. |
|  |  |  |  |  |  |  |
| 03-127: Target maximum toner M/A for process control gamma correction [P-control gamma target] |  |  |  |  |  |  |
| 03-127-01 | [Max M/A: K] | $0.7 \mathrm{mg} / \mathrm{cm}^{2}$ | $\begin{gathered} 0.5 \mathrm{to} \\ 1.5 \mathrm{mg} / \mathrm{cm}^{2} \end{gathered}$ | 0.001 | Yes | Adjusts the toner M/A target that is used for the maximum in the process control gamma correction. |
| 03-127-02 | [Max M/A: Color] | $0.7 \mathrm{mg} / \mathrm{cm}^{2}$ | $\begin{gathered} 0.5 \mathrm{to} \\ 1.5 \mathrm{mg} / \mathrm{cm}^{2} \end{gathered}$ | 0.001 | Yes | Do not adjust unless directed by technical support staff. |
|  |  |  |  |  |  |  |
| 03-128: Toner Density Correction [Toner Density Auto Control] |  |  |  |  |  |  |
| 03-128-00 | Toner density automatic correction [0: ON, 1: OFF] | 0 | 0 to 1 | 1 |  | Do not change the factory setting unless otherwise directed by technical support staff.. |
|  |  |  |  |  |  |  |
| 03-129: ID sensor pattern target toner M/A (toner supply control) [ID sensor Pattern Target] |  |  |  |  |  |  |
| 03-129-01 | [M/Aref: K] | $0.3 \mathrm{mg} / \mathrm{cm}^{2}$ | $\begin{gathered} 0.100 \text { to } 1.500 \\ \mathrm{mg} / \mathrm{cm}^{2} \end{gathered}$ | 0.001 |  | Adjusts the target toner M/A on the ID sensor pattern during toner supply control. <br> Do not adjust unless directed by technical support staff. |
| 03-129-02 | [M/Aref: Color] | $0.4 \mathrm{mg} / \mathrm{cm}^{2}$ |  | 0.001 |  |  |


| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \hline \hline \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 03-902: Current pointer table row number [Pointer Table No] |  |  |  |  |  |  |
| 03-902-01 | [K] |  | 1-20 | 1 |  | Displays the pointer table row number (to determine VD, VB, and VL) selected during the latest process control self-check. |
| 03-902-02 | [C] |  | 1-20 | 1 |  |  |
| 03-902-03 | [M] |  | 1-20 | 1 |  |  |
| 03-902-04 | [Y] |  | 1-20 | 1 |  |  |


| $03-907: ~ I D ~ s e n s o r ~ p a t t e r n ~ t o n e r ~ M / A ~ d i s p l a y ~[I D ~ S e n s o r ~ P a t t e r n ~ M / A ~ D i s p l a y] ~$ |  |  |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $03-907-01$ | $[\mathrm{~K}]$ | $\mathrm{mg} / \mathrm{cm}^{2}$ | to $\mathrm{mg} / \mathrm{cm}^{2}$ | 0.001 | Yes | Displays the most recently detected ID sensor pattern |
| $03-907-02$ | $[\mathrm{C}]$ | $\mathrm{mg} / \mathrm{cm}^{2}$ | to $\mathrm{mg} / \mathrm{cm}^{2}$ | 0.001 | Yes | M/A for each color. |
| $03-907-03$ | $[\mathrm{M}]$ | $\mathrm{mg} / \mathrm{cm}^{2}$ | to $\mathrm{mg} / \mathrm{cm}^{2}$ | 0.001 | Yes |  |
| $03-907-04$ | $[\mathrm{Y}]$ | $\mathrm{mg} / \mathrm{cm}^{2}$ | to $\mathrm{mg} / \mathrm{cm}^{2}$ | 0.001 | Yes |  |

3-964: Developer Initialization Result [Dev.Agitation Result]

| $3-964-00$ | [bResAging] | 0 to 999 | 1 | $1:$ Success <br> Others: Failure <br> See the troubleshooting section for details. |
| :--- | :--- | :--- | :--- | :--- | :--- |

3-972: Process control self-check interval (hours) [Auto P-control Interval]

| $3-972-00$ | [Timer] |  | 0 to 24 hours |  | Adjusts the timed process control self-check interval. <br> If 0 is selected, this type of process control self check <br> is not done. |
| :--- | :--- | :--- | :--- | :--- | :--- |

03-973: Process control self-check interval (pages) [P-Ctrl Self Chk Interval]

| 03-973-00 | [Sheets] | 150 pages | 0 to 500 pages | 1 | Yes | Adjusts the process control self-check interval. If 0 is <br> selected, this type of process control self check is not <br> done. |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |


| SP No. <br> [Display] | Default <br> Value | Value Range | Step | SP7- <br> $902 / 3$ | Description |
| :--- | :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| 03-974: Maximum target toner amount [Potential Control Target] |  |  |  |  |  |


| SP No. | Item <br> [Display] | Default <br> Value | Value Range | Step | SP7- <br> 902/3 | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 4. Scanner |  |  |  |  |  |  |
| 04-008: Sub-scan Magnification [Subscan Magnification] |  |  |  |  |  |  |
| 04-008-00 | Scanner sub-scan magnification <br> adjustment <br> [Subscan Magnification] | $0 \%$ | -1.0 to $1.0 \%$ | 0.1 | Yes | Adjusts the magnification of the scanned image in the <br> feed direction. This adjusts the scanner motor speed. |


| 04-010: Scanner leading edge registration adjustment [Lead Edge Regist: Scanning] |  |  |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| 04-010-00 | [Lead Edge Regist: Scanning] | 0 mm | -5.0 to 5.0 mm | 0.1 | Yes | Adjusts the leading edge registration by changing the <br> laser exposure start timing in the sub-scan direction. |


| 04-011: Scanner side-to-side registration adjustment [Sd to Sd Regist: Scanng] |  |  |  |  |  |  |
| :--- | :--- | :---: | :---: | :---: | :---: | :---: |
| 04-011-00 | [Side to Side Regist: Scanning] | 0 mm | -6.0 to 6.0 mm | 0.1 | Yes | Adjusts the side-to-side registration by changing the <br> laser exposure start timing in the main scan direction. |


| 04-012: Scanner blank margin adjustment [BInk Mrgn]  <br> 04-012-01 [Rear] |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | 0 mm | 0 to 3.0 mm | 0.1 | Sets the blank margin at each side for erasing the original shadow caused by the gap between the original and scale.. |
| 04-012-02 | [Front] | 0 mm | 0 to 3.0 mm | 0.1 |  |
| 04-012-03 | [Left] | 0 mm | 0 to 3.0 mm | 0.1 |  |
| 04-012-04 | [Right] | 0 mm | 0 to 3.0 mm | 0.1 |  |


| 04-013: S | ner free run |  |  |
| :---: | :---: | :---: | :---: |
| 04-013-01 | Lamp on [Lamp ON] | $\begin{aligned} & \text { 1: Start } \\ & \text { 0: Stop } \end{aligned}$ | Repeats the reciprocal movement of the carriage on the scanner alone. The speed is for $100 \%$. |
| 04-013-02 | Lamp off [Lamp OFF] |  |  |

04-301: APS operation test [Scanner Free Run]

| $04-301-00$ | APS operation test: Size display <br> [APS Data Confirmation] | to | Shows the width of the original detected by the <br> original width and length sensors. |
| :--- | :--- | :---: | :---: | :---: | :---: |


| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \hline \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 04-303: APS minimum size setting [APS Minimum size setting] |  |  |  |  |  |  |
| 04-303-00 | [0: Out of detection, 1: A5 L] | 0 | 0 to 1 | 1 |  | Specifies whether the original width is to be recognized as A5/HLT portrait when the original width sensor outputs are all set to OFF (A5R or smaller, or no original) in platen mode. If this SP is at 0 , no size is detected. |
| 04-417: IPU Test Ptrn Selection [IPU Test Ptrn Selection] |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| 04-417-00 | IPU test pattern setup [IPU Test Ptrn Selection] | 0 | 0 to 14 | 1 |  | $\begin{aligned} & 0=\text { No pattern (normal copy operation mode) } \\ & 1=\text { Grid pattern } \\ & 2=\text { Slanted Grid Pattern } \\ & 3=256 \text { gradation (Horizontal) } \\ & 4=256 \text { gradation (Vertical) } \\ & 5 \text { = Color patch } \\ & 6=\text { RGB gray scale (16 gradation steps) } \\ & 7=\text { YMCK-RGB } 16 \text { gradation } \\ & 8=\text { YMCK } 16 \text { gradation } \\ & 9=\text { YMCK } 128 \text { gradation } \\ & 10=\text { Same as } 1 \\ & 11 \text { = Same as } 8 \\ & 12=\text { Same as } 9 \\ & 13=\text { YMCK-RGB } 16 \text { gradation } \\ & 14=\text { YMCK } 128 \text { gradation } \\ & 1 . " \\ & \hline \end{aligned}$ |
| 04-426: RGB gain setup [RGB_GAIN] |  |  |  |  |  |  |
| 04-426-01 | [R_GAIN ODD] | 0 | 0 to 255 | 1 | Yes | Sets or displays the gain value of the amplifiers on the scanner IPU for odd and even pixels for each RGB color. <br> Do not adjust the factory settings. |
| 04-426-02 | [R_GAIN EVEN] | 0 | 0 to 255 | 1 | Yes |  |
| 04-426-03 | [G_GAIN ODD] | 0 | 0 to 255 | 1 | Yes |  |
| 04-426-04 | [G_GAIN EVEN] | 0 | 0 to 255 | 1 | Yes |  |
| 04-426-05 | [B_GAIN ODD] | 0 | 0 to 255 | 1 | Yes |  |
| 04-426-06 | [B_GAIN EVEN] | 0 | 0 to 255 | 1 | Yes |  |


| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 04-427: RGB reference setup [RGB REF] |  |  |  |  |  |  |
| 04-427-01 | R: 0 [R_REFO] |  |  |  |  | Sets or displays the reference voltage for the A/D converters on the scanner IPU for each RGB color. Do not adjust the factory settings. |
| 04-427-02 | G: 0 [G_REF0] |  |  |  |  |  |
| 04-427-03 | B: 0 [B_REF0] |  |  |  |  |  |
| 04-427-04 | R: 1 [R_REF1] | 160 | 0 to 255 | 1 | Yes |  |
| 04-427-05 | G: 1 [G_REF1] | 160 | 0 to 255 | 1 | Yes |  |
| 04-427-06 | B: 1 [B_REF1] | 160 | 0 to 255 | 1 | Yes |  |
|  |  |  |  |  |  |  |
| 04-435: [White Level Adj.] |  |  |  |  |  |  |
| 04-435-00 | [White Level Adjustment] |  | 1: Start | 1 |  | Performs the white level adjustment.. |
|  |  |  |  |  |  |  |
| 04-500: ACC object selection [ACC Target Selection] |  |  |  |  |  |  |
| 04-500-00 | [ACC Mode Selection] |  |  |  |  | Do not adjust this setting. To adjust this, use the user tools. |
|  |  |  |  |  |  |  |
| 04-501: ACC target [ACC Target Adjustment: Copier] |  |  |  |  |  |  |
| 04-501-01 | [Copier: Text: K] | 5 | 0 to 50 | 1 | Yes | Adjusts the ACC targets for text and photo mode in copy mode |
| 04-501-02 | [Copier: Text: C] | 5 | 0 to 50 | 1 | Yes |  |
| 04-501-03 | [Copier: Text: M] | 5 | 0 to 50 | 1 | Yes |  |
| 04-501-04 | [Copier: Text: Y] | 5 | 0 to 50 | 1 | Yes | See 'Replacement and Adjustment - Copy Image Adjustment - ACC Target Adjustment' for how to use these SP modes. |
| 04-501-05 | [Copier: Photo: K] | 5 | 0 to 50 | 1 | Yes |  |
| 04-501-06 | [Copier: Photo: C] | 5 | 0 to 50 | 1 | Yes |  |
| 04-501-07 | [Copier: Photo: M] | 5 | 0 to 50 | 1 | Yes | ACC (Automatic Color Calibration) |
| 04-501-08 | [Copier: Photo: Y] | 5 | 0 to 50 | 1 | Yes |  |



| 04-503: ACC target: Printer 2 [ACC Target Adjustment: Printer] |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 04-503-01 | [Printer2: Text: K] |  |  |  | Printer 2 is not used in this machine. Do not adjust these SP modes. |
| 04-503-02 | [Printer2: Text: C] |  |  |  |  |
| 04-503-03 | [Printer2: Text: M] |  |  |  |  |
| 04-503-04 | [Printer2: Text: Y] |  |  |  |  |
| 04-503-05 | [Printer2: Photo: K] |  |  |  |  |
| 04-503-06 | [Printer2: Photo: M] |  |  |  |  |
| 04-503-07 | [Printer2: Photo: M] |  |  |  |  |
| 04-503-08 | [Printer2: Photo: Y] |  |  |  |  |



| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \hline \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 04-521-05 | [Low ID (Option)] | 0 | 0 to 30 |  |  | Printer 2 is not used in this machine. Do not adjust these SP modes. |
| 04-521-06 | [Middle ID (Option)] | 0 | 0 to 30 |  |  |  |
| 04-521-07 | [High ID (Option)] | 0 | 0 to 30 |  |  |  |
| 04-521-08 | ID max (Option)] | 0 | 0 to 30 |  |  |  |

04-522: Manual gamma Adj: Printer 2: M [Manual gamma Adj: Printer2: M]

| 04-522-01 | [Low ID (Offset)] | 15 | 0 to 30 |  | Printer 2 is not used in this machine. Do not adjust these SP modes. |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 04-522-02 | [Middle ID (Offset)] | 15 | 0 to 30 |  |  |
| 04-522-03 | [High ID (Offset)] | 15 | 0 to 30 |  |  |
| 04-522-04 | [ID max (Offset)] | 15 | 0 to 30 |  |  |
| 04-522-05 | [Low ID (Option)] | 0 | 0 to 30 |  |  |
| 04-522-06 | [Middle ID (Option)] | 0 | 0 to 30 |  |  |
| 04-522-07 | [High ID (Option)] | 0 | 0 to 30 |  |  |
| 04-522-08 | [ID max (Option)] | 0 | 0 to 30 |  |  |
|  |  |  |  |  |  |
| 04-523: Manual gamma Adj: Printer 2: Y [Manual gamma Adj: Printer2: Y] |  |  |  |  |  |
| 04-523-01 | [Low ID (Offset)] | 15 | 0 to 30 |  | Printer 2 is not used in this machine. Do not adjust these SP modes. |
| 04-523-02 | [Middle ID (Offset)] | 15 | 0 to 30 |  |  |
| 04-523-03 | [High ID (Offset)] | 15 | 0 to 30 |  |  |
| 04-523-04 | [ID max (Offset)] | 15 | 0 to 30 |  |  |
| 04-523-05 | [Low ID (Option)] | 0 | 0 to 30 |  |  |
| 04-523-06 | [Middle ID (Option)] | 0 | 0 to 30 |  |  |
| 04-523-07 | [High ID (Option)] | 0 | 0 to 30 |  |  |
| 04-523-08 | [ID max (Option)] | 0 | 0 to 30 |  |  |


| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \hline \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 04-904 | Scanner IPU board tests [IPU Board Test] |  |  |  |  | Selects the CCD output and internal test pattern outputs. |
| 04-904-01 | Scanner IPU board test 1 [Test1] |  | 0 to 0x17 | 1 |  | Tests the scanner IPU board. 0: OK |
| 04-904-02 | Scanner IPU board test 2 [Test2] |  | 0 to $0 \times 2 \mathrm{~A}$ | 1 |  | Others: Defective |
| 04-907: VPU Test Pattern Selection [VPU Test Ptrn Selection] |  |  |  |  |  |  |
| 04-907-00 | VPU Test pattern select [VPU Test Ptrn Selection] | 0 | 0 to 5 | 1 |  | Selects the CCD output and internal test patterns. The analog video ASIC makes test patterns 1 to 5 for this SP mode. <br> 0: CCD output, 1: Black pattern, 2: White pattern, <br> 3: 16-gradation pattern, 4: 4-dot grid pattern, <br> 5: 2-dot grid pattern |
| 04-910: Manual gamma adjustment: Copy: Letter K [Manual gamma Adj: Copier: k] |  |  |  |  |  |  |
| 04-910-01 | Offset (low ID) [Low ID (Offset): Text] | 15 | 0 to 30 | 1 | Yes | Use these SPs to adjust the colour balance if the results of ACC are not satisfactory. |
| 04-910-02 | Offset (Middle ID) [Middle ID (Offset): Text] | 15 | 0 to 30 | 1 | Yes | This is for black toner (full colour mode) in letter mode, using copy mode. |
| 04-910-03 | Offset (High ID) <br> [High ID (Offset) Text] | 15 | 0 to 30 | 1 | Yes |  |
| 04-910-04 | Offset (ID max) <br> [ID max (Offset) Text] | 15 | 0 to 30 | 1 | Yes | Do not use the 'Option' settings. |
| 04-910-05 | Option (low ID) [Low ID (Option) Text] | 0 | 0 to 30 | 1 | Yes | See 'Replacement and Adjustment - Copy Image Adjustment - Printer Gamma Adjustment' for how to use these SP modes. |
| 04-910-06 | Option (Middle ID) <br> [Middle ID (Option) Text] | 0 | 0 to 30 | 1 | Yes |  |
| 04-910-07 | Option (High ID) <br> [High ID (Option) Text] | 0 | 0 to 30 | 1 | Yes | ACC (Automatic Colour Calibration) |
| 04-910-08 | Option (ID max) <br> [ID max (Option) Text] | 0 | 0 to 30 | 1 | Yes |  |


| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \hline \hline \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 04-911: Manual gamma adjustment: Copy: Letter C [Manual gamma Adj: Copier: C] |  |  |  |  |  |  |
| 04-911-01 | Offset (low ID) [Low ID (Offset): Text] | 15 | 0 to 30 | 1 | Yes | Use these SPs to adjust the colour balance if the results of ACC are not satisfactory. |
| 04-911-02 | Offset (Middle ID) <br> [Middle ID (Offset): Text] | 15 | 0 to 30 | 1 | Yes | This is for cyan toner in letter mode, using copy mode. |
| 04-911-03 | Offset (High ID) <br> [High ID (Offset) Text] | 15 | 0 to 30 | 1 | Yes |  |
| 04-911-04 | Offset (ID max) <br> [ID max (Offset) Text] | 15 | 0 to 30 | 1 | Yes | Do not use the 'Option' settings. |
| 04-911-05 | Option (low ID) [Low ID (Option) Text] | 0 | 0 to 30 | 1 | Yes | See 'Replacement and Adjustment - Copy Image Adjustment - Printer Gamma Adjustment' for how to use these SP modes. |
| 04-911-06 | Option (Middle ID) [Middle ID (Option) Text] | 0 | 0 to 30 | 1 | Yes |  |
| 04-911-07 | Option (High ID) [High ID (Option) Text] | 0 | 0 to 30 | 1 | Yes | ACC (Automatic Colour Calibration) |
| 04-911-08 | Option (ID max) <br> [ID max (Option) Text] | 0 | 0 to 30 | 1 | Yes |  |
|  |  |  |  |  |  |  |
| 04-912: Manual gamma adjustment: Copy: Letter M [Manual gamma Adj: Copier: M] |  |  |  |  |  |  |
| 04-912-01 | Offset (low ID) [Low ID (Offset): Text] | 15 | 0 to 30 | 1 | Yes | Use these SPs to adjust the colour balance if the results of ACC are not satisfactory. |
| 04-912-02 | Offset (Middle ID) <br> [Middle ID (Offset): Text] | 15 | 0 to 30 | 1 | Yes | This is for magenta toner in letter mode, using copy mode. |
| 04-912-03 | Offset (High ID) <br> [High ID (Offset) Text] | 15 | 0 to 30 | 1 | Yes |  |
| 04-912-04 | Offset (ID max) <br> [ID max (Offset) Text] | 15 | 0 to 30 | 1 | Yes | Do not use the 'Option' settings. |
| 04-912-05 | Option (low ID) <br> [Low ID (Option) Text] | 0 | 0 to 30 | 1 | Yes | See 'Replacement and Adjustment - Copy Image Adjustment - Printer Gamma Adjustment' for how to use these SP modes. |
| 04-912-06 | Option (Middle ID) [Middle ID (Option) Text] | 0 | 0 to 30 | 1 | Yes |  |
| 04-912-07 | Option (High ID) [High ID (Option) Text] | 0 | 0 to 30 | 1 | Yes | ACC (Automatic Colour Calibration) |


| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \hline \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 04-912-08 | Option (ID max) <br> [ID max (Option) Text] | 0 | 0 to 30 | 1 | Yes | Use these SPs to adjust the colour balance if the results of ACC are not satisfactory. <br> This is for magenta toner in letter mode, using copy mode. <br> Do not use the 'Option' settings. <br> See 'Replacement and Adjustment - Copy Image Adjustment - Printer Gamma Adjustment' for how to use these SP modes. <br> ACC (Automatic Colour Calibration) |
| 04-913: Manual gamma adjustment: Copy: Letter Y [Manual gamma Adj: Copier: Y] |  |  |  |  |  |  |
| 04-913-01 | Offset (low ID) [Low ID (Offset): Text] | 15 | 0 to 30 | 1 | Yes | Use these SPs to adjust the colour balance if the results of ACC are not satisfactory. <br> This is for yellow toner in letter mode, using copy mode. <br> Do not use the 'Option' settings. <br> See 'Replacement and Adjustment - Copy Image Adjustment - Printer Gamma Adjustment' for how to use these SP modes. <br> ACC (Automatic Colour Calibration) |
| 04-913-02 | Offset (Middle ID) <br> [Middle ID (Offset): Text] | 15 | 0 to 30 | 1 | Yes |  |
| 04-913-03 | Offset (High ID) <br> [High ID (Offset) Text] | 15 | 0 to 30 | 1 | Yes |  |
| 04-913-04 | Offset (ID max) [ID max (Offset) Text] | 15 | 0 to 30 | 1 | Yes |  |
| 04-913-05 | Option (low ID) [Low ID (Option) Text] | 0 | 0 to 30 | 1 | Yes |  |
| 04-913-06 | Option (Middle ID) [Middle ID (Option) Text] | 0 | 0 to 30 | 1 | Yes |  |
| 04-913-07 | Option (High ID) [High ID (Option) Text] | 0 | 0 to 30 | 1 | Yes |  |
| 04-913-08 | $\begin{aligned} & \text { Option (ID max) } \\ & \text { [ID max (Option) Text] } \end{aligned}$ | 0 | 0 to 30 | 1 | Yes |  |


| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \hline \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 04-914: Manual gamma adjustment: Copy: Letter, single color K [Manual gamma Adj: Copier: SC K] |  |  |  |  |  |  |
| 04-914-01 | Offset (low ID) [Low ID (Offset): Text] | 15 | 0 to 30 | 1 | Yes | Use these SPs to adjust the colour balance if the results of ACC are not satisfactory. |
| 04-914-02 | Offset (Middle ID) <br> [Middle ID (Offset): Text] | 15 | 0 to 30 | 1 | Yes | This is for black toner (single colour mode) in letter mode, using copy mode. |
| 04-914-03 | Offset (High ID) <br> [High ID (Offset) Text] | 15 | 0 to 30 | 1 | Yes |  |
| 04-914-04 | Offset (ID max) <br> [ID max (Offset) Text] | 15 | 0 to 30 | 1 | Yes | Do not use the 'Option' settings. |
| 04-914-05 | Option (low ID) [Low ID (Option) Text] | 0 | 0 to 30 | 1 | Yes | See 'Replacement and Adjustment - Copy Image Adjustment - Printer Gamma Adjustment' for how to use these SP modes. |
| 04-914-06 | Option (Middle ID) <br> [Middle ID (Option) Text] | 0 | 0 to 30 | 1 | Yes |  |
| 04-914-07 | Option (High ID) [High ID (Option) Text] | 0 | 0 to 30 | 1 | Yes | ACC (Automatic Colour Calibration) |
| 04-914-08 | Option (ID max) <br> [ID max (Option) Text] | 0 | 0 to 30 | 1 | Yes |  |
|  |  |  |  |  |  |  |
| 04-915: Manual gamma adjustment: Copy: Photo K [Manual gamma Adj: Copier: k] |  |  |  |  |  |  |
| 04-915-01 | Offset (low ID) <br> [Low ID (Offset): Photo] | 15 | 0 to 30 | 1 | Yes | Use these SPs to adjust the colour balance if the results of ACC are not satisfactory. |
| 04-915-02 | Offset (Middle ID) [Middle ID (Offset): Photo] | 15 | 0 to 30 | 1 | Yes | This is for black toner (full colour mode) in photo mode, using copy mode. |
| 04-915-03 | Offset (High ID) <br> [High ID (Offset) Photo] | 15 | 0 to 30 | 1 | Yes |  |
| 04-915-04 | $\begin{aligned} & \hline \text { Offset (ID max) } \\ & \text { [ID max (Offset) Photo] } \\ & \hline \end{aligned}$ | 15 | 0 to 30 | 1 | Yes | Do not use the 'Option' settings. |
| 04-915-05 | Option (low ID) <br> [Low ID (Option) Photo] | 0 | 0 to 30 | 1 | Yes | See 'Replacement and Adjustment - Copy Image Adjustment - Printer Gamma Adjustment' for how to use these SP modes. |
| 04-915-06 | Option (Middle ID) <br> [Middle ID (Option) Photo] | 0 | 0 to 30 | 1 | Yes |  |
| 04-915-07 | Option (High ID) <br> [High ID (Option) Photo] | 0 | 0 to 30 | 1 | Yes | ACC (Automatic Colour Calibration) |


| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \hline \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 04-915-08 | Option (ID max) <br> [ID max (Option) Photo] | 0 | 0 to 30 | 1 | Yes | Use these SPs to adjust the colour balance if the results of ACC are not satisfactory. <br> This is for black toner (full colour mode) in photo mode, using copy mode. <br> Do not use the 'Option' settings. <br> See 'Replacement and Adjustment - Copy Image Adjustment - Printer Gamma Adjustment' for how to use these SP modes. <br> ACC (Automatic Colour Calibration) |
| 04-916: Manual gamma adjustment: Copy: Photo C [Manual gamma Adj: Copier: C] |  |  |  |  |  |  |
| 04-916-01 | Offset (low ID) [Low ID (Offset): Photo] | 15 | 0 to 30 | 1 | Yes | Use these SPs to adjust the colour balance if the results of ACC are not satisfactory. <br> This is for cyan toner in photo mode, using copy mode. <br> Do not use the 'Option' settings. <br> See 'Replacement and Adjustment - Copy Image Adjustment - Printer Gamma Adjustment' for how to use these SP modes. <br> ACC (Automatic Colour Calibration) |
| 04-916-02 | Offset (Middle ID) [Middle ID (Offset): Photo] | 15 | 0 to 30 | 1 | Yes |  |
| 04-916-03 | Offset (High ID) [High ID (Offset) Photo] | 15 | 0 to 30 | 1 | Yes |  |
| 04-916-04 | Offset (ID max) [ID max (Offset) Photo] | 15 | 0 to 30 | 1 | Yes |  |
| 04-916-05 | Option (low ID) [Low ID (Option) Photo] | 0 | 0 to 30 | 1 | Yes |  |
| 04-916-06 | Option (Middle ID) [Middle ID (Option) Photo] | 0 | 0 to 30 | 1 | Yes |  |
| 04-916-07 | Option (High ID) <br> [High ID (Option) Photo] | 0 | 0 to 30 | 1 | Yes |  |
| 04-916-08 | $\begin{aligned} & \text { Option (ID max) } \\ & \text { [ID max (Option) Photo] } \end{aligned}$ | 0 | 0 to 30 | 1 | Yes |  |


| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \hline \hline \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 04-917: Manual gamma adjustment: Copy: Photo M [Manual gamma Adj: Copier: M] |  |  |  |  |  |  |
| 04-917-01 | $\begin{aligned} & \text { Offset (low ID) } \\ & \text { [Low ID (Offset): Photo] } \end{aligned}$ | 15 | 0 to 30 | 1 | Yes | Use these SPs to adjust the colour balance if the results of ACC are not satisfactory. |
| 04-917-02 | Offset (Middle ID) <br> [Middle ID (Offset): Photo] | 15 | 0 to 30 | 1 | Yes | This is for magenta toner in photo mode, using copy mode. |
| 04-917-03 | $\begin{aligned} & \text { Offset (High ID) } \\ & \text { [High ID (Offset) Photo] } \\ & \hline \end{aligned}$ | 15 | 0 to 30 | 1 | Yes |  |
| 04-917-04 | Offset (ID max) <br> [ID max (Offset) Photo] | 15 | 0 to 30 | 1 | Yes | Do not use the 'Option' settings. |
| 04-917-05 | Option (low ID) [Low ID (Option) Photo] | 0 | 0 to 30 | 1 | Yes | See 'Replacement and Adjustment - Copy Image Adjustment - Printer Gamma Adjustment' for how to use these SP modes. |
| 04-917-06 | Option (Middle ID) [Middle ID (Option) Photo] | 0 | 0 to 30 | 1 | Yes |  |
| 04-917-07 | $\begin{aligned} & \text { Option (High ID) } \\ & \text { [High ID (Option) Photo] } \end{aligned}$ | 0 | 0 to 30 | 1 | Yes | ACC (Automatic Colour Calibration) |
| 04-917-08 | Option (ID max) <br> [ID max (Option) Photo] | 0 | 0 to 30 | 1 | Yes |  |
|  |  |  |  |  |  |  |
| 04-918: Manual gamma adjustment: Copy: Photo Y [ Manual gamma Adj: Copier: Y] |  |  |  |  |  |  |
| 04-918-01 | Offset (low ID) [Low ID (Offset): Photo] | 15 | 0 to 30 | 1 | Yes | Use these SPs to adjust the colour balance if the results of ACC are not satisfactory. |
| 04-918-02 | Offset (Middle ID) [Middle ID (Offset): Photo] | 15 | 0 to 30 | 1 | Yes | This is for yellow toner in photo mode, using copy mode. |
| 04-918-03 | $\begin{aligned} & \text { Offset (High ID) } \\ & \text { [High ID (Offset) Photo] } \end{aligned}$ | 15 | 0 to 30 | 1 | Yes |  |
| 04-918-04 | $\begin{aligned} & \text { Offset (ID max) } \\ & \text { [ID max (Offset) Photo] } \\ & \hline \end{aligned}$ | 15 | 0 to 30 | 1 | Yes | Do not use the 'Option' settings. |
| 04-918-05 | Option (low ID) [Low ID (Option) Photo] | 0 | 0 to 30 | 1 | Yes | See 'Replacement and Adjustment - Copy Image Adjustment - Printer Gamma Adjustment' for how to use these SP modes. |
| 04-918-06 | Option (Middle ID) [Middle ID (Option) Photo] | 0 | 0 to 30 | 1 | Yes |  |
| 04-918-07 | Option (High ID) [High ID (Option) Photo] | 0 | 0 to 30 | 1 | Yes | ACC (Automatic Colour Calibration) |


| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 04-918-08 | Option (ID max) <br> [ID max (Option) Photo] | 0 | 0 to 30 | 1 | Yes | Use these SPs to adjust the colour balance if the results of ACC are not satisfactory. <br> This is for yellow toner in photo mode, using copy mode. <br> Do not use the 'Option' settings. <br> See 'Replacement and Adjustment - Copy Image Adjustment - Printer Gamma Adjustment' for how to use these SP modes. <br> ACC (Automatic Colour Calibration) |
| 04-919: Manual gamma adjustment: Printer: K [Manual gamma Adj: Printer: K] |  |  |  |  |  |  |
| 04-919-01 | Offset (low ID) [Low ID (Offset)] | 15 | 0 to 30 | 1 | Yes | Use these SPs to adjust the colour balance if the results of ACC are not satisfactory. <br> This is for black toner (full colour mode) using printer mode (for both text and photo data). <br> Do not use the 'Option' settings. <br> See 'Replacement and Adjustment - Copy Image Adjustment - Printer Gamma Adjustment' for how to use these SP modes. <br> ACC (Automatic Colour Calibration) |
| 04-919-02 | Offset (Middle ID) [Middle ID (Offset)] | 15 | 0 to 30 | 1 | Yes |  |
| 04-919-03 | Offset (High ID) [High ID (Offset)] | 15 | 0 to 30 | 1 | Yes |  |
| 04-919-04 | Offset (ID max) [ID max (Offset)] | 15 | 0 to 30 | 1 | Yes |  |
| 04-919-05 | Option (low ID) [Low ID (Option)] | 0 | 0 to 30 | 1 | Yes |  |
| 04-919-06 | Option (Middle ID) [Middle ID (Option)] | 0 | 0 to 30 | 1 | Yes |  |
| 04-919-07 | Option (High ID) [High ID (Option)] | 0 | 0 to 30 | 1 | Yes |  |
| 04-919-08 | Option (ID max) <br> [ID max (Option)] | 0 | 0 to 30 | 1 | Yes |  |


| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \hline \hline \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 04-920: Manual gamma adjustment: Printer: C [Manual gamma Adj: Printer: C] |  |  |  |  |  |  |
| 04-920-01 | Offset (low ID) [Low ID (Offset)] | 15 | 0 to 30 | 1 | Yes | Use these SPs to adjust the colour balance if the results of ACC are not satisfactory. <br> This is for cyan toner, using printer mode (for both text and photo data).. |
| 04-920-02 | Offset (Middle ID) [Middle ID (Offset)] | 15 | 0 to 30 | 1 | Yes |  |
| 04-920-03 | Offset (High ID) <br> [High ID (Offset)] | 15 | 0 to 30 | 1 | Yes |  |
| 04-920-04 | Offset (ID max) [ID max (Offset)] | 15 | 0 to 30 | 1 | Yes | Do not use the 'Option' settings. |
| 04-920-05 | Option (low ID) [Low ID (Option)] | 0 | 0 to 30 | 1 | Yes | See 'Replacement and Adjustment - Copy Image Adjustment - Printer Gamma Adjustment' for how to use these SP modes. |
| 04-920-06 | Option (Middle ID) [Middle ID (Option)] | 0 | 0 to 30 | 1 | Yes |  |
| 04-920-07 | Option (High ID) [High ID (Option)] | 0 | 0 to 30 | 1 | Yes | ACC (Automatic Colour Calibration) |
| 04-920-08 | Option (ID max) [ID max (Option)] | 0 | 0 to 30 | 1 | Yes |  |
|  |  |  |  |  |  |  |
| 04-921: Manual gamma adjustment: Printer: M [Manual gamma Adj: Printer: M] |  |  |  |  |  |  |
| 04-921-01 | Offset (low ID) [Low ID (Offset)] | 15 | 0 to 30 | 1 | Yes | Use these SPs to adjust the colour balance if the results of ACC are not satisfactory. |
| 04-921-02 | Offset (Middle ID) [Middle ID (Offset)] | 15 | 0 to 30 | 1 | Yes | This is for magenta toner using printer mode (for both text and photo data). |
| 04-921-03 | Offset (High ID) [High ID (Offset)] | 15 | 0 to 30 | 1 | Yes |  |
| 04-921-04 | Offset (ID max) [ID max (Offset)] | 15 | 0 to 30 | 1 | Yes | Do not use the 'Option' settings. |
| 04-921-05 | Option (low ID) [Low ID (Option)] | 0 | 0 to 30 | 1 | Yes | See 'Replacement and Adjustment - Copy Image Adjustment - Printer Gamma Adjustment' for how to use these SP modes. |
| 04-921-06 | Option (Middle ID) [Middle ID (Option)] | 0 | 0 to 30 | 1 | Yes |  |
| 04-921-07 | Option (High ID) [High ID (Option)] | 0 | 0 to 30 | 1 | Yes | ACC (Automatic Colour Calibration) |


| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 04-921-08 | Option (ID max) <br> [ID max (Option)] | 0 | 0 to 30 | 1 | Yes | Use these SPs to adjust the colour balance if the results of ACC are not satisfactory. <br> This is for magenta toner using printer mode (for both text and photo data). <br> Do not use the 'Option' settings. <br> See 'Replacement and Adjustment - Copy Image Adjustment - Printer Gamma Adjustment' for how to use these SP modes. <br> ACC (Automatic Colour Calibration) |
| 04-922: Manual gamma adjustment: Printer Y [Manual gamma Adj: Printer: Y] |  |  |  |  |  |  |
| 04-922-01 | Offset (low ID) [Low ID (Offset)] | 15 | 0 to 30 | 1 | Yes | Use these SPs to adjust the colour balance if the results of ACC are not satisfactory. <br> This is for yellow toner using printer mode (for both text and photo data). <br> Do not use the 'Option' settings. <br> See 'Replacement and Adjustment - Copy Image Adjustment - Printer Gamma Adjustment' for how to use these SP modes. <br> ACC (Automatic Colour Calibration) |
| 04-922-02 | Offset (Middle ID) [Middle ID (Offset)] | 15 | 0 to 30 | 1 | Yes |  |
| 04-922-03 | Offset (High ID) [High ID (Offset)] | 15 | 0 to 30 | 1 | Yes |  |
| 04-922-04 | Offset (ID max) [ID max (Offset)] | 15 | 0 to 30 | 1 | Yes |  |
| 04-922-05 | Option (low ID) [Low ID (Option)] | 0 | 0 to 30 | 1 | Yes |  |
| 04-922-06 | Option (Middle ID) [Middle ID (Option)] | 0 | 0 to 30 | 1 | Yes |  |
| 04-922-07 | Option (High ID) [High ID (Option)] | 0 | 0 to 30 | 1 | Yes |  |
| 04-922-08 | Option (ID max) <br> [ID max (Option)] | 0 | 0 to 30 | 1 | Yes |  |


| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \hline \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 04-932: Main scan dot position correction [Picture Element Correction] |  |  |  |  |  |  |
| 04-932-01 | [Red: Left] | 5 | 0 to 9 | 1 |  | Adjusts the left and right ends of the red and blue scan lines to align them with the green scan line. See 'Replacement and Adjustment - Copy Image Adjustment - Main Scan Position Dot Correction' for how to use these SP modes. |
| 04-932-02 | [Red: Right] | 5 | 0 to 9 | 1 |  |  |
| 04-932-03 | [Blue: Left] | 5 | 0 to 9 | 1 |  |  |
| 04-932-04 | [Blue: Right] | 5 | 0 to 9 | 1 |  |  |
|  |  |  |  |  |  |  |
| 04-980: [FPU Reference setting] |  |  |  |  |  |  |
| 04-980-01 | [Red: Positive] | 133 | 0 to 255 | 1 |  | Adjusts or displays the reference value used in the A/D converter for RGB signals in the scanner analog processing circuit when the FPU is used. <br> There is no need to use these SP modes with the FPU that is specified for use with the Iris/Lilac. |
| 04-980-02 | [Green: Positive] | 133 | 0 to 255 | 1 |  |  |
| 04-980-03 | [Blue: Positive] | 133 | 0 to 255 | 1 |  |  |
| 04-980-04 | [Red: Negative] | 133 | 0 to 255 | 1 |  |  |
| 04-980-05 | [Green: Negative] | 133 | 0 to 255 | 1 |  |  |
| 04-980-06 | [Blue: Negative] | 133 | 0 to 255 | 1 |  |  |
|  |  |  |  |  |  |  |
| 04-981: [FPU White level Target] |  |  |  |  |  |  |
| 04-981-01 | [Positive] | 568 | 0 to 1023 | 1 |  | Shows or sets the target level of the reference white level for positive and negative film when the FPU is used. <br> There is no need to use these SP modes with the FPU that is specified for use with the Iris/Lilac. |
| 04-981-02 | [Negative] | 568 | 0 to 1023 | 1 |  |  |


| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \hline \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 05. Operation mode/system [Mode] |  |  |  |  |  |  |
| 05-001-00 | Operation panel all on [0: OFF, 1: ON] | 0 | 0 to 1 | 1 |  | Turns on all the indicators to test the operation panel display functions. $0=$ Normal display; $1=$ All on |
| 05-009-01 | Display language setup [Disp Language] | 0 | 0 to 15 | 1 |  | Defines the display language. <br> 0 = Japanese; = 1 English; 2 = French; 3 = German; $4=$ Spanish; 5 = Italian, etc (the others are listed in the Installation section of the manual). |
| 05-009-02 | Millimeter/inch selection [mm or inch] | 0 | 0 to 1 | 1 |  | Selects metric or inches. $\begin{aligned} & 0=\text { metric } \\ & 1=\text { inches } \end{aligned}$ <br> This affects the available magnification ratios and the unit that is displayed when inputting values for directional size magnification. Available paper sizes and other features are not affected. |
| 05-104: [A3/DTL Double Count] |  |  |  |  |  |  |
| 05-104-00 | [A3/DTL Double Count] | 0 | 0 to 1 | 1 |  | Specifies whether the counter is doubled for A3/DLT size paper. <br> $0=$ Normal count, 1 = Double count |
| 05-113-00 | Key card/coin lock installation [Key Card / Coin Lock] | 0 | 0 to 3 | 1 |  | Specifies whether the key counter, key card, or coin lock is installed or not. <br> 0 = None (default) <br> 1 = Key card (used in Japan only) <br> 2 = Key counter <br> 3 = Coin lock (used in Japan only) |
| 05-114-00 | Account color mode setup [Color Mode Selection: Key Card] | 15 | 1 to 15 |  |  | Bit 0 = 1: Managed in black mode <br> Bit $1=1$ : Managed in single colour mode <br> Bit 2 = 1: Managed in two colour mode <br> Bit $3=1$ : Managed in full colour mode <br> See SM Section 4.4.7 for a complete description of SP5-114-000 |


| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \hline \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 05-120: Clear mode when key counter removed [Clear Md On/Off: Key Counter] |  |  |  |  |  |  |
| 05-120-00 | [Clear Md On/Off: Key Counter] | 1 | 0 to 1 | 1 |  | Specifies whether the current mode is cleared or not when the key counter is removed. <br> $0=$ Mode not cleared, $1=$ Mode cleared |
|  |  |  |  |  |  |  |
| 05-121: Count up Timing: Key Card [Count up Timing: Key Card] |  |  |  |  |  |  |
| 05-121-00 | Key card count-up timing [Count up Timing: Key Card] | 1 | 0 to 1 | 1 |  | Selects the counter update timing for the key card (used in Japan only) <br> 0 = Paper feed-in, 1 = Paper feed-out |
|  |  |  |  |  |  |  |
| 05-126: F size Paper [ $\mathrm{F}^{*}$ size Paper] |  |  |  |  |  |  |
| 05-126-00 | $\begin{aligned} & \text { F size selection } \\ & {[0: F 4,1: F, 2: \text { Folio] }} \end{aligned}$ |  |  |  |  | Determines which original size the machine detects when the APS sensors detect $F$ size. $\begin{aligned} & 0=\text { F4 (8 1/2" x 13") } \\ & 1 \text { = F (8" x 13") } \\ & \left.2=\text { Folio (8 } 1 / 4^{\prime \prime} \times 13^{\prime \prime}\right) \end{aligned}$ |
|  |  |  |  |  |  |  |
| 05-127: Feature Prohibition with Coin Lock [Coin Lock Prohibition] |  |  |  |  |  |  |
| 05-127-01 | When coin lock used: APS enabled [APS function] | 0 | 0 to 1 | 1 |  | Specifies whether APS (Automatic Paper Select) is enabled when a coin lock is used. $0=$ Disabled (default); 1 = Enabled Coin lock is used in Japan only. |
| 05-127-02 | When coin lock used: ACS enabled [ACS function] | 0 | 0 to 1 | 1 |  | Specifies whether ACS (Automatic Color Select) is enabled when a coin lock is used. $0=$ Disabled (default); 1 = Enabled Coin lock is used in Japan only. |


| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \hline \hline \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 05-128: User Code + Coin Lock [User Code + Coiun Lock] |  |  |  |  |  |  |
| 05-128-00 | [User Code + Conie Lock] | 0 | 0 to 1 |  |  | Selects whether both User Code and Coin Lock can be used. $\begin{aligned} & 0=\text { One of them only } \\ & 1=\text { Both } \end{aligned}$ <br> The coin lock is used in Japan only |
|  |  |  |  |  |  |  |
| 05-410: Key operator code reset [User Code Password Clear] |  |  |  |  |  |  |
| 05-410-00 | [User Code Password Clear] |  | 0 to 1 |  |  | Resets the key operator code. Use this when the user forgets the code. |
|  |  |  |  |  |  |  |
| 05-501: Set PM Counter Interval [Set PM Counter] |  |  |  |  |  |  |
| 05-501-00 | PM counter [Set PM Counter] | 60000 | 0 to 999999 | 1 |  | Sets the PM counter interval. 0: PM counter not used. |
|  |  |  |  |  |  |  |
| 05-504: [Jam Alarm Level] |  |  |  |  |  |  |
| 05-504-00 | [Jam Alarm Level] | 1 | 0 to 3 | 1 |  | Sets the jam alarm level (used in Japan only). $\begin{aligned} & 0=\text { Not used } \\ & 1=250 \text { sheets } \\ & 2=500 \text { sheets } \\ & 3=1,000 \text { sheets } \end{aligned}$ |
|  |  |  |  |  |  |  |
| 05-505: [SC Alarm Level] |  |  |  |  |  |  |
| 05-505-00 | [SC Alarm Level] | 1 | 0 to 3 | 1 |  | Sets the SC alarm level (used in Japan only). $\begin{aligned} & 0=\text { Not used } \\ & 1=250 \text { sheets } \\ & 2=500 \text { sheets } \\ & 3=1,000 \text { sheets } \end{aligned}$ |


| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \hline \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 05-507: SC Supply alarm setup: Copy count by size [Alarm Level] |  |  |  |  |  |  |
| 05-507-01 | [Toner End] | 0 | 0 to 1 | 1 |  | Specifies whether supply alarm calls are to be made. This mode specifies whether supply calls are to be made according to the number of copies. Used in Japan only |
| 05-507-02 | Count of Copy |  | 0 to 1 | 1 |  |  |
| 05-507-03 | Staple |  | 0 to 1 | 1 |  |  |
| 05-507-131 | A2 |  | 0 to 1 | 1 |  |  |
| 05-507-132 | A3 |  | 0 to 1 | 1 |  |  |
| 05-507-133 | A4 |  | 0 to 1 | 1 |  |  |
| 05-507-134 | A5 |  | 0 to 1 | 1 |  |  |
| 05-507-140 | B3 |  | 0 to 1 | 1 |  |  |
| 05-507-141 | B4 |  | 0 to 1 | 1 |  |  |
| 05-507-142 | B5 |  | 0 to 1 | 1 |  |  |
| 05-507-143 | B6 |  | 0 to 1 | 1 |  |  |
| 05-507-160 | DLT |  | 0 to 1 | 1 |  |  |
| 05-507-164 | LG |  | 0 to 1 | 1 |  |  |
| $05-507-166$ LT  0 to 1 |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| 05-508: [EM Auto Call On/Off] |  |  |  |  |  |  |
| 05-508-00 | CC auto call setup [EM Auto Call On/Off] | 1 | 0 to 1 | 1 |  | Specifies whether CC auto calls are to be made. <br> 0: No; 1: Yes <br> Used in Japan only |



| $5-609-00$ |  |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | use the user tools.

05-610: Recall/overwrite ACC factory settings [ACC]

| $05-610-04$ | Recall factory settings <br> [Load: Factory Setting] | 0 | 0 to 1 | 1 | Recalls the factory settings of the ACC values. |
| :--- | :---: | :---: | :---: | :---: | :--- |
| $05-610-05$ | Overwrite factory settings <br> Save as factory setting] | 0 | 0 to 1 | 1 | Overwrites the factory settings of the ACC values <br> with the current values. |


|  | SP No. | $\begin{gathered} \hline \text { Item } \\ \text { [Display] } \end{gathered}$ | Default Value | Value Range | Step | $\begin{aligned} & \hline \hline \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 5-611: Toner Ratios in 2C mode [Toner Amount Ration in 2C] |  |  |  |  |  |  |  |
|  | 5-611-01 | [Cyan in Blue] | 90 |  |  |  | Determines the amounts of toner used to produce R , G , and B in 2 C mode |
|  | 5-611-02 | [Magenta in Blue] | 80 |  |  |  |  |
|  | 5-611-03 | [Cyan in Green] | 90 |  |  |  |  |
|  | 5-611-04 | [Yellow in Green] | 80 |  |  |  |  |
|  | 5-611-05 | [Magenta in Red] | 100 |  |  |  |  |
|  | 5-611-06 | [Yellow in Red] | 80 |  |  |  |  |
| 5-612: [Scanner gamma selection] |  |  |  |  |  |  |  |
|  | 5-612-00 |  |  |  |  |  | Not used in this machine. |
| 05-801: [RAM Clear] |  |  |  |  |  |  |  |
|  | 05-801-01 | NVRAM Clear [NVRAM Clear] |  | 1: Clear |  |  | Returns the contents of the NV-RAM to the factorysettings. <br> See 'Replacement and Adjustment - System and Electronics - RAM Clear' for details on using this SP mode. |
| 05-802: [Free Run] |  |  |  |  |  |  |  |
|  | 05-802-1 | [Printer] 6 |  | $\begin{aligned} & \text { 0: Stop } \\ & \text { 1: Start } \end{aligned}$ |  |  | Printer: Printer only Scanner: Scanner and printer |
|  | 05-802-2 | [System] |  | $\begin{aligned} & \text { 0: Stop } \\ & \text { 1: Start } \end{aligned}$ |  |  |  |
| 05-803:Input tests [INPUT Chk] |  |  |  |  |  |  |  |
|  | 05-803 | [[INPUT Chk] |  |  |  |  | Refer to 'Service Tables - Input Check'. |
| 05-804: Output tests [OUTPUT Chk] |  |  |  |  |  |  |  |
|  | 05-804-xx |  |  |  |  |  | Refer to 'Service Tables - Output Check'. |
| ©NOTE: To perform a free run, Auto Paper Select and Auto Image Density must be set to "OFF" in User Tools, Copy Features, General Features, and Auto Text/Photo Mode must not be selected in Original Mode Priority and Auto Color Select must not be selected in Color Mode Priority. |  |  |  |  |  |  |  |

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SP TABLE

| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \hline \hline \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 05-810: [SC Reset] |  |  |  |  |  |  |
| 05-810-00 | [SC Reset] |  | 0 to 1 |  |  | Resets a type A service call condition, which is caused by the fusing section. $1 \text { = Reset }$ <br> After resetting the SC code, the main switch has to be turned off and on. |
|  |  |  |  |  |  |  |
| 05-811: [Serial No.] |  |  |  |  |  |  |
| 05-811-00 |  |  |  |  |  | Displays the serial number |
|  |  |  |  |  |  |  |
| 05-812: Service Telephone Number [Service Tel. No.] |  |  |  |  |  |  |
| 05-812-00 |  |  |  |  |  | Inputs the telephone number of the service representative. (This number is displayed when a service call condition occurs.) |
|  |  |  |  |  |  |  |
| 5-816: [RDS On/Off] |  |  |  |  |  |  |
| 5-816-00 |  | 0 | $\begin{gathered} \text { 0: OFF } \\ \text { 1: ON } \end{gathered}$ |  |  | When the machine is connected to an RDS system, set this SP to " 1 " to enable the RDS functions. |
|  |  |  |  |  |  |  |
| 5-817: [Repair Time Tx] |  |  |  |  |  |  |
| 5-817-00 |  | - | $\begin{aligned} & \hline \text { 0: End } \\ & \text { 1: Start } \end{aligned}$ |  |  | When using an RDS system, set this SP mode to 1 at the start of maintenance. Set it back to 0 after finishing maintenance. |
|  |  |  |  |  |  |  |
| 05-824: NVRAM Upload [NVRAM Up Load] |  |  |  |  |  |  |
| 05-824-00 | [NVRAM Up Load] |  | 0 to 1 |  |  | Uploads data from the NV-RAM to ROM. See 'Replacement \& Adjustment - System \& Electronics'. |
|  |  |  |  |  |  |  |
| 05-825: NV-RAM download [NVRAM Down Load] |  |  |  |  |  |  |
| 05-825-00 | [NVRAM Down Load] |  | 0 to 1 |  |  | Downloads data from the ROM to NV-RAM. See 'Replacement \& Adjustment - System \& Electronics'. |


| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \hline \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 05-827: Main program download [Program Down Load] |  |  |  |  |  |  |
| 05-827-00 | [Program Down Load] |  | 0 to 1 |  |  | Downloads the main program from an IC card. See 'Replacement \& Adjustment - System \& Electronics'. |
|  |  |  |  |  |  |  |
| 05-955: Printer internal pattern [Printer Test Pattern Setting] |  |  |  |  |  |  |
| 05-955-01 | Dot, Line: LD PM setup [LD PWM value: dot, line] | 128 | 0 to 255 | 1 |  | See 'Service Tables - SP Mode Additional Notes' |
| 05-955-02 | 16 grayscales-1: LD_PWM setup [LD PWM value: $\mathbf{1 / 1 6}$ Gradation] | 17 | 0 to 255 | 1 |  |  |
| 05-955-03 | 16 grayscales-2: LD_PWM setup [LD PWM value: 2/16 Gradation] | 34 | 0 to 255 | 1 |  |  |
| 05-955-04 | 16 grayscales-3: LD_PWM setup [LD PWM value: 3/16 Gradation] | 51 | 0 to 255 | 1 |  |  |
| 05-955-05 | 16 grayscales-4: LD_PWM setup [LD PWM value: 4/16 Gradation] | 68 | 0 to 255 | 1 |  |  |
| 05-955-06 | 16 grayscales-5: LD_PWM setup [LD PWM value: 5/16 Gradation] | 85 | 0 to 255 | 1 |  |  |
| 05-955-07 | 16 grayscales-6: LD_PWM setup [LD PWM value: 6/16 Gradation] | 102 | 0 to 255 | 1 |  |  |
| 05-955-08 | 16 grayscales-7: LD_PWM setup [LD PWM value: 7/16 Gradation] | 119 | 0 to 255 | 1 |  |  |
| 05-955-09 | 16 grayscales-8: LD_PWM setup [LD PWM value: 8/16 Gradation] | 136 | 0 to 255 | 1 |  |  |
| 05-955-10 | 16 grayscales-9: LD_PWM setup [LD PWM value: 9/16 Gradation] | 153 | 0 to 255 | 1 |  |  |
| 05-955-11 | 16 grayscales-10: LD_PWM setup [LD PWM value: 10/16 Gradation] | 170 | 0 to 255 | 1 |  |  |
| 05-955-12 | 16 grayscales-11: LD_PWM setup [LD PWM value: 11/16 Gradation] | 187 | 0 to 255 | 1 |  |  |
| 05-955-13 | 16 grayscales-12: LD_PWM setup [LD PWM value: 12/16 Gradation] | 204 | 0 to 255 | 1 |  |  |


| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \hline \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 05-955-14 | 16 grayscales-13: LD_PWM setup [LD PWM value: 13/16 Gradation] | 221 | 0 to 255 | 1 |  | See 'Service Tables - SP Mode Additional Notes' . |
| 05-955-15 | 16 grayscales-14: LD_PWM setup [LD PWM value: 14/16 Gradation] | 255 | 0 to 255 | 1 |  |  |
| 05-955-16 | 16 grayscales-15: LD_PWM setup [LD PWM value: 15/16 Gradation] | 238 | 0 to 255 | 1 |  |  |
| 05-955-17 | 16 grayscales-16: LD_PWM setup [LD PWM value: Trailing Patch] | 128 | 0 to 255 | 1 |  |  |
| 05-955-18 | Printer internal pattern type selection [Pattern Selection] | 0 | 0 to 21 | 1 |  |  |

05-963: [Polygon Motor Power Off]

| 05-963-00 | Polygon scanner pause time setup <br> [PlyMt Off Time] | 30 s | 0 to 60 s <br> $0:$ Stops <br> immediately | 1 | Sets the interval from the time the last page is exited <br> till the polygon motor stops when the copier enters <br> the standby state after completing a job. <br> Keep this at 30 s to prevent the motor from wearing <br> out too early. Also, if the user complains of noise, set <br> it to 0. The motor will stop immediately after the job. |
| :--- | :--- | :--- | :--- | :--- | :--- |


| 05-979: [SC Detection] |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| 05-979-02 | [Printer SC No Check Mode] | 0 | $0:$ Check <br> $1:$ Disable | Disables the self-diagnostics. SCs will not be <br> detected. |

## 6. Peripherals [Pheriphs]

06-006: ADF registration adjustment [ADF Regist]

|  |  |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| $06-006-01$ | 0 mm | -3.0 to 3.0 mm | 0.1 | Original scanning position adjustment when using the <br> ADF. See the ARDF manual for how to use these SP <br> modes. <br> morizontal] |  |
| $06-006-02$ | Non-switchback (thin original), front <br> mide [Thin Paper] | 0 step | -15 to 15 steps | 1 |  |
| $06-006-03$ | Switchback (thick original), front side <br> [Thick Paper] | 0 step | -15 to 15 steps | 1 |  |


| SP No. | Item <br> [Display] | Default <br> Value | Value Range | Step | SP7 <br> $\mathbf{9 0 2 / 3}$ | Description |
| :---: | :--- | :---: | :---: | :---: | :---: | :---: |
| $06-006-04$ | Switchback (thick original), back side <br> $[2$ sided] | 0 step | -15 to 15 steps | 1 |  |  |

## 06-102: [Sort/Stack Limit]

| 06-102-00 | [0: No limitation, 1: Limitation] | 1 | 0 to 1 | 1 | Enables or disables the limitation on the number of <br> sheets that can be stacked in the sorter. 0: Disabled; <br> $1:$ Enabled (default). This limit can be disabled if the <br> user requests, but the user has to make sure that <br> jams do not occur. |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |

06-104: Stapling Limit [Staple Sheet Limit]

| 06-104-00 | [Staple Sheet Limit] | 1 | 0 to 1 | 1 | Enables or disables the limitation on the number of <br> sheets that can be stapled. 0: Disabled; 1: Enabled <br> (default). This limit can be disabled if the user <br> requests, but the user has to make sure that jams do <br> not occur. |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |

## 06-107: [Sorter Free Run]

| $06-107-00$ | [Sorter Free Run] | 0 | 0 to 1 | 1 | Sorter free run |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |

$\Rightarrow$ 06-910 [Printer/Scanner Key Setting]

| 06-910-000 | [Printer/Scanner Key Setting] | 1 | 0 to 1 | 1 | When installing the E-300 controller, this should be <br> set to 1. If the setting is 0, the Printer/Scanner key <br> on the controller LCD panel does not work. |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |


| SP No. | Item <br> [Display] | Default <br> Value | Value Range | Step | SP7- <br> $902 / 3$ |
| :--- | :--- | :--- | :--- | :--- | :--- |
| ( |  |  |  |  |  |


| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \hline \hline \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 07-202-03 | C [Developer C Counter] |  | 0 to 9999999 | 1 |  | Shows the number of development operations for C . |
| 07-202-04 | M [Developer M Counter] |  | 0 to 9999999 | 1 |  | Shows the number of development operations for M. |
| 07-202-05 | $Y$ <br> [Developer Y Counter] |  | 0 to 9999999 | 1 |  | Shows the number of development operations for Y . |
|  |  |  |  |  |  |  |
| 07-203: Component usage counters (components related to image production) [Development Counter] |  |  |  |  |  |  |
| 07-203-01 | Drum [Drum Counter] |  | 0 to 9999999 | 1 |  | Shows the number of uses of components related to image production. |
| 07-203-02 | Transfer belt [Transfer Belt Counter] |  | 0 to 9999999 | 1 |  |  |
| 07-203-03 | Scanner exhaust fan filter [Scanner Dust Filter Counter] |  | 0 to 9999999 | 1 |  |  |
| 07-203-04 | Charge corona fan filter [Main CH. Filter Counter] |  | 0 to 9999999 | 1 |  |  |
| 07-203-05 | Rear cooling fan filter [Rear Filter Counter] |  | 0 to 9999999 | 1 |  | Shows the number of uses of components related to image production. |
| 07-203-06 | PCC wire [Pcc Wire Counter] |  | 0 to 9999999 | 1 |  |  |
| 07-203-07 | Charge corona wire [Main Charge Wire Counter] |  | 0 to 9999999 | 1 |  |  |
| 07-203-08 | Charge corona grid [Main Grid Counter] |  | 0 to 9999999 | 1 |  |  |
|  |  |  |  |  |  |  |
| 07-207: Component usage counters (components related to cleaning) [Cleaning Counter] |  |  |  |  |  |  |
| 07-207-01 | [Drum Cleaning Blade] | Images | $\begin{aligned} & \text { 0-9999999 } \\ & \text { images } \\ & \hline \end{aligned}$ | 1 |  | Shows the number of uses of components related to cleaning <br> 0: To clear the counter |
| 07-207-02 | [Drum Cleaning Brush] | Images | $\begin{aligned} & \begin{array}{l} \text { 0-9999999 } \\ \text { images } \\ \hline \end{array}{ }^{2} \end{aligned}$ | 1 |  |  |
| 07-207-03 | [Drum Lubricant Bar] | Images | $\begin{aligned} & \text { 0-9999999 } \\ & \text { images } \end{aligned}$ | 1 |  |  |


| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \hline \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 07-207-04 | [Transfer Belt Cleaning Brush] | Images | $\begin{array}{\|l} \hline \text { 0-9999999 } \\ \text { images } \\ \hline \end{array}$ | 1 |  |  |
| 07-207-05 | [Transfer Belt Lubricant Bar] | Images | $\begin{array}{\|l\|} \hline \text { 0-9999999 } \\ \text { images } \\ \hline \end{array}$ | 1 |  |  |
| 07-207-06 | Transfer roller cleaning blade (prints) [Paper Trns. Roller Blade [Print]] | Pages | $\begin{aligned} & \text { 0-9999999 } \\ & \text { pages } \end{aligned}$ | 1 |  |  |
| 07-207-07 | Transfer roller cleaning blade (images) [Paper Trns. Roller Blade [Dev]] | Images | $\begin{aligned} & \text { 0-9999999 } \\ & \text { images } \\ & \hline \end{aligned}$ | 1 |  |  |
| 07-207-08 | Transfer roller lubricant bar (prints) <br> [P.T. RIIr Lubricant Bar[Print]] | Pages | $\begin{array}{\|l\|} \hline \text { 0-9999999 } \\ \text { pages } \\ \hline \end{array}$ | 1 |  |  |
| 07-207-09 | Transfer roller lubricant bar (images) [P.T. Rllr Lubricant Bar [Dev]] | Images | $\begin{aligned} & \hline \text { 0-9999999 } \\ & \text { images } \\ & \hline \end{aligned}$ | 1 |  |  |
| 07-207-12 | Transfer belt cleaning blade | Images | $\begin{array}{\|l} \hline \text { 0-9999999 } \\ \text { images } \\ \hline \end{array}$ | 1 |  |  |


| 07-210: Component usage counters (components related to fusing) [Roller Counter] |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 07-210-01 | Hot roller (pages) [Hot Roller [Print]] | Pages | $\begin{aligned} & \text { 0-9999999 } \\ & \text { pages } \end{aligned}$ | 1 | Shows the number of uses of components related to fusing <br> 0: To clear the counter |
| 07-210-02 | Hot roller (images) [Hot Roller [Dev]] | Images | $\begin{aligned} & \text { 0-9999999 } \\ & \text { images } \end{aligned}$ | 1 |  |
| 07-210-03 | Pressure roller (pages) [Pressure Roller [Print]] | Pages | $\begin{aligned} & \text { 0-9999999 } \\ & \text { pages } \end{aligned}$ | 1 |  |
| 07-210-04 | Pressure roller (images) [Pressure Roller [Dev]] | Images | $\begin{aligned} & \text { 0-9999999 } \\ & \text { images } \end{aligned}$ | 1 |  |
| 07-210-05 | Oil supply pad (pages) [Oil Supply Pad [Print]] |  | 0 to 9999999 | 1 |  |
| 07-210-06 | Oil supply pad (images) [Oil Supply Pad [Dev]] |  | 0 to 9999999 | 1 |  |
| 07-210-07 | Hot roller blade (pages) [Hot Roller Blade [Print]] |  | 0 to 9999999 | 1 |  |



| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \hline \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 07-504-01 | Jams detected at any location just after closing the door or the main power is switched on[Init] | 0 | 0 to 65535 | 1 |  | Shows the number of paper jams at each location. |
| 07-504-02 | [Tray1] | 0 | 0 to 65535 | 1 |  |  |
| 07-504-03 | [Tray2] | 0 | 0 to 65535 | 1 |  |  |
| 07-504-04 | [Tray3] | 0 | 0 to 65535 | 1 |  |  |
| 07-504-05 | [Tray4] | 0 | 0 to 65535 | 1 |  |  |
| 07-504-06 | Duplex tray entrance [DplxEnter] | 0 | 0 to 65535 | 1 |  |  |
| 07-504-07 | Duplex tray, interior [FeedDplx] | 0 | 0 to 65535 | 1 |  |  |
| 07-504-08 | [Relay Roller] | 0 | 0 to 65535 | 1 |  |  |
| 07-504-09 | Registration [Regist] | 0 | 0 to 65535 | 1 |  |  |
| 07-504-10 | [Transfer] | 0 | 0 to 65535 | 1 |  |  |
| 07-504-11 | [Fusing Unit] | 0 | 0 to 65535 | 1 |  |  |
| 07-504-12 | [ExitMain] | 0 | 0 to 65535 | 1 |  |  |
| 07-504-13 | Duplex tray exit [ExitDplx] | 0 | 0 to 65535 | 1 |  |  |
| 07-504-14 | [Sorter] | 0 | 0 to 65535 | 1 |  | Shows the number of paper jams at each location. |
| 07-504-15 | [Staple] | 0 | 0 to 65535 | 1 |  |  |
| 07-504-16 | [Proof Tray] | 0 | 0 to 65535 | 1 |  |  |
|  |  |  |  |  |  |  |
| 07-505: Original Jam Counter [Original Jam Counter] |  |  |  |  |  |  |
| 07-505-01 | [Feed] | 0 | 0 to 65535 | 1 |  | Shows the number of original jams at each location. |
| 07-505-02 | [Exit] | 0 | 0 to 65535 | 1 |  |  |
|  |  |  |  |  |  |  |
| 07-801: ROM version display [ROM Version] |  |  |  |  |  |  |
| 07-801-01 | Main [Main] |  | 0 to 1 | 1 | Yes | Shows the ROM versions. |


| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \hline \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 07-801-02 | Scanner IPU [Scanner] |  | 0 to 1 | 1 | Yes |  |
| 07-801-03 | $\begin{aligned} & \text { IDU } \\ & \text { [IDU] } \end{aligned}$ |  | 0 to 1 | 1 | Yes |  |
| 07-801-04 | ADF <br> [ADF] |  | 0 to 1 | 1 | Yes |  |
| 07-801-05 |  |  | 0 to 1 | 1 | Yes |  |
| 07-801-06 | Optional paper feed unit [Bank] |  | 0 to 1 | 1 | Yes |  |
| 07-801-07 | FPU (film projector) [FPU] |  | 0 to 1 | 1 | Yes |  |
|  |  |  |  |  |  |  |
| 07-803: PM Counters [PM Counter] |  |  |  |  |  |  |
| 07-803-01 | PM counter display <br> [Total No. of Dev. Cycles.] |  | 0 to 9999999 |  |  | Shows the current value of the PM counter. |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| 07-804 [PM Counter Clear] |  |  |  |  |  |  |
| 07-804-01 | PM counter all clear: 1 PM [1PM Parts All Clear] |  | 1: Clear | 1 |  | Resets all counters for 1 PM components to zero. |
| 07-804-02 | PM counter all clear: 2 PM [2PM Parts All Clear] |  | 1: Clear | 1 |  | Resets all counters for 2 PM components to zero. |
| 07-804-03 | PM counter clear [PM Counter Clear] |  | 1: Clear | 1 |  | Resets SP 7-803-01 to zero. |
|  |  |  |  |  |  |  |
| 07-807: [SC/Jam Counter Clear] |  |  |  |  |  |  |
| 07-807-00 | [SC/Jam Counter Clear] |  | 1: Clear | 1 |  | Resets the SC and jam counters to zero. |



| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \hline \hline \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 07-825-00 | Total counter clear [Total Counter 0 Reset] |  | 1: Clear | 1 |  | If the counter value is less than zero, this SP mode can be used to reset the total counter to zero. |
|  |  |  |  |  |  |  |
| 07-902: Print Non-Default Data [Print Non-Default Data] |  |  |  |  |  |  |
| 07-902-00 | Adjustment data print (non-default data) <br> [Print Non-Default Data] |  | 1: Print | 1 |  | Prints a list of settings that have been changed from their defaults. |
| 07-903: Printout of adjustment data [Print All Data] |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| 07-903-00 |  |  | 1: Print |  |  | Prints all settings, including those that have not been changed from their defaults. |
|  |  |  |  |  |  |  |
| 07-904: [Print Printer Gamma Data] |  |  |  |  |  |  |
| 07-904-01 | [Copier Mode] |  | 1: Print | 1 |  | Prints the gamma-related adjustment values corresponding to the copy mode SP data settings. |
| 07-904-02 | [Printer Mode] |  | 1: Print | 1 |  | Prints the gamma-related adjustment values corresponding to the printer mode SP data settings. |
|  |  |  |  |  |  |  |
| 07-905: Print PM counter values [Print PM Data] |  |  |  |  |  |  |
| 07-905-00 | [Print PM Data] |  | 1: Print | 1 |  | Prints the PM counter values. |
|  |  |  |  |  |  |  |
| 07-910: Transfer unit counter display [Transfer Belt Counter] |  |  |  |  |  |  |
| 07-910-01 | Paper separation corona wire (prints) [Paper Separation Wire [Print]] |  | 0 to 9999999 | 1 |  | Shows the number of uses of a transfer related component. |
| 07-910-02 | Paper separation corona wire (images) [Paper Separation Wire [Dev]] |  | 0 to 9999999 | 1 |  | 0: Clear |
|  |  |  |  |  |  |  |
| 07-911: Duplex unit counter display [Counter:Paper transfer] |  |  |  |  |  |  |
| 07-911-01 | Duplex separation roller (pages) [Duplex Sep. Roller [Print]] |  | 0 to 9999999 | 1 |  | Shows the number of uses of a duplex tray component. <br> 0: Clear |


| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \hline \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 07-911-02 | Duplex separation roller (images) [Duplex Sep. Roller [Dev]] |  | 0 to 9999999 | 1 |  |  |
| 07-911-03 | Duplex feed roller (pages) [Duplex Feed Roller [Print]] |  | 0 to 9999999 | 1 |  |  |
| 07-911-04 | Duplex feed roller (images) [Duplex Feed Roller [Dev]] |  | 0 to 9999999 | 1 |  |  |
|  |  |  |  |  |  |  |
| 07-912: Exposure Lamp Counter [Counter:Exposure Lamp] |  |  |  |  |  |  |
| 07-912-01 | Exposure lamp usage counter display [Expr. Lamp [Dev]] |  | 0 to 9999999 | 1 |  | Shows the number of times the exposure lamp has been activated. <br> 0: Clear |

## 8. Special operating modes [Special Mode]

08-111: Special mode 1: Leading edge registration adjustment [Sp.Mode1:LeadEdge Registration]

| $08-111-01$ | [Normal Paper] | 0 mm | -5.0 to 5.0 mm | 0.1 |  | Adjusts the leading edge registration for the paper |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Adype selected when using special operating mode 1. |  |  |  |  |  |  |
| $08-111-02$ | $[$ OHP] | 0 mm | -5.0 to 5.0 mm | 0.1 |  | See SP 1-001-1 to 1-001-3. |

08-113: Special mode 1: Paper feed timing adjustment [Sp.Mode1:P.Feed Tmg]

| $08-113-01$ | By-pass | 0 mm | -5.0 to 5.0 mm |
| :--- | :--- | :--- | :--- |

[By-ps Feed: Normal]

| 0 mm | -5.0 to 5.0 mm |
| :--- | :--- |
|  |  |


| 0.1 | See SP 1-003. |
| :--- | :--- | :--- |



| SP No. | Item <br> [Display] | Default <br> Value | Value Range | Step | SP7- <br> 902/3 | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $08-134-17$ | $[1 \mathrm{C}$ Back] | $0 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 |  |  |
| $08-134-20$ | [4C Back] | $2 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 |  |  |

08-135: Special mode 1: Paper transfer bias, trailing edge correction [SP.Mode1:Trail Edge Current]

| $08-135-01$ | $[1 C]$ | $0 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 |  | See SP 2-315. |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $08-135-04$ | [4C $]$ | $0 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 |  |  |
| $08-135-17$ | $[1 C ~ B a c k]$ | $0 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 |  |  |
| $08-135-20$ | [4C Back] | $0 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 |  |  |


| 08-136: Special mode 1: Paper transfer bias, environment correction coefficient [Sp.Mode1:Tmp/Hum Corection] |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 08-136-01 | Low temperature, low humidity ,1C [Low Tmp/Hum: 1C] | 100\% | 10 to 400\% | 1 | See SP 2-316. |
| 08-136-02 | Low temperature, low humidity, 4C [Low Tmp/Hum: 4C] | 100\% | 10 to 400\% | 1 |  |
| 08-136-05 | High temperature, high humidity, 1C [High Tmp/Hum: 1C] | 100\% | 10 to 400\% | 1 |  |
| 08-136-06 | High temperature, high humidity, 4C [High Tmp/Hum: 4C] | 100\% | 10 to 400\% | 1 |  |
| 08-136-33 | Low temperature, low humidity, 1C Back side [Low Tmp/Hum: 1C Back] | 100\% | 10 to 400\% | 1 |  |
| 08-136-34 | Low temperature, low humidity, 4C Back side [Low Tmp/Hum: 4C Back] | 100\% | 10 to 400\% | 1 | See SP 2-316. |
| 08-136-37 | High temperature, high humidity, 1C Back side <br> [High Tmp/Hum: 1C Back] | 100\% | 10 to 400\% | 1 |  |
| 08-136-38 | High temperature, high humidity, 4C Back side <br> [High Tmp/Hum: 4C Back] | 100\% | 10 to 400\% | 1 |  |

08-211: Special mode 2: Leading edge registration adjustment [Sp.Mode2:LeadEdge Registration]


| SP No. | Item <br> [Display] | Default <br> Value | Value Range | Step | SP7- <br> 902/3 | Description |
| :---: | :--- | :---: | :---: | :---: | :---: | :---: |
| $08-230-05$ | [4C] | $15 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 |  |  |
| $08-230-18$ | $[1 C$ Back] | $10 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 |  |  |
| $08-230-21$ | [4C Back] | $10 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 |  |  |

08-234: Special mode 2: Paper transfer bias, leading edge area correction [SP.Mode2:Lead Edge Current]

| $08-234-01$ | $[1 C]$ | $0 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $08-234-04$ | $[4 C]$ | $0 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 |  |  |
| $08-234-17$ | $[1 C$ Back $]$ | $2 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 |  |  |
| $08-234-20$ | [4C Back] | $4 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 |  |  |

08-235: Special mode 2: Paper transfer bias, trailing edge correction [SP.Mode2:Trail Edge Current]

| $08-235-01$ | $[1 C]$ | $0 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 |  | See SP 2-315. |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $08-235-04$ | $[4 C]$ | $0 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 |  |  |
| $08-235-17$ | $[1 C$ Back $]$ | $-3 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 |  |  |
| $08-235-20$ | [4C Back] | $-3 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 |  |  |


| 08-236: Special mode 2: Paper transfer bias, environment correction coefficient [Sp.Mode2:Tmp/Hum Corection] |  |  |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| 08-236-01 | Low temperature, Iow humidity: 1C <br> [Low Tmp/Hum: 1C] | $100 \%$ | 10 to $400 \%$ | 1 | See SP 2-316. |  |
| $08-236-02$ | Low temperature, low humidity: 4C <br> [Low Tmp/Hum: 4C] | $100 \%$ | 10 to $400 \%$ | 1 |  |  |
| $08-236-05$ | High temperature, high humidity: 1C <br> [High Tmp/Hum: 1C] | $100 \%$ | 10 to $400 \%$ | 1 |  |  |
| $08-236-06$ | High temperature, high humidity: 4C <br> [High Tmp/Hum: 4C] | $100 \%$ | 10 to $400 \%$ | 1 |  |  |



| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \hline \hline \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 08-315: Special mode 3: hot \& pressure roller temperature setup [Sp.Mode3:RIIr.Tmp] |  |  |  |  |  |  |
| 08-315-02 | Hot roller: 1 sided: Standby mode [Hot RIIr/ Standby] | $165{ }^{\circ} \mathrm{C}$ | 100 to $200{ }^{\circ} \mathrm{C}$ | 1 |  | See SP 1-105. |
| 08-315-03 | Hot roller: 1 sided: Copy mode FC [Hot RIIr/ Nrml: FC] | $165^{\circ} \mathrm{C}$ | 100 to $200{ }^{\circ} \mathrm{C}$ | 1 |  |  |
| 08-315-04 | Hot roller: 1 sided: Copy mode 1C <br> [Hot RIIr/ Nrml: SC] | $160{ }^{\circ} \mathrm{C}$ | 100 to $200{ }^{\circ} \mathrm{C}$ | 1 |  |  |
| 08-315-07 | Pressure roller: 1 sided: Standby mode [Pressure RIIr/ Standby] | $150{ }^{\circ} \mathrm{C}$ | 100 to $200{ }^{\circ} \mathrm{C}$ | 1 |  |  |
| 08-315-08 | Pressure roller: 1 sided: Copy mode FC <br> [Pressure RIIr/ NrmI: FC] | $150{ }^{\circ} \mathrm{C}$ | 100 to $200{ }^{\circ} \mathrm{C}$ | 1 |  |  |
| 08-315-09 | Pressure roller: 1 sided: Copy mode 1C <br> [Pressure RIIr/ Nrml: SC] | $150{ }^{\circ} \mathrm{C}$ | 100 to $200{ }^{\circ} \mathrm{C}$ | 1 |  |  |

08-330: Special mode 3: Paper transfer bias, image area [Sp.Mode3: Image]

| 0 | See SP 2-310. |  |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $08-330-02$ | $[1 C]$ | $\mu \mathrm{A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 |  |  |
| $08-330-05$ | $[$ 4C $]$ | $\mu \mathrm{A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 |  |  |
| $08-330-18$ | $[1 C$ Back $]$ | $\mu \mathrm{A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 |  |  |
| $08-330-21$ | [4C Back] | $\mu \mathrm{A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 |  |  |


| 08-334: Special mode 3: Paper transfer bias, leading edge area correction [SP.Mode3:Lead Edge Current] |  |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $08-334-01$ | [1C $]$ | $\mu \mathrm{A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 |  |
| $08-334-04$ | [4C $]$ | $\mu \mathrm{A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 |  |
| $08-334-17$ | [1C Back] | $\mu \mathrm{A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 |  |
| $08-334-20$ | [4C Back] | $\mu \mathrm{A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 |  |


| 08-335: Special mode 3: Paper transfer bias, trailing edge correction [SP.Mode3:Trail Edge Current] |  |  |  |  |  |  |
| :--- | :--- | :---: | :---: | :---: | :---: | :---: |
| $08-335-01$ | $[1 \mathrm{C}]$ | $\mu \mathrm{A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | See SP 2-315. |  |
| $08-335-04$ | $[4 \mathrm{C}]$ | $\mu \mathrm{A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 |  |  |


| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 08-335-17 | [1C Back] | $\mu \mathrm{A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 |  |  |
| 08-335-20 | [4C Back] | $\mu \mathrm{A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 |  |  |
| 08-336: Special mode 3: Paper transfer bias, environment correction coefficient [Sp.Mode3:Tmp/Hum Corection] |  |  |  |  |  |  |
| 08-336-01 | Low temperature, low humidity: 1C [Low Tmp/Hum: 1C] | 100\% | 10 to 400\% | 1 |  | See SP 2-316. |
| 08-336-02 | Low temperature, low humidity: 4C [Low Tmp/Hum: 4C] | 100\% | 10 to 400\% | 1 |  |  |
| 08-336-05 | High temperature, high humidity: 1C [High Tmp/Hum: 1C] | 100\% | 10 to 400\% | 1 |  |  |
| 08-336-06 | High temperature, high humidity: 4C [High Tmp/Hum: 4C] | 100\% | 10 to 400\% | 1 |  |  |
| 08-336-33 | Low temperature, low humidity: 1C <br> Back side <br> [Low Tmp/Hum: 1C Back] | 100\% | 10 to 400\% | 1 |  |  |
| 08-336-34 | Low temperature, low humidity: 4C <br> Back side <br> [Low Tmp/Hum: 4C Back] | 100\% | 10 to 400\% | 1 |  |  |
| 08-336-37 | High temperature, high humidity: 1C Back side <br> [High Tmp/Hum: 1C Back] | 100\% | 10 to 400\% | 1 |  |  |
| 08-336-38 | High temperature, high humidity: 4C Back side <br> [High Tmp/Hum: 4C Back] | 100\% | 10 to 400\% | 1 |  | See SP 2-316. |

## APPENDIX-C

SERVICE CODE TABLE

SC CODES

| $\begin{aligned} & \hline \hline \text { SC } \\ & \text { No. } \end{aligned}$ | Item | Detection Conditions | Possible Causes | $\begin{aligned} & \hline \hline \text { Related } \\ & \text { SCs } \end{aligned}$ | Troubleshooting Procedure | Type |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SC101 | Exposure lamp failure | - Timing \& Condition - <br> - The lamp output check signal (LAMPDET) is still HIGH 250 ms after the lamp turns on (the ON check is canceled if the lamp goes off within 250 ms ). <br> - The lamp output check signal is still LOW 30ms after the lamp turns off (the OFF check is canceled if the lamp turns on within 30 ms ). | - Blown lamp <br> - Blown thermostat <br> - Blown fuse (FU3) <br> - Defective lamp regulator <br> - Poor connection of cables <br> - Defective cables <br> - Defective scanner IPU board <br> - Defective PSU |  | 1. Visually check the lamp element or check the continuity between both ends of the lamp terminals with a multimeter. <br> 2. Check continuity at the ends of the thermostat terminals with a multi-meter. <br> 3. Check if the connectors (CN1, CN2, and CN3) on the lamp regulator are properly connected. <br> 4. Check the continuity of the 3 cables. <br> 5. Replace the lamp regulator if 100 Vac is present at the CN3-1 and 5 on the lamp regulator. <br> 6. Replace the scanner IPU board <br> - Signals to Check - <br> - LAMPDET: CN502-2 on lamp regulator / CN403-12 on scanner IPU board <br> - LAMPTRIG: CN403-11 on scanner IPU board / CN5023 on lamp regulator | D |

SC CODES

| $\begin{aligned} & \hline \hline \text { SC } \\ & \text { No. } \end{aligned}$ | Item | Detection Conditions | Possible Causes | $\begin{gathered} \hline \hline \text { Related } \\ \text { SCs } \end{gathered}$ | Troubleshooting Procedure | Type |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SC120 | Scanner HP sensor does not turn on | - Timing \& Condition The scanner H.P. sensor does not turn on when the scanner moves back to the home position or at the home position check. <br> The sensor output at CN406-7 stays HIGH (5V). | - Scanner motor out of synchronization (drive error) <br> - Poor connection of connectors <br> - Defective scanner HP sensor <br> - Defective scanner IPU board <br> - Defective main control board | SC121 | 1. In SP 5-804-104, stop supplying the current to the scanner motor. Check the output signal from the scanner H.P. sensor in SP 5-803-100 by moving the scanner manually. (0: Not actuated; 1: Actuated - at H.P.) <br> 2. If the result of step 1 is OK ; <br> 1 Check the tension of the timing belt. <br> 2 Check if the pulley is firmly secured. <br> 3 Check if the scanner wire is properly wired <br> 4 Check the connection of CN710, and CN731 on the scanner motor drive board. <br> 5 Check continuity of cables. <br> 6 Replace the scanner motor drive board. <br> 7 Replace the scanner motor. <br> 3. If the result of step 1 is not OK; <br> 1 Check if the cable is properly connected. <br> 2 Check the continuity of cable. <br> 3 Replace the sensor. <br> 4 Replace the scanner IPU board. <br> 5 Replace the main control board. <br> - Signals to Check - <br> - Scanner HP: CN406-7 on scanner IPU board | D |
| SC121 | Scanner HP sensor does not turn off | - Timing \& Condition The sensor does not turn off when the scanner moves to the home position after scanning an original. <br> The sensor output at CN4067stays LOW (OV). | Same as SC120 | SC120 | Same as SC120. | D |

SC CODES

| $\begin{aligned} & \hline \hline \text { SC } \\ & \text { No. } \end{aligned}$ | Item | Detection Conditions | Possible Causes | $\begin{aligned} & \hline \hline \text { Related } \\ & \text { SCs } \end{aligned}$ | Troubleshooting Procedure | Type |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SC130 | Scanner start error | - Timing - <br> - Scanning start <br> - While the scanner motor is running <br> - Condition - <br> The scanning start signal is generated while the motor is moving. <br> Total number of steps calculated based on the signal from the stepper motor is out of range. <br> The H.P. sensor stays off when the scanner starts moving. <br> A 'scan start' command was issued while the motor was active. | Same as SC120 or Sequence error |  | Same as SC120 <br> or <br> Replace the sub and/or main scanner IPU board(s). | D |
| SC150 | Scanner ROM mismatch | - Timing - <br> After software installation or just after the main switch is turned on <br> - Condition The scanner IPU board detects that the software installed is not the correct one. | - An invalid IC card used (such as a card for a different model) <br> - Replace the scanner IPU board. |  | Try again with the correct IC card. Replace the scanner IPU board. | D |


| $\begin{aligned} & \hline \hline \mathrm{SC} \\ & \text { No. } \end{aligned}$ | Item | Detection Conditions | Possible Causes | $\begin{gathered} \hline \hline \text { Related } \\ \text { SC.s } \end{gathered}$ | Troubleshooting Procedure | Type |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SC170 | Video processing error 1 | - Timing Just after the main switch is turned on (after auto gain control on the scanner IPU board) <br> - Condition - <br> The corrected CCD odd/even pixel black level difference is not in the proper range. | - Poor connection of CCD flat cable <br> - Defective scanner IPU board <br> - Defective CCD |  | 1. Check if the flat cable is firmly connected at CN421 and CN404 on the SBU and scanner IPU board. <br> 2. Check the continuity of the flat cable. <br> 3. Replace the scanner IPU board. <br> 4. Replace the SBU unit. | D |
| SC171 | Video processing error 2 | - Timing - <br> Same as SC170 <br> - Condition - <br> The corrected black level is not in the proper range. | Same as SC170 |  | Same as SC170. | D |
| SC172 | Video processing error 3 | - Timing - <br> Same as SC170 <br> - Condition - <br> The corrected white level is not in the proper range. | - Poor connection of CCD cable <br> - Dirty optics <br> - Defective lamp regulator <br> - Defective scanner IPU board <br> - Defective CCD |  | 1. Check SP 4-426-001 to 006 (RGB Gain). If their values are near " 255 ", clean the optics section (exposure glass, white plate, mirrors, and lens). <br> 2. Visually check if the exposure lamp turns on during warming-up after the main switch is turned on. If not, replace the lamp regulator. <br> 3. Check if the CCD flat cable is firmly connected at CN421 and CN404 on the SBU and scanner IPU board. <br> 4. Check the continuity of the flat cable. <br> 5. Replace the scanner IPU board. <br> 6. Replace the SBU unit. | D |


| $\begin{aligned} & \hline \hline \text { SC } \\ & \text { No } \end{aligned}$ | Item | Detection Conditions | Possible Causes | $\begin{gathered} \hline \hline \text { Related } \\ \text { SCs } \end{gathered}$ | Troubleshooting Procedure | Type |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SC191 | Bar code scan error | - Timing Just after the main switch is turned on <br> - Condition - <br> The scanner IPU board detects that the bar code pattern scanned in is not appropriate. | - Non-standard bar code label <br> - Improper location of bar code <br> - Dirty bar code <br> - Defective scanner IPU board <br> - Defective main control board |  | 1. Check if the bar code is damaged or scratched. <br> 2. Clean the optics section components, such as mirrors and lenses, and the bar code label. <br> 3. Check if the mirrors are properly positioned on the 1st and 2 nd scanners. If the spring plate which secures the mirrors is out of position, it causes the light axis to be changed. <br> 4. Replace the scanner IPU board. <br> 5. Replace the main control board. | D |
| SC192 | Bar code number mismatch | - Timing Just after the main switch is turned on <br> - Condition - <br> The main control board detects that the bar code data scanned in does not match the machine identification number stored in the RAM. | - Defective RAM board <br> - Defective scanner IPU board <br> - Defective main control board |  | 1. Check if the serial number stored in the RAM is correct. NOTE:. Contact your product specialist for the detailed procedure. <br> 2. Check the copier's serial number and the number defined in SP mode. <br> 3. Garbled ROM data: Replace the NV-RAM. <br> 4. Replace the scanner IPU board. <br> 5. Replace the main control board. | D |
| SC193 | IDU error | - Timing Just after the main switch is turned on or during a hardware reset <br> - Condition - <br> The IDU starts self-diagnosis at power-on and a hardware error was detected during this. | - Defective IDU <br> - Defective scanner IPU board |  | 1. Test the scanner IPU board (SP 4-904-001 and 002). If not OK, replace the scanner IPU board. <br> 2. Replace the IDU board. | D |


| $\begin{aligned} & \hline \hline \text { SC } \\ & \text { No. } \end{aligned}$ | Item | Detection Conditions | Possible Causes | $\begin{gathered} \hline \text { Related } \\ \text { SCs } \\ \hline \end{gathered}$ | Troubleshooting Procedure | Type |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SC195 | Serial number error | - Timing Just after the main switch is turned on <br> - Condition - <br> The serial number entered or stored in RAM is not correct. | - Incorrect serial number <br> - RAM board is replaced. <br> - Defective RAM |  | 1. Check and re-enter the serial number properly. NOTE: Contact your product specialist for the detailed procedure. | D |
| SC301 | Charge current leak | - Timing - <br> When the charge corona unit is on during printing or process control <br> - Condition - <br> The current leak was detected for 2 seconds. | - Charge corona unit not installed properly <br> - Poor connection of cables <br> - Defective high voltage supply board (C,G) <br> - Defective I/O control board <br> - Defective main control board. |  | 1. Reinstall the charge corona unit properly or replace the charge corona unit. <br> 2. Reconnect the connectors on the high voltage supply board (C,G), I/O control board, and main control board, or check the cables. <br> 3. Check and clean the charge corona unit receptacle. <br> 4. Replace the high voltage supply board (C,G). <br> 5. Replace the I/O control board. <br> 6. Replace the main control board. <br> - Signals to Check - <br> - Leak detection: CN201-1 or TP224 on I/O control board or TP162 on main control board | D |
| SC302 | Charge corona grid voltage error | - Timing - <br> When the charge corona unit grid is on during printing or process control <br> - Condition - <br> The feedback voltage is 4.8 V or higher, or the PMW value is $50 \%$ or higher for 500 ms continuously. | Same as SC301 |  | Same as for SC301 <br> - Signals to Check - <br> - Feedback signal: CN201-3 or TP226 on I/O control board or CN302-A4 or TP160 on main control board <br> - PWM: CN201-4 or TP237 on I/O control board | D |


| $\begin{aligned} & \hline \hline \text { SC } \\ & \text { No. } \end{aligned}$ | Item | Detection Conditions | Possible Causes | $\begin{aligned} & \hline \text { Related } \\ & \text { SCs } \end{aligned}$ | Troubleshooting Procedure | Type |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SC320 | Polygon motor error | - Condition - <br> - The PMLOCK signal is not received by the LD main control board within a predetermined period of time. | - Poor connection of connector <br> - Defective polygon motor <br> - Defective LD main control board <br> - Defective scanner IPU board |  | 1. Check that the connector (CN602-4) on the LD control board is properly connected. <br> 2. Check the continuity of cable. <br> 3. Replace the polygon motor. <br> 4. Replace the LD main control board. <br> 5. Replace the scanner IPU board. | D |
| SC322 | Laser synchronizing signal error | - Timing \& Condition While the polygon motor is running and the laser diode is on, the LD main control board does not receive the laser synchronizing signal. | - Poor connection of connectors <br> - Defective laser synchronizing detector board <br> - Improper laser beam axis <br> - Defective LD control board <br> - Defective main control board <br> - Defective optic housing unit |  | 1. Check if the connectors (CN 604) are properly connected on the laser synchronizing detector board and LD main control board <br> 2. Remove and clean the synchronizing detector board. <br> 3. Check if anything such as the seal of the barrel toroidal lens in the optic housing unit interferes with the laser beam axis. <br> 4. Replace the synchronizing detector board. <br> 5. Check if the cable connectors (CN1 \& CN605) on the LD drive board and LD main control board are properly connected or check the continuity of the cable. <br> 6. Check if the cable connectors (CN601 \& CN306) on the LD main control board and main control board are properly connected or check the continuity of the cable. <br> 7. Replace the LD main control board. <br> 8. Replace the main control board <br> 9. Check the optical housing unit or replace it. | D |


| $\begin{aligned} & \hline \hline \text { SC } \\ & \text { No. } \end{aligned}$ | Item | Detection Conditions | Possible Causes | $\begin{gathered} \hline \hline \text { Related } \\ \text { SCs } \end{gathered}$ | Troubleshooting Procedure | Type |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SC323 | LD error | - Timing - <br> During LD writing <br> - Condition - <br> The LD main control board detects over-current or no feedback signal from the LD drive board. | - Poor connection of connector <br> - Defective LD drive board <br> - Defective LD main control board <br> - Defective main control board |  | 1. Check if the connectors (CN1 \& CN605) on the LD drive board and LD main control board are properly connected. <br> 2. Check the continuity of the cable. <br> 3. Check that the cable connectors (CN601 \& CN306) on the LD control board and main control board are properly connected. <br> 4. Replace the LD drive board. <br> 5. Replace the LD main control board <br> 6. Replace the main control board. | D |
| SC325 | Magnification correction error | The length of a line measured during main scan auto magnification correction does not fall within $-0.1 \%$ to $0.1 \%$ of the center value. <br> Detection timing: When three main scan magnification corrections failed successively. | Dirty or incorrectly installed synch. detector board, or defective polygon motor |  | This SC is only logged, and not displayed, so no particular action is required (no adverse influence is exerted on copier operation). Take the following actions if the customer complains about excessive magnification errors. Dirty synchronizing detector board: Clean it Incorrect synchronizing detector board installation: Reinstall Defective polygon motor: Replace. | C |


| $\begin{aligned} & \hline \hline \text { SC } \\ & \text { No. } \end{aligned}$ | Item | Detection Conditions | Possible Causes | $\begin{aligned} & \text { Related } \\ & \text { SCs } \end{aligned}$ | Troubleshooting Procedure | Type |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SC326 | FGATE1 error | - Timing \& Condition The main control board does not receive the FGATE signal from the LD control board during 3 revolutions of the transfer belt. | - Belt mark detection error <br> - Electrical noise <br> - Poor connection of connectors |  | 1. Clean the belt mark located on the back side of the transfer belt or replace the belt if the belt mark is dirty or peeled off. <br> 2. Clean the transfer belt home position sensor if it is dirty. <br> 3. Clean the bias terminals of the development units if they are dirty. <br> 4. Check if the cable connectors (CN606 \& NC408) on the LD main control board and scanner IPU board are properly connected. <br> 5. Check if the cable connectors (CN601 \& CN306) on the LD main control board and main control board are properly connected. <br> 6. Replace the LD main control board. <br> 7. Replace the main control board. <br> - Signals to Check - <br> - FGATE: CN601-A2 or TP608 on LD main control board / CN306-A9 on main control board <br> - Belt mark: CN218-B11, TP210, or CN233-A6 on I/O control board / CN303-B1, TP108, or CN306-B2 on main control board / CN601-B9 or TP606 on LD main control board <br> If the machine is equipped with the controller, <br> 1. Check if the connectors (CN609) on the LD control board and controller I/F board are properly set. <br> 2. Check if the controller I/F board is properly connected. <br> 3. Replace the interface board. | D |


| $\begin{aligned} & \hline \hline \text { SC } \\ & \text { No. } \end{aligned}$ | Item | Detection Conditions | Possible Causes | $\begin{gathered} \hline \hline \text { Related } \\ \text { SCs } \end{gathered}$ | Troubleshooting Procedure | Type |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SC327 | FGATE2 error | - Timing \& Condition When two pages are to be written on the transfer belt at the same time, the main control board does not receive the 2nd FGATE signal from the LD main control board during 3 revolutions of the transfer belt. | Same as SC326 |  | Same as SC326. | D |
| SC360 | Development bias error | - Timing - <br> When the development DC bias is on during printing or process control <br> - Condition - <br> The feedback voltage is 4.8 V or higher, or the PWM value becomes $80 \%$ or higher for 500 ms continuously. | - Poor connection of connectors <br> - Dirty terminals <br> - Defective high voltage supply (B) <br> - Defective I/O control board <br> - Defective main control board |  | 1. Clean the development roller shaft (terminal). <br> 2. Clean the bias terminal if it is dirty. <br> 3. Poor connection: Correct the leaf spring shape. <br> 4. Replace the bias terminal if it does not move smoothly. <br> 5. Check the connectors of high voltage supply cable and trigger lines are properly connected on the high voltage supply board (B), I/O control board, and main control board. <br> 6. Replace the high voltage supply board (B) <br> 7. Replace the I/O control board. <br> 8. Replace the main control board. <br> - Signals to Check - <br> - Feedback signal: CN203-A12, TP228, or CN214-A5 on I/O control board / CN302-A5 or TP167 on main control board <br> PWM: CN203-A13 or TP234 on I/O control board | D |


| $\begin{aligned} & \hline \text { SC } \\ & \text { No. } \end{aligned}$ | Item | Detection Conditions | Possible Causes | Related SCs | Troubleshooting Procedure | Type |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SC361 | Revolver HP sensor error | - Timing \& Condition The home position is not detected during 3 revolutions of the revolver unit after the revolver motor turns on. | - Poor connection of connector <br> - Dirty sensor <br> - Defective sensor <br> - Defective revolver motor <br> - Defective revolver drive board <br> - Defective I/O control board <br> - Defective main control board |  | 1. Check if the sensor connector is properly connected. <br> 2. Replace the revolver H.P. sensor if the voltage at CN203-A4 on the I/O control board does not change when covering the sensor with a piece of paper. NOTE: Make sure that the revolver unit is locked for this step. <br> 3. If the revolver unit does not rotate; <br> 1 Replace the revolver motor. <br> 2 Replace the revolver motor drive board. <br> 3 Replace the I/O control board. <br> 4 Replace the main control board. <br> - Signals to Check - <br> - Revolver H.P.: CN203-A4 or TP211 on I/O control board | D |
| SC385 | ID sensor VSG adjustment error | - Timing - <br> During process control self check, the main control board detects that the Vsg signal fed back from the ID sensor is out of range. | - Dirty ID sensor <br> - Poor connection of connector <br> - Defective ID sensor <br> - Poor cleaning |  | 1. Clean the ID sensor. <br> 2. Check if the sensor connector is properly connected. <br> 3. Replace the ID sensor. <br> 4. Check the drum cleaning unit. <br> - Signals to Check - <br> - ID sensor LED: CN203-B9 or TP252 on I/O control board <br> - ID sensor 1 (K ): CN203-B10 or TP227 on I/O control board / TP174 on main control board. <br> - ID sensor 2 (CMY): CN203-B11 or TP229 on I/O control board / TP173 on main control board. | D |


| $\begin{aligned} & \hline \hline \text { SC } \\ & \text { No. } \end{aligned}$ | Item | Detection Conditions | Possible Causes | $\begin{gathered} \hline \text { Related } \\ \text { SCs } \end{gathered}$ | Troubleshooting Procedure | Type |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SC386 | Amount of toner on sensor pattern too low during ID pattern measurement | The amount of toner obtained during YCM ID pattern measurement was less than (target value for the amount of toner) minus (threshold value for detecting insufficient toner density) 5 consecutive times, even though there was no toner end condition - If ID sensor error (SC385) is detected before this SC, no detection is attempted unless Vsg is adjusted and the ID sensor error condition is reset. - This SC does not apply to black toner since the toner end sensor is not used for Bk. | Defective toner end sensor, dirt in toner cartridge end sensor window |  | This SC is only logged in the memory (not displayed), so no particular action is required (no adverse influence is exerted on copier operation). <br> Defective toner end sensor: SP5-803-010 (Input check: toner end sensor), replace if necessary. <br> Dirty toner end sensor window: Clean. <br> Toner supply seal peeled off: Remove the cartridge and check the seal in the hopper. | C |
| SC387 | Drum potential error | - Timing - <br> During initial process control check or interval (number of copies) process control self check <br> - Condition - <br> While the revolver unit returns to the home position, the following condition is detected. $\begin{aligned} & V D<V G-200 V \\ & V D>V G+200 V \end{aligned}$ | - Uneven charge <br> - Worn drum <br> - Defective potential sensor |  | 1. Clean the charge corona unit or replace the charge corona wire and grid plate. <br> 2. Reinstall the drum. <br> 3. Replace the drum if necessary. <br> 4. Replace the potential sensor. | C |


| $\begin{aligned} & \hline \hline \text { SC } \\ & \text { No. } \end{aligned}$ | Item | Detection Conditions | Possible Causes | $\begin{gathered} \hline \text { Related } \\ \text { SCs } \end{gathered}$ | Troubleshooting Procedure | Type |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SC400 | Image transfer belt bias error | - Timing - <br> When the image transfer belt bias is on during printing or a process control self check <br> - Condition - <br> The feedback voltage is 4.8 V or higher, or the PWM value is $50 \%$ or higher (indicating a leak) for 500 ms continuously. | - Poor connection of connectors <br> - Defective high voltage supply board (T1,PCC) <br> - Defective I/O control board <br> - Defective main control board |  | 1. Check if the connectors of high voltage cables and trigger lines are properly connected on the high voltage supply board, I/O control board, and main control board. <br> 2. Clean the bias terminals. <br> 3. Replace the high voltage supply board (T1, PCC). <br> 4. Replace the I/O control board. <br> 5. Replace the main control board. <br> - Signals to Check - <br> - Feedback signal: CN277-B3, TP221, or CN214-A4 on I/O control board / CN302-A6 or TP158 on main control board. <br> - PWM: CN227-B4 or TP209 on I/O control board. | D |
| SC410 | Paper separation current leak | When the current leak is detected for 2 seconds while the paper separation corona is ON. | - Paper separation corona unit not set properly <br> - Corona wire broken <br> - Defective high voltage supply board (T2, D) <br> - Defective I/O control board <br> - Defective main control board |  | 1. Check to see if the separation corona unit is set properly. <br> 2. Replace the corona wire if it is broken. <br> 3. Check to see if the connectors are properly connected. <br> 4. Clean the receptacle. <br> 5. Replace the high voltage supply board (T2, D). <br> 6. Replace the I/O control board. <br> 7. Replace the main control board. <br> [Signal Check] <br> - CN227-A1 on I/O control board | D |

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| $\begin{aligned} & \hline \hline \text { SC } \\ & \text { No. } \end{aligned}$ | Item | Detection Conditions | Possible Causes | $\begin{gathered} \text { Related } \\ \text { SCs } \end{gathered}$ | Troubleshooting Procedure | Type |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SC422 | PCC leak | - Timing \& Condition When the current leak is detected for 2 seconds, leak detection starts 1 second after the PCC turns on. The leak signal is monitored twice at 1 second intervals. When the leak condition is detected twice continuously, this SC is displayed. | - PCC unit not properly set <br> - Corona wire broken <br> - Defective high voltage supply board (T1,PCC) <br> - Defective I/O control board <br> - Defective main control board |  | 1. Check if the PCC unit is properly instaled. <br> 2. Replace the corona wire if it is broken. <br> 3. Check if the connectors on the terminal and high voltage supply board (T1,PCC) are properly connected and if the cables are damaged. <br> 4. Clean the receptacle. <br> 5. Replace the high voltage supply board (T1,PCC). <br> 6. Replace the I/O control board. <br> 7. Replace the main control board. <br> - Signals to Check - <br> - Leak detection: CN227-B1 or TP294 on I/O control board. | D |


| $\begin{aligned} & \hline \text { SC } \\ & \text { No. } \end{aligned}$ | Item | Detection Conditions | Possible Causes | $\begin{aligned} & \hline \text { Related } \\ & \text { SCs } \end{aligned}$ | Troubleshooting Procedure | Type |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SC440 | Drum motor error | - Timing \& Condition - <br> - The feedback signal from the motor is still out of range 1 second after the trigger signal is sent. <br> - The feedback signal becomes out of range for 2 seconds while the trigger signal is on. | - Poor connection of connector <br> - Defective drum motor <br> - Defective I/O control board <br> - Defective main control board |  | 1. Check if the drum is locked by the cleaning blade. If it is, replace the cleaning blade. <br> 2. Check if the connector (CN223) on the I/O control board is properly connected. <br> 3. Check if the drum motor works properly using SP 5-804-001 to 004. If not, replace the drum motor. <br> 4. Replace the I/O control board. <br> 5. Replace the main control board. <br> - Signals to Check - <br> - Motor OK: CN223-B5 or TP295 on the I/O control board | D |
| SC450 | Paper transfer bias current error | - Timing - <br> When the paper transfer bias is on during printing <br> - Condition - <br> The feedback voltage is 4.8 V or higher (indicating a leak), or PWM value is $50 \%$ or higher for 500 ms continuously. | - Defective high voltage supply (T2,D) <br> - Defective I/O control board <br> - Defective main control board |  | 1. Check if the connectors of high voltage cables and trigger lines are properly connected on the high voltage supply board (T2,D), I/O control board, and main control board. <br> 2. Replace the high voltage supply board (T2,D). <br> 3. Replace the I/O control board. <br> 4. Replace the main control board. <br> - Signals to Check - <br> - Feedback signal: CN227-A3, TP220, or CN214-A3 on I/O control board / CN302-A7 or TP105 on the main control board <br> - PWM: CN227-A4 or TP208 on I/O control board | D |


| $\begin{aligned} & \hline \hline \text { SC } \\ & \text { No. } \end{aligned}$ | Item | Detection Conditions | Possible Causes | Related SCs | Troubleshooting Procedure | Type |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SC452 | Transfer belt mark detection error | - Timing \& ConditionThe main control board does not receive the belt mark detection signal from the transfer belt home position sensor for a certain period. | - Dirty or damaged belt mark <br> - Belt mark out of position <br> - Defective sensor <br> - Defective I/O control board <br> - Defective main control board |  | 1. Check if the transfer belt release lever is properly set. <br> 2. Clean the belt mark if it is dirty. <br> 3. Replace the transfer belt if a belt mark has peeled off or is damaged. <br> 4. Clean the transfer belt home position sensor if it is dirty. <br> 5. Replace the transfer belt home position sensor. <br> 6. Replace the I/O control board. <br> 7. Replace the main control board. <br> - Signals to Check - <br> - Sensor: CN233-A6, TP210, or CN218-B11 on I/O control board / CN303-B1 or TP137 on the main control board. | D |
| SC456 | Paper transfer unit position error | - Timing \& Condition <br> - The paper transfer home position sensor does not detect the paper transfer unit moving into the contact position or the release position at the correct time. | - Defective paper transfer positioning clutch <br> - Defective I/O control board |  | 1. Replace the paper transfer H.P. sensor. (Input Check: SP 5-803-11) <br> 2. Replace the paper transfer positioning clutch. (Output Check: SP 5-804-23) <br> 3. Replace the I/O control board. <br> - Signals to Check - <br> - H.P.: CN229-5 or TP286 on I/O control board | D |
| SC457 | Image transfer belt cleaning unit position error | - Timing \& Condition <br> - The belt cleaning home position sensor does not detect the transfer belt cleaning unit moving into the contact position or the release position at the correct time. | - Dirty sensor <br> - Defective sensor <br> - Defective belt cleaning clutch <br> - Defective I/O control board <br> - Defective main control board |  | 1. Pull out and re-insert the image transfer belt unit. <br> 2. Clean the belt cleaning H.P. sensor if it is dirty. <br> 3. Replace the sensor. (Input Check: 5-803-12) <br> 4. Replace the belt cleaning clutch. (Output Check: SP 5-804-36) <br> 5. Replace the I/O control board. <br> 6. Replace the main control board. <br> - Signals to Check - <br> - H.P.: CN202-2 or TP254 on I/O control board | D |

SC CODES

| $\begin{aligned} & \hline \text { SC } \\ & \text { No. } \end{aligned}$ | Item | Detection Conditions | Possible Causes | $\begin{gathered} \hline \hline \text { Related } \\ \text { SCs } \end{gathered}$ | Troubleshooting Procedure | Type |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SC495 | Temperature sensor error | - Timing \& Condition The temperature sensor output is out of range $(2.75 \mathrm{~V}$ or greater or less than 0.25 V ). | - Poor connection of connector <br> - Defective humidity sensor <br> - Defective I/O control board <br> - Defective main control board |  | 1. Check that the connectors (CN236, 214 \& CN302) are properly connected on the I/O control board and main control board. <br> 2. Replace the humidity sensor. <br> 3. Replace the I/O control board. <br> 4. Replace the main control board. <br> - Signals to Check - <br> - Temperature: CN236-6, TP247, or CN214-A9 on I/O control board / CN302-A1 or TP223 on main control board | C |
| SC496 | Humidity sensor error | - Timing \& Condition The humidity sensor output is out of range $(2.75 \mathrm{~V}$ or greater or less than 0.25 V ) | - Poor connection of connector <br> - Defective humidity sensor <br> - Defective I/O control board <br> - Defective main control board |  | 1. Check the connector is properly connected on the I/O board (CN236). <br> 2. Replace the humidity sensor. <br> 3. Replace the I/O control board. <br> 4. Replace the main control board. <br> - Signals to Check - <br> - Humidity: CN236-3, TP222, or CN214-A8 on I/O control board / CN302-A2 or TP168 on main control board | C |
| SC500 | Fusing motor error | - Timing \& Condition - <br> - The feedback signal from the motor is still out of range 1 second after the trigger signal is sent. <br> - The feedback signal becomes out of range for 2 seconds while the trigger signal is on. | - Poor connection of connector <br> - Defective fusing motor <br> - Defective I/O control board <br> - Defective main control board |  | 1. Check if the connector (CN204) is properly connected on the I/O control board. <br> 2. Replace the fusing motor. (Output check: SP 5-804-05,-06,-07,-08) <br> 3. Replace the I/O control board. <br> 4. Replace the main control board. <br> 5. Check if anything causes overload for the fusing unit drive. <br> - Signals to Check - <br> - Motor OK: CN204-7 on I/O control board | D |

SC CODES

| $\begin{aligned} & \hline \hline \text { SC } \\ & \text { No. } \end{aligned}$ | Item | Detection Conditions | Possible Causes | $\begin{aligned} & \hline \hline \text { Related } \\ & \text { SCs } \end{aligned}$ | Troubleshooting Procedure | Type |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\left\lvert\, \begin{array}{\|l\|l\|} \hline \text { SC501 } \\ \text { [eob1] } \end{array}\right.$ | 1st paper tray error | - Timing \& Condition - <br> - The upper limit sensor does not turn on 1.5 s after the tray bottom plate starts to go up. | - Defective upper limit sensor <br> - Defective tray bottom plate <br> - Defective I/O control board <br> - Defective main control board | $\begin{aligned} & \hline \text { SC502 } \\ & \text { SC503 } \\ & \text { SC504 } \end{aligned}$ | 1. Check if the spring of pick-up solenoid comes off. <br> 2. Check if the sensor cable is properly connected. <br> 3. Clean or replace the sensor and replace it if necessary (Input Check: SP 5-803-14 to 17). <br> 4. Replace the tray bottom lever if it is broken. <br> 5. Pull out the paper tray and check if the tray lift motor works properly (Output Check: SP 5-804-75 to 82). <br> 6. Replace the I/O control board. <br> 7. Replace the main control board. <br> - Signals to Check - <br> - Limit sensor H.P.: CN226-2 or TP206 on I/O control board | B |
| SC502 | 2nd paper tray error | Same as SC501 |  |  | Same as SC501 | B |
| SC503 | 3rd paper tray error | Same as SC501 |  | SC501 SC502 SC504 | Same as SC501 | B |
| SC504 | 4th paper tray error | Same as SC501 |  | SC501 SC502 SC503 | Same as SC501 | B |
| SC510 | Paper feed motor error | - Timing \& Condition - <br> - The feedback signal from the motor is still out of range 1 second after the trigger signal is sent. <br> - The feedback signal becomes out of range for 2 seconds while the trigger signal is on. | - Poor connection of connector <br> - Defective paper feed motor <br> - Defective I/O control board <br> - Defective main control board <br> - Mechanical overload |  | 1. Check if the connector is properly connected on the I/O control board (CN224). <br> 2. Replace the paper feed motor. (Output check: SP 5-804-08 to 09) <br> 3. Replace the I/O control board. <br> 4. Replace the main control board. <br> 5. Check the feed unit drive section and if anything causes overload. <br> - Signals to Check - <br> - Motor OK: CN224-B4 or TP297 on I/O control board | D |

SC CODES

| $\begin{aligned} & \hline \hline \text { SC } \\ & \text { No. } \end{aligned}$ | Item | Detection Conditions | Possible Causes | $\begin{gathered} \hline \hline \text { Related } \\ \text { SCs } \end{gathered}$ | Troubleshooting Procedure | Type |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SC522 | Duplex - Side fence jogger H.P. error | - Timing \& Condition - <br> - The home position is still detected a few seconds after the side fence leaves from the home position. <br> - The home position is not detected 12 seconds after the side fence moves back to the home position. | - Duplex unit not set properly <br> - Excessive load <br> - Poor connection of connector <br> - Defective side fence motor <br> - Defective I/O control board | SC524 | 1. Pull out and re-insert the duplex unit. <br> 2. Check the connector (CN485) is properly connected on the duplex control board. <br> 3. Check if anything causes overload to the motor. <br> 4. Replace the side fence motor (Output Check: SP 5-804 93 and 94). <br> 5. Replace the I/O control board. | B |
| SC524 | Duplex - End fence jogger H.P. error | - Timing \& Condition - <br> - The home position is still detected a few seconds after the end fence leaves from the home position. <br> - The home position is not detected 13 seconds after the end fence moves back to the home position. | - Duplex unit not set properly <br> - Excessive load <br> - Poor connection of connector <br> - Defective end fence motor <br> - Defective I/O control board | SC522 | 1. Pull out and re-insert the duplex unit. <br> 2. Check the connector (CN486) is properly connected on the duplex control board. <br> 3. Check if anything causes overload to the motor. <br> 4. Replace the end fence motor (Output Check: SP 5-804 95 and 96). <br> 5. Replace the I/O control board. | B |
| SC541 | Hot roller thermistor open | - Timing - <br> Every 1 second when the fusing unit is installed <br> - Condition - <br> The hot roller thermistor output is almost close to 5 V , which corresponds to $0^{\circ} \mathrm{C}$, for 6 seconds continuously. | - Fusing unit not set properly <br> - Poor connection of connector <br> - Defective thermistor <br> - Defective I/O control board <br> - Defective main control board |  | 1. Check if the fusing unit is properly set. <br> 2. Check if the thermistor connector is properly connected. <br> 3. Replace the thermistor if it is deformed. <br> 4. Replace the thermistor if it is opened by measuring the resistance. (Refer to the Temperature/ Resistance Conversion Reference Table at the end of this table.) <br> 5. Replace the I/O control board. <br> 6. Replace the main control board. <br> - Signals to Check - <br> - Thermistor: CN206-B9, TP231, or CN214-B1 on I/O control board / CN302-B9 or TP154 on main control board. | A |

SC CODES

| $\begin{aligned} & \hline \hline \text { SC } \\ & \text { No. } \end{aligned}$ | Item | Detection Conditions | Possible Causes | $\begin{gathered} \hline \hline \text { Related } \\ \text { SCs } \end{gathered}$ | Troubleshooting Procedure | Type |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SC542 | Hot roller warm-up error | - Timing \& Condition - <br> The hot roller thermistor does not output an analog value corresponding to the ready temperature within 12 minutes after the main switch is turned on. | - Poor connection of connectors <br> - Hot roller fusing lamp blown <br> - Hot roller thermofuse opened <br> - Power fluctuation <br> - Defective main control board <br> - Defective I/O control board <br> - Defective AC drive board |  | 1. Check if the following connectors are properly connected: <br> - Hot roller fusing lamp connectors <br> - CN303 on the main control board <br> - CN206 and CN214 on the I/O control board <br> - CN105 on the PSU <br> 2. Replace the hot roller fusing lamp if it is opened. <br> 3. Replace the hot roller thermofuse if it is opened. <br> 4. Check if the power supplied from the outlet fluctuates. <br> 5. Replace the main control board, I/O control board, or PSU (check the trigger signal at each pin and replace any defective boards). <br> - Signals to Check - <br> - Hot roller fusing lamp trigger: CN303-B6 on main control board / CN205-A4, TP267, or CN218-B6 on I/O control board / CN106-5 on PSU. | A |

SC CODES

| $\begin{aligned} & \hline \hline \text { SC } \\ & \text { No. } \end{aligned}$ | Item | Detection Conditions | Possible Causes | $\begin{gathered} \hline \hline \text { Related } \\ \text { SCs } \end{gathered}$ | Troubleshooting Procedure | Type |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SC543 | Hot roller fusing lamp overheat | - Timing - <br> Every 1 second when the fusing unit is installed <br> - Condition - <br> The hot roller thermistor output is lower than about 0.3 V , which corresponds to $220^{\circ} \mathrm{C}$, for 3 seconds continuously. | - Fusing unit not set properly <br> - Poor connection of connector <br> - Defective thermistor <br> - Defective I/O control board <br> - Defective main control board <br> - Defective PSU |  | 1. Check if the fusing unit is properly instaled. <br> 2. Check if the thermistor connector is properly connected. <br> 3. Replace the thermistor if it is deformed. <br> 4. Replace the thermistor if it is opened by measuring the resistance. (Refer to the Temperature/ Resistance Conversion Reference Table at the end of this SC code table.) <br> 5. Replace the main control board, I/O control board, or PSU (check the output from the thermistor and the trigger signal at each pin). <br> - Signals to Check - <br> - Thermistor: CN206-B9, TP231, or CN214-B1 on I/O control board / CN302-B9 or TP154 on main control board. <br> - Hot roller fusing trigger: CN303-B6 on main control board / CN205-A4, TP267, or CN218-B6 on I/O control board / CN106-5 on PSU. | A |
| SC544 | Hot roller fusing lamp lower limit temperature detected | - Timing - <br> Every 1 second after warm-up is completed <br> - Condition - <br> The hot roller thermistor output is higher than about 3V, which corresponds to 87 ${ }^{\circ} \mathrm{C}$, for 8 seconds continuously after warm-up is completed. | Same as SC543 |  | Same as SC543 | A |

SC CODES

| $\begin{aligned} & \hline \hline \text { SC } \\ & \text { No. } \end{aligned}$ | Item | Detection Conditions | Possible Causes | $\begin{gathered} \text { Related } \\ \text { SCs } \\ \hline \end{gathered}$ | Troubleshooting Procedure | Type |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SC545 | Hot roller ready temperature abnormal | - Timing - <br> Every 1 second after the temperature reaches the ready condition <br> - Condition - <br> The hot roller thermistor output does not reach the ready temperature within 7 minutes. | Same as SC543 |  | Same as SC543 | A |
| SC547 | Hot roller temperature does not increase | - Timing - <br> Every 1 second, 2 minutes after the main switch turned on until the hot roller temperature reaches the ready condition <br> - Condition - <br> The hot roller temperature does not increase by more than $3^{\circ} \mathrm{C}$ for a minute during warm-up. | - Poor connection of connectors <br> - Hot roller fusing lamp blown <br> - Hot roller thermofuse opened <br> - Defective main control board <br> - Defective I/O control board <br> - Defective PSU |  | 1. Check if the following connectors are properly connected; <br> - Hot roller fusing lamp connectors <br> - CN303 on the main control board <br> - CN206 and CN214 on the I/O control board <br> - CN105 on the PSU <br> 2. Replace the hot roller fusing lamp if it is opened. <br> 3. Replace the hot roller thermofuse if it is opened. <br> 4. Replace the main control board, I/O control board, or AC drive board (check the trigger signal at each pin). <br> - Signals to Check - <br> - Hot roller fusing lamp trigger: CN303-B6 on main control board / CN205-A4, TP267, or CN218-B6 on I/O control board / CN106-5 on PSU. | A |

SC CODES

| $\begin{aligned} & \hline \hline \text { SC } \\ & \text { No. } \end{aligned}$ | Item | Detection Conditions | Possible Causes | Related SCs | Troubleshooting Procedure | Type |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SC551 | Pressure roller thermistor open | - Timing - <br> Every 1 second after the fusing unit is installed <br> - Condition - <br> The pressure roller thermistor output is almost close to 5 V , which corresponds to $0^{\circ} \mathrm{C}$, for 6 seconds continuously. | - Fusing unit not installed properly <br> - Poor connection of connector <br> - Defective thermistor <br> - Defective I/O control board <br> - Defective main control board |  | 1. Check if the fusing unit is properly installed. <br> 2. Check if the thermistor connector is properly connected. <br> 3. Replace the thermistor if it is deformed. <br> 4. Replace the thermistor if it is opened by measuring the resistance. (Refer to the Temperature/ Resistance Conversion Reference Table at the end of this SC code table.) <br> 5. Replace the I/O control board. <br> 6. Replace the main control board. <br> - Signals to Check - <br> - Thermistor: CN206-B4, TP230, or CN214-B2 on I/O control board / CN302-B8 or TP156 on main control board. | A |
| SC552 | Pressure roller warm-up error | - Timing \& Condition The pressure roller thermistor does not output an analog value corresponding to the ready temperature within 12 minutes after the main switch is turned on. | - Poor connection of connectors <br> - Pressure roller fusing lamp blown <br> - Pressure roller thermofuse opened <br> - Blown fuse <br> - Power fluctuation <br> - Defective main control board <br> - Defective I/O control board <br> - Defective PSU |  | 1. Check if the following connectors are properly connected; <br> - Pressure roller fusing lamp connectors <br> - CN303 on the main control board <br> - CN206 and CN214 on the I/O control board <br> - CN105 on the PSU <br> 2. Replace the pressure roller fusing lamp if it is opened. <br> 3. Replace the pressure roller thermofuse if it is opened. <br> 4. Check if the power supplied from the outlet fluctuates. <br> 5. Replace the main control board, I/O control board, or PSU (check the trigger signal at each pin). <br> - Signals to Check - <br> - Pressure roller fusing lamp trigger: CN303-B7 on main control board / CN218-B5, TP267, or CN205-A5 on I/O control board / CN106-4 on PSU. | A |

SC CODES

| $\begin{aligned} & \hline \hline \text { SC } \\ & \text { No. } \end{aligned}$ | Item | Detection Conditions | Possible Causes | $\begin{gathered} \hline \text { Related } \\ \text { SCs } \\ \hline \end{gathered}$ | Troubleshooting Procedure | Type |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SC553 | Pressure roller overheat | - Timing - <br> Every 1 second when the fusing unit is installed <br> - Condition - <br> The pressure roller thermistor output is lower than about 0.3 V , which corresponds to $220^{\circ} \mathrm{C}$, for 3 seconds continuously. | - Fusing unit not installed properly <br> - Poor connection of connector <br> - Defective thermistor <br> - Defective I/O control board <br> - Defective main control board <br> - Defective PSU |  | 1. Check if the fusing unit is properly installed. <br> 2. Check if the thermistor connector is properly connected. <br> 3. Replace the thermistor if it is deformed. <br> 4. Replace the thermistor if it is opened by measuring the resistance. (Refer to the Temperature/ Resistance Conversion Reference Table at the end of this SC code table.) <br> 5. Replace the main control board, I/O control board, or PSU (check the output from the thermistor and the trigger signal at each pin). <br> - Signals to Check - <br> - Thermistor: CN206-B4, TP230, or CN214-B2 on I/O control board / CN302-B8 or TP156 on main control board. <br> - Pressure roller fusing trigger: CN303-B7 on main control board / CN218-B5, TP267, or CN205-A5 on I/O control board /CN106-4 on PSU. | A |
| SC554 | Pressure roller low limit temperature detected | - Timing - <br> Every 1 second after warm-up is completed <br> - Condition - <br> The pressure roller thermistor output is higher than about 3 V , which corresponds to $87^{\circ} \mathrm{C}$, for 8 seconds continuously after warm-up is completed. | Same as SC553 |  | Same as SC553 | A |

SC CODES

| $\begin{aligned} & \hline \text { SC } \\ & \text { No. } \end{aligned}$ | Item | Detection Conditions | Possible Causes | $\begin{gathered} \hline \text { Related } \\ \text { SCs } \\ \hline \end{gathered}$ | Troubleshooting Procedure | Type |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SC555 | Pressure roller ready temperature abnormal | - Timing - <br> Every 1 second after the temperature reaches the ready condition <br> - Condition - <br> The pressure roller thermistor output does not reach the ready temperature within 7 minutes continuously. | Same as SC553 |  | Same as SC553 | A |
| SC557 | Pressure roller temperature does not increase | - Timing - <br> Every 1 second, 2 minutes after the main switch turned on until the roller temperature reaches the ready condition <br> - Condition - <br> The pressure roller temperature does not increase by more than $3^{\circ} \mathrm{C}$ for a minute during warm-up. | - Poor connection of connectors <br> - Pressure roller fusing lamp brown <br> - Pressure roller thermofuse opened <br> - Defective main control board <br> - Defective I/O control board |  | 1. Check if the following connectors are properly connected: <br> - Pressure roller fusing lamp connectors <br> - CN303 on the main control board <br> - CN206 and CN214 on the I/O control board <br> 2. Replace the pressure roller fusing lamp if it is opened. <br> 3. Replace the pressure roller thermofuse if it is opened. <br> 4. Replace the main control board, I/O control board, or by checking the trigger signal at each pin. <br> - Signals to Check - <br> - Pressure roller fusing trigger: CN303-B7 on main control board / CN218-B5, or CN205-A5 on I/O control board. | A |

SC CODES

| $\begin{aligned} & \hline \hline \mathrm{SC} \\ & \text { No. } \end{aligned}$ | Item | Detection Conditions | Possible Causes | $\begin{gathered} \hline \text { Related } \\ \text { SCs } \\ \hline \end{gathered}$ | Troubleshooting Procedure | Type |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SC558 | Zero cross signal abnormal | - Timing \& Condition Zero cross signals generated within a certain period do not reach a predetermined number. | - Poor connection of connectors <br> - Blown fuse <br> - Defective PSU <br> - Defective main control board <br> - Defective I/O control board |  | 1. Check if the following connectors are properly connected; <br> - CN205 and CN218 on the I/O control board <br> - CN303 on the main control board <br> - CN106 on the PSU <br> 2. Check the continuity of the signal lines of the above cables. <br> 3. Replace the PSU, I/O control board, or main control board by checking the signal line at each pin. <br> - Signals to Check - <br> - Zero cross: CN106-3 on PSU/ CN205-A6, TP250, or CN218-B8 on I/O control board / CN303-B4 or TP170 on main control board | A |
| SC601 | Scanner IPU communication error | - Timing \& Condition After the main control board communicates successfully with the scanner IPU board once, a communication error is detected. | - Poor connection of connectors <br> - Defective scanner IPU board <br> - Defective main control board |  | 1. Turn the main power switch off/on. <br> 2. Check if the connectors (CN412 and CN407) are properly connected on the sub control board and scanner IPU board. <br> 3. Replace the scanner IPU board. <br> 4. Replace the main control board. | D |
| SC604 | IDU communication error | - Timing \& Condition No response is received from the IDU within 200 ms after the scanner IPU board sends a command and this error is detected 3 times in total. | - Poor connection between the IDU and scanner IPU board <br> - Defective IDU board <br> - Defective scanner IPU board |  | 1. Check if the IDU board is properly connected to the scanner IPU board. <br> 2. Replace the IDU board. <br> 3. Replace the scanner IPU board. | D |

SC CODES

| $\begin{aligned} & \hline \hline \text { SC } \\ & \text { No. } \end{aligned}$ | Item | Detection Conditions | Possible Causes | $\begin{gathered} \hline \hline \text { Related } \\ \text { SCs } \end{gathered}$ | Troubleshooting Procedure | Type |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SC620 | ADF communication error | - Timing \& Condition After the main control board communicates successfully with the ARDF once, a communication error is detected. | - Poor connection or damaged cable <br> - Defective ARDF main board <br> - Defective main control board |  | 1. Check that the cable is properly connected on the ADF main board and main control board or check if it is damaged. <br> 2. Replace the ARDF main board. <br> 3. Replace the main control board. | D |
| SC621 | Sorter communication error | - Timing Just after the main switch is turned on or while the sorter is running <br> - Condition - <br> The main control board detected a communication error with the sorter main board. | - Poor connection or damaged fibreoptic cable <br> - Defective sorter main board <br> - Defective main control board |  | 1. Check that the fibre-optic cable is properly connected on the sorter main board and main control board or check if it is damaged. <br> 2. Replace the sorter main board. <br> 3. Replace the main control board. | D |
| SC625 | FPU communication error | - Timing \& Condition The scanner IPU board detected a communication error with the FPU while the FPU is operating or after the FPU completes the operation. | - Poor connection or damaged fibreoptic cable <br> - Defective FPU main board <br> - Defective scanner IPU board |  | 1. Check that the fibre-optic cable is properly connected on the FPU main board and main control board or check if it is damaged. <br> 2. Replace the FPU main board. <br> 3. Replace the scanner IPU board. | B |
| SC626 | Paper tray unit communication error | - Timing - <br> Just after the main switch is turned on or while the paper tray unit is running <br> - Condition - <br> The main control board detected a communication error with the paper tray unit. | - Poor connection or damaged cables <br> - Defective CSS/bank interface board <br> - Defective paper tray unit control board <br> - Defective main control board |  | 1. Check that the cables are properly connected on the main control board, CSS/bank interface board, and paper tray unit control board or check if the cables are is damaged. <br> 2. Replace CSS/bank interface board. <br> 3. Replace the paper tray unit control board. <br> 4. Replace the main control board. | B |

SC CODES

| $\begin{aligned} & \hline \text { SC } \\ & \text { No. } \end{aligned}$ | Item | Detection Conditions | Possible Causes | Related SCs | Troubleshooting Procedure | Type |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SC630 | RDS communication error | - Timing \& Condition The main control board receives no response from RDS when accessing it. <br> Even when this error is detected, the copier does not show the SC code and this SC code is not logged. (Copier functions are still working.) | - Poor connection or damaged cable <br> - Defective line adapter <br> - Defective CSS/bank interface board <br> - Defective main control board |  | 1. Check that the cables are properly connected on the CSS/bank interface board and main control board or check if the cables are damaged. <br> 2. Check and/or change the setting of the line adapter or replace it. <br> 3. Replace the CSS/bank interface board. <br> 4. Replace the scanner IPU board. |  |
| SC690 | Application selection error | - Timing \& Condition When the main CPU communicates with CPUs on other PCBs, the main CPU does not receive response from the others. | - Scanner IPU firmware upgrade <br> - Poor connection of connectors <br> - Defective scanner IPU board <br> - Defective main control board <br> - Main boards of options |  | - If this SC code is displayed after the scanner IPU firmware is changed, the IC card may still be in the slot. Turn the main switch off and on after removing the IC card. <br> 1. Check if the connectors on the main control board, scanner IPU board, and the main board on each option are properly connected. <br> 2. Replace the defective boards. | B |
| SC720 | Sorter main motor error | The main motor pulse output state remains unchanged for 300 ms at start time, or for 100 ms during operation. | Defective motor |  | Defective motor: Test with SP5-804-120. Replace if necessary. | D |
| SC721 | Sorter bin motor error | The bin HP sensor has not turned off $2,550 \mathrm{~ms}$ after the bin goes up from the home position. | Defective sensor (including connectors), defective motor, or motor overload |  | Defective bin HP sensor: Check connections. Test using SP5-803-124/125 (input check: bin home/bin rotation). Replace the sensor if necessary. Overload: Check the mechanism, including the gears. Defective bin drive motor: Test with SP5-804-124. Replace if necessary. | D |
|  |  |  |  |  |  |  |

SC CODES

| $\begin{aligned} & \hline \hline \mathrm{SC} \\ & \text { No. } \end{aligned}$ | Item | Detection Conditions | Possible Causes | $\begin{aligned} & \hline \text { Related } \\ & \text { SCs } \end{aligned}$ | Troubleshooting Procedure | Type |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SC722 | Sorter jogger motor error | The jogger does not return to its home position within the specified time. <br> The jogger does not leave home position within the specified time. | Defective jogger HP sensor (including connectors), defective jogger motor |  | Defective jogger HP sensor: Check the connections. Test with SP5-803-128. Replace if necessary. <br> Defective jogger motor: Test with SP5-804-131. Replace if necessary. | D |
| SC724 | Sorter grip motor error | The grip HP sensor does not go off within 3,200 ms during travel out of home position. The grip HP sensor does not go on within $3,200 \mathrm{~ms}$ during return to home position. | Defective grip HP sensor (including connectors), defective grip motor |  | Defective grip HP sensor: Check connections. Test with SP5-803-129. Replace if necessary. <br> Defective grip motor: Test with SP5-804-127. Replace if necessary. | D |
| SC725 | Sorter stapler motor error | The stapler HP sensor cannot detect the home position within the specified time (700 ms ) after the stapler motor is turned on. | Staple jam, overload due to too many staples, or defective stapler motor |  | Staple jam: Check. <br> Overload due to too many staples: Check. <br> Defective stapler motor: Test with SP5-804-129. Replace if necessary. | B |
| SC731 | Sorter tray shift motor error | The sorter self-diagnostics detect a tray shift motor error and notify the main control board. <br> Detection timing: Just after power is turned on or when the sorter is running | Defective tray shift motor or overload |  | Motor overload: Check the mechanism, including the gears. <br> Defective motor: Test with SP5-804-132. Replace if necessary. | D |
| SC732 | Sorter tray lift motor error | The sorter self-diagnostics detect a tray lift motor error and notify the main control board. <br> Detection timing: Just after power is turned on or when the sorter is running | Defective tray lift motor |  | Defective tray lift motor: Test with SP5-804-124. Replace if necessary. <br> Defective sorter control board: Replace. | D |


| $\begin{aligned} & \hline \hline \text { SC } \\ & \text { No. } \end{aligned}$ | Item | Detection Conditions | Possible Causes | $\begin{gathered} \hline \text { Related } \\ \text { SCs } \end{gathered}$ | Troubleshooting Procedure | Type |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SC741 | Optional paper tray unit error | The paper tray unit selfdiagnostics detect an error and notify the main control board. <br> Detection timing: Just after power is turned on or when the paper tray unit is running. | Defective paper tray unit control board |  | Replace defective paper tray unit control board. | B |
| SC790 | Projector lamp on error | - Timing \& Condition The projector lamp does not turn on 100 ms after 5 V is applied to it. | - Poor connection of connector <br> - Blown projector lamp <br> - Defective projector main board |  | 1. Check if the connector is properly connected. <br> 2. Replace the projector lamp if it is blown. <br> 3. Replace the projector main board. | B |
| SC791 | Projector lamp off error | - Timing \& Condition The projector lamp does not turn off 100 ms after it is turned off. | - Defective projector main board <br> - Defective scanner IPU board <br> - Defective main control board |  | 1. Replace the projector main board. <br> 2. Replace the scanner IPU board <br> 3. Replace the main control board | B |
| SC792 | Projector lamp overheated | - Timing \& Condition The projector lamp overheats during projector operation. | - Poor connection of connector <br> - Defective thermistor <br> - Defective projector main board |  | 1. Check if the connector of the fan is properly connected. <br> 2. Replace the fan if it is defective. <br> 3. Replace the thermistor if it is defective. <br> 4. Replace projector main board. | B |


| SC No. | Item | Detection Conditions | Possible Causes | Related SCs | Troubleshooting Procedure | Type |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SC901 | Upper total counter error | - Feedback signal stays LOW when the main switch is turned $\mathbf{O N}$. <br> - Feedback signal stays LOW just before the trigger signal goes ON. <br> - Feedback signal stays HIGH just before the trigger signal goes OFF. | - Poor connection of the connectors <br> - Defective counter |  | 1. Check if the connectors are properly set. <br> 2. Replace the total counter. | D |
| SC902 | Lower total counter error |  |  |  |  | D |

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## Temperature/Resistance Conversion Reference Table

| Relationship between the |
| :--- |
| temperatures |
| Temperature Lower-limit <br> Value Standard <br> Value Upper-limit <br> Value <br> 0 211.7 329.3 398.9 <br> 10 166.8 198.9 236.9 <br> 20 105.4 123.7 145.1 <br> 30 68.4 79.11 91.44 <br> 40 45.45 51.86 59.14 <br> 50 30.88 34.78 39.16 <br> 60 21.4 23.833 26.51 <br> 70 15.12 16.64 18.3 <br> 80 10.87 11.83 12.88 <br> 90 7.935 8.554 9.216 <br> 100 5.881 6.281 6.703 <br> 110 4.42 4.678 4.948 <br> 120 3.365 3.531 3.703 <br> 130 2.593 2.699 2.807 <br> 140 2.021 2.087 2.154 <br> 150 1.592 1.632 1.672 <br> 160 1.249 1.289 1.33 <br> 170 0.9849 1.0228 1.068 <br> 180 0.7912 0.8276 0.8652 <br> 190 0.6834 0.6719 0.7067 <br> 200 0.5184 0.5499 0.5818 | |  |
| :---: |

## APPENDIX-D

FIRMWARE MODIFICATION HISTORY

## 1. SCANNER FIRMWARE HISTORY

### 1.1 SCANNER (NON - EDITOR VERSION)

| A258/A259 SCANNER (NON - EDITOR VERSION) FIRMWARE MODIFICATION HISTORY |  |  |  |
| :---: | :---: | :---: | :---: |
| DESCRIPTION OF MODIFICATION | FIRMWARE LEVEL | SERIAL NUMBER | FIRMWARE VERSION |
| - First Unit of Mass Production for the A258. | A2595136 D | 1st Mass Production for A258 | 1.12 |
| - To prevent a misdetection of SC191, the distance between the scanner lines has been changed. | A2595136 E | February 1999 Production for A258 | 1.14 |
| - To prevent the Cyan Background problem, the Auto Gain Control has been corrected. | A2595136 F | $\begin{aligned} & \text { April } 1999 \\ & \text { Production for } \\ & \text { A258 } \end{aligned}$ | 1.15 |
| - First Unit of Mass Production for the A259/A260 (Non - Editor Version) An abnormal image may occur after job recovery if a paper jam occurs while printing in Interleaf Mode. | A2595136 G | April 1999 Production for A258 | 1.18 |
| - SC326 occurs under the following conditions: <br> 1. A4 lengthwise <br> 2. $158 \%$ <br> 3. SP 04-010 (Scanner leading edge registration): 2.0 mm <br> When the Start key is pressed under these conditions, the exposure lamp turns on but then soon turns off. The copier keeps running. SC326 is displayed after a short while. | A2595136 J | September 1999 Production for A258 | 1.20 |
| - Thin lines on the originals may become thinner or thicker when making copies at 93\% reduction or smaller. | A2595136 K | December 1999 Production for A258 | 1.21 |

### 1.2 SCANNER (EDITOR VERSION)

| A260 SCANNER (EDITOR VERSION) FIRMWARE MODIFICATION HISTORY |  |  |  |
| :---: | :---: | :---: | :---: |
| DESCRIPTION OF MODIFICATION | FIRMWARE LEVEL | SERIAL NUMBER | FIRMWARE VERSION |
| - First Mass Production. | A2605136 F | 1st Mass Production | 1.17 |
| - Mono-colored thick lines in an original comprised of two or more toner colors appear separated as two offset lines. This is due to the vibration of the scanner, which causes the scanner to detect a line in different positions each time that it makes a scanning pass. The default setting for Auto Text/Photo Sensitivity has been shifted toward Text by 1 step. <br> - The firmware for the A259/A260 Scanner (Editor Version) can be installed in the A259/A260 Scanner (Non-Editor Version) and A258, and vice versa. If this is done, SC150 is displayed when the main switch is turned on. The firmware has been modified so that SC150 is displayed before the data is stored in the flash ROM. | A2605136 G | July 1999 <br> Production | 1.18 |
| - SC326 occurs under the following conditions: <br> 1. A4 lengthwise <br> 2. $158 \%$ <br> 3. SP 04-010 (Scanner leading edge registration): 2.0 mm <br> When the Start key is pressed under these conditions, the exposure lamp turns on but then soon turns off. The copier keeps running. SC326 is displayed after a short while. | A2605136 H | September 1999 Production | 1.20 |
| - Thin lines on originals may become thinner or thicker when making copies at $93 \%$ reduction or smaller. | A2605136 J | December 1999 Production | 1.21 |

## 2. A258 MAIN FRAME FIRMWARE HISTORY <br> 2.1 A258 MAIN FRAME FIRMWARE HISTORY

| A258 MAIN FRAME FIRMWARE MODIFICATION HISTORY |  |  |  |
| :---: | :---: | :---: | :---: |
| DESCRIPTION OF MODIFICATION | FIRMWARE LEVEL | SERIAL NUMBER | FIRMWARE VERSION |
| - First Unit of Mass Production for the A258 | A2585197 B | 1st Mass Production for A258 | 6.13A |
| - Enables the counter method to be changed (copy or development counter) only once in SP mode (SP7-008-000). | A2585197 C | April 1999 Production | 6.15 |
| - The transfer belt bias has been optimized as follows: <br> - At a certain point, the last original may not be fed out from the ARDF in 1 to 1 mode. | A2585197 D | Ricoh <br> May 1999 <br> Production <br> $\underline{\text { Savin/Gestetner }}$ <br> July 1999 <br> Production | 6.43 |
| - To prevent misdetection of the Toner End condition for black toner, the detection parameter has been changed from 4 to 8 times. | A2585197 E | Ricoh <br> May 1999 <br> Production <br> $\underline{\text { Savin/Gestetner }}$ <br> July 1999 <br> Production | 6.431 |

## A258 MAIN FRAME FIRMWARE MODIFICATION HISTORY

| DESCRIPTION OF MODIFICATION | FIRMWARE LEVEL | SERIAL NUMBER | FIRMWARE VERSION |
| :---: | :---: | :---: | :---: |
| - The display for the counters has been changed. "Copies" or "Developments" is displayed on the panel, depending on the counter method selected. This allows us to clearly know which counter method has been selected. <br> [ Symptom ] <br> Horizontal white lines / dirty background at the trailing edge when copying onto transparencies. This occurs in all environmental conditions except high temperature and humidity. [ Solution ] <br> The default setting of the following SP mode has been changed and the AC component of the paper separation corona turns ON when copying onto transparencies. | A2585197 F | July 1999 <br> Production | 6.621 |
| SP Mode No. Current Setting   <br>  New Setting   <br>  SP 2-310-10 10 uA 8 uA <br> SP 2-316-5 $70 \%$ $75 \%$  <br> SP 2-316-6 $80 \%$ $70 \%$  <br> SP 2-316-25 $100 \%$  $125 \%$ |  |  |  |
| - During evaluation tests on European paper, white lines appeared in the halftone areas. To prevent this problem, the settings of the following SP modes have been changed (for European versions only): |  |  |  |
| SP Mode No. Current setting   <br>  Sew Setting   <br> SP2-316-009  $100 \%$ $79 \%$ <br> SP2-316-010  $87 \%$ $70 \%$ <br> SP2-316-013  $120 \%$  <br> SP2-316-014  $87 \%$  |  |  |  |
| - The shut down timing for the main exhaust fan has been changed as follows to reduce the machine noise level. These figures refer to how long the machine waits to turn off the fan after turning off the drum motor. <br> Before After <br> 30 seconds 5 seconds <br> - To prevent the charge corona unit from becoming dirty too soon, the following SP mode has been added. SP3-980-000 "Charge corona fan ON/OFF timing setting". <br> - The following problem was corrected: The logging data (SP7-809-01) was not counted properly. |  |  |  |

## A258 MAIN FRAME FIRMWARE MODIFICATION HISTORY

## DESCRIPTION OF MODIFICATION

- An area of up to 20 mm from the trailing edge of the last copy becomes lighter in OHP or Thick Paper mode under the following conditions:

1. Selected paper size is A4(LT) sideways or smaller
2. The amount of copies selected is an even number.

- In the Series Copy Mode (Book to 1 sided), halftone areas on the right side of originals come out lighter under the following conditions.

1. B\&W copy mode.
2. The number of copies selected is 3 or more.
After a job is finished, the Start Key will turn green sooner.

- A blank display problem found in the previous version has been corrected.
- To prevent By-pass Tray jams when feeding the reverse side of the paper, the pick-up roller OFF timing has been changed.
- By this modification, the pick-up roller continues to feed the paper until the paper reaches the grip roller.
- The software has been modified for the following reasons:

1. To minimize dirty background in normal paper copy/print modes
2. To minimize dirty background in OHP/thick paper copy/print modes
3. To prevent horizontal color bands in color copy/print modes

## [ Contents of modification ]

## Dirty background

- The development unit will stay at the development position under the following conditions:

1. When the OPC drum starts rotating to develop the latent image.
2. During the extra transfer belt rotation (see NOTE) in Thick/OHP mode (copy/print).

CONTINUED ON NEXT PAGE

| FIRMWARE <br> LEVEL <br> A2585197 G | SERIAL <br> NUMBER <br> Rovember 1999 <br> Production <br> Savin/Gestetner | FIRMWARE <br> VERSION <br> 6.81 |
| :---: | :---: | :---: |
| October 1999 <br> Production |  |  |
| A2585197 J | March 2000 <br> Production | 6.913 |
| A2585197 K | April 2000 <br> Production | 7.02 |
|  |  |  |

## A258 MAIN FRAME FIRMWARE MODIFICATION HISTORY

| DESCRIPTION OF MODIFICATION | FIRMWARE LEVEL | SERIAL NUMBER | FIRMWARE VERSION |
| :---: | :---: | :---: | :---: |
| CONTINUED FROM PREVIOUS PAGE <br> To prevent toner from being attracted to the drum, a development bias is applied to the development sleeve. However, the dirty background level becomes worse if the drum and/or developer have deteriorated. To minimize dirty background, the timing of the revolver rotation and the position of the development unit have been changed. <br> NOTE: <br> In Thick Paper/OHP Modes, the process speed is reduced by half after the image is developed on the transfer belt (4-color image for full color). To properly transfer the image developed on the transfer belt onto the sheet of paper, the transfer belt makes an extra rotation. <br> Horizontal Color Bands <br> To improve image quality, the PG was slightly reduced from March '00 production. However, when the PG is reduced, the developer brush has a tendency to touch the drum surface while the revolver rotates. This may result in a horizontal color band on the outputs. To prevent this band, the timing of the revolver rotation has been changed so that the color band will not be transferred to the image area of the transfer belt. <br> - The SP modes listed below have been added so that toner concentration can be adjusted with more precision and finer control. <br> New SP modes: <br> SP2-203-001 to 013 <br> SP2-204-001 to 012 <br> - The software has been changed so that the key counter counts twice for A3/DLT when SP5-104-000 is activated (A3/DLT Double Count). | A2585197 K | April 2000 Production | 7.02 |

A258 MAIN FRAME FIRMWARE MODIFICATION HISTORY

| DESCRIPTION OF MODIFICATION |
| :--- |
| "Charge Corona Fan ON/OFF" |
| has been added to SP mode (refer to |
| TSB A258/A259/A260-027 for details). |
| However, since turning off the fan can cause |
| the temperature inside machine to increase, |
| setting "2" below (bold) has been newly |
| added to the software. |
| 0: Stays on |
| 1: Turn off |
| 2: Turn on at $\mathbf{3 0} 0^{\circ} \mathrm{C}$, turn off at $\mathbf{2 6}^{\circ} \mathbf{C}^{\circ}$ |
| using the temp. measured by the |
| temp/humidity sensor |

- If the machine is continuously on, the machine will not perform the initial process control self-check, causing the toner concentration to be out of range. To achieve optimum image quality under this condition, the software has been changed so that the initial process control self check will be performed if both of the following conditions are met:

1. 12 hours has passed since the last initial process control or forced process control self-check.
2. Process control self-check has passed 1 hour since the last time.

- When the revolver rotates, a small amount of toner can flow into the development unit, causing the toner concentration to increase. During the initial process control self-check, the machine automatically corrects the toner concentration (Toner Density Auto Control); however, this does not happen unless the main switch is turned off and on. To work around this, the software has been modified so that the toner density auto control can be performed during the interval process control self-check. The corresponding setting
(2) has been added to SP3-128:

SP3-128 Toner Density Auto Control Settings (Default : 0)
$\mathbf{0}$ : Execute at initial and forced process control self-check

1. Not execute at any self-check
2. Execute at initial, forced, and interval process control self-check

CONTINUED ON NEXT PAGE

| FIRMWARE <br> LEVEL | SERIAL <br> NUMBER | FIRMWARE <br> VERSION |
| :---: | :---: | :---: |
| A2585197 M | N/A | 7.05 |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

## A258 MAIN FRAME FIRMWARE MODIFICATION HISTORY

| DESCRIPTION OF MODIFICATION | FIRMWARE <br> LEVEL | SERIAL <br> NUMBER | FIRMWARE <br> VERSION |
| :--- | :---: | :---: | :---: |
| CONTINUED FROM PREVIOUS PAGE | A2585197 M | N/A | 7.05 |
| The following SP modes have been newly <br> added for Toner Density Auto Control: <br>  <br> SP3-130: TD Auto Correction Setting <br> Specifies the number of copies to <br> consume toner for the toner density <br> correction of the initial or interval process <br> control self-check. |  |  |  |
| NOTE: Normally, it is not necessary to adjust <br> the data of this SP mode in the field. |  |  |  |
| SP3-130-001 Initial self-check: <br> 0 to 50 copies / 10 (Default) / step] |  |  |  |
| SP3-130-002 Interval self-check: <br> 0 to 50 copies/ 5(Default) /1 step |  |  |  |
| SP3-130-003 Table limit setting: <br> [0 or 1/0 (Default) <br> 0:Limit, 1: No limit |  |  |  |
|  |  |  |  |

## 3. A259/A260 MAIN FRAME FIRMWARE HISTORY

### 3.1 A259/A260 MAIN FRAME FIRMWARE HISTORY

| A259/A260 MAIN FRAME FIRMWARE MODIFICATION HISTORY |  |  |  |
| :---: | :---: | :---: | :---: |
| DESCRIPTION OF MODIFICATION | FIRMWARE LEVEL | SERIAL NUMBER | FIRMWARE VERSION |
| - First Unit of Mass Production for the A259/A260. | A2605197 B | $\begin{aligned} & \frac{\text { A259/A260 }}{\text { 1st Mass }} \\ & \text { Production } \end{aligned}$ | 1.694 |
| - The display for the counters has been changed. "Copies" or "Developments" is displayed on the panel, depending on the counter method selected. This allows us to clearly know which counter method has been selected. <br> - The development bias OFF timing has been optimized to prevent the following problem: Poor image transfer may happen at the trailing edge of the last sheet of even pages in multi-copy mode (double image processing) with thick paper or transparencies. <br> - The outline length of the closed loop area is extended as follows. <br> [Before Modification] <br> Total Maximum length: Up to about 2 m <br> [After modification] <br> Total maximum length: Up to about 40 m Multi-closed loop: Up to about 10 m Closed loop for 1 area: Up to about 2 m <br> - "Area editing" and "Auto Reduce/Enlarge (AR/E)" can be selected at the same time. <br> [When selecting Save Area mode] <br> 1. The saved area will be enlarged/reduced to fit the designated paper size. <br> 2. The saved area image is aligned at the top left corner of outputs. <br> 3. Centering function is selectable. | A2605197 C | $\begin{aligned} & \begin{array}{l} \text { February } 2000 \\ \text { Production } \end{array} \\ & \begin{array}{l} \text { February } 2000 \\ \text { Production } \end{array} \end{aligned}$ | 1.728 |


| A259/A260 FIRMWARE MODIFICATION HISTORY |  |  |  |
| :---: | :---: | :---: | :---: |
| DESCRIPTION OF MODIFICATION | FIRMWARE LEVEL | SERIAL NUMBER | FIRMWARE VERSION |
| CONTINUE FROM PREVIOUS PAGE <br> [When not selecting Save Area mode] <br> - Since the image area becomes A3/DLT in "Area Editing" and "AR/E", the magnification ratio is automatically calculated based on A3/DLT size regardless of the original size. It is required to select the magnification ratio manually if you want to specify the magnification for the designated paper size. <br> - The printer gamma data for the printer mode, which is changed in SP mode, will not be applied to the copier until the main switch is turned off and on. | A2605197 C | A259February 2000Production$\quad$ A260October 1999 <br> Production | 1.728 |
| - The screen did not display magnification ratios greater than $255 \%$ even though the machine correctly made copies at these ratios. <br> - The detection timing for the SC522 and SC524 error conditions was optimized. <br> SC522: Duplex - Side fence jogger H.P. error <br> SC524: Duplex - End fence jogger H.P. error <br> - Under the following conditions, the machine displays "Copy size cannot be changed" on the screen after the paper is stacked in the duplex unit. <br> 1. Duplex copying in the platen mode from the by-pass tray. <br> 2. Paper on the by-pass tray runs out (paper end condition). | A2605197 D | A259 <br> February 2000 Production <br> A260 <br> February 2000 Production | 1.734 |
| - To prevent By-pass Tray jams when feeding the reverse side of the paper, the pick-up roller OFF timing has been changed. By this modification, the pick-up roller continues to feed the paper until the paper reaches the grip roller. | A2605197 E |  | 1.735 |


| A259/A260 MAIN FRAME FIRMWARE MODIFICATION HISTORY |  |  |  |
| :---: | :---: | :---: | :---: |
| DESCRIPTION OF MODIFICATION | FIRMWARE LEVEL | SERIAL NUMBER | FIRMWARE VERSION |
| - The software has been modified for the following reasons: <br> 1. To minimize dirty background in normal paper copy/print modes <br> 2. To minimize dirty background in OHP/thick paper copy/print modes <br> 3. To prevent horizontal color bands in color copy/print modes <br> [ Contents of modification ] <br> Dirty Background: <br> The development unit will stay at the development position under the following conditions: <br> 1. When the OPC drum starts rotating to develop the latent image. <br> 2. During the extra transfer belt rotation (see NOTE) in Thick/OHP mode (copy/print). <br> - To prevent toner from being attracted to the drum, a development bias is applied to the development sleeve. However, the dirty background level becomes worse if the drum and/or developer have deteriorated. To minimize the dirty background, the timing of the revolver rotation and the position of the development unit have been changed. <br> NOTE: In Thick Paper/OHP Modes, the process speed is reduced in half after the image is developed on the transfer belt (4color image for full color). To properly transfer the image developed on the transfer belt onto the sheet of paper, the transfer belt makes an extra rotation. <br> Horizontal Color Band: <br> To improve image quality, the PG was slightly reduced from the March '00 production. However, when the PG is reduced, the developer brush has a tendency to touch the drum surface while the revolver rotates. This may result in a horizontal color band on the outputs. To prevent this band, the timing of the revolver rotation has been changed so that the color band will not be transferred to the image area of the transfer belt. | A2605197 F | $\underset{\text { April } 2000}{\text { A259 }}$ <br> Production <br> A260 <br> April 2000 <br> Production | 1.771 |

## A259/A260MAIN FRAME FIRMW ARE MODIFICATION HISTORY

| DESCRIPTION OF MODIFICATION | FIRMWARE LEVEL | SERIAL NUMBER | FIRMWARE VERSION |
| :---: | :---: | :---: | :---: |
| CONTINUE FROM PREVIOUS PAGE <br> The SP modes listed below have been added so that toner concentration can be adjusted with more precision and finer control. <br> New SP modes: <br> SP2-203-001 to 013 <br> SP2-204-001 to 012 <br> The software has been changed so that the key counter counts twice for A3/DLT when SP5-104-000 is activated (A3/DLT Double Count). | A2605197 F | A259 April 2000 Production A260 April 2000 Production | 1.771 |
| - To prevent any data changes due to electrical noise, the initialization method of the NVRAM has been changed | A2605197 G |  | 1.774 |
| - "Charge Corona Fan ON/OFF" has been added to SP mode (refer to TSB A258/A259/A260-027 for details). However, since turning off the fan can cause the temperature inside machine to increase, setting " 2 " below (bold) has been newly added to the software. <br> 0 : Stays on <br> 1: Turn off <br> 2: Turn on at $30^{\circ} \mathrm{C}$, turn off at $26^{\circ} \mathrm{C}^{\circ}$ using the temp. measured by the temp/humidity sensor | A2605197 H | $\frac{\text { A259/A260 }}{N / A}$ | 1.777 |

## A259/A260 MAIN FRAME FIRMWARE MODIFICATION HISTORY

| DESCRIPTION OF MODIFICATION | FIRMWARE LEVEL | SERIAL NUMBER | FIRMWARE VERSION |
| :---: | :---: | :---: | :---: |
| CONTINUED FROM PREVIOUS PAGE <br> - If the machine is continuously on, the machine will not perform the initial process control self-check, causing the toner concentration to be out of range. To achieve optimum image quality under this condition, the software has been changed so that the initial process control self check will be performed if both of the following conditions are met: <br> 1. 12 hours has passed since the last initial process control or forced process control self-check. <br> 2. Process control self-check has passed 1 hour since the last time. <br> - When the revolver rotates, a small amount of toner can flow into the development unit, causing the toner concentration to increase. During the initial process control self-check, the machine automatically corrects the toner concentration (Toner Density Auto Control); however, this does not happen unless the main switch is turned off and on. To work around this, the software has been modified so that the toner density auto control can be performed during the interval process control self-check. The corresponding setting (2) has been added to SP3-128: <br> SP3-128 Toner Density Auto Control Settings (Default : 0): <br> 0: Execute at initial and forced process control self-check <br> 1. Not execute at any self-check <br> 2. Execute at initial, forced, and interval process control self-check <br> CONTINUED ON NEXT PAGE | A2605197 H | $\frac{\text { A259/A260 }}{\text { N/A }}$ | 1.777 |

## A259/A260 MAIN FRAME FIRMWARE MODIFICATION HISTORY

| DESCRIPTION OF MODIFICATION | FIRMWARE LEVEL | SERIAL NUMBER | FIRMWARE VERSION |
| :---: | :---: | :---: | :---: |
| CONTINUED FROM PREVIOUS PAGE <br> The following SP modes have been newly added for Toner Density Auto Control: <br> SP3-130 TD Auto Correction Setting: <br> Specifies the number of copies to consume toner for the toner density correction of the initial or interval process control self-check. <br> NOTE: Normally, it is not necessary to adjust the data of this SP mode in the field. <br> SP3-130-001 Initial self-check: <br> 0 to 50 copies / 10 (Default) / 1 step] <br> SP3-130-002 Interval self-check: <br> 0 to 50 copies/ 5 (Default) /1 step <br> SP3-130-003 Table limit setting: <br> [0 or $1 / 0$ (Default) <br> $0: L i m i t, 1$ : No limit | - A2605197 $\mathbf{H}$ | - $\frac{\text { A259/A260 }}{\text { N/A }}$ | - 1.777 |
| - During multi copy runs, the duplex feed motor malfunctions if the control pulse is not generated when the interrupt pulse is generated. This causes a paper jam in the duplex unit. This problem was found during internal tests. The paper jam occurred at about 1,500 duplex copies. | A2605197 J | $\frac{\text { A259/A259 }}{\mathrm{N} / \mathrm{A}}$ | 1.778 |

## B017/B018 SERVICE MANUAL

## OVERALL INFORMATION

## 1. OVERALL MACHINE INFORMATION

### 1.1 SPECIFICATIONS

### 1.1.1 MACHINE CONFIGURATION

|  | A258 / B018 | A259 | A260 | B017 |
| :---: | :---: | :---: | :---: | :---: |
| Operation Panel | 40-digit 4-line <br> LCD Hard Key <br> Type | $144 \mathrm{~mm} \times 192 \mathrm{~mm}$ (10.4 inch) <br> Color Touch Panel Display |  |  |
| Paper Tray Unit | 500 sheets | Duplex |  |  |
| Edit Function | No | No | Yes | Option |



## SPECIFICATIONS

### 1.1.2 GENERAL SPECIFICATIONS

|  | A258/A259/A260 |  |  | B017/B018 |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Configuration | Desktop |  |  |  |  |  |
| Copy Process | Dry electrostatics transfer system |  |  |  |  |  |
| Resolution | Scan: 400 dpi <br> Copy mode: 400 dpi <br> Print mode: 600 dpi |  |  | Scan: $\mathbf{6 0 0} \mathrm{dpi}$ <br> Copy mode: $\mathbf{6 0 0} \mathrm{dpi}$ <br> Print mode: 600 dpi |  |  |
| Gradations | 256 gradations |  |  |  |  |  |
| Originals | Sheet/Book/Object |  |  |  |  |  |
| Original Size | Max.: 11"x17"/A3 |  |  |  |  |  |
| Copy Paper Size | Paper tray: Max. 11"x17"/A3 <br> By-pass: Max. 12"18"/305x457mm |  |  |  |  |  |
| Copy Paper Weight | Paper Tray: 17 to 28 lbs. / 63 to $105 \mathrm{~g} / \mathrm{m}^{2}$ By-pass: 14 to $43 \mathrm{lbs} . / 52$ to $160 \mathrm{~g} / \mathrm{m}^{2}$ Auto duplex: 17 to $28 \mathrm{lbs} . / 63$ to $105 \mathrm{~g} / \mathrm{m}^{2}$ |  |  |  |  |  |
| Reproduction Ratios (\%) | LT: 400, 200, 155, 129, 121, 100, 93, 85, 78, 73, 65, 50, 25 <br> A4: 400, 200, 141, 122, 115, 100, 93, 82, 75, 71, 65, 50, 25 <br> LT \& A4: Programmable: 2 user ratios / Zoom : From 25 to 400 in 1\% step |  |  |  |  |  |
| Copy Speed (cpm) | A258 |  |  | B018 |  |  |
|  |  | $\begin{aligned} & \hline 2 " x 11 " \\ & \text { / A4(S) } \end{aligned}$ | $\begin{aligned} & \hline 11 " x 17 " / \\ & \text { A3 } \\ & \hline \end{aligned}$ |  | $\begin{aligned} & " \times 11 " \\ & \text { A4(S) } \end{aligned}$ | $\begin{aligned} & \text { 11"x17" / } \\ & \text { A3 } \end{aligned}$ |
|  | Normal Mode |  |  | Normal Mode |  |  |
|  | F/C | 6 | 3 | F/C | 6 | 3 |
|  | S/C (CMYK) | 21 | 11 | S/C (CMYK) | 25 | 13 |
|  | S/C (BG) | 9 | 4.5 | S/C (BG) | 9 | 4.5 |
|  | S/C (R) | 7 | 3.5 | S/C (R) | 7 | 3.5 |
|  | OHP/Thick paper mode |  |  | OHP/Thick paper mode |  |  |
|  | F/C | 3 | 1.5 | F/C | 3 | 1.5 |
|  | S/C (CMYK) | 5 | 2.5 | S/C (CMYK) | 5 | 2.5 |
|  | S/C (BG) | 4 | 2 | S/C (BG) | 4 | 2 |
|  | S/C (R) | 3.5 | 1.5 | S/C (R) | 3.5 | 1.5 |
|  | A259/A260 |  |  | B017 |  |  |
|  |  | $\begin{aligned} & \hline \text { 2"x11" } \\ & \text { / A4(S) } \end{aligned}$ | $\begin{aligned} & \text { 11"x17" / } \\ & \text { A3 } \end{aligned}$ |  | $\begin{aligned} & " \times 11 " \\ & \text { A4(S) } \\ & \hline \end{aligned}$ | $\begin{aligned} & 11 " \times 17^{\prime \prime} / \\ & \text { A3 } \end{aligned}$ |
|  | Normal Mode |  |  | Normal Mode |  |  |
|  | F/C | 6 | 3 | F/C | 6 | 3 |
|  | S/C (CMYK) | 28 | 14 | S/C (CMYK) | 31 | 15 |
|  | S/C (BG) | 9 | 4.5 | S/C (BG) | 9 | 4.5 |
|  | S/C (R) | 7 | 3.5 | S/C (R) | 7 | 3.5 |
|  | OHP/Thick paper mode |  |  | OHP/Thick paper mode |  |  |
|  | F/C | 3 | 1.5 | F/C | 3 | 1.5 |
|  | S/C (CMYK) | 5 | 2.5 | S/C (CMYK) | 5 | 2.5 |
|  | S/C (BG) | 4 | 2 | S/C (BG) | 4 | 2 |
|  | S/C (R) | 3.5 | 1.5 | $\mathrm{S} / \mathrm{C}(\mathrm{R})$ | 3.5 | 1.5 |


|  | A258/A259/A260 |  | B017/B018 |  |
| :---: | :---: | :---: | :---: | :---: |
| First Copy Time$\begin{aligned} & 81 / 2 " x 11 "(S) / \\ & \text { A4 } \end{aligned}$ |  | $\begin{aligned} & \hline 81 / 2^{\prime \prime} \times 11^{\prime \prime} \\ & \text { (S) / A4 } \\ & \hline \end{aligned}$ |  | $\begin{aligned} & 12 " \times 11 " \\ & \text { // A4 } \\ & \hline \end{aligned}$ |
|  | Normal Mode |  | Normal Mod |  |
|  | F/C | 22.4 | F/C | 22.4 |
|  | S/C (K) | 8 | S/C (K) | 8 |
|  | S/C (CMY) | 10 | S/C (CMY) | 10 |
|  | S/C (BGR) | 16 | S/C (B) | 19 |
|  | OHP/Thick p | er mode | S/C (G) | 16 |
|  | F/C | 35 | S/C (R) | 16 |
|  | S/C (K) | 23 | OHP/Thick | mode |
|  | S/C (CMY) | 25 | F/C | 35 |
|  | S/C (BGR) | 27 | S/C (K) | 23 |
|  |  |  | S/C (CMY) | 25 |
|  |  |  | S/C (B) | 30 |
|  |  |  | S/C (G) | 27 |
|  |  |  | S/C (R) | 27 |
| Warm-up Time | Approx. 7 min | es (at $68^{\circ} \mathrm{F} / 20^{\circ} \mathrm{C}$ ) | Approx. 4.5 | es (a |
| Duplexing: <br> A258/B017: <br> Manual <br> Duplex <br> A259/A260/ <br> B018: <br> Auto Duplex | Manual duplex color modes Manual \& auto single color m Manual \& auto single color m <br> Duplexing can <br> Manual duplex bypass table the Duplex Sid | ing in full color and s <br> duplexing in full colo des <br> duplexing in full colo des <br> done on 64-105 <br> ing can be done thro <br> ly, and the user sho <br> 2 key before copyi | d <br> paper. <br> the <br> press <br> he reverse sid |  |
| NonReproduction Area: | Leading edge Side: <br> Trailing Edge: | $\begin{aligned} & 0.2 " \pm 0.08 "(5 \\ & 0.08 " \pm 0.08 "( \\ & \text { Total less than } \\ & 2.0 \mathrm{~mm}+2.0 /- \end{aligned}$ | $\begin{aligned} & \mathrm{n} \pm 2 \mathrm{~mm}) \\ & 1 \mathrm{~m} \pm 2 \mathrm{~mm}) / \\ & 16^{6}(4 \mathrm{~mm}) \\ & \mathrm{mm} \end{aligned}$ |  |
| Copy Number Input | Number keys, | to 99 |  |  |
| Copy Number Input (Auto Duplex) | Number keys Single Color - <br> Full Color | 1 to 50: smalle 1 to 30: A3, 1 1 to 20: all siz | $\operatorname{an} A 3,11 " x$ |  |
| Image Density | Auto/Manual ( | steps) |  |  |
| Paper Capacity | Tray: <br> 500 sheets <br> (Manual <br> Bypass: <br> Normal pa OHP <br> Adhesive p | 1 tray lex Models: A258 / (80 g/m²/20 lb.) | 8) <br> sheets sheets sheet |  |




Options: Compatibility Table

| OK: Can be installed N/A: Not applicable |  |  | A258 | A259 | A260 | B018 | B017 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| ARDF | ARDF | A663 | OK |  |  |  |  |
| Sorter | $10 \mathrm{Bin} \mathrm{S/S}$ | A555 | OK |  |  |  |  |
|  | $20 \mathrm{Bin} \mathrm{S/S}$ | A834 | OK |  |  |  |  |
|  | 3 Bin Sorter | A849 | OK |  |  |  |  |
| Paper Tray | 2 Tray Unit | A832 | OK |  |  |  |  |
|  | 3 Tray Unit | A833 | OK |  |  |  |  |
| FPU | FPU | A846 | OK |  |  | N/A |  |
|  | FPU Table | A702-19 | OK |  |  |  |  |
| I/F | I/F (Type E) | A848 | OK |  |  | N/A |  |
|  | I/F (Type H) | B381 | N/A |  |  | OK |  |
| Controller | RC-200 | G528 | OK |  |  | N/A |  |
|  | RC-210 | G549 | N/A |  |  | OK | OK |
| Fax | Fax Option | B383 | NA |  |  | N/A | OK |
|  | Fax HDD | A841-11 |  |  |  | N/A | OK |
|  | Handset | A841-13 |  |  |  | N/A | OK |
|  | G4 Option | A816-17 |  |  |  | N/A | OK |
|  | JBIG Option | A818-12 |  |  |  | N/A | OK |
|  | SAF Memory | A818-10 |  |  |  | N/A | OK |
|  | Fax Stamp | A563-17 |  |  |  | N/A | OK |
| Other | Platen Cover | A749-01 | OK |  |  |  |  |
|  | Original Tray | A430-07 | OK |  |  |  |  |
|  | Edit Option | B380 | N/A |  |  |  | OK |

### 1.1.3 PLATEN/ARDF ORIGINAL SIZE DETECTION

| Size (width x length) [mm] | Platen |  | ARDF |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Inches | Metric | Inches | Metric |
| A3 (297 x 420) L | No | Yes | No | Yes |
| B4 (257 x 364) L | No | Yes | No | Yes |
| A4 (210 x 297) L | No | Yes | Yes | Yes |
| A4 (297 x 210) S | No | Yes | Yes | Yes |
| B5 (182 x 257) L | No | Yes | No | Yes |
| B5 (257 x 182) S | No | Yes | No | Yes |
| A5 (148 x 210) L | No | No* | No | Yes |
| A5 $(210 \times 148)$ S | No | No | No | Yes |
| B6 (128 x 182) L | No | No | No | Yes |
| B6 (182 x 128) S | No | No | No | Yes |
| 11" x 17" (DLT) | Yes | No | Yes | Yes |
| $11^{\prime \prime} \times 15{ }^{\prime \prime}$ | No | No | Yes | No |
| 10" $\times 14{ }^{\prime \prime}$ | No | No | Yes | Yes |
| 8.5" x 14" (LG) | Yes | No | Yes | No |
| 8.5" $\times 13^{\prime \prime}$ (F4) | No | No | Yes | Yes |
| 8.25 " $\times 13^{\prime \prime}$ | No | No | No | No |
| 8" $\times 13$ "(F) | No | Yes | Yes | No |
| 8.5" $\times 11$ " (LT) | Yes | No | Yes | Yes |
| $11^{\prime \prime} \times 8.5^{\prime \prime}$ (LT) | Yes | No | Yes | Yes |
| 8" x 10.5" | No | No | No | No |
| 8" $\times 10{ }^{\prime \prime}$ | No | No | Yes | No |
| 5.5 " $\times 8.5$ " (HLT) | No* | No | Yes | No |
| 8.5 " $\times 5.5$ " (HLT) | No | No | Yes | No |
| A6 (105 x 148) L | No | No | No | No |

*: When the message "Cannot detect original size" appears use SP4-303 to detect original sizes as A5 lengthwise/HLT.
*: This SP mode is only applicable for B017/018 copiers.

### 1.1.4 COPY PAPER SIZE

| Size(width $\times$ length) [mm] | Trays in the main body |  |  |  | Bypass | Optional Sort/Stap |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Paper Tray (A258/B018) |  | Duplex Tray (A259/A260/B017) |  | $\underset{\text { All }}{\text { versions }}$ |  |
|  | Inches | Metric | Inches | Metric |  |  |
| A3 (297 x 420) L | No | Yes | Yes | Yes | Yes | Yes |
| B4 (257 x 364) L | No | Yes | Yes | Yes | Yes | Yes |
| A4 (210 x 297) L | Yes | Yes | Yes | Yes | Yes | Yes |
| A4 (297 x 210) S | Yes | Yes | Yes | Yes | Yes | Yes |
| B5 (182 x 257) L | No | Yes | No | Yes | Yes | Yes |
| B5 (257 x 182) S | No | Yes | No | Yes | Yes | Yes |
| A5 (148 x 210) L | No | Yes | No | No | Yes | Yes (1) |
| A5 (210 $\times 148$ ) S | No | No | Yes | Yes | Yes | Yes (2) |
| B6 (128 x 182) L | No | No | No | No | Yes | Yes (1) |
| B6 (182 x 128) S | No | No | No | No | No | No |
| $12^{\prime \prime} \times 18{ }^{\prime \prime}$ | No | No | No | No | Yes | Yes (3) |
| 11" x 17" (DLT) | Yes | Yes | Yes | Yes | Yes | Yes |
| $11^{\prime \prime} \times 15{ }^{\prime \prime}$ | Yes | No | Yes | No | Yes | Yes |
| $10^{\prime \prime} \times 14{ }^{\prime \prime}$ | Yes | No | Yes | No | Yes | Yes |
| 8.5" x 14" (LG) | Yes | No | Yes | No | Yes | Yes |
| 8.5" $\times 13^{\prime \prime}$ (F4) | Yes | Yes | Yes | Yes | Yes | Yes |
| 8.25 " $\times 13^{\prime \prime}$ | No | No | Yes | Yes | Yes | Yes |
| 8" $\times 13$ "(F) | No | No | Yes | Yes | Yes | Yes |
| $8.5^{\prime \prime} \times 11^{\prime \prime}(\mathrm{LT})$ | Yes | Yes | Yes | Yes | Yes | Yes |
| $11^{\prime \prime} \times 8.5$ " (LT) | Yes | Yes | Yes | Yes | Yes | Yes |
| 8" $\times 10.5$ " | No | No | Yes | No | Yes | Yes |
| $8{ }^{\prime \prime} \times 10{ }^{\prime \prime}$ | Yes | No | Yes | Yes | Yes | Yes |
| 5.5 " x 8.5" (HLT) | No | No | No | No | Yes | Yes (1) |
| 8.5" $\times 5.5$ " (HLT) | Yes | No | Yes | Yes | Yes | Yes (2) |
| A6 (105 x 148) L | No | No | No | No | Yes | Yes (2) |

Yes (1): Stapling is not possible.
Yes (2): Only with the proof tray. Sorter bins cannot be used.
Yes (3): 20-bin sorter (A834): Stapling is not possible.
10-bin sorter (A555): Not available

### 1.1.5 APS PAPER SIZES AVAILABLE

## - For metric machines -

| Zoom. Ratios | $\begin{gathered} \hline \hline 200 \\ \sim \\ 174 \end{gathered}$ | $\begin{gathered} \hline \hline \\ \sim \\ 164 \end{gathered}$ | $\begin{gathered} \hline \hline 163 \\ \sim \\ 142 \end{gathered}$ | $\begin{gathered} \hline \hline 141 \\ \sim \\ 123 \end{gathered}$ | $\begin{gathered} \hline \hline \\ \hline 122 \\ 116 \end{gathered}$ | $\begin{gathered} 115 \\ \sim \\ 101 \end{gathered}$ | $\begin{gathered} 100 \\ \sim \\ 94 \end{gathered}$ | $\begin{gathered} \hline 93 \\ \sim \\ \sim 88 \end{gathered}$ | $\begin{gathered} \hline 87 \\ \sim \\ \text { } 83 \end{gathered}$ | $\begin{gathered} \hline 82 \\ \sim \\ 76 \end{gathered}$ | $\begin{gathered} \hline 75 \\ \underset{\sim}{72} \end{gathered}$ | $\begin{gathered} \hline 71 \\ \sim \\ 66 \end{gathered}$ | $\begin{gathered} \hline \underline{\sim} \\ \underset{\sim 2}{\sim} \end{gathered}$ | $$ | $\begin{aligned} & \hline 57 \\ & \sim \\ & 51 \end{aligned}$ | $\stackrel{50}{\sim}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| A3 | - | - | - | - | - | - | A3 | - | B4 | - | - | A4L | $\begin{array}{r} 8.5 \\ \times 13 \\ \hline \end{array}$ | B5L | - | A5L |
| B4 | - | - | - | - | - | A3 | B4 | - | - | A4L | $\begin{array}{r} 8.5 \\ \times 13 \end{array}$ | B5L | - | - | A5L | - |
| A4L | - | - | - | A3 | B4 | - | A4L | $\begin{aligned} & 8.5 \\ & \times 13 \end{aligned}$ | B5L | - | - | A5L | - | - | - | - |
| B5L | - | - | A3 | B4 | - | A4L | B5L | - | - | A5L | - | - | - | - | - | - |
| A5L | A3 | B4 | - | A4L | B5L | - | A5L | - | - | - | - | - | - | - | - | - |
| A4S | - | - | - | - | - | - | $\begin{array}{r} \mathrm{A} 4 \\ \mathrm{~S} \end{array}$ | - | $\begin{array}{r} \mathrm{B} 5 \\ \mathrm{~S} \end{array}$ | - | - | $\begin{array}{r} \text { A5 } \\ \text { S } \end{array}$ | - | - | - | - |
| B5S | - | - | - | - | - | $\begin{array}{r} \text { A4 } \\ \text { S } \end{array}$ | $\begin{array}{r} \text { B5 } \\ \text { S } \end{array}$ | - | - | $\begin{array}{r} \text { A5 } \\ \text { S } \end{array}$ | - | - | - | - | - | - |
| A5S | - | - | - | $\begin{array}{r} \mathrm{A} 4 \\ \mathrm{~S} \end{array}$ | $\begin{array}{r} \text { B5 } \\ \text { S } \end{array}$ | - | $\begin{gathered} \text { A5 } \\ \text { S } \end{gathered}$ | - | - | - | - | - | - | - | - | - |
| $\begin{aligned} & 8.5 \\ & \times 11 \end{aligned}$ | - | - | - | - | - | - | $\begin{array}{r} 8.5 \\ \mathrm{x} 11 \end{array}$ | - | - | - | - | - | - | - | - | - |
| $\begin{gathered} 11 \\ \times 8.5 \end{gathered}$ | - | - | - | - | - | - | $\begin{gathered} 11 \\ \times 8.5 \end{gathered}$ | - | - | - | - | - | - | - | - | - |
| $\begin{aligned} & 8.5 \\ & \times 13 \end{aligned}$ | - | - | - | - | A3 | - | $\begin{aligned} & 8.5 \\ & \times 13 \end{aligned}$ | - | - | A4L | B5L | - | - | - | - | A5L |
| $\begin{aligned} & 11 \\ & \times 15 \end{aligned}$ | - | - | - | - | - | - | $\begin{gathered} 11 \\ \times 15 \end{gathered}$ | - | - | - | - | - | - | - | - | - |

: Unavailable in platen cover mode. L: Lengthwise S: Sideways

- For standard machines (in inches)-

| $\begin{aligned} & \hline \hline \text { Zoom } \\ & \text { Ratios } \end{aligned}$ | $\begin{gathered} \hline 200 \\ \tilde{177} \end{gathered}$ | $\begin{gathered} \hline 176 \\ \tilde{156} \end{gathered}$ | $\begin{gathered} \hline 155 \\ \tilde{130} \end{gathered}$ | $\begin{gathered} \hline 129 \\ \tilde{122} \end{gathered}$ | $\begin{gathered} \hline 121 \\ \tilde{101} \end{gathered}$ | $\begin{gathered} 100 \\ \sim \\ \hline 94 \end{gathered}$ | $\begin{aligned} & \hline 93 \\ & \tilde{86} \end{aligned}$ | $\begin{gathered} \hline 85 \\ \tilde{78} \end{gathered}$ | $\begin{gathered} \hline 77 \\ \sim \\ 75 \end{gathered}$ | $\begin{gathered} \hline 74 \\ \tilde{66} \end{gathered}$ | $\begin{aligned} & \hline 65 \\ & \tilde{\sim} \\ & 51 \end{aligned}$ | $\stackrel{5}{\sim}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 11x17 | - | - | - | - | - | 11x17 | 11x17 | 11x15 | $\begin{aligned} & 8.5 \\ & \times 14 \end{aligned}$ | - | $\begin{aligned} & 8.5 \\ & \times 11 \end{aligned}$ | $\begin{gathered} 5.5 \\ \times 8.5 \end{gathered}$ |
| 11x15 | - | - | - | - | - | 11x15 | 11x15 | - | $\begin{aligned} & 8.5 \\ & \times 14 \end{aligned}$ | $\begin{array}{r} 8.5 \\ \times 11 \\ \hline \end{array}$ | - | $\begin{gathered} 5.5 \\ \times 8.5 \end{gathered}$ |
| 8.5×14 | - | - | - | - | $\begin{gathered} 11 \\ \text { x17 } \end{gathered}$ | $\begin{array}{r} 8.5 \\ \times 14 \end{array}$ | - | - | $\begin{aligned} & 8.5 \\ & \times 11 \end{aligned}$ | - | - | $\begin{gathered} 5.5 \\ \times 8.5 \end{gathered}$ |
| 8.5x11 | - | - |  | 11x17 | - | $\begin{array}{r} 8.5 \\ \times 11 \\ \hline \end{array}$ | - | - | - | - | $\begin{array}{r} 5.5 \\ \times 8.5 \\ \hline \end{array}$ | - |
| $\begin{gathered} 5.5 \\ \times 8.5 \end{gathered}$ | $\begin{gathered} 11 \\ \times 17 \end{gathered}$ | $\begin{gathered} 11 \\ \times 15 \end{gathered}$ | $\begin{array}{r} 8.5 \\ \times 14 \end{array}$ | $\begin{aligned} & 8.5 \\ & \times 11 \end{aligned}$ | - | $\begin{gathered} 5.5 \\ \times 8.5 \end{gathered}$ | - | - | - | - | - | - |
| $\begin{gathered} 8.5 \\ \times 5.5 \end{gathered}$ | - | - | - | $\begin{gathered} 11 \\ \times 8.5 \end{gathered}$ | - | $\begin{array}{r} 8.5 \\ \times 5.5 \end{array}$ | - | - | - | - | - | - |
| 11x8.5 | - | - | - | - | - | $\begin{array}{r} 11 \\ \times 8.5 \\ \hline \end{array}$ | - | - | - | - | $\begin{array}{r} 8.5 \\ \times 5.5 \\ \hline \end{array}$ | - |
| 8x10 | - | - | - | 11x17 | 10x14 | $8 \times 10$ | - | - | - | - | $\begin{array}{r} 5.5 \\ \times 8.5 \end{array}$ | - |
| 10x14 | - | - | - | - | - | 10x14 | - | $\begin{array}{r} 8.5 \\ \times 14 \end{array}$ | $\begin{aligned} & 8.5 \\ & \text { x11 } \end{aligned}$ | - | - | $\begin{array}{r} 5.5 \\ \times 14 \end{array}$ |
| 8x13 | - | - | - | 11x17 | - | $8 \times 13$ | - | - | - | - | $\begin{array}{r} 5.5 \\ \times 8.5 \\ \hline \end{array}$ | - |

$\square$ : Unavailable in platen cover mode.

NOTE: 1) The tables indicate the copy paper size for each original for 50 to $200 \%$ zoom ratios.
2) After specifying a zoom ratio, APS automatically selects a paper size if there is an equivalent paper size available, that guarantees the quality of the magnified copy image.
3) If there is no paper that corresponds to the detected size, the machine displays the message "Set xx paper in tray" and stops the job (copying is still possible).
4) For "-" in the above tables, the machine displays the message "Cannot detect original size" and stops the job (copying is still possible). The selected paper feed tray does not change.
5) When less than $49 \%$ or more than $201 \%$ is selected, APS behaves in accordance with note 4 above.
6) APS also supports the by-pass feed table (except for non-standard paper sizes). When the paper size selected by APS can only be fed from the by-pass feed table, the machine displays a warning to instruct the user to use the by-pass feed table.
7) APS does not support A6, B6, and A5.

### 1.1.6 DISPLAY EDITOR SPECIFICATIONS

| Function | Specifications |
| :---: | :---: |
| Scanned image | - The scanner scans the image. <br> - Maximum A3/DLT (11" x 17"): Reduced image display |
| Displayed image | - $144 \times 192 \mathrm{~mm}, 256$ colors ( 8 bits/dot) <br> - $640 \times 480$ dots, $0.33 \mathrm{~mm} /$ dot Reduces the dpi of scanned images to approximately 25 dpi and displays the entire image <br> - Zoom display: 4 levels (200\%, 264\%, 400\%, 528\%) |
| Area specification procedure | - Move the arrow on the screen by using the cursor key and enter a point by pressing the coordinate entry key. |

### 1.2 MECHANISM OVERVIEW

### 1.2.1 IMAGE GENERATION PROCESS



1. Drum Charge
2. Quenching
3. Drum Cleaning
4. PPC (Pre-cleaning Corona)
5. Belt Transfer
6. Paper Transfer
7. Paper Separation Corona
8. Belt Cleaning Unit and Lubricant Application Brush
9. ID Sensor
10. Development
11. Potential Sensor
12. Laser Exposure

## (1) Drum Charge

The charge corona applies a negative charge to the OPC drum and the charge grid ensures that this charge is even.

## - B017/018 -

- A new charge corona cleaner was adopted to keep the charge wire and charge grid clean. The cleaner starts automatically when the main switch is turned on and if the fusing temperature is less than $100^{\circ} \mathrm{C}$.


## (2) Quenching

After cleaning, the OPC is fully exposed to light from an array of red LEDs, which quench the residual charge on the OPC drum in preparation for the next copy cycle.

## (3) Drum Cleaning

The cleaning brush increases drum cleaning efficiency by applying lubricant to the OPC drum. The cleaning blade scrapes the residual toner off the OPC drum.

## (4) PCC (Pre-cleaning Corona)

The PCC lowers the charge on the photoconductor drum by applying AC and negative DC to improve the efficacy of the cleaning brush.

## (5) Belt Transfer

Positive charge applied to the back of the transfer belt transfers the toner image on the OPC drum to the transfer belt.

## - B017/018 -

- The electrical resistance of the belt varies from belt to belt and directly influences the image transfer belt bias. To optimize the image transfer belt bias a Current Feedback System was adopted to correct the current fluctuation caused by the variation of the electrical resistance on the belt.
- Another solenoid was added to the image transfer belt unit to keep the belt away from the drum between copy jobs. This helps prevent drum fatigue from residual voltage on the belt.


## (6) Paper Transfer

The negatively charged toner image is transferred to the paper by giving a positive charge to the back of the paper while the paper and transfer belt are held in close contact.

## - B017/018 -

- A brush was added to the image transfer belt unit to help push the belt down. This enables toner on the transfer belt to transfer onto the paper before the electrical field between the transfer belt and roller affects it. This helps to decrease the amount of scattered toner on printouts.


## (7) Paper Separation Corona

After transfer, the separation corona quenches the negative charge on the paper to reduce the attraction between the belt and paper. The curvature of the belt causes the paper to separate from the transfer belt.

## (8) Belt Cleaning Unit and Lubricant Application Brush

The brush applies lubricant, which makes it easier for the belt cleaning blade to scrape excess toner off the transfer belt.

## (9) ID Sensor

The ID sensor detects the density of the sensor patches developed on the OPC drum. The signal from the ID sensor is used for process and toner supply control.

## - B017/018 -

- A thermistor has been added to the ID sensor board. The thermistor corrects the output from the ID sensor depending on the temperature. This supplies more reliable data for better toner density control.


## (10) Development

The latent image on the drum attracts the negatively charged toner. Toner is preferentially attracted to those places on the drum surface where the laser reduced the negative charge. The development units for each color are included in the revolver unit.

## - B017/018 -

- A High frequency alternating current is applied to the development bias to optimize development. This improves the quality of grainy images.


## (11) Potential Sensor

The potential sensor detects the electrical potential (the strength of the electric field) on the photoconductor drum for process control.

## (12) Laser Exposure

The polygon mirror reflects the laser beam emitted from the laser diode and projects it onto the drum through the f-theta lens, drum mirror, and toner shield glass. The intensity of the laser output varies in correspondence with the image data. This process creates the latent image on the drum.

- B017/018 -
- The laser power was adjusted to achieve uniform side-to-side laser power. This causes the laser power to be applied evenly across the drum surface.
- Pulse positioning control was adopted to make the image appear smoother.


### 1.3 MAJOR UNIT LAYOUT AND PAPER FEED PATH



## (1) Scanner

- 400 dpi, 10-bit scanning in both main and sub-scan directions (A258/259/260)
- 600 dpi, 10-bit scanning in both main and sub-scan directions (B017/018)
- 3-line CCD
- Halogen exposure lamp
- 5-phase stepper motor drive
- Dual-side continuous scan (A4) support (in continuous copy mode)
- One scan copy in mono-toner color multi-copies (B017/18)
(2) Operation panel (A259, A260, and B017)
- 10.4-inch ( $640 \times 480$ ) color LCD (8-bit) touch-panel
- An additional operation panel is installed when the printer controller is installed.


## (3) Laser unit

- Optics: 6-sided polygon mirror + 2 f-theta lenses + BTL
- Polygon mirror motor ( $24,567 \mathrm{rpm}$ ) with oil bearing (A258/259/260)
- Polygon mirror motor ( $36,850 \mathrm{rpm}$ ) with oil bearing (B017/018)
- 400 dpi ( 8 bits per pixel for each color) in copy mode 600 dpi ( 8 bits per pixel for each color) in printer mode (A258/259/260)
- 600 dpi ( 8 bits per pixel for each color) in both the copy and printer modes (B017/018)
- Modulation: PM + PWM
- Laser power correction (B017/018)
- Image rotation feature (B017/018)


## (4) Transfer belt

- Transfer belt: Always in contact with the drum (A258/259/260)
- Transfer belt: In contact with drum during copy process (B017/018)
- Belt transfer: Indirect application of voltage with a roller
- Paper transfer: Roller transfer
- Registration: Synchronization by the transfer belt H.P. sensor
- Drive: Synchronized with the drum (same motor)
- Separation: Curvature separation + corona unit
- Transfer cycle: 1 belt rotation/A4, 2 rotations/A3
- Belt cleaning: Counter blade
- Lubrication: Brush roller with lubricant bar
- Bias control: Current feedback system (B107/018)
(5) Paper feed/transport system
- Paper feed (A258/B018)

Front loading 500 sheets, 1 -layer tray + by-pass feed

- Transport: Transport belt + fan
- Duplexing: Duplex unit installed as a standard component (A259/A260/B017)
- Paper tray (optional): Holds 500 sheets $\times 2$ trays or 500 sheets $\times 3$ trays.
(6) Fusing and paper exit
- Fusing: Silicone roller fusing (A258/259/260) Fusing: Silicone belt and roller fusing (B017/018)
- Oil application method: Double roller system
- Cleaning: Cleaning rollers (for hot and pressure rollers) (A258/259/260)

Europe/Asia: Cleaning roller for hot roller, cleaning blade for pressure roller

- Cleaning: Tension roller for fusing belt, blade and pad for pressure roller. (B017/018)
- OHP/thick paper speed change


## MAJOR UNIT LAYOUT AND PAPER FEED PATH

## (7) Development and toner supply

- Development: Two-component magnetic brush development
- Development switching: Revolver system
- Image density control: ID sensor + process control
- Toner supply: Screw-in bottle (220 g)
- Toner supply unit: Front of developer unit (rotation type)


## (8) Drum unit

- The drum unit contains the photoconductor drum, charge corona unit, and cleaning unit.
- Charge corona unit: Single-wire scorotron
- Quenching lamp: LED array
- Drive: Synchronized with the transfer belt (DC brushless motor + flywheel)
- Potential sensor included


### 1.4 PARTS LAYOUT

### 1.4.1 MECHANICAL COMPONENT LAYOUT



1. Paper Tray (A258/B018)/Duplex Tray (A259/A260/B017)
2. Pressure Roller
3. Hot Roller
4. 2nd Scanner
5. Revolver Development Unit
6. 1st Scanner
7. Drum Mirror
8. Toner Shield Glass
9. BTL (Barrel Torroidal Lens)
10. Charge Corona Unit
11. Scanner Lens
12. 2nd F-theta Lens
13. CCD Board
14. 1st F-theta Lens
15. Polygon Mirror
16. Drum Cleaning Unit
17. OPC Drum
18. Image Transfer Belt (ITB)
19. By-pass Feed Table
20. Image Transfer Belt Unit
21. Registration Roller
22. Transfer Belt Bias Roller
23. Paper Transfer Unit
24. Belt Cleaning Unit
25. Transport Belt
26. Fusing Belt (B017/018)
27. Heat Roller (B017/018)

### 1.4.2 ELECTRICAL COMPONENT LAYOUT

## - A258/259/260 -



## Diagram 1

1. Scanner Motor Drive Board
2. Scanner Motor
3. Platen Cover Position Sensor
4. IDU Board
5. Original Length Sensor
6. Lamp Regulator
7. Scanner Exhaust Fan
8. CCD Board (SBU)
9. Scanner IPU Board
10. Main Control Board
11. LD (Laser Diode) Main Control Board
12. Laser Synchronizing Detector Board 2
13. Polygon Mirror Motor Drive Board
14. Polygon Mirror Motor
15. LD (Laser Diode) Drive Board
16. Laser Synchronizing Detector Board 1
17. Optics Anti-condensation Heater
18. Original Width Sensor
19. Exposure Lamp
20. Optics Cooling Fan
21. Scanner H.P. Sensor
22. Exposure Lamp Thermostat
23. Original Length Sensor-Sub

### 1.4.3 ELECTRICAL COMPONENT LAYOUT

- B017/018 -



## Diagram 1

1. Scanner Motor Drive Board
2. Scanner Motor
3. Platen Cover Position Sensor
4. Blank
5. Original Length Sensor
6. Lamp Regulator
7. Blank
8. CCD Board (SBU)
9. Scanner IPU Board
10. Main Control Board
11. LD (Laser Diode) Main Control Board
12. Laser Synchronizing Detector Board 2
13. Polygon Mirror Motor
14. LD (Laser Diode) Drive Board
15. Laser Synchronizing Detector Board 1
16. Optics Anti-condensation Heater
17. Original Width Sensor
18. Exposure Lamp
19. Optics Cooling Fans
20. Scanner H.P. Sensor
21. Exposure Lamp Thermostat
22. Original Length Sensor-Sub
23. IPU Cooling Fan
24. Polygon Mirror Motor Cooling Fan
25. Blank


## Diagram 2

1. Main Power Switch
2. Belt Cleaning H.P. Sensor
3. Paper Tray Detector Switch
4. Transfer Belt Home Position Sensor
5. Transfer Belt Heater
6. Paper Height Sensor-1
7. Paper Height Sensor-2
8. Paper Transfer H.P. Sensor
9. Paper Transfer Unit Heater
10. Counters
11. Transport Fan
12. Front Door Switch
13. Paper Exit Door Switch (A259/A260/B017)
14. Junction Gate Solenoid (A259/A260/B017)


## Diagram 3

1. Paper Transfer Positioning Clutch
2. Paper Feed Motor
3. Registration Clutch
4. Relay Clutch
5. By-pass Feed Clutch
6. Paper Feed Clutch
7. By-pass Paper Width Detection Board
8. Vertical Transport Switch
9. By-pass Pick-up Solenoid
10. Upper Limit Sensor
11. Paper End Sensor
12. Relay Sensor
13. By-pass Paper End Sensor
14. By-pass Feed Table Switch
15. Registration Sensor
16. Temperature and Humidity Sensor


## Diagram 4

1. Operation Panel
2. Paper Separation Corona Unit
3. Pressure Roller Thermofuse
4. Pressure Roller Fusing Lamp
5. Paper Exit Sensor
6. Oil End Sensor
7. Hot Roller Thermistor (A258/259/260)
8. Hot Roller Fusing Lamp
9. Hot Roller Thermofuse (A258/259/260)
10. Pressure Roller Thermistor
11. Duplex Entrance Sensor
12. Duplex Turn Sensor
13. Duplex Paper End Sensor
14. Duplex Feed Motor
15. Side Fence Jogger HP Sensor
16. Duplex Side Fence Jogger Motor
17. Duplex End Fence Jogger Motor
18. Duplex Control Board
19. End Fence Jogger HP Sensor
20. Heat Roller Fusing Lamp (B017/018)
21. Heat Roller Thermostat (B017/018)
22. Heat Roller Thermistor (B017/018)
23. Image Transfer Belt Release Solenoid (B017/018)


## Diagram 5

1. Charge Corona Unit
2. Quenching Lamp
3. PCC (Pre-cleaning Corona)
4. ID Sensor
5. Charge Corona Fan
6. Toner Cartridge Sensor
7. Revolver H.P. Sensor
8. Toner End Sensor
9. High Voltage Supply Board: B
10. Potential Sensor
11. Charge Corona Cleaner Motor (B017/018)


## Diagram 6

1. Development Clutch
2. Toner Supply Motor
3. Revolver Motor
4. Belt Lubricant Clutch
5. Fusing Motor
6. Fusing Clutch
7. Belt Cleaning Clutch
8. Tray Lift Motor
9. Drum Motor


## Diagram 7

1. High Voltage Supply Board: C, G
2. Rear Upper Cooling Fan Motor
3. Fusing Unit Fan Motor
4. PSU (Power Supply Unit)
5. High Voltage Supply Board: T2, D
6. CSS/Bank Interface Board
7. Revolver Motor Drive Board
8. Used Toner Sensor
9. High Voltage Supply Board: T1, PCC
10. Main Exhaust Fan Motor
11. I/O (Input/Output) Control Board
12. PSU Fan Motor
13. Rear Lower Cooling Fan
14. Development Cooling Fan (B017/018)

### 1.4.4 DRIVE LAYOUT



Five motors drive the mechanical components for this machine. The drive sections driven by these five motors are listed below.

1. Scanner Drive
2. Development/Drum/Transfer Belt

Drive
3. Paper Feed/Registration/Paper Transfer/Transport Belt Drive
4. Fusing Unit/Paper Exit Drive
5. Revolver Drive

### 1.4.5 AIR FLOW



1. Optics Cooling Fan
2. Fusing Unit Fan
3. Rear Upper Cooling Fan
4. Scanner Exhaust Fan (A258/259/260)
5. Charge Corona Fan
6. PSU Fan
7. IPU cooling fan (B017/018)
8. Rear lower cooling fan
9. Development cooling fan (B017/018)
10. Main Exhaust Fan
11. Transport Fan

### 1.4.6 ELECTRICAL COMPONENT DESCRIPTIONS

Printed Circuit Boards

| Symbol | Name | Function | $\begin{gathered} \text { Index- } \\ \text { No } \end{gathered}$ | Location |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | $\begin{array}{\|c\|} \hline \text { A258/A259/ } \\ \text { A260 } \\ \hline \end{array}$ | B017/018 |
| PCB1 | PSU | Supplies AC and DC power. | 7-4 | K4 | G3 |
| PCB2 | Lamp regulator | Supplies AC power to the exposure lamp. | 1-6 | O7 | J6 |
| PCB3 | SBU | Converts the light reflected from the original into video signals. | 1-8 | J9 | G6 |
| PCB4 | Scanner IPU | Converts the RGB image signal from the CCD to a CMYK signal and sends it to the LD main control board. <br> Analyzes image for anticounterfeiting (B017/B018) | 1-9 | L8 | H7 |
| PCB5 | Scanner motor drive | Supplies DC power to the scanner motor. | 1-1 | M7 | H4 |
| PCB6 | I/O control | Interfaces the sensors, clutches, solenoids, and motors in the printer module with the main control board. | 7-11 | D14 | C7 |
| PCB7 | High voltage supply: <br> C, G | Supplies power to the charge corona wire and grid. | 7-1 | A14 | A10 |
| PCB8 | High voltage supply: <br> T1, PCC | Supplies power to the transfer belt and pre-cleaning corona unit. | 7-9 | A2 | A4 |
| PCB9 | High voltage supply: T2, D | Supplies power to the paper transfer bias roller and paper separation corona unit. | 7-5 | A1 | A3 |
| PCB10 | High voltage supply: <br> B | Supplies power to the development rollers. | 5-9 | A3 | A1 |
| PCB11 | Main control | Controls the printer sequence. | 1-10 | J12 | E10 |
| PCB12 | Laser synchronizing detector 1 | Detects laser main scan synchronization while the latent image is being written to the drum. | 1-16 | 015 | J9 |
| PCB13 | Laser synchronizing detector 2 | Detects laser main scan synchronization while the latent image is being written to the drum. | 1-12 | 015 | J10 |
| PCB14 | Revolver motor drive | Controls the revolver motor. | 7-7 | F5 | D4 |
| PCB15 | Interface: CSS/Bank | Connects to the CSS unit and optional paper tray unit. | 7-6 | J9 | F6 |
| PCB16 | LD drive | Drives the laser diode. | 1-15 | 017 | J9 |
| PCB17 | LD main control | Controls the laser power, main scan synchronizing sensors, and process control gamma correction. <br> Rotates scanned image (B017/018) <br> Analyzes images for anticounterfeiting. (B017/018) | 1-11 | M16 | H10 |


| Symbol | Name | Function | Index- <br> No | L258/A259/ <br> A260 | B017/018 |
| :--- | :--- | :--- | :---: | :---: | :---: |
| PCB18 | By-pass paper width <br> detection | Detects the paper width on the <br> by-pass feed table. | $3-7$ | A10 | A5 |
| PCB19 | Operation panel | Used to operate the copier. | $4-1$ | H19 |  |
| PCB20 | Duplex control | Controls the duplex unit. | $4-18$ | F20 <br> (A259/A260 <br> copiers only) | D12 |
| PCB21 | IDU | Analyzes images for anti- <br> counterfeiting. (A258/259/260) | $1-4$ | M14 | - |
| PCB22 | Polygon mirror motor <br> drive | Controls the polygon mirror <br> motor. (A258/259/260) | $1-13$ | O15 | - |
| PCB23 | Temperature and <br> humidity sensor | Detects the ambient temperature <br> and humidity. | $3-16$ | E19 | D11 |
| PCB24 | Header relay | Supplies the power to the <br> heaters | - | - | H1 |

Motors

| Symbol | Name | Function | Index- <br> No | Location |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | $\begin{gathered} \hline \text { A258/259/ } \\ 260 \end{gathered}$ | B017/018 |
| M1 | Scanner | Drives the scanner. | 1-2 | M6 | H4 |
| M2 | Polygon mirror | Drives the polygon mirror (laser unit). | 1-14 | O15 | H8 |
| M3 | Revolver drive | Rotates the revolver unit. | 6-3 | G5 | E4 |
| M4 | Duplex feed motor | Drives the paper feed roller in the duplex unit. | 4-14 | G20 (A259/A260 copiers only) | E12 <br> (B017 <br> models only) |
| M5 | Duplex Side fence jogger | Drives the duplex unit side fences. | 4-16 | G21 (A259/A260 copiers only) | E12 <br> (B017 <br> models only) |
| M6 | Duplex End fence jogger | Drives the duplex unit end fences. | 4-17 | G21 (A259/A260 copiers only) | E13 <br> (B017 <br> models only) |
| M7 | Paper feed | Drives the paper feed unit. | 3-2 | A12 | A6 |
| M8 | Tray lift | Lifts the tray bottom plate. | 6-8 | A12 <br> (A258 model <br> only) | A7 <br> (B018 <br> models only) |
| M9 | Toner supply | Supplies toner. | 6-2 | A7 | A3 |
| M10 | Drum | Drives the drum, the development unit currently at the development position, and the transfer belt. | 6-9 | A19 | A9 |
| M11 | Fusing | Drives the fusing units and exit rollers. | 6-5 | E8 | A10 |
| M12 | Charge corona cleaner | Drives the charge corona cleaner | 5-11 | - | A2 |

PARTS LAYOUT

Fan Motors

| Symbol | Name | Function | IndexNo | Location |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | $\begin{gathered} \text { A258/259/ } \\ 260 \end{gathered}$ | B017/018 |
| FM1 | Transport | Attracts copy paper to the transport belt. | 2-11 | A11 | A6 |
| FM2 | Optics cooling | Cools the scanner unit | 1-20 | O14 | - |
| FM3 | Charge corona | Cools the charge corona unit. | 5-5 | A6 | A3 |
| FM4 | Scanner exhaust | Cools the scanner unit. | 1-7 | P7 | - |
| FM5 | Fusing unit | Cools the fusing unit. | 7-3 | E1 | D4 |
| FM6 | Main exhaust | Sucks air from the charge and transfer areas out of the machine. | 7-10 | A17 | A5 |
| FM7 | Rear cooling unit (A258/59/60) <br> Rear upper cooling (B017/018) | Cools the rear section of the copier. | 7-2 | E10 | D3 |
| FM8 | PSU | Cools the PSU. | 7-12 | A7 | A11 |
| FM9 | Rear lower cooling | Cools the rear section of the copier. | 7-13 |  | D2 |
| FM10 | Polygon mirror motor | Cools the polygon mirror motor | 1-25 | - | D6 |
| FM11 | Optics cooling 0 | Cools the scanner unit. | 1-20 | - | J7 |
| FM12 | Optics cooling 1 |  | 1-20 | - | J7 |
| FM13 | IPU cooling | Cools the IPU section. | 1-24 | - | J7 |
| FM14 | Development cooling | Cools the development section. | 7-14 | - | J7 |

## Sensors

| Symbol | Name | Function | Index- <br> No | A258/259/ <br> $\mathbf{2 6 0}$ | B017/018 |
| :---: | :--- | :--- | :--- | :--- | :--- |
| S1 | Toner end | Detects the presence or <br> absence of toner in a <br> cartridge. | $5-8$ | A4 | A1 |
| S2 | Toner cartridge | Detects the presence or <br> absence of toner cartridges. | $5-6$ | A4 | A1 |
| S3 | Revolver H.P. | Detects if the revolver is at <br> the home position. | $5-7$ | A4 | A2 |
| S4 | Potential | Detects the potential of the <br> drum surface. | $5-10$ | A5 | A2 |
| S5 | ID | Detects the density of toner <br> on the developed ID sensor <br> patch on the drum. | $5-4$ | A5 | A2 |
| S6 | Belt cleaning H.P. | Detects if the belt cleaning <br> unit is at the home position. | $2-2$ | A8 | A11 |
| S7 | By-pass feed paper <br> end | Detects if there is paper on <br> the by-pass feed table. | $3-13$ | A8 | A5 |
| S8 | Upper limit | Detects the upper limit <br> position of the tray bottom <br> plate. | $3-10$ | A13 <br> (A258 model <br> only) | A7 <br> (B018 model <br> only |
| S9 | Relay | Detects paper jams at the <br> relay section. | $3-12$ | A13 <br> (A258 model <br> only) | A7 <br> (B018 model <br> only |


| Symbol | Name | Function | $\begin{gathered} \text { Index- } \\ \text { No } \end{gathered}$ | Location |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | $\begin{gathered} \text { A258/259/ } \\ 260 \end{gathered}$ | B017/018 |
| S10 | Tray paper end | Detects if there is paper in the paper feed tray. | 3-11 | G13 (A258 model only) | A7 <br> (B018 model <br> only |
| S11 | Relay | Detects a paper jam at the relay section | 3-12 | A14 (A259/A260 models only) | A7 |
| S12 | Used toner | Detects if the used toner tank is full. | 7-8 | A15 | A4 |
| S13 | Paper transfer H.P. | Detects if the paper transfer unit is at the home position. | 2-8 | A15 | A4 |
| S14 | Paper height 1 | Detects the amount of paper in the tray. | 2-6 | $\begin{array}{\|c} \hline \text { A16 } \\ \begin{array}{c} \text { (A258 model } \\ \text { only }) \end{array} \\ \hline \end{array}$ | A8 <br> B018 model <br> only |
| S15 | Paper height 2 | Detects the amount of paper in the tray. | 2-7 | A16 <br> (A258 model <br> only $)$ | A8 <br> B018 model <br> only |
| S16 | Transfer belt H.P. | Detects the mark on the transfer belt. | 2-4 | A18 | A9 |
| S17 | Registration H.P. | Detects paper jams at the registration section. | 3-15 | A19 | A9 |
| S18 | Paper exit | Detects paper jams at the paper exit. | 4-5 | F1 | D1 |
| S19 | Oil end | Detects if there is silicone oil in that tank. | 4-6 | G1 | E1 |
| S20 | Original length | Detects the length of the original. | 1-5 | N7 | J5 |
| S21 | Platen cover position | Detects if the platen cover is open or closed. | 1-3 | O7 | J5 |
| S22 | Original length -sub | Detects the length of the original | 1-23 | P7 | 14 |
| S23 | Scanner H.P. | Detects the scanner home position. | 1-21 | P14 | J6 |
| S24 | Original width | Detects the width of the original. | 1-18 | P14 | J6 |
| S25 | Side fence jogger HP | Detects the home position of the duplex unit side fence. | 4-15 | G22 (A259/A260 models only) | E13 <br> (B017 model <br> only |
| S26 | End fence jogger HP | Detects the home position of the duplex unit end fence. | 4-19 | G22 (A259/A260 models only) | E13 (B017 model only |
| S27 | Duplex paper end | Detects if there is paper in the duplex unit. | 4-13 | $\begin{array}{\|c\|} \hline \text { G22 } \\ \text { (A259/A260 } \\ \text { models only) } \\ \hline \end{array}$ | E13 (B017 model only |
| S28 | Duplex entrance | Detects when copy paper comes into the duplex unit. | 4-11 | G23 (A259/A260 models only) | E13 (B017 model only |
| S29 | Duplex turn | Detects when copy paper is being reversed in the duplex unit. | 4-12 | G23 (A259/A260 models only) | E13 (B017 model only |

PARTS LAYOUT

## Switches

|  |  |  |  | Location |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Symbols | Name | Function |  | $\begin{array}{\|c\|} \hline \text { A258/259/ } \\ 260 \\ \hline \end{array}$ | B017/018 |
| SW1 | Main power | Turns the copier power on or off. | 2-1 | M1 | H1 |
| SW2 | Front door | Cuts the DC line to the high voltage supply board when the front door is open. | 2-12 | E11 | A11 |
| SW3 | Paper exit door | Detects if the paper exit door is open or closed. | 2-13 | A7 <br> (A259/A260 <br> models only) | $\begin{gathered} \hline \text { D2 } \\ \begin{array}{c} \text { (B017 model } \\ \text { only) } \end{array} \\ \hline \end{gathered}$ |
| SW4 | By-pass feed table | Detects if the by-pass feed table is open or closed. | 3-14 | A8 | A5 |
| SW5 | Paper tray detector | Detects the presence or absence of a paper tray. | 2-3 | A16 <br> A258 model <br> only) | $\begin{array}{\|c\|} \hline \text { A7 } \\ \begin{array}{c} \text { (B018 model } \\ \text { only) } \end{array} \\ \hline \end{array}$ |
| SW6 | Vertical transport | Detects if the vertical transport door is open or closed. | 3-8 | A17 | A4 |

## Clutches

| Symbols | Name | Function | Index- <br> No | Location |  |
| :--- | :--- | :--- | :---: | :---: | :---: |
| CL1 | By-pass feed | Transmits drive to the by- <br> pass feed mechanism. | 3-5 | A9 | A517/018 |
| CL2 | Paper feed | Transmits drive to the paper <br> feed mechanism. | $3-6$ | A17 | A8 |
| CL3 | Registration | Transmits drive to the <br> registration rollers. | $3-3$ | A18 | A8 |
| CL4 | Paper transfer <br> positioning | Transmits drive to the paper <br> transfer unit. | $3-1$ | A11 | A6 |
| CL5 | Development | Transmits drive to the <br> development mechanism. | $6-1$ | E3 | D2 |
| CL6 | Relay | Transmits drive to the relay <br> rollers. | $3-4$ | A18 | A8 |
| CL7 | Belt cleaning | Transmits drive to the belt <br> cleaning unit. | $6-7$ | E2 | D1 |
| CL8 | Fusing | Transmits drive to the <br> fusing unit. | $6-6$ | E1 | D1 |
| CL9 | Belt lubricant | Transmits drive to the belt <br> lubricant mechanism. | $6-4$ | E2 | D1 |

Solenoids

| Symbols | Name | Function | $\begin{gathered} \text { Index- } \\ \text { No } \end{gathered}$ | Location |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | $\begin{array}{\|c\|} \hline \text { A258/259/ } \\ 260 \\ \hline \end{array}$ | B017/018 |
| SOL1 | By-pass pick-up | Lowers the by-pass pick-up roller. | 3-9 | A9 | A5 |
| SOL2 | Junction gate | Raises the junction gate for the duplex tray. | 2-14 | $\begin{array}{\|c\|} \hline \text { A7 } \\ \text { (A259/A260 } \\ \text { copiers only) } \\ \hline \end{array}$ | D2 |
| SOL3 | Image transfer belt release | Releases the image transfer belt from the drum. | 4-22 | - | A12 |

## Lamps

| Symbol | Name | Function | Index- <br> No | Location |  |
| :---: | :--- | :--- | :---: | :---: | :---: |
| L1 | Hot roller fusing | Provides heat to the hot <br> roller. | B017/018 |  |  |
| L2 | Pressure roller <br> fusing | Provides heat to the <br> pressure roller. | H1 | E1 |  |
| L3 | Exposure | Applies high intensity light <br> to the original for exposure. | $1-19$ | O5 | J5 |
| L4 | Quenching | Neutralizes any charge <br> remaining on the <br> photoconductor. | $5-2$ | A6 | A2 |
| L5 | Heat roller fusing | Provides heat to the heat <br> roller. | $4-20$ | - | E1 |

## Heaters

| Symbol | Name | Function | Index- <br> No | A258/259/ <br> $\mathbf{2 6 0}$ | B017/018 |
| :---: | :--- | :--- | :---: | :---: | :---: |
| H1 | Paper transfer unit | Prevents moisture from <br> forming around the paper <br> transfer unit. | $2-9$ | J 1 | G1 |
| H2 | Transfer belt | Used to stabilize the <br> temperature around the <br> transfer belt. | $2-5$ | K1 | G1 |
| H3 | Optics anti- <br> condensation | Prevents moisture from <br> forming on the optics. | $1-17$ | L1 | G1 |

Thermistors

| Symbol | Name | Function | Index- <br> No | L258/259/ion <br> $\mathbf{2 6 0}$ |  |
| :--- | :--- | :--- | :---: | :---: | :---: |
| BH1 017/018 |  |  |  |  |  |
| Pressure roller | Controls the temperature of <br> the pressure roller. | $4-9$ | F1 | D1 |  |
| TH2 | Hot roller | Controls the temperature of <br> the hot roller. | $4-6$ | G1 | - |
| TH3 | Heat Roller | Controls the temperature of <br> the heat and hot roller's. | $4-22$ | - | E1 |

## Thermofuses

| Symbol | Name | Function | Index- <br> No | Location |  |
| :---: | :--- | :--- | :---: | :---: | :---: |
| TF1 | Hot roller | Protects the hot roller from <br> overheating. | 4-8 | H1 | - |
| TF2 | Pressure roller | Protects the pressure roller <br> from overheating. | $4-3$ | H1 | F1 |

## Thermostat

| Symbol | Name | Function | Index- <br> No | A258/259/ <br> $\mathbf{2 6 0}$ | B017/018 |
| :---: | :--- | :--- | :---: | :---: | :---: |
| TS1 | Exposure lamp | Prevents the exposure lamp <br> from overheating when it is <br> on for a long time. | $1-22$ | O6 | J 5 |
| TS2 | Heat roller | Prevents the heat roller <br> fusing lamp from <br> overheating when it is on <br> for a long time. | $4-21$ | - | E1 |

Counter

| Symbol | Name | Function | Index- <br> No | A258/259/ <br> $\mathbf{2 6 0}$ | B017/018 |
| :---: | :---: | :--- | :---: | :---: | :---: |
| CO1 | Upper mechanical | Indicates the total number <br> of development cycles <br> made using the C, M, and Y Y <br> development units; | $2-10$ | A9 | D6 |
| CO2 | Lower mechanical | Shows the total number of <br> black developments. | $2-10$ | A10 | D7 |

## DETAILED DESCRIPTIONS

## 2. DETAILED DESCRIPTION (B017/018)

### 2.1 PROCESS CONTROL

### 2.1.1 OVERVIEW

The process control for this machine is almost the same as for the A258/259/260 copiers. The only difference is in the potential values of VD (charge voltage), VL (laser power), and VB (development bias). These potential values are optimized for 600 dpi processing. By changing the resolution, the density of the pattern used for process control has been changed. For process control to work properly, these potential values were changed from the A258/259/260 copier level to their current potential values for the B017/B018.

### 2.1.2 POTENTIAL CONTROL

Just like A258/259/260 copiers, there are 4 process control self-checks.

1) Forced process control self-check
2) Initial process control self-check
3) Interval process control self-check
4) Times process control self-check

The different points on the process control self-check from A258/259/260 copiers are as follows.

## Initial process control self-check

- The initial process control starts automatically when the power is turned on (or when the machine returns to stand-by mode from sleep mode), but only if the fusing belt in the fusing unit is less than $55^{\circ} \mathrm{C}$. This is because the fusing belt temperature drops faster because the fusing belt is thinner than the hot roller.


## TD auto correction (SP3-128)

- During the self-check, the machine automatically adjusts the toner concentration if the $\mathrm{M} / \mathrm{A}$ (Mass/Area) of the ID sensor pattern is out of $4.0+/-0.05 \mathrm{mg} / \mathrm{cm}^{2}$, in order to attain proper image density. This mode is executed only when performing the interval process control self-check. (This was executed only when performing the initial process control self-check on A258/259/260 copiers.)


### 2.2 DRUM UNIT

### 2.2.1 DRIVE MECHANISM

The drive mechanism for this machine is the same as for the A258/A259/A260 copiers. However, the drum shaft extends fully from the rear to the front side in order to prevent the photoconductor gap from fluctuating during drum rotation.

### 2.2.2 CHARGE CORONA UNIT CLEANER

A charge corona unit cleaner was adopted to prevent the charge corona wire and charge grid from being contaminated with toner and paper dust.

## Drive:

- Cleaner affixed to screw rod [A].
- Unit driven by DC motor [B] located at copier front.


## Cleaning:

- Grid cleaner pad [C] and charge wire cleaner pads [D].
- Home position at copier front.
- Machine cleans according to conditions below:


1) When the main switch is turned on.
2) When the fusing temperature is less than $55^{\circ} \mathrm{C}$.
3) When forced using an SP mode (SP2-802).

## Cleaning Path:

Copier front - Rear end point - Copier front
Only the charge corona grid is cleaned during the traverse from the copier front to the rear end point (black arrow). Both the charge wire and grid are cleaned during this traversal from the rear end point to the copier front (white arrow).

## Position Detection:

- No sensor to detect the position of the cleaner.
- I/O control board detects the current supplied to the motor
- It senses the sudden change in the current value, which occurs when the cleaner reaches the end point.
- At the turnaround point, the motor reverses.
- If current does not increase within 60 seconds after motor rotation, the I/O control board detects an open circuit or disconnected condition, stops the motor, and then displays SC303.


## Related SP modes:

1) SP2-802-000: Forced Charger Cleaning This performs the charge and grid cleaning.
2) SP2-803-001: Auto Cleaning ON/OFF This specifies the timing when the charger cleaning is performed.
3) SP2-803-002: Development Count

This enables charger cleaning at specified development cycle count
4) SP2-803-003: Operation Time

This specifies the operation time interval.

### 2.3 SCANNER UNIT

### 2.3.1 OVERVIEW

- Scanning resolution is 600 dpi .
- Higher resolution improves sharpness, and color and image reproduction capability.
- A new lens, CCD, and exposure lamp were added to attain the new 600 dpi resolution.
- New image rotation feature
- Rotates the scanned image in 90-degree increments and then prints out.
- 80 MB of memory is used for the image rotation.
- Stores up to A3/DLT mono-toner color images.
- The copier only makes one scan for the multi copy run in mono-toner (CMYK) color copy mode.
- The image rotation circuit is in the LD main control board.


### 2.4 IMAGE PROCESSING

### 2.4.1 OVERVIEW

The following features were added to B017/018 copiers or modified from the A258/259/260 copiers.

## Image rotation feature

- Rotates up to A3/DLT full color images.
- Maintains the maximum copy speed by feeding paper sideways.


## Laser power correction

- A correction value is applied to the laser power.
- This evenly applies the power across the drum surface, preventing uneven image density images.


## 600 dpi resolution

- Improved sharpness and gradation of images.
- New dither patterns in copy mode
- Increased productivity in print mode (Prints images out without slowing down the process speed for 600 dpi.)
NOTE: On the A258/259/260 copiers, the process speed changes to $2 / 3$ of the standard speed for 600 dpi.


## Dither processing

- Two dither patterns for Text and Photo modes
- Dither pattern size is increased to improve gradation.


## Pulse positioning control

- Machine can change the start timing for laser exposure.
- Makes lines appear smoother. (This improves the quality of grainy images.)


### 2.4.2 IMAGE ROTATION



- The image rotation circuit is located on the LD control board.
- CMYK data processed in the IPU section is sent to the LD control board.
- Image rotation circuit has 80 MB memory.
-64MB to store up to A3/DLT mono toner color image data
- 16 MB to store image separation data.
- After the image is rotated in this circuit, dither processing is applied to the image data and laser exposure begins.
- Since mono-toner color (CMYK) image data can be stored in memory, the scanner only scans the image once to make multi-copies.


### 2.4.3 LASER EXPOSURE



- New polygon mirror motor [A] to achieve real 600 dpi.
- Rotates at 36,850 rpm.
- The polygon mirror motor cooling fan $[B]$ is beside the optical housing unit because of this high-speed rotation.


### 2.4.4 LASER POWER CORRECTION



Even if the power from the LD unit is the same from side to side, laser power is not evenly applied across the drum surface due to the characteristics of the F-theta and Barrel Torroidal lenses as shown by the curve in the illustration. These characteristics cause the laser power at the center to be slightly stronger than at either side. This causes uneven image density on your printout.
Since all scanner units have the same characteristics, a correction curve is applied to the laser power exposed from the LD unit so that the laser power applied across the drum surface becomes even. The curved line in the illustration becomes straight by applying the correction to the laser power.

### 2.4.5 DITHER PROCESSING



- Two dither patterns for Text and Photo modes.
- In Text mode, dither patterns are made with $2 \times 2$ dot units for fine resolution.
- In the Photo mode, dither patterns are made with $3 \times 3$ dot units.
- Using the larger unit makes the image appear smoother, improving the quality of grainy images.


### 2.4.6 PULSE POSITIONING CONTROL

- The location of the active part of the laser signal can be on either the left or right side of each pixel.
- The positioning of the active part of the laser signal shifts to the left or right depending on adjacent pixel values.

- When scanning the gray solid image, top right, all active parts locate on the left side of each pixel if pulse-positioning control is not used.
- Engine capability problems cause these thin lines to be reproduced improperly.
- The line is not completely straight because image data was lost. This also causes grainy images.

- Pulse positioning control thickens the lines and reproduces them properly without any image loss.
- This causes the lines to appear smoother. (This improves the quality of grainy images.)



### 2.5 DEVELOPMENT UNIT

### 2.5.1 OVERVIEW

To optimize image development, a high frequency AC component has been applied to the development bias. The high frequency AC component improves the quality of grainy images.

### 2.5.2 TONER SUPPLY



When the revolver unit rotates, small amounts of toner tend to flow into the development unit. This causes the toner concentration to increase. To prevent toner from flowing into the development units, a small window [A] is added to the development shutter $[\mathrm{B}]$ and a magnet $[\mathrm{C}]$ is attached on to the toner supply pipe [D].

A small amount of developer flows back into the toner supply pipe through the small window on the shutter during the revolver rotation and is caught by the magnet. The developer caught by the magnet functions as a shield and prevents toner from flowing into the development unit. When toner is supplied to the development unit, the supply auger [E] rotates and supplies the proper amount of toner.

### 2.6 IMAGE TRANSFER BELT UNIT

### 2.6.1 OVERVIEW

The image transfer function is the same as the A258/259/260 copiers. The changes described below were applied to the B017/018 to improve reliability and image quality.

## Image transfer unit positioning

- Changed to maintain the width of the photoconductor gap.
- Changed compression spring position and the shape of the drum stay.


## Current feedback system

- Optimized the image transfer bias.
- Automatically corrects the current applied to the belt to apply a constant optimum transfer bias to the belt.
- This also prevents dark spots.


## Touch and release mechanism

- Added a solenoid to the image transfer belt unit.
- Keeps the image transfer belt away from the drum between copy jobs
- Prevents drum fatigue due to residual voltage on the belt.


## Paper transfer mechanism

- Added brush to the image transfer belt unit
- Changed the shape of the paper guide of the paper transfer unit.
- Ensures correct paper transfer
- Improves the quality of the toner blaster image.


### 2.6.2 IMAGE TRANSFER BELT UNIT POSITIONING



- The release lever $[A]$ is at the front of the unit.
- Moving the release lever rotates the release lever cam [B].
- Rotating the release lever counterclockwise applies tension to the belt
- The positioning cam [C] located at the end of the release shaft [D] moves in the same direction.
- The positioning cam moves along the rear frame [E]
- It is pushed outward by the rear frame because of the shape of the cam.
- A compression spring [F] is also located between the end of shaft and the positioning cam.
- This spring applies the pressure to the image transfer belt unit and places the unit in the proper position.
- To properly place this unit on A258/259/260 copiers:
- Compression spring put on the front side of the image transfer belt unit
- The drum stay presses the spring, which maintains the position of both the transfer belt and drum units.
- When securing the transfer belt stay with screws, its position might fluctuate slightly
- This is due to the pressure applied from the spring, causing the photoconductor gap to change slightly.
- To maintain this gap, the compression spring position and the transfer belt stay shape were changed for the B017/018 copiers.


The belt cleaning clutch $[A]$ transfers drive from the fusing motor to the belt cleaning shaft [B] through the couplings [C]. If the couplings are not properly engaged as shown [D], this may cause SC457 (ITB cleaning unit position error). This may happen when the machine power is on after the image transfer belt unit is installed.

If the couplings are not properly engaged, the coupling on the belt cleaning shaft is pressed by another coupling and the shaft moves to the front side of the copier as shown by white arrow. Rotating the belt cleaning shaft can properly connect the couplings by using a screwdriver to turn the shaft.

### 2.6.3 CURRENT FEEDBACK SYSTEM



- Electrical resistance of image transfer belts varies belt to belt.
- Current applied to the image transfer belt changes due to the variation of electrical resistance.
- The current feedback system was adopted to optimize the transfer bias. Insulated material is used for the roller [A]
- A receptacle [B2] was added to the rear side of the belt tension roller.
- This receptacle is connected to the high voltage supply board - T1, PCC [C].
- Current flows from the high voltage supply board to receptacle [B1] to the transfer bias roller [D] then to the belt. From the belt it is transferred to the tension roller [E] then to the receptacle [B2] and finally back to the high voltage supply board.
- The current fed back to the high voltage supply board changes because the electrical resistance of the belt varies.
- The current applied to the belt is automatically corrected thereby applying a constant optimum transfer bias to the belt.


### 2.6.4 TOUCH AND RELEASE MECHANISM



- If the image transfer belt is always in contact with the drum surface, residual voltage remains on the belt because the bias is always applied to the image transfer belt during operation.
- Residual voltage may cause drum fatigue, resulting in darker bands on copies.
- A solenoid [A] was added to the image transfer belt unit to prevent drum fatigue.
- The solenoid turns off between each copy job to keep the belt away from the drum.
- The image transfer belt is in contact with the drum whenever it rotates because the drum motor drives the belt.
- The solenoid turns off to keep the belt away from the drum 100 milliseconds after the drum motor stops between each copy job
- It turns on again 100 milliseconds before the drum motor starts rotating to bring the belt in contact with the drum.
- When the solenoid turns off, the release bracket $[B]$ is pulled by the spring [C].
- The bracket [B] pushes the stay [D] for the insulation roller [E] down, resulting in approximately a $1-\mathrm{mm}$ clearance between the drum and belt.


### 2.6.5 PAPER TRANSFER MECHANISM



- Brush [A], in the image transfer belt unit, pushes the belt down.
- This ensures that paper comes in contact with the image transfer belt before the electrical field affects the toner on the belt.
- High voltage applied to the paper transfer roller generates the electrical field.
- If this field affects the toner before the paper comes in contact with the belt, toner will be scattered around the image on the paper or smeared.


### 2.7 REGISTRATION



While making copies, paper dust is transferred to the paper transport section. The paper transport roller is cleaned by the cleaning blade; however, paper dust may cause cleaning efficiency to drop, resulting in the dirty backgrounds on the back side of copies. To prevent this, a cleaning scraper $[\mathrm{A}]$ was added to the registration roller section. The cleaning scraper removes paper dust off of the registration roller. The edge of the scraper needs to be cleaned at every PM to maintain cleaning efficiency.

### 2.8 FUSING

### 2.8.1 MAJOR COMPONENTS



1. Heat Roller
2. Heat Roller Thermostat
3. Heat Roller Thermistor
4. Oil Supply Roller
5. Oil Supply Pad
6. Oil Supply Sub-Roller
7. Oil Blade
8. Fusing Belt
9. Hot Roller
10. Hot Roller Fusing Lamp
11. Pressure Roller
12. Pressure Roller Fusing Lamp
13. Pressure Roller Thermofuse
14. Pressure Roller Thermistor
15. Paper Exit Sensor
16. Fusing Exit Roller
17. Fusing Exit Sub-Roller
18. Exit Roller
19. Exit Sub-Roller
20. Pick-off Pawls
21. Tension Roller
22. Heat Roller Fusing Lamp
23. Pressure Roller Cleaning Blade
24. Pressure Roller Cleaning Pad

### 2.8.2 DRIVE MECHANISM



- The fusing motor $[\mathrm{A}]$ drives the fusing and paper exit units.
- The fusing clutch $[B]$ transmits drive to the fusing drive gear $[C]$.
- When the CPU detects that the front door is opened (by the signal from the front door switch), it turns off the clutch,
- The clutch cuts the drive transmission from the drive gear [C].
- There are also gears $[\mathrm{D}]$ at the front of the hot and pressure rollers to reduce creasing.
- The friction between the fusing belt and hot roller drives the fusing belt [E].
- The fusing belt drives the heat roller [F] using this friction.
- The tension roller [ G ] applies tension to the fusing belt
- The friction from the fusing belt rotates it.
- This roller cleans the fusing belt surface.


### 2.8.3 FUSING UNIT

## Fusing Mechanism



- A belt fusing system was adopted to reduce the warming-up time.
- Warming-up time is 4.5 minutes.
- The heat roller $[A]$ is made of aluminum
- The fusing belt $[B]$ is made of resin coated with silicone rubber.
- The heat roller and fusing belt heat up faster because the heat conduction efficiency increased compared to the hot and pressure roller system.
- The heat, hot, and pressure rollers have a fusing lamp:
- 500W [C] for the heat roller,
- 150W [D] for the hot roller [E],
- 400W [F] for the pressure roller [G].
- The heat roller thermistor $[\mathrm{H}]$ controls the heat and hot roller fusing lamps.
- These two lamps turn on and off simultaneously.
- The fusing lamp for the hot roller evenly heats the roller. This prevents uneven fusing for the 1st copy after the power is switched on.
- The pressure roller thermistor [I] controls the pressure roller fusing lamp.
- When the main switch is turned on, the fusing rollers start rotating (idling mode) after the fusing belt temperature reaches $150^{\circ} \mathrm{C}$.
- The pressure roller then absorbs the heat of the fusing belt.
- Then, the fusing belt temperature drops from $150^{\circ} \mathrm{C}$.
- Fusing rollers stop rotating after the fusing belt temperature reaches $150^{\circ} \mathrm{C}$, again.
- Temperature control is normally accomplished by turning the fusing lamps on and off (SP mode (SP1-104).
- Thermostat [J] and thermofuse $[\mathrm{K}]$ prevent the temperature in the fusing section from rising to dangerous levels.
- The heat roller thermostat [J] blows at $200^{\circ} \mathrm{C}$
- The pressure roller thermofuse $[\mathrm{K}]$ blows at $117^{\circ} \mathrm{C}$.

By adopting a heat roller made of aluminum, the temperature of the fusing belt increases quickly. This may cause the fusing belt temperature to rise too high before the thermofuse blows, therefore the thermostat was adopted. The thermostat is in contact with the non-image area of the fusing belt and blows at $200^{\circ} \mathrm{C}$.

## Fusing Temperature Control

The fusing temperature depends on the selected copy modes, as shown below. The defaults indicated in the table can be adjusted with SP modes.

| State/Mode | Stand-by Mode | Copy Mode |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Normal |  | OHP/Thick Paper |  |
|  |  | Single Color | Full Color | Single Color | Full Color |
| Fusing: simplex, duplex side 1 | $175{ }^{\circ} \mathrm{C}$ | $160^{\circ} \mathrm{C}$ | $175{ }^{\circ} \mathrm{C}$ | $150{ }^{\circ} \mathrm{C}$ | $170^{\circ} \mathrm{C}$ |
| Fusing: , duplex side 2 | $175{ }^{\circ} \mathrm{C}$ | $160^{\circ} \mathrm{C}$ | $175{ }^{\circ} \mathrm{C}$ | $150{ }^{\circ} \mathrm{C}$ | $170^{\circ} \mathrm{C}$ |
| Pressure: simplex, duplex side 1 | $150{ }^{\circ} \mathrm{C}$ | $100^{\circ} \mathrm{C}$ | $150{ }^{\circ} \mathrm{C}$ | $150{ }^{\circ} \mathrm{C}$ |  |
| Pressure: , duplex side 2 | $150{ }^{\circ} \mathrm{C}$ | $100^{\circ} \mathrm{C}$ | $150{ }^{\circ} \mathrm{C}$ | $150{ }^{\circ} \mathrm{C}$ |  |

FUSING

## Fusing/Pressurization Mechanism



- The hot and pressure rollers are made from silicone.
- The oil supply mechanism makes it easier for paper to separate from the fusing belt and roller after fusing.
- Springs [C] and a bracket press the pressure roller [A] against the fusing belt and hot roller [B].
- Screwing in the pressure release screw [D] and lowering the pressure lever [E] releases the pressure between the rollers when disassembling the fusing unit.


## Oil Supply Mechanism



- Gear $[A]$ and cam gear $[B]$, on the fusing knob shaft at the front of the fusing unit, are always engaged.
- The actuator [C] for the oil pump roller is in contact with this cam gear.
- When the fusing drive gear rotates causing the fusing knob to rotate, the gear and cam gear on the fusing knob shaft rotate.
- This rotates the roller of the actuator following the cam about pin [J].
- This presses the oil pump sleeve [F] to supply oil to the oil supply pad [D].
- Excess oil is collected in the oil tank [E].
- At both ends of the oil pump sleeve [F] are valves, which prevent oil from flowing back.
- Oil is supplied to the oil sub roller [G] from the oil supply pad [H].
- The oil blade [I] prevents oil from being applied unevenly to the oil sub roller.
- Oil is then supplied to the fusing belt [K] via the oil supply roller [L].
$\Rightarrow$ - Capacity of the oil tank is increased from 350 cc to 430 cc .


## Oil End Detection

When the oil end is detected, approximately 60 cc of oil is still in the tank. Since more than 1,000 copies (A3/DLT) can be made, the software is changed as follows;
When the oil end sensor detects a near oil end condition, the machine displays oil near end condition. The machine displays the oil end condition 1,000 copies (regardless of paper size) after the near end condition is detected.

FUSING

## Cleaning Mechanism



- The tension roller [ A ] cleans the fusing belt [B].
- Toner and dust on the fusing belt adheres to the tension roller.
- The pressure roller blade [C] removes paper dust from the pressure roller [D].
- When making smaller size copies, the oil accumulates on the pressure roller outside the paper path. This may cause oil marks on outputs when making larger size copies. To prevent this, the pressure roller pad [E] is used and remove the excessive oil from the pressure roller.


### 2.9 OTHERS

### 2.9.1 SYSTEM CONFIGURATION



- The main control board CPU, controls the whole system by managing the:
- Scanner
- Operation panel
- Printer engine
- The scanner IPU board CPU controls the:
- Scanner motor
- Image data processing
- Both the main control board and the scanner IPU board have flash memory.
- This enables their programs to be replaced using a flash ROM card.
- The main control board uses the extended bus interface (CIVIC interface for controller and APIP interface for fax) to control the:
- Printer controller
- Fax unit


### 2.9.2 POWER STATES

This machine has three types of energy saver mode:

1) Energy saver mode
2) Power-off (sleep) state (called 'AOF, Auto Off mode' in the operation instructions)
3) Night mode (copier/printer, copier/fax, copier/printer/fax configurations only)

## Energy Saver Mode

In energy saver mode, all indicators on the operation panel, except the Main Power indicator and the LED on the Energy Saver key, are turned off. Three energy saver levels are available as shown in the following table. The energy saver level can be selected in User Tools (Default: Level 1).

| Level | Warming-up <br> time required | Energy Save | Fusing control |
| :--- | :--- | :---: | :--- |
| Level 1 | 0 seconds | $3 \%$ | Indicators on operation panel turn off. |
| Level 2 | 60 seconds | $25 \%$ | Heat roller temperature drops by $120^{\circ} \mathrm{C}$. |
| Level 3 | 120 seconds | $50 \%$ | Heat roller temperature drops by $120^{\circ} \mathrm{C}$ and <br> pressure roller temperature drops by $70^{\circ} \mathrm{C}$. |

## Power-off (Sleep) State (AOF mode)

The power-off state of this copier conforms to the International Energy Star standard (sleep mode). Of the DC outputs (VAA, VCA, VCB, VCC1, and VCC2) from the PSU, only VCC1 is turned on; all of the other outputs are off. In this state, power is applied only to the main control board and the operation switch, so that the machine can detect when the operation switch is pressed. In this state, the fusing lamps are off.
When the main board detects that the operation switch was pressed, the machine goes back to standby mode.

## Night mode

The machine enters night mode when one of the following is done.

- The operation switch is pressed to turn the power off
- The auto off timer settings expire (the operation switch is then turned off)

If the machine is in one or more of the following conditions, the machine enters night stand-by mode.

- G4 option is installed.
- Hard disk is installed.
- The data is stored in the memory.
- The machine is in memory transmission or polling reception
- Bit 1 of System Switch 15 is set to " 1 ". (This setting disables night mode.)

If not, the machine enters night mode (same as Power-off state). The machine does not enter either night stand-by mode or night mode if the machine is not in the stand-by mode (ex. service calls, error messages, paper misfeeds, open covers, or if the optional handset is in use).

## Night stand-by mode

DC output is supplied to all components. To save energy, the fusing lamps and all fans except for the IPU cooling fan are all off.

Night mode (same as Power-off state)
Only VCC1 is turned on; all other output is off. When the machine detects a ringing or off-hook signal, it returns to night stand-by mode and DC output is supplied. The machine then receives the incoming message and prints it.

## Main Power Switch Off State

When the main power switch is off, all power is shut off except the following heaters, which are always on whenever the power cord is connected to the outlet.

- Optics anti-condensation heater
- Transfer belt heater
- Paper transfer unit heater


## OTHERS

## Power State Transition Diagram

The following diagram shows the conditions in which the machine changes from one state to another.

*: LCD panel off mode
**: Power lines are cut except for 5V line

The timers can be programmed by user.

### 2.9.3 BUS SWITCH BOARD (OPTIONAL)



- The printer controller is an option for this copier.
- The bus switchboard interfaces the copier with the controller.
- The CIVIC interface between the controller unit and the bus switchboard transfers image data on an 8-bits/pixel basis for each color.
- The APIP interface between the fax unit and the bus switch board transfers image data on 2-bits/pixel basis for B\&W.
- The FCI (Fine Character and Image) chip performs image smoothing and line correction only in the fax mode.
- When the user selects smoothing, the FCl converts the image data (8 bits) to 7 bits of image and 1 bit of pixel positioning data.
- This simulates 1200 dpi resolution across the page.


## INSTALLATION

## 3. INSTALLATION PROCEDURE (B017/018) <br> 3.1 INSTALLATION REQUIREMENTS



INSTALLATION REQUIREMENTS

### 3.1.1 DIMENSIONS



### 3.1.2 ENVIRONMENTAL REQUIREMENTS

To ensure the optimum copy quality, the following environmental requirements need to be observed. When installing this copier at the customer site, make sure that the location meets these requirements.

1. Avoid an area which is exposed to direct sunlight or is excessively illuminated (Illumination should not exceed 2000 lux.).
2. Avoid areas that are too hot and humid or too cold and dry.

Standard temperature range: $10^{\circ} \mathrm{C}$ to $32^{\circ} \mathrm{C}$
Standard humidity range: $15 \%$ to $80 \%$
3. Avoid areas near fire or heat.
4. Avoid areas that are exposed to sudden temperature changes. This includes areas where the machine will be directly exposed to:

1) Cool air from an air conditioner
2) Heat from a heater.
5. Avoid dusty areas (maximum allowable amount of dust: $0.10 \mathrm{mg} / \mathrm{m}^{3}$ ).
6. Avoid a poorly-ventilated area (required minimum ventilation: $30 \mathrm{~m} / \mathrm{hr} / \mathrm{man}$
7. Do not place the machine where it will be exposed to corrosive gases.
8. Place the machine on a level floor (the inclination on any side should be no more than 5 mm ).
9. Do not place the machine where it may be subjected to strong vibrations.
10. Do not install the machine at any location over $2,000 \mathrm{~m}$ ( 6,500 feet) above sea level.
11. If the machine is installed close to other electronic equipment, they may interfere with each other. To avoid this problem:
1) Keep the machine as far away as possible from television sets or radios.
2) Reorient the receiving antenna of television sets and radios as needed.
3) Use a separate outlet for the machine.

## $\triangle$ CAUTION

1. Do not install the machine in a very humid or dusty area.
2. Do not install the machine on a rickety or inclined floor.
3. Completely pull out and hold all four handles when moving the machine. If the handles are not fully pulled out, or if you hold other parts of the machine, your fingers may be caught in the machine and get seriously hurt.
4. Do not lift the B017 copier by grasping the operation panel; it may be damaged.
5. When installing the optional paper tray unit, lock the caster wheels. If this is not done, the paper tray unit may fall and hurt someone.
6. When moving the machine after installing the paper tray unit, do not apply force to the upper part of the machine. The copier may fall off the paper tray unit.

### 3.1.3 MINIMUM SPACE REQUIREMENTS

Provide clearance for the copier, as shown below. If one or more options (such as the ADF or sorter stapler) are added to the copier, this clearance should be provided around the entire system.


NOTE: A space of at least $10 \mathrm{~cm}\left(3.9{ }^{\prime \prime}\right)$ at the rear of the machine is important for machine ventilation.

### 3.1.4 POWER REQUIREMENTS

## \} WARNING

1. Install the machine as close to the outlet as possible. Firmly plug in the machine after installation.
2. Avoid multi-wiring.
3. The power cord should be placed where it cannot be stepped on or flattened by the machine. When installing the machine, route the power cord out of the way of general traffic.
4. Be sure to connect the power cord's grounding wire.
5. Input voltage level:

US Model: $120 \mathrm{~V}, 60 \mathrm{~Hz}$ : More than 12 A
Europe/Asia Model: 220 V to $240 \mathrm{~V}, 50 / 60 \mathrm{~Hz}$ : More than 8 A
Taiwan Model: $110 \mathrm{~V}, 60 \mathrm{~Hz}$ : More than 12 A
2. Permissible voltage fluctuation: $\pm 10 \%$
3. Do not set anything on the power cord.

### 3.2 COPIER INSTALLATION

### 3.2.1 ACCESSORY CHECK

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

## Q'ty

1. Paper Size Decal ..... 1
2. Operating Instructions (not -26/-27 machines) ..... 1
3. Quick Guide (not -26/-27 machines) ..... 1
4. New Equipment Condition Report (-17, -19, -27, -29 machines only) ..... 1
5. User Survey Card (-17 machines only) ..... 1
6. Exit Tray ..... 1
7. Holder for Operating Instructions ..... 1
8. Logging Data Sheet ..... 1
9. Instruction Procedure Sheet (Prevention against counterfeiting) ..... 1
10. Favorite Key Decal (B018 only) ..... 1
11. Precaution Decal (not -26/-27 machines) ..... 1
12. Screw Driver (B018 only) (Keep in the paper tray) ..... 1
13. Toner Replacement Tool ..... 1

### 3.2.2 COPIER INSTALLATION PROCEDURE

## Tape Removal



1. Remove the strips of filament tape indicated in the above diagram.

- B018 only -


1. Remove the clamping materials $[A]$ from the paper tray.

- B017 only -


1. Remove the protectors $[B]$ from the metal rollers.
2. Peel off the two pieces of filament tape [C] from the duplex unit and remove the protective sheet [D].
3. While lifting the lower guide plate [E] on the duplex unit, take out the protective sheet [F].

Removing the Inner Transfer Cover and Paper Transfer Locking Screw




NOTE: Place a mat on the floor to keep the floor clean before doing this procedure.

1. Open the front cover and remove the filament tapes and cardboard placed at the paper transport unit.
2. Remove the revolver locking screw $[A]$ and the inner covers $[B]$ (2 screws each).
NOTE: Secure screw [A] on the drawer unit front frame for transportation.
3. Remove the paper transfer locking screw [C].

NOTE: Keep screw [C] for transportation.
4. Remove the charge corona unit [D] (1 screw, 1 connector [E], and clamp).
5. Remove the transfer belt lock shaft [F] (1 screw).

NOTE: Keep shaft [F] for transportation.
6. Remove the transfer belt stay [G] (4 screws and spring holder [H]).

NOTE: The spring holder will drop out when the drawer unit is pulled out if you forget to remove it in this step.

NOTE: 1) When the drawer unit [A] is left out, the drum is exposed to light. This may cause optical fatigue, resulting in dark bands. Therefore, after pulling out the drawer unit, remove the drum unit [B] (2 connectors [C]) and cover it with a black sheet or 5 (or more) white sheets of paper.
2) Before removing or installing the drum unit, rotate the drawer unit counterclockwise so that the upper edge of sensor actuator [D] aligns the sensor [E] as shown. This keeps the development sleeve away from the development position and prevents drum damage.
3) The revolver unit rotates counterclockwise. Do NOT try to turn it in the other direction.
7. Rotate the sensor actuator [D] so that the upper edge of the sensor actuator aligns the sensor as shown.
8. Pull out the drawer unit [A] (2 screws), and remove the drum unit [B] (2 connectors [C]). Then, place a black sheet or 5 white sheets of paper on the drum.


## Developer Installation



1. Remove the revolver stopper [A] from its storage place in the drawer unit (1 screw) and put it in the rear hole $[B]$ in the revolver side panel and in the notch [C] on the drawer unit stay.

## .CAUTION <br> If you do not install the revolver stopper before removing the development unit, the revolver may rotate, causing permanent damage to the development unit or its holder.

2. Open the locks [D] at both ends of the development unit [E] (1 screw each) and remove the development unit [E].

NOTE: When attaching and detaching the development unit, be sure to turn it in the direction shown in the diagram. Turning the development unit in the wrong direction may cause developer to spill from the toner hopper.

[^3]
3. Place the development unit on a flat, level surface, and remove the developer cover [A] (2 screws).
4. Place the development unit $[B]$ in the developer installation position $[C]$ and pour in 1 bag ( 380 g ) of developer [D].

NOTE: Pour developer into the auger from the development roller side. This speeds the agitation of the developer and prepares it for use more quickly.
5. Place the development unit in the developer scoop-up position [E], rotate the sleeve in the forward direction [F] to scoop up developer, then check that the roller is evenly coated with developer from front to rear.
6. Set the developer cover by pressing both sides [G] and make sure that the projections $[\mathrm{H}]$ are properly set into the 3 cutouts $[\mathrm{I}]$ on the development unit; then, affix the cover (2 screws).

NOTE: Make sure that the developer brush on the roller enters the development unit properly in this step. If the development unit is not placed on a flat surface while pouring developer, the development unit may be bent. This may cause developer to spill out. If this happens, the developer should be removed and placed on a clean sheet of paper, then poured back into the unit.

7. Put the development unit [A] in the drawer unit (2 lock screws [B]).

## $\triangle$ CAUTION

1. When replacing the developer cover, do not apply excessive force to the center of the development unit. The doctor gap will bend, altering the developer scooping efficiency.
2. Make sure that the developer locks (front and rear) are secured with screws before rotating the revolver. This protects the developer assembly and locks from damage.
3. Tighten the developer lock screws firmly. Loose lock screws will cause the PG (Photoconductor Gap) to fluctuate.
4. Remove the revolver stopper [C], rotate the revolver to the next color, then follow the developer installation procedure from step 1.
NOTE: The revolver unit rotates counterclockwise. Do NOT try to turn it in the other direction.

## ©CAUTION

If you do not install the revolver stopper before removing the development unit, the revolver may rotate, causing permanent damage to the development unit or its holder.
[A]

[B]
9. After all the color developers have been installed, return the revolver stopper to the front stay of the drawer unit.
NOTE: Be sure not to pinch the development bias wire when installing stopper.
10. Rotate the sensor actuator as explained in step 7; then, reinstall the drum unit (2 connectors).
NOTE: Do not forget to reconnect 2 connectors. If the connectors are not connected, SC code or error code occurs during process control or developer initial setting.
11. Set the drawer unit (2 screws).
12. Rotate the revolver unit until the cartridge replacement position with the provided screwdriver tool [A]. This tool is at the front of the paper tray (B018) or in the carton (B017).
13. Remove the dummy toner cap $[B]$.
14. Hold the new toner cartridge horizontally and shake it 5 or 6 times.
15. Remove the seal on the toner cartridge [C].
16. Insert the toner cartridge with the " $\uparrow$ " mark pointing up.
17. Turn the knob clockwise [D] to the " $\mathbf{\Delta}$ " mark until it clicks.

NOTE: To make the toner replenishment procedure easier, a toner replacement tool is enclosed as an accessory. Refer to "Toner Replenishment Procedure" (next page) for 'how to use this tool' and instruct users.
18. Repeat steps 12 to 17 for all colors.

NOTE: 1) Do NOT rotate the revolver unit between removing the dummy toner cap and installing the toner cartridge. Otherwise, toner will spill out from the toner hopper.
2) The revolver unit rotates counterclockwise. Do NOT try to turn it in the other direction.

## Toner Replenishment Procedure



## Toner cartridge removal:

1. Set the toner replacement tool $[A]$ in the toner cartridge $(\mathbb{1})$ so that a portion $[B]$ of the tool aligns the knob [C] for the cartridge.
2. Turn the tool counterclockwise (2). The hook [D] for the tool automatically releases the knob from the lock position.
3. Turn the tool clockwise slightly so to keep it away from the toner cartridge knob;
then, remove the tool from the cartridge ( $(3)$.
NOTE: Only the hook holds the knob, therefore an excessive load is applied to the knob if the toner cartridge is pulled out using the tool. This may cause the end part of knob to bend. If the deformed toner cartridge is put back in the machine, it may cause SC361.
4. Pull the toner cartridge out from the machine (4).


## Toner cartridge set:

1. Set the toner cartridge in the machine after removing the seal $[A](\mathbf{1})$.
2. Place the tool onto the cartridge after the cartridge is fully inserted (2).
3. Turn the tool clockwise (3) and remove it after the knob clicks (4).
$\Rightarrow$ After toner cartridge is replaced, hook the toner replacement tool on the hanger $[B]$ attached to the lower inner cover.

## Pressure Release Lever Set-up




1. Install the charge corona unit $[A]$ ( 1 screw, 1 connector, and clamp).
2. Reinstall the transfer belt stay ( 4 screws).
3. Set up the pressure release lever $[B]$ as follows:
1) Remove the snap ring [C] from the transfer unit.
2) Turn the pressure release lever counterclockwise.
3) Fit the pressure release lever on the pin [D].
4) Secure the pressure release lever with the snap ring [C].
4. Install the two inner transfer covers [E] (2 screws each).

## Installing Fusing Silicone Oil



1. Draw the fusing unit $[A]$ halfway out of the main unit and remove the oil cap $[B]$.
2. Pour in silicone oil [C].
3. Close the oil cap and push the fusing unit back in.
4. Close the front cover.

| $\triangle$ CAUTION |
| :--- |
| Take care not to spill silicone oil on the floor. If silicone oil spills on the <br> floor, wipe it up completely; otherwise, the floor will become slippery and <br> someone could slip and fall. |

## Initialization and Function Checks

1. Open the front cover and turn on the main switch.
2. When "Close the Front Cover" is displayed, close the front cover, then enter SP mode. $[\widehat{\Omega} \rightarrow(1) \rightarrow(0)$
3. Perform the developer setup procedure for all colors using SP2-225-005, "All Colors." Press 1 and "Enter" to start this process.
4. When the end-of-setup message appears, look at the code displayed on the operation panel or enter SP mode 3-964 (B018 only) to check that the result is "1" (successful).
NOTE: If the result code is a number other than 1 , consult the error code chart (see the Troubleshooting section).
5. Select the tray paper size (see "Setting the Tray Paper Size" on the next page).
6. After the warm-up procedure ends, check the copy quality in each of the following modes: Text, Photo and Text/Photo.
7. If necessary, do the ACC (Auto Color Calibration) in the User Tools ("Copy Features" $\rightarrow$ "Image Adjustment") to make sure that the chart is printed normally.

## $\triangle$ CAUTION

It is not necessary to adjust the Auto Color Calibration (ACC) unless the customer is unsatisfied with the copy samples. The ACC was factory adjusted. For the detailed auto color calibration procedure, refer to the User Tools section of the Operating Instructions manual for the customer.
8. When using the optional paper tray unit, adjust the registration for each tray if required (see "Replacement and Adjustment - Paper Feed and Registration Copy Image Area Adjustment").

## Setting the Tray Paper Size

First, change the position of the side fences and the end fence in each tray to match the paper size you will be using. Then set the paper size for each tray at the operation panel using the following procedure.

1. Press the "User Tools" key.
2. Make sure that the 'System Settings' menu is selected, then press the "OK" key.
3. Press the "NEXT" key until "Tray Paper Size" is displayed.
4. Press the "OK" key.
5. Select the tray with the $\square \square$ keys, then press the "OK" key.
6. Select the required size with the $\boxminus \square$ keys, then press the "OK" key.
7. Repeat steps 5 and 6 for each paper feed tray.
8. Press the "User Tools" key to exit the User Tools.
9. Make sure that the paper size in the trays matches the size that you just set up with the user tools.

## Setting the Language and Unit of Measurement

When the required language is other than English, French, German, Italian and Spanish, the main program for that language must be downloaded to the main control board. Then, the desired language can be selected. (Replacement and Adjustment - System and Electronics - Main Program Downloading)

- SP5-009-001 -

| Setting Value | Language | Setting Value | Language |
| :---: | :--- | :---: | :--- |
| 0 | Japanese <br> (not available) | 8 | Danish |
| 1 | English | 9 | Swedish |
| 2 | French | 10 | Norwegian |
| 3 | German | 11 | Czech |
| 4 | Spanish | 12 | Polish |
| 5 | Italian | 13 | Russian |
| 6 | Portuguese | 14 | Brazilian <br> Portuguese |
| 7 | Dutch | 15 | Taiwan Chinese |

The following procedure outlines how to change the machine language.

1. Enter SP mode.
2. Enter SP5-009-001 "Display Language".
3. Enter the appropriate value from the above table.
4. If necessary, change the measurement to either Standard (inches) or Metric (millimeters) with SP5-009-002.
0 : Metric (mm) 1: Standard (inches)
NOTE: By using SP5-009-002, the display for the unit measurement and the Enlargement/Reduction ratio shifts.
5. Turn the machine off/on and check the language and unit measurement on the LCD.

## Resetting the Counter

1. Enter the SP mode.
2. Enter SP7-825, "Total Counter 0 Reset."
3. Quit SP mode and make sure that the counter shows zero using the [Counter] key on the operation panel.

### 3.2.3 RELOCATION PROCEDURE



1. Remove the inner transfer cover [A] and release the belt pressure as shown:
1) Take off the snap ring (1) and pull the lever off the pin (2).
2) Move the lever down (3) and put the snap ring back on (4).
2. Remove the transfer belt [B]. (Refer to section 6.7.1 Transfer Belt Section.) Then, install the lock pin [C].
3. Reassemble the machine.
4. Install the revolver locking screw [D] into the development unit through the H.P. actuator using the special screwdriver tool [E] stored in the paper tray.
5. Install the paper transfer locking screw [F].
[^4]
### 3.3 OPTIONS

C: Installation procedure is the same as base models A258/259/260. Refer to the service manual of the base models.

U: The options are unique from the base models. Refer to the installation procedure in this manual.
$U$ (Fax): They are unique options related to the fax. Refer to the installation procedure in the Fax manual.

| Options | Product Code | C or U |
| :--- | :---: | :---: |
| Paper Tray Unit | A832/A833 | C |
| ARDF | A663 | C |
| 20-Bin Sorter Stapler | A834 | C |
| 10-Bin Sorter Stapler | A555 | C |
| 3-Bin Sorter | A849 | C |
| Platen Cover | A749-01 | C |
| Original Table | A430-07 | C |
| Edit Option | B380 | U |
| Controller I/F Unit | B381 | U |
| Fax Option | B383 | U (Fax) |
| ISDN Unit | A816 | U (Fax) |
| EXSAF Board | A818-10 | U (Fax) |
| PMU Board | A818-12 | U (Fax) |
| HDD | A841-11 | U (Fax) |
| Handset | A841-13 | U (Fax) |
| Fax Stamp | A563-17 | U (Fax) |

### 3.4 EDIT OPTION (B380)

### 3.4.1 ACCESORY CHECK

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

1. DIMM ..... 1
2. Harness ..... 1
3. Edit Pen ..... 1
4. Installation Procedure ..... 1

### 3.4.2 INSTALLATION



## $\triangle$ CAUTION

Unplug the copier power cord before starting the following procedure.

1. Remove the right upper cover [A] (2 screws).
2. Remove the Flash ROM card cover [B] (3 screws).
3. Disconnect two connectors [C].
4. Pull out the IPU base [D] slightly ( 2 screws).
5. Disconnect 6 connectors on the scanner IPU board.
6. Install the DIMM [E] into the slot [F] as shown.
7. Connect the harness [G] at CN412 on the scanner IPU and CN312 on the main control board.
8. Reassemble the machine.

### 3.5 CONTROLLER INTERFACE (B381)

### 3.5.1 ACCESSORY CHECK

Check the quantity and condition of the accessories in the box with the following list:
Description ..... Q'ty
1.I/F Unit ..... 1
2. I/F Bracket ..... 1
3. Harness Side Plate ..... 1
4. Cover Bracket ..... 1
5. I/F Cover ..... 1
6. Screw (M3x6) ..... 1
7. Screw (M4x6) ..... 8
8. Screw (M4x6) ..... 4
9. Screw with washer ..... 2
10. Snap Ring ..... 1
11. Clamp ..... 1
12. Installation Procedure (-17 only) ..... 1

### 3.5.2 INSTALLATION



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

1. Remove the four covers below in the following order.

* Right upper cover [A] (2 screws)
* Rear lower cover [B] (3 screws)
* Rear upper cover [C] (4 screws)
* Right rear cover [D] (1 screw)

2. Open the clamp [E] and pull out the power supply harness [F], then close the clamp.
3. Install the I/F bracket [G] on the right rear side of the copier (1 screw and 1 screw with washer $[\mathrm{H}])$. Then, feed the power supply harness through the clamp [I].
4. Attach the $\mathrm{I} / \mathrm{F}$ unit [J] to the $\mathrm{I} / \mathrm{F}$ bracket [G] (1 snap ring [K]).
5. Connect the power supply harness $[F]$ to the power supply board [L].

6. Connect the 100-pin shield cable [A] to the LD main board [B] (1 clamp [C]) and secure the grounding wire [D] to the bracket [E] (1 screw).
7. Connect the I/F harness [F] to CN305 on the main board and clamp the I/F harness as shown (1 clamp [G]). Remove the screw [H] securing the main board and secure both the main board and the grounding wire with this screw.
NOTE: Route the harnesses as shown so that the right upper cover can be properly installed at a later step.
8. Install the harness shield plate [I] ( $2 \mathrm{M} 4 \times 6$ screw [J] and $1 \mathrm{M} 3 \times 6$ screw $[\mathrm{K}]$ ).

NOTE: Make sure that any harnesses are not caught between the shield plate [I] and machine frame.



9. Attach the I/F unit [A] to the copier (3 screws, 1 screw with washer $[B]$ ).
10. Install the cover bracket [C] (1 screw).
11. Cut off and remove the cap [D] for the printer controller and/or caps [E] for the fax unit if installing those options. (Refer to the installation procedure of each option for the details.)
12. Install the I/F cover [F] (4 screws).
13. Install the harness clamp [G] on the I/F cover if the ADF is installed. (The size of the hole $[\mathrm{H}]$ marked in the illustration is slightly bigger than other holes.) Then, attach the ADF harnesses to this clamp. This is to prevent the ADF harnesses from being caught in between the I/F unit and copier when opening and closing the I/F unit.

### 3.6 FAX UNIT (B383)

NOTE: 1) Never install telephone wiring during a lightning storm.
2) Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
3) Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
4) Use caution when installing or modifying telephone lines.
5) Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning.
6) Do not use the telephone to report a gas leak in the vicinity of the leak.

## $\triangle$ CAUTION

1. Before installing the fax unit, switch off the main power and operation switches, and disconnect the power cord.
2. The fax unit contains a lithium battery. The danger of explosion exists if a battery of this type is incorrectly replaced. Replace only with same or an equivalent type recommended by the manufacturer. Discard used batteries in accordance with the manufacturer's instructions.

### 3.6.1 INSTALLATION PROCEDURE

NOTE: To install the fax unit, an I/F unit is required in addition.

[E]



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

9. Remove the I/F unit cover [A] (4 screws) and the cover bracket [B] (1 screw).
10. Cut off and remove the caps [C] and attach the TEL/LINE label [D].
11. Remove the right rear cover $[E]$ ( 1 screw).
12. Install the fax unit [F] ( $3 \mathrm{M} 3 \times 6$ screws and $1 \mathrm{M} 4 \times 6$ screw [G]).
13. Connect the flat cable $[\mathrm{H}]$ to the BUSSW board [I].
14. Remove 4 screws and swing out the I/F unit [J].
15. Clamp and route the harness $[K]$ as shown, then connect it to the I/O control board [L].
16. Attach the spring plate $[\mathrm{M}]$ ( 1 screw) as shown.
17. Turn on the battery switch (SW1) [ N ] on the FCU and install the bracket [ O ] ( 2 screws).
18. Secure the $I / F$ unit ( 3 screws and 1 screw with washer $[P]$ ).
19. Reinstall the I/F unit cover (4 screws).

FAX UNIT (B383)

20. Remove the caps $[A]$ with a small-bladed screw driver.
21. Install the key tops [B], cover [C], and attach Copy/Fax label [D].
22. Open the front cover. Then remove the operation panel and the left cover [ $E$ ] ( 2 screws each).
23. Put the fax operation panel harnesses [F] through the cut-outs [G] and install the fax operation panel [H] (2 screws).
24. Connect the intermediate harness [I] to the operation panel board and to the harness of the fax operation panel board.
25. Secure the intermediate harness with the clamps [J].
26. Reinstall the operation panel.

27. Attach the "Super G3" label [A] on the front cover.
28. Install the main switch cover $[B]$.
29. Connect the telephone line to the "LINE" jack at the rear of the machine.
30. Plug in the machine and turn on the main switch.

NOTE: The copier must be connected to a properly - grounded socket outlet.
31. Press the "Facsimile" key and check that the facsimile LED lights. At this time, the display reads: SC1201 - Functional problem with the fax. Data should be initialized.
NOTE: This is not a functional problem. The machine shows this message only when the fax unit is first installed. If the same message appears at the next power-on, check whether the battery switch (SW1) on the FCU has been turned on.
32. Press "Yes" to initialize the fax unit.
33. Set up and program the items required for fax communications as shown below. If the user function keys (F1, F2, F3, F4, and F5) need to be programmed, attach the label.
The default settings of the user function keys are as follows:

- F1: Start Manual Rx
- F2: Tx Result Display
- F3: TEL Mode
- F4: Not programmed
- F5: Not programmed

NOTE: Be sure to set the clock (date and time).
34. Program the serial number into the fax unit. The serial number can be found on the serial number label attached to the fax unit.

### 3.7 ISDN UNIT (A816)

### 3.7.1 INSTALLATION PROCEDURE

## $\triangle$ CAUTION

Before installing an optional unit, do the following:

1. Print out all messages stored in the memory.
2. Be sure to check that the memory indicator shows " $100 \%$ " in standby mode.
3. Print out the lists of user-programmed items and the system parameter list.
4. Switch off the main switch, and disconnect the power cord and the telephone line.


G]


NOTE: To use this option, a fax unit is required in addition.

1. Remove the I/F unit cover [A] (4 screws) and the left-side cover [B] (2 screws), then slide the FCU out from the fax unit.
2. Clip the ISDN modular jack [C] to the bracket [D], then connect the cable to the connector [E] on the CiG4 board [F].
3. Attach the bracket [D] to the CiG4 board [F] (2 screws), then attach the metal core [G] to the cable as shown. Be sure to slide the metal core [G] in between the bracket and the CiG4 board as shown.

4. Attach the FCU $[\mathrm{A}]$ to the bracket (2 screws), then connect FCU and CiG4 using the relay board $[\mathrm{B}]$.
5. Insert the FCU/CiG4 assembly [C] into the fax unit [D] (2 connectors [E]).
6. Open the ISDN modular jack window [F] on the left-side cover [G], then install the cover onto the fax unit.
7. Reassemble the machine.

8. Attach the contained 'G4' label to the function key (F4) space.

After G4 unit installation, this key is dedicated to switching between G3 and G4 communication modes. (Note the user function key assignment, below.)

- F1: Start Manual Rx
- F2: Tx File Status
- F3: TEL Mode
- F4: G3/G4 Communication Mode Selection
- F5: Not programmed

9. Affix FCC/IC approval label on the machine around ISDN jack (This step is only for US/CANADA).
10. Make two turns on the ISDN cable [A] and attach the metal core $[B]$ so that the cable goes into the core three times. Then, connect the cable to the ISDN jack [C]. If an analog telephone line has been removed before installation, reconnect it to the FCU.
11. Plug in the machine and turn on the main switch. Then enter the service mode.
12. Print the system parameter list and ensure that "G4" is listed as an option.
13. Set up and program the items required for ISDN communications. After setting up the ISDN parameters, be sure to turn the main switch off and on.

### 3.8 EXSAF BOARD (A818-10)

### 3.8.1 INSTALLATION PROCEDURE

| $\triangle$ CAUTION |
| :--- |
| Before installing this option, do the following: |
| 1. Print out all messages stored in the memory. |
| 2. Be sure to check the memory indicator shows " $100 \%$ " in standby mode. |
| 3. Print out the lists of user-programmed items and the system parameter |
| list. |
| 4. Switch off the main switch, and disconnect the power cord and the |
| telephone line. |

NOTE: To use this option, a fax unit is required in addition.



1. Remove the I/F unit cover [A] (4 screws), and the left-side cover [B] (2 screws).
2. Remove the FCU board (2 or 3 connectors).
3. Turn on the battery switch [C] on the EXSAF board, as shown.

NOTE: If installing the FCU board at the same time, be sure to turn on the FCU board battery switch [D].
4. Install the EXSAF board [E] and spacer [F] onto the FCU board [G], as shown.
5. Replace the FCU/EXSAF assembly into the fax unit (2 or 3 connectors).
6. Reassemble the machine.
7. Plug in the machine and turn on the main switch.
8. Press the 'Facsimile' key and ensure the facsimile LED lights. At this time, the following message appear:
"SC1207 - Adding FAX feature expander causes data loss. Turn main power switch off remove it to avoid loss. To continue press Yes."
9. Press "Yes" to initialize the SRAM.

NOTE: Whenever installing the EXSAF board at the first time, the machine displays SC1207, but this is not a problem.
10. Enter the service mode, and set bit 7 of system switch 1E to " 1 ".
11. Print the system parameter list and make sure that "EXSAF" is listed as an option also check that the memory indicator shows "100\%" in standby mode.
12. Connect the telephone cable to the NCU.

### 3.9 PMU BOARD (A818-12)

### 3.9.1 INSTALLATION PROCEDURE

| $\triangle$ CAUTION |
| :--- | :--- |
| Before installing an optional unit, do the following: |
| 1. Print out all messages stored in the memory. |
| 2. Be sure to check that the memory indicator shows " $100 \%$ " in standby |
| mode. |
| 3.Print out the lists of user-programmed items and the system parameter <br> list. <br> 4. <br> Switch off the main switch, and disconnect the power cord and the <br> telephone line. |

NOTE: To use this option, a fax unit is required in addition.


1. Remove the $I / F$ unit cover $[A]$ ( 4 screws) and the left-side cover $[B]$ (2 screws).
2. Remove the FCU board.
3. Connect the PMU board [C] and the double locking spacer [D] onto the FCU board [E], as shown.
4. Make sure that the battery switch (SW1) is turned on. Then, insert the FCU/ PMU assembly [F] into the fax unit [G].
5. Reassemble the machine.
6. Connect the telephone cable, then plug in the machine and turn on the main switch.
7. Print the system parameter list and make sure that "PMU" is listed as an option.

### 3.10 HARD DISK (A841-11)

### 3.10.1 INSTALLAITON PROCEDURE

| $\triangle$ CAUTION |
| :--- |
| Before installing an optional unit, do the following: |
| 1. Print out all messages stored in the memory. |
| 2. Be sure to check that the memory indicator shows " $100 \%$ " in standby |
| mode. |
| 3. Print out the lists of user-programmed items and the system parameter |
| list. |
| 4. Switch off the main switch, and disconnect the power cord and the |
| telephone line. |

NOTE: To install this option, an EXSAF board is required in addition.


1. Remove the I/F unit cover [A] (4 screws) and the left-side cover [B] (2 screws).
2. Remove 5 screws securing the I/F unit and fax unit. (The screw [ $C$ ] is the grounding screw.)
3. Slide the FCU board out from the fax unit (2 or 3 connectors).
4. Remove the EXSAF board [D] if it is already installed on the FCU board.
5. Connect the harness $[E]$ to the EXSAF board.
6. Make sure that the spacer [F] is installed on the FCU board, then reinstall the EXSAF board.
7. Make sure that the battery switches [G] on both FCU and EXSAF boards are turned on.

8. Install the hard disk drive [A] on the bracket [B] (4 screws).
9. Slide the FCU board into the fax unit and connect the connectors [C] to the FCU board and connector [D] to the hard disk drive so that no hole part meets with the portion where no pin is located as shown.
10. Secure the hard disk drive (2 screws).
11. Reassemble the machine.
12. Plug in the machine and turn on the main power switch.
13. Enter the service mode, and set bit 4 of system switch 05 to " 1 ".
14. Exit the service mode, turn off the machine, then turn the machine back on.
15. Enter the service mode, and initialize the memory files (function 07: RAM clear -2. files)
16. Print the system parameter list and make sure that "HD" is listed as an option. Also check that the memory indicator shows " $100 \%$ " in standby mode.

### 3.11 HANDSET (A841-13)

### 3.11.1 INSTALLATION PROCEDURE



## ⒸAUTION <br> Unplug the copier power cord before starting the following procedure.

1. Attach the bracket $[A]$ to the copier ( 2 screws, $M 4 x 12$ ).
2. Attach the handset cradle $[B]$ to the bracket ( 2 screws, $M 3 \times 8$ ).
3. Install the handset [C] on the cradle as shown.
4. Install the clamps [D] and run the handset cable through the clamps, then connect it to the "TEL" jack of the fax unit.

### 3.12 FAX STAMP (A563-17)

### 3.12.1 INSTALLATION



## $\triangle$ CAUTION

Unplug the copier power cord before starting the following procedure.

1. Remove the upper rear cover $[A]$ ( 7 screws).
2. Remove the right cover $[B]$ (2 screws).
3. Install the stamp unit [C] so that the cutout [D] in the stamp unit is properly hooked on the ARDF as shown (2 screws removed at step 2 and 1 connector [E]).
4. Open the holder [F] and install the stamper [G].
5. Turn on DIPSW 4 on the ARDF main board.

After the stamp unit has been installed, the F5 key is dedicated to switching the stamper on and off. (Note the user function key assignment, below.)

- F1: Start manual Rx
- F2: Tx result display
- F3: TEL mode
- F4: Not programmed
- F5: Stamper on/off


## SERVICE TABLES

## 4. SERVICE TABLES

### 4.1 SERVICE PROGRAM (SP) MODES

### 4.1.1 HOW TO ENTER SP MODE

Follow the procedure shown below to enter SP mode.


1) Press the clear modes key and enter 107.
2) Then hold down the clear/stop key for more than 3 seconds.

A service program number is composed of first, second, and third level numbers (Class 1, Class 2, and Class 3). Class 1 is 1 digit and the other classes are 3 digits. You can enter the complete 7-digit number with the numeric keypad and the enter key to display an SP mode menu directly. You can also use the selection keys under the LCD to change the class and to select a menu item.

## Reference

Use the $\approx \mp$ key when making a copy in an SP mode. To return to SP mode after making a copy, press the $¥$

### 4.2 SP MODE TYPES

The SP modes for this copier are divided into the following seven groups:

1. Paper feed/transport/fusing
2. Drum unit
3. Process control
4. Scanner
5. Operating mode/system
6. Peripheral
7. Logged data
8. Special mode set-up

### 4.3 SP MODE TABLE

The following tables show the SP modes of A258/259/260 and B017/018 copiers. In the tables, you can see which SP modes are applicable for which products.

A/B: Applicable for both A258/259/260 and B017/018 copiers
A/-: Applicable only for A258/259/260 copiers
-/B: Applicable only for B017/018 copiers
The following symbols are used in the SP mode tables.
(FA): Factory setting
(The data may be adjusted from the default setting at the factory. Refer to the factory setting sheets enclosed.)
DFU: Design/ Factory Used only
Do not touch the SP mode in the field.
(1st): 1st sided copy
(2nd): 2nd sided copy
H: Hot or Heat roller
P: Pressure roller
H: High humidity condition
L: Low humidity condition
Dev.: Development
Each SP mode is explained by the following manner.
[Adjustable range / Default setting / step / Yes or No (printed in SP7-902/903) ]
If any data is different between A258/259/260 and B017/018 copiers, the data for each copier is described separately as shown below.

A: [Range / Default / Step / Y or N]
B: [Range / Default / Step / Y or N]
An asterisk (*) in the right hand side of the mode number column means that this mode is stored in the NVRAM. If you do a RAM reset, all these SP modes will be reset to their default value.

SP1-XXX (Feed)

| 1 | Mode No. <br> (Class 1, 2 and 3) |  |  |  | Function <br> [ Range / Default / Step / Y or N (print) ] |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 001 | Leading edge registration |  |  |  | Adjusts the leading edge registration by changing the registration ON timing. |
|  | 01 | Normal Paper | A/B | * | All: [ -5.0 to 5.0 mm / $\underline{0.0}$ (FA) / 0.1 step / Y ] |
|  | 02 | OHP | A/B | * |  |
|  | 03 | Thick | A/B | * |  |
|  | 04 | 2/3 Speed | A/- | * |  |
|  | 05 | ACS/Black | -/B | * |  |
| 002 | Side-to-side registration |  |  |  | Adjusts the side-to-side registration by changing the laser main scan start position. |
|  | 01 | By-pass | A/B | * | All: [ -5.0 to 5.0 mm / $\underline{0.0}$ (FA) / 0.1 step / Y ] |
|  | 02 | Tray 1 | A/B | * |  |
|  | 03 | Tray 2 | A/B | * |  |
|  | 04 | Tray 3 | A/B | * | All: [ -5.0 to $5.0 \mathrm{~mm} / \underline{0.0}$ (FA) / 0.1 step / Y ] |
|  | 05 | Tray 4 | A/B | * |  |
|  | 06 | Duplex (2nd) | A/B | * |  |
| 003 | Paper feed timing |  |  |  | Adjusts the amount of paper buckle at the registration roller by changing the relay clutch OFF timing. |
|  | 01 | By-pass (Normal) | A/B | * | [ -5.0 to $5.0 \mathrm{~mm} / \underline{\underline{0.0} / 0.1} \mathrm{step} / \mathrm{Y}$ ] |
|  | 02 | Tray | A/B | * | A: [ -5.0 to $5.0 \mathrm{~mm} / \underline{0.0 / 0.1}$ step / Y ] <br> B: [ -5.0 to $5.0 \mathrm{~mm} /-1.5 / 0.1 \mathrm{step} / \mathrm{Y}$ ] |
|  | 03 | By-pass (OHP) | A/B | * | [ -5.0 to $5.0 \mathrm{~mm} / \underline{0.0} / 0.1 \mathrm{step} / \mathrm{Y}$ ] |
|  | 04 | By-pass (Thick) | A/B | * | [ -5.0 to $7.0 \mathrm{~mm} / \underline{2.0} / 0.1$ step / Y ] |
|  | 05 | Duplex (2nd) | A/B | * | A: $[-5.0$ to $5.0 \mathrm{~mm} / 0.0 / 0.1 \mathrm{step} / \mathrm{Y}]$ B: $[-6.5$ to $3.5 \mathrm{~mm} /-1.5 / 0.1$ step / Y ] |
| 101 | 00 | Oil end sensor | A/B | * | Specifies whether the oil end sensor is activated. <br> [ 0 or $1 / 1 /-/ \mathrm{Y}$ ] <br> 0 : Not activated, 1: Activated |
| 104 | 00 | Fusing control | A/B | * | Selects the fusing temperature control mode. The main switch needs to be turned off and on when the setting is changed. $\text { [ } 0 \text { or } 1 / 1 /-/ \mathrm{Y} \text { ] }$ <br> 0 : Phase control, 1: ON/OFF control |
| 105 | Fusing temperature |  |  |  | Sets the temperature for each condition. |
|  | Hot Roller / Heat Roller |  |  |  |  |
|  | 01 | H : Idling (1st) | A/B |  | $\begin{aligned} & \mathrm{A}:\left[100 \text { to } 200^{\circ} \mathrm{C} / \underline{163} / 1\right. \text { step / Y ] } \\ & \mathrm{B}:\left[100 \text { to } 200^{\circ} \mathrm{C} / \underline{173} / 1\right. \text { step / Y ] } \end{aligned}$ |
|  | 02 | H: Standby (1st) | A/B | * | $\begin{aligned} & \mathrm{A}:\left[100 \text { to } 200^{\circ} \mathrm{C} / \underline{165} / 1 \text { step } / \mathrm{Y}\right] \\ & \mathrm{B}:\left[100 \text { to } 200^{\circ} \mathrm{C} / \underline{175} / 1 \text { step } / \mathrm{Y}\right] \end{aligned}$ |
|  | 03 | H: Copy (1st) Normal FC | A/B | * |  |
|  | 04 | H: Copy (1st) Normal 1C | A/B | * | [ 100 to $200^{\circ} \mathrm{C} / \underline{160} / 1 \mathrm{step} / \mathrm{Y}$ ] |
|  | 05 | H: Copy (1st) OHP/Thick FC | A/B | * | A: [ 100 to $200^{\circ} \mathrm{C} / \underline{160 / 1}$ step / Y ] <br> B: [ 100 to $200^{\circ} \mathrm{C} / \underline{170 / 1}$ step / Y ] |
|  | 06 | H: Copy (1st) OHP/Thick 1C | A/B | * | [ 100 to $200^{\circ} \mathrm{C} / \underline{150 / 1}$ step / Y ] |
|  |  | ssure Roller |  |  |  |
|  | 07 | P: Standby (1st) | A/B | * | [ 100 to $200^{\circ} \mathrm{C} / 150 / 1$ step / Y ] |


| 1 | Mode No. (Class 1, 2 and 3) |  |  |  | Function <br> [ Range / Default / Step / Y or N (print) ] |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 105 | 08 | P: Copy (1st) Norma FC | A/B | * |  |
|  | 09 | P: Copy (1st) Normal 1C | A/B | * | A: [ 100 to $200^{\circ} \mathrm{C} / \underline{150 / 1}$ step / Y ] <br> B: [ 100 to $200^{\circ} \mathrm{C} / \underline{100 / 1}$ step / Y ] |
|  | 10 | ```P: Copy (1st) OHP/Thick FC``` | A/B | * | [ 100 to $200^{\circ} \mathrm{C} / \underline{150 / 1}$ step / Y ] |
|  | 11 | ```P: Copy (1st) OHP/Thick 1C``` | A/B | * |  |
|  | Hot/Heat Roller |  |  |  |  |
|  | 12 | H: Copy (2nd) Standby | A/B | * | A: [ 100 to $200{ }^{\circ} \mathrm{C} / \underline{165} / 1$ step / Y ] |
|  | 13 | H: Copy (2nd) Normal FC | A/B | * | B: [ 100 to $200{ }^{\circ} \mathrm{C} / \underline{175} / 1$ step / Y ] |
|  | 14 | H: Copy (2nd) Normal 1C | A/B | * | [ 100 to $200^{\circ} \mathrm{C} / \underline{160 / 1}$ step / Y ] |
|  | 15 | H: Copy (2nd) OHP/Thick FC | A/B | * | A: [ 100 to $200^{\circ} \mathrm{C} / \underline{160 / 1}$ step / Y ] <br> B: [ 100 to $200^{\circ} \mathrm{C} / \underline{170 / 1}$ step / Y ] |
|  | 16 | H: Copy (2nd) OHP/Thick 1C | A/B | * | [ 100 to $200^{\circ} \mathrm{C} / \underline{150 / 1}$ step / Y ] |
|  | Pressure Roller |  |  |  |  |
|  | 17 | P: Copy (2nd) Standby | A/B | * | [ 100 to $200^{\circ} \mathrm{C} / \underline{150} / 1$ step / Y ] |
|  | 18 | P: Copy (2nd) Normal FC | A/B | * |  |
|  | 19 | $\begin{aligned} & \text { P: Copy (2nd) Normal } \\ & \text { 1C } \end{aligned}$ | A/B | * | A: [ 100 to $200^{\circ} \mathrm{C} / \underline{150 / 1}$ step / Y ] <br> B: [ 100 to $200^{\circ} \mathrm{C} / 100 / 1$ step / Y ] |
|  | 20 | P: Copy (2nd) OHP/Thick FC | A/B | * | [ 100 to $200^{\circ} \mathrm{C} / \underline{150} / 1$ step / Y ] |
|  | 21 | $\begin{aligned} & \text { P: Copy (2nd) } \\ & \text { OHP/Thick 1C } \end{aligned}$ | A/B | * |  |
| 106 | Fusing temperature display |  |  |  | Displays the temperature in ${ }^{\circ} \mathrm{C}$. |
|  | 01 | Pressure roller | A/B |  | - |
|  | 02 | Hot/Heat roller | A/B |  | - |
| 108 | 00 | Fusing unit set | A/B | * | Turns fusing unit detection on and off. [ 0 or $1 / \underline{0} /-/ \mathrm{N}$ ] <br> 0: Detection / 1: No detection |
| 109 | 00 | Fusing NIP | A/B |  | Place an OHP sheet, and set the data ' 1 ', then, press the Start key to start feeding. Machine automatically makes NIP bands on the OHP sheet. |
| 801 | Motor speed |  |  |  | Adjusts the motor speed. |
|  | 01 | Fusing (standard) | A/B | * | A: [-1.0 to $1.0 \% / 0.0 / 0.1$ step / N ] DFU <br> B: [ -5.0 to $5.0 \% /-1.0 / 0.1$ step / N ] DFU |
|  | 02 | Paper feed (standard) | A/B | * | [ -1.0 to $1.0 \%$ / $\underline{0.1} / 0.1$ step / N ] DFU |
|  | 03 | Drum (standard) | A/B | * | A: [ -1.0 to $1.0 \% /-0.8 / 0.1$ step / N ] DFU <br> B: [ -1.0 to $1.0 \% / 0.0 / 0.1$ step / N ] DFU |
|  | 04 | Fusing (half) | A/B | * | A: [-1.0 to $1.0 \% / \underline{0.0} / 0.1$ step / N ] DFU <br> B: [ -5.0 to $5.0 \% /-1.0 / 0.1$ step / N ] DFU |
|  | 05 | Paper feed (half) | A/B | * | [ -1.0 to $1.0 \%$ / $0.1 / 0.1$ step / N ] DFU |
|  | 06 | Drum (half) | A/B | * | A: [ -1.0 to $1.0 \% /-0.8 / 0.1$ step / N ] DFU <br> B: [ -1.0 to $1.0 \% / 0.0 / 0.1$ step / N ] DFU |


| 1 | Mode No. (Class 1, 2 and 3) |  |  |  | Function <br> [ Range / Default / Step / Y or N (print) ] |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 801 | 07 | Fusing (2/3) | A/- | * | [ -1.0 to $1.0 \%$ / $\underline{0.0} / 0.1$ step / N ] DFU |
|  | 08 | Paper feed (2/3) | A/- | * | [ -1.0 to 1.0\% / 0.1 / 0.1 step / N ] DFU |
|  | 09 | Drum (2/3) | A/- | * | [-1.0 to 1.0\% / -0.8 / 0.1 step / N ] DFU |
| 901 | Fence position |  |  |  | Adjusts the fence stop position for the duplex unit. |
|  | 01 | Side fence | A/B | * | [ -5.0 to $5.0 \mathrm{~mm} / \underline{0.0} / 0.1 \mathrm{step} / \mathrm{Y}$ ] |
|  | 02 | End fence | A/B | * |  |

SP2-XXX (Drum)

| 2 | Mode No. (Class 1, 2 and 3) |  |  |  | Function <br> [Range / Default / Step / Y or N (print)] |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 101 | Blank margin |  |  |  | Adjusts the blank margin in the sub-scan and main scan directions. |
|  | Sub-scan |  |  |  |  |
|  | 01 | Leading edge Normal | A/B |  | [ -4.0 to $4.0 \mathrm{~mm} / \underline{0.0}$ (FA) / 0.1 step / Y ] |
|  | 02 | Leading edge Thick | A/B |  |  |
|  | 04 | Leading edge OHP | A/B | * |  |
|  | 05 | Trailing edge Normal | A/B |  | [ -3.0 to $10.0 \mathrm{~mm} / \underline{0.0}$ (FA) / 0.1 step / Y ] |
|  | 06 | Trailing edge Thick | A/B |  |  |
|  | 08 | Trailing edge OHP | A/B | * |  |
|  | Main scan |  |  |  |  |
|  | 09 | Front edge | A/B |  | [ -2.0 to $5.0 \mathrm{~mm} / \underline{0.0}$ (FA) / 0.1 step / Y ] |
|  | 10 | Rear edge | A/B | * |  |
|  | 11 | $\begin{aligned} & \text { Trailing edge Duplex } \\ & \text { (1st) } \end{aligned}$ | A/B |  | [ -3.0 to $10.0 \mathrm{~mm} / \underline{0.0}$ (FA) / 0.1 step / Y ] |
|  | 12 | Trailing edge Duplex (2nd) | A/B | * |  |
| 111 | 00 | Fax printer gamma | -/B | * | Adjusts the printer gamma for fax mode. [ 1 to 255 / 192 / 1 step / N ] |
| 112 | Main-scan magnification |  |  |  | Adjusts the magnification in the main-scan direction. |
|  | 01 | Copy / Copy \& Print | A/B | * | [ -1.00 to $1.00 \%$ / 0.0 (FA) / 0.01 step / Y ] |
|  | 02 | Print / Fax | A/B | * |  |
| 113 | Sub-scan magnification |  |  |  | Adjusts the magnification in the sub-scan direction. |
|  | 01 | Copy | A/- |  | [ - -1.0 to $1.0 \%$ / 0.0 (FA) / 0.1 step / Y ] DFU For copy mode, maintain the factory settings. For sub-scan magnification, use SP4-008 to adjust the scanner motor speed. |


| 2 | Mode No. (Class 1, 2 and 3 ) |  |  |  | Function <br> [Range / Default / Step / Y or N (print)] |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 113 | 02 | Print | A/- |  | $[-1.0 \text { to } 1.0 \% / 0.0 \text { (FA) } / 0.1 \text { step } / \mathrm{Y}]$ <br> To use this SP mode, do the following: <br> Print the trim pattern using pattern 1 in SP5-955018. Then check that the margins on the trim pattern are as follows: <br> Lead edge: 5 mm (target) $+/-2 \mathrm{~mm}$ <br> Trailing edge: 2 mm (target) $+2 \mathrm{~mm} /-1.5 \mathrm{~mm}$ Side (target): 1.5 mm <br> Side (specification): $2+/-2 \mathrm{~mm}$ <br> Adjust the magnification in the sub-scan direction first using SP2-113-02. Then print the trim pattern again. Adjust the magnification in the main scan direction with SP2-112-02. <br> Adjust SP2-113-02 (sub-scan) first and print the trim pattern again before adjusting SP2-112-02 (main scan), because SP2-113-02 also affects the main scan magnification. <br> NOTE: Do not adjust SP2-113-002 by more than $+/-0.5 \%$ at any one time. |
| 203 | ID sensor dev. potential |  |  |  | Sets the initial or correction value of the development potential for the ID sensor, or displays the potential value. |
|  | Initial value |  |  |  |  |
|  | 01 | [K] Initial | A/B |  | [ 0 to 300V / 110 / 1 step / Y ] DFU |
|  | 02 | [C] Initial | $A / B$ |  | [ 0 to 300V/150/1 step / Y ] DFU |
|  | 03 | [M] Initial | A/B |  |  |
|  | 04 | [Y] Initial | A/B | * |  |
|  | Correction value |  |  |  |  |
|  | 05 | [K] Correction | A/B |  | All: [-20 to 20 V / 0 / 1 step / Y ] |
|  | 06 | [C] Correction | $A / B$ |  | Adjusts the toner concentration. |
|  | 07 | [M] Correction | A/B |  | Negative value: Increases toner concentration |
|  | 08 | [Y] Correction | A/B | * | Positive value: Decreases toner concentration |
|  | Display |  |  |  |  |
|  | 09 | [K] Display | A/B |  |  |
|  | 10 | [C] Display | $A / B$ |  |  |
|  | 11 | [M] Display | $A / B$ |  |  |
|  | 12 | [Y] Display | $A / B$ |  |  |
|  | 13 | Potential correction select | A/B | * | [ 0 to 2 / $2 / 1$ step / Y] DFU <br> 0: Deactivates the potential correction <br> 1: Activates the potential correction (SP2-203-01 to 4) <br> 2: Activates the potential correction based on value calculated during process control. |
| 204 | ID sensor dev. potential correction |  |  |  | Sets the correction threshold (development gamma, upper and lower limits of development potential). |
|  | Dev. gamma threshold |  |  |  |  |
|  | 01 | [K] | A/B | * | $\begin{aligned} & \text { A: }[0.0 \text { to } 5.0 / \underline{1.9 / 0.1 ~ s t e p / N] ~ D F U ~} \\ & \mathrm{B}:[0.0 \text { to } 5.0 / \underline{\underline{2}} / 0.1 \text { step / N }] \text { DFU } \\ & \hline \end{aligned}$ |


| 2 | Mode No. (Class 1, 2 and 3) |  |  |  | Function <br> [Range / Default / Step / Y or N (print)] |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 204 | 02 | [C] | A/B | * | A: [ 0.0 to 5.0 / 1.8 / 0.1 step / N ] DFU |
|  | 03 | [M] | A/B | * | B: [ 0.0 to 5.0 / $\underline{\text { 2 }}$ / / 0.1 step / N ] DFU |
|  | 04 | [Y] | A/B | * |  |
|  | Dev. potential upper limit |  |  |  |  |
|  | 05 | [K] | A/B | * | A: $[0$ to $300 \mathrm{~V} / \underline{120 / 1}$ step / N ] DFU B: [ 0 to $300 \mathrm{~V} / \underline{90} / 1$ step / N ] DFU |
|  | 06 | [C] | A/B | * | A: [ 0 to $300 \mathrm{~V} / \underline{190} / 1$ step / N ] DFU |
|  | 07 | [M] | A/B | * | B: [ 0 to $300 \mathrm{~V} / \underline{150} / 1$ step / N ] DFU |
|  | 08 | [Y] | A/B | * |  |
|  | Dev. potential lower limit |  |  |  |  |
|  | 09 | [K] | A/B |  | A: $[0$ to $300 \mathrm{~V} / 100 / 1$ step / N ] DFU B: [ 0 to $300 \mathrm{~V} / 70 / 1$ step / N ] DFU |
|  | 10 | [C] | A/B | * | A: [ 0 to $300 \mathrm{~V} / 160$ / 1 step / N ] DFU |
|  | 11 | [M] | A/B |  | B: [ 0 to $300 \mathrm{~V} / \underline{130} / 1$ step / N ] DFU |
|  | 12 | [Y] | A/B | * |  |
| 207 | Forced toner supply |  |  |  | Forces toner to be supplied based on the SP2-208 setting. |
|  | 01 | [K] | A/B |  | $\begin{aligned} & {[0 \text { or } 1 / \underline{0} /-/ \mathrm{N}]} \\ & 0: O F F, 1: O N \end{aligned}$ <br> When selecting ' 1 ', the development unit of selected color moves to the development position. |
|  | 02 | [C] | A/B |  |  |
|  | 03 | [M] | A/B |  |  |
|  | 04 | [Y] | A/B |  |  |
| 208 | Toner supply amount |  |  |  | Specifies the amount of toner supplied in each mode. |
|  | Forced toner supply amount |  |  |  |  |
|  | 01 | [K] Forced toner | A/B | * | [ 1 to 50 times / $\underline{5} / 1$ step / N ] Sets the number of forced toner supply operations. |
|  | 02 | [C] Forced toner | A/B | * |  |
|  | 03 | [M] Forced toner | A/B | * |  |
|  | 04 | [Y] Forced toner | A/B | * |  |
|  | Fixed supply mode |  |  |  |  |
|  | 05 | [K] Fixed supply | A/B | * | [ 0 to $100 \%$ / $\underline{5} / 1$ step / N ] <br> Sets the toner supply rate used when the toner supply method (SP2-208-09) is set to ' 0 ' (fixed supply mode). |
|  | 06 | [C] Fixed supply | A/B | * |  |
|  | 07 | [M] Fixed supply | A/B | * |  |
|  | 08 | [Y] Fixed supply | A/B | * |  |
|  | 09 | Toner supply method | A/B |  | [ 0 to $2 / \underline{2} / 1 / \mathrm{N}$ ] <br> 0: Fixed supply, 1: Proportional control supply (Not available for A258/259/260/B017/018), 2: Fuzzy control supply. Do not set to ' 1 '. |
| 212 | Toner near end threshold |  |  |  | Changes the threshold of toner near end detection. |
|  | 01 | [K] | A/B | * | [ 0.000 to $1.000 \mathrm{mg} / \mathrm{cm} 2 / \underline{0.05} / 0.001 \mathrm{step} / \mathrm{N}$ ] DFU |
|  | 02 | [Color] | A/B | * | ```[ [0.000 to 1.000 mg/cm2 / 0.00 / 0.001 step / N ]``` |
| 225 |  | veloper setup |  |  | Performs developer initialization and forced process control self-check for the selected color, and displays the operation result. |


| 2 | Mode No.(Class 1, 2 and 3) |  |  |  | Function <br> [Range / Default / Step / Y or N (print)] |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 225 | 01 | [K] | A/B |  | $\begin{aligned} & {[0 \text { or } 1 /-/-/ \mathrm{N}]} \\ & 0: \mathrm{OFF}, 1: \mathrm{ON} \end{aligned}$ <br> Do this at installation or after changing the developer. <br> The operation result is displayed in SP3-964. (0: failure, 1 : success). |
|  | 02 | [C] | A/B |  |  |
|  | 03 | [M] | A/B |  |  |
|  | 04 | [Y] | A/B |  |  |
|  | 05 | [All color] | A/B |  |  |
|  | 06 | [CMY] | A/B |  |  |
| 301 | ITB bias |  |  |  | Adjusts the image transfer belt (ITB) bias for each mode. Normally, do not adjust these settings, except in response to specific problems as directed by technical support staff. |
|  | 01 | 4C-1st | A/B | * | A: $[300$ to $3000 \mathrm{~V} / \underline{1700 / 1}$ step $/ \mathrm{Y}]$ B: $[0$ to $32 / \underline{9} / 1$ step $/ \mathrm{Y}]$ |
|  | 02 | 4C-2nd | A/B | * | $\begin{array}{\|l\|} \hline \text { A: }[300 \text { to } 3000 \mathrm{~V} / \underline{1800} / 1 \text { step } / \mathrm{Y}] \\ \text { B: }[0 \text { to } 32 / \underline{9} / 1 \text { step } / \mathrm{Y}] \\ \hline \end{array}$ |
|  | 03 | 4C - 3rd | A/B | * | $\begin{array}{\|l\|} \hline \text { A: }[300 \text { to } 3000 \mathrm{~V} / \underline{1900} / 1 \text { step } / \mathrm{Y}] \\ \mathrm{B}:[0 \text { to } 32 / \underline{9} / 1 \text { step } / \mathrm{Y}] \\ \hline \end{array}$ |
|  | 04 | 4C - 4th | A/B | * | $\begin{array}{\|l\|} \hline \text { A: }[300 \text { to } 3000 \mathrm{~V} / \underline{2000} / 1 \text { step } / \mathrm{Y}] \\ \text { B: }[0 \text { to } 32 / \underline{9} / 1 \text { step } / \mathrm{Y}] \\ \hline \end{array}$ |
|  | 05 | 2C-1st | A/B | * | $\begin{aligned} & \text { A: }[300 \text { to } 3000 \mathrm{~V} / 1700 / 1 \text { step } / \mathrm{Y}] \\ & \mathrm{B}:[0 \text { to } 32 / \underline{9} / 1 \text { step } / \mathrm{Y}] \end{aligned}$ |
|  | 06 | 2C-2nd | A/B | * | A: [ 300 to $3000 \mathrm{~V} / 1800 / 1$ step / Y ] <br> B: $[0$ to $32 / \underline{9} / 1$ step $/ \mathrm{Y}$ ] |
|  | 07 | 3C-1st | A/B | * | ```A: [ 300 to 3000 V / 1700 / 1 step / Y] B: [ 0 to 32 / g/ / step / Y ]``` |
|  | 08 | 3C-2nd | A/B | * | A: $[300$ to $3000 \mathrm{~V} / \underline{1800 / 1}$ step $/ \mathrm{Y}]$ |
|  | 09 | 3C - 3rd | A/B | * | A: [ 300 to $3000 \mathrm{~V} / 1900 / 1$ step / Y ] <br> B: [ 0 to 32 / $\underline{9} / 1$ step / Y ] |
|  | 10 | 1C - 4th | A/B | * | $\begin{aligned} & \text { A: }[300 \text { to } 3000 \mathrm{~V} / 1700 / 1 \text { step } / \mathrm{Y}] \\ & \text { B: }[0 \text { to } 32 / \underline{16} / 1 \text { step } / \mathrm{Y}] \\ & \hline \end{aligned}$ |
|  | 11 | Between images | A/B | * | A: [ 300 to $3000 \mathrm{~V} / 1700 / 1$ step / Y ] <br> B: [ 0 to 32 / $\underline{20} / 1$ step $/ \mathrm{Y}$ ] |
|  | 12 | Image - area (half) | A/B | * | A: [ 300 to $3000 \mathrm{~V} / \underline{300} / 1$ step $/ \mathrm{Y}$ ] <br> B: [ 0 to 32 / $3 / 1$ step / Y ] |
|  | 13 | 4C-1st (2/3) | A/- | * | [ 300 to $3000 \mathrm{~V} / 1000 / 1 \mathrm{step} / \mathrm{Y}]$ |
|  | 14 | 4C-2nd (2/3) | A/- |  | [ 300 to $3000 \mathrm{~V} / 1100$ / 1 step / Y ] |
|  | 15 | 4C-3rd (2/3) | A/- |  | [ 300 to $3000 \mathrm{~V} / 1200$ / 1 step / Y ] |
|  | 16 | 4C - 4th (2/3) | A/- |  | [ 300 to $3000 \mathrm{~V} / 1300 / 1 \mathrm{step} / \mathrm{Y}$ ] |
|  | 17 | 2C-1st (2/3) | A/- |  | [ 300 to $3000 \mathrm{~V} / 1200$ / 1 step / Y ] |
|  | 18 | 2C-2nd (2/3) | A/- |  | [ 300 to $3000 \mathrm{~V} / 1300 / 1$ step / Y ] |
|  | 19 | 3C - 1st (2/3) | A/- |  | [ 300 to $3000 \mathrm{~V} / 1100$ / 1 step / Y ] |
|  | 20 | 3C - 2nd (2/3) | A/- |  | [ 300 to $3000 \mathrm{~V} / 1200 / 1$ step / Y ] |
|  | 21 | 3C - 3rd (2/3) | A/- |  | [ 300 to $3000 \mathrm{~V} / 1300$ / 1 step / Y ] |


| 2 | Mode No. (Class 1, 2 and 3) |  |  |  | Function <br> [Range / Default / Step / Y or N (print)] |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 301 | 22 | 1C - 4th (2/3) | A/- | * | [ 300 to $3000 \mathrm{~V} / 1200$ / 1 step / Y ] |
|  | 23 | Between images (2/3) | A/- | * | [ 300 to $3000 \mathrm{~V} / 1700 / 1$ step / Y ] |
|  | 24 | Bias correction | A/B | * | A: $[0$ or $1 / 0 /-/ N]$ <br> B: $[0$ or $1 / \underline{1 /-/ N]}$ <br> 0: ON, 1: OFF |
|  | 25 | Non image area (half) | A/B | * | ```A: [ 300 to 3000 V / 1700 / / step / N ] B: [ 0 to 32 / 13 / 1 step /Y ]``` |
|  | 40 | VD correction | -/B | * | Specifies the correction value to the ITB bias for the development potential (VD). <br> [ 0 to 2.5 / 1.0 / 0.1 step / Y ] |
|  | 41 | Leading edge 1C | -/B | * | Specifies the correction value to the ITB bias of |
|  | 42 | Leading edge 2C/3C/4C | -/B | * | the leading edge. <br> [ -20 to 20 / 6.0 / 0.1 step / Y ] |
| 310 | PTR bias |  |  |  | Specifies the paper transfer roller (PTR) bias settings for each mode. |
|  | 01 | Environment SW | A/B |  | [ 0 to $3 / \underline{1} / 1$ step / N] <br> 0 : No environment switching (normal) <br> 1: Conditions depend on the humidity sensor <br> 2: No environment switching (low humidity) <br> 3: No environment switching (high humidity) <br> When selecting 0 , 1 , or 3 , the transfer bias will not be compensated by conditions detected by the humidity sensor, the fixed correction value set in SP2-316 will be applied to the bias. |
|  | 02 | Normal 1C | A/B | * | A: [ 1 to $50 \mathrm{uA} / \underline{10} / 1$ step / Y ] <br> B: [ 1 to $50 \mathrm{uA} / 16 / 1$ step / Y ] |
|  | 03 | Normal 2C | A/B | * | A: [ 1 to $50 \mathrm{uA} / \underline{18} / 1$ step / Y ] |
|  | 04 | Normal 3C | A/B | * | B: [ 1 to 50 uA / $\underline{20} / 1$ step / Y ] |
|  | 05 | Normal 4C | A/B | * |  |
|  | 06 | Thick 1C | A/B | * | [ 1 to $50 \mathrm{uA} / \underline{8} / 1$ step / Y ] |
|  | 07 | Thick 2C | A/B | * | [ 1 to $50 \mathrm{uA} / \underline{10} / 1$ step / Y ] |
|  | 08 | Thick 3C | A/B | * |  |
|  | 09 | Thick 4C | A/B | * |  |
|  | 10 | OHP 1C | A/B | * | A: [ 1 to $50 \mathrm{uA} / 8 / 1$ step / Y ] <br> B: $[1$ to $50 \mathrm{uA} / \underline{9} / 1$ step $/ \mathrm{Y}]$ |
|  | 11 | OHP 2C | A/B | * | A: [ 1 to $50 \mathrm{uA} / \underline{10} / 1$ step /Y ] |
|  | 12 | OFP 3C | A/B | * | B: [ 1 to $50 \mathrm{uA} / \underline{11} / 1$ step / Y ] |
|  | 13 | OHP 4C | A/B | * |  |
|  | 14 | 2/31C | A/- | * | [ 1 to $50 \mathrm{uA} / \underline{10} / 1$ step / Y ] |
|  | 15 | 2/3 2C | A/- | * | [ 1 to $50 \mathrm{uA} / \underline{18} / 1$ step / Y ] |
|  | 16 | 2/3 3C | A/- | * |  |
|  | 17 | 2/3 4C | A/- | * |  |
|  | 18 | Normal 1C (2nd) | A/B | * | [ 1 to $50 \mathrm{uA} / 12 / 1$ step / Y ] |
|  | 19 | Normal 2C (2nd) | A/B | * | A: [ 1 to $50 \mathrm{uA} / \underline{15} / 1$ step / Y ] |
|  | 20 | Normal 3C (2nd) | A/B | * | B: [ 1 to 50 uA / $\underline{21}$ / 1 step / Y ] |
|  | 21 | Normal 4C (2nd) | A/B | * |  |


| 2 | Mode No. <br> (Class 1, 2 and 3) |  |  |  | Function [Range / Default / Step / Y or N (print)] |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 310 | 22 | Thick 1C (2nd) | A/B | * | A: [ 1 to $50 \mathrm{uA} / \underline{7} / 1$ step / Y ] <br> B: [ 1 to $50 \mathrm{uA} / \underline{8} / 1$ step / Y ] |
|  | 23 | Thick 2C (2nd) | A/B | * | A: [ 1 to $50 \mathrm{uA} / \underline{9} / 1$ step / Y ] <br> B: [ 1 to $50 \mathrm{uA} / \underline{10} / 1$ step / Y ] |
|  | 24 | Thick 3C (2nd) | A/B | * |  |
|  | 25 | Thick 4C (2nd) | A/B | * |  |
|  | 26 | 2/3 1C (2nd) | A/- | * | [ 1 to 50 uA / 10 / 1 step / Y ] |
|  | 27 | 2/3 2C (2nd) | A/- | * | [ 1 to $50 \mathrm{uA} / \underline{15} / 1$ step / Y ] |
|  | 28 | 2/3 3C (2nd) | A/- | * |  |
|  | 29 | 2/3 4C (2nd) | A/- | * |  |
| 311 | 01 | Forced belt cleaning | A/B |  | Lubricates the image transfer belt. Do this when a partially blank printout occurs. <br> [ 0 to $1 / \underline{0} /-/ \mathrm{N}$ ] <br> 0: OFF, 1:ON |
| 313 | PTR paper size correction |  |  |  | Specifies the correction value for the paper transfer roller (PTR) bias depending on the size of paper. <br> Adjusts only if there are problems with transferring a particular paper type, or in response to field problems as directed by technical support staff. <br> (S): Sideways, (L): Lengthwise |
|  | 01 | Normal LT(S) or larger | A/B | * | [ 10 to 400\% / 100 / 1 step / N ] |
|  | 02 | Normal B4 or larger | A/B | * | A: [ 10 to $400 \% / 100 / 1$ step / N ] <br> B: [ 10 to $400 \% / 150 / 1$ step / N ] |
|  | 03 | Normal A4(L) or larger | A/B | * | [ 10 to 400\% / 200 / 1 step / N ] |
|  | 04 | Normal less than A4(L) | A/B | * | [ 10 to 400\% / 250 / 1 step / N ] |
|  | 05 | Thick LT(S) or larger | A/B | * | [ 10 to $400 \%$ / $100 / 1$ step / N ] |
|  | 06 | Thick B4 or larger | A/B | * | A: $[10$ to $400 \% / \underline{100 / 1} / 1$ step / N ] B: $[10$ to $400 \% / 150 / 1$ step / N ] |
|  | 07 | Thick A4(L) or larger | A/B | * | [ 10 to 400\% / 250 / 1 step / N ] |
|  | 08 | Thick less than A4(L) | A/B | * | [ 10 to 400\% / 300 / 1 step / N ] |
|  | 09 | OHP LT(S) or larger | A/B | * | [ 10 to 400\% / 100 / 1 step / N ] |
|  | 10 | OHP B4 or larger | A/B | * | A: [ 10 to $400 \% / 100 / 1$ step / N ] <br> B: [ 10 to $400 \% / 150 / 1$ step / N ] |
|  | 11 | OHP A4(L) or larger | A/B | * | [ 10 to $400 \%$ / $270 / 1$ step / N ] |
|  | 12 | OHP less than A4(L) | A/B | * |  |
| 314 | PTR - leading edge |  |  |  | Specifies the correction value for the paper transfer roller (PTR) bias for the leading edge area depending on the paper type and mode. <br> Adjusts only if there are problems with transferring a particular paper type, or in response to field problems as directed by technical support staff. |
|  | 01 | Normal 1C | A/B | * | [ -20 to 40 uA / $\underline{0} / 1$ step / Y ] |
|  | 02 | Normal 2C | A/B | * |  |
|  | 03 | Normal 3C | A/B | * |  |
|  | 04 | Normal 4C | A/B | * |  |
|  | 05 | Thick 1C | A/B | * | [ -20 to 40 uA / $/$ / 1 step / Y ] |
|  | 06 | Thick 2C | A/B | * | [ -20 to 40 uA / $/$ / 1 step / Y ] |
|  | 07 | Thick 3C | A/B | * |  |


| 2 | Mode No. (Class 1, 2 and 3) |  |  |  | Function <br> [Range / Default / Step / Y or N (print)] |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 314 | 08 | Thick 4C | A/B | * | [ -20 to $40 \mathrm{uA} / \underline{0} / 1$ step / Y ] |
|  | 09 | OHP 1C | A/B | * | [ -20 to $40 \mathrm{uA} / \underline{0} / 1$ step / Y ] |
|  | 10 | OHP 2C | A/B | * |  |
|  | 11 | OHP 3C | A/B |  |  |
|  | 12 | OHP 4C | A/B |  |  |
|  | 13 | 2/3 1C | A/- |  |  |
|  | 14 | 2/32C | A/- | * |  |
|  | 15 | 2/3 3C | A/- | * |  |
|  | 16 | 2/3 4C | A/- | * |  |
|  | 17 | Normal 1C (2nd) | A/B | * |  |
|  | 18 | Normal 2C (2nd) | A/B | * | [ -20 to 40 uA / $\underline{\text { / }} 11$ step / Y ] |
|  | 19 | Normal 3C (2nd) | A/B | * |  |
|  | 20 | Normal 4C (2nd) | A/B | * |  |
|  | 21 | Thick 1C (2nd) | A/B | * | [ -20 to $40 \mathrm{uA} / \underline{4} / 1$ step / Y ] |
|  | 22 | Thick 2C (2nd) | A/B | * |  |
|  | 23 | Thick 3C (2nd) | A/B | * |  |
|  | 24 | Thick 4C (2nd) | A/B | * |  |
|  | 25 | 2/3 1C (2nd) | A/- | * | [ -20 to 40 uA / $\underline{0} / 1$ step / Y ] |
|  | 26 | 2/3 2C (2nd) | A/- | * |  |
|  | 27 | 2/3 3C (2nd) | A/- | * |  |
|  | 28 | 2/3 4C (2nd) | A/- | * |  |
| 315 | PTR - trailing edge |  |  |  | Specifies the correction value for the paper transfer roller (PTR) bias for the trailing edge area depending on the paper type and mode. Adjusts only if there are problems with transferring a particular paper type, or in response to field problems as directed by technical support staff. |
|  | 01 | Normal 1C | A/B | * | A: [ -20 to $40 \mathrm{uA} /-1 / 1$ step / Y ] <br> B: $[-20$ to $40 \mathrm{uA} /-8 / 1$ step $/ \mathrm{Y}]$ |
|  | 02 | Normal 2C | A/B | * | A: [ -20 to $40 \mathrm{uA} /-1 / 1$ step / Y ] |
|  | 03 | Normal 3C | A/B | * | B: [ -20 to $40 \mathrm{uA} / \underline{-10} / 1$ step / Y ] |
|  | 04 | Normal 4C | A/B | * |  |
|  | 05 | Thick 1C | A/B | * | [ -20 to $40 \mathrm{uA} /-\underline{1} / 1$ step / Y ] |
|  | 06 | Thick 2C | A/B | * |  |
|  | 07 | Thick 3C | A/B | * |  |
|  | 08 | Thick 4C | A/B | * |  |
|  | 09 | OHP 1C | A/B | * |  |
|  | 10 | OHP 2C | A/B | * |  |
|  | 11 | OHP 3C | A/B | * |  |
|  | 12 | OHP 4C | A/B | * |  |
|  | 13 | 2/31C | A/- | * |  |
|  | 14 | 2/3 2C | A/- | * |  |
|  | 15 | 2/3 3C | A/- | * |  |
|  | 16 | 2/3 4C | A/- | * |  |
|  | 17 | Normal 1C (2nd) | A/B | * | A: [ -20 to $40 \mathrm{uA} /-1 / 1$ step / Y ] <br> B: [ -20 to 40 uA / -8 / 1 step / Y ] |


| 2 | Mode No. (Class 1, 2 and 3) |  |  |  | Function [Range / Default / Step / Y or N (print)] |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 315 | 18 | Normal 2C (2nd) | A/B |  | A: [ -20 to $40 \mathrm{uA} /-\underline{1} / 1$ step / Y $]$ <br> B: [ -20 to $40 \mathrm{uA} /-10 / 1$ step / Y$]$ |
|  | 19 | Normal 3C (2nd) | A/B | * |  |
|  | 20 | Normal 4C (2nd) | A/B | * |  |
|  | 21 | Thick 1C (2nd) | A/B | * | [ -20 to $40 \mathrm{uA} /-\underline{1} / 1$ step /Y ] |
|  | 22 | Thick 2C (2nd) | A/B | * |  |
|  | 23 | Thick 3C (2nd) | A/B | * |  |
|  | 24 | Thick 4C (2nd) | A/B | * |  |
|  | 25 | 2/3 1C (2nd) | A/- | * |  |
|  | 26 | 2/3 2C (2nd) | A/- | * |  |
|  | 27 | 2/3 3C (2nd) | A/- |  |  |
|  | 28 | 2/3 4C (2nd) | A/- | * |  |
| 316 | PTR - environment |  |  |  | Specifies the correction value for the paper transfer roller (PTR) bias depending on the humidity. <br> Adjusts only if there are transfer problems for a particular paper type, or in response to field problems as directed by technical support staff. <br> L: Low humidity, H: High humidity |
|  | 01 | L Normal 1C | A/B | * | A: [ 10 to $400 \% / 100 / 1 / \mathrm{N}$ ] <br> B: $[10$ to $400 \% / \underline{75} / 1 / \mathrm{N}]$ |
|  | 02 | L Normal 4C | A/B | * | $\begin{aligned} & \text { A: }[10 \text { to } 400 \% / \overline{89} / 1 / \mathrm{N}] \\ & \mathrm{B}:[10 \text { to } 400 \% / \underline{100} / 1 / \mathrm{N}] \end{aligned}$ |
|  | 03 | L Thick 1C | A/B | * | [ 10 to $400 \% / \underline{100 / 1 / N]}$ |
|  | 04 | L Thick 4C | A/B | * |  |
|  | 05 | L OHP 1C | A/B | * | $\begin{aligned} & \mathrm{A}:[10 \text { to } 400 \% / \underline{75} / 1 / \mathrm{N}] \\ & \mathrm{B}:[10 \text { to } 400 \% / 115 / 1 / \mathrm{N}] \end{aligned}$ |
|  | 06 | L OHP 4C | A/B | * | $\begin{aligned} & \mathrm{A}:[10 \text { to } 400 \% / \overline{70} / 1 / \mathrm{N}] \\ & \mathrm{B}:[10 \text { to } 400 \% / 115 / 1 / \mathrm{N}] \end{aligned}$ |
|  | 07 | L Normal 1C (2/3) | A/- | * | [ 10 to $400 \% / 100 / 1 / \mathrm{N}]$ |
|  | 08 | L Normal 4C (2/3) | A/- | * | [ 10 to $400 \%$ / $89 / 1 / \mathrm{N}$ ] |
|  | 09 | L Normal 1C (2nd) | A/B | * | $\begin{aligned} & \text { A: }[10 \text { to } 400 \% / 79 / 1 / \mathrm{N}] \\ & \mathrm{B}:[10 \text { to } 400 \% / 100 / 1 / \mathrm{N}] \end{aligned}$ |
|  | 10 | L Normal 4C (2nd) | A/B | * | A: $[10$ to $400 \% / \underline{70} / 1 / \mathrm{N}]$ B: $[10$ to $400 \% / \underline{90} / 1 / \mathrm{N}]$ for EU version B. $[10$ to $400 \% / 115 / 1 / \mathrm{N}]$ fors <br> B: [ 10 to $400 \% / \underline{115 / 1 / N}$ ] for others |
|  | 11 | L Thick 1C (2nd) | A/B | * | [ 10 to $400 \% / \underline{100 / 1 / N]}$ |
|  | 12 | L Thick 4C (2nd) | $A / B$ | * |  |
|  | 13 | L Normal 1C (2/3) (2nd) | A/- | * | [ 10 to $400 \% / \underline{95} / 1 / \mathrm{N}$ ] |
|  | 14 | L Normal 4C (2/3) (2nd) | A/- | * | [ 10 to $400 \% / \underline{\text { \% } / 1 / \mathrm{N}]}$ |
|  | 21 | H Normal 1C | A/B | * | A: [ 10 to 400\% / 100 / $1 / \mathrm{N}$ ] |
|  | 22 | H Normal 4C | A/B | * | B: [ 10 to 400\% / 115 / $1 / \mathrm{N}$ ] |
|  | 23 | H Thick 1C | $A / B$ | * | [ 10 to $400 \% / \underline{100 / 1 / N]}$ |
|  | 24 | H Thick 4C | A/B | * |  |
|  | 25 | H OHP 1C | A/B | * | A: $[10$ to $400 \% / 125 / 1 / \mathrm{N}]$ $\mathrm{B}:[10$ to $400 \% / 115 / 1 / \mathrm{N}]$ |


| 2 | Mode No. (Class 1, 2 and 3) |  |  |  | Function <br> [Range / Default / Step / Y or N (print)] |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 316 | 26 | H OHP 4C | A/B | * | $\begin{aligned} & \text { A: }[10 \text { to } 400 \% / 100 / 1 / \mathrm{N}] \\ & \mathrm{B}:[10 \text { to } 400 \% / \underline{115} / 1 / \mathrm{N}] \end{aligned}$ |
|  | 27 | H Normal 1C (2/3) | A/- |  | [ 10 to $400 \% / \underline{100} / 1 / \mathrm{N}$ ] |
|  | 28 | H Normal 4C (2/3) | A/- |  |  |
|  | 29 | H Normal 1C (2nd) | A/B |  |  |
|  | 30 | H Normal 4C (2nd) | A/B |  |  |
|  | 31 | H Thick 1C (2nd) | A/B |  |  |
|  | 32 | H Thick 4C (2nd) | A/B |  |  |
|  | 33 | H Normal 1C (2/3) (2nd) | A/- |  |  |
|  | 34 | H Normal 4C (2/3) (2nd) | A/- | * |  |
|  | 35 | L Normal 1C Trailing | -/B | * | [ 10 to $400 \% / \underline{67} / 1 / \mathrm{N}]$ |
|  | 36 | L Normal 4C Trailing | -/B | * | [ 10 to $400 \% / \underline{53} / 1 / \mathrm{N}]$ |
|  | 37 | L Normal 1C (2nd) Trailing | -/B | * | [ 10 to $400 \% / \underline{59} / 1 / \mathrm{N}]$ |
|  | 38 | L Normal 4C (2nd) Trailing | -/B |  | [ 10 to $400 \%$ / 48 / 1 / N] |
| 802 | 00 | Forced charger cleaning | -/B |  | Performs the charge wire and grid cleaning. [ 0 or $1 / \underline{0} /-/ \mathrm{N}$ ] <br> 0: OFF, 1: ON |
| 803 | Charge cleaning setting |  |  |  |  |
|  | 01 | Auto cleaning ON/OFF | -/B |  | Specifies when auto cleaning is performed. <br> [ 0 to $2 / \underline{2} / 1$ step / Y ] <br> 0 : Deactivate <br> 1: Acts in the morning <br> 2: Acts at the timing set in SP2-803-002 |
|  | 02 | Development count | -/B | * | Sets the development counter. When the counter reaches the set value, auto cleaning is performed before the interval or time process control self check is executed. <br> [ 0 to 80 K developments / 1.0 / 0.1 step / Y ] <br> 0 : Deactivate |
|  | 03 | Operation time | -/B | * | Sets the operation time counter. When the counter reaches the set value, auto cleaning is performed before the interval or time process control self check is executed. <br> [ 0 to 999 hours/ $\underline{0} / 1$ step / Y ] <br> 0 : Deactivate |
| 912 | Temp. \& Hum. display |  |  |  | Displays the temperature and humidity detected by the humidity sensor. |
|  | 01 | Temperature | A/B |  | [ ${ }^{\circ} \mathrm{C} /-/ 0.1$ step / Y ] |
|  | 02 | Humidity (relative) | A/B |  | [ - \% / - / 0.1 step / Y ] |
|  | 03 | Humidity (absolute) | -/B |  | [ - / - / 0.1 step / Y ] |
| 913 | 00 | Toner overflow sensor | A/B | * | Enables/disables the toner overflow sensor. <br> [ 0 or $1 / 1 /-/ \mathrm{Y}$ ] <br> 0: OFF, 1: ON |


| 2 | Mode No. <br> (Class 1, 2 and 3) |  |  |  | Function [Range / Default / Step / Y or N (print)] |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 920 | 00 | Printer mode | A/- | * | Specifies the resolution when printing test patterns. <br> [ 0 or $1 / \underline{0} /-/ N$ ] <br> 0: $400 \mathrm{dpi}, 1: 600 \mathrm{dpi}$ |
| 951 | 00 | Toner end detection | A/B | * | Enables/disables the toner end detection for all colors. $[0 \text { or } 1 / 0 /-/ N]$ $0: \text { ON, 1: OFF }$ |
| 953 | Maximum toner supply ratio |  |  |  | Adjusts the maximum toner supply ratio in the fuzzy supply mode. |
|  | 01 | [K] | A/B | * | [ 0 to 100\% / 100 / 1 step / Y ] |
|  | 02 | [Color] | A/B | * | [ 0 to 100\% / 100 / 1 step / Y ] |
| 955 | 00 | Toner end detection | A/B | * | Specifies the method for determining the number of copies, which can be made between toner near end and toner end. <br> [ 0 or $1 / \underline{0} /-N$ ] <br> 0 : Pixel count and number of pages <br> 1: Number of pages only |
| 999 | 00 | ITB cleaning release | A/B |  | Releases the image transfer belt (ITB) cleaning blade and entrance seal from the belt by turning on the fusing motor and ITB cleaning clutch. |

SP3-XXX (Process)

| 3 | Mode No. <br> (Class 1, 2 and 3) |  |  | Function [ Range / Default / Step / Y or N (print) ] |
| :---: | :---: | :---: | :---: | :---: |
| 103 | Vsp display |  |  | Displays Vsp measured by the ID sensor. |
|  | 01 | [K] | A/B | All: [-V / - / 0.01 step / Y ] |
|  | 02 | [C] | A/B |  |
|  | 03 | [M] | A/B |  |
|  | 04 | [Y] | A/B |  |
| 107 | Vsg displays |  |  | Displays Vsg measure by the ID sensor. |
|  | 01 | [K] | A/B | All: [ -V / - / 0.01 step / Y ] |
|  | 02 | [Color] | A/B |  |
| 111 | 00 | Residual voltage display | A/B | Displays the residual voltage on the drum measure by the potential sensor. $\text { [ - V / - / } 1 \text { step / Y ] }$ |
| 121 | Development gamma display |  |  | Displays the development gamma. |
|  | 01 | [K] | A/B |  |
|  | 02 | [C] | A/B |  |
|  | 03 | [M] | A/B |  |
|  | 04 | [Y] | A/B |  |
| 122 | Vk display |  |  | Displays the Vk value. |
|  | 01 | [K] | A/B |  |
|  | 02 | [C] | A/B |  |
|  | 03 | [M] | A/B |  |
|  | 04 | [Y] | A/B |  |


| 3 | Mode No. (Class 1, 2 and 3) |  |  |  | Function [ Range / Default / Step / Y or N (print) ] |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 125 | 00 | Process control method | A/B |  | Specifies the process control method. <br> A: [ 0 to $2 / \underline{0} / 1$ step / Y ] <br> B: $[0$ or $1 / \underline{0} /-/ \mathrm{Y}]$ <br> 0: Enables process control <br> 1: Fixed (VG/VB/VL values are all fixed.) <br> 2: Enables process control in both copy/print modes <br> ' 2 ' is only available for A258/259/260 models. When installing a controller, the data should be changed to ' 2 '. If not, the machine will not perform the self-check for print mode. |
| 126 | 01 | Forced self-check | A/B |  | Performs the forced self-check. <br> [ 0 or $1 / \underline{0} /-/ \mathrm{N}$ ] <br> 0: - , 1: Execute <br> Whenever performing forced self-check, check the result in SP 3-975. |
| 127 | Max. M/A (process control) |  |  |  | Adjusts the toner M/A target that is used for the process control gamma correction. |
|  | 01 | [K] | A/B |  | [ 0.5 to $1.5 \mathrm{mg} / \mathrm{cm} 2 / \underline{0.7} / 0.001 / \mathrm{Y}$ ] DFU |
|  | 02 | [Color] | A/B |  |  |
| 128 | 00 | TD auto correction | A/B |  | Enables/disables the toner density automatic correction mode during the self-check. <br> A: $[0$ to $1 / \underline{0} /-/ N]$ DFU <br> $0:$ ON, 1: OFF <br> B: $[0$ to $3 / \underline{3} /-/ N]$ DFU <br> 0 : Perform at initial and forced process control self-check <br> 1: Disable <br> 2: Perform at initial, forced, and interval process control self-check <br> 3: Perform at interval process control self-check |
| 129 | Max. M/A (ID sensor) |  |  |  | Adjusts the toner M/A target of the ID sensor pattern. |
|  | 01 | [K] | A/B |  | [ 0.5 to $1.5 \mathrm{mg} / \mathrm{cm} 2 / 0.3 / 0.001 / \mathrm{Y}]$ DFU |
|  | 02 | [Color] | A/B | * | [ 0.5 to $1.5 \mathrm{mg} / \mathrm{cm} 2 / 0.4 / 0.001 / \mathrm{Y}$ ] DFU |
| 130 | TD auto correction setting |  |  |  | Specifies the number of copies to consume toner for toner density correction in the initial or interval process control self-check. |
|  | 01 | Initial self check | -/B |  | [ 0 to 50 copies / $10 / 1$ step / Y ] |
|  | 02 | Interval self check | -/B |  | [ 0 to 50 copies / $\underline{5} / 1$ step / Y ] |
|  | 03 | Table limit setting | -/B |  | Enables/disables the limit of adjustable range in the potential table. <br> [ 0 or $1 / \underline{0} /-/ \mathrm{Y}$ ] <br> 0: Limit 1: No limit |
| 902 | Pointer table display |  |  |  | Displays the pointer table (VD/VB/VL) number selected during the latest self-check. |
|  | 01 | [K] | A/B |  | All: [ 1 to 20/-/1 step / Y ] |


| 3 | Mode No. (Class 1, 2 and 3) |  |  |  | Function [ Range / Default / Step / Y or N (print) ] |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 902 | 02 | [C] | A/B |  |  |
|  | 03 | [M] | A/B |  |  |
|  | 04 | [Y] | A/B |  |  |
| 907 | M/A (ID sensor) display |  |  |  | Displays the M/A of the ID sensor most recently detected. |
|  | 01 | [K] | A/B |  | All: [ - mg/cm2 / - / 0.001 step / Y ] |
|  | 02 | [C] | A/B |  |  |
|  | 03 | [M] | A/B |  |  |
|  | 04 | [Y] | A/B |  |  |
| 964 | 00 | Dev. initialization result | A/B |  | Displays the result of developer initialization. [ 0 to 999 /-/ 1 step / Y ] <br> 0: Success <br> Others : Failure <br> See the troubleshooting section for details. |
| 972 | 00 | Self-check interval (H) | A/- |  | Adjusts the time interval of timed process control self-check. <br> [ 0 to 24 hours / $\underline{6} / 1 \mathrm{step} / \mathrm{Y}$ ] <br> 0 : Disables the timed process control self-check. |
|  | Self-check interval |  |  |  | Adjusts the time interval of initial and timed process control self check. |
|  | 01 | Timed self check | -/B |  | Adjusts the time interval of times process control self-check. <br> [ 0 to 24 hours / $\underline{6} / 1$ step / Y ] <br> 0 : Disable |
|  | 02 | Initial self check | -/B |  | Adjusts the time interval of initial process control self-check. <br> [ 0 to 24 hours / $\underline{0} / 1$ step / Y ] <br> 0 : Disable <br> Initial self-check will start when the time reaches the set value and if machine is not operated for the time set in SP 3-972-003. |
|  | 03 | Non-operation time | -/B | * | Adjusts the non-operation time. [ 0 to 24 hours / $\underline{0} / 1$ step / Y ] <br> 0 : Disable |
| 973 | 00 | Self-check interval (P) | A/B | * | Adjust the page interval of interval process control self-check. <br> A: [ 0 to 200 pages / $150 / 1$ step / Y ] <br> B: [ 0 to 500 pages / $\underline{150 / 1} 1$ step / Y ] <br> 0 : Disable |
| 974 |  | x. M/A (Image process) |  |  | Adjusts the maximum toner M/A during the image processing. |
|  | 01 | [K] | A/B | * | [ 0.5 to $1.5 \mathrm{mg} / \mathrm{cm} 2 / \underline{0.7} / 0.001 / \mathrm{Y}$ ] DFU |
|  | 02 | [Color] | A/B |  |  |
| 975 | 00 | Self-check result | A/B |  | Displays the self-check result. <br> [ 0 to 999 / - / 1 step / Y ] <br> 0 : Success <br> Others: Failure <br> See the troubleshooting section for details. |


| 3 | Mode No. (Class 1, 2 and 3) |  |  | Function [ Range / Default / Step / Y or N (print) ] |
| :---: | :---: | :---: | :---: | :---: |
| 980 | 00 | Charge corona fan | A/B | Specifies the ON timing of the charge corona fan. [ 0 or $1 / \underline{0} /-/ \mathrm{Y}$ ] <br> 0 : Fan stays on. <br> 1: Fan turns on when the drum motor turns on or when the machine returns from energy saver mode. The fan turns off 30 seconds after the drum motor turns off or when the machine enters energy saver mode. |

SP MODE TABLE

SP4-XXX (Scanner)

| 4 | Mode No. (Class 1, 2 and 3) |  |  |  | Function <br> [ Range / Default / Step / Y or N (print)] |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 008 | 00 | Sub-scan magnification | A/B |  | Adjusts the magnification in the sub-scan direction by changing the scanner motor speed. <br> A: [ -1.0 to $1.0 \% / \underline{0} / 0.1$ step / Y ] <br> B: [ -0.9 to $0.9 \% / \underline{0} / 0.1$ step / Y ] |
| 010 | 00 | Leading edge regist. | A/B |  | Adjusts the leading edge registration by changing the laser exposure start timing in the sub-scan direction. <br> A: [ -5.0 to $5.0 \mathrm{~mm} / \underline{0} / 0.1 \mathrm{step} / \mathrm{Y}$ ] <br> B: $[-4.0$ to $4.0 \mathrm{~mm} / 0 / 0.1$ step $/ \mathrm{Y}]$ |
| 011 | 00 | Side-to-side regist. | A/B |  | Adjusts the side-to-side registration by changing the laser exposure start timing in the main scan direction. <br> A: [ -6.0 to $6.0 \mathrm{~mm} / \underline{0} / 0.1 \mathrm{step} / \mathrm{Y}]$ <br> B: [ -2.5 to $2.5 \mathrm{~mm} / \underline{0} / 0.1$ step / Y ] |
| 012 | Blank margin |  |  |  | Sets the blank margin at each side for erasing the original shadow caused by the gap between the original and scale. |
|  | 01 | Rear | A/B | * | All: [ 0 to $3.0 \mathrm{~mm} / \underline{0} / 0.1$ step / N ] |
|  | 02 | Front | A/B |  |  |
|  | 03 | Left | A/B | * |  |
|  | 04 | Right | A/B | * |  |
| 013 | Scanner free run |  |  |  | Performs the scanner free run in the full size mode with the exposure lamp ON or OFF. |
|  | 01 | Lamp ON | A/B |  | All: [ 0 or $1 /-/-/ \mathrm{N}$ ] |
|  | 02 | Lamp OFF | A/B |  | 0: Stop, 1: Start |
| 205 | 00 | ADS level (B/W mode) | -/B | * | Adjusts the background level in ADS/B\&W copy mode. <br> [ 0 to 50 / 18 / 1 step / N ] <br> Increasing: Background density becomes lighter. <br> Decreasing: Background density becomes darker. |
| 301 | 00 | APS operation test | A/B |  | Shows the width of the original detected by the original width and length sensors. |
| 303 | 00 | APS minimum size | A/B |  | Specifies the minimum original size (A5 or HLT portrait) when all the original width sensor outputs are OFF <br> [ 0 or $1 / 0 /-/ N$ ] <br> 0 : No detection, 1: A5/HLT <br> NOTE: This is not applicable for A258/259/260 copiers. |


| 4 | Mode No. (Class 1, 2 and 3) |  |  |  | Function [ Range / Default / Step / Y or N (print) ] |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 417 | 00 | IPU Test Pattern | A/B |  | Specifies the IPU test pattern. <br> A: $[0$ to $14 / \underline{0} / 1$ step / N ] <br> B: [ 0 to $13 / \underline{0} / 1$ step $/ \mathrm{N}$ ] <br> A: <br> B: <br> 0 : No pattern <br> 0: No pattern <br> 1: Grid <br> 1: Grid <br> 2: Slanted grid <br> 2: Slanted grid <br> 3: 256 gradation (H) <br> 3: 256 gradation (H) <br> 4: 256 gradation (V) <br> 4: 256 gradation (V) <br> 5: Color patch <br> 5: Color patch <br> 6: RGB gray scale <br> 6: RGB gray scale <br> 7: YMCK-RGB (16) <br> 7: YMCK-RGB (16) <br> 8: YMCK (16) <br> 8: YMCK (16) <br> 9: YMCK (128) <br> 10: Same as 1 <br> 9. YMCK (128) <br> 10: No pattern <br> 11: Same as 8 <br> 11: Uneven check <br> 12: Same as 9 <br> 13: YMCK-RGB (16) <br> 12: Banding check (1) <br> 13: Banding check (2) <br> 14: YMCK (128) <br> (H): Horizontal, (V): Vertical <br> (16): 16 gradation, (128): 128 gradation |
| 426 | RGB gain |  |  |  | Adjusts the gain value of the amplifiers on the scanner IPU for odd and even pixels for each RGB color. |
|  | 01 | [R] Odd | A/B |  | All: [ 0 to 255 / $\underline{0} / 1$ step / Y ] DFU |
|  | 02 | [R] Even | A/B |  |  |
|  | 03 | [G] Odd | A/B |  |  |
|  | 04 | [G] Even | A/B |  |  |
|  | 05 | [B] Odd | A/B |  |  |
|  | 06 | [B] Even | A/B |  |  |
| 427 | RGB reference |  |  |  | Adjust the reference voltage for the A/D converters on the scanner IPU for each RGB color. |
|  | 01 | [R] 0 | A/B | * | All: [ 0 to 255 / $\underline{116 / 1 \text { step / N ] DFU }}$ |
|  | 02 | [G] 0 | A/B | * |  |
|  | 03 | [B] 0 | A/B | * |  |
|  | 04 | [R] 1 | A/B | * | All: [ 0 to 255 / 148 (FA) / 1 step / N ] DFU |
|  | 05 | [G] 1 | A/B | * |  |
|  | 06 | [B] 1 | A/B | * |  |
| 435 | 00 | White level adjustment | A/B |  | Performs the white level adjustment. Selects ' 1 ' to execute this adjustment. |
| 440 | 00 | Saturation | -/B | * | Adjusts the level of saturation. [ 0 to $5 / 3 / 1$ step / N] <br> 0: Linear <br> 1: Highest <br> 2: Low <br> 3: Default <br> 4: High <br> 5: Higher |
| 501 | ACC Target (Copier) |  |  |  | Adjusts the ACC targets for text and photo mode in copy mode. |


| 4 | Mode No. (Class 1, 2 and 3) |  |  |  | ```Function \\ [ Range / Default / Step / Y or N (print) ]``` |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 501 | 01 | [K] Text | A/B |  | All: [ 0 to 50 / $\underline{5} / 1$ step / Y ] DFU <br> Do not change the data in the field. Adjust the manual gamma for the image quality adjustment. The image quality can be adjusted only by changing the manual gamma. |
|  | 02 | [C] Text | A/B |  |  |
|  | 03 | [M] Text | A/B |  |  |
|  | 04 | [Y] Text | A/B |  |  |
|  | 05 | [K] Photo | A/B |  |  |
|  | 06 | [C] Photo | A/B |  |  |
|  | 07 | [M] Photo | A/B |  |  |
|  | 08 | [Y] Photo | A/B |  |  |
| 502 | ACC target (Printer) |  |  |  | Adjusts the ACC targets for text and photo mode in print mode. |
|  | 01 | [K] Text | A/B |  | All: [ 0 to 50 / $\underline{5} / 1$ step / Y ] DFU <br> Do not change the data in the field. Adjust the manual gamma for the image quality adjustment. The image quality can be adjusted only by changing the manual gamma. |
|  | 02 | [C] Text | A/B |  |  |
|  | 03 | [M] Text | A/B |  |  |
|  | 04 | [Y] Text | A/B |  |  |
|  | 05 | [K] Photo | A/B |  |  |
|  | 06 | [C] Photo | A/B |  |  |
|  | 07 | [M] Photo | A/B |  |  |
|  | 08 | [Y] Photo | A/B | * |  |
| 505 | ACC Correction (Highlight) |  |  |  | Adjusts the ACC target for highlight areas to correct the differences between machines. |
|  | 01 | [K] | A/B |  | All: [ -128 to 127 / $\underline{0}$ (FA)/ 1 step / N ] DFU Only when replacing SBU (lens block with CCD), set the data printed on the data sheet enclosed with the service part. |
|  | 02 | [C] | A/B | * |  |
|  | 03 | [M] | A/B | * |  |
|  | 04 | [Y] | A/B | * |  |
| 506 | ACC Correction (Shadow) |  |  |  | Adjusts the ACC target for shadow areas to correct the differences between machines. |
|  | 01 | [K] | A/B |  | All: [ -128 to 127 / $\underline{0}$ (FA) / 1 step / N] DFU Only when replacing SBU (lens block with CCD), set the data printed on the data sheet enclosed with the service part. |
|  | 02 | [C] | A/B |  |  |
|  | 03 | [M] | A/B |  |  |
|  | 04 | [Y] | A/B | * |  |
| 904 | IPU board test |  |  |  | Tests the scanner IPU board. |
|  | 01 | Test 1 | A/B |  | Performs write/read check for each ASIC. [ 0 to $0 \times 17 /-/-/ N$ ] <br> 0 OK, Others: Defective |
|  | 02 | Test 2 | A/B |  | Performs test for functions such as shading, picture elements correction, color conversion, image separation, and magnification. <br> [ 0 to 0x2A / - / - / N] <br> 0: OK, Others: Defective |


| 4 | Mode No. (Class 1, 2 and 3) |  |  |  | Function <br> [ Range / Default / Step / Y or N (print) ] |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 905 | 00 | Dither selection | -/B | * | Selects the dither pattern for copying or for test print. <br> [ 0 to 255 / 0 / 1 step / N ] <br> 0 : Default setting Letter/Photo <br> 1: RC-200-like dither ( 170 lines/inch) Photo <br> 2: RC-210-like dither ( 2 bit mode) Photo <br> 16: $1 \times 1$ dither (applied to whole image) Letter <br> 32: $1 \times 1$ dither (applied only to letters/lines) Letter <br> 64: $2 \times 2$ dither Photo <br> 128: $2 \times 2$ dither (less than $33 \%$ reduction) Photo <br> 255: 1x1 dither Letter/Photo <br> NOTE: When you change the data from the default setting, copies are made by using the selected dither pattern. |
| 907 | 00 | VPU test pattern | A/B |  | Selects the mode to print the test pattern out. The analog video ASIC makes test patterns 1 to 5 . <br> [ 0 to 5 / $\underline{0} / 1$ step / N ] <br> 0 : CCD output <br> 1: Black pattern <br> 2: White pattern <br> 3: 16-gradation pattern <br> 4: 4-dot grid pattern <br> 5: 2-dot grid pattern |
| 910 | Copy gamma - Letter [K] |  |  |  | Adjusts the black printer gamma for letter mode if the results of ACC are not satisfactory. <br> H: Highlight, M: Middle, S: Shadow |
|  | 01 | H (Offset) | A/B |  | All: [ 0 to 30 / 15 / 1 step / Y ] |
|  | 02 | M (Offset) | A/B | * |  |
|  | 03 | S (Offset) | A/B |  |  |
|  | 04 | IDmax (Offset) | A/B | * |  |
|  | 05 | H (Option) | A/B | * | All: [ 0 to 30 / 15 / 1 step / Y ] DFU |
|  | 06 | M (Option) | A/B | * |  |
|  | 07 | S (Option) | A/B |  |  |
|  | 08 | IDmax (Option) | A/B | * |  |
| 911 | Copy gamma - Letter [C] |  |  |  | Adjusts the cyan printer gamma for letter mode if the results of ACC are not satisfactory. <br> H: Highlight, M: Middle, S: Shadow |
|  | 01 | H (Offset) | A/B | * | All: [ 0 to 30 / 15 / 1 step / Y ] |
|  | 02 | M (Offset) | A/B | * |  |
|  | 03 | S (Offset) | A/B |  |  |
|  | 04 | IDmax (Offset) | A/B |  |  |
|  | 05 | H (Option) | A/B |  | All: [ 0 to 30 / $1 \underline{5} / 1$ step / Y ] DFU |
|  | 06 | M (Option) | A/B | * |  |
|  | 07 | S (Option) | A/B |  |  |
|  | 08 | IDmax (Option) | A/B | * |  |
| 912 | Copy gamma - Letter [M] |  |  |  | Adjusts the magenta printer gamma for letter mode if the results of ACC are not satisfactory. <br> H: Highlight, M: Middle, S: Shadow |
|  | 01 | H (Offset) | A/B | * | All: [ 0 to 30 / 15 / 1 step / Y ] |

SP MODE TABLE

| 4 | Mode No. (Class 1, 2 and 3) |  |  |  | Function [ Range / Default / Step / Y or N (print) ] |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 912 | 02 | M (Offset) | A/B | * |  |
|  | 03 | S (Offset) | A/B | * |  |
|  | 04 | IDmax (Offset) | A/B | * |  |
|  | 05 | H (Option) | A/B |  | All: [ 0 to 30 / 15 / 1 step / Y ] DFU |
|  | 06 | M (Option) | A/B | * |  |
|  | 07 | S (Option) | A/B |  |  |
|  | 08 | IDmax (Option) | A/B | * |  |
| 913 | Copy gamma - Letter [Y] |  |  |  | Adjusts the yellow printer gamma for letter mode if the results of ACC are not satisfactory. <br> H: Highlight, M: Middle, S: Shadow |
|  | 01 | H (Offset) | A/B | * | All: [ 0 to 30 / 15 / 1 step / Y ] |
|  | 02 | M (Offset) | A/B | * |  |
|  | 03 | S (Offset) | A/B | * |  |
|  | 04 | IDmax (Offset) | A/B | * |  |
|  | 05 | H (Option) | A/B | * | All: [ 0 to 30 / 15 / 1 step / Y ] DFU |
|  | 06 | M (Option) | A/B | * |  |
|  | 07 | S (Option) | A/B | * |  |
|  | 08 | IDmax (Option) | A/B | * | All: [ 0 to 30 / 15 / 1 step / Y ] DFU |
| 914 | Copy gamma - Letter [SC/K] |  |  |  | Adjusts the black printer gamma for letter (single color) mode if the results of ACC are not satisfactory. <br> H: Highlight, M: Middle, S: Shadow |
|  | 01 | H (Offset) | A/B |  | All: [ 0 to 30 / 15 / 1 step / Y ] |
|  | 02 | M (Offset) | A/B | * |  |
|  | 03 | S (Offset) | A/B | * |  |
|  | 04 | IDmax (Offset) | A/B | * |  |
|  | 05 | H (Option) | A/B | * | All: [ 0 to 30 / 15 / 1 step / Y ] DFU |
|  | 06 | M (Option) | A/B | * |  |
|  | 07 | S (Option) | A/B | * |  |
|  | 08 | IDmax (Option) | A/B | * |  |
| 915 | Copy gamma - Photo [K] |  |  |  | Adjusts the black printer gamma for photo mode if the results of ACC are not satisfactory. <br> H: Highlight, M: Middle, S: Shadow |
|  | 01 | H (Offset) | A/B | * | All: [ 0 to 30 / $\underline{15} / 1$ step / Y ] |
|  | 02 | M (Offset) | A/B | * |  |
|  | 03 | S (Offset) | A/B | * |  |
|  | 04 | IDmax (Offset) | A/B | * |  |
|  | 05 | H (Option) | A/B | * | All: [ 0 to 30 / 15 / 1 step / Y ] DFU |
|  | 06 | M (Option) | A/B | * |  |
|  | 07 | S (Option) | A/B |  |  |
|  | 08 | IDmax (Option) | A/B | * |  |
| 916 | Copy gamma - Photo [C] |  |  |  | Adjusts the cyan printer gamma for photo mode if the results of ACC are not satisfactory. <br> H: Highlight, M: Middle, S: Shadow |
|  | 01 | H (Offset) | A/B | * | All: [ 0 to 30 / 15 / 1 step / Y ] |
|  | 02 | M (Offset) | A/B | * |  |
|  | 03 | S (Offset) | A/B | * |  |


| 4 | Mode No. (Class 1, 2 and 3 ) |  |  |  | Function [ Range / Default / Step / Y or N (print) ] |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 916 | 04 | IDmax (Offset) | A/B | * |  |
|  | 05 | H (Option) | A/B | * | All: [ 0 to 30 / 15 / 1 step / Y ] DFU |
|  | 06 | M (Option) | A/B | * |  |
|  | 07 | S (Option) | A/B |  |  |
|  | 08 | IDmax (Option) | A/B |  |  |
| 917 | Copy gamma - Photo [M] |  |  |  | Adjusts the magenta printer gamma for photo if the results of ACC are not satisfactory. <br> H: Highlight, M: Middle, S: Shadow |
|  | 01 | H (Offset) | A/B |  | All: [ 0 to 30 / 15 / 1 step / Y ] |
|  | 02 | M (Offset) | A/B | * |  |
|  | 03 | S (Offset) | A/B | * |  |
|  | 04 | IDmax (Offset) | A/B | * |  |
|  | 05 | H (Option) | A/B | * | All: [ 0 to 30 / 15 / 1 step / Y ] DFU |
|  | 06 | M (Option) | A/B | * |  |
|  | 07 | S (Option) | A/B | * | All: [ 0 to 30 / 15 / 1 step / Y ] DFU |
|  | 08 | IDmax (Option) | A/B | * |  |
| 918 | Copy gamma - Photo [Y] |  |  |  | Adjusts the yellow printer gamma for photo mode if the results of ACC are not satisfactory. <br> H: Highlight, M: Middle, S: Shadow |
|  | 01 | H (Offset) | A/B | * | All: [ 0 to 30 / 15 / 1 step / Y ] |
|  | 02 | M (Offset) | A/B | * |  |
|  | 03 | S (Offset) | A/B | * |  |
|  | 04 | IDmax (Offset) | A/B | * |  |
|  | 05 | H (Option) | A/B | * | All: [ 0 to 30 / 15 / 1 step / Y ] DFU |
|  | 06 | M (Option) | A/B | * |  |
|  | 07 | S (Option) | A/B | * |  |
|  | 08 | IDmax (Option) | A/B | * |  |
| 919 | Print gamma - [K] |  |  |  | Adjusts the black printer gamma in print mode if the results of ACC are not satisfactory. <br> H: Highlight, M: Middle, S: Shadow |
|  | 01 | H (Offset) | A/B | * | All: [ 0 to 30 / 15 / 1 step / Y ] |
|  | 02 | M (Offset) | A/B | * |  |
|  | 03 | S (Offset) | A/B | * |  |
|  | 04 | IDmax (Offset) | A/B | * |  |
|  | 05 | H (Option) | A/B | * | All: [ 0 to 30 / $\underline{15} / 1$ step / Y ] DFU |
|  | 06 | M (Option) | A/B | * |  |
|  | 07 | S (Option) | A/B | * |  |
|  | 08 | IDmax (Option) | A/B | * |  |
| 920 | Print gamma - [C] |  |  |  | Adjusts the cyan printer gamma in print mode if the results of ACC are not satisfactory. <br> H: Highlight, M: Middle, S: Shadow |
|  | 01 | H (Offset) | A/B | * | All: [ 0 to 30 / 15 / 1 step / Y ] |
|  | 02 | M (Offset) | A/B | * |  |
|  | 03 | S (Offset) | A/B | * |  |
|  | 04 | IDmax (Offset) | A/B | * |  |
|  | 05 | H (Option) | A/B | * | All: [ 0 to 30 / 15 / 1 step / Y ] DFU |
|  | 06 | M (Option) | A/B | * |  |


| 4 | Mode No. (Class 1, 2 and 3) |  |  |  | Function <br> [ Range / Default / Step / Y or N (print) ] |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 920 | 07 | S (Option) | A/B |  |  |
|  | 08 | IDmax (Option) | A/B |  |  |
| 921 | Print gamma - [M] |  |  |  | Adjusts the magenta printer gamma in print mode if the results of ACC are not satisfactory. <br> H: Highlight, M: Middle, S: Shadow |
|  | 01 | H (Offset) | A/B | * | All: [ 0 to 30 / 15 / 1 step / Y ] |
|  | 02 | M (Offset) | $A / B$ | * |  |
|  | 03 | S (Offset) | A/B | * |  |
|  | 04 | IDmax (Offset) | A/B | * |  |
|  | 05 | H (Option) | $A / B$ | * | All: [ 0 to $30 / \underline{15} / 1$ step / Y ] DFU |
|  | 06 | M (Option) | A/B | * |  |
|  | 07 | S (Option) | A/B | * |  |
|  | 08 | IDmax (Option) | A/B | * |  |
| 922 | Print gamma - [Y] |  |  |  | Adjusts the yellow printer gamma in print mode if the results of ACC are not satisfactory. <br> H: Highlight, M: Middle, S: Shadow |
|  | 01 | H (Offset) | A/B | * | All: [ 0 to 30 / 15 / 1 step / Y ] |
|  | 02 | M (Offset) | A/B | * |  |
|  | 03 | S (Offset) | $A / B$ | * |  |
|  | 04 | IDmax (Offset) | A/B | * |  |
|  | 05 | H (Option) | A/B | * | All: [ 0 to 30 / 15 / 1 step / Y ] DFU |
|  | 06 | M (Option) | $A / B$ | * |  |
|  | 07 | S (Option) | $A / B$ |  |  |
|  | 08 | IDmax (Option) | $A / B$ | * |  |
| 932 | Main scan dot position correction |  |  |  | Adjusts the left and right ends of the red and blue scan lines to align them with the green scan line. |
|  | 01 | [R] Left | A/B | * | All: $[0$ to $9 / \underline{5} / 1$ step / N] |
|  | 02 | [R] Right | A/B | * |  |
|  | 03 | [B] Left | $A / B$ |  |  |
|  | 04 | [B] Right | $A / B$ | * |  |
| 980 | FPU reference setting |  |  |  | Adjusts or displays the reference value used in the A/D converter for RGB signals in the scanner analog processing circuit when the FPU is used. |
|  | 01 | [R] Positive | A/- | * | All: [ 0 to 255 / 133 / 1 step / N ] DFU |
|  | 02 | [G] Positive | A/- | * |  |
|  | 03 | [B] Positive | A/- | * |  |
|  | 04 | [ R$]$ Negative | A/- |  |  |
|  | 05 | [G] Negative | A/- | * |  |
|  | 06 | [B] Negative | A/- | * |  |
| 981 | FPU white level target |  |  |  | Shows or sets the target level of the reference white level for positive and negative films when the FPU is used. |
|  | 01 | Positive | A/- | * | All: [ 0 to 1023 / 568 / 1 step / N ] DFU |
|  | 02 | Negative | A/- | * |  |

SP5-XXX (Mode)

| 5 | Mode No.(Class 1, 2 and 3) |  |  |  | Function [ Range / Default / Step / Y or N (print) ] |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 001 | 00 | Operation panel all on | A/B |  | Turns on all the indicators to test the operation panel display functions. <br> [ 0 or $1 / \underline{0} /-/ N$ ] <br> 0 : Normal display, 1: All on |
| 009 | Operation panel setting |  |  |  | Specifies the display language and paper size. |
|  | 01 | Language selection | A/B |  | [ 0 to $15 / \frac{1}{} / 1$ step /N ]  <br> 0: Japanese 1: English <br> 2: French 3: German <br> 4: Spanish 5: Italian <br> 6: Portuguese 7: Dutch <br> 8: Danish 9: Swedish <br> 10: Norwegian 11: Czech <br> 12: Polish 13: Russian <br> 14: Brazilian 15: Taiwan Chinese |
|  | 02 | Paper size detection | A/B |  | $[0 \text { or } 1 / 0(E U) \text { or } 1(\mathrm{NA}) /-/ \mathrm{N}]$ <br> 0 : Metric, 1: Inches <br> This affects the available magnification ratios and the unit that is displayed when inputting values for directional size magnification. Available paper sizes and other features are not affected. |
| 104 | 00 | A3/DLT double count | A/B |  | Enable/disable the double count for A3/DLT paper size. <br> [ 0 or $1 / \underline{0} /-/ N$ ] <br> 0 : Normal count, 1: Double count |
| 113 | 00 | Key card / Coin lock | A/B |  | Specifies the type of accounting option. <br> [ 0 to 3 / $\underline{0} / 1$ step / N ] <br> 0 : None $\quad$ 1: Key card (Japan only) <br> 2: Key counter 3: Coin lock (Japan only) |
| 114 | 00 | Account mode setup | A/B |  | Specifies which color mode(s) can be accessible for key counter or user code mode. |
| 120 | 00 | Key counter clear | A/B |  | Specifies whether the current mode is cleared or not when the key counter is removed. <br> [ 0 or $1 / 1 /-/ N$ ] <br> 0: Not cleared, 1: Cleared |
| 121 | 00 | Key card count-up timing | A/B | * | Specifies the timing when the counter is counted up. <br> [ 0 or $1 / \underline{1 /-/ N]}$ <br> 0 : Paper feed-in, 1: Paper feed-out |


| 5 | Mode No. (Class 1, 2 and 3) |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 126 | 00 | F size detection | A/B |  | Specifies which original size the machine detects when the APS sensors detect $F$ size. <br> [ 0 to $2 / 0 / 1$ step / N ] <br> 0 : F4 (8 1/2" $\times 13^{\prime \prime}$ ), 1: $F\left(8^{\prime \prime} \times 13^{\prime \prime}\right)$, 2: Folio(8 $1 / 4^{\prime \prime} \times 13^{\prime \prime}$ ) |
| 127 | Coin lock - feature prohibition |  |  |  | Specifies whether APS or ACS is disabled or enabled. |
|  | 01 | APS | A/B |  | All: [ 0 or 1/ $/$ / / / N ] (Japan only) |
|  | 02 | ACS | A/B | * | 0: Disabled, 1: Enabled |
| 128 | 00 | User code + coin lock | A/B |  | Specifies whether both user code and coin lock can be used. <br> [ 0 or $1 / 0 /-/ N$ ] (Japan only) <br> 0 : One of them, 1: Both |
| 410 | 00 | User code pass clear | A/B |  | Resets the password for the user code. Use this when the user forgets it. <br> Selects '1' to clear the password. |
| 501 | 00 | PM counter set | A/B | * | Sets the PM counter interval. <br> [ 0 to 999999 / $60000 / 1$ step / N ] |
| 504 | 00 | Jam alarm set | A/B | * | Sets the jam alarm interval. <br> [ 0 to 3 / $\underline{3} / 1$ step / N ] (Japan only) <br> 0 : Not used, 1: 250 sheets, 2: 500 sheets, <br> 3: 1,000 sheets |
| 505 | 00 | SC alarm set | A/B | * | Sets the SC alarm interval. [ 0 to 3 / 10 / 1 step / N ] (Japan only) 0 : Not used, 1: 250 sheets, 2: 500 sheets, 3: 1,000 sheets |
| 507 | Supply alarm set |  |  |  | Enable/disable the supply alarm. |
|  | 01 | Toner end | A/B |  | All: [ 0 or $1 / \underline{0} /-/ \mathrm{N}$ ] (Japan only) 0: OFF, 1:ON |
|  | 02 | Copy count | A/B | * |  |
|  | 03 | Staple | A/B | * |  |
|  | 131 | A2 | A/B | * |  |
|  | 132 | A3 | A/B | * |  |
|  | 133 | A4 | A/B | * |  |
|  | 134 | A5 | A/B | * |  |
|  | 140 | B3 | A/B | * |  |
|  | 141 | B4 | A/B | * |  |
|  | 142 | B5 | A/B | * |  |
|  | 143 | B6 | A/B | * |  |
|  | 160 | DLT | A/B | * |  |
|  | 164 | LG | A/B | * |  |
|  | 166 | LT | A/B | * |  |
| 508 | 00 | CC auto call | A/B | * | Enable/disable CC auto call. [ 0 or $1 / \mathrm{O} /-/ \mathrm{N}$ ] (Japan only) 0 : OFF, 1:ON |
| 609 | 00 | Ink-jet mode | A/B | * | Selects the type of printers to simulate the color. [ 7 to $9 / 7 / 1$ step / N] DFU This mode can be selected in the User Tool. |


| 5 | Mode No. <br> (Class 1, 2 and 3) |  |  | Function <br> [ Range / Default / Step / Y or N (print) ] |
| :---: | :---: | :---: | :---: | :---: |
| 610 | ACC factory setting |  |  | Resets the factory settings or overwrites the current value onto the factory settings. |
|  | 04 | Recall | A/B | $\begin{aligned} & {[0 \text { or } 1 / \underline{0} /-/ \mathrm{N}]} \\ & 0:-, 1: \text { Recall } \end{aligned}$ |
|  | 05 | Overwrite | A/B | $\begin{aligned} & {[0 \text { or } 1 / \underline{0} /-/ \mathrm{N}]} \\ & 0:-, 1: \text { Overwrite } \end{aligned}$ |
| 611 | Color ratio in 2C mode |  |  | Specifies the color ratio contained in the color (2C mode). |
|  | 01 | [C] Blue | A/B | [ 0 to 100\% / g0 / 1 step / N] |
|  | 02 | [M] Blue | A/B | [ 0 to 100\% / 80/ 1 step / N] |
|  | 03 | [C] Green | A/B | [ 0 to 100\% / g0 / 1 step / N] |
|  | 04 | [Y] Green | A/B | [ 0 to 100\% / 80/ 1 step / N] |
|  | 05 | [M] Red | $A / B$ | [ 0 to 100\% / $100 / 1$ step / N] |
|  | 06 | [Y] Red | A/B | [ 0 to 100\% / 80/1 step / N] |
| 612 | 00 | Scanner gamma selection | A/B | Changes the color correction coefficient for the text/photo, text, and photo modes. <br> [ 0 to $2 / \underline{0} / 1$ step / N ] DFU |
| 801 | 01 | NV-RAM clear | A/B | Resets the NV-RAM to the factory settings except for the machine serial number, counter values, counting method. <br> Selects ' 1 ' to clear the NV-RAM. |
| 802 | System free run |  |  | Performs the free run |
|  | 01 | Printer | A/B | $\text { All: }[0 \text { or } 1 / \underline{0} /-/ \mathrm{N}]$$0 \text { : Stop, 1: Start }$ |
|  | 02 | System | A/B |  |
| 803 | xx | Input check | A/B | Refer to 'Service Tables - Input Check'. |
| 804 | xx | Output check | A/B | Refer to 'Service Tables - Output Check'. |
| 810 | 00 | SC Reset | $A / B$ | Resets a type A service call condition, which is caused by the fusing section. <br> Selects '1' to reset the SC condition. <br> After resetting the SC code, the main switch has to be turned off and on. |
| 811 | 00 | Serial Number | A/B | Displays the serial number. |
| 812 | 00 | Service Tel. No. | A/B | Inputs the telephone number of the service representative. This number is displayed when a service call condition occurs. |
| 816 | 00 | RDS ON/OFF | A/B | Enables RDS function when the RDS system is connected. Sets this SP to ' 1 ' to enable RDS. |
| 817 | 00 | Maintenance time | A/B | Sends the starting and finishing time of maintenance to the RDS center. <br> 1: Start, 2: Finish |
| 824 | 00 | NV-RAM upload | A/B | Uploads the data from the NV-RAM to the flash ROMs on the main control board. <br> Selects ' 1 ' to upload the data or press "ON" key. |
| 825 | 00 | NV-RAM download | A/B | Download the data uploaded to the flash ROMs to the NV-RAM. <br> Selects ' 1 ' to download the data or press "ON" key. |


| 5 | Mode No. (Class 1, 2 and 3 ) |  |  |  | Function [ Range / Default / Step / Y or N (print) ] |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 827 | Program download |  |  |  | Downloads the program from the flash ROM (IC) card to the main control / IPU board. |
|  | 00 | Main program | A/- |  | Flash ROM (IC) card to the main control board Selects ' 1 ' to download the program. |
|  | 01 | Main program | -/B |  |  |
|  | 02 | Scanner program | -/B |  | Flash ROM (IC) card to the IPU board Selects '1' to download the program. |
| 955 | Printer Test Pattern |  |  |  | Selects the test pattern. |
|  | 01 | LD PM setup | A/B |  | [ 0 to 255 / 128/1 step / N ] |
|  | 02 | 16 grayscale 1 | A/B | * | [ 0 to 255/17/1 step/N] |
|  | 03 | 16 grayscale 2 | A/B |  | [ 0 to 255 / $34 / 1$ step / N] |
|  | 04 | 16 grayscale 3 | A/B | * | [ 0 to 255/51/1 step / N] |
|  | 05 | 16 grayscale 4 | A/B | * | [ 0 to 255/68/1 step / N] |
|  | 06 | 16 grayscale 5 | A/B | * | [ 0 to 255/85/1 step / N] |
|  | 07 | 16 grayscale 6 | A/B | * | [ 0 to 255/102/1 step / N ] |
|  | 08 | 16 grayscale 7 | A/B | * | [ 0 to 255 / 119 / 1 step / N] |
|  | 09 | 16 grayscale 8 | A/B | * | [ 0 to 255 / 136/1 step / N ] |
|  | 10 | 16 grayscale 9 | A/B |  | [ 0 to 255 / 153/1 step / N ] |
|  | 11 | 16 grayscale 10 | A/B | * | [ 0 to 255/170/1 step / N] |
|  | 12 | 16 grayscale 11 | A/B |  | [ 0 to 255 / 187 / 1 step / N] |
|  | 13 | 16 grayscale 12 | A/B | * | [ 0 to 255 / 204 / 1 step / N] |
|  | 14 | 16 grayscale 13 | A/B | * | [ 0 to 255 / 221 / 1 step / N ] |
|  | 15 | 16 grayscale 14 | A/B | * | [ 0 to 255 / 238 / 1 step / N ] |
|  | 16 | 16 grayscale 15 | A/B |  | [ 0 to 255 / 255/1 step / N ] |
|  | 17 | 16 grayscale 16 | A/B |  | [ 0 to 255 / $128 / 1$ step / N] |
|  | 18 | Pattern selection | A/B |  | 0: No pattern <br> 1: Print margin pattern <br> 2: Print out all fonts <br> 3: 1dot/line grid pattern <br> 4: Belt pattern <br> 5: 16gradation with blank <br> 6: Solid <br> 7: 1 dot pattern (2x2) <br> 8: 1 dot pattern ( $4 \times 4$ ) <br> 9:1 dot sub-scan line <br> 10: 2 dot sub-scan line <br> 11: 1 dot main scan line <br> 12: 2 dot main scan line <br> 13: Color patch <br> 14: Grid pattern with scanner image <br> 15: 2 dot line grid pattern <br> 16: 16-gradation pattern <br> 17: 256-gradation pattern |
| 963 | 00 | Polygon mirror motor off | A/B | * | Sets the interval from the time the last page is exited until the polygon mirror motor stops. This is done when the copier enters the standby state after completing a job. Keep this at " 30 " to prevent the motor from wearing out too early. If the user complains of noise set it to ' 0 '. The motor will stop immediately after the job. <br> $[0$ to 60 seconds / $30 / 1$ step / N] |


| 5 | Mode No. <br> (Class 1, 2 and 3) |  |  |  | Function <br> [ Range / Default / Step / Y or N (print) ] |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 979 | 02 | SC condition disable | A/B | * | Disables the self-diagnostic function. <br> Selects '1' to disable the self-diagnostics. |

SP6-XXX (Peripherals)

| 6 | Mode No. (Class 1, 2 and 3) |  |  |  | Function [ Range / Default / Step / Y or N (print) ] |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 006 | ADF registration (A) |  |  |  | Adjusts the side-to-side or vertical registration by changing the scanning position for ARDF. |
|  | 01 | Side-to Side | A/B | * | [ -3.0 to $3.0 \mathrm{~mm} / \underline{0.0} / 0.1 \mathrm{step} / \mathrm{N}$ ] |
|  | 02 | Vertical (1st) Thin | A/B |  | [ -15 to 15 / $0 / 1$ step / N ] |
|  | 03 | Vertical (1st) Thick | A/B |  |  |
|  | 04 | Vertical (2nd) Thick | A/B |  |  |
| 102 | 00 | Sorter/Stack Limit | A/B |  | Enables or disables the limitation on the number of sheets that can be stacked in the sorter. <br> [ 0 or $1 / 1 /-/ N$ ] <br> 0 : Disable, 1: Enable <br> NOTE: This limit can be disabled if user requests, but user has to make sure that jams do not occur. |
| 104 | 00 | Staple limit |  | * | Enables or disables the limitation on the number of sheets that can be stapled. <br> [ 0 or $1 / 1 /-/ N$ ] <br> 0 : Disable, 1: Enable <br> NOTE: This limit can be disabled if user requests, but user has to make sure that jams do not occur |
| 107 | 00 | Sorter free run | A/B |  | Executes the sorter free run mode. |

SP7-XXX (Logging)

| 7 | Mode No.(Class 1, 2 and 3) |  |  |  | Function <br> [ Range / Default / Step / Y or N (print) ] |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 008 | 00 | Counter (D) | A/B |  | Specifies the counting method, development count or copy count. $[1 \text { or } 2 / 1 /-/ N]$ <br> 1: Development counter, 2: Copy counter <br> NOTE: This setting only can be changed once at installation (before the counted value is negative). |
| 202 | Development counter (D) |  |  |  | Displays the total number of developments in each color and grand total. |
|  | 01 | Total | A/B | * | [ 0 to 9999999 / $0 / 1$ step / N ] |
|  | 02 | [K] | A/B | * |  |
|  | 03 | [C] | A/B | * |  |
|  | 04 | [M] | A/B |  |  |
|  | 05 | [Y] | A/B | * |  |


| 7 | Mode No. (Class 1, 2 and 3) |  |  |  | Function [ Range / Default / Step / Y or N (print) ] |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 203 | PM counter (image) (D) |  |  |  | Displays the number of developments made on each component related to the image development section. |
|  | 01 | Drum | A/B | * | [ 0 to 9999999 / $/ 11$ step / N ] |
|  | 02 | Image transfer belt (ITB) | A/B | * |  |
|  | 03 | Filter (scanner) | $A / B$ | * |  |
|  | 04 | Filter (charge) | A/B | * |  |
|  | 05 | Filter (exhaust) | A/B | * |  |
|  | 06 | PCC wire | $A / B$ | * |  |
|  | 07 | Charge wire | A/B | * |  |
|  | 08 | Charge grid | A/B | * |  |
|  | 09 | Charge cleaner | -/B | * |  |
| 207 | PM counter (cleaning) (D) |  |  |  | Displays the number of developments or copies made on each component related to the cleaning section. |
|  | 01 | Blade (Drum) | A/B | * | [ 0 to 9999999 / 0 / 1 step / N ] |
|  | 02 | Brush (Drum) | A/B | * |  |
|  | 03 | Lubricant (Drum) | A/B | * |  |
|  | 04 | Brush (ITB) | A/B | * |  |
|  | 05 | Lubricant (ITB) | A/B | * |  |
|  | 06 | Blade (PTR) Dev. | $A / B$ | * |  |
|  | 07 | Blade (PTR) Copy | A/B | * |  |
|  | 08 | Lubricant (PTR) Dev. | A/B | * |  |
|  | 09 | Lubricant (PTR) Copy | A/B | * |  |
|  | 12 | Blade (ITB) | A/B | * |  |
| 210 | PM counter (fusing) (D) |  |  |  | Displays the number of developments or copies made on each component related to the fusing section. |
|  | 01 | Hot roller Copy | A/B | * | [ 0 to 9999999 / $/ 11$ step / N ] |
|  | 02 | Hot roller Dev. | A/B | * |  |
|  | 03 | Pressure roller Copy | A/B | * |  |
|  | 04 | Pressure roller Dev. | A/B | * |  |
|  | 05 | Oil supply pad Copy | A/B | * |  |
|  | 06 | Oil supply pad Dev. | A/B | * |  |
|  | 07 | Oil blade Copy | $A / B$ | * |  |
|  | 08 | Oil blade Dev. | A/B | * |  |
|  | 09 | Cleaning blade Copy | A/B | * |  |
|  | 10 | Cleaning blade Dev. | A/B | * |  |
|  | 15 | Cleaning pad Copy | $A / B$ | * |  |
|  | 16 | Cleaning pad Dev. | A/B | * |  |
|  | 17 | Fusing belt Copy | -/B | * |  |
|  | 18 | Fusing belt Dev. | -/B | * |  |
|  | 19 | Tension roller Copy | -/B | * |  |
|  | 20 | Tension roller Dev. | -/B | * |  |
| 401 | 00 | SC counter (D) | A/B | * | Displays the total number of SCs detected. |



| 7 | Mode No. (Class 1, 2 and 3) |  |  |  | Function [ Range / Default / Step / Y or N (print) ] |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 803 | 01 | PM counter (D) | A/B | * | Displays the current value of the PM counter. [ 0 to 9999999 / $0 / 1$ step / N] |
| 804 | PM counter clear |  |  |  | Resets PM counters for 1 PM parts counters, 2 PM parts counters, or PM counter to zero. |
|  | 01 | All clear (1PM) | A/B |  | 1: Clear |
|  | 02 | All clear (2PM) | A/B |  |  |
|  | 03 | All clear (PM counter) | A/B |  |  |
| 807 | 00 | SC/Jam counter clear | A/B |  | Resets SC and jam counters to zero. 1: Clear |
| 808 | 00 | Clear all counters | A/B |  | Resets all counters to zero, except for the PM counter |
| 809 | Logging data print |  |  |  | Prints the lists of counters. |
|  | 01 | Logging counter | A/B |  | 1: Print |
|  | 02 | SC/Jam history | A/B |  |  |
|  | 03 | Operation counter | A/B |  |  |
|  | 04 | All pages | A/B |  |  |
| 810 | 00 | Copy counter clear | A/B |  | Resets copy counter to zero. 1: Clear |
| 816 | 00 | Tray counter clear | A/B |  | Resets copy counters for each tray to zero. 1: Clear |
| 818 | Development counter clear |  |  |  | Resets the development counter to zero. |
|  | 01 | [K] | A/B |  | 1: Clear |
|  | 02 | [C] | A/B |  |  |
|  | 03 | [M] | A/B |  |  |
|  | 04 | [Y] | $A / B$ |  |  |
| 819 | 00 | Paper size counter clear | A/B |  | Resets the copy counters by paper size to zero. <br> 1: Clear |
| 825 | 00 | Total counter reset | A/B |  | Resets the total counter value to zero if the counter is negative value. <br> 1: Clear |
| 902 | 00 | Print non-default data | A/B |  | Prints a list of data that have been changed from their defaults. <br> 1: Print |
| 903 | 00 | Print all data | A/B |  | Prints lists of all printable data in SP mode. <br> 1: Print |
| 904 | Print gamma setting |  |  |  | Prints the gamma setting in copy or print mode. |
|  | 01 | Copy mode | A/B |  | 1: Print |
|  | 02 | Print mode | A/B |  |  |
| 905 | 00 | Print PM counter | A/B |  | Prints the PM counter values. 1: Print |
| 910 | PM counter (Separation) |  |  |  | Displays the number of copies or development made for the paper separation corona wire. |
|  | 01 | Separation wire Copy | A/B |  | [ 0 to 9999999 / $0 / 1$ step / N ] |
|  | 02 | Separation wire Dev. | A/B | * |  |


| 7 | Mode No. <br> (Class 1, 2 and 3) |  |  |  | Function <br> [ Range / Default / Step / Y or N (print) ] |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 911 | PM counter (duplex) |  |  |  | Displays the number of copies or development made on rollers |
|  | 01 | Separation roller Copy | A/B |  | [ 0 to 9999999 / $\mathbf{0} / 1$ step / N ] |
|  | 02 | Separation roller Dev. | A/B |  |  |
|  | 03 | Feed roller Copy | A/B |  |  |
|  | 04 | Feed roller Dev. | A/B | * |  |
| 912 | 01 | PM counter (exposure) | A/B | * | Displays the number of development made. [ 0 to 9999999 / $0 / 1$ step / N ] |

## SP8-XXX (Special Mode)

| 8 | $\begin{gathered} \text { Mode No. } \\ \text { (Class 1, } 2 \text { and 3) } \end{gathered}$ |  |  |  | $\qquad$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & 111 \\ & 211 \\ & 311 \end{aligned}$ | Leading registration SP1 Leading registration SP2 Leading registration SP3 |  |  |  | Adjust the leading edge registration for the paper type selected for special operation modes. |
|  | 01 | Normal | A/B |  | All: [ -5.0 to $5.0 \mathrm{~mm} / \underline{0.0} / 0.1$ step / Y ] |
|  | 02 | OHP | A/B |  |  |
|  | 03 | Thick | A/B |  |  |
| $\begin{array}{\|\|l\|} \hline 113 \\ 213 \\ 313 \end{array}$ | Paper feed timing SP1 <br> Paper feed timing SP2 <br> Paper feed timing SP3 |  |  |  | Adjusts the amount of paper buckle at the registration roller for special operation modes. |
|  | 01 | By-pass | A/B |  | [ -5.0 to $5.0 \mathrm{~mm} / \underline{0.0} / 0.1 \mathrm{step} / \mathrm{Y}$ ] |
|  | 02 | Paper trays | A/B |  |  |
|  | 03 | By-pass (half) | A/B |  | [ -5.0 to $7.0 \mathrm{~mm} / \underline{0.0} / 0.1 \mathrm{step} / \mathrm{Y}]$ |
|  | 05 | Duplex (2nd) | A/B |  | [ -5.0 to $5.0 \mathrm{~mm} / \underline{0.0} / 0.1 \mathrm{step} / \mathrm{Y}$ ] |
| $\begin{aligned} & 115 \\ & 215 \\ & 315 \end{aligned}$ | Fusing temperature SP1 Fusing temperature SP2 <br> Fusing temperature SP3 |  |  |  | Set the temperature of each condition for special operation modes. |
|  | 02 | H: Standby (1st) | A/B |  | A: [ 100 to $200^{\circ} \mathrm{C} / \underline{165 / 1}$ step / N ] <br> B: [ -20 to $20^{\circ} \mathrm{C} / \underline{0} / 1$ step / N ] |
|  | 03 | H: Copy (1st) Norma FC | A/B |  |  |
|  | 04 | H: Copy (1st) Normal 1C | A/B |  | A: [ 100 to $200^{\circ} \mathrm{C} / \underline{160 / 1} / 1$ step / N ] <br> B: [ -20 to $20^{\circ} \mathrm{C} / \underline{0} / 1$ step / N ] |
|  | 07 | P: Standby (1st) | A/B |  | A: [ 100 to $200^{\circ} \mathrm{C} / \underline{150 / 1}$ step / N ] |
|  | 08 | P: Copy (1st) Norma FC | A/B |  | B: [ -20 to $20^{\circ} \mathrm{C} / \underline{0} / 1$ step / N ] |
|  | 09 | P: Copy (1st) Normal 1C | A/B |  |  |
| $\begin{array}{\|l\|l\|} \hline 124 \\ 224 \\ 324 \end{array}$ | 00 | PTR AC ON/OFF SP1 PTR AC ON/OFF SP2 PTR AC ON/OFF SP3 | -/B |  | Turns off or on the AC component applied to the paper separation. <br> [ 0 or $1 / 1 /-/ N$ ] <br> 0: OFF, 1: ON |
| $\begin{array}{\|l\|l\|} \hline 129 \\ 229 \\ 329 \end{array}$ | 00 | ITB leading edge SP1 ITB leading edge SP2 ITB leading edge SP3 | -/B | * | Specifies the correction value for the image transfer belt (ITB) bias for the leading edge area in special operation modes. $\text { [ }-20.0 \text { to } 20.0 \text { / } 6.0 / 0.1 \text { step / N ] }$ |


| 8 | Mode No. (Class 1, 2 and 3) |  |  |  | Function [ Range / Default / Step / Y or N (print) ] |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & 130 \\ & 230 \\ & 330 \end{aligned}$ | PTR bias SP1 PTR bias SP2 PTR bias SP3 |  |  |  | Specifies the paper transfer roller (PTR) bias settings for special operation modes. |
|  | 130 |  |  |  |  |
|  | 02 | Normal [1C] | A/B | * | A: [ 1 to 50 uA / $10 / 1$ step / N ] <br> B: [ 1 to $50 \mathrm{uA} / 16 / 1$ step / N ] |
|  | 05 | Normal [4C] | A/B | * | A: [ 1 to $50 \mathrm{uA} / \underline{18 / 1 \text { step / N ] }}$ <br> B: [ 1 to $50 \mathrm{uA} / \underline{20} / 1$ step / N ] |
|  | 18 | Normal [1C] (2nd) | A/B | * | A: [ 1 to 50 uA / $10 / 1$ step / N ] <br> B: [ 1 to $50 \mathrm{uA} / 18 / 1$ step / N ] |
|  | 21 | Normal [4C] (2nd) | A/B | * | A: [ 1 to $50 \mathrm{uA} / \underline{15} / 1$ step / N ] <br> B: [ 1 to $50 \mathrm{uA} / \underline{22} / 1$ step / N ] |
|  | 230 |  |  |  |  |
|  | 02 | Normal [1C] | A/B | * | A: [ 1 to 50 uA / 15 / 1 step / N ] <br> B: [ 1 to $50 \mathrm{uA} / \underline{8} / 1$ step / N ] |
|  | 05 | Normal [4C] | A/B | * | A: [ 1 to 50 uA / 15 / 1 step / N ] <br> B: [ 1 to $50 \mathrm{uA} / 10 / 1$ step / N ] |
|  | 18 | Normal [1C] (2nd) | A/B | * | A: [ 1 to $50 \mathrm{uA} / \underline{10 / 1}$ step / N ] <br> B: [ 1 to $50 \mathrm{uA} / \underline{8} / 1$ step / N ] |
|  | 21 | Normal [4C] (2nd) | A/B | * | A: [ 1 to 50 uA / $10 / 1$ step / N ] <br> B: [ 1 to $50 \mathrm{uA} / 10 / 1$ step / N ] |
|  | 330 |  |  |  |  |
|  | 02 | Normal [1C] | A/B | * | A: [ 1 to $50 \mathrm{uA} / / 1 \mathrm{step} / \mathrm{N}$ ] <br> B: [ 1 to $50 \mathrm{uA} / 10 / 1$ step / N ] |
|  | 05 | Normal [4C] | A/B | * | A: [ 1 to 50 uA / / 1 step / N ] <br> B: [ 1 to $50 \mathrm{uA} / 18 / 1$ step / N ] |
|  | 18 | Normal [1C] (2nd) | A/B | * | A: $[1$ to $50 \mathrm{uA} / / 1$ step / N $]$ $\mathrm{B}:[1$ to $50 \mathrm{uA} / \underline{12} / 1$ step $/ \mathrm{N}]$ |
|  | 21 | Normal [4C] (2nd) | A/B | * | A: [ 1 to 50 uA / / 1 step / N ] <br> B: [ 1 to $50 \mathrm{uA} / 15 / 1$ step / N ] |
| $\begin{aligned} & 134 \\ & 234 \\ & 334 \end{aligned}$ | PTR leading edge SP1 PTR leading edge SP2 PTR leading edge SP3 |  |  |  | Specifies the correction value for the paper transfer roller (PTR) bias for the leading edge area depending on the paper type and mode for special operation modes. |
|  | 134 |  |  |  |  |
|  | 01 | Normal 1C | A/B |  | [ -20 to $40 \mathrm{uA} / \underline{0} / 1$ step / N ] |
|  | 04 | Normal 4C | A/B | * |  |
|  | 17 | Normal 1C (2nd) | A/B | * |  |
|  | 20 | Normal 4C (2nd) | A/B | * | [ -20 to 40 uA / 2 / 1 step / N ] |
|  | 234 |  |  |  |  |
|  | 01 | Normal 1C | A/B |  | [ -20 to $40 \mathrm{uA} / \underline{0} / 1$ step / N ] |
|  | 04 | Normal 4C | A/B | * |  |
|  | 17 | Normal 1C (2nd) | A/B |  | [ -20 to $40 \mathrm{uA} / \underline{2} / 1$ step / N ] |
|  | 20 | Normal 4C (2nd) | A/B | * | [-20 to $40 \mathrm{uA} / \underline{4} / 1$ step / N ] |
|  | 330 |  |  |  |  |
|  | 01 | Normal 1C | A/B | * | [ -20 to $40 \mathrm{uA} / \underline{0} / 1$ step / N ] |
|  | 04 | Normal 4C | A/B | * | [ -20 to $40 \mathrm{uA} / 0 / 1 \mathrm{step} / \mathrm{N}$ ] |


| 8 | Mode No. (Class 1, 2 and 3) |  |  |  | Function <br> [ Range / Default / Step / Y or N (print) ] |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 134 | 17 | Normal 1C (2nd) | A/B | * | [ -20 to $40 \mathrm{uA} / \underline{0} / 1$ step / N ] |
| $\begin{aligned} & 234 \\ & 334 \end{aligned}$ | 20 | Normal 4C (2nd) | A/B |  | [-20 to $40 \mathrm{uA} / \underline{\text { 2 / }} 1$ step / N ] |
| $\begin{aligned} & 135 \\ & 235 \\ & 335 \end{aligned}$ | PTR trailing edge SP1 PTR trailing edge SP2 PTR trailing edge SP3 |  |  |  | Specifies the correction value for the paper transfer roller (PTR) bias for the trailing edge area depending on the paper type and mode for special operation modes. |
|  | 01 | Normal 1C | A/B | * | A: [ -20 to $40 \mathrm{uA} / \underline{0} / 1$ step / N ] <br> B: [ -20 to $40 \mathrm{uA} /-1 / 1$ step / N ] |
|  | 04 | Normal 4C | A/B |  |  |
|  | 17 | Normal 1C (2nd) | A/B |  |  |
|  | 20 | Normal 4C (2nd) | A/B | * |  |
| $\begin{array}{\|l\|l} \hline 136 \\ 236 \\ 336 \end{array}$ | PTR environment SP1 <br> PTR environment SP2 <br> PTR environment SP3 |  |  |  | Specifies the correction value for the paper transfer roller (PTR) bias depending on the humidity for special operation modes. |
|  | 136 |  |  |  |  |
|  | 01 | L Normal 1C | A/B | * | [ 10 to $400 \%$ / $7 \underline{\text { / }} 1$ step / N ] |
|  | 02 | L Normal 4C | A/B | * | [ 10 to $400 \% / \underline{100} / 1$ step / N] |
|  | 05 | H Normal 1C | A/B | * |  |
|  | 06 | H Normal 4C | A/B | * |  |
|  | 33 | L Normal 1C (2nd) | A/B | * |  |
|  | 34 | L Normal 4C (2nd) | A/B | * |  |
|  | 37 | H Normal 1C (2nd) | A/B | * | [ 10 to $400 \% / \underline{100} / 1$ step / N ] |
|  | 38 | H Normal 4C (2nd) | A/B | * |  |
|  | 236, 336 |  |  |  |  |
|  | 01 | L Normal 1C | A/B | * | [ 10 to $400 \%$ / $100 / 1$ step / N] |
|  | 02 | L Normal 4C | A/B | * |  |
|  | 05 | H Normal 1C | A/B | * |  |
|  | 06 | H Normal 4C | A/B | * |  |
|  | 33 | L Normal 1C (2nd) | A/B | * |  |
|  | 34 | L Normal 4C (2nd) | A/B | * |  |
|  | 37 | H Normal 1C (2nd) | A/B | * |  |
|  | 38 | H Normal 4C (2nd) | A/B | * |  |

### 4.4 SP MODE ADDITIONAL NOTES

### 4.4.1 SP5-804 OUTPUT CHECK

| A258/B018 (1=ON, 0=OFF) A259/A260/B017 (ON, OFF) |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| No. for Class 3 | Load Name | Actual Display | $\begin{gathered} \hline \hline \text { A258/A259/ } \\ \text { A260 } \end{gathered}$ | B017/B018 |
| 001 | Drum motor, standard speed, forward | DRUM MT 1ST CW | i | i |
| 002 | Drum motor, half speed, forward | DRUM MT 2ND CW | i | i |
| 003 | Drum motor, standard speed, backward | DRUM MT 1ST CCW | i | i |
| 004 | Drum motor, $2 / 3$ speed | DRUM MT 3RD CW | i | i |
| 005 | Fusing motor, standard speed | FUSER MT 1ST | i | i |
| 006 | Fusing motor, half speed | FUSER MT 2ND | i | i |
| 007 | Fusing motor, 2/3 speed | FUSER MT 3RD | i | i |
| 008 | Paper feed motor, standard speed | PAPER FEED MT 1ST | i | i |
| 009 | Paper feed motor, half speed | PAPER FEED MT 2ND | i | i |
| 010 | Paper feed motor, $2 / 3$ speed | PAPER FEED MT 3RD | 1 | i |
| 012 | Charge corona cleaner motor, forward |  | - | i |
| 013 | Charge corona cleaner motor, reverse |  | - | i |
| 014 | High voltage supply board: T1 PCC | PCC BS | i | i |
| 015 | Quenching Lamp | QL | i | i |
| 016 | Charge corona/grid | MAIN GC | i | i |
| 017 | Development bias AC | DEV BS AC | i | i |
| 018 | Development bias DC | DEV BS DC | i | i |
| 019 | Development bias AC + DC | DEV BS AC DC | i | i |
| 021 | ID sensor LED | P SEN LED | i | i |
| 022 | Development clutch | DEV CL | i | i |
| 023 | Paper transfer positioning clutch | P TRNS SET CL | i | i |
| 024 | Fusing clutch | FUSER CL | i | i |
| 025 | Toner supply motor | TONER ADD MT | i | i |
| 026 | Revolver current during rotation | REV CRNT ROTA | i | i |
| 027 | Revolver current during development | REV CRNT DEV | i | i |
| 028 | Revolver current during standby | REV CRNT WAIT | i | i |
| 029 | Revolver 90-degree rotation | REV MT 90 | i | i |
| 030 | Revolver 45-degree rotation | REV MT 45 | i | i |
| 035 | Belt transfer bias | B TRNS BS | i | i |
| 036 | Belt cleaning clutch | BELT CLN SET CL | i | i |
| 037 | Lubricant brush clutch | SWEEP SET CL | i | i |
| 041 | Paper transfer bias | P TRNS BS | i | i |
| 043 | Polygon motor | PLY MT 600DPI | i | i |
| 044 | Power relay | PRT POWER RELAY | i | i |
| 045 | Fusing roller heater | FUSER UPPER HT | i | i |
| 046 | Pressure roller heater | FUSER LOWER HT | i | i |
| 047 | Rear cooling fan motor | MC FAN | i | i |
| 048 | Transport fan motor | PF FAN | i | i |
| 049 | Main exhaust fan motor | EXH FAN | i | 1 |


| No. for Class 3 | Load Name | Actual Display | $\begin{gathered} \hline \hline \text { A258/A259/ } \\ \text { A260 } \end{gathered}$ | B017/B018 |
| :---: | :---: | :---: | :---: | :---: |
| 050 | Fusing fan motor, high speed | FUSER FAN H SPD | i | i |
| 051 | Fusing fan motor, half speed | FUSER FAN L SPD | i | i |
| 053 | Charge corona fan motor | PLY FAN | i | i |
| 056 | Development cooling fan motor | DEV EXIT FAN H SPD | - | i |
| 057 | Development cooling fan motor | DEV EXIT FAN L SPD | - | i |
| 058 | ITB unit release solenoid | TRNS FEED CL | - | i |
| 059 | By-pass feed clutch | PF MAN CL | i | i |
| 060 | By-pass pick-up solenoid | PICK UP MAN SOL | i | i |
| 063 | 1st tray paper feed clutch | PF 1ST CL | i | i |
| 064 |  | PICK UP 1ST SOL |  |  |
| 066 | 2nd tray paper feed clutch | PF 2ND CL | i | i |
| 069 | 3rd tray paper feed clutch | PF 3RD CL | i | i |
| 072 | 4th tray paper feed clutch | PF 4TH CL | i | i |
| 075 | 1st tray lift motor, forward | TRAY UP 1ST MT UP | i | i |
| 076 | 1st tray lift motor, backward | TRAY UP 1ST MT DOWN | i | i |
| 077 | 2nd tray lift motor, forward | TRAY UP 2ND MT UP | i | i |
| 078 | 2nd tray lift motor, backward | TRAY UP 2ND MT DOWN | i | i |
| 079 | 3rd tray lift motor, forward | TRAY UP 3RD MT UP | i | i |
| 080 | 3rd tray lift motor, backward | TRAY UP 3RD MT DOWN | i | i |
| 081 | 4th tray lift motor, forward | TRAY UP 4TH MT UP | i | i |
| 082 | 4th tray lift motor, backward | TRAY UP 4TH MT DOWN | i | i |
| 086 | Registration clutch | REG CL | i | i |
| 087 | Relay clutch | PF MID CL | i | i |
| 088 | Junction gate solenoid | SEP SOL | i | i |
| 089 | Duplex feed motor, forward, standard speed | DPLX FEED MT CW | i | i |
| 090 | Duplex feed motor, forward, 2/3speed | DPLX FEED MT 2P3CW | i | i |
| 091 | Duplex feed motor, backward, standard speed | DPLX FEED MT CCW | i | i |
| 092 | Duplex feed motor, backward, 2/3 speed | $\begin{aligned} & \text { DPLX FEED MT } \\ & \text { 2P3CCW } \end{aligned}$ | i | i |
| 093 | Duplex side fence jogger motor, forward | DPLX SF MT CW | i | i |
| 094 | Duplex side fence jogger motor, backward | DPLX SF MT CCW | i | i |
| 095 | Duplex end fence jogger motor, forward | DPLX EF MT CW | i | i |
| 096 | Duplex end fence jogger motor, backward | DPLX EF MT CCW | i | i |
| 097 | PSU fan motor | EXHAUST FAN | i | i |
| 100 | Optics cooling fan motor | SCN FAN0 | i | i |
| 101 | Scanner exhaust fan motor | SCN FAN1 | i | i |
| 104 | Scanner motor | SCN REIGI OFF | i | i |
| 105 | Exposure lamp | SCN SP LAMP | i | i |
| 106 | Power relay: scanner | SCN PWR RELAY | i | i |
| 107 | FPU lamp | SCN SP FPU LAMP | i | i |

## SP <br> MODE ADDITIONAL NOTES

| No. for Class 3 | Load Name | Actual Display | $\begin{gathered} \hline \hline \text { A258/A259/ } \\ \text { A260 } \end{gathered}$ | B017/B018 |
| :---: | :---: | :---: | :---: | :---: |
| 120 | Sorter main motor | SS PROOF MT | i | i |
| 124 | Bin lift motor | SS BIN LIFT MT | $\stackrel{i}{\text { inC }}$ | $\stackrel{i}{\text { inC }}$ |
| 127 | Grip motor | SS CHACK MT | i , SR | i , SR |
| 129 | Stapler motor | SS STAPLER MT | ; ,SR | ; , SR |
| 131 | Jogger motor | SS JOGGER MT | i, SR | ; ,SR |
| 132 | Tray shift motor | SS SIFT MT | i , C | i, C |
| 133 | Junction gate solenoid | SS JOGGER MT | i , C | i, C |
| 134 | 2-bin gate solenoid | SS 2BIN SOL | i, C | i, C |
| 135 | 3-bin gate solenoid | SS 3BIN SOL | , C | i , C |
| 150 | ADF feed-in motor, forward | ADF IMOTOR F | i | i |
| 151 | ADF feed-in motor, backward | ADF IMOTOR R | i | i |
| 152 | ADF belt drive motor, forward | ADF BMOTOR F | i | i |
| 153 | ADF belt drive motor, backward | ADF BMOTOR R | i | i |
| 154 | ADF feed-out motor, forward | ADF OMOTER F | i | i |
| 155 | ADF inverter solenoid | ADF SOL | i | i |
| 156 | ADF display LED | ADF LED DIS | i | i |


| S:10-BIN SORTER | R:20-BIN SORTER | $C: 3-B I N ~ S O R T E R ~$ |
| :--- | :--- | :--- |

### 4.4.2 SP5-803 INPUT CHECK

Printer

| No. for <br> Class 3 | Sensor/Switch Name | Actual Display | Condition |  |
| :---: | :--- | :--- | :--- | :---: |
| 001 | Drum motor lock | SEN DRUM MT LOCK |  |  |
| 002 | Fusing motor lock | SEN FUSER M LOCK |  |  |
| 003 | Paper feed motor lock | SEN PF MT LOCK |  |  |
| 006 | Polygon mirror motor lock | SEN PLY MT LOCK | 1 (Lock) |  |
| 009 | Toner cartridge | SEN T CARTRIGE |  |  |
| 010 | Toner end | SEN TE | 0 (Set) |  |
| 011 | Paper transfer home position | SEN BERT MARK | 1 (Contact) |  |
| 012 | Belt cleaning home position (Release) |  |  |  |
| 013 | Used toner | SEN BTCLN POSTN | 1 (Release) |  |
|  | SEN DUST TONER | 1 (Full) | 0 |  |
| 014 | 1st tray upper limit | SEN TRAY1 UP | 1 (ON) |  |
| 015 | 2nd tray upper limit | SEN TRAY2 UP | 1 (ON) |  |
| 016 | 3rd tray upper limit | SEN TRAY3 UP | 1 (ON) |  |
| 017 | 4th tray upper limit | SEN TRAY4 UP | 1 (ON) |  |
| 019 | 2nd vertical transport | SEN PAPER TX2 |  |  |
| 020 | 3rd vertical transport | SEN PAPER TX3 |  |  |
| 021 | 4th vertical transport | SEN PAPER TX4 |  |  |
| 022 | Relay | SEN PAPER TX1 | 1 (PE) |  |
| 023 | 1st tray paper end | SEN TRAY1 PE | 0 (PE) |  |
| 024 | 2nd tray paper end | SEN TRAY2 PE | 1 (PE) |  |
| 025 | 3rd tray paper end | SEN TRAY3 PE | 1 (PE) |  |


| No. for Class 3 | Sensor/Switch Name | Actual Display | Condition |  |
| :---: | :---: | :---: | :---: | :---: |
| 026 | 4th tray paper end | SEN TRAY4 PE | 1 (PE) |  |
| 027 | By-pass feed paper end | SEN MANFEED PE |  | 0 (PE) |
| 038 | By-pass paper width detection SW 1 | SEN SIZ SW MAN 1 | 1 (ON) |  |
| 039 | By-pass paper width detection SW 2 | SEN SIZ SW MAN 2 | 1 (ON) |  |
| 040 | By-pass paper width detection SW 3 | SEN SIZ SW MAN 3 | 1 (ON) |  |
| 041 | By-pass paper width detection SW 4 | SEN SIZ SW MAN 4 | 1 (ON) |  |
| 043 |  | SEN TRAYI STACK |  |  |
| 047 | Paper height sensor 1 | SEN STACK SW 11 | 1 (ON) |  |
| 048 | Paper height sensor 2 | SEN STACK SW 12 | 1 (ON) |  |
| 049 | Paper tray detector switch | SEN TRAY1 SET |  | 0 (Set) |
| 051 | By-pass feed table switch | SEN MANNFEED SET | 1 (Open) |  |
| 052 | Registration | SEN REGIST |  | 0 (PE) |
| 053 | Duplex unit side fence jogger home position | SEN DPLX SIDE HP |  | 0 (HP) |
| 054 | Duplex unit end fence jogger home position | SEN DPLX END HP |  | 0 (HP) |
| 055 | Duplex entrance | SEN DPLX IN | 1 (PE) |  |
| 056 | Duplex turn | SEN DPLX RVS |  | 0 (PE) |
| 057 | Duplex paper end | SEN DPLX PE |  | 0 (PE) |
| 058 | Duplex unit set | SEN DPLX SET |  | 0 (Set) |
| 059 | Paper exit | SEN FUSER EXIT | 1 (PE) |  |
| 060 | Fusing oil end | SEN OIL END |  | 0 (End) |
| 061 |  | SEN FUSER DPLX |  |  |
| 062 | Front door switch | SEN FRONT DOOR |  | 0 (Open) |
| 063 | Vertical transport switch | SEN BANK DOOR |  | 0 (Open) |
| 064 | Transport Sensor (Paper Tray Unit) | SEN BANK DOOR2 |  |  |
| 065 | Paper exit door | SEN EXIT DOOR |  | 0 (Open) |
| 066 | PCC leak | SEN PCC LEAK |  | 0 (Leak) |
| 067 | Separation charge corona leak | SEN SEP CHG LEAK |  | 0 (Leak) |
| 068 | Charge corona leak | SEN MAIN CH LEAK |  | 0 (Leak) |
| 072 | Key counter | SEN KEY COUNTER |  | 0 (OK) |
| 073 | Key card | SEN KEY CARD |  | 0 (OK) |
| 074 | Counter check 1 | SEN ELC CHECK1 |  | 0 (Check) |
| 075 | Counter check 2 | SEN TOTAL CNT2 |  | 0 (Check) |
| 076 | 2nd tray detector switch | SEN TRAY2 SET | 1 (Set) |  |
| 077 | 3rd tray detector switch | SEN TRAY3 SET SEN | 1 (Set) |  |
| 078 | 4th tray detector switch | SEN TRAY4 SET SEN | 1 (Set) |  |

## Scanner

| No.for <br> Class 3 | Sensor/Switch Name | Actual Display | Condition |  |
| :---: | :--- | :--- | :---: | :---: |
| 100 | Scanner home position | HOME SENCER | 1 (Set) |  |
| 101 | Platen cover position | ATSUBAN SENSER | 1 (Set) |  |

## Sorter

| No. for Class 3 | Name | Actual Display | Sorter type | Condition |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 120 | Entry | SEN SS ENTER SEN | C | $\begin{aligned} & 1 \text { (Paper } \\ & \text { empty) } \end{aligned}$ |  |
| 121 | Proof (1 bin paper exit) | SEN SS PROOF EX SEN | C |  | $\begin{aligned} & 0 \text { (Paper } \\ & \text { empty) } \\ & \hline \end{aligned}$ |
| 122 | Entry (2-bin paper exit) | SEN SS ENTRY SEN | SRC |  | 0 (Paper empty) |
| 123 | Bin (3-bin paper exit) | SEN SS PAPER EXST SEN | SRC |  | $\begin{aligned} & 0 \text { (Paper } \\ & \text { empty) } \end{aligned}$ |
| 124 | Bin home (lift lower limit) | SEN SS BIN HP SEN | SRC | 1 (HP) |  |
| 125 | Bin rotation | SEN SS BIN ROTA SEN | SR | 1 (HP) |  |
| 126 |  | SEN SS RF OPEN SEN |  |  |  |
| 127 |  | SEN SS RF CLOSE SEN |  |  |  |
| 128 | Jogger home (shift position) | SEN SS JOGGER HP SEN | SRC | 1 (HP) |  |
| 129 | Grip home | SEN SS CHACK MOVE HP | SR | 1 (HP) |  |
| 130 |  | SEN SS STPL MOVE HP |  |  |  |
| 131 | Stapler home | SEN SS STPL MOVE HP | SR | 1 (HP) |  |
| 132 | Stapler end | SEN SS STPL END SEN | SR | 1 (Stapler end) |  |
| 133 | Stapler paper | SEN SS PAPER BIND SEN | SRC |  | $\begin{aligned} & 0 \text { (Paper } \\ & \text { empty) } \end{aligned}$ |
| 134 | Door safety switch | SEN SS DOOR OPEN SEN | SRC | 1 (Open) |  |
| 135 | Encoder | SEN SS ENCORDER SEN | SR |  | 0 (Normal) |
| 136 | Inverter | SEN SS REVERS SEN | C |  | $\begin{aligned} & 0 \text { (Paper } \\ & \text { empty) } \end{aligned}$ |
| 137 |  | SEN SS CHACK HP |  |  |  |

[^5]ARDF

| No. for <br> Class $\mathbf{3}$ | Name | Actual Display | Condition |  |
| :---: | :--- | :--- | :--- | :--- |
| 138 |  | SEN SS STPL UNIT SET |  |  |
| 139 |  | SEN SS STPL PUT SEN |  |  |
| 140 |  | SEN SS STPL PULL SEN |  |  |
| 150 | Width small | ADF_SIZE_SMALL | 1 (ON) |  |
| 151 | Width medium | ADF_SIZE_MIDDLE | 1 (ON) |  |
| 152 | Width large | ADF_SIZE_LARGE | 1 (ON) |  |
| 153 | Registration | ADF_REGIST_SEN | 1 (Paper present) |  |
| 154 | Paper exit | ADF_OUT_SEN | 1 (Paper present) |  |
| 155 | Lift-up | ADF_LIFT_SEN | 1 (Set) |  |
| 156 | APS | ADF_APS_SEN |  | 0 |
| 157 | Paper feed cover | ADF_ICVR_SEN |  | 0 (Open) |
| 158 | Paper exit cover | ADF_OCVR_SEN |  | 0 (Open) |

## SP MODE ADDITIONAL NOTES

### 4.4.3 SP5-955-018 TEST PATTERN SELECTION

| Setting Value | Pattern Name (A258/A259/A260) | Pattern Name(B017/B018) |
| :---: | :--- | :--- |
| 1 | Print margin pattern | Same |
| 2 | Print out all fonts | Same |
| 3 | 1 dot/line grid pattern | Same |
| 4 | Belt pattern | Same |
| 5 | $16-g r a d a t i o n ~ w i t h ~ b l a n k ~$ | Same |
| 6 | Solid | Same |
| 7 | 1 dot pattern $(2 x 2)$ | Same |
| 8 | 1 dot pattern (4x4) | Same |
| 9 | 1 dot sub-scan line | Same |
| 10 | 2 dot sub-scan line | Same |
| 11 | 1 dot main scan line | Same |
| 12 | 2 dot main scan line | Same |
| 13 | Color patch at trailing edge | Same |
| 14 | Grid pattern with scanner image | Same |
| 15 | 2 dot line grid pattern | Same |
| 16 | $16-g r a d a t i o n ~ p a t t e r n ~$ | $16-$ gradation pattern with blank |
| 17 | $256-g r a d a t i o n ~ p a t t e r n$ | Same |

### 4.4.4 5-955-001 LD_PWM (DOT, LINE)

Defines the LD value for dots and lines on the following test patterns: SP5-955018: 1-4, 6-15

### 4.4.5 5-955-002 TO 5-955-016 LD_PWM (16-GRADATION)

Defines the LD values for the 16 -gradations printed on test patterns SP5-955-018: 5, 16.

| Setting Value | Pattern Name (A258/A259/A260) |
| :---: | :--- |
| 002 | $1 / 15$ (for the second grade) |
| 003 | $2 / 15$ (for the third grade) |
| 004 | $3 / 15$ (for the fourth grade) |
| 005 | $4 / 15$ (for the fifth grade) |
| 006 | $5 / 15$ (for the sixth grade) |
| 007 | $6 / 15$ (for the seventh grade) |
| 008 | $7 / 15$ (for the eighth grade) |
| 009 | $8 / 15$ (for the ninth grade) |
| 010 | $9 / 15$ (for the tenth grade) |
| 011 | $10 / 15$ (for the eleventh grade) |
| 012 | $11 / 15$ (for the twelfth grade) |
| 013 | $12 / 15$ (for the thirteenth grade) |
| 014 | $13 / 15$ (for the fourteenth grade) |
| 015 | $14 / 15$ (for the fifteenth grade) |
| 016 | $14 / 15$ (for the fifteenth grade) |

### 4.4.6 5-995-017 LD_PWM (COLOR PATCHES)

Defines the LD value for the color patch at the trailing edge of the test pattern (for SP5-955-018: 13)

## USER TOOL MENU (B017)

### 4.5 USER TOOL MENU (B017)

## System settings

| Menu |
| :--- |
| Function Priority |
| Panel Tone |
| Ready/Tone |
| Auto Timer |
| Control Panel Off Timer |
| Control Panel Off Level |
| System Reset Timer (Printer option required) |
| Function Reset Timer (Printer option required) |
| Tray Paper Size |
| Paper Tray Priority |
| Auto Tray Switching |
| 3 Side Full Bleed |
| By-pass Tray Custom Size |
| Interleave Print (Printer option required) |
| Interleave Priority |
| Copy Count Display |
| Display Color Setting |
| Key Operator Tools |
| AOF (Keep it on) |
| Output Tray (For 3-bin Sorter only) |

## Copy Features



## Auto Color Calibration

| Menu |
| :--- |
| Copy Mode |
| Printer Mode |

### 4.5.1 USER TOOL MENU (B018)

## System settings

| Menu |  |
| :--- | :---: |
| Panel Tone |  |
| Ready/Tone |  |
| Copy Count Display |  |
| System Reset |  |
| Function Reset |  |
| Control Panel Off |  |
| Auto Timer |  |
| Tray Paper Size |  |
| Tray Priority |  |
| Auto Tray Switch |  |
| Interleave Print |  |
| Output Tray (For 3-bin Sorter only) |  |
| Display Contrast |  |
| 3 Side Full Bleed |  |
| By-pass Custom Size |  |
| Control Panel Off Level |  |
| Key Operator Tools |  |

## Copy Features



### 4.6 TP/SW/LED/FUSE (B017/B018)

### 4.6.1 MAIN CONTROL BOARD TEST POINTS

| TP No. | Signal | Description | Stand-byft <br> (V) | Remarks | $\begin{gathered} \text { TP } \\ \text { Implementation } \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
| TP102 | GND | Ground | 0 to 5.0 |  | Yes |
| TP130 | GND | Ground | 0 |  | Yes |
| TP143 | GND | Ground | 0 |  | Yes |
| TP154 | UPHT_TH | Analog input from the fusing thermistor (upper) | 0 to 5.0 |  | Yes |
| TP156 | LWHT_TH | Analog input from the fusing thermistor (lower) | 0 to 5.0 |  | Yes |
| TP157 | FB_T2 | Feedback sense terminal for the secondary transfer bias | 0 to 5.0 |  | Yes |
| TP158 | FB_T1 | Feedback sense terminal for the primary transfer bias | 0 to 5.0 |  | Yes |
| TP160 | FB_G | Feedback sense terminal for the grid bias | 0 to 5.0 |  | Yes |
| TP162 | FB_C | Feedback sense terminal for the charge corona unit bias | 0 to 5.0 |  | Yes |
| TP167 | FB_BDC | Feed back sense terminal for the development bias (DC) | 0 to 5.0 |  | Yes |
| TP168 | HUM | Humidity sensor analog input | 0 to 5.0 |  | Yes |
| TP170 | IZ_CROSS | Zero-cross interrupt input | 0 to 5.0 | Active L | Yes |
| TP172 | TMP | Temperature sensor analog input | 0 to 5.0 |  | Yes |
| TP173 | P_SEN2 | Density sensor color output | 0 to 5.0 |  | Yes |
| TP174 | P_SEN1 | Density sensor black output | 0 to 5.0 |  | Yes |
| TP176 | V_SEN | Potential sensor analog input | 0 to 5.0 |  | Yes |
| TP178 | ENGY | Enable signal for transition to the Energy Star mode | 0 to 5.0 | Active H | Yes |
| TP182 | ANGND | Analog ground | 0 |  | Yes |
| TP185 | GND | Ground | 0 |  | Yes |
| TP186 | +5V | +5V | 5.0 |  | Yes |
| TP187 | GND | Ground | 0 |  | Yes |

### 4.6.2 SCANNER IPU BOARD TEST POINTS

| TP No. | Signal | Description | Stand-by(V) | TP <br> Implementation |
| :---: | :---: | :--- | :---: | :---: |
| TP01 | GND | Ground | 0 | Yes |
| TP02 | GND | Ground | 0 | Yes |
| TP03 | $3.3 V$ | +3.3V power source | 3.3 | No |
| TP04 | 2.5 V | +2.5V power source | 2.5 | No |
| TP07 | GND | Ground | 0 | Yes |
| TP08 | +5VA | +5V power source | 0 | No |
| TP15 | GND | Ground | 0 | No |
| TP16 | +5V | +5V power source | 0 | Yes |
| TP23 | +12VA | +12V power source | 5.0 | No |
| TP24 | GND | Ground | 0 | Yes |
| TP31 | GND | Ground | 0 | Yes |

### 4.6.3 LD MAIN CONTROL BOARD TEST POINTS

| TP No. | Signal | Description | Stand- <br> by(V) | Remarks | TP <br> Implementation |
| :---: | :---: | :--- | :---: | :--- | :---: |
| TP2 | XDP2 | Laser synchronization detector 2 | 0 to 5.0 | Active L | No |
| TP3 | GND | Ground | 0 |  | No |
| TP4 | GND | Ground | 0 |  | No |
| TP5 | LDLVL | Defines the LD control reference <br> voltage. 0 to 2V, normally 1V. | 0 to 2.0 | Normally held at 1V. <br> Active H | No |
| TP6 | XDP1 | Laser synchronization detector 1 | 0 to 5.0 | Active L | No |
| TP7 | LDON | Shortening this terminal to <br> ground causes the LD to stay on <br> in full mode during the polygon <br> mirror motor ON period. | 0 to 5.0 | Active L | No |
| TP9 | GND | Ground | 0 |  |  |
| TP13 | +5V | +5V power source | 5 |  | No |
| TP14 | +2.5V | +2.5V power source | 2.5 |  | No |
| TP15 | GND | Ground | 0 |  | No |
| TP16 | +3.3V | +3.3V power source | 3.3 |  | No |
| TP18 | GND | Ground | 0 |  | No |
| TP19 | GND | Ground | 0 |  | No |
| TP20 | GND | Ground | 0 |  |  |

### 4.6.4 I/O CONTROL BOARD TEST POINTS

| TP No. | Signal | Description | Standby(V) | Remarks | TP Implementation |
| :---: | :---: | :---: | :---: | :---: | :---: |
| TP201 | AGND | Power ground | 0 |  | Yes |
| TP202 | TMP_SEN | Temperature sensor output | 0 to 5.0 |  | No |
| TP203 | HUM_SEN | Humidity sensor output | 0 to 5.0 |  | No |
| TP204 | FUMTR+ | Tray lift motor up signal | 0 to 24.0 | Upper Position " H " | No |
| TP205 | FUMTR- | Tray lift motor down signal | 0 to 24.0 | Down = "H" | No |
| TP206 | XFEED_LOCK | Paper feed motor lock state sensor signal | 0 to 5.0 | Lock = "L" | No |
| TP207 | XLEAK_D | Separation charge corona unit leak sensor signal | 0 to 5.0 | Leak = "L" | No |
| TP208 | FB_T2 | Secondary transfer high-voltage feedback voltage | 0 to 5.0 |  | No |
| TP209 | FB_T1 | Primary transfer high-voltage output control signal | 0 to 5.0 |  | No |
| TP210 | PWM_T1 | Primary transfer high-voltage output control signal | 0 to 5.0 |  | No |
| TP211 | PWM_T2 | Secondary transfer high-voltage output control signal | 0 to 5.0 |  | No |
| TP212 | XLEAK_PCC | PCC leak sensor signal | 0 to 5.0 | Leak = "L" | No |
| TP213 | T2_SEN | Secondary transfer unit contact/release sensor signal | 0 to 5.0 | Contact "H" | No |
| TP214 | RP_SEN1 | Paper height sensor signal 2 (left) | 0 to 5.0 | Shade "H" | No |
| TP215 | RP_SEN2 | Paper height sensor signal 1 (right) | 0 to 5.0 | Shade "H" | No |
| TP216 | XTRP_FAN | Transport fan ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP217 | XT2_CL | Secondary transfer contact/release clutch ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP218 | XBPF_CL | By-pass paper feed clutch ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP219 | XKCOUNT | Key counter count signal | 0 to 24.0 | $\begin{aligned} & 1 \text { count = } 1 \mathrm{~L} \\ & \text { pulse } \end{aligned}$ | No |
| TP220 | XT_CNT1 | Total counter 1 count signal | 0 to 24.0 | $\begin{aligned} & 1 \text { count = } 1 \mathrm{~L} \\ & \text { pulse } \end{aligned}$ | No |
| TP221 | XT_CNT2 | Total counter 2 count signal | 0 to 24.0 | $\begin{aligned} & 1 \text { count = } 1 \mathrm{~L} \\ & \text { pulse } \end{aligned}$ | No |
| TP222 | XKCRDCNT | - | - | - | - |
| TP223 | XTRG_D | Separation charge corona unit output ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP224 | XTRG_PCC | PCC output ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP225 | IMP_CLK | Drum motor speed control clock | 0 to 5.0 |  | No |
| TP226 | XIMP_TRG | Drum motor ON/OFF signal | 0 to 5.0 | ON = "L" | No |
| TP227 | XRGT_CL | Registration clutch ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP228 | XMID_CL | Relay clutch ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP229 | XIMP_CW | Drum motor forward/backward control signal | 0 to 5.0 | Forward = "L" | No |
| TP230 | XFEED_CL | Paper feed clutch ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP231 | XEXU_FAN | Exhaust fan ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP232 | XRGT_SEN | Registration sensor signal | 0 to 5.0 | $\begin{aligned} & \text { Paper present } \\ & =\text { "L" } \end{aligned}$ | No |
| TP233 | BLTPTN | Belt mark sensor signal | 0 to 5.0 | $\begin{aligned} & \text { Mark sensed = } \\ & \text { "H" } \end{aligned}$ | No |
| TP234 | FEED_CLK | - | - | - | No |
| TP235 | VCC2A | Analog +5V power source | 5.0 |  | Yes |
| TP236 | XFEED_TRG | Paper feed motor ON/OFF signal | 0 to 5.0 | ON = "L" | No |


| TP No. | Signal | Description | Standby(V) | Remarks | $\begin{gathered} \text { TP } \\ \text { Implementation } \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
| TP237 | XBPFSIZE2 | By-pass paper width sensor signal (bit 2) | 0 to 5.0 |  | No |
| TP238 | XBPFSIZE0 | By-pass paper width sensor signal (bit 0) | 0 to 5.0 |  | No |
| TP239 | XIMP_LOCK | Drum motor lock state sensor signal | 0 to 5.0 | Lock = "L" | No |
| TP240 | XBPFSIZE3 | By-pass paper width sensor signal (bit 3) (bit 3) | 0 to 5.0 |  | No |
| TP241 | XBPFSIZE1 | By-pass paper width sensor signal (bit 1) | 0 to 5.0 |  | No |
| TP242 | XFEED_PE | Paper tray (single side) paper end sensor signal | 0 to 5.0 | Paper end "L" | No |
| TP243 | XMID_SEN | Middle sensor signal | 0 to 5.0 | Detect a paper "L" | No |
| TP244 | FUD_SEN | Paper tray lift sensor signal | 0 to 5.0 | Upper position " H " | No |
| TP245 | XIORXT | - | - | - | No |
| TP246 | IOCLK | - | - | - | No |
| TP247 | XST | - | - | - | No |
| TP248 | ENGY_ON | Energy Star sleep signal ON/OFF signal | 0 to 5.0 | $\begin{aligned} & \text { Sleep mode = } \\ & \text { "H" } \end{aligned}$ | No |
| TP249 | RM_A | Revolver phase excitation signal | 0 to 5.0 | 4 1/phase excitation signals | No |
| TP250 | XREV_HP | Revolver HP sensor signal | 0 to 5.0 | Home position = " H " | No |
| TP251 | CGND | Digital signal ground | 0 |  | Yes |
| TP252 | DIR | Data bus direction control signal | 0 to 5.0 |  | No |
| TP253 | XEXIT_SEN | Paper exit sensor signal | 0 to 5.0 | Paper present = "L" | No |
| TP254 | XOILEND | Oil end sensor signal | 0 to 5.0 | Oil end = "L" | No |
| TP255 | XFEEDOPEN | Vertical transport door open sensor signal | 0 to 5.0 | Open = "L" | No |
| TP256 | $\begin{gathered} \text { XCHMT_LOC } \\ \mathrm{K} \\ \hline \end{gathered}$ | Chart cleaner motor lock state sensor signal | 0 to 5.0 | Lock = "L" | No |
| TP257 | XFDOPEN | Front door open sensor signal | 0 to 5.0 | Open = "L" | No |
| TP258 | XEXITOPEN | Paper exit door open sensor signal | 0 to 5.0 | Open = "L" | No |
| TP259 | P_SEN1 | Black density output | 0 to 5.0 |  | No |
| TP260 | P_SEN2 | Color (cyan, magenta, yellow) density output | 0 to 5.0 |  | No |
| TP261 | MDHT_TH | - | - | - | No |
| TP262 | UPHT_TH | Heat roller thermistor output | 0 to 5.0 |  | No |
| TP263 | LWHT_TH | Pressure roller thermistor output | 0 to 5.0 |  | No |
| TP264 | V_SEN | Potential sensor output | 0 to 5.0 |  | No |
| TP265 | FB_BDC | Development bias feedback voltage | 0 to 5.0 |  | No |
| TP266 | FB_G | Grid output feedback voltage | 0 to 5.0 |  | No |
| TP267 | FB_C | Charge corona output feedback voltage | 0 to 5.0 |  | No |
| TP268 | PC_I | - - | - | - | No |
| TP269 | CGNDA | Analog signal ground | 0 |  | Yes |
| TP270 | XTRG_BAC | Development bias AC component ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP271 | XFUS_LOCK | Fusing motor lock state sensor signal | 0 to 5.0 | Lock = "L" | No |


| TP No. | Signal | Description | $\begin{aligned} & \hline \hline \text { Stand- } \\ & \text { by(V) } \end{aligned}$ | Remarks | Implementation |
| :---: | :---: | :---: | :---: | :---: | :---: |
| TP272 | XRA_PRT | Fusing/pressure roller lamp power relay ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP273 | PWM_BDC | Development bias voltage control signal | 0 to 5.0 |  | No |
| TP274 | PWM_G | Grid voltage control signal | 0 to 5.0 |  | No |
| TP275 | PWM_C | Charge corona current control signal | 0 to 5.0 |  | No |
| TP276 | XFUS_TRG | Fusing motor ON/OFF signal | 0 to 5.0 | ON = "L" | No |
| TP277 | FUS_CLK | - | - | - | No |
| TP278 | BC_SEN | Belt cleaning blade contact/release sensor | 0 to 5.0 | Contact = "H" | No |
| TP280 | XPSU_FAN | PSU fan ON/OFF signal | 0 to 24.0 | ON = "L" |  |
| TP281 | CGND | Digital signal ground | 0 |  | Yes |
| TP282 | VCC2 | Digital +5 V power source | 5.0 |  | Yes |
| TP283 | VAA2 | +24V power source | 24.0 |  | Yes |
| TP284 | XBPF_SOL | By-pass clutch ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP285 | XEXU_FAN2 | Exhaust fan 2 ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP286 | CGNDA | Digital signal ground | 0 |  | No |
| TP287 | XT_MTR | Toner supply motor ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP289 | PLED | ID sensor LED luminous quantity control voltage | 0 to 5.0 |  | No |
| TP290 | AGND | Power ground | 0 |  | Yes |
| TP291 | XFUS_FAN | Fusing fan ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP292 | XFUS_CL | Fusing clutch ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP293 | XDEV_CL | Development clutch ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP294 | XPLM_FAN | Polygonal mirror motor fan ON/OFF signal | 0 to 24.0 | $\mathrm{ON}=$ "L" | No |
| TP295 | VCB | -12V power source | -12.0 |  | Yes |
| TP296 | VCA | +12V power source | 12.0 |  | Yes |
| TP297 | XSWP_CL | Sweeper clutch ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP298 | XBC_CL | Belt cleaning clutch ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP299 | XDUP_SOL | Duplex solenoid o ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP300 | XCL_FAN | Rear lower cooling ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP301 | XZ_CROSS | Zero-cross signal | 0 to 5.0 | Zero-cross section = "L" | No |
| TP302 | XUPHT_TRG | Fusing lamp ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP303 | XLWHT_TRG | Pressure roller lamp ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP304 | XRA_SCN | Lamp regulator power relay | 0 to 24.0 | ON = "L" | No |
| TP305 | XQL | QL ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP306 | XCH_FAN | Charge corona fan ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP307 | RM_I15A | Revolver motor current 1.5 A drive signal | 0 to 5.0 | $1.5 \mathrm{~A}=$ " $\mathrm{H}^{\prime}$ | No |
| TP300 |  | Rear lower cooling fan ON/OFF signal | 0 to 24.0 | $\mathrm{ON}=$ "L" |  |
| TP308 | CH_MT- | Charge cleaner motor back signal | 0 to 24.0 | $\mathrm{ON}=$ " ${ }^{\text {" }}$ | No |
| TP309 | XFUS_SEN | Fusing unit set signal | 0 to 5.0 | Set = "L" | No |
| TP310 | XCH_FAN | Charge corona fan ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP311 | RM_I08A | Revolver motor current 0.8 A drive signal | 0 to 5.0 | 0.8 A = " ${ }^{\text {" }}$ | No |
| TP312 | CH_MT+ | Charge cleaner motor forward signal | 0 to 24.0 | $\mathrm{ON}=$ " H " | No |

### 4.6.5 SWITCHES

| No. |  | Description | Remarks |
| :---: | :---: | :---: | :---: |
| Main Control Board |  |  |  |
| SW101 | 1 | Factory use only | Should be OFF |
|  | 2 | Factory use only | Should be OFF |
| SW102 | 1 | Designer use only | Should be OFF |
|  | 2 | Designer use only | Should be OFF |
|  | 3 | Designer use only | Should be OFF |
|  | 4 | Designer use only | Should be OFF |
| SW103 |  | Japanese market only | Should be "0" |
| Scanner IPU Board |  |  |  |
| SW1 |  | Designer use only | Should be OFF |
| SW2 | 1 | 1 scan |  |
|  | 2 | Motor excitation off |  |
|  | 3 | Lamp on |  |
|  | 4 | Free-running |  |
|  | 5 | Designer use only | Should be OFF |
|  | 6 | Designer use only | Should be OFF |
| 10 Control Board |  |  |  |
| SW1 |  | Japanese market only | Should be OFF |

### 4.6.6 LED SPECIFICATIONS

| No. | Function Outline | Remarks |
| :---: | :--- | :--- |
| Main control board |  |  |
| LED101 | Blinking : Normal <br> ON or OFF: Abnormal |  |
| LED102 | Designer use only |  |
| LED103 | Designer use only |  |
| LED104 | Designer use only |  |
| LED105 | Designer use only |  |
| SCN_IPU board |  |  |
| LED1 | Designer use only |  |
| LED2 | Designer use only |  |
| LED3 | Blinking when IDU works normally. |  |
| LED4 | Designer use only |  |
| LED5 | Designer use only | Normally OFF |
| LED6 | Designer use only |  |
| LED7 | Designer use only | Normally OFF |
| LED8 | Blinking : Normal <br> ON/or OFF : Abnormal | Normally OFF |
| LED9 | Designer use only |  |
| LED10 | Designer use only |  |

### 4.6.7 FUSE SPECIFICATIONS

## PSU

| $\begin{aligned} & \text { FUSE } \\ & \text { No. } \end{aligned}$ | Rating |  | Use | Symptom when turn on the main power switch |
| :---: | :---: | :---: | :---: | :---: |
|  | US | EU/Asia |  |  |
| FU101 | $\begin{aligned} & 15 \mathrm{~A} \\ & 125 / 250 \mathrm{Vac} \end{aligned}$ | - | AC input main fuse | No response |
| FU102 | $\begin{aligned} & 8 \mathrm{~A} \\ & 125 / 250 \mathrm{Vac} \end{aligned}$ | $\begin{aligned} & 5 \mathrm{~A} \\ & 125 / 250 \mathrm{Vac} \end{aligned}$ | PSU AC input fuse | No response |
| FU103 | $\begin{aligned} & \text { 3.15A } \\ & 125 \mathrm{Vac} \end{aligned}$ | $\begin{aligned} & \text { 2A 125Vac/ } \\ & 250 \mathrm{~V} \end{aligned}$ | Anti-condensation heater fuse | Heater does not work |
| FU1 | $\begin{array}{\|l\|} \hline 4 \mathrm{~A} \\ 125 / 250 \mathrm{Vac} \\ \hline \end{array}$ | $\begin{array}{\|l\|} \hline 4 \mathrm{~A} \\ 125 / 250 \mathrm{Vac} \\ \hline \end{array}$ | Vaa(+24) output fuse (IOB) | "Front Door Open" is displayed. |
| FU2 | $\begin{aligned} & 4 \mathrm{~A} \\ & 125 / 250 \mathrm{Vac} \end{aligned}$ | $\begin{aligned} & 4 \mathrm{~A} \\ & 125 / 250 \mathrm{Vac} \end{aligned}$ | Vaa(+24) output fuse (IOB) | "Front Door Open" is displayed. |
| FU3 | $\begin{aligned} & 4 \mathrm{~A} \\ & 125 / 250 \mathrm{Vac} \end{aligned}$ | $\begin{aligned} & 4 \mathrm{~A} \\ & 125 / 250 \mathrm{Vac} \end{aligned}$ | Vaa(+24) output fuse (Scanner Motor Drive Board and Scanner IPU Board) | SC101 is displayed. |
| FU4 | $\begin{aligned} & 4 \mathrm{~A} \\ & 125 / 250 \mathrm{Vac} \end{aligned}$ | $\begin{aligned} & 4 \mathrm{~A} \\ & 125 / 250 \mathrm{Vac} \end{aligned}$ | Vaa (+24) output fuse for the peripherals. | One of the peripheral devices will not run (a paper jam or paper empty condition is displayed). |
| FU31 | $\begin{aligned} & \text { 3.15A } \\ & 125 \mathrm{Vac} \end{aligned}$ | $\begin{aligned} & \text { 2A } \\ & 125 \mathrm{Vac} / 250 \mathrm{~V} \end{aligned}$ | +5 V safety regulation compliant protective fuse |  |
| FU71 | 2A 125Vac | $\begin{aligned} & 2 \mathrm{~A} \\ & 125 \mathrm{Vac} / 250 \mathrm{~V} \end{aligned}$ | Vcb(-12V) safety regulation compliant protective fuse (Scanner Motor Drive Board) |  |
| FU81 | $\begin{aligned} & 3.15 \mathrm{~A} \\ & 125 \mathrm{Vac} \end{aligned}$ | $\begin{aligned} & 3.15 \mathrm{~A} \\ & 125 \mathrm{Vac} / 250 \mathrm{~V} \end{aligned}$ | Vca(+12)/Vcd(+15V) safety regulation compliant fuse (Scanner Motor Drive Board and Scanner IPU Board) |  |
| FU83 | $\begin{aligned} & \hline 2 \mathrm{~A} \\ & 125 / 250 \mathrm{Vac} \\ & \hline \end{aligned}$ | $\begin{aligned} & \hline 2 \mathrm{~A} \\ & 125 / 250 \mathrm{Vac} \\ & \hline \end{aligned}$ | Vcd(+15V) output fuse (Scanner IPU Board) | SC171 is displayed |

## PREVENTIVE MAINTENANCE

## 5. PREVENTIVE MAINTENANCE

### 5.1 PM PROCEDURES

### 5.1.1 PM-RELATED COUNTERS

The major PM related counters available in the SP modes are summarized below. After performing a PM procedure, clear the PM counters.

## SP7-803 (Show PM Counter)

SP7-803-001: Counter for preventive maintenance

## SP7-804 (Clear PM Counter)

SP7-804-001: Counters for 60 kD preventive maintenance parts
SP7-804-002: Counters for 120 kD preventive maintenance parts
SP7-804-003: Clears 7-803-001

## SP7-202 (Show Development Counters)

Shows the number of times each color has been developed.
SP7-202-001: Total
SP7-202-002: Black
SP7-202-003: Cyan
SP7-202-004: Magenta
SP7-202-005: Yellow

## SP7-818 (Clear Development Counters)

Clears the development counters indicated in SP7-202.
SP7-818-001: Black
SP7-818-002: Cyan
SP7-818-003: Magenta
SP7-818-004: Yellow

## PM PROCEDURES

## SP7-203 (Show Image Production Counters)

Shows the usage of major components by number of images produced.

## SP7-207 (Show Cleaning Counters)

Shows the number of uses of the cleaning-related parts.

## SP7-210 (Show Fusing Counters)

Shows the number of uses of the fusing related parts

## SP 7-910 (Paper Separation Corona Counters)

Shows the number of uses of the separation corona

## SP 7-911 (Duplex Tray Counters)

Shows the number of uses of the duplex tray related parts

## SP 7-912 (Exposure Lamp Counter)

Shows the number of uses of the exposure lamp

### 5.1.2 REGULAR PREVENTIVE MAINTENANCE FLOW DIAGRAM

NOTE: The procedure that you use to replace the developer and the drum depends on the developer combination and the drum being replaced (See 6-6 Development Unit)






### 5.2 REGULAR PM ITEMS

Regular PM items: To be performed every 60,000 developments in accordance with the following table.

## Regular PM Table

NOTE: To wipe off toner, use a dry cloth. If toner is mixed with alcohol, it solidifies.

O: Inspect $\Delta$ : Lubricate $\square$ : Replace © Clean $\boldsymbol{A}$ : Adjust


|  | PM item | EM | Schedule |  |  |  |  |  | Remarks |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | 60 | 120 | 180 | 240 | 300 | 360 |  |
|  |  |  | kD | kD | kD | kD | kD | kD |  |
|  | Development unit toner catch pan |  | $\bullet$ | $\bullet$ | - | - | $\bullet$ | $\bullet$ | Wipe with a dry cloth or clean with a vacuum cleaner. |
|  | Developer (K) |  |  |  |  |  |  |  | Developer life is 60 kD . |
|  | Developer (C, M, Y) |  |  |  |  |  |  |  | Developer life is 45 kD for each color. Replace the three colors at the same time. |
|  | Development unit (including covers and gears) |  | $\bullet$ | $\bullet$ | - | $\bullet$ | $\bullet$ | $\bullet$ | Cover: wipe with a dry cloth. Gear: Clean with a blower brush. |
|  | Side <br> seal/entrance <br> seal |  | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ | O | $\bigcirc$ | $\bigcirc$ | Visually check. Replace if cracks, warps, or breakage are found. |
|  | Color toner set sensor | $\bullet$ | - | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | - | Clean with a blower brush, then wipe with a dry cloth. |
|  | Toner end sensor |  | - | $\bullet$ | - | - | - | - | Clean with a blower brush, then wipe with a dry cloth. |
|  | Bias terminal on the development unit. |  | $\bullet$ | $\bullet$ | - | $\bullet$ | $\bullet$ | - | Wipe with a dry cloth (should be free of oil or foreign matters). |
|  | Bias terminal on the copier/sealdevelopment bias. |  | - | - | - | - | - | - | Wipe with a dry cotton cloth (should be free of oil or foreign matters). |
|  |  |  |  |  |  |  |  |  |  |
|  | PCC |  | $\bullet$ | $\bullet$ | - | $\bullet$ | $\bullet$ | - | Wipe with a dry cloth. |
|  | PCC wire |  | $\bullet$ | $\square$ | - | $\square$ | $\bullet$ | $\square$ | Wipe with a dry cloth. |
|  | Cleaning blade |  | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | When replacing, apply setting powder. |
|  | Lubricant bar |  | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ |  |
|  | Cleaning brush |  |  | $\square$ |  | $\square$ |  | $\square$ |  |
|  | Cleaning unit and entrance mylar |  | $\bullet$ | $\bullet$ | - | $\bullet$ | $\bullet$ | - | Clean with a blower brush or wipe with a dry cloth. |
|  | Drum unit (including QL and potential sensor) |  | $\bullet$ | $\bullet$ | - | - | $\bullet$ | $\bullet$ | Wipe with a dry cloth. |
|  | Drawer unit (including ID sensor and carrier catcher) |  | $\bullet$ | $\bullet$ | - | $\bullet$ | $\bullet$ | $\bullet$ | Wipe with a dry cloth. |
|  | Charge corona unit casing | $\bullet$ | $\bullet$ | $\bullet$ | - | - | $\bullet$ | - | Wipe with a dry cloth. |
|  | Charge corona wire | $\bullet$ | - | $\square$ | - | $\square$ | $\bullet$ | $\square$ | Wipe with a damp cloth, then with a dry cloth. |
|  | Charge corona grid | $\bullet$ | - | $\square$ | - | $\square$ | - | $\square$ | Wipe with a damp cloth, then with a dry cloth. |
|  | Dust filter |  | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ |  |
|  |  |  |  |  |  |  |  |  |  |



REGULAR PM ITEMS


| $\begin{aligned} & \hline \stackrel{\text { ran }}{0} \\ & \text { io } \end{aligned}$ | PM item | EM | Schedule |  |  |  |  |  | Remarks |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | 60 | 120 | 180 | 240 | 300 | 360 |  |
|  |  |  | kD | kD | kD | kD | kD | kD |  |
|  | Entrance guide plates (upper and lower) | $\bullet$ | $\bullet$ | - | $\bullet$ | $\bullet$ | - | $\bullet$ | Wipe with a dry cloth. |
|  | Oil supply roller and sub-roller |  | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | - | - | Wipe with a dry cotton cloth or clean with a suitable solvent. |
|  | Oil supply pad |  | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ |  |
|  | Oil Blade |  | $\bullet$ | $\square$ | $\bullet$ | $\square$ | - | $\square$ | Wipe with a dry cotton cloth or clean with a suitable solvent. |
|  | Heat roller |  | - | - | $\bullet$ | $\bullet$ | - | - | Wipe with a dry cotton cloth or clean with a suitable solvent. |
|  | Fusing belt |  | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ |  |
|  | Hot roller |  |  | $\square$ |  | $\square$ |  | $\square$ |  |
|  | Tension roller |  | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ |  |
|  | Pressure roller |  |  | $\square$ |  | $\square$ |  | $\square$ |  |
|  | Pressure roller pad |  | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ |  |
|  | Pressure roller blade |  | $\bullet$ | $\square$ | $\bullet$ | $\square$ | $\bullet$ | $\square$ | Wipe with a dry cotton cloth or clean with a suitable solvent. |
|  | Heat isolating bushing |  | $\Delta$ | $\Delta$ | $\Delta$ | $\Delta$ | $\Delta$ | $\Delta$ | Wipe with a dry cotton cloth, then apply grease (Barrierta S552R). |
|  | Fusing belt thermistor |  | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | Clean with a suitable solvent and apply silicone oil to the contact surface. |
|  | Pressure roller thermistor |  |  | $\bullet$ |  | $\bullet$ |  | - | Clean with a suitable solvent and apply silicone oil to the contact surface. |
|  | Fusing unit bottom frame |  |  | - |  | $\bullet$ |  | - | Wipe with a dry cloth. |
|  | Pick-off pawls |  | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | - | - | Wipe with a dry cotton cloth or clean with a suitable solvent. |
|  | Silicone oil | O | $\Delta$ | $\Delta$ | $\Delta$ | $\Delta$ | $\Delta$ | $\Delta$ | After removing paper dust precipitated in the oil tank with a pipette, add silicone oil. |
|  | Fusing drive gear |  | $\Delta$ | $\Delta$ | $\Delta$ | $\Delta$ | $\Delta$ | $\Delta$ | Apply grease (Barrierta S552R) |
|  |  |  |  |  |  |  |  |  |  |
| - | Transfer roller blade |  | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ |  |
|  | Paper discharge corona casing |  | $\bullet$ | - | $\bullet$ | $\bullet$ | - | $\bullet$ | Wipe with a dry cloth. |
|  | Paper discharge corona wire |  | $\square$ | - | $\square$ | $\square$ | - | $\square$ |  |
|  | Toner collection case |  | - | - | $\bullet$ | $\bullet$ | - | $\bullet$ | Wipe with a dry cloth. |
|  | Lubricant bar |  | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ | $\square$ |  |



O: Inspect $\Delta$ : Lubricate $\qquad$ ]: Replace Clean

| $\begin{aligned} & \text { 듬 } \\ & \frac{\mathrm{O}}{\mathrm{O}} \end{aligned}$ | PM Item |  |  |  |  |  |  |  | Action Post-maintenance action |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | 60 | 120 | 180 | 240 | 300 | 360 |  |
|  |  |  | kD | kD | kD | kD | kD | kD |  |
|  | Paper feed roller: Feed |  |  |  |  |  | $\square$ |  | Clean each paper tray with a dry or damp cloth (cotton cloth). Guideline: Every 200,000 normal sheets |
|  | Pick-up roller |  |  |  |  |  | $\square$ |  | Each paper tray Guideline: Every 200,000 normal sheets |
|  | Paper separation roller |  |  |  |  |  | $\square$ |  | Each paper tray Guideline: Every 200,000 normal sheets |
|  | Relay rollers |  |  |  |  |  | $\bullet$ |  | Clean each paper tray with a dry or damp cloth (cotton cloth). Guideline: Every 200,000 normal sheets |
|  | Transport drive roller |  |  |  |  |  | $\bullet$ |  | Clean each paper tray with a dry or damp cloth (cotton cloth). Guideline: Every 200,000 normal sheets |
|  | Paper tray bottom plate |  |  |  |  |  | $\bullet$ |  | Clean each paper tray with a dry or damp cloth (cotton cloth). Guideline: Every 200,000 normal sheets |
|  | Relay clutch |  |  |  |  |  | O |  | Guideline: Every 200,000 normal sheets |
|  | Paper feed clutch |  |  |  |  |  | O |  | Check each paper tray. Guideline: Every 200,000 normal sheets |
|  |  |  |  |  |  |  |  |  |  |
| $\begin{aligned} & \text { 山 } \\ & \stackrel{\rightharpoonup}{\underset{\alpha}{4}} \end{aligned}$ | Transport belt | $\bullet$ |  | $\square$ |  | $\square$ |  | - | Wipe with a damp cotton cloth. Guideline: Every 80,000 normal sheets |
|  | Separation belt | $\bullet$ |  | $\square$ |  | $\square$ |  | $\square$ | Wipe with a damp cotton cloth. Guideline: Every 80,000 normal sheets |
|  | Separation roller | $\bullet$ |  | $\square$ |  | $\square$ |  | $\square$ | Wipe with a damp cotton cloth. <br> Guideline: Every 80,000 normal sheets |
|  | Registration sensor |  |  | - |  | $\bullet$ |  | - | Clean with a blower brush. Guideline: Every 80,000 normal sheets |
|  | Size sensor |  |  | - |  | $\bullet$ |  | $\bullet$ | Clean with a blower brush. Guideline: Every 80,000 normal sheets |
|  | Paper exist sensor |  |  | $\bullet$ |  | $\bullet$ |  | $\bullet$ | Clean with a blower brush. Guideline: Every 80,000 normal sheets |
|  |  |  |  |  |  |  |  |  |  |



## REPLACEMENT AND ADJUSTMENT

## 6. REPLACEMENT AND ADJUSTMENT

### 6.1 COVERS, FANS, AND FILTERS

### 6.1.1 FRONT, INNER, AND INNER TRANSFER COVERS



1. Remove the chain $[A]$ from the hook.
2. Remove the pins $[B]$ (two) from the hinges.
3. Remove the front cover.
4. Remove the inner cover [C] (2 screws).
5. Remove the inner transfer cover [D] (2 screws).

### 6.1.2 REAR COVERS



NOTE: When removing the covers, follow the step order. When installing the covers, follow the removal procedure in reverse.

1. Remove the used toner cover [A] (3 screws).
2. Remove the rear cover $[B]$ (4 screws).
3. Remove the left rear cover [C] (3 screws, 1 connector).

### 6.1.3 RIGHT COVERS

[B]


1. Open the front cover and the by-pass feed table.
2. Remove the right front cover [A] (1 screw).
3. Remove the right cover $[B]$ (1 or 2 screws).
4. Remove the used toner and rear covers (see "Rear Covers").
5. Remove the right rear cover [C] (1 screw).

### 6.1.4 LEFT COVERS



1. Remove the left center cover [A] (1 screw).
2. Open the front cover and pull out the fusing unit slightly.
3. Remove the left rear cover [B] (see "Rear Covers").
4. Remove the left cover [C] (2 screws).

### 6.1.5 EXPOSURE GLASS



1. Remove the left scale [A] (2 screws).
2. A258/259/260 only: Remove the rear scale [B] (3 screws). B017/018 only: Remove two screws securing the rear scale [B].
3. Remove the exposure glass [C].

NOTE: When reinstalling the exposure glass, ensure that the white plate faces down and to the left.

### 6.1.6 OPERATION PANEL

- A258/B018 only -

1. Remove the operation panel $[\mathrm{H}]$ ( 2 screws and 1 connector).

## - A259/A260/B017 only -

1. Remove the operation panel [D] (2 screws, 2 grounding wires, and 3 connectors).
NOTE: Perform the touch panel calibration procedure after replacing the operation panel (see "Touch Panel Calibration").

### 6.1.7 UPPER COVERS

1. Remove the upper right cover [E] (1 screw).
2. Remove the upper left cover [F] (1 screw).
3. Remove the upper rear cover [G] (2 or 3 screws).

### 6.1.8 USED TONER TANK



NOTE: Place a mat on the floor to keep the floor clean before doing this procedure.

1. Remove the used toner cover [A] (3 screws).
2. Pull out the used toner tank [B].
3. Disconnect the cable [C] and remove the cap [D].

### 6.1.9 CHARGE CORONA FAN FILTER



1. Remove the inner cover [A] (2 screws).
2. Pull out the charge corona fan filter $[B]$.

### 6.1.10 MAIN EXHAUST FAN FILTER



1. Remove the used toner cover [A] (3 screws).
2. A250/259/260 only: Pull out the main exhaust fan filter [B].

B017/018/only: Remove the filter cover [C] and pull out the main exhaust fan filter(s) [B].

### 6.1.11 SCANNER EXHAUST FAN FILTERS



1. Remove the left center cover $[A]$ ( 1 screw).
2. Remove the scanner exhaust fan filter $[B]$.

### 6.2 DRUM UNIT

| @WARNING |
| :--- |
| Turn off the power and unplug the machine before attempting any of the <br> procedures in this section. Laser beams can seriously damage your eyes. |

## CAUTION DECAL LOCATIONS

Two caution decals are located as shown below.


[^6]
## ©CAUTION



DO NOT TOUCH the revolver unit, the toner cartridge, the toner end sensor, or the toner cartridge sensor, while the front door switch is actuated. This is because the revolver might rotate automatically due to a timed process control self check, or if the start key is pressed.
To disable the timed process control self check, SP 3-972 should be 0. The default is $\mathbf{6}$ (hours). If you change this SP mode setting, you should reset it to 6 after finishing your work.

### 6.2.1 PULLING OUT THE REVOLVER/DRUM DRAWER



[G]


NOTE: Place a mat on the floor to keep the floor clean before performing these procedures.

1. Remove the following covers in the indicated order (see "Covers, Fans, and Filters"):
1) Front cover
2) Inner transfer cover [A]
3) Inner cover [B] (See "Charge Corona Fan Filter Removal".)
2. Release the transfer belt tension [C] (1 clamp) and remove the transfer belt stay [D] ( 5 screws or 4 screws and spring holder [E]).
NOTE: The spring holder will drop out when the drawer unit is pulled out if you forget to remove it in this step.
3. A258/259/260 only: Remove the charge duct cover [F] and the charge corona unit [G] with the corona cleaner [H] (2 screws).
B017/018 only: Remove the charge corona unit [G] (1 screw, 1 connector).

4. Rotate the sensor actuator $[A]$ so that the upper edge of sensor actuator aligns the sensor as shown.
NOTE: 1) Before removing or installing the drum unit, rotate the drawer unit in counterclockwise so that the upper edge of sensor actuator [A] aligns the sensor $[B]$ as shown. This keeps the development sleeve away from the development position and prevents the drum from damage.
2) The revolver unit rotates counterclockwise. Do NOT try to turn it in the other direction.
5. Pull out the drawer unit [C] (2 screws).

NOTE: 1) After pulling out the drawer unit, pull out the drum unit [D] (2 connectors [E]) and shield the drum unit from light with a black sheet or 5 (or more) white sheets of paper.
2) If the drawer unit is left out, the drum is exposed to light. This may cause optical fatigue, resulting in image anomalies (see
"Troubleshooting - Drum Light Fatigue"). Therefore after pulling out the drawer unit, remove the drum unit (2 connectors) and cover it with a black sheet or 5 (or more) white sheets of paper.

### 6.2.2 DRUM REPLACEMENT



1. Remove the connectors $[A](2)$ and lift out the drum unit $[B]$.
2. Turn the drum unit upside down, so that it rests as shown in the bottom left diagram, and remove the 2 screws.
NOTE: When placing the drum unit in the work area, it is important to turn it upside down while removing it as shown [C]. This prevents toner spillage.
3. Open the drum unit and remove the drum [D].
4. Release the cleaning blade pressure (1 spring [E]).

NOTE: Make sure that the front and rear ends of the blade [F] do not rest over the cleaning unit side seals [G].

5. Install the new drum [A] and apply setting power $[B]$ to the entire drum surface (2 screws).
NOTE: Be sure to apply the setting powder over the entire drum. This prevents the cleaning blade from catching on the drum surface.
6. Hook the cleaning blade pressure spring [C] at the bottom (1) first then the top (2)), to prevent the spring from being deformed.
7. Rotate the drum forward two or three times to settle the setting power between the drum surface and cleaning blade by applying pressure to the cleaning blade.
NOTE: Do not touch the drum more than 10 mm from either edge.
8. Make sure that the upper edge of sensor actuator [D] aligns the sensor [E] as shown.
9. Install the drum [F] unit in the reverse order of disassembly.

NOTE: After replacing the drum, be sure to perform the process control selfcheck on the new drum. See 6.6.3. "Post Developer Collection Procedure" for instructions.

### 6.2.3 CLEANING BLADE AND PCC WIRE REPLACEMENT



1. Remove the drum unit and the drum (see "Drum Replacement").
2. Remove the cleaning unit $[A]$ from the drum unit (2 screws).
3. Remove the cleaning blade $[B]$ from the cleaning unit [C] (2 screws, 1 spring) and install the new blade ( 2 screws, do not attach the spring yet).
NOTE: Apply setting powder to the drum surface after replacing the cleaning blade. Be sure to apply the setting powder over the entire drum. This prevents the cleaning blade from catching on the drum surface.
4. Remove the PCC [D] from the cleaning unit (1 screw).
5. Remove the front and rear end blocks [E] from the PCC.
6. Replace the PCC wire [F].
7. Assemble the drum unit in the reverse order of disassembly.

NOTE: 1) Make sure that the front and rear ends of the cleaning blade do not rest over the cleaning unit side seal; then hook the cleaning blade pressure spring [G] after installing the cleaning unit and drum to maintain the cleaning blade in the correct position.
2) After replacing the drum or the cleaning blade, rotate the drum forward two or three times to settle the setting powder between the drum surface and the cleaning blade.

### 6.2.4 CLEANING BRUSH REPLACEMENT



1. Remove the drum unit and the drum. (see "Drum Replacement").
2. Remove the cleaning unit from the drum unit ( 2 screws) (see "Cleaning Blade and PCC Wire Replacement").
3. Remove the coupling gear [A] from the rear of the cleaning unit (1 hook).
4. Remove the snap ring $[B]$ and gear $[C]$ securing the front side.
5. By pushing the front end of the brush shaft towards the rear, remove the rear panel [D] from the cleaning unit, then remove the cleaning brush $[E]$ (1 screw).

### 6.2.5 LUBRICANT BAR REPLACEMENT



1. Remove the drum unit and the drum.
2. Remove the cleaning unit from the drum unit (2 screws) (see "Cleaning Blade and PCC Wire Replacement).
3. Remove the cleaning blade (see "Cleaning Blade and PCC Wire Replacement").
4. Remove the lubricant holder [B] (2 screws).
5. Slide out the front end of the holder [D] and remove the lubricant bar [C].

NOTE: The lubricant bar springs [E] can be installed in two positions. When installing a new lubricant bar, place the springs in the deeper position. If cleaning problem should occur. Change the position of the springs to compensate for the wear of the lubricant bar.


### 6.2.6 CHARGE CORONA GRID, WIRE AND WIRE CLEANER REPLACEMENT (B017/018)


[E]


1. Remove the charge corona unit $[A]$ ( 1 screw, 1 connector).
2. Replace the grid.
1) Unscrew the screw $[B]$ (1 screw).
2) Remove the grid [C] and replace it.
3. Remove the corona wire.
1) Remove the front $[D]$ and rear end $[E]$ covers from the corona unit $[F]$.
2) Replace the corona wire [G].

4. Remove the corona wire cleaner.
1) Remove the motor cover [A] and motor [B] (2 screws).
2) Move the wire cleaner unit [C], by rotating the gear [D].
3) Unhook the wire cleaner [E] and replace it.

NOTE: 1) Do NOT touch the corona wire directly. Skin oils can damage the corona wire over time, causing uneven charging.
2) Do NOT bend the corona wire. If the wire is bent, it will not discharge uniformly. This causes uneven charging.
3) Put both ends of the corona wire in the end block slots.
4) Replace the front end block cover first. If the rear end block cover is replaced before the front cover, the coronal wire may catch on the corona wire case slot. This may damage the wire.

### 6.2.7 POTENTIAL SENSOR REPLACEMENT



NOTE: The potential sensor consists of a sensor element and a control board. You must replace both the sensor and the control board at the same time.

The sensor is very sensitive. Make sure that the sensor [A] does not fall off or is not subject to shock in any way. Handle it carefully and gently.

The setting powder is applied to the drum in the drum unit. If the powder goes into the sensor through the window [D] or accumulates around the window, it may cause the sensor to incorrectly detect the drum potential. Make sure that the setting powder is applied to the drum before the drum is set in the drum unit.

If the potential sensor is not set correctly when installing the sensor in the drum unit, an error such as $20^{*}$, $41^{*}$ or SC387 will result during the process control self-check. The window of the sensor should be in position as shown above.

1. Remove the drum (see "Drum Replacement").
2. Replace the potential sensor $[A]$.
3. Remove the charge corona fan $[B]$ from the drawer unit (1 screw, 1 connector).
4. Replace the potential sensor control board [C] (1 connector).

### 6.3 SCANNER UNIT

### 6.3.1 EXPOSURE LAMP REPLACEMENT



1. Remove the exposure glass (see "Covers, Fans, and Filters").
2. B017/018 only: Place your hand underneath the cutout $[A]$ and remove the rear scale $[B]$ by slightly pushing the scale up.
NOTE: When reinstalling the rear scale, make sure that it is properly set in the original position. (The positioning holes [C] on the rear scale should be set in the projections [D].)
3. Move the first scanner next to the opening in the frame.
4. Push the exposure lamp terminal $[E]$ in the direction shown, and remove the lamp [F].
5. Install the new lamp in the reverse order of disassembly.

NOTE: Do NOT touch the glass surface of the new lamp.
Ask the user to do the ACC procedure after replacing the lamp.

### 6.3.2 SBU REPLACEMENT



1. Remove the exposure glass (see Covers, Fans, and Filters).
2. Remove the upper right cover [A] (see Covers, Fans, and Filters).
3. Remove the scanner inner cover [B] (9 screws or 7 screws).
4. Remove the operation panel [C] (see Covers, Fans, and Filters).
5. Remove the upper right stay [D] (4 screws or 3 screws).
6. Disconnect the SBU [E] and APS sensor connectors.
7. Remove the SBU [E] (4 screws).
8. B017/018 only: Change the data for ACC correction (SP4-505 and 506) according to the data sheet enclosed with the SBU.
9. Do the user mode ACC procedure. If necessary adjust the KCMY color balance.

### 6.3.3 SCANNER IPU BOARD REPLACEMENT



1. Remove the right cover (see section 6.1).
2. Remove the Flash ROM card cover [B] (3 screws).
3. B017/B018 only: Disconnect the two connectors [C, D]. (Also disconnect CN312 [E] on the main control board for B017 equipped with the edit option.)

4. Pull out the IPU base slightly [F] (2 screws).
5. B017/018 only: Disconnect 6 connectors and pull the IPU base [F] completely out and remove the scanner IPU board (8 screws).

### 6.3.4 SCANNER WIRE/SCANNER MOTOR REPLACEMENT


. Remove the exposure glass and the exterior covers.
2. Remove the upper right stay $[A]$ and the upper left stay $[B]$ (4 screws each or 3 screws each).
3. To change the rear scanner wire: Do the following.
a) Disconnect the platen cover position sensor [D] and remove the platen cover frame [E] (4 screws).
b) Remove the lamp regulator [F] (2 screws, 3 connectors) and scanner drive board [G] (4 screws, 3 connectors).
[B]

4. B017/018 only: Loose the fixing screw of the tension bracket [D] and remove the tension spring [B], then remove grounding wire and the scanner motor [A] ( 4 screws, 1 timing belt [C]).
NOTE: After reinstalling the scanner motor, hook the tension spring, then fix the tension bracket.

## [B]


5. Remove the front ( 7 screws) and rear ( 6 screws) scanner brackets.
6. Remove the wire clamp [A] and release the wire tension spring [B] (1 screw each). Then remove the wire clamp on side where the wire will not replaced.
7. Remove the scanner wire [C].
8. Remove the Allen screw from the wire pulley [D].
9. Route the new scanner wire.

Take care to thread the wire on the pulley the correct way round. One end of wire has a ball attached to it, and the other end has a ring.

1) Lead the wire through the pulley hole and place the ball located at the middle of the wire in the groove on the pulley.
2) Wind the wire the number of turns and fix the wire with tape shown in the drawing.

3) Route the end of the wire $[A]$ that has the hook through the pulleys as shown ( $\mathbf{1},(2)$ and $[B])$, then hook the ring onto the wire tension bracket (3).
4) Route the end of the wire [C] that has the ball through the pulleys as shown ( $\mathbf{4}, \boldsymbol{6}$, and $\mathbf{6}$ ), then hook the ball onto the bracket ( $\mathbf{7}$ ).
10. Hook the spring [D] onto the wire tension bracket [E].

11. Secure the first and second carriages on the scanner with a scanner locking pins [A] (2 on each side).
NOTE: The correct scanner locking position is such that the scanner locking pins slide out smoothly.
12. Secure the wire tension bracket $[B]$ and the wire with the scanner wire clamp [C] (1 screw each).
13. Remove the scanner locking pins.
14. After tensioning the wire by executing a scanner free run (SP mode 4-013-001), reset the scanner locking pins. If the pins do not properly fit into the holes, loosen and reset the scanner wire clamp.

### 6.3.5 APS SENSORS



1. Remove the exposure glass.
2. A258/259/260 only: Replace the APS sensors $[A, B]$ (1 screw and 1 connector each)
B017/018 only: Replace the APS sensor [A] (1 screw and 1 connector).
3. Remove the upper right cover [C] (1 screw) and the scanner inner cover [D] (9 screws or 7 screws).
4. A258/259/260 only: Remove the APS sensor [E] (1 screw and 1 connector). B017/018 only: Remove the APS sensors [E, B] (1 screw, 1 connector each).

### 6.3.6 SCANNER HP SENSOR



## - A258/259/260 only -

1. Remove the exposure glass (see section 6.1.).
2. Remove the upper left cover (see section 6.1.).
3. Remove the scanner HP sensor [A] (1 screw, 1 connector).

- B017/018 only -

1. Remove the operation panel (see section 6.1.).
2. Remove the sensor bracket [B] (1 screw, 1 connector).
3. Remove the scanner HP sensor [C] (1 screw).

### 6.4 COPY IMAGE ADJUSTMENT

### 6.4.1 PRINTER GAMMA ADJUSTMENT

## Setting the KCMY standard values

Use the auto color calibration function (see the Operating Instructions).

## Gamma Data Print Out

Use SP 7-904 to print the current printer gamma settings for copier and printer mode.
SP 7-904-1 prints a list for copier mode. SP 7-904-2 prints a list for printer mode.
NOTE: This list cannot be printed on paper shorter than A4/LT length.

## KCMY color balance adjustment

The printer gamma curve created during the auto color calibration can be modified using SP mode. Use only the offset adjustments.
NOTE: Do not use the 'option' adjustments.
The greater the value of low ID, middle ID, high ID, and ID max, the higher the density is.

| Low ID | Levels 2 through 5 in the C4 chart 10-level scale |
| :---: | :--- |
| Middle ID | Levels 3 through 7 in the C4 chart 10-level scale |
| High ID | Levels 6 through 9 in the C4 chart 10-level scale |
| IDmax | Level 10 in the C4 chart 10-level scale (affects the entire range <br> of image density) |

SP7-904 (printer gamma printout) can be used to print the current values.

There are three adjustable modes:

- Text mode
- Photo mode
- B/W text mode

Also, there are separate adjustments for copier and printer mode.

Copy mode

|  |  | K | C | M | Y |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Text mode | Low ID | 4-910-001 | 4-911-001 | 4-912-001 | 4-913-001 |
|  | Middle ID | 4-910-002 | 4-911-002 | 4-912-002 | 4-913-002 |
|  | High ID | 4-910-003 | 4-911-003 | 4-912-003 | 4-913-003 |
|  | IDmax | 4-910-004 | 4-911-004 | 4-912-004 | 4-913-004 |
| Photo mode | Low ID | 4-915-001 | 4-916-001 | 4-917-001 | 4-918-001 |
|  | Middle ID | 4-915-002 | 4-916-002 | 4-917-002 | 4-918-002 |
|  | High ID | 4-915-003 | 4-916-003 | 4-917-003 | 4-918-003 |
|  | IDmax | 4-915-004 | 4-916-004 | 4-917-004 | 4-918-004 |
| B/W text mode | Low ID | 4-914-001 |  |  |  |
|  | Middle ID | 4-914-002 |  |  |  |
|  | High ID | 4-914-003 |  |  |  |
|  | IDmax | 4-914-004 |  |  |  |

Printer mode

|  |  | $\mathbf{K}$ | $\mathbf{C}$ | $\mathbf{M}$ | $\mathbf{Y}$ |
| :---: | :--- | :---: | :---: | :---: | :---: |
| Text mode | Low ID | $4-919-001$ | $4-920-001$ | $4-921-001$ | $4-922-001$ |
| and photo | Middle ID | $4-919-002$ | $4-920-002$ | $4-921-002$ | $4-922-002$ |
| mode | High ID | $4-919-003$ | $4-920-003$ | $4-921-003$ | $4-922-003$ |
|  | IDmax | $4-919-004$ | $4-920-004$ | $4-921-004$ | $4-922-004$ |
|  |  |  |  |  |  |

## Adjustment procedure

1. Copy a C-4 chart in text mode. Compare the copy with the chart.
2. Enter SP mode.
3. Open SP 4-XX-X for text mode (see the above tables for the SP numbers).
4. Adjust the offset values until the copy quality conforms to the standard. (The diagrams at the end of this procedure explain the ID ranges affected by each setting.)
5. Copy a C-4 chart in photo mode. Compare the copy with the chart.
6. Open SP 4-XX-X for photo mode (see the above tables for the SP numbers).
7. Adjust the offset values until the copy quality conforms to the standard.
8. Copy the C-4 chart in auto text/photo mode.
9. Examine the photo part (lower half of the image) on the C-4 chart. Compare the copy with the chart. Proceed to the next step if color displacement errors are found. Terminate the adjustment if the check proves normal.
10. Adjust the offset for low ID within the range of + _ 2 .

## Standard Copy Quality

IDmax: (K, C, M, and Y)
Adjust the offset value so that the density of level 10 matches the C-4 chart.

## Middle ID: (K, C, M, and Y)

Adjust the offset value so that the density of level 6 matches the C-4 chart.

High ID: (K, C, M, and Y)
Adjust the offset value so that the density of level 8 matches the C-4 chart.

Low ID: (K, C, M, and Y)
Adjust the offset value so that level 2 is just visible in the copy image and the density of level 3 matches the C-4 chart.

K Low ID: (C, M, and Y) - Do for photo mode only

Adjust the offset value so that the color balance of black scale levels 3 through 5 in
 the copy is seen as gray.

### 6.4.2 MAIN SCAN DOT POSITION CORRECTION

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

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

NOTE: Be sure to copy in the photo mode. This is because color displacement cannot be checked properly in text mode .
4. Check the yellow and cyan vertical lines. (Use a Magnification Scope to do this.) If they exactly overwrite the black line at the edges of the copy, exit the SP mode to end the adjustment. If the yellow and cyan lines significantly extend beyond the black line, proceed to the next step.
5. Press the Interrupt key to return to the SP mode and open SP4-932. Compare the current values against the table.

| $4-932-001$ | Dot correction $R$ left edge |
| :--- | :--- |
| $4-932-002$ | Dot correction $R$ right edge |
| $4-932-003$ | Dot correction B left edge |
| $4-932-004$ | Dot correction B right edge |

6. Referring to the diagram lower down the page, change the values in accordance with the following rules:

Case 1. When the yellow line is to the left of the black line, and the cyan line is to the right of the black line.

- If the edges of the yellow and cyan lines deviate evenly from the black line, select the value in the middle row that is immediately to the left of the current value.
- If the cyan line's edge is farther from the black line than the yellow line's edge, select the value in the top row that is immediately to the left of the current value.
- If the yellow line's edge is the farther from the black line than the cyan line's edge, select the value in the bottom row that is immediately to the left of the current value.
Case 2. When the cyan line is to the left of the black line, and the yellow line is to the right of the black line.
- If the edges of the yellow and cyan lines deviate evenly from the black line, select the value in the middle row that is immediately to the right of the current value.
- If the cyan line's edge is the farther from the black line than the yellow line's edge, select the value in the top row that is immediately to the right of the current value.
- If the yellow line's edge is the farther from the black line than the cyan line's edge, select the value in the bottom row that is immediately to the right of the current value.


In the above diagram:

- The first digit represents the value of the red correction (4-932-001: R left, 4-932002: R right)
- The second digit represents the value of the blue correction (4-932-003: B left, 4-932-004: B right)


### 6.5 LASER OPTICS SECTION

| $\triangle$ WARNING |
| :--- |
| Turn off the power and unplug the machine before attempting any of the <br> procedures in this section. Laser beams can seriously damage your eyes. |

## CAUTION DECAL LOCATIONS

Two caution decals are located in the laser section as shown below.


[^7]
### 6.5.1 POLYGON MIRROR MOTOR REPLACEMENT



1. Remove the following covers (see "Covers, Fans, and Filters").

- Right cover (1 screw)
- Operation panel

A259/260: 2 screws, 3 connectors, and 2 grounding wires ( 2 screws).
A258: 2 screws, and 1 grounding wire (Europe only)
B017/018: 2 screws, 3 connectors, and 2 grounding wires ( 2 screws).

- Upper rear cover (3 screws)
- Upper left cover (1 screw)

2. Remove the IC card cover [A] (3 screws).
3. Disconnect 2 connectors [B].
4. A260/B017 equipped with edit only: Disconnect connector [C] (CN312).
5. Unscrew the scanner clamp screws [D] (4 screws).
6. Remove the support rod [E].
7. Tilt the scanner and set the support rod as shown [F].

| $\boxed{4}$ CAUTION |
| :--- | :--- |
| Do not remove the support rod while the scanner unit is tilted. <br> Disengagement of the support bar may cause the scanner unit to fall down. $\mathbf{l}$ |

$\triangle$ CAUTION Disengagement of the support bar may cause the scanner unit to fall down.

8. Disconnect connectors [A] (3 connectors or 2 connectors).
9. Remove the optical housing unit [B] (4 screws).
10. Remove the optical housing cover [C] (10 hooks).
11. A258/259/260 only: Remove the polygon mirror motor [D] (4 screws and 1 connector).
B017/018 only: Remove the motor cover [E] (2 screws) and the polygon mirror motor [D] (2 screws, 1 connector).

## $\triangle$ CAUTION

1. Do NOT attempt to trigger the LD with the optical housing cover open.
2. After reassembly, make sure that the optical housing cover is closed completely.

### 6.5.2 LASER SYNCHRONIZING DETECTOR BOARD AND LD UNIT REPLACEMENT



1. Remove the optical housing unit (see "Polygon Mirror Motor Replacement").
2. Replace the laser synchronizing detector boards [A] (2 screws and 1 connector each).
3. Replace the LD unit [B] (2 screws and 1 connector).

### 6.5.3 SQUARENESS ADJUSTMENT



This procedure finely adjusts the image obliqueness caused by the laser unit.
NOTE: This procedure is used to finely adjust the inclination of horizontal lines in the image (across the page) by turning the laser unit, which tilts the scanning line of the laser beam.

1. Print the SP mode test pattern number 1 of SP5-955-018 and measure the inclination of the horizontal lines on the printout in relation to the normal position.
NOTE: When the laser unit is not squared, lines in the horizontal scanning direction are inclined and lines in the feed direction (vertical lines) stand upright.
2. Loosen the four screws securing the optical housing unit.
3. Remove the pin $[A]$ at the front left side of the optical housing unit.
4. Turn the optical housing unit in the direction of arrow $A$ or arrow $B$, depending on the inclination of the lines in the horizontal scanning direction you measured (see the diagram on the following page for guidelines).
5. Tighten the screws again (4 screws).

## LASER OPTICS SECTION



Turning in the direction of arrow A: This tilts horizontal lines in the image clockwise.

Turning in the direction of arrow B: This tilts horizontal lines in the image counterclockwise.

Amount of inclination:
The inclination of horizontal lines on the image is almost equal to the angle by which the scanner unit is turned.

Standard value:
The amount of inclination for a 240 mm scanning line must not be more than 0.5 mm.

### 6.6 DEVELOPMENT UNIT

### 6.6.1 REPLACING THE DEVELOPER

## Developer Collection Procedure



NOTE: Place a protective sheet on the floor. Take care not to spill developer on the customer's floor.

1. Remove the left and right inner covers, transfer belt stay, and charge corona unit, then pull out the drawer unit [ A$]$ (2 screws).
NOTE: 1) Before drawing out the drawer unit, rotate the sensor actuator [B] so that the upper edge of sensor actuator aligns the sensor.
2) Before drawing out the drawer unit when there is no transfer belt unit, place a sheet of paper [C] on the registration roller [D]. This is required because toner will spill from the rear end of the toner collection coil for the drum onto the registration roller.
2. Remove the drum unit [E] (2 connectors) and cover the drum with paper.

NOTE: Cover the drum with a sheet of black paper or 5 or more sheets of white paper. Otherwise, the drum will be exposed to light, subjecting the drum to optical fatigue (see "Troubleshooting - Drum Light Fatigue").

3. Remove the left revolver stopper [A] from its storage location on the drawer unit ( 1 screw) and fit it into the slot $[B]$ at the rear of the revolver side panel and in the notch [C] on the drawer unit stay.

## $\triangle$ CAUTION

If you do not install the revolver stopper before removing the development unit, the revolver may rotate, causing permanent damage to the development unit or its holder.
4. Open the locks [D] at both ends of the development unit [E] (1 screw each) and remove the development unit [E].

NOTE: When attaching and detaching the development unit, be sure to turn it in the direction shown in the diagram. Turning the development unit in the wrong direction may cause developer to spill from the toner hopper.

[^8]
5. Remove the developer cover [A] (2 screws).
6. Hold the development unit upside down in the developer collection bag, then rotate the sleeve in the forward direction [B] to collect the developer.
NOTE: When rotating the sleeve in the forward direction, keep the sleeve side facing up so that the developer will not be scooped up onto the sleeve.
7. Repeat the forward rotation/collection cycle until developer does not appear on the sleeve.
8. Rotate the sleeve in the opposite direction, then hold the development unit upside down again to collect the developer attached to the sleeve surface.

## DEVELOPMENT UNIT

## Installing New Developer



1. Place the development unit $[A]$ in the developer installation position $[B]$ and pour in 1 bag ( 380 g ) of developer [C].
NOTE: 1) When installing new developer, place the development unit on a flat space.
2) When pouring developer, fill up the space between the development roller and the first auger first. Then fill up the space between the two augers. This speeds the agitation of the developer and prepares it for use more quickly.
2. Place the development unit in the developer scoop-up position [D]. Check that the developer is not flowing out of the development unit casing while rotating the sleeve in the forward direction.

## $\triangle$ CAUTION

1. If the developer is not installed on a flat place, the development unit casing may bend and cause developer to fall when the sleeve is rotated. If this occurs, remove and reinstall the developer.
2. Do not rotate the development sleeve in the reverse direction.

3. Set the developer cover by pressing the both sides $[A]$ and make sure that the projections [B] are properly set into 3 cutouts [C] on the development unit; then, fix the cover (2 screws).
4. Put the development unit [D] in the drawer unit (2 lock screws $[E]$ ).

## $\triangle$ CAUTION

1. When replacing the developer cover and development unit, do not apply excessive force to the center of the development unit. The doctor gap will bend, altering the developer scooping efficiency.
2. When replacing the developer cover, first press both ends of the cover to confirm that the cover is properly set, and then secure it with the screws. If the ends of the cover are not properly set, developer may fall from the gap.
3. When installing the development unit in the drawer unit, hold the front and rear end of the development unit. Holding the center of the development unit may cause the development unit casing to bend, and developer may spill. If this occurs, remove then reinstall the developer.
4. Make sure that the developer locks (forward and rear) are secured with screws before rotating the revolver. This protects the developer assembly and locks from damage.
5. Tighten the developer lock screws firmly. Loose lock screws will cause the PG (Photoconductor Gap) to fluctuate.

6. Remove the revolver stopper [A], rotate the revolver to the next color, then follow the developer installation procedure from step 1.
NOTE: The revolver unit rotates counterclockwise. Do NOT try to turn it in the other direction.

| $₫$ CAUTION |
| :--- |
| If you do not install the revolver stopper before removing the development <br> unit, the revolver may rotate, causing permanent damage to the <br> development unit or its holder. |

### 6.6.2 POST DEVELOPER COLLECTION PROCEDURE

Follow the procedure in the flow chart shown below during the post developer collection procedure.

Also use this flowchart after replacing the drum.


After the end, adjust the image quality. (Do the user mode ACC procedure. If necessary adjust the ACC targets and/or the KCMY color balance.)

### 6.6.3 DEVELOPMENT UNIT REPLACEMENT



The development unit [A] service part is the same for each of the KYCM colors. Each unit has four pins.
When replacing a development unit, cut off one of the pins [B].
For example, when installing a new development unit for black, cut off the pin marked Bk.

### 6.6.4 TONER COLLECTION TRAY CLEANING



NOTE: Place a protective sheet on the floor. Take care not to spill developer on the customer's floor.

1. Remove the left and right inner covers, transfer belt stay, and charge corona unit, then pull out the drawer unit [A] (2 screws).
NOTE: 1) Before drawing out the drawer unit, rotate the sensor actuator [B] so that the upper edge of sensor actuator aligns the sensor.
2) Before drawing out the drawer unit when there is no transfer belt unit, place a sheet of paper [C] on the registration roller [D]. This is required because toner will spill from the rear end of the toner collection coil for the drum onto the registration roller.
2. Remove the drum unit [E] (2 connectors) and cover the drum with paper.

NOTE: Cover the drum with a sheet of black paper or 5 or more sheets of white paper. Otherwise, the drum will be exposed to light, subjecting it drum to optical fatigue (see "Troubleshooting - Drum Light Fatigue").
3. Remove the toner collection tray $[F]$ ( 2 screws) and clean it.

### 6.7 TRANSFER BELT UNIT

### 6.7.1 TRANSFER BELT SECTION

## Transfer Belt and Cleaning Unit



NOTE: Take care not to get the customer site dirty. Put down a floor mat before removing the cleaning unit.

1. Remove the right inner cover ( 2 screws).
2. Turn the transport release lever [A].
3. Remove the paper transfer unit positioning stay $[B]$ (2 screws) and pull out the paper transfer unit [C].
4. Remove the snap ring [D] and set the belt tension release lever to the "Transfer Belt Unit Install/Uninstall [E]". Then put the snap ring back on.
5. A258/259/260 only: Remove the transfer belt stay [F] (5 screws) and pull out the transfer belt unit [G].
B017/018 only: Remove the transfer belt stay [F] (4 screws and spring holder) and disconnect the connector $[\mathrm{H}]$. Then pull out the transfer belt unit [G].

6. Remove the cleaning unit retainers [A] from the cleaning unit (2 snap rings) and remove the cleaning unit $[\mathrm{B}]$.
7. Lift up the belt unit and detach the upper part of the transfer belt bracket ( 2 screws). Lower the bracket [C], as shown.
8. Turn the belt tension release lever in the direction shown, to set it to the "Transfer Belt Replacement" position.
9. Pull and turn the transfer belt [D], to remove it.

NOTE: 1) Hold the transfer belt at its edge. Never touch the belt surface. Any dirt on the belt might cause poor copy quality.
2) After removing the transfer belt, clean each roller with water or alcohol. When using alcohol, set the rollers aside for about 10 minutes to dry. If alcohol remains on the rollers when the belt is replaced, the rollers may adhere to the belt.

10. Replace the transfer belt and reset the transfer belt bracket.

NOTE: When installing a new transfer belt, make sure that the belt rims at both ends are past the ends of the roller.
11. Turn the transfer belt release lever in the direction shown above [A], and apply setting powder [B] to the entire belt surface, before putting back the cleaning unit [C].
12. Attach the cleaning unit to the transfer belt unit and turn the joint section of the cleaning unit [D] in the direction shown above, to pressurize the blade.
13. After pressurizing the blade, rotate the belt one turn in the direction shown above [ E$]$ to orient the belt with the blade.
NOTE: Failure to execute steps 11 to 13 may cause the belt to catch on the blade. This will cause the LCD to display SC452 (transfer belt home position detection error) or the blade bracket may become bent.
14. Set the belt tension release lever to the "Transfer Belt Release Position [F]" and reinstall the transfer belt unit.

## Hint for reinstalling the transfer belt unit.

When installing the transfer belt unit, hold it up with one hand underneath at the rear and slide it in along the rails. If it is not held up, it will not engage the coupling gears properly.


## B017/018 only:

NOTE: If the couplings [A] are not properly engaged, this may cause SC457 (ITB cleaning unit position error) when the power is on. When they are not properly engaged, the shaft [B] moves outward as shown by white arrow. Rotating the shaft with a screwdriver can properly connect the couplings.

## Cleaning Blade Replacement

NOTE: Take care not to get the customer site dirty. Put down a floor mat before removing the cleaning unit.
[B]

[D]


1. Turn the lubricant bracket $[A]$ as shown (unhook 2 springs $[B]$ at both ends).
2. Remove the blade [C] (2 screws).

NOTE: Do not touch the rubber area of the blade.
3. After replacing the blade, turn the transfer belt release lever [D] in the direction shown, and apply setting powder [E] to the entire belt surface, before installing the cleaning unit.
4. Attach the cleaning unit to the transfer belt unit and turn the joint section [F] of the cleaning unit [G] in the direction shown above [H], to pressurize the blade.
5. After pressurizing the blade, rotate the belt one turn in the direction shown above [I], to orient the belt with the blade.
NOTE: Failure to execute steps 3 to 5 may cause the belt to catch on the blade. This will cause the LCD to display SC452 (transfer belt home position detection error) or the blade bracket may become bent.

## Lubricant Bar and Lubricant Brush Replacement



1. Remove the lubricant bracket $[A]$ ( 2 screws and 2 springs $[B]$ ).
2. Remove the lubricant bar [C].
3. Remove the lubricant brush [D] (2 snap-rings [E], 2 bearings, and 1 gear).

NOTE: When reinstalling the lubricant bar, make sure that the springs [F] are set properly.

### 6.7.2 PAPER TRANSFER UNIT

## Lubricant Bar And Blade Replacement



1. Remove the paper transfer guide plate ( 2 screws or 1 screw, 1 stepping screw).
2. Remove the lubricant bar [A].
3. Remove the blade [B] (3 screws).

## Paper Separation Corona Wire Replacement



1. Remove the paper separation corona unit [A] (2 screws).
2. Remove the paper separation corona guide $[B]$.
3. Remove the corona wire [C] (1 spring).

NOTE: 1) When reinstalling the corona wire, make sure to reinstall the ring [D] in the middle of the corona wire.
2) Make sure the corona wire is properly set in place in the V-shaped notch at the rear.

## Transfer Roller Replacement



1. Remove the paper transfer guide plate $[\mathrm{A}]$ ( 2 screws) and paper separation corona unit (2 screws).
2. Remove the drive gear $[B]$.
3. Remove the front and rear bearings [C] (1 E-ring each).

### 6.8 PAPER FEED AND REGISTRATION SECTION

### 6.8.1 BY-PASS FEED TABLE REMOVAL



1. Remove the right cover (see "Covers, Fans, and Filters").
2. Disconnect the connector $[A]$.
3. Remove the front snap ring $[B]$.
4. Tilt the by-pass feed table [C] by about 20 degrees, then remove it by pushing it toward the rear.

### 6.8.2 BY-PASS PAPER WIDTH DETECTION BOARD REPLACEMENT

[B]


1. Remove the by-pass feed table.
2. Remove the by-pass feed cover [A] (2 screws).
3. Remove the by-pass feed paper width detection board [B] (1 screw).

NOTE: When installing the board, take care not to bend the terminal plate [C].

### 6.8.3 BY-PASS FEED, PICK-UP AND SEPARATION ROLLERS, AND TORQUE LIMITER REPLACEMENT



1. Remove the by-pass feed table.
2. Open the vertical transport door [A].
3. Remove the snap rings and replace the rollers.

NOTE: Clean the pick-up [B], feed [C], and separation rollers [D] with a moistened cloth.

### 6.8.4 BY-PASS FEED UNIT REPLACEMENT



1. Remove the following covers (see "Covers, Fans, and Filters"):

- Right front cover
- Right cover
- Right rear cover

2. Open the vertical transport door [A].
3. Remove the by-pass feed table ( 1 connector, 1 snap ring).
4. Remove the by-pass feed unit [B] (2 screws and 1 connector).

### 6.8.5 REGISTRATION SENSOR REPLACEMENT



1. Remove the transfer belt unit.
2. Remove the registration sensor bracket $[A]$ ( 1 screw).
3. Remove the registration sensor $[B]$ ( 1 screw and 1 connector).

### 6.8.6 VERTICAL TRANSPORT DOOR REPLACEMENT



1. Open the vertical transport door [A].
2. Remove the bracket $[B]$ (1 screw).
3. Push in hinge [C], and remove the vertical transport door.

### 6.8.7 PAPER TRAY PICK-UP, PAPER FEED, AND SEPARATION ROLLER REPLACEMENT



1. Remove the paper tray.
2. Remove the paper feed roller [A] (1 snap ring), separation roller [B] (1 snap ring), and pick-up roller [C].

NOTE: Clean the pick-up, feed, and separation rollers with a moistened cloth.

### 6.8.8 PAPER FEED UNIT AND CLUTCH REPLACEMENT



1. Remove the following covers (see "Covers, Fans, and Filters"):
1) Used toner cover
2) Rear cover
3) Right rear cover
2. Remove the vertical transport door.
3. Remove the main exhaust fan.
4. Remove the paper feed clutch bracket $[A]$ (1 screw).
5. Remove the paper feed clutch $[B]$ (1 bearing and 1 connector).
6. Remove the three paper feed unit drive gears [C] (1 drive belt [D]).
7. Remove the paper feed unit [E] (2 screws and 1 connector).

### 6.8.9 COPY IMAGE AREA ADJUSTMENT

Adjust the leading edge registration for each paper type and line speed (normal paper, OHP, thick paper, $2 / 3$ speed: A258/259/260 only) to determine the leading edge margin. Also adjust the side-to-side registration for each paper feed station, to determine the left and right edge margins.
NOTE: When adjusting the leading edge registration, be sure the machine has been connected to the power outlet for more than 3 hours.
The leading edge margin should be $5 \pm 2 \mathrm{~mm}$. The adjustment procedure is described below.

## Preparation

1. Place the type of paper for the registration adjustment in the paper feed tray.
2. Enter SP mode and ensure that all the values of SP2-101 are 0.0 (default value).
3. Generate the trim patterns using the procedure shown below.
1) Select SP5-955-018 (Printer in Pattern).
2) Press "1" in "Data Input" on the screen at the ten-key pad and press \# (Enter key). "1" appears in the "Set Data" field.
3) Press the Interrupt key to temporarily exit the SP mode screen, select "B/W Mode" and the paper feed tray for the test, then press the Start key to generate the trim pattern.
4) Press the Interrupt key again to return to the SP mode screen.

## Leading Edge Registration

Standard value: $5 \pm 2 \mathrm{~mm}$

1. Enter SP mode 1-1 (leading edge registration adjustment).
2. Select the level 3 SP mode for the condition you wish to adjust.

- 1. Normal (wooden pulp paper)
- 2. OHP
- 3. Thick paper
- 4. $2 / 3$ speed (printer mode): A258/259/260 only

3. Type a number in "Data Input" on the screen at the ten-key pad.

Input value range: - 5.0 to 5.0
After entering a number, press the \# (Enter key) to save the number in "Set Data."

To increase the leading edge margin [A]: Increase the stored value.
To decrease the leading edge margin: Reduce the stored value.
NOTE: To enter a negative number, press the $\because$ key before typing the value of the negative number.
4. Repeat printing and testing with the interrupt key until the margin $[A]$ in the trim pattern falls within the specified range.


## Side-to-side Registration

Standard value: $2 \pm 2 \mathrm{~mm}$

1. Enter SP mode 1-2 (side-to-side registration adjustment).
2. Select the paper feed unit to test.

- Manual feed (by-pass feed table)
- Tray 1 (Copier paper feed tray): A258/B018 only
- Tray 2 (Optional paper feed unit, first tray)
- Tray 3 (Optional paper feed unit, second tray)
- Tray 4 (Optional paper feed unit, third tray)
- Duplex 2nd side (Duplex unit): A259/A260/B017 only

NOTE: Any value entered for Tray 1 is ignored in duplex models.
3. Type a number in "Data Input" on the screen at the ten-key pad.

Input value range: -5.0 to 5.0
After entering a number, press the \# (Enter key) to save the number in "Set Data."

To move the image to the right (when viewing towards the direction of paper feed): Increase the stored value.

To move the image to the left (when viewing towards the direction of paper feed): Decrease the stored value.
NOTE: To enter a negative number, press the $\circledast$ key before typing the value of the negative number.
4. Repeat step 3) until the distance $[B]$ in the trim pattern (see the previous page) falls within the specified range.

NOTE: After the registration adjustment, reset the value of SP5-955-18 to "0" to resume normal copy operation.

### 6.9 PAPER TRANSPORT, FUSING, AND PAPER EXIT SECTIONS

### 6.9.1 FUSING UNIT REMOVAL



## $\triangle$ CAUTION

1. Be careful when handling the fusing unit. It is very hot.
2. Take care not to spill silicone oil on the floor. If silicone oil spills on the floor, immediately clean it up with a suitable solvent. Silicone oil is very slippery and can cause someone to fall.
3. Remove the front door (see "Covers, Fans, and Filters").
4. Lower the release lever [A], pull out the fusing unit, and unscrew the stopper [B] (1 screw).
NOTE: Hold the bottom of the fusing unit when you pull it out.

### 6.9.2 TRANSPORT UNIT REMOVAL



1. Remove the fusing unit.
2. Remove the transport unit lever $[A]$ ( 1 screw).
3. Remove the inner cover $[B]$ ( 1 screw).
4. Remove the mounting bracket [C] (1 screw).
5. Unplug the connector [D] and remove the transport unit [E].

### 6.9.3 FUSING UNIT TOP COVER REMOVAL



1. $\mathbf{A} \mathbf{2 5 8 / 2 5 9 / 2 6 0}$ only: Remove the fusing unit knob $[A]$ (1 screw).
2. Remove the fusing unit top cover $[B]$ (2 screws).

### 6.9.4 OIL SUPPLY PAD AND OIL BLADE REPLACEMENT (B017/018)



1. Remove the fusing unit top cover (2 screws).
2. Remove the oil supply tube stopper $[A]$ (1 screw).
3. Remove the oil supply pad $[B]$ ( 4 screws).
4. Remove the upper right stay [C] (4 screws).
5. Remove the oil blade [D] ( 5 screws).
6. Clean the oil supply roller $[E]$, sub-roller [F], and oil blade with a dry cloth.

NOTE: When installing the oil blade, secure the screws from either the front or rear side as shown by the arrow. This ensures that even pressure is applied to the sub-roller.

When installing the upper right stay, make sure that the oil supply tube [G] is not caught by the stay [C].

When installing the oil supply tube, check the following:

- Make sure that oil supply tube is routed as shown above [H].
- Place the oil supply tube so that the edge [I] of tube can be seen through the hole [J] on the oil supply pad; then, install the tube stopper [A].


### 6.9.5 PRESSURE ROLLER OIL PAD AND OIL BLADE REPLACEMENT (B017/018)



1. Remove the fusing entrance guide $[A]$ (2 screws).
2. Remove the pressure roller blade assembly $[B]$ (2 springs).
3. Remove the pressure roller blade [C] (1 screw).
4. Remove the pressure roller pad $[D]$ ( 1 screw).

### 6.9.6 TENSION ROLLER REPLACEMENT (B017/018)



1. Remove the top cover (2 screws).
2. Open the paper exit unit $[A]$.
3. Remove the tension roller unit [B] (2 screws).

NOTE: Do not damage the edge of the pick-off pawls [C].
4. Remove the tension springs [D], bushings [E], and tension roller [F].

### 6.9.7 UPPER FUSING UNIT REMOVAL (B017/018)



1. Turn the pressure release screws $[A]$ clockwise to release the pressure roller pressure.
2. Remove the top cover.
3. Open and remove the paper exit unit (1 snap-ring).
4. Remove the tension roller unit ( 2 screws).
5. Disconnect 5 connectors routed in the fusing upper unit [B].

- 1 oil sensor connector (3p).
- 2 white connectors (1p).
- 2 blue connectors ( $2 p, 3 p$ ).

6. Remove the fusing upper unit (6 screws).

NOTE: When reinstalling the upper fusing unit, make sure that gears are properly engaged and secure the screws in the order described in the illustration.

### 6.9.8 HEAT \& HOT ROLLER FUSING LAMPS REPLACEMENT (B017/018)



1. Remove the upper fusing unit (See Upper Fusing Unit Removal).
2. Remove the heat and hot roller fusing lamp terminals [A] (1 screw each).
3. Remove the front and rear lamp holders $[B]$ (1 screw each).
4. Replace the fusing lamps.

NOTE: The heat roller fusing lamp is an 500 W lamp and the hot roller fusing lamp is an 150 W lamp. The rating is printed on one end of the lamp.

### 6.9.9 FUSING BELT, HEAT AND HOT ROLLER REPLACEMENT (B017/018)




1. Remove the fusing upper unit and the fusing lamps. (See Heat \& Hot Roller Fusing Lamps Replacement).
2. Remove the bushing $[A]$ and ball bearings $[B]$ (2 C-rings).
3. Remove the heat roller [C].
4. Remove the drive gear $[D]$ and ball bearings $[E]$ (2 C-rings $[F]$ ).
5. Pull out the hot roller [G] with the fusing belt [H].
6. Remove the stoppers [I] and remove the fusing belt.

NOTE: 1) When installing the heat roller the shorter distance from [J] the roller edge to groove should be at the front.
2) Apply grease (Barrierta S552R) to the drive gear [D] after reassembling the unit.

[^9]
### 6.9.10 PRESSURE ROLLER AND PRESSURE ROLLER FUSING LAMP (B017/018)



1. Remove the fusing upper unit and the fusing lamps. (See Heat \& Hot Roller Fusing Lamps Replacement).
2. Remove the fusing entrance guide ( 2 screws).
3. Disconnect the pressure roller fusing lamp connectors [A].
4. Remove the rear lamp holder $[B]$ (1 screw), then release the fusing lamp from the front lamp holder [C].
5. Pull out the pressure roller [D] together with the fusing lamp and place it on a clean sheet of paper.
6. Remove the pressure roller fusing lamp $[E]$.
7. Remove the ball bearings $[\mathrm{F}]$ and gear [G].

NOTE: 3) The pressure roller fusing lamp is a 400 W lamp. The rating is printed on one end of the lamp.
4) When reinstalling the pressure roller and fusing lamp, route the lamp harness $[\mathrm{H}]$ as shown.

### 6.9.11 NIP BANDWIDTH ADJUSTMENT



NOTE: 1) Check and adjust the nip bandwidth AFTER the copier has warmed up.
2) Place an OHP sheet on the by-pass feed table before starting this procedure.
3) Use only A4/LT sideways (other sizes of OHP sheet may cause a paper jam).
4) If a sorter is connected to the copier, disconnect the sorter connector and remove the sorter, otherwise a paper jam will occur after ejecting the OHP sheet.

1. Enter SP mode and measure the fusing nip bandwidth (SP1-109).
2. When the OHP sheet is ejected, measure the nip width of the bands.
1) Use a rule to measure the width of the slightly opaque area on the OHP sheet.
2) If the slightly opaque area has notched boundaries, measure the narrowest width.
3) For both edges of the OHP sheet, measure the width 10 mm away from the edge.
3. Check that the average width of the three bands (front, rear, and center) matches the standard value.

## Standard value

## A258/259/260

Center: $8.7 \pm 0.3 \mathrm{~mm}$
Edge deviation: 0.5 mm maximum

## B017/018

Center: $7.9 \pm 0.3 \mathrm{~mm}$
Edge deviation: 0.5 mm maximum
4. If the measured nip width does not correspond to the standard value, adjust the nip width using the pressure roller screw [A].
Then repeat steps 1 to 4 until the width is correct.

### 6.9.12 HEAT ROLLER THERMOSTAT AND THERMISTOR REPLACEMENT (B017/018)



1. Remove the top cover (2 screws).
2. Remove the cover plate $[A]$ ( 1 screw).
3. Unscrew the terminal $[B]$ of harnesses ( 1 screw each).
4. Remove the thermostat housing [C] (1 screw), then, remove the heat roller thermostat [D].
5. Remove the heat roller thermistor [E] (1 screw, 1 connector).

### 6.9.13 PRESSURE ROLLER THERMOFUSE AND THERMISTOR REPLACEMENT (B017/018)

[B]


1. Remove the paper exit guide (1 snap-ring).
2. Remove the harness covers $[A, B]$ ( 3 screws).
3. Remove the pressure roller thermofuse [C] (1 screw, 2 connectors).
4. Remove the pressure roller thermistor [D] (1 screw, 1 connector).

### 6.9.14 CAUTIONS TO BE TAKEN WHEN USING A FUSING UNIT THAT HAS BEEN IN STOCK FOR A LONG PERIOD

NOTE: When using a fusing unit that has been in stock for an extended period, press the pump with your fingers to check whether an adequate amount of oil is pumped up.

Reason: A fusing unit that has been stocked unused for a long time may have a clogged pump or valve in the oil supply unit. Such a fusing unit will not run smoothly. This may result in an oil supply shortage and the hot roller will fail earlier than normal.

### 6.10 DUPLEX UNIT

### 6.10.1 DUPLEX UNIT REMOVAL



1. Pull out the duplex unit $[A]$.
2. Remove the duplex unit (4 screws).

### 6.10.2 SEPARATION ROLLER REPLACEMENT



1. Remove the duplex unit (see procedure 10.1).
2. Remove the separation roller assembly [A] (2 screws).
3. Remove two springs [B].
4. Replace the separation roller [C] (2 E-rings and 2 bearings).

NOTE: Be sure to install the separation roller (one-way clutch) so that the clutch is visible.

### 6.10.3 FEED ROLLER REPLACEMENT



1. Pull out the duplex unit.
2. Remove the guide rail $[A]$ (1 screw and 1 snap-ring).
3. Remove the upper guide plate [B] and lower guide plate [C] (1 snap-ring).
4. Remove the inner cover [D] (2 screws).
5. Remove the 2 snap-rings [E] from both ends of the feed roller shaft.
6. Slide the bearings [F] inward.
7. Replace the feed roller [G] (2 E-rings, 2 paper flatteners [H], and 1 guide roller [I]).

NOTE: 1) Be sure to install the feed and guide rollers correctly.
2) The feed roller is made of silicone rubber and is not compatible with the non-silicone rubber feed rollers used in some previous models.

### 6.10.4 DUPLEX FEED MOTOR REPLACEMENT



1. Perform steps 1 through 4 of Feed Roller Replacement.
2. Remove the bracket [A] (1 screw).
3. Remove the feed roller shaft assembly [B] (2 snap-rings).
4. Remove the pulley [C] and the timing belt [D].
5. Remove the pressure spring [E].

6. Disconnect the connector $[A]$ of the duplex feed motor $[B]$.
7. Close the side fences [C] and remove the duplex feed assembly [D] (5 screws 2 connectors).
8. Remove the duplex feed motor assembly (3 screws).
9. Replace the duplex feed motor (2 screws).

NOTE: 1) When installing the duplex feed assembly [D] on the base unit, place the bottom plate $[\mathrm{F}]$, with the mylar strip $[\mathrm{E}]$, over the bracket tabs [G].
2) Ensure the base unit's mylar strip $[\mathrm{H}]$ is placed against the guide plate [I], as shown. It must not go under the guide plate.

### 6.11 SYSTEM AND ELECTRONICS

## Flash ROM card handling precautions:

- Never insert or remove a Flash ROM card with the main power switch on.
- Do not turn the main power switch off during the software installation process.
- Since the Flash ROM card is a precision part, it must not be exposed to high temperature, humidity, or direct sunlight.
- Never bend, scratch, or apply excessive shock to a Flash ROM card.


### 6.11.1 IPU PROGRAM DOWNLOADING



1. Turn off the main power switch on the copier.
2. Remove the right cover [A] (see "Covers, Fans, and Filters").
3. Remove flash ROM cover [B] (2 screws).
4. Insert the Flash ROM card [C] that contains the new IPU software. NOTE: Insert the Flash ROM card with side "A" facing up.
— B017/018 only-
5. Turn on the main power switch while keeping the front door open. This will force the machine to skip the process control initialization. When the system starts and the LCD displays the normal menu, close the front cover and go to SP5-827-002 to download the program.
6. To start downloading:

B017: Press "OK".
B018: Input = " 1 ", then, press the Enter key.
7. Wait until end of processing is indicated on the screen (approximately 30 seconds, depending on the size of the software). Then, turn the main power switch off when an end of processing message appears, and remove the Flash ROM card.

## - All machines -

5. Turn on the main switch again.
6. When the copier is in standby mode, check the program version with SP 7-801002. If the download failed, repeat the procedure.

### 6.11.2 MAIN PROGRAM DOWNLOADING



1. Turn off the main power switch on the copier.
2. Open the front cover and remove the transfer inner cover (see "Covers, Fans, and Filters").
3. Insert the Flash ROM card [A] that contains the new main program.

NOTE: Insert the Flash ROM card with side "B" facing right when viewed from the front.
4. Turn on the main power switch while keeping the front door open. This will force the machine to skip the process control initialization. When the system starts and the LCD displays the normal menu, close the front cover.
5. Select SP mode:

A258/259/260: SP5-827
B017/018: SP5-827-001
6. To start downloading:

A258/B018: Input = "1", then press the Enter key A259/A260/B017: Press "OK"
7. Wait until end of processing is indicated on the screen (approximately 3 minutes, depending on the size of the software).
8. When an end of processing message appears, turn the main power switch off and remove the Flash ROM card.
9. Replace all covers and turn on the main power switch.
10. Check the version of the software using SP7-801-001.

NOTE: If the download fails and the LCD does not display an "OK" message, turn the main power switch off again, remove and insert the Flash ROM card, then re-execute the download procedure. If it fails again, reprogram the Flash ROM card and re-execute the download procedure.

### 6.11.3 NV-RAM UPLOADING AND DOWNLOADING

With SP mode, copier settings can be uploaded to the Flash ROMs on the main control board from the NV-RAM, or downloaded from the Flash ROMs to the NVRAM. When uploading or downloading the copier setting, the Flash ROM card that contains the main program needs to be set in the main control board slot.

## SP5-824: Upload

Executing an upload saves the copier settings (including the main counter value and serial number) onto flash ROMs on the main control board.

## SP5-825: Download

Executing a download loads copier settings (excluding the main counter value and serial number) from flash ROMs into the NV-RAM inside the copier.

## UploadIDownload Procedure

1. Print out the copier settings that have been modified from their defaults, using SP7-902.
2. Turn the main power switch off and insert the Flash ROM card into the main control board (see Main Program Downloading).
3. Turn the main power switch on and start one of the following SP modes.

- Upload: SP5-824
- Download: SP5-825

4. To start uploading or downloading:

A258/B018: Input "1".
A259/A260/B017: Press "OK".
5. Wait until end of processing is indicated on the screen (approximately 1 to 3 minutes, depending on the size of the software).
6. When an end of processing message appears, turn the main power switch off and remove the Flash ROM card.
7. Replace all covers and turn on the main power switch.
8. Using the settings list printed in step 1 using SP7-902, input the values that were different from the factory settings (after downloading).

### 6.11.4 RAM CLEAR

## RAM Clear Procedure

NOTE: Clearing the RAM resets all SP and UP values to the defaults, except the serial number and main counter value. Therefore, it is important to clear the RAM using the procedure shown below.

1. Before clearing the RAM, execute SP7-902 to output the SP mode values that have been changed from their default values.
2. Upload the settings from the NV-RAM onto a Flash ROM chip using SP5-824 (see "NV-RAM uploading and downloading").
3. Use SP5-801 to clear the RAM.
4. Turn the machine "OFF" then "ON".
5. Run the forced process control self-check (this is required since RAM clearing also initializes the process control data).
6. Enter the SP mode changes that were printed in step 1, or download the NVRAM values from the Flash ROM chip (see the download procedure).
7. Perform the auto color calibration (ACC) procedure.
8. A259/A260/B017: Calibrate the touch panel.

## Precautions when replacing the NV-RAM



The NV-RAM stores the counter value and the copier settings.
The procedure for replacing the NV-RAM on the main control board is given below.
Make sure you have the factory settings that come with the copier before beginning the following procedure:

1. Print the SP mode values that have been modified from their default values, using SP7-902.
2. Turn the main power switch off and unplug the power cord.
3. Remove the right upper cover [A] (1 or 2 screws).
4. Replace the NV-RAM [B] at IC106 (for A258/B018) or IC104 (for A259/A260/B017) on the main control board.
5. Assemble the machine in the reverse order of disassembly.
6. Turn on the main power and enter the machine's device number in the factory set mode (consult your executive for details).
7. Execute SP5-801 (RAM Clear).
8. Enter the SP mode changes you printed in step 1.
9. Perform the auto color calibration (ACC) procedure.
10. If the color balance after the ACC is not satisfactory for the customer, adjust the ACC target using SP4-501 (for copier mode) and SP4-502 (for printer mode), and/or do the KCMY color balance adjustment.
11. A259/A260/B017: Calibrate the touch panel.

### 6.11.5 TOUCH PANEL CALIBRATION (A259/A260/B017 ONLY)



It is necessary to calibrate the touch panel in the following cases:

- After the operation panel is replaced.
- The touch panel coordinates are illegible or misaligned.
- After the NVRAM is cleared.

1. Press the $\approx \mp$ key, then press and hold the ${ }^{C / \theta}$ key (for 3 seconds or longer). The calibration screen will appear.
2. Gently touch the screen with the tip of a pen in the sequence indicated by the arrow, which appears on the screen (from upper left to lower right).
3. Touch any location with the touch pen to verify the current coordinates.
4. Terminate the calibration with the $\#$ key if the coordinates of the " + " mark almost match the point you touched. If the coordinates disagree, rerun the calibration with the key.

NOTE: Do not use a sharp-tipped pen in this procedure. The touch panel might be damaged.

## TROUBLESHOOTING

## 7. TROUBLESHOOTING

### 7.1 SERVICE CALL CONDITIONS

### 7.1.1 SUMMARY

| Type | Display Method | How to Reset |
| :---: | :---: | :---: |
| A | Fusing unit SCs displayed on the operation panel. The machine is disabled. The user cannot reset the SC. | Turn the main switch off then on before entering SP mode. Reset the SC (set SP5810 to 1 ), then turn the main switch off then on again. |
| B | SCs that disable only the features that use the defective item. Although these SCs are not shown to the user under normal conditions, they are displayed on the operation panel only when the defective feature is selected. | Turn power off/on. |
| C | SCs that are not shown on the operation panel. They are internally logged. | Logging only |
| D | Turning the operation switch or main power switch off then on resets the SC. Displayed on the operation panel. Re-displayed if they occurred after the main power switch is turned on again. | Turn the operation switch or main power switch off and on. |

All SCs are logged.

### 7.1.2 SC CODE DESCRIPTIONS

|  |  | Phenomenon | Possible Cause/ Troubleshooting Procedure |
| :---: | :---: | :---: | :---: |
| 101 | D | Exposure lamp failure <br> - The lamp output check signal (LAMPDET) is still HIGH 250 ms after the lamp turns on (the ON check is canceled if the lamp goes off within 250 ms ). <br> - The lamp output check signal is still LOW 30 ms after the lamp turns off (the OFF check is canceled if the lamp turns on within 30 ms ). | 1. Visually check the lamp element or check the continuity between both ends of the lamp terminals with a multi-meter. <br> 2. Check continuity at the ends of the thermostat terminals with a multi-meter. <br> 3. Check if the connectors (CN1, CN2, and CN3) on the lamp regulatorare properly connected. <br> 4. Check the continuity of the 3 cables. <br> 5. Replace the lamp regulatorif 100 Vac is present at the CN3-1 and 3 on the lamp regulator. <br> 6. Replace the scanner IPU board <br> 7. Check fuse (FU103) on PSU and replace if necessary. <br> 8. Replace PSU <br> - Signals to Check - <br> - LAMPDET: CN502-2 on lamp regulator / CN403-12 on scanner IPU board <br> - LAMPTRIG: CN403-11 on scanner IPU board / CN502-3 on lamp regulator |
| 120 | D | Scanner HP sensor does not turn on |  |
|  |  | The scanner H.P. sensor does not turn on when the scanner moves back to the home position or at the home position check. <br> The sensor output at CN406-7 [A258/A259/A260] / CN406-6 [B017/B018] stays HIGH (5V). | 1. In SP 5-804-104, stop supplying the current to the scanner motor. Check the output signal from the scanner H.P. sensorin SP 5-803-100 by moving the scanner manually. (0: Not actuated; <br> 1: Actuated - at H.P.) <br> 2. If the result of step 1 is OK ; <br> 1) Check the tension of the timing belt <br> 2) Check if the pulley is firmly secured. <br> 3) Check if the scanner wireis properly wired <br> 4) Check the connection of CN710, and CN731 on the scanner motor drive boaro <br> 5) Check continuity of cables <br> 6) Replace the scanner motor drive board <br> 7) Replace the scanner motor. <br> 3. If the result of step 1 is not OK; <br> 1) Check if the cable is properly connected. <br> 2) Check the continuity of cable <br> 3) Replace the sensor. <br> 4) Replace the scanner IPU board <br> 5) Replace the main control board <br> - Signals to Check - <br> Scanner HP: CN406-7 [A258/A259/A260] / CN406-6 [B017/B018] on scanner IPU board |


| No. <br> Definition |  | Phenomenon | Possible Cause/ Troubleshooting Procedure |
| :---: | :---: | :---: | :---: |
| 121 | D | Scanner HP sensor does not turn off |  |
|  |  | The sensor does not turn off when the scanner moves from the home position. <br> The sensor output at CN406-7 [A258 /A259/A260] / CN406-6 [B017/B018] stays LOW (0V). | 1. Same as SC120 |
| 130 | D | Scanner start error |  |
|  |  | - Timing - <br> - Scanning start <br> - While the scanner motor is running <br> - Condition - <br> - Total number of steps calculated based on the signal from the stepper motor is out of range. <br> - The H.P. sensor is off when the scanner starts moving. <br> - A 'scan start' command was issued while the motor was active. | Same as SC120 <br> or <br> 1. Sequence error <br> Replace the sub and/or main scanner IPU board(s). |
| 150 | D | Scanner ROM mismatch |  |
|  |  | - Timing - <br> After software installation or just after the main switch is turned on <br> - Condition - <br> 1) The scanner IPU board detects that the software installed is not the correct one | 1. An invalid IC card used (such as a card for a different model). Try again with the correct IC card. <br> 2. Replace the scanner IPU board |
| 170 | D | Video processing error 1 |  |
|  |  | - Timing - <br> Just after the main switch is turned on (after auto gain control on the scanner IPU board) <br> - Condition - <br> The corrected CCD odd/even pixel black level difference is not in the proper range. | 1. Check if the flat cable is firmly connected at CN421 (CN1) and CN404 on the SBU and scanner IPU board <br> 2. Check the continuity of the flat cable <br> 3. Replace the scanner IPU board <br> 4. Replace the SBU unit |
| 171 | D | Video processing error 2 |  |
|  |  | - Timing - <br> Same as SC170 <br> - Condition - <br> The corrected black level is not in the proper range. | Same as SC170 |


| $\begin{array}{\|r\|r\|} \hline \text { Nofin } \end{array}$ |  | Phenomenon | Possible Cause/ Troubleshooting Procedure |
| :---: | :---: | :---: | :---: |
| 172 | D | Video processing error 3 <br> - Timing - <br> Same as SC170 <br> - Condition - <br> The corrected white level is not in the proper range. | 1. Check SP 4-426-001 to 006 (RGB Gain). If their values are near " 255 ", clean the optics section (exposure glass, white plate, mirrors, and lens). <br> 2. Visually check if the exposure lamp turns on during warming-up after the main switch is turned on. If not, replace the lamp regulator. <br> 3. Check if the CCD flat cable is firmly connected at CN421 (CN1) and CN404 on the SBU and scanner IPU board <br> 4. Check the continuity of the flat cable <br> 5. Replace the scanner IPU board <br> 6. Replace the SBU unit |
| 191 | D | Bar code scan error <br> - Timing - <br> Just after the main switch is turned on <br> - Condition - <br> The scanner IPU board detects that the bar code pattern scanned in is not appropriate. | 1. Check if the bar code is damaged or scratched. <br> 2. Clean the optics section components, such as mirrors and lenses, and the bar code label. <br> 3. Check if the mirrors are properly positioned on the 1st and 2 nd scanners. If the spring plate which secures the mirrors is out of position, it causes the light axis to be changed. <br> 4. Replace the scanner IPU board <br> 5. Replace the main control board |
| 192 | D | Bar code number mismatch <br> - Timing - <br> Just after the main switch is turned on <br> - Condition - <br> The main control board detects that the bar code data scanned in does not match the machine identification number stored in the RAM. | 1. Check if the serial number stored in the RAM is correct. <br> NOTE: Contact your product specialist for the detailed procedure. <br> 2. Check the copier's serial number and the number defined in SP mode <br> 3. Garbled ROM data: Replace the NV-RAM. <br> 4. Replace the scanner IPU board <br> 5. Replace the main control board |
| 193 | D | IDU error |  |
|  |  | - Timing - <br> Just after the main switch is turned on or during a hardware reset <br> - Condition - <br> The IDU starts self-diagnosis at power-on and a hardware error was detected during this. | [A258/A259/A260] <br> 1. Test the scanner IPU board (SP 4-904-01 and 002). If not OK, replace the scanner IPU board. <br> 2. Replace the IDU board. <br> [B017/B018] <br> Replace the scanner IPU board. |


|  |  | Phenomenon | Possible Cause/ Troubleshooting Procedure |
| :---: | :---: | :---: | :---: |
| 195 | D | Serial number error <br> - Timing - <br> Just after the main switch is turned on <br> - Condition - <br> The serial number entered or stored in RAM is not correct. | 1. Check and re-enter the serial numberproperly. <br> NOTE: Contact your product specialist for the detailed procedure. <br> 2. Garbled ROM data: Replace the NV-RAM. |
| 301 | D | Charge current leak <br> - Timing - <br> When the charge corona unit is on during printing or process control. <br> - Condition - <br> The feedback voltage is 4.8 V or higher, or the PMW value is $60 \%$ or higher for 500 ms continuously. | 1. Reinstall the charge corona unitproperly or replace the charge corona unit. <br> 2. Reconnect the connectors on the high voltage supply board (C, G), I/O control board, and main control board or check the cables. <br> 3. Check and clean the charge corona unit receptacle. <br> 4. Replace the high voltage supply board (C, G.) <br> 5. Replace the I/O control board <br> 6. Replace the main control board <br> - Signals to Check - <br> [A258/A259/260] <br> - Feedback signal: CN201-1 on I/O control board or CN302-A3 on main control board <br> - PWM: CN201-B3 on I/O control board. <br> [B017/B018] <br> - Feedback signal: CN201-B1 on I/O control board or CN302-A3 on main control board <br> - PWM: CN201-B3 on I/O control board. |
| 302 | D | Charge corona grid voltage error |  |
|  |  | - Timing - <br> When the charge corona unit grid is on during printing or process control <br> - Condition - <br> The feedback voltage is 4.8 V or higher, or the PMW value is $60 \%$ or higher for 500 ms continuously. | Same as SC301 <br> - Signals to Check [A258/A259/A260] <br> - Feedback signal: CN201-3 on I/O control board or CN302-A4 on main control board <br> - PWM: CN201-4 on I/O control board <br> [B017/B018] <br> - Feedback signal: CN201-B3 on I/O control board or CN302-A4 on main control board <br> - PWM: CN201-B4 on I/O control board |


| No. <br> Definition | Phenomenon |  | Possible Cause/ Troubleshooting Procedure <br> 303 |
| :--- | :--- | :--- | :--- |


| $\begin{array}{\|\|c} \hline \text { No. } \\ \text { Definiti } \end{array}$ |  | Phenomenon | Possible Cause/ Troubleshooting Procedure |
| :---: | :---: | :---: | :---: |
| 323 | D | LD error <br> - Timing - <br> During LD writing <br> - Condition - <br> The LD main control board detects over-current or no feedback signal from the LD drive board. | 1. Check if the connectors (CN1 \& CN605 [A258/ A259 /A260]/ CN601 [B017/B018]) on the LD drive board and LD main control boardare properly connected. <br> 2. Check the continuity of the cable <br> 3. Check that the cable connectors (CN601 [A258/A259/A260] / CN605 [B017/B018] \& CN306) on the LD control board and main control board are properly connected. <br> 4. Replace the LD drive board <br> 5. Replace the LD main control board <br> 6. Replace the main control board |
| 325 | C | Magnification correction error |  |
|  |  | - Condition - <br> The length of a line measured during main scan auto magnification correction does not fall within $-0.1 \%$ to $0.1 \%$ of the center value. <br> -Timing - When three main scan magnification corrections failed successively. | This SC is only logged, and not displayed, so no particular action is required (no adverse influence is exerted on copier operation). Take the following actions if the customer complains about excessive magnification errors. <br> 1. Dirty synchronizing detector board Clean it <br> 2. Incorrect synchronizing detector board installation: Reinstall <br> 3. Defective polygon mirror motor Replace. |


| No. Definition |  | Phenomenon | Possible Cause/ Troubleshooting Procedure |
| :---: | :---: | :---: | :---: |
| 326 | D | FGATE1 error |  |
|  |  | - Timing \& Condition - <br> The main control board does not receive the FGATE signal from the LD control board during 3 revolutions of the transfer belt. | 1. Clean the belt mark located on the backside of the transfer belt or replace the belt if the belt mark is dirty or peeled off. <br> 2. Clean the transfer belt home position sensor if it is dirty. <br> 3. Clean the bias terminals of the development units if they are dirty. <br> 4. Check if the cable connectors (CN606 \& CN408) on the LD main control board and scanner IPU boardare properly connected. <br> 5. Check if the cable connectors (CN601[A258/ A259/A260] / CN605 [B017/B018] \& CN306) on the LD main control board and main control board are properly connected. <br> 6. Replace the LD main control board <br> 7. Replace the main control board <br> - Signals to Check - <br> [A258/A259/A260] <br> - FGATE: CN601-A2 on LD main control board / CN306-A9 on main control board <br> - Belt mark: CN218-B11 or CN233-A6 on I/O control board / CN303-B1 or CN306-B2 on main control board / CN601-B9 on LD main control board <br> [B017/B018] <br> - FGATE: CN605-A2 on LD main control board / CN306-A9 on main control board <br> - Belt mark: CN211-B11 or CN225-A6 on I/O control board / CN303-B1 or CN306-B2 on main control board / CN605-B9 on LD main control board <br> If the machine is equipped with the controller, <br> 1. Check if the connectors (CN609) on the LD control board and controller I/F boardare properly set. <br> 2. Check if the controller I/F boardis properly connected. <br> 3. Replace the interface board |
| 327 | D | FGATE2 error |  |
|  |  | - Timing \& Condition - <br> When two pages will be written on the transfer belt at the same time, the main control board does not receive the 2nd FGATE signal from the LD main control board during 3 revolutions of the transfer belt. | Same as SC326 |


| ${ }_{\|r\|}^{\mathrm{Nc}} \mathrm{Defin}$ |  | Phenomenon | Possible Cause/ Troubleshooting Procedure |
| :---: | :---: | :---: | :---: |
| 360 | D | Development bias error <br> - Timing - <br> When the development DC bias is on during printing or process control. <br> - Condition - <br> The feedback voltage is 4.8 V or higher, or the PWM value becomes $80 \%$ or higher for 500 ms continuously. | 1. Clean the development roller shaft (terminal) <br> 2. Clean the bias terminalif it is dirty. <br> 3. Poor connection: Correct the leaf spring shape. <br> 4. Replace the bias terminalif it does not move smoothly. <br> 5. Check the connectors of high voltage supply cable and trigger linesare properly connected on the high voltage supply board (B), I/O control board, and main control board. <br> 6. Replace the high voltage supply board (B) <br> 7. Replace the I/O control board <br> 8. Replace the main control board <br> - Signals to Check - <br> [A258/A259/A260] <br> - Feedback signal: CN203-A12 or CN214-A5 on I/O control board / CN302-A5 on main control board <br> - PWM: CN203-A13 on I/O control board <br> [B017/B018] <br> - Feedback signal: CN202-A12 or CN210-A5 on I/O control board / CN302-A5 on main control board <br> - PWM: CN202-A13 on I/O control board |
| 361 | D | Revolver HP sensor error <br> - Timing \& Condition - <br> The home position is not detected during 3 revolutions of the revolver unit after the revolver motor turns on. | 1. Check if the sensor connectoris properly connected. <br> 2. Replace the revolver H.P. sensorif the voltage at CN203-A4 [A258/A259/A260] / CN202-A4 [B017/B018] on the I/O control board does not change when covering the sensor with a piece of paper. <br> NOTE: Make sure that the revolver unit is locked for this step. <br> 3. If the revolver unit does not rotate; <br> 1) Replace the revolver motor. <br> 2) Replace the revolver motor drive board <br> 3) Replace the I/O control board <br> 4) Replace the main control board <br> - Signals to Check - [A258/A259/A260] <br> Revolver H.P.: CN203-A4 on I/O control board <br> [B017/B018] <br> Revolver H.P.: CN202-A4 on I/O control board |


| No. Definition |  | Phenomenon | Possible Cause/ Troubleshooting Procedure |
| :---: | :---: | :---: | :---: |
| 385 | D | ID sensor VSG adjustment error |  |
|  |  | - Timing - <br> During process control self check, the main control board detects that the Vsg signal fed back from the ID sensor is out of range. | 1. Clean the ID sensor. <br> 2. Check if the sensor connectoris properly connected. <br> 3. Replace the ID sensor. <br> 4. Check the drum cleaning unit <br> - Signals to Check - <br> [A258/A259/A260] <br> - ID sensor LED: CN203-B9 on I/O control board <br> - ID sensor 1 (K ): CN203-B10 on I/O control board / CN302-B6 on main control board. <br> - ID sensor 2 (CMY): CN203-B11 on I/O control board / CN302-B5 on main control board. <br> [B017/B018] <br> - ID sensor LED: CN202-B9 on I/O control board <br> - ID sensor 1 (K ): CN202-B10 on I/O control board / CN302-B6 on main control board. <br> - ID sensor 2 (CMY): CN202-B11 on I/O control board / CN302-B5 on main control board. |
| 386 | C | Amount of toner on sensor pattern too low during ID pattern measurement |  |
|  |  | The amount of toner obtained during YCM ID pattern measurement was less than (target value for the amount of toner) minus (threshold value for detecting insufficient toner density) 5 consecutive times, even though there was no toner end condition <br> - If ID sensor error (SC385) is detected before this SC, no detection is attempted unless Vsg is adjusted and the ID sensor error condition is reset. <br> - This SC does not apply to black toner since the toner end sensor is not used for Bk. | This SC is only logged in the memory (not displayed), so no particular action is required (no adverse influence is exerted on copier operation). <br> 1. Defective toner end sensor SP5-803-010 (Input check: toner end sensor), replace if necessary. <br> 2. Dirty toner end sensor window Clean. <br> 3. Toner supply sealpeeled off: Remove the cartridge and check the seal in the hopper. |
| 387 | C | Drum potential error |  |
|  |  | - Timing - <br> During initial process control check or interval (number of copies) process control self check <br> - Condition - <br> While the revolver unit returns to the home position, the following condition is detected. $\begin{aligned} & V D<V G-200 V \\ & V D>V G+200 V \end{aligned}$ | 1. Clean the charge corona unitor replace the charge corona wire and grid plate <br> 2. Reinstall the drum. <br> 3. Replace the drum if necessary. <br> 4. Replace the potential sensor. |


| $\boldsymbol{r}_{\mathrm{Defin}}^{\mathrm{Na}}$ |  | Phenomenon | Possible Cause/ Troubleshooting Procedure |
| :---: | :---: | :---: | :---: |
| 400 | D | Image transfer belt bias error <br> - Timing - <br> When the image transfer belt bias is on during printing or a process control self check <br> - Condition - <br> The feedback voltage is 4.8 V or higher, or the PWM value is $60 \%$ or higher (indicating a leak) for 500 ms continuously. | 1. Check if the connectors of high voltage cables and trigger linesare properly connected on the high voltage supply board, I/O control board, and main control board <br> 2. Clean the bias terminals <br> 3. Replace the high voltage supply board(T1, PCC). <br> 4. Replace the I/O control board <br> 5. Replace the main control board <br> - Signals to Check [A258/A259/A260] <br> - Feedback signal: CN277-B3 or CN214-A4 on I/O control board / CN302-A6 on main control board. <br> - PWM: CN227-B4 on I/O control board. <br> [B017/B018] <br> - Feedback signal: CN221-B3 or CN210-B4 on I/O control board / CN302-A6 on main control board. <br> - PWM: CN221-B4 on I/O control board. |
| 410 | D | Paper separation current leak |  |
|  |  | - Condition - <br> When the current leak is detected for 2 seconds while the paper separation corona is ON. | 1. Check to see if the separation corona unitis set properly. <br> 2. Replace the corona wire if it is broken. <br> 3. Check to see if the connectors are properly connected. <br> 4. Clean the receptacle. <br> 5. Replace the high voltage supply board (T2, D). <br> 6. Replace the I/O control board <br> 7. Replace the main control board <br> - Signal to Check - <br> [A258/A259/A260] <br> Leak Detection: CN227-A1 on I/O control Board <br> [B017/B018] <br> Leak Detection: CN221-A1 on I/O control Board |


| $\begin{array}{r} \mathrm{No} \\ \text { Defini } \end{array}$ |  | Phenomenon | Possible Cause/ Troubleshooting Procedure |
| :---: | :---: | :---: | :---: |
| 422 | D | PCC leak <br> - Timing \& Condition - <br> When the current leak is detected for 2 seconds, leak detection starts 1 second after the PCC turns on. The leak signal is monitored twice at 1 -second intervals. When the leak condition is detected twice continuously, this SC is displayed. | 1. Check if the PCC unit is properly installed. <br> 2. Replace the corona wire if it is broken. <br> 3. Check if the connectors on the terminal and high voltage supply board (T1, PCCare properly connected and if the cables are damaged. <br> 4. Clean the receptacle. <br> 5. Replace the high voltage supply board (T1, PCC). <br> 6. Replace the I/O control board <br> 7. Replace the main control board <br> - Signals to Check - <br> [A258/A259/A260] <br> Leak Detection: CN227-B1 on I/O control Board <br> [B017/B018] <br> Leak Detection: CN221-B1 on I/O control Board. |
| 440 | D | Drum motor error |  |
|  |  | - Timing \& Condition - <br> - The feedback signal from the motor is still out of range 1 second after the trigger signal is sent. <br> - The feedback signal becomes out of range for 2 seconds while the trigger signal is on. | 1. Check if the cleaning blade locks the drum. If it is, replace the cleaning blade <br> 2. Check if the connector (CN223[A258/A259 /A260]/ CN225 [B017/B018]) on the I/O control board is properly connected. <br> 3. Check if the drum motor works properly using SP 5-804-001 to 004. If not, replace the drum motor. <br> 4. Replace the I/O control board <br> 5. Replace the main control board <br> - Signals to Check - <br> [A258/A259/A260] <br> Motor OK: CN223-B5 on the I/O control board <br> [B017/B018] <br> Motor OK: CN225-B5 on the I/O control board |



| $\begin{array}{r} \text { No } \\ \text { Defini } \end{array}$ |  | Phenomenon | Possible Cause/ Troubleshooting Procedure |
| :---: | :---: | :---: | :---: |
| 456 | D | Paper transfer unit position error <br> - Timing \& Condition <br> - The paper transfer home position sensor does not detect the paper transfer unit moving into the contact position or the release position at the correct time. | 1. Replace the paper transfer H.P. sensor (Input Check: SP 5-803-11) <br> 2. Replace the paper transfer positioning clutch. (Output Check: SP 5-804-23) <br> 3. Replace the I/O control board <br> - Signals to Check - [A258/A259/A260] <br> H.P.: CN229-5 on I/O control board [B017/B018] <br> H.P.: CN221-B10 on I/O control board |
| 457 | D | Image transfer belt cleaning unit p <br> - Timing \& Condition <br> - The belt cleaning home position sensor does not detect the transfer belt cleaning unit moving into the contact position or the release position at the correct time. | osition error <br> 1. Pull out and re-insert the image transfer belt unit. <br> 2. Clean the belt cleaning H.P. sensorif it is dirty. <br> 3. Replace the sensor. (Input Check: 5-803-12) <br> 4. Replace the belt cleaning clutch (Output Check: SP 5-804-36) <br> 5. Replace the I/O control board <br> 6. Replace the main control board <br> - Signals to Check - <br> [A258/A259/A260] <br> H.P.: CN202-2 or TP254 on I/O control board [B017/B018] <br> H.P.: CN201-B12 or TP254 on I/O control board |
| 495 | C | Temperature sensor error <br> - Timing \& Condition - <br> The temperature sensor output is out of range ( 2.75 V or greater or less than 0.25 V ). | [A258/A259/A260] <br> 1. Check that the connectors (CN236, 214 \& CN302) are properly connected on the I/O control board and main control board [B017/B018] <br> 1. Check that the connectors (CN210, 218 \& CN304) are properly connected on the I/O control board and main control board <br> 2. Replace the humidity sensor <br> 3. Replace the I/O control board <br> 4. Replace the main control board <br> - Signals to Check - <br> [A258/A259/A260] <br> Temperature: CN236-6 or CN214-A9 on I/O control board / CN302-A1 on main control board <br> [B017/B18] <br> Temperature: CN218-1 or CN210-B9 on I/O control board / CN304-A1 on main control board |



| $\begin{array}{r} \text { No } \\ \text { Defini } \end{array}$ |  | Phenomenon | Possible Cause/ Troubleshooting Procedure |
| :---: | :---: | :---: | :---: |
| 501 | B | - Timing \& Condition - <br> - The upper limit sensor does not turn on1.5 s after the tray bottom plate starts to go up. | 1. Check if the spring of pick-up solenoidcomes off. <br> 2. Check if the upper limit sensor cableis properly connected. <br> 3. Clean or replace the upper limit sensorand replace it if necessary (Input Check: SP 5-80314 to 17). <br> 4. Replace the tray bottom leverif it is broken. <br> 5. Pull out the paper tray and check if the tray lift motor works properly (Output Check: SP 5-80475 to 82). <br> 6. Replace the I/O control board <br> 7. Replace the main control board <br> - Signals to Check - <br> [A258/A259/A260] <br> Upper limit sensor: CN226-2 on I/O control board <br> [B017/B018] <br> Upper limit sensor: CN220-2 on I/O control board |
| 502 | B | 2nd paper tray error |  |
|  |  | Same as SC501 | Same as SC501 |
| 503 | B | 3rd paper tray error |  |
|  |  | Same as SC501 | Same as SC501 |
| 504 | B | 4th paper tray error Same as SC501 |  |
|  |  |  | Same as SC501 |
| 510 | D | Paper feed motor error |  |
|  |  | - Timing \& Condition - <br> - The feedback signal from the motor is still out of range 1 second after the trigger signal is sent. <br> - The feedback signal becomes out of range for 2 seconds while the trigger signal is on. | 1. Check if the connectoris properly connected on the I/O control board (CN224[A258/A259/ A260] / CN217 [B017/B018]). <br> 2. Replace the paper feed motor (Output check: SP 5-804-08 to 09) <br> 3. Replace the I/O control board <br> 4. Replace the main control board <br> 5. Check the feed unit drive sectionand if anything causes overload. <br> - Signals to Check - <br> [A258/A259/A260] <br> Motor OK: CN224-B4 on I/O control board <br> [B017/B18] <br> Motor OK: CN217-B8 on I/O control board |


| No. Definition |  | Phenomenon | Possible Cause/ Troubleshooting Procedure |
| :---: | :---: | :---: | :---: |
| 522 | B | Duplex - Side fence jogger H.P. error |  |
|  |  | - Timing \& Condition - <br> - The home position is still detected a few seconds after the side fence leaves from the home position. <br> - The home position is not detected 12 seconds after the side fence moves back to the home position. | 1. Pull out and re-insert the duplex unit <br> 2. Check the connector (CN485)is properly connected on the duplex control board <br> 3. Check if anything causes overload to the motor. <br> 4. Replace the side fence motor(Output Check: SP 5-804 93 and 94). <br> 5. Replace the I/O control board |
| 524 | B | Duplex - End fence jogger H.P. error |  |
|  |  | - Timing \& Condition - <br> - The home position is still detected a few seconds after the end fence leaves from the home position. <br> - The home position is not detected 13 seconds after the end fence moves back to the home position. | 1. Pull out and re-insert the duplex unit <br> 2. Check the connector (CN486)is properly connected on the duplex control board <br> 3. Check if anything causes overload to the motor. <br> 4. Replace the end fence motor(Output Check: SP 5-804 95 and 96). <br> 5. Replace the I/O control board |
| 541 | A | Hot roller thermistor open [A258/A259/A260] Heat roller thermistor open [B017/B018] |  |
|  |  | - Timing - <br> Every 1 second when the fusing unit is installed <br> - Condition - <br> The hot roller thermistor [A258/A259/ A260] / heat roller thermistor [B017/ B018] output is almost close to 5 V , which corresponds to $0^{\circ} \mathrm{C}$, for 6 seconds continuously. | 1. Check if the fusing unit is properly set. <br> 2. Check if the thermistor connectoris properly connected. <br> 3. Replace the thermistor if it is deformed. <br> 4. Replace the thermistor if the measured resistance is outside the resistance range indicated in the table. $\begin{aligned} & \text { [A258/A259/A260] } \\ & 10^{\circ} \mathrm{C}: 166.8 \mathrm{k} \Omega-236.9 \mathrm{k} \Omega \\ & 200^{\circ} \mathrm{C}: 0.5184 \Omega-0.5818 \Omega \\ & \text { [B017/B018] } \\ & 10^{\circ} \mathrm{C}: 342.8 \mathrm{k} \Omega-514.2 \mathrm{k} \Omega \\ & 220^{\circ} \mathrm{C}: 0.6171 \Omega-0.7057 \Omega \end{aligned}$ <br> 5. Replace the I/O control board <br> 6. Replace the main control board <br> - Signals to Check - <br> [A258/A259/A260] <br> Thermistor: CN206-B9 or CN214-B1 on I/O control board / CN302-B9 on main control board. <br> [B017/B018] <br> Thermistor: CN204-B9 or CN210-B11 on I/O control board / CN304-B9 on main control board. |


| No. Definition |  | Phenomenon | Possible Cause/ Troubleshooting Procedure |
| :---: | :---: | :---: | :---: |
| 542 |  | Hot roller warm-up error [A258/A2 Heat roller warm-up error [B017/B | $\begin{aligned} & \text { 59/A260] } \\ & \text { 018] } \end{aligned}$ |
|  |  | - Timing \& Condition The hot roller thermistor [A258/A259/ A260] / heat roller thermistor [B017/ B018] does not output an analog value corresponding to the ready temperature within 12 minutes after the main switch is turned on. | [A258/A259/A260] <br> 1. Check if the following connectors are properly connected: <br> - Hot roller fusing lamp connectors <br> - CN303 on the main control board <br> - CN206 and CN214 on the I/O control board <br> - CN105 on the PSU <br> 2. Replace the hot roller fusingif it is opened. <br> 3. Replace the hot roller thermofuseif it is opened. <br> [B017/ B018] <br> 1. Check if the following connectors are properly connected: <br> - Heat roller fusing lamp connectors <br> - CN303 on the main control board <br> - CN204 and CN211 on the I/O control board <br> - CN105 on the PSU <br> 2. Replace the heat roller fusing lampif it is opened. <br> 3. Replace the heat roller thermofuse if it is opened. <br> 4. Check if the power suppliedfrom the outlet fluctuates. <br> 5. Replace the main control board, I/O control board, or PSU (check the trigger signal at each pin and replace any defective boards). <br> - Signals to Check - <br> [A258/A259/A260] <br> Hot roller fusing lamp trigger: CN303-B6 on main control board / CN205-A4 or CN218-B6 on I/O control board / CN106-5 on PSU. <br> [B017/B018] <br> Heat roller fusing lamp trigger: CN303-B6 on main control board / CN203-A4 or CN211-B6 on I/O control board / CN106-5 on PSU. |


| No. Definition |  | Phenomenon | Possible Cause/ Troubleshooting Procedure |
| :---: | :---: | :---: | :---: |
| 543 | A | Hot roller fusing lamp overheat [A258/A259/A260] Heat roller fusing lamp overheat [B017/B018] |  |
|  |  | - Timing - <br> Every 1 second when the fusing unit is installed <br> - Condition - <br> The hot roller thermistor [A258/A259/ A260] / heat roller thermistor [B017/ B018] output is lower than about 0.3 V , which corresponds to $220^{\circ} \mathrm{C}$, for 3 seconds continuously. | 1. Check if the fusing unit is properly installed. <br> 2. Check if the thermistor connectoris properly connected. <br> 3. Replace the thermistor if it is deformed. <br> 4. Replace the thermistor if the measured resistance is outside the resistance range indicated in the table. [A258/A259/A260] <br> $10^{\circ} \mathrm{C}: 166.8 \mathrm{k} \Omega-236.9 \mathrm{k} \Omega$ <br> $200^{\circ} \mathrm{C}: 0.5184 \Omega-0.5818 \Omega$ <br> [B017/B018] <br> $10^{\circ} \mathrm{C}: 342.8 \mathrm{k} \Omega-514.2 \mathrm{k} \Omega$ <br> $220^{\circ} \mathrm{C}: 0.6171 \Omega-0.7057 \Omega$ <br> 5. Replace the main control board, I/O control board, or PSU (check the output from the thermistor and the trigger signal at each pin). <br> - Signals to Check - <br> [A258/A259/A260] <br> - Thermistor: CN206-B9 or CN214-B1 on I/O control board / CN302-B9 on main control board. <br> - Hot roller fusing trigger: CN303-B6 on main control board / CN205-A4 or CN218-B6 on I/O control board / CN106-5 on PSU. <br> [B017/B018] <br> - Thermistor: CN204-B9 or CN210-B11 on I/O control board / CN304-B9 on main control board. <br> - Heat roller fusing lamp trigger: $\mathrm{CN} 303-\mathrm{B} 6$ on main control board / CN203-A4 or CN211B6 on I/O control board / CN106-5 on PSU. |
| 544 | A | Hot roller fusing lamp lower limit temperature detected [A258/A259/A260] Heat roller fusing lamp lower limit temperature detected [B017/B018] |  |
|  |  | - Timing - <br> Every 1 second after warm-up is completed <br> - Condition - <br> The hot roller thermistor [A258/A259/ A260] / heat roller thermistor [B017/ B018] output is higher than about 3 V , which corresponds to $87^{\circ} \mathrm{C}$, for 8 seconds continuously after warmup is completed. | Same as SC543 |

## SERVICE CALL CONDITIONS

| No. <br> Definition |  | Phenomenon | Possible Cause/ Troubleshooting Procedure |
| :---: | :---: | :---: | :---: |
| 545 | A | Hot roller ready temperature abnormal [A258/A259/A260] Heat roller ready temperature abnormal [B017/B018] |  |
|  |  | - Timing - <br> Every 1 second after the temperature reaches the ready condition <br> - Condition - <br> The hot roller thermistor [A258/A259/ A260] / heat roller thermistor [B017/ B018] output does not reach the ready temperature within 7 minutes. |  |
| 547 | A | Hot roller temperature does not inc Heat roller temperature does not in | rease [A258/A259/A260] acrease [B017/B018] |
|  |  | - Timing - <br> Every 1 second, 2 minutes after the main switch turned on until the hot roller temperature reaches the ready condition <br> - Condition - <br> The hot roller [A258/A259/A260]/ heat roller [B017/B018] temperature does not increase by more than $3^{\circ} \mathrm{C}$ for a minute during warm-up. | [A258/A259/A260] <br> 1. Check if the following connectors are properly connected; <br> - Hot roller fusing lamp connectors <br> - CN303 on the main control board <br> - CN206 and CN214 on the I/O control board <br> - CN105 on the PSU <br> 2. Replace the hot roller fusing lampif it is opened. <br> 3. Replace the hot roller thermofuseif it is opened. <br> 4. Replace the main control board, I/O control board, or AC drive board(check the trigger signal at each pin). <br> - Signals to Check Hot roller fusing lamp trigger: CN303-B6 on main control board / CN205-A4 or CN218-B6 on I/O control board / CN106-5 on PSU. |


| No. Definition |  | Phenomenon | Possible Cause/ Troubleshooting Procedure |
| :---: | :---: | :---: | :---: |
| $\begin{array}{\|l\|l} \hline 547 \\ \text { (cont.) } \end{array}$ |  |  | [B017/B018] <br> 1. Check if the following connectors are properly connected; <br> - Heat roller fusing lamp connectors <br> - CN303 on the main control board <br> - CN204 and CN211 on the I/O control board] <br> - CN105 on the PSU <br> 2. Replace the heat roller fusing lampif it is opened. <br> 3. Replace the heat roller thermofuse if it is opened. <br> 4. Replace the main control board, I/O control board, or AC drive board(check the trigger signal at each pin). <br> - Signals to Check - <br> Heat roller fusing lamp trigger: CN303-B6 on main control board / CN203-A4 or CN211-B6 on I/O control board / CN106-5 on PSU. |
| 551 | A | Pressure roller thermistor open |  |
|  |  | - Timing - <br> Every 1 second after the fusing unit is installed <br> - Condition - <br> The pressure roller thermistor output is almost close to 5 V , which corresponds to $0^{\circ} \mathrm{C}$, for 6 seconds continuously. | 1. Check if the fusing unit is properly installed. <br> 2. Check if the thermistor connectoris properly connected. <br> 3. Replace the thermistor if it is deformed. <br> 4. Replace the thermistor if the measured resistance is outside the resistance range indicated in the table. <br> [A258/A259/A260] <br> $10^{\circ} \mathrm{C}: 166.8 \mathrm{k} \Omega-236.9 \mathrm{k} \Omega$ <br> $200^{\circ} \mathrm{C}: 0.5184 \Omega-0.5818 \Omega$ <br> [B017/B018] <br> $10^{\circ} \mathrm{C}: 342.8 \mathrm{k} \Omega-514.2 \mathrm{k} \Omega$ <br> $220^{\circ} \mathrm{C}: 0.6171 \Omega-0.7057 \Omega$ <br> 5. Replace the I/O control board <br> 6. Replace the main control board <br> - Signals to Check - <br> [A258/A259/A260] <br> Thermistor: CN206-B4 or CN214-B2 on I/O control board / CN302-B8 on main control board. <br> [B017/B018] <br> Thermistor: CN204-B4 or CN210-B12 on I/O control board / CN302-B8 on main control board. |



| $\begin{array}{r} \mathrm{Nc} \\ \text { Defin } \end{array}$ |  | Phenomenon | Possible Cause/ Troubleshooting Procedure |
| :---: | :---: | :---: | :---: |
| 553 | A | Pressure roller overheat <br> - Timing - <br> Every 1 second when the fusing unit is installed <br> - Condition - <br> The pressure roller thermistor output is lower than about 0.3 V , which corresponds to $220^{\circ} \mathrm{C}$, for 3 seconds continuously. | 1. Check if the fusing unit is properly installed. <br> 2. Check if the thermistor connectoris properly connected. <br> 3. Replace the thermistor if it is deformed. <br> 4. Replace the thermistor if the measured resistance is outside the resistance range indicated in the table. <br> [A258/A259/A260] <br> $10^{\circ} \mathrm{C}: 166.8 \mathrm{k} \Omega-236.9 \mathrm{k} \Omega$ <br> $200^{\circ} \mathrm{C}: 0.5184 \Omega-0.5818 \Omega$ <br> [B017/B018] <br> $10^{\circ} \mathrm{C}: 342.8 \mathrm{k} \Omega-514.2 \mathrm{k} \Omega$ <br> $220^{\circ} \mathrm{C}: 0.6171 \Omega-0.7057 \Omega$ <br> 5. Replace the main control board, I/O control board, or PSU (check the output from the thermistor and the trigger signal at each pin). <br> - Signals to Check - <br> [A258/A259/A260] <br> - Thermistor: CN206-B4 or CN214-B2 on I/O control board / CN302-B8 on main control board. <br> - Pressure roller fusing lamp trigger: CN303B7 on main control board / CN218-B5, or CN205-A5 on I/O control board / CN106-4 on PSU. <br> [B017/B018] <br> - Thermistor: CN204-B4 or CN210-B12 on I/O control board / CN302-B8 on main control board. <br> - Pressure roller fusing lamp trigger: CN303B7 on main control board / CN211-B5 or CN203-A5 on I/O control board / CN106-4 on PSU. |
| 554 | A | Pressure roller low limit temperature detected |  |
|  |  | - Timing - <br> Every 1 second after warm-up is completed <br> - Condition - <br> The pressure roller thermistor output is higher than about 3 V , which corresponds to $87^{\circ} \mathrm{C}$, for 8 seconds continuously after warmup is completed. | Same as SC553 |


| $\mathrm{r}_{\mathrm{Dofini}}^{\mathrm{No}}$ |  | Phenomenon | Possible Cause/ Troubleshooting Procedure |
| :---: | :---: | :---: | :---: |
| 555 | A | Pressure roller ready temperature <br> - Timing - <br> Every 1 second after the temperature reaches the ready condition <br> - Condition - <br> The pressure roller thermistor output does not reach the ready temperature within 7 minutes continuously. | abnormal |
| 557 | A | Pressure roller temperature does not increase |  |
|  |  | - Timing - <br> Every 1 second, 2 minutes after the main switch turned on until the roller temperature reaches the ready condition <br> - Condition - <br> The pressure roller temperature does not increase by more than 3 ${ }^{\circ} \mathrm{C}$ for a minute during warm-up. | [A258/A259/A260] <br> 1. Check if the following connectors are properly connected: <br> - Hot roller fusing lamp connectors <br> - CN303 on the main control board <br> - CN206 and CN214 on the I/O control board <br> [B017/B018] <br> 1. Check if the following connectors are properly connected: <br> - Heat roller fusing lamp connectors <br> - CN303 on the main control board <br> - CN204 and CN211 on the I/O control board <br> 2. Replace the pressure roller fusing lampif it is opened. <br> 3. Replace the pressure roller thermofuseif it is opened. <br> 4. Replace the main control board, I/O control board, or by checking the trigger signal at each pin. <br> - Signals to Check - <br> [A258/A259/A260] <br> Pressure roller fusing lamp trigger: CN303-B7 on main control board / CN218-B5, or CN205-A5 on I/O control board / CN106-4 on PSU. <br> [B017/B018] <br> Pressure roller fusing lamp trigger: CN303-B7 on main control board / CN211-B5 or CN203A5 on I/O control board / CN106-4 on PSU. |


|  |  | Phenomenon | Possible Cause/ Troubleshooting Procedure |
| :---: | :---: | :---: | :---: |
| 558 | A | Zero cross signal abnormal <br> - Timing \& Condition - <br> Zero cross signals generated within a certain period do not reach a predetermined number. | 1. Check if the following connectors are properly connected; <br> - CN205 and CN218 on the I/O control board [A255/A259/A260] <br> - CN203 and CN211 on the I/O control board [B017/B018] <br> - CN303 on the main control board <br> - CN106 on the PSU <br> 2. Check the continuity of the signal lines of the above cables. <br> 3. Replace the PSU, I/O control board, or main control board by checking the signal line at each pin. <br> - Signals to Check - <br> [A258/A259/A260] <br> Zero cross: CN106-3 on PSU/ CN205-A6, or CN218-B8 on I/O control board / CN303-B4 on main control board <br> [B017/B018] <br> Zero cross: CN106-3 on PSU/ CN203-A6, or CN211-B8 on I/O control board / CN303-B4 or on main control board |
| 601 | D | Scanner IPU communication error <br> Timing \& Condition - <br> After the main control board communicates successfully with the scanner IPU board once, a communication error is detected. | 1. Turn the main power switch off/on. <br> 2. Check if the connectors (CN412 and CN407) are properly connected on the main control board and scanner IPU board <br> 3. Replace the scanner IPU board <br> 4. Replace the main control board |
| 604 | D | IDU communication error <br> - Timing \& Condition - <br> No response is received from the IDU within 200 ms after the scanner IPU board sends a command and this error is detected 3 times in total. | 1. Check if the IDU board is properly connected to the scanner IPU board. <br> 2. Replace the IDU board. <br> 3. Replace the scanner IPU board |
| 620 | D | ADF communication error <br> - Timing \& Condition - <br> After the main control board communicates successfully with the ARDF once, a communication error is detected. | 1. Check that the cable is properly connected on the ADF main board and main control board or check if it is damaged. <br> 2. Replace the ARDF main board <br> 3. Replace the main control board |


| No. <br> Definition |  | Phenomenon | Possible Cause/ Troubleshooting Procedure |
| :---: | :---: | :---: | :---: |
| 621 | D | Sorter communication error |  |
|  |  | - Timing Just after the main switch is turned on or while the sorter is running <br> - Condition - <br> The main control board detected a communication error with the sorter main board. | 1. Check that the fiber-optic cableis properly connected on the sorter main board and main control board or check if it is damaged. <br> 2. Replace the sorter main board <br> 3. Replace the main control board |
| 625 | B | FPU communication error |  |
|  |  | - Timing \& Condition The scanner IPU board detected a communication error with the FPU while the FPU is operating or after the FPU completes the operation. | Defective scanner IPU board <br> 1. Check that the fiber-optic cableis properly connected on the FPU main board and main control board or check if it is damaged. <br> 2. Replace the FPU main board <br> 3. Replace the scanner IPU board |
| 626 | B | Paper tray unit communication error |  |
|  |  | - Timing Just after the main switch is turned on or while the paper tray unit is running <br> - Condition - <br> The main control board detected a communication error with the paper tray unit. | 1. Check that the cables are properly connected on the main control board, CSS/bank interface board, and paper tray unit control board or check if the cables are is damaged. <br> 2. Replace CSS/bank interface board <br> 3. Replace the paper tray unit control board <br> 4. Replace the main control board |
| 630 |  | RDS communication error |  |
|  |  | - Timing \& Condition The main control board receives no response from RDS when accessing it. <br> Even when this error is detected, the copier does not show the SC code and this SC code is not logged. (Copier functions are still working.) | 1. Check that the cables are properly connected on the CSS/bank interface board and main control board or check if the cables are damaged. <br> 2. Check and/or change the setting of the line adapter or replace it. <br> 3. Replace the CSS/bank interface board <br> 4. Replace the scanner IPU board |
| 690 | B | Application selection error |  |
|  |  | - Timing \& Condition When the main CPU communicates with CPUs on other PCBs, the main CPU does not receive response from the others. | 1. If this SC code is displayed after the scanner IPU firmware is changed, the IC card may still be in the slot. Turn the main switch off and on after removing the IC card. . <br> 2. Check if the connectors on the main control board, scanner IPU board, and the main board on each optionare properly connected. <br> 3. Replace the main control board, scanner IPU board, or the main board on each option |


| No. <br> Definition |  | Phenomenon | Possible Cause/ Troubleshooting Procedure |
| :---: | :---: | :---: | :---: |
| 720 | D | Sorter main motor error |  |
|  |  | The main motor pulse output state remains unchanged for 300 ms at start time, or for 100 ms during operation. | Sorter main motor:Test with SP5-804-120. Replace if necessary |
| 721 | D | Sorter bin motor error |  |
|  |  | The bin HP sensor has not turned off $2,550 \mathrm{~ms}$ after the bin goes up from the home position. | 1. Bin HP sensor: Check connections. Test using SP5-803-124/125 (input check: bin home/bin rotation). Replace the sensor if necessary. <br> 2. Overload: Check the mechanism, including the gears. <br> 3. Bin drive motor:Test with SP5-804-124. Replace if necessary. |
| 722 | D | Sorter jogger motor error |  |
|  |  | - The jogger does not return to its home position within the specified time. <br> - The jogger does not leave home position within the specified time. | 1. Jogger HP sensor:Check the connections. Test with SP5-803-128. Replace if necessary. <br> 2. Jogger motor:Test with SP5-804-131. Replace if necessary. |
| 724 | D | Sorter grip motor error |  |
|  |  | - The grip HP sensor does not go off within 3,200 ms during travel out of home position. <br> - The grip HP sensor does not go on within $3,200 \mathrm{~ms}$ during return to home position. | 1. Grip HP sensor: Check connections. Test with SP5-803-129. Replace if necessary. <br> 2. Grip motor. Test with SP5-804-127. Replace if necessary. |
| 725 | B | Sorter stapler motor error |  |
|  |  | The stapler HP sensor cannot detect the home position within the specified time ( 700 ms ) after the stapler motor is turned on. | 1. Staple jam: Check. <br> 2. Overload:Too many staples <br> 3. Stapler motor. Test with SP5-804-129. Replace if necessary. |
| 731 | D | Sorter tray shift motor error |  |
|  |  | The sorter self-diagnostics detect a tray shift motor error and notify the main control board. <br> - Timing - <br> Just after power is turned on or when the sorter is running | 1. Motor overload:Check the mechanism, including the gears. <br> 2. Motor: Test with SP5-804-132. Replace if necessary. |

## SERVICE CALL CONDITIONS

| $\begin{array}{r} \mathrm{No} \\ \text { Defin } \end{array}$ |  | Phenomenon | Possible Cause/ Troubleshooting Procedure |
| :---: | :---: | :---: | :---: |
| 732 | D | Sorter bin lift motor error <br> The sorter self-diagnostics detect a bin lift motor error and notify the main control board. <br> - Timing Just after power is turned on or when the sorter is running | 1. Bin lift motor. Test with SP5-804-124. Replace if necessary. <br> 2. Sorter control board Replace |
| 741 | B | Optional paper tray unit error The paper tray unit selfdiagnostics detect an error and notify the main control board. <br> - Timing - Just after power is turned on or when the paper tray unit is running. | Paper tray unit control board Replace. |
| 790 | B | Projector lamp on error <br> - Timing \& Condition - <br> The projector lamp does not turn on 100 ms after 5 V is applied to it. | 1. Check if the connector of blown projector lamp is properly connected. <br> 2. Replace the projector lampif it is blown. <br> 3. Replace the projector main board |
| 791 | B | Projector lamp off error <br> - Timing \& Condition - <br> The projector lamp does not turn off 100 ms after it is turned off. | 1. Replace the projector main board <br> 2. Replace the scanner IPU board <br> 3. Replace the main control board |
| 792 | B | Projector lamp overheated <br> - Timing \& Condition The projector lamp overheats during projector operation. | 1. Check if the connector of the fanis properly connected. <br> 2. Replace the fan if it is defective. <br> 3. Replace the thermistor if it is defective. <br> 4. Replace projector main board |
| 901 | D | Upper total counter error <br> - Feedback signal stays LOW when the main switch turns on. <br> - Feedback signal stays LOW just before the trigger signal goes ON. <br> - Feedback signal stays HIGH just before the trigger signal goes off. | 1. Check if the connectors are properly set. <br> 2. Replace the total counter. |
| 902 | D | Lower total counter error |  |

### 7.2 PROCESS CONTROL ERROR CONDITIONS

### 7.2.1 PROCESS CONTROL SELF-CHECK RESULTS (SP3-975-00)

Self-check results 03-975-00

| Displayed Value | Item | Related SP No. | Major Cause | Remarks |
| :---: | :---: | :---: | :---: | :---: |
| 1 | Successful | None |  |  |
| 89 | Toner end error | SP3-125-00 | SP3-125-00 is set to " 1 ", toner end condition or toner near-end condition. |  |
| 99 | Forced termination (door opened, etc.) | None | Power is turned off during selfcheck. <br> Temporary main power failure |  |
| 100 | ID sensor offset error |  | ID sensor connector disconnected | SC385 is indicated. |
| 110 | Vsg adjustment error | 3-107 | Dirty ID sensor, dirty drum, foreign materials or flaws on the drum | SC385 is indicated. |
| 120 | Coating weight calculation error | None | ID sensor noise interference, defective development unit, incorrect charge control unit setup, development bias error |  |
| 130 | Vmin error |  | ID sensor noise interference, K toner density too low |  |
| 20* | $\gamma$ calculation error, invalid $\gamma$ or Vk value | 3-122-xx | Development unit error, mixed colors |  |
| 300 | Residual potential error | 3-111-00 | Drum anomaly, faulty LD unit, poor grounding |  |
| 31* | Vd adjustment error | None | Drum deterioration, optical fatigue |  |
| $32^{*}$ | Vpl adjustment error | None | Drum anomaly, faulty LD unit |  |
| 40* | Self-check process control $\gamma$ (gamma) error (unable to calculate) |  |  |  |
| 41* | Self-check process control $\gamma$ (gamma) error (out of range condition) |  |  |  |

$1: \mathrm{K}, 2: \mathrm{Y}, 3: \mathrm{C}$, and $4: \mathrm{M}$ are displayed for the respective colors for items identified by an asterisk in the 'Displayed value' column of the table.

### 7.2 PROCESS CONTROL ERROR CONDITIONS

### 7.2.1 PROCESS CONTROL SELF-CHECK RESULTS (SP3-975-00)

Self-check results 03-975-00

| Displayed Value | Item | Related SP No. | Major Cause | Remarks |
| :---: | :---: | :---: | :---: | :---: |
| 1 | Successful | None |  |  |
| 89 | Toner end error | SP3-125-00 | SP3-125-00 is set to " 1 ", toner end condition or toner near-end condition. |  |
| 99 | Forced termination (door opened, etc.) | None | Power is turned off during selfcheck. <br> Temporary main power failure |  |
| 100 | ID sensor offset error |  | ID sensor connector disconnected | SC385 is indicated. |
| 110 | Vsg adjustment error | 3-107 | Dirty ID sensor, dirty drum, foreign materials or flaws on the drum | SC385 is indicated. |
| 120 | Coating weight calculation error | None | ID sensor noise interference, defective development unit, incorrect charge control unit setup, development bias error |  |
| 130 | Vmin error |  | ID sensor noise interference, K toner density too low |  |
| 20* | $\gamma$ calculation error, invalid $\gamma$ or Vk value | 3-122-xx | Development unit error, mixed colors |  |
| 300 | Residual potential error | 3-111-00 | Drum anomaly, faulty LD unit, poor grounding |  |
| 31* | Vd adjustment error | None | Drum deterioration, optical fatigue |  |
| 32* | Vpl adjustment error | None | Drum anomaly, faulty LD unit |  |
| 40* | Self-check process control $\gamma$ (gamma) error (unable to calculate) |  |  |  |
| 41* | Self-check process control $\gamma$ (gamma) error (out of range condition) |  |  |  |

$1: \mathrm{K}, 2: \mathrm{Y}, 3: \mathrm{C}$, and $4: \mathrm{M}$ are displayed for the respective colors for items identified by an asterisk in the 'Displayed value' column of the table.

### 7.2.3 SELF-CHECK PROCESS CONTROL RELATED SE

## (1) SC385: Vsg adjustment error

The LCD displays SC385 when the output from the ID sensor is outside $1.8 \pm$ 0.05 V during Vsg adjustment.

Turning the power off then on resets this condition. However, SC385 is lit again after the end of each copy job even when this SC condition is reset by turning the power off then on. Toner is still supplied by using fixed supply mode, until a subsequent Vsg adjustment succeeds.

Vsg adjustment timing:

- After a process control self-check (forced, power-on time, or fixed interval).
- After developer initialization (SP2-225-1 to SP2-225-5)
- When the output differs from the Vsg value measured during the preceding Vsg adjustment by more than $\pm 0.05 \mathrm{~V}$.


## (2) SC386: ID sensor pattern error

An SC386 is generated when the M/A is out of the target range $\left(0.2\right.$ to $0.4 \mathrm{mg} / \mathrm{cm}^{2}$ for $C, M$, and $Y$ toners, 0.1 to $0.3 \mathrm{mg} / \mathrm{cm}^{2}$ for $K$ toner). For example, if an $M / A$ less than $0.2 \mathrm{mg} / \mathrm{cm}^{2}$ is detected five times successively for $C, M$, and $Y$ toners (or 0.1 $\mathrm{mg} / \mathrm{cm}^{2}$ for K toner), the machine will generate an SC386.
Turning the power off then on resets this SC. Subsequently, the toner supply is carried out in normal supply mode (fuzzy control).
There are cases in which SC385 occurs before SC386 (abnormal ID sensor) output is generated because of a faulty ID sensor.

Differences between SC385 and SC386 in their use

- SC385 is detected only when a Vsg adjustment is being performed. Consequently, it can never be detected in continuous copy mode (until selfcheck process controls are performed at a fixed interval or the establishment of an end of copy job condition).
- SC386 is detected during toner supply control, which is done every image production. Consequently, it is designed to be detected when abnormal toner density occurs during the development process in continuous copy mode.


### 7.3 DRUM LIGHT FATIGUE

Leaving the drum exposed to direct sunlight will cause it damage. This damage creates light fatigue on the drum, an effect that will be visible on the print out. When the drawer unit is slid out, even if the drum remains in the drawer unit, it will be exposed to direct and reflected light. Light fatigue will occur if the drum is exposed for more than 2 minutes.
This section will show how to determine where light fatigue occurred on the image.
Making a print test pattern with SP mode 5-955-18 enables you to determine whether the drum has light fatigue. Follow this procedure to make a test pattern with A3 (DTL) in 1C (single color) mode using SP mode.

1. Enter SP mode 5-955.
2. Set SP 5-955-018 to 6 to select the Solid test pattern.
3. Set SP 5-955-001 to 51 to select the LD writing value, 51 .
4. Press the $=7$ key to change the LD.
5. Select $A 3$ (DTL) size and $B / W$ mode (or another $1 C$ mode).
6. Press the * key to make a test pattern.
7. Check whether the image has a dark uneven area.
8. If the darker area location is similar to the following figure, replace the drum.
9. After replacing the drum, set SP5-955-001 10128 and 5-955-018 to 0.

Feed direction


### 7.4 FIRMWARE HISTORY

### 7.4.1 B017/B018 FIRMWARE MODIFICATION HISTORY



| FIRMWARE MODIFICATION HISTORY |  |  |  |
| :--- | :---: | :---: | :---: |
| DESCRIPTION OF MODIFICATION | Models | Prod. | Ver. |
| Corrects the following: <br> 1. An SC condition may occur at the 2nd copy when <br> the following conditions are met: | B0175197K | May | 1.172 |
| 1) More than 2 sheets of A3 originals are set in the | B0185197K | May | 1.112 |
| DF |  | 2001 |  |
| 2) Black/White or single color mode (Yellow, Magenta |  |  |  |
| or Cyan) |  |  |  |
| 3) Image shift is used (shift to left) |  |  |  |
| 2) A4 paper is selected |  |  |  |
| 2. If APS is unable to detect the paper size when the |  |  |  |
| paper bank is not installed, the operation panel |  |  |  |
| display shows the 1st tray for the paper bank as |  |  |  |
| selected (shaded). |  |  |  |
| 3. An RSS function was not operating properly. |  |  |  |

### 7.4.2 B017/B018 IPU FIRMWARE MODIFICATION HISTORY

| DESCRIPTION OF MODIFICATION | Models | Prod. | Ver. |
| :--- | :---: | :---: | :---: |
| Initial Production | B0175133D | $1^{\text {st }}$ Prod. | 1.04 |
| The separation threshold level for letter and photo was <br> changed. <br> Corrects the following: <br> When scanning A4 or A3 size using the ADF and Fiery <br> controller, the scanned image becomes white at least <br> the Main or IPU program should be upgraded. | B0175133E | Jan. 2001 | 1.05 |
| Corrects the following: <br> Optimized scanner registration accuracy for 25-70\% <br> reduction mode. | B0175133F | Feb. 2001 | 1.06 |
| Corrects the following: <br> The machine does not detect A5L or 5 1/2" X 8 1/2"L <br> originals in APS mode, even if SP 4-303 (APS Minimum <br> Size Setting) is set to 1. | B0175133G | Aug. 2001 | 1.07 |

### 7.4.3 B017/B018 FCU FIRMWARE MODIFICATION HISTORY

| DESCRIPTION OF MODIFICATION | Models | Prod. | Ver. |
| :--- | :---: | :---: | :---: |
| Initial Production | B3835582B | $1^{\text {st }}$ Prod. | 2.17 |

## B383

## FAX UNIT

This manual explains the Fax Unit, as well as the following.
$\square$ EXSAF (Machine Code: A818)
$\square$ HDD (Machine Code: A841)
$\square$ PMU (Machine Code: A818)
$\square$ ISDN (Machine Code: A816)
$\square$ Handset (Machine Code: A841)

- Stamp (Machine Code: A563)


## 1. OVERALL MACHINE INFORMATION

### 1.1 SPECIFICATIONS

## Type

Desktop type transceiver

## Circuit

PSTN, PABX, ISDN (optional)

## Connection

Direct couple
Original Size (Book)
Maximum Length: 432 mm [17 ins]
Maximum Width: 297 mm [11.7 ins]
Original Size (ADF)
Maximum: A3, 11" x 17"
Minimum: B5, $51 / 2^{\prime \prime} \times 81 / 2^{\prime \prime}$

## Scanning Method

Flat bed, with CCD

## Scan Width

$210 \mathrm{~mm}[8.64 \mathrm{ins}] \pm 1 \%$ (A4)
$216 \mathrm{~mm}[8.5 \mathrm{ins}] \pm 1 \%$ ( $8.5^{\prime \prime} \times 11^{\prime \prime}$ )
$256 \mathrm{~mm}[10.2 \mathrm{ins}] \pm 1 \%$ (B4)
279 mm [11.0 ins] $\pm 1 \%$ (11" x 17"r)
$296 \mathrm{~mm}[12.2 \mathrm{ins}] \pm 1 \%$ (A3)

## Resolutions

$8 \times 3.85$ lines $/ \mathrm{mm}$ (G3 only)
$8 \times 7.7$ lines/mm (G3 only)
$8 \times 15.4$ lines $/ \mathrm{mm}$ (G3 only)
$16 \times 15.4$ lines $/ \mathrm{mm}$ (G3 only)
$200 \times 100 \mathrm{dpi}$
$200 \times 200 \mathrm{dpi}$
$400 \times 400 \mathrm{dpi}$

## Note:

To use the $8 \times 15.4$ lines $/ \mathrm{mm}, 16 \times 15.4$ lines $/ \mathrm{mm}$ and $400 \times 400$ dpi resolutions, an optional PMU (page memory) is required.

## Memory Capacity

ECM: 128 Kbytes

## SAF:

Standard: 2 Mbytes (160 pages)
With optional memory board (EXSAF):
6 Mbytes (480 pages)
With optional HDD:
80 Mbytes (3000 pages)
Measured using an ITU-T \#1 test document (Slerexe letter)

## Compression

MH, MR, MMR, SSC
JBIG (PMU is required)
(MMR only with ECM and G4)
SAF storage for memory tx: MMR and raw data

## Protocol

Group 3 with ECM
Group 4 (ISDN unit required)

## Modulation

V.34, V. 17 (TCM), V. 29 (QAM),
V.27ter (PHM), V. 21 (FM)

## Data Rate (bps)

G3:
33600/31200/28800/26400/24000/21600/
19200/16800/14400/12000/9600/7200/4800
/2400, Automatic fallback
G4 (option): $64 \mathrm{kbps} / 56 \mathrm{kbps}$

## I/O Rate

With ECM: $0 \mathrm{~ms} / \mathrm{line}$
Without ECM: 2.5, 5, 10, 20, or $40 \mathrm{~ms} / \mathrm{line}$

## Transmission Time

G3: 3 s at 28800 bps ; Measured with G3
ECM using memory for an ITU-T \#1 test document (Slerexe letter) at $8 \times 3.85 \mathrm{l} / \mathrm{mm}$ resolution
G4 (option): 3 s at 64 kbps ; Measured with an ITU-T \#1 test document (Slerexe letter) at $200 \times 200$ dpi resolution

### 1.2 FEATURES

### 1.2.1 FEATURES LIST

KEY:
O = Used, $\mathrm{X}=$ Not Used,
A = Optional EXSAF required
$\mathrm{B}=$ Optional HDD required
C = Optional PMU required
$\mathrm{D}=$ Optional ISDN unit required
$\mathrm{E}=$ Optional STAMP unit

| Video Processing Features |  |
| :---: | :---: |
| Automatic image density selection | 0 |
| Contrast | O |
| Halftone (Basic \& Error Diffusion) | 0 |
| MTF | 0 |
| Reduction before tx ( $\mathrm{B4}$-> A4) | 0 |
| Reduction before tx ( $\mathrm{A} 3->\mathrm{B4} 4)$ | 0 |
| Reduction before tx ( $\mathrm{A} 3->\mathrm{A} 4$ ) | 0 |
| Scanning Resolution Standard | 0 |
| Scanning Resolution - Detail | 0 |
| Scanning Resolution - Fine | C |
| Scanning Resolution Superfine | C |
| Smoothing to $400 \times 400 \mathrm{dpi}$ when printing | 0 |
| JBIG compression | C |


| Communication Features - Automatic |  |
| :--- | :---: |
| V. 34 communication | O |
| Al short protocol | O |
| Automatic fallback | O |
| Automatic redialing <br> (Memory tx only) | O |
| Confidential Reception | A |
| Dual Access | O |
| Substitute reception | O |


| Communication Features - User <br> Selectable |  |
| :--- | :---: |
| 90 Image Rotation before tx | O |
| Action as a transfer <br> broadcaster | A |
| Al Redial (last ten numbers) | O |
| Answering machine interface | X |
| Authorized Reception | O |
| Automatic dialing <br> (pulse or DTMF) | O |
| Auto Document | O |
| Automatic Voice Message | X |
| Batch Transmission | O |
| Book Original tx | O |
| Broadcasting | O |
| Chain Dialing | O |
| Communication Record <br> Display | O |
| Confidential ID Override | O |
| Confidential Reception | A |
| Confidential Transmission | O |
| Direct Fax Number Entry | O |
| Economy Transmission | O |
| Fax on demand | X |
| Forwarding | A |
| Free Polling | O |
| Groups (9 groups) | O |
| Group Transfer Station | A |
| Hold | X |
| ID Transmission | O |
| Immediate Redialing | O |
| Immediate transmission | O |
| Keystroke Programs | O |
| Length Reduction | O |
| Memory transmission | O |
| Multi-step Transfer | A |
| Next Transfer Station | X |
| Non-standard original size |  |
| transmission | O |
| OMR | X |
| On Hook Dial | O |
| Ordering Toner |  |
| Page Count | O |
|  |  |


| Communication Features - User Selectable |  |
| :---: | :---: |
| Page separation mark | 0 |
| Parallel memory transmission | 0 |
| Personal Codes | 0 |
| Personal Codes with Conf. ID | X |
| Partial Image Area Scanning | X |
| Polling Reception | 0 |
| Polling Transmission | 0 |
| Polling tx file lifetime in the SAF | 0 |
| Quick Dial (Standard: 56 stations) | 0 |
| Reception modes (Fax, Tel) | 0 |
| Remote control features | X |
| Remote Transfer | X |
| Resolutions available for reception <br> Standard <br> Detail <br> Fine ( $16 \times 15.4 \mathrm{l} / \mathrm{mm}$ only) <br> Superfine | O O C C |
| Restricted Access | 0 |
| Secured Polling | 0 |
| Secured Polling with Stored ID Override | 0 |
| Secure Transmission | X |
| Send Later | 0 |
| SEP/SUB/PWD | O |
| Silent ringing detection | X |
| Speed Dial (Standard: 100 stations) | 0 |
| Stamp | E |
| Telephone Directory | 0 |
| Tonal Signal Transmission | 0 |
| Transfer Request | 0 |
| Transmission Deadline (TRD) | X |
| Turnaround Polling | X |
| Two-step Transfer | X |
| Two in one | O |
| Voice Request (immed. tx only) | X |


| Communication Features - <br> Service Selectable |  |
| :--- | :---: |
| Al Short Protocol | O |
| Auto-reduction override option | O |


| Communication Features - <br> Service Selectable |  |
| :--- | :---: |
| Busy tone detection | O |
| Cable Equalizer | O |
| PSTN | O |
| ISDN | D |
| Closed Network (rx) | O |
| Continuous Polling Reception | O |
| Dedicated tx parameters | O |
| ECM | O |
| EFC | X |
| Inch-mm conversion before tx | O |
| mm-inch selection when | O |
| printing | O |
| Page retransmission times | O |
| Protection against wrong conn. | X |
| Short Preamble |  |


| Other User Features |  |
| :--- | :---: |
| Area code prefix | X |
| Center mark | O |
| Checkered mark | O |
| Clearing a memory file | O |
| Clearing a polling file | O |
| Clock | O |
| Confidential ID | O |
| Counters | X |
| Daylight Saving Time | O |
| Destination Check | O |
| Direct entry of names | O |
| File Retention Time | O |
| File Retransmission | X |
| Function Programs (F1 - F5) | O |
| Hard Disk Filing System | O |
| ID Code | SP |
| Label Insertion ("To xxx") | O |
| Language Selection |  |
| Manual service call | A |
| Memory Lock | O |
| Modifying a memory file (tx) | A |
| Multi Sort Document <br> Reception | O |
| Own telephone number | O |
| Energy Saver | X |
| Print density control |  |

FEATURES

| Other User Features |  |
| :--- | :---: |
| Printing a memory file | SP <br> mode |
| RDS on/off | O |
| Reception Mode Switching | X |
| Timer | Reception time printing |
| Remaining memory indicator | O |
| Reverse Order Printing | O |
| RTI, TTI, CSI | O |
| Speaker volume control | O |
| Specified Cassette Selection | O |
| Substitute reception on/off | O |
| Telephone line type | O |
| Toner Saving Mode | X |
| TTI/CIL on/off | O |
| User Function Keys (5 keys) | O |
| User Parameters | O |
| Wild Cards | O |


| Reports - Automatic |  |
| :--- | :---: |
| Charge Control Report | X |
| Communication Failure Report | O |
| Confidential File Report | A |
| Error Report | O |
| Fax On Demand Report | X |
| Memory Storage Report | O |
| Polling Clear Report | O |
| Polling Reserve Report | O |
| Polling Result Report | O |
| Power Failure Report | O |
| Journal | O |
| Toner Cassette Order Form | X |
| Transfer Result Report | A |
| Transmission Result Report | O |


| Reports - User-initiated |  |
| :--- | :---: |
| Authorized Reception List | O |
| Charge Control Report | X |
| File List | O |
| Forwarding List | A |
| Group List | O |
| Hard Disk File List | X |
| Personal Code List | O |
| Keystroke Program List | O |


| Reports - User-initiated |  |
| :--- | :---: |
| Quick Dial/Function Key Label | O |
| Quick Dial List | O |
| Specified Cassette Selection <br> List | X |
| Speed Dial List | O |
| TCR/Journal | O |
| Transmission Status Report | X |
| User Function List | X |
| User Parameter List | O |


| Service Mode Features |  |
| :--- | :---: |
| Back-to-back test | O |
| Bit switch programming | O |
| Buzzer test | O |
| Cable equalizer | O |
| Comm. parameter display | O |
| Counter check | O |
| Country code | O |
| DTMF tone test | O |
| Echo countermeasure | O |
| Effective term of service calls | O |
| Error code display | O |
| Excessive jam alarm | B |
| File Transfer | SP |
| Hard Disk Utilities <br> (Format etc.) | X |
| LCD contrast adjustment |  |
| Line error mark | O |
| Memory file printout (all files) | O |
| Modem test (includeV.34 / V.8) | O |
| NCU parameters | O |
| Periodic service call | O |
| PM Call | O |
| Printing all communication <br> records kept in memory | O |
| Protocol dump list | O |
| RAM display/rewrite | O |
| RAM dump | O |
| RAM test | O |
| RDS |  |
| - RAM read/write |  |
| - Dial data transfer |  |
| (Quick/Speed) |  |
| - Software transfer | O |
| Ringer test | O |


| Service Mode Features |  |
| :--- | :---: |
| ROM version display <br> (FCU and Modem) | O |
| Serial number | O |
| Service monitor report | O |
| Service station number | O |
| Software Download | O |
| Software Upload | O |
| Modem Software Download | O |
| SRAM data backup and <br> restore | O |
| System parameter list | O |
| Technical data on the Journal | O |

### 1.2.2 CAPABILITIES OF PROGRAMMABLE ITEMS

The following table shows how the capabilities of each programmable item will change after the optional function upgrade card is installed.

| Item | Standard | With optional <br> memory board <br> (EXSAF) |
| :--- | :---: | :---: |
| Maximum number of memory files | 200 | 1000 |
| Maximum number of destinations per file | 200 | 1000 |
| Maximum number of destinations overall | 500 | 2000 |
| Maximum number of pages overall | 160 | 480 (HDD: 3000) |
| Number of Quick Dials | 56 | 56 |
| Number of Speed Dials | 100 | 1000 |
| Number of Groups | 9 | 30 |
| Maximum number of destinations per <br> Group | 200 | 200 |
| Maximum number of destinations dialed <br> from the ten-key pad overall | 100 | 1000 |
| Maximum number of programs <br> (programmed in 56 <br> Quick Dial keys) | (programmed in 56 <br> Quick Dial keys) |  |
| Maximum number of Auto Documents <br> (programmed in 6 <br> Quick Dial keys) | (programmed in 18 <br> Quick Dial keys) |  |
| Maximum number of communication <br> records for the Journal stored in the <br> memory | 200 | 900 |
| Maximum number of addresses specified <br> for features such as Authorized <br> Reception and Specified Cassette <br> Selection | 30 | 50 |
| Maximum number of user function keys | 5 | 5 |
| Maximum number of personal codes | 20 | 50 |

### 1.3 OVERALL MACHINE CONTROL

### 1.3.1 SYSTEM CONTROL



The basic fax unit consists of two PCBs: an FCU and an NCU.
The FCU controls all the fax communications and fax features, in cooperation with the base copier's main board. The NCU switches the analog line between the fax unit and the optional external telephone.

## Fax Options

1. ISDN unit: This allows the fax unit to communicate over an ISDN (Integrated Services Digital Network) line.
2. EXSAF board: This expands the SAF memory capacity to hold up to 6MB of received data or data for transmission. Also, some additional features become available. In addition, this expands the system's SRAM capacity to hold programmed telephone numbers, communication records, etc.
3. PMU board: This expands the page memory capacity to 4 MB to enable 400 dpi communications. Also, JBIG compression becomes available.
4. Hard Disk: This expands the SAF memory capacity to 80MB. The EXSAF is required to install this option.

### 1.3.2 POWER DISTRIBUTION AND CONTROL

The FCU power is supplied from the base copier (+24V, +12V, -12 V , and +5 VE ) and PSU $(+5 \mathrm{~V})$. Refer to the base copier's service manual for details.

### 1.3.3 MEMORY BACK-UP

The system parameters and programmed items in the SRAM on the FCU and the EXSAF board are backed up by batteries (long-term backup), in case the base copier's main switch is turned off.

The SAF memory (DRAM) on the FCU and the EXSAF board are backed up by rechargeable batteries for 1 hour.

### 1.4 VIDEO DATA PATH

### 1.4.1 TRANSMISSION



## Memory Transmission and Parallel Memory Transmission

The mainframe's scanner scans the original at the selected resolution in inch format. The mainframe processes the data and transfers it to the FCU.

NOTE: When scanning a fax original, the mainframe uses the MTF and thresholding parameter settings programmed in the fax unit's scanner bit switches, not the copier's SP modes.
Then, the FCU converts the data to mm format, and compresses the data in MMR+raw format to store it in the SAF memory. If image rotation is possible, the image is rotated in page memory before compression.
At the time of transmission, the FCU decompresses the stored data, then recompresses and/or reduces the data if necessary for transmission. Either the NCU or CiG4 (optional) transmits the data to the line.

## Immediate Transmission

The mainframe's scanner scans the original at the resolution agreed with the receiving terminal. The mainframe video processes the data and transfers it to the FCU.
NOTE: When scanning a fax original, the mainframe uses the MTF and thresholding parameter settings programmed in the fax unit's scanner bit switches, not the copier's SP modes.
Then the FCU stores the data in page memory, and compresses the data for transmission. Either the NCU or CiG4 (optional) transmits the data to the line.

## JBIG Transmission

- Memory transmission: With memory transmission, if the receiver has JBIG compression, the data goes from the SCP (DCR) to the PMU for JBIG compression. Then either the NCU or CiG4 (ISDN unit) transmits the data to the line.
- Immediate transmission: With immediate transmission, if the receiver has JBIG compression, the data goes from the page memory to the PMU for JBIG compression. Then either the NCU or CiG4 (optional) transmits the data to the line.


### 1.4.2 RECEPTION



First, the FCU stores the data from either an analog line or an ISDN line to the SAF memory. (The data goes in parallel to the SCP, and is checked for error lines/frames.)

The FCU then decompresses the data and transfers it to page memory. If image rotation is possible, the image is rotated in the page memory. The data is transferred to the mainframe.

## JBIG Reception

When the machine receives data compressed with JBIG, the data is sent to PMU for decompression. Then the data is stored in the page memory, and transferred to the mainframe.

## 2. DETAILED SECTION

### 2.1 SERVICE CALL CONDITIONS

The fax unit makes an automatic service call when a SC code other than the following is informed from the base copier.
NOTE: The service station's fax number has to be programmed in advance, or the machine cannot make a service call.

Exceptions

| Address (H) | Definition | Default | SC code |
| :---: | :---: | :---: | :---: |
| 480A30 | 1st SC code - High byte (BCD) | 09 | 9AA from 900 to 999 |
| 480A31 | 1st SC code - Low byte (BCD) | AA |  |
| 480A32 | 2nd SC code - High byte (BCD) | FF | Not programmed |
| 480A33 | 2nd SC code - Low byte (BCD) | FF |  |
| 480A34 | 3rd SC code - High byte (BCD) | FF | Not programmed |
| 480A35 | 3rd SC code - Low byte (BCD) | FF |  |
| 480A36 | 4th SC code - High byte (BCD) | FF | Not programmed |
| 480A37 | 4th SC code - Low byte (BCD) | FF |  |
| 480A38 | 5th SC code - High byte (BCD) | FF | Not programmed |
| 480A39 | 5th SC code - Low byte (BCD) | FF |  |
| 480A3A | 6th SC code - High byte (BCD) | FF | Not programmed |
| 480A3B | 6th SC code - Low byte (BCD) | FF |  |
| 480A3C | 7th SC code - High byte (BCD) | FF | Not programmed |
| 480A3D | 7th SC code - Low byte (BCD) | FF |  |
| 480A3E | 8th SC code - High byte (BCD) | FF | Not programmed |
| 480A3F | 8th SC code - Low byte (BCD) | FF |  |
| 480A40 | 9th SC code - High byte (BCD) | FF | Not programmed |
| 480A41 | 9th SC code - Low byte (BCD) | FF |  |
| 480A42 | 10th SC code - High byte (BCD) | FF | Not programmed |
| 480A43 | 10th SC code - Low byte (BCD) | FF |  |
| 480A44 | 11th SC code - High byte (BCD) | FF | Not programmed |
| 480A45 | 11th SC code - Low byte (BCD) | FF |  |
| 480A46 | 12th SC code - High byte (BCD) | FF | Not programmed |
| 480A47 | 12th SC code - Low byte (BCD) | FF |  |
| 480A48 | 13th SC code - High byte (BCD) | FF | Not programmed |
| 480A49 | 13th SC code - Low byte (BCD) | FF |  |
| 480A4A | 14th SC code - High byte (BCD) | FF | Not programmed |
| 480A4B | 14th SC code - Low byte (BCD) | FF |  |
| 480A4C | 15th SC code - High byte (BCD) | FF | Not programmed |
| 480A4D | 15th SC code - Low byte (BCD) | FF |  |
| 480A4E | 16th SC code - High byte (BCD) | FF | Not programmed |
| 480A4F | 16th SC code - Low byte (BCD) | FF |  |
| 480A50 | 17th SC code - High byte (BCD) | FF | Not programmed |
| 480A51 | 17th SC code - Low byte (BCD) | FF |  |


| Address (H) | Definition | Default | SC code |
| :---: | :--- | :---: | :---: |
| $480 A 52$ | 18th SC code - High byte (BCD) | FF |  |
| $480 A 53$ | 18th SC code - Low byte (BCD) | FF |  |
| 480A54 | 19th SC code - High byte (BCD) | FF | Not programmed |
| 480 A55 | 19th SC code - Low byte (BCD) | FF |  |
| 480A56 | 20th SC code - High byte (BCD) | FF | Not programmed |
| $480 A 57$ | 20th SC code - Low byte (BCD) | FF |  |

To add additional SC codes, program them in the blank addresses.

## Wild Cards

This function allows 'A' or 'a', to be used as a wild card instead of numbers from 0 to 9 . For example, '1AA' or '1aa' means all the SC codes from 100 to 199, and '39A' or '39a' means all the SC codes from 390 to 399.
The fax unit cannot make an automatic service call when a Fax SC code condition has occurred. Refer to Troubleshooting for Fax SC code details.

## Manual Service Call

If the service station needs a report, the user can make a service call manually, by changing bit 7 of User Parameter 14 (0E) to ' 1 '.

A sample auto service report


| Paper Size Code Table |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Code | Size | Code | Size |  |
| 005 | A4 sideways | 038 | $8.5 \times 11^{\prime \prime}$ sideways |  |
| 014 | B5 sideways | 160 | $11 \times 17^{\prime \prime}$ lengthwise |  |
| 031 | Non-standard | 164 | $8.5 \times 14^{\prime \prime}$ lengthwise |  |
| 132 | A3 lengthwise | 166 | $8.5 \times 11^{\prime \prime}$ lengthwise |  |
| 133 | A4 lengthwise | 172 | $5.5 \times 8.5^{\prime \prime}$ lengthwise |  |
| 134 | A5 lengthwise |  |  |  |
| 141 | B4 lengthwise |  |  |  |
| 142 | B5 lengthwise |  |  |  |
| 159 | Non-standard |  |  |  |

### 2.1.1 PERIODIC SERVICE CALL

The periodic service call notifies the service station of the machine's condition. The call is made at a time interval programmed in the following RAM addresses:

| Parameters | Address (H) |
| :---: | :---: |
| Call interval: 01 through 15 month(s) (BCD) 00: Periodic Service Call Disabled | 480379 |
| Date and time of the next call |  |
| Year: last two digits of the year (BCD) | 48037A |
| Month: 01 through 12 (BCD) | 48037B |
| Day: 01 through 31 (BCD) | 48037C |
| Hour: 00 through 23 (BCD) | 48037D |

To change these settings after programming, change the call interval. The machine then automatically changes the remaining parameters by referring to the interval and the current date and time.

### 2.1.2 PM CALL

If PM alarm is enabled by the base copier's SP mode and PM call is enabled by system switch 01, the machine will make an automatic service call when the base copier's PM counter reaches the PM interval.

### 2.1.3 EFFECTIVE TERM OF SERVICE CALLS

If a time limit for the effectiveness of service calls is programmed, the machine stops making automatic service calls after the time limit.

Program the time limit at the following addresses. This function is disabled when all of these addresses are $00(\mathrm{H})$.

|  | Address (H) |
| :--- | :---: |
| Year: last two digits of the year (BCD) | 480383 |
| Month: 01 through 12 (BCD) | 480384 |
| Day: 01 through 31 (BCD) | 480385 |

### 2.2 SCANNING FEATURES

### 2.2.1 PARALLEL MEMORY TRANSMISSION

Using basic memory transmission, normally the machine starts dialing after the document has been completely scanned. Using Parallel Memory Transmission, the machine starts dialing at the same time the machine starts scanning. If the document has multiple pages, the machine scans them into memory and sends them while scanning continues.
NOTE: This function is only usable when sending an original from the ADF.
The following table shows the differences between normal memory transmission and parallel memory transmission.

|  | Normal memory tx | Parallel memory tx |
| :--- | :--- | :--- |
| File Reserve Report | If automatic report printout <br> is enabled. | Not printed. |
| If the other terminal is |  |  |
| busy | Tries to resend the <br> message later. | Continues scanning the <br> document into memory, and <br> tries to resend it later. |
| If transmission failed | Tries to resend the <br> remaining pages later. | Tries to resend the remaining <br> pages later. |
| If memory overflows <br> during scanning | Stops scanning and <br> erases all the scanned <br> pages from memory, or <br> sends all the scanned <br> pages (user's choice). | Stops scanning and hangs up <br> the communication when <br> memory overflow is detected. <br> Then erases all the scanned <br> pages from memory without <br> notifying the user. |
| If a document jam <br> occurred during <br> scanning | Stops scanning and <br> deletes all the scanned <br> pages from memory. | Stops scanning and hangs up <br> the communication when a <br> document jam is detected. |
| How and when the <br> scanned message is <br> erased from memory | The complete message is <br> erased after all the pages <br> have been sent. | Same as memory transmission. |
| Memory threshold to <br> start scanning into <br> memory | Depends on the setting of <br> communication switch 0D. <br> Default setting - 24kB | Depends on the setting of <br> system switch 10. <br> Default setting - 384 kB |
| Meaning of the stamp <br> mark | Successfully stored. | Successfully stored. |
| Batch numbering (P. <br> x/x) | Enabled | Not available unless the number <br> of pages is programmed <br> manually. |
| Including a sample of <br> the image on reports | Possible | Possible |

In the following cases, the machine uses normal memory transmission even if parallel memory transmission is enabled.

- Send later transmission
- Broadcasting
- Transmission of an Auto Document only
- Transfer request transmission
- When Image Rotation before Tx is enabled, and an A4 sideways or $8.5 \times 11^{\prime \prime}$ sideways original is detected
- If the other terminal is busy
- If the external telephone connected to the machine is in use
- When communication switch 0 A , bit 0 is set to 1 , and the machine is using memory transmission when redialing
- When remaining memory space is less than the threshold for parallel memory transmission (default $=384 \mathrm{kB}$ )
- When the original is located on the exposure glass

When using G4 transmission, parallel memory transmission is normally disabled, because transmission using G4 is much faster than scanning. As a result, G4 transmission using parallel memory transmission takes about twice as long as normal memory transmission (using an ITU-T \#1 test chart).
If the document contains pages with complicated images or it is a photo document using halftone, parallel memory transmission may be faster than normal memory transmission. If the user commonly sends this type of fax message, enable parallel memory transmission for G4 transmission by changing system switch 11 , bit 7 to 1 .

## Cross Reference

Parallel memory tx (G3) On/Off - User parameter 07, bit 2
Parallel memory tx (G4) On/Off - System switch 11, bit 7
Memory threshold for enabling parallel memory tx

- System switch 10, bits 0 to 7

Point of resumption of memory transmission upon redialing

- Communication switch 0A, bit 0


### 2.2.2 SUB-SCAN LENGTH CORRECTION USING ADF

The ADF informs the FCU of the original length. If the length data is incorrect or the original is skewed, the machine corrects the sub-scan length to a standard paper length.

The correction algorithm is follows.

| Before sub-scan length <br> correction | After sub-scan length correction |
| :---: | :--- |
| Under 135 mm | 128 mm (B6 short edge length) |
| $136 \mathrm{~mm}-157 \mathrm{~mm}$ | 148 mm (A5 short edge length) |
| $158 \mathrm{~mm}-192 \mathrm{~mm}$ | 182 mm (B6 long edge length) |
| $193 \mathrm{~mm}-223 \mathrm{~mm}$ | 210 mm (A4 short edge length) <br> 216 mm (LT short edge length) <br> See the note below the table. |
| $267 \mathrm{~mm}-287 \mathrm{~mm}$ | 279 mm (LT long edge length) |
| $288 \mathrm{~mm}-307 \mathrm{~mm}$ | 297 mm (A4 long edge length) |
| $355 \mathrm{~mm}-374 \mathrm{~mm}$ | 364 mm (B4 long edge length) |
| $410 \mathrm{~mm}-425 \mathrm{~mm}$ | 420 mm (A3 long edge length) |
| Over 426mm | 432 mm (DLT long edge length) |

NOTE: Depends on the settings of scanner switch OC bit 6
Length Correction Enabled (Default setting)


When this feature is enabled, in the above example, the gray part of the original is not scanned. However this allows the machine to rotate the image before transmission in order to avoid unintentional reduction.

## Length Correction Disabled



In the above example, this feature is disabled. An unintentional reduction may occur if the receiving machine cannot print on paper with a width of 297 mm . However, with length-correction disabled, the machine sends the entire image.

## Cross Reference

- Image rotation before transmission - section 2.2.4.
- Sub-scan length correction on/off - Scanner switch 0C, bit 7
- Default setting is 0 . (Sub-scan length correction is enabled)
- Setting A4 or LT size when sub-scan length correction is on.
- Scanner switch 0C bit 6. Default setting is 1. (Recognize as A4 or LT size)


### 2.2.3 PAGE SPLIT TRANSMISSION (BOOK TRANSMISSION)



This function allows a $\mathrm{B} 4, \mathrm{~A} 4 / 8.5 \times 11^{\prime \prime}$, or $\mathrm{A} 3 / 11 \times 17$ " size book original to be sent as two separate pages.

When this function is selected, the machine scans the original twice and transmits the pages in the same sequence they were scanned.

With the default setting, the left page is sent first, then the right page is sent. If the setting is changed, the order is reversed.

## Cross Reference

- Scanning start page - User parameter switch 06, bit6
- Default setting is 0 . (Start scan from the left)

NOTE: 1) Memory transmission is used whenever this function is selected.
2) This function is only possible when sending a book original from the exposure glass.
3) If this function is used for an A3 or $11 \times 17$ " original, the pages may be transmitted in a lengthwise direction, depending on the setting of "Image Rotation before Transmission" (see the next page).

### 2.2.4 IMAGE ROTATION BEFORE TRANSMISSION



## A4 or $8.5 \times 11$ " sideways

This function avoids the unintentional reduction of an A4 or $8.5 \times 11$ " sideways original. When the machine detects a sideways A4 or $8.5 \times 11$ " original in the ADF or on the exposure glass, the fax unit rotates the scanned image clockwise by 90 degrees before transmission, as shown above.

## A5 or HLT lengthwise

This function avoids a blank space in the main scan direction. When the machine detects an A5 or HLT original placed lengthwise in the ADF or on the exposure glass, the fax unit rotates the scanned image clockwise by 90 degrees before transmission, as shown above.

NOTE: 1) Even if Parallel Memory Transmission is enabled, the machine uses normal memory transmission to send an A4 or $8.5 \times 11$ " sideways original.
2) If the machine carries out this function while printing, the machine stops printing until scanning is completed.
3) The machine determines if it will rotate the image after the paper size is determined.
4) This feature is not performed during parallel memory transmission.
5) In Book mode, the machine determines image rotation for each page scanned.
In ADF mode, the machine determines image rotation for the first page. If it is rotated, the machine will check each page. If the first page need not be rotated, the machine will not check the rest of the pages.

## Cross Reference

- Image rotation before Tx A3 or 11" width original on/off - Scanner switch 0F, bit 0 (Default setting is enabled)
- Image rotation before Tx A5 or HLT width original on/off - Scanner switch 0F, bit 2 (Default setting is disabled)
- Small size original detection
- Scanner switch 0C, bits 1 and 2
(Default setting is "Depends on the setting of the base copier.")


### 2.3 PRINTING FEATURES

### 2.3.1 PAPER SIZE SELECTION

This section explains how the FCU selects the appropriate paper size for printing a received fax image. Refer to the 'Paper Size Selection Priorities' tables at the end of this section for how the appropriate paper size is actually selected.

## Width Priority And Length Priority

When 'Width Priority' is selected, a paper size of the same width as the received fax image has a higher priority. The fax image may be printed on several pages.
When 'Length Priority' is selected, a paper size that has enough length to print the received fax image has higher priority. The fax image is printed on one sheet of paper, but the printed fax may have wide margins on the left and right.

## Cross Reference

- Paper selection priority - Printer switch 0E, bit 0 (Default: Width)


## Image Rotation Before Printing

If the machine has the same size paper as the received fax image size, but in sideways orientation, the fax unit rotates the image by 90 degrees clockwise, and prints it sideways.

This feature is only possible when the received fax image is one of the following sizes: A4 lengthwise, $8.5 \times 11$ " lengthwise, B5 lengthwise
NOTE: This function can not be disabled.

## Sub-Scan Reduction And Page Separation

## Sub-scan Reduction Disabled

When Sub-scan Reduction is disabled, the received fax image is printed unreduced.

If the image is longer than the paper length +6 mm , the image is separated onto two pages (see the top drawing below).
If the image is shorter than the paper length +6 mm but longer than the paper length - 4 mm , the part of the image after paper length -4 mm will be lost (see the bottom drawing below).
NOTE: The page separation threshold is adjustable between 0 and 15 mm (the default is paper length +6 mm ). Refer to Printer Switch 03, bits 4 to 7 for more details.

The 2 mm gaps at the leading and trailing edges depend on the leading and trailing edge margin settings.

The 10 mm image duplication can be adjusted or disabled.


## PRINTING FEATURES

## Sub-scan Reduction Enabled

When Sub-scan Reduction is enabled, the received fax image is reduced in the page memory to fit on the selected paper, if the received image length is between [paper length -4 mm ] and [paper length +20 mm ]. See the drawing below.


NOTE: The upper limit (page length +20 mm ) is adjustable between 0 and 155 mm . Refer to Printer Switch 04, bits 0 to 4 for more details.
If the FCU detects that the image must be separated into more than one page after reduction, what happens to the data depends on the Reduction Rate Equalization setting (Printer Switch 0E, bit 7).

- Reduction Rate Equalization Off (Example Diagram: Two-page Printout) -


1. The data up to [page length -4 mm ] will be printed on page 1 , without reduction.
2. The last 10 mm of this data will be repeated at the top of the next page (this length can be can be adjusted or repetition can be switched off).
3. The remaining data will be printed on page 2, with reduction, if it is within [paper length +20 mm ].
4. If it is longer than this, page separation is done again. Data up to [page length 4 mm ] will be printed on page 2, without reduction.
5. The process for page 3 and subsequent pages will repeat from step 2.

- Reduction Rate Equalization On (Example Diagram: Two-page Printout) -


1. The machine determines how many pages will be needed to print the message, taking the following into account:
The final page $(\mathrm{n})$ is such that the received image length is within (paper length $x \mathrm{n})+20 \mathrm{~mm}$
The data must be reduced to fit on pages of length (paper length -4 mm ), with an equal reduction rate for each page
The last 10 mm of the previous page will be repeated at the top of the next page (this length can be adjusted or repetition can be disabled).
2. The machine prints all the pages, at the same reduction rate.

If the customer does not want to receive a fax message on separate pages, page separation can be disabled. However, once it has been disabled, the machine does not print the received fax message until a paper size which can hold the received fax image on one page is set in a cassette. Keep page separation enabled if the customer expects to receive fax messages longer than the installed paper.

Cross Reference

| Parameter | Switch | Default Setting |
| :--- | :--- | :--- |
| Reduction in sub-scan direction <br> on/off | Printer Switch 03, bit 0 | Enabled <br> (except Germany) |
| Equalizing reduction rate among <br> separated pages | Printer Switch 0E, bit 7 | Enabled |
| Page separation threshold when <br> reduction is disabled | Printer Switch 03, bits 4-7 | 6 mm |
| Page separation threshold when <br> reduction is enabled | Printer Switch 04, bits 0-4 | 20 mm |
| Page separation on/off | Printer Switch 0E, bit 2 | Enabled |
| Page separation mark on/off | Printer Switch 00, bit 0 | Enabled |
| Image duplication with page <br> separation, on/off | Printer Switch 00, bit 1 | Enabled |
| Length of the repeated image on <br> the next page | Printer Switch 04, bits 5-6 | 10 mm |

## PRINTING FEATURES

## Page Reduction

This function allows a received fax image to be printed on paper with less width than the fax image.


First, the received image is reduced by a fixed reduction rate in the main and subscan directions. The available reduction rates are as follows:

- $84 \%$ - A3 to B4 reduction
- $82 \%$ - B4 to A4 lengthwise reduction

Then, the reduced image is further reduced (if necessary) in the sub-scan direction so that it can be printed on one page. However, if the FCU detects that the image does not fit on one page after sub-scan reduction, the FCU cancels the page reduction, but uses normal sub-scan reduction on the received fax image.

NOTE: 1) Sub-scan reduction is automatically enabled when Page Reduction is enabled.
2) A3 to A4 reduction is not available.

## Cross Reference

- Page reduction on/off - User parameter 10 (0A), bit 3 (Default: Disabled)


## Examples

1. When printing a B4 size fax image on $8.5^{\prime \prime} \times 11^{\prime \prime}$ lengthwise paper

- Fax image size: $256 \times 364 \mathrm{~mm}$ ( $10.7 \times 14.3^{\prime \prime}$ )
- Paper size: 216 x 279 mm ( $8.5 \times 11$ ")
- Reduction rate used: $82 \%$
- Page separation threshold: 20 mm

The received image is printed on one $8.5 \times 11$ " sheet, because the image length after page reduction ( $364 \mathrm{~mm} \times 82 \%=298.5 \mathrm{~mm}$ ) is shorter than the paper length ( 279 mm ) plus 20 mm .
2. When printing a non-standard size ( $256 \times 400 \mathrm{~mm}$ ) fax image on $8.5 \times 11^{11}$ lengthwise paper

- Fax image size: 256 x 400 mm (10.7 x 15.7")
- Paper size: $216 \times 279 \mathrm{~mm}$ ( $8.5 \times 11{ }^{\prime \prime}$ )
- Reduction rate used: $82 \%$
- Page separation threshold: 20 mm

The received fax image is printed on two $8.5 \times 11$ " sheets after page separation and image rotation, because the image length after page reduction ( $400 \mathrm{~mm} \times 82 \%$ $=328 \mathrm{~mm}$ ) is longer than the paper length ( 279 mm ) plus 20 mm .

Refer to the "Paper Size Selection Priorities" table later in this chapter.

## Two In One

This function allows two small pages to be printed on one sheet of paper. However, this function only works when the machine does not have the following size of paper in the cassette.

- The same size of paper as the received image
- The paper which has the same width and sufficient length


## Cross Reference

- Two in one on/off - User parameter 10 (0A), bit 1 (Default: Disabled)

PRINTING FEATURES

### 2.3.2 PAPER SIZE SELECTION PRIORITIES





Lengthwise
$\Leftarrow \square$
Sideways

| Page Reduction | Disabled |
| :--- | :--- |
| Reduction in Sub-scan Direction | Enabled |
| Page Separation Threshold | 20 mm |
| Width or Length Priority | Width |

$\square$ : Image Rotation
$\square$ : Half of the page is blank
$\Xi$ : Page Reduction

$\Longleftarrow$ $\square$ Lengthwise
$\rightleftarrows$ $\square$ Sideways

| Page Reduction | Disabled |
| :--- | :--- |
| Reduction in Sub-scan Direction | Disabled |
| Page Separation Threshold |  |
| Width or Length Priority | Length |

$\triangle$ : Image Rotation
$\square$ : Half of the page is blank
$\square$ : Page Reduction

$\rightleftharpoons$ $\square$ Lengthwise
$\Leftarrow \square$
Sideways

| Page Reduction | Disabled |
| :--- | :--- |
| Reduction in Sub-scan Direction | Enabled |
| Page Separation Threshold | 20 mm |
| Width or Length Priority | Length |



$\square$ Lengthwise
$\square$ Sideways

| Page Reduction | Enabled |
| :--- | :--- |
| Reduction in Sub-scan Direction | Enabled |
| Page Separation Threshold | 20 mm |
| Width or Length Priority | Width |

$\triangle$ : Image Rotation
$\square$ :
: Half of the page is blank
$\Xi$ : Page Reduction

$\Longleftarrow$ Lengthwise
$\rightleftharpoons \square$ Sideways

| Page Reduction | Enabled |
| :--- | :--- |
| Reduction in Sub-scan Direction | Enabled |
| Page Separation Threshold | 20 mm |
| Width or Length Priority | Length |



$<$ $\square$ Lengthwise
$\longleftarrow$ Sideways

### 2.3.3 JUST SIZE PRINTING

This function restricts the machine so that it can only print a received message on paper with the highest priority paper size.

NOTE: 1) Example:
A: The machine has A4 (lengthwise) and B4.
B: The A4 paper tray is empty
C: The machine receives an A4 (lengthwise) size message.
When just size printing is disabled, the machine prints the received
image on B4 paper. When just size printing is enabled, the machine will not print on B4 paper. If the machine has A4 (sideways), the machine prints using image rotation.
2) When the paper tray with the highest priority paper size is empty, the machine displays 'Paper designated to print Fax/lists are empty. Refill -- size'.
3) When both page reduction and just size printing are enabled, page reduction is given priority

## Cross Reference

- Just size printing on/off - User parameter switch 05, bit5 Default setting is 0 : Just size printing is disabled
- Just size printing while a paper cassette is opened - Printer switch 06, bit 1 Default setting is 0 : Printing will not start


### 2.3.4 TWO-SIDED (DUPLEX) PRINTING



## PRINTING FEATURES

When duplex printing is enabled in fax mode, the machine prints two consecutive pages, which must be the same size and direction, onto both sides of the page. Duplex printing can utilize both Left Binding and Top Binding, selected by a bit switch.

## LEFT BINDING

As shown in the above diagram, the printed results of both sides are in the same direction.

## TOP BINDING

As shown in the above diagram, the printed results of both sides are in the reverse direction.

NOTE: 1) The optional duplex unit and EXSAF card are required to enable duplex printing.
2) The machine starts printing after all pages have been received.

## Cross Reference

- Duplex printing on/off for specific senders - Key operator mode 07
- Duplex printing on/off for all received fax messages - Printer Switch 0F, bit 2
- Wait time when duplex unit is in use - Printer Switch OF, bits 6 and 7
- Bind direction - Printer Switch 0F, bits 3


### 2.4 FAX COMMUNICATION FEATURES

### 2.4.1 SEP/SUB/PWD

In 1996, ITU-T introduced the following protocol signals as the T. 30 recommendations. These signals enable confidential transmission and secured polling between machines produced by different manufacturers.
SEP (Selective Polling): This signal informs the other terminal of a polling ID to enable secured (ID) polling or to select a document to poll.
Up to 20 digits or characters can be sent in a SEP frame.
PWD (Password): This signal informs the other terminal of a password to enable extra security.
Up to 20 digits or characters can be sent in a PWD frame.
SUB (Sub-address): This signal informs a sub-address of a destination. Some fax servers use this information to route a received fax message to a specific address in the local network.
Up to 20 digits or characters can be sent in a SUB frame.
SID (Sender ID): This signal informs the other terminal of the sender ID to identify the transmitter.
Up to 20 digits or characters can be sent in a SID frame.
NOTE: SID is not available with this machine.

The ITU-T recommendation only clarifies transmission requirements, and does not specify reception requirements. How the receiving terminal treats these signals varies with receiver terminal and manufacturer.
This machine is capable of sending SEP, SUB and PWD codes in transmission or for polling reception, but it is not capable of receiving these codes. If the machine receives one of these frames, the machine ignores it.

## FAX COMMUNICATION FEATURES

## Selective Polling (SEP/PWD)



## Sub-address (SUB)



### 2.4.2 JBIG COMPRESSION

JBIG (Joint Bi-Level Image Coding Expert Group) is a working group which consists of members of ITU-T T. 82 and ISO11544. The JBIG compression method allows data compression of approximately 1.2 to 1.3 times the MMR method in text mode, and 2 to 10 times in halftone mode.

The optional PMU board is required for JBIG compression.
JBIG compression is disabled when any of the following conditions occur.

- When JBIG compression is turned off with communication switch 00.
- When ECM is turned off with communication switch 01.
- When the receiving terminal does not have the JBIG feature.
- When the receiving terminal does not have the ECM feature.

There are two modes for JBIG compression.

- Standard mode: one stripe (data block) consists of 128 lines.
- Optional mode: one stripe of one page (transmission speed with this mode is faster).
This machine supports both modes for transmission and reception. The mode used is determined during handshaking.

Cross reference: Section 4.2 Bit switches

- JBIG reception mode : Communication bit switch 00 bit 5

0 : Standard mode only 1 : Standard mode and optional mode (default)

- Priority of JBIG mode used for transmission: Communication bit switch 00 bit 6 0 : Standard mode 1: Optional mode (default)


## Data Compression

JBIG compressed data is referred to as a Bi-level Image Entity (BIE).
The BIE consists of a header frame (BIH: Bi-level Image Header) and a compressed data frame (BID: Bi-level Image Data).
The BIH frame contains information such as main scan width (pixels), sub-scan length, and compression mode (standard/optional).
The BID frame contains the actual data.


## FAX COMMUNICATION FEATURES

### 2.4.3 TRANSFER BROADCASTING

This machine uses a new algorithm to identify the requester's fax number to send back the transfer result report. Previously, the transfer result report did not sometimes reach the requester with the old algorithm.
In a transfer broadcasting operation, the transfer requester informs its own fax number to the transfer station. The transfer station uses that number to identify the requester's fax number, which the transfer station must dial to send the transfer result report back to the requester.
Transmission of the transfer result report and selection of the number to dial depends on the following three settings.

| Setting | Switch |
| :--- | :--- |
| Conditions required for transfer result report | Communication switch OB bit 3 |
| transmission | 0: Always |
|  | 1: Only if there is an error |
| Action when there is no fax number in the | Communication switch 0B bit 5 |
| programmed Quick/Speed dials which matches | 0: Transfer is cancelled |
| the requester's own fax number | 1: Transfer is continued |
| Number of digits compared to find the | Communication switch 0C bits 0 to 4 |
| requester's fax number from the programmed | (default setting = 5 digits) |
| Quick/Speed dials. |  |

The requester's fax number format is normally as follows.
[ International access code ] [ Country code ] [ Area code ] - [ Local tel. no.] A pause ("-") must be programmed between area code and local tel. no.

Before the machine transfers the message, the machine compares the last few digits of the requester's own fax number with all the programmed Quick/Speed Dials as shown in the following diagram. Starting from Quick Dial 01 to the end of the Speed Dial codes. (The default setting for the number of digits compared is 5; see the above table.)

If the machine finds a number in which the compared digits match those of the requester's own fax number, the machine chooses the number as the destination for sending the report back. However, depending on the number of digits compared, the machine may choose the wrong destination, as shown in the example diagram on the next page.
Note that the machine does not compare the following:

- Pause ("-")
- ISDN sub-address ("/aaaa", "aaaa" is a sub-address number)

With a G4 transfer request, the G4 and G3 own fax numbers are informed from the requester, then the machine compares the G4 number first, and the G3 number second.

## Example



| No. of digits to compare | Result |
| :---: | :---: |
| 4 | Q01 |
| 5 | Q05 |
| 6 | Q05 |
| 7 | Q05 |
| 8 | Q08 |
| 9 | Q08 |
| 10 | Q08 |
| 11 | S07 |
| 12 | No match |
| 13 | No match |


| Q01 | $071-441-3456$ |
| :---: | ---: |
| Q02 | $020-4773456$ |
| Q03 | $020-4776666$ |
| Q04 | $00-81454771748$ |
| Q05 | 2223456 |
| Q06 | $00-4961969063456$ |
| Q07 | 0569723456 |
| Q08 | $201-2223456$ |
| Q09 | $00-31204564569$ |
| Q10 | 013453456 |
| $\mathbf{I}$ | 1 |
| 1 | 1 |
| 1 | 1 |
| 1 | 1 |
| I | 1 |
| Q56 | 0875558888 |

With
Function Upgrade Card

| S00 | 1223456 |
| ---: | ---: |
| S01 | 5413654 |
| S02 | $00-4126567878$ |
| S03 | 0454771748 |
| S04 | 0634558989 |
| S05 | 07474125899 |
| S06 | $00-85226356541$ |
| S07 | $00-12012223456$ |
| S08 | 02212301564 |
| S09 | 6524555 |
| 1 | 1 |
| 1 | 1 |
| 1 | 1 |
| 1 | 1 |
| 1 | $00-496158756458$ |
| S99 |  |
| S100 |  |

2223450


In the above example:

- If the requester is within the same area, Quick Dial 05 or Quick Dial 08 is the correct destination, depending on the required dialing method for numbers in the same country or area. The machine selects Quick Dial 05 if it compares from 5 to 7 digits, and selects Quick Dial 08 if it compares from 8 to 10 digits.
- If the requester is in another country, Speed Dial 07 is the correct destination. The machine selects this number if it compares 11 digits. Any setting higher than this will result in no match, due to the different international access codes at the start of the numbers.
- If the machine compares less than 4 digits, it selects Quick Dial 01.
- If the number of digits to compare is set to zero, the machine sends the report to the first Quick or Speed Dial number programmed in.

Note that the result can be changed depending on the locations where the candidates are programmed. For example, if "00-1-2012223456" is programmed in Quick Dial 01, the machine always selects this number for sending back the report, even if the transfer request is from within the same country.

When programming the machine to act as a Transfer Station, the combination of the communication switch OC setting (number of digits) and the programmed location of the requester's fax number has to be considered carefully.

## FAX COMMUNICATION FEATURES

If the machine can not find the destination for the report, it either:

- Stops the transfer operation and prints a report locally (if bit 5 of communication switch OB is 0 ).
- Or, continues the transfer operation and prints a result report locally after finishing all the transfer operations (if bit 5 of communication switch OB is 1).


## Cross Reference to other parameters

ID code programming

- Key operator mode

Use of economy transmission during a transfer operation to end receivers

- Communication switch 0B, bit 0

Use of economy transmission during a transfer operation to next transfer stations

- Communication switch 0B, bit 1

Use of label insertion for the end receivers in a transfer operation

- Communication switch 0B, bit 2

Printout of the message when acting as a transfer station

- Communication switch 0B, bit 4


### 2.4.4 V.8/V.34 PROTOCOL

NOTE: 1) Refer to "V.8/V. 34 Training Manual" for overall information about V.8/V. 34 protocol.
2) This section explains machine specific functions only.

## V. 8 in Manual Reception

This machine starts V. 8 procedure in order to make V. 34 communication enabled in manual reception, though some other fax machines do not.
Refer to "V.8/V. 34 Training Manual - section 3.1" for detailed procedures.

## Shift-down Conditions

## One-step Shift-Down from Receiving Terminal



NOTE: The receiving terminal must be this machine.
If this machine has sent two PPRs for one ECM block, it will request one step shiftdown to the sender terminal in the next control channel.

N eor : Number of frame re-transmissions remaining until the Tx terminal sends DCN to terminate the communication. This is fixed at " 9 ", not adjustable.

## FAX COMMUNICATION FEATURES

## Two-step Shift-down from Sending Terminal



NOTE: The sender terminal must be this machine.
If this machine has received four PPRs for one ECM block, it will request two step shift-down to the receiving terminal in the next control channel.

## One-step Shift-up from Receiving Terminal



NOTE: The receiving terminal must be this machine.
If this machine has sent two consecutive MCFs and it could detect good line condition, it will request one step shift-up to the sender terminal in the next control channel.

### 2.5 PCBS

### 2.5.1 FCU



The FCU (Facsimile Control Unit) controls fax communications, the video interface to the base copier's engine, energy saver mode, and fax options.

## SCP (System Control Processor)

- CPU
- Data compression and reconstruction (DCR)
- MMR + raw data compression for SAF storage (DCMMR)
- DMA control
- Clock generation
- DRAM backup control
- Ringing signal/tone detection


## VPC

- Video and command interface to the base copier

Modem (Matsushita: MN195003MFL)

- V.34, V17, V.29, V.27ter, V.21, and V. 8


## Energy Saver CPU

- Power distribution control in energy saver mode


## ROM

- 2MB (16 Mbit) flash ROM for system software storage


## DRAM

- The 6 MB of DRAM is shared between SAF Memory ( 2 MB ), ECM Buffer ( 128 KB ), Page Memory (2 MB), Working Memory ( 384 kB ), and Line buffer etc ( 512 kB ). The remaining 1 MB of memory is not used.
- The 2 MB of SAF memory is backed up by the rechargeable battery.

SRAM

- The 128 KB SRAM for system and user parameter storage is backed up by the lithium battery.


## Oscillators

- 42.20545MHz oscillator for system clock generation
- 32.768 MHz oscillator for the real time clock. This is backed up by the lithium battery.
- 24.192MHz oscillator for the MN195003MFL modem

Jumpers, Switches, and Test Points

| Item | Description |
| :--- | :--- |
| SW1 | Switches the SRAM backup battery on/off |
| SW2 | Reset switch |
| SW3 | Switches the data transfer direction |

PCBS

### 2.5.2 NCU (US)



Jumpers

| Item | Description |
| :---: | :--- |
| JP7 | These jumpers should be shorted when the machine is connected to a |
| dr8 | dry line. |

### 2.5.3 NCU (EUROPE/ASIA)



Control Signals and Jumpers

|  | CSEL1 | RSEL |
| :--- | :---: | :---: |
| Country | CN2-5 | CN1-13 |
| CTR21 | H | H |
| Australia | H | H |
| South Africa | H | H |
| Malaysia | H | H |
| Hong Kong | L | L |
| New Zealand | L | L |
| Singapore | L | L |
| Asia | L | L |
|  | L: Low, H: High |  |

## CTR21 (Common Technical Regulation 21):

France, Germany, UK, Italy, Austria, Belgium, Denmark, Finland, Ireland, Norway,
Sweden, Switzerland, Portugal, Holland, Spain, Israel, Greece

### 2.5.4 EXSAF BOARD

## EXSAF BOARD



The EXSAF board expands the SAF memory capacity to hold up to 6 MB, and some additional features become available. In addition, this expands the SRAM capacity. This board also serves as the HDD interface.

## DRAM

- 4MB DRAM for SAF expansion.


## SRAM

- 512 KB SRAM for programmable area expansion.


## Lithium battery

- Backs up the SRAM.


## Jumpers, Switches, and Test Points

| Item | Description |
| :--- | :--- |
| SW1 | Switches the backup battery on/off |

### 2.5.5 PMU BOARD



The PMU board expands the page memory capacity to 4MB. Also, 400dpi resolution and JBIG compression become available.

## DRAM

- 2MB DRAM for page memory expansion.


## QM Coder

- 2 QM coders for JBIG compression.


## PAL (PALCE16V8H-15PC)

- 2 PALs make a strobe control signal. This is used for DMA selection.


## 3. INSTALLATION

### 3.1 FAX UNIT (B383)

NOTE: 1) Never install telephone wiring during a lightning storm.
2) Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
3) Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
4) Use caution when installing or modifying telephone lines.
5) Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning.
6) Do not use the telephone to report a gas leak in the vicinity of the leak.

## $\triangle$ CAUTION

1. Before installing the fax unit, switch off the main power and operation switches, and disconnect the power cord.
2. The fax unit contains a lithium battery. The danger of explosion exists if a battery of this type is incorrectly replaced. Replace only with same or an equivalent type recommended by the manufacturer. Discard used batteries in accordance with the manufacturer's instructions.

## FAX UNIT (B383)

### 3.1.1 INSTALLATION PROCEDURE

NOTE: To install the fax unit, an I/F unit is required in addition.


[E]



## $\triangle$ CAUTION

Unplug the copier power cord before starting the following procedure.

1. Remove the $I / F$ unit cover $[A]$ (4 screws) and the cover bracket [B] (1 screw).
2. Cut off and remove the caps [C] and attach the TEL/LINE label [D].
3. Remove the right rear cover [E] ( 1 screw).
4. Install the fax unit [F] (3 M3x6 screws and 1 M4x6 screw [G]).
5. Connect the flat cable $[\mathrm{H}]$ to the BUSSW board $[I]$.
6. Remove 3 screws and swing out the I/F unit [J].
7. Clamp and route the harness $[\mathrm{K}]$ as shown, then connect it connector CN209 on the I/O control board [L].
8. Attach the spring plate $[\mathrm{M}]$ ( 1 screw) as shown.
9. Turn on the battery switch (SW1) [N] on the FCU and install the bracket [O] (2 screws).
10. Secure the I/F unit (3 screws and 1 screw with washer $[P]$ ).
11. Reinstall the I/F unit cover (4 screws).

12. Remove the caps $[A]$ with a small-bladed screw driver.
13. Install the key tops [B], cover [C], and attach Copy/Fax label [D].
14. Open the front cover. Then remove the operation panel ( 2 screws) and the left cover [E] (2 screws each).
15. Put the fax operation panel harnesses [F] through the cut-outs [G] and install the fax operation panel [H] (2 screws).
16. Connect the intermediate harness [I] to the operation panel board and to the harness of the fax operation panel board.
17. Secure the intermediate harness with the clamps [J].
18. Reinstall the operation panel.

19. Attach the "Super G3" label [A] on the front cover and the "Line/Tel" label on the rear cover.
20. Install the main switch cover [B].
21. Connect the telephone line to the "LINE" jack at the rear of the machine.
22. Plug in the machine and turn on the main switch.

NOTE: The copier must be connected to a properly - grounded socket outlet.
23. Press the "Facsimile" key and check that the facsimile LED lights. At this time, the display reads: SC1201 - Functional problem with the fax. Data should be initialized.
NOTE: This is not a functional problem. The machine shows this message only when the fax unit is first installed. If the same message appears at the next power-on, check whether the battery switch (SW1) on the FCU has been turned on.
24. Press "Yes" to initialize the fax unit.
25. Set up and program the items required for fax communications as shown below. If the user function keys (F1, F2, F3, F4, and F5) need to be programmed, attach the label.
The default settings of the user function keys are as follows:

- F1: Start Manual Rx
- F2: Tx Result Display
- F3: TEL Mode
- F4: Not programmed
- F5: Not programmed

NOTE: Be sure to set the clock (date and time).
26. Program the serial number into the fax unit. The serial number can be found on the serial number label attached to the fax unit.

### 3.2 ISDN UNIT (A816)

### 3.2.1 INSTALLATION PROCEDURE

## ⒸAUTION <br> Before installing an optional unit, do the following:

1. Print out all messages stored in the memory.
2. Be sure to check that the memory indicator shows " $100 \%$ " in standby mode.
3. Print out the lists of user-programmed items and the system parameter list.
4. Switch off the main switch, and disconnect the power cord and the telephone line.


G]


NOTE: To use this option, a fax unit is required in addition.

1. Remove the I/F unit cover [A] (4 screws) and the left-side cover [B] (2 screws), then slide the FCU out from the fax unit.
2. Clip the ISDN modular jack [C] to the bracket [D], then connect the cable to the connector [E] on the CiG4 board [F].
3. Attach the bracket [D] to the CiG4 board [F] (2 screws), then attach the metal core [G] to the cable as shown. Be sure to slide the metal core [G] in between the bracket and the CiG4 board as shown.

4. Attach the FCU $[\mathrm{A}]$ to the bracket (2 screws), then connect FCU and CiG4 using the relay board $[\mathrm{B}]$.
5. Insert the FCU/CiG4 assembly [C] into the fax unit [D] (2 connectors [E]).
6. Open the ISDN modular jack window [F] on the left-side cover [G], then install the cover onto the fax unit.
7. Reassemble the machine.

8. Attach the contained 'G4' label to the function key (F4) space.

After G4 unit installation, this key is dedicated to switching between G3 and G4 communication modes. (Note the user function key assignment, below.)

- F1: Start Manual Rx
- F2: Tx File Status
- F3: TEL Mode
- F4: G3/G4 Communication Mode Selection
- F5: Not programmed

9. Affix FCC/IC approval label on the machine around ISDN jack (This step is only for US/CANADA).
10. Make two turns on the ISDN cable [A] and attach the metal core $[B]$ so that the cable goes into the core three times. Then, connect the cable to the ISDN jack [C]. If an analog telephone line has been removed before installation, reconnect it to the FCU.
11. Plug in the machine and turn on the main switch. Then enter the service mode.
12. Print the system parameter list and ensure that "G4" is listed as an option.
13. Set up and program the items required for ISDN communications. After setting up the ISDN parameters, be sure to turn the main switch off and on.

### 3.3 EXSAF BOARD (A818-10)

### 3.3.1 INSTALLATION PROCEDURE

| $\triangle$ CAUTION |
| :--- |
| Before installing this option, do the following: |
| 1. Print out all messages stored in the memory. |
| 2. Be sure to check the memory indicator shows " $100 \%$ " in standby mode. |
| 3. Print out the lists of user-programmed items and the system parameter |
| list. |
| 4. Switch off the main switch, and disconnect the power cord and the |
| telephone line. |

NOTE: To use this option, a fax unit is required in addition.


1. Remove the I/F unit cover [A] (4 screws), and the left-side cover [B] (2 screws).
2. Remove the FCU board (2 or 3 connectors).
3. Turn on the battery switch [C] on the EXSAF board, as shown.

NOTE: If installing the FCU board at the same time, be sure to turn on the FCU board battery switch [D].
4. Install the EXSAF board [E] and spacer [F] onto the FCU board [G], as shown.
5. Replace the FCU/EXSAF assembly into the fax unit (2 or 3 connectors).
6. Reassemble the machine.
7. Plug in the machine and turn on the main switch.
8. Press the 'Facsimile' key and ensure the facsimile LED lights. At this time, the following message appear:
"SC1207 - Adding FAX feature expander causes data loss. Turn main power switch off remove it to avoid loss. To continue press Yes."
9. Press "Yes" to initialize the SRAM.

NOTE: Whenever installing the EXSAF board at the first time, the machine displays SC1207, but this is not a problem.
10. Enter the service mode, and set bit 7 of system switch 1E to " 1 ".
11. Print the system parameter list and make sure that "EXSAF" is listed as an option Also check that the memory indicator shows " $100 \%$ " in standby mode.
12. Connect the telephone cable to the NCU.

### 3.4 PMU BOARD (A818-12)

### 3.4.1 INSTALLATION PROCEDURE

| \1. CAUTION |  |
| :---: | :---: |
|  | ore installing an optional unit, do the following: |
|  | Print out all messages stored in the memory. |
|  | Be sure to check that the memory indicator shows "100\%" in standby mode. |
|  | Print out the lists of user-programmed items and the system parameter list. |
|  | Switch off the main switch, and disconnect the power cord and the telephone line. |

NOTE: To use this option, a fax unit is required in addition.


1. Remove the I/F unit cover [A] (4 screws) and the left-side cover [B] (2 screws).
2. Remove the FCU board.
3. Connect the PMU board [C] and the double locking spacer [D] onto the FCU board [E], as shown.
4. Make sure that the battery switch (SW1) is turned on. Then, insert the FCU/ PMU assembly [F] into the fax unit [G].
5. Reassemble the machine.
6. Connect the telephone cable, then plug in the machine and turn on the main switch.
7. Print the system parameter list and make sure that "PMU" is listed as an option.

### 3.5 HARD DISK (A841-11)

### 3.5.1 INSTALLAITON PROCEDURE

| $\triangle$ CAUTION |
| :--- |
| Before installing an optional unit, do the following: |
| 1. Print out all messages stored in the memory. |
| 2. Be sure to check that the memory indicator shows " $100 \%$ " in standby |
| mode. |
| 3.Print out the lists of user-programmed items and the system parameter <br> list. <br> 4. <br> Switch off the main switch, and disconnect the power cord and the <br> telephone line. |

NOTE: To install this option, an EXSAF board is required in addition.


1. Remove the I/F unit cover [A] (4 screws) and the left-side cover [B] (2 screws).
2. Remove 5 screws securing the $I / F$ unit and fax unit. (The screw $[C]$ is the grounding screw.)
3. Slide the FCU board out from the fax unit (2 or 3 connectors).
4. Remove the EXSAF board [D] if it is already installed on the FCU board.
5. Connect the harness $[E]$ to the EXSAF board.
6. Make sure that the spacer [F] is installed on the FCU board, then reinstall the EXSAF board.
7. Make sure that the battery switches [G] on both FCU and EXSAF boards are turned on.

8. Install the hard disk drive [A] on the bracket [B] (4 screws).
9. Slide the FCU board into the fax unit and connect the connectors [C] to the FCU board and connector [D] to the hard disk drive so that no hole part meets with the portion where no pin is located as shown.
10. Secure the hard disk drive ( 2 screws).
11. Reassemble the machine.
12. Plug in the machine and turn on the main power switch.
13. Enter the service mode, and set bit 4 of system switch 05 to " 1 ".
14. Exit the service mode, turn off the machine, then turn the machine back on.
15. Enter the service mode, and initialize the memory files (function 07: RAM clear -2. files)
16. Print the system parameter list and make sure that "HD" is listed as an option. Also check that the memory indicator shows " $100 \%$ " in standby mode.

### 3.6 HANDSET (A841-13)

### 3.6.1 INSTALLATION PROCEDURE



## ⒸAUTION <br> Unplug the copier power cord before starting the following procedure.

1. Attach the bracket $[A]$ to the copier ( 2 screws, $M 4 \times 12$ ).
2. Attach the handset cradle $[B]$ to the bracket ( 2 screws, $M 3 \times 8$ ).
3. Install the handset [C] on the cradle as shown.
4. Install the clamps [D] and run the handset cable through the clamps, then connect it to the "TEL" jack of the fax unit.

### 3.7 FAX STAMP (A563-17)

### 3.7.1 INSTALLATION



## $\triangle$ CAUTION

Unplug the copier power cord before starting the following procedure.

1. Remove the upper rear cover $[A]$ ( 7 screws).
2. Remove the right cover $[B]$ (2 screws).
3. Install the stamp unit [C] so that the cutout [D] in the stamp unit is properly hooked on the ARDF as shown (2 screws removed at step 2 and 1 connector [E]).
4. Open the holder [F] and install the stamper [G].
5. Turn on DIPSW 4 on the ARDF main board.

After the stamp unit has been installed, the F5 key is dedicated to switching the stamper on and off. (Note the user function key assignment, below.)

- F1: Start manual Rx
- F2: Tx result display
- F3: TEL mode
- F4: Not programmed
- F5: Stamper on/off


## 4. SERVICE TABLES

### 4.1 SERVICE LEVEL FUNCTIONS

### 4.1.1 HOW TO ENTER AND EXIT THE FAX SERVICE MODE

## To Enter Fax Service Mode:

1. Ensure that the machine is in the fax standby mode.

2. Press 0 (1) (0) (7) , then hold down
( 0 ) for more than 3 seconds.
The SP mode main menu appears.

| $\square$ Service Mode | Enter number |
| :---: | :---: |
| 01 Bit Switches | 02 System Parameter |
| 03 Error Codes | 04 Service Report |
| -9\% | PrevMenu |

## To Exit Fax Service Mode:

1. Press 'OK' or 'PrevMenu' until the SP mode main menu appears.
2. Press the [PrevMenu] key.

### 4.1.2 BIT SWITCH PROGRAMMING (FUNCTION 01)

1. Enter the fax service mode.
2. Press $\square \square$
3. Press one of the following numbers, as required:


1 - System bit switches
2 - Scanner bit switches
3

- Printer bit switches

4

- Communication bit switches

5 - G3 bit switches
6 - G4 internal switches
7 - G4 parameter switches

NOTE: An optional G4 interface is required to access the G4 internal and G4 parameter bit switches.

## SERVICE LEVEL FUNCTIONS

## Example:

1. Press 1
2. Scroll through the bit switches.

To increment the bit switch number:
press ‘ $\downarrow$ Switch'.
To decrement the bit switch number: press ‘ $\uparrow$ Switch'.
Example:
To display bit switch 03: Press ‘ $\downarrow$ Switch’ 3 times.
3. Adjust the bit switch.

Example:
To change the value of bit 7 , press 7 .
4. To adjust more bit switches, go to step 2.
$\left.\begin{array}{|lll|}\hline \text { Kit Switches }> & \text { System Switch } \\ \hline \begin{array}{ll|l|}\hline \text { Switch00 } & \text { Default } \\ \text { Current }\end{array} & 00000000 \\ & 00000000\end{array}\right]$
$\left.\begin{array}{|lll|}\hline \text { Kit Switches> } & \text { System Switch } \\ \hline \begin{array}{lll|}\hline \text { Switch00 } & \text { Defalt } \\ \text { Current }\end{array} & 00000000 \\ & 10000000\end{array}\right]$

To finish, press 'OK' then 'PrevMenu'.
5. Exit the service mode.

NOTE: After changing any of the G4 bit switches, be sure to turn the main power switch off and back on to activate the new settings.

### 4.1.3 SYSTEM PARAMETER LISTS (FUNCTION 02)

1. Enter the fax service mode.
2. Press $0 \square$

| System Parameter List $>$ | Enter number |
| :--- | :--- |
| 1 Sys. Para. List 2 G4 Sys. Para. List <br> 3 ROM Version 4 Modem Version |  |
|  |  |

3. Press one of the following numbers, as required:
1 - G3 system parameter list
2 - G4 system parameter list
NOTE: An optional G4 interface is required to print the G4 system parameter list.
4. Press $\Delta$
5. Exit the service mode.

### 4.1.4 FCU ROM VERSION DISPLAY (FUNCTION 02)

1. Enter the fax service mode.
2. Press $0 \square$ then 3

| KROM Version> |  |
| :--- | :--- |
| P/N:B3835584 | Date: 00-04-07 |
| Ver: $0 \times 00$ | Dver: 2.05 |
| Ar00: LILAC2EUR | sum: 5000 |
|  |  |

3. Exit the service mode.

NOTE: The check-sum value displayed is calculated in 16-bit little endian format.

### 4.1.5 MODEM PROGRAM VERSION DISPLAY (FUNCTION 02)

1. Enter the fax service mode.
2. Press $0 \square$ then 4
3. Exit the service mode.

| Modem ROM Ver.> |  |
| :--- | :---: |
| Ver: 0330 |  |
|  | $0 K$ |

### 4.1.6 ERROR CODE DISPLAY (FUNCTION 03)

1. Enter the fax service mode.
2. Press $0 \square 3$
3. Press either Prev. or Next to scroll through the error codes.
4. Exit the service mode.


### 4.1.7 SERVICE MONITOR REPORT (FUNCTION 04)

1. Enter the fax service mode.
2. Press $0 \boxed{4}$ then $\Delta$
3. Exit the service mode.

Service Monitor report
Press Start to begin

Cancel

### 4.1.8 G3 PROTOCOL DUMP LIST (FUNCTION 05)

1. Enter the fax service mode.
2. Press 05
3. Press 1 then $\Delta$

| <Protocol Dump> | Enter number 14 |
| :--- | ---: |
| 1 G3 Protocol List |  |
| 2 G4 Protocol List |  |
|  | PrevMenu |

4. Exit the service mode.

NOTE: Refer to the Troubleshooting section for details of the codes listed on the V. 34 protocol dump list.

### 4.1.9 G4 PROTOCOL DUMP LIST (FUNCTION 05)

NOTE: An optional G4 interface is required to print the G4 protocol dump list.

1. Enter the fax service mode.
2. Press 05

| SProtocol Dump> | Enter number $\boldsymbol{H}$ |
| :--- | ---: |
| 1 G3 Protocol List |  |
| 2 G4 Protocol List |  |
|  | PrevMenu |

3. Press 2
4. Press one of the following numbers as required:
1 - D + Bch
2 - Dch
3 - Bch1 Link

| G4 Protocol List | Enter number |
| :--- | :--- |
| 1 D+Bch | 2 Dch |
| 3 | Bch1 LiNK |
|  | 4 Dch LINK |
|  | PrevMenu |

5. Exit the service mode.

### 4.1.10 RAM DISPLAY AND REWRITE (FUNCTION 06)

1. Enter the fax service mode.
2. Press $0 \square 6$
3. Press 1

| RAMM | Enter number |
| :--- | :--- |
| RAMM R/W | 2 NCU Parameters |
| 3 G3 Memory Dump | 4 G4 Memory Dump |
|  |  |
|  | PrevMenu |

4. Enter the start address of the RAM area to be displayed, then press OK.

| RAMM R/W $>$ | Input the address |
| :--- | :---: |
| ADDRESS $=480000 \mathrm{H}$ |  |
|  | Cancel |

5. Move the cursor to the target address using the arrow keys, then enter a new value.
6. To scroll through the RAM addresses: press Prev. or Next.


To jump to an another address: press OK, and go back to step 4.
7. Exit the service mode.

### 4.1.11 NCU PARAMETERS (FUNCTION 06)

1. Enter the fax service mode.
2. Press $\square \square$
3. Press 2

| RAMM | Enter number |
| :--- | :--- |
| R RAM R/W | 2 NCU Parameters |
| 3 G3 Memory Dump | 4 G4 Memory Dump |
|  |  |

4. Move the cursor to the target parameter using the arrow keys, then enter a new value.
5. Exit the service mode.


### 4.1.12 RAM DUMP (FUNCTION 06)

1. Enter the fax service mode.
2. Press 06
3. Press one of the following numbers as required:
3 - G3 memory dump list
4- G4 memory dump list

4. An optional G4 interface is required to print the G4 memory dump list.
5. Enter the first four digits of the start and end addresses, then press $\Delta$
Example: Start at 480000, end at
 4801FF

6. Exit the service mode.

### 4.1.13 RAM CLEAR (FUNCTION 07)

1. Enter the fax service mode.
2. Press $0 \square 7$

| RAMM Clear> | Enter number |
| :--- | :--- |
| I Initialization | 2 Files |
| 3 Bit Switches | 4 Factory Settings |
|  |  |

3. Press one of the following numbers, as required:
1 - Initializes the data in the SRAM, files in the SAF memory, and the clock.
2 - Erases all the files stored in the SAF memory.
3 - Resets the bit switches and the user parameters.
4 - Initializes the data in the SRAM and files in the SAF memory.
The machine automatically returns to standby mode after self-initialization.
To initialize the fax unit without erasing files or resetting the bit switches, do one of the following:

- Hold down the "Speed Dial" key for more than 10 s , while the machine is in facsimile mode. This initializes the fax unit only.
- Remove the rear cover, and press SW2 on the FCU. This initializes the fax unit only.
- Turn off the main power and operation switches and turn them back on. This initializes the whole machine.


### 4.1.14 HARD DISK (FUNCTION 08)

NOTE: To access this function, the hard disk option must be installed, and System Switch 05, bit 4 must be set to 1 .

1. Enter the fax service mode.
2. Press 08
3. Press one of the following numbers, as required, then press $\Delta$
1 - Erases everything stored on the hard disk


2 - Low level hard disk formatting (requires over 50 min .)
NOTE: If there is an error during the test, the machine displays ' $N G$ '.
4. Make sure that OK is displayed after the process, then exit the service mode.

### 4.1.15 SERVICE STATION FAX NUMBER (FUNCTION 09)

1. Enter the fax service mode.
2. Press $0 \square$
3. Enter the fax number of the service station that will receive Automatic Service Calls from this machine. To use a G4 number, press the 'F4' key.

4. Press OK.
5. Exit the service mode.

### 4.1.16 SERIAL NUMBER (FUNCTION 10)

1. Enter the fax service mode.
2. Press $1 \square 0$
3. Enter the fax unit's serial number at the keypad, then press OK.
4. Exit the service mode.

| Serial No.> |  |
| :--- | :--- |
| Serial No.: |  |
|  |  |
|  | Cancel |
|  | 0 K |

### 4.1.17 MODEM TEST (FUNCTION 11)

NOTE: Refer to section 4.1.18 for V. 8 and V. 34 tests.

1. Enter the fax service mode.
2. Press $1 \square$

| Tests> | Enter number |
| :--- | :--- |
| 1 G3 CCU Tests | 2 Memory Tests |
| 3 IG3 CCU Test | 4 Stamp Test |
|  |  |
|  |  |

3. Press one of the following numbers:

1 - Modem test (analog line)
3 - Modem test (ISDN line)
NOTE: An optional ISDN interface is required

| KG3 CCU Tests $>$ | Enter number |
| :--- | :--- |
| 1 Modem | 2 DTMF |
| 3 | Detection |
| 5 V.34 Test | 4 Ringer |
|  |  | to test a modem on an ISDN line.

4. Press 1
5. Choose a modem signal type at the keypad, then press $\Delta$ To stop, press c/0.
6. Exit the service mode.

### 4.1.18 V.34 MODEM TEST (FUNCTION 11)

1. Enter the service mode.
2. Press $1 \square 1$ then $\square$
3. Press 5 .

| V. 34 Test $>$ | Enter number |
| :--- | :--- |
| 1 Symbol Rate | 2400 baud |
| 2 Data Rate | 2400 bps |
|  |  |
|  | Cancel |

4. Press a symbol rate and a data rate, then press OK.
1 - Select a symbol rate
2 - Select a data rate
5. Press "Start" to start the test.

To stop the test, press "Stop".
6. Exit the service mode.

| Symbol Rate> |  |  | Enter number |
| :--- | :--- | :--- | :--- |
| 1 | V34 2400baud | 2 V34 | 3000baud |
| 3 | V34 3200baud | 4 V34 2800baud |  |
| 5 | V34 3429baud |  |  |
|  |  | PrevMlenu |  |


| <Data Rate> | Enter number -- |  |
| :---: | :---: | :---: |
| 01 V34 2400bps | 02 V34 | 4800 bps |
| 03 V34 7200bps | 04 V34 | 9600 bps |
| Q:\%) $\downarrow$ Wext |  | PrevMenu |

### 4.1.19 DTMF TEST (FUNCTION 11)

1. Enter the fax service mode.
2. Press $1 \square 1$

| Tests $>$ | Enter number |
| :--- | :--- |
| 1 G3 CCU Tests | 2 Memory Tests |
| 3 IG3 CCU Test | 4 Stamp Test |
|  |  |
|  |  |

3. Press one of the following numbers:

1 - DTMF test (analog line)
3 - DTMF test (ISDN line)
4. A G4 interface is required to test DTMF tones on an ISDN line.

5. Press 2
6. Choose a DTMF signal type at the keypad, then press $\triangle$ To stop the test, press c/ه

| KDTMF> |  |
| :--- | ---: |
| Select [0]~[9] [*] [\#] |  |
|  |  |
|  | PrevMenu |

### 4.1.20 MODEM SIGNAL DETECTION TEST (FUNCTION 11)

NOTE: V. 8 and V. 34 signal detection tests are not available.

1. Enter the fax service mode.
2. Press $1 \square 1$

| Tests> | Enter number |
| :--- | :--- |
| 1 G3 CCU Tests | 2 Memory Tests |
| 3 IG3 CCU Test | 4 Stamp Test |
|  |  |
|  |  |

3. Press one of the following numbers, as required:
1 - Modem signal detection test (analog line)
3 - Modem signal detection test

| KG3 CCU Tests $>$ | Enter number |
| :--- | :--- |
| 1 Modem | 2 DTMF |
| 3 Detection | 4 Ringer |
| 5 V.34 Test |  |
|  |  |

(digital [ISDN] line)
NOTE: An optional G4 interface is required to test a modem signal on an ISDN line.
4. Press 3
5. Choose the modem signal type to be detected at the keypad, then press $\Delta$ To stop the test, press c/ه

| <Detection) |  |  | Enter number ${ }_{\text {- }}$ |
| :---: | :---: | :---: | :---: |
| 1 V 21 | 300bps | 2 V27 | 2400bps |
| 3 V27 | 4800 bps | 4 V29 | 7200 bps |
| 个\% | $\square$ Next |  | PrevMenu |

6. Exit the service mode.

### 4.1.21 RINGER TEST (FUNCTION 11)

1. Enter the fax service mode.
2. Press $1 \square 1$

| Tests> | Enter number |
| :--- | :--- |
| 1 G3 CCU Tests | 2 Memory Tests |
| 3 IG3 CCU Test | 4 Stamp Test |
|  |  |
|  |  |

3. Press 1

| KG3 CCU Tests $>$ | Enter number |
| :--- | :--- |
| 1 Modem | 2 DTMF |
| 3 | Detection |
| 5 V .34 Test | 4 Ringer |
|  |  |
|  |  |

4. Press 4 then $\Delta$

To stop the test, press $\mathbf{C / D}$
5. Exit the service mode.

| Ringer> |
| :--- |
| Press the Start key to begin |
| Cancel |

### 4.1.22 STAMP TEST (FUNCTION 11)

NOTE: An optional stamp unit is required to use this function.

1. Enter the fax service mode.
2. Press $1 \square 1$

| Tests $>$ | Enter number |
| :--- | :--- |
| $1 \mathrm{G3} \mathrm{CCU}$ Tests | 2 Memory Tests |
| 3 IG3 CCU Test | 4 Stamp Test |
|  |  |
|  |  |

3. Press 4 then $\Delta$

To stop the test, press c/ه
4. Exit the service mode.

| Stamp> |
| :--- |
| Press the Start key to begin |
| Cancel |

### 4.1.23 G4 PARAMETER PROGRAMMING (FUNCTION 12)

NOTE: An optional G4 interface is required to access this function.

1. Enter the fax service mode.
2. Press $\square$ 2
3. Press one of the following numbers, as required:
1-ISDN IP (International Prefix)
2 -G4 SN (Subscriber Number) Main


3-G4 SN (Subscriber Number) Sub
4 -ISDN G3 SN (Subscriber Number) Main
5 -ISDN G3 SN (Subscriber Number) Sub
6-G4 Subaddress
7-ISDN G3 Subaddress
4. Program the selected item.
5. Exit the service mode.

NOTE: After changing any of the G4 parameters, be sure to turn the main power switch off and on to activate the new settings.

### 4.1.24 FILE PRINTOUT (FUNCTION 13)

1. Enter the fax service mode.
2. Press $1 \square 3$ then $\Delta$

The machine prints all the files stored in the SAF memory, including confidential messages.

```
File Printout
Press Start to begin
```

Cancel

NOTE: Do not use this function, unless the customer is having trouble printing confidential messages or recovering from a memory lock status.

### 4.1.25 JOURNAL (TCR) PRINTOUT (FUNCTION 14)

1. Enter the fax service mode.
2. Press $1 \boxed{4}$
3. Either:

Choose All - The machine prints all the communication records on the report. The maximum is 200 records,

```
To print TCR, select mode and press
Start key.
    Al|/Date:__/_-
```

Cancel without the optional EXSAF board, or 900 records, with the EXSAF board.
Specify a date - The machine prints all communication records after the specified date.
4. Exit the service mode.

### 4.1.26 USAGE LOG PRINTOUT (FUNCTION 15)

The following functions are for designer use only. However, list 5 (SC history) may be useful.

1. Enter the fax service mode.
2. Press 15
3. Press one of the following numbers, as required, then press $\triangle$
1 - Engine interface
2 - Mailbox usage
```
History Printout
Press Start to begin
    No:
```

Cancel

3 - Operation trace
4 - Print log
5 - SC history
6 - File storage
7 - Scanner
8 - Job and SAF file creation
9 - Data reconstruction
4. Exit the service mode.

### 4.1.27 DATA TRANSFER (FUNCTION 16)

This function allows ROM and SRAM data transfer between the FCU inside the machine and an external flash memory card or FCU. Refer to the following sections for details.

- Section 6.4.1 - FCU ROM download from a flash memory card
- Section 6.4.2 - FCU ROM upload to a flash memory card
- Section 6.4.3 - Modem ROM download from a flash memory card
- Section 6.5.1 - SRAM backup to a flash memory card
- Section 6.3.3 - SRAM restore from a flash memory card
- Section 6.3.2 - SRAM restore from FCU


### 4.2 BIT SWITCHES

## WARNING <br> Do not adjust a bit switch that is described as "Not used", as this may cause the machine to malfunction or to operate in a manner that is not accepted by local regulations. Such bits are for use only in other areas, such as Japan.

NOTE: Default settings for bit switches are not listed in this manual. Refer to the System Parameter List printed by the machine.

### 4.2.1 SYSTEM SWITCHES

| System Switch 00 |  |
| :---: | :---: |
| No | FUNCTION COMMENTS |
| 0 | Not used. $\quad$ Do not change the settings. |
| 1 | Technical data (optional) 1: Instead of the personal name, the following <br> printout on TCR/Journal data are listed on the TCR/Journal for each G3 <br> 0: Disabled communication. <br> 1: Enabled If enabled, bits 2 and 3 settings are ignored. |
|  | Notes: <br> The error lines field is not used. <br> EQM and Rx level are fixed at "FFFF" in TX mode. <br> Symbol rate is printed only for V. 34 communications. |


| System Switch 00 |  |  |
| :---: | :---: | :---: |
|  | FUNCTION <br> Technical data (standard) printout on TCR/Journal <br> 0 : Disabled <br> 1: Enabled | COMMENTS <br> 1: Instead of the personal name, the following data are listed on the TCR for each G3 communication. |
|  | e.g. 32 V 34 288 M 01 00 03 04 <br> First number: Symbol rate (V. 34 only) <br> Second number: Final modem type used <br> Third number: Final data rate (for example, 288 means 28.8 kbps ) <br> Fourth: M means modem EQM / L means Rx level <br> Fifth and sixth numbers: Line quality data. Either a measure of the error rate or the $r x$ level is printed, depending on the bit 3 setting below. (An M on the report indicates that it is error rate, and an $L$ indicates Rx level.) The left hand figure is the low byte and the right hand figure is the high byte (refer to the following note for how to read the rx level). If it is a measure of the error rate; a larger number means more errors. <br> Seventh number (rx mode only): Total number of error lines that occurred during non-ECM reception. <br> Eighth number (rx mode only): Total number of burst error lines that occurred during non-ECM reception. <br> The fifth and sixth numbers are fixed at 00 for transmission records and ECM reception records. |  |
|  | Rx level calculation <br> Example: 32 V34 288 L $\mathbf{0 1} \underline{\mathbf{0 0}} 0304$ <br> The four-digit hexadecimal value $(N)$ after " $L$ " indicates the rx level. <br> The high byte is given first, followed by the low byte. Divide the decimal value of N by -16 to get the rx level. <br> In the above example, the decimal value of $N(=0100[\mathrm{H}])$ is 256. <br> So, the actual rx level is $256 /-16=-16 \mathrm{~dB}$ |  |
| 3 | Line quality data output method <br> 0 : Measure of error rate (during image data transmission only) <br> 1: Rx level | This bit determines the data type to be printed on the TCR (Journal) when technical data printout is enabled by bit 2 above. |
| 4 | Not used | Do not change the setting. |
| 5 | G3/G4 Communication parameter display <br> 0 : Disabled <br> 1: Enabled | This is a fault-finding aid. The LCD shows the key parameters (see the next 2 pages). This is normally disabled because it cancels the CSI display for the user. <br> Be sure to reset this bit to 0 after testing. |
| 6 | Protocol dump list output after each communication 0: Off 1: On | This is only used for communication troubleshooting. It shows the content of the transmitted facsimile protocol signals. Always reset this bit to 0 after finishing testing. |


| System Switch $\mathbf{0 0}$ |  |  |
| :---: | :--- | :--- |
| No | FUNCTION | COMMENTS |
| $\mathbf{7}$ | Amount of protocol dump data <br> in one protocol dump list <br> printout operation <br> 0: Up to the limit of the <br> memory area for protocol <br> dumping <br> 1: Last communication only | Change this bit to 1 if you want to have a protocol <br> dump list of the last communication only. |

## G3 Communication Parameters

| Modem rate | 336: 33600 bps 168: 16800 bps 312: 31200 bps 144: 14400 bps 288: 28800 bps 120: 12000 bps 264: 26400 bps 96: 9600 bps 240: 24000 bps 72 : 7200 bps 216: $21600 \mathrm{bps} 48: 4800 \mathrm{bps}$ 192: $19200 \mathrm{bps} 24: 2400 \mathrm{bps}$ |
| :---: | :---: |
| Resolution | S: Standard ( $8 \times 3.85$ dots per mm) <br> D: Detail ( $8 \times 7.7$ dots per mm ) <br> F: Fine ( $8 \times 15.4$ dots per mm ) <br> SF: Superfine ( $16 \times 15.4$ dots per mm ) - optional PMU board required. <br> 21: Standard ( $200 \times 100 \mathrm{dpi}$ ) <br> 22: Detail ( $200 \times 200 \mathrm{dpi}$ ) <br> 44: Superfine ( $400 \times 400 \mathrm{dpi}$ ) - optional PMU board required. |
| Compression mode | MMR: MMR compression <br> MR: MR compression <br> MH: MH compression <br> JBO: JBIG compression (Optional mode) - optional PMU board required <br> JBB: JBIG compression (Basic mode) - optional PMU board required |
| Communication mode | ECM: With ECM <br> SSC: Using SSC <br> EFC: Using EFC <br> NML: With no ECM, SSC, or EFC |
| Width and reduction | A4: A4 (8.3"), no reduction B4: B4 (10.1"), no reduction A3: A3 (11.7"), no reduction |
| I/O rate | $0: 0 \mathrm{~ms} / \mathrm{line}$ <br> 25: $2.5 \mathrm{~ms} /$ line <br> 5: $5 \mathrm{~ms} / \mathrm{line}$ <br> 10: $10 \mathrm{~ms} /$ line <br> 20: $20 \mathrm{~ms} / \mathrm{line}$ <br> 40: $40 \mathrm{~ms} / \mathrm{line}$ <br> Note: <br> " 40 " is displayed while receiving a fax message using AI short protocol. |

G4 Communication Parameters

| Compression mode | MMR: MMR compression <br> MR: MR compression <br> MH: MH compression |
| :---: | :---: |
| Resolution | 21: Standard ( $200 \times 100 \mathrm{dpi}$ ) <br> 22: Detail ( $200 \times 200 \mathrm{dpi}$ ) <br> 44: Superfine ( $400 \times 400 \mathrm{dpi}$ ) - optional PMU board required |
| Width and reduction | A4: A4 (8.3"), no reduction B4: B4 (10.1"), no reduction A3: A3 (11.7"), no reduction |
| Transfer | T: Transfer <br> - : Other |
| Confidential | C: Confidential <br> - : Other |
| Other parameters | The following information is shown in 6-bit format. Bit 1 is the first bit from the left, and bit 6 is at the right end. <br> Bit 1-Smoothing <br> 0: Enabled, 1: Disabled <br> (Smoothing is disabled in halftone mode.) <br> Bit 2 - CIL printing <br> 0: Enabled, 1: Disabled <br> Bit 3 - Not used <br> Bit 4 - mm/inch conversion 0: Disabled, 1: Enabled <br> Bit 5 - Engine type 0: mm, 1: inch <br> Bit 6 - Resolution unit $0: \mathrm{mm}, 1$ : inch |


| System Switch 01 |  |  |
| :---: | :--- | :--- |
| No | FUNCTION | COMMENTS |
| $\mathbf{0}$ | Automatic Service Call <br> 0: Disabled <br> 1: Enabled | This bit switch determines whether the machine <br> will send an Auto Service Call to the service <br> station when it is time for PM. <br> Cross reference <br> Auto service calls: Section 2.1 |
| $\mathbf{1 - 7}$ | Not used | Do not change the settings. |


| System Switch 02 |  |  |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| $\begin{gathered} \hline 0 \\ \text { to } \\ 3 \\ \hline \end{gathered}$ | Not used | Do not change the settings. |
| 4 | File retention time 0: Depends on User Parameter 24 [18(H)] 1: No limit | 1: A file that had a communication error will not be erased unless the communication is successful. |
| 5 | Not used | Do not change the setting. |
| $\begin{aligned} & \hline 6 \\ & 7 \end{aligned}$ | Memory read/write by RDS <br> Bit 76 Setting <br> 00 Always disabled <br> 01 User selectable <br> 10 User selectable <br> 11 Always enabled | ( 0,0 ): All RDS systems are always locked out. $(0,1),(1,0)$ : Normally, RDS systems are locked out, but the user can temporarily switch RDS on to allow RDS operations to take place. RDS will automatically be locked out again after a certain time, which is stored in System Switch 03 (see below). Note that if an RDS operation takes place, RDS will not switch off until this time limit has expired. <br> (1,1): At any time, an RDS system can access the machine. |


| System Switch 03 |  |  |
| :---: | :--- | :--- |
| No | FUNCTION | COMMENTS |
| $\mathbf{0}$ | Length of time that RDS is | $00-99$ hours (BCD). |
| to | temporarily switched on when |  |
| $\mathbf{7}$ | bits 6 and 7 of System Switch | This data is only valid if bits 6 and 7 of System <br>  <br>  <br> 02 are set to "User selectable" <br> Switch 02 are set to "User selectable". <br> The default setting is 24 hours. |


| System Switch 04 |  |  |
| :---: | :--- | :--- |
| No | FUNCTION | COMMENTS |
| $\mathbf{0}$ |  |  |
| to |  |  |
| $\mathbf{2}$ |  |  | Not used $\quad$ Do not change the settings.


| System Switch 04 |  |  |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| 5 | Memory file transfer operation <br> 0 : Service level <br> 1: User level | If the machine is unable to print fax messages due to a mechanical problem, change this bit to 1 to transfer all messages in the memory (including confidential rx messages) to an another terminal. Always reset this bit to zero after transfer. However, this bit can be left at 1 , if the customer's key-operator wants to transfer the files himself. <br> Procedure <br> 1. Enter service mode and change this bit to 1. <br> 2. Exit the service mode. <br> 3. Enter the key-operator mode, and select 'Keyoperator settings'. <br> 4. Choose ' 04 ' and specify a destination for the machine to transfer all the files to. <br> 5. Press 'OK'. <br> 6. After the machine transfers the memory files, enter the service mode and reset this bit to 0 . Otherwise, anybody who knows how to enter the key-operator mode can transfer confidential messages. |
| 6 | G3 CSI/G4 Terminal ID programming level <br> 0: User level <br> 1: Service level | 1: The CSI and Terminal ID can only be programmed using a service function. <br> The Terminal ID can only be programmed if a Group 4 option is installed. |
| 7 | Telephone line type programming mode <br> 0: User level <br> 1: Service level | 1: Telephone line type selection (tone dial or pulse dial) can only be programmed using a service function. |


| System Switch 05 |  |  |
| :---: | :--- | :--- |
| No | FUNCTION | COMMENTS |
| $\mathbf{0}$ | Not used | Do not change the settings. |
| $\mathbf{1}$ |  | Display of both RTI and CSI <br> on the LCD <br> 0: Disabled <br> $1:$ Enabled |
| $\mathbf{3}$ | Not used | 1: An RTI will be displayed until phase B of the <br> protocol sequence, and a CSI will be displayed <br> after phase C. |
| $\mathbf{4}$ | Hard disk option <br> 0: Not installed <br> 1: Installed | Do not change the setting. |
| $\mathbf{5}$ | Not used | Change this bit to 1 when installing the hard disk <br> option. |
| $\mathbf{t o}$ |  | Do not change the settings. |
| $\mathbf{7}$ |  |  |

[^10]System Switch 08 - Not used (Do not change the factory settings.)

| System Switch 09 |  |  |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| 0 | Addition of image data from confidential transmissions on the transmission result report 0 : Disabled 1: Enabled | If this feature is enabled, the top half of the first page of confidential messages will be printed on transmission result reports. |
| 1 | Inclusion of communications on the TCR when no image data was exchanged. <br> 0 : Disabled 1: Enabled | 0: Communications which reached phase C (message $\mathrm{tx} / \mathrm{rx}$ ) of the T. 30 protocol are listed on the TCR (Journal). <br> 1: Communications which reached phase A (call setup) of T. 30 protocol are listed on the TCR (Journal). This will include telephone calls. |
| 2 | Automatic error report printout 0: Disabled 1: Enabled | 0: Error reports will not be printed. <br> 1: Error reports will be printed automatically after failed communications. |
| 3 | Printing of the error code on the error report <br> 0 : No 1: Yes | 1: Error codes are printed on the error reports. |
| 4 | Not used | Do not change the setting. |
| 5 | Power failure report <br> 0 : Disabled 1: Enabled | 1: A power failure report will be automatically printed after the power is switched on if a fax message disappeared from the memory when the power was turned off last. |
| 6 | Not used | Do not change the setting. |
| 7 | Priority given to various types of remote terminal ID when printing reports <br> 0: RTI > CSI > Dial label > Tel. number <br> 1: Dial label > Tel. number > RTI > CSI | This bit determines which set of priorities the machine uses when listing remote terminal names on reports. <br> In G4 communication, G4_TID (Terminal ID) is used instead of RTI or CSI. <br> Dial Label: The name stored, by the user, for the Quick/Speed Dial number. |


| System Switch OA |  |  |
| :---: | :--- | :--- |
| No | FUNCTION | COMMENTS |
| $\mathbf{0}$ | Not used | Do not change the settings. |
| $\mathbf{1}$ |  |  |
| $\mathbf{2}$ |  | Continuous polling reception <br>  <br> $\mathbf{3}$ <br> 0: Disabled 1: Enabled |
|  | This feature allows a series of stations to be continuous cycle. This will continue <br> until the polling reception file is erased. <br> The dialing interval is the same as memory <br> transmisison. |  |


| System Switch OA |  |  |
| :---: | :--- | :--- |
| No | FUNCTION | COMMENTS |
| $\mathbf{4}$ | Dialing on the ten-key pad <br> when the external telephone <br> is off-hook <br> 0: Disabled 1: Enabled | 0: Prevents dialing from the ten-key pad while the <br> external telephone is off-hook. Use this setting <br> when the external telephone is not by the <br> machine, or if a wireless telephone is connected <br> as an external telephone. <br> 1: The user can dial on the machine's ten-key pad <br> when the handset is off-hook. |
| $\mathbf{5}$ | On hook dial <br> 0: Disabled 1: Enabled | 0: On hook dial is disabled. |
| $\mathbf{6}$ | Line used for G3 transmission <br> 0: PSTN 1: ISDN | If an ISDN unit has been installed, this bit <br> determines whether G3 transmissions go out over <br> the PSTN or the ISDN. |
| $\mathbf{7}$ | Line used when the machine <br> falls back to G3 from G4 if the <br> other end is not a G4 machine <br> 0: PSTN 1: ISDN | This bit switch has no effect if Communication <br> Switch 07 bit 0 is set to 0. |


| System Switch OB - Not used (Do not change the factory settings.) |
| :--- | :--- |
| System Switch 0C - Not used (Do not change the factory settings.) |
| System Switch OD - Not used (Do not change the factory settings.) |


| System Switch 0E |  |  |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| $\begin{aligned} & \hline 0 \\ & 1 \\ & 2 \end{aligned}$ | Not used | Do not change the settings. |
| 3 | Action when the external handset goes off-hook <br> 0 : Manual tx and rx operation <br> 1: Memory tx and rx operation (the display remains the same) | 0: Manual tx and rx are possible while the external handset is off-hook. But, memory tx is not possible. <br> 1: The display stays in standby mode even when the external handset is used, so that other people can use the machine for memory tx operation. Note that manual $t x$ and $r x$ are not possible with this setting. |
| 4 <br> to <br> 7 | Not used | Do not change the settings. |


| System Switch 0F |  |  |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| $\begin{gathered} \hline 0 \\ \text { to } \\ 7 \end{gathered}$ | Country code for functional settings (Hex) | This country code determines the factory settings of bit switches and RAM addresses. However, it has no effect on the NCU parameter settings and communication parameter RAM addresses. <br> Cross reference <br> NCU country code: Function 06, parameter C.C. |


| System Switch 10 |  |  |
| :---: | :--- | :--- |
| No | FUNCTION | COMMENTS |
| $\mathbf{0}$ | Threshold memory level for | Threshold $=\mathrm{N} \times 64$ kbytes +256 kbytes |
| to | parallel memory transmission | N can be between $00-\mathrm{FF}(\mathrm{H})$ |
| $\mathbf{7}$ |  | Default setting: 02(H) $=384$ kbytes |


| System Switch 11 |  |  |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| 0 | TTI printing position <br> 0 : Printed before the data leading edge <br> 1: Superimposed on the page data | Change this bit to 1 if the TTI overprints information that the customer considers to be important (G3 transmissions). |
| 1 | TSI (G3) or CIL (G4) printing position <br> 0 : Printed before the data leading edge <br> 1: Superimposed on the page data | Change this bit to 1 if the TSI (G3) or CIL (G4) overprints information that the customer considers to be important. |
| $\begin{array}{\|c\|} \hline 2 \\ \text { to } \\ 6 \end{array}$ | Not used | Do not change the factory settings. |
| 7 | Use of parallel memory transmission with G4 transmission <br> 0: Disabled 1: Enabled | This determines whether parallel transmission can be used with a G4 transmission or not. Note that this bit is only effective if Parallel Memory transmission is enabled (User Parameter 07 - bit 2). |


| System Switch 12 |  |  |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| $\begin{gathered} 0 \\ \text { to } \\ 7 \end{gathered}$ | TTI/CIL printing position in the main scan direction <br> CIL: Command Information Line (Group 4) | 08 to 92 (BCD) mm. Input even numbers only. This setting determines the print start position for the TTI and CIL from the left edge of the paper. If the TTI is moved too far to the right, it may overwrite the file number which is on the top right of the page. On an A4 page, if the CIL is moved over by more than 60 mm , it may overwrite the page number. |

System Switch 13 - Not used (do not change the settings)

| System Switch 14 |  |  |
| :---: | :--- | :--- |
| No | FUNCTION | COMMENTS |
| $\mathbf{0}$ | Action when JBIG files and <br> MH/MR/MMR files are mixed <br> in batch transmission <br> 0: JBIG files are transmitted <br> separately <br> 1: Transmitted in one batch | 0: JBIG files are transmitted separately from <br> MH/MR/MMR files. <br> 1: JBIG files are converted into MH, MR, or MMR <br> format, and transmitted in one batch together with <br> MH/MR/MMR files. |
| 1 | Not used |  |
| to |  |  |
| $\mathbf{5}$ |  |  |$\quad$| Do not change the settings. |
| :--- |
| $\mathbf{6}$ |
| File no. print in TTI <br> 0: Enabled <br> 1: Disabled |
| $\mathbf{7}$ |
| Page no. print in TTI <br> 0: Enabled <br> 1: Disabled |


| System Switch 15 |  |  |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| 0 | Not used | Do not change the setting. |
| 1 | Going into the Night mode automatically <br> 0: Enabled <br> 1: Disabled | 1: The machine will restart from the Energy Saver mode quickly, because the +5 V power supply is active even in the Energy Saver mode. |
| 2 | DRAM backup during Night mode <br> 0 : Disabled <br> 1: Enabled | 1: The machine backs up the DRAM even in the Night mode. |
| $\begin{gathered} \hline 3 \\ \text { to } \\ 7 \end{gathered}$ | Not used | Do not change the settings. |


| System Switch 16 - Not used (do not change the settings) |
| :--- |
| System Switch 17 - Not used (do not change the settings) |
| System Switch 18 - Not used (do not change the settings) |


| System Switch 19 |  |  |
| :---: | :--- | :--- |
| No | FUNCTION |  |
| $\mathbf{0}$ | Key acknowledgement tone |  |
| to | volume adjustment |  |
| $\mathbf{2}$ | (in the fax application) |  |
|  | $\mathbf{0 0 0}$ (Min.: OFF)-111 (Max.) |  |
|  | Default setting - 011 |  |
| $\mathbf{3}$ | Not used | Do not change the settings. |
| to |  |  |
| $\mathbf{7}$ |  |  |


| System Switch 1A - Not used (do not change the settings) |
| :--- |
| System Switch 1B - Not used (do not change the settings) |
| System Switch 1C - Not used (do not change the settings) |
| System Switch 1D - Not used (do not change the settings) |


| System Switch 1E |  |  |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| 0 | Communication after the TCR (Journal) data storage area has become full <br> 0: Possible <br> 1: Impossible | This setting is effective only when Automatic TCR (Journal) printout is enabled. <br> $\mathbf{0}$ : If the buffer memory of the communication records for the TCR (Journal) is full, fax communications are still possible. But the machine will overwrite the oldest communication records. <br> 1: If the buffer memory of the communication records for the TCR (Journal) has become full, fax communications will become impossible, to prevent overwriting the communication records before the machine prints them out. <br> Cross Reference <br> - Automatic TCR (Journal) output - User switch 03, bit 7 <br> a Number of communication records for TCR (Journal): <br> 200 records (without EXSAF board) 900 records (with EXSAF board) |
| 1 | Action when the SAF memory has become full during scanning <br> 0 : The page is erased. <br> 1: The file is erased. | 0: If the SAF memory becomes full during scanning, the successfully scanned pages are transmitted. <br> 1: If the SAF memory becomes full during scanning, the file is erased and no pages are transmitted. <br> Not applicable to parallel memory transmission |
| 2 | RTI/CSI display priority 0: RTI 1: CSI | This bit determines which identifier, RTI or CSI, is displayed on the LCD while the machine is communicating in G3 non-standard mode. |
| 3 | File No. printing 0: Enabled <br> 1: Disabled | 1: File numbers are not printed on any reports. |
| 4 | Action when authorized reception is enabled in the following conditions: <br> Receive messages only from senders whose RTI/CSIs are programmed AND Authorized addresses are not programmed <br> 0 : Authorized reception is automatically disabled <br> 1: Authorized reception is enabled | If authorized reception is enabled in this condition, the machine will not receive any fax messages. If customer intends to do so, change this bit to " 1 " before enabling Authorized Reception. Otherwise, keep this bit to " 0 (default setting)" so that the customer will not mistakenly set up the machine not to receive any fax messages. |


| System Switch 1E |  |  |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| 5 | Address display priority in the Al redial mode. <br> 0: RTI/CSI <br> 1: Telephone number | 0 : When the machine has both RTI/CSI and the telephone number information, the machine displays RTI/CSI priority. <br> 1: The machine always displays the telephone number. |
| 6 | Not used | Do not change the setting |
| 7 | RAM initialization after the optional EXSAF board is installed or removed <br> 0: Enabled <br> 1: Disabled | When the machine detects that an EXSAF has been installed or removed, the machine shows the following message on the display for the customer. <br> "CAUTION! Adding/Removing EXSAF board results in data loss. Turn off the main switch and replace the card to cancel. If you want to continue, press Yes." <br> If $Y$ es is pressed, the machine initializes the RAM to the "with" or "without card" configuration. However, changing this bit to ' 1 ' disables this initialization, even if Yes is pressed. <br> Change this bit to 1 after installing the EXSAF board. <br> 0 : When the above message is displayed, the machine initializes the RAM if Yes is pressed. The amount of data lost depends on whether the board is in or out (see Installation - EXSAF). To avoid losing data, the user must switch off immediately and put the board back in. <br> 1: When the above message is displayed, the machine does not initialize the RAM even if Yes is pressed. However, the fax unit cannot be used until the user switches off, puts the board back in, then switches back on. No data is lost. |


| System Switch 1F |  |  |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| 0 | Not used | Do not change the setting. |
| 1 | Report printout after an original jam during SAF storage or if the SAF memory is full <br> 0: Enabled <br> 1: Disabled | 0: When an original jams, or the SAF memory overflows during scanning, a report will be printed. <br> Change this bit to " 1 ", if the customer does not want to have report in these cases. <br> Memory tx - Memory storage report <br> Parallel memory tx - Transmission result report |
| 2 | Not used | Do not change the setting. |
| 3 | Received fax print start timing (G3 reception) <br> 0 : After receiving each page <br> 1: After receiving all pages | $\mathbf{0}$ : The machine prints each page immediately after the machine receives it. <br> 1: The machine prints the complete message after the machine receives all the pages in the memory. |
| 4 | Received fax print start timing (G4 reception) <br> 0 : After receiving each page <br> 1: After receiving all pages |  |
| $\begin{gathered} \hline 5 \\ \text { to } \\ 6 \end{gathered}$ | Not used | Do not change the factory settings. |
| 7 | Action when a fax SC has occurred <br> 0 : Automatic reset <br> 1: SC code display | 0: When the fax unit detects a fax SC code other than SC1201, SC1202, SC1207, SC1802, <br> SC1811 and SC1815, the fax unit automatically resets itself. <br> 1: When the fax unit detects any fax SC code, the fax unit displays the SC code and stops. <br> Cross Reference <br> Fax SC codes - See "Troubleshooting" |

### 4.2.2 SCANNER SWITCHES

| Scanner Switch 00 |  |  |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| $\mathbf{0}$ | Not used | Do not change the settings. |
| to |  |  |
| $\mathbf{7}$ |  |  |


| Scanner Switch 01 |  |  |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| $\begin{gathered} 0 \\ \text { to } \\ 4 \end{gathered}$ | Scan density step value (Text mode) | When scan density is adjusted manually away from the Normal setting, the threshold value for binary picture processing changes for each step from the value specified by Scanner Switch 02, by the amount programmed here. <br> For example, with the settings (20), the threshold value changes as follows. <br> The value can be between 00 and 1F (H) [= 31(D)]. <br> For a darker threshold, input a lower value. |
| ¢ <br> to <br> 7 | Not used. | Do not change the settings. |


| Scanner Switch $\mathbf{0 2}$ |  |  |
| :---: | :--- | :--- |
| No | FUNCTION | COMMENTS |
| $\mathbf{0}$ | Binary picture processing: | This setting determines the threshold value for |
| to | Threshold for Text mode - | binary picture processing in Text mode (when the |
| $\mathbf{7}$ | Normal setting (center <br> scan density setting is at the center). <br> position) | The value can be between 00 and FF. For a <br> darker threshold, input a lower value. |

## Scanner Switch 03- Not used (do not change the settings)

| Scanner Switch 04 |  |  |
| :---: | :--- | :---: |
| No | FUNCTION |  |
| $\mathbf{0}$ | Dirty background elimination |  |
| to | level |  |
| $\mathbf{3}$ | (Text mode) |  |
|  |  |  |
| $\mathbf{4}$ | This setting determines the threshold value for |  |
| dot used | The value can cand in text mode. |  |
| to | stronger threshold, input a higher value. |  |



| Scanner Switch 06 |  |  |
| :---: | :--- | :--- |
| No | FUNCTION | COMMENTS |
| $\mathbf{0}$ | MTF setting | The value can be between 0 and 11. Refer to |
| to | (Text/Photo mode) | Scanner Switch 05 for details. |
| $\mathbf{3}$ |  |  |
| $\mathbf{4}$ | Not used | Do not change the settings. |
| to |  |  |
| $\mathbf{7}$ |  |  |


| Scanner Switch 07 |  |  |
| :---: | :--- | :--- |
| No | FUNCTION | COMMENTS |
| $\mathbf{0}$ | MTF setting (Photo mode) | The value can be between 0 and 11. Refer to the <br> to <br> 3 |
| $\mathbf{d i a g r a m}$ on the previous page for details. |  |  |
| to | Not used |  |
| 7 |  |  |


| Scanner Switch 08 |  |  |
| :---: | :--- | :---: |
| No | FUNCTION |  |
| $\mathbf{y}$ |  |  |
| to | Scan margin setting (top and bottom margin in book scan mode, and top margin in |  |
| $\mathbf{3}$ | ADF mode) |  |
|  | The setting can be between 0 and $\mathrm{F}(\mathrm{H})$ (in mm). |  |
| $\mathbf{4}$ |  |  |
| to | Scan margin setting (bottom margin in ADF mode) |  |
| $\mathbf{6}$ | The setting can be between 0 and 7 (H) (in mm). |  |
| $\mathbf{7}$ | Not used |  |


| Scanner Switch 09- Not used (do not change the settings) |
| :--- |
| Scanner Switch 0A- Not used (do not change the settings) |
| Scanner Switch 0B - Not used (do not change the settings) |


| Scanner Switch 0C |  |  |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| 0 | Action when an original jam has occurred while scanning the original into memory for memory tx <br> 0 : Continues scanning after recovery <br> 1: Stops scanning and erases all scanned pages for that job | This bit is only effective when parallel memory tx is disabled (user parameter 07 - bit 2). <br> If parallel memory $t x$ is enabled, the machine always erases the scanned pages when an original jam occurs. The machine then asks the user to retry from the first page, even if the parallel memory tx is not actually used. <br> 0 : The machine displays a message asking the user to put the jammed page back into the original stack, and continues scanning. <br> The message is displayed for the time period specified by scanner switch $0 E$, bit 2. <br> 1: The machine erases all the scanned pages and asks the user to retry from the first page. |
| $\begin{gathered} \hline 1 \\ \text { to } \\ 2 \end{gathered}$ | Setting when an original size cannot be recognized <br> Bit 21 Setting <br> 00 Depending on the copier's setting <br> 01 A5D <br> 10 A5 $\square$ <br> 11 No original | When both bits are set to " 0 ", the machine recognizes an original size depending on base copier's setting. |
| $\begin{gathered} \hline 3 \\ \text { to } \\ 5 \end{gathered}$ | Not used | Do not change the settings. |
| 6 | Scan width used for a document set in the ADF when the width is less than 230 mm . <br> 0: A4 ( 210 mm ) <br> 1: LT ( 216 mm ) | This bit is set at " 1 " when the country code is set to the US. <br> Refer to Sub Scan Length Correction using ADF in section 2. |
| 7 | Original length adjustment for A4/LT LEF originals in ADF scan mode <br> 0: Enable <br> 1: Disable | 0 : An original of 193 to 223 mm length is regarded as A4 or LT depending on the setting of bit 6 above. <br> 1: Original length data from the ADF sensor is used. <br> Refer to Sub Scan Length Correction using ADF in section 2. |


| Scanner Switch OD |  |  |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| 0 | Scan magnification ratio fine $\binom{0}{0}=0 \%,\binom{1}{0}=-0.5 \%,\binom{0}{1}=+$ <br> The actual magnification ratio this setting. | ing (Main scan direction) $\%,\binom{1}{1}=$ Do not use this setting the sum of the base copier's SP mode setting and |
| 2 | Scan magnification ratio fine $\binom{0}{0}=0 \%,\binom{1}{0}=-1.0 \%,\binom{0}{1}=+$ <br> The actual magnification ratio this setting. | ing (Sub scan direction) <br> $0 \%,\binom{1}{1}=$ Do not use this setting <br> the sum of the base copier's SP mode setting and |
|  <br> to <br> 6 <br> 7 | Not used | Do not change the settings. |
| 7 | Scan width for A5 lengthwise or B5 lengthwise originals <br> 0: 210 mm (8.5") <br> 1: Original width | 0: The machine scans the original as 210 mm (8.5") width. The transmitted image has a blank area on the right. <br> 1: The machine scans 148 mm (A5) or 182 mm (B5) and centers the scanned data on a 216 mm width transmitted image. |


| Scanner Switch 0E |  |  |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| 0 | Wait time for the next page when scanning a book original into memory $\begin{aligned} & 0: 60 \mathrm{~s} \\ & 1: 30 \mathrm{~s} \end{aligned}$ | This bit determines how long the machine waits for the next page when scanning a book original for memory transmission. If this timer expires, the machine transmits all the pages scanned so far as one document. <br> Note: In immediate tx, the wait time for the next page is 10 s . |
| 1 | Scan resolution unit (except standard resolution in book scan mode) <br> 0: mm <br> 1: inches | This bit determines which resolution unit will be used for scanning a fax message. <br> Default setting: mm |
| 2 | ADF jam alarm display time $0: 60 \mathrm{~s}$ <br> 1:30 s | The bit is only effective when bit 0 of scanner bit switch $0 C$ is ' 0 '. <br> This bit determines how long the machine displays the ADF jam alarm after a jam occurred. |
| $\begin{gathered} 3 \\ \text { to } \\ 4 \end{gathered}$ | Not used | Do not change the settings. |
| 5 | Monotone background original Mode <br> 0: Disable <br> 1: Enable | Change this bit when the customer requires. |
| 6 <br> to <br> 7 | Not used | Do not change the settings. |


| Scanner Switch 0F |  |  |
| :---: | :--- | :--- |
| No | FUNCTION | COMMENTS |
| $\mathbf{0}$ | Image rotation before <br> transmission (A4/LT size) <br> 0: Disabled <br> 1: Enabled | This bit determines whether the machine rotates <br> the scanned image by 90 degrees before <br> transmission. <br> If this bit is set at 1, A4 (LT) sideways images <br> (297 mm width in the protocol) will be transmitted <br> as A4 (LT) lengthwise images (216 mm width in <br> the protocol). <br> Refer to Image Rotation Before Transmission in <br> chapter 2 for more details. |
| $\mathbf{1}$ | Not used | Do not change the setting |
| $\mathbf{2}$ | Image rotation before <br> transmission (A5/HLT size) <br> $\mathbf{0 :}$ Disabled <br> 1: Enabled | This bit determines whether the machine rotates <br> the scanned image by 90 degrees before <br> transmission. <br> If this bit is set at "1", A5 (HLT) lengthwise images <br> will be transmitted as A4 (LT) width images (216 <br> mm width in the protocol). <br> Refer to Image Rotation Before Transmission in <br> chapter 2 for more details. |
| $\mathbf{3}$ | Not used |  |
| to |  |  |
| $\mathbf{7}$ |  |  |$\quad$| Do not change the settings. |
| :--- |

### 4.2.3 PRINTER SWITCHES

| Printer Switch 00 |  |  |
| :---: | :--- | :--- |
| No | FUNCTION | COMMENTS |
| $\mathbf{0}$ | Page separation mark <br> 0: Disabled <br> 1: Enabled | 0: No marks are printed. <br> 1: If a received page has to be printed out on two <br> sheets, an asterisk inside square brackets is <br> printed at the bottom right hand corner of the first <br> sheet, and a "2" inside a small box is printed at <br> the top right hand corner of the second sheet. <br> This helps the user to identify pages that have <br> been split. |
| $\mathbf{1}$ | Repetition of data when the <br> received page is longer than <br> the printer paper <br> 0: Disabled <br> 1: Enabled | 0: The next page continues from where the <br> previous page left off. <br> 1: The final few mm of the previous page are <br> printed at the top of the next page. <br> See Sub Scan Reduction and Page Separation in <br> section 2 for details. |
| $\mathbf{2}$ | Prints date and time data on <br> received fax messages <br> 0: Disabled <br> 1: Enabled | This switch is only effective when user parameter <br> 02 - bit 2 (printing the received date and time on <br> received fax messages) is enabled. <br> 1: The machine prints the received and printed <br> date and time at the bottom of each received <br> page. |
| 30 <br> to | Not used | Do not change the settings. |
| $\mathbf{7}$ |  |  |


| Printer Switch 01 |  |  |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| 0 <br> 1 <br> 2 | Not used | Do not change the settings. |
| $\begin{aligned} & \hline 3 \\ & 4 \end{aligned}$ | Maximum print width used in the setup protocol $\binom{0}{0}=$ Not used $\binom{1}{0}=297 \mathrm{~mm}\binom{0}{11.7 \mathrm{inch}}=\begin{aligned} & 254 \mathrm{~mm} \\ & 10.1 \text { inch }\end{aligned}\binom{1}{1}=\begin{aligned} & 216 \mathrm{~mm} \\ & 8.5 \mathrm{inch}\end{aligned}$ |  |
| 5 6 | Not used | Do not change the settings. |
| 7 | Received message width restriction in the protocol signal to the sender 0: Disabled <br> 1: Enabled | 0: The machine informs the transmitting machine of the print width depending on the paper size available from the paper feed stations. <br> Refer to the table on the next page for how the machine chooses the paper width used in the setup protocol (NSF/DIS). <br> 1: The machine informs the transmitting machine of the fixed paper width which is specified by bits 3 and 4 above. |

Relationship between available paper sizes and printer width used in the setup protocol

| Available Paper Size | Printer width used in the Protocol (NSF/DIS) |
| :---: | :---: |
| A4 or $8.5 \times 11^{\prime \prime}$ | 297 mm width |
| B5 | 256 mm width |
| A5 or $8.5 \times 5.5 "$ | 216 mm width |
| No paper available (Paper end) | 216 mm width |


| Printer Switch 02 |  |  |
| :---: | :--- | :--- |
| No | FUNCTION | COMMENTS |
| $\mathbf{0}$ | 1st paper feed station usage <br> for fax printing <br> 0: Enabled <br> 1: Disabled | 0: The paper feed station can be used to print fax <br> messages and reports. |
| $\mathbf{1}$ | 2nd paper feed station usage <br> for fax printing <br> 0: Enabled <br> 1: Disabled | 1: The specified paper feed station will not be <br> used for printing fax messages and reports. |
| $\mathbf{2}$ | Srd paper feed station usage <br> for fax printing <br> 0: Enabled <br> 1: Disabled | Note: Do not disable usage for the paper feed <br> station which has been specified by User <br> Parameter Switch 0F (15), or which is used for <br> the Specified Cassette Selection feature. |
| $\mathbf{3}$ | 4th paper feed station usage <br> for fax printing <br> 0: Enabled <br> 1: Disabled | Do not change the settings. |
| $\mathbf{4}$ | Not used <br> to <br> $\mathbf{7}$ |  |


| Printer Switch 03 |  |  |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| 0 | Length reduction of received data <br> 0: Disabled <br> 1: Enabled | 0: Incoming pages are printed without length reduction. <br> Cross reference <br> Page separation threshold: Printer Sw. 03, bits 4 to 7. <br> 1: Incoming page length is reduced when printing. Cross reference <br> Maximum reducible length: Printer Switches 04, bits 0 to 4 <br> Page separation and data reduction: Section 2 |
| 1 <br> 2 <br> 3 | Not used | Do not change the settings |
| $\begin{gathered} 4 \\ \text { to } \\ 7 \end{gathered}$ | Page separation threshold (with <br> If the incoming page is up to $x$ excess portion will not be print than the length of copy paper, The value of $x$ is determined by <br> Hex value of bits 4 to 7 <br> 0 <br> 1 <br> and so on until <br> F <br> Default setting: 6 mm <br> Cross reference <br> Page separation and data redu <br> Length reduction On/Off: Print | reduction disabled in switch 03-0 above) <br> mm longer than the length of copy paper, the d. If the incoming page is more than xmm longer he excess portion will be printed on the next page. these four bits. <br> (mm) <br> ction: section 2 <br> Switch 03, Bit 0 |



Printer Switch 05 - Not used (do not change the settings)

| Printer Switch 06 |  |  |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| 0 | Printing while a paper cassette is pulled out, when the Just Size Printing feature is enabled. <br> 0 : Printing will not start <br> 1: Printing will start if another cassette has a suitable size of paper, based on the paper size selection priority tables. | Refer to Just Size Printing in section 2 for details. <br> Cross reference Just size printing on/off - User switch 05, bit 5 |
| 1 <br> to <br> 7 | Not used. | Do not change the settings. |


| Printer Switch 07 - Not used (do not change the settings) |
| :--- |
| Printer Switch 08 - Not used (do not change the settings) |
| Printer Switch 09 - Not used (do not change the settings) |
| Printer Switch 0A - Not used (do not change the settings) |
| Printer Switch 0B - Not used (do not change the settings) |
| Printer Switch 0C - Not used (do not change the settings) |
| Printer Switch 0D - Not used (do not change the settings) |


| Printer Switch OE |  |  |
| :---: | :--- | :--- |
| No | FUNCTION | COMMENTS |


| Printer Switches 0F |  |  |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| $\begin{gathered} 0 \\ \text { to } \\ 1 \end{gathered}$ | Smoothing feature   <br> Bit 1 Bit 0 Setting <br> 0 0 Disabled <br> 0 1 Disabled <br> 1 0 Enabled <br> 1 1 Not used | $(\mathbf{0}, \mathbf{0})(\mathbf{0}, \mathbf{1})$ : Disable smoothing if the machine receives halftone images from other manufacturer's fax machines frequently. |
| 2 | Duplex printing <br> 0 : Disabled <br> 1: Enabled | 1: The machine always prints received fax messages in duplex printing mode. <br> Cross Reference <br> "Duplex Printing" in chapter 2 |
| 3 | Binding direction for Duplex Printing <br> 0 : Left binding <br> 1: Top binding | Cross Reference <br> "Duplex Printing" in chapter 2 |
| 4 | Printing fax messages in user code mode <br> 0: Enabled <br> 1: Disabled | 1: The machine holds the received fax messages until the machine exits the restricted access mode using user codes or key counter. <br> If the machine enters the restricted access mode again while printing fax messages, the machine stops printing until the machine exits the mode again. <br> Cross reference <br> User code mode on/off - SP Mode 5-401 |
| 5 | Not used | Do not change the setting. |
| $\begin{aligned} & \hline 6 \\ & 7 \end{aligned}$ | $\begin{aligned} & \text { Wait timer for Duplex Print Moc } \\ & \binom{0}{0}=\operatorname{Not} \operatorname{limit}\binom{1}{0}=1 \mathrm{~mm},\binom{0}{1}= \end{aligned}$ <br> If the duplex unit is already being going to print a fax message in becomes available. The time th above. If the timer expires, the | $\mathrm{mm},\binom{1}{1}=10 \mathrm{~mm}$ <br> g used for a copy or print job when the fax unit is duplex mode, the fax unit waits until the duplex unit the fax unit will wait can be specified, as shown message is printed on single sides. |

### 4.2.4 COMMUNICATION SWITCHES

| Communication Switch 00 |  |  |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| $\begin{gathered} 0 \\ \text { to } \\ 1 \end{gathered}$ |  | These bits determine the compression capabilities to be declared in phase $B$ (handshaking) of the T. 30 protocol. |
| $\begin{gathered} 2 \\ \text { to } \\ 3 \end{gathered}$ |  | These bits determine the compression capabilities to be used in the transmission and to be declared in phase $B$ (handshaking) of the T. 30 protocol. |
| 4 | Not used | Do not change the setting. |
| 5 | Setting of JBIG compression method: Reception <br> 0 : Only basic <br> 1: Basic and Optional | Change the setting when communication problems occur using JBIG compression. |
| 6 | Setting of JBIG compression method: transmission <br> 0 : Basic priority <br> 1: Optional priority | Change the setting when communication problems occur using JBIG compression. |
| 7 | Closed network (reception) <br> 0 : Disabled <br> 1: Enabled | 1: Reception will not go ahead if the ID code of the other terminal does not match the ID code of this terminal. This function is only available in NSF/NSS mode. |


| Communication Switch 01 |  |  |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| 0 | $\begin{aligned} & \text { ECM } \\ & \text { 0: Off } \quad 1: \text { On } \end{aligned}$ | If this bit is set to 0 , ECM is switched off for all communications. <br> In addition, V. 8 protocol and JBIG compression are switched off automatically. |
| 1 | Not used | Do not change the setting. |
| $\begin{gathered} 2 \\ \text { to } \\ 3 \end{gathered}$ | Wrong connection prevention <br> method    <br> Bit 3 Bit 2 Setting  <br> 0 0 None  <br> 0 1 8 digit CSI  <br> 1 0 4 digit CSI  <br> 1 1 CSI/RTI  | $(0,1)$ - The machine will disconnect the line without sending a fax message, if the last 8 digits of the received CSI do not match the last 8 digits of the dialed telephone number. This does not work when manually dialed. <br> $(1,0)$ - The same as above, except that only the last 4 digits are compared. <br> $(1,1)$ - The machine will disconnect the line without sending a fax message, if the other end does not identify itself with an RTI or CSI. <br> $(0,0)$ - Nothing is checked; transmission will always go ahead. <br> Note: This function does not work when dialing is done from the external telephone. |
| $\begin{gathered} \hline 4 \\ \text { to } \\ 5 \end{gathered}$ | Not used | Do not change the setting. |
| $\begin{aligned} & \hline 6 \\ & 7 \end{aligned}$ | Maximum printable page length available | The setting determined by these bits is informed to the transmitting terminal in the pre-message protocol exchange (in the DIS/NSF frames). |


| Communication Switch 02 |  |  |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| 0 | Burst error threshold 0: Low 1: High | If there are more consecutive error lines in the received page than the threshold, the machine will send a negative response. <br> The Low and High threshold values depend on the sub-scan resolution, and are as follows. |
| 1 | Acceptable total error line ratio $0: 5 \% \text { 1: } 10 \%$ | If the error line ratio for a page exceeds the acceptable ratio, RTN will be sent to the other end. |
| 2 | Treatment of pages received with errors during G3 reception <br> 0: Deleted from memory without printing <br> 1: Printed | 0: Pages received with errors are not printed. |
| 3 | Hang-up decision when a negative code (RTN or PIN) is received during G3 immediate transmission <br> 0: No hang-up, 1: Hang-up | 0: The next page will be sent even if RTN or PIN is received. <br> 1: The machine will send $D C N$ and hang up if it receives RTN or PIN. <br> This bit is ignored for memory transmissions or if ECM is being used. |
| $\begin{gathered} 4 \\ \text { to } \\ 6 \end{gathered}$ | Not used | Do not change the settings. |
| 7 | Method of total error rate calculation <br> 0: Normal method <br> 1: French PTT requirement | 0: Error rate is calculated by dividing the number of total lines by the number of error lines. <br> 1: Error rate is calculated by dividing the number of total plus error lines by the number of error lines. |


| Communication Switch 03 |  |  |
| :---: | :--- | :--- |
| No | FUNCTION | COMMENTS |
| $\mathbf{0}$ | Maximum number of page | $00-$ FF $(\mathrm{Hex})$ times. |
| to | retransmissions in a G3 | This setting is not used if ECM is switched on. |
| $\mathbf{7}$ | memory transmission | Default setting $-03(\mathrm{H})$ |

Communication Switch 04 - Not used (do not change the settings)
Communication Switch 05 - Not used (do not change the settings)

Communication SW 06 -Not used (do not change the settings)

| Communication Switch 07 |  |  |
| :---: | :--- | :--- |
| No | FUNCTION | COMMENTS |
| $\mathbf{0}$ | Fallback from G4 to G3 if the <br> other terminal is not a G4 <br> terminal <br> 0: Disabled 1: Enabled | Also see system switch 0A bit 7. <br> Refer to the ISDN G4 option service manual (G4 <br> Internal Switches 17, 18, 1A, 1B, and 1C) for the <br> CPS code set (Cause Value set) to determine G4 <br> to G3 fallback. |
| $\mathbf{1}$ |  |  |
| to |  |  |
| $\mathbf{3}$ |  |  | Not used $\quad$ Do not change the settings.


| Communication Switch 08 |  |  |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| $\begin{gathered} \hline 0 \\ \text { to } \\ 7 \end{gathered}$ | Program the ISDN extension access number | When use the ISDN extension line, program the extension access number, then change communication switch 07 bit 6 to 1 . <br> The value can be between 00 and 99 (BCD). If the value is set to $F F(B C D)$, it means that no number is programmed. <br> Do not use any setting other than listed above. |

[^11]| Communication Switch 0A |  |  |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| 0 | Point of resumption of memory transmission upon redialing <br> 0 : From the error page <br> 1: From page 1 | 0: The transmission begins from the page where transmission failed the previous time. <br> 1: Transmission begins from the first page, using normal memory transmission. |
| $\begin{gathered} 1 \\ \text { to } \\ 6 \end{gathered}$ | Not used | Do not change the settings. |
| 7 | Emergency calls using 999 0: Enabled 1: Disabled | If this bit is at 1 , the machine will not allow you to dial 999 at the auto-dialer. This is a PTT requirement in the UK and some other countries. |


| Communication Switch 0B |  |  |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| 0 | Use of Economy <br> Transmission during a <br> Transfer operation to end receivers <br> 0 : Disabled 1: Enabled | These bits determine whether the machine uses the Economy Transmission feature when it is carrying out a Transfer operation as a Transfer Station. |
| 1 | Use of Economy <br> Transmission during a <br> Transfer operation to the Next <br> Transfer Stations <br> 0 : Disabled 1: Enabled |  |
| 2 | Use of Label Insertion for the End Receivers in a Transfer operation <br> 0: Disabled 1: Enabled | This bit determines whether the machine uses the Label Insertion feature when it is carrying out a Transfer operation as a Transfer Station. |
| 3 | Conditions required for Transfer Result Report transmission <br> 0: Always transmitted <br> 1: Only transmitted if there was an error | 0: When acting as a Transfer Station, the machine will always send a Transfer Result Report back to the Requesting Station after completing the Transfer Request, even if there were no problems. <br> 1: The machine will only send back a Transfer Result Report if there were errors during communication so that one or more of the End Receivers could not be contacted. |
| 4 | Printout of the message when acting as a Transfer Station 0 : Disabled 1: Enabled | When the machine is acting as a Transfer Station, this bit determines whether the machine prints the fax message coming in from the Requesting Terminal. |


| Communication Switch OB |  |  |
| :---: | :--- | :--- |
| No | FUNCTION | COMMENTS |
| $\mathbf{5}$ | Action when there is no fax <br> number in the programmed <br> Quick/Speed dials which <br> meets the requesting <br> terminal's own fax number <br> 0: Transfer is disabled <br> 1: Transfer is enabled | After the machine receives a transfer request, the <br> machine compares the last N digits of the <br> requesting terminal's own fax number with all the <br> Quick/Speed dials programmed in the machine. <br> (N is the number programmed in communication <br> switch 0C.) <br> 0: If there is no matching number programmed in <br> the machine, the machine rejects the transfer <br> request. <br> 1: Even if there is no matching number <br> programmed in the machine, the machine accepts <br> the transfer request. The result report will be <br> printed at the transfer terminal, but will not be sent <br> back to the requesting terminal. |
| $\mathbf{6}$ | Not used | Do not change the settings. |
| to |  |  |
| $\mathbf{7}$ |  |  |


| Communication Switch 0C |  |  |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| $\begin{gathered} 0 \\ \text { to } \\ 4 \end{gathered}$ | Number of digits compared to find the requester's fax number from the programmed Quick/Speed Dials when acting as a Transfer Station | 00-1F (0 to 31 digits) <br> After the machine receives a transfer request, the machine compares the own telephone number sent from the Requesting Terminal with all Quick/Speed Dials programmed in the machine, starting from Quick Dial 01 to the end of the Speed Dials. <br> This number determines how many digits from the end of the telephone numbers the machine compares. <br> If it is set to 00 , the machine will send the report to the first Quick/Speed Dial that the machine compared. If Quick Dial 01 is programmed, the machine will send the report to Quick 01. If Quick Dial 01 through 04 are not programmed and Quick Dial 05 is programmed, the machine will send the report to Quick 05. <br> Default setting -05(H) $=5$ digits |
| $\begin{gathered} 5 \\ \text { to } \\ 7 \end{gathered}$ | Not used | Do not change the settings. |


| Communication Switch 0D |  |  |
| :---: | :--- | :--- |
| No | FUNCTION | COMMENTS |
| $\mathbf{0}$ | The available memory |  |
| to |  |  |
| threshold, below which ringing | 00 to FF (Hex), unit = 4 kbytes |  |
| detection (and therefore |  |  |
| deception into memory) is |  |  |
| disabled | (e.g., 06(H) = 24 kbytes) |  |
|  | One page is about 24 kbytes. <br> The machine refers to this setting before each fax <br> reception. If the amount of remaining memory is <br> below this threshold, the machine cannot receive <br> any fax messages. <br> If this setting is kept at 0, the machine will detect <br> ringing signals and go into receive mode even if <br> there is no memory available. This will result in <br> communication failure. |  |


| Communication Switch 0E |  |  |
| :---: | :--- | :--- |
| No | FUNCTION | COMMENTS |
| $\mathbf{0}$ | Minimum interval between | 06 to $\mathrm{FF}(\mathrm{Hex})$, unit $=2 \mathrm{~s}$ |
| to | automatic dialing attempts | (e.g., $06(\mathrm{H})=12 \mathrm{~s})$ <br> $\mathbf{7}$ |
|  |  | This value is the minimum time that the machine <br> waits before it dials the next destination. |

Communication Switch 0F - Not used (do not change the settings)

| Communication Switch 10 |  |  |
| :---: | :--- | :--- |
| No | FUNCTION | COMMENTS |
| $\mathbf{0}$ | Memory transmission: | $01-$ FF (Hex) times |
| to | Maximum number of dialing | Note: CTR21 requirements prohibit changing this |
| $\mathbf{7}$ | attempts to the same | switch. |
|  |  |  |

Communication Switch 11 - Not used (do not change the settings.)

| Communication Switch 12 |  |  |
| :---: | :--- | :--- |
| No | FUNCTION | COMMENTS |
| $\mathbf{0}$ | Memory transmission: Interval | $01-$ FF (Hex) minutes |
| to | between dialing attempts to | Note: CTR21 requirements prohibit charging this |
| $\mathbf{7}$ | the same destination | switch |

Communication Switch 13 - Not used (do not change the settings.)

| Communication Switch 14 |  |  |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| 0 | Inch-to-mm conversion during transmission <br> 0: Disabled 1: Enabled | 0: In immediate transmission, data scanned in inch format are transmitted without conversion. In memory transmission, data stored in the SAF memory in mm format are transmitted without conversion. <br> Note: When storing the scanned data into SAF memory, the fax unit always converts the data into mm format. <br> 1: The machine converts the scanned data or stored data in the SAF memory to the format which was specified in the set-up protocol (DIS/NSF) before transmission. |
| $\begin{gathered} 1 \\ \text { to } \\ 5 \end{gathered}$ | Not used | Do not change the factory settings. |
| $\begin{aligned} & 6 \\ & 7 \end{aligned}$ |  | For the best performance, do not change the factory settings. <br> The setting determined by these bits is informed to the transmitting terminal in the pre-message protocol exchange (in the DIS/NSF frames). |

[^12]| Communication Switch 1E |  |  |
| :---: | :--- | :--- |
| No | FUNCTION | COMMENTS |
| $\mathbf{0}$ | Extension access code (0 to | If the PABX does not support V.8/V.34 protocol |
| to | 7) to turn V.8 protocol On/Off | procedure, set this bit to "1" to disable V.8. |
| $\mathbf{7}$ | 0: On | Example: If "0" is the PSTN access code, set bit |
|  | 1: Off | 0 to 1. When the machine detects "0" as the first <br> dialed number, it automatically disables V.8 <br> protocol. (Alternatively, if " 3 " is the PSTN access <br> code, set bit 3 to 1.) |
|  |  |  |


| Communication Switch 1F |  |  |
| :---: | :--- | :--- |
| No | FUNCTION | COMMENTS |
| $\mathbf{0}$ | Extension access code (8 and | Refer to communication switch 1E. |
| to | 9) to turn V.8 protocol On/Off | Example: If "8" is the PSTN access code, set bit |
| 1 | 0: On | 0 to 1. When the machine detects " 8 " as the first <br>  <br>  <br> 1: Off |
|  |  | dialed number, it automatically disables V. 8 <br> protocol. (If "9" is the PSTN access code, use bit <br> 1.) |
| 2-7 | Not used | Do not change the settings. |

### 4.2.5 G3 SWITCHES

| G3 Switch 00 |  |  |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| $\begin{aligned} & \hline 0 \\ & 1 \end{aligned}$ | Monitor speaker during communication (tx and rx) | ( 0,0 ): The monitor speaker is disabled all through the communication. <br> $(0,1)$ : The monitor speaker is on up to phase B in the T. 30 protocol. <br> $(1,0)$ : Used for testing. The monitor speaker is on all through the communication. Make sure that you reset these bits after testing. |
| 2 | Monitor speaker during memory transmission 0 : Disabled 1: Enabled | 1: The monitor speaker is enabled during memory transmission. |
| $\begin{gathered} \hline 3 \\ \text { to } \\ 6 \end{gathered}$ | Not used | Do not change the settings. |
| 7 | Back to back test 0: Disabled 1: Enabled | Set this bit to 1 when you wish to do a back to back test. <br> 115 V model: Be sure to connect jumpers JP5 and JP6 on the NCU before doing the test. 220 V model: Be sure to apply dc voltage between wires L1 and L2 on the NCU. |



## Back-to-Back Connection:

The dc power supplies should be adjusted so that the line current to the NCU is about 30 mA .

| G3 Switch 01 |  |  |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| $\begin{gathered} \hline 0 \\ \text { to } \\ 3 \\ \hline \end{gathered}$ | Not used | Do not change the settings. |
| 4 | DIS frame length 0: 10 bytes $1: 4$ bytes | 1: The bytes in the DIS frame after the 4th byte will not be transmitted (set to 1 if there are communication problems with PC-based faxes which cannot receive the extended DIS frames). |
| 5 | Not used | Do not change the setting. |
| 6 | CED/ANSam transmission <br> 0 : Disabled <br> 1: Enabled | Do not change this setting, unless the communication problem is caused by the CED/ANSam transmission. |
| 7 | Not used | Do not change the setting. |


| G3 Switch 02 |  |  |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| 0 | G3 protocol mode used <br> 0: Standard and non-standard <br> 1: Standard only | Change this bit to 1 only when the other end can only communicate with machines that send T.30standard frames only. <br> 1: Disables NSF/NSS signals (these are used in non-standard mode communication) |
| $\begin{gathered} \hline 1 \\ \text { to } \\ 4 \end{gathered}$ | Not used | Do not change the settings. |
| 5 | Use of modem rate history for transmission using Quick/Speed Dials 0: Disabled <br> 1: Enabled | 0: Communications using Quick/Speed Dials always start from the highest modem rate. <br> 1: The machine refers to the modem rate history for communications with the same machine when determining the most suitable rate for the current communication. |
| 6 | Al short protocol (transmission and reception) <br> 0 : Disabled 1: Enabled | Refer to Appendix B in the Group 3 Facsimile Manual for details about AI Short Protocol. |
| 7 | Short preamble <br> 0: Disabled 1: Enabled | Refer to Appendix B in the Group 3 Facsimile Manual for details about Short Preamble. |


| G3 Switch 03 |  |  |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| 0 | DIS detection number (Echo countermeasure) 0: 1 $1: 2$ | 0 : The machine will hang up if it receives the same DIS frame twice. <br> 1: Before sending DCS, the machine will wait for the second DIS which is caused by echo on the line. |
| 1 | V. 8 protocol in manual reception <br> 0 : Disabled <br> 1: Enabled | 0: The machine sends CED instead of ANSam when starting a manual reception. <br> 1: The machine sends ANSam in manual reception. |
| 2 | V. 8 protocol <br> 0 : Disabled <br> 1: Enabled | 0: V.8/V. 34 communications will not be possible. Note: <br> Do not change this setting unless the line condition is always bad enough to slow down the data rate below 14.4 kbps . |
| 3 | ECM frame size <br> 0: 256 bytes <br> 1: 64 bytes | Keep this bit at "0" in most cases. |
| 4 | CTC transmission conditions <br> 0 : After one PPR signal received <br> 1: After four PPR signals received (ITU-T standard) | 0: When using ECM in non-standard (NSF/NSS) mode, the machine sends a CTC to drop back the modem rate after receiving a PPR, if the following condition is met in communications at 14.4, 12.0, 9.6 , and 7.2 kbps . <br> $\sqrt{\mathrm{N} \text { Trnasmit }} \leq \mathrm{N}$ Resend <br> NTransmit- Number of transmitted frames NResend- Number of frames to be retransmitted <br> 1: When using ECM, the machine sends a CTC to drop back the modem rate after receiving four PPRs. <br> PPR, CTC: These are ECM protocol signals. <br> This bit is not effective in V. 34 communications. |
| 5 | Modem rate used for the next page after receiving a negative code (RTN or PIN) 0: No change 1: Fallback | 1: The machine's tx modem rate will fall back before sending the next page if a negative code is received. This bit is ignored if ECM is being used. |
| 6 <br> to <br> 7 | Not used | Do not change the settings. |


| G3 Switch 04 |  |  |
| :---: | :--- | :--- |
| No | FUNCTION | COMMENTS |
| $\mathbf{0}$ | Training error detection | $0-\mathrm{F}(\mathrm{Hex}) ; 0-15$ bits |
| to | threshold | If the number of error bits in the received TCF is |
| $\mathbf{3}$ |  | below this threshold, the machine informs the |
|  |  | sender that training has succeeded. |
| $\mathbf{4}$ | Not used | Do not change the settings. |
| to |  |  |
| $\mathbf{7}$ |  |  |


| G3 Switch 05 |  |  |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| $\begin{gathered} 0 \\ \text { to } \\ 3 \end{gathered}$ |  | These bits set the initial starting modem rate for transmission. <br> Use the dedicated transmission parameters if you need to change this for specific receivers. <br> If a modem rate slower than 14.4 kbps is selected, V. 8 protocol should be disabled manually. <br> Cross reference <br> V. 8 protocol on/off - G3 switch 03, bit2 |
| $\begin{gathered} \hline 4 \\ \text { to } \\ 5 \end{gathered}$ | Initial modem type for 9.6 k or    <br> 7.2 kbps .    <br> Bit 5    <br> Bit 4    Setting | These bits set the initial modem type for 9.6 and 7.2 kbps , if the initial modem rate is set at these speeds. |
| \% <br> to <br> 7 | Not used | Do not change the settings. |


| G3 Switch 06 |  |  |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| $\begin{gathered} 0 \\ \text { to } \\ 3 \end{gathered}$ |  | These bits set the initial starting modem rate for reception. <br> Use a lower setting if high speeds pose problems during reception. <br> If a modem rate slower than 14.4 kbps is selected, V. 8 protocol should be disabled manually. <br> Cross reference <br> V. 8 protocol on/off - G3 switch 03, bit2 |
| $\begin{gathered} \hline 4 \\ \text { to } \\ 7 \end{gathered}$ |  | The setting of these bits is used to inform the transmitting terminal of the available modem type for the machine in receive mode. <br> If V .34 is not selected, V .8 protocol must be disabled manually. <br> Cross reference <br> V. 8 protocol on/off - G3 switch 03, bit2 |


| G3 Switch 07 |  |  |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| 0 <br> to <br> 1 | PSTN cable equalizer   <br> (tx mode: Internal)   <br> Bit 1 Bit $\mathbf{0}$ Setting <br> 0 0 None <br> 0 1 Low <br> 1 0 Medium <br> 1 1 High | Use a higher setting if there is signal loss at higher frequencies because of the length of wire between the modem and the telephone exchange. <br> Use the dedicated transmission parameters for specific receivers. <br> Also, try using the cable equalizer if one or more of the following symptoms occurs. <br> - Communication error <br> - Modem rate fallback occurs frequently. <br> Note: This setting is not effective in V. 34 communications. |
| $\begin{gathered} 2 \\ \text { to } \\ 3 \end{gathered}$ | PSTN cable equalizer   <br> (rx mode: Internal)   <br> Bit 3 Bit 2 Setting <br> 0 0 None <br> 0 1 Low <br> 1 0 Medium <br> 1 1 High | Use a higher setting if there is signal loss at higher frequencies because of the length of wire between the modem and the telephone exchange. <br> Also, try using the cable equalizer if one or more of the following symptoms occurs. <br> - Communication error with error codes such as $0-20,0-23$, etc. <br> - Modem rate fallback occurs frequently. <br> Note: This setting is not effective in V. 34 communications. |
| 4 | PSTN cable equalizer <br> (V.8/V. 17 rx mode: External) <br> 0 : Disabled <br> 1: Enabled | Keep this bit at "1". |
| 5 | PSTN cable equalizer (V. 34 rx mode; External) | Keep this bit at "1". |
| 6 7 | Not used | Do not change the settings. |

G3 Switch 08 - Not used (do not change the settings)

| G3 Switch 09 |  |  |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| $\begin{gathered} 0 \\ \text { to } \\ 1 \end{gathered}$ | ISDN cable equalizer   <br> (tx mode: Internal)   <br> Bit 1 Bit $\mathbf{0}$ Setting <br> 0 0 None <br> 0 1 Low <br> 1 0 Medium <br> 1 1 High | Use a higher setting if there is signal loss at higher frequencies because of the length of wire between the modem and the telephone exchange. <br> Use the dedicated transmission parameters for specific receivers. <br> Also, try using the cable equalizer if one or more of the following symptoms occurs. <br> - Communication error <br> - Modem rate fallback occurs frequently. <br> Note: This setting is not effective in V. 34 communications. |
| $\begin{array}{\|c\|} \hline 2 \\ \text { to } \\ 3 \end{array}$ | ISDN cable equalizer   <br> (rx mode: Internal)   <br> Bit 3 Bit 2 Setting <br> 0 0 None <br> 0 1 Low <br> 1 0 Medium <br> 1 1 High | Use a higher setting if there is signal loss at higher frequencies because of the length of wire between the modem and the telephone exchange. <br> Also, try using the cable equalizer if one or more of the following symptoms occurs. <br> - Communication error with error codes such as $0-20,0-23$, etc. <br> - Modem rate fallback occurs frequently. <br> Note: This setting is not effective in V. 34 communications. |
| 4 | ISDN cable equalizer (V.8/V. 17 rx mode: External) <br> 0 : Disabled <br> 1: Enabled | Keep this bit at "0" in most cases. |
| 5 | ISDN cable equalizer (V. 34 rx mode: External) <br> 0 : Disabled <br> 1: Enabled | Keep this bit at "0" in most cases. |
| 6 <br> to <br> 7 | Not used | Do not change the settings. |


| G3 Switch 0A |  |  |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| $\begin{aligned} & 0 \\ & 1 \end{aligned}$ | Maximum allowable carrier drop during image data reception | These bits set the acceptable modem carrier drop time. <br> Try using a longer setting if error code $0-22$ is frequent. |
| $2$ | Not used | Do not change the settings. |
| 4 | Maximum allowable frame interval during image data reception. $0: 5 \mathrm{~s} 1: 13 \mathrm{~s}$ | This bit set the maximum intervals between each EOL signal (end-of-line) or intervals between each ECM frame from the other end. Try using a longer setting if error code 0-21 is frequent. |
| 5 | Not used | Do not change the setting. |
| 6 | Reconstruction time for the first line in receive mode 0: $6 \mathrm{~s} 1: 12 \mathrm{~s}$ | When the sending terminal is controlled by a computer, there may be a delay in receiving page data after the local machine accepts set-up data and sends CFR. This is outside the T. 30 recommendation. But, if this delay occurs, set this bit to 1 to give the sending machine more time to send data. <br> Refer to error code 0-20. <br> ITU-T T. 30 recommendation: The first line should come within 5 s of CFR. |
| 7 | Not used | Do not change the setting. |

G3 SW OB - Not used (do not change the settings)

| G3 Switch 0C |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| No | FUNCTION |  |  | COMMENTS |
| 0 | Pulse dialing method |  |  | $\mathrm{P}=$ Number of pulses sent out, $\mathrm{N}=$ Number dialed. |
|  | Bit 1 | Bit 0 | Setting |  |
|  |  |  | Normal $(\mathrm{P}=\mathrm{N})$ |  |
|  | $0$ |  | $\begin{aligned} & \text { Oslo } \\ & (\mathrm{P}=10-\mathrm{N}) \end{aligned}$ |  |
|  |  |  | Sweden $(\mathrm{N}+1)$ |  |
|  | 1 | 1 | Not used |  |
|  <br> 2 <br> to <br> 7 | Not us |  |  | Do not change the settings. |

G3 SW OD - Not used (do not change the settings)


| G3 Switch OF |  |  |
| :---: | :--- | :--- |
| No | FUNCTION | COMMENTS |
| $\mathbf{0}$ | Alarm when an error occurred <br> in Phase C or later <br> 0: Disabled <br> 1: Enabled | If the customer wants to hear an alarm after each <br> error communication, change this bit to "1". |
| $\mathbf{1}$ | Alarm when the handset is <br> off-hook at the end of <br> communication <br> 0: Disabled <br> 1: Enabled | If the customer wants to hear an alarm if the <br> handset is off-hook at the end of fax <br> communication, change this bit to "1". |
| $\mathbf{2}$ | Not used | Do not change the settings. |
| to |  |  |
| $\mathbf{7}$ |  |  |

### 4.3 NCU PARAMETERS

The following tables give the RAM addresses and units of calculation of the parameters that the machine uses for ringing signal detection and automatic dialing. The factory settings for each country are also given. Most of these must be changed by RAM read/write (Function 06-1), but some can be changed using NCU Parameter programming (Function 06-2); if Function 06-2 can be used, this will be indicated in the Remarks column. The RAM is programmed in hex code unless (BCD) is included in the Unit column.
NOTE: CTR21 requirements prohibit changing the shaded items below.

| Address | Function | Unit |  | rks |
| :---: | :---: | :---: | :---: | :---: |
| 480400 | Country code for NCU parameters | Use the Hex value to program the country code directly into this address, or use the decimal value to program it using Function 06-2 (parameter 00). |  |  |
|  |  | Country | Decimal | Hex |
|  |  | France | 00 | 00 |
|  |  | Germany | 01 | 01 |
|  |  | UK | 02 | 02 |
|  |  | Italy | 03 | 03 |
|  |  | Austria | 04 | 04 |
|  |  | Belgium | 05 | 05 |
|  |  | Denmark | 06 | 06 |
|  |  | Finland | 07 | 07 |
|  |  | Ireland | 08 | 08 |
|  |  | Norway | 09 | 09 |
|  |  | Sweden | 10 | 0A |
|  |  | Switzerland | 11 | OB |
|  |  | Portugal | 12 | OC |
|  |  | Holland | 13 | OD |
|  |  | Spain | 14 | OE |
|  |  | Israel | 15 | OF |
|  |  | USA | 17 | 11 |
|  |  | Asia | 18 | 12 |
|  |  | Hong Kong | 20 | 14 |
|  |  | South Africa | 21 | 15 |
|  |  | Australia | 22 | 16 |
|  |  | New Zealand | 23 | 17 |
|  |  | Singapore | 24 | 18 |
|  |  | Malaysia | 25 | 19 |
|  |  | China | 26 | 1A |
|  |  | Taiwan | 27 | 1B |
|  |  | Turkey | 32 | 20 |
|  |  | Greece | 33 | 21 |
| 480401 | Line current detection time | 20 ms | Line current detection is disabled. <br> Line current is not detected if 480401 contains FF. |  |
| 480402 | Line current wait time |  |  |  |
| 480403 | Line current drop detect time |  |  |  |


| Address | Function | Unit | Remarks |
| :---: | :---: | :---: | :---: |
| 480404 | PSTN dial tone frequency upper limit (high byte) | Hz (BCD) | If both addresses contain $\mathrm{FF}(\mathrm{F})$, tone detection is disabled. |
| 480405 | PSTN dial tone frequency upper limit (low byte) |  |  |
| 480406 | PSTN dial tone frequency lower limit (high byte) | Hz (BCD) |  |
| 480407 | PSTN dial tone frequency lower limit (low byte) |  |  |
| 480408 | PSTN dial tone detection time | 20 ms | If 480408 contains FF, the machine pauses for the pause time (address 48040D / 48040E). <br> See Note 3 (Italy). |
| 480409 | PSTN dial tone reset time (LOW) |  |  |
| 48040A | PSTN dial tone reset time (HIGH) |  |  |
| 48040B | PSTN dial tone continuous tone time |  |  |
| 48040C | PSTN dial tone permissible drop time |  |  |
| 48040D | PSTN wait interval (LOW) |  |  |
| 48040E | PSTN wait interval (HIGH) |  |  |
| 48040F | PSTN ringback tone detection time | 20 ms | Detection is disabled if this contains FF. |
| 480410 | PSTN ringback tone off detection time | 20 ms |  |
| 480411 | PSTN detection time for silent period after ringback tone detected (LOW) | 20 ms |  |
| 480412 | PSTN detection time for silent period after ringback tone detected (HIGH) | 20 ms |  |
| 480413 | PSTN busy tone frequency upper limit (high byte) | Hz (BCD) | If both addresses contain $\mathrm{FF}(\mathrm{F})$, tone detection is disabled. |
| 480414 | PSTN busy tone frequency upper limit (low byte) |  |  |
| 480415 | PSTN busy tone frequency lower limit (high byte) | Hz (BCD) |  |
| 480416 | PSTN busy tone frequency lower limit (low byte) |  |  |
| 480417 | PABX dial tone frequency upper limit (high byte) | Hz (BCD) | If both addresses contain $F F(F)$, tone detection is disabled. |
| 480418 | PABX dial tone frequency upper limit (low byte) |  |  |
| 480419 | PABX dial tone frequency lower limit (high byte) | Hz (BCD) |  |
| 48041A | PABX dial tone frequency lower limit (low byte) |  |  |
| 48041B | PABX dial tone detection time | 20 ms | If 48041B contains FF, the machine pauses for the pause time (480420 / 480421). |


| Address | Function | Unit | Remarks |
| :---: | :---: | :---: | :---: |
| 48041C | PABX dial tone reset time (LOW) | 20 ms |  |
| 48041D | PABX dial tone reset time (HIGH) | 20 ms |  |
| 48041E | PABX dial tone continuous tone time | 20 ms |  |
| 48041F | PABX dial tone permissible drop time | 20 ms |  |
| 480420 | PABX wait interval (HIGH) | 20 ms |  |
| 480421 | PABX wait interval (LOW) | 20 ms |  |
| 480422 | PABX ringback tone detection time | 20 ms | Detection is disabled if this contains FF. |
| 480423 | PABX ringback tone off detection time | 20 ms |  |
| 480424 | PABX detection time for silent period after ringback tone detected (LOW) | 20 ms |  |
| 480425 | PABX detection time for silent period after ringback tone detected (HIGH) | 20 ms |  |
| 480426 | PABX busy tone frequency upper limit (high byte) | Hz (BCD) | If both addresses contain $F F(F)$, tone |
| 480427 | PABX busy tone frequency upper limit (low byte) |  | detection is disabled. |
| 480428 | PABX busy tone frequency lower limit (high byte) | Hz (BCD) |  |
| 480429 | PABX busy tone frequency lower limit (low byte) |  |  |
| 48042A | Busy tone ON time: range 1 | 20 ms |  |
| 48042B | Busy tone OFF time: range 1 | 20 ms |  |
| 48042C | Busy tone ON time: range 2 | 20 ms |  |
| 48042D | Busy tone OFF time: range 2 | 20 ms |  |
| 48042E | Busy tone ON time: range 3 | 20 ms |  |
| 48042F | Busy tone OFF time: range 3 | 20 ms |  |
| 480430 | Busy tone ON time: range 4 | 20 ms |  |
| 480431 | Busy tone OFF time: range 4 | 20 ms |  |
| 4804G32 | Busy tone continuous tone detection time | 20 ms |  |


| Address | Function | Unit | Remarks |
| :---: | :---: | :---: | :---: |
| 480433 | Busy tone signal state time tolerance required for detection (a setting of ON-OFF must be detected twice). <br> Bits 7 and 6 - number of cycles req <br> Bits 5 and 4 - number of cycles req <br> Bit $\begin{array}{llll}5 & 4 & \\ 0 & 0 & 2 \text { times } \\ 0 & 1 & 3 \text { times } \\ & 1 & 0 & 4 \text { times } \\ & 1 & 1 & 5 \text { times }\end{array}$ <br> Bits 3 and 2 - Not used. Keep these Bits 1 and 0 - Tolerance ( $\pm$ ) $\begin{array}{llll} \text { Bit } & 1 & 0 & \\ & 0 & 0 & 75 \% \\ & 0 & 1 & 50 \% \\ & 1 & 0 & 25 \% \\ & 1 & 1 & 12.5 \% \end{array}$ | for all rang cycles mean <br> ired for cad <br> red for cade <br> bits at 0 . | and number of cycles hat ON-OFF-ON or OFF- <br> e detection in tx <br> detection in rx |
| 480434 | upper limit (high byte) | Hz (BCD) | If both addresses contain $\mathrm{FF}(\mathrm{F})$, tone |
| 480435 | International dial tone frequency upper limit (low byte) |  | detection is disabled. |
| 480436 | International dial tone frequency lower limit (high byte) | Hz (BCD) |  |
| 480437 | International dial tone frequency lower limit (low byte) |  |  |
| 480438 | International dial tone detection time | 20 ms | If 480438 contains FF, the machine pauses for |
| 480439 | International dial tone reset time (LOW) | 20 ms | the pause time (48043D / 48043E). |
| 48043A | International dial tone reset time (HIGH) | 20 ms | See Note 3 (Belgium). |
| 48043B | International dial tone continuous tone time | 20 ms |  |
| 48043C | International dial tone permissible drop time | 20 ms |  |
| 48043D | International dial wait interval (HIGH) | 20 ms |  |
| 48043E | International dial wait interval (LOW) | 20 ms |  |
| 48043F | Country dial tone upper frequency limit (HIGH) | Hz (BCD) | If both addresses contain $F F(F)$, tone |
| 480440 | Country dial tone upper frequency limit (LOW) |  | detection is disabled. |


| Address | Function | Unit | Remarks |
| :---: | :---: | :---: | :---: |
| 480441 | Country dial tone lower frequency limit (HIGH) | $\mathrm{Hz}(\mathrm{BCD})$ |  |
| 480442 | Country dial tone lower frequency limit (LOW) |  |  |
| 480443 | Country dial tone detection time | 20 ms | If 480443 contains FF, the machine pauses for the pause time (480448 / 480449). |
| 480444 | Country dial tone reset time (LOW) |  |  |
| 480445 | Country dial tone reset time (HIGH) |  |  |
| 480446 | Country dial tone continuous tone time |  |  |
| 480447 | Country dial tone permissible drop time |  |  |
| 480448 | Country dial wait interval (LOW) |  |  |
| 480449 | Country dial wait interval (HIGH) |  |  |
| 48044A | Time between opening or closing the DO relay and opening the OHDI relay | 1 ms | See Notes 4 and 7. <br> Function 06-2 <br> (parameter 11). |
| 48044B | Break time for pulse dialing | 1 ms | See Note 4. Function 06-2 (parameter 12). |
| 48044C | Make time for pulse dialing | 1 ms | See Note 4. Function 06-2 (parameter 13). |
| 48044D | Time between final OHDI relay closure and DO relay opening or closing | 1 ms | See Note 7. <br> Function 06-2 (parameter 14). <br> This parameter is only valid in Europe. |
| 48044E | Minimum pause between dialed digits (pulse dial mode) | 20 ms | See Note 4. Function 06-2 (parameter 15). |
| 48044F | Time waited when a pause is entered at the operation panel |  | Function 06-2 (parameter 16). |
| 480450 | DTMF tone on time | 1 ms | Function 06-2 (parameter 17). |
| 480451 | DTMF tone off time |  | Function 06-2 (parameter 18). |
| 480452 | Tone attenuation level of DTMF signals while dialing | $\begin{gathered} -\mathrm{dBm} \times 0.5 \\ -3.5 \end{gathered}$ | Function 06-2 (parameter 19). See Note 6. |


| Address | Function | Unit | Remarks |
| :---: | :---: | :---: | :---: |
| 480453 | Tone attenuation value difference between high frequency tone and low frequency tone in DTMF signals | -dBm x 0.5 | Function 06-2 (parameter 20). <br> The setting must be less than -5 dBm , and should not exceed the setting at 480452 h above. See Note 6. |
| 480454 | PSTN: DTMF tone attenuation level after dialing | $\begin{gathered} -\mathrm{dBm} \times 0.5 \\ -3.5 \end{gathered}$ | Function 06-2 (parameter 21). See Note 6. |
| 480455 | ISDN: DTMF tone attenuation level after dialing | -dBm x 0.5 | See Note 6 |
| 480456 | Not used |  | Do not change the settings. |
| 480457 | Time between 48044Dh (NCU parameter 14) and 48044Eh (NCU parameter 15) | 1 ms | This parameter takes effect when the country code is set to France. |
| 480458 | Not used |  | Do not change the setting. |
| 480459 | Grounding time (ground start mode) | 20 ms | The Gs relay is closed for this interval. |
| 48045A | Break time (flash start mode) | 1 ms | The OHDI relay is open for this interval. |
| 48045B | International dial access code (High) | BCD | $\begin{aligned} & \text { For a code of } 100 \text { : } \\ & 48045 \mathrm{~B}-\mathrm{F} 1 \\ & 48045 \mathrm{C}-00 \end{aligned}$ |
| 48045C | International dial access code (Low) |  |  |
| 48045D | PSTN access pause time | 20 ms | This time is waited for each pause input after the PSTN access code. If this address contains FF[H], the pause time stored in address 48044 F is used. <br> Do not set the number more than 7 in the UK. |
| 48045E | Bits 7 to 5 - Progress tone detection    <br> Bit 7 Bit 6 Bit 5 dBm <br> 0 0 0 -25.0 <br> 0 0 1 -35.0 <br> 0 1 0 -30.0 <br> 0 1 1 -36.0 <br> 1 0 0 -40.0 <br> 1 1 0 -49.0 <br> Bits 2 and $0-$ see Note 3.   |  |  |


| Address | Function | Unit | Remarks |
| :---: | :---: | :---: | :---: |
| 48045F | Bit 7 and 6 - Not used <br> Bit 5 - Polarity change detection in rx (1: Enabled) <br> Bit 4 - Polarity change detection in tx (1: Enabled) <br> Bits 3 to 0 - Not used |  | Detection time is 500 ms in both tx and rx . See Note 8. |
| $\begin{gathered} 480460 \\ \text { to } \\ 480464 \end{gathered}$ | Not used |  | Do not change the settings. |
| 480465 | Long distance call prefix (HIGH) | BCD | $\begin{array}{r} \hline \text { For a code of 0: } \\ 480465-\mathrm{FF} \\ 480466-\mathrm{FO} \end{array}$ |
| 480466 | Long distance call prefix (LOW) | BCD |  |
| $\begin{gathered} 480467 \\ \text { to } \\ 480471 \end{gathered}$ | Not used |  | Do not change the settings. |
| 480472 | Acceptable ringing signal frequency: range 1 , upper limit | $\begin{aligned} & 1000 / \mathrm{N} \\ & (\mathrm{~Hz}) . \end{aligned}$ | Function 06-2 (parameter 02). |
| 480473 | Acceptable ringing signal frequency: range 1, lower limit |  | Function 06-2 (parameter 03). |
| 480474 | Acceptable ringing signal frequency: range 2 , upper limit |  | Function 06-2 (parameter 04). |
| 480475 | Acceptable ringing signal frequency: range 2, lower limit |  | Function 06-2 (parameter 05). |
| 480476 | Number or rings until a call is detected | 1 | Function 06-2 (parameter 06). <br> The setting must not be zero (0). |
| 480477 | Minimum required length of the first ring | 20 ms | See Note 5. Function 06-2 (parameter 07). |
| 480478 | Minimum required length of the second and subsequent rings | 20 ms | Function 06-2 (parameter 06-2). |
| 480479 | Ringing signal detection reset time (LOW) | 20 ms | Function 06-2 (parameter 09). |
| 48047A | Ringing signal detection reset time (HIGH) |  | Function 06-2 (parameter 10). |
| $\begin{gathered} \text { 48047B } \\ \text { to } \\ 480480 \end{gathered}$ | Not used |  | Do not change the settings. |
| 480481 | Interval between dialing the last digit and switching the Oh relay over to the external telephone when dialing from the operation panel in handset mode. | 20 ms | Factory setting: 500 ms |


| Address | Function | Unit | Remarks |
| :---: | :---: | :---: | :---: |
| 480482 | Bits 0 and 1 - Handset off-hook detection time <br> Bit 100 Setting <br> $\begin{array}{lll}0 & 0 & 200 \mathrm{~ms} \\ 0 & 1 & 800 \mathrm{~ms}\end{array}$ <br> Other Not used <br> Bits 2 and 3 - Handset on-hook detection time <br> Bit 32 Setting <br> $\begin{array}{lll}0 & 0 & 200 \mathrm{~ms} \\ 0 & 1 & 800 \mathrm{~ms}\end{array}$ <br> Other Not used <br> Bits 4 to 7 - Not used |  |  |
| $\begin{gathered} 480483 \\ \text { to } \\ 4804 \mathrm{AO} \end{gathered}$ | Not used |  | Do not change the settings. |
| 4804A1 | Acceptable CED detection frequency upper limit (high byte) | BCD (Hz) | If both addresses contain $\mathrm{FF}(\mathrm{F})$, tone detection is disabled |
| 4804A2 | Acceptable CED detection frequency upper limit (low byte) |  |  |
| 4804A3 | Acceptable CED detection frequency lower limit (high byte) | BCD (Hz) | If both addresses contain $F F(F)$, tone detection is disabled. |
| 4804A4 | Acceptable CED detection frequency lower limit (low byte) |  |  |
| 4804A5 | CED detection time | $\begin{aligned} & 20 \mathrm{~ms} \\ & \pm 20 \mathrm{~ms} \end{aligned}$ | Factory setting: 200 ms |
| 4804A6 | Acceptable CNG detection frequency upper limit (high byte) | BCD (Hz) | If both addresses contain $F F(F)$, tone detection is disabled. |
| 4804A7 | Acceptable CNG detection frequency upper limit (low byte) |  |  |
| 4804A8 | Acceptable CNG detection frequency lower limit (high byte) | BCD (Hz) | If both addresses contain $F F(F)$, tone detection is disabled. |
| 4804A9 | Acceptable CNG detection frequency lower limit (low byte) |  |  |
| 4804AA | Not used |  | Do not change the setting. |
| 4804AB | CNG on time | 20 ms | Factory setting: 500 ms |
| 4804AC | CNG off time | 20 ms | Factory setting: 200 ms |


| Address | Function | Unit | Remarks |
| :---: | :---: | :---: | :---: |
| 4804AD | CNG On/Off time tolerance, and number of cycles required for detection (a setting of 4 cycles means that ON-OFF-ON or OFF-ON-OFF must be detected twice). <br> Bits 7, 6, 5, 4 - number of cycles required for cadence detection Bits 3 and 2 - OFF time tolerance ( $\pm$ ) <br> Bits 1 and $0-$ ON time tolerance $( \pm)$ |  |  |
| 4804AE | Not used |  | Do not change the settings. |
| 4804AF | Acceptable AI short protocol tone ( 800 Hz ) detection frequency upper limit (high byte) |  | If both addresses contain $F F(F)$, tone detection is disabled. |
| 4804B0 | Acceptable AI short protocol tone ( 800 Hz ) detection frequency upper limit (low byte) |  | If both addresses contain $\mathrm{FF}(\mathrm{F})$, tone detection is disabled. |
| 4804B1 | Acceptable AI short protocol tone $(800 \mathrm{~Hz})$ detection frequency lower limit (high byte) | $\mathrm{Hz}(\mathrm{BCD})$ | If both addresses contain $F F(F)$, tone detection is disabled. |
| 4804B2 | Acceptable AI short protocol tone $(800 \mathrm{~Hz})$ detection frequency lower limit (low byte) |  | If both addresses contain $F F(F)$, tone detection is disabled. |
| 4804B3 | Detection time for 800 Hz Al short protocol tone | 20 ms | Factory setting: 360 ms |
| 4804B4 | PSTN: Tx level from the modem | - dBm | Function 06-2 (parameter 01). |
| 4804B5 | PSTN: 1100 Hz tone transmission level | - N 4804B4-0.5N 4804B5 (dB) See Note 8. |  |
| 4804B6 | PSTN: 2100 Hz tone transmission level | - N4804B4-0.5N 4804B6 (dB) See Note 8. |  |
| 4804BA | ISDN: Tx level from the modem | -dBm | The setting must be between -12dBm and 15 dBm . |
| 4804BB | ISDN: 1100 Hz tone transmission level | - $\mathrm{N} 4804 \mathrm{BA}-0.5 \mathrm{~N} 4804 \mathrm{BB}$ (dB) |  |
| 4804BC | ISDN: 2100 Hz tone transmission level | - N 4804BA - 0.5N 4804BC (dB) |  |


| Address | Function | Unit | Remarks |
| :---: | :---: | :---: | :---: |
| 4804BD | Modem turn-on/off level (incoming signal detection level) <br> Turn-on level $\begin{aligned} & 00(\mathrm{H}):-33 \mathrm{dBm} \\ & 01-0 \mathrm{~A}(\mathrm{H}):-38 \mathrm{dBm} \\ & 0 \mathrm{~B}-14(\mathrm{H}):-43 \mathrm{dBm} \\ & 15-1 \mathrm{~F}(\mathrm{H}):-48 \mathrm{dBm} \end{aligned}$ <br> Turn-off level <br> The turn-off level is automatically set at "turn-on level minus 3 dBm ". |  |  |
| $\begin{gathered} \text { 4804BE } \\ \text { to } \\ 4804 \mathrm{C} 6 \end{gathered}$ | Not used |  | Do not change the settings. |
| 4804C7 | Bits 0 to 3 - Not used. <br> Bit 4 - V. 34 protocol dump 0: Simple, 1: Detailed (default) <br> Bits 5 to 7 - Not used. |  |  |
| $\begin{gathered} 4804 \mathrm{C} 8 \\ \text { to } \\ 4804 \mathrm{D} 9 \end{gathered}$ | Not used |  | Do not change the settings. |
| 4804DA | T. 30 T 1 timer | 1 s |  |

## NOTES

1. If a setting is not required, store FF in the address.
2. In Europe, if the country code is not specified, set it to UK (02).
3. Italy and Belgium only

RAM address 48045E: the lower four bits have the following meaning.
Bit 2 1: International dial tone cadence detection enabled (Belgium)
Bit 1 Not used
Bit 0 1: PSTN dial tone cadence detection enabled (Italy)
If bit 0 or bit 2 is set to 1 , the functions of the following RAM addresses are changed.
480408 (if bit $0=1$ ) or 480438 (if bit $2=1$ ): tolerance for on or off state duration (\%), and number of cycles required for detection, coded as in address 480433.

48040B (if bit $0=1$ ) or 48043B (if bit $2=1$ ): on time, hex code (unit $=20 \mathrm{~ms}$ )
48040C (if bit $0=1$ ) or 48043C(if bit $2=1$ ): off time, hex code (unit $=20 \mathrm{~ms}$ )
4. Pulse dial parameters (addresses 48044A to 48044F) are the values for 10 pps. If 20 pps is used, the machine automatically compensates.
5. The first ring may not be detected until 1 to 2.5 wavelengths after the time specified by this parameter.
6. The calculated level must be between 0 and 10 .

The attenuation levels calculated from RAM data are:
High frequency tone: - $0.5 \times \mathrm{N} 480452 / 480454-3.5 \mathrm{dBm}$
$-0.5 \times \mathrm{N} 480455 \mathrm{dBm}$
Low frequency tone: - $0.5 \times(\mathrm{N} 480452 / 480454+\mathrm{N} 480453)-3.5 \mathrm{dBm}$

$$
-0.5 \times(\mathrm{N} 480455+\mathrm{N} 480453) \mathrm{dBm}
$$

Note: N480452, for example, means the value stored in address 480452(H)
7. 48044A: Europe - Between Ds opening and Di opening, France - Between Ds closing and Di opening 48044D: Europe - Between Ds closing and Di closing, France - Between Ds opening and Di closing
8. Tone signals which frequency is lower than 1500 Hz (e.g., 800 Hz tone for Al short protocol) refer to the setting at 4804B5h. Tones which frequency is higher than 1500 Hz refer to the setting at 4804B6h.
9. Polarity change detection in transmission starts after dialing has been finished in automatic dialing mode, or after Start key is pressed in manual dialing mode. Polarity change detection in reception should be enabled in Spain.
10. The actual inter-digit pause (pulse dial mode) is the sum of the periods specified by the RAM addresses 48044A, 48044D, and 48044E.


### 4.4 DEDICATED TRANSMISSION PARAMETERS

Each Quick Dial Key and Speed Dial Code has eight bytes of programmable parameters allocated to it. If transmissions to a particular machine often experience problems, store that terminal's fax number as a Quick Dial or Speed Dial, and adjust the parameters allocated to that number.

The programming procedure will be explained first. Then, the eight bytes will be described.

### 4.4.1 PROGRAMMING PROCEDURE

1. Make sure the machine is in 'Facsimile' mode, then press 'User Tools'.
2. Press 1, then either choose 'Registering Quick Dial' or 'Registering Speed Dial'.
Example: Change the Parameters in Quick Dial 10.
3. Press Quick Dial key 10.

NOTE: The selected Quick or Speed Dial must be programmed beforehand.
4. When the programmed dial number is displayed, press $\mathrm{S}-\mathrm{V}-\mathrm{C}$ using Quick Dial keys, then press 'Start'.
5. The settings for byte 0 are now displayed. Press a number from 0 to 7 corresponding to the bit that you wish to change.
Example: Change bit 7 to 1: Press 7
6. To scroll through the parameter bytes, either:

Select the next byte: press ‘ $\downarrow$ Switch’ or
Select the previous byte: press ‘ $\uparrow$ Switch'
until the correct byte is displayed. Then go back to step 6.
7. After the setting is changed, press OK.
8. To finish, press 'User Tools'.

### 4.4.2 PARAMETERS

The initial settings of the following parameters are all $\mathrm{FF}(\mathrm{H})$ - all the parameters are disabled.

```
Switch 01
FUNCTION AND COMMENTS
CCITT T1 time (for PSTN G3 mode)
If the connection time to a particular terminal is longer than the NCU parameter setting,
adjust this byte. The T1 time is the value stored in this byte (in hex code), multiplied by 1
second.
Range:
1 to 127 s (01h to 7Fh)
OOh or FFh - The local NCU parameter factory setting is used.
Do not program a value between 80h and FEh.
```

| Switch 02 |  |  |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| $\begin{gathered} 0 \\ \text { to } \\ 4 \end{gathered}$ | Tx level       <br> Bit $\mathbf{4}$ $\mathbf{3}$ $\mathbf{2}$ $\mathbf{1}$ $\mathbf{0}$  <br> 0 Setting      <br> 0 0 0 0 0 0  <br> 0 0 0 0 1 -1  <br> 0 0 0 1 0 -2  <br> 0 0 0 1 1 -2  <br> 0 0 1 0 0 -4  <br>    $\vdots$    <br>    $\vdots$    <br> 0 1 1 1 1  -15 <br> 1 1 1 1 1 Disabled  | If communication with a particular remote terminal often contains errors, the signal level may be inappropriate. Adjust the Tx level for communications with that terminal until the results are better. <br> When disabled, the NCU parameter 01 setting is used. <br> Note: Do not use settings other than listed on the left. |
| $\begin{gathered} 5 \\ \text { to } \\ 7 \end{gathered}$ | Cable equalizer    <br> Bit $\mathbf{7}$ $\mathbf{6}$ $\mathbf{5}$ <br> 0 Setting   <br> 0 0 0 None <br> 0 0 1 Low <br> 0 1 0 Medium <br> 0 1 1 High <br> 1 1 1 Disabled | Use a higher setting if there is signal loss at higher frequencies because of the length of wire between the modem and the telephone exchange when calling the number stored in this Quick/Speed Dial. <br> Also, try using the cable equalizer if one or more of the following symptoms occurs. <br> - Communication error with error codes such as $0-20,0-23$, etc. <br> - Modem rate fallback occurs frequently. <br> Note: Do not use settings other than listed on the left. |


| Switch 03 |  |  |  |
| :---: | :---: | :---: | :---: |
| No | FUNCTION |  | COMMENTS |
| $\begin{array}{\|c\|} \hline 0 \\ \text { to } \\ 3 \end{array}$ | Initial Tx modem rate |  | If training with a particular remote terminal always takes too long, the initial modem rate may be too high. Reduce the initial Tx modem rate using these bits. <br> For the settings slower than 14.4 kbps, Switch 04 bit 4 must be changed to 0 . <br> Note: Do not use settings other than listed on the left. |
|  | Bit 3210 | Setting (bps) |  |
|  | 0000 | Not used |  |
|  | 00001 | 2,400 |  |
|  | 0010 | 4,800 |  |
|  | 0011 | 7,200 |  |
|  | 0100 | 9,600 |  |
|  | 0101 | 12,000 |  |
|  | 0110 | 14,400 |  |
|  | $\begin{array}{llll}0 & 1 & 1 & 1\end{array}$ | 16,800 |  |
|  | $\begin{array}{llll}1 & 0 & 0 & 0 \\ 1 & 0 & 0 & 1\end{array}$ | 19,200 |  |
|  | 1001 | 21,600 |  |
|  | 1010 | 24,000 |  |
|  | 10011 | 26,400 |  |
|  | 1100 | 28,800 |  |
|  | 1101 | 31,200 |  |
|  | 1110 | 33,600 |  |
|  | $\begin{array}{lllll}1 & 1 & 1\end{array}$ | Disabled |  |
|  | Other settings: | Not used |  |
|  | Not used |  | Do not change the settings. |
| to 7 |  |  |  |


| Switch 04 |  |  |  |
| :---: | :---: | :---: | :---: |
| No | FUNCTION |  | COMMENTS |
| $\begin{aligned} & 0 \\ & 1 \end{aligned}$ | $$ | ersion before tx Setting Inch-mm conversion available Inch only Not used Disabled | The machine uses inch-based resolutions for scanning. If "inch only" is selected, the printed copy may be slightly distorted at the other end if that machine uses mm-based resolutions. |
| $\begin{gathered} 2 \\ \text { to } \\ 3 \end{gathered}$ | DIS/NSF det  <br> Bit 3 Bit 2 <br> 0 0 <br> 0 1 <br>   <br> 1 0 <br> 1 1 | ction method Setting <br> First DIS or NSF <br> Second DIS or NSF <br> Not used <br> Disabled | $\mathbf{( 0 , 1 ) : ~ U s e ~ t h i s ~ s e t t i n g ~ i f ~ e c h o e s ~ o n ~ t h e ~ l i n e ~ a r e ~}$ interfering with the set-up protocol at the start of transmission. The machine will then wait for the second DIS or NSF before sending DCS or NSS. |
| 4 | V. 8 protocol <br> 0 : Disabled <br> 1: Enabled |  | If transmissions to a specific destination always end at a lower modem rate (lower than 14,400 bps), disable V. 8 protocol so as not to use V. 34 protocol. <br> 0: V. 34 communication will not be possible. |



| Switch 05- Optional ISDN G4 kit required |  |  |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| $\begin{gathered} \hline 0 \\ \text { to } \\ 3 \end{gathered}$ | Data rate     <br> Bits 3 $\mathbf{2}$ $\mathbf{1}$ $\mathbf{0}$  <br> 0 Setting    <br> 0 0 0 0  <br> 64 kbps     <br> 1 1 0 1 56 kbps <br> 1 1  Disabled  | When disabled, the G4 parameter switch 2 (bits 0 and 1) setting is used. |
| 4 <br> to <br> 7 | Not used | Do not change the settings. |


| Switch 06 - Optional ISDN G4 kit required |  |  |  |
| :---: | :---: | :---: | :---: |
| No | FUNCTION |  | COMMENTS |
| 0 | Link Modules |  | When disabled, the G4 parameter switch 3 (bit 0) |
| to | Bits 3210 | Setting | setting is used. |
| 3 | 0000 | Modulo 8 |  |
|  | 0001 | Modulo 128 |  |
|  | 1111 | Disabled |  |
|  | Not used |  | Do not change the settings. |
| to |  |  |  |


| Switch 07 - Optional ISDN G4 kit required |  |  |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| $\begin{gathered} \hline 0 \\ \text { to } \\ 3 \end{gathered}$ | Layer 3 protocol    <br> Bits 3 $\mathbf{2}$ $\mathbf{1}$ $\mathbf{0}$ <br> 0 Setting   <br> 0 0 0 0 <br> 0 ISO 8208   <br> 0 0 0 1 T.70 NULL | When disabled, the G4 parameter switch 6 (bit 0) setting is used. |
| $\begin{gathered} \hline 4 \\ \text { to } \\ 7 \end{gathered}$ | Packet modules     <br> Bits 3 $\mathbf{2}$ $\mathbf{1}$ $\mathbf{0}$ Setting <br> 0 0 0 0  <br> 0 0 0 1 Modulo 9 <br> 1 1 1 1 Disable 128 <br>      | When disabled, the G4 parameter switch 6 (bit 4) setting is used. |

DEDICATED TRANSMISSION PARAMETERS
Switch 08 - Not used

### 4.5 SERVICE RAM ADDRESSES

```
\\CAUTION
Do not change the settings which are marked as "Not used" or "Read only."
011000 to 011007(H) - ROM name (ASCII)
011009 to 011012(H) - ROM part number (ASCII)
011017 to 011020(H) - ROM version number (ASCII)
011022 to 01102A(H) - ROM release date (ASCII)
480001 to 480004(H) - ROM version (Read only)
    480001(H) - Revision number (BCD)
    480002(H) - Year (BCD)
    480003(H) - Month (BCD)
    480004(H) - Day (BCD)
480006 to 480015(H) - Machine's serial number (16 digits - ASCII)
480018(H) - Total program checksum (low)
480019(H) - Total program checksum (high)
480020 to 48003F(H) - System bit switches
480040 to 48004F(H) - Scanner bit switches
480050 to 48005F(H) - Printer bit switches
480060 to 48007F(H) - Communication bit switches
480080 to 48008F(H) - G3 bit switches
4800A0(H) - User parameter switch 00 (SWUER_00)
Bit 0: Stamp home position 0: Disabled, 1: Enabled
Bits 1 to 3: Scanning contrast home position
    Bit 3 2 1 Setting
    0}0000\mathrm{ Automatic
    0
    0}100\mathrm{ Position 2
    0}1111\mathrm{ Position 3 (Medium)
    1 0 0 Position 4
    1 0 1 Position 5 (Darkest)
Bits 4 and 5: Scanning resolution home position
Bit 54 Setting
00 Standard
01 Detail
10 Superfine
11 Superfine
Bit 6: Transmission mode home position 0: Memory tx, 1: Immediate tx
Bit 7: Not used
```


## 4800A1(H) - User parameter switch 01 (SWUSR_01)

Bit 0: Label insertion home position 0: Disabled, 1: Enabled
Bit 1: ID transmission home position 0: Disabled, 1: Enabled
Bit 2: Automatic reduction (tx) home position 0: Disabled, 1: Enabled
Bits 3 and 4: Scanning mode LED home position

$$
\begin{array}{llll}
\text { Bit } & 4 & 3 & \text { Setting } \\
& 0 & 0 & \text { Text } \\
& 0 & 1 & \text { Text/ Photo } \\
& 1 & 0 & \text { Photo }
\end{array}
$$

Bit 5: TTI print home position 0: Disabled, 1: Enabled
Bit 6: Not used
Bit 7: Settings return to home position after scanning 0: Disabled, 1: Enabled
4800A2(H) - User parameter switch 02 (SWUSR_02)
Bit 0: Forwarding mark printing on forwarded messages 0: Disabled, 1: Enabled
Bit 1: Center mark printing on received copies 0: Disabled, 1: Enabled
Bit 2: Reception time printing 0: Disabled, 1: Enabled
Bit 3: TSI print on received messages 0: Disabled, 1: Enabled
Bit 4: Checkered mark printing 0: Disabled, 1: Enabled
Bit 5: CIL printing (G4) 0: Disabled, 1: Enabled
Bit 6: TID printing (G4) 0: Disabled, 1: Enabled
Bit 7: Not used

## 4800A3(H) - User parameter switch 03 (SWUSR_03: Automatic report printout)

Bit 0: Transmission result report (memory transmissions) 0: Off, 1: On
Bit 1: Not used
Bit 2: Memory storage report 0: Off, 1: On
Bit 3: Polling reserve report (polling reception) 0: Off, 1: On
Bit 4: Polling result report (polling reception) 0 : Off, 1: On
Bit 5: Transmission result report (immediate transmissions) 0: Off, 1: On
Bit 6: Polling clear report 0: Off, 1: On
Bit 7: Journal (TCR) 0: Off, 1: On

## 4800A4(H) - User parameter switch 04 (SWUSR_04: Automatic report printout)

Bit 0: Automatic confidential reception report output 0: Off, 1: On
Bits 1 to 6: Not used
Bit 7: Inclusion of a sample image on reports
$0:$ Off, 1: On

## 4800A5(H) - User parameter switch 05 (SWUSR_05)

Bit 0: Substitute reception when the base copier is in SC condition 0 : Off, 1: On
Bits 1 and 2: Condition for substitute $r x$ when the machine cannot print messages
(Paper end, Toner end, and Jam in night mode)
Bit 21 Setting
$0 \quad 0$ The machine receives all the fax messages
01 The machine receives the fax messages with RTI or CSI
10 The machine receives the fax messages with the same ID code
11 The machine does not receive anything.
Bit 3: Not used
Bit 4: Restricted Access using personal code 0: Off, 1: On
Bit 5: Just size printing 0: Off, 1: On
Bit 6: Allow document with mixed paper sizes in the ADF 0: No, 1: Yes
Bit 7: Add paper display when a cassette is empty 0 : Off, 1: On
4800A6(H) - User parameter switch 06 (SWUSR_06)
Bit 0: Not used
Bit 1: G3/G4 LED home position $\quad 0: \mathrm{G} 3,1: \mathrm{G} 4$
Bit 2 to 4: Not used
Bit 5: Quick dial label print format
0 : Suitable for white paper, 1: Suitable for transparent paper
Bit 6: Scan sequence in Book transmission
0 : Left to right, 1: Right to left
Bit 7: Not used

## 4800A7(H) - User parameter switch 07 (SWUSR_07)

Bits 0 and 1: Not used
Bit 2: Parallel memory transmission 0: Off, 1: On
Bits 3 and 7: Not used

## 4800A8(H) - User parameter switch 08 (SWUSR_08)

Bit 0 and 1: Not used.
Bit 2: Authorized reception
0 : Only faxes from senders whose RTIs/CSIs are specified for this feature are accepted.
1: Only faxes from senders whose RTIs/CSIs are not specified for this feature are accepted.
Bits 3 to 7: Not used.

## 4800A9(H) - User parameter switch 09 (SWUSR_09)

Bit 0: Reverse printing 0 : Off, 1: On (optional 3 bin sorter unit is required)
Bits 1 to 7: Not used

## 4800AA(H) - User parameter switch 10 (SWUSR_0A)

Bit 0: Not used
Bit 1: 2 into $1 \quad 0:$ Off, 1: On
Bit 2: Not used
Bit 3: Page reduction 0: Off, 1: On
Bits 4 to 7: Not used

## 4800AB(H) - User parameter switch 11 (SWUSR_0B)

Bit 0: Not used
Bit 1: Method of transmitting numbers after the "Tone" mark over an ISDN line 0 : UUI, 1: Tone
Bits 2 to 5: Not used
Bit 6: Printout of messages received while acting as a forwarding station
0 : Off, 1: On
Bit 7: Polling Standby duration
0 : Once, 1: No limit

## 4800AD(H) - PSTN access method (SWUSR_0D)

Bits 0 and 1: PSTN access method from behind a PABX
Bit 10 Setting
00 PSTN
01 Loop start
10 Ground start
11 Flash start
Bits 2 to 7: Not used

## 4800AE(H) - User parameter switch 14 (SWUSR_0E)

Bit 0: Message printout while the machine is in Night Timer mode 0: On, 1: Off
Bit 1: Not used
Bit 2: Batch transmission
0: Off, 1: On

Bit 3: Reset when function changed
0: Off, 1: On
Bits 4 to 6: Not used
Bit 7: Manual service call (system parameter list tx) 0: Off, 1: On

## 4800AF(H) - User parameter switch 15 (SWUSR_0F)

Bits 0, 1 and 2: Cassette for fax printout
$\begin{array}{lllll}\text { Bit } & 2 & 1 & 0 & \text { Setting }\end{array}$
$\begin{array}{llll}0 & 0 & 1 & 1 \text { st paper feed station }\end{array}$
$\begin{array}{llll}0 & 1 & 0 & \text { 2nd paper feed station }\end{array}$
$\begin{array}{llll}0 & 1 & 1 & 3 r d \\ \text { paper feed station }\end{array}$
1000 4th paper feed station
Other settings Not used
Bits 3 and 4: Not used
Bit 5: Using the cassette specified by bits 0,1 and 2 above only 0 : On, 1: Off Bits 6 and 7: Not used

## 4800B0(H) - User parameter switch 16 (SWUSR_10)

Bits 0 and 1: Not used
Bit 2: Paper size selection priority for A4 size fax message when A4/LT size paper is not available.

0: A3 has priority, 1: B4 has priority
Bits 3 to 7: Not used

## 4800B1(H) - Function settings (SWUSR_11)

Bits 0 and 1: Not used
Bit 2: Necessity of "Add" button to add a destination for broadcasting
0 : Yes (users have to press "Add" after selecting a destination)
1: No (selected destination is added without pressing "Add" button
Bits 3 to 7: Not used

## 4800B2(H) - User parameter switch 18 (SWUSR_12)

Bits 0 and 1: Fax print color home position
Bit 100 Setting
01 Black
10 Magenta
11 Cyan
Bits 2 and 3: Not used
Bits 4 and 5: $2^{\text {nd }}$ color choice
Bit $5 \quad 4$ Setting
0 O Never
01 Black
10 Magenta
1 1 Cyan
Bits 6 and 7: Not used

## 4800B8(H) - User parameter switch 24 (SWUSR_18)

Bits 0 and 1: File retention time
Bit 10 Setting
00 Disabled
0124 hours
10 Disabled
1172 hours
Bits 2 to 7: Not used

## 4800B9(H) - Function settings (SWUSR_19)

Bits 0 to 3: Not used
Bit 4: RDS operation 0: Not acceptable
1: Acceptable for the limit specified by system switch 03
Note: This bit is only effective when RDS operation can be selected by the user.
Bits 5 and 6: Not used
Bit 7: Daylight saving time 0: Disabled, 1: Enabled

## 4800BA(H) - Function settings (SWUSR_1A)

Bit 0: Not used
Bit 1: Dialing type $\quad 0$ : Pulse dialing (10 pps), 1: Tone (DTMF) dialing
Bits 2 to 7: Not used

4800BB(H) - PSTN access number from behind PABX (SWUSR_1B)
Access number Hex value to program (BCD)
0
F0
n
ת
0
F0
00
00
$\sqrt{3}$
$\sqrt{\Omega}$
99
99
4800C0 to 4800CF(H) - G4 Parameter Switches
(Refer to the ISDN G4 option service manual for details.)
4800D0 to 4800EF(H) - G4 Internal Switches
(Refer to the ISDN G4 option service manual for details.)
4800F0 to 480103(H) - RTI (Max. 20 characters - ASCII) - See the following note.
480104 to 480117(H) - CSI (Max. 20 characters - ASCII)
480118 to $800137(\mathrm{H})$ - TTI (Max. 32 characters - ASCII) - See the following note.
480138(H) - Number of CSI characters (Hex)
NOTE: If the number of characters is less than the maximum ( 20 for RTI, 32 for TTI), add a stop code (FF[H]) after the last character.

480139 to 480147(H) - Service station's fax number (Service mode 09) See $48018 \mathrm{~F}(\mathrm{H})$ for the type of network used for this number.

```
480157 to 480165(H) - Own fax number (PSTN)
480166 to 480174(H) - Own fax number (ISDN G4)
480175 to 480183(H) - Own fax number (ISDN G3)
480184(H) - ID code (low - Hex)
480185(H) - ID code (high - Hex)
480186(H) - Confidential ID (low - BCD)
480187(H) - Confidential ID (high - BCD)
480188(H) - Memory lock ID (low - Hex)
480189(H) - Memory lock ID (high - Hex)
48018F(H) - Network type used for the service station number
    00(H) - G3 (PSTN)
    01(H) - G4 (ISDN)
480198 to 48019F(H) - Last power off time (Read only)
    480198(H) - 01(H) - 24-hour clock, 00(H) - 12-hour clock (AM), 02(H) - 12-
        hour clock (PM)
    480199(H) - Year (BCD)
    48019A(H) - Month (BCD)
    48019B(H) - Day (BCD)
    48019C(H) - Hour
    48019D(H) - Minute
    48019E(H) - Second
    48019F(H) - 00: Monday, 01: Tuesday, 02: Wednesday, ...... , 06: Sunday
```

$4801 \mathrm{AC}(\mathrm{H})$ - Optional equipment (Read only - Do not change the setting)
Bit 0: PMU 0: Not installed, 1: Installed
Bit 1: Not used
Bit 2: Not used
Bit 3: EXSAF
0 : Not installed, 1: Installed
Bit 4: Hard disk
0 : Not installed, 1: Installed
Bit 5: Not used
Bit 6: ISDN unit 0: Not installed, 1: Installed
Bit 7: Not used

## 4801 AE(H) - Optional equipment (Read only - Do not change the setting) <br> Bit 0: Paper Tray <br> 0 : Not installed, 1: Installed <br> Bits 1 to 7: Not used

4801AF(H) - Optional equipment (Read only - Do not change the setting)
Bit 0: Not used
Bit 1: Not used
Bit 2: ARDF 0: Not installed, 1: Installed
Bit 3: Stamp
0 : Not installed, 1: Installed
Bits 4 to 7: Not used
4801C4 to $4801 \mathrm{C} 6(\mathrm{H})$ - Rx counter (the format is the same as for the tx counter)
4802AE to 4802C5(H) - G4 terminal ID (ASCII - Max. 24 characters)
4802C6 to 4802D9(H) - ISDN G3 CSI (ASCII - Max. 20 digits)
4802DA(H) - Number of digits programmed in the ISDN G3 CSI (Hex)
4802DB to 4802DE(H) - ISDN IP
4802DF to 4802E2(H) - ISDN G3 sub-address
4802E3 to 4802E6(H) - ISDN G4 sub-address
4802E7 to 4802EB(H) - CiG4 board ROM information
4802E7(H) - Suffix
4802E8(H) - Version (BCD)
4802E9(H) - Year (BCD)
4802EA(H) - Month (BCD)
4802EB(H) - Day (BCD)
480300(H) - Number of copies for multi-sort document reception
480356(H) - Time for economy transmission (hour in 24h clock format - BCD)
480357(H) - Time for economy transmission (minute - BCD)
480372(H) - Transmission monitor volume 00-07(H)
480373(H) - Reception monitor volume 00-07(H)
480374(H) - On-hook monitor volume 00-07(H)
480375(H) - Dialing monitor volume 00-07(H)
480376(H) - Buzzer volume 00-07(H)
480379 to $48037 \mathrm{D}(\mathrm{H})$ - Periodic service call parameters (Refer to section 2.1.2 for details)

480383 to $\mathbf{4 8 0 3 8 5 ( H )}$ - Effective term of automatic service calls (Refer to section 2.1.3 for details)

48038C to 48038D(H) - Modem ROM information
48038C(H) - Modem ROM version (Low)
48038D(H) - Modem ROM version (High)
48038E(H) - Modem ROM checksum value (Low)
48038F(H) - Modem ROM checksum value (High)
480400 to 4804DA(H) - NCU parameters (Refer to section 4.3 for details)
480A30 to 480A57(H) - SC codes NOT for automatic service call
If the fax unit receives an SC code from the copier engine other than programmed in these addresses, the fax unit sends an automatic service call report to the programmed service station.
Program a SC code in four-digit BCD format as shown in the example below.
Example 1: SC code '192'
Address (High) - 01(BCD)
Address (Low) - 92 (BCD)
Wildcard characters "a" or "A" can be used to specify a series of SC codes.
Example 2: SC code '900 to 999"
Address (High) - 09 (BCD)
Address (Low) - aa or AA (Hex)
Example 3: SC code '330 to 339"
Address (High) - 03 (BCD)
Address (Low) - 3a or 3A (Hex)

- Default settings -

| High Address (H) | Data (BCD) | Low Address (L) | Data (BCD) | SC code |
| :---: | :---: | :---: | :---: | :---: |
| 480A30 | 09 | $480 A 31$ | AA | 9AA |
| 480A32 | FF | $480 A 33$ | FF | Not programmed |
| 480A34 | FF | $480 A 35$ | FF | Not programmed |
| 480A36 | FF | $480 A 37$ | FF | Not programmed |
| 480A38 | FF | 480A39 | FF | Not programmed |
| 480A3A | FF | 480A3B | FF | Not programmed |
| 480A3C <br> to <br> 480A56 | FF(H) | 480A3D <br> to <br> 480A57 | FF(H) | Not Programmed |

## 480A58 to 480AD6(H) - Fax operation log data

Each of the following counters uses 4 bytes. The data is stored in hexadecimal format as shown in the example below.
480A58 to 480A5B(H) - Total number of transmissions

## Example 1

The counter value is $00010185(\mathrm{Hex})=65,925$ (decimal), when the data is stored as follows:

- 480A58-85(H)
- 480A59-01(H)
- 480A5A - 01(H)
- 480A5B - 00(H)

480A5C to 480A5F(H) - Total number of receptions
480A60 to 480A63(H) - Number of transmitted pages
480A64 to 480A67(H) - Number of received pages
480A68 to 480A6B(H) - Number of G3/IG3 transmissions
480A6C to 480A6F(H) - Number of G4 transmissions
480A70 to 480A73(H) - Number of G3/IG3 receptions
480A74 to 480A77(H) - Number of G4 receptions
Each of the following counters uses 2 bytes. The data is stored in hexadecimal format as shown in the example below.
480A78 to 480A79(H) - Number of pages scanned at $8 \times 3.85 \mathrm{l} / \mathrm{mm}$

## Example 2

The counter value is $0185(\mathrm{Hex})=389$ (decimal), when the data is stored as follows:

- 480A78-85(H)
- 480A79-01(H)

480A7A to 480A7B(H) - Number of pages scanned at $8 \times 7.7 \mathrm{l} / \mathrm{mm}$
480A7C to 480A7D(H) - Number of pages scanned at $8 \times 15.4 \mathrm{l} / \mathrm{mm}$
480A7E to 480A7F(H) - Number of pages scanned at $16 \times 15.4 \mathrm{l} / \mathrm{mm}$
480A80 to 480A81(H) - Number of pages scanned at $200 \times 100 \mathrm{dpi}$
480A82 to 480A83(H) - Number of pages scanned at $200 \times 200 \mathrm{dpi}$
480A84 to 480A85(H) - Number of pages scanned at $200 \times 400 \mathrm{dpi}$ 480A86 to 480A87(H) - Number of pages scanned at $400 \times 400 \mathrm{dpi}$

Each of the following counters uses 4 bytes. The data is stored in hexadecimal format as shown in example 1 above.

480A88 to 480A8B(H) - Total number of scanned pages
480A8C to 480A8F(H) - Number of scanned pages of A4 width
480A90 to 480A93(H) - Number of scanned pages of B4 width
480A94 to 480A97(H) - Number of scanned pages of A3 width
480A98 to 480A9B(H) - Number of scanned pages in Text mode
480A9C to 480A9F(H) - Number of scanned pages in Photo mode

> 480AA0 to 480AA3(H) - Number of scanned pages in Text/Photo mode 480AA4 to 480AA7(H) - Number of scanned pages in Special Original mode 480AA8 to 480AAB(H) - Total number of transmission jobs 480AAC to 480AAF(H) - Total number of memory transmissions

Each of the following counters uses 2 bytes. The data is stored in hexadecimal format as shown in example 2 above.

480AB0 to 480AB1(H) - Number of send later transmissions
480AB2 to 480AB3(H) - Number of TRD transmissions
480AB4 to 480AB5(H) - Number of confidential transmissions
480AB6 to 480AB7(H) - Number of transfer request transmissions
480AB8 to 480AB9(H) - Number of transfer broadcasts
480ABA to 480ABB(H) - Number of broadcasts
480ABC to 480ABD(H) - Number of polling transmissions
480ABE to 480ABF(H) - Number of image rotation transmissions
480AC0 to 480AC1(H) - Number of label insertions
480AC2 to 480AC3(H) - Number of 2-sided original transmissions
480AC4 to 480AC5(H) - Not used
480AC6 to 480AC7(H) - Number of confidential receptions
480AC8 to 480AC9(H) - Number of memory lock receptions
480ACA to 480ACB(H) - Number of receptions from specific senders
480ACC to 480ACD(H) - Number of polling receptions

492D00 to 4931DF(H) - Dedicated tx parameters for Quick Dial 01-56 and Speed Dial \#00-\#99.

As explained in section 4.4, each set of dedicated tx parameters consists of 8 bytes.
492D00 to 492D07(H) - Dedicated tx parameters for Quick 01
492D08 to 492D0F(H) - Dedicated tx parameters for Quick 02
492D10 to 492D17(H) - Dedicated tx parameters for Quick 03
,
492EB8 to 492EBF(H) - Dedicated tx parameters for Quick 56 492EC0 to 492EC7(H) - Dedicated tx parameters for Speed \#00
492EC8 to 492ECFH) - Dedicated tx parameters for Speed \#01
492ED0 to 492ED7(H) - Dedicated tx parameters for Speed \#03
ת
4931D8 to 4931DF(H) - Dedicated tx parameters for Speed \#99

## 49CA00 to 49CB7F(H) - Latest 64 error codes (Read only)

One error record consists of 6 bytes of data.
First error record start address - 49CA00(H)
Second error record start address - 49CA06(H)
Third error record start address - 49CAOC(H) :
64th error record start address - 49CB7A(H)
The format is as follows:
1st byte - Minute (BCD)
2nd byte - Hour (BCD)
3rd byte - Day (BCD)
4th byte - Month (BCD)
5th byte - Error code (low) [If the error code is 1-23, 23 is stored here.]
6th byte - Error code (high) [If the error code is $1-23,01$ is stored here.]

## 49F084 to 49F763(H) - Latest 20 error communication records (Read only)

One error communication record consists of 88 bytes. The format is as follows:
1st byte - Header
Bit 0: Communication result 0 : OK, 1: NG
Bit 1: Document jam 1: Occurred
Bit 2: Power down 1: Occurred
Bit 3: Not used
Bit 4: Technical data printout instead of personal codes 0: No, 1: Yes
Bit 5: Type of technical data $\quad 0$ : Rx level, 1: Measure of error rate
Bit 6: Error report 0 : Not printed, 1: Printed
Bit 7: Data validity
0: Not valid, 1: Valid
2nd byte - Not used
3rd to 6th bytes - Date and time when the communication started
3rd byte - Month (BCD)
4th byte - Day (BCD)
5th byte - Hour (BCD)
6th byte - Minute (BCD)
7th and 8th bytes - Communication time
7th byte - Minutes (BCD)
8th byte - Seconds (BCD)
9th and 10th byte - Number of pages transmitted or received
9th byte - Low byte (Hex)
10th byte - High byte (Hex)

11th and 12th bytes - Personal code or number of total/burst error lines If bit 4 of the 1 st byte is 0 :

11th byte - Personal code (low - BCD)
12th byte - Personal code (high - BCD)
If bit 4 of the 1st byte is 1 :
11th byte - Number of total error lines (Hex)
12th byte - Number of burst error lines (Hex)
13th byte - File number (low - Hex)
14th byte - File number (high - Hex)
15th and 16th bytes - Rx level or measure of error rate If bit 5 of the 1 st byte is 0 :

15th byte - Rx level (low - Hex)
16th byte - Rx level (high - Hex)
If bit 4 of the 1 st byte is 1 :
15th byte - Measure of error rate (low - Hex)
16th byte - Measure of error rate (high - Hex)
17th byte - Final modem rate
Bits 0 to 2: Final modem speed
$\left(\begin{array}{l}\text { Bit } 0 \\ \text { Bit } 1 \\ \text { Bit } 2 \\ \text { Bit } 3\end{array}\right)=\left(\begin{array}{l}1 \\ 0 \\ 0 \\ 0\end{array}\right) 2.4 \mathrm{k}\left(\begin{array}{l}0 \\ 1 \\ 0 \\ 0\end{array}\right) 4.8 \mathrm{k}\left(\begin{array}{l}1 \\ 1 \\ 0 \\ 0\end{array}\right) .7 .2 \mathrm{k}\left(\begin{array}{l}0 \\ 0 \\ 1 \\ 0\end{array}\right) 9.6 \mathrm{k}\left(\begin{array}{l}1 \\ 0 \\ 1 \\ 0\end{array}\right) .12 .0 \mathrm{k}\left(\begin{array}{l}0 \\ 1 \\ 1 \\ 0\end{array}\right) .14 .4 \mathrm{k}\left(\begin{array}{l}1 \\ 1 \\ 1 \\ 0\end{array}\right) 16.8 \mathrm{k}$
$\left(\begin{array}{l}\text { Bit } 0 \\ \text { Bit } 1 \\ \text { Bit } 2 \\ \text { Bit } 3\end{array}\right)=\left(\begin{array}{l}0 \\ 0 \\ 0 \\ 1\end{array}\right) 19.2 \mathrm{k}\left(\begin{array}{l}1 \\ 0 \\ 0 \\ 1\end{array}\right) 21.6 \mathrm{k}\left(\begin{array}{l}0 \\ 1 \\ 0 \\ 1\end{array}\right) 24.0 \mathrm{k}\left(\begin{array}{l}1 \\ 1 \\ 0 \\ 1\end{array}\right) 26.4 \mathrm{k}\left(\begin{array}{l}0 \\ 0 \\ 1 \\ 1\end{array}\right) 28.8 \mathrm{k}\left(\begin{array}{l}1 \\ 0 \\ 1 \\ 1\end{array}\right) \cdot 31.2 \mathrm{k}\left(\begin{array}{l}0 \\ 1 \\ 1 \\ 1\end{array}\right) 33.6 \mathrm{k}$
Bits 4 to 6: Final modem type
$\left(\begin{array}{l}\text { Bit } 4 \\ \text { Bit5 } 5 \\ \text { Bit6 } \\ \text { Bit } 7\end{array}\right)=\left(\begin{array}{l}1 \\ 0 \\ 0 \\ 0\end{array}\right)$ V. $27 \operatorname{ter}\left(\begin{array}{l}0 \\ 1 \\ 0 \\ 0\end{array}\right)$ V. $29\left(\begin{array}{l}1 \\ 1 \\ 0 \\ 0\end{array}\right)$ V. $33\left(\begin{array}{l}0 \\ 0 \\ 1 \\ 0\end{array}\right)$ V. 17 (Long) $\left(\begin{array}{l}1 \\ 0 \\ 1 \\ 0\end{array}\right)$ V. 17 (Short)

18th to 20th byte - Not used
21st to 44th byte - Remote terminal's ID (RTI, TSI or CSI) (ASCII)

45th byte - Communication mode \#1
Bits 0-1: Network
$\binom{$ Bit 0}{ Bit 1}$=\binom{1}{0} \operatorname{PSTN}\binom{0}{1} \operatorname{ISDN}$
Bit 2: Communication Protocol 0: G3, 1: G4
Bit 3: ECM
0 : Off, 1: On
Bits 4 to 7: Communication mode used
$\left(\begin{array}{l}\text { Bit } 4 \\ \text { Bit5 } \\ \text { Bit } 6 \\ \text { Bit7 } 7\end{array}\right)=\left(\begin{array}{l}0 \\ 0 \\ 0 \\ 0\end{array}\right)$ : Normal $\left(\begin{array}{l}1 \\ 0 \\ 0 \\ 0\end{array}\right)$ : Confidential $\left(\begin{array}{l}0 \\ 1 \\ 0 \\ 0\end{array}\right)$ : Polling $\left(\begin{array}{l}1 \\ 1 \\ 0 \\ 0\end{array}\right)$ : Transfer
$\left(\begin{array}{l}\text { Bit } 4 \\ \text { Bit5 } \\ \text { Bit6 } \\ \text { Bit } 7\end{array}\right)=\left(\begin{array}{l}0 \\ 0 \\ 1 \\ 0\end{array}\right)$ : Forwarding $\left(\begin{array}{l}1 \\ 0 \\ 1 \\ 0\end{array}\right)$ : Automatic Service Call
46th byte - Communication mode \#2
Bit 0: Tx or Rx
0: Tx, 1: Rx
Bit 1: Reduction in Tx
0: Not reduced, 1: Reduced
Bit 2: Batch transmission
0: Not used, 1: Used
Bit 3: Send later transmission
0: Not used, 1: Used
Bit 4: Transmission from
Bits 5 to 7: Network type used
$\left(\begin{array}{l}\text { Bit } 5 \\ \text { Bit } 6 \\ \text { Bit } 7\end{array}\right)=\left(\begin{array}{l}1 \\ 0 \\ 0\end{array}\right)$ Standard $\left(\begin{array}{l}0 \\ 1 \\ 0\end{array}\right)$ Detail $\left(\begin{array}{l}1 \\ 1 \\ 0\end{array}\right)$ Fine $\left(\begin{array}{l}0 \\ 0 \\ 1\end{array}\right)$ Superfine
47th byte - Not used
48th byte - Number of errors during communication (Hex)
49th to 52nd byte - 1st error code and page number where the error occurred 49th byte - Page number where the error occurred (low - Hex)
50th byte - Page number where the error occurred (high - Hex)
51st byte - Error code (low - BCD)
52nd byte- Error code (high - BCD)
53rd to 56th byte - 2nd error code and page number where the error occurred 57th to 60th byte - 3rd error code and page number where the error occurred 61st to 64th byte - 4th error code and page number where the error occurred 65th to 68th byte - 5th error code and page number where the error occurred 69th to 72 nd byte - 6th error code and page number where the error occurred 73rd to 76th byte - 7th error code and page number where the error occurred 77th to 80th byte - 8th error code and page number where the error occurred 81st to 84th byte - 9th error code and page number where the error occurred 85th to 88th byte - 10th error code and page number where the error occurred

64A800 to 64C41F(H) - Dedicated tx parameters for Speed Dial \#100 - \#999, when EXSAF is installed.
As explained in Dedicated Transmission parameters in section 4, each set of dedicated tx parameters consists of 8 bytes.

64A800 to 64A807(H) - Dedicated tx parameters for Speed \#100
64A808 to 64A80F(H) - Dedicated tx parameters for Speed \#101
64A810 to 64A817(H) - Dedicated tx parameters for Speed \#102
,
64C418 to 64C41F(H) - Dedicated tx parameters for Speed \#999

## 5. PREVENTIVE MAINTENANCE

### 5.1 SPECIAL TOOLS AND LUBRICANTS

- Flash/SRAM data copy tool (P/N: A1939353)
- Flash Memory Card - 4MB (P/N: A2309352)
- Card Case (P/N: A2309351)


### 5.2 PM TABLE

No PM necessary for the fax option.

## 6. REMOVAL AND REPLACEMENT

### 6.1 PRECAUTION

| 〔CAUTION |
| :--- |
| Before starting disassembly, be sure to print all message files in the SAF <br> memory. Then, turn off the main power switch and disconnect the power <br> cord and telephone cable for safety. |
| Lithium Battery <br> The danger of explosion exists if a battery of this type is incorrectly <br> replaced. Replace only with the same or an equivalent type recommended <br> by the manufacturer. Discard used batteries in accordance with the <br> manufacturer's instructions. |

### 6.2 NCU AND SPEAKER



1. Remove the cover [A] (4 screws).
2. Disconnect the speaker harness $[B]$, then remove the speaker [C] (1 screw).
3. Disconnect the harnesses [D] and [E], then remove the NCU [F] (4 screws).

### 6.3 FCU

### 6.3.1 REMOVAL



1. Remove the cover [ A ] (4 screws) and the small bracket [B] (2 screws).
2. Loosen 5 screws, then carefully pull on the right side of the Interface unit [C] so that it rotates along the left joint.
3. Disconnect the harnesses [D] then remove the FCU [E].

- To restore SRAM data from the old FCU (if you do not have the latest data backup) - Go to section 6.3.2
- To restore SRAM data from a flash memory card backup - Go to section 6.3.3.


### 6.3.2 SRAM DATA RESTORE FROM FCU

Before restoring the SRAM data, install a new FCU and initialize the SRAM on the new FCU using the following procedure.

1. Install a new FCU in the machine (see section 6.3.1)

NOTE: Do not install the EXSAF and PMU yet, if they were present.
2. Turn on the machine. The machine displays "SC1201".

NOTE: The machine always displays "SC1201" the first time the FCU is installed. Please ignore it.
3. Press OK to initialize the SRAM.

Then, restore the SRAM using the following procedure.
4. Turn off the machine.
5. Remove the bracket [A] then connect the data copy tool [B] with the old FCU [C] to the card slot as shown.
See the note below for the switch settings.
IMPORTANT: Support the old FCU by hand from now until the end of the download procedure.


NOTE: 1) The switch on the data copy tool must be OFF.
2) SW3 below the card slot must be OFF (lower position).
3) Do not turn off the battery switch on the old FCU.
6. Turn on the machine, and enter the fax service mode.
7. Press 16 then 2 .
8. Press 1.
9. Press "\#" then $\Delta$.
10. When "Loading Completed" appears, turn off the main power switch then disconnect the tools.
11. Install the EXSAF and PMU if they were present.
12. Turn the machine back on.
13. Print the system parameter list to check if the previous settings have been successfully recovered.

### 6.3.3 SRAM DATA RESTORE FROM FLASH CARD BACKUP

SRAM data can be copied to a flash memory card. For how to do this, refer to section 6.5.

Before restoring the SRAM data, install a new FCU and initialize the SRAM on the new FCU using the following procedure.

1. Install a new FCU in the machine (see section 6.3.1).
2. Turn on the machine. The machine displays "SC1201".

NOTE: The machine always displays "SC1201" the first time the FCU is installed. Please ignore it.
3. Press OK to initialize the SRAM.

Then, restore the SRAM using the following procedure.
4. Turn off the machine.

NOTE: If the EXSAF board was present; make sure that the backup of EXSAF and FCU SRAM is available, then install the EXSAF.
If this backup is not available, restore the data from the old FCU. After restoring, connect the EXSAF to the new FCU.
5. Remove the bracket [A] then connect the flash memory card $[B]$ to the card slot as shown.
See the note below for the switch settings.


NOTE: 1) SW3 below the card slot must be OFF (lower position).
2) If the switch setting is wrong, the fax function will not start up.
6. Turn on the machine, and enter the fax service mode.
7. Press $4 \boxed{6}$ then 2 .
8. Press 3 .

Refer to the table below for which type of backup must be used, depending on the presence of EXSAF.

| EXSAF | Type of backup |  |
| :--- | :---: | :---: |
|  | FCU SRAM | FCU and EXSAF SRAM |
| Not present | OK | Do not use. |
| Present | Do not use. | OK |

9. Press either of the following:

1 - Standard SRAM only
2 - Standard SRAM and SRAM on the EXSAF.
10. Press " S " then $\Delta$; a confirmation message appears.
11. Press Start to restore the SRAM.
12. When "Loading Completed" appears, turn off the main power switch then disconnect the card.
13. Turn the machine back on.
14. Print the system parameter list to check if the previous settings have been successfully recovered.

### 6.4 ROM UPDATE

### 6.4.1 FCU ROM DOWNLOAD

This function updates the FCU ROM using a flash memory card.
NOTE: The flash memory card must be programmed with FCU ROM data as explained in section 6.6.

1. Turn off the machine and remove the cover $[A]$.
2. Connect the flash memory card [B] to the card slot as shown.


NOTE: SW3 below the card slot must be ON (upper position).
3. Turn on the machine and enter the fax service mode.
4. Press $1 \square 6$ then $\square$.
5. Press 1.
6. Press OK, then check the ROM version.

If the card does not contain FCU ROM data, "Please check flash card" appears. Turn off the machine and retry the procedure with the correct card.
7. Press Start.
8. When "Loading Completed" appears, turn off the main power switch then disconnect the flash memory card.
9. Turn OFF the SW3 below the card slot.
10. Turn the machine back on.
11. Print the system parameter list to check if the new ROM version is printed.

### 6.4.2 FCU ROM UPLOAD

This function makes a copy of the FCU ROM inside the machine onto a flash memory card.
NOTE: This procedure erases the flash memory card completely before uploading ROM data.

1. Turn off the machine and remove the cover [A].
2. Connect the flash memory card $[B]$ to the card slot as shown.


NOTE: SW3 below the card slot must be OFF (lower position).
3. Turn on the machine and enter the fax service mode.
4. Press $\square \square$ then $\square$.
5. Press 2.
6. Press OK, then check the ROM version.
7. Press Start.
8. When "Loading Completed" appears, turn off the main power switch then disconnect the flash memory card.
9. Turn the machine back on.

### 6.4.3 MODEM ROM DOWNLOAD

This function updates the Modem ROM on the FCU using a flash memory card.
NOTE: The flash memory card must be programmed with modem ROM data for this model as explained in section 6.6.
Do not use a flash card with data for another model.

1. Turn off the machine and remove the cover [A].
2. Connect the flash memory card $[B]$ to the card slot as shown.


NOTE: SW3 below the card slot must be OFF (lower position).
3. Turn on the machine and enter the fax service mode.
4. Press 16 then 4 .
5. Press Start.
6. When "Loading Completed" appears, turn off the main power switch then disconnect the flash memory card.
7. Turn the machine back on. Print the system parameter list to check the new modem ROM version.

### 6.5 SRAM DATA BACKUP AND RESTORE

### 6.5.1 SRAM BACKUP TO A FLASH MEMORY CARD

This function makes a backup copy of all the fax SRAM data onto a flash memory card. If a computer based PC card writer system is available, the backup can be saved as a computer file from the flash memory card.
If the EXSAF board is not installed, this function makes a backup copy of the standard SRAM on the FCU.
If the EXSAF board is installed, this function makes a backup copy of the standard SRAM and the SRAM on the optional EXSAF board.
NOTE: This procedure erases the flash memory card completely before uploading SRAM data.

1. Turn off the machine and remove the cover [A].
2. Connect the flash memory card $[B]$ to the card slot as shown.


NOTE: SW3 below the card slot must be OFF (lower position).
3. Turn on the machine and enter the fax service mode.
4. Press $1 \boxed{6}$ then 2 .
5. Press 2.
6. Press Start.
7. When "Loading Completed" appears, turn off the main power switch then disconnect the flash memory card.
8. Turn the machine back on

The data in the flash card can be copied to a PC for safe keeping. This data can then be uploaded from the PC to a flash memory card if the SRAM data has to be restored later.
Refer to the SwapFTL manual for details.

### 6.5.2 SRAM RESTORE FROM A FLASH MEMORY CARD

This function recovers SRAM data if the FCU is replaced or SRAM data was lost accidentally.
For how to restore the SRAM data from the backup on a flash memory card, refer to section 6.3.3 for details.

### 6.6 DATA ADDRESS RANGES ON THE CARD

The following sections show how ROM and RAM data must be programmed before downloading, or how data is uploaded onto the 4MB flash memory card.

### 6.6.1 FCU FIRMWARE DATA



### 6.6.2 MODEM ROM AND SRAM DATA



| Start Address (Hex) | 200000 | 200000 | 200000 |
| :---: | :---: | :---: | :---: |
| Length (Hex) | 40000 | 20000 | A0000 |
| Size (kB) | 256 | 128 | $128+512$ |

## 7. TROUBLESHOOTING

### 7.1 ERROR CODES

If an error code occurs, retry the communication. If the same problem occurs, try to fix the problem as suggested below. Note that some error codes appear only in the error code display and on the service report.

| Code | Meaning | Suggested Cause/Action |
| :---: | :---: | :---: |
| 0-00 | DIS/NSF not detected within 40 s of Start being pressed | - Check the line connection. <br> - Check the NCU - FCU connectors. <br> - The machine at the other end may be incompatible. <br> - Replace the NCU or FCU. <br> - Check for DIS/NSF with an oscilloscope. <br> - If the rx signal is weak, there may be a bad line. |
| 0-01 | DCN received unexpectedly | - The other party is out of paper or has a jammed printer. <br> - The other party pressed Stop during communication. |
| 0-03 | Incompatible modem at the other end | - The other terminal is incompatible. |
| 0-04 | CFR or FTT not received after modem training | - Check the line connection. <br> - Check the NCU - FCU connectors. <br> - Try changing the tx level and/or cable equalizer settings. <br> - Replace the FCU or NCU. <br> - The other terminal may be faulty; try sending to another machine. <br> - If the rx signal is weak or defective, there may be a bad line. <br> Cross reference <br> - Tx level - NCU Parameter 01 (PSTN) <br> - Cable equalizer - G3 Switch 07 (PSTN) <br> - Dedicated Tx parameters - Section 4 |
| 0-05 | Unsuccessful after modem training at 2400 bps | - Check the line connection. <br> - Check the NCU - FCU connectors. <br> - Try adjusting the tx level and/or cable equalizer. <br> - Replace the FCU or NCU. <br> - Check for line problems. <br> Cross reference <br> - See error code 0-04. |


| Code | Meaning | Suggested Cause/Action |
| :---: | :---: | :---: |
| 0-06 | The other terminal did not reply to DCS | - Check the line connection. <br> - Check the FCU - NCU connectors. <br> - Try adjusting the tx level and/or cable equalizer settings. <br> - Replace the NCU or FCU. <br> - The other end may be defective or incompatible; try sending to another machine. <br> - Check for line problems. <br> Cross reference <br> - See error code 0-04. |
| 0-07 | No post-message response from the other end after a page was sent | - Check the line connection. <br> - Check the FCU - NCU connectors. <br> - Replace the NCU or FCU. <br> - The other end may have jammed or run out of paper. <br> - The other end user may have disconnected the call. <br> - Check for a bad line. <br> - The other end may be defective; try sending to another machine. |
| 0-08 | The other end sent RTN or PIN after receiving a page, because there were too many errors | - Check the line connection. <br> - Check the FCU - NCU connectors. <br> - Replace the NCU or FCU. <br> - The other end may have jammed, or run out of paper or memory space. <br> - Try adjusting the $t x$ level and/or cable equalizer settings. <br> - The other end may have a defective modem/NCU/FCU; try sending to another machine. <br> - Check for line problems and noise. <br> Cross reference <br> - Tx level - NCU Parameter 01 (PSTN) <br> - Cable equalizer - G3 Switch 07 (PSTN) <br> - Dedicated Tx parameters - Section 4 |
| 0-14 | Non-standard post message response code received | - Check the FCU - NCU connectors. <br> - Incompatible or defective remote terminal; try sending to another machine. <br> - Noisy line: resend. <br> - Try adjusting the tx level and/or cable equalizer settings. <br> - Replace the NCU or FCU. <br> Cross reference <br> - See error code 0-08. |


| Code | Meaning | Suggested Cause/Action |
| :---: | :---: | :---: |
| 0-15 | The other terminal is not capable of specific functions. | The other terminal is not capable of accepting the following functions, or the other terminal's Memory is full. <br> - Confidential rx <br> - Transfer function <br> - SEP/SUB/PWD |
| 0-16 | CFR or FTT not detected after modem training in confidential or transfer mode | - Check the line connection. <br> - Check the FCU - NCU connectors. <br> - Replace the NCU or FCU. <br> - Try adjusting the tx level and/or cable equalizer settings. <br> - The other end may have disconnected, or it may be defective; try calling another machine. <br> - If the rx signal level is too low, there may be a line problem. <br> Cross reference <br> - See error code 0-08. |
| 0-17 | Communication was interrupted by pressing the Stop key. | If the Stop key was not pressed and this error keeps occurring, replace the operation panel or OPU. |
| 0-20 | Facsimile data not received within 6 s of retraining | - Check the line connection. <br> - Check the FCU - NCU connectors. <br> - Replace the NCU or FCU. <br> - Check for line problems. <br> - Try calling another fax machine. <br> - Try adjusting the reconstruction time for the first line and/or rx cable equalizer setting. <br> Cross reference <br> - Reconstruction time - G3 Switch 0A, bit 6 <br> - Rx cable equalizer - G3 Switch 07 (PSTN) |
| 0-21 | EOL signal (end-of-line) from the other end not received within 5 s of the previous EOL signal | - Check the connections between the FCU, NCU, \& line. <br> - Check for line noise or other line problems. <br> - Replace the NCU or FCU. <br> - The remote machine may be defective or may have disconnected. <br> Cross reference <br> - Maximum interval between EOLs and ECM frames - G3 Bit Switch 0A, bit 4 |


| Code | Meaning | Suggested Cause/Action |
| :---: | :---: | :---: |
| 0-22 | The signal from the other end was interrupted for more than the acceptable modem carrier drop time (default: 200 ms ) | - Check the line connection. <br> - Check the FCU - NCU connectors. <br> - Replace the NCU or FCU. <br> - Defective remote terminal. <br> - Check for line noise or other line problems. <br> - Try adjusting the acceptable modem carrier drop time. <br> Cross reference <br> - Acceptable modem carrier drop time - G3 Switch 0A, bits 0 and 1 |
| 0-23 | Too many errors during reception | - Check the line connection. <br> - Check the FCU - NCU connectors. <br> - Replace the NCU or FCU. <br> - Defective remote terminal. <br> - Check for line noise or other line problems. <br> - Try asking the other end to adjust their tx level. <br> - Try adjusting the rx cable equalizer setting and/or rx error criteria. <br> Cross reference <br> - Rx cable equalizer - G3 Switch 07 (PSTN) <br> - Rx error criteria - Communication Switch 02, bits 0 and 1 |
| 0-30 | The other terminal did not reply to NSS(A) in Al short protocol mode | - Check the line connection. <br> - Check the FCU - NCU connectors. <br> - Try adjusting the tx level and/or cable equalizer settings. <br> - The other terminal may not be compatible. <br> Cross reference <br> - Dedicated tx parameters - Section 4 |
| 0-52 | Polarity changed during communication | - Check the line connection. Retry communication. |
| 0-70 | Communication mode specified in CM/JM was not available. <br> (V. 8 calling and called terminal) | - The other terminal did not have a compatible communication mode (e.g., the other terminal was a V. 34 data modem.) <br> - A polling tx file was not ready at the other terminal when polling rx was initiated from the calling terminal. |
| 0-74 | Calling terminal fell back to T. 30 mode, because it could not detect ANSam after sending Cl . | - The calling terminal could not detect ANSam due to noise, etc. <br> - ANSam was too short to detect. <br> - Check the line connection and condition. <br> - Try making a call to another V.8/V. 34 fax. |


| Code | Meaning | Suggested Cause/Action |
| :---: | :---: | :---: |
| 0-75 | Called terminal fell back to T. 30 mode, because it could not detect a CM in response to ANSam. (ANSam timeout) | - The terminal could not detect ANSam. <br> - Check the line connection and condition. <br> - Try receiving a call from another V.8/V. 34 fax. |
| 0-76 | Calling terminal fell back to T. 30 mode, because it could not detect a JM in response to a CM. (CM timeout) | - The called terminal could not detect a CM due to noise, etc. <br> - Check the line connection and condition. <br> - Try making a call to another V.8/V. 34 fax. |
| 0-77 | Called terminal fell back to T. 30 mode, because it could not detect a CJ in response to JM. (JM timeout) | - Calling terminal could not detect a JM due to noise, etc. <br> - A network that has narrow bandwidth cannot pass JM to the other end. <br> - Check the line connection and condition. <br> - Try receiving a call from another V.8/V. 34 fax. |
| 0-80 | Line was disconnected due to timeout in V. 34 phase 2 - line probing. | - The guard timer expired while starting these phases. Serious noise, narrow bandwidth, or low signal level can cause these errors. |
| 0-81 | Line was disconnected due to timeout in V. 34 phase 3 - equalizer training. | - If these errors happen at transmitting terminal: <br> - Try making a call at a later time. <br> - Try using V. 17 or slower modem using |
| 0-82 | Line was disconnected due to timeout in V. 34 phase 4 - control channel start-up. | dedicated tx parameters. <br> - Try increasing the tx level. <br> - Try adjusting the cable equalizer setting |
| 0-83 | Line was disconnected due to timeout in V. 34 control channel restart sequence. | - If these errors happen at the receiving terminal: <br> - Try adjusting the cable equalizer setting. <br> - Try increasing the tx level. <br> - Try using V. 17 or slower modem if the same error is frequent when receiving from multiple senders. |
| 0-84 | Line was disconnected due to abnormal signaling in V. 34 phase 4 - control channel start-up. | - Signal did not stop within 10 s . <br> - Turn off the machine, then turn it back on. <br> - If the same error is frequent, replace the FCU. |
| 0-85 | Line was disconnected due to abnormal signaling in V. 34 control channel restart. | - Signal did not stop within 10 s . <br> - Turn off the machine, then turn it back on. <br> - If the same error is frequent, replace the FCU. |
| 0-86 | Line was disconnected because the other terminal requested a data rate using MPh that was not available in the currently selected symbol rate. | - The other terminal was incompatible. <br> - Ask the other party to contact the manufacturer. |


| Code | Meaning | Suggested Cause/Action |
| :---: | :---: | :---: |
| 0-87 | Control channel started after unsuccessful primary channel. | - The receiving terminal restarted the control channel because data reception in the primary channel was not successful. <br> - This does not result in an error communication. |
| 0-88 | Line was disconnected because PPR was transmitted/received 9 (default) times within the same ECM frame. | - Try using a lower data rate at the start. <br> - Try adjusting the cable equalizer setting. |
| 2-10 | The modem cannot enter tx mode | - Replace the FCU. |
| 2-11 | Only one V. 21 connection flag was received | - Replace the FCU. |
| 2-12 | Modem clock irregularity | - Replace the FCU. |
| 2-13 | Modem initialization error | - Turn off the machine, then turn it back on. <br> - Update the modem ROM. <br> - Replace the FCU. |
| 2-20 | Abnormal coding/decoding (cpu not ready) | - Replace the FCU. |
| 2-23 | JBIG compression or reconstruction error | - Turn off the machine, then turn it back on. <br> - Replace the PMU board if the error is frequent. |
| 2-24 | JBIG ASIC error | - Turn off the machine, then turn it back on. <br> - Replace the PMU board if the error is frequent. |
| 2-25 | JBIG data reconstruction error (BIH error) | - JBIG data error. <br> - Check the sender's JBIG function. |
| 2-26 | JBIG data reconstruction error (Float marker error) | - Update the FCU ROM. |
| 2-27 | JBIG data reconstruction error (End market error) |  |
| 2-28 | JBIG data reconstruction error (Timeout) |  |
| 2-50 | The machine reset itself | - If this is frequent, update the ROM, or replace the FCU. |
| 3-00 | G4 interface board reset | - Replace the G4 interface board or FCU. |
| 3-10 | Disconnection during ISDN G3 communication | - Check the other terminal and the ISDN line. <br> - The other terminal may have dialed a wrong number. |
| 3-11 | Disconnection during ISDN G4 communication | - Check the other terminal and the ISDN line. |
| 3-20 | A CSA signal was received during ISDN G4 communication | - The operator at the other terminal may have interrupted the communication. |
| 3-21 | A CSA was sent during ISDN G4 communication, because the Stop key was pressed | - The local operator has interrupted the communication. |
| 3-30 | Mismatched specifications (rx capability) | - Check the receive capabilities requested from the other terminal. |


| Code | Meaning | Suggested Cause/Action |
| :---: | :---: | :---: |
| 4-00 | One page took longer than 8 minutes to transmit | - Check for a bad line. <br> - Try the communication at a lower resolution, or without halftone. <br> - Replace the FCU. |
| 4-01 | Line current was cut | - Check the line connector. <br> - Check the connection between FCU and NCU. <br> - Check for line problems. <br> - Replace the FCU or the NCU. |
| 4-02 | The other end cut the received page, as it was longer than the maximum limit. | - Split the page into smaller pieces, or ask the other end to change their maximum receive length setting, then resend pages. |
| 4-10 | Communication failed because of ID Code mismatch (Closed Network) or Tel. No./CSI mismatch (Protection against Wrong Connections) | - Get the ID Codes the same and/or the CSIs programmed correctly, then resend. <br> - The machine at the other end may be defective. |
| 5-00 | Data reconstruction not possible | - Replace the FCU. |
| 5-10 | DCR timer expired | - Replace the FCU. |
| 5-20 | Storage impossible because of a lack of memory | - Temporary memory shortage. <br> - Test the SAF memory. <br> - Replace the FCU or optional EXSAF |
| 5-21 | Memory overflow |  |
| 5-22 | Mode table overflow after the second page of a scanned document | - Wait for the messages which are currently in the memory to be sent or delete some files from memory. |
| 5-23 | Print data error when printing a substitute rx or confidential rx message | - Test the SAF memory. <br> - Ask the other end to resend the message. <br> - Replace the FCU or IC memory card. |
| 5-24 | Memory overflow after the second page of a scanned document | - Try using a lower resolution setting. <br> - Wait for the messages which are currently in the memory to be sent or delete some files from memory. |
| 5-25 | SAF file access error | - Replace the FCU, EXSAF, or the hard disk. |
| 5-30 | Mode table for the first page to be printed was not effective | - Replace the FCU, EXSAF or the hard disk. |
| 6-01 | G3 ECM - no V. 21 signal was received | - Try adjusting the rx cable equalizer. <br> - Replace the FCU or NCU. |
| 6-02 | G3 ECM - EOR was received |  |
| 6-03 | G3 ECM - non-standard V. 21 code received | - The other terminal may be defective. |


| Code | Meaning | Suggested Cause/Action |
| :---: | :---: | :---: |
| 6-04 | G3 ECM - RTC not detected | - Check the line connection. <br> - Check connections from the NCU to the FCU. <br> - Check for a bad line or defective remote terminal. <br> - Replace the FCU or NCU. |
| 6-05 | G3 ECM - facsimile data frame not received within 18 s of CFR, but there was no line fail | - Check the line connection. <br> - Check connections from the NCU to the FCU. <br> - Check for a bad line or defective remote terminal. <br> - Replace the FCU or NCU. <br> - Try adjusting the rx cable equalizer Cross reference <br> - Rx cable equalizer - G3 Switch 07 (PSTN) |
| 6-06 | G3 ECM - coding/decoding error | - Defective FCU. <br> - The other terminal may be defective. |
| 6-08 | G3 ECM - PIP/PIN received in reply to PPS.NULL | - The other end pressed Stop during communication. <br> - The other terminal may be defective. |
| 6-09 | G3 ECM - ERR received | - Check for a noisy line. <br> - Adjust the tx levels of the communicating machines. <br> - See code 6-05. |
| 6-10 | G3 ECM - error frames still received at the other end after all communication attempts at 2400 bps | - Check for line noise. <br> - Adjust the tx level (use NCU parameter 01 or the dedicated tx parameter for that address). <br> - Check the line connection. <br> - Defective remote terminal. |
| 6-11 | G3 ECM - printing impossible because of a missing first line in the MMR coding | - Check for problems in the printer mechanism. |
| 6-21 | V. 21 flag detected during high speed modem communication | - The other terminal may be defective or incompatible. |
| 6-99 | V. 21 signal not stopped within 6 s | - Replace the FCU. |
| 9-30 | HDD write error | - Turn both power switches off and on, to mark defective sectors as bad and to initialize the hard disk. <br> - Initialize the hard disk interface (service mode 08-1). <br> - Check the cable connections. <br> - Format the hard disk (service mode 08-2). <br> - Replace the hard disk interface card. <br> - Replace the hard disk. |


| Code | Meaning | Suggested Cause/Action |
| :---: | :---: | :---: |
| 9-31 | HDD control error | - Turn both power switches off and on. <br> - Replace the hard disk. |
| 9-32 | HDD read error |  |
| 9-33 | HDD fatal error |  |
| 21-00 | BiCU communication error | Check the cable connection between BiCU and FCU. <br> Replace the BiCU or FCU. |
| 21-01 | BiCU turned off | - Check if the LED (+5V supply) on the BiCU is lit or not. Check the cable connection between BiCU and FCU. Replace the BiCU or FCU. |
| 21-02 | BiCU handshake error | - Check the cable connection between BiCU and FCU. Replace the BiCU or FCU. |
| 22-00 | Original length exceeded the maximum scan length | - Divide the original into a few pages. Check the resolution used for scanning. Lower the scan resolution if possible. Add optional page memory. |
| 22-01 | Memory overflow while receiving | - Wait for the files in the queue to be sent. Delete unnecessary files from memory. Transfer the substitute reception files to an another fax machine, if the machine's printer is busy or out of order. <br> Add an optional SAF memory card or hard disk. |
| 22-02 | Tx or rx job stalled due to line disconnection. | - Tx or rx job does not finish even after line connection. <br> - Restart the machine. |
| 22-03 | Cache memory for HDD has become full while receiving. | - Writing data to the HDD takes too long. <br> - Check the cable connection to the HDD. If problem persists, replace the HDD. |
| 23-00 | HDD data read timeout | - Reading data from the HDD takes too long. <br> - Check the cable connection to the HDD. If problem persists, replace the HDD. |

### 7.2 MODEM STATUS CODES IN V. 34 PROTOCOL DUMP

The following sections explain the meaning of modem status codes which appear on the G3 protocol dump list after V. 34 communications.

NOTE: 1) The machine sometimes cannot print all the status codes. For example, even if code 0127 (INFOh reception) is not printed, the modem may actually have received INFOh.
2) In polling, the signals go in the opposite direction after phase 2. Also, INFOOc replaces INFOOa, and vice versa.

### 7.2.1 CALLING SIDE

## Phase 1 (V.8)

| FIF | Description |
| :---: | :--- |
| 0010 | Idle |
| 0110 | Idle |
| 0111 | ANSam reception |
| 0011 | CM transmission |
| 0112 | JM reception |
| 0012 | CJ transmission |
| 0013 | Phase 1 end |

Phase 2 (Line Probing)

| FIF | Description |
| :---: | :--- |
| 0020 | Idle |
| 0021 | 75 ms interval |
| 0121 | Waiting for INFO0a |
| 0022 | INFOOc transmission |
| 0122 | INFOOa reception |
| 0123 | A reception |
| 0023 | INFOOc retransmission due to missing INFOOa |
| 0024 | INFO0c retransmission due to the second INFOOa reception |
| 0031 | B transmission |
| 0032 | B bar transmission |
| 0033 | L1 transmission |
| 0034 | L2 transmission |
| 0041 | B transmission during INFOh reception. |
| 0127 | INFOh reception |
| 0042 | Phase 2 end |
| 0043 | Waiting for A due to recovery from phase 3 (control channel) |

Phase 3 (Equalizer Training)

| FIF | Description |
| :---: | :--- |
| 0050 | Idle |
| 0051 | 70 ms interval |
| 0130 | Phase 3 |
| 0052 | S transmission |
| 0053 | S bar transmission |
| 0054 | PP transmission |
| 0055 | TRN transmission |
| 0056 | Phase 3 end |

## Phase 4 and 5 (Control Channel)

| FIF |  |
| :---: | :--- |
| 0060 | Idle |
| 0141 | Waiting for PPh |
| 0061 | 70 ms interval |
| 0062 | PPh transmission |
| 0142 | PPh reception |
| 0063 | ALT transmission |
| 0143 | ALT reception |
| 0064 | MPh transmission |
| 0144 | MPh reception |
| 0065 | E transmission |
| 0145 | E reception |
| 0066 | T.30 control signal transmission (e.g., NSS or DCS) |
| 0151 | Flag reception |
| 0152 | T.30 control signal reception (e.g., NSF, DIS or CFR) |
| 0067 | Phase 5 end |

## Phase 6 (Primary Channel)

| FIF |  |
| :---: | :--- |
| OOA0 | Idle |
| O0A1 | D0 ms interval |
| 0160 | Phase 6 |
| O0A2 | S transmission |
| O0A3 | S bar transmission |
| O0A4 | PP transmission |
| O0A5 | B1 transmission |
| 00A6 | Image data transmission |
| 00A7 | Phase 6 end |

MODEM STATUS CODES IN V. 34 PROTOCOL DUMP

Control Channel (Post Message - Sh)

| FIF | Description |
| :---: | :--- |
| 0070 | Idle |
| 0071 | 70 ms interval |
| 0141 | Waiting for Sh or PPh |
| 0072 | Sh transmission |
| 0073 | Sh bar transmission |
| 0146 | Sh/Sh bar reception |
| 0074 | ALT transmission |
| 0143 | ALT reception |
| 0075 | E transmission |
| 0076 | T.30 control signal transmission (e.g., PPS-EOP) |
| 0151 | Flag reception |
| 0152 | T.30 control signal reception (e.g., MCF) |
| 0077 | End |

## Control Channel (Post Message - PPh)

| FIF |  |
| :---: | :--- |
| 0080 | Idle |
| 0081 | PPh transmission |
| 0142 | PPh reception |
| 0082 | ALT transmission |
| 0143 | ALT reception |
| 0083 | MPh transmission |
| 0144 | MPh reception |
| 0084 | E transmission |
| 0085 | T.30 control signal transmission (e.g., PPS-MPS) |
| 0151 | Flag reception |
| 0152 | T.30 control signal reception (e.g., MCF) |
| 0086 | End |

Control Channel Recovery (AC)

| FIF | Description |
| :---: | :--- |
| 0090 | Idle |
| 0091 | AC transmission |
| 0092 | PPh transmission |
| 0142 | PPh reception |
| 0093 | ALT transmission |
| 0143 | ALT reception |
| 0094 | MPh transmission |
| 0144 | MPh reception |
| 0095 | E transmission |
| 0096 | T.30 control signal transmission (e.g., PPS-EOP) |
| 0151 | Flag reception |
| 0152 | T.30 control signal reception (e.g., MCF) |
| 0097 | End |

## V. 34 End

| FIF |  |
| :---: | :---: |
| 00B0 | Modem idle |

### 7.2.2 CALLED SIDE

## Phase 1 (V.8)

| FIF | Description |
| :---: | :--- |
| 0010 | Idle |
| 0110 | Idle |
| 0111 | CM reception |
| 0012 | JM transmission |
| 0112 | CI reception |
| 0113 | CJ reception |
| 0013 | Phase 1 end |

## Phase 2 (Line Probing)

| FIF | Description |
| :---: | :--- |
| 0020 | Idle |
| 0121 | Waiting for INFO0c |
| 0021 | 75 ms interval |
| 0122 | INFOOc reception |
| 0022 | INFOOa transmission |
| 0023 | INFO0a retransmission due to missing INFOOc |
| 0024 | INFOOa retransmission due to the second INFOOc reception |
| 0123 | B reception |
| 0124 | B bar reception |
| 0031 | A transmission |
| 0032 | A bar transmission |
| 0033 | No signal. Waiting for L1/L2 |
| 0125 | L1/L2 reception |
| 0126 | B reception |
| 0041 | A transmission |
| 0042 | INFOh transmission |
| 0043 | Phase 2 end |
| 0044 | Waiting for B due to recovery from phase 3 (control channel) |

Phase 3 (Equalizer Training)

| FIF | Description |
| :---: | :--- |
| 0050 | Idle |
| 0131 | No signal |
| 0051 | 70 ms interval |
| 0052 | Waiting for S |
| 0132 | S reception |
| 0053 | Waiting for S bar |
| 0133 | S bar reception |
| 0054 | Waiting for PP |
| 0134 | PP reception |
| 0055 | Waiting for TRN |
| 0135 | TRN reception |
| 0056 | Phase 3 end |

## Phase 4 and 5 (Control Channel)

| FIF |  |
| :---: | :--- |
| 0060 | Idle |
| 0141 | No signal |
| 0061 | 70 ms interval |
| 0142 | PPh reception |
| 0062 | PPh transmission |
| 0143 | ALT reception |
| 0063 | ALT transmission |
| 0144 | MPh reception |
| 0064 | MPh transmission |
| 0145 | E reception |
| 0065 | E transmission |
| 0066 | T.30 control signal transmission (e.g., NSF and DIS) |
| 0067 | Phase 5 end |

MODEM STATUS CODES IN V. 34 PROTOCOL DUMP

Phase 6 (Primary Channel)

| FIF |  |
| :---: | :--- |
| 00A0 | Idle |
| 0161 | No signal |
| 00A1 | 70 ms interval |
| 0162 | S reception |
| 00A2 | Waiting for S |
| 0163 | S bar reception |
| 00A3 | Waiting for S bar |
| 0164 | PP reception |
| 00A4 | Waiting for PP |
| 0165 | B1 reception |
| 00A5 | Waiting for B1 |
| 0166 | Flag reception |
| 0167 | Image data reception |
| 00A6 | Waiting for image data |
| 0168 | Turn off |
| 00A7 | Phase 6 end |

## Control Channel (Post Message - Sh)

| FIF |  |
| :---: | :--- |
| 0070 | Idle |
| 0071 | 70 ms interval |
| 0041 | No signal |
| 0072 | Detecting Sh and Sh bar |
| 0146 | Sh/Sh bar reception |
| 0073 | Sh transmission |
| 0074 | Sh bar transmission |
| 0143 | ALT reception |
| 0075 | ALT transmission |
| 0145 | E reception |
| 0076 | E transmission |
| 0151 | Flag reception |
| 0152 | T.30 control signal reception (e.g., PPS-EOP) |
| 0077 | T.30 control signal transmission (e.g., MCF) |
| 0078 | End |

Control Channel (Post Message - PPh)

| FIF | Description |
| :---: | :--- |
| 0080 | Idle |
| 0142 | PPh reception |
| 0081 | PPh transmission |
| 0143 | ALT reception |
| 0082 | ALT transmission |
| 0144 | MPh reception |
| 0083 | MPh transmission |
| 0145 | E reception |
| 0084 | E transmission |
| 0151 | Flag reception |
| 0152 | T.30 control signal reception (e.g., PPS-MPS) |
| 0085 | T.30 control signal transmission (e.g., MCF) |
| 0086 | End |

Control Channel Recovery (AC)

| FIF |  |
| :---: | :--- |
| 0090 | Idle |
| 0091 | AC transmission |
| 0147 | AC reception |
| 0142 | PPh reception |
| 0092 | PPh transmission |
| 0143 | ALT reception |
| 0093 | ALT transmission |
| 0144 | MPh reception |
| 0094 | MPh transmission |
| 0145 | E reception |
| 0095 | E transmission |
| 0151 | Flag reception |
| 0152 | T.30 control signal reception (e.g., PPS-MPS) |
| 0096 | T.30 control signal transmission (e.g., MCF) |
| 0097 | End |

## V. 34 End

| FIF |  | Description |
| :---: | :--- | :--- |
| 00B0 | Modem idle |  |

### 7.3 FAX SC CODES

When the FCU detects a Fax SC Code condition other than SC1201 and SC1207, it resets itself automatically (default setting). This initializes the FCU without erasing files in the SAF memory or resetting the switches.

NOTE: For details on Fax SC Codes 1201 and 1207, refer to the following sections.
If bit 7 of System Switch 1F is changed to "1", when the FCU detects a Fax SC Code condition, it displays the code on the display and stops working until the fax unit is initialized using one of the following methods:

- Hold down the "\#" and "*" keys for more than 10 s .
- Turn off the main power switch and turn it back on.
- Press SW2 on the FCU.

The fax unit cannot make automatic service calls in reaction to a Fax SC Code, because the fax unit cannot make fax communications in SC Code conditions.

### 7.3.1 SC1201

When the FCU detects an unrecoverable error in the SRAM, which requires a complete SRAM initialization, the fax unit displays this SC Code and stops.
There is no way to recover from this error condition without a complete SRAM initialization (all the user and service programmed data will be erased).

The possible causes are:

- SRAM backup battery defect or SW1 on the FCU is at the "OFF" position
- SRAM on the FCU has a physical defect
- Flash memory card or data copy tool connection was loose


### 7.3.2 SC1202

When the FCU detects an unrecoverable error in the HDD control area of the EXSAF SRAM, or if the HDD is replaced without initializing the SAF memory, the fax unit displays this SC code and stops.
To recover from this error, do the following.

1. Disconnect the HDD from the EXSAF.
2. Initialize the SAF files using service mode function 07-2.
3. Connect the HDD again.

If the problem persists, replace the EXSAF.

### 7.3.3 SC1207

This is the same as SC1201 except the error location is the SRAM on the EXSAF.
The possible causes are:

- SRAM backup battery defect or SW1 on the EXSAF is at the "OFF" position.
- SRAM on the EXSAF has a physical defect.
- EXSAF connection was loose.


### 7.3.4 SC1802/1811/1815

If file location data in the SRAM on the EXSAF or HDD itself has a serious defect, the machine displays one of these SC codes.
To recover from these errors, initialize the SAF memory using service function 08. If the problem persists, try formatting the HDD. If formatting does not have any effect, replace the EXSAF or HDD.

## FAX SC CODES

### 7.3.5 FAX SC CODE TABLE

| SC Code | Description | Suggested Action | When bit 7 of System Switch 1F = 0 | When bit 7 of System Switch 1F = 1 |
| :---: | :---: | :---: | :---: | :---: |
| 1101 | Handshake error with BiCU at start-up | Initialize the fax unit. (See the previous page for the initialization procedure) | Automatic reset | SC Code display |
| 1102 |  |  |  |  |
| 1103 |  |  |  |  |
| 1111 | Command tx/rx error to/from the BiCU |  |  |  |
| 1112 | Base copier's engine was reset |  |  |  |
| 1120 | Interface module error |  |  |  |
| 1201 | Unrecoverable FCU SRAM error | $\begin{array}{\|l\|} \hline \text { Refer to the section } \\ \text { 7.3.1. } \\ \hline \end{array}$ | $\begin{aligned} & \hline \text { SC Code } \\ & \text { display } \end{aligned}$ |  |
| 1202 | EXSAF battery backup error <br> (HD control area) | Refer to section 7.3.2. | SC Code display |  |
| 1203 | Software error | Initialize the fax unit. | Automatic reset |  |
| 1204 |  |  |  |  |
| 1205 |  |  |  |  |
| 1206 |  |  |  |  |
| 1207 | Unrecoverable EXSAF SRAM error | Refer to section 7.3.3. | SC Code display |  |
| 1251 | Software error | Initialize the fax unit. | Automatic reset |  |
| 1252 |  |  |  |  |
| 1253 |  |  |  |  |
| 1290 |  |  |  |  |
| 1301 |  |  |  |  |
| 1302 |  |  |  |  |
| 1303 |  |  |  |  |
| 1304 |  |  |  |  |
| 1305 |  |  |  |  |
| 1306 |  |  |  |  |
| 1307 |  |  |  |  |
| 1308 |  |  |  |  |
| 1401 | DCMMR timed out | Initialize the fax unit, or replace the FCU. |  |  |
| 1402 | DMA4 table creation timed out |  |  |  |
| 1501 | Error in Quick Dial data storage area |  |  |  |
| 1802 | HDD file table error | $\begin{aligned} & \text { Refer to section } \\ & \text { 7.3.4. } \end{aligned}$ | SC Code display |  |
| 1811 | HDD read error |  |  |  |
| 1815 | HDD write error |  |  |  |

## TECHNICAL SERVICE BULLETINS

GESTETNER - CS206
RICOH - AFICIO COLOR 3006
SAVIN - SDC306

## SUBJECT: FIRMWARE UPGRADE FOR COUNTERS

## SCOPE:

The A258 black and color copy counters can be set to display the number of developments or the number of sheets that are output. However, setting the machine to display the number of sheets can only be selected with the main firmware version 6.15 or greater.

## SYMPTOM:

The counter display SP 7-008 cannot be changed from developments to sheets.

## CAUSE:

The programming for this function is not included in the current firmware level.

## SOLUTION:

Upgrade the main firmware using the following procedure:

1. Access the TSC Download site at HTTP://TSC.RICOHCORP.COM.
2. Download the file A258v643.EXE
3. Self extract the file by double clicking on it.
4. Read the "Read Me" file included.
5. Write the "A2585197dv643.bin" file onto a PCMCIA card (A2309352) using the SwapFTLTM binary utility.
6. Download the firmware to the copier main board by following the procedure on page 6-32 in the Field Service Manual.
7. Clear the total counter as per the Field Service Manual page 3-21.
8. Set SP 7-008 "Set Counter Display" to 2 for sheet count.

BULLETIN NUMBER: A258/A259/A260 - 001 REISSUE $\star$

## APPLICABLE MODEL:

GESTETNER - CS206
RICOH - AFICIO COLOR 3006
SAVIN - SDC306

## TECHNICAL SERVICE BULLETIN

## SUBJECT: FIRMWARE UPGRADE FOR COUNTERS

## SCOPE:

The A258 black and color copy counters can be set to display the number of developments or the number of sheets that are output. However, setting the machine to display the number of sheets can only be selected with the main firmware version 6.15 or greater.

## SYMPTOM:

The counter display SP 7-008 cannot be changed from developments to sheets.

## CAUSE:

The programming for this function is not included in the current firmware level.

## SOLUTION:

Upgrade the main firmware using the following procedure:

1. Access the TSC Download site at HTTP://TSC.RICOHCORP.COM.
2. Download the file A258v643.EXE
3. Self extract the file by double clicking on it.
4. Read the "Read Me" file included.
5. Write the "A2585197dv643.bin" file onto a PCMCIA card (A2309352) using the SwapFTL™ binary utility.
6. Download the firmware to the copier main board by following the procedure on page 6-32 in the Field Service Manual.
7. Clear the total counter as per the Field Service Manual page 3-21.
8. Set SP 7-008 "Set Counter Display" to 2 for sheet count.
*NOTE: Once the counter display is set to display sheets, it cannot be changed back to display developments.

TECHNICAL SERVICE BULLETIN

## BULLETIN NUMBER: A258/A259/A260-002

06/03/99

## APPLICABLE MODEL:

GESTETNER - CS206/206D/206DE
RICOH - AFICIO 3006/4006/4106
SAVIN - SDC306/306A/306E

## SUBJECT: SERVICE MANUAL - INSERT

## GENERAL:

The Service Manual page(s) listed below must be replaced with the page(s) supplied. Each bulletin package contains 1 set of replacement pages.

PAGES:

- IX
- 6-87,88

Updated Information (Table of Contents)
New Information (Other - Drive Section Removal)

BULLETIN NUMBER: A258/A259/A260-003

## APPLICABLE MODEL:

GESTETNER - CS206
RICOH - N/A
SAVIN - SDC306

## SUBJECT: YELLOW DEVELOPER

## GENERAL:

Please be advised that the charge characteristics of Lot Number indicated below (for Type K Yellow Developer) may cause toner scattering and is considered defective.

Each Service location is required to perform a physical check of current inventory for the indicated Lot Number. The quantity should be communicated to your Savin Regional Aftermarket Managers for return authorization and disposition instructions by August 13, 1999.
Please note that all other colors (Magenta, Cyan, and Black) and all other lot numbers of Type K Yellow Developer are compliant with design specifications and not impacted by this notification.

| Product Code | DESCRIPTION | LOT NUMBER |
| :---: | :---: | :---: |
| 5423 | Savin Color Developer Type K Yellow | 9003981 |

## TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A258/A259/A260-004
08/30/99

## APPLICABLE MODEL:

GESTETNER - CS206/206D/206DE
RICOH - AFICIO 3006/4006/4106
SAVIN - SDC306/306A/306E

## SUBJECT: SERVICE MANUAL - INSERT

## GENERAL:

The Service Manual page(s) listed below must be replaced with the page(s) supplied. Each bulletin package contains 1 set of replacement pages.

PAGES:
The revised areas have been highlighted by an arrow $\Rightarrow$.

- VI
- 3-59 through 3-61
- B-50

Updated Information (Table of Contents)
Updated Information (Controller Interface Installation)
Updated Information (Appendix B)
$\Rightarrow 25$. Turn on the machine.
If the machine is A259 or A260, skip the remainder of this step.
For A258 machines, use SP7-801-000 to confirm that the firmware version of the main control board is v.6.43 or later. If it's not, the copier's firmware must be upgraded (for the controller connection).
26. Change SP3-125-000 from 0 (Default) to 2.
27. Enter SP3-126-000 then: press 1 and \# for the A258 OR press ON for A259/260.
28. After doing the forced process control self check, check that the result is " 1 " (successful) using SP3-975. (A259/260 machine automatically displays the result on the screen.) If the result code is a number other than 1 , consult the error code chart (see the troubleshooting section of the service manual).
29. Do the ACC for printer. If necessary, do the AutoCal of the controller calibration.
30. Check SP6-910-000. The setting should be "1" for the controller.

In order for the copier to function properly as a printer, the following settings must be made:

- AOF (Keep it on) set to OFF keeps the copier from going off in the middle of an operation.
- Interleave Print set to ON allows copier to switch automatically between copy and print.
- Control Panel Off set to OFF keeps the copier from blanking out.
- System Reset set to OFF keeps the copier from resetting in the middle of an operation. le. calibration


### 3.12 OTHERS

### 3.12.1 ORIGINAL TABLE INSTALLATION PROCEDURE



1. Remove two caps [A] from the main unit cover.
2. Insert the shoulder screws [B]. Do not tighten them yet.
3. Mount the original table [C] so that it hangs on the shoulder screws.
4. Tighten the shoulder screws.

### 3.12.2 KEY COUNTER HOLDER INSTALLATION PROCEDURE



1. Remove the right front cover from the main unit (1 screw).
2. Cut away a section $[A]$.
3. Plug in the connector $[B]$ for the key counter holder.
4. Secure the key counter holder on the main unit (2 screws).
5. Replace the right front cover ( 1 screw ).
6. To enable the key counter function, enter "2" in SP5-113.

| SP No. | Item <br> [Display] | Default <br> Value | Value Range | Step | SP7 <br> $\mathbf{9 0 2 / 3}$ | Description |
| :---: | :--- | :---: | :---: | :---: | :---: | :---: |
| $06-006-04$ | Switchback (thick original), back side <br> $[2$ sided] | 0 step | -15 to 15 steps | 1 |  |  |

## 06-102: [Sort/Stack Limit]

| 06-102-00 | [0: No limitation, 1: Limitation] | 1 | 0 to 1 | 1 | Enables or disables the limitation on the number of <br> sheets that can be stacked in the sorter. 0: Disabled; <br> $1:$ Enabled (default). This limit can be disabled if the <br> user requests, but the user has to make sure that <br> jams do not occur. |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |

06-104: Stapling Limit [Staple Sheet Limit]

| 06-104-00 | [Staple Sheet Limit] | 1 | 0 to 1 | 1 | Enables or disables the limitation on the number of <br> sheets that can be stapled. 0: Disabled; 1: Enabled <br> (default). This limit can be disabled if the user <br> requests, but the user has to make sure that jams do <br> not occur. |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |

## 06-107: [Sorter Free Run]

| $06-107-00$ | [Sorter Free Run] | 0 | 0 to 1 | 1 | Sorter free run |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |

$\Rightarrow$ 06-910 [Printer/Scanner Key Setting]

| 06-910-000 | [Printer/Scanner Key Setting] | 1 | 0 to 1 | 1 | When installing the E-300 controller, this should be <br> set to 1. If the setting is 0, the Printer/Scanner key <br> on the controller LCD panel does not work. |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A258/A259/A260-005

## APPLICABLE MODEL:

GESTETNER - CS206/206D/206DE
RICOH - AFICIO 3006/4006/4106
SAVIN - SDC306/306A/306E

## SUBJECT: SERVICE MANUAL - CORRECTION

## GENERAL:

The Laser Exposure section of the Service Manual was incorrectly numbered. The correction will be made to the Table of Contents (TOC) and the Laser Exposure section of the Service Manual. The next printing of the Service Manual will be corrected.

Please correct your Service Manual with the following information:

| PAGE NUMBER | FROM | TO |
| :---: | :--- | :--- |
| TOC III | 2.6 LASER EXPOSURE | 2.5 .6 LASER EXPOSURE |
| TOC III | 2.6 .1 OVERVIEW | 2.5 .6 .1 OVERVIEW |
| TOC III | 2.6 .2 OPTICAL PATH | $2.5 .6 .2 ~ O P T I C A L ~ P A T H ~$ |
| $2-56$ | 2.6 LASER EXPOSURE | 2.5 .6 LASER EXPOSURE |
| $2-56$ | 2.6 .1 OVERVIEW | 2.5 .6 .1 OVERVIEW |
| $2-57$ | 2.6 .2 OPTICAL PATH | 2.5 .6 .2 OPTICAL PATH |

## TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A258/A259/A260-006
APPLICABLE MODEL:
GESTETNER - CS206
RICOH - AFICIO 3006
SAVIN - SDC306

## SUBJECT: PARTS CATALOG UPDATES

- UPDATE 1:

PARTS CORRECTIONS - The following parts corrections are being issued for all A258 Parts Catalogs. Please correct your Parts Catalogs with the following information.

|  |  |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| INCORRECT PART NO. | CORRECT <br> PART NO. | DESCRIPTION | QTY | PAGE | ITEM |
| 11050310 | A2591987 | Rod Holder | 1 | 27 | 103 |
| A2595137 | A2595146 | Scanner IPU-B Board | 1 | 29 | 15 |
| 03140100B | 03140120B | Philips Pan Head Screw M4x12 |  | 31 | 104 |
| 06320120 | 06320120G | Parallel Pin M2x12 | 1 | 37 | 106 |
| A2593522 | A2593521 | Discharge Corona Unit | 1 | 55 | 29 |
| AX200159 | AX200188 | Magnetic Clutch | 1 | 71 | 14 |
| AB030276 | AB030661 | Tightener Pulley | 1 | 71 | 24 |
| 04713906 | 07413906 | Bushing 6mm | 1 | 73 | 105 |
| A2595329 | AZ230089 | Power Supply Unit-250W(230V) | 1 | 79 | 8 |
| A2599520 | A2589520 | NVRAM Minus Counter | 1 | 83 | 8 |
| A2591582 | A2591581 | Operation Panel Bracket | 1 | 83 | 3 |
| A2591581 | A2591582 | Rubber Cushion | 4 | 83 | 4 |
| 54209550 | A2579100 | Silicone Oil (Ricoh Brand) | 1 | 111 | 3 |
| 54209550 | A2579550 | Silicone Oil (Generic Brand) | 1 | 111 | 3 |
|  | A2593011 | Drawer Unit - NA/EU | $0 \rightarrow 1$ | 39 | * |
|  | A2593013 | Drawer Unit - AA/OEM | $0 \rightarrow 1$ | 39 | * |
|  | A2594013 | Fusing Unit 120V | $0 \rightarrow 1$ | 59 | * |
|  | A2594018 | Fusing Unit 230V | $0 \rightarrow 1$ | 59 | * |
| AA000542 | Delete Item | Decal Laser Class 1 | $1 \rightarrow 0$ | 13 | 29 |
| A2592392 | Delete Item | Pull Out Stay | $1 \rightarrow 0$ | 51 | 24 |
| AA132116 | Delete Item | Collar - 8 | $1 \rightarrow 0$ | 71 | 25 |
| AX400126 | Delete Item | Heater-100V 13W | $1 \rightarrow 0$ | 37 | 22 |

Continued...

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- UPDATE 2: ENTRANCE SEAL ASS'Y - The individual components of the Entrance Seal are no longer available. They are only available as an assembly. The following parts corrections are being issued for all A258 Parts Catalogs. Please correct your Parts Catalogs with the following information.


|  |  |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | PAGE | ITEM |
| A2596719 |  | Entrance Seal Holder | $1 \rightarrow 0$ | 45 | 14 |
| A2596720 |  | Entrance Seal | $1 \rightarrow 0$ | 45 | 24 |
| A2596721 |  | Entrance Seal Tape | $1 \rightarrow 0$ | 45 | 25 |
|  | $\rightarrow$ A2596718 | Entrance Seal Assembly | $0 \rightarrow 1$ | 45 | 28 |

- UPDATE 3: TAPPING SCREW M3x8 - The following part update is being issued for all A258 Parts Catalogs. Please correct your Parts Catalogs with the following information.


|  |  | REFERENCE |  |  |
| :---: | :---: | :---: | :---: | :---: |
| PART NUMBER | DESCRIPTION | QTY | PAGE | ITEM |
| $04503008 B$ | Tapping Screw M3x8 | $0 \rightarrow 1$ | 17 | 106 |

Continued...

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- UPDATE 4: SEALS - The Side Fence Seal has been converted into individual components. The following parts corrections are being issued for all A258 Parts Catalogs. Please correct your Parts Catalogs with the following information.


|  |  |  |  | REFERENCE |  |  |  |  |  |  |
| ---: | :--- | :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | PAGE | ITEM |  |  |  |  |  |
| A2593166 |  | Side Fence Seal | $2 \rightarrow 0$ | 41 | 9 |  |  |  |  |  |
|  | $\longrightarrow$ A2593175 | Front Side Seal | $0 \rightarrow 1$ | 41 | 22 |  |  |  |  |  |
|  | $\longrightarrow$ A2593176 | Rear Side Seal | $0 \rightarrow 1$ | 41 | 23 |  |  |  |  |  |

- UPDATE 5:

SEAL $-250 \times 3 \times 5$-The following part update is being issued for all A258 Parts Catalogs. Please correct your Parts Catalogs with the following information.


| PART NUMBER | DESCRIPTION | REFERENCE |  |  |
| :---: | :--- | :---: | :---: | :---: | :---: |
| A2591740 | Seal $-250 \times 3 \times 5$ | QTY | PAGE | ITEM |

Continued...

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- UPDATE 6: FAN MOTOR -The following parts updates are being issued for all A258 Parts Catalogs. Please correct your Parts Catalogs with the following information.


|  |  | REFERENCE |  |  |
| :---: | :--- | :---: | :---: | :---: |
| PART NUMBER | DESCRIPTION | QTY | PAGE | ITEM |
| A2595583 | Relay Harness | $0 \rightarrow 1$ | 79 | 16 |
| A2591032 | Fan Motor Bracket | $0 \rightarrow 1$ | 79 | 17 |
| AX640090 | Fan Motor DC24V | $0 \rightarrow 1$ | 79 | 18 |
| $04514030 B$ | Philips Tapping Screw M4x30 | $\mathrm{n} \rightarrow \mathrm{n}+2$ | 79 | 109 |

- UPDATE 7: DRAWER UNIT FRONT HARNESS - The Cartridge Sensor Harness is part of the Drawer Unit Front Harness. The Draw Unit Front Harness description correction is being issued for all A258 Parts Catalogs. Please correct your Parts Catalogs with the following information.

| INCORRECT <br> PART NO. |  |  |  |  |  |  |  | CORRECT <br> PART NO. | DESCRIPTION | QTY | PAGE | ITEM |
| :---: | :--- | :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| A2595476 | A2595466 | Drawer Unit Front Harness | 1 | 49 | 27 |  |  |  |  |  |  |  |
| A2595563 |  | Cartridge Sensor Harness | 1 | 51 | 4 |  |  |  |  |  |  |  |

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- UPDATE 8: REAR LOWER HARNESS - The Relay Harness -Tmp/Humidity is part of the Rear Lower Harness. The Rear Lower Harness description correction is being issued for all A258 Parts Catalogs. Please correct your Parts Catalogs with the following information.

| INCORRECT <br> PART NO. | CORRECT <br> PART NO. | REFERENCE |  |  |  |
| :---: | :--- | :--- | :---: | :---: | :---: |
| A2595473 | A2595463 | Rear Lower Harness | QTY | PAGE | ITEM |
| A2595510 |  | Relay Harness -Tmp/Humidity | 1 | 77 | 6 |
|  | $\rightarrow$ A2595463 | Rear Lower Harness | 1 | 77 | 19 |

## INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and <br> NEW machines. | 2 | NEW parts CAN NOT be used in OLD machines. <br> OLD parts can be used in OLD and NEW machines. |
| :---: | :--- | :---: | :--- |
| 1 | NEW parts can be used in OLD and NEW machines. <br> OLD parts CAN NOT be used in NEW machines. | 3 | OLD parts CAN NOT be used in NEW machines. <br> NEW parts CAN NOT be used in OLD machines. |
| $3 / S$ | 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 <br> previously modified, use the new part numbers individually. |  |  |

## APPLICABLE MODEL:

GESTETNER - CS206/206D/206DE
RICOH - AFICIO 3006/4006/4106
SAVIN - SDC306/306A/306E

## SUBJECT: INSTALLATION CAUTIONS FOR THE CONTROLLER I/F KIT

## GENERAL:

Some problems related to SC 326 or ARDF were reported from the other markets. These problems were caused by mistakes during the installation. Please note the remarks explained below and keep these items in mind when installing the I/F kit.

## Remarks:

1. Please remember if the connectors are not properly set or the shorting cable is not removed, SC326 will occur. At each step of installation, make sure that:

- The 100 pin shielded cable connector [ A ] is properly connected.
- The I/F cable connector [B] is properly connected.
- The shorting cable [C] is removed.
- The LD flat cable [D] is properly connected.

2. Make sure that fiber optic cable connectors are correctly set to the main control board. White marks are painted on the connectors. If the fiber optic cable is set in the wrong connectors on the Main Board, The ADF will not function.


## SUBJECT: DARK SPOTS IN SOLID AREAS

## SYMPTOM:

In the solid area, dark spots appear as show in the illustration.

## CAUSES:



- Electrical resistance of the image transfer belt has a specified tolerance. If the electrical resistance is in the lower area of the specification, the pre-fixed transfer bias becomes higher than the optimum value. In this case, toner transferred onto the belt tends to be re-attracted to the Drum.
- Small carriers in the Development Unit tend to be physically attracted to the Drum. The carriers transferred to the belt create a gap between the Drum and belt. Toner on some parts of the Transfer Belt where the carriers are present are not re-attracted to the Drum due to the gap. The result is the dark spots symptom in the solid areas as shown above.
- It is known that the dark spots problem has tendency to appear as the development potential becomes higher. If the residual voltage detected by the Drum potential sensor is 30 V or less, the potential sensor is damaged, and this may cause the problem of the dark spots.


## SOLUTIONS:

1. Check the residual voltage in SP3-111-00. If the voltage is 30 V or less, replace the Drum Potential Sensor and check whether or not the problem disappears. If not, see step 2.
2. Decrease the transfer belt bias in the SP mode as shown below.

In the Copy mode: SP2-301-01 to 04

| SP Mode |  | Default | Step 1 | Step 2 | Step 3 | Step 4 |
| :--- | :--- | ---: | ---: | ---: | ---: | ---: |
| SP2-301-01 | 1st color | 1700 | 1200 | 1000 | 800 | 600 |
| SP2-301-02 | 2nd color | 1800 | 1300 | 1000 | 800 | 600 |
| SP2-301-03 | 3rd color | 1900 | 1400 | 1000 | 800 | 600 |
| SP2-301-04 | 4th color | 2000 | 1500 | 1000 | 800 | 600 |

## NOTE 1:

- Decrease the transfer belt bias from the 1 st to 4 th color by 500 volts each (Step 1) as shown in the above table. Then, check whether the dark spots have disappeared completely or partially. If the dark spots are still present on the copy, decrease the bias as shown and check the results.

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Page 2 of 2

## NOTE: (Continued)

- When the transfer bias is decreased, it may cause the image in the solid area to become rough or light. Since there will be less toner transferred onto the belt and/or it may cause the fireflies due to small clogged toner that makes gap between the Drum and belt. When the belt bias is decreased, check the level of both the dark spots and rough image/fireflies. Select the proper bias that gives the best overall results.

In the Print mode (2/3 speed): SP2-301-13 to 16

| SP Mode |  | Default |  |  | Step 1 |
| :--- | :--- | :---: | :---: | :---: | :---: |
| Step 2 |  |  |  |  |  |
|  | S/M | Ver. 6.43 |  |  |  |
| SP2-301-13 | 1st color | 800 | 1000 | 800 | 600 |
| SP2-301-14 | 2nd color | 900 | 1100 | 800 | 600 |
| SP2-301-15 | 3rd color | 1000 | 1200 | 800 | 600 |
| SP2-301-16 | 4th color | 1100 | 1300 | 800 | 600 |

## NOTE 2:

- The default setting described in the Service Manual (S/M) has been changed in the main software (Ver. 6.43) as shown in the above table.
- Refer to the points explained in NOTE 1.

3. Perform the ACC (Auto Color Calibration) after adjusting the transfer bias.

## REMARKS:

When adjusting the transfer belt bias for the dark spots on machines, the image quality concerning the dark spots, rough image, and fireflies should be checked whenever the image transfer belt is replaced. Also, if necessary, readjust the transfer belt bias.

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A258/A259/A260 - 008 REISSUE $\star$
09/11/2000
APPLICABLE MODEL:
GESTETNER - CS206/206D/206DE
RICOH - AFICIO 3006/4006/4106
SAVIN - SDC306/306A/306E

## SUBJECT: DARK SPOTS IN SOLID AREAS

## SYMPTOM:

In the solid area, dark spots appear as shown in the illustration.

## CAUSES:



- Electrical resistance of the image transfer belt has a specified tolerance. If the electrical resistance is in the lower area of the specification, the pre-fixed transfer bias becomes higher than the optimum value. In this case, toner transferred onto the belt tends to be re-attracted to the Drum.
- Small carriers in the Development Unit tend to be physically attracted to the Drum. The carriers transferred to the belt create a gap between the Drum and belt. Toner on some parts of the Transfer Belt where the carriers are present are not re-attracted to the Drum due to the gap. The result is the dark spots symptom in the solid areas as shown above.
- It is known that the dark spots problem has tendency to appear as the development potential becomes higher. If the residual voltage detected by the Drum potential sensor is 30V or less, the potential sensor is damaged, and this may cause the problem of the dark spots.
- 

NOTE: 30V or less is possible with a new Drum.

## SOLUTIONS:

1. Check the residual voltage in SP3-111-00. If the voltage is 30 V or less, replace the Drum Potential Sensor and check whether or not the problem disappears. If not, see step 2.
2. Decrease the transfer belt bias in the SP mode as shown below.

In the Copy mode: SP2-301-01 to 04

| SP Mode | Default | Step 1 | Step 2 | Step 3 | Step 4 |  |
| :--- | :--- | ---: | ---: | ---: | ---: | ---: |
| SP2-301-01 | 1st color | 1700 | 1200 | 1000 | 800 | 600 |
| SP2-301-02 | 2nd color | 1800 | 1300 | 1000 | 800 | 600 |
| SP2-301-03 | 3rd color | 1900 | 1400 | 1000 | 800 | 600 |
| SP2-301-04 | 4th color | 2000 | 1500 | 1000 | 800 | 600 |

## NOTE 1:

- Decrease the transfer belt bias from the 1st to 4th color by 500 volts each (Step 1) as shown in the above table. Then, check whether the dark spots have disappeared completely or partially. If the dark spots are still present on the copy, decrease the bias as shown and check the results.

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Page 2 of 2

## NOTE 1: (Continued)

- When the transfer bias is decreased, it may cause the image in the solid area to become rough or light. Since there will be less toner transferred onto the belt and/or it may cause fireflies due to small clogged or clumped toner particles that makes a gap between the Drum and Belt. When the belt bias is decreased, check the level of both the dark spots and rough image/fireflies. Select the bias that gives the best overall results.

In the Print mode (2/3 speed): SP2-301-13 to 16

| SP Mode |  | Default |  |  | Step 1 |
| :--- | :--- | :---: | :---: | :---: | :---: |
| Step 2 |  |  |  |  |  |
|  | S/M | Ver. 6.43 |  |  |  |
| SP2-301-13 | 1st color | 800 | 1000 | 800 | 600 |
| SP2-301-14 | 2nd color | 900 | 1100 | 800 | 600 |
| SP2-301-15 | 3rd color | 1000 | 1200 | 800 | 600 |
| SP2-301-16 | 4th color | 1100 | 1300 | 800 | 600 |

## NOTE 2:

- The default setting described in the Service Manual $(S / M)$ has been changed in the main software (Ver. 6.43) as shown in the above table.
- Refer to the points explained in NOTE 1.

3. Perform the ACC (Auto Color Calibration) after adjusting the Transfer Bias.

REMARKS:
When adjusting the transfer belt bias for the dark spots on machines, the image quality concerning the dark spots, rough image, and fireflies should be checked whenever the image transfer belt is replaced. Also, if necessary, readjust the transfer belt bias.

BULLETIN NUMBER: A258/A259/A260-009
10/15/99
APPLICABLE MODEL:
GESTETNER - CS206/206D/206DE
RICOH - AFICIO 3006/4006/4106
SAVIN - SDC306/306A/306E

## SUBJECT: DIRTY BACKGROUND

## SYMPTOM:

Dirty background slightly appears in the copy mode.

## CAUSE:

The reproduction of highlight areas has been improved from the previous products; therefore, background of an original tends to come through on the copies.

## SOLUTION:

When customers complain about the dirty background, please explain the above mentioned cause, to them, provide the customer with proper instructions, depending on the mode selected as shown in the following table.

| Symptom/Mode | Troubleshooting |
| :--- | :--- |
| Dirty background in FC copy <br> mode | Instruct user to select the Auto Image Density mode. |
| Backside of original appears  <br> Dirty background in B\&W <br> copy mode Instruct user to select the Letter mode. <br> The Auto Image Density mode detects the background density <br> of an original and it does not appear on the copy during the <br> image processing. This mode is effective for originals that have <br> high density backgrounds like newspapers, but not for the <br> originals that have low density backgrounds. |  |

NOTE: To reduce the complaint from customers, the following SP mode has been added. When this $S P$ mode is energized, the Text mode becomes the default setting for the B\&W copy mode.

SP mode: 5-005-008
Value range: 0 or 1
Default: 0
Data $=0: \quad$ The mode set in the User Tool (Copier Feature) is selected in the B\&W copy mode.
Data =1 : When the B\&W copy mode is selected, the Text mode is automatically selected regardless of the setting in the User Tool.

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A258/A259/A260-010
10/15/99
APPLICABLE MODEL:
GESTETNER - CS206/206D/206DE
RICOH - AFICIO 3006/4006/4106
SAVIN - SDC306/306A/306E

## SUBJECT: DIRTY MARKS SPACED 142mm A PART

## SYMPTOM:

Dirty marks appear a 142 mm a part from each other on the copies.


## CAUSE:

Foreign material may be on the Transfer Belt Drive Roller.

## SOLUTION:

Clean the Transfer Belt Drive Roller with a dry cloth.
NOTE: When this problem happens and the drive roller is not cleaned, the Transfer Belt may develop a ridged deformation along its length as a result of the foreign material. This line/ridge is reflected in the copies.

BULLETIN NUMBER: A258/A259/A260-011
10/15/99
APPLICABLE MODEL:
GESTETNER - CS206/206D/206DE
RICOH - AFICIO 3006/4006/4106
SAVIN - SDC306/306A/306E

## SUBJECT: HANDLING OF THE DRUM POTENTIAL SENSOR

## GENERAL:

Please note of the following cautions in order to prevent damage to the Drum Potential Sensor and/or detection error.

## CAUTIONS:

- The sensor is very sensitive. If the sensor is dropped or the probe [ A ] is subject to shock in anyway, damage to the sensor may occur. Please handle it carefully and gently.
- Do not vacuum the Drum Potential Sensor.
- The Service Manual shows that Setting Powder is applied to the Drum in the Drum Unit. If the powder goes into the sensor through the window $[B]$ or accumulates around the window, it may cause the sensor to mal-detect the potential. Therefore, please apply the Setting Powder to the Drum before the Drum is set in the Drum Unit.
- If the Potential Sensor is not set correctly when installing the sensor in the Drum Unit, an error such as $20^{*}, 41^{*}$ or SC387 will result during the process control self-check.

NOTE: For 20* and 41* refer to page 7-3 in the Service Manual.

[A]

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A258/A259/A260-012
10/15/99
APPLICABLE MODEL:
GESTETNER - CS206/206D/206DE
RICOH - AFICIO 3006/4006/4106
SAVIN - SDC306/306A/306E

## SUBJECT: BLACK TONER END MAL-DETECTION \& ERROR 511 AT DEVELOPER INITIALIZATION

1. Black toner end mal-detection during developer initialization
2. Error code 511 during developer initialization

## CAUSES:

1. The Toner Supply Motor Gear $[A]$ and Toner Supply Gear $[B]$ are not properly engaged. This causes a toner supply problem. The Toner Supply Motor may have been incorrectly positioned and then secured in this position during the production stage. In such a case, the motor gear [A] would not engage the Toner Supply Gear $[B]$ and/or the gears would be engaged tight, causing the gear shafts $[C]$ to bend.
2. The Toner Supply Gear [B] is broken. When the Drawer Unit is inserted in the machine with the Development Unit located at the development position, the Toner Supply Gear [B] may contact the Motor Gear $[A]$ and may cause the gear $[B]$ to brake.


## SOLUTIONS:

|  | Production Countermeasure | Field Countermeasure |
| :--- | :--- | :--- |
| 1 | It has been ensured that the <br> motor was properly placed in <br> the correct position and <br> secured. This procedure has <br> been reflected in production <br> runs from April 1999 on ward. | During the installation of machines produced in February and March <br> of 1999, check whether the Toner Supply Motor is properly <br> positioned after the Drawer Unit is pulled out. Make sure that the <br> plastic part (black) [A] is correctly placed in the cutout of the Rear <br> Frame. <br> (Please refer to the picture on the first page). <br> If the motor is not correctly positioned, remove the motor. <br> If the gears on the motor shaft are properly engaged, reposition <br> the motor in the cutout properly. <br> If the gears on the motor shaft are not properly engaged or the <br> shafts have already been bent, replace the motor. |
| 2 | When inserting the Drawer Unit into the machine, place the Development Unit in a position so that <br> there is sufficient distance between the Development Sleeve and the Drum. Insert the Drawer Unit. <br> Rotate the revolver counterclockwise so that the actuator [B] is positioned inside the doted lines as <br> shown in the illustration. |  |



TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A258/A259/A260-013
10/15/99
APPLICABLE MODEL:
GESTETNER - CS206/206D/206DE
RICOH - AFICIO 3006/4006/4106
SAVIN - SDC306/306A/306E

- Noise from the Fusing Section
- The Oil Supply Roller does not rotate


## CAUSE:

Silicone Oil was not supplied to the Oil Supply Pad and the pad became dry. When the Upper Cover was installed, the cover pushed the Oil Supply Tube [A] and the tube bent as shown in Picture 3 (page 2).

## SOLUTION:

## PRODUCTION COUNTERMEASURE:

The length of the Oil Supply Tube will be modified from 290 mm to 265 mm .

## FIELD COUNTERMEASURE:

If the Oil Supply Tube [A] is routed as shown in Picture $1 \& 2$, the tube may bend when the Upper Cover $[B]$ is installed as shown in Picture 3 (page 2).
To prevent this, the Oil Supply Tube has to be routed as shown in Pictures 4 \& 5 (page 2).



Continued...

Tech Service Bulletin No. A258/A259/A260-013
Page 2 of 2


Picture 4


Picture 5


Picture 6


## APPLICABLE MODEL:

GESTETNER - CS206/206D/206DE
RICOH - AFICIO 3006/4006/4106
SAVIN - SDC306/306A/306E

## SUBJECT: TONER HOPPER SEAL

## SYMPTOM:

The Toner Hopper Seal may peel off as shown in the picture. This cause the fit of the Toner Bottle to be tight and/or the toner to leak or scatter.

## CAUSE:

The Toner Hopper Seal was not firmly attached to the Toner Hopper. This cased the seal to be torn off when the Toner Bottle was set.

## SOLUTION:

## PRODUCTION COUNTERMEASURE:



The production procedure has been improved and the Toner Hopper Seal was firmly attached by pressure. This modification was implemented from April 1999 production.

## FIELD COUNTERMEASURE:

If this problem is found in the field, replace the seal by following the procedure described below.

1. Remove the Toner Bottle.
2. Pull out the Drawer Unit.
3. Remove the damaged seal and clean the surface of the Toner Hopper where the seal is attached with alcohol.

NOTE: Make sure that no parts of the torn seal fall into the Toner Hopper. If this happens, white lines may result.
4. Attach the new seal. Make sure that it is properly
 fixed in place by pressing firmly.

NOTE: P/N A2593346 Toner Hopper Seal
5. Remove the Toner Collection Tray (saucer) and reassemble the parts removed.

NOTE: During the above procedure, take extra caution so your finger does not get caught between the Drawer Unit and Revolver.

BULLETIN NUMBER: A258/A259/A260-015
10/15/99
APPLICABLE MODEL:
GESTETNER - CS206/206D/206DE
RICOH - AFICIO 3006/4006/4106
SAVIN - SDC306/306A/306E

## SUBJECT: USER CODE PROGRAMMING INSTRUCTIONS

## GENERAL:

## A258 COPIER:

1. Press the USER TOOL BUTTON on Operation Panel.
2. Select COPY FEATURES.
3. Select GENERAL FEATURES.
4. Press NEXT until KEY OPERATOR TOOLS is displayed and select.
5. Press NEXT until ACCESSIBLE MODES is displayed and select.
6. Select the Color Modes that you want to restrict (a check mark indicates restricted). Press EXIT.
7. Select Program User Codes.
8. Enter the User Code you want to program and press OK.
9. Highlight the Color Mode(s) that you want this User Code to be able to use and press SELECT. When complete press EXIT.
10. Press the USER TOOL BUTTON on Operation Panel to exit User Tools.

## IF A KEY OPERATOR CODE IS REQUIRED (Needed For Security):

1. Press the USER TOOL BUTTON on Operation Panel.
2. Press SYSTEM SETTINGS.
3. Press NEXT until KEY OPERATOR TOOLS is displayed and select.
4. Select PROGRAM KEY OP-CODE.
5. Enter the Key Operator Code. Press OK.
6. Select KEY OP. ACCESS. Select ON. Press OK.
7. Press the USER TOOL BUTTON on Operation Panel to exit User Tools.

## A259 / A260 COPIER:

1. Follow steps 1 through 4 in the A258.
2. Under ACCESSIBLE MODES select the color modes that you want restricted (a darkened mode is restricted).
3. Select Program. Enter the User Code you want to program.
4. Highlight the Color Mode(s) that you want this User Code to be able to use.
5. Press the USER TOOL BUTTON on Operation Panel to exit User Tools.

IF A KEY OPERATOR CODE IS REQUIRED (Needed For Security):

1. Follow Steps 1 through 3 in the A258 Key Op Access.
2. Select ON. Enter the Key Operator Code and Press ENTER.
3. Press the USER TOOL BUTTON on Operation Panel to exit User Tools.

# Gestetner <br> SGMII 

RD®ロM TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A258/A259/A260-016
11/09/99

## APPLICABLE MODEL:

GESTETNER - CS206/206D/206DE
RICOH - AFICIO 3006/4006/4106
SAVIN - SDC306/306A/306E

## SUBJECT: SERVICE MANUAL - INSERT

## GENERAL:

The Service Manual page(s) listed below must be replaced with the page(s) supplied. Each bulletin package contains 1 set of replacement pages.

PAGES:

- C-12A~ C-13
- $\mathrm{C}-29 \sim \mathrm{C}-32$

Updated Information (Additional Service Codes - SC410)

Updated Information (Additional Service Codes - SC901/902)

| $\begin{aligned} & \hline \hline \text { SC } \\ & \text { No. } \end{aligned}$ | Item | Detection Conditions | Possible Causes | $\begin{gathered} \hline \text { Related } \\ \text { SCs } \end{gathered}$ | Troubleshooting Procedure | Type |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SC400 | Image transfer belt bias error | - Timing - <br> When the image transfer belt bias is on during printing or a process control self check <br> - Condition - <br> The feedback voltage is 4.8 V or higher, or the PWM value is $50 \%$ or higher (indicating a leak) for 500 ms continuously. | - Poor connection of connectors <br> - Defective high voltage supply board (T1,PCC) <br> - Defective I/O control board <br> - Defective main control board |  | 1. Check if the connectors of high voltage cables and trigger lines are properly connected on the high voltage supply board, I/O control board, and main control board. <br> 2. Clean the bias terminals. <br> 3. Replace the high voltage supply board (T1, PCC). <br> 4. Replace the I/O control board. <br> 5. Replace the main control board. <br> - Signals to Check - <br> - Feedback signal: CN277-B3, TP221, or CN214-A4 on I/O control board / CN302-A6 or TP158 on main control board. <br> - PWM: CN227-B4 or TP209 on I/O control board. | D |
| SC410 | Paper separation current leak | When the current leak is detected for 2 seconds while the paper separation corona is ON. | - Paper separation corona unit not set properly <br> - Corona wire broken <br> - Defective high voltage supply board (T2, D) <br> - Defective I/O control board <br> - Defective main control board |  | 1. Check to see if the separation corona unit is set properly. <br> 2. Replace the corona wire if it is broken. <br> 3. Check to see if the connectors are properly connected. <br> 4. Clean the receptacle. <br> 5. Replace the high voltage supply board (T2, D). <br> 6. Replace the I/O control board. <br> 7. Replace the main control board. <br> [Signal Check] <br> - CN227-A1 on I/O control board | D |

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| $\begin{aligned} & \hline \hline \text { SC } \\ & \text { No. } \end{aligned}$ | Item | Detection Conditions | Possible Causes | $\begin{gathered} \text { Related } \\ \text { SCs } \end{gathered}$ | Troubleshooting Procedure | Type |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SC422 | PCC leak | - Timing \& Condition When the current leak is detected for 2 seconds, leak detection starts 1 second after the PCC turns on. The leak signal is monitored twice at 1 second intervals. When the leak condition is detected twice continuously, this SC is displayed. | - PCC unit not properly set <br> - Corona wire broken <br> - Defective high voltage supply board (T1,PCC) <br> - Defective I/O control board <br> - Defective main control board |  | 1. Check if the PCC unit is properly instaled. <br> 2. Replace the corona wire if it is broken. <br> 3. Check if the connectors on the terminal and high voltage supply board (T1,PCC) are properly connected and if the cables are damaged. <br> 4. Clean the receptacle. <br> 5. Replace the high voltage supply board (T1,PCC). <br> 6. Replace the I/O control board. <br> 7. Replace the main control board. <br> - Signals to Check - <br> - Leak detection: CN227-B1 or TP294 on I/O control board. | D |


| $\begin{aligned} & \hline \hline \text { SC } \\ & \text { No. } \end{aligned}$ | Item | Detection Conditions | Possible Causes | $\begin{gathered} \hline \text { Related } \\ \text { SCs } \end{gathered}$ | Troubleshooting Procedure | Type |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SC741 | Optional paper tray unit error | The paper tray unit selfdiagnostics detect an error and notify the main control board. <br> Detection timing: Just after power is turned on or when the paper tray unit is running. | Defective paper tray unit control board |  | Replace defective paper tray unit control board. | B |
| SC790 | Projector lamp on error | - Timing \& Condition The projector lamp does not turn on 100 ms after 5 V is applied to it. | - Poor connection of connector <br> - Blown projector lamp <br> - Defective projector main board |  | 1. Check if the connector is properly connected. <br> 2. Replace the projector lamp if it is blown. <br> 3. Replace the projector main board. | B |
| SC791 | Projector lamp off error | - Timing \& Condition The projector lamp does not turn off 100 ms after it is turned off. | - Defective projector main board <br> - Defective scanner IPU board <br> - Defective main control board |  | 1. Replace the projector main board. <br> 2. Replace the scanner IPU board <br> 3. Replace the main control board | B |
| SC792 | Projector lamp overheated | - Timing \& Condition The projector lamp overheats during projector operation. | - Poor connection of connector <br> - Defective thermistor <br> - Defective projector main board |  | 1. Check if the connector of the fan is properly connected. <br> 2. Replace the fan if it is defective. <br> 3. Replace the thermistor if it is defective. <br> 4. Replace projector main board. | B |


| SC No. | Item | Detection Conditions | Possible Causes | Related SCs | Troubleshooting Procedure | Type |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SC901 | Upper total counter error | - Feedback signal stays LOW when the main switch is turned $\mathbf{O N}$. <br> - Feedback signal stays LOW just before the trigger signal goes ON. <br> - Feedback signal stays HIGH just before the trigger signal goes OFF. | - Poor connection of the connectors <br> - Defective counter |  | 1. Check if the connectors are properly set. <br> 2. Replace the total counter. | D |
| SC902 | Lower total counter error |  |  |  |  | D |

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## Temperature/Resistance Conversion Reference Table

| Relationship between the |
| :--- |
| temperatures |
| Temperature Lower-limit <br> Value Standard <br> Value Upper-limit <br> Value <br> 0 211.7 329.3 398.9 <br> 10 166.8 198.9 236.9 <br> 20 105.4 123.7 145.1 <br> 30 68.4 79.11 91.44 <br> 40 45.45 51.86 59.14 <br> 50 30.88 34.78 39.16 <br> 60 21.4 23.833 26.51 <br> 70 15.12 16.64 18.3 <br> 80 10.87 11.83 12.88 <br> 90 7.935 8.554 9.216 <br> 100 5.881 6.281 6.703 <br> 110 4.42 4.678 4.948 <br> 120 3.365 3.531 3.703 <br> 130 2.593 2.699 2.807 <br> 140 2.021 2.087 2.154 <br> 150 1.592 1.632 1.672 <br> 160 1.249 1.289 1.33 <br> 170 0.9849 1.0228 1.068 <br> 180 0.7912 0.8276 0.8652 <br> 190 0.6834 0.6719 0.7067 <br> 200 0.5184 0.5499 0.5818 | |  |
| :---: |

RTEPET TECHNICAL SERVICE BULLETIN

## APPLICABLE MODEL:

GESTETNER - CS206/206D/206DE
RICOH - AFICIO 3006/4006/4106
SAVIN - SDC306/306A/306E

## SUBJECT: SERVICE MANUAL - INSERT

## GENERAL:

The Service Manual page(s) listed below must be replaced with the page(s) supplied. Each bulletin package contains 1 set of replacement pages.

PAGES:
The revised areas have been highlighted by an arrow $\Rightarrow$.

- 1-28
- 2-79
- 6-51
- 6-82
- 7-3~7-4
- 8-9
- B-27
- B-46

Updated Information
Updated Information
Updated Information
Updated Information
Updated Information
Updated Information
Updated Information
Updated Information

## Belt Transfer Bias



The belt transfer bias mechanism uses a bias roller [A] to minimize the toner scattering around the transfer belt (scattering is reduced because lower voltages are used in this type of system than with a corona wire transfer system).
The high voltage supply board - T1, PCC [B] applies a voltage to the transfer belt through the bias roller, which is inside the transfer belt.
Color toners are superimposed on the transfer belt one at a time. The transfer voltage is increased as they are superimposed.
The transfer voltage is reduced between images to prolong the life of the belt cleaning unit (less dust and loose toner is attracted to the belt between images).
$\Longrightarrow$ In the printer mode, the speed of the belt is reduced by $1 / 3$, so the transfer voltage is adjusted to a value that matches the belt speed.
SC400: Belt transfer bias PP (high-voltage power supply: T1, PCC) error

10. Replace the transfer belt and reset the transfer belt bracket.

NOTE: When installing a new transfer belt, make sure that the belt rims at both ends are past the ends of the roller.
11. Turn the transfer belt release lever in the direction shown above [A], and apply setting powder $[\mathrm{B}]$ to the entire belt surface, before putting back the cleaning unit [C].
12. Attach the cleaning unit to the transfer belt unit and turn the joint section of the cleaning unit [D] in the direction shown above, to pressurize the blade.
13. After pressurizing the blade, rotate the belt one turn in the direction shown above [ E ] to orient the belt with the blade.
NOTE: Failure to execute steps 11 to 13 may cause the belt to catch on the blade. This will cause the LCD to display SC452 (transfer belt home position detection error) or the blade bracket may become bent.
$\Rightarrow$ 14. Set the belt tension release lever to the "Transfer Belt Install/Uninstall Position $[F]$ " and reinstall the transfer belt unit.

## Hint for reinstalling the transfer belt unit.

When installing the transfer belt unit, hold it up with one hand underneath at the rear and slide it in along the rails. If it is not held up, it will not engage the coupling gears properly.

### 6.11.2 MAIN PROGRAM DOWNLOADING



1. Turn off the main power switch on the copier.
2. Open the front cover and remove the transfer inner cover (see "Covers, Fans, and Filters").
3. Insert the Flash ROM card [A] that contains the new main program.

NOTE: Insert the Flash ROM card with side "B" facing right when viewed from the front.
4. Turn on the main power switch while keeping the front door open. This will force the machine to skip the process control initialization. When the system starts and the LCD displays the normal menu, close the front cover and go to SP5-827 to download the main program.
5. Select "OK" to start. Press " 1 " then "Enter" to download.
6. Wait until end of processing is indicated on the screen (approximately 3 minutes, depending on the size of the software).
7. When an end of processing message appears, turn the main power switch off and remove the Flash ROM card.
8. Replace all covers and turn on the main power switch.
9. Check the version of the software using SP7-801-001.

NOTE: If the download fails and the LCD does not display an "OK" message, turn the main power switch off again, remove and insert the Flash ROM card, then re-execute the download procedure. If it fails again, reprogram the Flash ROM card and re-execute the download procedure.

### 7.3 PROCESS CONTROL ERROR CONDITIONS

### 7.3.1 PROCESS CONTROL SELF-CHECK RESULTS (SP3-975-00)

Self-check results 03-975-00

| Displayed <br> Value | Item | Related <br> SP No. | Major Cause | Remarks |
| :---: | :--- | :--- | :--- | :--- |
| 1 | Successful | None |  |  |
| 99 | Forced termination (door <br> opened, etc.) | None | Power is turned off during self- <br> check. <br> Temporary main power failure |  |
| 100 | ID sensor offset error | ID sensor connector <br> disconnected | SC385 is <br> indicated. |  |
| 110 | Vsg adjustment error | $3-107$ | Dirty ID sensor, dirty drum, <br> foreign materials or flaws on the <br> drum | SC385 is <br> indicated. |
| 120 | Coating weight calculation <br> error | None | ID sensor noise interference, <br> defective development unit, <br> incorrect charge control unit <br> setup, development bias error |  |
| 130 | Vmin error | ID sensor noise interference, K <br> toner density too low |  |  |
| $20^{*}$ | $\gamma$ calculation error, invalid $\gamma$ <br> or Vk value | $3-122-$-xx | Development unit error, mixed <br> colors |  |
| 300 | Residual potential error <br> $31^{*}$ | $3-111-00$ | Drum anomaly, faulty LD unit, <br> poor grounding |  |
| $32^{*}$ | Vpl adjustment error | None | Drum deterioration, optical <br> fatigue |  |
| $40^{*}$ | Self-check process control $\gamma$ <br> (gamma) $\gamma$ <br> calculate) | None (unable to | Drum anomaly, faulty LD unit |  |
| $41^{*}$ | Self-check process control $\gamma$ <br> (gamma) error (out of range <br> condition) |  |  |  |

NOTE: 1:K, 2:Y, 3:C, and 4:M are displayed for the respective colors for items identified by an asterisk in the 'Displayed value' column of the table.

### 7.3.2 DEVELOPER SETUP RESULTS (SP3-964-00)

| Displayed Value | Item | Related SP No. | Major Cause | Remarks |
| :---: | :---: | :---: | :---: | :---: |
| 1 | Successful |  |  |  |
| 20* | Unable to perform calculation, invalid $\gamma$ (gamma) or Vk value |  | Development unit error, mixed colors |  |
| 31* | Vd adjustment error |  | Drum deterioration, optical fatigue |  |
| 32* | Vpl adjustment error |  | Drum anomaly, faulty LD unit |  |
| 40* | Self-check process control $\gamma$ (gamma) error (unable to calculate) |  | Same as process control selfcheck result. |  |
| 41* | Self-check process control $\gamma$ (gamma) error (out of range condition) |  | Same as process control selfcheck result. |  |
| 50* | Toner end condition, etc. |  | Toner end sensor actuated, toner end condition | Toner end condition detected during developer replenishment. |
| 51* | Toner supply error ( $\gamma$ (gamma) value will not go up when toner is replenished.) |  | Developer/toner supply mechanism error, toner supply motor cable disconnected | Re-run. |
| 52* | PS potential calculation error |  | Developer error, ID sensor or potential sensor error |  |
| 99 | Forced termination (door open, etc.) |  | Power turned off during selfcheck, temporary main power failure |  |
| 100 | ID sensor offset error |  | ID sensor cable disconnected |  |
| 110 | Vsg adjustment error |  | Dirty ID sensor, dirty drum, foreign materials or flaws on the drum |  |
| 120 | Coating weight calculation error |  | ID sensor noise interference, defective development unit, incorrect charge control unit setup, development bias error |  |
| 130 | Vmin error |  | ID sensor noise interference, BK toner density too low |  |
| 300 | Residual potential error |  | Drum anomaly, faulty LD unit, poor grounding |  |

[^13]
### 4.5 PAPER TRANSPORT MECHANISM



An independent motor called the belt drive motor [A] (a dc stepper motor) drives the transport belt [B]. The belt drive motor starts rotating soon after the copier sends an original feed-in signal.
Inside the transport belt are four pressure roller shafts, which achieve the proper amount of pressure between the belt and the original. The pressure roller shaft [C] closest to the left original scale is made of rubber for the stronger pressure that is required when in the thick original mode (this is the mode used for normal paper). The other rollers are sponge rollers.

Since the copier's original alignment position is at the left rear corner (not in the center), the originals fed from the DF must also be at this position. But if the original was to be fed along the rear scale, unnecessary original skew, jam or wrinkling may occur.

To prevent such problems, the original transfer position is set 3.5 mm away from the rear scale as shown. The correction for this 3.5 mm gap is compensated for by the position of the lens unit.

| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \hline \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 04-303: APS minimum size setting [APS Minimum size setting] |  |  |  |  |  |  |
| 04-303-00 | [0: Out of detection, 1: A5 L] | 0 | 0 to 1 | 1 |  | Specifies whether the original width is to be recognized as A5/HLT portrait when the original width sensor outputs are all set to OFF (A5R or smaller, or no original) in platen mode. If this SP is at 0 , no size is detected. |
| 04-417: IPU Test Ptrn Selection [IPU Test Ptrn Selection] |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| 04-417-00 | IPU test pattern setup [IPU Test Ptrn Selection] | 0 | 0 to 14 | 1 |  | $\begin{aligned} & 0=\text { No pattern (normal copy operation mode) } \\ & 1=\text { Grid pattern } \\ & 2=\text { Slanted Grid Pattern } \\ & 3=256 \text { gradation (Horizontal) } \\ & 4=256 \text { gradation (Vertical) } \\ & 5 \text { = Color patch } \\ & 6=\text { RGB gray scale (16 gradation steps) } \\ & 7=\text { YMCK-RGB } 16 \text { gradation } \\ & 8=\text { YMCK } 16 \text { gradation } \\ & 9=\text { YMCK } 128 \text { gradation } \\ & 10=\text { Same as } 1 \\ & 11 \text { = Same as } 8 \\ & 12=\text { Same as } 9 \\ & 13=\text { YMCK-RGB } 16 \text { gradation } \\ & 14=\text { YMCK } 128 \text { gradation } \\ & 1 . " \\ & \hline \end{aligned}$ |
| 04-426: RGB gain setup [RGB_GAIN] |  |  |  |  |  |  |
| 04-426-01 | [R_GAIN ODD] | 0 | 0 to 255 | 1 | Yes | Sets or displays the gain value of the amplifiers on the scanner IPU for odd and even pixels for each RGB color. <br> Do not adjust the factory settings. |
| 04-426-02 | [R_GAIN EVEN] | 0 | 0 to 255 | 1 | Yes |  |
| 04-426-03 | [G_GAIN ODD] | 0 | 0 to 255 | 1 | Yes |  |
| 04-426-04 | [G_GAIN EVEN] | 0 | 0 to 255 | 1 | Yes |  |
| 04-426-05 | [B_GAIN ODD] | 0 | 0 to 255 | 1 | Yes |  |
| 04-426-06 | [B_GAIN EVEN] | 0 | 0 to 255 | 1 | Yes |  |


| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \hline \hline \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 5-611: Toner Ratios in 2C mode [Toner Amount Ration in 2C] |  |  |  |  |  |  |
| 5-611-01 | [Cyan in Blue] | 90 |  |  |  | Determines the amounts of toner used to produce R, G, and B in 2C mode |
| 5-611-02 | [Magenta in Blue] | 80 |  |  |  |  |
| 5-611-03 | [Cyan in Green] | 90 |  |  |  |  |
| 5-611-04 | [Yellow in Green] | 80 |  |  |  |  |
| 5-611-05 | [Magenta in Red] | 100 |  |  |  |  |
| 5-611-06 | [Yellow in Red] | 80 |  |  |  |  |
| 5-612: [Scanner gamma selection] |  |  |  |  |  |  |
| 5-612-00 |  |  |  |  |  | Not used in this machine. |
| 05-801: [RAM Clear] |  |  |  |  |  |  |
| 05-801-01 | NVRAM Clear [NVRAM Clear] |  | 1: Clear |  |  | Returns the contents of the NV-RAM to the factorysettings. <br> See 'Replacement and Adjustment - System and Electronics - RAM Clear' for details on using this SP mode. |
| 05-802: [Free Run] |  |  |  |  |  |  |
| 05-802-1 | [Printer] |  | $\begin{aligned} & \text { 0: Stop } \\ & \text { 1: Start } \end{aligned}$ |  |  | Printer: Printer only System: Scanner and printer |
| 05-802-2 | [System] |  | $\begin{aligned} & \text { 0: Stop } \\ & \text { 1: Start } \end{aligned}$ |  |  |  |
| 05-803:Input tests [INPUT Chk] |  |  |  |  |  |  |
| 05-803 | [[INPUT Chk] |  |  |  |  | Refer to 'Service Tables - Input Check'. |
| 05-804: Output tests [OUTPUT Chk] |  |  |  |  |  |  |
| 05-804-xx |  |  |  |  |  | Refer to 'Service Tables - Output Check'. |
| NOTE: To perform a free run, Auto Paper Select and Auto Image Density must be set to "OFF" in User Tools, Copy Features, General Features, and Auto Text/Photo Mode must not be selected in Original Mode Priority and Auto Color Select must not be selected in Color Mode Priority. |  |  |  |  |  |  |

BULLETIN NUMBER: A258/A259/A260-018

## APPLICABLE MODEL:

GESTETNER - CS206/206D/206DE
RICOH - AFICIO 3006/4006/4106
SAVIN - SDC306/306A/306E

## SUBJECT: DEVELOPER SPILLAGE with SERVICE MANUAL - INSERT

## GENERAL:

IMPORTANT: To prevent developer spillage during installation and removal of the Developer Unit, the following cautions are being added to the Service Manual. Please follow these instructions very carefully to prevent developer from spilling from the Developer Unit.

The Service Manual pages listed below must be replaced with the pages supplied. Each bulletin package contains 1 set of replacement pages.

PAGES:
The revised areas have been highlighted by an arrow $\Rightarrow$.

- 3-14,15

Updated Information (Copier Installation)

## $\Rightarrow$

3. Remove the developer cover $[A]$ (2 screws).
4. Place the development unit [B] in the developer installation position [C] and pour in 1 bag ( 380 g ) of developer [D].
NOTE: Pour developer into the auger from the development roller side. This speeds the agitation of the developer and prepares it for use more quickly.
5. Place the development unit in the developer scoop-up position [E], rotate the sleeve in the direction of arrow [F] to scoop up developer, then check that the roller is evenly coated with developer from front to rear.
NOTE: Always place developer unit on a level surface.


NOTE: When attaching the developer cover [A], set the cover by pressing both sides [G] as shown below and make sure that the cover is positioned properly. There are 3 cutouts $[\mathrm{H}]$ on the developer cover. When positioning the cover on the development unit, each projection [I] on the development unit should be set into each cutout properly. If the developer cover is not set properly, developer may leak from the gap between the cover and development unit.


6. Replace the developer cover (2 screws) and put the development unit [A] in the drawer unit (2 lock screws [B]).

## $\triangle$ CAUTION

1. When replacing the developer cover, do not apply excessive force to the center [E] of the development unit. The doctor gap will bend, altering the developer scooping efficiency. Hold both sides [D].
2. Make sure that the developer locks (front and rear) are secured with screws before rotating the revolver. This protects the developer assembly and locks from damage.
3. Tighten the developer lock screws firmly. Loose lock screws will cause the PG (Photoconductor Gap) to fluctuate.
4. Remove the revolver stopper [C], rotate the revolver to the next color, then follow the developer installation procedure from step 1.

NOTE: The revolver unit rotates counterclockwise. Do NOT try to turn it in the other direction.

## $\triangle$ CAUTION

If you do not install the revolver stopper before removing the development unit, the revolver may rotate, causing permanent damage to the development unit or its holder.

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A258/A259/A260-019
12/20/99

## APPLICABLE MODEL:

GESTETNER - CS206/206D/206DE
RICOH - AFICIO 3006/4006/4106
SAVIN - SDC306/306A/306E

## SUBJECT: DRUM DAMAGE PREVENTION with SERVICE MANUAL - INSERT

## GENERAL:

IMPORTANT: To prevent damage to the Drum during installation and removal, the following cautions are being added to the Service Manual. Please follow these instructions very carefully to prevent damage to the Drum.

The Service Manual page listed below must be replaced with the page supplied. Each bulletin package contains 1 set of replacement pages.

PAGES:
The revised areas have been highlighted by an arrow $\Rightarrow$.

- 6-11

Updated Information (Pulling out the Revolver/Drum Drawer)

NOTE: 1) After pulling out the drawer unit, pull out the drum unit (2 connectors) and shield the drum unit from light with a black sheet or 5 (or more) white sheets of paper.
2) If the drawer unit is left out, the drum is exposed to light. This may cause optical fatigue, resulting in image anomalies (see "Troubleshooting - Drum Light Fatigue"). Therefore after pulling out the drawer unit, remove the drum unit (2 connectors) and cover it with a black sheet or 5 (or more) white sheets of paper.
3) When the revolver unit is rotated without removing the drum unit, the development sleeve may come in contact with the drum surface. This may cause damage to the drum and result in dotted spots on the copies. This is due to the fact that normally, the PG (gap between the drum and sleeve) is properly maintained when the drawer unit is in the machine. Therefore, please make sure that the drum unit is removed whenever servicing the revolver section.
4) Before installing the drum unit $[A]$ in the drawer unit, the revolver unit should be rotated so that the actuator $[B]$ is positioned in the sensor within the dotted lines as shown in the insert diagram below.
5) Release the transfer belt pressure whenever pulling out the drawer unit from the machine. If the drawer unit is pulled out without releasing the pressure, the drum and/or belt may be damaged.
6) Before closing the drawer unit, ensure that the revolver unit is in the home position as shown in the insert diagram below (within the dotted lines).

[B]

## TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A258/A259/A260-020
12/23/99
APPLICABLE MODEL:
GESTETNER - CS206/206D/206DE
RICOH - AFICIO 3006/4006/4106
SAVIN - SDC306/306A/306E

## SUBJECT: PARTS CATALOG UPDATES

- UPDATE 1: POWER SUPPLY CORD - The Power Supply Cord has been changed due to a vendor change. The following parts updates are being issued for all A258 Parts Catalogs. Please update your Parts Catalogs with the following information.

| A258 Only |  |  |  | REFERENCE |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE | ITEM |
| A1935711 | A2595608 | Power Supply Cord (120V) | 1 | 0 | 77 | 18 |
| A1935712 | A2595606 | Power Supply Cord (230V) | 1 | 0 | 77 | 18 |

## UNITS AFFECTED:

A258 Serial Number cut-in not available at time of publication.

- UPDATE 2: EMI REGULATION CHANGES - The following changes were made to meet EMI regulations. The illustration below shows the location for the new items on page 81. The following parts updates are being issued for all A258 Parts Catalogs. Please update your Parts Catalogs with the following information.


A258 Only

| REFERENCE |  |
| :---: | :---: |
| PAGE | ITEM |
| 83 | 22 |
| 83 | 19 |
| 83 | 22 |
| 79 | 9 |
| 79 | 9 |
| 79 | 7 |
| 29 | 17 |
| 81 | $25^{*}$ |
| 81 | $111^{*}$ |

[^14]Continued...

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## UNITS AFFECTED:

All A258 copiers manufactured after the Serial Numbers listed below will have the new style EMI parts installed during production.

| PART NUMBER | A2585464 <br> A2585468 <br> A2605236 | A2585513 | A2595835 <br> 04514008B |
| :---: | :--- | :--- | :--- |
| MODEL NAME | SERIAL NUMBER | SERIAL NUMBER | SERIAL NUMBER |
| Gestetner CS206 | 3B39070001 | 3B39040001 | 3B39040039 |
| Ricoh AFICIO 3006 | H0190500001 | H0190400001 | H0190400201 |
| Savin SDC306 | 3B39070001 | 3B39040001 | 3B39040039 |

- UPDATE 3: TOUCH PANEL - The Touch Panel has been changed due to a vendor change. The following parts updates are being issued for all A259 and A260 Parts Catalogs. Please update your Parts Catalogs with the following information.

| A259 and A260 Only |  |  |  | REFERENCE |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. NEW PART NO. DESCRIPTION QTY INT PAGE ITEM <br> A2591552 A2591551 Touch Panel 1 0 15 23 |  |  |  |  |  |  |

## UNITS AFFECTED:

All A259 and A260 copiers manufactured after the Serial Numbers listed below will have the new style Touch Panel installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS206D | 3B4910xxxx |
| Gestetner CS206DE | 3B59090001 |
| Ricoh AFICIO 4006 | H02910xxxxx |
| Ricoh AFICIO 4106 | H0390900001 |
| Savin SDC306A | 3B4910xxxx |
| Savin SDC306E | 3B59090001 |

- UPDATE 4: DUPLEX UNIT - The Duplex Unit has been added to the parts catalog. Also, two Large Plates were added to the Lower Guide to push the sheets of paper down. This will improve paper stacking with paper curl. The following parts updates are being issued for all A259 and A260 Parts Catalogs. Please update your Parts Catalogs with the following information.

| A259 and A260 Only | REFERENCE |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| PART NUMBER | DESCRIPTION | QTY | PAGE | ITEM |
| A2604540 | Duplex Unit - A4 | 1 | 63 | $*$ |
| A2604542 | Duplex Unit - LT | 1 | 63 | $*$ |

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A259 and A260 Only
REFERENCE

| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE | ITEM |
| :---: | :---: | :--- | :---: | :---: | :---: | :---: |
| A1344740 | A2604576 | Lower Guide Plate - LT | 1 | 1 | 63 | 15 |
|  | A2574918 | Large Plate | 2 | - | 63 | $24^{*}$ |

* Denotes new item number.


## UNITS AFFECTED:

All A259 and A260 copiers manufactured after the Serial Numbers listed below will have the new style Lower Guide Plate - LT and Large Plate installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS206D | 3B4905xxxx |
| Gestetner CS206DE | 3B59040001 |
| Ricoh AFICIO 4006 | H02905xxxxx |
| Ricoh AFICIO 4106 | H0390500001 |
| Savin SDC306A | 3B4905xxxx |
| Savin SDC306E | 3B59040001 |

- UPDATE 5: GEARS - The following parts updates are being issued for all A259 and A260 Parts Catalogs. Please update your Parts Catalogs with the following information.

| A259 and A260 Only |  |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | PAGE | ITEM |
| AB017519 |  | Gear - 29Z/108Z | 1 | 75 | 26 |
|  | $\rightarrow$ AB017521 | Gear - 23Z/108Z |  |  |  |
| AB017518 |  | Gear - 70Z/58Z | 1 | 75 | 28 |
|  | $\rightarrow$ AB017520 | Gear - 46Z/70Z |  |  |  |

## UNITS AFFECTED:

A259 and A260 Serial Number cut-ins were not available at time of publication.

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Page 4 of 7

- UPDATE 6: FUSE - The Fuse type was changed to improve reliability. The following part update is being issued for all A258, A259 and A260 Parts Catalogs. Please update your Parts Catalogs with the following information.

A258, A259 and A260
REFERENCE

| OLD PARTNO. | NEW PART NO. | DESCRIPTION | QTY | PAGE |  | ITEM |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | A258 | $\begin{aligned} & \hline \text { A259 } \\ & \text { A260 } \end{aligned}$ |  |
| 11070887 |  | Fuse - 250V 15A (120V) | $1 \rightarrow 0$ |  |  |  |
|  | \$11070629 | Fuse (Ceramic Case) 125V 15A (120V) | $0 \rightarrow 1$ | 79 | 3 | 108 |

## UNITS AFFECTED:

All A258, A259 and A260 copiers manufactured after the Serial Numbers listed below will have the new style Fuse (Ceramic Case) 125V 15A (120V) installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS206 | 3B39070001 |
| Gestetner CS206D | 3B4905xxxx |
| Gestetner CS206DE | 3B59070001 |
| Ricoh AFICIO 3006 | H0190700001 |
| Ricoh AFICIO 4006 | H02910xxxxx |
| Ricoh AFICIO 4106 | H0390700001 |
| Savin SDC306 | 3B39070001 |
| Savin SDC306A | 3B4910xxxx |
| Savin SDC306E | 3B59070001 |

- UPDATE 7: MAGNET CATCH PLATE - The Magnet Catch Plate was coming off when opening the Front Cover. To prevent this, the shape of the Plate was changed. The following part update is being issued for all A258, A259 and A260 Parts Catalogs. Please update your Parts Catalogs with the following information.


OLD


NEW

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A258, A259 and A260
REFERENCE

| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | PAGE | ITEM |
| :---: | :---: | :---: | :---: | :---: | :---: |
| A1661351 | A2591263 | Magnet Catch Plate | 1 | 11 | 12 |

## UNITS AFFECTED:

All A258, A259 and A260 copiers manufactured after the Serial Numbers listed below will have the new style Magnet Catch Plate installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS206 | 3B39070001 |
| Gestetner CS206D | 3B4908xxxx |
| Gestetner CS206DE | 3B59070001 |
| Ricoh AFICIO 3006 | H0190700001 |
| Ricoh AFICIO 4006 | H02908xxxxx |
| Ricoh AFICIO 4106 | H0390700001 |
| Savin SDC306 | 3B39070001 |
| Savin SDC306A | 3B4908xxxx |
| Savin SDC306E | 3B59070001 |

- UPDATE 8: INTERFACE BOARD - The following part update is being issued for all A258, A259 and A260 Parts Catalogs. Please update your Parts Catalogs with the following information.

A258, A259 and A260
REFERENCE

| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE |  | ITEM |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  | A258 | $\begin{aligned} & \text { A259 } \\ & \text { A260 } \end{aligned}$ |  |
| A2595416 | A2585416 | Interface Board - Css/bank | 1 | 0 | 77 | 81 | 13 |

## UNITS AFFECTED:

All A258, A259 and A260 copiers manufactured after the Serial Numbers listed below will have the new style Interface Board - Css/bank installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS206 | 3B39080001 |
| Gestetner CS206D | 3B4908xxxx |
| Gestetner CS206DE | 3B59080001 |
| Ricoh AFICIO 3006 | H0190800001 |
| Ricoh AFICIO 4006 | H02908xxxxx |
| Ricoh AFICIO 4106 | H0390800001 |
| Savin SDC306 | 3B39080001 |
| Savin SDC306A | 3B4908xxxx |
| Savin SDC306E | 3B59080001 |

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- UPDATE 9: DUCT SEALS - The Duct Seals and other parts listed below were added to the Exhaust Duct (P/N A2591097 and the Fan Motor (P/N AX640101) to reduce noise in Stand-By mode. The following parts updates are being issued for all A258, A259 and A260 Parts Catalogs. Please update your Parts Catalogs with the following information.


| A258, A259 and A260 |  |  | REFERENCE |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| PART NUMBER | DESCRIPTION | QTY | PAGE |  | ITEM |  |
|  |  |  | A258 | $\begin{aligned} & \text { A259 } \\ & \text { A260 } \end{aligned}$ | A258 | $\begin{aligned} & \text { A259 } \\ & \text { A260 } \end{aligned}$ |
| AA153116 | Duct Seal - 20x235 | 1 | 81 | 85 | 22 * | 23 * |
| AA153117 | Duct Upper Seal - 20x20 | 1 | 81 | 85 | 23 * | 24* |
| AA153118 | Duct Bottom Seal - 20x20 | 1 | 81 | 85 | 24 * | 25 * |
| AA161144 | O-ring - M4.42 | 2 | 33 | 29 | 30 * | 30 * |
| AA161145 | Rubber Cushion - M10 | 2 | 33 | 29 | 31 * | 31 * |
| A2591892 | Duct Upper Seal - 30x62 | 1 | 33 | 29 | 32* | 32 * |
| 08073073 | Washer - M4.5 | 2 | 33 | 29 | 107 * | 107 * |

* Denotes new item number.


## UNITS AFFECTED:

All A258, A259 and A260 copiers manufactured after the Serial Numbers listed below will have the new style Ducts Seals and other parts listed above installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS206 | 3B39080001 |
| Gestetner CS206D | 3B4909xxxx |
| Gestetner CS206DE | 3B59080001 |
| Ricoh AFICIO 3006 | H0190800096 |
| Ricoh AFICIO 4006 | H02909xxxxx |
| Ricoh AFICIO 4106 | H0390800001 |
| Savin SDC306 | 3B39080001 |
| Savin SDC306A | 3B4909xxxx |
| Savin SDC306E | 3B59080001 |

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- UPDATE 10: CLEANING BLADE - The part number for the Drum Cleaning Blade was changed due to a vendor change. The following part update is being issued for all A258, A259 and A260 Parts Catalogs. Please update your Parts Catalogs with the following information.

A258, A259 and A260
REFERENCE

| OLD PART <br> NO. | NEW PART <br> NO. | DESCRIPTION | QTY | INT | PAGE |  |  | ITEM |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| AD041058 | AD041063 | Cleaning Blade | 1 | 0 | 55 | A258 | A259/A260 |  |

## UNITS AFFECTED:

All A258, A259 and A260 copiers manufactured after the Serial Numbers listed below will have the new style Cleaning Blade installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS206 | 3B39100001 |
| Gestetner CS206D | 3B4911xxxx |
| Gestetner CS206DE | 3B591080001 |
| Ricoh AFICIO 3006 | H0191100001 |
| Ricoh AFICIO 4006 | H02911xxxxx |
| Ricoh AFICIO 4106 | H0391000001 |
| Savin SDC306 | 3B39100001 |
| Savin SDC306A | 3B4911xxxx |
| Savin SDC306E | 3B59100001 |

- UPDATE 11: TRANSPORT BELT - The part number for the Transport Belt was changed due to a vendor change. The following part update is being issued for all A258, A259 and A260 Parts Catalogs. Please update your Parts Catalogs with the following information.

| A258, A259 and A260 |  |  |  |  |  |  | REFERENCE |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART | NEW PART | DESCRIPTION | QTY | INT |  | GE | ITEM |
|  |  | DESCRIPTION | QTY | INT | A258 | A259/A260 | , |
| AA040028 | AA040029 | Transport Belt | 1 | 0 | 89 | 93 | 18 |

## UNITS AFFECTED:

All A258, A259 and A260 copiers manufactured after the Serial Numbers listed below will have the new style Transport Belt installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS206 | 3B39100001 |
| Gestetner CS206D | 3B4911xxxx |
| Gestetner CS206DE | 3B59100001 |
| Ricoh AFICIO 3006 | H0191100001 |
| Ricoh AFICIO 4006 | H02911xxxxx |
| Ricoh AFICIO 4106 | H0391000001 |
| Savin SDC306 | 3B39100001 |
| Savin SDC306A | 3B4911xxxx |
| Savin SDC306E | 3B59100001 |

## TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A258/A259/A260-021
01/17/2000
APPLICABLE MODEL:
GESTETNER - CS206/206D/206DE
RICOH - AFICIO 3006/4006/4106
SAVIN - SDC306/306A/306E

## SUBJECT: PARTS CATALOG UPDATES

- UPDATE 1: I/O CONTROL BOARD - A switch (SW1) has been added to the I/O Control Board. This switch does not affect the US model. The following part update is being issued for all A258 Parts Catalogs. Please update your Parts Catalogs with the following information.

A258 Only
REFERENCE

| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE | ITEM |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| A2595051 | A2595052 | I/O Control Board | 1 | 0 | 77 | 4 |

CAUTION: Do not change the position of this switch (SW1) and if the position of the switch (SW1) is changed with the Main Switch turned ON, the I/O Control Board will be damaged.

## UNITS AFFECTED:

All A258 copiers manufactured after the Serial Numbers listed below will have the new style I/O Control Board installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS206 | 3B39040001 |
| Ricoh AFICIO 3006 | H0190400001 |
| Savin SDC306 | 3B39040001 |

## - UPDATE 2:

TONER TRANSPORT SCREW - To improve toner collection, the material of the Toner Transport Screw was changed from plastic to metal. This change handles temperature better and prevents the toner from clumping. The following part update is being issued for all A258, A259 and A260 Parts Catalogs. Please update your Parts Catalogs with the following information.


Continued...

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## UNITS AFFECTED:

All A258, A259 and A260 copiers manufactured after the Serial Numbers listed below will have the new style Toner Transport Screw installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS206 | 3B39070001 |
| Gestetner CS206D | 3B4910xxxx |
| Gestetner CS206DE | 3B59070001 |
| Ricoh AFICIO 3006 | H0190700001 |
| Ricoh AFICIO 4006 | H02910xxxxx |
| Ricoh AFICIO 4106 | H0390700001 |
| Savin SDC306 | 3B39070001 |
| Savin SDC306A | 3B4910xxxx |
| Savin SDC306E | 3B59070001 |

- UPDATE 3: SPRING SPACER - The shape of the Spring Spacer was changed to reduce the mechanical play against the Pressure Spring. The following part update is being issued for all A258 Parts Catalogs. Please update your Parts Catalogs with the following information.


| A258 Only |  |  |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE | ITEM |
| A2594124 | A2594148 | Spring Spacer | 4 | 1 | 65 | 14 |

## UNITS AFFECTED:

All A258 copiers manufactured after the Serial Numbers listed below will have the new style Spring Spacer installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS206 | 3B39070001 |
| Ricoh AFICIO 3006 | H0190700001 |
| Savin SDC306 | 3B39070001 |

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- UPDATE 4: POWER PACK ASS'Y T2/D - The frequency of AC current for the Separation Corona has been changed to help prevent 8 mm banding in print mode. The following part update is being issued for all A258, A259 and A260 Parts Catalogs. Please update your Parts Catalogs with the following information.

| A258, A259 and A260 |  |  |  |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  | PAGE |  |  |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | A258 | $\begin{aligned} & - \\ & \hline \text { A259 } \\ & \text { A260 } \end{aligned}$ | ITEM |
| A2595055 | A2595058 | Power Pack Ass'y T2/D | 1 | 1 | 79 | 83 | 4 |

NOTE: When this modification was applied, instead of a part number change the suffix of the part number was changed from "D" to " $E$ ". Due to field requests, the part number was changed as shown in the above chart. There is complete interchangeability between A2595055E and A2595058. Part Number A2595055E was used in production and the table in UNITS AFFECTED shows the serial number cut-ins for this part.

NOTE: The suffix of part number AZ320095 printed on the Power Pack was changed from "A" to "B". The above modification was applied from AZ320095B.

## UNITS AFFECTED:

All A258, A259 and A260 copiers manufactured after the Serial Numbers listed below will have the new style Power Pack Ass'y T2/D installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS206 | 3B39080001 |
| Gestetner CS206D | 3B4909xxxx |
| Gestetner CS206DE | 3B59050001 |
| Ricoh AFICIO 3006 | H0190500091 |
| Ricoh AFICIO 4006 | H02909xxxxx |
| Ricoh AFICIO 4106 | H0390500101 |
| Savin SDC306 | 3B39080001 |
| Savin SDC306A | 3B4909xxx |
| Savin SDC306E | 3B59050001 |

## INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and <br> NEW machines. | 2 | NEW parts CAN NOT be used in OLD machines. <br> OLD parts can be used in OLD and NEW machines. |
| :---: | :---: | :---: | :--- |
| 1 | NEW parts can be used in OLD and NEW machines. <br> OLD parts CAN NOT be used in NEW machines. | 3 | OLD parts CAN NOT be used in NEW machines. <br> NEW parts CAN NOT be used in OLD machines. |
| $3 / S$ | 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 <br> previously modified, use the new part numbers individually. |  |  |

TECHNICAL SERVICE BULLETIN

## BULLETIN NUMBER: A258/A259/A260-022

## APPLICABLE MODEL:

GESTETNER - CS206/206D/206DE
RICOH - AFICIO 3006/4006/4106
SAVIN - SDC306/306A/306E

## SUBJECT: SERVICE MANUAL - INSERT

## GENERAL:

The Service Manual page listed below must be replaced with the page supplied. Each bulletin package contains 1 set of replacement pages.

PAGES:
The revised areas have been highlighted by an arrow $\Rightarrow$.

- 6-21


### 6.3.3 SCANNER IPU BOARD REPLACEMENT



1. Remove the right cover (see section 6.1).
2. A259/A260 only: Remove the shield plate [A] (3 screws).
3. Remove the Flash ROM card cover [B] (3 screws).
4. Disconnect the LD flat cable [C] and connector [D] (also disconnect CN312 [E] on the main control board for A260).
5. Pull out the IPU base slightly [F] (2 screws).
6. Disconnect CN404, CN407, and CN408 on the scanner IPU board (3 connectors).
$\Rightarrow \quad$ NOTE: Open CN408 carefully by using a small blade screwdriver.
7. Pull out the IPU base further and unplug 6 more connectors.
8. Fully pull out the IPU base [F], and unscrew the 8 screws on the scanner IPU board [G].
9. Take out the scanner IPU board [G] while turning it toward you, and disconnect the IDU connector $[\mathrm{H}]$.

## TECHNICAL SERVICE BULLETIN

## BULLETIN NUMBER: A258/A259/A260-023

## APPLICABLE MODEL:

GESTETNER - CS206/206D/206DE
RICOH - AFICIO 3006/4006/4106
SAVIN - SDC306/306A/306E

## SUBJECT: IPU BOARD CN408 BREAKAGE

## SYMPTOM:

Connector 408 [A] on the IPU Board is broken during servicing.

## CAUSE:

If the Connector 408 is opened by using a finger, it may break.

## SOLUTION:

Open the connector carefully by using a small blade screwdriver. See the photo below.

[A]

## TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A258/A259/A260-024
02/11/2000
APPLICABLE MODEL:
GESTETNER - CS206/206D/206DE
RICOH - AFICIO 3006/4006/4106
SAVIN - SDC306/306A/306E

## SUBJECT: PARTS CATALOG UPDATES

- UPDATE 1: DC MOTOR- The specification of the rotation speed stability for the DC Motor - DC 24V 20W has been improved to prevent 6 mm banding in print mode. The following parts updates are being issued for all A258, A259 and A260 Parts Catalogs. Please update your Parts Catalogs with the following information.

|  |  |  |  |  |  | EFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NUMBER | NEW PART NUMBER | DESCRIPTION | QTY | INT | PAGE |  | ITEM |
|  |  |  |  |  | A258 | A259/A260 |  |
| AX060162 | AX060197 | DC Motor - DC 24V 20W | 1 | 1 | 69 | 73 | 5 |

## UNITS AFFECTED:

All A258, A259 and A260 copiers manufactured after the Serial Numbers listed below will have the new style DC Motor installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS206 | 3B39100001 |
| Gestetner CS206D | 3B4911xxxx |
| Gestetner CS206DE | 3B59100001 |
| Ricoh AFICIO 3006 | H0191100001 |
| Ricoh AFICIO 4006 | H02911xxxxx |
| Ricoh AFICIO 4106 | H0391000001 |
| Savin SDC306 | 3B39100001 |
| Savin SDC306A | 3B4911xxxx |
| Savin SDC306E | 3B59100001 |

UPDATE 2:
GEARS- The Gears have been modified to solve the 12 mm banding that may occur in copy mode. The following parts updates are being issued for all A258 Parts Catalogs. Please update your Parts Catalogs with the following information.

| A258 Only |  |  |  |  | REFERENCE |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. NEW PART NO. DESCRIPTION QTY INT PAGE <br> ITEM      <br> AB017512 AB017521 Gear $-23 Z / 108 Z$ 1 1 71 <br> AB017477 AB017520 Gear $-46 Z / 70 Z$ 1 1 71 |  |  |  |  |  |

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## UNITS AFFECTED:

All A258 copiers manufactured after the Serial Numbers listed below will have the new style DC Motor installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS206 | 3B39020066 |
| Ricoh AFICIO 3006 | H0190200131 |
| Savin SDC306 | 3B39020066 |

## INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and <br> NEW machines. | 2 | NEW parts CAN NOT be used in OLD machines. <br> OLD parts can be used in OLD and NEW machines. |
| :---: | :--- | :---: | :--- |
| 1 | NEW parts can be used in OLD and NEW machines. <br> OLD parts CAN NOT be used in NEW machines. | 3 | OLD parts CAN NOT be used in NEW machines. <br> NEW parts CAN NOT be used in OLD machines. |
| $3 / S$ | 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 <br> previously modified, use the new part numbers individually. |  |  |

BULLETIN NUMBER: A258/A259/A260-025
02/11/2000

## APPLICABLE MODEL:

GESTETNER - CS206/206D/206DE
RICOH - AFICIO 3006/4006/4106
SAVIN - SDC306/306A/306E

## SUBJECT: BANDING

## GENERAL:

Occurrences of banding have been reported from the field ( $1.5-\mathrm{mm}, 6-\mathrm{mm}, 8-\mathrm{mm}$, and $12-\mathrm{mm}$ ). The causes for each type of banding are different. This Technical Service Bulletin explains how to verify each type and apply the corresponding solution.

SYMPTOM/CAUSE/SOLUTION:
No: This type of banding does not occur in this mode.

| Type | Mode |  | Cause | Solutions |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | Copy | Print |  | Production | In the field |
| $\begin{aligned} & 1.5- \\ & \mathrm{mm} \end{aligned}$ | No | Yes | The coupling of the Drum vibrates and generates a specific frequency. This frequency may cause 1.5mm banding only in $2 / 3$ speed mode. | The material of the coupling located in the Drum Shaft Holder (P/N A2592251) has been changed from plastic to metal. <br> P/N: A2592251 <br> NOTE: The part number has not been changed; but the old part was never stocked. | - Replace the Drum Shaft Holder. <br> P/N: A2592251 <br> Refer to page 5 of this bulletin. |
| 6-mm | No | Yes | The rotation speed stability of some Drum Motors may vary. If the rotation speed is not constant, the image development process is affected (especially in $2 / 3$ speed mode, causing 6-mm banding). | The rotation speed stability of the Drum Motor has been improved. <br> P/N changed: AX060162 -> AX060197 | - Replace the Drum Motor. <br> P/N AX060197 <br> Refer to page 6 of this bulletin. |
| 8-mm | No | Yes | The AC current of the Paper Separation Corona generates noise, which may affect the Paper Transfer Roller. If this occurs, the frequency of the AC current causes $8-\mathrm{mm}$ pitch banding only in $2 / 3$ speed mode. | The frequency of the AC current has been changed on the High Voltage Supply Board (T2, D). <br> P/N changed: A2595055 -> A2595058 | - Replace the High Voltage Supply Board (T2, D). P/N A2595058 <br> - If the new board is not available, rerouting the high voltage cable of the Paper Transfer Roller may solve the problem. If not, the board should be replaced with new type. <br> Refer to page 6 of this bulletin. |
| 12-mm | Yes | No | The frequency generated by the gears in the Drum Drive Unit may cause 12-mm banding only in standard speed mode. | The gears have been modified to reduce the specific frequency generated when the gears rotate. $\mathrm{P} / \mathrm{N}$ changed: AB017512 -> AB017521 AB017477 -> AB017520 | - Replace the gears with modified ones. <br> P/N AB017521 <br> P/N AB017520 <br> Refer to page 7 to 8 of this bulletin. |

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Please refer to "WORKFLOW" on page 3 for Troubleshooting Procedures.
NOTE: If the dark spots described in A258/A259/A260-008 appear on the outputs due to an inappropriate transfer bias setting, this may cause an uneven image that resembles a banding image. Please follow the procedures in A258/A259/A260-008 first, when dark spots appear on the outputs.

## UNITS AFFECTED:

All A258, A259 and A260 copiers manufactured after the Serial Numbers listed below will have the modifications specified in the chart on page 1 installed during production.
(A258)

| CODE | SERIAL NUMBER |  |  |  |
| :--- | :--- | :--- | :--- | :--- |
|  | 1.5-mm | 6-mm | 8-mm | 12-mm |
| CS206 | 3B39100001 | 3B39100001 | 3B39080001 | 3B39020066 |
| AFICIO 3006 | H0191100001 | H0191100001 | H0190500091 | H0190200131 |
| SDC306 | 3B39100001 | 3B39100001 | 3B39080001 | 3B39020066 |

(A259/A260)

| CODE |  |  |  |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :---: | :---: | :---: |
|  | $\mathbf{1 . 5 - m m}$ | 6-mm |  |  |  | 8-mm | $\mathbf{1 2 - m m}$ |
| CS206D | 3B4910XXXX | 3B4911XXXX | 3B4909XXXX | From the first <br> production |  |  |  |
| AFICIO 4006 | H02910XXXXX | H02911XXXXX | H02909XXXXX |  |  |  |  |
| SDC306A | 3B4910XXXX | 3B4911XXXX | 3B4909XXXX |  |  |  |  |
|  |  |  |  |  |  |  |  |
| CS206DE | 3B59100001 | 3B59100001 | 3B59050001 | From the first <br> production |  |  |  |
| AFICIO 4106 | H0390900001 | H0391000001 | H0390500101 |  |  |  |  |
| SDC306E | 3B59100001 | 3B59100001 | 3B59050001 |  |  |  |  |

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## WORKFLOW:



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## STEP [1] How to measure the width of the banding

1. Print the test pattern in SP Mode.

- SP5-955-018 : Set to "11" (1 dot main scan line)
- SP5-955-001 : Set to "90" or "128" (LD PWM value) depending on the image density on the output.
- SP2-920-000 : Set to "1" to print the test pattern in 600 dpi mode if the problem is related to the print mode.

2. Switch to copy mode and select B\&W and A3 (DLT) size mode. Then, print out the test pattern.
3. Select 5 or 10 bands $[A]$ which are visible on the test pattern printed out and measure them by using a suitable ruler. Calculate the width $[\mathrm{B}]$ of the banding by dividing the measured value by the number of bands (5 or 10).

NOTE: Use the following method to distinguish between 6-mm and 8-mm banding:
If the printed bands are not clearly visible and it is difficult to judge whether the width is 6 or 8 -mm, check if the banding disappears or is improved by disconnecting the connector [ C ] of the Paper Separation Corona.

- If the banding disappears or is improved, it is 8 - mm banding.
- If nothing is changed, it is 6 - mm banding.

NOTE: It is not likely that a paper jam will occur during the test. To help prevent the possibility of a jam, be certain to use only the recommended type of paper. After the testing is finished, make sure that the connector is re-connected properly.


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## Step [2] 1.5-mm Banding : Drum Shaft Holder Replacement Procedure

1. Pull out the Drawer Unit.

NOTE: Remove the Drum Unit and put some sheets of paper on the unit to protect it from light fatigue.
2. Follow steps 1-8 of the replacement procedure for $12-\mathrm{mm}$ banding (see page 7 of this bulletin.)
3. Remove the Receptacle [A] (1 screw).
4. Replace the Drum Shaft Holder [B] (6 screws).

## NOTE:

A total of 4 different plates have been prepared for both sides of the Drum Shaft Holder. The difference between [C] and [D] or between [E] and [F] is the thickness. The difference between [C] and [E] or between [D] and [F] is the shape. These differences exist so that the 4 plates can be easily distinguishable.
The Rear Frame, where the Drum Shaft Holder is installed, is slightly tilted. These springs are used to correct the angle of the frame.
The number of Spring Plates installed is different from machine to machine, depending on the angle at which the frame is tilted.
When replacing the Drum Shaft Holder, it is also necessary to transfer the existing plates to the new Drum Shaft Holder.


## Step [3] 6-mm Banding : Drum Motor Replacement Procedure

1. Remove the Rear Cover.
2. Remove the Stay [A].
3. Disconnect the connector from the Drum Motor [B] and replace the Motor.
[B]


## Step [4] 8-mm Banding : High Voltage Supply Board - T2/D Replacement Procedure

1. Remove the Rear Cover.
2. Replace the High Voltage Supply Board T2/D [A].

NOTE: If the part is not available, rerouting the High Voltage Cable [B] of the Paper Transfer Roller sometimes improves or solves the problem. If nothing changes, the High Voltage Supply Board should be replaced.


As explained, the frequency of the AC current has been changed. The suffix of the service part number for The High-Voltage Supply Board [A] was changed from "A2595055D" to "A2595055E".
For purposes of parts control in the field, the service part number has been changed from A2595055 to A2595058. This means that A2595055E and A2595058 are the exact same part. The part number printed on the High Voltage Supply Board (A2595055E and A2595058) is AZ320095B (the modified board).

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## Step [5] 12-mm Banding : Gear Replacement Procedure

1. Remove the following parts: Rear Covers, Fly-wheel [A] and the Stay [B]
2. Remove the 3 screws securing the PSU and the 4 screws securing the I/O Control Board. Then, move these two parts aside to make space to remove the Drum Drive Unit [C].

NOTE: It is not necessary to remove the PSU and I/O Control Board.
3. Disconnect the connector of the Drum Motor [D].
4. Rotate the Drum Motor counterclockwise manually so that the screw [E] of the Drum Pulley [F] faces downward.
5. Loosen the screw [G] and remove the Tension Spring [H].
6. Remove the Drum Motor (4 screws) and Drum Pulley (1 screw)
7. Remove the 3 connectors from the Drive Unit and remove the Unit (4 screws and 2 stud screws).
8. Remove the Tension Spring [I]. Then, remove the Unit Cover Plate [J] (3 screws).

## NOTE:

(1) Before opening the Drive Unit, make note of the routing of the Timing Belts as well as the positioning of the pulleys.
This will make it much easier to set the belts and pulleys back after the procedure.
(2) Do not open the Drive Unit completely. If this is done, the Timing Belt and pulleys will come off the unit. Open the cover just enough for gear replacement (See photo).
9. Replace the White and Black Gears $[\mathrm{K}]$. The Black Gear is secured by 2 screws.
[K]

10. Reinstall the Upper Cover Plate. Make sure that the heads $[A]$ of the studs are in position of the holes of the Cover Plate.

NOTE: Make sure that the Timing Belts $[B]$ are properly set as shown.
11. Reinstall the Drive Unit and Drum Pulley by pressing the Timing Belt [C] down as shown.
12. Reinstall the Drum Motor [D] (4 screws).
13. Set the Tension Spring $[E]$ and rotate the motor counterclockwise 5-6 times. Secure the screw [F].

NOTE: Before securing the screw, the motor should be rotated after hooking the spring. If this is not done, the proper tension will not be applied to the belt, causing the Timing Belt to jump during operation. This may cause a partial color shift image.
14. Reinstall all other parts removed.

[C]


BULLETIN NUMBER: A258/A259/A260-026

## APPLICABLE MODEL:

GESTETNER - CS206/206D/206DE
RICOH - AFICIO 3006/4006/4106
SAVIN - SDC306/306A/306E

## SUBJECT: PARTS CATALOG UPDATES

## GENERAL:

The following Parts Updates are being issued for all A258, A259, and A260 Parts Catalogs.

- UPDATE 1: Grid Cleaning Pad - The Grid Cleaning Pad [A] was added to the Drum Unit's upper frame [B] as shown in the illustration. This enables the service engineer to clean the Grid Plate.


| NEW PART NUMBER |  |  | REFERENCE |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | DESCRIPTION | QTY | PAGE |  | ITEM |
|  |  |  | A258 | A259/A260 |  |
| A2592311 | Grid Cleaning Pad | 0-1 | 53 | 49 | 12* |

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## UNITS AFFECTED:

All A258, A259, and A260 manufactured after the Serial Numbers listed below will have the new style Grid Cleaning Pad installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS206 | 3B39070001 |
| Gestetner CS206D | 3B4907XXXX |
| Gestetner CS206DE | 3B59060001 |
| Ricoh Aficio 3006 | H0190900001 |
| Ricoh Aficio 4006 | H02907XXXXX |
| Ricoh Aficio 4106 | H0390600001 |
| Savin SDC306 | 3B39070001 |
| Savin SDC306A | 3B4907XXXX |
| Savin SDC306E | 3B59060001 |

## - UPDATE 2 :

Belt Drive Roller - The diameter of the Belt Drive Roller has been changed from $45 \pm 0.05$ to $44.93 \pm 0.04 \mathrm{~mm}$ in order to improve the image quality (color shift between black and other colors).
If the diameter of the roller is greater than 45 mm , the Transfer Belt may slip when the Transfer Belt Cleaning Blade is released. This may cause the black line to shift from other colors.


| $\begin{gathered} \text { OLD PART } \\ \text { NO. } \end{gathered}$ | NEW PART NO. |  |  | INT | REFERENCE |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | DESCRIPTION | QTY |  | PAGE |  | ITEM |
|  |  |  |  |  | A258 | A259/A260 |  |
| A2596055 | A2596057 | Belt Drive Roller | 1 | 1 | 47 | 43 | 8 |

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## UNITS AFFECTED:

All A258, A259, and A260 manufactured after the Serial Numbers listed below will have the new style Belt Drive Roller installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS206 | 3B39100001 |
| Gestetner CS206D | 3B4911XXXX |
| Gestetner CS206DE | 3B59100001 |
| Ricoh Aficio 3006 | H0191100001 |
| Ricoh Aficio 4006 | H02911XXXX |
| Ricoh Aficio 4106 | H0391000001 |
| Savin SDC306 | 3B39100001 |
| Savin SDC306A | 3B4911XXXX |
| Savin SDC306E | 3B59100001 |

- UPDATE 3: Tension Spring - To prevent the Timing Belt from shuddering due to lack of tension during the copy process, the spring pressure has been increased.


| OLD PART NO. | NEW PARTNO. |  | QTY | INT | REFERENCE |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | DESCRIPTION |  |  | PAGE |  | ITEM |
|  |  |  |  |  | A258 | A259/A260 |  |
| AA060768 | AA060832 | Tension Spring | 1 | 1 | 71 | 75 | 21 |

## UNITS AFFECTED:

All A258, A259, and A260 manufactured after the Serial Numbers listed below will have the new type Tension Spring installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS206 | 3B39040001 |
| Gestetner CS206D | 3B4904XXXX |
| Gestetner CS206DE | 3B59040001 |
| Ricoh Aficio 3006 | H0190200257 |
| Ricoh Aficio 4006 | H02904XXXXX |
| Ricoh Aficio 4106 | H0390500001 |
| Savin SDC306 | 3B39040001 |
| Savin SDC306A | 3B4904XXXX |
| Savin SDC306E | 3B59040001 |

## SUBJECT: CURVED DARK BANDS OR UNEVEN IMAGE DENSITY

## SYMPTOM:

Curved dark bands [A] or uneven image density appear due to a dirty Charge Corona Unit.

[A]

NOTE: So far this problem has been reported only from the Japanese market. The problem occurred especially in environments where a humidifier (supersonic wave type) was used. After the moisture from the humidifier evaporates, a residue adheres to the Charge Corona Unit and causes this problem.

## SOLUTIONS:

As solution to this problem, two modifications have been applied. One involves SP mode and the other is a Grid Cleaning Pad. There are notes in this bulletin on how to apply these solutions to the field machines depending on the environment and/or the condition of the machine. Please investigate which solution (either or both) should be applied.

Solution [1] SP Mode:
The software has been modified and the following SP mode was added.

| SP No. | Item <br> [Displayed] | Default | Value Range | Step | SP7-902/3 | Description |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |

When setting SP3-980-00 to "1", the fan turns off 30 seconds after the Drum Motor stops or when the Energy Saver mode turns on. The fan turns on when the Drum Motor turns on or when the Energy Saver mode turns off. This SP mode can extend the time until the Charge Corona Unit is considered dirty.

Continued...

This software change has been implemented in the Main Firmware (Ver. 6.621) on the A258.

NOTE: This modification has been applied from the July production run. This software change has been implemented from the first mass production units on the A259/A260.

## Please read following notes when changing the setting of this SP mode.

- When activating this SP mode, the Transfer Belt Heater should be disconnected. This is because the temperature inside the machine tends to increase since the Charge Corona Fan turns off as explained above.


1. Remove the Lower Rear Cover.
2. Remove the Used Toner Bottle (1 connector).
3. Remove the High Voltage Supply Board -T2/ D [A] (1 screw and 2 connectors).
4. Disconnect the connector $[B]$ of the Heater located behind the High Voltage Supply Board.

- When activating this SP mode, please check the C/O (copies per original) in full color copy mode. The output signal from the ID sensor tends to fluctuate due to temperature changes inside machine. This may cause image the density to fluctuate if the $\mathrm{C} / \mathrm{O}$ is 20 (20 repeat copies) or more.


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## Solution [2] Grid Cleaning Pad:

In addition to the SP mode, a Grid Cleaning Pad (\#A2592311) has been added to the Upper Frame of the Drum Unit (as shown in the picture) from the June production run onward.
(Please refer to TSB A258/A259/A260-026 for the serial number cut-ins.)

This modification enables service technicians to clean the Grid Plate, by removing the screw holding Charge Corona Unit and pulling out the Charge Corona Unit letting the Grid Cleaning Pad to wipe the grid clean.

## Top View



NOTE: If the Charge Corona Unit is not set properly, it may cause an SC301 or a blank image problem. The Grid Cleaning Pad will be worn away while cleaning the grid plate and needs to be replaced at around 100th cleaning. Although this is a consumable part this part is not assigned as a PM part since the problem occurrence is very low.

## Installation Procedure:

1. Using alcohol, clean the Upper Frame of the Drum Unit where the Grid Cleaning Pad is attached.
2. Attach the Cleaning Pad $[A]$ as shown in the picture.

## TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A258/A259/A260-028
03/27/2000

## APPLICABLE MODEL:

GESTETNER - CS206/206D/206DE
RICOH - AFICIO 3006/4006/4106
SAVIN - SDC306/306A/306E

## SUBJECT: HOT ROLLER

Due to parts standardization, the part number for the Hot Roller has been changed. The following part update is being issued for all A258, A259 and A260 Parts Catalogs. Please update your Parts Catalogs with the following information.


| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | REFERENCE |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  | AGE | ITEM |
|  |  |  |  |  | A258 | A259/A260 | , |
| AE010025 | AE010020 | Hot Roller | 1 | 0 | 63 | 59 | 25 |

## UNITS AFFECTED:

A258, A259 and A260 Serial Number cut-ins were not available at time of publication.

## INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and <br> NEW machines. | 2 | NEW parts CAN NOT be used in OLD machines. <br> OLD parts can be used in OLD and NEW machines. |
| :---: | :--- | :---: | :--- |
| 1 | NEW parts can be used in OLD and NEW machines. <br> OLD parts CAN NOT be used in NEW machines. | 3 | OLD parts CAN NOT be used in NEW machines. <br> NEW parts CAN NOT be used in OLD machines. |
| $3 / S$ | 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 <br> previously modified, use the new part numbers individually. |  |  |

Gestetner

R1®(1)TM

TECHNICAL SERVICE BULLETIN

SaVIT

BULLETIN NUMBER: A258/A259/A260-029
03/29/2000
APPLICABLE MODEL:
GESTETNER - CS206/206D/206DE
RICOH - AFICIO 3006/4006/4106
SAVIN - SDC306/306A/306E

## SUBJECT: PARTS CATALOG UPDATES

## GENERAL:

The following parts corrections are being issued for all A258, A259, and A260 Parts Catalogs.

UPDATE 1: GEAR $\mathbf{- 2 2 Z}$ - Due to a vender change the Gear $-22 Z$ part number has changed.


|  |  |  |  |  | REFERENCE |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{gathered} \text { OLD PART } \\ \text { NO. } \end{gathered}$ | NEW PART NO. | DESCRIPTION | QTY | INT |  | AGE | ITEM |
|  |  |  |  |  | A258 | A259/A260 |  |
| AB014148 | AB013971 | Gear - 22Z | 1 | 0 | 63 | 59 | 19 |

## UNITS AFFECTED:

A258, A259, and A260 Serial Number cut-in not available at time of publication.

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- UPDATE 2: DUST FILTER - To improve the durability the filter, the material of the filter has been changed.


| $\begin{gathered} \text { OLD PART } \\ \text { NO. } \end{gathered}$ | NEW PART NO. |  |  |  | REFERENCE |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | DESCRIPTION | QTY | INT |  | AGE | ITEM |
|  |  |  |  |  | A258 | A259/A260 |  |
| A2591082 | A2591047 | Dust Filter | 1 | 1 | 81 | 85 | 12 |

## UNITS AFFECTED:

All A258, A259, and A260 copiers manufactured after the Serial Numbers listed below will have the new type Dust Filter installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS206 | 3B39110001 |
| Gestetner CS206D | 3B4912XXXX |
| Gestetner CS206DE | 3B59110001 |
| Ricoh Aficio 3006 | H0191100001 |
| Ricoh Aficio 4006 | H02912XXXXX |
| Ricoh Aficio 4106 | H0391100001 |
| Savin SDC306 | 3B39110001 |
| Savin SDC306A | 3B4912XXXX |
| Savin SDC306E | 3B59110001 |

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- UPDATE 3: REAR SCALE - The description for the Rear Scale listed in the parts catalog is incorrect. The correct description is "Rear Scale - A4", please change this in your parts catalog. Also, please add an additional Index No. 14 to the parts catalog as shown below.


| PART NUMBER |  | INCORRECT DESCRIPTION | CORRECT DESCRIPTION | PAGE |
| :---: | :---: | :---: | :---: | :---: |
| ITEM |  |  |  |  |
| A1341922 | Rear Scale | Rear Scale - A4 | 13 | 14 |


|  |  | REFERENCE |  |  |
| :---: | :---: | :---: | :---: | :---: |
| NEW PART NUMBER | DESCRIPTION | QTY | PAGE | ITEM |
| A1337157 | Rear Scale - LT | 1 | 13 | 14 |

## INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and <br> NEW machines. | 2 | NEW parts CAN NOT be used in OLD machines. <br> OLD parts can be used in OLD and NEW machines. |
| :---: | :--- | :--- | :--- |
| 1 | NEW parts can be used in OLD and NEW machines. <br> OLD parts CAN NOT be used in NEW machines. | 3 | OLD parts CAN NOT be used in NEW machines. <br> NEW parts CAN NOT be used in OLD machines. |
| $3 / S$ | 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 <br> previously modified, use the new part numbers individually. |  |  |

## BULLETIN NUMBER: A258/A259/A260-030

03/29/2000
APPLICABLE MODEL:
GESTETNER - CS206/206D/206DE
RICOH - AFICIO 3006/4006/4106
SAVIN - SDC306/306A/306E

## SUBJECT: SQUEAKING NOISE

## SYMPTOM:

A squeaking noise is generated in the Development Unit.

## CAUSE:

The vibration generated from the Doctor Blade during the development process is transferred to the upper cover. This results in a squeaking noise.

## SOLUTION:

To absorb the vibration four (4) foam rubber pads have been attached to each Development Covers.

## FIELD COUNTERMEASURE:

Follow the procedure below to install the foam rubber pads.

1. Make a full color copy and check when the noise occurs (i.e. at which color in the development process).
2. Turn off the main switch.
3. Pull out the Drawer Unit.
4. Remove the Drum Unit and place a few sheets of paper on the unit to prevent the Drum from developing light fatigue.
5. Remove the relevant Development Unit(s).
6. Remove the Development Cover [A] (3 screws).
7. Clean the areas on the front and reverse sides
 of the development cover where the pads will be attached with damp cloth and then dry.
8. Attach three (3) foam rubber pads $[B]$ to the reverse side of the Development Cover as shown.

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## Page 2 of 2

9. Reinstall the Development Cover and attach one foam rubber pad [C] to the front side of the cover, as shown.
10. Reassemble the machine.


## PRODUCTION COUNTERMEASURE:

The foam rubber pads have been attached to the Development Unit Covers during production.


## UNITS AFFECTED:

All A258, A259, and A260 copiers manufactured after the Serial Numbers listed below will have the Foam Rubber Pads installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS206 | 3B39110001 |
| Gestetner CS206D | 3B4001XXXX |
| Gestetner CS206DE | 3B59110001 |
| Ricoh Aficio 3006 | H0191100001 |
| Ricoh Aficio 4006 | H02001XXXXX |
| Ricoh Aficio 4106 | H0391100001 |
| Savin SDC306 | 3B39110001 |
| Savin SDC306A | 3B4001XXXX |
| Savin SDC306E | 3B59110001 |

## INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and <br> NEW machines. | 2 | NEW parts CAN NOT be used in OLD machines. <br> OLD parts can be used in OLD and NEW machines. |
| :---: | :--- | :--- | :--- |
| 1 | NEW parts can be used in OLD and NEW machines. <br> OLD parts CAN NOT be used in NEW machines. | 3 | OLD parts CAN NOT be used in NEW machines. <br> NEW parts CAN NOT be used in OLD machines. |
| $3 / S$ | 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 <br> previously modified, use the new part numbers individually. |  |  |

## TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A258/A259/A260-031
04/03/2000

## APPLICABLE MODEL:

GESTETNER - CS206/206D/206DE
RICOH - AFICIO 3006/4006/4106
SAVIN - SDC306/306A/306E

## SUBJECT: SERVICE MANUAL - INSERT

## GENERAL:

The Service Manual pages listed below must be replaced with the pages supplied. Each bulletin package contains 1 set of replacement pages.

PAGES:
The revised areas have been highlighted by an arrow $\Rightarrow$.

- TOC VI through IX Updated Information (Table of Contents)
- 2-3 Updated Information (Process Control - Removed ACC Runtime Process Control)
- 4-9 and $10 \quad$ Updated Information (5-114-000 Account Color Mode Setup)
- B-11 through B-19 Updated Information (SP Tables - Default values have been changed)
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## (2) Initial process control self check

The initial process control starts automatically when the power is turned on (or when the machine returns to standby mode from sleep mode), but only if the hot roller in the fusing unit is less than 100 degrees centigrade. This process control is done only when SP3-125 (Set Potential Control Method) is set to "0 (Auto)."

## (3) Interval process control self check

The interval process control starts automatically at the end of a copy job during which the total number of copies exceeds a preset value.
The preset value can be defined using SP3-973 (Set Process Control Self Check Interval). The factory setting is 150 sheets. The maximum possible interval is 500 sheets. Using a shorter interval reduces the machine's average copying speed. Setting the process control interval to 0 disables the interval process control.

## (4) Timed process control self check

The timer is reset to 6 hours after a process control self check, at the end of a copy job, when the power is switched on, after toner end recovery, or if the front door is opened and closed.
The 6-hour interval can be adjusted with SP 3-972.

### 4.4.5 5-955-002 TO 5-955-016 LD_PWM (16-GRADATION)

Defines the LD values for the 16 -gradations printed on test patterns SP5-955-018: 5, 16.
002: 1/15 (for the second grade)
003: $2 / 15$ (for the third grade)
004: 3/15 (for the fourth grade)
005: 4/15 (for the fifth grade)
006: $5 / 15$ (for the sixth grade)
007: 6/15 (for the seventh grade)
008: 7/15 (for the eighth grade)
009: 8/15 (for the ninth grade)
010: $9 / 15$ (for the tenth grade)
011: 10/15 (for the eleventh grade)
012: 11/15 (for the twelfth grade)
013: 12/15 (for the thirteenth grade)
014: 13/15 (for the fourteenth grade)
015: 14/15 (for the fifteenth grade)
016: 15/16 (for the sixteenth grade)

### 4.4.6 5-995-017 LD_PWM (COLOR PATCHES)

Defines the LD value for the color patch at the trailing edge of the test pattern (for SP5-955-018: 13)

## $\Rightarrow$ 4.4.7 5-114-000 ACCOUNT COLOR MODE SETUP

When the key counter has been installed, it is possible to select color mode(s) which are only accessible by using the key counter. The default for this SP is 15. This means that the key counter is always required when making copies.

| Setting | Black/White | Single Color | Twin Color | Full Color |
| :---: | :---: | :---: | :---: | :---: |
| 1 | Counter |  |  |  |
| 2 |  | Counter |  |  |
| 3 | Counter | Counter | Counter |  |
| 4 |  |  | Counter |  |
| 5 | Counter |  | Counter |  |
| 6 |  | Counter | Counter |  |
| 7 | Counter | Counter |  |  |
| 8 |  |  |  | Counter |


$\Longrightarrow$| Setting | Black/White | Single Color | Twin Color | Full Color |
| :---: | :---: | :---: | :---: | :---: |
| 9 | Counter |  |  | Counter |
| 10 |  | Counter |  | Counter |
| 11 | Counter | Counter |  | Counter |
| 12 |  |  | Counter | Counter |
| 13 | Counter |  | Counter | Counter |
| 14 |  | Counter | Counter | Counter |
| 15 | Counter | Counter | Counter | Counter |

Counter: A key counter is required to make copies. The number is then counted up by the key counter.
No Mark: Copies can be made without a key counter.

1. Before setting SP5-114-000, SP5-113-000 Key Counter must be selected. For example, set to 2 (= Key Counter) when you use Key Counter.
2. When SP5-104-000 (A3/DLT Double Count) is set to 1 (Double Count), the electrical counters of the operation panel, the mechanical counters and also a key counter count up double for A3/DLT (Ver 1.612 Firmware or greater).

### 4.5 USER TOOL

### 4.5.1 USER TOOL MENU

## System settings

| Menu |  |
| :---: | :---: |
| Panel Tone |  |
| Ready/Tone |  |
| Copy Count Display |  |
| System Reset |  |
| Function Reset |  |
| Control Panel Off |  |
| Auto Timer |  |
| Tray Paper Size |  |
| Tray Priority |  |
| Auto Tray Switch |  |
| Interleave Print |  |
| Output Tray Prio. <br> (For 3-bin sorter only) |  |
| Display Contrast |  |
| 3 Side Full Bleed |  |
| Bypass Custom Size |  |
| Key Operator Tools | Key Op. Access |
|  | Program Key Op Code |
| AOF (Keep it on) | Pre |



| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \hline \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 02-310: Paper transfer bias setup [Belt transfer bias] |  |  |  |  |  |  |
| 02-310-01 | Paper transfer forced environment switchover <br> [Paper transfer bias] | 1 | 0 to 3 | 1 |  | Specifies whether the transfer bias is to be switched according to the detected value from the humidity sensor, or whether it is to stay fixed at the values for normal or low humidity (these values depend on the settings of SP2-316). <br> 0: No environment switching, kept at standard conditions <br> 1: Conditions depend on the sensor (default) <br> 2: No environment switching, kept at low humidity conditions <br> 3: No environment switching, kept at high humidity conditions |
| 02-310-02 | Image area: Normal paper: 1C [NRML 1C] | $10 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes | Adjusts the paper transfer belt bias for various paper types and modes. <br> 3C mode: Used in twin colour modes ( $\mathrm{Bk} / \mathrm{R}, \mathrm{Bk} / \mathrm{G}$, or Bk/B) <br> Adjust only if there are problems with insufficient transfer in the image area of the copy for a particular paper type or mode, or in response to field problems as directed by technical support staff. |
| 02-310-03 | Image area: Normal paper: 2C [NRML 2C] | $18 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-310-04 | Image area: Normal paper: 4C [NRML 3C] | $18 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-310-05 | Image area: Normal paper: 1C [NRML 4C] | $18 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-310-06 | Image area: Thick paper: 1C [THICK 1C] | $8 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-310-07 | Image area: Thick paper: 2C [THICK 2C] | $10 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-310-08 | Image area: Thick paper: 3C [THICK 3C] | $10 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-310-09 | Image area: Thick paper: 4C [THICK 4C] | $10 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-310-10 | $\begin{aligned} & \text { Image area: OHP:1C } \\ & \text { [OHP 1C] } \end{aligned}$ | $8 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-310-11 | $\begin{aligned} & \text { Image area: OHP:2C } \\ & \text { [OHP 2C] } \end{aligned}$ | $10 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes |  |


| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \hline \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 02-310-12 | $\begin{aligned} & \text { Image area: OHP:3C } \\ & \text { [OHP 3C] } \end{aligned}$ | $10 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes | Adjusts the paper transfer belt bias for various paper types and modes. |
| 02-310-13 | $\begin{aligned} & \text { Image area: OHP:4C } \\ & \text { [OHP 4C] } \end{aligned}$ | $10 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes | 3C mode: Used in twin colour modes (Bk/R, Bk/G, or |
| 02-310-14 | Image area: $2 / 3$ speed: 1C [NRML_2/3 1C] | $10 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes | Bk/B) |
| 02-310-15 | Image area: 2/3 speed: 2C [NRML_2/3 2C] | $18 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes | Adjust only if there are problems with insufficient transfer in the image area of the copy for a particular |
| 02-310-16 | Image area: $2 / 3$ speed: 3 C [NRML_2/3 3C] | $18 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes | paper type or mode, or in response to field problems as directed by technical support staff. |
| 02-310-17 | Image area: 2/3 speed: 4C <br> [NRML_2/3 4C] | $18 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-310-18 | Image area: Normal paper, back side: 1C <br> [NRML Back 1C] | $12 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-310-19 | Image area: Normal paper, back side: 2C <br> [NRML Back 2C] | $15 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-310-20 | Image area: Normal paper, back side: 3C <br> [NRML Back 3C] | $15 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-310-21 | Image area: Normal paper, back side: 4C <br> [NRML Back 4C] | $15 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-310-22 | Image area: Thick paper: back side: 1C <br> [THICK Back 1C] | $7 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-310-23 | Image area: Thick paper: back side: 2C <br> [THICK Back 2C] | $9 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-310-24 | Image area: Thick paper: back side: 3C <br> [THICK Back 3C] | $9 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes |  |


| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \hline \hline \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 02-310-25 | Image area: Thick paper: back side: 4C <br> [THICK Back 4C] | $9 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes | Adjusts the paper transfer belt bias for various paper types and modes. <br> 3C mode: Used in twin colour modes (Bk/R, Bk/G, or Bk/B) <br> Adjust only if there are problems with insufficient transfer in the image area of the copy for a particular paper type or mode, or in response to field problems as directed by technical support staff. |
| 02-310-26 | Image area: $2 / 3$ speed: back side: 1C [NRML_2/3 Back 1C] | $10 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-310-27 | Image area: $2 / 3$ speed: back side: 2C [NRML_2/3 Back 2C] | $15 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-310-28 | Image area: 2/3 speed: back side: 3C [NRML_2/3 Back 3C] | $15 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-310-29 | Image area: $2 / 3$ speed: back side: 4 C [NRML_2/3 Back 4C] | $15 \mu \mathrm{~A}$ | 1 to $50 \mu \mathrm{~A}$ | 1 | Yes |  |
|  |  |  |  |  |  |  |
| 02-311: [Fo | ced Belt Cleaning] |  |  |  |  |  |
| 02-311-00 | Lubricant application |  |  | $\begin{gathered} \text { 0: OFF } \\ \text { 1: ON } \end{gathered}$ | - | Lubricates the image transfer belt. Do this when a partially blank printout occurs. |
|  |  |  |  |  |  |  |
| 02-313: Рар | er transfer paper size correction [P.T.B.: | per Size | rrection] |  |  |  |
| 02-313-01 | Normal paper: LT Sideways or larger [NRML over LT Sideways] | 100\% | 10 to 400\% | 1 |  | Paper transfer bias correction factors for various paper types and sizes. |
| 02-313-02 | Normal paper: B4 or larger [NRML over B4] | 100\% | 10 to 400\% | 1 |  | Adjust only if there are problems with insufficient transfer for a particular paper type, or in response to |
| 02-313-03 | Normal paper: A4 Lengthwise or larger [NRML over A5 Lengthwise] | 200\% | 10 to 400\% | 1 |  | field problems as directed by technical support staff. |
| 02-313-04 | Normal paper: Less than A4 Lengthwise <br> [NRML under A5 Lengthwise] | 250\% | 10 to 400\% | 1 |  |  |
| 02-313-05 | Thick paper: LT Sideways or larger [THICK over LT Sideways] | 100\% | 10 to 400\% | 1 |  |  |
| 02-313-06 | Thick paper: B4 or larger [THICK over B4] | 100\% | 10 to 400\% | 1 |  |  |
| 02-313-07 | Thick paper: A4 Lengthwise or larger [THICK over A5 Lengthwise] | 250\% | 10 to 400\% | 1 |  |  |


| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \hline \hline \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 02-313-08 | Thick paper: Less than A4 Lengthwise [THICK under A5 Lengthwise] | 300\% | 10 to 400\% | 1 |  | Paper transfer bias correction factors for various paper types and sizes. <br> Adjust only if there are problems with insufficient transfer for a particular paper type, or in response to field problems as directed by technical support staff. |
| 02-313-09 | OHP:LT Sideways or larger [OHP over LT Sideways] | 100\% | 10 to 400\% | 1 |  |  |
| 02-313-10 | OHP:B4 or larger [OHP over B4] | 100\% | 10 to 400\% | 1 |  |  |
| 02-313-11 | OHP:A4 Lengthwise or larger [OHP over A5 Lengthwise] | 270\% | 10 to 400\% | 1 |  |  |
| 02-313-12 | OHP: Less than A4 Lengthwise [OHP under A5 Lengthwise] | 270\% | 10 to 400\% | 1 |  |  |
|  |  |  |  |  |  |  |
| 02-314: Pap | transfer leading edge area correction | per Tran | ias: Leading | dge] |  |  |
| 02-314-01 | Normal paper: 1C [NRML 1C] | $0 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes | For the paper leading edge, this correction value is added to the paper transfer image area setting. |
| 02-314-02 | Normal paper: 2C [NRML 2C] | $0 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes | Adjust only if there are problems with insufficient transfer at the leading edge of the copy for a |
| 02-314-03 | $\begin{aligned} & \text { Normal paper: 3C } \\ & \text { [NRML 3C] } \\ & \hline \end{aligned}$ | $0 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes | particular paper type or mode, or in response to field problems as directed by technical support staff. |
| 02-314-04 | $\begin{aligned} & \text { Normal paper: 4C } \\ & \text { [NRML 4C] } \\ & \hline \end{aligned}$ | $0 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes | 3C mode: Used in twin colour modes (Bk/R, Bk/G, or |
| 02-314-05 | Thick paper: 1C [THICK 1C] | $3 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes | Bk/B) |
| 02-314-06 | Thick paper: 2C [THICK 2C] | $0 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-314-07 | Thick paper: 3C [THICK 3C] | $0 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-314-08 | Thick paper: 4C [THICK 4C] | $0 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-314-09 | $\begin{aligned} & \mathrm{OHP}: 1 \mathrm{C} \\ & \text { [OHP 1C] } \end{aligned}$ | $0 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-314-10 | $\begin{aligned} & \mathrm{OHP}: 2 \mathrm{C} \\ & \text { [OHP 2C] } \end{aligned}$ | $0 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |


| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 02-314-11 | $\begin{aligned} & \mathrm{OHP:} \mathrm{3C} \\ & \text { [OHP: 3C] } \end{aligned}$ | $0 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes | For the paper leading edge, this correction value is added to the paper transfer image area setting. |
| 02-314-12 | $\begin{aligned} & \mathrm{OHP:} \mathrm{4C} \\ & \text { [OHP: 4C] } \end{aligned}$ | $0 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes | Adjust only if there are problems with insufficient transfer at the leading edge of the copy for a |
| 02-314-13 | 2/3 speed: 1C [NRML_2/3 1C] | $0 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes | particular paper type or mode, or in response to field problems as directed by technical support staff. |
| 02-314-14 | 2/3 speed: 2C [NRML_2/3 2C] | $0 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes | 3C mode: Used in twin colour modes ( $\mathrm{Bk} / \mathrm{R}, \mathrm{Bk} / \mathrm{G}$, or |
| 02-314-15 | 2/3 speed: 3C [NRML_2/3 3C] | $0 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes | Bk/B) |
| 02-314-16 | 2/3 speed: 4C [NRML_2/3 4C] | $0 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-314-17 | Normal paper: back side: 1C [NRML Back 1C] | $0 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-314-18 | Normal paper: back side: 2C [NRML Back 2C] | $2 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-314-19 | Normal paper: back side: 3C [NRML Back 3C] | $2 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-314-20 | Normal paper: back side: 4C [NRML Back 4C] | $2 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-314-21 | Thick paper: back side: 1C [THICK Back 1C] | $2 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-314-22 | Thick paper: back side: 2C [THICK Back 2C] | $4 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-314-23 | Thick paper: back side: 3C [THICK Back 3C] | $4 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-314-24 | Thick paper: back side: 4C [THICK Back 4C] | $4 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-314-25 | 2/3 speed: back side: 1C [NRML_2/3 Back 1C] | $0 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-314-26 | 2/3 speed: back side: 2C [NRML_2/3 Back 2C] | $0 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |


| SP No. | Item <br> [Display] | Default <br> Value | Value Range | Step | SP7- <br> 902/3 | Description |
| :---: | :--- | :---: | :---: | :---: | :---: | :--- |
| 02-314-27 | 2/3 speed: back side: 3C <br> [NRML_2/3 Back 3C] | $0 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes | For the paper leading edge, this correction value is <br> added to the paper transfer image area setting. |
| 02-314-28 | 2/3 speed: back side: 4C <br> [NRML_2/3 Back 4C] | $0 \mu \mathrm{~A}$ | -20 to 40 $\mu \mathrm{A}$ | 1 | Yes | Adjust only if there are problems with insufficient <br> transfer at the leading edge of the copy for a <br> particular paper type or mode, or in response to field <br> problems as directed by technical support staff. |
| 3C mode: Used in twin colour modes (Bk/R, Bk/G, or |  |  |  |  |  |  |


| 02-315: Paper transfer trailing edge correction [Paper Trans Bias: Trail Edge] |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 02-315-01 | Normal paper: 1C [NRML 1C] | $-1 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes | For the paper trailing edge, this correction value is added to the paper transfer image area setting. Adjust only if there are problems with insufficient transfer at the trailing edge of the copy for a particular paper type or mode, or in response to field problems as directed by technical support staff. <br> 3C mode: Used in twin colour modes ( $\mathrm{Bk} / \mathrm{R}, \mathrm{Bk} / \mathrm{G}$, or Bk/B) |
| 02-315-02 | Normal paper: 2C [NRML 2C] | $-1 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-315-03 | Normal paper: 3C [NRML 3C] | $-1 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-315-04 | Normal paper: 4C [NRML 4C] | -1 $\mu \mathrm{A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-315-05 | Thick paper: 1C [THICK 1C] | -1 $\mu \mathrm{A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-315-06 | Thick paper: 2C [THICK 2C] | -1 $\mu \mathrm{A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-315-07 | Thick paper: 3C [THICK 3C] | -1 $\mu \mathrm{A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-315-08 | Thick paper: 4C [THICK 4C] | $-1 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-315-09 | $\begin{aligned} & \mathrm{OHP}: 1 \mathrm{C} \\ & \text { [OHP 1C] } \end{aligned}$ | -1 $\mu \mathrm{A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-315-10 | $\begin{aligned} & \mathrm{OHP}: 2 \mathrm{C} \\ & \text { [OHP 2C] } \end{aligned}$ | $-1 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-315-11 | $\begin{aligned} & \mathrm{OHP}: 3 \mathrm{C} \\ & \text { [OHP 3C] } \end{aligned}$ | -1 $\mu \mathrm{A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |


| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \hline \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 02-315-12 | $\begin{aligned} & \text { OHP: 4C } \\ & \text { [OHP 4C] } \end{aligned}$ | -1 $\mu \mathrm{A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes | For the paper trailing edge, this correction value is added to the paper transfer image area setting. |
| 02-315-13 | $\begin{aligned} & \text { 2/3 speed: } 1 \mathrm{C} \\ & {[\text { NRML_2/3 1C] }} \end{aligned}$ | -1 $\mu \mathrm{A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes | Adjust only if there are problems with insufficient transfer at the trailing edge of the copy for a particular |
| 02-315-14 | $\begin{aligned} & \text { 2/3 speed: 2C } \\ & \text { [NRML_2/3 2C] } \end{aligned}$ | -1 $\mu \mathrm{A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes | paper type or mode, or in response to field problems as directed by technical support staff. |
| 02-315-15 | $\begin{aligned} & \text { 2/3 speed: 3C } \\ & \text { [NRML_2/3 3C] } \end{aligned}$ | -1 $\mu \mathrm{A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes | 3C mode: Used in twin colour modes ( $\mathrm{Bk} / \mathrm{R}, \mathrm{Bk} / \mathrm{G}$, or |
| 02-315-16 | 2/3 speed: 4C [NRML_2/3 4C] | -1 $\mu \mathrm{A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes | Bk/B) |
| 02-315-17 | Normal paper: back side: 1C [NRML Back 1C] | -1 $\mu \mathrm{A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-315-18 | Normal paper: back side: 2C [NRML Back 2C] | -1 $\mu \mathrm{A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-315-19 | Normal paper: back side: 3C [NRML Back 3C] | -1 $\mu \mathrm{A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-315-20 | Normal paper: back side: 4C [NRML Back 4C] | -1 $\mu \mathrm{A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-315-21 | Thick paper: back side: 1C [THICK Back 1C] | -1 $\mu \mathrm{A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-315-22 | Thick paper: back side: 2C [THICK Back 2C] | -1 $\mu \mathrm{A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-315-23 | Thick paper: back side: 3C [THICK Back 3C] | -1 $\mu \mathrm{A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-315-24 | Thick paper: back side: 4C [THICK Back 4C] | -1 $\mu \mathrm{A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-315-25 | 2/3 speed: back side: 1C [NRML_2/3 Back 1C] | -1 $\mu \mathrm{A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-315-26 | 2/3 speed: back side: 2C [NRML_2/3 Back 2C] | -1 $\mu \mathrm{A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |
| 02-315-27 | 2/3 speed: back side: 3C [NRML_2/3 Back 3C] | -1 $\mu \mathrm{A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes |  |


| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \hline \hline \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 02-315-28 | 2/3 speed: back side: 4C [NRML_2/3 Back 4C] | $0 \mu \mathrm{~A}$ | -20 to $40 \mu \mathrm{~A}$ | 1 | Yes | For the paper trailing edge, this correction value is added to the paper transfer image area setting. Adjust only if there are problems with insufficient transfer at the trailing edge of the copy for a particular paper type or mode, or in response to field problems as directed by technical support staff. <br> 3C mode: Used in twin colour modes (Bk/R, Bk/G, or Bk/B) |
| 02-316: Paper transfer bias: environmental correction [P.T.B.Correction:Humidity] |  |  |  |  |  |  |
| 02-316-01 | [Low-Hum NRML 1C] | 100 | 10 to 400 |  |  | Corrects the paper transfer belt bias for the type of paper and copy mode depending on the humidity. Adjust if there are transfer problems for all modes in a certain humidity condition. <br> These settings are used in conjunction with SP 2-310-1. <br> 2/3 speed: Printer mode |
| 02-316-02 | [Low-Hum NRML 4C] | 89 | 10 to 400 |  |  |  |
| 02-316-03 | [Low-Hum THICK 1C] | 100 | 10 to 400 |  |  |  |
| 02-316-04 | [Low-Hum THICK 4C] | 100 | 10 to 400 |  |  |  |
| 02-316-05 | [Low-Hum OHP 1C] | 75 | 10 to 400 |  |  |  |
| 02-316-06 | [Low-Hum OHP 4C] | 89 | 10 to 400 |  |  |  |
| 02-316-07 | [Low-Hum NRML_2/3 1C] | 100 | 10 to 400 |  |  |  |
| 02-316-08 | [Low-Hum NRML_2/3 4C] | 89 | 10 to 400 |  |  |  |
| 02-316-09 | [Low-Hum NRML Back 1C] | 70 | 10 to 400 |  |  |  |
| 02-316-10 | [Low-Hum NRML Back 4C] | 70 | 10 to 400 |  |  |  |
| 02-316-11 | [Low-Hum THICK Back 1C] | 100 | 10 to 400 |  |  |  |
| 02-316-12 | [Low-Hum THICK Back 4C] | 100 | 10 to 400 |  |  |  |
| 02-316-13 | [Low-Hum NRML_2/3 Back 1C] | 95 | 10 to 400 |  |  |  |
| 02-316-14 | [Low-Hum NRML_2/3 Back 4C] | 70 | 10 to 400 |  |  |  |
| 02-316-21 | [High-Hum NRML 1C] | 100 | 10 to 400 |  |  |  |
| 02-316-22 | [High-Hum NRML 4C] | 100 | 10 to 400 |  |  |  |
| 02-316-23 | [High-Hum THICK 1C] | 100 | 10 to 400 |  |  |  |
| 02-316-24 | [High-Hum THICK 4C] | 100 | 10 to 400 |  |  |  |
| 02-316-25 | [High-Hum OHP 1C] | 125 | 10 to 400 |  |  |  |
| 02-316-26 | [High-Hum OHP 4C] | 100 | 10 to 400 |  |  |  |
| 02-316-27 | [High-Hum NRML_2/3 1C] | 100 | 10 to 400 |  |  |  |


| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \hline \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 05. Operation mode/system [Mode] |  |  |  |  |  |  |
| 05-001-00 | Operation panel all on [0: OFF, 1: ON] | 0 | 0 to 1 | 1 |  | Turns on all the indicators to test the operation panel display functions. $0=$ Normal display; $1=$ All on |
| 05-009-01 | Display language setup [Disp Language] | 0 | 0 to 15 | 1 |  | Defines the display language. <br> 0 = Japanese; = 1 English; 2 = French; 3 = German; $4=$ Spanish; 5 = Italian, etc (the others are listed in the Installation section of the manual). |
| 05-009-02 | Millimeter/inch selection [mm or inch] | 0 | 0 to 1 | 1 |  | Selects metric or inches. $\begin{aligned} & 0=\text { metric } \\ & 1=\text { inches } \end{aligned}$ <br> This affects the available magnification ratios and the unit that is displayed when inputting values for directional size magnification. Available paper sizes and other features are not affected. |
| 05-104: [A3/DTL Double Count] |  |  |  |  |  |  |
| 05-104-00 | [A3/DTL Double Count] | 0 | 0 to 1 | 1 |  | Specifies whether the counter is doubled for A3/DLT size paper. <br> $0=$ Normal count, 1 = Double count |
| 05-113-00 | Key card/coin lock installation [Key Card / Coin Lock] | 0 | 0 to 3 | 1 |  | Specifies whether the key counter, key card, or coin lock is installed or not. <br> 0 = None (default) <br> 1 = Key card (used in Japan only) <br> 2 = Key counter <br> 3 = Coin lock (used in Japan only) |
| 05-114-00 | Account color mode setup [Color Mode Selection: Key Card] | 15 | 1 to 15 |  |  | Bit 0 = 1: Managed in black mode <br> Bit $1=1$ : Managed in single colour mode <br> Bit 2 = 1: Managed in two colour mode <br> Bit $3=1$ : Managed in full colour mode <br> See SM Section 4.4.7 for a complete description of SP5-114-000 |

RTCOEM TECHNICAL SERVICE BULLETIN

## BULLETIN NUMBER: A258/A259/A260-032

06/02/2000

## APPLICABLE MODEL:

GESTETNER - CS206/206D/206DE
RICOH - AFICIO 3006/4006/4106
SAVIN - SDC306/306A/306E

## SUBJECT: SERVICE MANUAL - INSERT

## GENERAL:

The Service Manual pages listed below must be replaced with the pages supplied. Each bulletin package contains 1 set of replacement pages.

PAGES:

The revised areas have been highlighted by an arrow $\Rightarrow$.

- 2-2
- 4-22 through 27
- 7-5
- A-1

Updated Information (Potential Control)
Updated Information (Test Points)
Updated Information (SC385: Vsg Adjustment Error)
Updated Information (A4 Size B/W Mode Timing Chart)

### 2.1.2 POTENTIAL CONTROL

## Overview

Potential control is the process of controlling the development potential to maintain the density of the toner image on the drum. It does this by compensating for variations in drum chargeability and toner chargeability.
The machine uses the image density (ID) sensor to measure drum reflectivity and the density of a standard sensor pattern. It uses the potential sensor to detect the potential on the standard sensor pattern (before the pattern is developed). These tests are done during the process control self check, which is done at specific times (such as after replacing the developer).
The ID and potential sensor outputs are used to calculate the development potential. This is the difference between the development bias voltage and the voltage of areas of the drum that have been discharged by laser exposure at full power. If changes in this potential are not accounted for, the color balance will be poor.

Depending on the development potential that is calculated, the machine uses a look-up table in memory (called a pointer table) to adjust the following:

- VD: Drum potential without exposure - to adjust this, the machine adjusts the charge corona grid voltage (VG)
- VL: Drum potential with the strongest exposure - to adjust this, the machine adjusts the laser diode input current (ILD)
- VB: Development bias

Potential control controls the development potential so that the maximum amount of toner applied to the drum is kept constant. However, the medium (greyscale) range is ignored. To improve this situation, a new process called 'process control gamma correction' is done after potential control. This process defines LD output for all 256 grades of the greyscale (development bias and charge corona grid potential are not affected).

## Potential Control Timing

The machine carries out potential control and process control gamma correction during the 'process control self check'. There are four types of process control self checks, categorized according to their execution times. Process control takes approximately 3 minutes.

## (1) Forced process control self check

After replacing the drum, the technician must do the forced process control procedure (SP3-126). There is no need to use SP3-126 at installation, because forced process control is included in the developer initialization process (SP2-225).
(See 6.6.3 Developer Collection Procedure for details.)

### 4.6 TP/SW/LED/FUSE

### 4.6.1 MAIN CONTROL BOARD TEST POINTS



| TP No. | Signal | Description | Ready (V) | Remarks | TP Implementation |
| :---: | :---: | :---: | :---: | :---: | :---: |
| TP154 | UPHT_TH | Analog input from the fusing thermistor (upper) | 0 to 5.0 |  | Yes |
| TP155 | /IACK | Used to get an interrupt vector. | 0 to 5.0 | $\mathrm{ON}=$ "L". | Yes |
| TP156 | LWHT_TH | Analog input from the fusing thermistor (lower) | 0 to 5.0 |  | Yes |
| TP157 | FB_T2 | Feedback sense terminal for the secondary transfer bias | 0 to 5.0 |  | Yes |
| TP158 | FB_T1 | Feedback sense terminal for the primary transfer bias | 0 to 5.0 |  | Yes |
| TP160 | FB_G | Feedback sense terminal for the grid bias | 0 to 5.0 |  | Yes |
| TP162 | FB_C | Feedback sense terminal for the charge corona unit bias | 0 to 5.0 |  | Yes |
| TP167 | FB_BDC | Feed back sense terminal for the development bias (DC) | 0 to 5.0 |  | Yes |
| TP168 | HUM | Humidity sensor analog input | 0 to 5.0 |  | Yes |
| TP170 | /Z_CROSS | Zero-cross interrupt input | 0 to 5.0 | $\mathrm{ON}=$ "L". | Yes |
| TP172 | TMP | Temperature sensor analog input | 0 to 5.0 |  | Yes |
| TP173 | P_SEN2 | Density sensor color output | 0 to 5.0 |  | Yes |
| TP174 | P_SEN1 | Density sensor black output | 0 to 5.0 |  | Yes |
| TP176 | V_SEN | Potential sensor analog input | 0 to 5.0 |  | Yes |
| TP178 | ENGY | Enable signal for transition to the Energy Star mode | 0 to 5.0 | $\mathrm{ON}=$ "L". | Yes |
| TP182 | ANGND | Analog ground | 0 |  | Yes |
| TP185 | GND | Ground | 0 |  | Yes |
| TP186 | +5V | +5V | 5.0 |  | Yes |
| TP187 | GND | Ground | 0 |  | Yes |

### 4.6.2 SCANNER IPU BOARD TEST POINTS

| TP No. | Signal | Description | Ready (V) | Remarks | $\begin{array}{c\|} \hline \text { TP } \\ \text { Implementation } \\ \hline \end{array}$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
| TP01 | GND | Ground | 0 |  | Yes |
| TP02 | IFGATEL | Frame gate signal | 0 to 3.3 | $\mathrm{ON}=$ "L". | No |
| TP03 | GND | Ground | 0 |  | Yes |
| TP04 | ILSYNCL | Line Sync. signal | 0 to 3.3 | $\mathrm{ON}=$ "L". | No |
| TP07 | GND | Ground | 0 |  | Yes |
| TP09 | AGND | Analog ground | 0 |  | No |
| TP10 | AGND | Analog ground | 0 |  | No |
| TP13 | AGND | Analog ground | 0 |  | No |
| TP14 | +5VA | Analog +5V power source | 5.0 |  | No |
| TP15 | AGND | Analog ground | 0 |  | No |
| TP17 | +12VA | Analog +12V power source | 12.0 |  | No |
| TP20 | Vpeak | Samples and holds the image's background level. | 3.0 to 4.0 |  | No |
| TP21 | +5V | 5 V power source | 5.0 |  | No |
| TP22 | GND | Ground | 0 |  | Yes |
| TP23 | GND | Ground | 0 |  | Yes |

### 4.6.3 LD MAIN CONTROL BOARD TEST POINTS

|  | TP No. | Signal | Description | Ready (V) | Remarks | TP Implementation |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | TP601 | GND | Ground | 0 |  | No |
| $\Longrightarrow$ | TP602 | LDON | Shortening this terminal to ground causes the LD to stay on in full mode during the polygon ON period. | 0 to 5.0 | $\mathrm{ON}=$ "L". | No |
| $\Longrightarrow$ | TP603 | XWD7 | Least significant bit of the LD control image data ( $1 / 8$ bits) | 5 | $\mathrm{ON}=$ "L". | No |
| $\Longrightarrow$ | TP604 | LDCLK | LD control pixel clock used to latch data. | 5 | $\mathrm{ON}=$ " H ". | No |
| $\Rightarrow$ | TP605 | LDLVL | Defines the LD control reference voltage. 0 to 2 V , normally 1 V . | 0 to 2.0 | Normally held at 1V. | No |
|  | TP606 | BTRIG | Belt mark signal. Set when a transfer belt mark is sensed. | 0 to 5.0 | Set low when a transfer belt mark is sensed. | No |
| $\Longrightarrow$ | TP607 | XPM | PMSYNC. Line sync. signal. | 0 to 5.0 | Approx. $407.05 \mu \mathrm{~s}$. $\mathrm{ON}=$ " L ". | No |
| $\Longrightarrow$ | TP608 | XWFG | WFGATE. Externally referenced frame sync. signal. Controlled by the scanner in the copy mode and by the controller in the print mode. | 0 to 5.0 | Under control of the scanner in the copy mode and of the controller in the print mode. $\mathrm{ON}=$ " L ". | No |
| $\Rightarrow$ | TP609 | XBFG | BFGATE. Write frame sync. signal. Set by a belt mark or software trigger. Source signal for XSFG. | 0 to 5.0 | Triggered by a belt mark or software trigger. Source signal for XSFG. ON = "L". | No |
|  | TP610 | GND | Ground | 0 |  | No |
| $\Longrightarrow$ | TP611 | XSLS | SLSYNC. Scanner or controller line sync. signal. | 0 to 5.0 | $\mathrm{ON}=$ "L". | No |
| $\Longrightarrow$ | TP612 | XSFG | SFGATE. Scanner or controller frame sync. signal. | 0 to 5.0 | $\mathrm{ON}=$ "L". | No |

### 4.6.4 I/O CONTROL BOARD TEST POINTS

| TP No. | Signal | Description | Ready (V) | Remarks | $\begin{gathered} \text { TP } \\ \text { Implementation } \\ \hline \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
| TP201 | RP_SEN2 | Paper height sensor signal 1 (right) | 0 to 5.0 | Blocked "H" | No |
| TP202 | RP_SEN1 | Paper height sensor signal 2 (left) | 0 to 5.0 | Blocked "H" | No |
| TP203 | T2_SEN | Secondary transfer unit contact/release sensor signal | 0 to 5.0 | Contact "H" | No |
| TP204 | XFEED_PE | Paper tray (single side) paper end sensor signal | 0 to 5.0 | Paper end "L" | No |
| TP205 | XMID_SEN | Middle sensor signal | 0 to 5.0 | Detect a paper "L" | No |
| TP206 | FUD_SEN | Paper tray lift sensor signal | 0 to 5.0 | Upper position " H " | No |
| TP207 | IMP_CLK | Drum motor speed control clock | 0 to 5.0 |  | No |
| TP208 | PWM_T2 | Secondary transfer high-voltage output control signal | 0 to 5.0 |  | No |
| TP209 | PWM_T1 | Primary transfer high-voltage output control signal | 0 to 5.0 |  | No |
| TP210 | BLTPTN | Belt mark sensor signal | 0 to 5.0 | $\begin{aligned} & \text { Mark sensed = } \\ & \text { "H" } \end{aligned}$ | No |
| TP211 | XREV_HP | Revolver HP sensor signal | 0 to 5.0 | Home position = "H" | No |
| TP212 | XRGT_SEN | Registration sensor signal | 0 to 5.0 | Paper present = "L" | No |
| TP213 | AGND | Power ground | 0 |  | Yes |
| TP214 | RM_A | Revolver phase excitation signal | 0 to 5.0 | 4 1/phase excitation signals | No |
| TP215 | FEED_CLK | Paper feed motor speed control clock | 0 to 5.0 |  | No |
| TP216 | XIORST | I/O expander reset signal | 0 to 5.0 | Reset = "L" | No |
| TP217 | IOCLK | Address/data bus clock | 0 to 5.0 |  | No |
| TP218 | XST | Address/data bus start signal | 0 to 5.0 |  | No |
| TP219 | DIR | Data bus direction control signal | 0 to 5.0 |  | No |
| TP220 | FB_T2 | Secondary transfer high-voltage feedback voltage | 0 to 5.0 |  | No |
| TP221 | FB_T1 | Primary transfer high-voltage output control signal | 0 to 5.0 |  | No |
| TP222 | HUM_SEN | Humidity sensor output | 0 to 5.0 |  | No |
| TP223 | TMP_SEN | Temperature sensor output | 0 to 5.0 |  | No |
| TP224 | FB_C | Charge corona output feedback voltage | 0 to 5.0 |  | No |
| TP225 | V_SEN | Potential sensor output | 0 to 5.0 |  | No |
| TP226 | FB_G | Grid output feedback voltage | 0 to 5.0 |  | No |
| TP227 | P_SEN1 | Black density output | 0 to 5.0 |  | No |
| TP228 | FB_BDC | Development bias feedback voltage | 0 to 5.0 |  | No |
| TP229 | P_SEN2 | Color (cyan, magenta, yellow) density output | 0 to 5.0 |  | No |
| TP230 | LWHT_TH | Pressure roller thermistor output | 0 to 5.0 |  | No |
| TP231 | UPHT_TH | Hot roller thermistor output | 0 to 5.0 |  | No |
| TP232 | CGNDA | Analog signal ground | 0 |  | Yes |
| TP233 | CGND | Digital signal ground | 0 |  | Yes |
| TP234 | PWM_BDC | Development bias voltage control signal | 0 to 5.0 |  | No |
| TP235 | FUS_CLK | Fusing motor speed control signal | 0 to 5.0 |  | No |


| TP No. | Signal | Description | Ready (V) | Remarks | $\begin{gathered} \hline \hline \text { TP } \\ \text { Implementation } \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
| TP236 | PWM_C | Charge corona current control signal | 0 to 5.0 |  | No |
| TP237 | PWM_G | Grid voltage control signal | 0 to 5.0 |  | No |
| TP239 | VCC2A | Analog +5V power source | 5.0 |  | Yes |
| TP240 | VCC2 | Digital +5 V power source | 5.0 |  | Yes |
| TP241 | AGND | Power ground | 0 |  | Yes |
| TP242 | VAA2 | +24V power source | 24.0 |  | Yes |
| TP243 | VCA | +12V power source | 12.0 |  | Yes |
| TP244 | VCB | -12V power source | -12.0 |  | Yes |
| TP245 | CGNDA | Analog signal ground | 0 |  | Yes |
| TP247 | CGND | Digital signal ground | 0 |  | Yes |
| TP248 | XEXIT_SEN | Paper exit sensor signal | 0 to 5.0 | Paper present = "L" | No |
| TP249 | XFUS_FAN | Fusing fan ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP250 | XZ_CROSS | Zero-cross signal | 0 to 5.0 | Zero-cross section = "L" | No |
| TP251 | ENGY_ON | Energy Star sleep signal ON/OFF signal | 0 to 5.0 | $\begin{aligned} & \text { Sleep mode = } \\ & \text { "H" } \end{aligned}$ | No |
| TP252 | PLED | ID sensor LED luminous quantity control voltage | 0 to 5.0 |  | No |
| TP254 | BC_SEN | Belt cleaning blade contact/release sensor | 0 to 5.0 | Contact = "H" | No |
| TP256 | XDEV_CL | Development clutch ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP257 | XDUP_SOL | Duplex solenoid o ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP258 | XT_CNT2 | Total counter 2 count signal | 0 to 24.0 | $\begin{aligned} & 1 \text { count }=1 \mathrm{~L} \\ & \text { pulse } \end{aligned}$ | No |
| TP259 | XKCOUNT | Key counter count signal | 0 to 24.0 | $\begin{aligned} & 1 \text { count }=1 \mathrm{~L} \\ & \text { pulse } \end{aligned}$ | No |
| TP260 | XBPF_CL | By-pass paper feed clutch ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP263 | XCH_FAN | Charge corona fan ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP264 | XQL | QL ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP265 | XT_CNT1 | Total counter 1 count signal | 0 to 24.0 | $\begin{aligned} & 1 \text { count = } 1 \mathrm{~L} \\ & \text { pulse } \end{aligned}$ | No |
| TP266 | XT_MTR | Toner supply motor ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP267 | XRA_PRT | Fusing/pressure roller lamp power relay ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP268 | XTRG_D | Separation charge corona unit output ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP269 | RM_108A | Revolver motor current 0.8 A drive signal | 0 to 5.0 | $0.8 \mathrm{~A}=$ " H " | No |
| TP270 | RM_I15A | Revolver motor current 1.5 A drive signal | 0 to 5.0 | $1.5 \mathrm{~A}=$ " H " | No |
| TP271 | XIMP_TRG | Drum motor ON/OFF signal | 0 to 5.0 | ON = "L" | No |
| TP272 | XTRG_PCC | PCC output ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP273 | XTRG_BAC | Development bias AC component ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP274 | FUMTR- | Tray lift motor down signal | 0 to 24.0 | Down = "H | No |
| TP275 | XTRP_FAN | Transport fan ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP278 | XRGT_CL | Registration clutch ON/OFF signal | 0 to 24.0 | $\mathrm{ON}=$ "L" | No |
| TP279 | XMID_CL | Relay clutch ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP280 | XEXU_FAN | Exhaust fan ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| TP281 | FUMTR+ | Tray lift motor up signal | 0 to 24.0 | Upper Position " H " | No |
| TP282 | XSWP_CL | Sweeper clutch ON/OFF signal | 0 to 24.0 | ON = "L" | No |


|  | TP No. | Signal | Description | Ready (V) | Remarks | $\begin{gathered} \text { TP } \\ \text { Implementation } \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\Rightarrow$ | TP283 | XFUS_CL | Fusing clutch ON/OFF signal | 0 to 24.0 | ON = "L" | No |
|  | TP284 | XBC_CL | Belt cleaning clutch ON/OFF signal | 0 to 24.0 | ON = "L" | No |
|  | TP285 | XFEED_CL | Paper feed clutch ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| $\Rightarrow$ | TP286 | XT2_CL | Secondary transfer contact/release clutch ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| $\Rightarrow$ | TP287 | XIMP_CW | Drum motor forward/backward control signal | 0 to 5.0 | Forward = "L" | No |
|  | TP288 | XFEED_TRG | Paper feed motor ON/OFF signal | 0 to 5.0 | ON = "L" | No |
|  | TP289 | XFUS_TRG | Fusing motor ON/OFF signal | 0 to 5.0 | ON = "L" | No |
|  | TP290 | XFDOPEN | Front door open sensor signal | 0 to 5.0 | Open = "L" | No |
| $\Rightarrow$ | TP291 | XFEEDOPEN | Vertical transport door open sensor signal | 0 to 5.0 | Open = "L" | No |
|  | TP292 | XEXITOPEN | Paper exit door open sensor signal | 0 to 5.0 | Open = "L" | No |
| $\Rightarrow$ | TP293 | XLEAK_D | Separation charge corona unit leak sensor signal | 0 to 5.0 | Leak = "L" | No |
| $\Rightarrow$ | TP294 | XLEAK_PCC | PCC leak sensor signal | 0 to 5.0 | Leak = "L" | No |
| $\Rightarrow$ | TP295 | XIMP_LOCK | Drum motor lock state sensor signal | 0 to 5.0 | Lock = "L" | No |
|  | TP296 | XBPFSIZE0 | By-pass paper width sensor signal (bit 0) | 0 to 5.0 |  | No |
|  | TP297 | XFEED_LOCK | Paper feed motor lock state sensor signal | 0 to 5.0 | Lock = "L" | No |
|  | TP301 | XBPFSIZE3 | By-pass paper width sensor signal (bit 3) | 0 to 5.0 |  | No |
|  | TP302 | XBPFSIZE2 | By-pass paper width sensor signal (bit 2) | 0 to 5.0 |  | No |
|  | TP303 | XBPFSIZE1 | By-pass paper width sensor signal (bit 1) | 0 to 5.0 |  | No |
| $\Rightarrow$ | TP306 | XOILEND | Oil end sensor signal | 0 to 5.0 | Oil end = "L" | No |
|  | TP308 | XFUS_LOCK | Fusing motor lock state sensor signal | 0 to 5.0 | Lock = "L" | No |
|  | TP309 | XRA_SCN | Lamp regulator power relay | 0 to 24.0 | ON = "L" | No |
|  | TP310 | XLWHT_TRG | Pressure roller lamp ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| $\Rightarrow$ | TP311 | XUPHT_TRG | Fusing lamp ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| $\Rightarrow$ | TP312 | XBPF_SOL | By-pass clutch ON/OFF signal | 0 to 24.0 | ON = "L" | No |
| $\Rightarrow$ | TP313 | XEXU_FAN2 | Exhaust fan 2 ON/OFF signal | 0 to 24.0 | ON = "L" | No |

### 7.3.3 SELF-CHECK PROCESS CONTROL RELATED SCs

## (1) SC385: Vsg adjustment error

The LCD displays SC385 when the output from the ID sensor is outside $1.8+$ offset $\pm 0.05 \mathrm{~V}$ during Vsg adjustment.
Turning the power off then on resets this condition. However, SC385 is lit again after the end of each copy job even when this SC condition is reset by turning the power off then on. Toner is still supplied by using fixed supply mode, until a subsequent Vsg adjustment succeeds.

NOTE: Vsg adjustment timing:

- After a process control self-check (forced, power-on time, or fixed interval).
- After developer initialization (SP2-225-1 to SP2-225-5)
- When the output differs from the Vsg value measured during the preceding Vsg adjustment by more than $\pm 0.05 \mathrm{~V}$.


## (2) SC386: ID sensor pattern error

The LCD displays SC386 when the M/A is out of the target range ( 0.2 to 0.4 $\mathrm{mg} / \mathrm{cm}^{2}$ for $\mathrm{C}, \mathrm{M}$, and Y toners, 0.1 to $0.3 \mathrm{mg} / \mathrm{cm}^{2}$ for K toner). For example, if an $\mathrm{M} / \mathrm{A}$ less than $0.2 \mathrm{mg} / \mathrm{cm}^{2}$ is detected five times successively for $\mathrm{C}, \mathrm{M}$, and Y toners (or $0.1 \mathrm{mg} / \mathrm{cm}^{2}$ for K toner), the machine will display an SC386.
Turning the power off then on resets this SC. Subsequently, the toner supply is carried out in normal supply mode (fuzzy control).

There are cases in which SC385 occurs before SC386 (abnormal ID sensor) output is generated because of a faulty ID sensor.

NOTE: Differences between SC385 and SC386 in their use

- SC385 is detected only when a Vsg adjustment is being performed. Consequently, it can never be detected in continuous copy mode (until selfcheck process controls are performed at a fixed interval or the establishment of an end of copy job condition).
- SC386 is detected during toner supply control, which is done every image production. Consequently, it is designed to be detected when abnormal toner density occurs during the development process in continuous copy mode.


## A4 SIZE B/W MODE

A4 BN( mm )
Print Start


## BULLETIN NUMBER: A258/A259/A260-033

07/11/2000

## APPLICABLE MODEL:

## GESTETNER - CS206/206D/206DE

RICOH - AFICIO 3006/4006/4106
SAVIN - SDC306/306A/306E

## SUBJECT: OZONE FILTER DUSTING

## SYMPTOM:

When the Main Switch is turned on for the first time after machine installation of after the installation of a new Ozone Filter, black dust may be seen.

## CAUSE:

Part of the absorbent material on the Ozone Filter surface may fall or blow out of the machine and will appear as black dust when the Main Switch is turned on for the first time after machine installation or Ozone Filter installation.

## SOLUTION:

When installing a A258/A259/A260 with a new style Ozone Filter (P/N AA010109) or when installing a new style Ozone Filter (P/N AA010109), clean its surface with a vacuum cleaner or gently tap the filter onto a piece of paper to remove any excess black dust.

## GENERAL:

The following part update is being issued for all A258/A259/A260 Parts Catalogs.


| $\begin{gathered} \text { OLD PART } \\ \text { NO. } \end{gathered}$ | NEW PART NO. |  |  | REFERENCE |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | DESCRIPTION | QTY | PAGE |  | ITEM |
|  |  |  |  | A258 | A259/A260 |  |
| A2591081 | AA010109 | Ozone Filter | 1 | 81 | 85 | 13 |

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## UNITS AFFECTED:

All A258/A259/A260 copiers manufactured after the Serial Numbers listed below will have the new style Ozone Filter installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS206 | 3B30020001 |
| Gestetner CS206D | 3B40020001 |
| Gestetner CS206E | 3B50020001 |
| Ricoh Aficio 3006 | H0100200001 |
| Ricoh Aficio 4004 | H02003xxxxx |
| Ricoh Aficio 4106 | H0300200001 |
| Savin SDC306 | 3B30020001 |
| Savin SDC306A | 3B40020001 |
| Savin SDC306E | 3B50020001 |

## BULLETIN NUMBER: A258/A259/A260-034

09/15/2000
APPLICABLE MODEL:
GESTETNER - CS206/206D/206DE
RICOH - AFICIO 3006/4006/4106
SAVIN - SDC306/306A/306E

## SUBJECT: PAPER JAMS IN BY-PASS TRAY

## SYMPTOM:

Paper jams at the By-Pass Tray.

## CAUSE:

Even if the user selects "Sideways" from the Operation Panel, the paper orientation is automatically reset to "Lengthwise" if the By-Pass Tray Side Fences are moved to the 12" size position. This may result in a paper jam.

## SOLUTION:

A Side Fence Stopper has been added to the Front Side Fence so that the maximum width that can be set is A3 (11"). This Stopper can be pulled out to make copies with paper larger than this size.

NOTE: The serial number cut-in was not available at time of publication.
NOTE: An Errata Sheet (see page 2) has been enclosed with the modified production units.
To add the Side Fence Stopper [A], the shape of the Front Side Fence [B] was modified. Please refer to page 2.

## GENERAL:

The following parts updates are being issued for all A258/A259/A260 Parts Catalogs.

|  | REFERENCE |  |  |  |  |
| :---: | :---: | :--- | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | PAGE | ITEM |
| A2592970 | A2592972 | Front Side Fence | 1 | 17 | 3 |
| - | A2592973 | Side Fence Stopper | 1 | 17 | $21^{*}$ |

[^16]NOTE: The part number of the By-Pass Feed Table Assembly has not changed, but the suffix has. Therefore, please order the above two parts separately to perform this modification in the field.

## UNITS AFFECTED:

A258/A259/A260 Serial Number cut-ins were not available at time of publication.

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## Errata Sheet:

NOTE: This sheet is for EU/AA versions. For the NA version, the paper size indicated is 11 "x17", not A3.

## How to Set Paper Larger Than A3 in the Bypass Tray

If you want to set paper larger than A3 in the bypass tray, carry out the following procedure.

1 Open the bypass tray.

2 Pull up the blue tab.
[B]


3 Leaving the blue tab up, slide the paper guides until they stop.


4 Insert the copy paper into the bypass tray.

## Note

Make sure that the paper guides match the paper size.
Be sure to return the blue tab to its original position before you close the bypass tray. If you do not return it correctly, the bypass tray might not close properly.

## BULLETIN NUMBER: A258/A259/A260-035

## SUBJECT: PARTS CATALOG UPDATES

## GENERAL:

The following parts updates are being issued for all A258/A259/A260 Parts Catalogs.

- UPDATE 1: Seal 14×37-A Seal has been added to the Drawer Unit to prevent toner from spilling out. Please update your parts catalog with the following information.


REFERENCE

| PART NUMBER | DESCRIPTION | QTY | PAGE |  |  | (ITEM |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | A259/A260 |  |  |  |
| A2592396 | Seal $14 \times 37$ | 1 | 51 | 47 | 25 |  |

* Denotes new item number.


## UNITS AFFECTED:

All A258/A259/A260 copiers manufactured after the Serial Numbers listed below will have the new Seal $14 \times 37$ installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS206 | 3B30020001 |
| Gestetner CS206D | 3B40020001 |
| Gestetner CS206DE | 3B50020001 |
| Ricoh AFICIO 3006 | H0100200001 |
| Ricoh AFICIO 4006 | H0200200001 |
| Ricoh AFICIO 4106 | H0300200001 |
| Savin SDC306 | 3B30020001 |
| Savin SDC306A | 3B40020001 |
| Savin SDC306E | 3B50020001 |

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- UPDATE 2: Paper Feed Drive Case and Unit - In order to improve the reliability of the Paper Feed Drive Case and Unit, the shafts have been changed from plastic to metal. Please update your parts catalog with the following information.


A258/A259/A260
REFERENCE

| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE |  | ITEM |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  | A258 | $\begin{aligned} & \text { A259 } \\ & \text { A260 } \end{aligned}$ |  |
| A2591155 | A2591166 | Paper Feed Drive Case | 1 | 1 | 75 | 79 | 21 |


|  | A258 |  |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE | ITEM |
| A2591151 | A2591165 | Paper Feed Drive Unit | 1 | 1 | 75 | 14 |


| A259/A260 |  |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| PART NUMBER | DESCRIPTION | QTY | INT | PAGE | ITEM |
| A2591165 | Paper Feed Drive Unit | 1 | - | 79 | $35^{*}$ |

* Denotes new item number.


## UNITS AFFECTED:

All A258/A259/A260 copiers manufactured after the Serial Numbers listed below will have the new Paper Feed Drive Unit installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS206 | 3B30030001 |
| Gestetner CS206D | 3B40030001 |
| Gestetner CS206DE | 3B50030001 |
| Ricoh AFICIO 3006 | H 0100200209 |
| Ricoh AFICIO 4006 | H 0200200001 |
| Ricoh AFICIO 4106 | H 0300200094 |
| Savin SDC306 | 3B30030001 |
| Savin SDC306A | 3B40030001 |
| Savin SDC306E | 3B50030001 |

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- UPDATE 3: ID Sensor Cover - The shape of the ID Sensor Cover has been changed to optimize airflow to the ID Sensor. The old style ID Sensor Cover, item 11, (P/N A2592475) did not include item 17, P/N A2592491, item 18, P/N A2592490 or item 19, P/N A2593456. Please update your parts catalog with the following information.


REFERENCE

| $\begin{gathered} \text { OLD PART } \\ \text { NO. } \end{gathered}$ | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE |  | ITEM |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  | A258 | A259/A260 |  |
| A2592475 | A2592468 | ID Sensor Cover | 1 | 1 | 51 | 47 | 11 |

## UNITS AFFECTED:

All A258/A259/A260 copiers manufactured after the Serial Numbers listed below will have the new style ID Sensor Cover installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS206 | 3B30040001 |
| Gestetner CS206D | 3B40040001 |
| Gestetner CS206DE | 3B50040001 |
| Ricoh AFICIO 3006 | H0100400001 |
| Ricoh AFICIO 4006 | H 0200400001 |
| Ricoh AFICIO 4106 | H 0300300094 |
| Savin SDC306 | 3B30040001 |
| Savin SDC306A | 3B40040001 |
| Savin SDC306E | 3B50040001 |

- UPDATE 4: Development Unit Holder - The shape of the Development Unit Holder has been modified twice. The first modification was applied to improve the durability. The second modification was applied to ensure the proper Photoconductor Gap (PG. See the illustration below. Please update your parts catalog with the following information.


First Modification
REFERENCE

| OLD PART NO. | INTERIM PART NO. | DESCRIPTION | QTY | INT | PAGE |  | TEM |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  | A258 | A259/A260 |  |
| A2593229 | B0173229 | Development Unit Holder | 8 | 1 | 39 | 35 | 1 |


| Second Modification |  |  |  |  | REFERENCE |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| INTERIM | NEW PART | DESCRIPTION | QTY | INT | PAGE |  | ITEM |
| PART NO. | NO. |  |  |  | A258 | A259/A260 |  |
| B0173229 | A2593240 | Development Unit Holder | 8 | 1 | 39 | 35 | 1 |

## UNITS AFFECTED:

All A258/A259/A260 copiers manufactured after the Serial Numbers listed below will have the new style Development Unit Holders installed during production.

| MODEL NAME | 1st SERIAL NUMBER | 2nd SERIAL NUMBER |
| :---: | :--- | :--- |
| Gestetner CS206 | 3B30030001 | 3B30050001 |
| Gestetner CS206D | 3B40030001 | 3B40050001 |
| Gestetner CS206DE | 3B50030001 | 3B500500001 |
| Ricoh AFICIO 3006 | H0100300001 | H0100500001 |
| Ricoh AFICIO 4006 | H0200300001 | H0200500001 |
| Ricoh AFICIO 4106 | H0300300001 | H0300500001 |
| Savin SDC306 | 3B30030001 | 3B30050001 |
| Savin SDC306A | 3B40030001 | 3B40050001 |
| Savin SDC306E | 3B50030001 | 3B50050001 |

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## Page 5 of 5

- UPDATE 5: Front Supporter - Drum Shaft - The original style Drum Shaft Supporter only had one ball bearing. An additional ball bearing has been added to ensure the proper PG is maintained and that wobble is minimized during copying. Please update your parts catalog with the following information.


REFERENCE

| $\begin{gathered} \text { OLD PART } \\ \text { NO. } \end{gathered}$ | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE |  | ITEM |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  | A258 | A259/A260 |  |
| A2592462 | A2592422 | Front Supporter - Drum Shaft | 1 | 1 | 49 | 45 | 1 |

## UNITS AFFECTED:

All A258/A259/A260 copiers manufactured after the Serial Numbers listed below will have the new style Front Supporter - Drum Shaft installed during production.

| MODEL NAME | 2nd SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS206 | 3B30050001 |
| Gestetner CS206D | 3B40050001 |
| Gestetner CS206DE | 3B50050001 |
| Ricoh AFICIO 3006 | H0100500001 |
| Ricoh AFICIO 4006 | H0200500001 |
| Ricoh AFICIO 4106 | H0300500001 |
| Savin SDC306 | 3B30050001 |
| Savin SDC306A | 3B40050001 |
| Savin SDC306E | 3B50050001 |

## INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and <br> NEW machines. | 2 | NEW parts CAN NOT be used in OLD machines. <br> OLD parts can be used in OLD and NEW machines. |
| :---: | :--- | :---: | :--- |
| 1 | NEW parts can be used in OLD and NEW machines. <br> OLD parts CAN NOT be used in NEW machines. | 3 | OLD parts CAN NOT be used in NEW machines. <br> NEW parts CAN NOT be used in OLD machines. |
| $3 / S$ | 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 <br> previously modified, use the new part numbers individually. |  |  |

BULLETIN NUMBER: A258/A259/A260-036
10/10/2000
APPLICABLE MODEL:
GESTETNER - CS206/206D/206DE
RICOH - AFICIO 3006/4006/4106
SAVIN - SDC306/306A/306E

## SUBJECT: TONER SPILLS FROM TONER COLLECTION COIL

## SYMPTOM:

Toner spills out from the joint section [A] of the Toner Collection Coil causing the rear side in the machine to become dirty with toner. This can cause toner spots on copies or paper jams if toner should drop on any clutches.

## CAUSE:

Used toner tends to clump together due to the temperature of the Toner Collection Coil. The toner then gets clogged around the joint section. This may cause the toner to spill out from the joint section.

## SOLUTION:

- The material of the Toner Collection Coil has been changed from plastic to metal. This will prevent the temperature of the Coil from rising. This modification was
 applied to the production line in July '99. At the same time, in order to force the toner to drop straight down into the Collection Coil Tube, the size of cutout $[B]$ on the Toner Outlet Cap has been changed as shown above.
- A seal has been added to the Drawer Unit to cover the joint section. This was applied to the production line in February 2000.

If this problem occurs in the field, please replace the Toner Collection Coil and Toner Outlet Cap, and attach the Seal.

## GENERAL:

The following parts updates are being issued for all A258/A259/A260 Parts Catalogs.
REFERENCE

| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | PAGE |  | ITEM |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | A258 | $\begin{aligned} & \text { A259 } \\ & \text { A260 } \end{aligned}$ |  |
| A2593571 | A2593631 | Toner Transport Screw (Coil) | 1 | 55 | 51 | 21 |
|  | A2592396 | Seal 14x37 | 1 | 51 | 47 | 25 |

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Page 2 of 2

## UNITS AFFECTED:

All A258/A259/A260 copiers manufactured after the Serial Numbers listed below will have the new style Toner Transport Screw (Coil) installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS206 | 3B39070001 |
| Gestetner CS206D | 3B4910xxxx |
| Gestetner CS206DE | 3B59070001 |
| Ricoh AFICIO 3006 | H0190700001 |
| Ricoh AFICIO 4006 | H02910xxxxx |
| Ricoh AFICIO 4106 | H0390700001 |
| Savin SDC306 | 3B39070001 |
| Savin SDC306A | 3B4910xxxx |
| Savin SDC306E | 3B59070001 |

All A258/A259/A260 copiers manufactured after the Serial Numbers listed below will have the new Seal $14 \times 37$ installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS206 | 3B30020001 |
| Gestetner CS206D | 3B40020001 |
| Gestetner CS206DE | 3B50020001 |
| Ricoh AFICIO 3006 | H0100200001 |
| Ricoh AFICIO 4006 | H0200200001 |
| Ricoh AFICIO 4106 | H0300200001 |
| Savin SDC306 | 3B30020001 |
| Savin SDC306A | 3B40020001 |
| Savin SDC306E | 3B50020001 |

## REPLACEMENT PROCEDURE:


2. Remove the Drum Unit and place a few sheets of paper on the Unit to prevent the Drum from developing light fatigue.
3. Clean the area where the Seal $[A]$ is to be attached with alcohol.
4. Attach the Seal $[A]$ to the Drawer Unit as shown.
5. Remove the Cleaning Unit from the Drum Unit.
6. Remove the Toner Outlet Cap [B] (1 screw) and Spring [C].
7. Replace the Toner Outlet Cap and Toner Collection Coil [D] (Snap-Ring [E] and Gear [F]).
8. Reassemble the machine.

## TECHNICAL SERVICE BULLETIN

```
BULLETIN NUMBER: A258/A259/A260-036 REISSUE \(\star\)
11/16/2000 APPLICABLE MODEL:
GESTETNER - CS206/206D/206DE
RICOH - AFICIO 3006/4006/4106
SAVIN - SDC306/306A/306E
```


## SUBJECT: TONER SPILLS FROM TONER COLLECTION COIL

## SYMPTOM:

Toner spills out from the joint section [A] of the Toner Collection Coil causing the rear side in the machine to become dirty with toner. This can cause toner spots on copies or paper jams if toner should drop on any clutches.

## CAUSE:

Used toner tends to clump together due to the temperature of the Toner Collection Coil. The toner then gets clogged around the joint section. This may cause the toner to spill out from the joint section.

## SOLUTION:

- The material of the Toner Collection Coil has been changed from plastic to metal. This will prevent the temperature of the
 Coil from rising. This modification was
 applied to the production line in July '99. At the same time, in order to force the toner to drop straight down into the Collection Coil Tube, the size of cutout [B] on the Toner Outlet Cap has been changed as shown above.
- A seal has been added to the Drawer Unit to cover the joint section. This was applied to the production line in February 2000.

If this problem occurs in the field, please replace the Toner Collection Coil and Toner Outlet Cap, and attach the Seal.

## GENERAL:

The following parts updates are being issued for all A258/A259/A260 Parts Catalogs.

*NOTE: The part number for the Toner Outlet Cap (P/N A2593582) has not changed, however the part has been altered as indicated in the illustration above.

Continued...

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Page 2 of 2

## UNITS AFFECTED:

All A258/A259/A260 copiers manufactured after the Serial Numbers listed below will have the new style Toner Transport Screw (Coil) installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS206 | 3B39070001 |
| Gestetner CS206D | 3B4910xxxx |
| Gestetner CS206DE | 3B59070001 |
| Ricoh AFICIO 3006 | H0190700001 |
| Ricoh AFICIO 4006 | H02910xxxxx |
| Ricoh AFICIO 4106 | H0390700001 |
| Savin SDC306 | 3B39070001 |
| Savin SDC306A | 3B4910xxxx |
| Savin SDC306E | 3B59070001 |

All A258/A259/A260 copiers manufactured after the Serial Numbers listed below will have the new Seal $14 \times 37$ installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS206 | 3B30020001 |
| Gestetner CS206D | 3B40020001 |
| Gestetner CS206DE | 3B50020001 |
| Ricoh AFICIO 3006 | H0100200001 |
| Ricoh AFICIO 4006 | H0200200001 |
| Ricoh AFICIO 4106 | H0300200001 |
| Savin SDC306 | 3B30020001 |
| Savin SDC306A | 3B40020001 |
| Savin SDC306E | 3B50020001 |

REPLACEMENT PROCEDURE:


1 to 2.5 mm

1. Pull out the Drawer Unit.
2. Remove the Drum Unit and place a few sheets of paper on the Unit to prevent the Drum from developing light fatigue.
3. Clean the area where the Seal $[A]$ is to be attached with alcohol.
4. Attach the Seal $[A]$ to the Drawer Unit as shown.
5. Remove the Cleaning Unit from the Drum Unit.
6. Remove the Toner Outlet Cap [B] (1 screw) and Spring [C].
7. Replace the Toner Outlet Cap and Toner Collection Coil [D] (Snap-Ring [E] and Gear [F]).
8. Reassemble the machine.

## APPLICABLE MODEL: <br> GESTETNER - CS206/206D/206DE <br> RICOH - AFICIO 3006/4006/4106 <br> SAVIN - SDC306/306A/306E

## SUBJECT: SERVICE MANUAL - INSERT

## GENERAL:

The "Reinstallation Remarks" on new page 6-10 of the Service Manual explains the procedure for installing or reinstalling the Drum Stay. These instructions will ensure the proper Photoconductor Gap (PG). Although a slightly shifted PG would not directly cause any machine failure, a proper PG is essential to ensure the effectiveness or precautions, such as troubleshooting for black toner scattering (PG Seals). Be sure to follow the procedure in "Reinstallation Remarks" when installing the Drum Stay.

The Service Manual page listed below must be replaced with the page supplied. Each bulletin package contains 1 set of replacement pages.

## PAGES:

The revised areas have been highlighted by an arrow $\Rightarrow$.


Updated Information (Pulling Out the Revolver/Drum Drawer)

### 6.2.1 PULLING OUT THE REVOLVER/DRUM DRAWER


$\Rightarrow$ NOTE: Place a mat on the floor to keep the floor clean before performing these procedures.

1. Remove the following covers in the indicated order (see "Covers, Fans, and Filters"):
1) Front cover
2) Inner transfer cover [A]
3) Inner cover [B] (See "Charge Corona Fan Filter Removal".)

$$
[\mathrm{B}]
$$


2. Release the transfer belt tension [C] (1 clamp) and remove the transfer belt stay [D] (5 screws).
3. Remove the charge duct cover [E] and the charge corona unit [F] with the corona cleaner [G] (2 screws).
4. Pull out the drawer unit $[\mathrm{H}]$ (2 screws).

## REINSTALLATION REMARKS:

Install the drum stay [I] while pressing portion [J]. The Transfer Belt Unit will then be secured in the proper position by the pressure of spring [K]. If portion [J] is not pressed while the screws are fastened (NOTE: In any order), the drum stay will not be fixed in the proper position due to the pressure from the spring. This will cause the PG (Photoconductor Gap) to slightly
 shift.

## SUBJECT: SC385 / BLACK TONER SCATTERING INSIDE MACHINE

## SYMPTOM:

Black toner scatters inside the machine. Toner accumulates around the Black Development Unit and ID Sensor areas, which may sometimes cause an SC385.

## CAUSE:

If the PG (Photoconductor Gap) is close to the upper limit, toner concentration tends to increase and toner may scatter inside the machine. An SC385 may occur, if toner accumulates on the ID Sensor. This occurs most often with black toner due to its unique characteristics.

## PRODUCTION COUNTERMEASURES:

- In order to shift the PG, a PG Seal (P/N A2593219) has been attached to the Lower Development Unit holder of the Black Development Unit only.

NOTE: Please do not attach the PG Seals to the Color Development Units. If this is done, a color band may appear on the outputs. This occurs because the narrow PG may cause the Developer Sleeve of a Color Development Unit to touch the Drum surface when the Unit moves into the development position.

- The Dust Filter has been modified twice to minimize the amount of dust exiting the machine.
- The ID Sensor Cover has been modified to optimize the airflow to the ID Sensor. This prevents toner from accumulating on the surface of the ID Sensor.
- The Drum Shaft Supporter has been modified and an additional ball bearing has been inserted in order to prevent the PG from changing during copy runs.
- The Development Unit Holder has been modified twice. The first modification was done to improve the holder durability and the second was done to ensure the proper PG.

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## UNITS AFFECTED:

All A258/A259/A260 copiers manufactured after the Serial Numbers listed below will have the production countermeasures installed during production

|  | PG SEAL | ID SENSOR COVER | DRUM SHAFT SUPPORTER | DEVELOPMENT UNIT HOLDER |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | $\begin{gathered} \text { A2593229 to } \\ \text { B0173229 } \\ \hline \end{gathered}$ | $\begin{gathered} \text { B0173229 to } \\ \text { A2593240 } \end{gathered}$ |
| A258 |  |  |  |  |  |
| CS206 | 3B39100001 | 3B30040001 | 3B30050001 | 3B30030001 | 3B30050001 |
| Aficio 3006 | H01910XXXXX | H0100400001 | H0100500001 | H0100300001 | H0100500001 |
| SDC306 | 3B39100001 | 3B30040001 | 3B30050001 | 3B30030001 | 3B30050001 |
| A259 |  |  |  |  |  |
| CS206D | 3B4910XXXXX | 3B40040001 | 3B40050001 | 3B40030001 | 3B40050001 |
| Aficio 4006 | H02910XXXXX | H0200400001 | H0200500001 | H0200300001 | H0200500001 |
| SDC306A | 3B4910XXXXX | 3B40040001 | 3B40050001 | 3B40030001 | 3B40050001 |
| A260 |  |  |  |  |  |
| CS206 | 3B59100001 | 3B50040001 | 3B50050001 | 3B50030001 | 3B50050001 |
| Aficio 3006 | H0391000001 | H0300300094 | H0300500001 | H0300300001 | H0300500001 |
| SDC306E | 3B59100001 | 3B50040001 | 3B50050001 | 3B50030001 | 3B50050001 |

## FIELD COUNTERMEASURES:

The following parts need to be replaced or attached:

- Replace the Drum Shaft Supporter.
- Attach PG Seals to the Lower Development Unit Holders.
- Replace the Development Unit Holders.
- Replace the ID Sensor Cover.
- Replace the Dust Filter.

Please refer to the procedures described below for replacement or attachment.

## 1. Drum Shaft Supporter Replacement



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1. Remove the Drum Stay $[\mathrm{A}]$ ( 5 screws).
2. Replace the Drum Shaft Supporter [B] (4 screws).

NOTE: When reinstalling the Drum Stay [A], the screws should be secured while pressing portion [C] of the Drum Stay.

## 2. PG Seal Attachment \& Development Unit Holder Replacement Procedure



| $\begin{gathered} \hline \text { OLD PART } \\ \text { NO. } \end{gathered}$ | NEW PARTNO. |  | QTY | REFERENCE |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | DESCRIPTION |  | PAGE |  | ITEM |
|  |  |  |  | A258 | A259/A260 |  |
| - | A2593219 | Seal 7x10 | 1 | 39 | 35 | 13* |
| A2593229 | A2593240 | Development Unit Holder | 8 | 39 | 35 | 1 |

* Denotes new item number.

NOTE: The PG Seal size has been changed from $10 \times 14 \mathrm{~mm}$ to $7 \times 10 \mathrm{~mm}$ to achieve the target PG. The part number was not changed through this modification, however the suffix was.
NOTE: The Development Unit Holder has been modified twice. The above part number is the latest one (A2593229 $\rightarrow$ B0173229 $\rightarrow$ A2593240).

1. Pull out the Drawer Unit.
2. Remove the Drum Unit and place a few sheets of paper on the unit to prevent the Drum from developing light fatigue.
3. Clean the machine using a vacuum cleaner.
4. Remove the Black Development Unit.
5. Clean the Lower Development Unit Holder [A] completely with damp and dry cloths.

NOTE: When dampening cloth, use water and not alcohol. Alcohol can deform the Seal. If alcohol is used by accident, clean the holder with a dry cloth after the holder dries.
6. Attach a PG Seal $[B]$ to both sides of the Lower Development Unit Holder as shown in the above illustration.

NOTE: Make sure that the Seal has been attached flush against the Holder and is not folded. If the Seal is not properly attached, the PG will be out of specification.

The PG Seal should not be attached to the Development Holders for Color Development
Units. If this is done, the PG will become narrow and the Developer Brush may contact the Drum while the Revolver rotates. This causes a color band to appear on the outputs.

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7. Reinstall the Development Unit and install the new Development Unit Holders [A].

NOTE: If there is a Foam Rubber Pad already attached to the Development Cover [C], be sure to remove it before installing the Development Unit. If the Unit is installed with the Foam Rubber Pad attached, the Unit will be pressed by the Toner Cartridge Case [D], causing the PG to become narrower.

## 3. ID Sensor Cover Replacement



Continued...

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| OLD PART NO. | NEW PART NO. |  |  | REFERENCE |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | DESCRIPTION | QTY | PAGE |  | ITEM |
|  |  |  |  | A258 | A259/A260 |  |
| A2592475 | A2592468 | ID Sensor Cover | 1 | 51 | 47 | 11 |

1. Loosen the screw $[A]$ securing the Charge Corona Fan.
2. Remove the ID Sensor Cover [B] (2 screws).
3. Install the new ID Sensor Cover (2 screws).

NOTE: Make sure that the Mylar [C] is in the proper position between the ID Sensor Cover and Lower Stay [D] as shown in the illustration on page 4 for "ID Sensor Cover replacement".

## 4. Dust Filter Replacement



| OLD PART NO. | NEW PART NO. |  | QTY | REFERENCE |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | DESCRIPTION |  | PAGE |  | ITEM |
|  |  |  |  | A258 | A259/A260 |  |
| A2591082 | A2591047 | Dust Filter | 1 | 81 | 85 | 12 |

1. Remove the cover [A] (3 screws).
2. Replace the Main Exhaust Fan Filter [B].

## 5. After Reassembling Machine

If toner has scattered inside the machine, the toner concentration might already be too high. Therefore, please make $5 \mathrm{~B} \& \mathrm{~W}$ copies in the following mode to reduce the toner concentration.

- Set SP5-955-018 to 6 (solid test pattern). Make sure that SP 5-955-017 (LD_PWM) is set to default (128).
- $\quad$ Select A 3 (DLT) size.

BULLETIN NUMBER: A258/A259/A260-039<br>10/27/2000<br>\section*{APPLICABLE MODEL:}<br>GESTETNER - CS206/206D/206DE<br>RICOH - AFICIO 3006/4006/4106<br>SAVIN - SDC306/306A/306E

## SUBJECT: PARTS CATALOG UPDATES

## GENERAL:

The following parts updates are being issued for all A258/A259/A260 Parts Catalogs.

- UPDATE 1: Duct Seal - Lower Case - The Duct Seal attached to the Rear Cover is no longer necessary, therefore this part has been removed. Please update your Parts Catalog with the following information.


|  |  |  |  |  |  |  |  |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | PAGE | ITEM |  |  |  |  |  |  |
| A2591317 | - | Duct Seal - Lower Case | $1 \rightarrow 0$ | 13 | 25 |  |  |  |  |  |  |

UNITS AFFECTED:
A258/A259/A260 Serial Number cut-in not available at time of publication.

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Page 2 of 3

- UPDATE 2: Ozone Filter and Related Parts - The Ozone Filter Case and the parts related to it have been modified to minimize the amount of dust exiting the machine. Please update your Parts Catalog with the following information.

(12)

| OLD PART NO. | NEW PART NO. |  |  |  | REFERENCE |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | DESCRIPTION | QTY | INT | PAGE |  | ITEM |
|  |  |  |  |  | A258 | $\begin{aligned} & \hline \text { A259 } \\ & \text { A260 } \end{aligned}$ |  |
| A2591081 | AA010109 | Ozone Filter | 1 | 1 | 81 | 85 | 13 |
| A2591047 | A2592337 | Dust Filter | $1 \rightarrow 3$ | 3/S | 81 | 85 | 12 |
| A2591083 | A2592334 | Ozone Filter Case | 1 | 3/S | 81 | 85 | 10 |
| A2591085 |  | Case Cover - Ozone Filter | $1 \rightarrow 0$ | - | 81 | 85 | 11 |
|  | $\rightarrow$ A2592335 | Upper Case Cover | 1 | 3/S |  |  |  |
|  | A2592336 | Front Case Cover | 1 | 3/S | 81 | - | 25 |
|  | A2592336 | Front Case Cover | 1 | 3/S | - | 85 | 22 |
|  | A2592338 | Seal - 5x36 | 1 | 3/S | 81 | 85 | 26 |
|  | A2592339 | Seal - 5x76 | 2 | 3/S | 81 | 85 | 27 |

## Page 3 of 3

## INSTALLATION:



## NOTE 1:

If the machine does not show any toner scattering, you only need to replace the Filter(s) which are dirty with toner and/or dust. The Filters become dirty from the Joint Duct side [A]. Therefore, remove the dirty Filter(s) $[B]$ first and then shift the clean Filter(s) [C] toward the Joint Duct side. Then, insert the new Filter(s) [D] as shown in the illustration above. The Filters should always be installed so that the side with the tab [E] faces the Joint Duct $[\mathrm{A}]$.

## NOTE 2:

The old style Dust Filter P/N A2591047 will continue to be available as a Service Part.

## NOTE 3

P/N's A2591083 and A2591085 will no longer available as Service Parts. If either of these need to be replaced, replace both with the 6 parts listed in the table with the $3 / S$ Interchangeability Rating.

## INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and <br> NEW machines. | 2 | NEW parts CAN NOT be used in OLD machines. <br> OLD parts can be used in OLD and NEW machines. |
| :---: | :--- | :---: | :--- |
| 1 | NEW parts can be used in OLD and NEW machines. <br> OLD parts CAN NOT be used in NEW machines. | 3 | OLD parts CAN NOT be used in NEW machines. <br> NEW parts CAN NOT be used in OLD machines. |
| $3 / S$ | 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 <br> previously modified, use the new part numbers individually. |  |  |

```
BULLETIN NUMBER: A258/A259/A260-040
APPLICABLE MODEL:
    GESTETNER - CS206/206D/206DE
    RICOH - AFICIO 3006/4006/4106
    SAVIN - SDC306/306A/306E
```

11/27/2000

SUBJECT: TONER SCATTERING INSIDE MACHINE

## SYMPTOM:

Toner scatters around the Toner Hopper area and inside the machine.

## CAUSE:

The Toner Hopper Seal is damaged or peeled off while the Toner Bottle is replaced. Toner may spill out from the clearance created by the damaged Toner Hopper Seal and toner supply opening of the Toner Bottle.

## SOLUTION:

Protective Sheets [A] have been applied to the Toner Hopper Seals [B], in order to prevent the Toner Hopper Seal from being damaged while the Toner Bottle is replaced.


## INSTALLATION PROCEDURE:



1. Pull out the Drawer Unit.
2. Remove the Drum Unit and place a few sheets of paper on the unit to prevent the Drum from developing light fatigue. Then, remove the Toner Bottle.
3. Rotate the Drawer Unit so that the toner supply opening [A] faces up, then lock the position of the Revolver Unit by putting a cleaning cloth $[B]$ in between the Drawer Unit and Development Unit as shown.
4. Remove the Stay [C] (2 screws and 1 connector).
5. Clean the area around the Toner Hopper Seal [D] with a dry cloth.

NOTE: Do not use alcohol. Thoroughly clean the area where the protective Seal [E] is to be attached. If the Toner Hopper Seal is already damaged or peeled off, please replace the Seal.
6. Fold the Protective Sheet [E] along the dotted line and attach it to the Hopper as shown. (Refer to the picture on the next page.)

NOTE: Make sure that the protective sheet is properly attached, without any gap. If this is not done, the sheet may peel off when the toner bottle is replaced.
7. Attach the portion [F] of the seal along with the hopper and fold the end of seal and attach it as shown.

8. Attach a piece of tape $[A]$ to the toner supply opening before rotating the revolver so that toner will not spill out from the hopper. Turn the revolver to the setting position; then, remove the tape [A] and insert the bottle.
9. Attach the protective sheets for the other colors.

## GENERAL:

The following part update is being issued for all A258/A259/A260 Parts Catalogs.
REFERENCE

| NEW PART NO. | DESCRIPTION | QTY | PAGE |  | ITEM |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | A258 | A259/A260 |  |
| A2593347 | Protective Sleeve | 4 | 51 | 47 | 26 * |

* Denotes new item number.


## UNITS AFFECTED:

All A258/A259/A260 copiers manufactured after the Serial Numbers listed below will have the new Protective Sleeve installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS206 | 3B30040001 |
| Gestetner CS206D | 3B40040001 |
| Gestetner CS206DE | 3B50040001 |
| Ricoh AFICIO 3006 | H0100500001 |
| Ricoh AFICIO 4006 | H 0200400001 |
| Ricoh AFICIO 4106 | H 0300400001 |
| Savin SDC306 | 3B30040001 |
| Savin SDC306A | 3B40040001 |
| Savin SDC306E | 3B50040001 |

RTEDM TECHNICAL SERVICE BULLETIN

## BULLETIN NUMBER: A258/A259/A260-041

12/08/2000

## APPLICABLE MODEL:

GESTETNER - CS206/206D/206DE
RICOH - AFICIO 3006/4006/4106
SAVIN - SDC306/306A/306E

## SUBJECT: SERVICE MANUAL INSERT / FIRMWARE HISTORY

## GENERAL:

The Service Manual pages listed below must be replaced with the pages supplied. Each bulletin package contains 1 set of replacement pages.

PAGES:

The revised areas have been highlighted by an arrow $\Rightarrow$.

- TOC - xiv
- Cover Page
- D1-1 to D1-2
- D2-1 to D2-6
- D3-1 to D3-6


## Updated Information

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A258 Main Frame Firmware History
A259/A260 Main Frame Firmware History
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3.3 MIRROR UNIT ..... 13-5
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A4 SIZE FULL COLOR MODE ..... A1-2
A3 SIZE B/W MODE ..... A1-3
A3 SIZE FULL COLOR MODE ..... A1-4
APPENDIX B SP MODE TABLE
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## APPENDIX-D

FIRMWARE MODIFICATION HISTORY

## 1. SCANNER FIRMWARE HISTORY

### 1.1 SCANNER (NON - EDITOR VERSION)

| A258/A259 SCANNER (NON - EDITOR VERSION) FIRMWARE MODIFICATION HISTORY |  |  |  |
| :---: | :---: | :---: | :---: |
| DESCRIPTION OF MODIFICATION | FIRMWARE LEVEL | SERIAL NUMBER | FIRMWARE VERSION |
| - First Unit of Mass Production for the A258. | A2595136 D | 1st Mass Production for A258 | 1.12 |
| - To prevent a misdetection of SC191, the distance between the scanner lines has been changed. | A2595136 E | February 1999 Production for A258 | 1.14 |
| - To prevent the Cyan Background problem, the Auto Gain Control has been corrected. | A2595136 F | $\begin{aligned} & \text { April } 1999 \\ & \text { Production for } \\ & \text { A258 } \end{aligned}$ | 1.15 |
| - First Unit of Mass Production for the A259/A260 (Non - Editor Version) An abnormal image may occur after job recovery if a paper jam occurs while printing in Interleaf Mode. | A2595136 G | April 1999 Production for A258 | 1.18 |
| - SC326 occurs under the following conditions: <br> 1. A4 lengthwise <br> 2. $158 \%$ <br> 3. SP 04-010 (Scanner leading edge registration): 2.0 mm <br> When the Start key is pressed under these conditions, the exposure lamp turns on but then soon turns off. The copier keeps running. SC326 is displayed after a short while. | A2595136 J | September 1999 Production for A258 | 1.20 |
| - Thin lines on the originals may become thinner or thicker when making copies at 93\% reduction or smaller. | A2595136 K | December 1999 Production for A258 | 1.21 |

### 1.2 SCANNER (EDITOR VERSION)

| A260 SCANNER (EDITOR VERSION) FIRMWARE MODIFICATION HISTORY |  |  |  |
| :---: | :---: | :---: | :---: |
| DESCRIPTION OF MODIFICATION | FIRMWARE LEVEL | SERIAL NUMBER | FIRMWARE VERSION |
| - First Mass Production. | A2605136 F | 1st Mass Production | 1.17 |
| - Mono-colored thick lines in an original comprised of two or more toner colors appear separated as two offset lines. This is due to the vibration of the scanner, which causes the scanner to detect a line in different positions each time that it makes a scanning pass. The default setting for Auto Text/Photo Sensitivity has been shifted toward Text by 1 step. <br> - The firmware for the A259/A260 Scanner (Editor Version) can be installed in the A259/A260 Scanner (Non-Editor Version) and A258, and vice versa. If this is done, SC150 is displayed when the main switch is turned on. The firmware has been modified so that SC150 is displayed before the data is stored in the flash ROM. | A2605136 G | July 1999 <br> Production | 1.18 |
| - SC326 occurs under the following conditions: <br> 1. A4 lengthwise <br> 2. $158 \%$ <br> 3. SP 04-010 (Scanner leading edge registration): 2.0 mm <br> When the Start key is pressed under these conditions, the exposure lamp turns on but then soon turns off. The copier keeps running. SC326 is displayed after a short while. | A2605136 H | September 1999 Production | 1.20 |
| - Thin lines on originals may become thinner or thicker when making copies at $93 \%$ reduction or smaller. | A2605136 J | December 1999 Production | 1.21 |

## 2. A258 MAIN FRAME FIRMWARE HISTORY <br> 2.1 A258 MAIN FRAME FIRMWARE HISTORY

| A258 MAIN FRAME FIRMWARE MODIFICATION HISTORY |  |  |  |
| :---: | :---: | :---: | :---: |
| DESCRIPTION OF MODIFICATION | FIRMWARE LEVEL | SERIAL NUMBER | FIRMWARE VERSION |
| - First Unit of Mass Production for the A258 | A2585197 B | 1st Mass Production for A258 | 6.13A |
| - Enables the counter method to be changed (copy or development counter) only once in SP mode (SP7-008-000). | A2585197 C | April 1999 Production | 6.15 |
| - The transfer belt bias has been optimized as follows: <br> - At a certain point, the last original may not be fed out from the ARDF in 1 to 1 mode. | A2585197 D | Ricoh <br> May 1999 <br> Production <br> $\underline{\text { Savin/Gestetner }}$ <br> July 1999 <br> Production | 6.43 |
| - To prevent misdetection of the Toner End condition for black toner, the detection parameter has been changed from 4 to 8 times. | A2585197 E | Ricoh <br> May 1999 <br> Production <br> $\underline{\text { Savin/Gestetner }}$ <br> July 1999 <br> Production | 6.431 |

## A258 MAIN FRAME FIRMWARE MODIFICATION HISTORY

| DESCRIPTION OF MODIFICATION | FIRMWARE LEVEL | SERIAL NUMBER | FIRMWARE VERSION |
| :---: | :---: | :---: | :---: |
| - The display for the counters has been changed. "Copies" or "Developments" is displayed on the panel, depending on the counter method selected. This allows us to clearly know which counter method has been selected. <br> [ Symptom ] <br> Horizontal white lines / dirty background at the trailing edge when copying onto transparencies. This occurs in all environmental conditions except high temperature and humidity. [ Solution ] <br> The default setting of the following SP mode has been changed and the AC component of the paper separation corona turns ON when copying onto transparencies. | A2585197 F | July 1999 <br> Production | 6.621 |
| SP Mode No. Current Setting   <br>  New Setting   <br>  SP 2-310-10 10 uA 8 uA <br> SP 2-316-5 $70 \%$ $75 \%$  <br> SP 2-316-6 $80 \%$ $70 \%$  <br> SP 2-316-25 $100 \%$  $125 \%$ |  |  |  |
| - During evaluation tests on European paper, white lines appeared in the halftone areas. To prevent this problem, the settings of the following SP modes have been changed (for European versions only): |  |  |  |
| SP Mode No. Current setting   <br>  Sew Setting   <br> SP2-316-009  $100 \%$ $79 \%$ <br> SP2-316-010  $87 \%$ $70 \%$ <br> SP2-316-013  $120 \%$  <br> SP2-316-014  $87 \%$  |  |  |  |
| - The shut down timing for the main exhaust fan has been changed as follows to reduce the machine noise level. These figures refer to how long the machine waits to turn off the fan after turning off the drum motor. <br> Before After <br> 30 seconds 5 seconds <br> - To prevent the charge corona unit from becoming dirty too soon, the following SP mode has been added. SP3-980-000 "Charge corona fan ON/OFF timing setting". <br> - The following problem was corrected: The logging data (SP7-809-01) was not counted properly. |  |  |  |

## A258 MAIN FRAME FIRMWARE MODIFICATION HISTORY

## DESCRIPTION OF MODIFICATION

- An area of up to 20 mm from the trailing edge of the last copy becomes lighter in OHP or Thick Paper mode under the following conditions:

1. Selected paper size is A4(LT) sideways or smaller
2. The amount of copies selected is an even number.

- In the Series Copy Mode (Book to 1 sided), halftone areas on the right side of originals come out lighter under the following conditions.

1. B\&W copy mode.
2. The number of copies selected is 3 or more.
After a job is finished, the Start Key will turn green sooner.

- A blank display problem found in the previous version has been corrected.
- To prevent By-pass Tray jams when feeding the reverse side of the paper, the pick-up roller OFF timing has been changed.
- By this modification, the pick-up roller continues to feed the paper until the paper reaches the grip roller.
- The software has been modified for the following reasons:

1. To minimize dirty background in normal paper copy/print modes
2. To minimize dirty background in OHP/thick paper copy/print modes
3. To prevent horizontal color bands in color copy/print modes

## [ Contents of modification ]

## Dirty background

- The development unit will stay at the development position under the following conditions:

1. When the OPC drum starts rotating to develop the latent image.
2. During the extra transfer belt rotation (see NOTE) in Thick/OHP mode (copy/print).

CONTINUED ON NEXT PAGE

| FIRMWARE <br> LEVEL <br> A2585197 G | SERIAL <br> NUMBER <br> Rovember 1999 <br> Production <br> Savin/Gestetner | FIRMWARE <br> VERSION <br> 6.81 |
| :---: | :---: | :---: |
| October 1999 <br> Production |  |  |
| A2585197 J | March 2000 <br> Production | 6.913 |
| A2585197 K | April 2000 <br> Production | 7.02 |
|  |  |  |

## A258 MAIN FRAME FIRMWARE MODIFICATION HISTORY

| DESCRIPTION OF MODIFICATION | FIRMWARE LEVEL | SERIAL NUMBER | FIRMWARE VERSION |
| :---: | :---: | :---: | :---: |
| CONTINUED FROM PREVIOUS PAGE <br> To prevent toner from being attracted to the drum, a development bias is applied to the development sleeve. However, the dirty background level becomes worse if the drum and/or developer have deteriorated. To minimize dirty background, the timing of the revolver rotation and the position of the development unit have been changed. <br> NOTE: <br> In Thick Paper/OHP Modes, the process speed is reduced by half after the image is developed on the transfer belt (4-color image for full color). To properly transfer the image developed on the transfer belt onto the sheet of paper, the transfer belt makes an extra rotation. <br> Horizontal Color Bands <br> To improve image quality, the PG was slightly reduced from March '00 production. However, when the PG is reduced, the developer brush has a tendency to touch the drum surface while the revolver rotates. This may result in a horizontal color band on the outputs. To prevent this band, the timing of the revolver rotation has been changed so that the color band will not be transferred to the image area of the transfer belt. <br> - The SP modes listed below have been added so that toner concentration can be adjusted with more precision and finer control. <br> New SP modes: <br> SP2-203-001 to 013 <br> SP2-204-001 to 012 <br> - The software has been changed so that the key counter counts twice for A3/DLT when SP5-104-000 is activated (A3/DLT Double Count). | A2585197 K | April 2000 Production | 7.02 |

A258 MAIN FRAME FIRMWARE MODIFICATION HISTORY

| DESCRIPTION OF MODIFICATION |
| :--- |
| "Charge Corona Fan ON/OFF" |
| has been added to SP mode (refer to |
| TSB A258/A259/A260-027 for details). |
| However, since turning off the fan can cause |
| the temperature inside machine to increase, |
| setting "2" below (bold) has been newly |
| added to the software. |
| 0: Stays on |
| 1: Turn off |
| 2: Turn on at $\mathbf{3 0} 0^{\circ} \mathrm{C}$, turn off at $\mathbf{2 6}^{\circ} \mathbf{C}^{\circ}$ |
| using the temp. measured by the |
| temp/humidity sensor |

- If the machine is continuously on, the machine will not perform the initial process control self-check, causing the toner concentration to be out of range. To achieve optimum image quality under this condition, the software has been changed so that the initial process control self check will be performed if both of the following conditions are met:

1. 12 hours has passed since the last initial process control or forced process control self-check.
2. Process control self-check has passed 1 hour since the last time.

- When the revolver rotates, a small amount of toner can flow into the development unit, causing the toner concentration to increase. During the initial process control self-check, the machine automatically corrects the toner concentration (Toner Density Auto Control); however, this does not happen unless the main switch is turned off and on. To work around this, the software has been modified so that the toner density auto control can be performed during the interval process control self-check. The corresponding setting
(2) has been added to SP3-128:

SP3-128 Toner Density Auto Control Settings (Default : 0)
$\mathbf{0}$ : Execute at initial and forced process control self-check

1. Not execute at any self-check
2. Execute at initial, forced, and interval process control self-check

CONTINUED ON NEXT PAGE

| FIRMWARE <br> LEVEL | SERIAL <br> NUMBER | FIRMWARE <br> VERSION |
| :---: | :---: | :---: |
| A2585197 M | N/A | 7.05 |
|  |  |  |
|  |  |  |
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|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

## A258 MAIN FRAME FIRMWARE MODIFICATION HISTORY

| DESCRIPTION OF MODIFICATION | FIRMWARE <br> LEVEL | SERIAL <br> NUMBER | FIRMWARE <br> VERSION |
| :--- | :---: | :---: | :---: |
| CONTINUED FROM PREVIOUS PAGE | A2585197 M | N/A | 7.05 |
| The following SP modes have been newly <br> added for Toner Density Auto Control: <br>  <br> SP3-130: TD Auto Correction Setting <br> Specifies the number of copies to <br> consume toner for the toner density <br> correction of the initial or interval process <br> control self-check. |  |  |  |
| NOTE: Normally, it is not necessary to adjust <br> the data of this SP mode in the field. |  |  |  |
| SP3-130-001 Initial self-check: <br> 0 to 50 copies / 10 (Default) / step] |  |  |  |
| SP3-130-002 Interval self-check: <br> 0 to 50 copies/ 5(Default) /1 step |  |  |  |
| SP3-130-003 Table limit setting: <br> [0 or 1/0 (Default) <br> 0:Limit, 1: No limit |  |  |  |
|  |  |  |  |

## 3. A259/A260 MAIN FRAME FIRMWARE HISTORY

### 3.1 A259/A260 MAIN FRAME FIRMWARE HISTORY

| A259/A260 MAIN FRAME FIRMWARE MODIFICATION HISTORY |  |  |  |
| :---: | :---: | :---: | :---: |
| DESCRIPTION OF MODIFICATION | FIRMWARE LEVEL | SERIAL NUMBER | FIRMWARE VERSION |
| - First Unit of Mass Production for the A259/A260. | A2605197 B | $\begin{aligned} & \frac{\text { A259/A260 }}{\text { 1st Mass }} \\ & \text { Production } \end{aligned}$ | 1.694 |
| - The display for the counters has been changed. "Copies" or "Developments" is displayed on the panel, depending on the counter method selected. This allows us to clearly know which counter method has been selected. <br> - The development bias OFF timing has been optimized to prevent the following problem: Poor image transfer may happen at the trailing edge of the last sheet of even pages in multi-copy mode (double image processing) with thick paper or transparencies. <br> - The outline length of the closed loop area is extended as follows. <br> [Before Modification] <br> Total Maximum length: Up to about 2 m <br> [After modification] <br> Total maximum length: Up to about 40 m Multi-closed loop: Up to about 10 m Closed loop for 1 area: Up to about 2 m <br> - "Area editing" and "Auto Reduce/Enlarge (AR/E)" can be selected at the same time. <br> [When selecting Save Area mode] <br> 1. The saved area will be enlarged/reduced to fit the designated paper size. <br> 2. The saved area image is aligned at the top left corner of outputs. <br> 3. Centering function is selectable. | A2605197 C | $\begin{aligned} & \begin{array}{l} \text { February } 2000 \\ \text { Production } \end{array} \\ & \begin{array}{l} \text { February } 2000 \\ \text { Production } \end{array} \end{aligned}$ | 1.728 |


| A259/A260 FIRMWARE MODIFICATION HISTORY |  |  |  |
| :---: | :---: | :---: | :---: |
| DESCRIPTION OF MODIFICATION | FIRMWARE LEVEL | SERIAL NUMBER | FIRMWARE VERSION |
| CONTINUE FROM PREVIOUS PAGE <br> [When not selecting Save Area mode] <br> - Since the image area becomes A3/DLT in "Area Editing" and "AR/E", the magnification ratio is automatically calculated based on A3/DLT size regardless of the original size. It is required to select the magnification ratio manually if you want to specify the magnification for the designated paper size. <br> - The printer gamma data for the printer mode, which is changed in SP mode, will not be applied to the copier until the main switch is turned off and on. | A2605197 C | A259February 2000Production$\quad$ A260October 1999 <br> Production | 1.728 |
| - The screen did not display magnification ratios greater than $255 \%$ even though the machine correctly made copies at these ratios. <br> - The detection timing for the SC522 and SC524 error conditions was optimized. <br> SC522: Duplex - Side fence jogger H.P. error <br> SC524: Duplex - End fence jogger H.P. error <br> - Under the following conditions, the machine displays "Copy size cannot be changed" on the screen after the paper is stacked in the duplex unit. <br> 1. Duplex copying in the platen mode from the by-pass tray. <br> 2. Paper on the by-pass tray runs out (paper end condition). | A2605197 D | A259 <br> February 2000 Production <br> A260 <br> February 2000 Production | 1.734 |
| - To prevent By-pass Tray jams when feeding the reverse side of the paper, the pick-up roller OFF timing has been changed. By this modification, the pick-up roller continues to feed the paper until the paper reaches the grip roller. | A2605197 E |  | 1.735 |


| A259/A260 MAIN FRAME FIRMWARE MODIFICATION HISTORY |  |  |  |
| :---: | :---: | :---: | :---: |
| DESCRIPTION OF MODIFICATION | FIRMWARE LEVEL | SERIAL NUMBER | FIRMWARE VERSION |
| - The software has been modified for the following reasons: <br> 1. To minimize dirty background in normal paper copy/print modes <br> 2. To minimize dirty background in OHP/thick paper copy/print modes <br> 3. To prevent horizontal color bands in color copy/print modes <br> [ Contents of modification ] <br> Dirty Background: <br> The development unit will stay at the development position under the following conditions: <br> 1. When the OPC drum starts rotating to develop the latent image. <br> 2. During the extra transfer belt rotation (see NOTE) in Thick/OHP mode (copy/print). <br> - To prevent toner from being attracted to the drum, a development bias is applied to the development sleeve. However, the dirty background level becomes worse if the drum and/or developer have deteriorated. To minimize the dirty background, the timing of the revolver rotation and the position of the development unit have been changed. <br> NOTE: In Thick Paper/OHP Modes, the process speed is reduced in half after the image is developed on the transfer belt (4color image for full color). To properly transfer the image developed on the transfer belt onto the sheet of paper, the transfer belt makes an extra rotation. <br> Horizontal Color Band: <br> To improve image quality, the PG was slightly reduced from the March '00 production. However, when the PG is reduced, the developer brush has a tendency to touch the drum surface while the revolver rotates. This may result in a horizontal color band on the outputs. To prevent this band, the timing of the revolver rotation has been changed so that the color band will not be transferred to the image area of the transfer belt. | A2605197 F | $\underset{\text { April } 2000}{\text { A259 }}$ <br> Production <br> A260 <br> April 2000 <br> Production | 1.771 |

## A259/A260MAIN FRAME FIRMW ARE MODIFICATION HISTORY

| DESCRIPTION OF MODIFICATION | FIRMWARE LEVEL | SERIAL NUMBER | FIRMWARE VERSION |
| :---: | :---: | :---: | :---: |
| CONTINUE FROM PREVIOUS PAGE <br> The SP modes listed below have been added so that toner concentration can be adjusted with more precision and finer control. <br> New SP modes: <br> SP2-203-001 to 013 <br> SP2-204-001 to 012 <br> The software has been changed so that the key counter counts twice for A3/DLT when SP5-104-000 is activated (A3/DLT Double Count). | A2605197 F | A259 April 2000 Production A260 April 2000 Production | 1.771 |
| - To prevent any data changes due to electrical noise, the initialization method of the NVRAM has been changed | A2605197 G |  | 1.774 |
| - "Charge Corona Fan ON/OFF" has been added to SP mode (refer to TSB A258/A259/A260-027 for details). However, since turning off the fan can cause the temperature inside machine to increase, setting " 2 " below (bold) has been newly added to the software. <br> 0 : Stays on <br> 1: Turn off <br> 2: Turn on at $30^{\circ} \mathrm{C}$, turn off at $26^{\circ} \mathrm{C}^{\circ}$ using the temp. measured by the temp/humidity sensor | A2605197 H | $\frac{\text { A259/A260 }}{N / A}$ | 1.777 |

## A259/A260 MAIN FRAME FIRMWARE MODIFICATION HISTORY

| DESCRIPTION OF MODIFICATION | FIRMWARE LEVEL | SERIAL NUMBER | FIRMWARE VERSION |
| :---: | :---: | :---: | :---: |
| CONTINUED FROM PREVIOUS PAGE <br> - If the machine is continuously on, the machine will not perform the initial process control self-check, causing the toner concentration to be out of range. To achieve optimum image quality under this condition, the software has been changed so that the initial process control self check will be performed if both of the following conditions are met: <br> 1. 12 hours has passed since the last initial process control or forced process control self-check. <br> 2. Process control self-check has passed 1 hour since the last time. <br> - When the revolver rotates, a small amount of toner can flow into the development unit, causing the toner concentration to increase. During the initial process control self-check, the machine automatically corrects the toner concentration (Toner Density Auto Control); however, this does not happen unless the main switch is turned off and on. To work around this, the software has been modified so that the toner density auto control can be performed during the interval process control self-check. The corresponding setting (2) has been added to SP3-128: <br> SP3-128 Toner Density Auto Control Settings (Default : 0): <br> 0: Execute at initial and forced process control self-check <br> 1. Not execute at any self-check <br> 2. Execute at initial, forced, and interval process control self-check <br> CONTINUED ON NEXT PAGE | A2605197 H | $\frac{\text { A259/A260 }}{\text { N/A }}$ | 1.777 |

## A259/A260 MAIN FRAME FIRMWARE MODIFICATION HISTORY

| DESCRIPTION OF MODIFICATION | FIRMWARE LEVEL | SERIAL NUMBER | FIRMWARE VERSION |
| :---: | :---: | :---: | :---: |
| CONTINUED FROM PREVIOUS PAGE <br> The following SP modes have been newly added for Toner Density Auto Control: <br> SP3-130 TD Auto Correction Setting: <br> Specifies the number of copies to consume toner for the toner density correction of the initial or interval process control self-check. <br> NOTE: Normally, it is not necessary to adjust the data of this SP mode in the field. <br> SP3-130-001 Initial self-check: <br> 0 to 50 copies / 10 (Default) / 1 step] <br> SP3-130-002 Interval self-check: <br> 0 to 50 copies/ 5 (Default) /1 step <br> SP3-130-003 Table limit setting: <br> [0 or $1 / 0$ (Default) <br> $0: L i m i t, 1$ : No limit | - A2605197 $\mathbf{H}$ | - $\frac{\text { A259/A260 }}{\text { N/A }}$ | - 1.777 |
| - During multi copy runs, the duplex feed motor malfunctions if the control pulse is not generated when the interrupt pulse is generated. This causes a paper jam in the duplex unit. This problem was found during internal tests. The paper jam occurred at about 1,500 duplex copies. | A2605197 J | $\frac{\text { A259/A259 }}{\mathrm{N} / \mathrm{A}}$ | 1.778 |

## BULLETIN NUMBER: A258/A259/A260-043

02/22/2001

## APPLICABLE MODEL:

GESTETNER - FAX UNIT (B383) for CS206/CS206d/CS206e
RICOH - FAX UNIT (B383) for Aficio Color3006/4006/4106
SAVIN - FAX UNIT (B383) for SD306/306A/A306e

## SUBJECT: FAX UNIT RELAY HARNESS

When installing the Fax Unit (machine code B383), it is not necessary to install the Relay Harness shown in the figure below.


This Relay Harness was used to correct a problem in other markets. It was never used in our market.

## UNITS AFFECTED:

The following table shows the serial numbers of the Fax Units with the Relay Harness. All other Fax Units do not include the Relay Harness.

| Model Code | Production Month | Serial Number |
| :---: | :---: | :---: |
| B383 | Aug. 2000 | H6200800001-H6200800055 |
|  | Sep. 2000 | H6200900001-H6200800036 |
|  |  | $H 6200900040-H 6200800042$ |
|  |  | $H 6200900044-\mathrm{H} 6200800046$ |
|  |  | $H 6200900048-\mathrm{H} 6200800059$ |
|  |  | $H 6200900061-\mathrm{H} 6200800062$ |
|  |  | H620090065-H6200000078 |
|  |  | H6200900081-H6200800082 |

```
BULLETIN NUMBER: A258/A259/A260 - 043 REISSUE \star 05/08/2001
* APPLICABLE MODEL:
    GESTETNER - FAX OPTION TYPE 400 (B383)
    RICOH - FAX OPTION TYPE 400 (B383)
    SAVIN - FAX OPTION TYPE 400 (B383)
```


## SUBJECT: FAX UNIT RELAY HARNESS

## GENERAL:

This bulletin was reissued due to errors in the applicable model listing above and the bulletin numbering sequence. Please refer to "Technical Service Bulletin B383-001" for additional information for the Fax Unit Relay Harness.

## BULLETIN NUMBER: A258/A259/A260- 044

## APPLICABLE MODEL:

## GESTETNER - CS206/206d/206de

RICOH - AFICIO COLOR 3006/4006/4106
SAVIN - SDC 306/306A/306E

## SUBJECT: LOWER REGISTRATION ROLLER

## GENERAL:

To remove paper dust from the lower registration roller, a scraper has been added.


Continued...

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Page 2 of 2

The following parts additions are being issued for all A258 Parts Catalogs.

|  |  | REFERENCE |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| NEW PART NO. | DESCRIPTION |  | QTY |  | PAGE |  | ITEM |
|  |  |  | A259/260 |  |  |  |  |
| A2592660 | Scraper - Registration Roller | 1 | 37 | $23^{*}$ |  |  |  |
| A2592660 | Scraper - Registration Roller | 1 |  | 33 | $23^{*}$ |  |  |

## *DENOTES NEW ITEM NUMBER

## UNITS AFFECTED:

All A258/259/260 copiers manufactured after the Serial Numbers listed below will have the new style Scraper - Registration Roller installed during production

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS206 | 3B30070001 |
| GestetnerCS206d | 3B40070001 |
| GestetnerCS206de | 3B50070001 |
| Ricoh Aficio Color 3006 | H0100700001 |
| Ricoh Aficio Color 4006 | H0200700001 |
| Ricoh Aficio Color 4106 | H03008xxxxx |
| Savin SDC306 | 3B30070001 |
| Savin SDC306A | 3B40070001 |
| Savin SDC306E | 3B50070001 |

## INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and NEW machines. |  | NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines |
| :---: | :---: | :---: | :---: |
| 1 | NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines. | 3 | OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines. |
| 3/S | Must be installed as a set on units manufactured prior to the $\mathrm{S} / \mathrm{N}$ cut-in. On units manufactured after the $\mathrm{S} / \mathrm{N}$ cut-in or previously modified, use the new part numbers individually. |  |  |

## BULLETIN NUMBER: A258/A259/A260- 045

## APPLICABLE MODEL:

GESTETNER - CS206/206d/206de
RICOH - AFICIO COLOR 3006/4006/4106
SAVIN - SDC 306/306A/306E

## SUBJECT: PULLEY HOLDER

## GENERAL:

A bushing has been added to the pulley holder to prevent noise. Both of the bushings are the new type (\#5). When replacing the pulley holder, the pulley holder and bushing should be replace as a set.
31. DRIVE SECTION 2 (A258)


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Page 2 of 2

The following parts corrections are being issued for all A258/259/260 Parts Catalogs.

| $\begin{gathered} \text { OLD PART } \\ \text { NO. } \end{gathered}$ | NEW PART NO. |  |  |  | REFERENCE |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | DESCRIPTION | QTY | INT | PAGE |  | ITEM |
|  |  |  |  |  | A258 | A259/260 |  |
| A2591137 | A2591139 | Pulley Holder | 1 | 3 | 71 | 75 | 8 |
| 50530447 | AA082046 | Bushing - $6 \times 12 \times 6$ | $1 \rightarrow 2$ | 1 | 71 | 75 | 5 |

## UNITS AFFECTED:

All A258/259/260 copiers manufactured after the Serial Numbers listed below will have the new style Pulley Holder and Bushing installed during production

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS206 | 3B30080001 |
| GestetnerCS206d | 3B40080001 |
| GestetnerCS206de | 3B50080001 |
| Ricoh Aficio Color 3006 | H 0100700049 |
| Ricoh Aficio Color 4006 | H 0200700076 |
| Ricoh Aficio Color 4106 | $\mathrm{H} 03008 x x x x x$ |
| Savin SDC306 | 3B30080001 |
| Savin SDC306A | 3B40080001 |
| Savin SDC306E | 3B50070001 |

## INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and <br> NEW machines. | 2 | NEW parts CAN NOT be used in OLD machines. <br> OLD parts can be used in OLD and NEW machines. |
| :---: | :--- | :--- | :--- |
| 1 | NEW parts can be used in OLD and NEW machines. <br> OLD parts CAN NOT be used in NEW machines. | 3 | OLD parts CAN NOT be used in NEW machines. <br> NEW parts CAN NOT be used in OLD machines. |
| $3 / S$ | 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 <br> previously modified, use the new part numbers individually. |  |  |

## BULLETIN NUMBER: A258/A259/A260- 046

GESTETNER - CS206/206d/206de
RICOH - AFICIO COLOR 3006/4006/4106
SAVIN - SDC 306/306A/306E

## SUBJECT: DECAL - TONER SUPPLY

## GENERAL:

To improve the instructions for changing the toner cartridge, the toner supply decal has been changed as shown below.


Continued.

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Page 2 of 2

The following parts corrections are being issued for all A258/259/260 Parts Catalogs.

| OLD PART NO. | NEW PART NO. |  | QTY | INT | REFERENCE |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | DESCRIPTION |  |  |  | AGE | ITEM |
|  |  |  |  |  | A258 | A259/260 | ITEM |
| A2591348 | A2591344 | Decal - Toner Supply | 1 | 0 | 11 | 11 | 2 |
| A2591348 | A2591344 | Decal - Toner Supply | 1 | 0 | 109 | 125 | 7 |

## UNITS AFFECTED:

A258/A259/A260 Serial Number cut-in not available at time of publication.

## INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and <br> NEW machines. | 2 | NEW parts CAN NOT be used in OLD machines. <br> OLD parts can be used in OLD and NEW machines. |
| :---: | :--- | :--- | :--- |
| 1 | NEW parts can be used in OLD and NEW machines. <br> OLD parts CAN NOT be used in NEW machines. | 3 | OLD parts CAN NOT be used in NEW machines. <br> NEW parts CAN NOT be used in OLD machines. |
| $3 / S$ | 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 <br> previously modified, use the new part numbers individually. |  |  |

## BULLETIN NUMBER: A258/A259/A260- 047

## APPLICABLE MODEL:

GESTETNER - CS206/206d/206de
RICOH - AFICIO COLOR 3006/4006/4106
SAVIN - SDC 306/306A/306E

## SUBJECT: GEARS

## GENERAL:

To improve the drive section reliability, some of the gears have had ball bearings added.


The following parts corrections are being issued for all A258 Parts Catalogs.

| OLD PART NO. | NEW PART NO. |  |  | INT | REFERENCE |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | DESCRIPTION | QTY |  | PAGE |  | ITEM |
|  |  |  |  |  | A258 | A259/260 |  |
| AB017485 | AB017576 | Gear - 21Z/24Z | 1 | 1 | 75 | 79 | 27 |
| AB017482 | AB017575 | Gear - 24Z/20Z | 1 | 1 | 75 | 79 | 29 |

Continued...

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Page 2 of 2

## UNITS AFFECTED:

All A258/259/260 copiers manufactured after the Serial Numbers listed below will have the new style gears installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS206 | 3B3009xxxx |
| GestetnerCS206d | 3B4009xxxx |
| GestetnerCS206de | 3B5009xxxx |
| Ricoh Aficio Color 3006 | H01009xxxxx |
| Ricoh Aficio Color 4006 | H02009xxxxx |
| Ricoh Aficio Color 4106 | H03009xxxxx |
| Savin SDC306 | 3B3009xxxx |
| Savin SDC306A | 3B4009xxxx |
| Savin SDC306E | 3B5009xxxx |

## INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and <br> NEW machines. | 2 | NEW parts CAN NOT be used in OLD machines. <br> OLD parts can be used in OLD and NEW machines. |
| :---: | :--- | :--- | :--- |
| 1 | NEW parts can be used in OLD and NEW machines. <br> OLD parts CAN NOT be used in NEW machines. | 3 | OLD parts CAN NOT be used in NEW machines. <br> NEW parts CAN NOT be used in OLD machines. |
| $3 / S$ | 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 <br> previously modified, use the new part numbers individually. |  |  |

BULLETIN NUMBER: A258/A259/A260-048
04/18/2001
APPLICABLE MODEL:
GESTETNER - CS206/206d/206de
RICOH - AFICIO COLOR 3006/4006/4106
SAVIN - SDC 306/306A/306E

## SUBJECT: MAIN BOARD

## GENERAL:

To increase the noise margin for NVRAM, the main board has been changed.
39. ELECTRICAL COMPONENT 4 (A259/A260)


The following parts corrections are being issued for all A59/A260 Parts Catalogs.

|  |  |  |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE | ITEM |
| A2605087 | A2605089 | Main Board (US) | 1 | 1 | 87 | 12 |
| A2605087 | A2605089 | Main Board (US) | 1 | 1 | 101 | 1 |

Continued...

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Page 2 of 2

## UNITS AFFECTED:

All A259/260 copiers manufactured after the Serial Numbers listed below will have the new style Main Board installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS206d | 3B40070001 |
| Gestetner CS206de | 3B50070001 |
| Ricoh AFICIO 4006 | H0200600280 |
| Ricoh AFICIO 4106 | H03007XXXXX |
| Savin SD306A | 3B40070001 |
| Savin SDC306E | 3B50070001 |

## INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and <br> NEW machines. | 2 | NEW parts CAN NOT be used in OLD machines. <br> OLD parts can be used in OLD and NEW machines. |
| :---: | :--- | :--- | :--- |
| 1 | NEW parts can be used in OLD and NEW machines. <br> OLD parts CAN NOT be used in NEW machines. | 3 | OLD parts CAN NOT be used in NEW machines. <br> NEW parts CAN NOT be used in OLD machines. |
| $3 / S$ | 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 <br> previously modified, use the new part numbers individually. |  |  |

BULLETIN NUMBER：A258／A259／A260－ 048 REISSUE $\star$

## APPLICABLE MODEL：

GESTETNER－CS206／206D／206DE
RICOH－AFICIO COLOR 3006／4006／4106
SAVIN－SDC306／306A／306E

## SUBJECT：MAIN BOARD

## GENERAL：

To increase the noise margin for NVRAM，the main board has been changed．
The following parts corrections are being issued for all A258／A259／A260 Parts Catalogs．


|  |  |  |  |  | REFE | NCE |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO． | NEW PART NO． | DESCRIPTION | QTY | INT | PAGE | ITEM |
| A2585087 | A2585090 | Main Board（US）－－A258 | 1 | 1 | 83 | 12 |
|  |  |  |  |  | 95 | 1 |
| A2605087 | A2605090 | Main Board（US）－－A259／A260 | 1 | 1 | 87 | 12 |
|  |  |  |  |  | 101 | 1 |

Continued．．．
Tech Service Bulletin No．A258／A259／A260－ 048 Reissue $\star$ Page 2 of 2

## UNITS AFFECTED:

All A258/A259/260 copiers manufactured after the serial numbers listed below will have the new style main board installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS206 | 3B30070010 |
| Gestetner CS206D | 3B40070001 |
| Gestetner CS206DE | 3B50070001 |
| Ricoh Aficio 3006 | H0100700001 |
| Ricoh Aficio 4006 | H0200600280 |
| Ricoh Aficio 4106 | H03007XXXXX |
| Savin SDC306 | 3B30070010 |
| Savin SD306A | 3B40070001 |
| Savin SDC306E | 3B50070001 |

## INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and <br> NEW machines. | 2 | NEW parts CAN NOT be used in OLD machines. <br> OLD parts can be used in OLD and NEW machines. |
| :---: | :--- | :--- | :--- |
| 1 | NEW parts can be used in OLD and NEW machines. <br> OLD parts CAN NOT be used in NEW machines. | 3 | OLD parts CAN NOT be used in NEW machines. <br> NEW parts CAN NOT be used in OLD machines. |
| $3 / S$ | 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 <br> previously modified, use the new part numbers individually. |  |  |

## BULLETIN NUMBER: A258/A259/A260-049

04/18/2001

## APPLICABLE MODEL:

GESTETNER - CS206/CS206d/CS206e
RICOH - AFICIO COLOR 3006/4006/4106
SAVIN - SD306/306A/306e

## SUBJECT: TONER STOPPER SEAL

## GENERAL:

To prevent toner from dropping from the end of the toner collection pipe, a seal has been added to the toner stopper as shown.
The following addition is being issued for all A258/259/260 Parts Catalogs.

| NEW PART NO. |  |  | REFERENCE |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | DESCRIPTION | QTY | PAGE |  | ITEM |
|  |  |  | A258 | A259/A260 |  |
| B0173450 | Toner Stopper Seal | 1 | 55 |  | 37* |
| B0173450 | Toner Stopper Seal | 1 |  | 51 | 37* |

*DENOTES NEW ITEM NUMBER


Continued...

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## UNITS AFFECTED:

All A258/A259/A260 copiers manufactured after the Serial Numbers listed below will have the new style toner stopper seal installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner SC206 | 3B3012xxxx |
| Gestetner SC206d | 3B4012xxxx |
| Gestetner CS206de | 3B5012xxx |
| Ricoh Aficio color3006 | H01012xxxxx |
| Ricoh Aficio color4006 | H02012xxxx |
| Ricoh Aficio color4106 | H03012xxxxx |
| Savin SDC306 | 3B3012xxxx |
| Savin SDC306A | 3B4012xxxx |
| Savin SDC306E | 3B5012xxx |

## INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and <br> NEW machines. | 2 | NEW parts CAN NOT be used in OLD machines. <br> OLD parts can be used in OLD and NEW machines. |
| :---: | :--- | :--- | :--- |
| 1 | NEW parts can be used in OLD and NEW machines. <br> OLD parts CAN NOT be used in NEW machines. | 3 | OLD parts CAN NOT be used in NEW machines. <br> NEW parts CAN NOT be used in OLD machines. |
| $3 / S$ | 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 <br> previously modified, use the new part numbers individually. |  |  |

BULLETIN NUMBER: A258/A259/A260-050
05/31/2001
APPLICABLE MODEL:
GESTETNER - CS206/206D/206DE
RICOH - AFICIO 3006/4006/4106
SAVIN - SDC306/306A/306E

## SUBJECT: PARTS CATALOG UPDATES

## GENERAL:

The following parts updates are being issued for all A258/A259/A260 Parts Catalogs.

- UPDATE 1: Rear Right Cover - To increase the air flow, the exhaust vent of the rear right cover has been changed from a round hole style to a mesh type as shown.


|  |  |  |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE | ITEM |
| A2591310 | A2591308 | Rear Right Cover | 1 | 1 | 13 | 18 |

## UNITS AFFECTED:

All A258/A259/A260 copiers manufactured after the Serial Numbers listed below will have the new style rear right cover installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS206 | 3B30040001 |
| GestetnerCS206D | 3B40040001 |
| Gestetner CD206DE | 3B50040001 |
| Ricoh Aficio 3006 | H0100400001 |
| Ricoh Aficio 4006 | H0200400001 |
| Ricoh Aficio4106 | H0300400001 |
| Savin SDC306 | 3B30040001 |
| Savin SDC306A | 3B40040001 |
| Savin SDC306E | 3B50040001 |

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- UPDATE 2: Main Board - To increase the EMI margin for NVRAM, the programming of the main board has been changed.


|  |  |  |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE | ITEM |
| A2585087 | A2585090 | Main Board (A258) | 1 | 1 | 83/95 | 12/1 |
| A2605087 | A2605089 | Main Board (A259/A260) | 1 | 1 | 87/101 | 12/1 |

## UNITS AFFECTED:

All A258/A259/A260 copiers manufactured after the Serial Numbers listed below will have the new main board installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS206 | 3B30070010 |
| GestetnerCS206D | 3B40070001 |
| Gestetner CD206DE | 3B50070001 |
| Ricoh Aficio 3006 | H0100700001 |
| Ricoh Aficio 4006 | H0200600280 |
| Ricoh Aficio4106 | H03007XXXXX |
| Savin SDC306 | 3B30070010 |
| Savin SDC306A | 3B40070001 |
| Savin SDC306E | 3B50070001 |

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- UPDATE 3: Gear \& Bearings - To decrease the smell from the fusing unit during operation, the oil on the gear and the grease in the bearings has been changed.


| OLD PART NO. | NEW PARTNO. |  | QTY | INT | REFERENCE |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | DESCRIPTION |  |  | PAGE |  | ITEM |
|  |  |  |  |  | A258 | A259/A260 |  |
| AB014099 | AB014185 | Gear - 58Z | 1 | 1 | 63 | 59 | 27 |
| AE030015 | AB030039 | Ball Bearing - $35 \times 47 \times 7 \mathrm{~mm}$ | 2 | 1 | 63 | 59 | 23 |
| AE030019 | AE030040 | Ball Bearing - $7 \times 20 \times 32 \mathrm{~mm}$ | 2 | 1 | 65 | 61 | 1 |
| A2594013 | A2594027 | Fusing Unit - 120V | 1 | 1 | 59 | 55 | * |
| A2594018 | A2594028 | Fusing Unit - 230 V | 1 | 1 | 59 | 55 | * |

## UNITS AFFECTED:

All A258/A259/A260 copiers manufactured after the Serial Numbers listed below will have the new gear and bearings installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS206 | 3B30080001 |
| GestetnerCS206D | 3B40080001 |
| Gestetner CD206DE | 3B50080001 |
| Ricoh Aficio 3006 | H0100700049 |
| Ricoh Aficio 4006 | H0200700083 |
| Ricoh Aficio4106 | H03008XXXX |
| Savin SDC306 | 3B30080001 |
| Savin SDC306A | 3B40080001 |
| Savin SDC306E | 3B50080001 |

## INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and <br> NEW machines. | 2 | NEW parts CAN NOT be used in OLD machines. <br> OLD parts can be used in OLD and NEW machines. |
| :---: | :--- | :--- | :--- |
| 1 | NEW parts can be used in OLD and NEW machines. <br> OLD parts CAN NOT be used in NEW machines. | 3 | OLD parts CAN NOT be used in NEW machines. <br> NEW parts CAN NOT be used in OLD machines. |
| $3 / S$ | 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 <br> previously modified, use the new part numbers individually. |  |  |

## SUBJECT: PARTS CATALOG UPDATES

## GENERAL:

The following parts updates are being issued for all A258/A259/A260 Parts Catalogs.

- UPDATE 1: Rear Right Cover - To increase the air flow, the exhaust vent of the rear right cover has been changed from a round hole style to a mesh type as shown.


|  |  |  |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE | ITEM |
| A2591310 | A2591308 | Rear Right Cover | 1 | 1 | 13 | 18 |

## UNITS AFFECTED:

All A258/A259/A260 copiers manufactured after the Serial Numbers listed below will have the new style rear right cover installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS206 | 3B30040001 |
| GestetnerCS206D | 3B40040001 |
| Gestetner CD206DE | 3B50040001 |
| Ricoh Aficio 3006 | H0100400001 |
| Ricoh Aficio 4006 | H0200400001 |
| Ricoh Aficio4106 | H0300400001 |
| Savin SDC306 | 3B30040001 |
| Savin SDC306A | 3B40040001 |
| Savin SDC306E | 3B50040001 |

Continued...

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- UPDATE 2: Main Board - To increase the EMI margin for NVRAM, the programming of the main board has been changed.


|  |  |  |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE | ITEM |
| A2585087 | A2585090 | Main Board (A258) | 1 | 1 | 83/95 | 12/1 |
| A2605087 | A2605089 | Main Board (A259/A260) | 1 | 1 | 87/101 | 12/1 |

## UNITS AFFECTED:

All A258/A259/A260 copiers manufactured after the Serial Numbers listed below will have the new main board installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS206 | 3B30070010 |
| GestetnerCS206D | 3B40070001 |
| Gestetner CD206DE | 3B50070001 |
| Ricoh Aficio 3006 | H0100700001 |
| Ricoh Aficio 4006 | H0200600280 |
| Ricoh Aficio4106 | H03007XXXXX |
| Savin SDC306 | 3B30070010 |
| Savin SDC306A | 3B40070001 |
| Savin SDC306E | 3B50070001 |

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- UPDATE 3: Gear \& Bearings - To decrease the smell from the fusing unit during operation, the oil on the gear and the grease in the bearings has been changed.

FUSING UNIT 3


FUSING UNIT 4



## UNITS AFFECTED:

All A258/A259/A260 copiers manufactured after the Serial Numbers listed below will have the new gear and bearings installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS206 | 3B30080001 |
| GestetnerCS206D | 3B40080001 |
| Gestetner CD206DE | 3B50080001 |
| Ricoh Aficio 3006 | H0100700049 |
| Ricoh Aficio 4006 | H0200700083 |
| Ricoh Aficio4106 | H03008XXXXX |
| Savin SDC306 | 3B30080001 |
| Savin SDC306A | 3B40080001 |
| Savin SDC306E | 3B50080001 |

## INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and <br> NEW machines. | 2 | NEW parts CAN NOT be used in OLD machines. <br> OLD parts can be used in OLD and NEW machines. |
| :---: | :--- | :--- | :--- |
| 1 | NEW parts can be used in OLD and NEW machines. <br> OLD parts CAN NOT be used in NEW machines. | 3 | OLD parts CAN NOT be used in NEW machines. <br> NEW parts CAN NOT be used in OLD machines. |
| $3 / S$ | 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 <br> previously modified, use the new part numbers individually. |  |  |

## BULLETIN NUMBER: A258/A259/A260-051

## APPLICABLE MODEL:

## GESTETNER - Cs206/206D/206DE

RICOH - AFICIO COLOR 3006/4006/4106
SAVIN - SDC306/306A/306E

## SUBJECT: SPRING AND STEPPED SCREW

## GENERAL:

The following parts corrections are being issued for all A259/A260 Parts Catalogs.


|  |  |  |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE | ITEM |
| AA063068 | AA063532 | Spring | $1 \rightarrow 2$ | 1 | 69 | 7 |
| 54465832 | AA143452 | Stepped Screw | $1 \rightarrow 2$ | 1 | 69 | 8 |

*DENOTES NEW ITEM NUMBER

## UNITS AFFECTED:

A259/A260 Serial Number cut-in not available at time of publication.

## TECHNICAL SERVICE BULLETIN

## BULLETIN NUMBER: A258/A259/A260-052

## APPLICABLE MODEL:

GESTETNER - CS206/206D/206DE
RICOH - AFICIO 3006/4006/4106
SAVIN - SDC306/306A/306E

## SUBJECT: PARTS CATALOG UPDATES

## GENERAL:

The following parts updates are being issued for all A258/A259/A260 Parts Catalogs. Please update your Parts Catalogs with the following information.

- UPDATE 1: Toner Stopper Seal- To prevent toner dropping from the toner collection pipe, a seal has been added to the toner stopper as shown in the illustration below. Please update your A258/A259/A260 Parts Catalogs with the following information.


|  |  | REFERENCE |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| NEW PART NO. | DESCRIPTION | QTY | PAGE |  | ITEM |
|  | B0173592 |  | 1 | A258 |  |

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## UNITS AFFECTED:

All A258/A259/A260 copiers manufactured after the serial numbers listed below will have the new style toner stopper seal installed during production

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS206 | 3B3012xxxx |
| Gestetner CS206D | 3B4012xxxx |
| Gestetner CS206DE | 3B5012xxxx |
| Ricoh AFICIO 3006 | H01012xxxxx |
| Ricoh AFICIO 4006 | H02012xxxxx |
| Ricoh AFICIO 4106 | H03012xxxxx |
| Savin SDC306 | 3B3012xxxx |
| Savin SDC306A | 3B4012xxxx |
| Savin SDC306E | 3B5012xxxx |

- UPDATE 2: Frame Duct Stay- The frame duct stay was omitted from the Parts Catalog. Please update your A258/A259/A260 Parts Catalogs with the following information.



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- UPDATE 3: Choke Coil- To meet CE regulations in Europe the coil has been modified to a choke coil. Please update your Parts Catalogs with the following information.


| OLD PART NO. | NEW PART NO. | OLD DESCRIPTION | QTY | INT |
| :---: | :---: | :---: | :---: | :---: |
| N6074525 |  | Coil-RITL-9704 | $1 \rightarrow 0$ | - |
|  | $\rightarrow$ AZ020015 | Choke Coil - 10MH 2.5A | 1 | 3 |


|  |  | REFERENCE |  |  |
| :---: | :---: | :---: | :---: | :---: |
| NEW PART NO. | PAGE |  | ITEM |  |
|  | A258 | A259/A260 | A258 | A259/A260 |
| AZ020015 | 67 | 71 | 19 | 2 |

## UNITS AFFECTED:

The A258, A259 and A260 Serial Number cut-ins are not available at time of publication.

- UPDATE 4: Transfer Belt Cleaning Unit- To standardize parts with the B017/B018 models, the transfer belt cleaning unit has been changed. Note when replacing the cam shaft, (P/N A2596727) to new part (P/N B0176727), the cleaning blade holder must also be replaced, (P/N B0176708). Please update your Parts Catalogs with the following information.


| OLD PART NO. | NEW PART NO. |  |  |  | REFERENCE |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | DESCRIPTION | QTY | INT | PAGE |  | ITEM |
|  |  |  |  |  | A258 | $\begin{aligned} & \hline \text { A259 } \\ & \text { A260 } \end{aligned}$ |  |
| A2596003 | B0176003 | Transfer Belt Cleaning Unit | 1 | 0 | 43 | 39 | * |
| A2596714 | B0176714 | Lubricant Bar Cover | 1 | 0 | 43 | 39 | 1 |
| A2596745 | B0176745 | Lubricant Bar | 1 | 0 | 43 | 39 | 3 |
| A2596711 | B0176711 | Lubricant Bar Holder | 1 | 0 | 43 | 39 | 5 |
| AB014131 | AB014220 | Gear - 17Z | 1 | 1 | 43 | 39 | 9 |
| A2596318 | B0176318 | Tone Catch Pan | 1 | 0 | 43 | 39 | 13 |
| A2596708 | B0176708 | Cleaning Blade Holder | 1 | 3/S | 45 | 41 | 2 |
| A2596727 | B0176727 | Cam Shaft | 1 | 3/5 | 45 | 41 | 5 |
| B0176750 | B0176751 | Grounding Plate | 1 | 0 | 45 | 41 | 9 |
| - | B0176707 | Duct Belt Cleaning Unit | 1 | - | 45 | 41 | 29 * |

[^19]
## UNITS AFFECTED:

The A258, A259 and A260 Serial Number cut-ins are not available at time of publication.

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- UPDATE 5: Transfer Belt Drive Roller- Improper registration may occur if the screw that fastens the belt drive roller and joint becomes loose. To ensure proper registration, the tapping screw has been changed to an M4 type screw and the transfer drive belt and joint have been modified to accommodate this change. Please update your Parts Catalog with the following information.


| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | REFERENCE |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  | PAGE |  | ITEM |
|  |  |  |  |  | A258 | $\begin{aligned} & \text { A259 } \\ & \text { A260 } \end{aligned}$ |  |
| A2596057 |  | Transfer Belt Drive Roller | $1 \rightarrow 0$ |  | 47 | 43 | 8 |
|  | $\rightarrow$ B0176057 | Drive Roller - Transfer Belt | 1 | 3/S | 47 | 43 | 8 |
| A2591103 | B0176058 | Driven Joint | 1 | 3/S | 47 | 43 | 16 |
| 04513006B |  | Tapping Screw - M3X6 | - |  | 47 | 43 | 105 |
|  | $\rightarrow 03540080 \mathrm{~B}$ | Screw - M4X8 | - | 3/S | 47 | 43 | 106 * |

## * Denotes new item number.

## UNITS AFFECTED:

All A258/A259/A260 copiers manufactured after the serial numbers listed below will have the new style transfer belt drive roller parts installed during production

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS206 | 3B3101xxxx |
| Gestetner CS206D | 3B4101xxxx |
| Gestetner CS206DE | 3B5101xxxx |
| Ricoh AFICIO 3006 | H01101xxxxx |
| Ricoh AFICIO 4006 | H02101xxxxx |
| Ricoh AFICIO 4106 | H03101xxxxx |
| Savin SDC306 | 3B3101xxxx |
| Savin SDC306A | 3B4101xxxx |
| Savin SDC306E | 3B5101xxxx |

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- UPDATE 6: Mylars- To prevent a malfunction of the belt cleaning home position sensor and registration clutch, caused by paper dust or toner, mylars have been added. Please update your Parts Catalog with the following information.


| PART NUMBER | DESCRIPTION | QTY | REFERENCE |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | PAGE |  | ITEM |  |
|  |  |  | A258 | $\begin{aligned} & \text { A259 } \\ & \text { A260 } \\ & \hline \end{aligned}$ | A258 | A259 A260 |
| B0171120 | Sensor Protection Mylar | 1 | 71 | 75 | 45* | 45 |
| B0171119 | Clutch Protection Mylar | 1 | 75 | 79 | 37 * | 36* |

* Denotes new item number.


## UNITS AFFECTED:

All A258/A259/A260 copiers manufactured after the serial numbers listed below will have the new mylars installed during production

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS206 | 3B3012xxxx |
| Gestetner CS206D | 3B4012xxxx |
| Gestetner CS206DE | 3B5012xxxx |
| Ricoh AFICIO 3006 | H01012xxxxx |
| Ricoh AFICIO 4006 | H02012xxxxx |
| Ricoh AFICIO 4106 | H03012xxxxx |
| Savin SDC306 | 3B3012xxxx |
| Savin SDC306A | 3B4012xxxx |
| Savin SDC306E | 3B5012xxxx |

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- UPDATE 7: Thermistor- To prevent the thermistor from being peeled off, the thermistor has been modified. Please update your Parts Catalog with the following information.


| OLD PART NO. | NEW PARTNO. |  |  |  | REFERENCE |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | DESCRIPTION | QTY | INT | PAGE |  | ITEM |
|  |  |  |  |  | A258 | $\begin{aligned} & \hline \text { A259 } \\ & \text { A260 } \\ & \hline \end{aligned}$ |  |
| A2595447 | A2595448 | Thermistor Ass'y - Pressure | 1 | 1 | 65 | 61 | 16 |

## UNITS AFFECTED:

The new style pressure thermistor assembly will only be available as a service part.

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS206 | Service Parts Only |
| Gestetner CS206D | Service Parts Only |
| Gestetner CS206DE | Service Parts Only |
| Ricoh AFICIO 3006 | Service Parts Only |
| Ricoh AFICIO 4006 | Service Parts Only |
| Ricoh AFICIO 4106 | Service Parts Only |
| Savin SDC306 | Service Parts Only |
| Savin SDC306A | Service Parts Only |
| Savin SDC306E | Service Parts Only |

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- UPDATE 8: Ozone Filter- On TSB A258/A259/A260 - 039, the ozone filter was changed from A2591081 to AA010109 to prevent dust from exiting the machine. To prevent the powder inside the ozone filter from being scattered, the original style filter should be used. Please update your Parts Catalog with the following information.


| OLD PART NO. | NEW PARTNO. |  |  |  | REFERENCE |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | DESCRIPTION | QTY | INT | PAGE |  | ITEM |
|  |  |  |  |  | A258 | $\begin{aligned} & \text { A259 } \\ & \text { A260 } \end{aligned}$ |  |
| AA010109 | A2591081 | Ozone Filter | 1 | 1 | 81 | 85 | 13 |

## UNITS AFFECTED:

All A258/A259/A260 copiers manufactured after the serial numbers listed below will have the oiginal style ozone filters installed during production

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS206 | 3B30070001 |
| Gestetner CS206D | 3B40070001 |
| Gestetner CS206DE | 3B50050001 |
| Ricoh AFICIO 3006 | H0100700001 |
| Ricoh AFICIO 4006 | H0200700001 |
| Ricoh AFICIO 4106 | H03008xxxxx |
| Savin SDC306 | 3B30070001 |
| Savin SDC306A | 3B40070001 |
| Savin SDC306E | 3B50050001 |

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- UPDATE 9: Hot Roller - To improve the reliability, the vendor has changed the hot roller production procedure. Please update your Parts Catalog with the following information.



## UNITS AFFECTED:

The new style hot roller will only be available as a service part.

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS206 | Service Parts Only |
| Gestetner CS206D | Service Parts Only |
| Gestetner CS206DE | Service Parts Only |
| Ricoh AFICIO 3006 | Service Parts Only |
| Ricoh AFICIO 4006 | Service Parts Only |
| Ricoh AFICIO 4106 | Service Parts Only |
| Savin SDC306 | Service Parts Only |
| Savin SDC306A | Service Parts Only |
| Savin SDC306E | Service Parts Only |

## INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and <br> NEW machines. | 2 | NEW parts CAN NOT be used in OLD machines. <br> OLD parts can be used in OLD and NEW machines. |
| :---: | :--- | :---: | :--- |
| 1 | NEW parts can be used in OLD and NEW machines. <br> OLD parts CAN NOT be used in NEW machines. | 3 | OLD parts CAN NOT be used in NEW machines. <br> NEW parts CAN NOT be used in OLD machines. |
| $3 / S$ | 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 <br> previously modified, use the new part numbers individually. |  |  |

## BULLETIN NUMBER: A258/A259/A260-053

## APPLICABLE MODEL:

GESTETNER - CS206/206D/206DE
RICOH - AFICIO 3006/4006/4106
SAVIN - SDC306/306A/306E

## SUBJECT: PARTS CATALOG UPDATES

## GENERAL:

The following parts updates are being issued for all A258/A259/A260 Parts Catalogs.

- UPDATE 1: Oil Tank - The oil tank from the B017/B018 has been adopted for parts standardization on the A258, A259 and A260. The new style oil tank has an increased capacity from 350 cc to 430 cc . Please update your A258/A259/A260 Parts Catalog with the following information.

- UPDATE 2: Positioning Plate - To ensure that the positioning plate does not come loose, the three individual components of the original style positioning plate are now assembled together as independent parts. Please update your A258/A259/A260 Parts Catalog with the following information.


| OLD PART NO. | NEW PART NO. |  |  |  | REFERENCE |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | DESCRIPTION | QTY | INT | PAGE |  | ITEM |
|  |  |  |  |  | A258 | $\begin{aligned} & \text { A259 } \\ & \text { A260 } \end{aligned}$ |  |
| A2596240 |  | Positioning Plate | - | - | 57 | 53 | 8 |
|  | $\rightarrow$ A2596244 | Positioning Cover | $0 \rightarrow 1$ | 3S | 57 | 53 | 8 |
|  | $\rightarrow$ A2596241 | Positioning Bracket | $0 \rightarrow 1$ | 3S | 57 | 53 | 34* |
|  | $\rightarrow 04523008 \mathrm{~B}$ | Tapping Screw - M3X8 | $0 \rightarrow 1$ | 3S | 57 | 53 | 105* |

* Denotes new item number.


## UNITS AFFECTED:

All A258/A259/A260 copiers manufactured after the Serial Numbers listed below will have the new style positioning cover, bracket and screw and installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS206 | 3B30080001 |
| Gestetner CS206D | 3B40080001 |
| Gestetner CS206DE | 3B50080001 |
| Ricoh AFICIO 3006 | H0100700049 |
| Ricoh AFICIO 4006 | H0200700145 |
| Ricoh AFICIO 4106 | H03008xxxxx |
| Savin SDC306 | 3B30080001 |
| Savin SDC306A | 3B40080001 |
| Savin SDC306E | 3B50080001 |

## INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and <br> NEW machines. | 2 | NEW parts CAN NOT be used in OLD machines. <br> OLD parts can be used in OLD and NEW machines. |
| :---: | :--- | :---: | :--- |
| 1 | NEW parts can be used in OLD and NEW machines. <br> OLD parts CAN NOT be used in NEW machines. | 3 | OLD parts CAN NOT be used in NEW machines. <br> NEW parts CAN NOT be used in OLD machines. |
| $3 / S$ | 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 <br> previously modified, use the new part numbers individually. |  |  |

## BULLETIN NUMBER: A258/259/260-054

09/05/2001

## APPLICABLE MODEL:

## GESTETNER - CS206/CS206D/CS206E

RICOH - AFICIO 3006/4006/4106
SAVIN - SDC306/SDC306A/SDC306E

## SUBJECT: PARTS CATALOG UPDATES

## GENERAL:

The following parts updates are being issued for all A258/259/260 Parts Catalogs.

- UPDATE 1: Tightener - Please insert the following illustration correction for the tightener (Parts Catalog, A258 pg. 70. Parts Catalog, A259/260 pg. 74).
Note: Since this is only an illustration correction, the part number has not changed.


Continued

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- UPDATE 2: Development Unit Holder - The production process for the development unit holder has been changed to increase its strength and durability.
Note: There is a projection on the new holder to distinguish it from the old one.

- UPDATE 3: Gear_46Z/70Z - For parts standardization with successor models, the gear has been changed.


| A258/A259/A260 |  |  |  |  | REFERENCE |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART | NEW | DESCRIPTION | QTY | INT | PAGE |  | ITEM |
| NO | PART NO. |  |  |  | A258 | A259/A260 |  |
| AB017520 | AB017551 | Gear - 46Z/70Z | 1 | 0 | 71 | 75 | 28 |

- UPDATE 4: Gear_24Z/20Z - To improve durability, a ball bearing has been added to the gear.



## INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and <br> NEW machines. | 2 | NEW parts CAN NOT be used in OLD machines. <br> OLD parts can be used in OLD and NEW machines. |
| :---: | :--- | :--- | :--- |
| 1 | NEW parts can be used in OLD and NEW machines. <br> OLD parts CAN NOT be used in NEW machines. | 3 | OLD parts CAN NOT be used in NEW machines. <br> NEW parts CAN NOT be used in OLD machines. |
| $3 / S$ | 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 <br> previously modified, use the new part numbers individually. |  |  |

RTEDEM TECHNICAL SERVICE BULLETIN

## BULLETIN NUMBER: A258/A259/A260-055

## APPLICABLE MODEL: <br> GESTETNER - CS206/206D/206DE <br> RICOH - AFICIO 3006/4006/4106 <br> SAVIN - SDC306/306A/306E

## SUBJECT: SERVICE MANUAL - INSERT

## GENERAL:

The Service Manual pages listed below must be replaced with the pages supplied. Each bulletin package contains 1 set of replacement pages.

PAGES:

The revised areas have been highlighted by an arrow $\Rightarrow$.

- 1-28
- $4-15$
- 5-6
- 7-1
- B-47

Updated Information
Updated Information
Updated Information
Updated Information
Updated Information

## Motors

| Symbol | Name | Function | Index-No | Remarks |
| :---: | :---: | :---: | :---: | :---: |
| M1 | Scanner motor | Drives the scanner. | 1-2 | M6 |
| M2 | Polygon mirror motor | Drives the polygon mirror (laser unit). | 1-14 | O15 |
| M3 | Revolver drive motor | Rotates the revolver unit. | 6-3 | G5 |
| M4 | Duplex feed motor | Drives the paper feed roller in the duplex unit. | 4-14 | G20 (A259/A260 copiers only) |
| M5 | Duplex Side fence jogger motor | Drives the duplex unit side fences. | 4-16 | G21 <br> (A259/A260 <br> copiers only) |
| M6 | Duplex End fence jogger motor | Drives the duplex unit end fences. | 4-17 | G21 (A259/A260 copiers only) |
| M7 | Paper feed motor | Drives the paper feed unit and transport unit. | 3-2 | A12 |
| M8 | Tray lift motor | Lifts the tray bottom plate. | 6-8 | A12 (A258 models only) |
| M9 | Toner supply motor | Supplies toner. | 6-2 | A7 |
| M10 | Drum motor | Drives the drum, the development unit currently at the development position, and the transfer belt. | 6-9 | A19 |
| M11 | Fusing motor | Drives the fusing unit and exit rollers. | 6-5 | E8 |

Fan Motors

| Symbol | Name | Function | Index-No | Remarks |
| :---: | :--- | :--- | :---: | :---: |
| FM1 | Transport fan | Attracts copy paper to the transport belt. | $2-11$ | A11 |
| FM2 | Optics cooling fan | Cools the scanner unit | $1-20$ | O14 |
| FM3 | Charge corona fan | Cools the charge corona unit. | $5-5$ | A6 |
| FM4 | Scanner exhaust fan | Cools the scanner unit. | $1-7$ | P7 |
| FM5 | Fusing unit fan | Cools the fusing unit. | $7-3$ | E1 |
| FM6 | Main exhaust fan | Sucks air from the charge and transfer <br> areas out of the machine. | $7-10$ | A17 |
| FM7 | Rear cooling unit fan | Cools the rear section of the copier. | $7-2$ | E10 |
| FM8 | PSU fan | Cools the PSU. | $7-12$ | A7 |


| Menu | Description |
| :--- | :--- |
|  | Program Key |
| Op Code |  |$\quad$ Use to register or change the key operator code (up to 8 digits).



## 7. TROUBLESHOOTING

### 7.1 SERVICE CALL (SC) ERRORS

### 7.1.1 SC TYPES AND RESETTING PROCEDURES

| Type | Display Method | How to Reset |
| :---: | :---: | :---: |
| A | SCs displayed on the operation panel. The machine is disabled. The user cannot reset the SC. | Turn the main switch off then on before entering SP mode. Reset the SC (set SP5-810 to 1), then turn the main switch off then on again. |
| B | SCs that disable only the features that use the defective item. Although these SCs are not shown to the user under normal conditions, they are displayed on the operation panel only when the defective feature is selected. | Turn power off/on. |
| C | SCs that are not shown on the operation panel. They are internally logged. | Logging only |
| D | Turning the operation switch or main power switch off then on resets the SC. Displayed on the operation panel. Re-displayed if they occurred after the main power switch is turned on again. | Turn the operation switch or main power switch off and on. |

All SCs are logged.

Rev. 10/2001
SP TABLE

| SP No. | Item [Display] | Default Value | Value Range | Step | $\begin{aligned} & \hline \hline \text { SP7- } \\ & 902 / 3 \end{aligned}$ | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 05-810: [SC Reset] |  |  |  |  |  |  |
| 05-810-00 | [SC Reset] |  | 0 to 1 |  |  | Resets a type A service call condition, which is caused by the fusing section. $1 \text { = Reset }$ <br> After resetting the SC code, the main switch has to be turned off and on. |
|  |  |  |  |  |  |  |
| 05-811: [Serial No.] |  |  |  |  |  |  |
| 05-811-00 |  |  |  |  |  | Displays the serial number |
|  |  |  |  |  |  |  |
| 05-812: Service Telephone Number [Service Tel. No.] |  |  |  |  |  |  |
| 05-812-00 |  |  |  |  |  | Inputs the telephone number of the service representative. (This number is displayed when a service call condition occurs.) |
|  |  |  |  |  |  |  |
| 5-816: [RDS On/Off] |  |  |  |  |  |  |
| 5-816-00 |  | 0 | $\begin{gathered} \text { 0: OFF } \\ \text { 1: ON } \end{gathered}$ |  |  | When the machine is connected to an RDS system, set this SP to " 1 " to enable the RDS functions. |
|  |  |  |  |  |  |  |
| 5-817: [Repair Time Tx] |  |  |  |  |  |  |
| 5-817-00 |  | - | $\begin{aligned} & \hline \text { 0: End } \\ & \text { 1: Start } \end{aligned}$ |  |  | When using an RDS system, set this SP mode to 1 at the start of maintenance. Set it back to 0 after finishing maintenance. |
|  |  |  |  |  |  |  |
| 05-824: NVRAM Upload [NVRAM Up Load] |  |  |  |  |  |  |
| 05-824-00 | [NVRAM Up Load] |  | 0 to 1 |  |  | Uploads data from the NV-RAM to ROM. See 'Replacement \& Adjustment - System \& Electronics'. |
|  |  |  |  |  |  |  |
| 05-825: NV-RAM download [NVRAM Down Load] |  |  |  |  |  |  |
| 05-825-00 | [NVRAM Down Load] |  | 0 to 1 |  |  | Downloads data from the ROM to NV-RAM. See 'Replacement \& Adjustment - System \& Electronics'. |

## BULLETIN NUMBER: A258/A259/A260-056

11/16/2001
APPLICABLE MODEL:

## GESTETNER -CS206D/CS206DE

RICOH - AFICIO 4006/4106
SAVIN -SDC306A/SDC306E

## SUBJECT: CLEANING BRUSH ROLLER

## GENERAL:

To improve durability, the fibers of the cleaning brush roller have been thickened (increased in diameter) and the number of the fibers on the cleaning brush have been decreased. To compensate for the change in the physical characteristics of the brush fibers, the springs for the lubricant bar have been weakened.
Replace the old parts with the new parts as a set. The following parts corrections are being issued for all A259/A260 Parts Catalogs.

## 21. DRUM CLEANING (A259/A260)



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|  |  |  |  |  |  |  |  | REFERENCE |
| :---: | :---: | :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE | ITEM |  |  |
| AA063603 |  | Compression Spring |  |  |  |  |  |  |
|  | AA063649 | Pressure Spring - 20mm | 1 | $3 / \mathrm{S}$ | 51 | 36 |  |  |
| AD042036 | AD042044 | Cleaning Brush Roller | 1 | $3 / \mathrm{S}$ | 51 | 23 |  |  |

## UNITS AFFECTED:

The A259 Serial Number cut-in was not available at time of publication.

## INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and <br> NEW machines. | 2 | NEW parts CAN NOT be used in OLD machines. <br> OLD parts can be used in OLD and NEW machines. |
| :---: | :--- | :--- | :--- |
| 1 | NEW parts can be used in OLD and NEW machines. <br> OLD parts CAN NOT be used in NEW machines. | 3 | OLD parts CAN NOT be used in NEW machines. <br> NEW parts CAN NOT be used in OLD machines. |
| $3 / S$ | 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 <br> previously modified, use the new part numbers individually. |  |  |

## TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A258/A259/A260-057
11/16/2001

## APPLICABLE MODEL:

GESTETNER - CS206/206D/206DE
RICOH - AFICIO 3006/4006/4106
SAVIN - SDC306/306A/306E

SUBJECT: GEAR - 54Z

## GENERAL:

To improve durability, the material of the gear has been changed. The following part correction is being issued for all A258/A259/A260 Part Catalogs.


| OLD PART NO. | NEW PARTNO. |  |  | INT | REFERENCE |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | DESCRIPTION | QTY |  | PAGE |  | ITEM |
|  |  |  |  |  | A258 | A259/A260 |  |
| AB017479 | AB017602 | Gear - 54Z | 1 | 1 | 71 | 75 | 33 |

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Page 2 of 2

## UNITS AFFECTED:

All A258/A259/A260 copiers manufactured after the Serial Numbers listed below will have the new style Gear $-54 Z$ installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS206 | 3B3105XXXX |
| Gestetner CS206d | 3B4105XXXX |
| Gestetner CS206de | 3B5105XXXX |
| Ricoh Aficio Color 3006 | H01105XXXXX |
| Ricoh Aficio Color4006 | H02105XXXXX |
| Ricoh Aficio Color 4106 | H03105XXXXX |
| Savin SDC306E | 3B5105XXXX |
| Savin SDC306A | 3B4105XXXX |
| Savin SDC306 | 3B3105XXXX |

## INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and <br> NEW machines. | 2 | NEW parts CAN NOT be used in OLD machines. <br> OLD parts can be used in OLD and NEW machines. |
| :---: | :--- | :--- | :--- |
| 1 | NEW parts can be used in OLD and NEW machines. <br> OLD parts CAN NOT be used in NEW machines. | 3 | OLD parts CAN NOT be used in NEW machines. <br> NEW parts CAN NOT be used in OLD machines. |
| $3 / S$ | 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 <br> previously modified, use the new part numbers individually. |  |  |

BULLETIN NUMBER: A258/A259/A260-058
12/18/2001

## APPLICABLE MODEL:

GESTETNER - CS206/206D/206DE
RICOH - AFICIO 3006/4006/4106
SAVIN - SDC306/306A/306E

## SUBJECT: OZONE FILTER

## GENERAL:

To decrease ozone discharge, an ozone filter and a new seal have been added.
Install the ozone filter and the seal as a set. The following parts additions are being issued for all A258/259/260 Parts Catalogs.


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Page 2 of 2


## *DENOTES NEW ITEM NUMBER

## INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and <br> NEW machines. | 2 | NEW parts CAN NOT be used in OLD machines. <br> OLD parts can be used in OLD and NEW machines. |
| :---: | :--- | :--- | :--- |
| 1 | NEW parts can be used in OLD and NEW machines. <br> OLD parts CAN NOT be used in NEW machines. | 3 | OLD parts CAN NOT be used in NEW machines. <br> NEW parts CAN NOT be used in OLD machines. |
| $3 / S$ | 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 <br> previously modified, use the new part numbers individually. |  |  |

## TECHNICAL SERVICE BULLETIN

## BULLETIN NUMBER: A258/A259/A260-059 <br> APPLICABLE MODEL: <br> GESTETNER - CS206/206D/206DE <br> RICOH - AFICIO 3006/4006/4106 <br> SAVIN - SDC306/306A/306E

01/22/2002

## SUBJECT: TONER COLLECTION PIPE

## SYMPTOM:

Noise from the toner collection pipe and clogged toner collection pipe.

## CAUSE:

The toner collection drive gears are not properly engaged. This is caused by the side to side movement of the drive shaft in the bracket, which has a rough surface.

## SOLUTION

Add 2 washers (08074025) between the gear and snap ring when changing the gear (see illustration).
The surface of the drive shaft has been made smoother and grease has been applied to the drive shaft since August 2000 production.


|  | REFERENCE |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | PAGE | ITEM |
| - | 08074025 | Washer | 2 | 72 | $109 *$ |

*DENOTES NEW ITEM NUMBER

BULLETIN NUMBER: A258/A259/A260-060
01/22/2002
APPLICABLE MODEL:
GESTETNER - CS206/206D/206DE
RICOH - AFICIO 3006/4006/4106
SAVIN - SDC306/306A/306E

## SUBJECT: PARTS CATALOG UPDATES

## GENERAL:

The following parts updates are being issued for all A258/A259/A260 Parts Catalogs.

## UPDATE 1: <br> Ball Bearing - 6X10X3mm - Part Number Change

 Development Unit- Part Number ChangeTo improve reliability the bushing has been changed to a ball bearing.


| OLD PART NO. | NEW PART NO. |  |  |  | REFERENCE |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | DESCRIPTION | QTY | INT | PAGE |  | ITEM |
|  |  |  |  |  | A258 | A259/A260 |  |
| 08053507 | B0173151 | Bushing - 6 mm <br> Ball Bearing - 6X10X3mm | 4 | 1 | 41 | 37 | 103 |
| A2593026 | A2593027 | Development Unit | 4 | 1 | $\begin{aligned} & 39 \\ & 41 \end{aligned}$ | $\begin{aligned} & 35 \\ & 37 \end{aligned}$ | $\begin{aligned} & 2 \\ & 1 \end{aligned}$ |

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Page 2 of 4

- UPDATE 2: Bushing - 8mm - Part Number Change

Development Unit - Part Number Change
Bushing - 8mm - Part Number Change

To increase the margin against developer leaking, the length of the rear bushing has been changed. As the new and old parts are not interchangeable, the part number of the development unit has also changed. The rear ball bearing has been changed to a bushing. Therefore, the front side ball bearing has also been changed to a bushing.


- UPDATE 3: Washer - 6X11.5X0.8mm - Part Number Change

To prevent the snap ring from coming off, a washer has been added between the bushing and gear as shown.


| OLD PART NO. | NEW PART NO. |  |  | REFERENCE |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | DESCRIPTION | QTY | PAGE |  | ITEM |
|  |  |  |  | A258 | A259/A260 |  |
| - | AA132000 | Washer - 6X11.5X0.8mm | 1 | 43 | 39 | 17* |

*DENOTES NEW ITEM NUMBER

Tech Service Bulletin No. A258/A259/A260 - 060

- UPDATE 4: Cleaning Brush Roller - Part Number Change Pressure spring - 20mm- Part Description/Number Change

To improve durability, the fibers of the cleaning brush roller have been thickened (increased in diameter) and the number of the fibers on the cleaning brush have been decreased. To compensate for the change in the physical characteristics of the brush fibers, the springs for the lubricant bar have been weakened.
Replace the old parts with the new ones as a set.

## 21. DRUM CLEANING (A259/A260)



|  |  |  |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE | ITEM |
| AA063603 | - AA063649 | Compression Spring <br> Pressure Spring - 20mm | 1 | 3 | 51 | 36 |
| AD042036 | AD042044 | Cleaning Brush Roller | 1 | 3 | 51 | 23 |

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A258/A259/A260-061
06/24/2002
APPLICABLE MODEL:
GESTETNER - CS206/206D/206DE
RICOH - AFICIO 3006/4006/4106
SAVIN - SDC306/306A/306E

## SUBJECT: PRESSURE ROLLER

## GENERAL:

The Pressure Roller has been changed due to a vendor change. The following part update is being issued for all A258/A259/A260 Parts Catalogs.


| OLD PART NO. | NEW PART NO. |  |  |  | REFERENCE |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | DESCRIPTION | QTY | INT | PAGE |  | ITEM |
|  |  |  |  |  | A258 | $\begin{gathered} \hline \text { A259 } \\ \text { IA260 } \end{gathered}$ |  |
| AE020101 | AE020110 | Pressure Roller | 1 | 0 | 65 | 61 | 3 |

## UNITS AFFECTED:

A258/A259/A260 Serial Number cut-in was not available at time of publication.

## INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and <br> NEW machines. | 2 | NEW parts CAN NOT be used in OLD machines. <br> OLD parts can be used in OLD and NEW machines. |
| :---: | :--- | :---: | :--- |
| 1 | NEW parts can be used in OLD and NEW machines. <br> OLD parts CAN NOT be used in NEW machines. | 3 | OLD parts CAN NOT be used in NEW machines. <br> NEW parts CAN NOT be used in OLD machines. |
| $3 / S$ | 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 <br> previously modified, use the new part numbers individually. |  |  |

## TECHNICAL SERVICE BULLETIN

## BULLETIN NUMBER: A258/A259/A260-062

03/03/2003

## APPLICABLE MODEL:

GESTETNER - CS206/206D/206DE
RICOH - AFICIO COLOR 3006/4006/4106
SAVIN - SDC306/306A/306E

## SUBJECT: PARTS CATALOG UPDATES

## GENERAL:

The following parts updates are being issued for all A258/A259/A260 Parts Catalogs.

- UPDATE 1: Bushing - $\mathbf{6 m m}$ - To ensure a noise is not generated from the bushing in the transfer belt cleaning unit, the material of the bushing has been changed.


| $\begin{gathered} \text { OLD PART } \\ \text { NO. } \end{gathered}$ | NEW PART NO. |  |  | INT | REFERENCE |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | DESCRIPTION | QTY |  | PAGE |  | ITEM |
|  |  |  |  |  | A258 | A259/A260 |  |
| A2596754 | AA082123 | Bushing - 6mm | 6 | 1 | 43 | 39 | 6 |

Continued...

## UNITS AFFECTED:

All A258/A259/A260 copiers manufactured after the serial numbers listed below will have the new bushing installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner | Service Part Only |
| CS206/206D/206DE |  |
| Ricoh | Service Part Only |
| Aficio 3006/4006/4106 | Service Part Only |
| Savin |  |
| SDC306/306A/306E |  |

- UPDATE 2: Image Transfer Belt - Due to parts standardization with other models the image transfer belt has changed.


|  |  |  |  |  |  | EFERENC |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{gathered} \text { OLD PART } \\ \text { NO. } \end{gathered}$ | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE |  | ITEM |
|  |  |  |  |  | A258 | A259/A260 |  |
| A2596050 | B0176051 | Transfer Belt | 1 | 0 | 47 | 43 | 2 |

## UNITS AFFECTED:

All A258/A259/A260 copiers manufactured after the serial numbers listed below will have the new transfer belt installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner | Service Part Only |
| CS206/206D/206DE |  |
| Ricoh | Service Part Only |
| Aficio 3006/4006/4106 | Savin |
| SDC306/306A/306E |  |

## INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and <br> NEW machines. | 2 | NEW parts CAN NOT be used in OLD machines. <br> OLD parts can be used in OLD and NEW machines. |
| :---: | :--- | :---: | :--- |
| 1 | NEW parts can be used in OLD and NEW machines. <br> OLD parts CAN NOT be used in NEW machines. | 3 | OLD parts CAN NOT be used in NEW machines. <br> NEW parts CAN NOT be used in OLD machines. |
| $3 / S$ | 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 <br> previously modified, use the new part numbers individually. |  |  |

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: A258/A259/A260-063
05/27/2003

## APPLICABLE MODEL:

GESTETNER - CS206/CS206D/CS206DE
LANIER -5706/N/A/5806E
RICOH - AFICIO COLOR 3006/4006/4106
SAVIN - SDC306/SDC306A/SDC306E

SUBJECT: SC452

## SYMPTOM:

SC452 is triggered when the Image Transfer Belt moves past its front or rear positional limit.

## CAUSE:

1. The Bias Roller is not set in the correct position, deforming the hole in the Pressure Release Lever (photo below). This can happen during servicing if the Pressure Release Lever is not set correctly when installing the Image Transfer Belt Unit.

2. The side plate of the Transfer Belt Unit is bent during servicing.

## SOLUTION:

## 1. Pressure release lever:

- After an occurrence, replace the Pressure Release Lever with the B017/B018 lever (B0176089) and the screw with AA143025.

- When servicing, be sure to set the lever on the pin as described on pg. 3-17 of the A258/A259/A260 Service Manual.


## 2. Side plate:

Replace the Transfer Belt Unit.

|  |  | REFERENCE |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | PAGE | ITEM |
| AA143402 | AA143025 | Screw - Scale | 2 | 59 | 11 |

## TECHNICAL SERVICE BULLETINS

## BULLETIN NUMBER: B017/B018-001

04/18/2001

## APPLICABLE MODEL:

## GESTETNER - RC-210 (Controller G549 )for CS231/225

RICOH - RC-210 (Controller G549 )for Aficio Color 4506/3506
SAVIN - RC-210 (Controller G549 )for SDC326A/SDC326

## SUBJECT: PARTS CATALOG CORRECTION

## GENERAL:

The following parts corrections are being issued for all G549 Parts Catalogs.

|  |  | REFERENCE |  |  |  |
| :---: | :---: | :--- | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | PAGE | ITEM |
| G6785818 |  | Control Board | $\mathbf{1 \rightarrow 0}$ | 3 | 2 |
| G5495400 |  | ASIC - Eagle2 | $\mathbf{1 \rightarrow 0}$ | 3 | 4 |
|  |  | G5495651 | .Controller Board | $\mathbf{0 \rightarrow 1}$ | 3 |
|  | G5495102 | DIMM R-PS2 4MB | $\mathbf{0 \rightarrow 1}$ | 3 | $11^{*}$ |

*DENOTES NEW ITEM NUMBER


Gestetner

BULLETIN NUMBER: B017/B018 - 002
04/18/2001
APPLICABLE MODEL:
GESTETNER - CS231/CS235
RICOH - AFICIO COLOR 4506/3506
SAVIN - SDC 326A/SDC326

## SUBJECT: DECAL - TONER SUPPLY

## GENERAL:

To improve the instructions for changing the toner cartridge, the toner supply decal has been changed as shown below.


Continued...

Tech Service Bulletin No. B017/B018-002
Page 2 of 2

The following parts corrections are being issued for all A258/259/260 Parts Catalogs.

|  |  |  |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE | ITEM |
| A2591348 | A2591344 | Decal - Toner Supply | 1 | 0 | 11 | 2 |
| A2591348 | A2591344 | Decal - Toner Supply | 1 | 0 | 139 | 7 |

## UNITS AFFECTED:

All B017B018 copiers manufactured after the Serial Numbers listed below will have the new style Decal Toner Supply installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS231 | From First Production |
| Gestetner CS225 | From First Production |
| Ricoh Aficio Color 4506 | From First Production |
| Ricoh Aficio Color 3506 | From First Production |
| Savin SDC326A | From First Production |
| Savin SDC326 | From First Production |

## INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and <br> NEW machines. | 2 | NEW parts CAN NOT be used in OLD machines. <br> OLD parts can be used in OLD and NEW machines. |
| :---: | :--- | :--- | :--- |
| 1 | NEW parts can be used in OLD and NEW machines. <br> OLD parts CAN NOT be used in NEW machines. | 3 | OLD parts CAN NOT be used in NEW machines. <br> NEW parts CAN NOT be used in OLD machines. |
| $3 / S$ | 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 <br> previously modified, use the new part numbers individually. |  |  |

## SUBJECT: INSTALLATION NOTES FOR E-310 PRINTER CONTROLLER

## GENERAL:

This bulletin contains some important notes concerning the installation of the color controller E-310 for the B017/B018 color copiers.

1. Approved Firmware for the B017/B018 Color copiers for connection with the printer controller E-310.

When scanning an A4 or A3 original using the ADF and Fiery controller, the scanned image comes out blank with some old firmware versions. To solve this problem, upgrade either the main or IPU firmware to the following version:

| Model Name | Main Control | Scanner IPU |
| :--- | :--- | :--- |
| B017 | Ver. 1.072 or newer | Ver. 1.05 or newer |
| $\underline{\text { B018 }}$ | Ver 1.132 or newer | Ver. 1.05 or newer |

In order to meet EMI Class B certification requirements, a ferrite clamp (Item \#16 below) must be attached to the video interface cable inside the I/F unit. For details, refer to Appendix A of the E-310 Installation \& Service Guide.

After the controller is installed, turn on the copier main power, access SP mode 6-910-000 ("Printer/Scanner key setting"), and change the setting from " 0 " to " 1 ". Please refer to Appendix A of the E-310.


Continued...

## Appendix A: This chapter summarizes the hardware and nerworking features of the Specifications <br> Color Controller E-310.

## Hardware features

- 360 MHz Intel Ceieron CPU
- 256 MB memory
- 8.4GB HDD
- SCSI interface connector for attaching a CD -ROM drive
- Adobe PostScript Level 3
- Battery - 3V manganese dioxide lithium coin cell (Panasonic CR2032 or equivalent)


## Networking and connectivity

The E-310 has the following nerworking features:

- Supports AppleTalk, TCP/IP, and IPX protocols simultaneously
- RJ-45 por for twisted pair (10BaseT/100Base TX) network connection


## User software

A complere descripcion of E-310 user sofware is provided in Getting Started. For optimal E-310 pefformance, current versions of the user soffware should be maintained on every network computer that might print to the E-310.

## Safety and emissions compliance

The E-310 board has been cerrified to meet or surpass the following standards:

| Sarety approvals | EMI approvals |
| :---: | :---: |
| - Ul, C.UL. | - FCCClass B |
| - EN 60950 (TOVV Bauart gepriff) | - vcciclas a |
|  | - EN 55022 Class B |
|  | - AS'NZS 3548 Class B |
|  | - EN 500882.1 |
|  | - ASINZS4252] |

Continued...

## Output voltage



On the E-310, the SCSI and USB connectors output +5 V DC. The other external connectors on the E-310 including the copier interface connector have no output voltage (see Figure A-1).


FIGURE A-1 E-310 output voltage

PTC Rating
R158, R135, R159
Rated hold current 0.75 A
Rated trip current $\quad 1.5 \mathrm{~A}$
Max. voltage $\quad+15 \mathrm{~V} D C$

The PCB ROM revision X (file name XXXXXXXX.EXE) can be downloaded through the Technology Solution Center FTP Site http://tsc.ricohcorp.com.

NOTE: Refer to Facts Line Bulletin \# FLOO2 and Publication Bulletin \#023 for more information about the FTP Internet Web Site and EPROM / Flash Card Exchange program.

## BULLETIN NUMBER: B017/B018-004

GESTETNER - CS231/CS235
RICOH - AFICIO COLOR 4506/3506
SAVIN - SDC 326A/SDC326

## SUBJECT: IPU COOLING FAN NOISE

## GENERAL:

The following is a troubleshooting fix for the indicated subject.

## SYMPTOM:

Noise can sometimes be heard from the IPU fan motor while the machine is in standby mode.

## CAUSE:

In slow speed mode, the reduced speed of the motor can sometimes cause the casing to resonate.

## SOLUTION:

Attach the B0171924 damper to the IPU cooling fan as shown below.


## BULLETIN NUMBER: B017/B018-005

GESTETNER - CS231/CS235
RICOH - AFICIO COLOR 4506/3506
SAVIN - SDC 326A/SDC326

## SUBJECT: TONER STOPPER SEAL

## GENERAL:

To prevent toner from dropping from the end of the toner collection pipe, a seal has been added to the toner stopper as shown.
The following addition is being issued for all A258/259/260 Parts Catalogs.

|  | REFERENCE |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| NEW PART NO. | DESCRIPTION | QTY | PAGE | ITEM |
| B0173592 | Toner Stopper Seal | 1 | 53 | $37^{*}$ |

*DENOTES NEW ITEM NUMBER


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Page 2 of 2

## UNITS AFFECTED:

All A258/259/260 copiers manufactured after the Serial Numbers listed below will have the new style toner stopper seal installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner SC206 | 3B3012xxxx |
| Gestetner SC206d | 3B4012xxxx |
| Gestetner CS206de | 3B5012xxx |
| Ricoh Aficio color3006 | H01012xxxxx |
| Ricoh Aficio color4006 | H02012xxxx |
| Ricoh Aficio color4106 | H03012xxxxx |
| Savin SDC306 | 3B3012xxxx |
| Savin SDC306A | 3B4012xxxx |
| Savin SDC306E | 3B5012xxx |

## INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and <br> NEW machines. | 2 | NEW parts CAN NOT be used in OLD machines. <br> OLD parts can be used in OLD and NEW machines. |
| :---: | :--- | :--- | :--- |
| 1 | NEW parts can be used in OLD and NEW machines. <br> OLD parts CAN NOT be used in NEW machines. | 3 | OLD parts CAN NOT be used in NEW machines. <br> NEW parts CAN NOT be used in OLD machines. |
| $3 / S$ | 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 <br> previously modified, use the new part numbers individually. |  |  |

BULLETIN NUMBER: B017/B018-006<br>04/18/2001<br>APPLICABLE MODEL:<br>GESTETNER - CS231/CS235<br>RICOH - AFICIO COLOR 4506/3506<br>SAVIN - SDC 326A/SDC326

## SUBJECT: ROM ERROR MESSAGE AFTER INSTALLATION

## GENERAL:

If a fax is received while the machine is in Energy Saver Mode, there are some cases where the connection may be lost as the FCU is not able to come on line fast enough. This is because it waits for the main board wakeup signal. To ensure that incoming transmissions are properly received, all FCU production units will bring themselves on line instead.

However, there is a minor side effect:
" Area or Language of ROM is different. Please check ROM version" is displayed only when the main power is turned on for the first time following installation. This is because the main board has not yet confirmed the area and language information with the FCU.

## Action:

Simply press "OK" and the display will be cleared.

## TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B017/B018-007
04/18/2001

## APPLICABLE MODEL:

GESTETNER - CS231/CS235
RICOH - AFICIO COLOR 4506/3506
SAVIN - SDC 326A/SDC326

## SUBJECT: SERVICE MANUAL - INSERT

## GENERAL:

The Service Manual pages listed below must be replaced with the pages supplied. Each bulletin package contains 1 set of replacement pages.

An arrow has highlighted the revised areas $\Rightarrow$.

## PAGES:

- xxi
- 1-4
- 1-28
- 2-21
- 3-18
- 7-4
- 7-30

Updated Information (TOC)
Updated Information (specifications).
Updated Information (printed Circuit boards).
Updated Information (Oil Supply Mechanism).
Updated Information (toner cartridge set).
Updated Information (service call conditions).
Updated Information (process control error conditions).

## BULLETIN NUMBER: B017/B018-008

07/16/2001

## APPLICABLE MODEL:

GESTETNER - CS231/CS225
RICOH - AFICIO COLOR 4506/3506
SAVIN - SDC326A/SDC 326

## SUBJECT: SERVICE MANUAL - INSERT

## GENERAL:

The Service Manual pages listed below must be replaced with the pages supplied. Each bulletin package contains 1 set of replacement pages.

An arrow has highlighted the revised areas $\Rightarrow$.

PAGES:

- 1-4
- 1-28
- 2-21
- 3-18
- 7-4
- 7-30

Updated Information (Weight)
Updated Information (Anti Counterfeiting)
Updated Information ( Oil tank capacity)
Updated Information (Toner cartridge Hook)
Updated Information (SC 193)
Updated Information (Self check Table)


### 1.4.6 ELECTRICAL COMPONENT DESCRIPTIONS

## Printed Circuit Boards

| Symbol | Name | Function | $\begin{array}{\|c} \text { Index- } \\ \text { No } \end{array}$ | Location |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | $\begin{array}{\|c\|} \hline \text { A258/259/ } \\ 260 \end{array}$ | B017/018 |
| PCB1 | PSU | Supplies AC and DC power. | 7-4 | K4 | G3 |
| PCB2 | Lamp regulator | Supplies AC power to the exposure lamp. | 1-6 | O7 | J6 |
| PCB3 | SBU | Converts the light reflected from the original into video signals. | 1-8 | J9 | G6 |
| PCB4 | Scanner IPU | Converts the RGB image signal from the CCD to a CMYK signal and sends it to the LD main control board. <br> Analyzes image for anticounterfeiting (B017/B018) | 1-9 | L8 | H7 |
| PCB5 | Scanner motor drive | Supplies DC power to the scanner motor. | 1-1 | M7 | H4 |
| PCB6 | I/O control | Interfaces the sensors, clutches, solenoids, and motors in the printer module with the main control board. | 7-11 | D14 | C7 |
| PCB7 | High voltage supply: C, G | Supplies power to the charge corona wire and grid. | 7-1 | A14 | A10 |
| PCB8 | High voltage supply: T1, PCC | Supplies power to the transfer belt and pre-cleaning corona unit. | 7-9 | A2 | A4 |
| PCB9 | High voltage supply: T2, D | Supplies power to the paper transfer bias roller and paper separation corona unit. | 7-5 | A1 | A3 |
| PCB10 | High voltage supply: B | Supplies power to the development rollers. | 5-9 | A3 | A1 |
| PCB11 | Main control | Controls the printer sequence. | 1-10 | J12 | E10 |
| PCB12 | Laser synchronizing detector 1 | Detects laser main scan synchronization while the latent image is being written to the drum. | 1-16 | 015 | J9 |
| PCB13 | Laser synchronizing detector 2 | Detects laser main scan synchronization while the latent image is being written to the drum. | 1-12 | 015 | J10 |
| PCB14 | Revolver motor drive | Controls the revolver motor. | 7-7 | F5 | D4 |
| PCB15 | Interface: CSS/Bank | Connects to the CSS unit and optional paper tray unit. | 7-6 | J9 | F6 |
| PCB16 | LD drive | Drives the laser diode. | 1-15 | O17 | J9 |

## Oil Supply Mechanism


[F] [G]


- Gear [A] and cam gear [B], on the fusing knob shaft at the front of the fusing unit, are always engaged.
- The actuator [C] for the oil pump roller is in contact with this cam gear.
- When the fusing drive gear rotates causing the fusing knob to rotate, the gear and cam gear on the fusing knob shaft rotate.
- This rotates the roller of the actuator following the cam about pin [J].
- This presses the oil pump sleeve [F] to supply oil to the oil supply pad [D].
- Excess oil is collected in the oil tank [E].
- At both ends of the oil pump sleeve [F] are valves, which prevent oil from flowing back.
- Oil is supplied to the oil sub roller [G] from the oil supply pad [H].
- The oil blade [l] prevents oil from being applied unevenly to the oil sub roller.
- Oil is then supplied to the fusing belt $[K]$ via the oil supply roller [L].
$\Rightarrow$ - Capacity of the oil tank is increased from 350 cc to 430 cc .


## Oil End Detection

When the oil end is detected, approximately 60 cc of oil is still in the tank. Since more than 1,000 copies (A3/DLT) can be made, the software is changed as follows;
When the oil end sensor detects a near oil end condition, the machine displays oil near end condition. The machine displays the oil end condition 1,000 copies (regardless of paper size) after the near end condition is detected.


## Toner cartridge set:

1. Set the toner cartridge in the machine after removing the seal $[A](\mathbf{1})$.
2. Place the tool onto the cartridge after the cartridge is fully inserted (2).
3. Turn the tool clockwise (3) and remove it after the knob clicks (4).
$\Rightarrow$ After toner cartridge is replaced, hook the toner replacement tool on the hanger $[B]$ attached to the lower inner cover.

| No. Definition |  | Phenomenon | Possible Cause/ Troubleshooting Procedure |
| :---: | :---: | :---: | :---: |
| 172 | D | Video processing error 3 |  |
|  |  | - Timing - <br> Same as SC170 <br> - Condition - <br> The corrected white level is not in the proper range. | 1. Check SP 4-426-001 to 006 (RGB Gain). If their values are near " 255 ", clean the optics section (exposure glass, white plate, mirrors, and lens). <br> 2. Visually check if the exposure lamp turns on during warming-up after the main switch is turned on. If not, replace the lamp regulator. <br> 3. Check if the CCD flat cable is firmly connected at CN421 (CN1) and CN404 on the SBU and scanner IPU board. <br> 4. Check the continuity of the flat cable. <br> 5. Replace the scanner IPU board. <br> 6. Replace the SBU unit. |
| 191 | D | Bar code scan error |  |
|  |  | - Timing Just after the main switch is turned on <br> - Condition - <br> The scanner IPU board detects that the bar code pattern scanned in is not appropriate. | 1. Check if the bar code is damaged or scratched. <br> 2. Clean the optics section components, such as mirrors and lenses, and the bar code label. <br> 3. Check if the mirrors are properly positioned on the 1st and 2nd scanners. If the spring plate which secures the mirrors is out of position, it causes the light axis to be changed. <br> 4. Replace the scanner IPU board. <br> 5. Replace the main control board. |
| 192 | D | Bar code number mismatch |  |
|  |  | - Timing - <br> Just after the main switch is turned on <br> - Condition - <br> The main control board detects that the bar code data scanned in does not match the machine identification number stored in the RAM. | 1. Check if the serial number stored in the RAM is correct. <br> NOTE: Contact your product specialist for the detailed procedure. <br> 2. Check the copier's serial number and the number defined in SP mode. <br> 3. Garbled ROM data: Replace the NV-RAM. <br> 4. Replace the scanner IPU board. <br> 5. Replace the main control board. |
| 193 | D | IDU error |  |
|  |  | - Timing - <br> Just after the main switch is turned on or during a hardware reset <br> - Condition - <br> The IDU starts self-diagnosis at power-on and a hardware error was detected during this. | [A258/A259/A260] <br> 1. Test the scanner IPU board (SP 4-904-01 and 002). If not OK, replace the scanner IPU board. <br> 2. Replace the IDU board. <br> [B017/B018] <br> Replace the scanner IPU board. |

### 7.2 PROCESS CONTROL ERROR CONDITIONS

### 7.2.1 PROCESS CONTROL SELF-CHECK RESULTS (SP3-975-00)

Self-check results 03-975-00

| Displayed Value | Item | Related SP No. | Major Cause | Remarks |
| :---: | :---: | :---: | :---: | :---: |
| 1 | Successful | None |  |  |
| 89 | Toner end error | SP3-125-00 | SP3-125-00 is set to " 1 ", toner end condition or toner near-end condition. |  |
| 99 | Forced termination (door opened, etc.) | None | Power is turned off during selfcheck. <br> Temporary main power failure |  |
| 100 | ID sensor offset error |  | ID sensor connector disconnected | SC385 is indicated. |
| 110 | Vsg adjustment error | 3-107 | Dirty ID sensor, dirty drum, foreign materials or flaws on the drum | SC385 is indicated. |
| 120 | Coating weight calculation error | None | ID sensor noise interference, defective development unit, incorrect charge control unit setup, development bias error |  |
| 130 | Vmin error |  | ID sensor noise interference, K toner density too low |  |
| 20* | $\gamma$ calculation error, invalid $\gamma$ or Vk value | 3-122-xx | Development unit error, mixed colors |  |
| 300 | Residual potential error | 3-111-00 | Drum anomaly, faulty LD unit, poor grounding |  |
| 31* | Vd adjustment error | None | Drum deterioration, optical fatigue |  |
| 32* | Vpl adjustment error | None | Drum anomaly, faulty LD unit |  |
| 40* | Self-check process control $\gamma$ (gamma) error (unable to calculate) |  |  |  |
| 41* | Self-check process control $\gamma$ (gamma) error (out of range condition) |  |  |  |

$1: \mathrm{K}, 2: \mathrm{Y}, 3: \mathrm{C}$, and $4: \mathrm{M}$ are displayed for the respective colors for items identified by an asterisk in the 'Displayed value' column of the table.

BULLETIN NUMBER: B017/B018 - 009

GESTETNER - CS231/225
RICOH - AFICIO 4506/3506
SAVIN - SDC326A/326

## SUBJECT: PARTS CATALOG UPDATES

## GENERAL:

The following parts updates are being issued for all B017/B018 Parts Catalogs. Please update your Parts Catalogs with the following information.

- UPDATE 1:

Toner Stopper Seal- To prevent toner dropping from the toner collection pipe, a seal has been added to the toner stopper as shown in the illustration below. Please update your B017/B018 Parts Catalogs with the following information.


|  | REFERENCE |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| NEW PART NO. | DESCRIPTION | QTY | PAGE | ITEM |
| B0173592 | Toner Stopper Seal | 1 | 51 | $37^{*}$ |

* Denotes new item number.

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Page 2 of 5

## UNITS AFFECTED:

All B017/B018 copiers manufactured after the serial numbers listed below will have the new style toner stopper seal installed during production

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS231 | From 1st production |
| Gestetner CS225 | From 1st production |
| Ricoh AFICIO 4506 | From 1st production |
| Ricoh AFICIO 3506 | From 1st production |
| Savin SDC326A | From 1st production |
| Savin SDC326 | From 1st production |

- UPDATE 2: Choke Coil- To meet CE regulations in Europe the coil has been modified to a choke coil. Please update your Parts Catalogs with the following information.


|  |  |  |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE | ITEM |
| N6074525 |  | Coil-RITL-9704 | $1 \rightarrow 0$ | - | 79 | 19 |
|  | $\rightarrow$ AZ020015 | Choke Coil - 10MH 2.5A | 1 | 3 | 79 | 19 |

## UNITS AFFECTED:

The new style choke coil has been in production from the beginning for the B017 and B018.

Tech Service Bulletin No. B017/B018-009

## Page 3 of 5

- UPDATE 3: Lubricant Bar- To prevent the lubricant bar from being deformed during transport, the four parts listed below have been modified. Please update your Parts Catalog with the following information.


Page 57


| REFERENCE |  |  |  |  |  |  |  |
| :---: | :---: | :--- | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE | ITEM |  |
| A2596745 | B0176745 | Lubricant Bar | 1 | 0 | 55 | 3 |  |
| A2596711 | B0176711 | Lubricant Bar Holder | 1 | 0 | 55 | 5 |  |
| A2596714 | B0176714 | Lubricant Bar Cover | 1 | 0 | 55 | 1 |  |
| B0176750 | B0176751 | Grounding Plate | 1 | 0 | 57 | 9 |  |

## UNITS AFFECTED:

All B017/B018 copiers manufactured after the serial numbers listed below will have the new style lubricant bar parts installed during production

| MODEL NAME | SERIAL NUMBER |
| :---: | :---: |
| Gestetner CS231 | H 6001200001 |
| Gestetner CS225 | H 5901200001 |
| Ricoh AFICIO 4506 | H 6001200043 |
| Ricoh AFICIO 3506 | H 5901200043 |
| Savin SDC326A | H 6001200001 |
| Savin SDC326 | H 5901200001 |

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- UPDATE 4: Transfer Belt Drive Roller- Improper registration may occur if the screw that fastens the belt drive roller and joint becomes loose. To ensure proper registration, the tapping screw has been changed to an M4 type screw and the transfer drive belt and joint have been modified to accommodate this change. Please update your Parts Catalog with the following information.


|  |  |  |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE | ITEM |
| A2596057 |  | Transfer Belt Drive Roller | $1 \rightarrow 0$ |  | 59 | 8 |
|  | $\rightarrow$ B0176057 | Drive Roller - Transfer Belt | 1 | 3/S | 59 | 8 |
| A2591103 | B0176058 | Driven Joint | 1 | 3/S | 59 | 16 |
| 04513006B |  | Tapping Screw - M 3 X6 | - |  | 59 | 105 |
|  | -03540080B | Screw - M4X8 | - | 3/5 | 59 | 106* |

* Denotes new item number.


## UNITS AFFECTED:

All B017/B018 copiers manufactured after the serial numbers listed below will have the new style transfer belt drive roller parts installed during production

| MODEL NAME | SERIAL NUMBER |
| :---: | :---: |
| Gestetner CS231 | H 6001200001 |
| Gestetner CS225 | H 5901200001 |
| Ricoh AFICIO 4506 | H 6001200076 |
| Ricoh AFICIO 3506 | H 5901200115 |
| Savin SDC326A | H 6001200001 |
| Savin SDC326 | H 5901200001 |

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## Page 5 of 5

- UPDATE 5: Mylars- To prevent a malfunction of the belt cleaning home position sensor and registration clutch, caused by paper dust or toner, mylars have been added. Please update your Parts Catalog with the following information.

* Denotes new item number.


## UNITS AFFECTED:

All B017/B018 copiers manufactured after the serial numbers listed below will have the new mylars installed during production

| MODEL NAME | SERIAL NUMBER |
| :---: | :---: |
| Gestetner CS231 | H 6001100001 |
| Gestetner CS225 | H 5901100001 |
| Ricoh AFICIO 4506 | H 6001100021 |
| Ricoh AFICIO 3506 | H 5901100020 |
| Savin SDC326A | H 6001100001 |
| Savin SDC326 | H 5901100001 |

## INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and <br> NEW machines. | 2 | NEW parts CAN NOT be used in OLD machines. <br> OLD parts can be used in OLD and NEW machines. |
| :---: | :--- | :---: | :--- |
| 1 | NEW parts can be used in OLD and NEW machines. <br> OLD parts CAN NOT be used in NEW machines. | 3 | OLD parts CAN NOT be used in NEW machines. <br> NEW parts CAN NOT be used in OLD machines. |
| $3 / S$ | 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 <br> previously modified, use the new part numbers individually. |  |  |

## BULLETIN NUMBER: B017/B018-010

## APPLICABLE MODEL:

GESTETNER - Model CS231/CS225
RICOH - Model AFICIO COLOR4506/3506
SAVIN - Model SDC326A/326

## SUBJECT: SERVICE MANUAL - INSERT

## GENERAL:

The Service Manual pages listed below must be replaced with the pages supplied. Each bulletin package contains 1 set of replacement pages.

An arrow has highlighted the revised areas $\Rightarrow$.

## PAGES:

- xxi Updated Information (TOC)
- 7-34 Updated Information (FIRMWARE MODIFICATION HISTORY)
6.9.14 CAUTIONS TO BE TAKEN WHEN USING A FUSING UNIT THAT HAS BEEN IN STOCK FOR A LONG PERIOD ..... 6-79
6.10 DUPLEX UNIT ..... 6-80
6.10.1 DUPLEX UNIT REMOVAL ..... 6-80
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6.10.3 FEED ROLLER REPLACEMENT ..... 6-81
6.10.4 DUPLEX FEED MOTOR REPLACEMENT ..... 6-82
6.11 SYSTEM AND ELECTRONICS ..... 6-84
6.11.1 IPU PROGRAM DOWNLOADING ..... 6-84
6.11.2 MAIN PROGRAM DOWNLOADING ..... 6-86
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Upload/Download Procedure ..... 6-87
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Precautions when replacing the NV-RAM ..... 6-89
6.11.5 TOUCH PANEL CALIBRATION (A259/A260/B017 ONLY) ..... 6-90
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7. TROUBLESHOOTING ..... 7-1
7.1 SERVICE CALL CONDITIONS ..... 7-1
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7.2 PROCESS CONTROL ERROR CONDITIONS ..... 7-30
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7.2.2 DEVELOPER SETUP RESULTS (SP3-964-00) ..... 7-31
7.2.3 SELF-CHECK PROCESS CONTROL RELATED SCS ..... 7-32
(1) SC385: Vsg adjustment error ..... 7-32
(2) SC386: ID sensor pattern error ..... 7-32
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7.4 FIRMWARE MODIFICATION HISTORY ..... 7-34

## $\Rightarrow$ <br> 7.4 FIRMWARE HISTORY

### 7.4.1 B017/B018 FIRMWARE MODIFICATION HISTORY

| FIRMWARE MODIFICATION HISTORY |  |  |  |
| :---: | :---: | :---: | :---: |
| DESCRIPTION OF MODIFICATION | Models | Production | FIRMWARE VERSION |
|  | B017 | $1^{\text {st }}$ massPro | 1.104 |
|  | B018 | $1^{\text {st }}$ massPro | 1.064 |
| To remove 12 mm banding within 30 mm from the leading edge, the OFF timing of the revolver motor was changed. | B017 | March 2001 | 1.132 |
|  | B018 | Feb. 2001 | 1.072 |
| To prevent offset image if the following conditions 1 and 2 , or 1 and 3 occur at the same time, ON/OFF timing of the separation corona was changed. <br> 1) Low humidity (example: $20^{\circ} \mathrm{C}, 10 \%$ or $10^{\circ} \mathrm{C}, 15 \%$ ) <br> 2) Full color (multi-copy), longer than A4 (8.5×11) sideways, from the $3^{\text {rd }}$ copy. <br> 3) Making a mono color copy within 1 minute after making full color copies (longer than A4 ( $8.5 \times 11$ ) sideways. |  |  |  |
| Perform the main corona wire cleaning during developer setup (SP2-225-X) to prevent uneven image at installation. |  |  |  |
| The following problem was corrected: <br> The LED for the fax key stays red after clearing a duplex jam. |  |  |  |
| The following problem was corrected: When scanning A4 (8.5x11) or A3 (11x17) size using the ADF and a Fiery controller, the scanned image becomes white. |  |  |  |

B017/B018 IPU FIRMWARE MODIFICATION HISTORY

| DESCRIPTION OF MODIFICATION | Model <br> s | Production | FIRMWARE <br> VERSION |
| :--- | :---: | :---: | :---: |
| The separation threshold level for letter and photo was <br> changed. | B017 | Jan. 2001 | 1.05 |
|  | B018 |  |  |
| The following problem was fixed. <br> When scanning A4 or A3 size using the ADF and Fiery <br> controller, the scanned image becomes white at least <br> the Main or IPU program should be upgraded. |  |  |  |

## BULLETIN NUMBER: B017/B018-011

## APPLICABLE MODEL:

GESTETNER - CS231/225
RICOH - AFICIO 4506/35063
SAVIN - SDC326A/326

## SUBJECT: SERVICE MANUAL - INSERT

## GENERAL:

The Service Manual pages listed below must be replaced with the pages supplied. Each bulletin package contains 1 set of replacement pages.

PAGES:

The revised areas have been highlighted by an arrow $\Rightarrow$.

- 7-13

Updated Information (Service Call Condition 452)


## BULLETIN NUMBER:

B017/B018-012
08/14/2001
APPLICABLE MODEL:
GESTETNER - CS231/CS225
RICOH - AFICIO COLOR 4506/3506
SAVIN - SDC326A/SDC326

## SUBJECT: I/O BOARD RESISTORS

## GENERAL:

Resistors R266 and R267 on the I/O board have been changed. This increases the margin of safety provided by the pressure and heat roller high-temperature safety circuits. The change has reduced the maximum allowable roller temperature. The following parts corrections are being issued for all B017/B018 parts catalogs.

|  |  |  |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE | ITEM |
| 16304202 |  | Resistor - 2 k ohm $\pm 5 \%$ |  |  | 121 | 163 |
|  | 16304122 | Resistor - 1.2k ohm $\pm 5 \% 1 / 16 \mathrm{~W}$ | 1 | 3 | 121 | 181* |
| 16304243 |  | Resistor - 24 k ohm $\pm 5 \%$ 1/16W |  |  | 121 | 166 |
|  | 16304223 | Resistor - 22k ohm $\pm 5 \%$ 1/16W | 1 | 3 | 121 | 182* |

*DENOTES NEW ITEM NUMBER

## UNITS AFFECTED:

All B017/B018 copiers manufactured after the Serial Numbers listed below will have the new resistors installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :---: |
| Gestetner CS231 | H6001100001 |
| Gestetner CS225 | H5901100001 |
| Ricoh Aficio Color 4506 | H6001100021 |
| Ricoh Aficio Color 3506 | H5901100020 |
| Savin SD326A | H6001100001 |
| Savin SD326 | H5901100001 |

## INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and <br> NEW machines. | 2 | NEW parts CAN NOT be used in OLD machines. <br> OLD parts can be used in OLD and NEW machines. |
| :---: | :--- | :--- | :--- |
| 1 | NEW parts can be used in OLD and NEW machines. <br> OLD parts CAN NOT be used in NEW machines. | 3 | OLD parts CAN NOT be used in NEW machines. <br> NEW parts CAN NOT be used in OLD machines. |
| 3/S | 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 <br> previously modified, use the new part numbers individually. |  |  |

## BULLETIN NUMBER: B017/B018-013

## GESTETNER -CS231/CS225

RICOH - AFICIO 4506/3506
SAVIN -SDC326A/SDC326

## SUBJECT: RIGHT MIDDLE COVER

## GENERAL:

To ensure that the magnetic catch stays properly mounted, the attachment method has been changed to a hook-type attachment. To facilitate this, the new right middle cover includes this new magnetic catch. The following parts corrections are being issued for all B017/B018 Parts Catalogs.

Tech Service Bulletin No. B017/B018-013

|  |  |  |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE | ITEM |
| B0171285 | B0171220 | Right Middle Cover | 1 | 1 | 13 | 23 |
| AG070014 | AG071010 | Magnet Catch | 1 | 3 | 13 | 22 |

## UNITS AFFECTED:

All B017/B018 copiers manufactured after the Serial Numbers listed below will have the new style right middle cover and magnet catch installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :---: |
| Gestetner CS231 | H6010100001 |
| Gestetner CS225 | H5910100001 |
| Ricoh Aficio 4506 | H6010500086 |
| Ricoh Aficio 3506 | H5901200053 |
| Savin SDC326A | H6010100001 |
| Savin SDC326 | H5910100001 |

## INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and <br> NEW machines. | 2 | NEW parts CAN NOT be used in OLD machines. <br> OLD parts can be used in OLD and NEW machines. |
| :---: | :--- | :--- | :--- |
| 1 | NEW parts can be used in OLD and NEW machines. <br> OLD parts CAN NOT be used in NEW machines. | 3 | OLD parts CAN NOT be used in NEW machines. <br> NEW parts CAN NOT be used in OLD machines. |
| O/S | Must be nstalled as a set on units manufactured prior to the S/N <br> previously modified, use the new part numbers individually. |  |  |

## BULLETIN NUMBER: B017/B018-014

09/05/2001
APPLICABLE MODEL:
GESTETNER - CS231/CS225
RICOH - AFICIO 4506/3506
SAVIN -SDC326A/SDC326

## SUBJECT: SPRING

## GENERAL:

To ensure proper registration at $25 \%$ and $33 \%$ image reduction, (where the margin of error is slightly larger), the tension of the spring for the scanner motor belt has been increased The following parts corrections are being issued for all B017/B018 Parts Catalogs.


|  |  |  |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE | ITEM |
| A2591917 | B0171755 | Spring - 17X5mm | 1 | 1 | 35 | 20 |

## UNITS AFFECTED:

All B017/B018 copiers manufactured after the Serial Numbers listed below will have the new style Spring $17 \times 5 \mathrm{~mm}$ installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :---: |
| Gestetner CS231 | H6010200001 |
| Gestetner CS225 | H5910200001 |
| Ricoh Aficio 4506 | H6010500086 |
| Ricoh Aficio 3506 | H5910200033 |
| Savin SDC326 | H5910200001 |
| Savin SDC326A | H6010200001 |

## BULLETIN NUMBER: B017/B018-015

## APPLICABLE MODEL: <br> GESTETNER - CS231/225 <br> RICOH - AFICIO 4506/3506 <br> SAVIN - SDC 326A/326

## SUBJECT: SERVICE MANUAL - INSERT

## GENERAL:

The Service Manual pages listed below must be replaced with the pages supplied. Each bulletin package contains 1 set of replacement pages.

PAGES:
The revised areas have been highlighted by an arrow $\Rightarrow$.

- xxi
- $7-33 \& 34$

Updated Information (Table of Contents)
Updated Information (Firmware Modifications)
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### 7.4 FIRMWARE HISTORY

### 7.4.1 B017/B018 FIRMWARE MODIFICATION HISTORY

| FIRMWARE MODIFICATION HISTORY |  |  |  |
| :---: | :---: | :---: | :---: |
| DESCRIPTION OF MODIFICATION | Models | Prod. | Ver. |
| Initial Production | B0175197G <br> B0185197G | $\begin{aligned} & \hline 1^{\text {st }} \text { Prod. } \\ & 1^{\text {st }} \text { Prod. } \end{aligned}$ | $\begin{aligned} & 1.104 \\ & 1.064 \end{aligned}$ |
| To remove 12 mm banding within 30 mm from the leading edge, the OFF timing of the revolver motor was changed. <br> To prevent offset image if the following conditions 1 and 2 , or 1 and 3 occur at the same time, ON/OFF timing of the separation corona was changed. <br> 1) Low humidity (example: $20^{\circ} \mathrm{C}, 10 \%$ or $10^{\circ} \mathrm{C}, 15 \%$ ) <br> 2) Full color (multi-copy), longer than A4 ( $8.5 \times 11$ ) sideways, from the $3^{\text {td }}$ copy. <br> 3) Making a mono color copy within 1 minute after making full color copies (longer than A4 (8.5×11) sideways. <br> Perform the main corona wire cleaning during developer setup (SP2-225-X) to prevent uneven image at installation. <br> The following problem was corrected: <br> The LED for the fax key stays red after clearing a duplex jam. <br> The following problem was corrected: <br> When scanning A4 ( $8.5 \times 11$ ) or A3 (11x17) size using the ADF and a Fiery controller, the scanned image becomes white. | $\begin{aligned} & \text { B0175197H } \\ & \text { B0185197H } \end{aligned}$ | $\begin{gathered} \text { March } \\ 2001 \\ \text { Feb. } 2001 \end{gathered}$ | 1.132 1.072 |
| Corrects the following: <br> SC326 may occur if the following 3 conditions are met: <br> 1) Multi-copy run <br> 2) Image rotation mode <br> 3) Suffix of the LD control board P/N (B0175291) is before H . <br> SC121 may occur if the following 3 conditions are met. <br> 1) Multi-copy run <br> 2) Image rotation mode <br> 3) Suffix of the LD control board $\mathrm{P} / \mathrm{N}$ ( B 0175291 ) is before H . <br> Documents received in night mode are stored as substitution reception documents and are not printed out. <br> Software modified to so that it can be used with the RSS function. | B0175197J B0185197J | Not available <br> Not Available | 1.15 1.09 |

## $\Rightarrow$ <br> 7.4.2 B017/B018 IPU FIRMWARE MODIFICATION HISTORY

| DESCRIPTION OF MODIFICATION | Models | Prod. | Ver. |
| :--- | :---: | :---: | :---: |
| Initial Production | B0175133D | $1^{\text {st }}$ Prod. | 1.04 |
| The separation threshold level for letter and photo was <br> changed. | B0175133E | Jan. 2001 | 1.05 |
| The following problem was fixed. <br> When scanning A4 or A3 size using the ADF and Fiery <br> controller, the scanned image becomes white at least <br> the Main or IPU program should be upgraded. |  |  |  |

### 7.4.3 B017/B018 FCU FIRMWARE MODIFICATION HISTORY

| DESCRIPTION OF MODIFICATION | Models | Prod. | Ver. |
| :--- | :---: | :---: | :---: |
| Initial Production | B3835582B | $1^{\text {st }}$ Prod. | 2.17 |

## BULLETIN NUMBER：B017／B018－016

09／05／2001

## APPLICABLE MODEL：

GESTETNER－CS231／CS225
RICOH－AFICIO 4506／3506
SAVIN－SDC326A／SDC326

## SUBJECT：PARTS CATALOG CORRECTION

## GENERAL：

Please insert the following illustration correction for the tightener（Parts Catalog，B017／B018 pg．82）．
Note：Since this is only an illustration correction，the part number has not changed．The production process for the development unit holder has been changed to increase its strength and durability．
Note：There is a projection on the new holder to distinguish it from the old one．
The following parts corrections are being issued for all B017／B018 Parts Catalogs．


Continued．．．

Tech Service Bulletin No. B017/B018-016
Page 2 of 2


|  |  |  |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE | ITEM |
| A2593240 | B0173230 | Development Unit Holder | 4 | 1 | 43 | 1 |

## UNITS AFFECTED:

All B017/B018copiers manufactured after the Serial Numbers listed below will have the new style development unit holder installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :---: |
| Gestetner CS231 | H6010200001 |
| Gestetner CS225 | H5910200001 |
| Ricoh Aficio 4506 | H6010500086 |
| Ricoh Aficio 3506 | H5910200033 |
| Savin SDC326A | H6010200001 |
| SavinSDC326 | H5910200001 |

## INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and <br> NEW machines. | 2 | NEW parts CAN NOT be used in OLD machines. <br> OLD parts can be used in OLD and NEW machines. |
| :---: | :--- | :--- | :--- |
| 1 | NEW parts can be used in OLD and NEW machines. <br> OLD parts CAN NOT be used in NEW machines. | 3 | OLD parts CAN NOT be used in NEW machines. <br> NEW parts CAN NOT be used in OLD machines. |
| $3 / S$ | 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 <br> previously modified, use the new part numbers individually. |  |  |

BULLETIN NUMBER: B017/B018-017
10/16/2001
APPLICABLE MODEL:
GESTETNER - CS231/CS225
RICOH - 4506/3506
SAVIN - 326A/326

## SUBJECT: PARTS CATALOG CORRECTION

## GENERAL:

Please change the following item numbers in your Parts Catalogs: The following parts corrections are being issued for all B017/B018 Parts Catalogs.

## EXTERIOR 2 (B017/B018)



RTEDEM TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B017/B018-018

## APPLICABLE MODEL:

GESTETNER - CS231/CS225
RICOH - AFICIO 4506/3506
SAVIN - SDC326A/SDC326

## SUBJECT: SERVICE MANUAL - INSERT

## GENERAL:

The Service Manual pages listed below must be replaced with the pages supplied. Each bulletin package contains 1 set of replacement pages.

PAGES:

The revised areas have been highlighted by an arrow $\Rightarrow$.

- 1-28 \& 1-29
- 3-10 \& 3-11
- 6-88

Updated Information
Updated Information
Updated Information

### 1.4.6 ELECTRICAL COMPONENT DESCRIPTIONS

Printed Circuit Boards

| Symbol | Name | Function | $\begin{gathered} \text { Index- } \\ \text { No } \end{gathered}$ | Location |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | $\begin{array}{\|c\|} \hline \text { A258/A259/ } \\ \text { A260 } \\ \hline \end{array}$ | B017/018 |
| PCB1 | PSU | Supplies AC and DC power. | 7-4 | K4 | G3 |
| PCB2 | Lamp regulator | Supplies AC power to the exposure lamp. | 1-6 | O7 | J6 |
| PCB3 | SBU | Converts the light reflected from the original into video signals. | 1-8 | J9 | G6 |
| PCB4 | Scanner IPU | Converts the RGB image signal from the CCD to a CMYK signal and sends it to the LD main control board. <br> Analyzes image for anticounterfeiting (B017/B018) | 1-9 | L8 | H7 |
| PCB5 | Scanner motor drive | Supplies DC power to the scanner motor. | 1-1 | M7 | H4 |
| PCB6 | I/O control | Interfaces the sensors, clutches, solenoids, and motors in the printer module with the main control board. | 7-11 | D14 | C7 |
| PCB7 | High voltage supply: <br> C, G | Supplies power to the charge corona wire and grid. | 7-1 | A14 | A10 |
| PCB8 | High voltage supply: <br> T1, PCC | Supplies power to the transfer belt and pre-cleaning corona unit. | 7-9 | A2 | A4 |
| PCB9 | High voltage supply: T2, D | Supplies power to the paper transfer bias roller and paper separation corona unit. | 7-5 | A1 | A3 |
| PCB10 | High voltage supply: <br> B | Supplies power to the development rollers. | 5-9 | A3 | A1 |
| PCB11 | Main control | Controls the printer sequence. | 1-10 | J12 | E10 |
| PCB12 | Laser synchronizing detector 1 | Detects laser main scan synchronization while the latent image is being written to the drum. | 1-16 | 015 | J9 |
| PCB13 | Laser synchronizing detector 2 | Detects laser main scan synchronization while the latent image is being written to the drum. | 1-12 | 015 | J10 |
| PCB14 | Revolver motor drive | Controls the revolver motor. | 7-7 | F5 | D4 |
| PCB15 | Interface: CSS/Bank | Connects to the CSS unit and optional paper tray unit. | 7-6 | J9 | F6 |
| PCB16 | LD drive | Drives the laser diode. | 1-15 | 017 | J9 |
| PCB17 | LD main control | Controls the laser power, main scan synchronizing sensors, and process control gamma correction. <br> Rotates scanned image (B017/018) <br> Analyzes images for anticounterfeiting. (B017/018) | 1-11 | M16 | H10 |


| Symbol | Name | Function | Index- <br> No | L258/A259/ <br> A260 | B017/018 |
| :--- | :--- | :--- | :---: | :---: | :---: |
| PCB18 | By-pass paper width <br> detection | Detects the paper width on the <br> by-pass feed table. | $3-7$ | A10 | A5 |
| PCB19 | Operation panel | Used to operate the copier. | $4-1$ | H19 |  |
| PCB20 | Duplex control | Controls the duplex unit. | $4-18$ | F20 <br> (A259/A260 <br> copiers only) | D12 |
| PCB21 | IDU | Analyzes images for anti- <br> counterfeiting. (A258/259/260) | $1-4$ | M14 | - |
| PCB22 | Polygon mirror motor <br> drive | Controls the polygon mirror <br> motor. (A258/259/260) | $1-13$ | O15 | - |
| PCB23 | Temperature and <br> humidity sensor | Detects the ambient temperature <br> and humidity. | $3-16$ | E19 | D11 |
| PCB24 | Header relay | Supplies the power to the <br> heaters | - | - | H1 |

Motors

| Symbol | Name | Function | Index- <br> No | Location |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | $\begin{gathered} \hline \text { A258/259/ } \\ 260 \end{gathered}$ | B017/018 |
| M1 | Scanner | Drives the scanner. | 1-2 | M6 | H4 |
| M2 | Polygon mirror | Drives the polygon mirror (laser unit). | 1-14 | O15 | H8 |
| M3 | Revolver drive | Rotates the revolver unit. | 6-3 | G5 | E4 |
| M4 | Duplex feed motor | Drives the paper feed roller in the duplex unit. | 4-14 | G20 (A259/A260 copiers only) | E12 <br> (B017 <br> models only) |
| M5 | Duplex Side fence jogger | Drives the duplex unit side fences. | 4-16 | G21 (A259/A260 copiers only) | E12 <br> (B017 <br> models only) |
| M6 | Duplex End fence jogger | Drives the duplex unit end fences. | 4-17 | G21 (A259/A260 copiers only) | E13 <br> (B017 <br> models only) |
| M7 | Paper feed | Drives the paper feed unit. | 3-2 | A12 | A6 |
| M8 | Tray lift | Lifts the tray bottom plate. | 6-8 | A12 <br> (A258 model <br> only) | A7 <br> (B018 <br> models only) |
| M9 | Toner supply | Supplies toner. | 6-2 | A7 | A3 |
| M10 | Drum | Drives the drum, the development unit currently at the development position, and the transfer belt. | 6-9 | A19 | A9 |
| M11 | Fusing | Drives the fusing units and exit rollers. | 6-5 | E8 | A10 |
| M12 | Charge corona cleaner | Drives the charge corona cleaner | 5-11 | - | A2 |

Removing the Inner Transfer Cover and Paper Transfer Locking Screw




NOTE: Place a mat on the floor to keep the floor clean before doing this procedure.

1. Open the front cover and remove the filament tapes and cardboard placed at the paper transport unit.
2. Remove the revolver locking screw $[A]$ and the inner covers $[B]$ (2 screws each).
NOTE: Secure screw [A] on the drawer unit front frame for transportation.
3. Remove the paper transfer locking screw [C].

NOTE: Keep screw [C] for transportation.
4. Remove the charge corona unit [D] (1 screw, 1 connector [E], and clamp).
5. Remove the transfer belt lock shaft [F] (1 screw).

NOTE: Keep shaft [F] for transportation.
6. Remove the transfer belt stay [G] (4 screws and spring holder [H]).

NOTE: The spring holder will drop out when the drawer unit is pulled out if you forget to remove it in this step.

NOTE: 1) When the drawer unit [A] is left out, the drum is exposed to light. This may cause optical fatigue, resulting in dark bands. Therefore, after pulling out the drawer unit, remove the drum unit [B] (2 connectors [C]) and cover it with a black sheet or 5 (or more) white sheets of paper.
2) Before removing or installing the drum unit, rotate the drawer unit counterclockwise so that the upper edge of sensor actuator [D] aligns the sensor [E] as shown. This keeps the development sleeve away from the development position and prevents drum damage.
3) The revolver unit rotates counterclockwise. Do NOT try to turn it in the other direction.
7. Rotate the sensor actuator [D] so that the upper edge of the sensor actuator aligns the sensor as shown.
8. Pull out the drawer unit [A] (2 screws), and remove the drum unit [B] (2 connectors [C]). Then, place a black sheet or 5 white sheets of paper on the drum.


### 6.11.4 RAM CLEAR

## RAM Clear Procedure

NOTE: Clearing the RAM resets all SP and UP values to the defaults, except the serial number and main counter value. Therefore, it is important to clear the RAM using the procedure shown below.

1. Before clearing the RAM, execute SP7-902 to output the SP mode values that have been changed from their default values.
2. Upload the settings from the NV-RAM onto a Flash ROM chip using SP5-824 (see "NV-RAM uploading and downloading").
3. Use SP5-801 to clear the RAM.
4. Turn the machine "OFF" then "ON".
5. Run the forced process control self-check (this is required since RAM clearing also initializes the process control data).
6. Enter the SP mode changes that were printed in step 1, or download the NVRAM values from the Flash ROM chip (see the download procedure).
7. Perform the auto color calibration (ACC) procedure.
8. A259/A260/B017: Calibrate the touch panel.

BULLETIN NUMBER: B017/B018-019<br>11/16/2001<br>APPLICABLE MODEL:<br>GESTETNER - CS231/CS225<br>RICOH - AFICIO 4506/3506<br>SAVIN - SDC326A/SDC326

## SUBJECT: DEVELOPMENT UNIT PARTS

## GENERAL:

The following parts corrections are being issued for Page 49 in all B017/B018 Parts Catalogs.

Please correct your parts catalog as follows.

- add four doctor blade side seal (Item 23).
- add three foam rubber (Item 24).
- delete the illustration of index number 21 and 22.
- correct the parts number of index number 2.
- correct the index number of front side seal from 9 to 21.
- correct the index number of rear side seal from 9 to 22.
- delete the illustration of seal.
- delete the index number 9 from the list.


Continued...

Tech Service Bulletin No. B017/B018-019

Please correct your parts catalog as follows

|  |  |  |  | REFERENCE |  |  |  |  |  |  |  |
| :---: | :---: | :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE | ITEM |  |  |  |  |  |
|  | A2593177 | Doctor Blade Side Seal | 4 |  | 49 | $23^{*}$ |  |  |  |  |  |
|  | A2593178 | Foam Rubber | 3 |  | 49 | $24 *$ |  |  |  |  |  |
| A2593147 |  | Bearing Holder |  |  |  |  |  |  |  |  |  |
|  | B0173160 | Bushing - 8mm | 2 | 1 | 49 | 2 |  |  |  |  |  |
| A2593166 |  | Front Side Fence Seal | 1 |  | 49 | 21 |  |  |  |  |  |
| A2593166 |  | Rear Side Fence Seal | 1 |  | 49 | 22 |  |  |  |  |  |

*DENOTES NEW ITEM NUMBER

## INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and <br> NEW machines. | 2 | NEW parts CAN NOT be used in OLD machines. <br> OLD parts can be used in OLD and NEW machines. |
| :---: | :--- | :--- | :--- |
| 1 | NEW parts can be used in OLD and NEW machines. <br> OLD parts CAN NOT be used in NEW machines. | 3 | OLD parts CAN NOT be used in NEW machines. <br> NEW parts CAN NOT be used in OLD machines. |
| $3 / S$ | 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 <br> previously modified, use the new part numbers individually. |  |  |

BULLETIN NUMBER: B017/B018 - 020
01/23/2002
APPLICABLE MODEL:
GESTETNER - CS231/225
RICOH - AFICIO 4506/3506
SAVIN - SDC 326A/326

## SUBJECT: LUBRICANT BAR

## GENERAL:

The lubricant bar has been changed to provide greater temperature stability.
The following parts corrections are being issued for all B017/B018 Parts Catalogs.
26. PAPER TRANSPORT UNIT (B017/B018)


|  | REFERENCE |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE | ITEM |  |  |  |  |
| B0176255 | A2596255 | Lubricant Bar | 1 | 1 | 61 | 22 |  |  |  |  |

Continued..

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Page 2 of 2

## INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and <br> NEW machines. | 2 | NEW parts CAN NOT be used in OLD machines. <br> OLD parts can be used in OLD and NEW machines. |
| :---: | :--- | :--- | :--- |
| 1 | NEW parts can be used in OLD and NEW machines. <br> OLD parts CAN NOT be used in NEW machines. | 3 | OLD parts CAN NOT be used in NEW machines. <br> NEW parts CAN NOT be used in OLD machines. |
| $3 / S$ | 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 <br> previously modified, use the new part numbers individually. |  |  |

## UNITS AFFECTED:

All B017/B018 copiers manufactured after the Serial Numbers listed below will have the new style Lubricant Bar installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :---: |
| Gestetner CS231 | H6010500026 |
| Gestetner CS225 | H5910500017 |
| Ricoh Aficio Color3506 | H59106XXXX |
| Ricoh Aficio Color 4506 | H6010600117 |
| Savin SDC326A | H6010500026 |
| Savin SDC326 | H5910500017 |

BULLETIN NUMBER: B017/B018-021

SAMN - SDC 326ASDC326

## SUBJECT: MAIN CONTROL BOARD

## GENERAL:

The following modifications have been applied to the Main Board:

1. The filter has been changed due to discontinuation of 16070939.
2. A resistor has been added between pins 29 and 32 of IC104 that reduces electrical noise that interferes with the NVRAM write signal.
3. The size of the capacitor has been increased this ensures that voltage is supplied to the CPU during the input drop when the front door is closed. Insufficient voltage causes the CPU to reset. The following part addition and corrections are being issued for all B017/B018 Parts Catalogs.

|  |  |  |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE | ITEM |
| 16070939 | 16071245 | Filter - NFM4516P13C204F | 1 | 0 | 110 | 177 |
| 16070939 | 16071245 | Filter - NFM4516P13C204F | 1 | 0 | 117 | 161 |
| 16402221 | 16402471 | Capacitor - 470 $\mu \mathrm{F} \pm 20 \%$ 25V | 1 | 1 | 111 | 215 |
| 16402221 | 16402471 | Capacitor - $470 \mu \mathrm{~F} \pm 20 \%$ 25V | 1 | 1 | 117 | 191 |
|  | 16118103 | Resistor - 10k $2 \pm 5 \% 1 / 4 \mathrm{~W}$ | 1 |  | 111 | 228* |
|  | 16118103 | Resistor - 10k $2 \pm 5 \% 1 / 4 \mathrm{~W}$ |  |  | 117 | 202* |

*DENOTES NEW ITEM NUMBER

## UNITS AFFECTED:

All B017/B018 copiers manufactured after the Serial Numbers listed below will have the new style resistor installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS231 | H 6010500034 |
| Gestetner CS225 | H 5910600009 |
| Ricoh Aficio Color 4506 | H 601000117 |
| Ricoh Aficio Color 3506 | H 5910800035 |
| Savin SDC326A | H 6010500034 |
| Savin SDC326 | H 5910600009 |

BULLETIN NUMBER: B017/B018-022
APPLICABLE MODEL:
GESTETNER - CS231/225
RICOH - AFICIO 4506/3506
SAMN - SDC326A 326

## SUBJECT: SC301, SC302, or SC360

## SYMPTOM:

SC301, SC302 or SC360 may occur while making copies.

## CAUSE:

Poor contact between the grounding plate and PCC casing can cause an electrical leak / noise.

## SOLUTION

Form the portion of the grounding plate shown below approximately $20^{\circ}\left( \pm 5^{\circ}\right)$ to optimize the contact between grounding plate and PCC casing.

Note: When forming, be sure to keep the portion flat and untwisted.


## UNITS AFFECTED:

The grounding plate was modified as shown above and applied to the production line from May 2001.

BULLETIN NUMBER: B017/B018-023
05/30/2002

## APPLICABLE MODEL:

GESTETNER - CS231/225
RICOH - AFICIO 4506/3506
SAVIN - SDC326A/326

## SUBJECT: SERVICE MANUAL - INSERT

## GENERAL:

## TECHNICAL SERVICE BULLETIN

The Service Manual pages listed below must be replaced with the pages supplied. Each bulletin package contains 1 set of replacement pages.

PAGES:

The revised areas have been highlighted by an arrow $\Rightarrow$.

- 7-33 through 7-35

Updated Information (Firmware Modification History)

### 7.4 FIRMWARE HISTORY

### 7.4.1 B017/B018 FIRMWARE MODIFICATION HISTORY



| FIRMWARE MODIFICATION HISTORY |  |  |  |
| :--- | :---: | :---: | :---: |
| DESCRIPTION OF MODIFICATION | Models | Prod. | Ver. |
| Corrects the following: <br> 1. An SC condition may occur at the 2nd copy when <br> the following conditions are met: | B0175197K | May | 1.172 |
| 1) More than 2 sheets of A3 originals are set in the | B0185197K | May | 1.112 |
| DF |  | 2001 |  |
| 2) Black/White or single color mode (Yellow, Magenta |  |  |  |
| or Cyan) |  |  |  |
| 3) Image shift is used (shift to left) |  |  |  |
| 2) A4 paper is selected |  |  |  |
| 2. If APS is unable to detect the paper size when the |  |  |  |
| paper bank is not installed, the operation panel |  |  |  |
| display shows the 1st tray for the paper bank as |  |  |  |
| selected (shaded). |  |  |  |
| 3. An RSS function was not operating properly. |  |  |  |

### 7.4.2 B017/B018 IPU FIRMWARE MODIFICATION HISTORY

| DESCRIPTION OF MODIFICATION | Models | Prod. | Ver. |
| :--- | :---: | :---: | :---: |
| Initial Production | B0175133D | $1^{\text {st }}$ Prod. | 1.04 |
| The separation threshold level for letter and photo was <br> changed. <br> Corrects the following: <br> When scanning A4 or A3 size using the ADF and Fiery <br> controller, the scanned image becomes white at least <br> the Main or IPU program should be upgraded. | B0175133E | Jan. 2001 | 1.05 |
| Corrects the following: <br> Optimized scanner registration accuracy for 25-70\% <br> reduction mode. | B0175133F | Feb. 2001 | 1.06 |
| Corrects the following: <br> The machine does not detect A5L or 5 1/2" X 8 1/2"L <br> originals in APS mode, even if SP 4-303 (APS Minimum <br> Size Setting) is set to 1. | B0175133G | Aug. 2001 | 1.07 |

### 7.4.3 B017/B018 FCU FIRMWARE MODIFICATION HISTORY

| DESCRIPTION OF MODIFICATION | Models | Prod. | Ver. |
| :--- | :---: | :---: | :---: |
| Initial Production | B3835582B | $1^{\text {st }}$ Prod. | 2.17 |

## SUBJECT: PARTS CATALOG UPDATES

## GENERAL:

The following parts updates are being issued for all B017/B018 Parts Catalogs.

- UPDATE 1: Duct Cover - Front Cover - To prevent the B017 Front Cover from becoming dirty, a Duct Cover has been added. The part number for the Front Cover Assembly (Item 16) has not been changed. Please update your B017/B018 Parts Catalog with the following information.


B017 only
REFERENCE

| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE | ITEM |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| - | B0171258 | Duct Cover - Front Cover | 1 | - | 11 | $30^{*}$ |

* Denotes new item number.


## UNITS AFFECTED:

All B017 copiers manufactured after the Serial Numbers listed below will have the new style Duct Cover installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :---: |
| Gestetner CS231 | H 6011000001 |
| Ricoh Aficio Color 4506 | H 6010800080 |
| Savin SDC326A | H 6011000001 |

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- UPDATE 2: Thermostat - The Thermostat has been modified to improve the contact of the Thermostat to the Fusing Belt. The Thermostat Harness, Housing, and Bracket have also been modified accordingly. The Thermostat Assembly is available as a spare part to facilitate service in the field. This assembly includes the Thermostat, Harness, and Housing. When installing the new parts in an old unit, replace all parts as a set with a new Upper Stay (Item 6 - P/N B017413). Please update your B017/B018 Parts Catalog with the following information.


|  |  |  |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE | ITEM |
| AW110022 | AW110023 | Thermostat - $220^{\circ} \mathrm{C}, 250 \mathrm{~V} / 10 \mathrm{~A}$ | 1 | 3/S | 65 | 5 |
| B0174361 | B0174365 | Thermostat Housing | 1 | 3/S | 65 | 35 |
| B0174362 | B0174366 | Rear Harness - Thermostat | 1 | 3/S | 65 | 34 |
| B0174363 | B0174367 | Front Harness - Thermostat | 1 | 3/S | 65 | 36 |
|  | B0174364 | Thermostat Ass'y | 1 |  | 65 | 40* |
| B0174386 |  | Thermostat Holder | 1 | S | 65 | 37 |
| - | $\rightarrow \mathrm{B} 0174387$ | Thermostat Bracket |  |  |  |  |

* Denotes new item number.


## UNITS AFFECTED:

All B017/B018 copiers manufactured after the Serial Numbers listed below will have the new style Thermostat installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :---: |
| Gestetner CS231 | H6010800065 |
| Gestetner CS225 | H5910800033 |
| Ricoh Aficio Color 4506 | H6010800175 |
| Ricoh Aficio Color 3506 | H59109xxxxx |
| Savin SDC326A | H6010800065 |
| Savin SDC326 | H5910800033 |

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- UPDATE 3: Guide Plate \& Transfer Roller - The Transfer Roller and Guide Plate part numbers have been changed due to vendor change. Please update your B017/B018 Parts Catalog with the following information.


|  |  |  |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE | ITEM |
| B0176225 | B0176228 | Guide Plate - Transfer Roller | 1 | 0 | 61 | 15 |
| B0176261 | B0176262 | Paper Transfer Unit | 1 | 0 | 61 | 9 |

* Denotes new item number.


## UNITS AFFECTED:

B017/B018 Serial Number cut-in was not available at time of publication.

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- UPDATE 4: IPU Board- To stabilize the clock signal level between the IPU Board and Main Board, R140 on the IPU board has been changed and R133 on the IPU board has been deleted. Please update your B017/B018 Parts Catalog with the following information.

|  |  |  |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE | ITEM |
| 16304470 |  | Resistor - $470 \Omega \pm 5 \% 1 / 16 \mathrm{~W}$ | 1 | 1 | 135 | 208 |
|  | $\rightarrow 16340000$ | Resistor - $0 \Omega 1 / 16 \mathrm{~W}$ |  |  |  |  |
| 16304103 |  | Resistor - $10 \mathrm{k} \Omega \pm 5 \% 1 / 16 \mathrm{~W}$ | $1 \rightarrow 0$ |  | 134 | 198 |

## UNITS AFFECTED:

All B017/B018 copiers manufactured after the Serial Numbers listed below will have the new style Resistors installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :---: |
| Gestetner CS231 | H6010200001 |
| Gestetner CS225 | H5910200001 |
| Ricoh Aficio Color 4506 | H6010500086 |
| Ricoh Aficio Color 3506 | H5910200033 |
| Savin SDC326A | H6010200001 |
| Savin SDC326 | H5910200001 |

## INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and <br> NEW machines. | 2 | NEW parts CAN NOT be used in OLD machines. <br> OLD parts can be used in OLD and NEW machines. |
| :---: | :--- | :---: | :--- |
| 1 | NEW parts can be used in OLD and NEW machines. <br> OLD parts CAN NOT be used in NEW machines. | 3 | OLD parts CAN NOT be used in NEW machines. <br> NEW parts CAN NOT be used in OLD machines. |
| $3 / S$ | 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 <br> previously modified, use the new part numbers individually. |  |  |

## Gestetner* <br> R [ [10 <br> TECHNICAL SERMCE BULLEIIN



BULLEIIN NUMBER: B017/B018-025
07/17/2002
APPLICABLE MODEL:
GESTETNER - CS231/225
RICOH - AFICIO 4506/3506
SAMN - SDC326A 326

## SUBJECT: SERVICE MANUAL - INSERT

## GENERAL:

The Service Manual pages listed below must be replaced with the pages supplied. Each bulletin package contains 1 set of replacement pages.

An arrow has highlighted the revised areas $\Rightarrow$.

## PAGES:

- 1-34

Parts Layout - Thermistors (Updated Information)

Thermistors

| Symbol | Name | Function | Index- <br> No | L258/259/ion <br> $\mathbf{2 6 0}$ |  |
| :--- | :--- | :--- | :---: | :---: | :---: |
| BH17/018 |  |  |  |  |  |
| THessure roller | Controls the temperature of <br> the pressure roller. | $4-9$ | F1 | D1 |  |
| TH2 | Hot roller | Controls the temperature of <br> the hot roller. | $4-6$ | G1 | - |
| TH3 | Heat Roller | Controls the temperature of <br> the heat and hot rollers. | $4-22$ | - | E1 |

## Thermofuses

| Symbol | Name | Function | Index- <br> No | Location |  |
| :---: | :--- | :--- | :---: | :---: | :---: |
| TF1 | Hot roller | Protects the hot roller from <br> overheating. | B017/018 | H1 | - |
| TF2 | Pressure roller | Protects the pressure roller <br> from overheating. | $4-3$ | H1 | F1 |

## Thermostat

| Symbol | Name | Function | Index- <br> No | A258/259/ <br> $\mathbf{2 6 0}$ | B017/018 |
| :---: | :--- | :--- | :---: | :---: | :---: |
| TS1 | Exposure lamp | Prevents the exposure lamp <br> from overheating when it is <br> on for a long time. | $1-22$ | O6 | J 5 |
| TS2 | Heat roller | Prevents the heat roller <br> fusing lamp from <br> overheating when it is on <br> for a long time. | $4-21$ | - | E1 |

Counter

| Symbol | Name | Function | Index- <br> No | A258/259/ <br> $\mathbf{2 6 0}$ | B017/018 |
| :---: | :---: | :--- | :---: | :---: | :---: |
| CO1 | Upper mechanical | Indicates the total number <br> of development cycles <br> made using the C, M, and Y Y <br> development units; | $2-10$ | A9 | D6 |
| CO2 | Lower mechanical | Shows the total number of <br> black developments. | $2-10$ | A10 | D7 |

## BULLETIN NUMBER：

B017／B018－026
09／20／2002

## APPLICABLE MODEL：

GESTETNER－CS231／225
RICOH－AFICIO 4506／3506
SAVIN－SDC 326A／326

## SUBJECT：PARTS CATALOG UPDATES

## GENERAL：

The following parts updates are being issued for all B017／B018 Parts Catalogs．
－UPDATE 1：Transport Belt－To minimize paper jams，the vendor has improved the cleaning procedure for the Transport Belt．Please use this new belt for replacements in the field．

46．Transport Unit（B017／B018）


|  | REFERENCE |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO． | NEW PART NO． | DESCRIPTION | QTY | INT | PAGE | ITEM |
| AA040029 | AA040032 | Transport Belt | 2 | 1 | 101 | 18 |

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## UNITS AFFECTED:

All B017/B018 copiers manufactured after the Serial Numbers listed below will have the new style Transport Belt installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :---: |
| Gestetner CS231 | H 6010800065 |
| Gestetner CS225 | H 5910800025 |
| Ricoh Aficio Color 4506 | H 6010800175 |
| Ricoh Aficio Color 3506 | H 5920200010 |
| Savin SDC326A | H 6010800065 |
| Savin SDC326 | H 5910800025 |

- UPDATE 2: Development Unit - To minimize noise from the Development Unit, the strength of the Development Roller magnet has been changed.

|  |  |  |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE | ITEM |
| B0173018 | B0173017 | Development Unit | 4 | 1 | $\begin{aligned} & 43 \\ & 49 \end{aligned}$ | 2 1 |

## UNITS AFFECTED:

All B017/B018 copiers manufactured after the Serial Numbers listed below will have the new style Development Unit installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :---: |
| Gestetner CS231 | H 6010600081 |
| Gestetner CS225 | H 5910600036 |
| Ricoh Aficio Color 4506 | H 60107 xxxxx |
| Ricoh Aficio Color 3506 | H 59107 xxxxx |
| Savin SDC326A | H 6010600081 |
| Savin SDC326 | H 5910600036 |

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- UPDATE 3: Drawer Unit - The material of the bias terminal (not a service part) has been changed to increase the terminal's performance.

|  |  |  |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE | ITEM |
| B0173011 | B0173014 | Drawer Unit (NA/EU) | 1 | 0 | 45 | * |
| B0173013 | B0173015 | Drawer Unit (AA/OEM) | 1 | 0 | 45 | * |

UPDATE 4: Hot Roller - To minimize paper creasing, the factory processing procedure for the Hot Roller has been modified.

|  |  |  |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE | ITEM |
| AE010026 | AE010036 | Hot Roller | 1 | 1 | 65 | 14 |
| B0174019 | B0174022 | Fusing Unit - 120V | 1 | 1 | 63 | * |
| B0174029 | B0174031 | Fusing Unit - 230V | 1 | 1 | 63 | * |

## UNITS AFFECTED:

All B017/B018 copiers manufactured after the Serial Numbers listed below will have the new style Hot Roller installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :---: |
| Gestetner CS231 | H 0611000001 |
| Gestetner CS225 | H 5911000003 |
| Ricoh Aficio Color 4506 | H 6011000061 |
| Ricoh Aficio Color 3506 | H 5920200010 |
| Savin SDC326A | H 0611000001 |
| Savin SDC326 | H 5911000003 |

## INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and <br> NEW machines. | 2 | NEW parts CAN NOT be used in OLD machines. <br> OLD parts can be used in OLD and NEW machines. |
| :---: | :--- | :--- | :--- |
| 1 | NEW parts can be used in OLD and NEW machines. <br> OLD parts CAN NOT be used in NEW machines. | 3 | OLD parts CAN NOT be used in NEW machines. <br> NEW parts CAN NOT be used in OLD machines. |
| $3 / S$ | 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 <br> previously modified, use the new part numbers individually. |  |  |

## TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B017/B018-027
02/07/2003

## APPLICABLE MODEL:

GESTETNER - CS231/225
RICOH - AFICIO 4506/3506
SAVIN - SDC326A/326
SUBJECT: OIL SUMP

## GENERAL:

The shape of the Oil Sump has been modified to increase its strength. The following part update is being issued for all B017/B018 Parts Catalogs. Please update your parts catalog with the following information.


## UNITS AFFECTED:

All B017/B018 copiers manufactured after the serial numbers listed below will have the new style Oil Sump installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :---: |
| Gestetner CS231 | H6020100009 |
| Gestetner CS225 | H5920200001 |
| Ricoh Aficio 4506 | H6020100023 |
| Ricoh Aficio 3506 | H5920200010 |
| Savin SDC326A | H602010009 |
| Savin SDC326 | H5920200001 |

## INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and <br> NEW machines. | 2 | NEW parts CAN NOT be used in OLD machines. <br> OLD parts can be used in OLD and NEW machines. |
| :---: | :--- | :---: | :--- |
| 1 | NEW parts can be used in OLD and NEW machines. <br> OLD parts CAN NOT be used in NEW machines. | 3 | OLD parts CAN NOT be used in NEW machines. <br> NEW parts CAN NOT be used in OLD machines. |
| $3 / S$ | 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 <br> previously modified, use the new part numbers individually. |  |  |

BULLETIN NUMBER: B017/B018-028
02/07/2003

## APPLICABLE MODEL:

GESTETNER - CS231/225
RICOH - AFICIO 4506/3506
SAVIN - SDC326A/326

## SUBJECT: FUSING LAMP \& HEATER

## GENERAL:

The following parts have been changed due to a vendor change. The following parts updates are being issued for all B017/B018 Parts Catalogs. Please update your parts catalog with the following information.


| REFERENCE |  |  |  |  |  |  |  |
| :---: | :---: | :--- | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE | ITEM |  |
| AX440122 | AX440152 | Fusing Lamp - 120V /650W | 1 | 0 | 65 | 11 |  |
| AX440123 | AX440153 | Heater - 230V 650W | 1 | 0 | 65 | 11 |  |
| AX420001 | AX420004 | Fusing Lamp - 120V /150W | 1 | 0 | 65 | 12 |  |
| AX420002 | AX420005 | Heater - 230V 150W | 1 | 0 | 65 | 12 |  |
| AX430057 | AX430075 | Fusing Lamp -120V 400W | 1 | 0 | 69 | 8 |  |
| AX430058 | AX430076 | Heater - 230V 400W | 1 | 0 | 69 | 8 |  |

## UNITS AFFECTED:

B017/B018 Serial Number cut-in was not available at time of publication.

## INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and <br> NEW machines. | 2 | NEW parts CAN NOT be used in OLD machines. <br> OLD parts can be used in OLD and NEW machines. |
| :---: | :--- | :---: | :--- |
| 1 | NEW parts can be used in OLD and NEW machines. <br> OLD parts CAN NOT be used in NEW machines. | 3 | OLD parts CAN NOT be used in NEW machines. <br> NEW parts CAN NOT be used in OLD machines. |
| $3 / S$ | 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 <br> previously modified, use the new part numbers individually. |  |  |

BULLETIN NUMBER: B017/B018-029
02/13/2003

## APPLICABLE MODEL:

GESTETNER - CS231/225
RICOH - AFICIO 4506/3506
SAVIN - SDC326A/326

## SUBJECT: RECOMMENDED THROUGHPUT MATERIAL

## GENERAL:

The following chart is the Recommended Throughput Material for the B017 and B018 copiers. This chart includes the Paper Type, Brand of paper, the Paper Size, Paper Weight in both pounds and $\mathrm{g} / \mathrm{m}^{2}$, Feed Location, Mode and Rating.

| Paper Type | Brand | Paper Size | Paper Weight (Pounds) | Paper Weight ( $\mathrm{g} / \mathrm{m}^{2}$ ) | eed Location | Mode | Rating |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Plain Paper | Hammermill Laser Print White | DLT-LT | 24 | 90 | All trays | Normal | $\begin{gathered} \text { Highly } \\ \text { Recommended } \\ \hline \end{gathered}$ |
| Plain Paper | Hammermill Laser Print White | 12x18 | 24 | 90 | Bypass feed onlv | Normal | Recommended |
| Plain Paper | Hammermill Color Copv Paper | DLT - LT | 28 | 105 | All trays | Normal | Highly Recommended |
| Plain Paper | Hammermill Color Copv Paper | 12x18 | 28 | 105 | Bypass feed onlv | Normal | Recommended |
| Plain Paper | Hammermill Fore DP | DLT - LT | 20 | 75 | All trays | Normal | Recommended |
| Plain Paper | Champion Multipurpose | DLT - LT | 20 | 75 | All trays | Normal | Recommended |
| Plain Paper | $\begin{array}{r} \text { Xerox } \\ \text { 4024DP } \end{array}$ | DLT-LT | 20 | 75 | All trays | Normal | Recommended |
| Plain Paper | Georgia Pacific Ardor Xerocopv | DLT-LT | 20 | 75 | All trays | Normal | Recommended |
| Plain Paper | Georgia Pacific Nekoosa Bond | DLT-LT | 20 | 75 | All trays | Normal | Recommended |
| Plain Paper | Georgia Pacific Ardor Xerocodv | DLT - LT | 24 | 90 | All trays | Normal | Recommended |
| Plain Paper | Boise Cascade Xeroaraphic | DLT - LT | 20 | 75 | All trays | Normal | Recommended |
| Plain Paper | $\begin{gathered} \hline \text { Boise Cascade } \\ \text { X- } 9000 \end{gathered}$ | DLT-LT | 20 | 75 | All trays | Normal | Recommended |
| Plain Paper | Springhill Relav DP | DLT-LT | 20 | 75 | All trays | Normal | Recommended |
| Recycle Paper | Hammermill Savinas DP | DLT-LT | 20 | 75 | All trays | Normal | Recommended |
| OHP | $\begin{aligned} & \text { Folex } \\ & \times 355 \\ & \hline \end{aligned}$ | LT | OHP | OHP | Bypass feed onlv | OHP | Recommended |
| OHP | $\begin{gathered} 3 \mathrm{M} \\ \text { PP2260 } \end{gathered}$ | LT | OHP | OHP | Bypass feed onlv | OHP | Recommended |
| T-shirt Print | TMT International The Maaic Touch TTC300 | T-shirt | T-shirt | T-shirt | Bypass feed onlv | Normal | Recommended |

## TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B017/B018-030
03/03/2003

## APPLICABLE MODEL:

GESTETNER - CS231/225
RICOH - AFICIO 4506/3506
SAVIN - SDC326A/326

## SUBJECT: PARTS CATALOG UPDATES

## GENERAL:

The following parts updates are being issued for all B017/B018 Parts Catalogs.

- UPDATE 1: Bushing $\mathbf{- 6 m m}$ - To ensure a noise is not generated from the bushing in the transfer belt cleaning unit, the material of the bushing has been changed.


|  |  |  |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE | ITEM |
|  |  |  |  |  | B017/B018 |  |
| A2596754 | AA082123 | Bushing - 6mm | 6 | 1 | 55 | 6 |

Continued...

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## UNITS AFFECTED:

All B017/B018 copiers manufactured after the serial numbers listed below will have the new bushing installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS231/225 | Service Part Only |
| Ricoh Aficio 4506/3506 | Service Part Only |
| Savin SDC326A/326 | Service Part Only |

- UPDATE 2: Image Transfer Belt - Due to parts standardization with other models the image transfer belt has changed.


| $\begin{gathered} \hline \text { OLD PART } \\ \text { NO. } \end{gathered}$ | NEW PART NO. |  | QTY | INT | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | DESCRIPTION |  |  | PAGE | ITEM |
|  |  |  |  |  | B017/B018 |  |
| A2596050 | B0176051 | Transfer Belt | 1 | 0 | 59 | 2 |

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## UNITS AFFECTED:

All B017/B018 copiers manufactured after the serial numbers listed below will have the new transfer belt installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :--- |
| Gestetner CS231/225 | Service Part Only |
| Ricoh Aficio 4506/3506 | Service Part Only |
| Savin SDC326A/326 | Service Part Only |

## INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and <br> NEW machines. | 2 | NEW parts CAN NOT be used in OLD machines. <br> OLD parts can be used in OLD and NEW machines. |
| :---: | :--- | :---: | :--- |
| 1 | NEW parts can be used in OLD and NEW machines. <br> OLD parts CAN NOT be used in NEW machines. | 3 | OLD parts CAN NOT be used in NEW machines. <br> NEW parts CAN NOT be used in OLD machines. |
| $3 / S$ | 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 <br> previously modified, use the new part numbers individually. |  |  |

## APPLICABLE MODEL：

GESTETNER－CS231／225
RICOH－AFICIO 4506／3506
SAVIN－SDC326A／326

## SUBJECT：TRANSFER BELT SPRINGS

## GENERAL：

To optimize the touch \＆release mechanism of the image transfer belt，the release spring has been modified．
The following parts update is being issued for all B017／B018 Parts Catalogs．


|  |  |  |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO． | NEW PART NO． | DESCRIPTION | QTY | INT | PAGE | ITEM |
| B0176185 |  | Spring－25X5mm | 2－0 | 1 | 59 | 34 |
|  | －B0176174 | Spring－33X5mm | 0－2 | 1 | 59 | 34 |

[^20]Continued．．．

## UNITS AFFECTED:

All B017/B018 copiers manufactured after the serial numbers listed below will have the new style spring's installed during production.

| MODEL NAME | SERIAL NUMBER |
| :---: | :---: |
| Gestetner CS231 | H0620100001 |
| Gestetner CS225 | H5910100001 |
| Ricoh Aficio Color 3506 | H5910200033 |
| Ricoh Aficio Color 4506 | H6020100023 |
| Savin SDC326A | H0620100001 |
| Savin SDC326 | H5910100001 |

## INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and <br> NEW machines. | 2 | NEW parts CAN NOT be used in OLD machines. <br> OLD parts can be used in OLD and NEW machines. |
| :---: | :--- | :---: | :--- |
| 1 | NEW parts can be used in OLD and NEW machines. <br> OLD parts CAN NOT be used in NEW machines. | 3 | OLD parts CAN NOT be used in NEW machines. <br> NEW parts CAN NOT be used in OLD machines. |
| $3 / S$ | 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 <br> previously modified, use the new part numbers individually. |  |  |


[^0]:    ⒸAUTION
    When removing the development unit, do not apply excessive force to the center of the development unit. The doctor gap will bend, altering the developer scooping efficiency.

[^1]:    \DDANGER
    Be sure to turn off the main switch and disconnect the power plug from the power outlet before attempting any disassembly or adjustment of the laser unit. This copier uses a class 3B laser beam with a wavelength of 780 nm and an output of 15 mW . The laser can seriously damage your eyes.

[^2]:    $\Longrightarrow$ * NOTE: $1: \mathrm{K}, 2: \mathrm{Y}, 3: \mathrm{C}$, and 4:M are displayed for the respective colors for items identified by an asterisk in the 'Displayed value' column of the table.

[^3]:    .CAUTION
    Remove the development units one color at a time (never remove two or more development units from the revolver at the same time). Removing two or more development units at the same time may upset the balance of the revolver. This will cause the revolver to revolve by itself and personal injury may occur.

[^4]:    . CAUTION
    After removing the lock screw and shaft after reinstallation, keep them in a safe location, because you will need them later.

[^5]:    | S:10-BIN SORTER | $\mathrm{R}: 20-\mathrm{BIN}$ SORTER | $\mathrm{C}: 3$-BIN SORTER |
    | :--- | :--- | :--- |

[^6]:    \} DDANGER
    Be sure to turn off the main switch and disconnect the power plug from the power outlet before attempting any disassembly or adjustment of the laser unit. This copier uses a class 1 laser beam with a wavelength of 780 nm and an output of 15 mW . The laser can seriously damage your eyes.

[^7]:    \} DANGER
    Be sure to turn off the main switch and disconnect the power plug from the power outlet before attempting any disassembly or adjustment of the laser unit. This copier uses a class 3B laser beam with a wavelength of 780 nm and an output of 15 mW . The laser can seriously damage your eyes.

[^8]:    ⒸAUTION
    Remove the development units one color at a time (never remove two or more development units from the revolver at the same time). Removing two or more development units at the same time may upset the balance of the revolver. This will cause the revolver to revolve by itself, catching, hitting or trapping your fingers inside the unit.

[^9]:    $\triangle$ CAUTION
    Be sure to apply the grease to the drive gear after the gear has cooled. The grease vaporizes when heated. The resulting gas is harmful if inhaled.

[^10]:    System Switch 06 - Not used (Do not change the factory settings.)
    System Switch 07 - Not used (Do not change the factory settings.)

[^11]:    Communication SW 09 -Not used (do not change the settings)

[^12]:    Communication Switch 15 - Not used (do not change the settings)
    Communication Switch 16 - Not used (do not change the settings)
    Communication Switch 17 - Not used (do not change the settings)
    Communication Switch 18 - Not used (do not change the settings)
    Communication Switch 19 - Not used (do not change the settings)
    Communication Switch 1A - Not used (do not change the settings)
    Communication Switch 1B - Not used (do not change the settings)
    Communication Switch 1C - Not used (do not change the settings)
    Communication Switch 1D - Not used (do not change the settings)

[^13]:    $\Longrightarrow$ * NOTE: $1: \mathrm{K}, 2: \mathrm{Y}, 3: \mathrm{C}$, and 4:M are displayed for the respective colors for items identified by an asterisk in the 'Displayed value' column of the table.

[^14]:    * Denotes new item numbers.

[^15]:    * DENOTES NEW ITEM

[^16]:    * Denotes new item number.

[^17]:    * Denotes new item number.

[^18]:    * Denotes new item number.

[^19]:    * Denotes new item number.

[^20]:    ＊DENOTES NEW ITEM NUMBER

