# MODEL S-F1
## (Machine Code: H555)
# SERVICE MANUAL

**NOTE:** The "♦" mark in this service manual indicates that the marked item is identical to the Model S-C1.

November 30, 2001
Subject to change.

# ⚠IMPORTANT SAFETY NOTICES

**PREVENTION OF PHYSICAL INJURY**

1. Before disassembling or assembling parts of the machine and peripherals, make sure that the machine power cord is unplugged.
2. The wall outlet should be near the machine and easily accessible.
3. 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.
4. The inside and the metal parts of the fusing unit become extremely hot while the printer is operating. Be careful to avoid touching those components with your bare hands.

**HEALTH SAFETY CONDITIONS**

Toner is non-toxic, but if you get it 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. Do not incinerate toner cartridge. Toner dust may ignite suddenly when exposed to an open flame.
2. Dispose of used toner cassette in accordance with local regulations. (It is non-toxic supply.)
3. Dispose of replaced parts in accordance with local regulations.

**LITHIUM BATTERIES (MEMORY BACK-UP)**

The danger of explosion exists if a battery of this type is incorrectly replaced. Replace only with the same or an equivalent type recommended by the manufacturer. Discard used batteries in accordance with the manufacture's instructions.

**SAFE AND ECOLOGICAL DISPOSAL**

1. Do not incinerate toner bottles or used toner. Toner dust may ignite suddenly if exposed to an open flame.
2. Dispose of used toner, developer, and organic Photoconductor in accordance with local regulations. (These are nontoxic supplies.)
3. Dispose of replaced parts in accordance with local regulations.

## LASER SAFETY

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

**⚠WARNING**

**Use of controls not specified in this manual, or performance of adjustments or procedures not specified in this manual, may result in hazardous radiation exposure.**

**⚠WARNING FOR LASER UNIT**

**WARNING: Turn off the main switch before attempting any of the procedures in the Laser Unit section. Laser beams can cause serious damage to eyes.**

**CAUTION MARKING:**


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### SYMBOLS AND ABBREVIATIONS

This manual uses the symbols and abbreviations shown below.

| Symbol | Meaning |
|---|---|
| ☛ | "See", "Refer to" |
| | Clip ring |
| | Screw |
| | Connector |
| SEF | Short Edge Feed |
| LEF | Long Edge Feed |
| CT | Core Technology manual |
| | Energy Saver/Clear Modes key |
| ♦ | Marked item or feature is identical to the corresponding feature of the Model S-C1. |

# TABLE OF CONTENTS

# 1. INSTALLATION

**NOTES:** 1) Never install telephone wiring during a lightning storm.
2) Never install a telephone jack in wet locations, unless the jack is specifically designed for such a location.
3) Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
4) Use caution when installing and modifying telephone lines.
5) Avoid using telephones (other than cordless types) during an electrical storm, as there may be a remote risk of electric shock from lightning.
6) Do not use telephones when in the vicinity of a gas leak. Use either a neighbor, cellular or public telephone to report the leak.

**⚠CAUTION**

1. **Before installing the fax unit, switch off the main power and disconnect the power cord.**
2. **The fax unit includes lithium battery(s). There is risk of explosion if a battery of this type is replaced incorrectly. Replace the battery with the same type, or with an equivalent type as recommended by the manufacturer. Discard used batteries in accordance with the manufacturer's instructions.**

## 1.1 INSTALLING THE MACHINE

Refer to "Before you use this machine" and Operating Instructions for information about the installation environment and instructions on how to install and set up the machine.

# 1.2 INITIAL PROGRAMMING♦

| Items to Program (Service Level - Service Function*1) | Function No. |
|---|---|
| Country code (System switch 0F) | 01 |
| Protocol requirements (G3 switch 0B) - EU only | 01 |
| PM call (System switch 01- bit 0) | 01 |
| Country code (NCU parameter 00) | 07 |
| Service station's fax number | 09 |
| Replacement level of maintenance kits (System Switch 04)<br>- ADF rollers<br>- PCU | 01 |
| Telephone Line Type (System Switch 04) | 01 |

| Items to Program (Service Level - SP Mode*1) | SP No. |
|---|---|
| Machine's serial number | 5-811 |
| Language replacement (Firmware download) | 5-827 |
| PSTN access code (RAM address 4000DB) | 7-955 |
| PSTN access method (RAM address 4000CD) | |
| Periodic service call (RAM addresses 40054F to 400553) | |

*1: See Section 5.1.1 for information about how to enter service functions.

| Items to Program (User Administrator Level) | User Tools |
|---|---|
| Monitor volume | Fax Features -> Setup |
| Display contrast | |
| Date and Time | |
| Reception mode | |
| Fax Header/Own Name/Own No. (TTI/RTI/CSI) | |
| Reports on/off | Key Op. Tools |
| Country Code (except NA) | |
| Fusing power control during energy saver mode | System Settings |
| Language selection | Language |
| Other initial programming items | *2 |

*2: Refer to the Operating Instructions for details.

# 1.3 HANDSET (OPTION FOR NA MODEL)

## 1.3.1 ACCESSORY CHECK

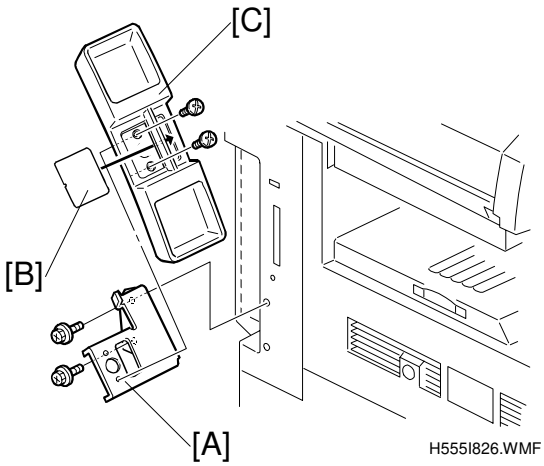
Check that you have the components and accessories indicated below.

| No. | Description | Q'ty |
|---|---|---|
| 1 | Handset | 1 |
| 2 | Handset cradle | 1 |
| 3 | Screws | 2 |
| 4 | Handset manual | 1 |

## 1.3.2 INSTALLATION PROCEDURE

Attach the handset bracket [A] included with the fax option, using both screws included with that option.

1. Remove the label [B] from the handset cradle [C].
2. Attach the cradle [C] to the bracket [A] using the two screws. Finally, reattach the label.
3. Place the handset on the cradle.

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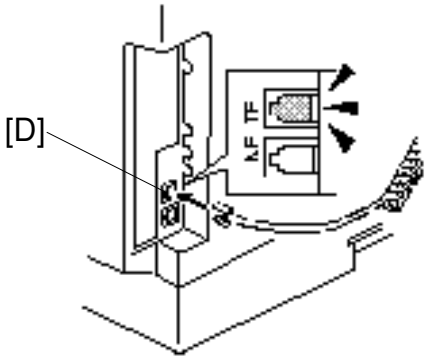
4. Connect the cable [D] to the telephone jack at the rear of the machine.

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# 1.4 BY-PASS FEEDER TYPE 300 (OPTION FOR EU/AA)

## 1.4.1 ACCESSORY CHECK

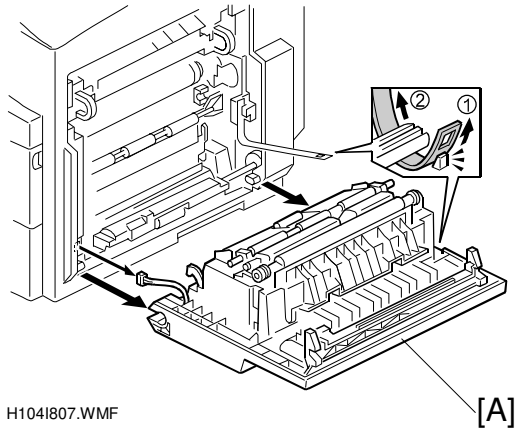
Check the items in the box below to confirm that you have all the required components

| No. | Description | Q'ty |
|---|---|---|
| 1 | By-pass Feed Roller Unit | 1 |
| 2 | By-pass Tray | 1 |
| 3 | Gears | 2 |
| 4 | Bracket | 1 |
| 5 | Ground Plate | 1 |
| 6 | Screws – Tapping | 3 |
| 7 | Screws – Phillips | 1 |

## 1.4.2 INSTALLATION PROCEDURE

**⚠WARNING**

**Switch off the machine and unplug the main machine power cord before starting the installation procedure.**

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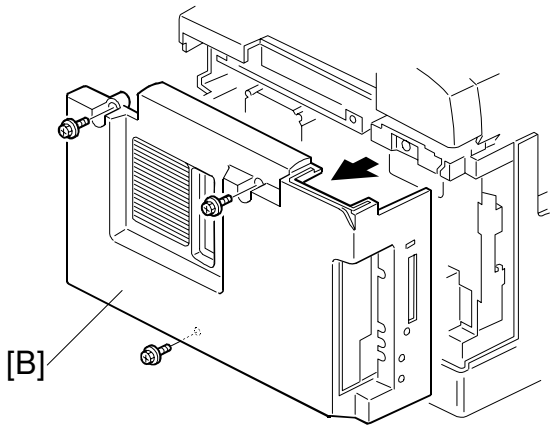


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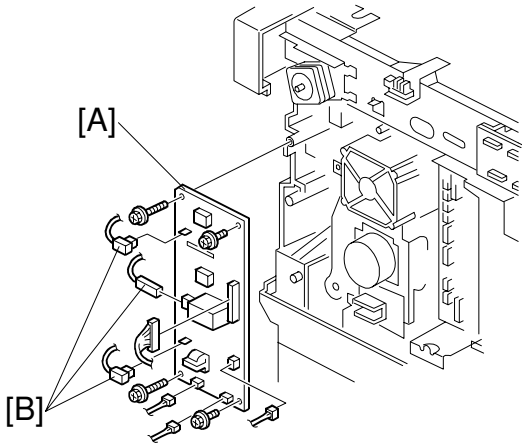
1. Open the right-door [A] and remove it (Strap x 1, ☞ x 1).
   - Use a small, flat screwdriver to raise the end of the strap ① from the peg then pull it through the slot ②.
2. Remove the rear cover [B] (☞ x 3).

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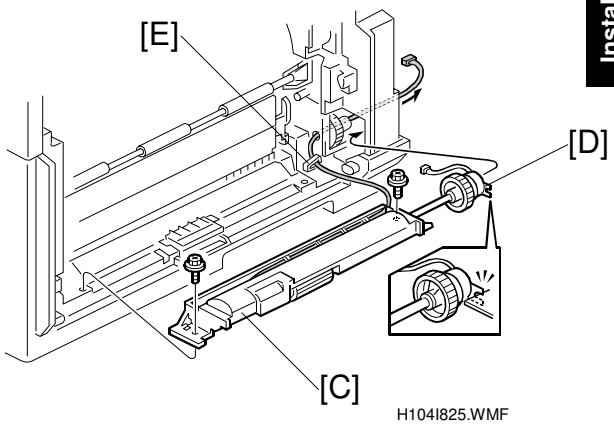


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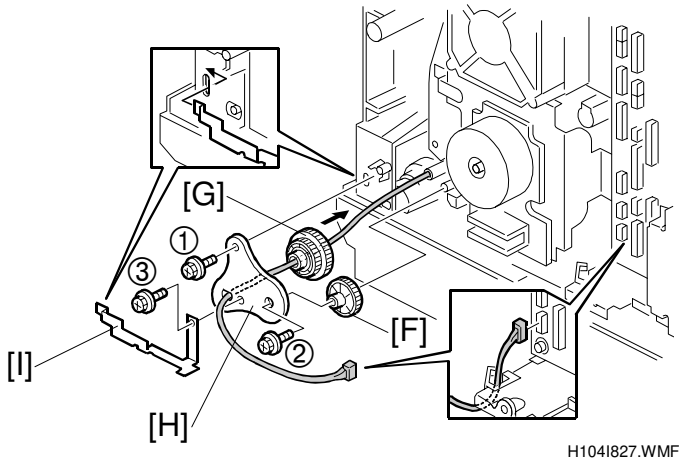


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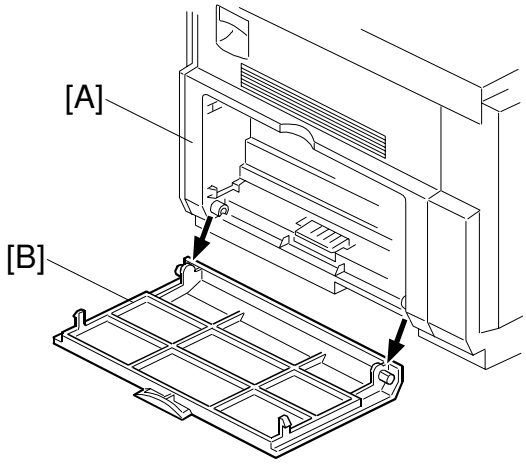
3. Disconnect the High Voltage Power Supply Board [A] (☞ x 4).
   - Disconnect the bayonet connectors (C, T, B) from [B] and place the unit aside. (It is not necessary to disconnect all connectors.)
4. Install the By-pass Feed Roller Unit [C] (☞ x 2).
   - Make sure that the clutch arm [D] is engaged with the peg and that the paper sensor cable is clamped at [E].
5. Mount the gears [F] and [G]. Make sure that gear [G] is engaged with the by-pass feed clutch and that the paper sensor connector passes through the shaft of gear [G].
6. Remove screw ① and use it to attach bracket [H], and then attach the tapping screw ② (provided).
7. Attach the ground plate [I] (☞ x 1) ③. (Use the Phillips screw provided.)
8. Connect the paper sensor connector to the FCU at connector CN30. Make sure that the wire is inside the frame.
9. Re-attach the High Voltage Supply Board then connect the clutch cable to CN3.

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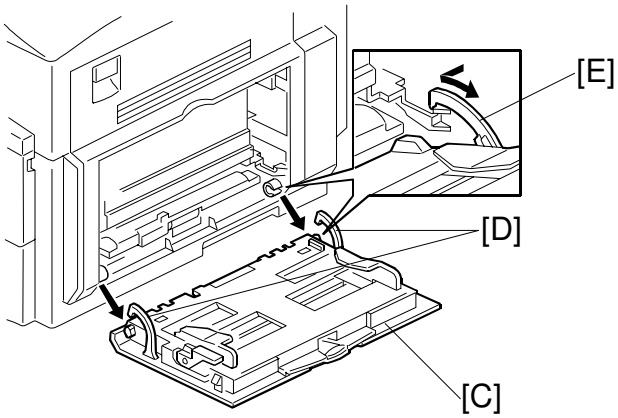


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10. Re-attach the right door [A] (Strap x 1, x 1)
11. Detach the dummy cover [B].
12. Attach the 100-sheet by-pass feed tray [C].
    - Align the pegs with the slots and gently push them up until the tray snaps in place. Slowly raise the tray making sure that the arms [D] move into the wells on either side.
    - If the tray does not open and close smoothly, remove it and try again. Make sure the pegs are aligned within the slots before snapping the tray in place.
    - To remove, gently press the arms [E] and push down.

# 2. PREVENTIVE MAINTENANCE SCHEDULES

## 2.1 PM TABLE

**NOTE:** 1) After carrying out PM, clear the PM counter (SP7-804).
2) PM intervals (45k, 60k, 90k, 120k) indicate the number of prints.

**Key:** **AN**: As necessary, **FST**: Field Service Technician
**C**: Clean, **R**: Replace, **L**: Lubricate, **I**: Inspect



| | 45k | 90k | AN | NOTE |
|---|---|---|---|---|
| **ADF** | | | | |
| ADF feed unit assembly (Including feed and pick-up rollers) | R (user) | R (user) | | ADF Maintenance Kit |
| Reverse roller assembly | R (user) | R (user) | | ADF Maintenance Kit |
| Exposure glass◆ | | | C | Dry cloth |
| R0, R1, R2 rollers◆ | | | C | Dry cloth |
| Pressure roller◆ | | | C | Dry cloth |
| White shading plate◆ | | | C | Dry cloth |
| | | | | |
| **DRUM AREA** | | | | |
| PCU | R (user) | R (user) | | |
| Transfer roller◆ | | R (FST) | | |
| Discharge plate◆ | | R (FST) | | |
| | | | | |
| **PAPER FEED** | | | | |
| Paper feed roller◆ | | R (FST) | C | Water or alcohol. |
| Friction pad◆ | | R (FST) | C | Dry cloth |
| Bottom-plate pad◆ | | C (FST) | C | Water or alcohol. |
| Registration roller◆ | | C (FST) | C | Water or alcohol. |
| | | | | |
| **FUSING UNIT** | | | | |
| Hot roller◆ | | R (FST) | | |
| Pressure roller◆ | | R (FST) | | |
| Hot roller bushings◆ | | R (FST) | | |
| Pressure-roller bushings◆ | | I (FST) | | |
| Inlet guide◆ | | C (FST) | | |
| Outlet guide◆ | | C (FST) | | |
| Hot roller stripper pawls◆ | | R (FST) | | |
| Thermistor◆ | | C (FST) | | Dry cloth |
| | | | | |

| | 60k | 120k | AN | NOTE |
|---|---|---|---|---|
| **PAPER TRAY UNIT (Option)** | | | | |
| Paper feed roller◆ | | R (FST) | | |
| Bottom-plate pad◆ | | | C | Dry cloth |
| Friction pad◆ | | R (FST) | | |
| | | | | |

# 2.2 COUNTERS

The machine has several counters that require resetting as described in the next section below. The table below shows how to use each counter.

| | On/Off | | Interval | Reset | Display |
|---|---|---|---|---|---|
| **PM Counter♦** | PM Call | • Sys. Bit Sw 01 bit 0 | • SP5-501-1<br>• 400324 - 6H | • SP7-804-1 | • SP7-803-1<br>• 400320 - 3H<br>• Sys.Para.List |
| | Alarm | • SP5-501-2 | | | |
| **PCU Counter** | Alarm | • SP5-912-1 | • SP5-912-2<br>• 400330 - 3H | • SP7-909-1<br>• When new PCU is installed (automatic reset) | • SP7-908-1<br>• 40032C - FH<br>• Sys.para.List |
| **ADF Counter** | Alarm | • Sys. Bit Sw. 04 bit 5 | • 4002D0 - 3H | • Key Operator Tools Menu<br>• 4002CC - FH | • 4002CC - FH<br>• Sys.para.List |

## 2.2.1 RESETTING THE PM COUNTER♦

The PM counter requires resetting after the count exceeds the programmed value.

**To reset the PM counter:**

1. Access SP7-804-1 (PM Counter Reset).
2. Hold down the Halftone key and press the OK key to reset the counter.
   If the reset is successful, the display shows “Action completed.”
   If the reset fails, the display shows “Error!!!”

## 2.2.2 RESETTING THE PCU COUNTER

The user replaces the PCU when the PCU counter exceeds the programmed value, and the machine displays “Time to change PCU”.

**NOTE:** With “Time to change PCU” displayed, any operation, printing, etc. is available, but the display will not clear until the PCU is replaced or until the PCU counter is reset.

**To reset the PCU counter:**

Reset the PCU counter with SP7-909-1 (PCU Counter Reset).

**NOTE:** When the PCU is replaced with a new PCU, the PCU counter is reset automatically with the “New PCU Detection System”. (☛ 6.11.4)

1. Access SP7-909-1 (PCU Counter Reset).
2. Hold down the Halftone key and press the OK key to reset the counter.
   - If the reset is successful, “Action completed” is displayed.
   - If the reset fails, “Error!!!” is displayed.

## 2.2.3 RESETTING THE ADF COUNTER

The user performs replacement with the ADF Maintenance Kit.

When the ADF counter exceeds the programmed count value, the machine displays “Time to replace ADF Maintenance Kit”.

**NOTE:** The display can be cleared by pressing the OK or Stop key, but the same display comes up again every 100 prints until the ADF maintenance kit is replaced.



**To reset the ADF counter:**

The ADF counter must be reset after ADF Maintenance Kit replacement:

1. Enter the User Tools menu.
2. Select “4. Key Op. Tools”, then select “Key Operator Tools Menu”.
3. Select “1. ADF Counter Reset”, then press “OK”.
4. Select “Reset”, then press “OK” to clear the ADF counter

-or-

1. Access SP7-955 (Memory Read/Write (Byte Access)).
2. Set RAM addresses 4002CC to 4002CFH to all zero.

# 3. REPLACEMENT AND ADJUSTMENT

## 3.1 PRECAUTIONS

| ⚠CAUTION |
| --- |
| **Before starting disassembly, be sure to print all message files in the SAF memory. Then, turn off the main power switch and disconnect the power cord and telephone cable for safety.** |
| **Lithium Battery**<br>**The danger of explosion exists if a battery of this type is incorrectly replaced. Replace only with the same type or with an equivalent type recommended by the manufacturer. Discard used batteries in accordance with the manufacturer's instructions.** |



### 3.1.1 GENERAL♦

Do not turn off the main switch while mechanical parts are active, as this may cause parts to stop out of home position. Attempting to remove or install the PCU or other such units while parts are out of home position may result in damage.

### 3.1.2 PCU (PHOTOCONDUCTOR UNIT)♦

The PCU consists of the OPC drum, charge roller, development unit, and cleaning components. Observe the following precautions when handling the PCU.

1. Never touch the drum surface with bare hands. If the drum surface is dirty or if you have accidentally touched it, wipe it with a dry cloth, or clean it with wet cotton and then wipe it dry with a cloth.
2. Never use alcohol to clean the drum. Alcohol will dissolve the drum surface.
3. Store the PCU in a cool dry place.
4. Do not expose the drum to corrosive gases (ammonia, etc.).
5. Do not shake a used PCU, as this may cause toner and developer to spill out.
6. Dispose of used PCU components in accordance with local regulations.

### 3.1.3 TRANSFER ROLLER♦

1. Never touch the surface of the transfer roller with bare hands.
2. Be careful not to scratch the transfer roller, as the surface is easily damaged.

### 3.1.4 SCANNER UNIT (ADF)

1. This machine employs a CIS unit with exposure glass permanently attached, and is replaced as a single unit. The CIS unit is factory adjusted before shipping. Never attempt to disassemble the CIS and remove the brackets.
2. Use alcohol or glass cleaner to clean the exposure glass.

### 3.1.5 LASER UNIT♦

1. Do not loosen or adjust the screws securing the LD drive board on the LD unit. Doing so will throw the LD unit out of adjustment.
2. Do not adjust the variable resistors on the LD unit, as these are permanently adjusted at the factory. If replacement of the LD drive board is necessary, replace the entire LD unit.
3. Keep the polygon mirror and toroidal lens free of dust. Laser performance is very sensitive to dust on these components.
4. Do not touch the shield glass or the surface of the polygon mirror with bare hands.

### 3.1.6 FUSING UNIT♦

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

### 3.1.7 PAPER FEED♦

1. Do not touch the surface of paper feed rollers.
2. To avoid misfeeds, the side and end fences in each paper tray must be positioned correctly so as to align with loaded paper size.

### 3.1.8 IMPORTANT♦

The machine will automatically start toner agitation when you install a new PCU. Be sure to wait for initialization to finish before reopening the front cover or turning off the main switch.

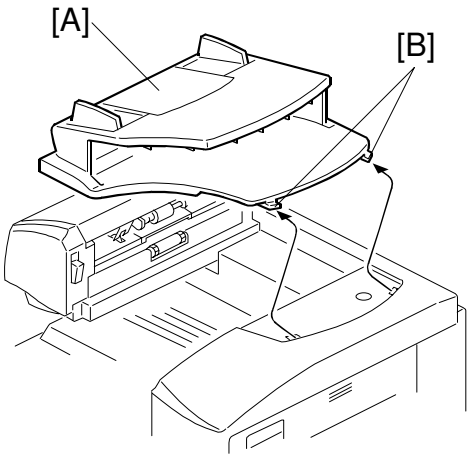
# 3.2 SPECIAL TOOLS AND LUBRICANTS

| Part Number | Description | Q'ty | Common with... |
|---|---|---|---|
| N8036701♦ | Flash Memory Card (4MB) | 1 | Schmidt series |
| N8031000♦ | Card Case | 1 | Schmidt series |
| H0689300 | CIS Shading Chart | 1 | H1 |

# 3.3 EXTERIOR COVERS AND OPERATION PANEL

## 3.3.1 ORIGINAL TABLE

Push the original table [A] to the left to release the tabs [B], then lift up.

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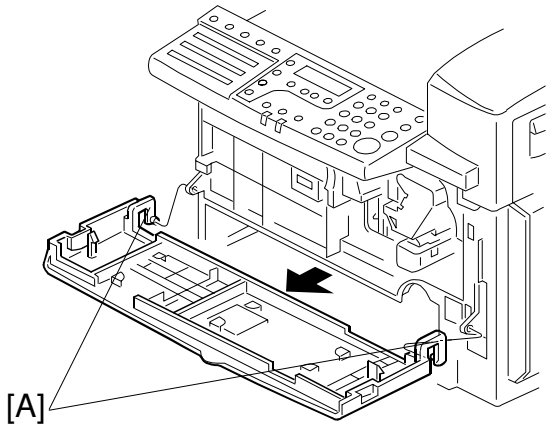
## 3.3.2 FRONT DOOR

1. Pull out the paper tray completely.
2. Press out on the arms [A] to release, then remove the front door.

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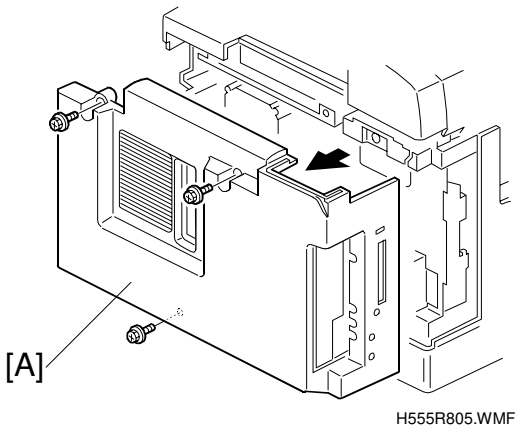
## 3.3.3 REAR COVER

1. Rear cover [A] (☞ x 3)



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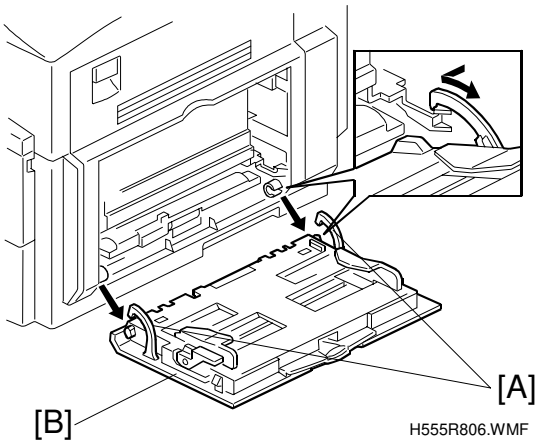
## 3.3.4 BY-PASS TRAY♦

1. Press the stopper rails [A] inward.
2. Remove the by-pass tray [B].



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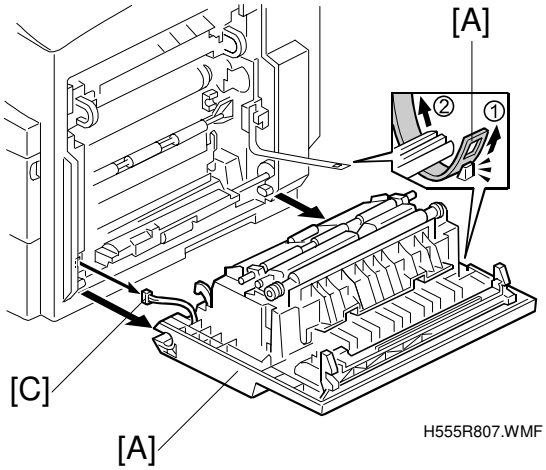
## 3.3.5 RIGHT DOOR♦

1. Open the right door [A].
2. Undo the strap [B].
3. Connector [C] (☞ x 1)



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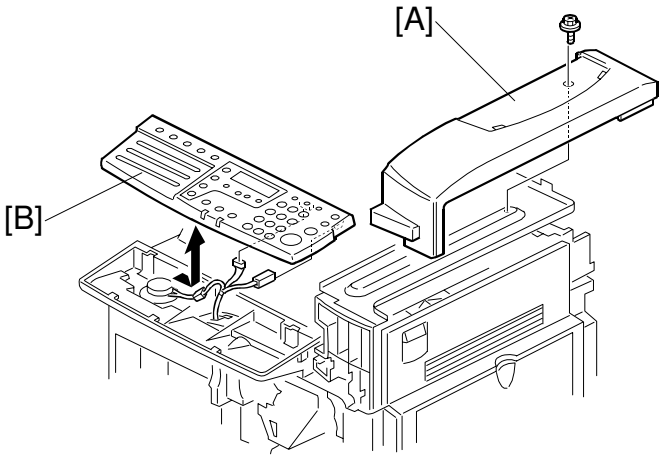
## 3.3.6 OPERATION PANEL

1. Original table. (☛ 3.3.1)
2. Right upper cover [A] (☞ x 1)
3. Operation panel [B] (☞ x 2)

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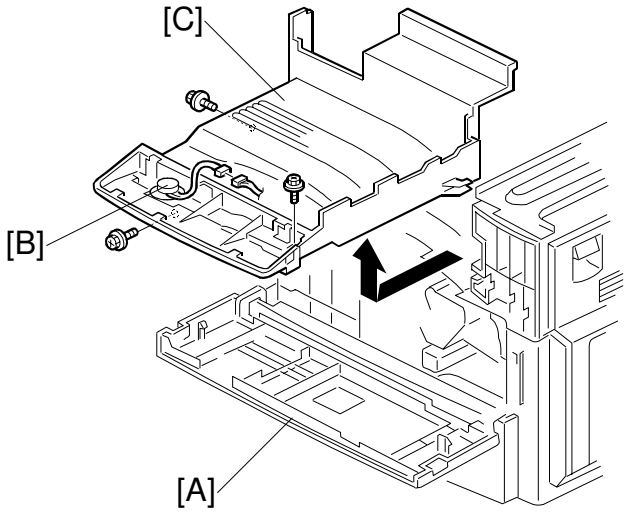
## 3.3.7 OUTPUT TRAY

1. Open the front door [A].
2. Operation panel (☛ 3.3.6)
3. Disconnect the speaker [B]. (☞ x 1)
4. Output tray [C] (☞ x 3)
   - Pass the operation panel connectors and speaker connectors through the output tray knockout before positioning the output tray for re-installation.

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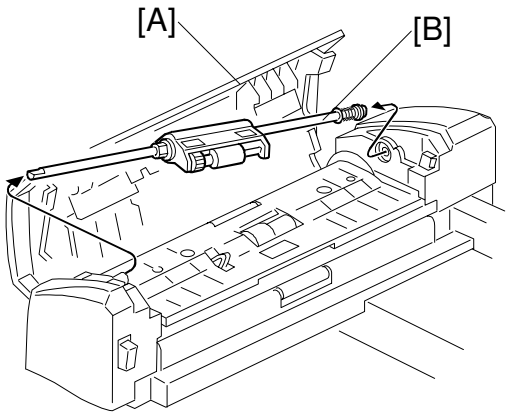
# 3.4 ADF UNIT

## 3.4.1 FEED UNIT

1. Raise the upper cover [A].
2. Feed unit [B].
   - Push to the right to disengage the left end and lift out.

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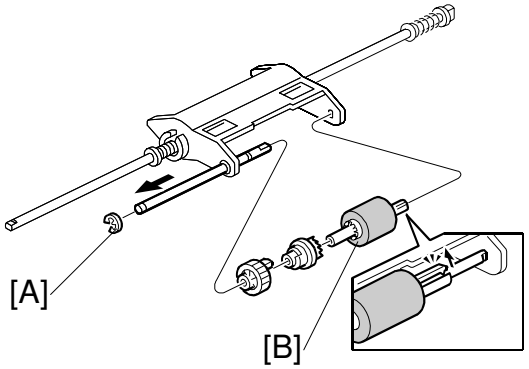
## 3.4.2 PICKUP ROLLER♦

1. Feed unit (☛ 3.4.1)
2. Remove E-ring [A].
3. DF pickup roller [B].

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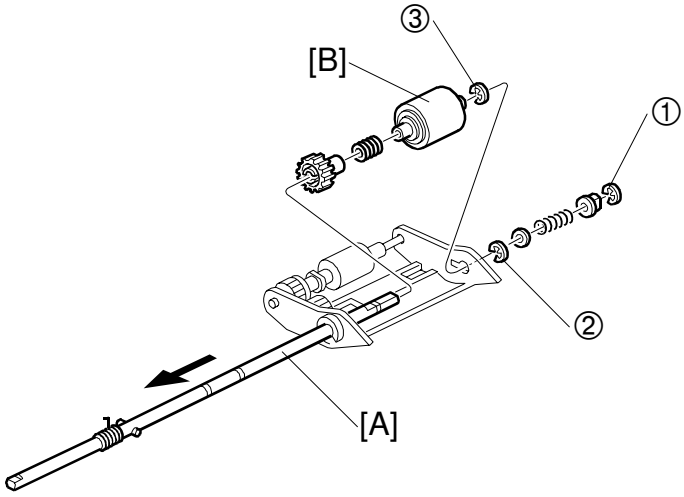
## 3.4.3 FEED ROLLER

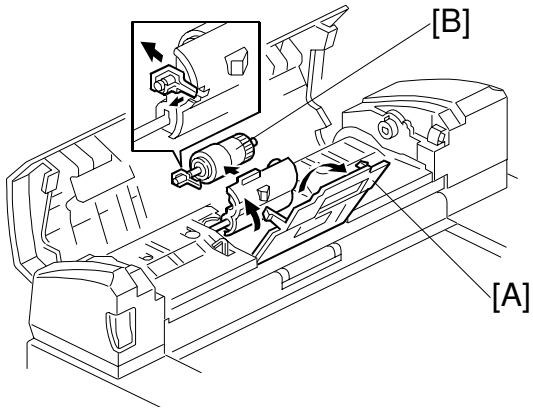
1. Feed unit (☛ 3.4.1)
2. Feed roller shaft [A] (ℂ x 3)
   ①, ②, ③
3. DF feed roller [B]



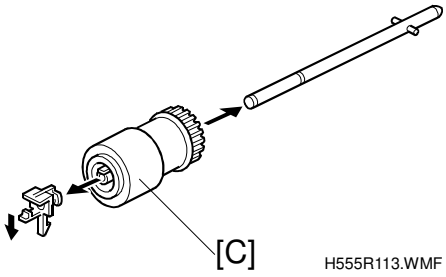

H555R834.WMF

## 3.4.4 SEPARATION ROLLER♦

1. Feed unit (☛ 3.4.1)
2. Open the center lid [A]
3. Lift out the separation roller ass'y [B].
4. DF separation roller [C]




H555R110.WMF

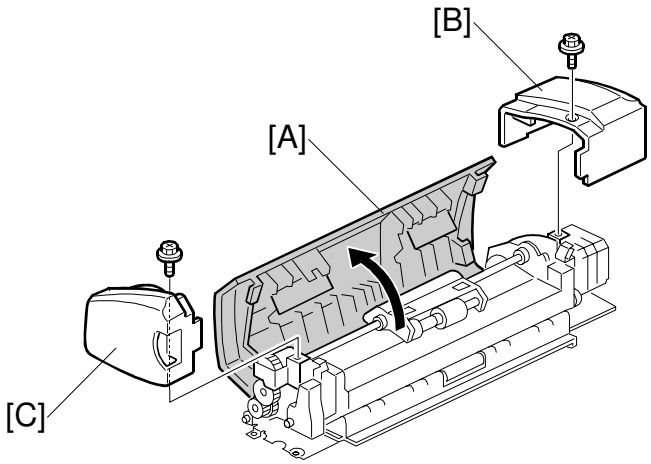



H555R113.WMF



## 3.4.5 DF COVERS♦

1. Open the upper cover [A].
2. DF back cover [B] (🔩 x 1)
3. DF front cover [C] (🔩 x 1)

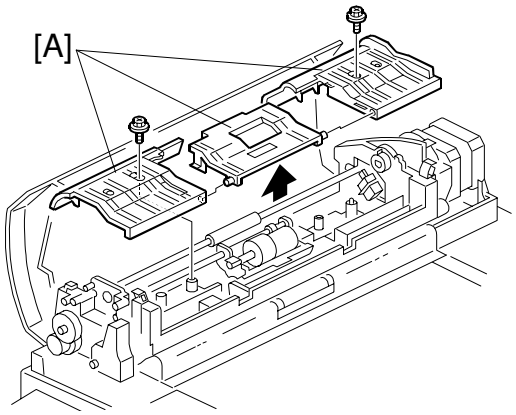



H555R111.WMF

## 3.4.6 SENSORS, SWITCHES

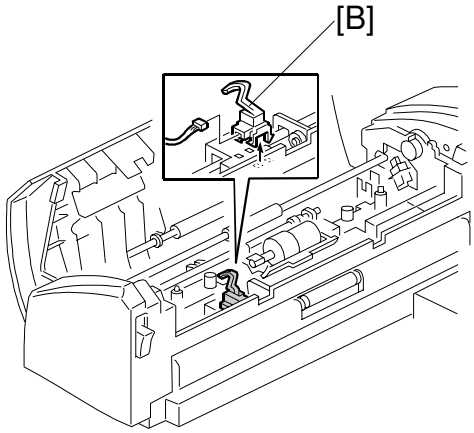
### *S1 (Original Set Sensor)♦, Cover Open Switch♦*

1. Feed unit (☛ 3.4.1)
2. Three lids [A] (🔩 x 2)




H555R109.WMF

3. S1 (original set sensor) [B].

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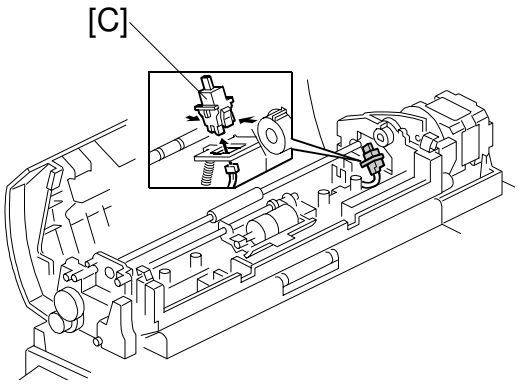
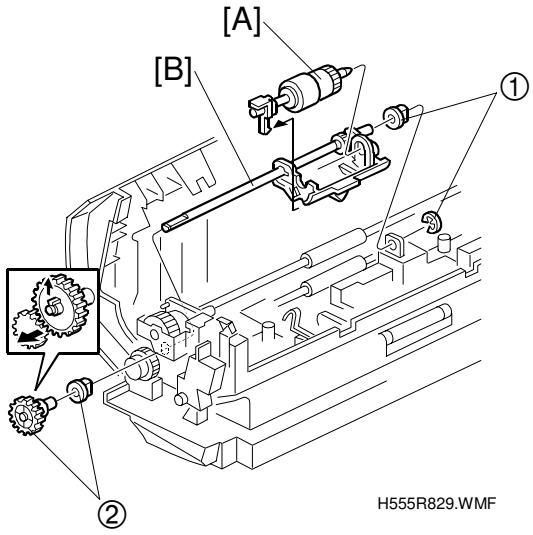
4. Cover open switch [C].




H555R112.WMF

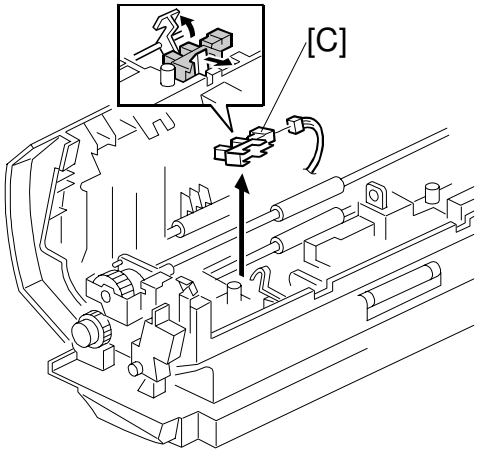
### *S2 (Original Registration Sensor)*

1. Open the upper cover.
2. Feed unit. (☛ 3.4.1)
3. Three lids. (☞ x 2) (☛ 3.4.6)
4. DF front cover. (☞ x 1) (☛ 3.4.5)
5. Detach the separation roller [A].
6. Remove the separation roller drive shaft [B] at ① (ℂ x 1, bushing x 1) and at ② (gear x 1, bushing x 1)
   - Raise the plastic release on the gear to release it from the end of the drive shaft.



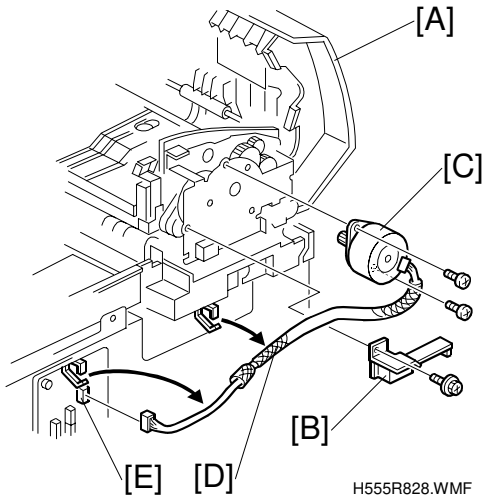



7. S2 (original registration sensor) [C] (✋ x1, feeler spring x 1)



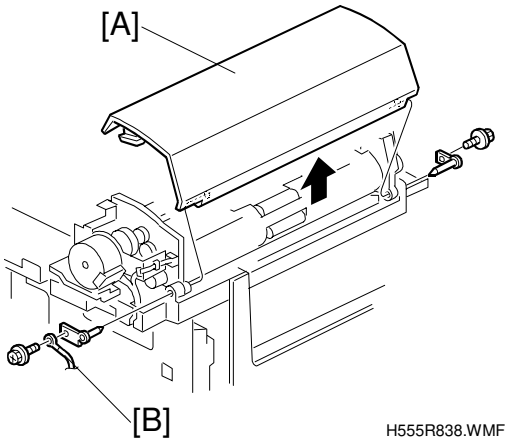

## 3.4.7 TX MOTOR

1. Rear cover (☞ x 3) (☛ 3.3.3)
2. Open the upper cover [A].
3. DF rear cover (☞ x 1) (☛ 3.4.5)
4. Plastic bracket [B] (☞ x 1)
5. TX motor [C] (☞ x 2, ✋ x 1)
   - Pull the mesh-covered cables [D] out of the slotted knockout and separate it from the two harnesses.
   - Disconnect the connector at CN500 on the FCU [E].

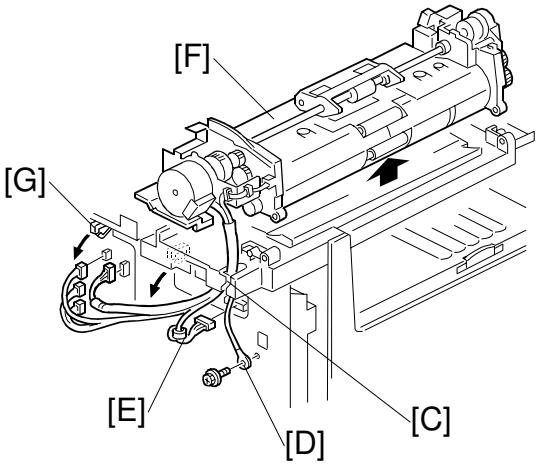


## 3.4.8 CIS

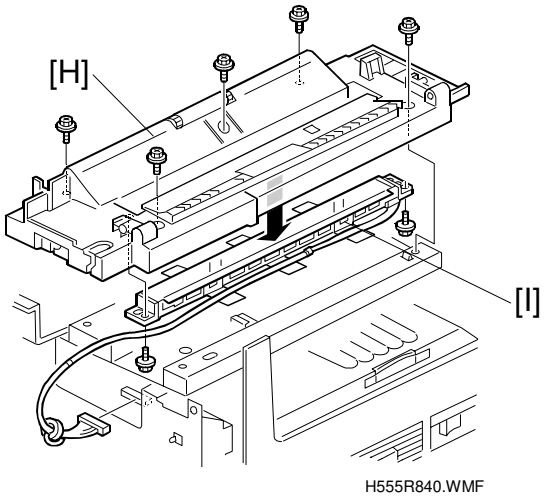
1. Open and remove the upper cover [A] (x 2, brackets x 2).
   - Use the tip of a small flat screwdriver to pry the metal shafts out of the holes on either side of the upper cover.
   - Be sure to re-attach the ground wire [B] when re-connecting.
2. Remove the front and rear DF covers. (☛ 3.4.5)




3. Pull all cables out of the slotted knockout in the frame [C].
4. Disconnect the ground wire at the frame [D] (x 1).
5. Disconnect the upper unit connector [E] on the FCU at CN11 (x 1).
6. Set the upper unit [F] aside.
   - It is not necessary to remove all the connectors at the FCU.
   - However, if you need to remove the upper unit, disconnect the cables from the 2-wire harnesses, then at the FCU [G] disconnect CN500, CN31, CN38, and CN37.




7. Remove the lower unit [H] (x 5)
   - Work carefully to avoid scratching or breaking the exposure glass.
8. Turn the lower unit over and remove the CIS unit [I] (x 2, x 1, 3 tapes).
   - There are only 2 screws. Note that 1 extra screw hole does not require a screw.
   - Replace the tapes over the CIS unit when re-installing.
   - Never attempt to disassemble the CIS and remove the brackets.



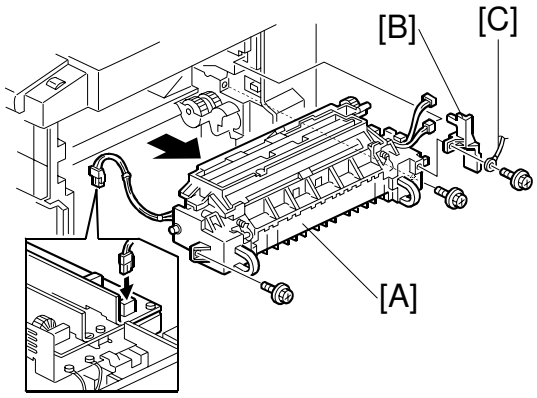

9. Perform the CIS shading adjustment (☛ 3.14.2)

# 3.5 FUSING

## 3.5.1 FUSING UNIT♦

**⚠CAUTION**
**The fusing unit can become very hot. Be sure that it has cooled down sufficiently before handling it.**

1. Turn off the main switch, and unplug the machine.
2. Output tray (☛ 3.3.7)
3. Fusing unit [A] (x 3, x 3)
   - When reinstalling the unit, replace the spacer [B] in the correct position, and remember to set the grounding wire [C] into place.

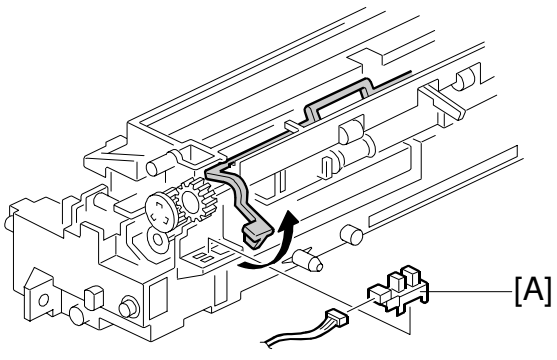



H555R501.WMF



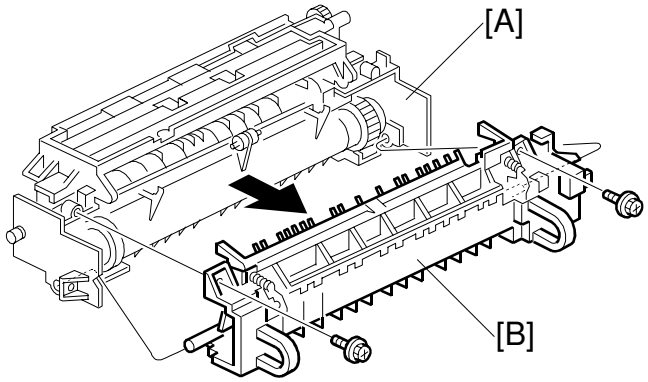
## 3.5.2 EXIT SENSOR♦

1. Fusing unit (☛ 3.5.1)
2. Exit sensor [A] (x 1)

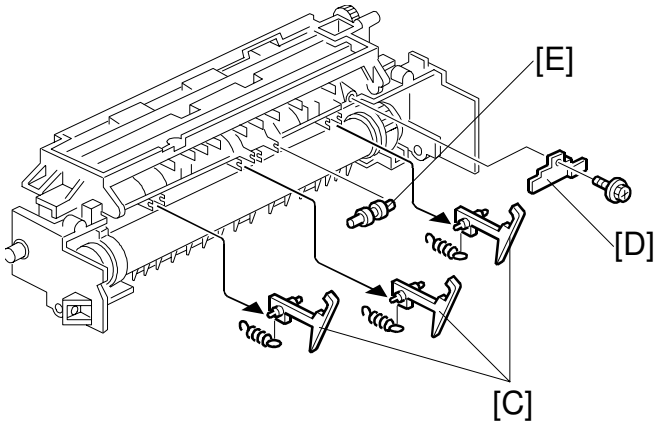



H555R508.WMF

## 3.5.3 HOT ROLLER STRIPPER PAWLS♦




H555R502.WMF

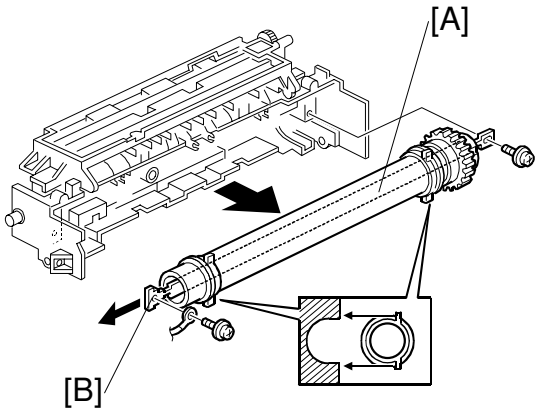



H555R507.WMF

1. Fusing unit (☛ 3.5.1)
2. Separate the fusing unit into two sections: the hot roller section [A], and the pressure roller section [B]. (🔩 x 2)
   **NOTE:** After removing the screws, lower the pressure roller section about halfway and then slide it toward the front side to detach it.
3. Hot roller stripper pawls [C] (1 spring for each pawl)
   **NOTE:** 1) To remove the right pawl, first remove the plastic spacer at [D] (🔩 x 1).
   2) When reinstalling the center pawl, be sure to set roller [E] back into place.

## 3.5.4 HOT ROLLER & FUSING LAMP♦

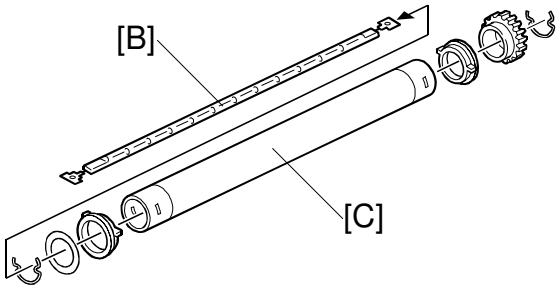
1. Hot roller stripper pawls (☛ 3.5.3)
2. Hot roller assembly [A] (☞ x 2)
   - Each of the screws has a washer.
   - After removing the screws, lift the hot roller assembly out from the rear side.
3. Fusing lamp [B]



H555R505.WMF



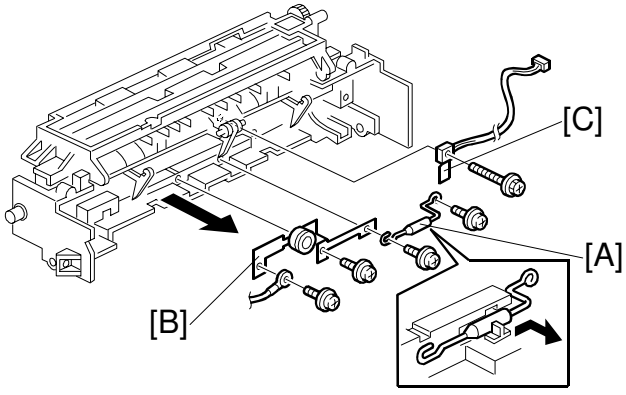
4. Hot roller [C] (C-rings x 2, spacer x 1, gear x 1, bushings x 2)



H555R509.WMF

## 3.5.5 THERMOFUSE, THERMOSWITCH, AND THERMISTOR♦

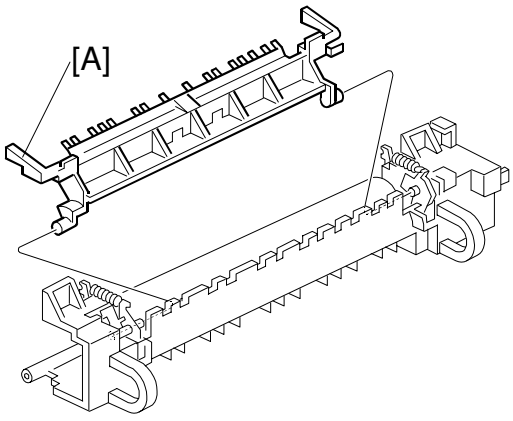
1. Remove the hot roller assembly from the hot roller section. (☛ 3.5.3)
2. Thermofuse [A] (☞ x 2).
3. Thermoswitch [B] (☞ x 2)
   - You must remove the thermofuse first.
4. Thermistor [C] (☞ x 1)



H555R506.WMF

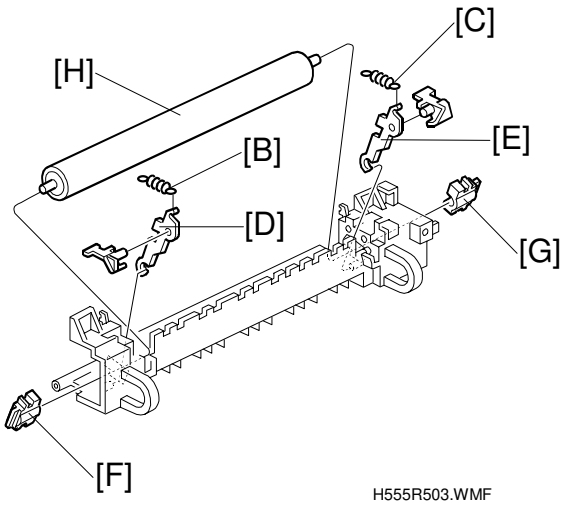
## 3.5.6 PRESSURE ROLLER♦

1. Fusing unit (☛ 3.5.1)
2. Separate the fusing unit into two sections: the hot roller section and the pressure roller section (☛ 3.5.3, Step 2). Carry out the remaining steps on the pressure roller section.
3. Fusing entrance guide [A]



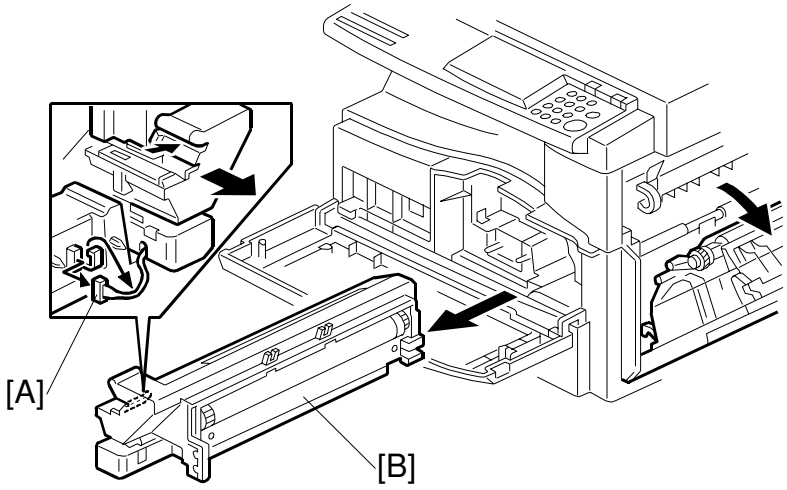

H555R504.WMF

4. 2 springs ([B], [C])
5. 2 pressure arms ([D], [E])
   - Manipulate each arm so that it comes out through the slit in the casing.
6. 2 bushings ([F], [G])
7. Pressure roller [H]




H555R503.WMF

# 3.6 PCU♦



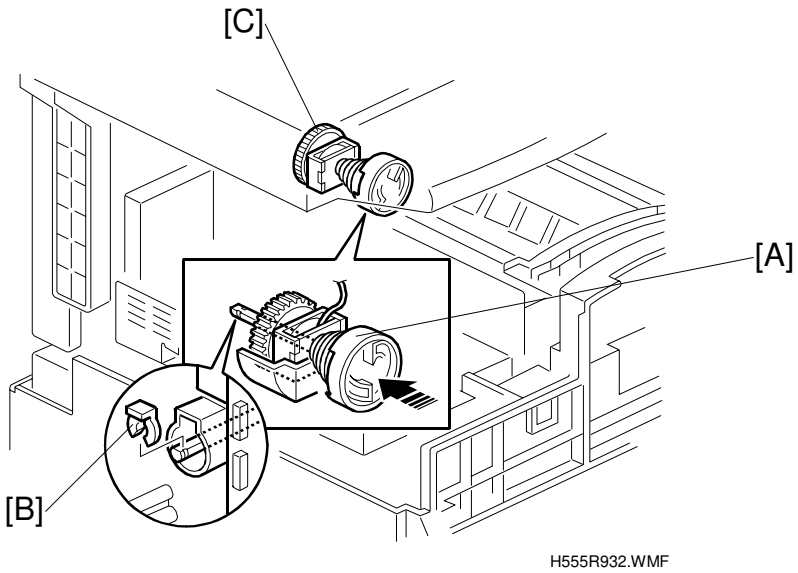

H555R023.WMF



1. Open the right door.
   **NOTE:** ***Do not forget to open the right door.*** The PCU may become stuck if you try to remove it while the front door is closed.
2. Open the front door.
3. Remove the toner bottle holder or THM.
   **NOTE:** If working on a toner-bottle model, clean away all spilled toner from the toner bottle area and from the inside of the front door.
4. Detach the connector [A] and pull out the PCU [B].

**NOTE:** 1) After installing the new PCU, be sure to remove the Styrofoam piece and to pull off the two tags. (☛ 1.1.2, Step 10)
2) The machine will automatically detect the new PCU and begin toner initialization. (☛ 6.10.4)

# 3.7 TONER SUPPLY CLUTCH♦

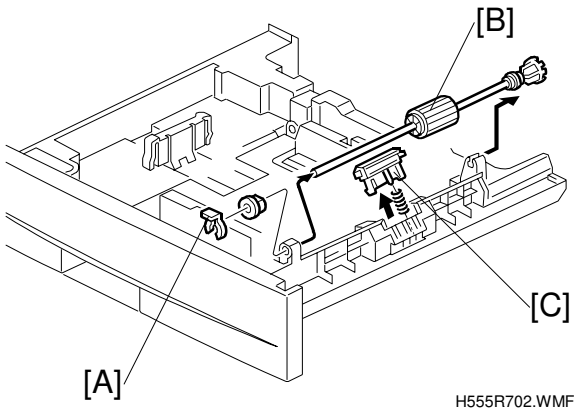



1. Remove the THM.
2. Output tray (☛ 3.3.7)
3. Rear cover (☛ 3.3.3)
4. Disconnect the connector on C19 on the FCU.
5. Reach into to the machine and push the clutch coupler [A] toward the rear, and at the same time reach around the back and remove the clip ring [B].
6. Remove the cone and spring, then lift the toner supply clutch mechanism [C] out of its housing and remove it.
   **NOTE:** When removing, note how the wire goes through a clamp, and also note where it passes through the rear of the machine.

# 3.8 PAPER FEED SECTION

## 3.8.1 PAPER FEED ROLLER AND FRICTION PAD♦

1. Take out the paper tray.
2. Clip ring [A]
3. Pull the shaft back, and lift it out.
4. Remove either or both of the following:
   - Paper feed roller [B]
   - Friction pad [C]

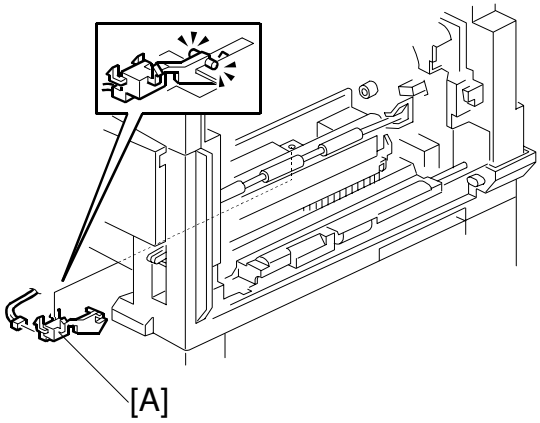


H555R702.WMF

## 3.8.2 PAPER END SENSOR♦

1. Take out the paper tray.
2. Open the right door.
3. PCU (☛ 3.6)
4. Paper end sensor [A] (☞ x 1)

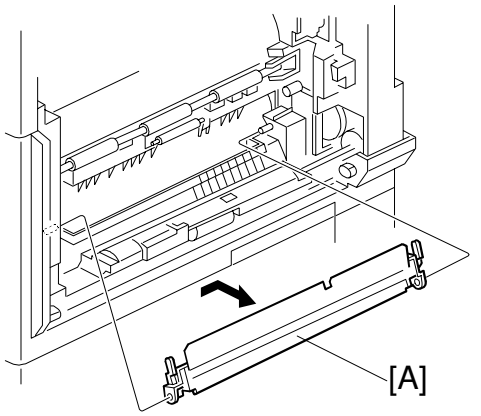
**NOTE:** When installing the new sensor, reach your left hand in through the front and your right hand in through the right side, and view from the right side.



H555R929.WMF

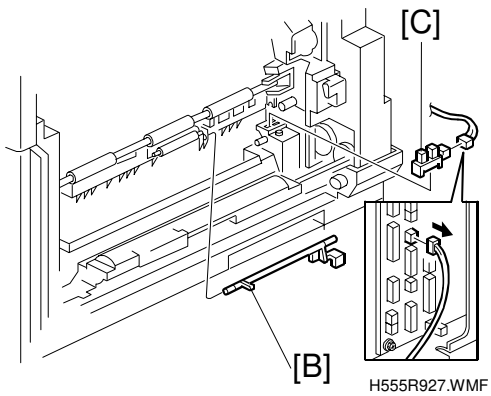
## 3.8.3 REGISTRATION SENSOR♦

1. Take out the paper tray.
2. Open the right door.
3. Black guide piece [A]



H555R926.WMF

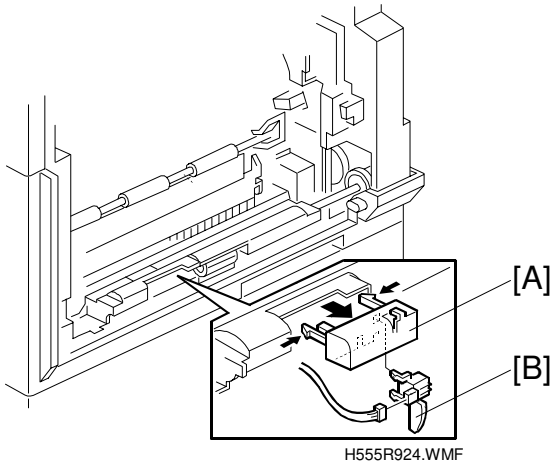
4. Registration sensor feeler [B]
5. Registration sensor [C] (✍ x 1)



H555R927.WMF

## 3.8.4 BY-PASS PAPER END SENSOR♦

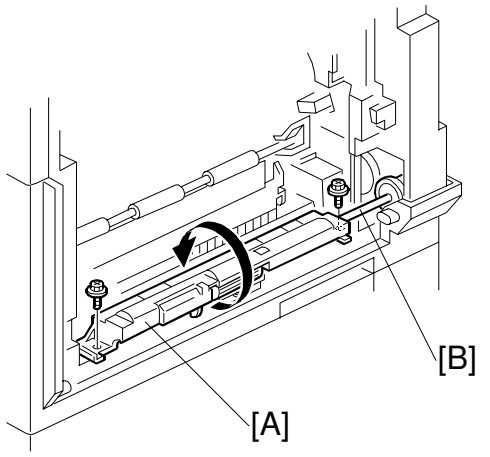
1. Right door (☛ 3.3.5)
2. Detach the sensor compartment [A].
3. By-pass paper end sensor [B] (✍ x 1)



H555R924.WMF

## 3.8.5 BY-PASS FEED ROLLER♦

1. Right door (☛ 3.3.5)
2. Unscrew the feed roller frame [A] (🔩 x 2) and rotate it about the feed roller shaft [B] so that it is upside down.
3. Detach the feed roller shaft [B] from the feed roller frame (unsnap the two snap pawls [C] and remove the spacer [D]).
4. By-pass feed roller [E]

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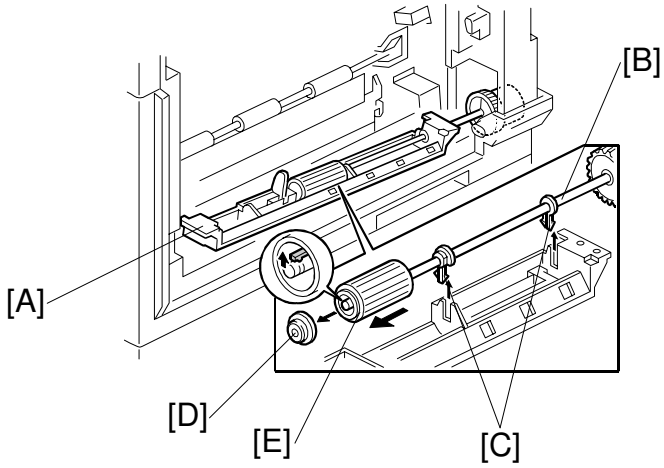
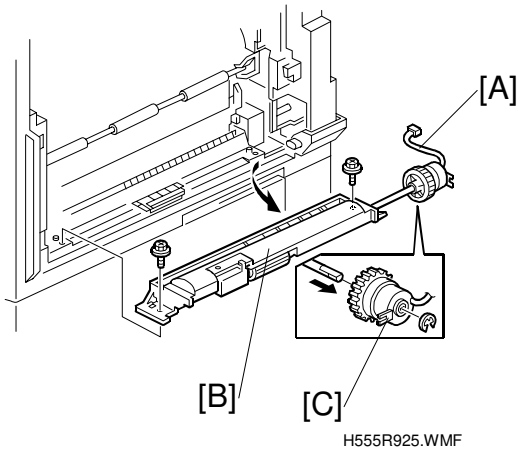



H555R938.WMF

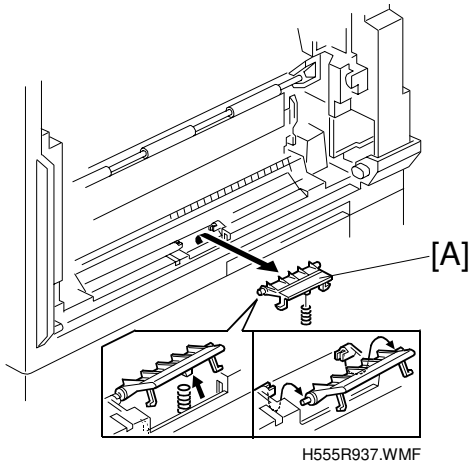
## 3.8.6 BY-PASS FEED CLUTCH♦

1. Rear cover (☛ 3.3.3)
2. Right door (☛ 3.3.5)
3. Detach the by-pass feed clutch connector [A] from CN3 on the high-voltage power supply board.
4. Unscrew the by-pass feed roller housing [B] (x 2), and pull it out of the machine.
   - It is not necessary to remove or disconnect the by-pass paper end sensor.
5. By-pass feed clutch [C] (x 1)



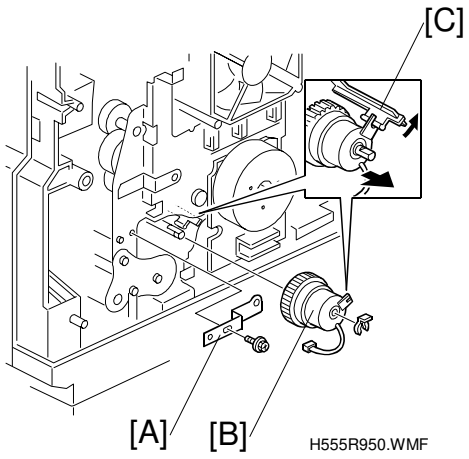

## 3.8.7 BY-PASS FRICTION PAD♦

1. Right door (☛ 3.3.5)
2. Detach the roller housing (☛ 3.8.6), and move it out of the way.
3. By-pass friction pad [A]



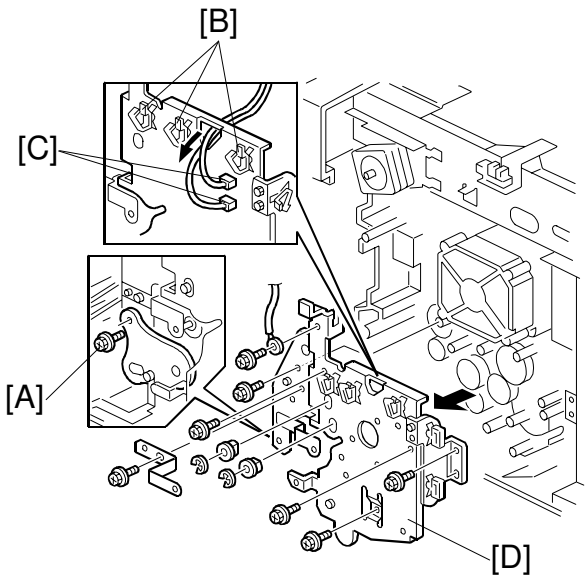

## 3.8.8 REGISTRATION CLUTCH

1. Rear cover (☛ 3.3.3)
2. High-voltage power supply board (☛ 3.12.2)
3. Ground plate [A] (x 1)
4. Registration clutch [B] (x 1, x 1)
   - To free the clutch, pry clip [C] gently away from it using a screwdriver.



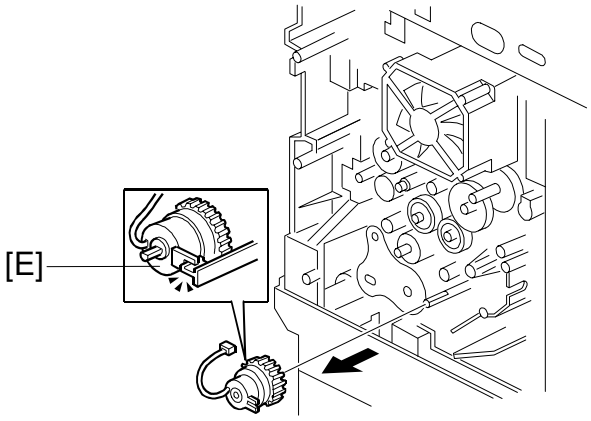
## 3.8.9 PAPER FEED CLUTCH♦

1. Pull the paper tray part way out.
2. High-voltage power supply board (☛ 3.12.2)
3. Main motor (☛ 3.12.4)
4. Remove 1 screw [A] from the small cover plate.
5. Open 3 clamps [B] on the large cover plate, and remove the wiring.
6. Detach two connectors [C] from the FCU.
7. Large cover plate [D] ( x 7, x 2, bushings x 2)




H555R920.WMF

8. Paper feed clutch [E]

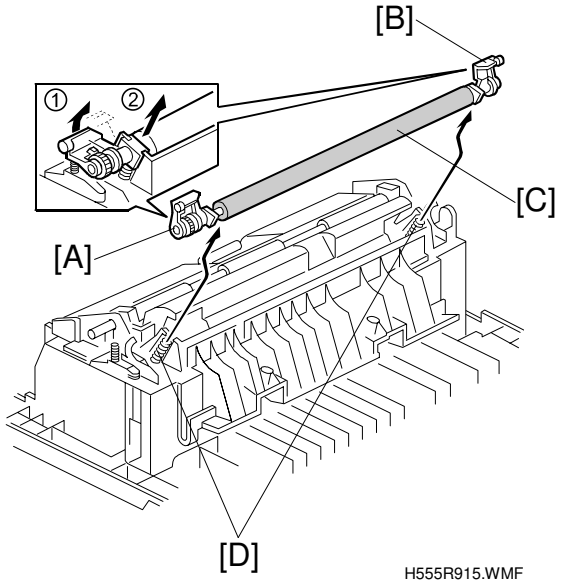



H555R922.WMF

# 3.9 IMAGE TRANSFER SECTION

## 3.9.1 IMAGE TRANSFER ROLLER♦

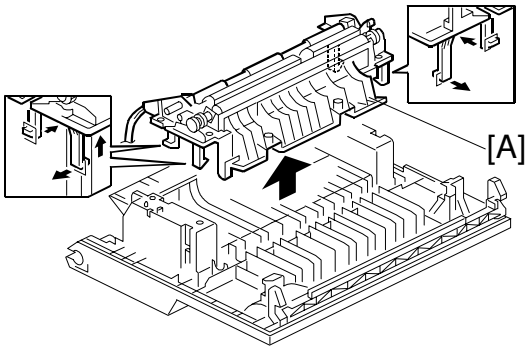
1. Right door (☛ 3.3.5)
2. Raise the levers ([A], [B]) at the ends of the image transfer roller, and remove the roller [C].
   - Note the position of the 2 springs [D] at each end. When reinstalling the roller, be sure that the pegs on the plastic end pieces fit into the springs.
   - Never touch the transfer roller surface with bare hands.



H555R915.WMF

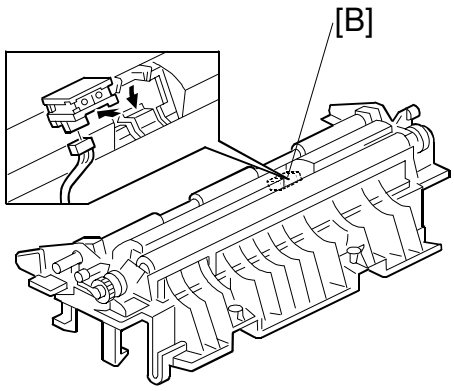
## 3.9.2 ID (IMAGE DENSITY) SENSOR♦

1. Right door (☛ 3.3.5)
2. Push in the latches as shown, and pry off
   the entire section [A].



H555R913.WMF

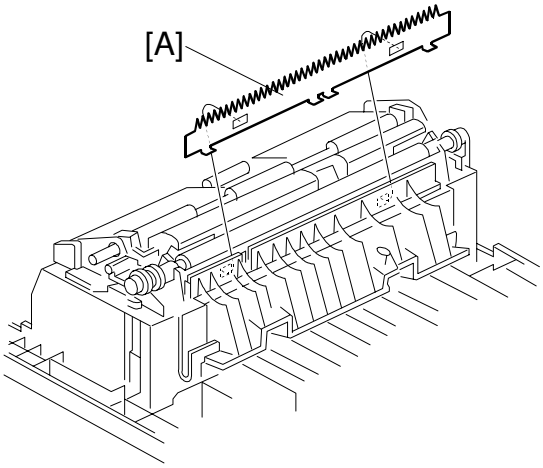
3. ID sensor [B] (☞ x 1)



H555R914.WMF

## 3.9.3 DISCHARGE PLATE♦

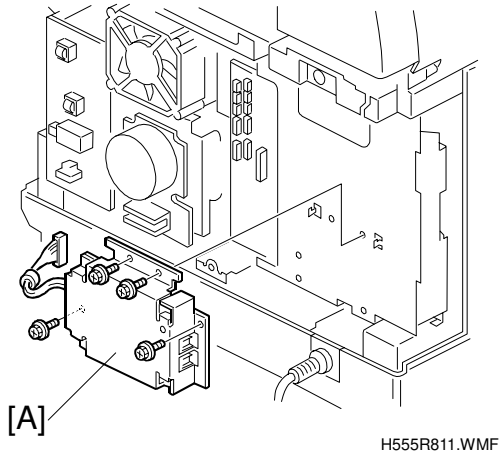
1. Right door (☛ 3.3.5)
2. Use tweezers to remove the discharge plate [A].



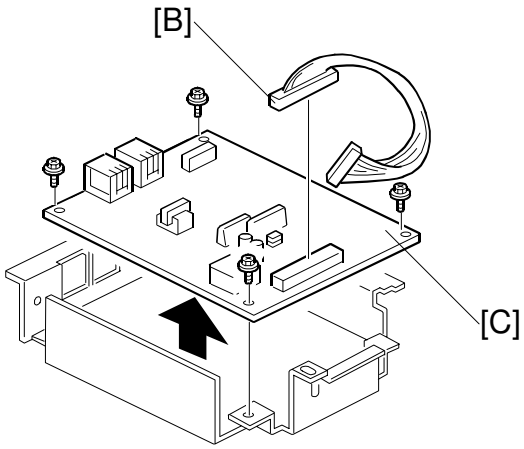

H555R934.WMF

# 3.10 PCBs

## 3.10.1 NETWORK CONTROL UNIT (NCU)




H555R811.WMF



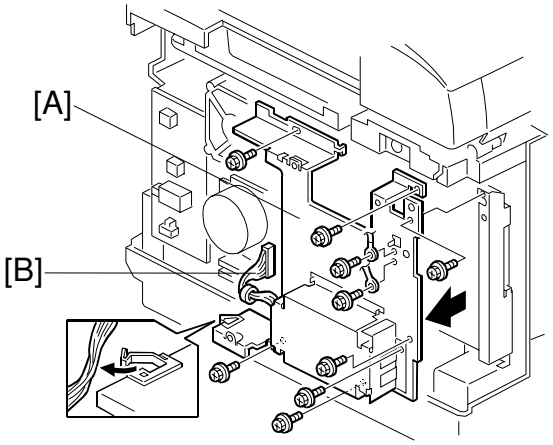

H555R135.WMF

1. Rear cover (☛ 3.3.3)
2. NCU bracket [A] (x 4, x 1)
3. Disconnect the harness [B] from the NCU.
4. NCU [C] (x 4)

## 3.10.2 FACSIMILE CONTROL UNIT (FCU)♦

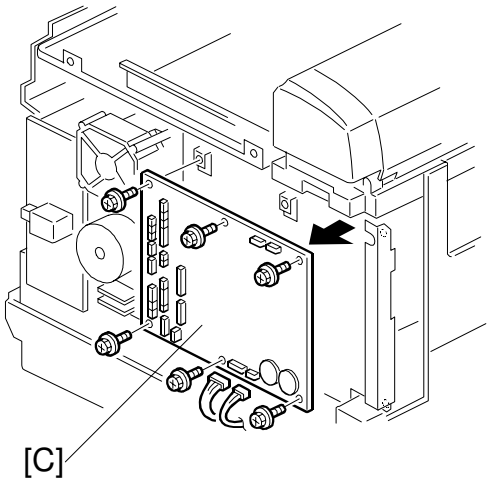
**NOTE:** 1) Before starting replacement, use SP5-824 to save SRAM user data from the existing FCU into a flash memory card. After finishing the replacement, use SP5-825 to reload the data from the card into the SRAM on the new FCU. For instructions, see Section 5.1.8.
2) Replacement FCUs ship with the battery jumper switch set to the OFF position. Be sure to change the jumper switch to the ON position before installing the replacement FCU.

1. FCU cover plate [A] (☞ x 9).
   - Detach the NCU connector [B] first, then unscrew the cover plate and remove the cover plate together with the NCU.



H555R812.WMF

2. FCU [C] (✋ x all, ☞ x 6)



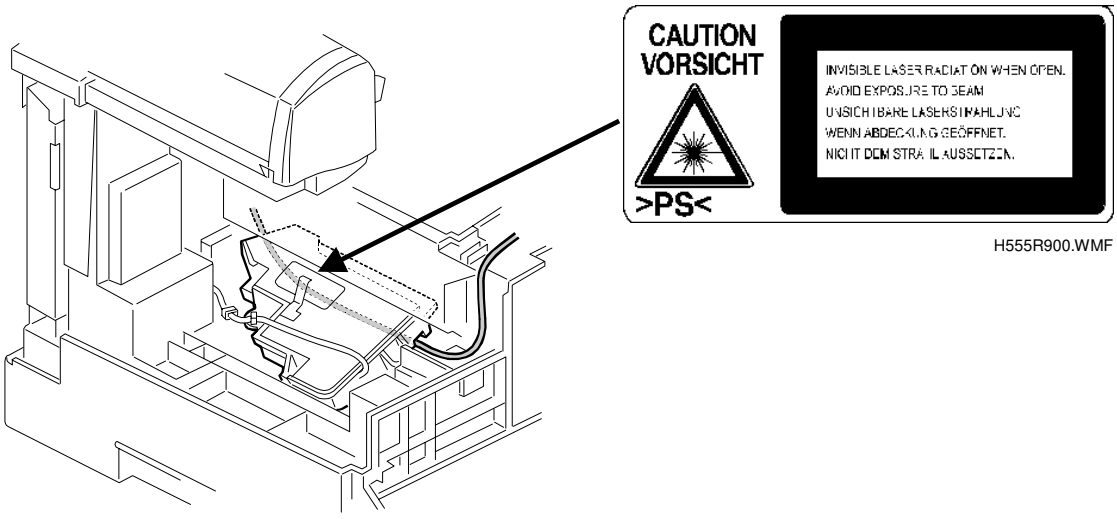
H555R814.WMF

# 3.11 LASER UNIT

**⚠WARNING**

**The laser beam can cause serious eye damage. Be sure that the main power switch is off and that the machine is unplugged before accessing the laser unit.**

## 3.11.1 LOCATION OF "CAUTION" DECAL♦

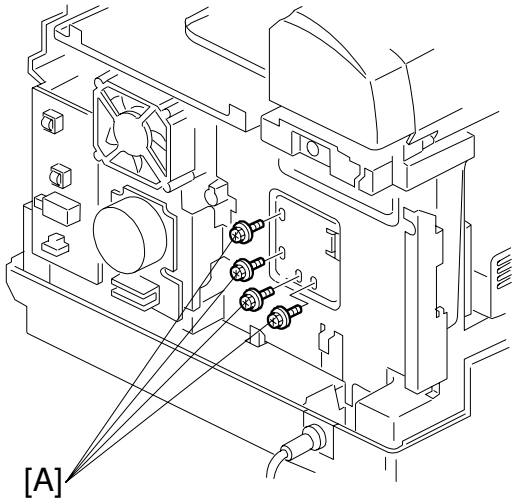



H555R900.WMF

H555R101.WMF

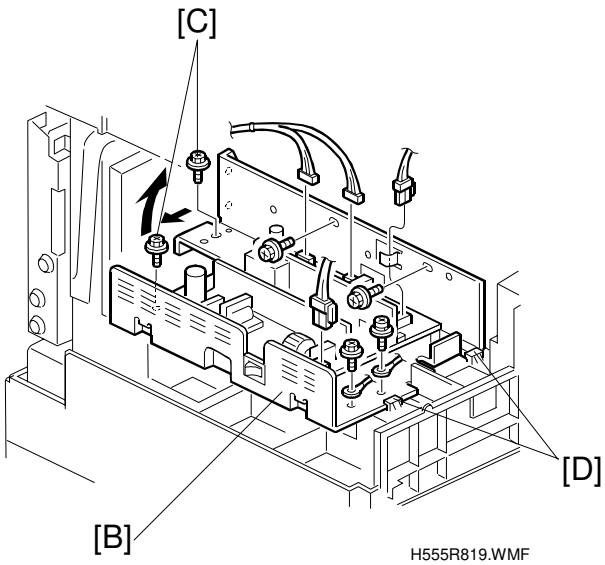
## 3.11.2 PSU BRACKET♦

1. Operation panel (☛ 3.3.6)
2. Output tray (☛ 3.3.7)
   - After removing the output tray, leave the front door open.
3. FCU (☛ 3.10.2)
4. Remove the 4 screws at [A].




H555R818.WMF

5. Unscrew the 6 screws securing the PSU bracket [B], and detach the 4 connectors.
   **NOTE:** Use a stubby screwdriver to remove the 2 screws at [C].
6. Hold the PSU bracket at the rear (viewing from the front of the machine), pull the rear end out to the left slightly, then lift the bracket upward at the rear so that it comes free of the hooks [D] at the front.
7. Pull the PSU bracket out.

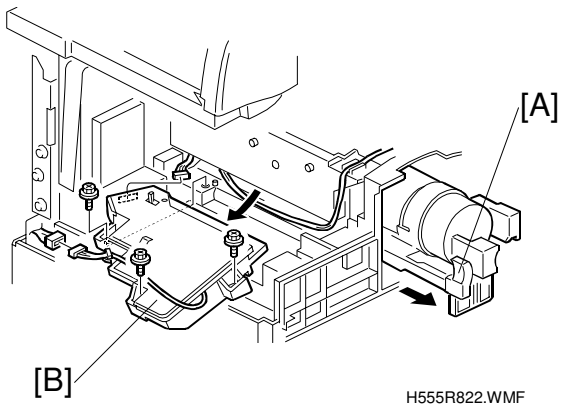



H555R819.WMF

Replacement Adjustment

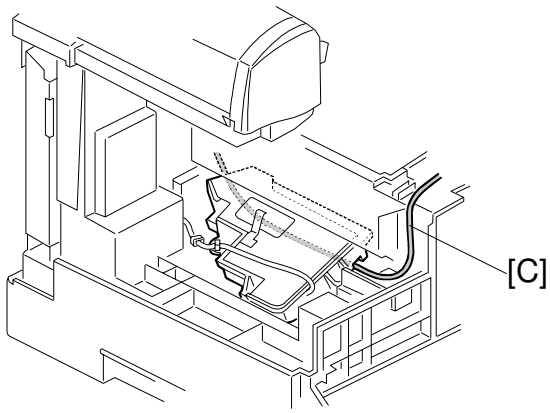
## 3.11.3 LASER UNIT

1. PSU bracket (☛ 3.11.2)
   **NOTE:** After removing the PSU bracket, leave the front door open.
2. Release the THM and pull it out slightly. (You do not need to pull it out all the way.)
   **NOTE:** To release the THM, push in on the green latch [A].



H555R822.WMF

3. Laser unit [B] (x 3, x 2)
   **NOTE:** When reinstalling the laser unit, be sure that the wire at [C] passes under the unit. In particular, be certain that the wire does not pass in front of the glass area on the unit.



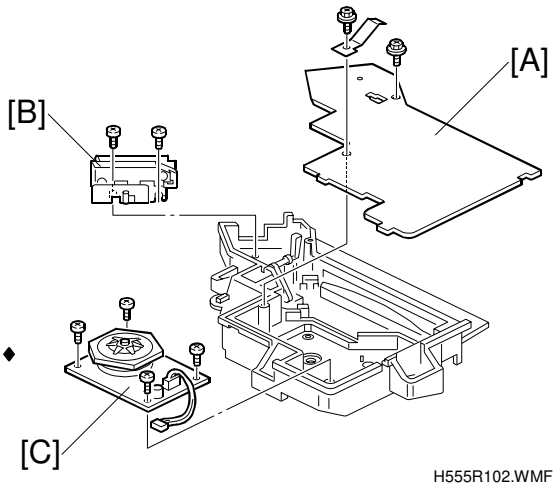
H555R101.WMF

## 3.11.4 LD UNIT♦

1. Laser Unit (☛ 3.11.3)
2. Laser unit cover [A] (x 2)
3. LD unit [B] (x 2)
   **NOTE:** The LD drive board itself is not adjustable, and is not a replaceable part. You must replace the entire bracket.

## 3.11.5 POLYGON MIRROR MOTOR♦

1. Laser Unit (☛ 3.11.3)
2. Laser unit cover [A] (x 2)
3. Polygon mirror motor [C] (x 4)

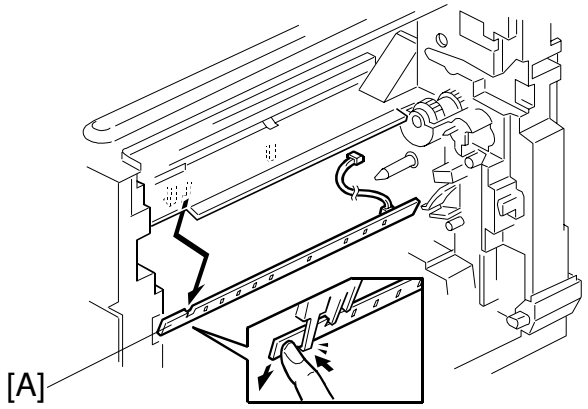


H555R102.WMF

# 3.12 OTHER REPLACEMENTS

## 3.12.1 QUENCHING LAMP♦

1. PCU (☛ 3.6)
2. Quenching lamp [A] (✋ x 1)

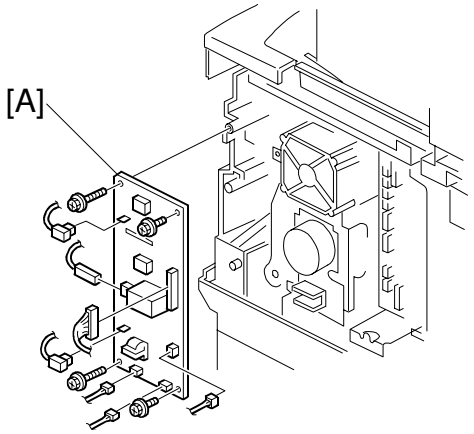



H555R813.WMF



## 3.12.2 HIGH-VOLTAGE POWER SUPPLY BOARD♦

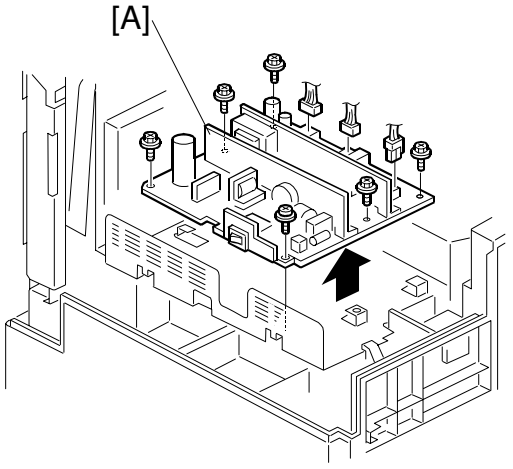
1. Rear cover (☛ 3.3.3)
2. High-voltage power supply board [A] (☞ x 4, all connectors)




H555R802.WMF

## 3.12.3 PSU♦

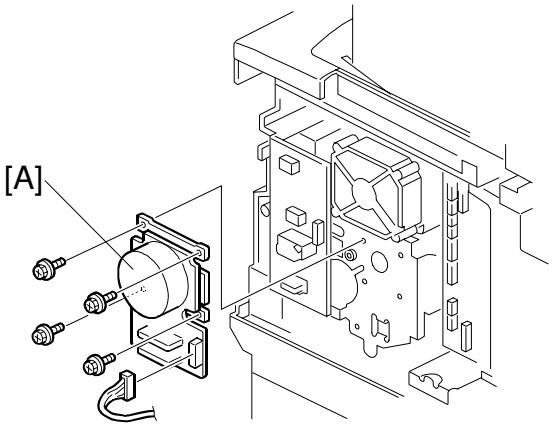
1. Output tray (☛ 3.3.7)
2. PSU [A] (☞ x 6, all connectors)




H555R810.WMF

## 3.12.4 MAIN MOTOR♦

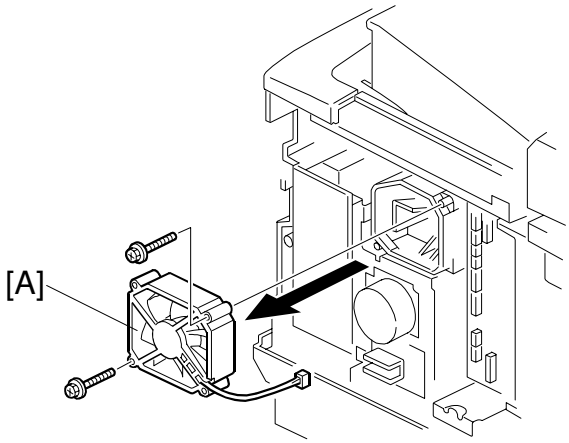
1. Rear cover (☛ 3.3.3)
2. Main motor [A] (x 4, x 1)




H555R804.WMF

## 3.12.5 EXHAUST FAN♦

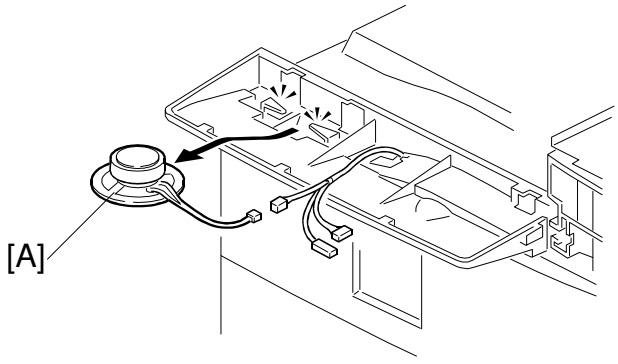
1. Rear cover (☛ 3.3.3)
2. Exhaust fan [A] (x 2, x 1)




H555R803.WMF

## 3.12.6 MONITOR SPEAKER

1. Operation panel (☛ 3.3.6)
2. Monitor speaker [A] (x 1)




H555R845.WMF

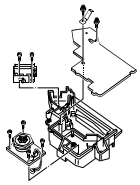
# 3.13 PRINTING ADJUSTMENTS

You need to perform the following printing adjustments after executing a Memory All Clear (SP5-801) and after replacing the paper tray. For details about how to access and use the SP mode and fax service functions, see Section 5.

Before you begin the printing adjustments:

- Make sure the paper is installed correctly in each paper source before you start these adjustments.

## 3.13.1 REGISTRATION - LEADING EDGE/SIDE-TO-SIDE♦



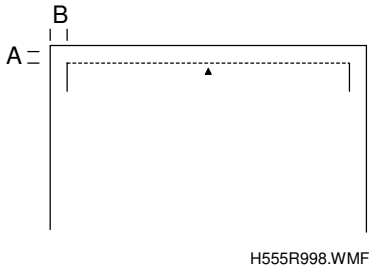
### *To print the Trimming Area Pattern*

Print the REGIST pattern. Follow the procedure in Section "5.2 FAX SERVICE FUNCTIONS", Accessing Fax Service Mode, "08. Printer".

### *To check and adjust the Trimming Area Pattern*

1. Check the leading edge registration [A] for each paper feed station, and adjust each of these registrations using SP1-001.

| Tray | SP mode | Specification |
|---|---|---|
| Paper tray(s) | SP1-001-1 | 0 ± 2 mm |
| 100-sheet by-pass | SP1-001-2 | 0 ± 2 mm |




H555R998.WMF

A: Leading edge

B: Side-to-side

2. Check the side-to-side registration [B] for each paper feed station, and adjust these registrations using SP1-002. (Adjust the trays in order: the 1st tray first, then the 2nd tray [if installed], then the by-pass).

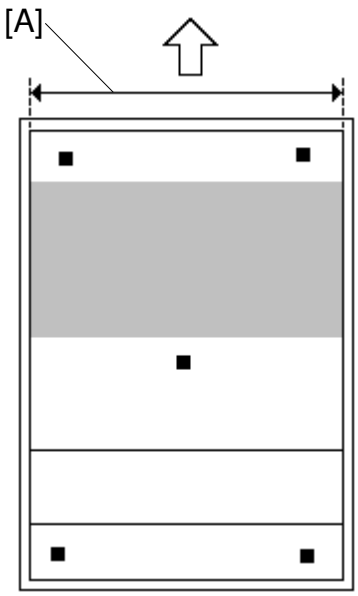
| Tray | SP mode | Specification |
|---|---|---|
| 1st tray | SP1-002-1 | 0 ± 2 mm |
| 2nd tray | SP1-002-2 | |
| 100-sheet by-pass | SP1-002-5 | |

## 3.13.2 MAIN-SCAN MAGNIFICATION

1. Print the Trimming Area Pattern (FACTORY pattern). For details, see Section "5.2 Fax Service Functions, Accessing Fax Service Modes, 08. Printer".

| Paper Size | Width [A] |
|---|---|
| Letter | 210 mm |
| A4 | 204 mm |

2. Perform SP2-998 to adjust magnification in the main scan direction until the width of the frame in the printout meets the specifications in the above table (100±1% in both directions).

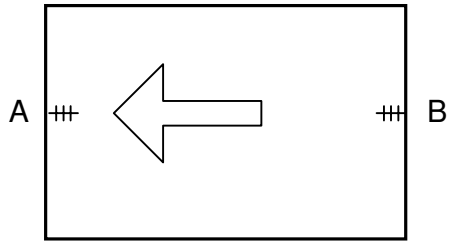



H555R996.WMF

# 3.14 SCANNING ADJUSTMENTS

## 3.14.1 REGISTRATION

1. Make a temporary test chart as shown above, using A4 or Letter paper.
2. Place the temporary test chart into the ADF and make a copy from one of the feed stations.
3. Check the registrations, and adjust as necessary using SP mode, as follows.




H555R997.WMF

A: Leading edge
B: Trailing edge

| SP mode | Function |
|---|---|
| SP6-006-2 | Leading edge registration (A above) |
| SP6-006-3 | Blank margin for the trailing edge (B above) |



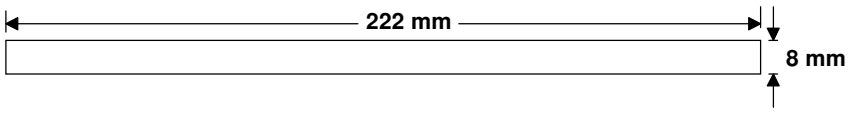
## 3.14.2 CIS SHADING ADJUSTMENT

This procedure adjusts the CIS shading level. Carry out this adjustment after doing any of the following:

- After replacing the CIS.
- After replacing the white plate.
- After replacing the FCU. (If the content of the SRAM on the FCU is uploaded before replacement and downloaded after replacement, then CIS shading adjustment is not required.)
- After performing a Memory All Clear (SP5-801).

**To prepare the mylar:**

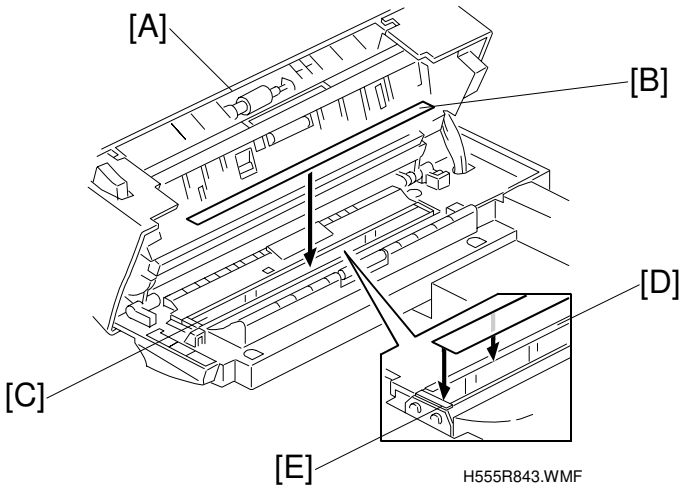
1. To perform this procedure, you need to cut a strip of mylar from the CIS Shading Chart P/No. H0689300. Cut the mylar to precise dimensions 222 mm x 8 mm.




H555R999.WMF

2. Inspect the sheet carefully and make sure that it is free of dust. Clean if necessary. If the mylar shading adjustment sheet is not available:
   - You can use a sheet of A4 plain paper in place of the mylar sheet, but the level of adjustment will not be perfect. The quality of the images, especially halftones, will be poor.
   - The CIS is Letter width. If the shading adjustment is done with A4 paper, some elements on the left side of the CIS cannot be adjusted.

## To adjust the shading:




1. Open the ADF unit [A].
2. Make sure that the CIS exposure glass and the white plate are clean. Inspect the mylar sheet [B], then lay the sheet on the exposure glass [C].
   - Make sure that the length of the sheet is snug and level with the mylar that runs along the length of the exposure glass on its left side [D]. Make sure that the sheet does not overlap this mylar.
   - Make sure that the sheet is snug and level with the mylars on both ends [E] of the exposure glass. The sheet should not overlap either mylar.
3. Execute the shading adjustment procedure. For details, see Section “5.2 FAX SERVICE FUNCTIONS, Accessing Fax Service Mode, 10. Shading”

   The shading data is written to SRAM on the FCU.

   When you see “OK!!”, remove the shading sheet from the DF and go to the next step.

   -or-

   If you see “NG!!”, the shading adjustment did not complete normally.

   Press the Stop button C/©.

   Carefully clean the shading mylar and the CIS exposure glass, then repeat the procedure. After cleaning, if the adjustment fails again, there could be a malfunction. A malfunction could be caused by:
   - Disconnection of the CIS
   - Broken CIS
   - FCU malfunction (LED circuits, video circuits)
4. Inspect the white plate and CIS exposure glass, and make sure that they are clean. Then close the DF upper unit and make sure that it locks.
5. Scan one original.
   - The first original scan is important because it uses the white plate to set the peak level, which is the value used for base control of image scanning.
   - When you execute the first scan, make sure that the original does not skew.

# 4. TROUBLESHOOTING

## 4.1 SERVICE CALL CONDITIONS

### 4.1.1 SUMMARY♦

There are two service-call levels, as follows.

| Level | Definition | Reset Procedure |
|---|---|---|
| A | To prevent possible damage to the machine, level-A service calls can be cleared only by a service representative The machine will not operate until the representative clears the call. | Enter SP 5-810 (SC code reset) and select "1". Then simultaneously press the *Original Type* key and the *OK* (or ⓇⓉ) key. (There is no need to turn the main switch off and on.). |
| B | These SCs can be cleared by turning the main power switch off and on. | Turn the main power switch off and on. |

**NOTE:** 1) *If a problem involves circuit boards:* Before deciding to replace a circuit board, first see if you can solve the problem by disconnecting and then reconnecting all connectors.
2) *If a problem involves a motor lock:* Check the mechanical load first, before deciding whether to replace motors or sensors.
3) Switching power off and back on may in some cases cause loss of data stored in SAF memory.

## 4.1.2 SC CODE DESCRIPTIONS

| No. Definition | | | Symptom | Possible Cause |
|---|---|---|---|---|
| SC Code | Error Code | Level | | |
| *Scanner* | | | | |
| 101♦ | 1-04 | B | Exposure (LED) Lamp Error | |
| | | | Insufficient white level detected when scanning the white plate. | • Exposure lamp (LED) defective<br>• CIS defective<br>• Bad connection |
| *Image Process 1* | | | | |
| 302♦ | 9-17 | B | Charge roller current leak | |
| | | | Current leak at the charge roller was detected. | • Charge roller damaged<br>• High voltage supply board defective<br>• Poor connection of the PCU |
| 320♦ | 9-23 | B | Polygon mirror motor error | |
| | | | Did not detect lock signal from polygon mirror motor within 10 seconds after motor ON signal; or, lost lock signal for continuous 1.5 seconds after signal was detected. | • Polygon mirror motor (or harness) defective<br>• FCU defective |
| 322♦ | 9-20 | B | Laser synchronization error | |
| | | | Detected LD error signal for continuous 1.5 seconds while polygon mirror motor was running at constant speed. | • Synchronization detection mirror defective<br>• LD unit defective<br>• FCU defective<br>• LD harness damaged<br>• THM not in place |
| 390♦ | 9-73 | B | TD sensor error | |
| | | | The TD sensor output less than 0.33 V or greater than 2.64 V ten times in succession. | • TD sensor defective<br>• Bad connection |
| 391♦ | 9-29 | B | Development bias leak | |
| | | | Development bias leak signal was detected. | • Development roller defective<br>• High voltage supply board defective |
| 392♦ | 9-74 | B | Developer initialization error | |
| | | | Error reading ID sensor pattern during developer initialization. | • Forgot to remove heat seal from replacement PCU<br>• ID sensor defective<br>• TD sensor defective<br>• Drum is not turning<br>• Development roller is not turning<br>• Right door not closed firmly |

| No. Definition | | | Symptom | Possible Cause |
|---|---|---|---|---|
| SC Code | Error Code | Level | | |
| *Image Process 2* | | | | |
| 401♦ | 9-29 | B | Transfer roller leak error 1 (“+” leak) | |
| | | | A current leak signal for the transfer roller was detected. (Current feedback signal was not detected for at least 200 ms). | • Transfer roller damaged<br>• High voltage supply board defective<br>• Poor connection between transfer unit and machine<br>• Transfer unit set incorrectly |
| 402♦ | 9-29 | B | Transfer roller leak error 2 (“–” leak) | |
| | | | A current leak signal for the transfer roller was detected. (Current feedback signal was not detected for at least 200 ms). | • Transfer roller damaged<br>• High voltage supply board defective<br>• Poor connection between transfer unit and machine<br>• Transfer unit set incorrectly |
| *Print Engine* | | | | |
| 500♦ | 9-24 | B | Main motor lock error | |
| | | | Failed to detect main motor lock signal for 7 checks in succession (total of 700 ms) after main motor started to rotate, or after last lock signal was detected. | • Main motor defective<br>• Too much load on the drive mechanism<br>• Motor driver damaged |
| 541♦ | 9-22 | A | Fusing thermistor open | |
| | | | Thermistor generated abnormal values immediately after 24 V power on. | • Fusing thermistor defective or disconnected<br>• Fusing lamp defective<br>• Fuse blown<br>• PSU defective<br>• Bad connection between fuser and machine |
| 542♦ | 9-22 | A | Fusing temperature warm-up error | |
| | | | During fusing warm-up, fusing temperature failed to reach target range within 22 seconds (when starting at least 25°C below the target temperature). | • Fusing thermistor defective<br>• Fusing lamp defective<br>• Thermofuse blown<br>• PSU defective<br>• Bad connection between fuser and machine<br>• Transistor on the FCU defective |
| 543♦ | 9-22 | A | Fusing overheat error | |
| | | | Detected fusing temperature remained above 230°C for 1 second. | • Fusing thermistor defective<br>• PSU defective |

| No. Definition | | | Symptom | Possible Cause |
|---|---|---|---|---|
| SC Code | Error Code | Level | | |
| 544♦ | 9-22 | A | Fusing low temperature error | |
| | | | Detected fusing temperature remained abnormally low for 1 second during fusing operation (below 140°C) or during stand-by mode. | • Fusing thermistor defective<br>• PSU defective<br>• Bad connection between fuser and machine |
| 546♦ | 9-22 | A | Unstable fusing temperature | |
| | | | Detected that fusing temperature changed more than ±25°C/second two seconds in succession. | • Fusing thermistor defective<br>• PSU defective<br>• Bad connection between fuser and machine |
| 547♦ | 9-22 | B | Zero-cross detection error | |
| | | | Detection error (detection overflow or busy) occurred 8 times in succession (at 20 ms intervals) while 24 V power was on. | • PSU defective<br>• FCU defective |
| 548♦ | 9-22 | A | Fusing-temperature range violation (too high) | |
| | | | During paper transport, fusing temperature moved above limit (200°C for plain paper, 210°C for thick paper) and remained above limit for 10 seconds. | • TRIAC short<br>• Fan not running |
| 549♦ | 9-22 | A | Fusing-temperature range violation (too low) | |
| | | | During paper transport, fusing temperature fell below lower limit (155°C) and remained below limit for 6 seconds. | • Fusing thermistor defective<br>• PSU defective |
| 550♦ | 9-22 | A | Standby temperature error 1 | |
| | | | Fusing temperature failed to drop to expected level within a given time (15 seconds, 15 minutes, or 25 minutes, depending on mode) after entering standby or low-power mode. | • TRIAC short<br>• Fan not running |
| 551♦ | 9-22 | A | Standby overheat | |
| | | | Temperature during standby or low-power mode remained too high for a specified interval (10 seconds or 25 seconds, depending on the mode). | • TRIAC short |
| 552♦ | 9-22 | A | Standby low temperature error | |
| | | | After reaching expected temperature in low-power mode (level 1) or standby mode, temperature fell and remained below 155°C for 20 seconds. | • Fusing thermistor defective<br>• PSU defective |

| No. Definition | | | Symptom | Possible Cause |
|---|---|---|---|---|
| SC Code | Error Code | Level | | |
| *Communication* | | | | |
| 692♦ | 9-49 | B | Communication error between FCU and printer controller | |
| | | | Printer failed to acknowledge message from FCU within 1.2 seconds. | • Printer controller defective<br>• FCU defective<br>• Poor connection between FCU and printer controller |
| *Printer Controller* | | | | |
| 2001♦ | 9-48 | B | Printer controller self-diagnostic error | |
| | | | Printer controller's power-on self-diagnostic detected an error. | • Self-diagnostic error |

# 4.2 ERROR CODE DESCRIPTIONS

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 |
| 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. |
| 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. |

| Code | Meaning | Suggested Cause/Action |
|---|---|---|
| 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 Tx 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 |
| 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. |
| 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/SID |
| 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. (SC ☛ 0-08) |

| Code | Meaning | Suggested Cause/Action |
|---|---|---|
| 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. |
| 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 between ECM frames - G3 Switch 0A, bit 4 |
| 0-22♦ | The signal from the other end was interrupted for more than the acceptable modem carrier drop time (default: 200 ms) | • Check the line connection.<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 |
| 0-24♦ | Printer failure occurred while the memory was full during non-ECM reception; negative response returned | There is no memory space available, or substitute reception is disabled.<br>• Try asking the user to add optional extra memory. |

| Code | Meaning | Suggested Cause/Action |
|---|---|---|
| 0-29♦ | Data block format failure in ECM reception | Check for line noise or other line problems.<br>• Try receiving from another machine.<br>Replace the FCU. |
| 0-30♦ | The other terminal did not reply to NSS(A) in AI 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 |
| 0-32♦ | The other terminal sent a DCS, which contained functions that the receiving machine cannot handle. | • Check the protocol dump list.<br>• Ask the other party to contact the manufacturer. |
| 0-33♦ | DCR timer runs out without receiving certain amount of data. | • 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. |
| 0-52♦ | Polarity changed during communication | • Check the line connection.<br>Retry communication. |
| 0-70♦ | The 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 and not a fax modem.)<br>• A polling Tx file was not ready at the other terminal when polling rx was initiated from the calling terminal. |
| 0-74♦ | The calling terminal fell back to T.30 mode, because it could not detect ANSam after sending CI. | • The calling terminal could not detect ANSam due to noise, etc.<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. |
| 0-75♦ | The called terminal fell back to T.30 mode, because it could not detect a CM in response to ANSam (ANSam timeout). | • The terminal could not detect ANSam.<br>• Check the line connection and condition.<br>• Try receiving a call from another V.8/V.34 fax. |
| 0-76♦ | The calling terminal fell back to T.30 mode, because it could not detect a JM in response to a CM<br>(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♦ | The called terminal fell back to T.30 mode, because it could not detect a CJ in response to JM<br>(JM timeout). | • The 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. |

| Code | Meaning | Suggested Cause/Action |
|---|---|---|
| 0-79♦ | The called terminal detected CI while waiting for a V.21 signal. | • Check for line noise or other line problems.<br>• If this error occurs, the called terminal falls back to T.30 mode. |
| 0-80♦ | The line was disconnected due to a timeout in V.34 phase 2 – line probing. | • The guard timer expired while starting these phases. Serious noise, narrow bandwidth, or low signal level can cause these errors.<br>If these errors happen at the transmitting terminal:<br>• Try making a call at a later time.<br>• Try using V.17 or a slower modem using dedicated Tx parameters.<br>• Try increasing the Tx level.<br>• Try adjusting the Tx cable equalizer setting.<br>If these errors happen at the receiving terminal:<br>• Try adjusting the rx cable equalizer setting.<br>• Try increasing the Tx level.<br>• Try using V.17 or a slower modem if the same error is frequent when receiving from multiple senders. |
| 0-81♦ | The line was disconnected due to a timeout in V.34 phase 3 – equalizer training. | |
| 0-82♦ | The line was disconnected due to a timeout in the V.34 phase 4 – control channel start-up. | |
| 0-83♦ | The line was disconnected due to a timeout in the V.34 control channel restart sequence. | |
| 0-84♦ | The line was disconnected due to abnormal signaling in V.34 phase 4 – control channel start-up. | • The signal did not stop within 10 s.<br>• Turn off the machine, then turn it back on.<br>• If the same error is frequent, replace the FCU. |
| 0-85♦ | The line was disconnected due to abnormal signaling in V.34 control channel restart. | • The signal did not stop within 10 s.<br>• Turn off the machine, then turn it back on.<br>• If the same error is frequent, replace the FCU. |
| 0-86♦ | The line was disconnected because the other terminal requested a data rate using MPh that was not available in the currently selected symbol rate. | • The other terminal was incompatible.<br>• Ask the other party to contact the manufacturer. |
| 0-87♦ | The control channel started after an unsuccessful primary channel. | • The receiving terminal restarted the control channel because data reception in the primary channel was not successful.<br>• This does not result in an error communication. |
| 0-88♦ | The line was disconnected because PPR was transmitted/received 9 (default) times within the same ECM frame. | • Try using a lower data rate at the start.<br>• Try adjusting the cable equalizer setting. |
| 1-00♦ | Document jam | • Incorrectly inserted document or unsuitable document type.<br>Check the ADF drive components and sensors. |
| 1-01♦ | Document length exceeded the maximum | • Try changing the maximum acceptable document length.<br>• Divide the document into smaller pieces.<br>• Check the ADF drive components and sensors.<br>**Cross reference**<br>• Max. document length - Scanner switch 00, bits 2 and 3 |

| Code | Meaning | Suggested Cause/Action |
|---|---|---|
| 1-02♦ | Shading error (Interval of original documents is too short) | • Check the ADF drive components and sensors. |
| 1-04♦ | Exposure (LED) lamp error (SC-101) | • Check the LED lamp (CIS) connection<br>• Replace the CIS or FCU |
| 1-08♦ | Shading error (no LED lamp turns on) | |
| 1-10♦ | Paper at the scan line when the power was turned on. | • Remove the paper.<br>• Check the scan line sensor. |
| 1-17♦ | Document jam in the feed-out area | • Clear any debris from the sensor actuator.<br>• Check the ADF drive components and sensors. |
| 1-20♦ | Paper did not reach the fusing exit at the end of printing | • Remove the paper.<br>• Check the printer drive components and sensors. |
| 1-21♦ | Paper present at the fusing exit after printing | |
| 1-30♦ | Paper ran out during printing | • Add paper in the cassette. |
| 1-34♦ | Paper ran out after printing | |
| 1-35♦ | Paper lift mechanism error at the 1st optional paper tray | • Check the printer drive components and sensors of optional paper tray. |
| 1-71♦ | The cover was opened or the cassette was pulled out during printing | • Close the cover or put back the cassette. |
| 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/ reconstruction error | • Turn off the machine, then turn it back on.<br>• Replace the FCU if the error occurs frequently. |
| 2-24 | JBIG ASIC error | |
| 2-25 | JBIG data reconstruction error (BIH) error | • JBIG data error.<br>• Check the remote terminal's JBIG function.<br>• Replace the FCU if the error occurs frequently. |
| 2-26 | JBIG data reconstruction error (Float marker error) | |
| 2-27 | JBIG data reconstruction error (End marker error) | |
| 2-50♦ | The machine resets itself for a fatal FCU system error | • If this is frequent, update the ROM, or replace the FCU. |
| 2-51♦ | The machine resets itself because of a fatal communication error | • If this is frequent, update the ROM, or replace the FCU. |
| 2-52♦ | Memory resource releasing error after communication | • Check the connection between FCU and NCU board. |

| Code | Meaning | Suggested Cause/Action |
|---|---|---|
| 3-30♦ | Mismatched specifications (rx capability) | • Check the receive capabilities requested from the other terminal. |
| 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>Change 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 re-send. |
| 4-10♦ | Communication failed because of an ID Code mismatch (Closed Network) or Tel. No./CSI mismatch (Protection against Wrong Connections) | • Get the ID Codes the same and/or the CSIs programmed correctly, then resend.<br>• The machine at the other end may be defective. |
| 5-00♦ | Data construction not possible | • Replace the FCU. |
| 5-01♦ | Data reconstruction not possible | |
| 5-10♦ | DCR timer expired | |
| 5-20♦ | Storage impossible because of a lack of memory | • Temporary memory shortage.<br>• Test the SAF memory.<br>• Replace the FCU board |
| 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 re-send the message.<br>• Replace the FCU board. |
| 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 board. |
| 5-30♦ | Mode table for the first page to be printed was not effective | • Replace the FCU or IC memory card. |
| 6-00♦ | G3 ECM - T1 time out during reception of facsimile data | • Try adjusting the rx cable equalizer.<br>• Replace the FCU or NCU. |
| 6-01♦ | G3 ECM - no V.21 signal was received | |
| 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<br>**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. |
| 9-00♦ | PIN code response because of printer SC error | • Fix and release the SC error |
| 9-02♦ | DMA receiving error (PLU) | • Replace the FCU. |
| 9-03♦ | Paper eject error at the last page (with image data) | • Check the printer drive components and sensors |
| 9-04♦ | Paper eject error at the last page (without image data) | |
| 9-05♦ | Paper eject error | |
| 9-07♦ | Paper non-feed or jam at the cassette entrance | • Check the clutch connectors.<br>• If the problem persists, replace the FCU and/or the high-voltage power supply board (power pack). |

| Code | Meaning | Suggested Cause/Action |
|---|---|---|
| 9-08♦ | Paper jam inside the development area | • Check the paper feed mechanism, clutch and sensors.<br>• If the problem persists, replace the FCU. |
| 9-09♦ | Paper jam in the fusing exit area | |
| 9-10♦ | Toner end detected | • Replace the cartridge. |
| 9-12♦ | Cover open detected during printing | • Close the cover, or check the cover sensors. |
| 9-13♦ | LD interlock error | • Replace the polygon motor<br>• Replace the LD unit |
| 9-14♦ | PSU overheat | • Check the machine's environment<br>• Replace the PSU |
| 9-17♦ | Charge corona unit failure (SC-302) | • If the problem persists, replace the FCU. |
| 9-20♦ | Laser diode failure (SC-322) | • Replace the LDDR<br>• If the problem persists, replace the FCU. |
| 9-22♦ | Fusing lamp failure (SC-54x, 55x) | • Check the thermistor, thermoswitch and thermofuse.<br>• Replace the fusing lamp.<br>• Replace the PSU.<br>• If the problem persists, replace the FCU. |
| 9-23♦ | Polygon mirror motor failure (SC-320) | • Replace the polygon motor.<br>• If the problem persists, replace the FCU. |
| 9-24♦ | Main motor failure (SC-500) | • Check the interlock switch.<br>• Replace the main motor.<br>• If the problem persists, replace the FCU. |
| 9-29♦ | Power pack error (SC-391, 401, 402) | • Check the connections<br>• Replace the power pack or FCU |
| 9-30 | Disk drive error (write) | • Check the connection of the memory card<br>• If the problem persists, replace the memory card and/or FCU. |
| 9-31 | Disk control error (close) | |
| 9-32 | Disk memory error (read) | |
| 9-33 | Fatal disk error | |
| 9-50♦ | Paper non-feed at the optional paper tray. | • Check if a recommended type of paper is used.<br>• Check if the paper guides are aligned to the paper correctly.<br>• Check the paper feed mechanism and sensors in the unit. |
| 9-51♦ | Jam at the paper exit of the upper paper feed unit. | • Check for a blockage in the paper feed path.<br>• Check the paper feed mechanisms inside the unit.<br>• Check if the sensor is defective. |
| 9-60♦ | Printer error occurs during reception | If substitute reception is switched off and a paper jam or other printer error occurs, the machine will terminate the reception.<br>• Check the printer mechanism. |
| 9-61♦ | Memory overflow occurs during reception | • Check the SAF. |
| 9-73♦ | TD sensor error (SC-390) | • Check the connection<br>• Replace the TD sensor |

| Code | Meaning | Suggested Cause/Action |
|---|---|---|
| 9-74♦ | Developer initialization error (SC-392) | • Check if the heat seal from the replacement PCU is not removed.<br>• Replace the ID sensor<br>• Replace the TD sensor<br>• Replace the PCU<br>• Check if the right door is closed firmly |
| 9-80♦ | By-pass feed - paper non-feed or jam at the entrance | • Check the registration roller and sensor.<br>• Check the paper feed mechanism and sensors. |
| 9-81♦ | By-pass feed - paper length exceeds the maximum limit (600 mm) | • Check the paper feed mechanism and sensors. |
| 9-82♦ | By-pass feed - paper non-feed or jam at the entrance | • Same as 9-80 |
| 9-84♦ | Paper non-feed or jam at the cassette entrance | • Same as 9-07 |
| 22-00♦ | Original length exceeded the maximum scan length | • Divide the original into a few pages.<br>• Check the resolution used for scanning. Lower the scan resolution if possible.<br>• Add optional page memory. |
| 22-01♦ | Memory overflow while receiving | • Wait for the files in the queue to be sent.<br>• Delete unnecessary files from memory.<br>• Transfer the substitute reception files to an another fax machine, if the machine's printer is busy or out of order.<br>• Expand SAF memory. |
| 22-02♦ | Tx or rx job stalled due to line disconnection at the other end | • The job started normally but did not finish normally; data may or may not have been received fully.<br>• Restart the machine. |
| F0-xx♦ | V.34 modem error | • Replace the FCU. |

# 4.3 ELECTRICAL COMPONENT DEFECTS

## 4.3.1 SENSOR/SWITCH OPEN ERRORS

| Sensor | CN | Symptom |
|---|---|---|
| Registration Sensor | FCU 27-2♦ | Paper jam reported. |
| Paper End Sensor | FCU 29-2♦ | Paper-end error when attempting to feed from main tray. Fax key blinks red. |
| By-pass Paper End Sensor | FCU 30-2♦ | “Paper End” message when attempting to feed from by-pass tray. . |
| Exit Sensor | FCU 28-2♦ | Paper jam reported. |
| Image Density (ID) Sensor | FCU 32-1♦ | Toner control process changes. |
| Toner Density (TD) Sensor | FCU 23-3♦ | “Reset PCU Correctly” message appears, and Caution indicator stays on. |
| ADF Guide Open Sensor | FCU 31-4 | “Close ADF” message appears, and Caution indicator stays on. |
| ADF Original Set Sensor (S1) | FCU 31-2 | Fails to detect originals at ADF. |
| ADF Registration Sensor (S2) | FCU 37-2 | Document jam reported. |
| Front/Right Door Switch | FCU 14♦ | “Close Front/Right Cover” message appears, and the Caution indicator stays on. |

## 4.3.2 BLOWN FUSE CONDITIONS

All of these fuses are on the power supply board.

| Fuse | Rating | | At main switch ON |
|---|---|---|---|
| | 120 V | 220 - 240 V | |
| FU1♦ | 12 A/125 V | 6.3 A/250 V | No response. |
| F2♦ | 1 A/250 V | 1 A/250 V | Anti-condensation heater (option) does not turn on. |
| F3♦ | 4 A/250 V | 2 A/250 V | No response. |
| F201♦ | 5 A/250 V | 5 A/250 V | No response. |

# 5. SERVICE TABLES

## 5.1 USING SERVICE PROGRAM MODE (SP MODE)

Use the Service Program mode (SP mode) to check electrical data, change operating modes, and adjust values.

**NOTE:** In the procedures below, the [Energy Saver/Clear Modes] key symbol in text represents the "Energy Saver/Clear Modes" key on the operation panel.

### *Accessing SP Mode*

#### *How to enter SP Mode*

1. Key in the following sequence.
   [Energy Saver/Clear Modes] → 1 → 0 → 7 → C/⊘
   - Hold the C/⊘ key down for longer than 3 seconds.
2. The LCD displays a menu.

```
[Service P-Mode]  No._
1 Copy 2 Fax 3 Printer
```

H555S001.WMF

**NOTE:** Installed applications appear on the menu as follows: "1.Copy", "2. Fax", "3. Printer". If an application is not installed, the corresponding item does not appear.

3. Press the number for the application mode you need. (For example, press "1" to select the copier application mode.) The selected SP mode display appears on the LCD, as shown.

```
SP H5557220C E1 class1
No.1 Feed
```

H555S002.WMF

#### *How to Exit SP Mode*

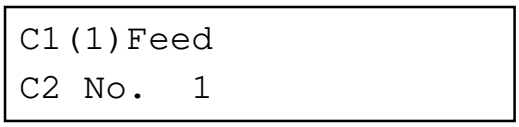
Press [Energy Saver/Clear Modes] or the *Cancel* key one or more times to return to the standby-mode display.

### *Accessing Copy Mode from within SP Mode*

1. Press the ⊙ key.
2. Select the appropriate copy mode and make trial copies.
   **NOTE:** The *User Tools* LED flashes while you are using copy mode from within SP mode.
3. To return to SP mode, press [Energy Saver/Clear Modes].

Service Tables

### *How to Select a Program Number*




H555S003.WMF

Each SP number consists of two or three levels ("classes"). To select a program, you need to enter each class number in sequence.

1. Enter the first-class program number with the numeric keypad (or change the number using the *Left* **<** or *Right* **>** cursor key), and then press the R/# key or the *OK* key.
2. Enter the second-class program number with the numeric keypad (or the *Left* **<** or *Right* **>** cursor key), and press R/# or *OK*.
3. To select a third-class program: select the second-class number and then use the *Left* **<** or *Right* **>** cursor key.
4. To return to the next higher class, press ⌦.

### *To Input a Value or Setting*

1. Enter the required program mode as explained above.
2. Enter the required setting using the numeric keys, and then press R/# or the OK key.

**NOTE:** 1) If you forget to press R/# or OK, the previous value remains in effect.
2) If necessary, use the •/* key to select "+" or "–" when entering the value.

## 5.1.1 SP MODE TABLES

**NOTE:** 1) An asterisk (*) after the SP number means that this SP's value is stored in the SRAM. If you do a RAM reset, all these SP settings will be returned to their factory defaults.

2) In the Function/[Setting] column:
- Comments are in *italics*.
- The setting range is enclosed in brackets, with the default setting written in **bold**.
- **DFU** stands for **D**esign/**F**actory **U**se only. Values marked **DFU** should not be changed.
- **IAJ** means that you should refer to Section 3.13 (“Replacement and Adjustment – Copy Image Adjustments”) for more information.
- **IP** means that you should refer to Section 6.11, (Detailed Descriptions - Image Processing").
- The reference to the “Original Type” key in the text denotes the “Halftone” key. (There is no “Original Type” key on the operation panel of this machine.)

### *SP1-XXX (Feed)*

| 1 | Mode Number/Name | | Function/[Setting] |
|---|---|---|---|
| 001* | Leading Edge Registration | | |
| | 1♦ | Paper tray (copy, fax) | Adjusts the plotter leading-edge registration from each paper feed station. Use the Trimming Area Pattern (SP5-902, No.10) to make the adjustment.)<br>[–9.0 ~ 9.0 / **0.0** / 0.1 mm/step] **IAJ**<br>• *Specification: 0 ± 2 mm*<br>• *Use the # key to select “+” or “–” when entering the value.* |
| | 2♦ | By-pass (copy fax) | |
| | 4♦ | Paper tray (optional printer) | |
| | 5♦ | By-pass (optional printer) | |
| 002* | Side-to-Side Registration | | |
| | 1♦ | 1st tray | Adjusts the printing side-to-side registration from each paper feed station. (Use Trimming Area Pattern (SP5-902, No.10) to make the adjustment.) The 2nd-tray adjustment is for the optional tray.<br>[–9.0 ~ 9.0 / **0.0** / 0.1 mm/step] **IAJ**<br>• *Specification: 0 ± 2 mm*<br>• *Use the # key to select “+” or “–” when entering the value.* |
| | 2♦ | 2nd tray | |
| | 5♦ | By-pass | |
| 003* | Paper Feed Timing | | |
| | 1♦ | 1st tray | Adjusts the amount of buckle the paper feed clutch applies to the paper (by adjusting delay between triggering of the registration sensor and activation of registration clutch). A higher setting applies greater buckling.<br>[0 ~ 10 / **5** / 1 mm/step] |
| | 2♦ | Other trays | |
| | 3♦ | By-pass | |
| 106 | Fusing Temperature Display | | |
| | 1♦ | | Displays the fusing temperature.<br>*Press ⊡ to exit the display.* |

Service Tables

| 1 | Mode Number/Name | | Function/[Setting] |
|---|---|---|---|
| 109 | Fusing Nip Band Check | | |
| | 1♦ | | Checks the fusing nip band.<br>[**1 = No** / 0= Yes] **DFU** |
| 902 | AC Frequency Display | | |
| | 1♦ | | Displays the fusing lamp power control frequency (as detected by the zero cross signal generator), in Hz. |

## *SP2-XXX (Drum)*

| 2 | Mode Number/Name | | Function/[Setting] |
|---|---|---|---|
| 001 | Charge Bias Adjustment | | |
| | 1*♦ | Image area | Adjusts the voltage applied to the charge roller when printing.<br>[–1800 ~ –1500 / **–1650** / 1 V/step]<br>*The actually applied voltage changes automatically as charge roller voltage correction is carried out. The value you set here becomes the base value on which this correction is carried out.* |
| | 2*♦ | ID sensor pattern | Adjusts the voltage applied to the charge roller when generating the ID sensor pattern.<br>[0 ~ 400 / **200** / 1 V/step]<br>*The actual charge-roller voltage is obtained by adding this value to the value of SP2-001-1.* |
| | 3♦ | Manual | Use this feature to adjust the voltage to the image area when diagnosing a problem.<br>[–1900 ~ 0 / **0** / 1 V/step]<br>• *The value is applied as an offset to the value set by SP2-001-001.*<br>• *This setting is lost at power-off.* |
| 005* | Charge Bias Correction | | |
| | 1♦ | Vsdp min. | Sets lower limit for application of charge-bias correction.<br>[0 ~ 100 / **90** / 1%/step]<br>*Correction is applied if Vsdp/Vsg is less than this value.* |
| | 2♦ | Vsdp max. | Sets upper limit for application of charge-bias correction.<br>[0 ~ 100 / **95** / 1%/step]<br>*Correction is applied if Vsdp/Vsg is greater than this value.* |
| | 3♦ | Correction step | Sets the correction step (the amount of voltage added or subtracted for each correction).<br>[0 ~ 200 / **50** / 1V/step] |

| 2 | Mode Number/Name | | Function/[Setting] |
|---|---|---|---|
| 201* | Development Bias Adjustment | | |
| | 1♦ | Image area | Adjusts the voltage applied to the development roller when printing.<br>[–800 ~ 0 / **–600** / 1 V/step]<br>• *This can be adjusted as a temporary measure if faint copies are being produced due to an aging drum.* |
| | 2♦ | ID sensor pattern | Adjusts the voltage applied to the development roller when generating the ID sensor pattern.<br>[**0 = N (200 V)** / 1 = H (240 V) / 3 = HH (280 V) / 4 = LL (120 V)]<br>*The actual voltage applied is this setting - 600 V.* |
| 213* | Copies after Toner Near End | | |
| | 1♦ | | Sets the number of copy/print/fax pages that can be made after toner near-end has been detected.<br>[**0 = 50 pages** / 1 = 20 pages]<br>*Reduce the number of pages if the user normally makes copies with a high image ratio.* |
| 214♦ | Initial Developer Running | | |
| | | | Initializes the developer (by forced churning).<br>[**0 = No** / 1 = Yes]<br>• *To start forced developer initialization, you must turn the machine off and back on.*<br>• *Since the machine automatically initializes the developer when a replacement PCU is installed, there is no need to carry out this SP when replacing the PCU.*<br>• *If the machine has not been used for a long period of time, prints may have a dirty background. In this case, use this SP to mix the developer.* |
| 220 | TD Sensor Value Display | | |
| | 1♦ | | Displays:<br>a) Current TD sensor output value (Vt)<br>b) Target TD output value [Vts corrected by ID sensor output]<br>• *The TD sensor output value changes every copy. If a > b, toner is supplied to the development unit.*<br>• *Press ⌧ to exit the display.* |
| 221 | ID Sensor Display | | |
| | 1♦ | | Displays Vsg, Vsp, Vsdp, Vt, and the ID sensor's PWM output. Use these values to check the operational status of the ID sensor.<br>[**0 = No** / 1 = Yes]<br>• *This machine has no SC code for ID sensor errors. If imaging problems occur (such as dirty background), use this SP to determine whether the problem is with toner density control.*<br>• *You can use SP7-911 to check the number of ID sensor errors that have occurred. (☛ 5.1.10)* |

| 2 | Mode Number/Name | | Function/[Setting] |
|---|---|---|---|
| 301* | Transfer Current | | |
| | 1♦ | Normal paper | Adjusts the current applied to the transfer roller when feeding from a paper tray.<br>[0 = –2 μA / **1 = 0 μA** / 2 = +2 μA / 3 = +4 μA]<br>• *Use a high setting if the user normally feeds relatively thick paper (within spec).*<br>*(☛ 6.14.2, "Image Transfer Current Timing")* |
| | 2♦ | Thick/Thin paper | Adjusts the current applied to the transfer roller when feeding from the by-pass tray.<br>[0 = –2 μA / **–1 = 0 μA** / 2 = +2 μA / 3 = +4 μA]<br>• *Use a high setting (a) if the user normally feeds relatively thick paper, or (b) if waste toner is re-attracted from the drum (which can occur when using transparencies).*<br>*(☛ 6.14.2, "Image Transfer Current Timing")* |
| | 4♦ | Cleaning | Adjusts the current applied to the transfer roller for roller cleaning.<br>[–10 ~ 0 / **–4** / 1 μA/step]<br>• *Increase the current if toner remains on the roller after cleaning. (Remaining toner may cause dirty background on the rear side.)*<br>*(☛ 6.14.2, "Image Transfer Current Timing")* |
| | 5♦ | Manual (Temporary) | **DFU** |
| 906* | Tailing Correction | | |
| | 1♦ | Shift value | When printing multiple copies, the machine will shift the image writing position by the specified amount after every *n* copies, where *n* is given by SP2-906-2.<br>[0.0 ~ 1.0 / **0.0** / 0.1 mm/step]<br>*When making many copies of an original that contains vertical lines (such as in tables), the paper may not separate correctly. This can cause tailing images (ghosts of the vertical lines continuing past the bottom of the table). This SP corrects the problem by shifting the paper after every specified number of copies.* |
| | 2♦ | Interval | Changes the interval for the image shift specified by SP2-906-1.<br>[1 ~ 10 / **1** / 1 page/step]<br>*If the setting is n, the machine executes the shift after the first n copies, then shifts back to standard position after the next n copies, and so on.* |
| 908 | Forced Toner Supply | | |
| | 1♦ | | Forces the toner bottle (or toner hopper) to supply toner to the toner supply unit. Press "1" to start.<br>[**0 = No** / 1 = Yes]<br>*The machine supplies toner over a total of 15 seconds (1.5 second on, 1.5 second off, repeated 5 times).* |

| 2 | Mode Number/Name | | Function/[Setting] |
|---|---|---|---|
| 922* | Toner Supply Time | | |
| | 1♦ | | Adjusts the toner supply motor ON time.<br>[0.1 ~ 5.0 / **0.6** / 0.1 s/step]<br>• *Raising this value increases the toner supply motor ON time. Set to a high value if the user tends to make many copies having high proportions of solid black image areas.*<br>*(☛ 6.11.4, "Toner Density Control")* |
| 926* | Standard Vt | | |
| | 1♦ | | Adjusts Vts (the reference voltage used for new developer). The TD sensor output is adjusted to this value during the TD sensor initial setting process.<br>[0.00 ~ 3.3 / **1.25** / 0.01 V/step] **DFU** |
| 927* | ID Sensor Control | | |
| | 1♦ | | Selects whether the ID sensor is or is not used for toner density control.<br>[0 = No / **1 = Yes**]<br>*This value should normally be left at "1". If the value is "0", dirty background may occur after long periods of non-use.* |
| 928 | Toner End Clear | | |
| | 1♦ | | Clears the toner end condition without adding new toner. Select "1" then press the # key to clear the condition.<br>[**0 = No** / 1 = Yes]<br>*Setting this to "1" will clear the following:*<br>• *Toner end and near-end indicator*<br>• *Toner near-end counter*<br>• *Toner end counter (sheets)*<br>• *Toner end counter (level)*<br>*This function should generally not be used. If you clear the toner end condition without adding new toner, there is a risk that the drum may eventually begin to attract carrier after toner runs out. This attracted carrier may damage the drum.* |
| 929* | Vref Limits | | |
| | 1♦ | Upper | Adjust the upper Vref limit.<br>[0.50 ~ 3.50 / **1.80** / 0.01V/step] |
| | 2♦ | Lower | Adjust the lower Vref limit.<br>[0.00 ~ 3.50 / **0.45** / 0.01V/step] |
| 995* | ID Detection Interval | | |
| | 1♦ | | Sets the interval after which ID detection will be carried out at start of printing (relative to previous ID detection).<br>[0 ~ 999 / **480** / 1 minute/step]<br>*Higher values increase the chance of dirty background. Lower values increase the frequency at which the machine makes ID sensor patterns, increasing the chance that the transfer roller (and rear side of paper) will become dirty.* |

| 2 | Mode Number/Name | | Function/[Setting] |
|---|---|---|---|
| 998* | Main Scan Magnification (Printing) | | |
| | 1♦ | | Adjusts the magnification along the main scan direction, for all print modes (copy, fax, printing).<br>[–0.5 ~ +0.5 / **0.0** / 0.1%/step] **IAJ**<br>• *Use the # key to select "+" or "–" when entering the value.* |

## *SP4-XXX (Scanner)*

| 4 | Mode Number/Name | | Function/[Setting] |
|---|---|---|---|
| 012* | Erase Margin Adjustment | | |
| | 3 | Left side | Adjusts the left edge erase margin.<br>[0.0 ~ 9.0 / **2.0** / 0.1 mm/step] **IAJ** |
| | 4 | Right side | Adjusts the right edge erase margin.<br>[0.0 ~ 9.0 / **2.0** / 0.1 mm/step] **IAJ** |
| 902*♦ | Exposure Lamp ON | | |
| | | | Lets you turn the exposure lamp on and off.<br>[0 = Lamp Off / 1 = Lamp On]<br>• *To turn the exposure lamp on, press "1". To turn the lamp off, press "0". To exit, press ⊡ or Cancel to exit.*<br>• *The scanner moves to the shading position and remains there until you exit the SP.*<br>• *The display also shows the minimum and maximum white-plate values (updated every 0.5 sec.).* |
| 913* | DF Shading Interval Time | | |
| | 1♦ | | Adjusts the interval used for shading processing in DF mode.<br>[0 ~ 255 / **30** / 1s/step]<br>• *Setting this value to 255 will switch off auto-shading between pages of DF copy jobs.*<br>• *Light and heat may affect scanner response. Reduce this setting if copy quality indicates that the white level is drifting during DF copy jobs.* |

| 4 | Mode Number/Name | Function/[Setting] |
|---|---|---|
| 921* | Image Adjustment Selection | |
| | 1 | You must first use this SP to select the processing mode (pattern) that you wish to set adjustment parameters for with SP codes SP4-922 to SP4-966. **IP**<br><br>There are seven modes ("Pattern 1" to "Pattern 7"), as follows.<br>1: Text Copy. Copy default. Normal text with error diffusion.<br>2: Text Fax. Fax default. Sharp text with error diffusion.<br>3: Fax Special. Dropout with fixed binary processing.<br>4: Photo Normal. Fax and copy default. Uses error diffusion.<br>5: Photo Smooth. Uses dithering.<br>6: Text Printer. Printed characters.<br>7: Photo Printer. Printed photographs.<br>8~11: Not used<br><br>First use the right or left cursor key to select the mode ("Pattern 1" to "Pattern 7"), and then press "1" to enable adjustment for that mode. Press *OK*, and then use SP4-922 to 4-966 to make adjustments for that mode.<br>• *If you select "0", SPs 4-922 to 966 will not operate.* |
| 922*♦ | Scanning Density Adjustment | |
| | | Selects whether the linear gamma table or the 16-bit gray mode gamma table is used for the mode selected for adjustment with SP4-921.<br>[0~2 / **0** / 1] **IP**<br>0: Default gamma table<br>1: Linear gamma table (= OFF)<br>2: Not used |
| 923*♦ | Image Density Adjustment | |
| | | Shifts the default setting of scanning density to the left or right. Note that there is no density selector on the operation panel.<br>[–1 ~ +1 / 0 / 1] **IP**<br>**–1:** Lighter<br>**0:** Normal<br>**1:** Darker |
| 925*♦ | Sharpness Adjustment | |
| | | Allows fine adjustment of the image sharpness processing (MTF and smoothing coefficients) for the mode selected with SP4-921.<br>[–2 ~ 2 / **0** / 1 step] **IP**<br>**–2: Soft**<br>**–1: Soft (l**ight)<br>**0:** Normal<br>**1: Sharp**<br>2: Sharp |

Service Tables

| 4 | Mode Number/Name | Function/[Setting] |
|---|---|---|
| 926* | Texture Cleaning Threshold Level (Effective only with Error Diffusion) | |
| | | Adjusts the texture removal threshold for the mode selected with SP4-921.<br>[0 ~ 4 / **0** / 1 step] **IP**<br>0: The default value for the selected mode is used.<br>1: Fixed threshold.<br>2: Varying threshold (low variance)<br>3: Varying threshold (medium variance)<br>4: Varying threshold (high variance) |
| 927*♦ | Line Width Correction | |
| | | Adjusts the line width correction algorithm for the mode selected with SP4-921. Positive settings produce thicker lines; negative settings produce thinner lines.<br>[–2 ~ 2 / **0** / 1/step] **IP** |
| 928*♦ | Independent Dot Erase | |
| | | Selects the dot erase level for the mode selected with SP4-921. Higher settings provide greater erasure.<br>[–2 ~ 2 / **0** / 1/step] **IP** |
| 930* | Binary Data Select | |
| | | Determines how data is processed when picture/text separation is applied (Standard and Detail resolution only; picture/text separation does not work with Fine resolution).<br>[0 ~ 6 / **0**/ 1/step] **IP**<br>Text areas (one-bit data):<br>0: Default for the selected mode<br>1: All data treated using smoothing<br>2: Mixture of raw data and smoothing<br>3: All data treated using MTF<br>4: All data treated using MTF<br>5: Mixture of raw data and MTF<br>6: All data treated using MTF<br>Photo areas:<br>0: Default for the selected mode<br>1: All data treated using smoothing<br>2: Mixture of raw data and smoothing<br>3: All data treated using smoothing<br>4: All data output as raw data<br>5: Mixture of raw data and MTF<br>6: All data treated using MTF |
| 931* | Uneven Dot Adjustment (Vertical black line correction) | |
| | | Selects the bad-dot (pixel) correction method used by the mode selected with SP4-921.<br>[0 ~ 5 / **0** / 1 step] **IP**<br>0: Default for the selected mode<br>1: Off<br>2: 1-dot correction<br>3: 2-dot correction<br>4: 3-dot correction<br>5: 4-dot correction |

| 4 | Mode Number/Name | Function/[Setting] |
|---|---|---|
| 932* | Auto Density Determination | |
| | | This setting determines whether standard or more detailed scanning is required, based on the content of the image. This feature is enabled only when Auto is selected.<br>[–2 ~ 2 / **0** / 1/step] **IP**<br>–2: Most likely to recognize as standard mode.<br>–1: More likely to recognize as standard mode.<br>0: Normal<br>1: Less likely to recognize as standard mode.<br>2: Least likely to recognize as standard mode.<br>*Disabled for copy mode, immediate (non-memory) fax transmission, and parallel memory fax transmission.* |
| 933* | Blank-Page Sensor Level Adjustment | |
| | | Attempts to recognize the scanned page as a blank page and outputs a warning on the operation panel LCD when a blank page is detected. This SP adjusts the sensitivity of blank page recognition.<br>[-2 ~ 2 / **0** / 1/step] **IP**<br>–2: Least likely to recognize a blank page.<br>–1: Less likely recognize a blank page.<br>0: Normal<br>1: More likely to recognize a blank page.<br>2: Most likely to recognize a blank page. |
| 934*◆ | Peak Level | |
| | | Adjusts the detection level for the white peak prior to start of scanning, for the mode selected with SP4-921.<br>[–128 ~ 127 / **0** / 1/step] **IP**<br>Text modes (Text normal, Text sharp and Dropout): The applied peak becomes (detected peak ± this setting) x about 60%<br>Photo modes (Photo normal and Photo smooth): The applied peak becomes (detected peak ± this setting). |
| 935*◆ | AE [Auto Exposure] Check Speed | |
| | | Adjusts the white-peak checking (tracking) speed for the mode selected with SP4-921.<br>[–2 ~ 2 / **0** / 1/step] **IP**<br>This SP is only effective in Text modes (Text normal, Text Sharp and Dropout).<br>*A negative setting reduces the speed; a positive setting increases the speed.* |
| 936*◆ | Peak Offset | |
| | | Sets the peak correction offset for the mode selected with SP4-921.<br>[–2 ~ 2 / **0** / 1 step] **IP**<br>*A negative setting produces better reproduction of low-contrast originals. A positive setting provides better elimination of dirty background.* |

| 4 | Mode Number/Name | Function/[Setting] |
|---|---|---|
| 961*♦ | Plotter (Printer Engine) Mode Select | |
| | | Selects the plotter (printer engine) mode used by the processing mode selected with SP4-921.<br>[1~3 / **1** / 1 step] **IP**<br>1 = Normal (no correction)<br>2 = Toner save<br>3 = FCI (Fine Character Adjustment)<br>*The default varies according to the processing mode selected with SP4-921.* |
| 962*♦ | Marking Image Density Conversion | |
| | | Selects the image density conversion for the processing mode selected with SP4-921.<br>[–2 ~ 2 / **0** / 1 step] **IP**<br>–2: Black reduction 2<br>–1: Black reduction 1<br>0: Normal (Off)<br>1: Black enlargement 1<br>2: Black enlargement 2<br>*A setting of "0" switches conversion OFF. Negative settings reduce the black marking size, while positive values magnify it.* |
| 963*♦ | Marking Image Density Setting | |
| | | Sets the density adjustment type for the mode selected with SP4-921.<br>[1 ~ 5 / **0** / 1/step] **IP**<br>0: The selected mode's default value is used.<br>1: Distortion prevention<br>2: Distortion prevention and jagged edge correction<br>3: Normal<br>4: Jagged edge correction (light)<br>5: Jagged edge correction (heavy) |
| 964*♦ | (Spot) Independent Dot Enhancement Select | |
| | | Selects the emphasis used for lone dots, for the mode selected with SP4-921.<br>[–2 ~ 2 / **0** / 1step] **IP**<br>☛ 6.11.5 |
| 965*♦ | Toner Save Level | |
| | | Sets the toner save level for the mode selected with SP4-921.<br>[0 ~ 4 / **0** / 1/step] **IP**<br>0: Default for the selected mode<br>1: Thin lines<br>2: Mask 1 (with edge detection)<br>3: Mask 2 (no edge detection)<br>4: Mask 3 (with edge detection) |
| 966*♦ | Smoothing Select | |
| | | Selects whether smoothing is used for the mode selected with SP4-921.<br>[0 ~ 2 / **0** / 1/step] **IP**<br>0: Default for the selected mode<br>1: OFF<br>2: ON |

## *SP5-XXX (Mode)*

| 5 | Mode Number/Name | | Function/[Setting] |
|---|---|---|---|
| 001♦ | All Indicators On | | |
| | | | Sets on all indicators on the operation panel, and causes the display to blink (empty for five second, all pixels black for five seconds).<br>*After checking, press ⊡ or Cancel to exit.* |
| 501* | PM Alarm Mode | | |
| | 1♦ | Interval | Sets the base PM interval.<br>[1 ~ 255 / **45** / 1K copies/step]<br>*This setting is meaningful only if SP5-501-2 is set to "1".* |
| | 2♦ | On/Off | Enables/disables the PM alarm for the total number of prints, copies, and faxes.<br>[0 = Disable / **1 = Enable**] |
| 801♦ | Memory All Clear | | |
| | | | Resets all SP/UP settings and values to their defaults, with the exception of plug-and-play settings (SP5-907), total print counters (SP7-003), and the serial number setting (SP5-811). *(☛ 5.1.5)*<br>[**0 = No** / 1 = Yes]<br>• *Before clearing the SRAM, be sure to output an SMC printout of all current SRAM content. (☛ SP5-992).*<br>• *This SP mode should generally not be used.* |
| 803♦ | Input Check | | |
| | | | Displays the signals being received from a selected sensor or switch. *(☛ 5.1.2)*<br>*Press ⊡ to exit the program.* |
| 804♦ | Output Check | | |
| | | | Turns on a selected electrical component for test purposes. |
| 810♦ | SC Code Reset | | |
| | | | Resets all level-A service call conditions, such as fusing errors.<br>[**0 = No** / 1 = Yes]<br>• *After selecting "1", hold down the Halftone key and press the OK key (or the # key) to execute the reset. If the reset succeeds, the machine reboots. If it fails, the display shows "Error!!!".*<br>*(☛ 4.1, "Service Call Conditions")* |
| 811*♦ | Serial Number Input | | |
| | | | Used to input the machine serial number (normally done at the factory). This is the serial number printed on SMC reports. *(☛ 5.1.9)* |
| 824♦ | SRAM Data Upload | | |
| | | | Uploads SP and UP settings from the machine's SRAM to a flash memory card. *(☛ 5.1.8)*<br>[**0 = No** / 1 = Yes]<br>• *This SP is effective only if a flash memory card has been plugged into the machine's card slot.* |

Service Tables

| 5 | Mode Number/Name | Function/[Setting] |
|---|---|---|
| 825♦ | SRAM Data Download | |
| | | Downloads SP mode data from a flash memory card to the machine's SRAM. *(☛ 5.1.8)*<br>[**0 = No** / 1 = Yes]<br>• *This SP is effective only if a flash memory card has been plugged into the machine's card slot.* |
| 826♦ | Program Upload | |
| | | Uploads the system program from the machine's SRAM into the flash memory card plugged into the machine's card slot. *(☛ 5.1.7)*<br>[**0 = No** / 1 = Yes]<br>• *This SP is effective only if a flash memory card has been plugged into the machine's card slot.* |
| 827♦ | Program Download | |
| | | Downloads the system program from a flash memory card to the machine's SRAM. *(☛ 5.1.7)*<br>[**0 = No** / 1 = Download first 2MB / 2= Download last 2MB]<br>• *This SP is effective only if you have booted the machine from a flash memory card.* |
| 837♦ | Program Checksums | |
| | | Displays checksums of the contents of the machine's SRAM.<br>• *The screen shows three check sums: "SUM" (total checksum, "B" (boot sum), and "M" (main sum).*<br>• *If you have used SP5-827 to download new firmware, be sure to reboot the software before running this SP. (If you don't reboot, the screen will show checksums for the previous firmware.)* |
| 906* | Exhaust-Fan Control Timer | |
| | 1♦ | Inputs the fan control time.<br>[30 ~ 120 / **30** / 1 s/step]<br>*The fan maintains existing speed for the specified time before slowing or stopping (after occurrence of an SC or following entry into warm-up, standby, or low-power mode).* |
| 907*♦ | Plug & Play Setting | |
| | | Selects the brand name and production name for the Plug and Play function (for Windows 95 and up). These names are registered in the SRAM. If the SRAM becomes defective, these names should be re-registered.<br>• *Use the Right or Left cursor key to scroll through the list of brand names. To select a brand name, press the Halftone key and the OK (or ⊕) key at the same time. The LCD displays an asterisk (*) next to the number of the currently selected brand name.*<br>• *After displaying any of the brand names, you can view the corresponding production name by holding down the Darker key. (If the production name is too long to fit on the screen, you can view the rest of the name by holding down both the Darker and Lighter keys).*<br>• *To exit, press ⌧ or the Cancel key.* |

| 5 | Mode Number/Name | | Function/[Setting] |
|---|---|---|---|
| 912* | PCU Alarm | | |
| | 1♦ | Alarm Display On/Off | Selects whether or not the machine will display a "Replace PCU" warning when the PCU alarm counter reaches the interval set by SP912-2.<br>[**0 = Display** / 1 = Do not display] |
| | 2♦ | Interval | Sets the PCU Alarm interval (count) at which a "Replace PCU" warning occurs.<br>[1 ~ 255 / **45** / 1,000 sheets/step] |
| 913 | UP Mode Data Reset | | |
| | 1♦ | | Resets the user tools settings (with the exception of the copy user codes and copy user code counters).<br>[**0 = No** / 1 = Yes]<br>• *This operation is equivalent to executing a System Reset with the User Tools.*<br>• *After selecting "1", hold down the Halftone key and press the OK key (or # key) to execute the reset. If the reset is successful, the display shows "Action completed". If the reset fails, the display shows "Error!!!"* |
| 991* | Debug Monitor Mode | | |
| | 1♦ | | [0 ~ 3 / **0** / 1/step] **DFU** |
| 992♦ | SMC Printing | | |
| | | | Prints out machine data. *(☛ 5.1.4)*<br>[**0 = No** / 1 = SP settings / 2 = All / 3 = Memory] |

Service Tables

## *SP6-XXX (Peripherals)*

| 6 | Mode Number/Name | | Function/[Setting] |
|---|---|---|---|
| 006 | ADF Registration | | |
| | 2♦ | Leading Edge | Adjusts the leading edge registration for DF mode.<br>[–5.0 ~ +5.0 / **0.0** / 0.1 mm/step] **IAJ**<br>0.1 mm/step<br>*Use the * key to select "+" or "–" when entering the value.* |
| | 3♦ | Trailing Edge Erase | Adjusts the trailing edge erase margin for DF mode.<br>[–3.0 ~ +3.0 / **–1.0** / 0.1 mm/step] **IAJ**<br>*Use the * key to select "+" or "–" when entering the value.* |
| 009♦ | ADF Free Run | | |
| | | | Performs a DF free run .<br>[**0 = No** / 1 = Yes]<br>• *For details about free runs: ☛ 5.1.6.*<br>• *After selecting "1", press OK or # twice to start the run. Press C to stop.* |

| 6 | Mode Number/Name | Function/[Setting] |
|---|---|---|
| 910◆ | ADF/Printer Free Run | |
| | | Performs a free run of the DF and printer.<br>[**0 = No** / 1 = Yes]<br>• *For details about free runs: ☛ 5.1.6.*<br>• *After selecting "1", press OK or # twice to start the run. Press C to stop.* |

### *SP7-XXX (Data Log)*

| 7 | Mode Number/Name | | Function/[Setting] |
|---|---|---|---|
| 002* | Total Original Counter | | |
| | 1◆ | All Modes | Displays the total number of scanned originals (total). |
| | 2◆ | Copy | Displays total number of scanned originals (copy mode only). |
| | 3◆ | Fax | Displays total number of scanned originals (fax mode only). |
| 003 | Total Print Counter | | |
| | 1◆ | All Modes | Displays the total number of prints (total). |
| | 2*◆ | Copy | Displays the total number of prints (copier mode). |
| | 3*◆ | Fax | Displays the total number of prints (fax mode). |
| | 4*◆ | Printer | Displays the total number of prints (printer mode). |
| 101* | Copy Counter – Paper Size | | |
| | 1◆ | A4 | Displays the total number of copies by paper size. |
| | 2◆ | B5 | |
| | 3◆ | LG | |
| | 4◆ | LT | |
| | 5◆ | HLT | |
| | 6◆ | Others | |
| 204* | Copy Counter – Paper Tray | | |
| | 1◆ | 1st | Displays the total number of sheets fed from each paper feed station. |
| | 2◆ | 2nd | |
| | 3◆ | By-pass | |
| 205* | Total ADF Counter | | |
| | 1◆ | | Displays the total number of originals fed by the DF. |
| 401* | Total SC Counter | | |
| | 1◆ | | Displays the total number of logged SC codes. |
| 402* | SC Type Counter | | |
| | 1◆ | | Displays the total number of each type of logged SC code. |
| 501* | Total Jam Counter | | |
| | 1◆ | | Displays the total number of jams (copy paper + original). |
| 502* | Total Paper Jam Counter | | |
| | 1◆ | | Displays the total number of copy paper jams. |
| 503* | Total Original Jam Counter | | |
| | 1◆ | | Displays the total number of original jams. |

| 7 | Mode Number/Name | | Function/[Setting] |
|---|---|---|---|
| 504* | Jam Counter – by Location | | |
| | 1♦ | "A" jams | Displays the total number of copy paper jams by location. |
| | 4♦ | "Y" jams | |
| | 5♦ | 1st Tray | |
| | 6♦ | 2nd Tray | |
| | 7♦ | By-pass | |
| 801 | ROM Versions and Option Connections<br>***Note: SP7-801 cannot be accessed at the screen.*** *This information appears on SMC printouts only. (Go to SP5-992 and select "2" to print out all data. The SP7-801 information will appear in the "LOG DATA" section on the second page of the printout. [☛ 5.1.4])* | | |
| | Shows software versions and option connection statuses as below. | | |
| | 1♦ | Firmware Version | |
| | 2♦ | No meaning (Fixed at "VER. 1") | |
| | 3♦ | Fax Unit ["Yes" = installed, "No" = Not installed] | |
| | 4♦ | Printer Unit ["Yes" = installed, "No" = Not installed] | |
| | 5♦ | ADF ["Yes" = installed, "No" = Not installed] | |
| | 6♦ | Optional Memory ["No" (None installed), "32MB", "40MB", "64MB"] | |
| | 7♦ | Paper Tray Unit ["Yes" = installed, "No" = Not installed] | |
| | 8♦ | By-pass Type ["1" = 1 sheet / "100" = 100-sheet] | |
| 803* | PM Counter Display | | |
| | 1♦ | | Displays the PM counter value (the count since the last PM). |
| 804 | PM Counter Reset | | |
| | 1♦ | | Resets the PM counter.<br>[**0 = No** / 1 = Yes]<br>*After selecting "1", hold down the Halftone key and press the OK key (or # key) to execute the reset. If the reset is successful, the display shows "Action completed". If the reset fails, the display shows "Error!!!"* |
| 807 | SC/Jam Counter Reset | | |
| | 1♦ | | Resets the SC counter and all jam counters.<br>[**0 = No** / 1 = Yes]<br>*After selecting "1", hold down the Halftone key and press the OK key (or # key) to execute the reset. If the reset is successful, the display shows "Action completed". If the reset fails, the display shows "Error!!!".* |
| 808 | Reset Counters | | |
| | 1♦ | | Resets all counters, except for the total counter (SP7-003).<br>[**0 = No** / 1 = Yes]<br>*After selecting "1", hold down the Halftone key and press the OK key (or # key) to execute the reset. If the reset is successful, the display shows "Action completed". If the reset fails, the display shows "Error!!!".* |

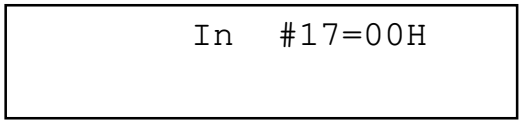
| 7 | Mode Number/Name | | Function/[Setting] |
|---|---|---|---|
| 825 | Total Counter Reset | | |
| | 1♦ | | Resets the electronic total counter.<br>[**0 = No** / 1 = Yes]<br>• *This reset is generally performed at installation. This SP mode is effective only once, while the counter still has a negative value. This SP cannot be used once the counter takes a positive value.*<br>• *After selecting "1", hold down the Halftone key and press the OK key (or ⓡ/# key) to execute the reset. If the reset is successful, the display shows "Action completed". If the reset fails, the display shows "Error!!!".* |
| 901 | SC History Display | | |
| | 1♦ | | Displays the codes of the last fifty errors that have occurred.<br>**[**0 = No / 1 = Yes]<br>*On fax-equipped models, you can print out the last fifty error codes using fax service mode 04. For information, refer to the fax service manual.* |
| 902 | SC History Reset | | |
| | 1♦ | | Clears the SC history.<br>[**0 = No** / 1 = Yes]<br>• *Note that when executed on fax-equipped models, this operation will not clear the machine's service-report data.*<br>• *After selecting "1", hold down the Halftone key and press the OK key (or ⓡ/# key) to execute the reset. If the reset is successful, the display shows "Action completed". If the reset fails, the display shows "Error!!!".* |
| 908 | PCU Counter Display | | |
| | 1♦ | | Displays the number of prints made since the PCU was last replaced. |
| 909 | PCU Counter Reset | | |
| | 1♦ | | Resets the developer counter.<br>[**0 = No** / 1 = Yes]<br>*After selecting "1", press the Halftone key and the OK key (or ⓡ/# key) at the same time to execute the reset. If the reset is successful, the display shows "Action completed". If the reset fails, the display shows "Error!!!".* |
| 911* | ID Sensor Error Counter Display | | |
| | 1♦ | | Displays the total number of logged ID sensor errors.<br>*For information about how to analyze these errors, see Section 5.1.10.* |
| 912 | ID Sensor Error Counter Reset | | |
| | 1♦ | | Resets the ID sensor error counter.<br>[**0 = No** / 1 = Yes]<br>*After selecting "1", hold down the Halftone key and press the OK key (or ⓡ/# key) to execute the reset. If the reset is successful, the display shows "Action completed". If the reset fails, the display shows "Error!!!".* |

| 7 | Mode Number/Name | Function/[Setting] |
|---|---|---|
| 955♦ | Memory Read/Write (Byte Access) | |
| | | Lets you read byte values from arbitrary RAM addresses, and write values into arbitrary addresses. *(☛ 5.1.11)* |
| 956♦ | Memory Read/Write (Word Access) | |
| | | Same as SP7-955, except that access is in (2-byte) words. **DFU**<br>*This SP is not intended for use on models outside of Japan. Always use SP7-955 to carry out memory reads and writes.* |

## 5.1.2 INPUT CHECK (SP5-803)


H555S005.WMF

1. Access SP5-803.
2. Select the number that will access the switch or sensor you wish to check (see the table below).
3. Check the status of the sensor, switch or motors.
4. If you wish to check the signal during a copy cycle, select the required copy mode, then press ⓧ.
5. The LCD panel will display “00H” or “01H”, as shown below.




H555S010.WMF

The following table shows the meaning of the value displayed for each switch and sensor.

***Input Check Table***

| Number | Description | Reading | |
|---|---|---|---|
| | | 00H | 01H |
| 1♦ | ADF registration sensor (S1) | No paper | Paper detected |
| 3♦ | ADF original set sensor (S2) | No paper | Paper detected |
| 9♦ | ADF unit and ADF upper cover open sensors | Closed | Open |
| 15♦ | Registration sensor | No paper | Paper detected |
| 16♦ | Exit Sensor | No paper | Paper detected |
| 17♦ | Front door switch | Door closed | Door open |
| 18♦ | Right door switch | Door closed | Door open |
| 20♦ | PCU detection | Not detected | Detected |
| 21♦ | New PCU detection (inside PCU) | Not detected | Detected |
| 23♦ | Mechanical counter sensing | Counter not installed | Counter installed |
| 24♦ | Main motor lock | Not detected | Detected |
| 25♦ | Polygon motor lock | Not detected | Detected |
| 35♦ | Paper end sensor (standard tray) | Paper not detected. | Paper detected. |
| 40♦ | Paper tray 2*1 | Not installed | Installed |
| 45♦ | Paper end sensor (paper tray 2*1) | No paper | Paper detected |
| 47♦ | Paper tray 2*1 door switch | Not detected | Detected |
| 48♦ | Paper tray 2*1 feed sensor | No paper | Paper detected |
| 90♦ | 100-sheet by-pass feeder unit | Not detected | Detected |
| 95♦ | By-pass paper end sensor (100-sheet by-pass feeder unit) | No paper | Paper detected |

*1: Optional Paper Tray Unit

## 5.1.3 OUTPUT CHECK (SP5-804)♦

```
Output Check
Code:      0  Data:  0
```

H555S011.WMF

**CAUTION:** To avoid mechanical or electrical damage, do not leave electrical components on continuously for a prolonged period of time.

1. Access SP5-804.
2. Select the number that corresponds to the component you wish to check (see the table below), then press *OK* or #.
3. Press "1", then press *OK* or the # key to check that component.
4. To interrupt the test, re-enter SP 5-804 and enter a value of "0".

### *Input Check Table*

| Number | Description |
|---|---|
| 1 | Polygon mirror motor (400 x 400 dpi) |
| 2 | Polygon mirror motor (600 x 600 dpi) |
| 3 | Main motor |
| 4 | Fan motor (slow) |
| 5 | Fan motor (fast) |



## 5.1.4 SMC PRINTING (SP5-992)♦

1. Access SP5-992.
2. Select the type of data you wish to print: "1" to print SP settings only, "2" to print all system parameters (including SP settings), or "3" to dump a selected memory range.
3. If you selected "3", press the *OK* key and then use the cursor and numeric keys to enter the address range to be dumped.
4. Press ◇ to access the copy mode display.
5. Select the print conditions (paper size, print density, etc).
6. Press ◇ again to print the list.
7. Press ⌧ to exit from copy mode.
8. Press ⌧ as necessary to exit this SP.

## 5.1.5 MEMORY ALL CLEAR (SP5-801)♦

Executing a Memory All Clear will reset all SRAM-resident SP and UP settings and values to their defaults - with the exception of the serial number setting (SP5-811), the plug-and-play settings (SP5-907), and the total print counters (SP7-003). This procedure is not for normal use, but may be appropriate if the copier has malfunctioned as a result of a problem with its SRAM.

1. Before clearing the memory clear, you should do both of the following to save current SRAM data (if possible).
   - Print a complete SMC printout using SP5-992. Be sure to select all "2" ("All") for the printout type. (☛ 5.1.4)
   - Upload the data to a flash memory card using SP5-824. (☛ 5.1.8)
2. Access SP5-801.
3. Hold down the "Halftone" key and press the *OK* key (or R/# key) to execute the clear. If the clear is successful, the display shows "Action completed". If it fails, the display shows "Error!!!".
4. Turn the main switch off and back on.
5. If you save SRAM data to a flash-memory card, try downloading the data back into the machine (☛ 5.1.8). If the download is successful, this completes the procedure.

*If you did not save SRAM data to a flash memory card, or if you were unable to download the saved data, then continue as follows.*

6. Carry out printer and scanner registration and magnification adjustments. (☛ 3.13)
7. Carry out CIS shading adjustment, using FAX Service Mode. (☛ 3.14.2)
8. Refer to the SMC printout, and re-enter any values that differ from the factory settings.
9. Check the copy quality, and carry out any necessary adjustments.

## 5.1.6 FREE RUNS

SP mode offers a variety of free-run operations, as indicated below. Please keep in mind that prolonged or unnecessary use of free runs can cause machine wear or other problems. Select the free run that drives only those parts that you specifically need to check.

| Name | SP | ADF | | Print engine | | *Remarks* |
|---|---|---|---|---|---|---|
| | | ADF feed | LED Lamp | Paper printout | Fusing Lamp | |
| Fusing Nip Band Check | SP1-109♦ | Off | Off | Runs | Runs | **Factory use only** |
| ADF Free Run | SP6-009♦ | Runs | Runs | Off | Off | |
| ADF/Printer Free Run | SP6-910♦ | Runs | Runs | Runs | Runs | Same as Service Function 08 "1.AGING". |

## 5.1.7 PROGRAM UPLOAD/DOWNLOAD

The program (firmware) for this machine is upgraded using a 4MB flash memory card. The machine provides the following two SPs to support program porting and upgrade:

- SP5-826: Uploads the program from the machine's flash ROM to a flash memory card.
- SP5-827: Downloads the selected program from a flash memory card to the machine's flash ROM.

Since the program size is only 2MB, it is possible to carry two different program versions on a single card, and selectively download either one of these. If you wish to carry two different programs on the same card, write one of these programs into card address space 000000h to 1FFFFFh, and write the other one into address space 200000h to 3FFFFFh.

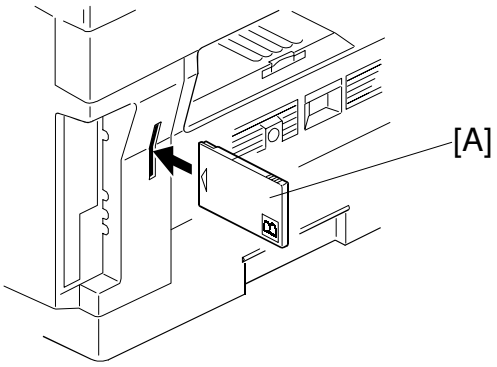
### *Program Download (SP5-827)*

This SP is effective only if you boot the machine from the flash memory card as described below. If the download is unsuccessful, or if you decide that you do not wish to start the download, please turn the machine off and back on before resuming normal operation.

**NOTE:** Be sure to turn off the main switch before inserting or removing the flash memory card. Installing or removing a card while the main switch is on may damage the FCU.

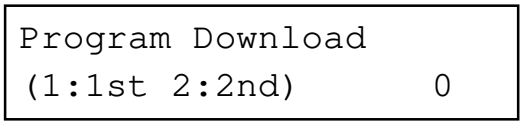


1. Turn off the main switch.
2. Insert the flash memory card [A] into the card slot, with the card's "B" side facing the rear of the machine.




H555S012.WMF

3. Turn on the main switch.
4. The machine boots from the card, automatically enters SP5-827, and displays the following.

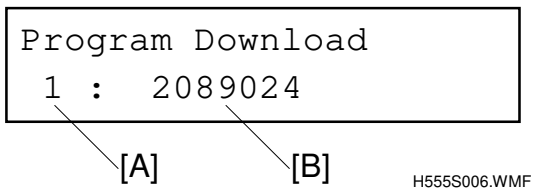



H555S004.WMF

**NOTE:** If the card does not contain a valid program, the machine will boot from the machine, and start in the normal standby mode.

5. If you wish to load the program stored in first half of the card (in card space 000000h to 1FFFFFh), enter "1". If you wish to load the program stored in second half of the card (space 200000h to 3FFFFFh), enter "2". Then press OK to start the download.
   **NOTE:** If you enter "0" (the default) instead of "1" or "2", the machine moves back to the top-level SP5-827 screen. If you enter "1" or "2" but the corresponding card space does not contain a valid program, the machine displays "Loading error!!!".
6. The machine erases the current firmware, then begins downloading the new firmware from the card. The "ON" lamp flashes, and the screen counts down the progress. The download takes about 3 minutes.
   **NOTE:** If downloading fails, the "Loading error!!!" message appears. If this occurs, try repeating the procedure.
7. After completing the download, turn off the main switch and remove the memory card.
8. Turn the switch back on, and run SP5-837 to check the checksums for the new firmware. Or print out the system parameter list (Fax service function 02) to confirm that it correctly displays the checksums and the new firmware version.
   **NOTE:** Be sure to remove the card and turn the main switch off and back on before running the above SP.

Display during download:




H555S006.WMF

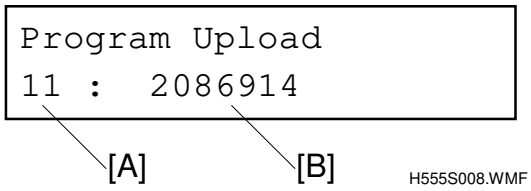
[A]: "0" = erasing flash ROM
"1" or "2" = writing to flash ROM
("1" if you selected "1st"; "2" if you selected "2nd".)
[B]: Amount (bytes) remaining to be written

### *Program Upload (SP5-826)*

**NOTE:** 1) Be sure to turn off the main switch before inserting or removing the flash memory card. Installing or removing a card while the main switch is on may damage the FCU.
2) This operation will erase any data already stored in the flash memory card.

1. Turn off the main switch.
2. Insert the flash memory card into the card slot, with the card's "A" side facing the front of the machine. (See illustration on preceding page.)
3. Turn on the main switch.
4. Access SP5-826.
5. Enter "1" at the keypad, and then press OK.
6. The machine erases the card, and then writes the program into it. The "ON" lamp flashes, and the screen counts down the progress. Uploading takes about 2 minutes. On successful completion, the screen displays "Loading completed".
   **NOTE:** If uploading fails, the "Loading error!!!" message appears. If this occurs, try repeating the procedure.
7. Turn off the main switch, then remove the memory card.

Display during upload:




[A]: "10" = erasing card
"11" = writing to card
[B]: Amount (bytes) remaining to be written

## 5.1.8 SRAM DATA UPLOAD/DOWNLOAD

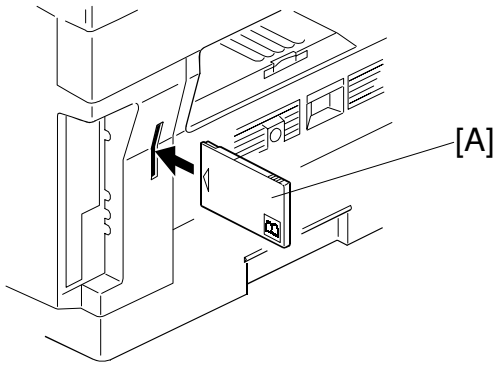
Before installing a new FCU, and before executing a "memory all clear", you should upload all current SRAM data into a flash memory card. You can then download the data back after completing the FCU replacement or memory clear.

- SP5-824: Upload from the machine's SRAM to a flash memory card.
- SP5-825: Download from a flash memory card to the machine's SRAM

### *SRAM Data Upload (SP5-824)*

**NOTE:** 1) Be sure to turn off the main switch before inserting or removing the flash memory card. Installing or removing a card while the main switch is on may damage the FCU.
2) This operation will erase any data already stored in the flash memory card.

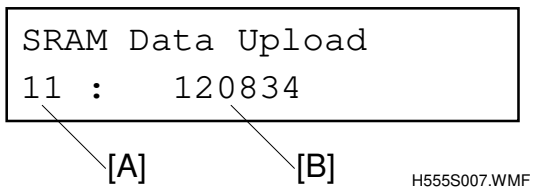
1. Change System Switch 01 bit 7 to 1.
2. Turn off the main switch.
3. Insert the flash memory card [A] into the card slot, with the card's "B" side facing the rear of the machine.
4. Turn on the main switch.
5. Access SP5-824.
6. Enter "1" at the keypad, and then press OK or #.



H555S012.WMF

7. The machine erases the card, and then saves its SRAM data into it. The "ON" lamp flashes, and the screen counts down the progress. Uploading takes about 30 seconds. On successful completion, the screen displays "Loading completed".
   **NOTE:** If uploading fails, the "Loading error!!!" message appears. If this occurs, try repeating the procedure.
8. Turn off the main switch, then remove the memory card.

Display during upload:



H555S007.WMF

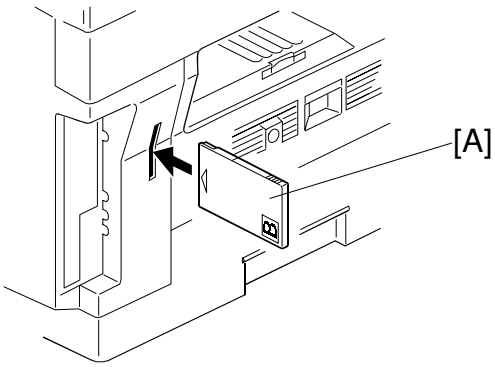
[A]: "10" = erasing card
"11" = saving to card
[B]: Amount (bytes) remaining

9. Turn the power back on and change System Switch 01 bit 7 back to 0.

### *SRAM Data Download (SP5-825)*

**NOTE:** 1) Be sure to turn off the main switch before inserting or removing the flash memory card. Installing or removing a card while the main switch is on may damage the FCU.
2) This operation will overwrite all of the machine's current SRAM data.

1. Change System Switch 01 bit 7 to 1.
2. Turn off the main switch.
3. Insert the flash memory card [A] into the card slot, with the card's "B" side facing the rear of the machine. (See illustration on preceding page.)
4. Turn on the main switch.
5. Access SP5-825.
6. Enter "1" at the keypad, and then press OK.



H555S012.WMF

7. The machine executes the download. This operation takes about 2 seconds. On successful completion, the screen displays "Loading completed".
   **NOTE:** If uploading fails, the "Loading error!!!" message appears. If this occurs, try repeating the procedure.
8. Turn off the main switch, then remove the memory card.
9. Turn the power back on and change System Switch 01 bit 7 back to 0.

## 5.1.9 SERIAL NUMBER INPUT (SP5-811)♦

Use this SP to input the machine's 11-digit serial number. (This is normally done at the factory). Each key of the numeric keypad controls a different digit of the serial number: the first key controls the first digit, the second key controls the second digit, and so on. (The R/# key is not used.) Press each key as many time as necessary to set the corresponding digit. To set the second digit to "X", for example, press the 2 key as many times as necessary to bring up "X" on the screen.

Note that the first four digits of the serial number may be either letters or numbers. Digits 5 to 11 are always numbers.

| | | |
|---|---|---|
| 1 | 2 | 3 |
| 1st digit | 2nd digit | 3rd digit |
| 4 | 5 | 6 |
| 4th digit | 5th digit | 6th digit |
| 7 | 8 | 9 |
| 7th digit | 8th digit | 9th digit |
| •/* | 0 | R/# |
| 10th digit | 11th digit | Not used |

## 5.1.10 ID SENSOR ERROR ANALYSIS (SP2-221)♦

```
Vg4.05,Vp0.56,PW59
Vg-Vp3.49,Vt2.16
```

H555S009.WMF

A defective ID sensor does not generate an SC condition, but does cause the image quality to become worse (e.g., dirty background on the copy). If these conditions occur, check the ID sensor output using SP2-221. (☛ 6.11.15)

1. Vsg ("Vg" in the display)

   Error Condition: Vsg < 1.65

   Possible causes:
   - ID sensor defective
   - ID sensor dirty
   - Drum does not get charged

2. Vsp ("Vp" in the display)

   Error Condition: Vsp > 1.65

   Possible causes:
   - Toner density is very low
   - ID sensor pattern is not being generated

3. Power ("PW" in the display)

   This is the power for the light source of the ID sensor.

   Error Condition: Vsg < 2.31 at maximum power

   Possible causes:
   - ID sensor defective
   - ID sensor dirty
   - Drum does not get charged

4. Vsdp ("Vg-Vp" in the display)

   No Error Conditions

5. Vt

   Error Condition: Vt > 2.64 or Vt < 0.20

   Possible cause:
   - TD sensor defective

## 5.1.11 MEMORY READ/WRITE♦

You can use SP7-955 to read byte values from arbitrary RAM addresses, and to write values to arbitrary RAM addresses.

When you enter this SP, the screen looks likes this:

```
Mem R/W (1byte)
Adr=800000  Data=00
```

H555S013.WMF

You can now operate the SP as follows.

- To manually enter an address or data value: Use the cursor keys to move to the desired column in the "Adr" field. Use numeric keys to input number values 1 to 9, and ["Halftone" + numeric keys "1" to "6"] to input number values A to F.
- After entering an address value, press OK (or R/#) to set the value. The Data field will then display the current content of the entered address. The cursor will jump to the Data field.
- To increment or decrement the address, use the density keys (or "Halftone" + cursor keys). The Data value will change to show the content of the selected address.
- When the cursor is in the Data field, you can enter a new value to be stored into the selected address. Press OK (or R/#) to write the new value into the address. The cursor will then return to the Address field.
- If you are in the Data field, pressing Cancel will move you to the address field. If you are in the address field, pressing Cancel will exit this SP.
- To cancel an entry in progress (and restore the previous value), press C/⊘. To exit the SP, press the *Clear Modes* key.

# 5.2 FAX SERVICE FUNCTIONS

## 5.2.1 ACCESSING FAX SERVICE MODE

***How to enter service function mode***♦

1. Ensure that the machine is in standby mode.
2. Press ▭ ① ⓪ ⑦, then hold down C/© for more than 3 seconds. The SP mode main menu opens.

```
[Service P-Mode] No._
1 Copy 2 Fax 3 Printer
```

H555S501.WMF

3. Press ② to enter the fax service mode.

```
SERVICE FUNCTION
■■FUNCTION NO.
```

H555S502.WMF

***How to exit service function mode***♦

Press "Cancel" to exit the service mode.

## 5.2.2 FUNCTION NO.

### *01. BIT SW*♦

1. Enter the fax service mode.
2. Press ⓪①, then "OK".
   ⓪ - System Switches
   ① - Scanner Switches
   ② - Plotter Switches
   ③ - Communication Switches
   ④ - G3 Switches

```
SERVICE FUNCTION
01.BIT SW
```

H555S503.WMF

```
0.SYSTEM   1.SCANNER
2.PLOTTER  3.COMMUNI.
```

H555S504.WMF

**Example:**

1. Press ⓪
2. Scroll through the bit switches.
   To increment the bit switch number:
   Press **>**
   To decrement the bit switch number:
   Press **<**
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.
   To finish, press "OK" then "Cancel".
5. Press "Cancel" to exit the service mode.

```
 SYS DF  :0000 0000
 BITSW 00:0000 0000
```

H555S505.WMF

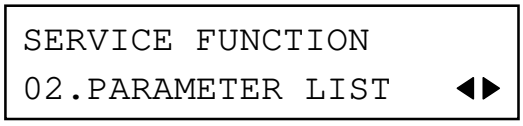
```
 SYS DF  :0000 0000
 BITSW 00:1000 0000
```

H555S506.WMF

Service Tables

### *02. PARAMETER LIST*

1. Enter the fax service mode.
2. Press 0 2.



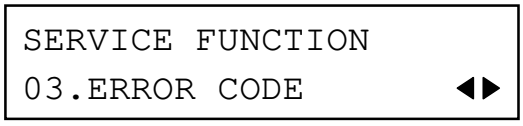

H555S507.WMF

3. Press "OK".
4. Press Start.


H555S508.WMF

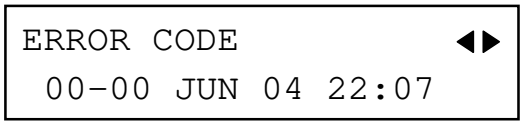
### *03. ERROR CODE*

1. Enter the fax service mode.
2. Press 0 3.




H555S509.WMF

3. Press "OK".
4. Scroll through the error codes with the arrow keys




H555S510.WMF

### *04. SERVICE REPORT*

1. Enter the fax service mode.
2. Press 0 4.

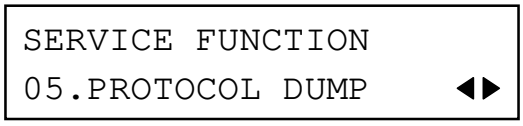

H555S511.WMF

3. Press "OK".
4. Press Start.


H555S512.WMF

### *05. PROTOCOL DUMP♦*

1. Enter the fax service mode.
2. Press ⓪⑤.




H555S513.WMF

3. Press “OK”.


H555S514.WMF

4. Select “1–COMMUNICATION” or “ALL–COMMUNICATIONS” with the arrow keys, then press “OK”.

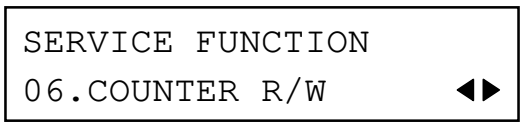

H555S515.WMF

5. Press ◇.


H555S516.WMF

### *06. COUNTER R/W♦*

1. Enter the fax service mode.
2. Press ⓪⑥, then “OK”.

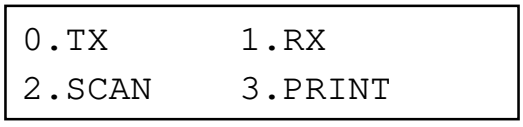



H555S517.WMF

3. To check the transmitted, received, scanned and printed page counters, and the printer and scanner jam counters, press ⓪.
   -or-
   To check the PM counter, press ①.
   -or-
   To check the Toner counter - press ②.

   **Example:** Press ⓪.


H555S518.WMF




H555S519.WMF

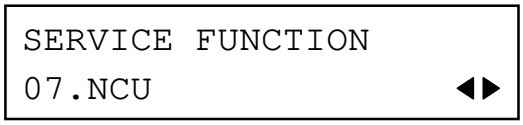
4. To check the received counter, press ①.
5. To change the contents of a counter, input the new value, then press “OK”.
6. To finish, press “CANCEL”.


H555S520.WMF

Service Tables

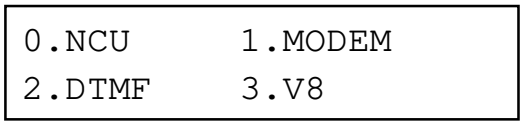
### *07. NCU*

1. Enter the fax service mode.
2. Press ⓪⑦.




H555S527.WMF

3. Press “OK”.
4. Select an item from the menu, then press ◈.




H555S528.WMF

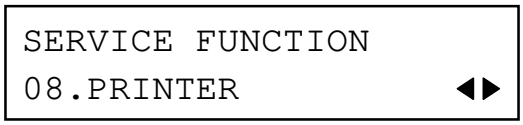
0. NCU: NCU parameters
1. MODEM: MODEM test
2. DTMF: DTMF test
3. V8: V8 test
4. V34: V34 test
5. DP: Dial pulse test


H555S533.WMF

**NOTE:** NA models only:
Before changing the NCU country code with “0. NCU”, you must first set system switch 15 bit 2 to 1

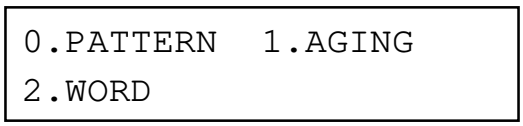
## *08. PRINTER*

1. Enter the fax service mode.
2. Press 0 8.




H555S536.WMF

3. Press "OK".
4. Select an item from the menu, then press #.




H555S537.WMF

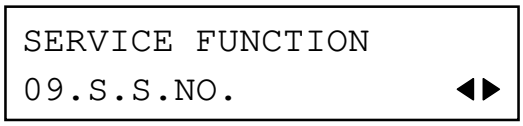
0. PATTERN: Test pattern print
1. AGING: Free run for ADF, LED array, paper feed, and fusing lamp
2. WORD♦: Wording list print

| Pattern Name | Test Pattern |
|---|---|
| SLANT R1 | Diagonal line pattern, ascending (1-dot width) |
| SLANT R2 | Diagonal line pattern, ascending (2-dot width) |
| SLANT L1 | Diagonal line pattern, descending (1-dot width) |
| SLANT L2 | Diagonal line pattern, descending (2-dot width) |
| FACTORY | Factory pattern |
| REGIST | Registration adjustment pattern |
| SUMIYA | Sumiya pattern (Shaded bars) |

Service Tables

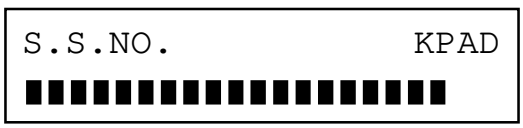
## *09. S.S. NUMBER♦*

1. Enter the fax service mode.
2. Press 0 9




H555S547.WMF

3. Press "OK".
4. Enter the fax number of the service station that will receive Automatic Service Calls from the machine.
5. Press "OK".




H555S548.WMF

## *10. SHADING*

This procedure adjusts the CIS shading level.

**NOTE:** For more details about how to adjust the shading level, see "3.14.2 CIS SHADING ADJUSTMENT".

1. Enter the fax service mode.
2. Press ①⓪.

```
SERVICE FUNCTION
10.SHADING                    ◀▶
```

H555S530.WMF

3. Press "OK".

```
                          START
SET SHADING
```

H555S531.WMF

4. Place a CIS shading chart on the CIS, then press ◇.

```
NOW SETTING SHADING
```

H555S552.WMF

5. The machine automatically adjusts the CIS shading level.
   If test is successful, the display shows "OK!!".

```
NOW SETTING SHADING
OK:
```

H555S553.WMF

   If test is unsuccessful, the display shows "NG!!".

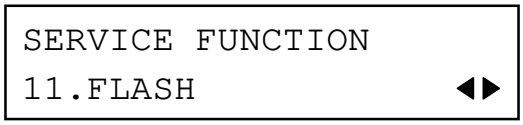
```
NOW SETTING SHADING
NG:
```

H555S554.WMF

## *11. FLASH*

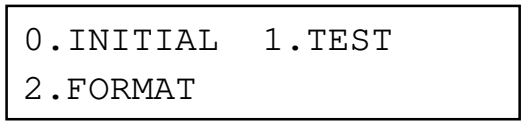
This procedure is used when the optional memory card ('silicon disk' type) does not work properly.

1. Enter the fax service mode.
2. Press 1 1.




H555S556.WMF

3. Press "OK".
4. Select an item from the menu, then press ◇.




H555S557.WMF

| Menu | Function | When is this effective? | Data |
|---|---|---|---|
| **0. INITIAL:** | The file system is created. | If you want to reset the card to the initial condition | Cleared |
| **1. TEST:** | The file system is reproduced in the working RAM of the machine memory | • When an error occurs on the card<br>• When checking the card format | Not cleared |
| **2. FORMAT:** | Independent clusters are removed. | • When 100% is displayed even though a file is stored<br>• When 100% is not displayed even though no file exists | Not cleared |

Tests 1 and 2 are similar to 'scandisk' and 'defrag' utilities commonly on PCs. Try these first, and if the test result is negative, then reset the card with test 0.

# 5.3 BIT SWITCH TABLES

**⚠WARNING**

**Do not adjust a bit switch or use a setting that is described as "Not used", as this may cause the machine to malfunction or to operate in a manner unacceptable by local regulations. The "Not Used" bits are for use only in Japan or other areas.**

**NOTE:** Default settings for bit switches are not listed in this manual. Refer to the System Parameter List printed by the machine.

## 5.3.1 SYSTEM SWITCHES

| System Switch 00 | | |
|---|---|---|
| **No.** | **FUNCTION** | **COMMENTS** |
| **0, 1♦** | **RAM Reset**<br>**Bit 1 0 Reset Level**<br>0 0 No reset<br>0 1 Reset Level 2<br>1 0 Reset Level 3<br>1 1 Not used | **Reset Level 3:** Erases all image data files stored in the SAF memory and communication files (e.g. substitute RX files). This is the recommended setting when the SAF requires clearing.<br>**Reset Level 2:** This level erases the following items in addition to those erased by Reset Level 3: own telephone number, bit switches (excluding country code), RTI/TTI/CSI, report data, programmed telephone numbers (Quick/Speed/Groups, service station, etc.), NCU parameters, and personal codes. The NCU country code is also set to the same as the bit switch country code (System Bit Switch 0F).<br>After erasing, the machine automatically changes these two bits back to 0.<br>**No reset:** Normal operation<br>**Cross-reference**<br>**RAM Reset Level 1 (Factory reset):** Change the RAM address data from 400005(H) to FF(H), then turn the machine off and on. In addition to those items erased by Reset Level 2, the clock, country code (default country code: USA for NA models, UK for Europe/Asia models), scan margin settings and print registration settings are erased. To adjust the country code, you must first set system switch 15 bit 2 to 1. |

| System Switch 00 | | |
|---|---|---|
| **No.** | **FUNCTION** | **COMMENTS** |
| **2♦** | Technical data printout on Journal<br>**0:** Disabled **1:** Enabled | **1:** Instead of a personal code, the Journal lists the following data for each analog G3 communication.<br>E.g. 32 V34 288 M 01 00 03 02<br>**First number:** Symbol rate (V.34 only)<br>Second number: Final modem type used<br>**Third number:** Final date rate (for example, 288 means 28.8 KBPS)<br>**Fourth number:** M means modem EQM./L means RX level.<br>**Fifth and sixth number:** Line quality data. This is either a measurement of the error rate or the RX level, 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 high byte and the right-hand figure is the low byte (refer to the note after this table for how to read the RX level). If it measures 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 seventh and eighth numbers are fixed at 00 for transmission records and ECM reception records. |
| **3♦** | Line quality data output method<br>**0:** Error rate measurement during image data transmission<br>**1:** Rx level | This bit determines the data type printed in the Journal when bit 2 (above) enables a technical data printout. |
| **4♦** | Line error marks<br>**0:** Disabled **1:** Enabled | If this bit is 1, a mark will be printed on the left edge of the page at any place where a line error occurred in the data. A noisy line causes such errors, for example. |
| **5♦** | Communication parameter display<br>**0:** Disabled **1:** Enabled | This is a faultfinding aid. The LCD shows the key parameters (see the next page). 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<br>**0:** Disabled **1:** Enabled | This is used for communication troubleshooting. It shows the content of the transmitted facsimile protocol signals. Always reset this bit to 0 after testing.<br>The setting of system switch 09 bit 6 determines the types of communication that the list is printed after. |

| System Switch 00 | | |
|---|---|---|
| **No.** | **FUNCTION** | **COMMENTS** |
| **7♦** | Amount of protocol dump data in one protocol dump list print operation<br>**0:** Up to the limit of the memory area for protocol dumping<br>**1:** Last communication only | Change this bit to 1 if you want to have a protocol dump list of the last communication only. |

How to calculate the RX level listed on the Journal (when bit 2 of system switch 00 is set to 1)

**Example:** 32 V34 288 **L 01 00** 00 00

The four-digit hexadecimal values (N) after L indicates the RX level.
The high byte is given first, followed by the low byte. Divide the decimal value of N by -16 to get the RX level.

In this above example, the decimal value of N (=0100[H]) is 256.
So, the actual RX level is 256/-16 = -16 dB.

### *Communication Parameters*

| | |
|---|---|
| Mode | DCS: ITU-T standard NSS: Non-standard G3 |
| Modem rate | 336: 33600 BPS 168: 16800 BPS<br>312: 31200 BPS 144: 14400 BPS<br>288: 28800 BPS 120: 12000 BPS<br>264: 26400 BPS 96: 9600 BPS<br>240: 24000 BPS 72: 7200 BPS<br>216: 21600 BPS 48: 4000 BPS<br>192: 19200 BPS 24: 2400 BPS |
| Resolution | F: Fine, transmitted at 8 x 15.4 dots per mm<br>D: Detail, transmitted at 8 x 7.7 dots per mm<br>S: Standard, transmitted at 8 x 3.85 dots per mm<br>21: Standard (200 x 100 dpi)<br>22: Detail (200 x 200 dpi)<br>24: Fine (200 x 400 dpi) |
| Compression mode | MMR: MMR compression<br>MR: MR compression<br>MH: MH compression<br>JBO: JBIG optional compression<br>JBB: JBIG standard compression |
| Communication mode | ECM: With ECM<br>NML: With no ECM |
| Width and reduction | A4: A4 (8.3"), no reduction |
| I/O rate | 0: 0 ms/line 10: 10 ms/line<br>2/: 2.5 ms/line 20: 20 ms/line<br>5: 5 ms/line 40: 40 ms/line<br>“40” is displayed while receiving a fax message using AI short protocol. |

| System Switch 01 | | |
|---|---|---|
| **No.** | **FUNCTION** | **COMMENTS** |
| **0**♦ | PM call<br>**0:** Disabled **1:** Enabled | This bit switch determines whether the machine will send an Auto Service Call to the service station when it is time for PM. |
| **1**♦ | Auto service call<br>**0:** Disabled **1:** Enabled | This bit switch determines whether the machine will send an Auto Service Call to the service station when a fatal error occurs.<br><br>This bit is changed to 0 (disabled) automatically when the machine called a not fax machine or a wrong fax machine.<br>**Cross-reference**<br>Communication Switch 02 bits 4 and 5 - Wrong connection prevention method (Service station) |
| **2–6**♦ | Not used | Do not change these settings. |
| **7** | Machine starts up at power-on<br>**0:** Auto detect<br>**1:** Always start up from machine ROM, even if there is a flash memory card in the slot | **0:** If a flash memory card that contains machine software is installed in the machine's card slot, the machine starts up from the flash memory card. If no flash memory card is installed, the machine starts up from the machine ROM.<br>**1:** The machine does not have a switch to select either ROM or flash memory card for startup, so when you must start up from the machine ROM (not from the memory card), set this bit to 1. For example, set to 1 when doing an SRAM data upload/download. |

| System Switch 02 | | |
|---|---|---|
| **No.** | **FUNCTION** | **COMMENTS** |
| **0**♦ | Memory file transfer<br>**0:** Disabled **1:** Enabled | **1:** All messages in the memory (including confidential RX messages) are sent to the fax number that is stored as the service station.<br>Always reset this bit to zero after transfer.<br>**Cross-reference**<br>Service station number: Function 09 |
| **1–3**♦ | Not used | Do not change these settings. |
| **4**♦ | Automatic reset (during communication)<br>**0:** Disabled **1:** Enabled | **1:** The machine automatically returns to standby mode when a page takes more than a certain time to send (the default setting is 60 minutes).<br>This timer can be adjusted with RAM addresses 4004C0 and 4004C1.<br>**Cross-reference**<br>Service RAM Addresses, section 5.5. |
| **5**♦ | Not used | Do not change the setting. |

| System Switch 02 | | |
|---|---|---|
| **No.** | **FUNCTION** | **COMMENTS** |
| **6, 7♦** | Memory read/write by RDS<br>**Bit 7 6 Setting**<br>0 0 Always disabled<br>0 1 User selectable<br>1 0 User selectable<br>1 1 Always enabled | **(0,0):** All RDS systems are always locked out.<br>**(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** |
| **0–7♦** | Length of time that RDS is temporarily switched on when bits 6 and 7 of System Switch 02 are set to "User selectable" | 00 - 99 hours (BCD).<br>This data is only valid if bits 6 and 7 of System Switch 02 are set to "User selectable".<br>The default setting is 24 hours. |

| System Switch 04 | | |
|---|---|---|
| **No.** | **FUNCTION** | **COMMENTS** |
| **0–2♦** | Not used | Do not change these settings. |
| **3♦** | Dedicated transmission parameter programming<br>**0:** Disabled **1:** Enabled | Set this bit to 1 before changing any dedicated transmission parameters. |
| **4** | Pressing the Start key when using a Keystroke Program<br>**0:** Not needed **1:** Needed | **0:** The user does not need to press the Start key when operating a keystroke program. |
| **5♦** | Replacement level for the maintenance kits<br>**0:** User **1:** Service | **0:** The machine asks the user to replace the parts in the ADF maintenance kit after 45,000 scans with the ADF.<br>After the user replaces the parts, the machine asks the user if they have been replaced or not. After the user answers yes, the user has to reset the roller counter using the key operator tools.<br>The replacement counter is programmed at the following addresses:<br>ADF kit counter: 4002D0 to 4002D3(H)<br>Refer to Section 5.5 for more details.<br>**1:** The machine will not ask the user to replace the maintenance kits. |
| **6♦** | CSI programming level<br>**0:** User level **1:** Service level | **1:** Only a service function can program the CSI. |
| **7♦** | Telephone line type programming mode<br>**0:** User level **1:** Service level | **1:** Only a service function can program the telephone line type selection. |

| System Switch 05 | | |
|---|---|---|
| **No.** | **FUNCTION** | **COMMENTS** |
| **0–7♦** | Not used | Do not change these settings. |

| System Switch 06 | | |
|---|---|---|
| **No.** | **FUNCTION** | **COMMENTS** |
| **0♦** | Use of the Stop key during memory transmission<br>**0:** Disabled **1:** Enabled | **1:** The Stop key can be used to halt memory transmissions. However, users might accidentally cancel another person's memory transmission in progress. |
| **1-3♦** | Not used | Do not change these settings. |
| **4♦** | Use of the Stop key during memory transmission<br>**0:** Disabled **1:** Enabled | **1:** The Stop key can be used to halt memory transmissions. After pressing the Stop key, a message (STOP & CLR FILE?) appears on the LCD. |
| **5–7♦** | Not used | Do not change these settings. |

| |
|---|
| **System Switch 07♦** - Not used (do not change any of these settings) |
| **System Switch 08♦** - Not used (do not change any of these settings) |

| System Switch 09 | | |
|---|---|---|
| **No.** | **FUNCTION** | **COMMENTS** |
| **0** | Addition of part of the image data from confidential transmissions on the transmission result report.<br>**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 in the Journal when no image data was exchanged.<br>**0:** Disabled **1:** Enabled | **0:** The Journal lists communications that reached phase C (message TX/RX) of the T.30 protocol.<br>**1:** The Journal lists communications that reached phase A (call setup) of T.30 protocol. This includes telephone calls. |
| **2♦** | Automatic error report printout<br>**0:** Disabled **1:** Enabled | **0:** Error reports are not printed.<br>**1:** Error reports will print automatically after all failed communications, excluding polling reception and immediate transmissions. |
| **3♦** | Print error code on error report<br>**0:** No **1:** Yes | **1:** Error codes are printed on the error reports. |
| **4** | Print confidential ID on personal code list<br>**0:** No **1:** Yes | **1:** Confidential IDs are printed on the personal code list |
| **5♦** | Power failure report<br>**0:** Disabled **1:** Enabled | **1:** A power failure report automatically prints after the power is switched on if a fax message disappears from memory when the power was turned off last. |

| System Switch 09 | | |
|---|---|---|
| **No.** | **FUNCTION** | **COMMENTS** |
| **6**♦ | Conditions for printing the protocol dump list<br>**0:** Print for all communications<br>**1:** Print only when there is a communication error | This switch becomes effective only when system switch 00 bit 6 is set to 1.<br>**1:** Set this bit to 1 when you wish to print a protocol dump list only for communications with errors. |
| **7**♦ | Priority given to various types of remote terminal ID when printing reports<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>Dial Label: The name stored with the Quick/Speed Dial number by the user. |

| System Switch 0A | | |
|---|---|---|
| **No.** | **FUNCTION** | **COMMENTS** |
| **0–2**♦ | Not used | Do not change these settings |
| **3**♦ | Continuous polling reception<br>**0:** Disabled **1:** Enabled | This feature allows a series of stations to be polled in a continuous cycle. |
| **4**♦ | Dialing on the ten-key pad when the handset is off-hook<br>**0:** Disabled **1:** Enabled | **1:** The user can dial on the ten-key pad when the handset is off-hook. |
| **5**♦ | On-hook dial<br>**0:** Disabled **1:** Enabled | **0:** On-hook dial is disabled. |
| **6, 7**♦ | Not used | Do not change these settings |

| System Switch 0B | | |
|---|---|---|
| **No.** | **FUNCTION** | **COMMENTS** |
| **0, 1** | Not used | Do not change these settings. |
| **2, 3** | Energy Saver mode timer<br>**Bit 3 2 Time Limit**<br>0 0 1 minute<br>0 1 3 minutes<br>1 0 5 minutes<br>1 1 No limit | **(1, 1):** Automatic Energy Saver mode is disabled.<br>**(Other):** The machine goes into Energy Saver Mode when the timer exceeds the time limit after the last operation. (☛Section 6 Details, "6.20 Energy Saver Modes") |
| **4–6**♦ | Not used | Do not change these settings. |
| **7** | Keys to be pressed to exit the energy saver mode<br>**0:** Only the energy saver key<br>**1:** Any key | **1:** Any key can be pressed to exit the energy saver mode |

| System Switch 0C | | |
|---|---|---|
| **No.** | **FUNCTION** | **COMMENTS** |
| **0–2**♦ | Not used | Do not change these settings. |
| **3**♦ | Paper size selection for ADF mode<br>**0:** A4 **1:** Letter | This switch determines the original size in ADF mode, and fixes the maximum scanning width. |
| **4–7**♦ | Not used | Do not change these settings. |

**System Switch 0D** - Not used (do not change any of these settings)

**System Switch 0E**

| No. | FUNCTION | COMMENTS |
|---|---|---|
| **0–6♦** | Not used | Do not change these settings. |
| **7♦** | Paper size to be used when printing a report that includes an image<br>**0:** Always printed on A4/Letter size<br>**1:** Depends on the image size | **0:** Every report is always printed on A4/Letter size paper. If the image size is larger and cannot fit on A4/Letter size paper, then the image is reduced.<br>**1:** The paper that is used depends on the image size in the report.<br>The following matrix is applied when printing reports:<br>Each of the 7 columns represents a different paper tray setup. For example, the first column is for when the only paper size in the machine is A4, the 4th column is for when the machine contains A4 and letter paper, and the 7th column is for when the machine contains all three sizes. |

| Paper Size | ●: Priority paper size<br>❍: Available only if this bit is set to 1 | | | | | | |
|---|---|---|---|---|---|---|---|
| A4 | ● | — | — | ● | ● | — | ● |
| Letter | — | ● | — | ❍ | — | ● | ❍ |
| Legal | — | — | ● | — | ❍ | ❍ | ❍ |

**System Switch 0F**

| No. | FUNCTION | COMMENTS |
|---|---|---|
| **0–7♦** | Country code for functional settings (Hex)<br><br>00: France<br>01: Germany<br>02: UK<br>03: Italy<br>04: Austria<br>05: Belgium<br>06: Denmark<br>07: Finland<br>08: Ireland<br>09: Norway<br>0A: Sweden<br>0B: Swiss.<br>0C: Portugal<br>0D: Holland<br>0E: Spain<br>0F: Israel<br>10: Not used<br>11: USA<br>12: Asia<br>13: Not used<br>14: Hong Kong<br>15: South Africa<br>16: Australia<br>17: New Zealand<br>18: Singapore<br>19: Malaysia<br>1A: China<br>1B: Formosa<br>1C: Korea<br>20: Turkey<br>21: Greece<br>22: Hungary<br>23: Czech<br>24: Poland | 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><br>**Cross-reference**<br>NCU country code: Function 07, parameter CC.<br>The bit switch country code will automatically be changed to the same country code with the NCU country code when you change the NCU country code and exit the service mode.<br><br>**Note:** If RAM reset level 1 is executed, this bit switch resets to UK (02) for EU/Asia models and to USA (11) for the NA model. |

Service Tables

| System Switch 10 | | |
|---|---|---|
| **No.** | **FUNCTION** | **COMMENTS** |
| **0–7♦** | Threshold memory level for parallel memory transmission | Threshold = N x 64 Kbytes<br>N can be between 00 - FF(H)<br>Default setting: 04(H) = 256 Kbytes |

| System Switch 11 | | |
|---|---|---|
| **No.** | **FUNCTION** | **COMMENTS** |
| **0♦** | TTI printing position<br>**0:** Superimposed on the page data<br>**1:** Printed before the data leading edge | Change this bit to 1 if the TTI overprints information that the customer considers important. |
| **1–3♦** | Not used | Do not change these settings. |
| **4♦** | Received-time printing position<br>**0:** Superimposed on the page data<br>**1:** Printed after the data trailing edge | Change this bit to 1 if the reception time overprints information that the customer considers important. |
| **5♦** | Preferred type of terminal identification to appear on reports<br>**0:** Label programmed in the machine<br>**1:** Dialed number | Change this bit to 1 If the customer wants reports to always show actually dialed numbers rather than programmed labels. (If the setting is 0, the report will show programmed label if one is registered, or dialed number otherwise). |
| **6♦** | Memory reception if no RTI or CSI received<br>**0:** Reception disabled<br>**1:** Reception enabled only when there is no problem with the printer mechanism | This switch setting is dependent on user parameter switch 05 bit 1.<br>This SW — U.P.05 bit 1: 0: Reception always enabled<br>This SW 0 U.P.05 bit 1: 1: Reception disabled<br>This SW 1 U.P.05 bit 1: 1: Reception enabled only there is no problem with theprinter mechanism |
| **7♦** | Not used | Do not change the setting. |

| System Switch 12 | | |
|---|---|---|
| **No.** | **FUNCTION** | **COMMENTS** |
| **0–7♦** | TTI printing position in the main scan direction | 08 to 92 (BCD) mm. Only input even numbers. This setting determines the TTI print start position from the left edge of the paper. If the TTI is too far to the right, the file number, which is on the top right of the page, may obscure it. |

| **System Switch 13♦** - Not used (do not change any of these settings) |
|---|

| System Switch 14 | | |
|---|---|---|
| **No.** | **FUNCTION** | **COMMENTS** |
| **0–7** | Wait time between pages in printer mode (with the optional printer unit) | 05 to 64 (H) (5 to 100s)<br>During a print job, a fax message could come in while a page from the computer is still being compiled.<br>If the timer has not run out yet, the machine will continue to compile the page from the printer and the fax message will not be printed. However, if the timer runs out before the page has been compiled, all pages of the fax message will be printed, then the rest of the waiting print job will be output.<br>Therefore, with a longer setting, the fax machine is more likely to wait until the end of print job output before printing any incoming fax messages. A shorter setting allows the fax machine to interrupt a print job to print an incoming fax message.<br>Default setting: 0A(H) = 10 s |

| System Switch 15 | | |
|---|---|---|
| **No.** | **FUNCTION** | **COMMENTS** |
| **0**♦ | Not used | Do not change this setting. |
| **1**♦ | Programming with European characters<br>**0:** Disabled **1:** Enabled | **1:** The user can program with European characters (e.g. "**ä**", "**å**") for the TTI, Quick Dial labels, etc. |
| **2**♦ | Change NCU country code<br>**0:** Disabled **1:** Enabled | **0:** The machine does not display "c.c." in the service mode 07: NCU, 0: NCU PARA menu. |
| **3** | Country code programming level<br>**0:** Service level<br>**1:** User level | **1:** The user can change the country code with the User Tools menu. |
| **4**♦ | Daylight saving time automatic adjustment (NA only)<br>**0:** Manual adjustment<br>**1:** Automatic adjustment | **1:** The clock is adjusted automatically at start and end of daylight-saving time (in May and October). |
| **5–7**♦ | Not used | Do not change these settings. |

| System Switch 16 | | |
|---|---|---|
| **No.** | **FUNCTION** | **COMMENTS** |
| **0** | Protection of data on the optional memory card<br>**0:** Disabled **1:** Enabled | **0:** When a memory card is installed in the machine's IC card slot before power-off, all the data in the card is initialized if the machine does not detect the card at the next power-on.<br>**1:** When a memory card is installed in the machine's IC card slot before power-off, the machine does not start up unless the machine detects the IC card at the next power-on. This prevents the data inside the card from being initialized while replacing PCBs or downloading software. |
| **1–7♦** | Not used | Do not change these settings. |

| System Switch 17 | | |
|---|---|---|
| **No.** | **FUNCTION** | **COMMENTS** |
| **0♦** | Not used | Do not change the setting. |
| **1** | Direct fax number entry<br>**0:** Disabled **1:** Enabled | **0:** The user must place the original on the ADF before dialing.<br>**1**: Users can dial fax numbers before setting the original. |
| **2♦** | Not used | Do not change the setting. |
| **3♦** | Tonal signals key when the machine is in pulse dial setting.<br>**0:** Disabled **1:** Enabled | **0:** No tone signal on dialing.<br>**1:** The machine can dial out tone signals. |
| **4, 5♦** | Not used | Do not change these settings. |
| **6♦** | Notify user when the communication is complete<br>**0:** Not notify **1:** Notify | **0:** No notification.<br>**1:** The machine notifies the user with a beeper when the communication is complete. |
| | Not used | Do not change the setting. |

| |
|---|
| **System Switch 18♦** - Not used (do not change any of these settings) |
| **System Switch 19♦** - Not used (do not change any of these settings) |
| **System Switch 1A♦** - Not used (do not change any of these settings) |
| **System Switch 1B♦** - Not used (do not change any of these settings) |
| **System Switch 1C♦** - Not used (do not change any of these settings) |
| **System Switch 1D♦** - Not used (do not change any of these settings) |
| **System Switch 1E♦** - Not used (do not change any of these settings) |
| **System Switch 1F♦** - Not used (do not change any of these settings) |

## 5.3.2 SCANNER SWITCHES

| Scanner Switch 00 | | |
|---|---|---|
| **No** | **FUNCTION** | **COMMENTS** |
| **0**♦ | MTF<br>**0:** Disabled **1:** Enabled | |
| **1**♦ | Text/Photo separation in halftone mode<br>**0:** Disabled **1:** Enabled | Normally keep this bit at 1 to get a good halftone quality. |
| **2, 3**♦ | Maximum transmittable document length.<br>**Bit 3 2 Setting**<br>0 0 600 mm<br>0 1 1,200 mm<br>1 0 Not used<br>1 1 Not used | |
| **4**♦ | OR processing in immediate Tx and copying (Standard resolution)<br>**0:** Disabled **1:** Enabled | **0:** The machine scans the document in 3.85 line/mm steps, then transmits or makes copies.<br>**1:** The machine scans the document in 7.7 line/mm steps. Each pair of lines goes through OR processing before transmission or copy making. Toner may be used up earlier if OR processing is enabled. |
| **5**♦ | Not used | Do not change the setting. |
| **6** | OR processing in memory Tx at Standard resolution<br>**0:** Disabled **1:** Enabled | **0:** The machine scans the document in 3.85 line/mm steps, then stores the document in memory.<br>**1:** The machine scans the document in 7.7 line/mm steps. Each pair of lines goes through OR processing before storing in memory. Toner may be used up earlier if OR processing is enabled. |
| **7**♦ | Not used | Do not change the setting. |

| |
|---|
| **Scanner Switch 01**♦ - Not used (do not change any of these settings) |
| **Scanner Switch 02**♦ - Not used (do not change any of these settings) |
| **Scanner Switch 03**♦ - Not used (do not change any of these settings) |
| **Scanner Switch 04**♦ - Not used (do not change any of these settings) |
| **Scanner Switch 05**♦ - Not used (do not change any of these settings) |
| **Scanner Switch 06**♦ - Not used (do not change any of these settings) |
| **Scanner Switch 07**♦ - Not used (do not change any of these settings) |
| **Scanner Switch 08**♦ - Not used (do not change any of these settings) |
| **Scanner Switch 09**♦ - Not used (do not change any of these settings) |
| **Scanner Switch 0A**♦ - Not used (do not change any of these settings) |
| **Scanner Switch 0B**♦ - Not used (do not change any of these settings) |
| **Scanner Switch 0C**♦ - Not used (do not change any of these settings) |
| **Scanner Switch 0D**♦ - Not used (do not change any of these settings) |
| **Scanner Switch 0E**♦ - Not used (do not change any of these settings) |
| **Scanner Switch 0F**♦ - Not used (do not change any of these settings) |

## 5.3.3 PLOTTER SWITCHES

| Plotter Switch 00 | | |
|---|---|---|
| **No** | **FUNCTION** | **COMMENTS** |
| **0**♦ | Page separation mark<br>**0:** Disabled **1:** Enabled | **0:** No marks are printed.<br>**1**: If a received page has to be printed out on two sheets, an asterisk inside square brackets is printed at the bottom right hand corner of the first sheet, and a "2" inside a small box is printed at the top right hand corner of the second sheet. This helps the user to identify pages that have been split. |
| **1**♦ | Repetition of data when the received page is longer than the printer paper<br>**0:** Disabled **1:** Enabled | **0:** The next page continues from where the previous page left off.<br>**1:** The final 10 mm of the previous page are repeated at the top of the next page. |
| **2-7**♦ | Not used | Do not change these settings. |

| Plotter Switch 01 | | |
|---|---|---|
| **No** | **FUNCTION** | **COMMENTS** |
| **0**♦ | Reset the fusing unit failure<br>**0:** Off<br>**1:** On (Clear) | When a fusing error occurs, set this bit to 1 after fixing the problem. The machine then resets the fusing error. Switch the machine off/on and this bit will reset itself to 0. |
| **1-7**♦ | Not used | Do not change these settings. |

**Plotter Switch 02**♦ - Not used (do not change any of these settings)

| Plotter Switch 03 | | |
|---|---|---|
| **No** | **FUNCTION** | **COMMENTS** |
| **0**♦ | Length reduction of received data<br>**0:** Disabled **1:** Enabled | **0:** Incoming pages are printed without length reduction.<br>(Page separation threshold: Plotter Switch 03, bits 4 to 7)<br>**1:** Incoming page length is reduced when printing.<br>(Maximum reducible length: Plotter Switches 04, bits 0 to 4) |
| **1-3**♦ | Not used | Do not change these settings. |

| Plotter Switch 03 | | |
|---|---|---|
| **No** | **FUNCTION** | **COMMENTS** |
| **4-7♦** | Page separation threshold (with reduction disabled with switch 03-0 above)<br><br>If the incoming page is up to x mm longer than the length of copy paper, the excess portion will not be printed. If the incoming page is more than x mm longer than the length of copy paper, the excess portion will be printed on the next page.<br>The value of x is determined by these four bits.<br><br>Hex value of bits 4 to 7 x (mm)<br>0 0<br>1 1<br>and so on until<br>F 15<br><br>Default setting: 6 mm<br><br>**Cross reference**<br>Length reduction On/Off: Plotter Switch 03, Bit 0 | |

| Plotter Switch 04 and 05 | | |
|---|---|---|
| **No** | **FUNCTION** | **COMMENTS** |
| **0-7♦** | Reduction ratios used for different paper sizes (with reduction enabled in switch 03-bit 0 above)<br>If reduction is enabled, the data will be reduced in the lengthwise direction before printing.<br>These switches determine the maximum reduction ratio for each paper size.<br><br>**Cross-reference**<br>Switch 04/05 Paper used<br>Bit0 A5 sideways/HLT sideways<br>Bit1 Not used<br>Bit2 LT/B5<br>Bit3 A4<br>Bit4 F<br>Bit5 LG<br>Bit6 Not used<br>Bit7 Not used<br><br>SW04 SW05 Reduction Ratio<br>0 0 Disabled<br>1 0 4/3<br>0 1 8/7<br>1 0 12/11 | |

Service Tables

| |
|---|
| **Plotter Switch 06**♦ - Not used (do not change any of these settings) |
| **Plotter Switch 07**♦ - Not used (do not change any of these settings) |
| **Plotter Switch 08**♦ - Not used (do not change any of these settings) |
| **Plotter Switch 09**♦ - Not used (do not change any of these settings) |
| **Plotter Switch 0A**♦ - Not used (do not change any of these settings) |
| **Plotter Switch 0B**♦ - Not used (do not change any of these settings) |
| **Plotter Switch 0C**♦ - Not used (do not change any of these settings) |
| **Plotter Switch 0D**♦ - Not used (do not change any of these settings) |
| **Plotter Switch 0E**♦ - Not used (do not change any of these settings) |
| **Plotter Switch 0F**♦ - Not used (do not change any of these settings) |

## 5.3.4 COMMUNICATION SWITCHES

| Communication Switch 00 | | |
|---|---|---|
| **No** | **FUNCTION** | **COMMENTS** |
| **0, 1♦** | Compression modes available in receive mode<br>**Bit 1 0 Modes**<br>0 0 MH only<br>0 1 MH/MR<br>1 0 MH/MR/MMR<br>1 1 MH/MR/MMR/JBIG | These bits determine the compression capabilities to be declared in phase B (handshaking) of the T.30 protocol. |
| **2, 3♦** | Compression modes available in transmit mode<br>**Bit 3 2 Modes**<br>0 0 MH only<br>0 1 MH/MR<br>1 0 MH/MR/MMR<br>1 1 MH/MR/MMR/JBIG | These bits determine the compression capabilities to be used in the transmission and to be declared in phase B (handshaking) of the T.30 protocol. |
| **4** | JBIG priority transmission<br>**0:** Disabled **1:** Enabled | **0:** If JBIG compression is already in use, MMR compression is used.<br>**1:** If JBIG compression is already in use, any subsequent jobs are placed on hold until the JBIG resource is free. |
| **5** | JBIG reception mode<br>**0:** Standard mode only<br>**1:** Standard and optional mode (default) | **0**: JBIG optional mode is switched off for reception. Change the setting when communication problems occur using JBIG compression. |
| **6** | Priority for JBIG mode used for transmission<br>**0:** Standard mode<br>**1:** Optional mode (default) | This bit determines the priority for the compression mode used for JBIG transmission.<br>Change the setting when communication problems occur using JBIG compression. |
| **7** | Closed network (reception)<br>**0:** Disabled **1:** Enabled | **1:** No reception 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♦** | ECM<br>**0:** Off **1:** On | If this bit is set to 0, ECM is switched off for all communications. |
| **1♦** | Not used | Do not change the setting. |

| Communication Switch 01 | | |
|---|---|---|
| **No** | **FUNCTION** | **COMMENTS** |
| **2, 3**♦ | Wrong connection prevention method<br>**Bit 3 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. |
| **4**♦ | Operator call if no response is received in reply to NSF/DIS<br>**0:** Disabled **1:** Enabled | Set this bit to 1 if the user expects to receive telephone calls at the same number that the machine is connected to. The machine will then alert the user if a phone call comes in. |
| **5**♦ | Not used | Do not change the setting. |
| **6, 7**♦ | Maximum printable page length available<br>**Bit 7 6 Setting**<br>0 0 No limit<br>0 1 B4 (364 mm)<br>1 0 A4 (297 mm)<br>1 1 Not used | The setting determined by these bits is informed to the transmitting terminal in the pre-message protocol exchange (in the DIS/NSF frames). |

| Communication Switch 02 | | |
|---|---|---|
| **No** | **FUNCTION** | **COMMENTS** |
| **0**♦ | Burst error threshold<br>**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.<br>**Resolution** **100 dpi 3.85 l/mm** **200 dpi 7.7 l/mm** **400 dpi 15.4 l/mm**<br>Low settings 6 12 24<br>High settings 12 24 48<br>This bit is ignored if ECM is in use.<br>This method is enabled only when the switch 02-bit 7 below is set to 1. |
| **1**♦ | Acceptable total error line ratio<br>**0:** 5% **1:** 10% | If the error line ratio for a page exceeds the acceptable ratio, RTN will be sent to the other end.<br>This bit is ignored if ECM is in use. |
| **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. |

| Communication Switch 02 | | |
|---|---|---|
| **No** | **FUNCTION** | **COMMENTS** |
| **3♦** | Hang-up decision when a negative code (RTN or PIN) is received during immediate transmission<br>**0:** No hang-up<br>**1:** Hang-up | **0:** The next page will be sent even if RTN or PIN is received.<br>**1:** The machine will send DCN and hang up if it receives RTN or PIN.<br>This bit is ignored for memory transmissions or if ECM is being used. |
| **4, 5♦** | Wrong connection prevention method (Auto Service Call)<br>**Bit 3 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. |
| **6♦** | Not used | Do not change the setting. |
| **7♦** | Burst error<br>**0:** Disabled **1:** Enabled | If this switch is set to 0, burst error count method in switch 02-bit 0 above is disabled, and only total error line count method in switch 02-bit 1 above is used. |

| Communication Switch 03 | | |
|---|---|---|
| **No** | **FUNCTION** | **COMMENTS** |
| **0–7♦** | Maximum number of page retransmissions in a memory transmission | 00 - FF (Hex) times.<br>This setting is not used if ECM is switched on.<br>Default setting - 03(H) |

| |
|---|
| **Communication Switch 04♦** - Not used (do not change any of these settings) |
| **Communication Switch 05♦** - Not used (do not change any of these settings) |

| Communication Switch 06 | | |
|---|---|---|
| **No** | **FUNCTION** | **COMMENTS** |
| **0–5♦** | Not used | Do not change these settings. |
| **6♦** | Dialing requirements: USA<br>**0:** Disabled **1:** Enabled | This function automatically sets these switches to the required settings for each country after selecting a country code (System switch 0F). |
| **7♦** | DTS requirements: Germany<br>**0:** Disabled **1:** Enabled | |

| |
|---|
| **Communication Switch 07♦** - Not used (do not change any of these settings) |
| **Communication Switch 08♦** - Not used (do not change any of these settings) |
| **Communication Switch 09♦** - Not used (do not change any of these settings) |

| 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. |
| **1–6**♦ | Not used | Do not change these settings. |
| **7**♦ | Emergency calls using 999<br>**0:** Enabled **1:** Disabled | Hong Kong only<br>If this bit is at 1, the machine will not allow you to dial 999 at the auto-dialer. |

| |
|---|
| **Communication Switch 0B**♦ - Not used (do not change any of these settings) |
| **Communication Switch 0C**♦ - Not used (do not change any of these settings) |

| Communication Switch 0D | | |
|---|---|---|
| **No** | **FUNCTION** | **COMMENTS** |
| **0–7**♦ | The available memory threshold, below which ringing detection (and therefore reception into memory) is disabled | 00 to FF (Hex), unit = 2 KB<br>(e.g. 0C(H) = 24 KB)<br>One page is about 24 KB.<br>The machine refers to this setting before each fax reception. If the remaining memory is below this threshold, the machine cannot receive fax messages.<br>If this setting remains at 0, the machine will detect ringing signals and enter receive mode even if there is no available memory. This will result in communication failure. |

| Communication Switch 0E | | |
|---|---|---|
| **No** | **FUNCTION** | **COMMENTS** |
| **0–7**♦ | Minimum interval between automatic dialing attempts | 06 to FF (Hex), unit = 2 s<br>(e.g., 06(H) = 12 s)<br>This value is the minimum time that the machine waits before it dials the next destination. |

| |
|---|
| **Communication Switch 0F**♦ - Not used (do not change any of these settings) |

| Communication Switch 10 | | |
|---|---|---|
| **No** | **FUNCTION** | **COMMENTS** |
| **0–7**♦ | Memory transmission: Maximum number of dialing attempts to the same destination | 01 - FE (Hex) = 1 - 254 times |

| Communication Switch 11 | | |
|---|---|---|
| **No** | **FUNCTION** | **COMMENTS** |
| **0–7** | Immediate transmission: Maximum number of dialing attempts to the same destination | 01 - FE (Hex) = 1 - 254 times |

| Communication Switch 12 | | |
|---|---|---|
| **No** | **FUNCTION** | **COMMENTS** |
| **0–7♦** | Memory transmission: Interval between dialing attempts to the same destination | 00 - FF (Hex) = 0 - 255 minutes |

| Communication Switch 13 | | |
|---|---|---|
| **No** | **FUNCTION** | **COMMENTS** |
| **0–7** | Immediate transmission: Interval between dialing attempts to the same destination. | 00 - FF (Hex) = 0 - 255 minutes |

| Communication Switch 14 | | |
|---|---|---|
| **No** | **FUNCTION** | **COMMENTS** |
| **0♦** | Inch-to-mm conversion during transmission<br>**0:** Disabled (default)<br>**1:** Enabled | **0:** Transmitting is always done in inch format.<br>**1:** If the other end only has mm-based resolution for printing, the machine converts the scanned data to mm-format before transmission. |
| **1♦** | Inch/mm format informed to the other terminal during transmission<br>**0:** Always in inch format<br>**1:** Dependent on the other terminal (default) | **0:** The machine always informs the other terminal that the resolution is in inch format and transmits with the inch format.<br>**1:** The machine informs the other terminal that the resolution is in mm format and transmits with the inch format if the other end only has mm-based resolution.<br>This setting is informed to the receiving terminal in the pre-message protocol exchange (in the DCS/NSS frames). |
| **2♦** | Not used | Do not change the setting. |
| **3♦** | I/O rate for Detail reception<br>**0:** Off (Normal)<br>**1:** On (Double) | **1:** Shortens receiving time for non-ECM communication<br>**Note:** In most cases this setting should be left at 0. Communication will fail if fusing warm-up time is longer than the time it takes to receive the image. |

| Communication Switch 14 | | |
|---|---|---|
| **No** | **FUNCTION** | **COMMENTS** |
| **4♦** | Positive response timing when substitute reception is disabled<br>**0:** When the fusing exit sensor turns on<br>**1:** When all image data are stored in the memory | This switch setting is effective when user parameter switch 05 bit 0 is set to 0 (Substitute reception is off).<br>**0:** The data is not stored in the SAF memory. The machine sends the positive response to the other end when the leading edge of the paper turns on the fusing exit sensor. This informs the other end of successful reception after the received image data has already been printed.<br>**1:** The incoming data is stored in the SAF memory. The machine sends the positive response to the other end when all received image data have been stored in the SAF memory. This sends the positive response earlier than when this bit switch is set to 0, but the page has not been printed yet.<br><br>The data goes to SAF, like for substitute reception. However, it is different from substitute reception, as follows:<br>• The machine rejects all incoming ringing signals when the printer is out of order.<br>• The received image data are stored in the memory even if no RTI/CSI is received. |
| **5♦** | Not used | Do not change the setting. |
| **6, 7♦** | Available unit of resolution in which fax messages are received<br>**Bit 7 6 Unit**<br>0 0 mm<br>0 1 inch<br>1 0 mm and inch (default)<br>1 1 Not used | For the best performance, do not change the factory settings.<br><br>The setting determined by these bits is informed to the transmitting terminal in the pre-message protocol exchange (in the DIS/NSF frames). |

| Communication Switch 15 | | |
|---|---|---|
| **No** | **FUNCTION** | **COMMENTS** |
| **0, 1♦** | Available resolution for receiving fax messages<br>**Bit 0 1:** 200 x 100/8 x 3.85<br>**Bit 1 1:** 200 x 200/8 x 7.7<br>Other bits: Not used | 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). |
| **2–7♦** | Not used | Do not change these settings. |

| **Communication Switch 16♦** - Not used (do not change any of these settings) |
|---|

| Communication Switch 17 | | |
|---|---|---|
| **No** | **FUNCTION** | **COMMENTS** |
| **0**♦ | Not used | Do not change the setting. |
| **1** | SUB reception<br>**0:** Disabled **1:** Enabled | **0:** Disables signal reception features, such as confidential reception from another maker's machine, that require a SUB (Subaddress) setting. |
| **2–7**♦ | Not used | Do not change these settings. |

| |
|---|
| **Communication Switch 18**♦ - Not used (do not change any of these settings) |
| **Communication Switch 19**♦ - Not used (do not change any of these settings) |
| **Communication Switch 1A**♦ - Not used (do not change any of these settings) |

| Communication Switch 1B♦ | | |
|---|---|---|
| **No** | **FUNCTION** | **COMMENTS** |
| **0**<br>**1**<br>**2**<br>**3**<br>**4**<br>**5**<br>**6**<br>**7** | Extension access code (0 to 7) to turn V.8 protocol On/Off<br>**0:** On<br>**1:** Off | If the PABX does not support V.8/V.34 protocol procedure, set one of these bits to "1" to disable V.8.<br>**Example:** If "0" is the PSTN access code, set bit 0 to 1. When the machine detects "0" as the first dialed number, it automatically disables V.8 protocol. (Alternatively, if "3" is the PSTN access code, set bit 3 to 1.) |

| Communication Switch 1C | | |
|---|---|---|
| **No** | **FUNCTION** | **COMMENTS** |
| **0**♦<br>**1**♦ | Extension access code (8 and 9) to turn V.8 protocol On/Off<br>**0:** On<br>**1:** Off | Refer to communication switch 1B.<br>**Example:** If "8" is the PSTN access code, set bit 0 to 1. When the machine detects "8" as the first dialed number, it automatically disables V.8 protocol. (If "9" is the PSTN access code, use bit 1.) |
| **2–7**♦ | Not used | Do not change these settings. |

| |
|---|
| **Communication Switch 1D**♦ - Not used (do not change any of these settings) |
| **Communication Switch 1E**♦ - Not used (do not change any of these settings) |
| **Communication Switch 1F**♦ - Not used (do not change any of these settings) |

## 5.3.5 G3 SWITCHES

| G3 Switch 00 | | |
|---|---|---|
| **No** | **FUNCTION** | **COMMENTS** |
| **0, 1♦** | Monitor speaker during communication (tx and rx)<br>**Bit 1 0 Setting**<br>0 0 Disabled<br>0 1 Up to Phase B<br>1 0 All the time<br>1 1 Not used | **(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<br>**0:** Disabled **1:** Enabled | **1:** The monitor speaker is enabled during memory transmission. |
| **3-7♦** | Not used | Do not change these settings. |

| G3 Switch 01 | | |
|---|---|---|
| **No** | **FUNCTION** | **COMMENTS** |
| **0–3♦** | Not used | Do not change these settings. |
| **4♦** | DIS frame length<br>**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 **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.30-standard frames only.<br>**1:** Disables NSF/NSS signals (these are used in non-standard mode communication) |
| **1–4♦** | Not used | Do not change these settings. |
| **5♦** | Use of modem rate history for transmission using Quick/Speed Dials<br>**0:** Disabled **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♦** | AI short protocol (transmission and reception)<br>**0:** Disabled **1:** Enabled | Refer to the Core Technology Manual for details about AI Short Protocol. |
| **7♦** | Not used | Do not change the settings. |

| G3 Switch 03 | | |
|---|---|---|
| **No** | **FUNCTION** | **COMMENTS** |
| **0**♦ | DIS detection number<br>(Echo countermeasure)<br>**0:** 1<br>**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**♦ | Not used | Do not change the setting. |
| **2**♦ | V.8 protocol<br>**0:** Disabled **1:** Enabled | **0:** V.8/V.34 communications will not be possible.<br>**Note:** Do not set to 0 unless the line condition is always bad enough to slow down the data rate to 14.4 kbps or lower. |
| **3**♦ | ECM frame size<br>**0:** 256 bytes<br>**1:** 64 bytes | Keep this bit at “0” in most cases. |
| **4**♦ | CTC transmission conditions<br>**0:** Ricoh mode (PPR x 1)<br>**1:** ITU-T mode (PPR x 4) | When using ECM, the machine will choose a slower modem rate after receiving PPR once (Ricoh mode) or four times (ITU-T mode).<br>This bit is ineffective in V.34 communications. |
| **5**♦ | Modem rate for the next page after receiving a negative code (RTN or PIN)<br>**0:** No change **1:** Fallback | **1:** The TX modem rate of the machine will fall back before sending the next page if it receives a negative code. This bit is ignored if ECM is in use. |
| **6**♦ | Not used | Do not change the setting. |
| **7**♦ | Polarity change after DIS/NSF detection<br>**0:** Disabled **1:** Enabled | This bit should be set to ”1” only to deal with communication problems caused by certain types of exchanger. |

| G3 Switch 04 | | |
|---|---|---|
| **No** | **FUNCTION** | **COMMENTS** |
| **0–3**♦ | Training error detection threshold | 0 - F (Hex): 0 - 15 bits<br>If the number of error bits in the received TCF is below this threshold, the machine informs the sender that the training was successful. |
| **4–7**♦ | Not used | Do not change these settings. |

| G3 Switch 05 | | |
|---|---|---|
| **No** | **FUNCTION** | **COMMENTS** |
| **0–3♦** | Initial Tx modem rate<br>**Bit 3 2 1 0 Setting (bps)**<br>0 0 0 1 2.4 k<br>0 0 1 0 4.8 k<br>0 0 1 1 7.2 k<br>0 1 0 0 9.6 k<br>0 1 0 1 12.0 k<br>0 1 1 0 14.4 k<br>0 1 1 1 16.8 k<br>1 0 0 0 19.2 k<br>1 0 0 1 21.6 k<br>1 0 1 0 24.0 k<br>1 0 1 1 26.4 k<br>1 1 0 0 28.8 k<br>1 1 0 1 31.2 k<br>1 1 1 0 33.6 k<br>Other settings - Not used | These bits set the initial starting modem rate for transmission.<br><br>Use the dedicated transmission parameters if you need to change this for specific receivers.<br><br>If a modem rate of 14.4 kbps or slower is selected, V.8 protocol should be disabled manually.<br><br>**Cross reference**<br>V.8 protocol on/off - G3 switch 03, bit 2 |
| **4, 5♦** | Initial modem type for 9.6 k or 7.2 kbps.<br>**Bit 5 4 Setting**<br>0 0 V.29<br>0 1 V.17<br>1 0 V.34<br>1 1 Not used | These bits set the initial modem type for 9.6 and 7.2 kbps, if the initial modem rate is set at these speeds. |
| **6, 7♦** | Not used | Do not change these settings. |

| G3 Switch 06 | | |
|---|---|---|
| **No** | **FUNCTION** | **COMMENTS** |
| **0-3♦** | Initial Rx modem rate<br>**Bit 3 2 1 0 Setting (bps)**<br>0 0 0 1 2.4 k<br>0 0 1 0 4.8 k<br>0 0 1 1 7.2 k<br>0 1 0 0 9.6 k<br>0 1 0 1 12.0 k<br>0 1 1 0 14.4 k<br>0 1 1 1 16.8 k<br>1 0 0 0 19.2 k<br>1 0 0 1 21.6 k<br>1 0 1 0 24.0 k<br>1 0 1 1 26.4 k<br>1 1 0 0 28.8 k<br>1 1 0 1 31.2 k<br>1 1 1 0 33.6 k<br>Other settings - Not used | These bits set the initial starting modem rate for reception.<br><br>Use a lower setting if high speeds pose problems during reception.<br><br>If a modem rate of 14.4 kbps or slower is selected, V.8 protocol should be disabled manually.<br><br>**Cross reference**<br>V.8 protocol on/off - G3 switch 03, bit 2 |

| G3 Switch 06 | | |
|---|---|---|
| **4–7♦** | Modem types available for reception<br>**Bit 7 6 5 4 Setting**<br>0 0 0 1 V.27ter<br>0 0 1 0 V.27ter, V.29<br>0 0 1 1 Not used<br>0 1 0 0 V.27ter, V.29, V.17<br>0 1 0 1 V.27ter, V.29, V.17,V.34<br>Other settings - Not used | The setting of these bits is used to inform the transmitting terminal of the available modem type for the machine in receive mode.<br><br>If V.34 is not selected, V.8 protocol must be disabled manually.<br><br>**Cross reference**<br>V.8 protocol on/off - G3 switch 03, bit 2 |

| G3 Switch 07 | | |
|---|---|---|
| **No** | **FUNCTION** | **COMMENTS** |
| **0, 1♦** | PSTN cable equalizer (tx mode: Internal)<br>**Bit 1 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><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><br>**Note:** This setting is not effective in V.34 communications. |
| **2, 3♦** | PSTN cable equalizer (rx mode: Internal)<br>**Bit 3 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><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><br>**Note:** This setting is not effective in V.34 communications. |
| **4♦** | PSTN cable equalizer (V.27ter, V.29, V.33/V.17, V.8 rx mode: External)<br>**0:** Disabled **1:** Enabled | Keep this bit at “1” in most cases. |
| **5–7♦** | Not used | Do not change these settings. |

| G3 Switch 08 | | |
|---|---|---|
| **No** | **FUNCTION** | **COMMENTS** |
| **0, 1♦** | PABX cable equalizer<br>(tx mode: Internal)<br>**Bit 1 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><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><br>**Note:** This setting is not effective in V.34 communications. |
| **2, 3♦** | PABX cable equalizer<br>(rx mode: Internal)<br>**Bit 3 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><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><br>**Note:** This setting is not effective in V.34 communications. |
| **4♦** | PABX cable equalizer<br>(V.27ter, V.29, V.33/V.17, V.8 rx mode: External)<br>**0:** Disabled **1:** Enabled | Set this bit to 0 when line quality is good.<br>(e.g. for a digital PABX) |
| **5–7♦** | Not used | Do not change these settings. |

| **G3 Switch 09♦** - Not used (do not change any of these settings) |
|---|

| G3 Switch 0A | | |
|---|---|---|
| **No** | **FUNCTION** | **COMMENTS** |
| **0, 1♦** | Maximum allowable carrier drop during image data reception<br>**Bit 1 0 Value (ms)**<br>0 0 200<br>0 1 400<br>1 0 800<br>1 1 Not used | These bits set the acceptable modem carrier drop time.<br>Try using a longer setting if error code 0-22 is frequent. |
| **2♦** | Reception carrier drop operation.<br>**0:** Continue reception<br>**1:** Disconnect the line | This bit decides what the machine does when there is a carrier drop in the image data. |
| **3♦** | Not used | Do not change the setting. |

| G3 Switch 0A | | |
|---|---|---|
| **4♦** | Maximum allowable frame interval during image data reception.<br>**0:** 5 s<br>**1:** 13 s | This bit set the maximum interval between EOL (end-of-line) signals from the other end.<br>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<br>**0:** 6 s<br>**1:** 12 s | When the sending terminal is controlled by a computer, there may be a delay in receiving page data after the local machine accepts set-up data and sends CFR. This is outside the T.30 recommendation. But, if this delay occurs, set this bit to 1 to give the sending machine more time to send data.<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 Switch 0B (Europe only) | | |
|---|---|---|
| | **FUNCTION** | **COMMENTS** |
| **0♦** | Protocol requirements: Europe<br>**0:** Disabled **1:** Enabled | Program these bit switches manually to match local requirements. |
| **1♦** | Protocol requirements: Spain<br>**0:** Disabled **1:** Enabled | |
| **2♦** | Protocol requirements: Germany<br>**0:** Disabled **1:** Enabled | |
| **3♦** | Protocol requirements: France<br>**0:** Disabled **1:** Enabled | |
| **4♦** | PTT requirements: Germany<br>**0:** Disabled **1:** Enabled | |
| **5–7♦** | Not used | Do not change these settings. |

| |
|---|
| **G3 Switch 0C♦** - Not used (do not change any of these settings) |
| **G3 Switch 0D♦** - Not used (do not change any of these settings) |
| **G3 Switch 0E♦** - Not used (do not change any of these settings) |
| **G3 Switch 0F♦** - Not used (do not change any of these settings) |

# 5.4 NCU PARAMETERS♦

The following tables give the RAM addresses and the parameter calculation units that the machine uses for ringing signal detection and automatic dialing. The factory settings for each country are also given. Most of these must be changed by -RAM read/write (SP7-955), but some can be changed using NCU Parameter programming (Function 07-0); if Function 07-0 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.

| Address | Function | Unit | Remarks |
|---|---|---|---|
| 401400 | 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 07-0 (parameter C.C.).<br>**Note:** NA model only<br>You will have to set system switch 15 bit 2 to 1 before trying to change the NCU country code. | |

| 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 | 0B |
| Portugal | 12 | 0C |
| Holland | 13 | 0D |
| Spain | 14 | 0E |
| Israel | 15 | 0F |
| 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 |
| Formosa | 27 | 1B |
| Korea | 28 | 1C |
| Turkey | 32 | 20 |
| Greece | 33 | 21 |
| Hungary | 34 | 22 |
| Czech | 35 | 23 |
| Poland | 36 | 24 |

| Address | Function | Unit | Remarks |
|---|---|---|---|
| 401401 | Line current detection time | 20 ms | Line current detection is disabled.<br>Line current is not detected if 401401 contains FF. |
| 401402 | Line current wait time | | |
| 401403 | Line current drop detect time | | |
| 401404 | PSTN dial tone frequency upper limit (high byte) | Hz (BCD) | If both addresses contain FF(H), tone detection is disabled.<br>See Note 7 |
| 401405 | PSTN dial tone frequency upper limit (low byte) | | |
| 401406 | PSTN dial tone frequency lower limit (high byte) | | |
| 401407 | PSTN dial tone frequency lower limit (low byte) | | |
| 401408 | PSTN dial tone detection time | 20 ms | If 401408 contains FF(H), the machine pauses for the pause time (address 40140D / 40140E).<br><br>Italy: See Note 2 and 7 |
| 401409 | PSTN dial tone reset time (LOW) | | |
| 40140A | PSTN dial tone reset time (HIGH) | | |
| 40140B | PSTN dial tone continuous tone time | | |
| 40140C | PSTN dial tone permissible drop time | | |
| 40140D | PSTN wait interval (LOW) | 20 ms | See Note 7 |
| 40140E | PSTN wait interval (HIGH) | | |
| 40140F | PSTN ring-back tone detection time | 20 ms | Detection is disabled if this contains FF. |
| 401410 | PSTN ring-back tone off detection time | 20 ms | |
| 401411 | PSTN detection time for silent period after ring-back tone detected (LOW) | | |
| 401412 | PSTN detection time for silent period after ring-back tone detected (HIGH) | | |
| 401413 | PSTN busy tone frequency upper limit (high byte) | Hz (BCD) | If both addresses contain FF(H), tone detection is disabled. |
| 401414 | PSTN busy tone frequency upper limit (low byte) | | |
| 401415 | PSTN busy tone frequency lower limit (high byte) | Hz (BCD) | If both addresses contain FF(H), tone detection is disabled. |
| 401416 | PSTN busy tone frequency lower limit (low byte) | | |
| 401417 | PABX dial tone frequency upper limit (high byte) | Hz (BCD) | If both addresses contain FF(H), tone detection is disabled. |
| 401418 | PABX dial tone frequency upper limit (low byte) | | |
| 401419 | PABX dial tone frequency lower limit (high byte) | Hz (BCD) | If both addresses contain FF(H), tone detection is disabled. |
| 40141A | PABX dial tone frequency lower limit (low byte) | | |

| Address | Function | Unit | Remarks |
|---|---|---|---|
| 40141B | PABX dial tone detection time | 20 ms | If 40141B contains FF, the machine pauses for the pause time (401420 / 401421). |
| 40141C | PABX dial tone reset time (LOW) | | |
| 40141D | PABX dial tone reset time (HIGH) | | |
| 40141E | PABX dial tone continuous tone time | | |
| 40141F | PABX dial tone permissible drop time | | |
| 401420 | PABX wait interval (LOW) | | |
| 401421 | PABX wait interval (HIGH) | | |
| 401422 | PABX ringback tone detection time | 20 ms | If both addresses contain FF(H), tone detection is disabled. |
| 401423 | PABX ringback tone off detection time | | |
| 401424 | PABX detection time for silent period after ringback tone detected (LOW) | 20 ms | If both addresses contain FF(H), tone detection is disabled. |
| 401425 | PABX detection time for silent period after ringback tone detected (HIGH) | 20 ms | If both addresses contain FF(H), tone detection is disabled. |
| 401426 | PABX busy tone frequency upper limit (high byte) | Hz (BCD) | If both addresses contain FF(H), tone detection is disabled. |
| 401427 | PABX busy tone frequency upper limit (low byte) | | |
| 401428 | PABX busy tone frequency lower limit (high byte) | Hz (BCD) | If both addresses contain FF(H), tone detection is disabled. |
| 401429 | PABX busy tone frequency lower limit (low byte) | | |
| 40142A | Busy tone ON time: range 1 | 20 ms | |
| 40142B | Busy tone OFF time: range 1 | | |
| 40142C | Busy tone ON time: range 2 | | |
| 40142D | Busy tone OFF time: range 2 | | |
| 40142E | Busy tone ON time: range 3 | | |
| 40142F | Busy tone OFF time: range 3 | | |
| 401430 | Busy tone ON time: range 4 | | |
| 401431 | Busy tone OFF time: range 4 | | |
| 401432 | Busy tone continuous tone detection time | | |
| 401433 | Busy tone signal state time tolerance for all ranges, and number of cycles required for detection (a setting of 4 cycles means that ON-OFF-ON or OFF-ON-OFF must be detected twice).<br><br>Tolerance (±)<br>Bit 1 0<br>0 0 75% Bits 2 and 3 must always<br>0 1 50% be kept at 0.<br>1 0 25%<br>1 1 12.5%<br><br>Bits 7, 6, 5, 4: number of cycles required for cadence detection | | |

| Address | Function | Unit | Remarks |
|---|---|---|---|
| 401434 | International dial tone frequency upper limit (high byte) | Hz (BCD) | If both addresses contain FF(H), tone detection is disabled. |
| 401435 | International dial tone frequency upper limit (low byte) | | |
| 401436 | International dial tone frequency lower limit (high byte) | Hz (BCD) | If both addresses contain FF(H), tone detection is disabled. |
| 401437 | International dial tone frequency lower limit (low byte) | | |
| 401438 | International dial tone detection time | 20 ms | If 401438 contains FF, the machine pauses for the pause time (40143D / 40143E).<br><br>Belgium: See Note 2. |
| 401439 | International dial tone reset time (LOW) | | |
| 40143A | International dial tone reset time (HIGH) | | |
| 40143B | International dial tone continuous tone time | | |
| 40143C | International dial tone permissible drop time | | |
| 40143D | International dial wait interval (LOW) | | |
| 40143E | International dial wait interval (HIGH) | | |
| 40143F | Country dial tone upper frequency limit (HIGH) | Hz (BCD) | If both addresses contain FF(H), tone detection is disabled. |
| 401440 | Country dial tone upper frequency limit (LOW) | | |
| 401441 | Country dial tone lower frequency limit (HIGH) | Hz (BCD) | If both addresses contain FF(H), tone detection is disabled. |
| 401442 | Country dial tone lower frequency limit (LOW) | | |
| 401443 | Country dial tone detection time | 20 ms | If 401443 contains FF, the machine pauses for the pause time (401448 / 401449). |
| 401444 | Country dial tone reset time (LOW) | | |
| 401445 | Country dial tone reset time (HIGH) | | |
| 401446 | Country dial tone continuous tone time | | |
| 401447 | Country dial tone permissible drop time | | |
| 401448 | Country dial wait interval (LOW) | | |
| 401449 | Country dial wait interval (HIGH) | | |
| 40144A | Time between opening or closing the DO relay and opening the OHDI relay | 1 ms | See Notes 3, 6 and 7. Function 07–0 (parameter 11). |
| 40144B | Break time for pulse dialing | 1 ms | See Notes 3 and 7. Function 07-0 (parameter 12). |
| 40144C | Make time for pulse dialing | 1 ms | See Notes 3 and 7. Function 07-0 (parameter 13). |
| 40144D | Not used | Do not change the setting. | |

| Address | Function | Unit | Remarks |
|---|---|---|---|
| 40144E | Minimum pause between dialed digits (pulse dial mode) | 20 ms | See Notes 3 and 7. Function 07-0 (parameter 15). |
| 40144F | Time waited when a pause is entered at the operation panel | | Function 07-0 (parameter 16). See Note 7 |
| 401450 | DTMF tone on time | 1 ms | Function 07-0 (parameter 17). See Note 7 |
| 401451 | DTMF tone off time | | Function 07-0 (parameter 18). See Note 7 |
| 401452 | Tone attenuation level of DTMF signals while dialing | -dBm x 0.5 | Function 07-0 (parameter 19). See Note 5 and 7. |
| 401453 | Tone attenuation value difference between high frequency tone and low frequency tone in DTMF signals | -dBm x 0.5 | Function 07-0 (parameter 20). See Notes 5 and 7. The setting must be less than –5dBm, and should not exceed the setting at 401452h above. |
| 401454 | PSTN: DTMF tone attenuation level after dialling | -dBm x 0.5 | Function 07-0 (parameter 21). See Note 5. |
| 401455 | ISDN: DTMF tone attenuation level after dialling | -dBm x 0.5 | See Note 5 |
| 401456 | Not used | Do not change the setting. | |
| 401457 | Time between 40144Dh (NCU parameter 14) and 40144Eh (NCU parameter 15) | 1 ms | |
| 401458 | Not used | Do not change the setting. | |
| 401459 | Grounding time (ground start mode) | 20 ms | The Gs relay is closed for this interval. |
| 40145A | Break time (flash start mode) | 1 ms | The OHDI relay is open for this interval. |
| 40145B | International dial access code (High) | BCD | For a code of 100:<br>40145B - F1<br>40145C - 00 |
| 40145C | International dial access code (Low) | | |
| 40145D | 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 40144F is used.<br>In the UK: Do not set a number higher than 7. |
| 40145E | Progress tone detection level, and cadence detection enable flags | Bits 7–3: Not used<br>Bits 2–0: See Note 2. | |
| 40145F to 401464 | Not used | Do not change these settings. | |

| Address | Function | Unit | Remarks |
|---|---|---|---|
| 401465 | Long distance call prefix (HIGH) | BCD | For a code of 0:<br>401465 - FF<br>401466 - F0 |
| 401466 | Long distance call prefix (LOW) | BCD | |
| 401467<br>to<br>401468 | Not used | Do not change these settings. | |
| 401469 | Distinctive ring | Hex | 00(H): OFF, 01(H): ON |
| 40146A | Distinctive ring minimum off time | 1 ms | |
| 40146B | Distinctive ring maximum one cycle time | 20 ms<br>± 20 ms | |
| 40146C<br>to<br>401471 | Not used | Do not change these settings. | |
| 401472 | Acceptable ringing signal frequency: range 1, upper limit | 1000/ N (Hz) | Function 07-0 (parameter 02). See Note 7. |
| 401473 | Acceptable ringing signal frequency: range 1, lower limit | | Function 07-0 (parameter 03). See Note 7. |
| 401474 | Acceptable ringing signal frequency: range 2, upper limit | 1000/ N (Hz) | Function 07-0 (parameter 04). See Note 7. |
| 401475 | Acceptable ringing signal frequency: range 2, lower limit | | Function 07-0 (parameter 05). See Note 7. |
| 401476 | Number or rings until a call is detected | 1 | Function 07-0 (parameter 06). See Note 7.<br>The setting must not be zero. |
| 401477 | Minimum required length of the first ring | 20 ms | Function 07-0 (parameter 07). See Note 4 and 7. |
| 401478 | Minimum required length of the second and subsequent rings | 20 ms | Function 07-0 (parameter 08). See Note 7. |
| 401479 | Ringing signal detection reset time (LOW) | 20 ms | Function 07-0 (parameter 09). See Note 7. |
| 40147A | Ringing signal detection reset time (HIGH) | 20 ms | Function 07-0 (parameter 10). See Note 7. |
| 40147B<br>to<br>401480 | Not used | Do not change the settings. | |
| 401481 | 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 |
|---|---|---|---|
| 401482 | Bits 0 and 1 - Handset off-hook detection time<br>**Bit 1 0 Setting**<br>0 0 200 ms<br>0 1 800 ms<br>Other Not used<br><br>Bits 2 and 3 - Handset on-hook detection time<br>**Bit 3 2 Setting**<br>0 0 200 ms<br>0 1 800 ms<br>Other Not used<br><br>Bits 4 to 7 - Not used | | |
| 401483 to 4014A4 | Not used | Do not change these settings. | |
| 4014A5 | CED detection time | 20 ms ± 20 ms | Factory setting: 200 ms |
| 4014A6 to 4014AA | Not used | Do not change these settings. | |
| 4014AB | CNG on time | 20 ms | Factory setting: 500 ms |
| 4014AC | CNG off time | | Factory setting: 200 ms |
| 4014AD | Number of CNG cycles required for detection | | The data is coded in the same way as address 401433. |
| 4014AE | Not used | Do not change the settings. | |
| 4014AF | Acceptable AI short protocol tone (800Hz) detection frequency upper limit (high byte) | Hz (BCD) | If both addresses contain FF(H), tone detection is disabled. |
| 4014B0 | Acceptable AI short protocol tone (800Hz) detection frequency upper limit (low byte) | | |
| 4014B1 | Acceptable AI short protocol tone (800Hz) detection frequency lower limit (high byte) | Hz(BCD) | If both addresses contain FF(H), tone detection is disabled. |
| 4014B2 | Acceptable AI short protocol tone (800Hz) detection frequency lower limit (low byte) | | |
| 4014B3 | Detection time for 800 Hz AI short protocol tone | 20 ms | Factory setting: 360 ms |
| 4014B4 | PSTN: Tx level from the modem | - dBm | Function 07-0 (parameter 01). See Note 7.<br>**Note:** Do not set a value higher than –3dBm. Even if a value higher than –3 dBm is set, the tx level will be kept –3dBm. |

| Address | Function | Unit | Remarks |
|---|---|---|---|
| 4014B5 to 4014B6 | Not used | Do not change these settings. | |
| 4014B7 | PABX: Tx level from the modem | - dBm | |
| 4014B8 to 4014BC | Not used | Do not change these settings. | |
| 4014BD | Modem turn-on level (incoming signal detection level) | -37-0.5N (dBm) | |
| 4014BE to 4014C6 | Not used | Do not change these settings. | |
| 4014C7 | 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. | | |
| 4014C8 to 4014D9 | Not used | Do not change the settings. | |
| 4014DA | T.30 T1 timer | 1 s | See Note 7. |
| 4014DB to 4014DF | Not used | Do not change these settings. | |
| 4014E0 bit 3 | Maximum wait time for post message | **0:** 12 s<br>**1:** 30 s | **1:** Maximum wait time for post message (EOP/EOM/MPS) can be changed to 30 s.<br>Change this bit to "1" if communication errors occur frequently during V.17 reception. |



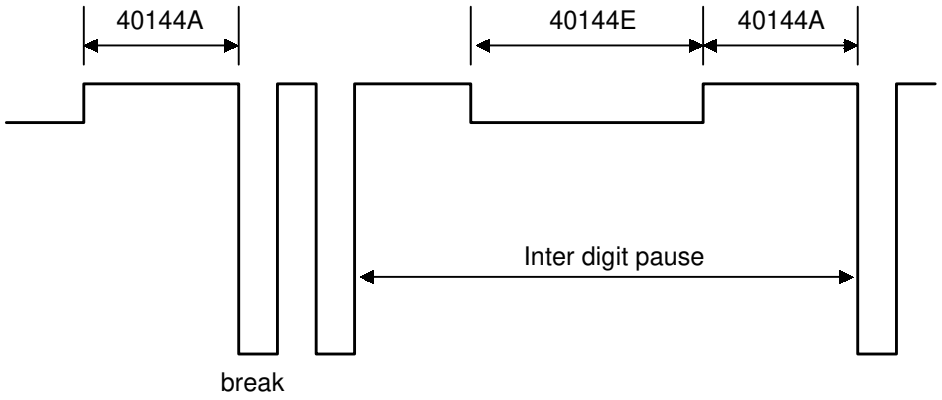
**NOTES**

1. If a setting is not required, store FF in the address.
2. Italy and Belgium only

   RAM address 40145E: 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.
   401408 (if bit 0 = 1) or 401438 (if bit 2 = 1): tolerance for on or off state duration (%), and number of cycles required for detection, coded as in address 401433.
   40140B (if bit 0 = 1) or 40143B (if bit 2 = 1): on time, hex code (unit = 20 ms)
   40140C (if bit 0 = 1) or 40143C (if bit 2 = 1): off time, hex code (unit = 20 ms)

3. Pulse dial parameters (addresses 40144A to 40144F) are the values for 10 pps. If 20 pps is used, the machine automatically compensates.
4. The first ring may not be detected until 1 to 2.5 wavelengths after the time specified by this parameter.
5. The attenuation levels calculated from RAM data are:




High frequency tone: - 0.5 x N**401452/401454** dBm
Low frequency tone: - 0.5 x (N**401452/401454** + N**401453**) dBm

**NOTE:** N**401452**, for example, means the value stored in address 401452(H)

6. The actual inter-digit pause (pulse dial mode) is the sum of the periods specified by RAM addresses 40144A and 40144E.
7. For European models, these parameters should not be changed in the field. The default values of these parameters have been approved by CTR21 and/or EG201121. Therefore, a change in any one of these values would constitute a violation of these requirements.

# 5.5 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.

## 5.5.1 PROGRAMMING PROCEDURE♦

1. Set bit 3 of System Bit Switch 04 to 1.
2. Either use the programming Quick Dial number or Speed Dial number.
   **Example:** Change the Parameters in Quick Dial 01.
3. Make sure the machine is in standby mode. Press 'User Tools' key then choose '2. Fax Features'.
4. Select the "1. Program/Delete", then press "OK" key.
   Select "1. Prog. Quick dial" then press "OK" key.
   Press Quick Dial key 01 and "OK" key.
5. Press the "OK" key three times.
6. 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
7. To scroll through the parameter bytes, either:
   Select the next byte: 
   or
   Select the previous byte:  until the correct byte is displayed. Then go back to step 6.
8. After the setting is changed, press "OK" until "Programmed" displays.
9. To finish, press 'User Tools'.

## 5.5.2 PARAMETERS♦

The initial settings of the following parameters are all FF(H)—all the parameters are disabled.

| **Switch 00** |
|---|
| **FUNCTION AND COMMENTS** |
| ITU-T T1 time (for PSTN G3 mode)<br>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.<br>**Range:**<br>0 to 120 s (00h to 78h)<br>FFh - The local NCU parameter factory setting is used.<br>Do not program a value between 79h and FEh. |

| **Switch 01** | | |
|---|---|---|
| **No** | **FUNCTION** | **COMMENTS** |
| **0–4** | Tx level<br>**Bit 4 3 2 1 0 Setting**<br>0 0 0 0 0 Not used<br>0 0 0 0 1 Not used<br>0 0 0 1 0 Not used<br>0 0 0 1 1 -3<br>0 0 1 0 0 -4<br>0 0 1 0 1 -5<br>:<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>If the setting is 'Disabled', the NCU parameter 01 setting is used.<br>**Note:** Do not use settings other than listed on the left. |
| **5–7** | Cable equalizer<br>**Bit 7 6 5 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>If the setting is 'Disabled', the bit switch setting is used.<br>**Note:** Do not use settings other than listed on the left. |

| Switch 02 | | |
|---|---|---|
| **No** | **FUNCTION** | **COMMENTS** |
| **0–3** | Initial Tx modem rate<br>**Bit 3 2 1 0 Setting (bps)**<br>0 0 0 0 Not used<br>0 0 0 1 2,400<br>0 0 1 0 4,800<br>0 0 1 1 7,200<br>0 1 0 0 9,600<br>0 1 0 1 12,000<br>0 1 1 0 14,400<br>0 1 1 1 16,800<br>1 0 0 0 19,200<br>1 0 0 1 21,600<br>1 0 1 0 24,000<br>1 0 1 1 26,400<br>1 1 0 0 28,800<br>1 1 0 1 31,200<br>1 1 1 0 33,600<br>1 1 1 1 Disabled<br><br>Other settings: Not used | 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><br>For the settings 14.4 or kbps slower, Switch 04 bit 4 must be changed to 0.<br><br>If the setting is 'Disabled', the bit switch setting is used.<br><br>**Note:** Do not use settings other than listed on the left. |
| **4, 5** | Not used | Do not change the settings. |
| **6** | AI short protocol<br>**0:** Off<br>**1:** Disabled | Refer to the Core Technology Manual for details about AI Short Protocol.<br>If the setting is 'Disabled', the bit switch setting is used. |
| **7** | Not used | Do not change the setting. |

| Switch 03 | | |
|---|---|---|
| **No** | **FUNCTION** | **COMMENTS** |
| **0, 1** | Inch-mm conversion before transmission<br>**Bit 1 0 Setting**<br>0 0 Inch-mm conversion available<br>0 1 Inch only<br>1 0 Not used<br>1 1 Disabled | The machine uses inch-based resolutions for scanning. If "inch only" is selected, the printed copy may be slightly distorted at the other end if that machine uses mm-based resolutions.<br><br>If the setting is 'Disabled', the bit switch setting is used. |
| **2, 3** | DIS/NSF detection method<br>**Bit 3 2 Setting**<br>0 0 First DIS or NSF<br>0 1 Second DIS or NSF<br>1 0 Not used<br>1 1 Disabled | **(0, 1)** Use this setting if echoes on the line are interfering with the setup protocol at the start of transmission. The machine will then wait for the second DIS or NSF before sending DCS or NSS.<br><br>If the setting is 'Disabled', the bit switch setting is used. |

| Switch 03 | | |
|---|---|---|
| **No** | **FUNCTION** | **COMMENTS** |
| **4** | V.8 protocol<br>**0**: Off<br>**1**: Disabled | If transmissions to a specific destination always end at a lower modem rate (14,400 bps or lower), disable V.8 protocol so as not to use V.34 protocol.<br>**0:** V.34 communication will not be possible.<br>If the setting is 'Disabled', the bit switch setting is used. |
| **5** | Compression modes available in transmit mode<br>**0:** MH only<br>**1:** Disabled | This bit determines the capabilities that are informed to the other terminal during transmission.<br>If the setting is 'Disabled', the bit switch setting is used. |
| **6**<br>**7** | ECM during transmission<br>**Bit 7 6 Setting**<br>0 0 Off<br>0 1 On<br>1 0 Not used<br>1 1 Disabled | For example, if ECM is switched on but is not wanted when sending to a particular terminal, use the (0, 0) setting.<br>Note that V.8/V.34 protocol and JBIG compression are automatically disabled if ECM is disabled.<br>If the setting is 'Disabled', the bit switch setting is used. |

| |
|---|
| **Switch 04:** Not used (do not change any of these settings) |
| **Switch 05:** Not used (do not change any of these settings) |
| **Switch 06:** Not used (do not change any of these settings) |
| **Switch 07:** Not used (do not change any of these settings) |
| **Switch 08:** Not used (do not change any of these settings) |
| **Switch 09:** Not used (do not change any of these settings) |

# 5.6 SERVICE RAM ADDRESSES

**⚠CAUTION**
**Do not change the settings which are marked as "Not used" or "Read only".**

**400001 to 400004(H)♦ - ROM version (Read only)**
400001(H) - Revision number (BCD)
400002(H) - Year (BCD)
400003(H) - Month (BCD)
400004(H) - Day (BCD)

**400005(H)♦** - **RAM Reset Level 1**
Change the data at this address to FF(H), then switch the machine off and on to reset all system settings (with the exception of the copier SP/UP settings, which are retained).

**Caution:** Before using this RAM, print the settings of all the system parameters (System Parameter List - Function02).

The country code will be reset to UK for EU/Asia models and USA for NA model when RAM reset level 1 is done.

**400006(H)♦ - Language Code (Hex)**
02(H) - English
04(H) - French
05(H) - Spanish
06(H) - German
07(H) - Italian
08(H) - Swedish
09(H) - Norwegian
0A(H) - Portuguese
0B(H) - Dutch
0C(H) - Polish
0D(H) - Hungarian
0E(H) - Czech
0F(H) - Danish
10(H) - Finnish

**400008(H)♦** - Program checksum: Total (low)
**400009(H)♦** - Program checksum: Total (high)
**40000A(H)♦** - Program checksum: Boot (low)
**40000B(H)♦** - Program checksum: Boot (high)
**40000C(H)♦** - Program checksum: Main (low)
**40000D(H)♦** - Program checksum: Main (high)
**40000E(H)♦** - RDS program update counter (Hex)

**400010 to 40002F(H)♦** - System bit switches
**400030 to 40003F(H)♦** - Scanner bit switches
**400040 to 40004F(H)♦** - Plotter bit switches

**400050 to 40006F(H)♦** - Communication bit switches
**400070 to 40007F(H)♦** - G3 bit switches

**4000C0(H) - User parameter switch 00 (SWusr_00)**
Bits 0 to 3: Not used
Bits 4 and 5♦: Scanning resolution home position

| Bit 5 | 4 | Setting |
|---|---|---|
| 0 | 0 | Standard |
| 0 | 1 | Detail |
| 1 | 0 | Fine |
| 1 | 1 | Not used |

Bit 6♦: Transmission mode home position 0: Memory tx, 1: Immediate tx
Bit 7♦: Halftone home position 0: Disabled, 1: Enabled

**4000C1(H) - User parameter switch 01 (SWusr_01)**
Bits 0 to 6♦: Not used
Bit 7♦: Settings return to home position after scanning 0: Disabled, 1: Enabled

**4000C2(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
Bits 5 and 7♦: Not used

**4000C3(H) - User parameter switch 03 (SWusr_03: Automatic report printout)**
Bit 0♦: Communication result report (memory transmissions) 0: Off, 1: On
Bit 1♦: Not used
Bit 2♦: File reserve report (memory transmission) 0: Off, 1: On
Bit 3♦: File reserve report (polling reception) 0: Off, 1: On
Bit 4♦: Communication result report (polling reception) 0: Off, 1: On
Bit 5♦: Transmission result report (immediate transmissions) 0: Off, 1: On
Bit 6♦: Not used
Bit 7♦: Journal 0: Off, 1: On

**4000C4(H) - User parameter switch 04 (SWusr_04: Automatic report printout)**
Bit 0: Confidential file report 0: Off, 1: On
Bits 1 to 6♦: Not used
Bit 7♦: Inclusion of a sample image on reports 0: Off, 1: On

**4000C5(H) - User parameter switch 05 (SWusr_05)**
Bit 0♦: Substitute reception 0: Enabled, 1: Disabled
Bit 1♦: Memory reception if no RTI or CSI received 0: Possible, 1: Impossible
Bits 2 and 3♦: Not used
Bit 4♦: Restricted Access using personal codes 0: Off, 1: On
Bit 5♦: Not used
Bit 6: Energy Saver Mode 0: Energy Saving Standby (Fusing lamp off)
1: Fax Standby (Fusing lamp half-cool)
Bit 7♦: Not used

**4000C6(H) - User parameter switch 06 (SWusr_06)**

Bit 0♦: TT print 0: Off, 1: On
Bit 1♦: Not used
Bit 2: Closed Network Tx 0: Off, 1: On
Bit 3♦: Not used
Bit 4♦: Batch transmission 0: Off, 1: On
Bits 5 to 7♦: Not used

**4000C7(H) - User parameter switch 07 (SWusr_07)**

Bits 0 and 1♦: Not used
Bit 2♦: Parallel memory transmission 0: Off, 1: On
Bit 3♦: Not used
Bit 4♦: Use of the ⊛ key for tonal signals 0: Off, 1: On
Bits 5 to 7♦: Not used

**4000C8(H) - User parameter switch 08 (SWusr_08)**

Bits 0 to 1♦: Not used.
Bits 2 to 3: Authorized Reception 0: Off, 1: On
Bits 4 to 5: Specified Tray Selection 0: Off, 1: On
Bits 6 and 7♦: Forwarding

| Bit 7 | 6 | Setting |
|---|---|---|
| X | 0 | Disabled |
| 0 | 1 | Faxes from senders whose RTIs/CSIs are specified for this feature are forwarded. |
| 1 | 1 | Faxes from senders whose RTIs/CSIs are not specified for this feature are forwarded. |

**4000C9(H) - User parameter switch 09 (SWusr_09)**

Bits 0 and 1♦: Memory lock

| Bit 0 | 1 | Setting |
|---|---|---|
| X | 0 | Disabled |
| 0 | 1 | Faxes from senders whose RTIs/CSIs are specified for this feature are kept in the memory until a memory lock ID is entered. |
| 1 | 1 | Faxes from senders whose RTIs/CSIs are not specified for this feature are kept in the memory until a memory lock ID is entered. |

Bits 2 to 5♦: Not used
Bit 6♦: Inclusion of the Yes key when Quick Dials are continuously selected for destinations 0: Not needed, 1: Needed
1: The user must press the Yes key after each Quick Dial key. This is to prevent the user from selecting incorrect destinations.
Bit 7♦: Not used

**4000CA(H) - User parameter switch 10 (SWusr_0A)**

Bits 0 to 4♦: Not used
Bit 5: Task selection for by-pass tray 0: All
1: Only for optional printer
Bit 6♦: Not used
Bit 7♦: Halftone type 0: Error diffusion, 1: Dither

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**4000CB(H) - User parameter switch 11 (SWusr_0B)**

Bits 0 to 1♦: Not used

Bit 2: Detection of blank sheet during transmission 0: Off, 1: On

Bits 3 to 5♦: Not used

Bit 6♦: Printout of messages received while acting as a forwarding station
0: Off, 1: On

Bit 7♦: Not used

**4000CC(H) - User parameter switch 12 (SWusr_0C)**

Bit 0♦: Not used

Bit 1♦: Distinctive Ring detection (NA only) 0: Off, 1: On

Bit 2♦: Toner saving mode 0: Disabled, 1: Enabled

Bits 3 to 6♦: Not used

Bit 7: Copy mode 0: Possible, 1: Impossible

**4000CD(H) - User parameter switch 13 (SWusr_0D)**
**(NA and Asia Models)**

Bit 0♦: PSTN/PABX selection 0: PSTN, 1: PABX

Bits 1 to 7: Not used

**(EU Model)**

Bits 0 and 1♦: PSTN access method from behind a PABX

| Bit 1 | 0 | Setting |
|---|---|---|
| 0 | 0 | PSTN |
| 0 | 1 | Loop start (prefix) |
| 1 | 0 | Ground start |
| 1 | 1 | Flash start |

Bits 2 to 7♦: Not used

**4000CE to 4000D2(H) - User parameter switch 14 to 18 (SWusr_0E to 12)**

Bits 0 to 7♦: Not used

**4000D3(H) - User parameter switch 19 (SWusr_13)**

Bits 0 to 4♦: Not used

Bits 5 to 7: Default tray selection for copying

| Bit 7 | 6 | 5 | Setting |
|---|---|---|---|
| 0 | 0 | 1 | Tray 1 (Standard paper tray) |
| 0 | 1 | 0 | Tray 2 (Optional paper tray) |
| 1 | 1 | 1 | By-pass feeder |

**4000D4(H) - User parameter switch 20 (SWusr_14)**

Bits 0 to 3♦: Not used

Bit 4: Black line correction when scanning originals 0: Off, 1: On

Bits 5 to 6♦: Not used

Bit 7: Display warning if scanner is dirty 0: Off, 1: On

**4000D5 to 4000D8(H) - User parameter switch 21 to 24 (SWusr_15 to 18)**

Bits 0 to 7♦: Not used

**4000D9(H) - User parameter switch 25 (SWusr_19)**

Bit 0: Night Timer 0: Off, 1: On

Bits 1 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 (system switch 02 bits 6 and 7).

Bits 5 and 6♦: Not used

Bit 7♦: Daylight saving time (User tools) 0: Disabled, 1: Enabled

**4000DA(H) - User parameter switch 26 (SWusr_1A)**

Bit 0 and 1♦: Dialing type
(This switch is not printed on the user parameter list.)

| Bit 1 | Bit 0 | Setting |
|---|---|---|
| 0 | 0 | Pulse dialing (10 pps) |
| 0 | 1 | Pulse dialing (20 pps) |
| 1 | 0 | Tone (DTMF) dialing |

Bits 2 to 7♦: Not used

**4000DB(H)♦ - User parameter switch 27 (SWusr_1B)**

PSTN access code from behind a PABX (Key operator tools)
(This switch is not printed on the user parameter list.)

| Access number | Hex value to program (BCD) |
|---|---|
| 0 ⇩ 9 | F0 ⇩ F9 |
| 00 ⇩ 99 | 00 ⇩ 99 |

**4000DC(H)♦ - User parameter switch 28 (SWusr_1C)**

Number of rings in TEL mode (User tools)
(This switch is not printed on the user parameter list.)

| Number of rings | Hex value to program (BCD) |
|---|---|
| 00 ⇩ 99 | 00 ⇩ 99 |

**4000DD to 4000EF(H) - User parameter switch 29 to 47 (SWusr_1D to 2F)**

Bits 0 to 7♦: Not used

**400130 to 400143(H)♦** - RTI (Max. 20 characters - ASCII) - See the following note.
**400159 to 400178(H)♦** - TTI 1 (Max. 32 characters - ASCII) - See the following note
**400179 to 40018C(H)♦** - CSI (Max. 20 digits - ASCII)
**4001D5(H)♦** - Number of CSI digits (Hex)

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.

**4001D8 to 4001E6(H)♦** - Service station's fax number (Max. 15 digits - ASCII)
[FAX Service Function 09]

**4001F6 to 400204(H)♦** - Own fax number: PSTN (Max. 15 digits - ASCII)

**400250(H)♦** - ID code (low - BCD)
**400251(H)♦** - ID code (high - BCD)

**400252(H)♦** - Confidential ID (low - BCD)
**400253(H)♦** - Confidential ID (high - BCD)

**400254(H)♦** - Memory Lock ID (low - BCD)
**400255(H)♦** - Memory Lock ID (high - BCD)

**400273 to 40027D(H)♦** – Daylight-saving time (Summer time)

Amount of time shift

400273(H) – Amount of time shift
1-0xFF(H) minutes, 00(H)= 60 minutes

Start date/time:

400274(H) - Month (BCD)
400275(H) - Week (Hex)
400276(H) - 00: Monday, 01: Tuesday, 02: Wednesday, .... , 06: Sunday
400277(H) - Hour (BCD)
400278(H) - Day (BCD)

End date/time:

400279(H) - Month (BCD)
40027A(H) - Week (Hex)
40027B(H) - 00: Monday, 01: Tuesday, 02: Wednesday, .... , 06: Sunday
40027C(H) - 24-Hour (BCD)
40027D(H) - Day (BCD)

**40027E to 400285(H)♦** - Last power off time (Read only)

40027E(H) - Clock
00(H) - 12-hour clock (AM)
01(H) - 24-hour clock
10(H) - 12-hour clock (PM)
40027F(H) - Year (BCD)
400280(H) - Month (BCD)
400281(H) - Day (BCD)
400282(H) - Hour
400283(H) - Minute
400284(H) - Second
400285(H) - 00: Monday, 01: Tuesday, 02: Wednesday, ..... , 06: Sunday

**400286 to 40028D(H)♦** - Present time (Read only)

400286(H) - Clock
- 00(H) - 12-hour clock (AM)
- 01(H) - 24-hour clock
- 10(H) - 12-hour clock (PM)

400287(H) - Year (BCD)
400288(H) - Month (BCD)
400289(H) - Day (BCD)
40028A(H) - Hour
40028B(H) - Minute
40028C(H) - Second
40028D(H) - 00: Monday, 01: Tuesday, 02: Wednesday, ..... , 06: Sunday

**40028E to 400291(H)♦** - Total seconds (hex value) since 00:00:00 1st January 1990 (Read only)

**400292 to 400295(H)♦** - Optional equipment (Read only)

400292(H)
- Bit 1: Memory expander 40MB
- Bit 3: ADF
- Bit 4: !00 sheets by-pass tray unit
- Bit 7: Paper tray unit
- Other bits: Not used

400293(H)
- Bit 4: Printer unit
- Other bits: Not used

400294(H)
- Bit 2: JBIG
- Other bits: Not used

400295(H)
- Bit 3: 1 sheet by-pass tray unit
- Bit 4: Modem
- Bit 5: DIMM
- Other bits: Not used



For the following counters, the wording in brackets indicates how these counters appear on the system parameter list.

**4002AC to 4002AF(H)♦** - TX counter (TRANSMISSION)

| Address | High | Low |
|---|---|---|
| 4002AC(H) | Tens digit | Unit digit |
| 4002AD(H) | Thousands digit | Hundreds digit |
| 4002AE(H) | Hundred thousands digit | Ten thousands digit |
| 4002AF(H) | Ten millions digit | Millions digit |

**Note:** The following counters have the same data format as above.

**4002B0 to 4002B3(H)♦** - RX counter (RECEPTION)

**4002B4 to 4002B7(H)♦** - Scan counter (SCAN)

**4002B8 to 4002BB(H)♦** - Print counter (PRINT)

**4002C0 to 4002C3(H)♦** - ADF counter (ADF)

**4002CC to 4002CF(H)** - ADF roller counter

**4002D0 to 4002D3(H)** - ADF roller interval (Default: 45,000)

**4002D8 to 4002DB(H)♦** - Paper feed counter: standard cassette (MAIN CASSETTE)

**4002DC to 4002DF(H)♦** - Paper feed counter: optional cassette (CASSETTE 2)

**4002EC to 4002EF(H)♦** - Paper feed counter: by-pass feeder (BY-PASS)

**4002F4 to 4002F7(H)♦** - Scanner total jam counter (DOC. JAM)

**4002F8 to 4002FB(H)♦** - Printer total jam counter (COPY JAM)

**4002FC to 4002FF(H)♦** - Paper jam counter: standard cassette (MAIN CST JAM)

**400300 to 400303(H)♦** - Paper jam counter: optional cassette (CST 2 JAM)

**400310 to 400313(H)♦** - Paper jam counter: by-pass feeder (BY-PASS JAM)

**400318 to 40031B(H)♦** - Fusing exit jam counter (EJECT JAM)

**40031C to 40031F(H)♦** - Registration jam counter (PAPER JAM)

**400320 to 400323(H)♦** - Printer PM counter (PM)

**400324 to 400327(H)♦** - Printer PM interval (PM DEFAULT: Default: 90,000)

**400328 to 40032B(H)♦** - Copy counter (COPY)

**40032C to 40032F(H)♦** - OPC counter (PCU)

**400330 to 400333(H)♦** - OPC PM interval (Default: 45,000)

**400334 to 400337(H)♦** - AIO counter (TONER)

**400340 to 40034F(H)♦** - Excessive jam call parameters

| Parameters | | Address (H) | | Initial Setting | Sys. Para. List |
|---|---|---|---|---|---|
| | | ADF | Printer | | |
| **DEC** (1 – 255; 0 = Disabled) | | 400340 | 400344 | 10 (H) | X |
| **CALL** (3 – 15; 0 = Disabled) | | 400341 | 400345 | 06(H) | Y |
| **CLR** | (Low) | 400342 | 400346 | 30(H) | - |
| | (High) | 400343 | 400347 | 00(H) | |

| Counters | Address (H) | | Sys. Para. List |
|---|---|---|---|
| | ADF | Printer | |
| **JAM**: Jam counter used to place a service call | 400348 | 40034C | Z |
| **NO-JAM1**: Counter used for JAM counter decrement | 400349 | 40034D | - |
| **NO-JAM2**: Counter used for clearing the JAM counter | 40034A (Low) | 40034E (Low) | - |
| | 40034B (High) | 40034F (High) | |

If the machine makes an excessive jam call, it sets a bit in RAM address 4018F8(H) to 1 (bit 2 for scanner jams and bit 3 for printer engine jams). No more excessive jam calls can be made until the bit is reset to 0.

**400360 to 400363(H)♦** - Charger (charge roller) counter
**400368 to 40036B(H)♦** - Fusing pressure roller counter
**400384 to 400387(H)♦** - Total SC counter
**400388 to 40038B(H)♦** - Paper jam counter: standard cassette
**40038C to 40038F(H)♦** - Paper jam counter: optional paper tray
**4003A0 to 4003A3(H)♦** - Paper jam counter: by-pass feeder
**4003A4 to 4003A7(H)♦** - Scanner counter: copy mode
**4003A8 to 4003AB(H)♦** - Scanner counter: fax mode
**4003AC to 4003AF(H)♦** - Print counter by paper size: A4 paper
**4003B0 to 4003B3(H)♦** - Print counter by paper size: B5 paper
**4003B4 to 4003B7(H)♦** - Print counter by paper size: Legal paper
**4003B8 to 4003BB(H)♦** - Print counter by paper size: Letter paper
**4003BC to 4003BF(H)♦** - Print counter by paper size: Half-letter paper
**4003C0 to 4003C3(H)♦** - Print counter by paper size: Other paper
**4003C4 to 4003C7(H)♦** - Total jam counter
**4003C8 to 4003CB(H)♦** - Book scan counter [Not used]
**4003CC to 4003CF(H)♦** - SC101 counter
**4003D0 to 4003D3(H)♦** - SC120 counter
**4003D4 to 4003D7(H)♦** - SC121 counter
**4003D8 to 4003DB(H)♦** - SC122 counter
**4003DC to 4003DF(H)♦** - SC123 counter
**4003E0 to 4003E3(H)♦** - SC192 counter
**4003E4 to 4003E7(H)♦** - SC302 counter
**4003E8 to 4003EB(H)♦** - SC320 counter
**4003EC to 4003EF(H)♦** - SC322 counter
**4003F0 to 4003F3(H)♦** - SC324 counter
**4003F4 to 4003F7(H)♦** - SC350 counter
**4003F8 to 4003FB(H)♦** - SC390 counter
**4003FC to 4003FF(H)♦** - SC391 counter
**400400 to 400403(H)♦** - SC392 counter
**400404 to 400407(H)♦** - SC401 counter
**400408 to 40040B(H)♦** - SC402 counter

**40040C to 40040F(H)♦** - SC500 counter

**400410 to 400413(H)♦** - SC541 counter

**400414 to 400417(H)♦** - SC542 counter

**400418 to 40041B(H)♦** - SC543 counter

**40041C to 40041F(H)♦** - SC544 counter

**400420 to 400423(H)♦** - SC546 counter

**400424 to 400427(H)♦** - SC547 counter

**400428 to 40042B(H)♦** - SC548 counter

**40042C to 40042F(H)♦** - SC549 counter

**400430 to 400433(H)♦** - SC550 counter

**400434 to 400437(H)♦** - SC551 counter

**400438 to 40043B(H)♦** - SC552 counter

**40043C to 40043F(H)♦** - SC692 counter

**400440 to 400443(H)♦** - SC900 counter

**400444 to 400447(H)♦** - SC901 counter

**400448 to 40044B(H)♦** - SC999 counter

**40044C to 40044F(H)♦** - SC2001 counter

**400450 to 400453(H)♦** - SC2002 counter

**40047C to 40047F(H)♦** - ID sensor error counter

**4004BC to 4004BD(H)♦** - Modem ROM version (BCD)

**4004C0 to 4004C1(H)♦**
Timer adjustment for FCU automatic reset (system switch 02 bit 4)
0000 to 04FF(H): 1 hour
0500 to FFFF(H): N x 500 ms (10.7 minutes to 9.1 hours)

**4004D8 to 400501(H)♦ - Night timer period**

4004D8 to 4004DA(H) - Setting #1 for Monday
4004DB to 4004DD(H) - Setting #2 for Monday
4004DE to 4004E0(H) - Setting #1 for Tuesday
4004E1 to 4004E3(H) - Setting #2 for Tuesday
4004E4 to 4004E6(H) - Setting #1 for Wednesday
4004E7 to 4004E9(H) - Setting #2 for Wednesday
4004EA to 4004EC(H) - Setting #1 for Thursday
4004ED to 4004EF(H) - Setting #2 for Thursday
4004F0 to 4004F2(H) - Setting #1 for Friday
4004F3 to 4004F5(H) - Setting #2 for Friday
4004F6 to 4004F8(H) - Setting #1 for Saturday
4004F9 to 4004FB(H) - Setting #2 for Saturday
4004FC to 4004FE(H) - Setting #1 for Sunday
4004FF to 400501(H) - Setting #2 for Sunday

**Program format**

First byte - Hour (BCD)
Second byte - Minute (BCD)
Third byte - 00(H): Timer start time, 01(H): Timer end time

**40052E to 400531(H)♦** - Time of last RDS execution (Read-only)
These 4 bytes store the time at which RDS was last carried out. (Time is given in total seconds counted from 00:00:00 January 1, 1990.)

**400548(H)♦** - Transmission monitor volume 00 – 07(H)
**400549(H)♦** - Reception monitor volume 00 – 07(H)
**40054A(H)♦** - On-hook monitor volume 00 – 07(H)
**40054B(H)♦** - Dialing monitor volume 00 – 07(H)
**40054C(H)♦** - Buzzer volume 00 – 07(H)
**40054D(H)♦** - Key acknowledgment tone volume 00 – 07(H)

**40054E(H)♦ -** Country code (same data as System bit switch 0F)

**40054F to 400553(H)♦ - Periodic service call parameters**

| Parameters | | Address (H) |
|---|---|---|
| Call interval | 01 through 15 month(s) (BCD)<br>00: Periodic service call disabled | 40054F |
| Next call | Year (Read only) | 400550 |
| | Month (Read only) | 400551 |
| | Day: 01 through 31 (BCD) | 400552 |
| | Hour: 01 through 24 (BCD) | 400553 |

**400559 to 40055B(H)♦ - Effective term of automatic service calls**

| Parameters | Address (H) |
|---|---|
| Year: last two digits of the year (BCD) | 400559 |
| Month: 01 through 12 (BCD) | 40055A |
| Day: 01 through 31 (BCD) | 40055B |

**401400 to 4014E0(H)♦** - NCU parameters (☛ 5.4)

**4018F8(H)♦:** If the machine makes an excessive jam call, it sets a bit in this RAM address to 1 (bit 2 for scanner jams and bit 3 for printer engine jams). No more excessive jam calls can be made until the bit is reset to 0

**40213C(H)♦** - Text mode selection for Fax mode (☛ 6.11.3) 01(H): Text Sharp
02(H): Dropout

**40FECC to 41028B(H)♦** - Dedicated tx parameters for Quick Dial 01 - 30.
There are 32 bytes for each Quick Dial. Only the 23rd to 32nd bytes are used.
40FECC to 40FEEB(H) - Dedicated tx parameters for Quick 01
40FEEC to 40FF0B(H) - Dedicated tx parameters for Quick 02
40FF0C to 40FF2B(H) - Dedicated tx parameters for Quick 03
⇩
41026C to 41028B(H) - Dedicated tx parameters for Quick 30

**41028C to 4108CB(H)♦** - Dedicated tx parameters for Speed Dial #00 - #49.
There are 32 bytes for each Speed Dial. Only the 23rd to 32nd bytes are used.
41028C to 4102AB(H) - Dedicated tx parameters for Speed #00
4102AC to 4102CB(H) - Dedicated tx parameters for Speed #01
4102CC to 4102EB(H) - Dedicated tx parameters for Speed #02
⇩
4108AC to 4108CB(H) - Dedicated tx parameters for Speed #49

**413AB4 to 413CB3(H)♦ - Latest 64 error codes (Read only)**
One error record consists of 8 bytes of data.
First error record start address - 413AB4(H)
Second error record start address - 413ABC(H)
Third error record start address - 413AC4(H)
:
64th error record start address - 413CAC(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 (BCD) [If the error code is 1-23, 23 is stored here.]
6th byte - Error code : high (BCD) [If the error code is 1-23, 01 is stored here.]
7th byte - Communication line (Hex)
00(H): PSTN
02(H): PABX
8th byte - Not used

**41559C to 415D43(H)♦ - Latest 20 error communication records (Read only)**
One error communication record consists of 98 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: Character type — 0: ASCII, 1: Japanese characters
- Bit 4: Technical data printout instead of personal codes — 0: No, 1: Yes
- Bit 5: Type of technical data — 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 7th bytes - Date and time when the communication started
- 3rd byte - Year (BCD)
- 4th byte - Month (BCD)
- 5th byte - Day (BCD)
- 6th byte - Hour (BCD)
- 7th byte - Minute (BCD)

8th and 9th bytes - Communication time
- 8th byte - Minutes (BCD)
- 9th byte - Seconds (BCD)

10th byte - Line detection status
- 01(H): Ringing detection
- 02(H): 1300Hz detection
- 03(H): Remote detection
- 04(H): CNG detection

11th and 12th bytes - Number of pages transmitted or received
- 11th byte - Low byte (Hex)
- 12th byte - High byte (Hex)

13th and 14th bytes - Personal code or number of total/burst error lines
- If bit 4 of the 1st byte is 0: 13th byte - Personal code (low - BCD)
  14th byte - Personal code (high - BCD)
- If bit 4 of the 1st byte is 1: 13th byte - Number of total error lines (Hex)
  14th byte - Number of burst error lines (Hex)

15th byte - File number (low - Hex)
16th byte - File number (high - Hex)

17th and 18th bytes – Destination File ID number (for system work area)

19th byte - Communication result
- 00(H): OK
- 80(H): NG
- FF(H): Unknown

20th byte - Type of image mode
- 00(H): Text
- 01(H): Gray scale
- 02(H): Color
- 03(H): Color/Text
- 04(H): Color/Photo
- 80(H): Photo

21st and 22nd bytes - Rx level or measure of error rate
- If bit 5 of the 1st byte is 0: 20th byte - Rx level (low - Hex)
  21st byte - Rx level (high - Hex)
- If bit 4 of the 1st byte is 1: 20th byte - Measure of error rate (low - Hex)
  21st byte - Measure of error rate (high - Hex)

23rd byte - Final modem rate

Bits 0 to 3: Final modem speed

| Bit 3 | 2 | 1 | 0 | Setting |
|---|---|---|---|---|
| 0 | 0 | 0 | 1 | 2.4 k |
| 0 | 0 | 1 | 0 | 4.8k |
| 0 | 0 | 1 | 1 | 7.2k |
| 0 | 1 | 0 | 0 | 9.6k |
| 0 | 1 | 0 | 1 | 12.0k |
| 0 | 1 | 1 | 0 | 14.4k |
| 0 | 1 | 1 | 1 | 16.8k |
| 1 | 0 | 0 | 0 | 19.2k |
| 1 | 0 | 0 | 1 | 21.6k |
| 1 | 0 | 1 | 0 | 24.0k |
| 1 | 0 | 1 | 1 | 26.4k |
| 1 | 1 | 0 | 0 | 28.8k |
| 1 | 1 | 0 | 1 | 31.2k |
| 1 | 1 | 1 | 0 | 33.6k |

Other settings - Not used

Bits 4 to 7: Final modem type

| Bit 6 | 5 | 4 | Setting |
|---|---|---|---|
| 0 | 0 | 1 | V.27ter |
| 0 | 1 | 0 | V.27ter, V.29 |
| 0 | 1 | 1 | V.33 |
| 1 | 0 | 0 | V.27ter, V.29, V.17 |
| 1 | 0 | 1 | V.27ter, V29, V.17, V.34 |

Other settings - Not used

Bit 7 0: Not V.34, 1: V.34

24th to 26th bytes - Not used

27th to 50th byte - Remote terminal's ID (RTI, TSI or CSI) (ASCII)

51st byte - Communication mode #1

Bits 0 - 3: Resolution used

| Bit 3 | 2 | 1 | 0 | Setting |
|---|---|---|---|---|
| 0 | 0 | 0 | 1 | 8 x 3.85 lines/mm |
| 0 | 0 | 1 | 0 | 8 x 7.7 lines/mm |
| 0 | 0 | 1 | 1 | 8 x 15.4 lines/mm |
| 0 | 1 | 0 | 0 | 16 x 15.4 lines/mm |
| 0 | 1 | 0 | 1 | 24 x 23.1 lines/mm |

Bits 4 to 7: Communication mode used

| Bit 7 | 6 | 5 | 4 | Setting |
|---|---|---|---|---|
| 0 | 0 | 0 | 0 | Normal |
| 0 | 0 | 0 | 1 | Confidential |
| 0 | 0 | 1 | 0 | Polling |
| 0 | 1 | 0 | 0 | Forwarding |
| 0 | 1 | 0 | 1 | Automatic Service Call |

Other settings - Not used

52nd 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 | 0: ADF, 1: Memory |
| Bit 5: Not used | |
| Bit 6: ECM | 0: Off, 1: On |
| Bit 7: Not used | |

53rd to 56th bytes - Not used

57th byte - Number of errors during communication (Hex)

58th byte - Not used

59th to 62nd byte - 1st error code and page number where the error occurred
- 59th byte - Page number where the error occurred (low - Hex)
- 60th byte - Page number where the error occurred (high - Hex)
- 61st byte - Error code (low - BCD)
- 62nd byte - Error code (high - BCD)

63rd to 66th byte - 2nd error code and page number where the error occurred
67th to 70th byte - 3rd error code and page number where the error occurred
71st to 74th byte - 4th error code and page number where the error occurred
75th to 78th byte - 5th error code and page number where the error occurred
79th to 82nd byte - 6th error code and page number where the error occurred
83rd to 86th byte - 7th error code and page number where the error occurred
87th to 90th byte - 8th error code and page number where the error occurred
91st to 94th byte - 9th error code and page number where the error occurred
95th to 98th byte - 10th error code and page number where the error occurred

# 5.7 USER TOOLS

## 5.7.1 HOW TO ENTER AND EXIT USER TOOLS♦

Press the User Tools key, then select the User Tools program. When you are finished with the User Tools program, press the User Tools key to exit.

## 5.7.2 USER TOOLS TABLE

### *Fax Features*

| *Level 0* | *Level 1* | *Level 2* | *Level 3* |
|---|---|---|---|
| **User Tools** | 1. Counter | ☛ Operating Instructions | |
| | **2. Fax Features** | 1. Program/Delete | ☛ Operating Instructions |
| | | 2. Reports/Lists | ☛ Operating Instructions |
| | | **3. Setup** | **1. Monitor Volume♦** |
| | | | **2. Display Contrast♦** |
| | | | **3. Date/Time♦** |
| | | | **4. Summer Time/DST♦*1** |
| | | | **5. Reception Mode♦** |
| | | | **6. No. of Rings♦** |
| | | | **7. FAX Information♦** |
| | | | **8. Tray Paper Size♦** |
| | | | **9. By-pass Paper Type** |
| | | | **10. Fax Reset Timer♦** |
| | | | **11. On Hook Timeout♦** |
| | | **4. Key Op. Tools** | **1. ADF Counter Reset*2** |
| | | | **2. Authorized Rx** |
| | | | **3. Memory Lock♦** |
| | | | **4. Specified Tray** |
| | | | **5. Forwarding♦** |
| | | | **6. Energy Saver Timer** |
| | | | **7. User Parameters♦** |
| | | | **8. Personal Code♦** |
| | | | **9. ID Code♦** |
| | | | **10. Line Type♦*3** |
| | | | **11. Select Line♦** |
| | | | **12. PSTN Access No.♦** |
| | | | **13. Country Code*1,3** |
| | | | **14. Memory File Transfer♦** |
| | | | **15. Margin Adjustment** |
| | | | **16. DS On/Off*2** |
| | | | **17. System Parameter Tx*2** |
| | 3. Printer Features | ☛ Operating Instructions | |
| | 4. Language | ☛ Operating Instructions | |

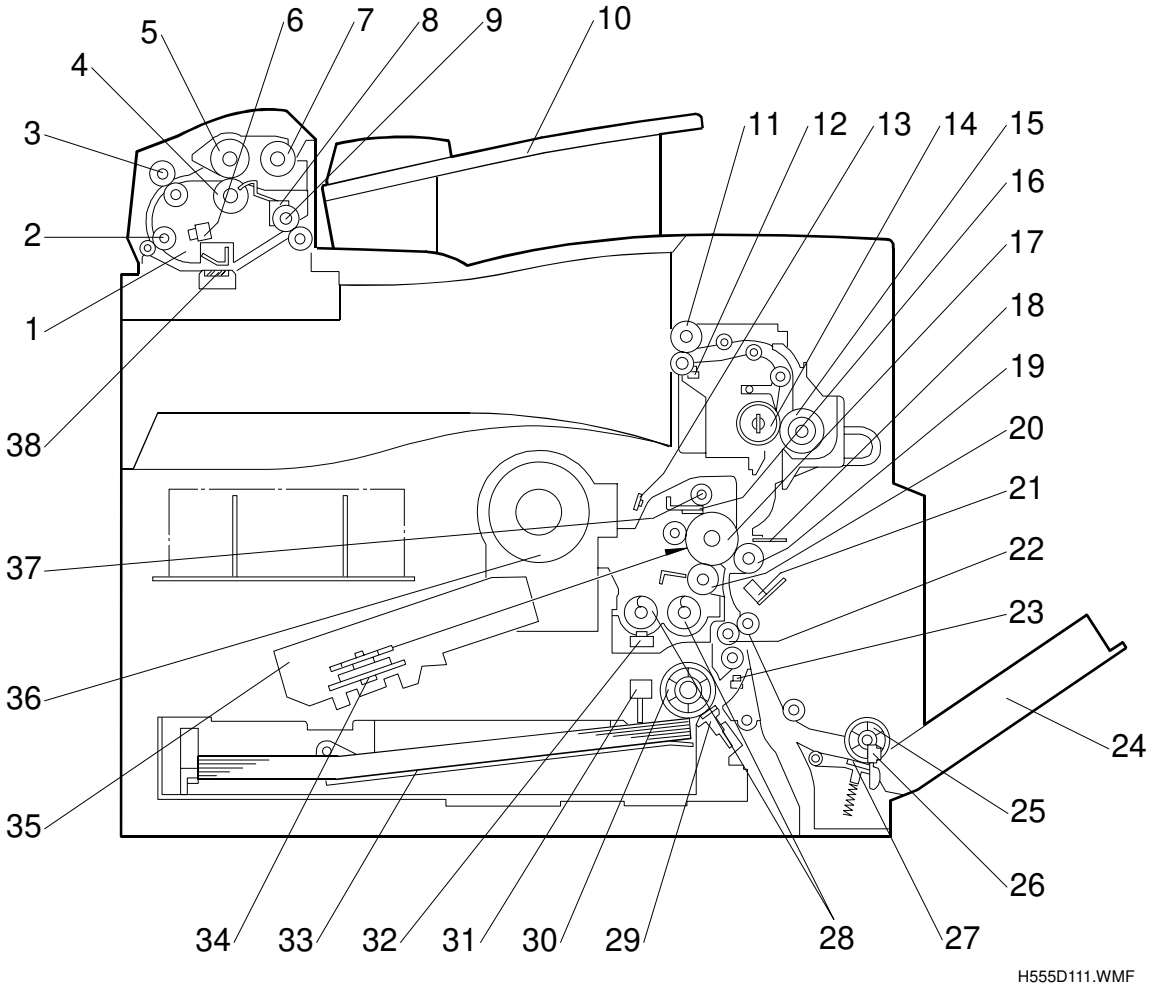
*1: Europe and Asia models only
*2: This feature may not appear on the LCD, depending on the bit switch settings.
*3: This feature may or may not be available, depending on country code setting.

Service Tables

# 6. DETAILED SECTION DESCRIPTIONS

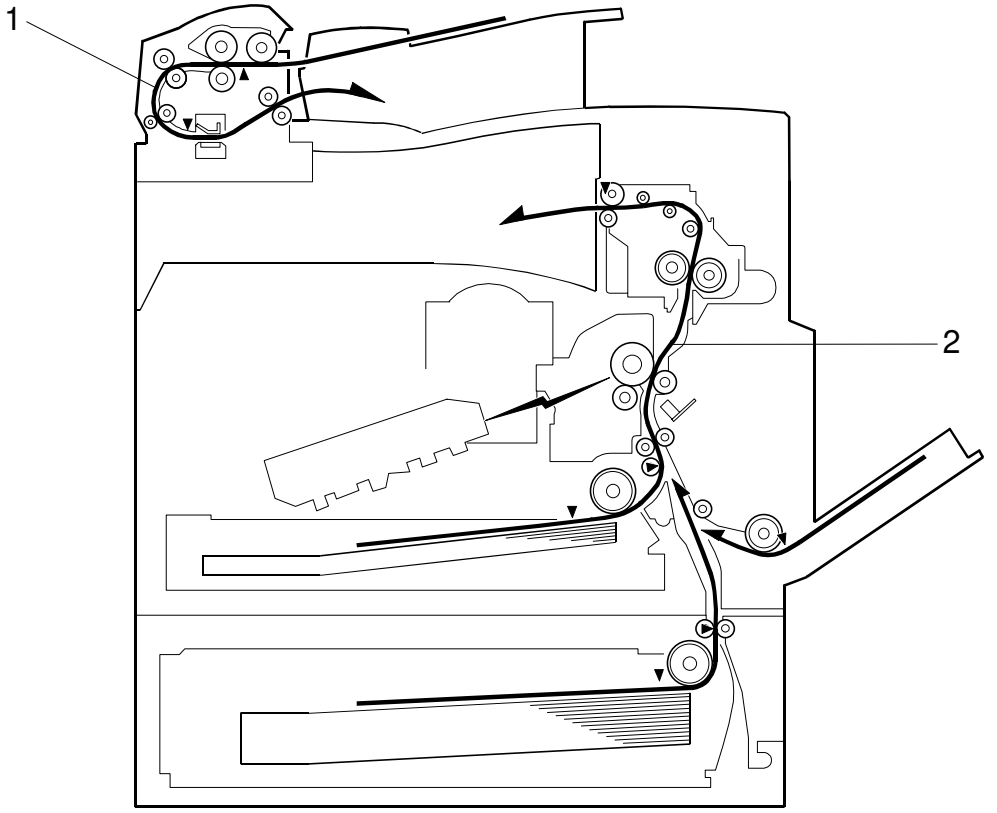
## 6.1 OVERVIEW

### 6.1.1 MECHANICAL COMPONENT LAYOUT



1. ADF (Auto Document Feeder)
2. R1 (Transport 2) Roller
3. R0 (Transport 1) Roller
4. Separation Roller
5. Feed Roller
6. S2 (original registration) Sensor
7. Pick-up Roller
8. S1 (original set) Sensor
9. R2 (Exit) Roller
10. Document Table
11. Exit Roller
12. Exit Sensor
13. Quenching Lamp
14. Hot Roller
15. Pressure Roller
16. Cleaning Blade
17. OPC Drum
18. Discharge Plate
19. Transfer Roller
20. Development Roller
21. ID (Image Density) Sensor
22. Registration Roller
23. Registration Sensor
24. By-pass Tray
25. By-pass Paper Feed Roller
26. By-pass Paper End Sensor
27. By-pass Friction Pad
28. Mixing Augers
29. (Main) Friction Pad
30. Paper Feed Roller
31. Paper End Sensor
32. TD (Toner Density) Sensor
33. Bottom Plate
34. Polygon Mirror Motor
35. Laser Unit
36. Toner Hopper Magazine (THM)
37. Toner Collection Coil
38. Exposure Glass (CIS Unit)

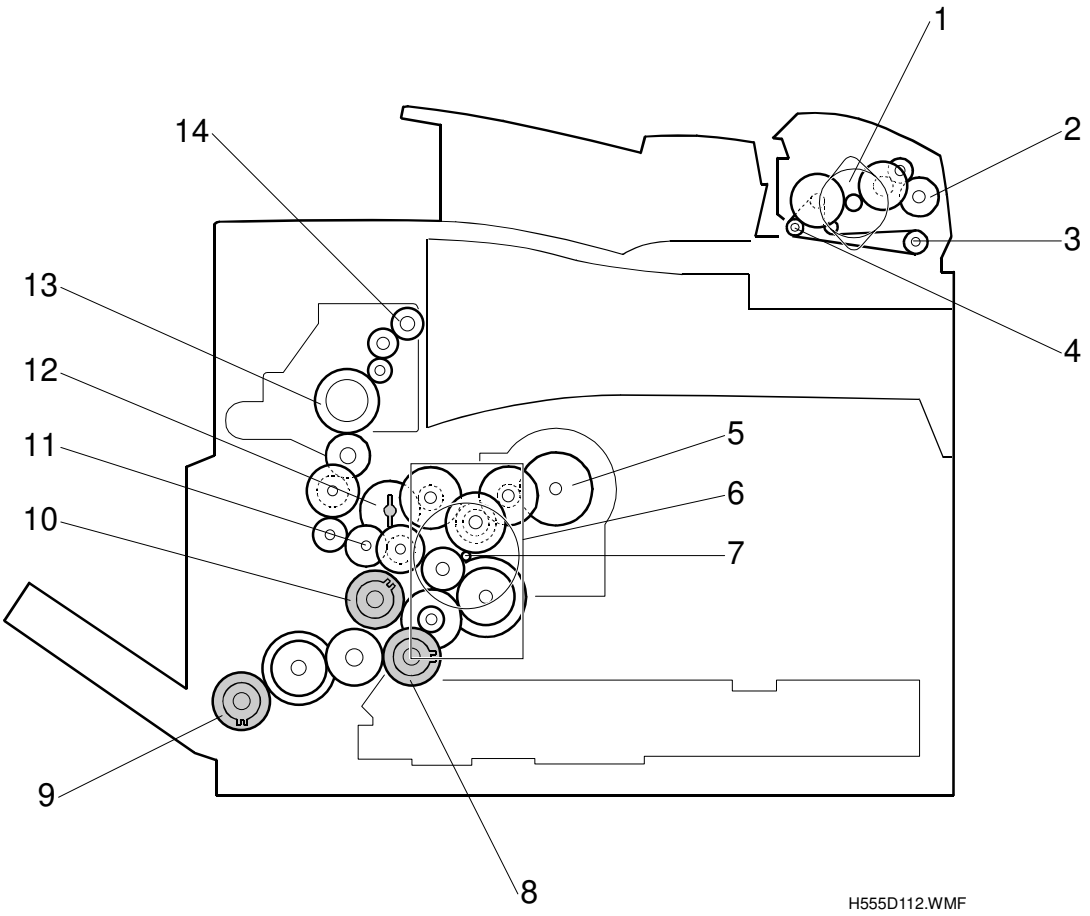
# 6.2 PAPER PATH




H555D113.WMF

1♦. Original Document Path
2♦. Printer Paper Path

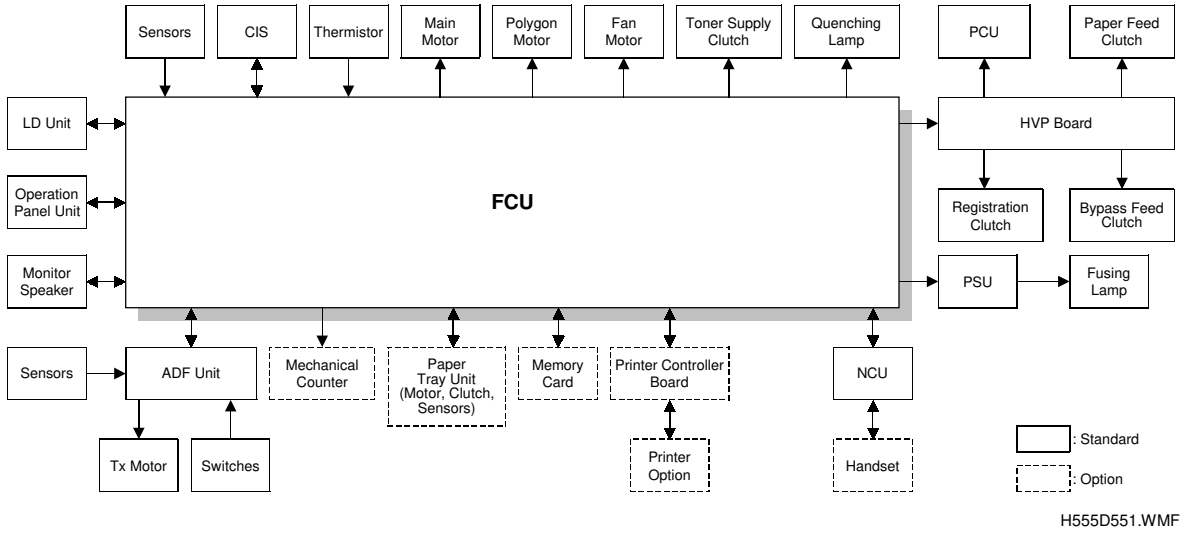
# 6.3 DRIVE LAYOUT




1. Tx Motor
2. R0 (Transport 1) Roller♦
3. R1 (Transport 2) Roller♦
4. R2 (Exit) Roller♦
5. THM Clutch♦
6. Main Motor (board)♦
7. Main Motor (drive shaft)♦
8. Paper Feed Clutch♦
9. By-pass Feed Clutch♦*1
10. Registration Clutch♦
11. Developer Driver Gear♦
12. Drum Drive Gear♦
13. Fusing Drive Gear♦
14. Exit Roller♦

*1: By-pass feed clutch: This is part of the by-pass feed unit, or the By-pass Feeder Type 300 (H104), installed as an option for EU/Asia models.

# 6.4 BLOCK DIAGRAM: PCBs AND COMPONENTS




**NOTE:** The FCU (Facsimile Control Unit) contains logical components for overall system control, and direct interfaces for the optional equipment.

# 6.5 POWER DISTRIBUTION

## 6.5.1 DISTRIBUTION DETAILS

The PSU (Power Supply Unit) generates +5V (+5VE) and +24V (+24VE) DC, and supplies these to the FCU.

The FCU has regulators that generate supplies from +24VE to +5VLD for the LDDR, and also from +3V (specifically, +3.3V) to +5VE for internal use, as indicated in the table below.

| Source | Voltage | Description |
|---|---|---|
| +24VE | +5VLD*♦ | For the LDDR |
| | +24VM* | For the CIS, main motor, polygon motor, PSU, cooling fan, clutches, power pack, quenching lamp, mechanical counter and optional paper tray |
| | | For the Tx motor |
| +5VE | | For the operation panel and optional printer unit |
| | +3V♦ | For the SDRAM, VPL, CIOP, and modem. |
| | +3VA♦ | For analog communication processing |
| | +3VBAT♦ | Supplied from a long-term lithium battery; backs up the SRAM (programmed settings) on the FCU. |
| | +3VD♦ | Supplied from a rechargeable lithium battery; backs up stored data DRAM and on optional IC card (both on the FCU) for 12 hours after power goes off. |
| | +3VE♦ | For the SCP2A and flash ROM. |
| | +3VV♦ | For the thermistor |
| | +5V | For the power pack, sensors, flash memory card and optional paper tray. |
| | +5VA♦ | For analog communication processing |
| | +5VDS♦ | For the NCU |
| | +5VHCT♦ | For the card I/F |
| | +5VSPD♦ | For the monitor speaker |
| | +5VVD | For the CIS |

*Supply is cut off if the interlock switch is open.

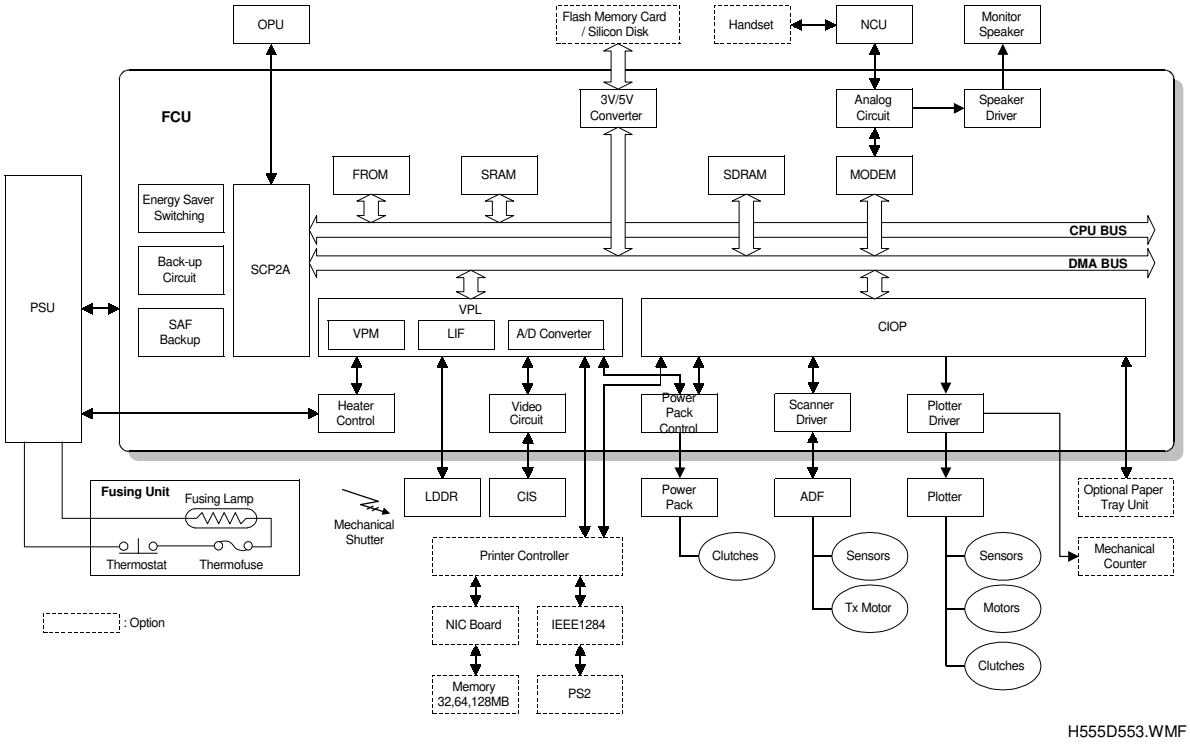
## 6.5.2 MEMORY BACK-UP♦

A non-rechargeable lithium battery provides long-term backup for the SRAM on the FCU, so that system parameters and programmed settings are maintained even when the base copier is unplugged or its main switch is turned off.

A rechargeable lithium battery backs up the SAF memory (SDRAM) on the FCU for about 12 hours in the event that power goes off.

# 6.6 MAIN PCBs

## 6.6.1 FCU (FACSIMILE CONTROL UNIT)

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The FCU is the machine's main controller. It controls scanning, printing, fax operations, image processing, power-mode switching, and it interfaces with standard and optional peripherals and with the user. It holds the machine's FROM, SRAM, and DRAM, and provides the slot for the optional memory card.

### *SCP2A♦*

The machine’s CPU. Uses a dual bus structure (CPU bus and DMA bus), and includes DMA, DCR, JBIG, and energy-save control circuits.

### *VPL (Video Processing LSI)♦*

This chip implements video processing, utilizing the following internal blocks.

- VPM (Video Processing Module)
- Implements scanning control and image processing.
- LIF (Laser Interface)
- Implements printing control and image processing
- A/D Converter

### *CIOP (Communications and I/O Processing)*

Implements communication and I/O control circuits. Runs at 9.83MHz (clock signal supplied by the main CPU).

### *FROM (Flash ROM) – 2MB*

The machine's program memory. Packaged in a 48-pin TSOP; 90ns access time; runs at +2.7 to +3.6 V (+3VE). The memory content can be overwritten from a flash memory card.

### *SDRAM – 8MB*

The machine's standard operating RAM. Packaged in a 54-pin TSOP; 100MHz maximum clock speed; operates at +3.3 V (+3VD). Allocated as follows: 6.0K for page memory and (if applicable) ring buffer; 3M for the fax SAF; 576K working RAM; 256K line buffer, 128K ECM buffer, 128K OS, 64K text SAF. The SAF backup circuit will maintain DRAM content for up to about 12 hours if power outage occurs while SAF data is being stored.

### *SRAM – 128K*

Stores users settings and usage data. Packaged in a 32-pin TSOP; 70ns access time; runs at +2.7 to +3.6 V (+3V BAT). On-board battery backup maintains memory content while power is off.

### *3V/5V Converter*

Interface between the 3 V output by the FCU and the 5V used by service flash card.

### *Energy-Save Switching*

Controls low-power mode switching

### *Reset/Backup Circuit*

Monitors +5VE power, and issues system reset and RTC reset signals. When the main power is off, supplies power from the primary battery to SRAM and parts of the SCP2A.

### *SAF Backup*

Backs up DRAM for up to 12 hours if power outage occurs while SAF data is being held.

### *Analog Processing Circuit*

Implements modem filtering, 2/4-line switching, and RITONE switching.

### *Modem*

Implements a V34 modem and code. Includes a 24.6MHz modem clock.

### *Speaker Driver*

Drives the speaker for the buzzer and monitor sounds.

### *Heater Control*

Processes signals from the thermistor controlling the fusing heater.

### *Video Processing Circuit*

Interface with the CIS.

### *Power Pack Control*

Interface with the high-voltage power supply unit. (Implements PWM control and receives feedback.)

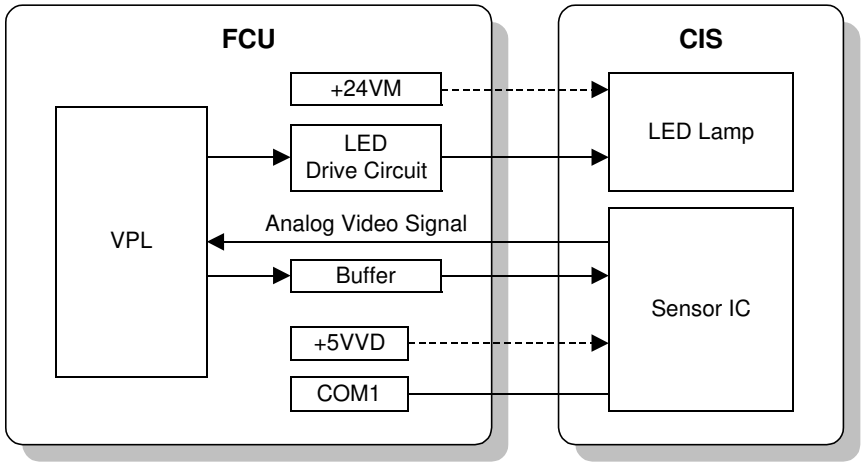
### *Scanner Driver*

Drives the Tx motor and interfaces with the ADF.

### *Plotter (Printer Engine) Driver*

- Drives the main and polygon motors; the feed, by-pass, registration, and toner-supply clutches; the quenching lamp; and the fan.
- Interfaces with the exit, paper-end, registration, ID, and TD sensors.

## 6.6.2 CIS (CONTACT IMAGE SENSOR) UNIT




### FCU

Controls all fax features and communications. The FCU supplies power to the CIS LED array and processes the analog video signals from the Sensor IC of the CIS.

**LED Drive Circuit**: Powers the LED array of the CIS.

**VPL**: The VPL (Video Processing LSI) is the chip on the FCU that performs video processing.

**Buffer**: Buffers the CIS drive signals and boosts them from 3 V to 5 V. The VPL is a 3V system, so the signals must be boosted before sending them to the CIS.

### CIS

The CIS (Contact Image Sensor) is a compact reading device, consists of (1) an LED array, which operates as the light source for scanning the originals, and (2) an array of self-focusing optic fibers (SELFOC). Light from the LED array is projected onto the original and reflected back onto the self-focusing fiber optical array and then to the Sensor IC. The entire assembly is below the original document (loaded face up and transported over the exposure glass face down), approximately 0.1 mm from the surface of the original.

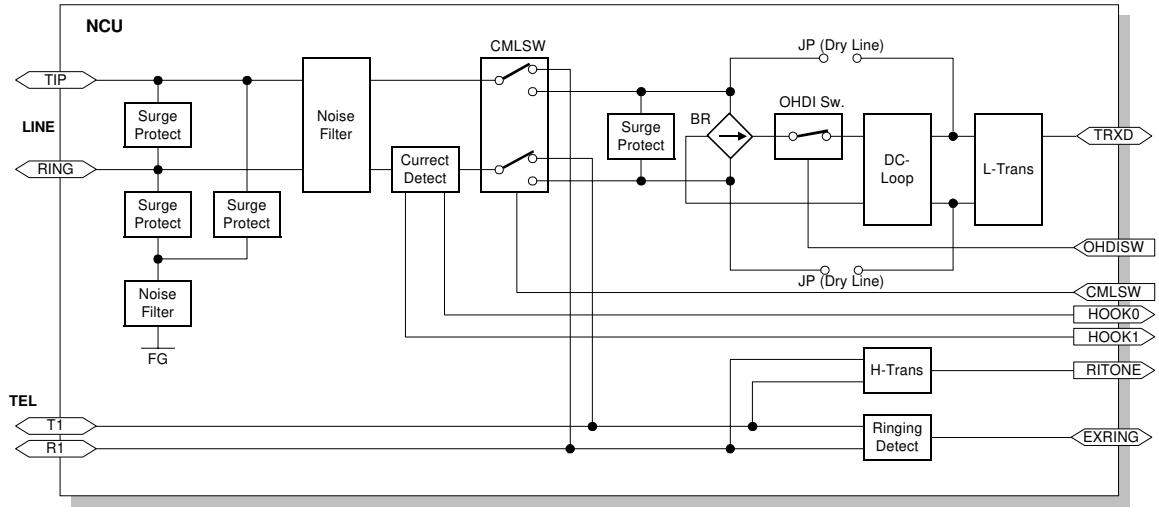
**LED Lamps**: Sealed diodes that switch on when a very low current passes through them. The LED lamps provide the light source for scanning the original as it passes over the exposure glass above. Signals from the VPL switch the LEDs off and on at the start and end of scanning.

**Sensor IC**: Light-sensitive phototransistors that convert the light reflected from the original into video image signals and sends them to the VPL.

## 6.6.3 NCU (NETWORK CONTROL UNIT)

The NCU implements the interface between the fax system and the telephone network.

### *North America version*♦

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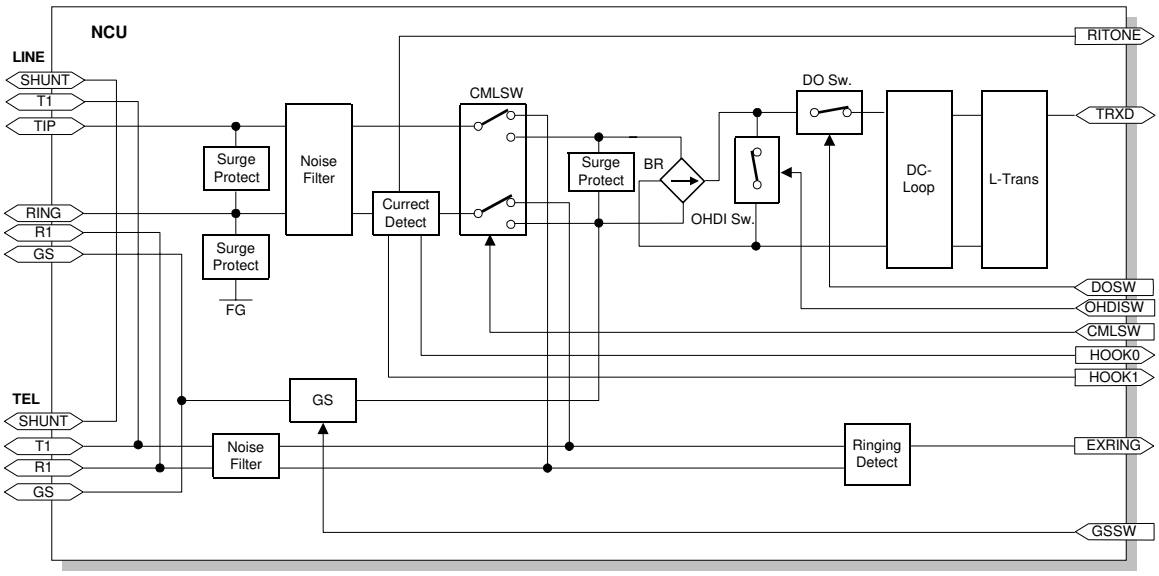
### *Europe version*

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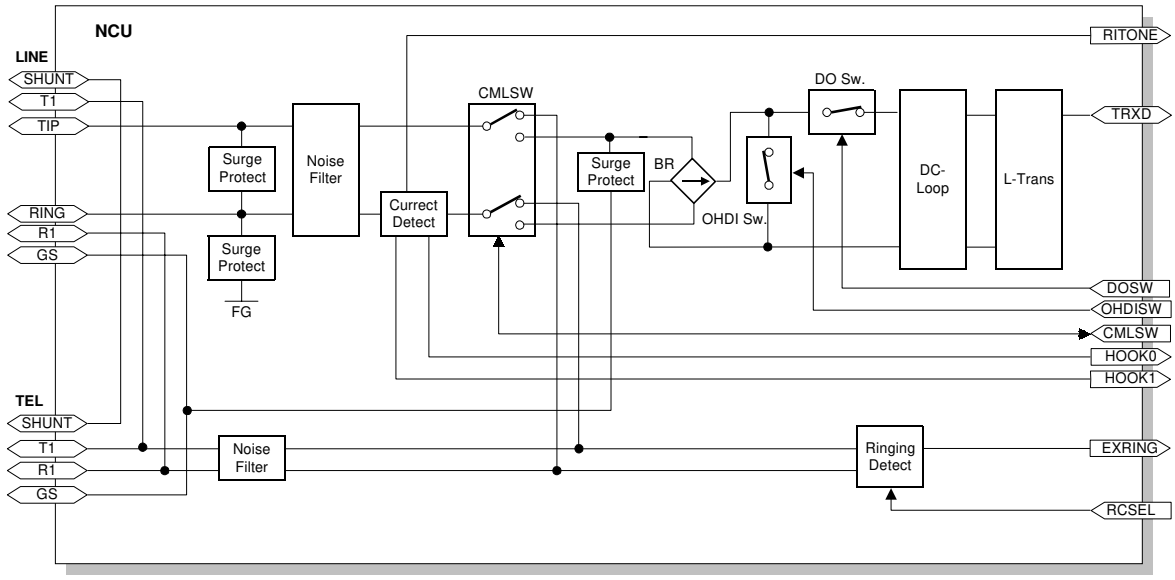
## *Asia version*

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# 6.7 VIDEO DATA PATH

## 6.7.1 TRANSMISSION

### *Immediate Transmission*

The CIS (Contact Image Sensor) scans the original at a resolution that matches the capabilities of the receiving terminal. After analog and digital image processing, the data is compressed for transmission using JBIG compression. The compressed data passes through the DCR buffer, then into the ECM memory. The NCU transmits the data to the line through the modem.

### *Memory Transmission*

The CIS (Contact Image Sensor) scans the original at the selected resolution, then the data is compressed with MMR (or raw format) and stored in the SAF memory.

At time of transmission, the stored data in the SAF memory is decompressed, then compressed again for transmission using JBIG compression. The compressed data passes through the DCR buffer, then to the ECM memory. The NCU transmits the data to the line through the modem.

### *Parallel Memory Transmission*

This feature allows the machine to scan a document into the SAF memory and send the same document simultaneously, i.e. the machine stores the processed video data in the SAF memory and sends the data through the modem at the same time.

## 6.7.2 RECEPTION

Data from an analog line passes to the modem through the NCU. After the modem demodulates the data, it passes through the ECM memory, DCR buffer, then to the DCR (or the JBIG), which decompresses it into raster image data.

At the same time (if substitute reception is enabled), the compressed data passes to the SAF memory as a backup to prevent loss of the transmission due to mechanical problems during printing

The raster image data then passes to the page memory for printing. After a page of data has been stored in the page memory, the data is sent to the LDDR through the LIF in the VPL.

## 6.7.3 COPYING

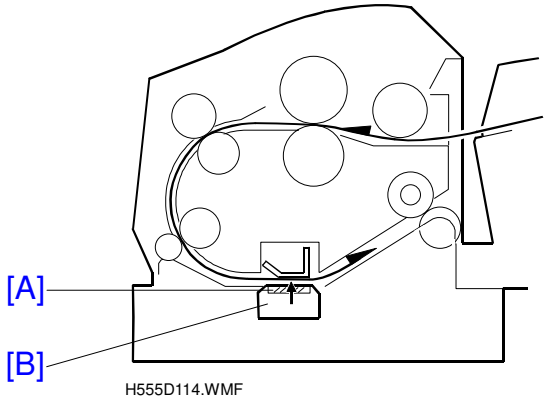
### *Single Copy*♦

The scanned data passes to the page memory after image processing in the VPL. After a page of data has been stored in the page memory, the data is sent to the LDDR through the LIF.

### *Multi-page Copy*♦

The scanned data passes to the SAF memory after 1) image processing in the VPL and 2) compression in the DCR. After a page of data has been stored in the SAF memory, the data passes to the DCR again for decompression then to the page memory for printing.

# 6.8 COPY PROCESS OVERVIEW

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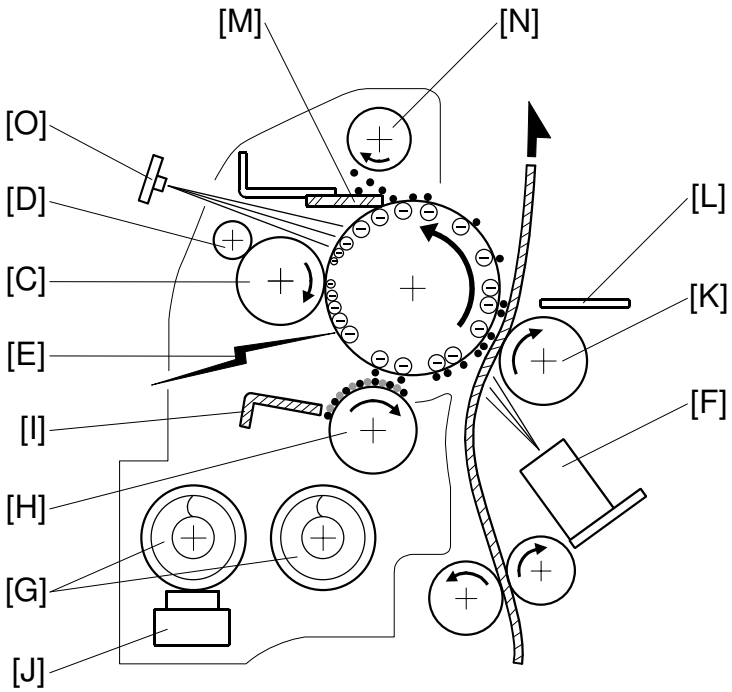


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The following is a brief overview. For more detailed information about each process, refer to the *Core Technology* manual.

### 1. EXPOSURE

The original passes over the exposure glass [A] → the CIS [B] scans the reflected light and the sensor IC converts the reflected light to an analog data signal → the FCU converts analog signal into digital data, processes it, stores it in memory → the FCU retrieves the data from memory and uses it to drive the laser. (Each original is scanned once.)

### 2. DRUM CHARGE♦

In the dark, the drum charge roller [C] imparts a negative charge to the OPC drum. (The roller is kept clean by cleaning roller [D].)

### 3. LASER EXPOSURE♦

The laser unit, controlled by the FCU, fires a beam [E] at the drum, drawing the latent electrostatic image on the drum surface. (Exposure by laser dissipates the local negative charge.)

### 4. ID (IMAGE DENSITY) SENSOR♦

The ID sensor [F] periodically measures (a) drum surface reflectivity, and (b) reflectivity of a test pattern image drawn on the drum. The FCU uses ID sensor data to adjust charge-roller voltage, and uses both ID sensor data and TD sensor [J] data to adjust the toner density.

### 5. DEVELOPMENT♦

Augers at [G] carry developer (carrier/toner mix) to the magnetic development roller [H]. The roller creates a developer “brush” that rubs against the drum, causing toner to adhere to the electrostatic image. (The doctor blade [I] restricts the height of the “brush”. The TD (toner density) sensor [J] measures the ratio of toner in the developer.)

### 6. IMAGE TRANSFER♦

Paper moves between the drum and the transfer roller [K]. A positive charge applied to the transfer roller pulls toner off the drum and onto the paper while also attracting the paper itself.

### 7. PAPER SEPARATION♦

Paper is separated from the drum as a result of (a) electrostatic attraction of paper toward transfer roller, and (b) a high AC voltage applied to the discharge plate [L].

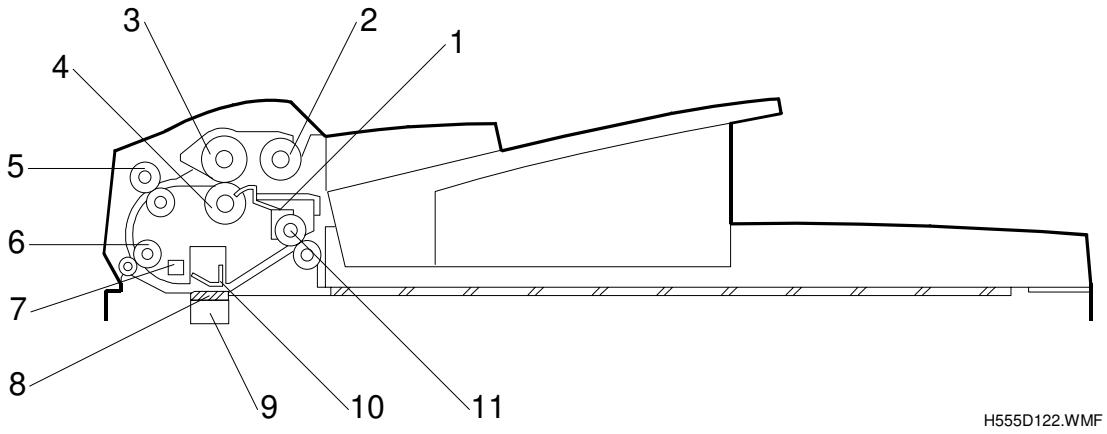
### 8. CLEANING♦

The cleaning blade [M] scrapes remaining toner from the drum, and the toner collection coil [N] retrieves this toner.

### 9. QUENCHING♦

Light from the quenching lamp [O] neutralizes the charge on the drum surface.

# 6.9 ORIGINAL SCANNING




1. S1 (original set) Sensor
2. Pick-up Roller
3. Feed Roller
4. Separation Roller
5. R0 (Transport 1) Roller
6. R1 (Transport 2) Roller
7. S2 (original registration) Sensor
8. Exposure glass
9. CIS (Contact Image Sensor)
10. White Pressure Plate
11. R2 (Exit) Roller

### 6.9.1 OVERVIEW

#### *Pickup*

Inserting the original lowers the feeler of the S1 sensor [1]. S1 then tells the CPU that the original is ready to feed, and the CPU starts the Tx motor. Driven by the Tx motor, the pick-up roller [2] drives the original between the feed and separation roller. The feed roller [3] drives the top original into the paper path.

#### *Separation*

The feed roller (2) and reverse roller (4) comprise the FRR mechanism that separates the sheets. CT The reverse roller (4) allows only the top sheet to feed. The R0 roller (5) feeds the original on the paper path to the R1 roller (6).

#### *Transport*

The R1 roller (6) feeds the original to the S2 sensor. The S2 sensor (7) detects the leading edge then the trailing edge of the original. If the trailing edge does not feed past the S2 sensor within the specified time interval, then the S2 sensor detects a jam and feeding halts. (☛ 6.10)

#### *Scanning*

As the original moves past the exposure glass (8) during a normal feed, the CIS (9) scans the original. The white pressure plate (10) holds the gap between the original and the exposure glass (CIS) to prevent unevenness of reflected light from the LED lamp. Before the first page of a job is scanned, the CIS scans the white pressure plate to take a white reference value.

#### *Exit*

The R2 roller (11) feeds the original onto the document table. After the last sheet is fed, the Tx motor reverses briefly and raises the pick-up roller.

## 6.10 JAM CONDITIONS

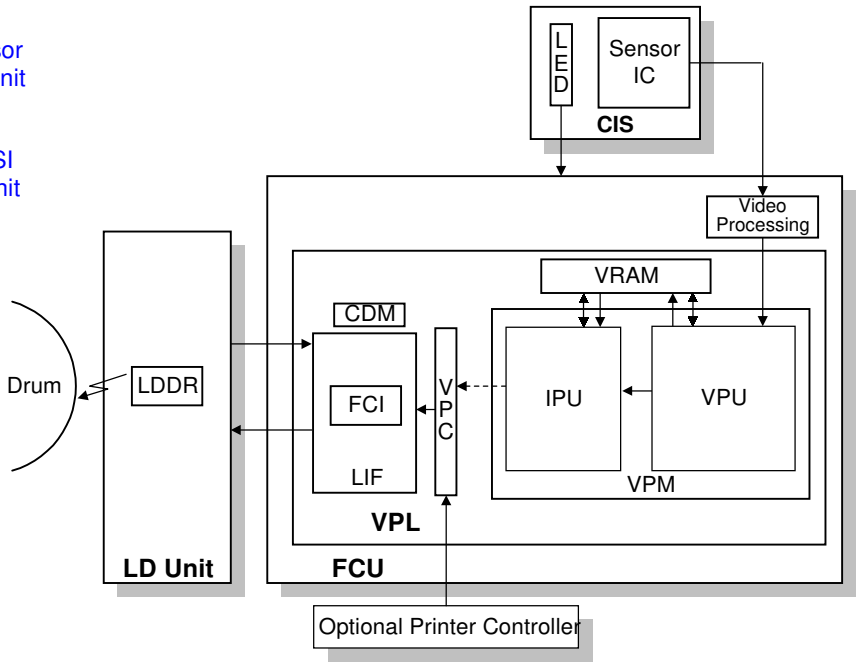
- If S2 does not switch on within 2 seconds after the Tx motor starts, a non-feed error (error code 1-00) is returned.
- If the S2 sensor does not switch on after the maximum document length (600 mm) is exceeded during feed, a maximum length error (error code 1-01) is returned.
- If S2 detects an original at power on, error code 1-10 is returned.

# 6.11 IMAGE PROCESSING

## 6.11.1 OVERVIEW

**Abbreviations:**

| | |
|---|---|
| **CIS** | Contact Image Sensor |
| **IPU** | Image Processing Unit |
| **LDDR** | Laser Diode Driver |
| **LIF** | Laser Interface |
| **VPL** | Video Processing LSI |
| **VPU** | Video Processing Unit |

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The scanned image is processed by the following modules.

### *In the CIS*

- When the original reaches S2 (the original registration sensor), the VPL switches on the LED array in the CIS to illuminate the original over the exposure glass for scanning.
- The self-focusing fiber optics of the CIS focus the image and send it to the Sensor IC which then relays the image to the VPL as analog video signals for processing by the VPL

### *In the VPL Chip on the FCU*

**VPU:** Video correction (black level, shading, peak tracking and correction), image correction (gamma correction), and reduction processing (in main-scan direction). (☛ 6.11.2)

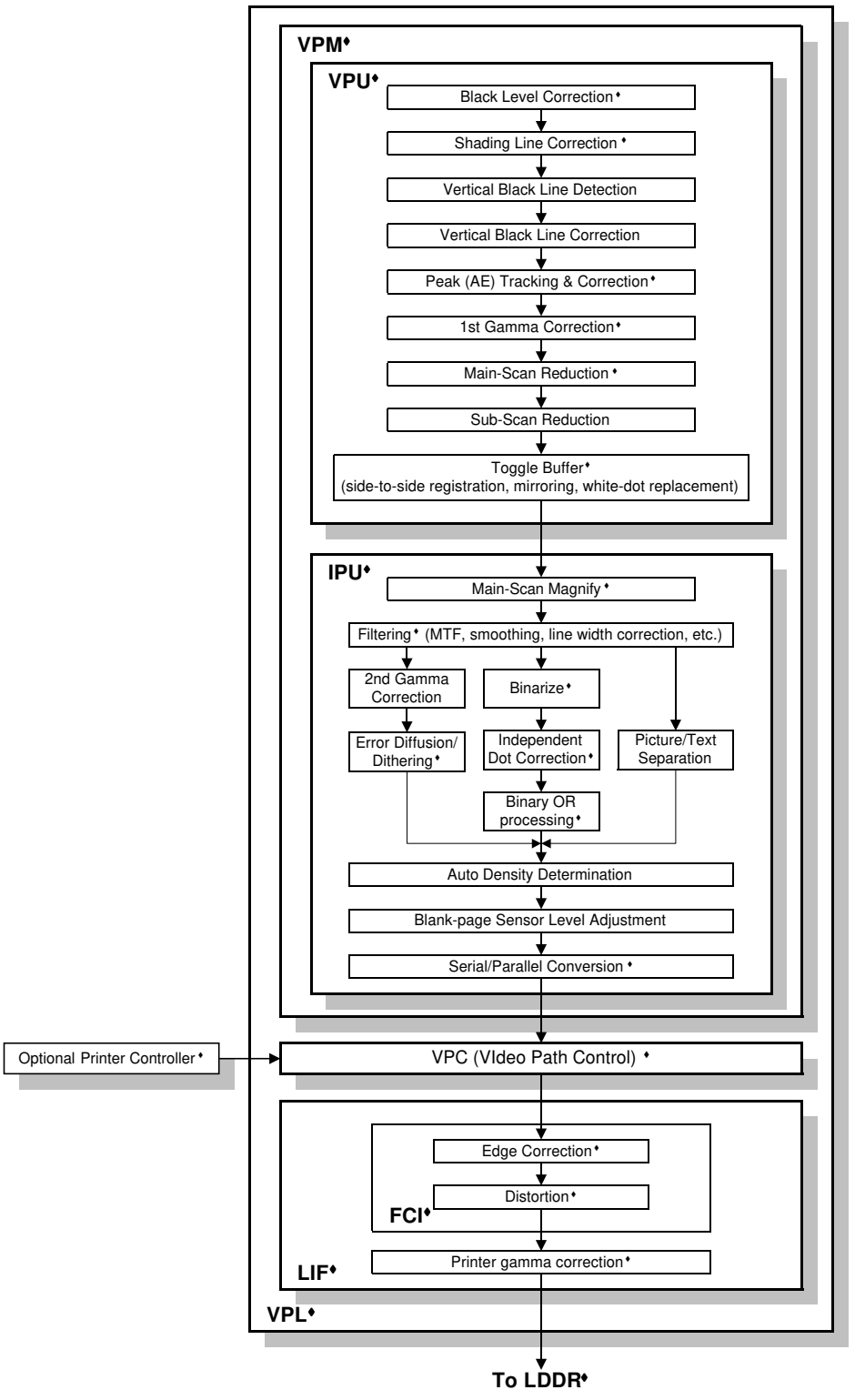
**IPU:** Magnification processing (in main scan direction), filtering, second gamma correction (fax only), etc. (☛ 6.11.2) )

**LIF:** Smoothing, edge correction, FCI (fine character adjustment) (☛ 6.11.2)

The data then moves to the LD drive board in accordance with timing controlled by the FCU. The VPU and IPU are submodules of a larger module, the VPM (Video Processing Module). The VPM includes interface components (not shown) that interface these submodules to the VRAM processing memory. The VPC (Video Path Control circuit) controls which signal is sent to the LIF.

## 6.11.2 IMAGE PROCESSING PATH

The diagram below shows the image processing steps. The steps that are actually carried depend on the selected original processing modes (☛ 6.11.3) and on adjustments made with the relevant SPs (☛ 6.11.5).

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## 6.11.3 ORIGINAL MODES

The machine offers five original modes for copying and transmitting faxes.

### *Original Mode Summary*

Original mode selection determines how the original is scanned for copying or fax sending. Here is a summary of the five modes:

| Mode | Also Called | Intended For... |
|---|---|---|
| Text Copy | Text Normal | Normal text originals. Copy default. |
| Text Fax | Text Sharp | For newspapers or other originals through which text on the rear side is moderately visible. Fax default. |
| Fax Special | Dropout | Stronger removal of dropout colors. |
| Photo 1 | Photo Normal | Normal photos. Employs error diffusion. CT |
| Photo 2 | Photo Smooth | Photos with visible pixels (newspaper photos, etc.) Employs dithering. CT |
| Text Printer | Printed Text | The so-called "plotter" (printer engine) modes. (☛ 6.11.5) |
| Photo Printer | Printed Photos | |

### *Original Mode Selection*

#### *Text Copy (Normal)*

Automatically selected by the machine if the scanned original is to be copied.

#### *Text Fax (Sharp)*

Automatically selected by the machine if the scanned original is to be sent as a fax, unless the customer engineer has selected Fax Special by changing the setting for the SRAM address (see below).

#### *Fax Special (Dropout)*

Can be used instead of Text Fax if the user is having difficulty with the quality of transmitted faxes. The mode used by the machine is determined by the value set for SRAM address 40213C(H) (☛ 5.6). To change the mode you must use SP7-955 to manually change the value of this SRAM address.

- To change to Fax Special (Dropout), write 02H into this address.
- To restore the setting to Text 2 (Text sharp), write 01H into this address.

### *Photo Normal / Photo Smooth*

A User Parameter setting performed by the customer or customer engineer determines whether Photo Normal (the default) or Photo Smooth is used to scan originals for fax transmission when the halftone button has been pressed. The User Parameter settings and original modes are as follows:

| User Parameter switch 10 bit 7 | Mode | What it Does |
|---|---|---|
| **0:** Standard Method | Photo Normal | Error diffusion is performed to reproduce the best quality photo image using error diffusion. |
| **1:** Speed Method | Photo Smooth | Color tones are reproduced in black and white using dithering. |

For details about how to change this setting, refer to the “Key Operator Settings - User Parameters” section in the *Operating Instructions - Advanced Features* manual for the machine.

## 6.11.4 IMAGE PROCESSING STEPS FOR EACH MODE

Figures in brackets: SP mode default settings : Not used

| Image Processing Path | | Text | | | Photo | | Adjust with |
|---|---|---|---|---|---|---|---|
| | | Normal*1 | Sharp*2 | Dropout*3 | Normal*4 | Smooth*5 | |
| Shading correction | Shading Line Correction | Enabled | | | Enabled | | |
| | Vertical Black Line Correction | 1-dot correction (2) | | | 1-dot correction (2) | | SP4-931 |
| | Peak (AE) Tracking | Slow (-1) | Fast (+1) | Fast (+1) | Disabled | | SP4-935 |
| | Peak (AE) Correction | Normal (0) | Normal (0) | Eliminate background (+1) | Normal (0) | Normal (0) | SP4-934 SP4-936 |
| | 1st γ Correction | Text Normal (0) | | | | | SP4-922 |
| Magnification | Main-scan/ Sub-scan reduction | Enabled | | | Enabled | | |
| | Mirroring | | | | | | |
| | Side-to-side Registration | Enabled | | | Enabled | | |
| | Main-scan Magnification | Enabled | | | Enabled | | |
| Filtering | MTF | Weak (-1) | Normal (0) | Normal (0) | Normal (0) | Strong (1) | SP4-925 |
| | Smoothing | Disabled (6) | Disabled (6) | Disabled (5) | Disabled (4) | Enabled (3) | SP4-930 |
| | Line Width Correction | Disabled (0) | | | Disabled (0) | | SP4-927 |
| Gradation | 2nd γ Correction | | | | Photo Normal (0) | Photo Normal (0) | SP4-922 |
| | Error Diffusion/ Dithering | Error Diffusion (2) | | | Error Diffusion (3) | Dithering | SP4-926 (E. Diff. Only) |
| Image Correction | Independent Dot Erase | | Enabled (1) | Enabled (1) | | | SP4-928 |
| | Pict./Text Separation: Standard & Detail Resolution | Binary (6) + Error Diffusion | Binary (6) (Auto Threshold) | Binary (5) | Binary (4) + Error Diffusion | Binary (3) + Dithering | SP4-930 |
| | Pict./Text Separation: Fine Resolution | Error Diffusion | | | Error Diffusion | Dithering | |
| | Auto Density Determination | Normal (0) | | | Normal (0) | | SP4-932 |
| | Blank-page Sensor Level | Normal (0) | | | Normal (0) | | SP4-933 |
| Path Control | Video Path Control | Enabled | | | Enabled | | |
| LIF | FCI | Disabled | Enabled | Enabled | Disabled | | ☛ 6.11.5 |
| | Printer γ Correction | Enabled | | | Enabled | | |

*1: Text Copy (Normal) Selected by default for copying. Normal text with error diffusion.

*2: Text Fax (Sharp) Selected by default for fax transmission. Sharp text with auto threshold.

*3: Fax Special (Dropout) Dropout enabled with fixed binary processing. Can be used in place of Text Fax (Sharp) by re-setting SRAM address 40213C(H). (☛ 6-21)

*4: Photo Normal Selected by default for photo images copied or sent by fax. Uses error diffusion. Used for the User Tool parameter: "Standard Method"

*5: Photo Smooth Uses dithering. Used for the User Tool parameter: "Speed Method". Can be set to replace Photo Normal with a User Tool. (☛ 6-22)

## 6.11.5 MODE ADJUSTMENTS

### *To customize image processing mode*

As the customer engineer, you can use SP codes 4-922 to 4-966 to further customize each of these original modes to meet specific user requirements.

If the user is experiencing a problem with copy or fax quality, proceed as follows:

1. First, use SP4-921 to select the original mode that you wish to customize.
2. Next, while referring to the table below, enter the relevant settings for SP4-922 to SP4-966.

   **NOTE:** If you enter an SP customization setting for an original mode that does not support that customization, the entry will have no meaning.

### *Default plotter (printer engine) customization settings for each mode*

The following table shows the default printer engine customization settings for each original mode performed with SP4-961 to SP4-966. For more information about adjustments, refer to the SP mode descriptions in Section 5.

| | SP4-961 | SP4-962 | SP4-963 | SP4-964*1 | SP4-965 | SP4-966 |
|---|---|---|---|---|---|---|
| **Copy** | | | | | | |
| Text Copy (Normal) | 1: Normal | 0: Normal | 3: Normal | 1: None | 1:Thin lines | 2: On |
| **Fax** | | | | | | |
| Text Fax (Sharp) | 3: FCI | 0: Normal | 2: Distortion prevention + jagged edge correction | 1: None | 1:Thin lines | 2: On |
| Fax Special (Dropout) | 3: FCI | 0: Normal | 2: Distortion prevention + jagged edge correction | 1: None | 1:Thin lines | 2: On |
| Photo Normal | 1: Normal | 0: Normal | 3: Normal | 1: None | 3: Mask 2 | 1: Off |
| Photo Smooth | 1: Normal | 0: Normal | 3: Normal | 1: None | 3: Mask 2 | 1: Off |
| **Printer** | | | | | | |
| Text Printer (FCI ON) | 3: FCI | 0: Normal | 4: Jagged edge correction (light) | 2: Level 1 | 4: Mask 3 | 2: On |
| Photo Printer (FCI OFF) | 3: FCI | 0: Normal | 3: Normal | 2: Level 1 | 4: Mask 3 | 1: Off |

*1: SP4-964 adjustments operate as follows.

| SP4-964 setting | Applied enhancement (fax) | Applied enhancement (printer) |
|---|---|---|
| –2 | Not used | 0: Weak |
| –1 | 0: Weak | 1: None |
| 0 | 1: None | 2: Level 1 |
| +1 | 2: Level 1 | 3: Level 2 |
| +2 | 3: Level 2 | 4: Level 3 |

### *SP Settings SP4961~SP4966*

For more details about all the settings available for SP4-921, and SP4-961~SP4-966, see Section “4 Service Tables”.

## 6.11.6 VERTICAL BLACK LINE CORRECTION

### *Overview*

Vertical black line correction is a new software feature of this machine. It prevents black lines in image data caused by dirt, paper dust, correction fluid, ink, etc. at the scan line.

Before scanning the first page of the original, the machine scans the white plate to check if there is any dust at the scan line or a defect in the CIS; these are detected as abnormal pixels in the scan line. If something is detected, a warning is displayed in the operation panel LCD. If possible, the machine corrects the scanned image for the effects of this dust or defect (if uncorrected, these would cause vertical black lines in the image).

The number of occurrences for various categories of black line is recorded in the vertical black line counters in the table shown below. This table is part of the System Parameters list printed from the operation panel. (☛ 5.2.2 Function No., "02. Parameter List")

For details about how to read the table, see the table on the next page ("Count Detection Parameters List").

**NOTE:** The dark squares in the table below are added for emphasis here only to show where the counters are. These squares do not appear on the actual System Parameter list printout.

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 416E00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 416E10 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 416E20 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 416E30 | 00 | 00 | 08 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 4B | 00 | 0F | 00 |
| 416E40 | 00 | 00 | 08 | 00 | 01 | 00 | 00 | 00 | 0F | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 416E50 | 02 | 00 | 06 | 00 | 07 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 416E60 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 416E70 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 416E80 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 416E90 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 416EA0 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 416EB0 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 416EC0 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 416ED0 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 416ED0 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 416EF0 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |

## *Count Detection Parameters List*

Please refer to the sample on the previous page as you read the table descriptions below.

| Address | Count | Detection Conditions |
|---|---|---|
| **416E3C, D** | Vertical Black Line Detections | Number of jobs in which an abnormal pixel was detected before page 1 of the original was scanned. Increments only by 1 per job. |
| **416E3E, F** | Pixels of Abnormal Width – Correctable | Increments by 1 for every abnormally wide pixel that can be corrected electronically. The electronically correctable width depends on a special setting made at the factory before shipping. (Currently this width is set for 1 pixel.) Also, if alternating pixels ❍ ● ❍ ● are detected, the counter is incremented. |
| **416E40, 1** | Pixels of Abnormal Width – Not Correctable | Increments by 1 for every abnormally wide pixel that cannot be corrected electronically. The electronically correctable width depends on a special setting made at the factory. (Currently this width is set for 1 pixel.) |
| **416E42, 3** | Abnormal Pixels – Consecutive occurrence at the same place (1 time) | Increments by 1 if an abnormal pixel occurred, but had disappeared from that place by the start of the next job (for example, the exposure glass was cleaned or the original brushed away the speck of dust).*1 |
| **416E44, 5** | Abnormal Pixels – Consecutive occurrence at the same place (2~9 times) | Increments by 1 if an abnormal pixel occurred at the same place on the scan line 2 to 9 consecutive times, but was not there at the start of the next job (for example, the exposure glass was cleaned or the original brushed away the speck of dust).*1 |
| **416E46, 7** | Abnormal Pixels – Consecutive occurrence at the same place (10 or more times) | Increments by 1 if an abnormal pixel occurred at the same place on the scan line 10 or more consecutive times, but was not there at the start of the next job (for example, the exposure glass was cleaned or the original brushed away the speck of dust).*1 |
| **416E48, 9** | Abnormal Pixel Width Counter: 2~3 Pixels Wide | Increments by 1 every time an abnormal pixel 2~3 times wider than 1 pixel is detected. If more than one pixel is detected, the counter updates once for each pixel detected. |
| **416E4A, B** | Abnormal Pixel Width Counter: 4~6 Pixels Wide | Increments by 1 every time an abnormal pixel 4~6 times wider than 1 pixel is detected. If more than one pixel is detected, the counter updates once for each pixel detected. |
| **416E4C, D** | Abnormal Pixel Width Counter: 7~12 Pixels Wide | Increments by 1 every time an abnormal pixel 7~12 times wider than 1 pixel is detected. If more than one pixel is detected, the counter updates once for each pixel detected. |
| **416E4E, F** | Abnormal Pixel Width Counter: 13 or More Pixels Wide | Increments by 1 every time an abnormal pixel 13 times or more wider than 1 pixel is detected. If more than one pixel is detected, the counter updates once for each pixel detected. |
| **416E50, 1** | Abnormal Pixels in CIS Block 1 | Increments by 1 if abnormal pixels are detected in Block 1*2 of the CIS. |
| **416E52, 3** | Abnormal Pixels in CIS Block 2 | Increments by 1 if abnormal pixels are detected in Block 2*2 of the CIS. |
| **416E54, 5** | Abnormal Pixels in CIS Block 3 | Increments by 1 if abnormal pixels are detected in Block 3*2 of the CIS. |
| **416E56, 7** | Abnormal Pixels in CIS Block 4 | Increments by 1 if abnormal pixels are detected in Block 4*2 of the CIS. |

*1: This counter increments by one only when an abnormal pixel that was previously detected at a certain position has now disappeared.

*2: The length of the CIS (Contact Image Sensor) is divided into four blocks: Block 1, Block 2, Block 3, and Block 4. The count is incremented only once even if abnormal pixels are detected at more than one location in the same block.

### *Settings for Vertical Black Line Detection*

User Parameter settings performed by the customer or customer engineer determine whether 1) vertical black lines are corrected, and whether 2) a warning is issued every time a vertical black line (abnormal pixel in the scan line) is detected before scanning an original.

The machine defaults are set to 1) correct vertical black lines and 2) issue a warning when a vertical black line (abnormal pixel in the scan line) is detected. These settings are performed by setting User Parameter Switch 20 bit 04 to 1 (or 0) for correction, and setting User Parameter Switch 20 bit 7 to 1 (or 0) for the warning message. The default settings for both vertical line correction and the issue of the warning are both “1” (On).

For details about how to change this setting, refer to the “Key Operator Settings - User Parameters” section in the *Operating Instructions - Advanced Features* manual for the machine.

### *Vertical Black Line Warning Message*

The vertical black line warning message “Scanner Needs Cleaning” is displayed in the LCD on the operation panel when:

- Pixels of abnormal width that cannot be corrected are detected three times consecutively.
- Pixels of abnormal width that can be corrected are detected 10 times consecutively.

The scanning job is not interrupted when this message is displayed. If paper dust is the cause of the problem, for example, the following sheets of the original could remove it from the scanning area.

To release the error, just press the OK button.

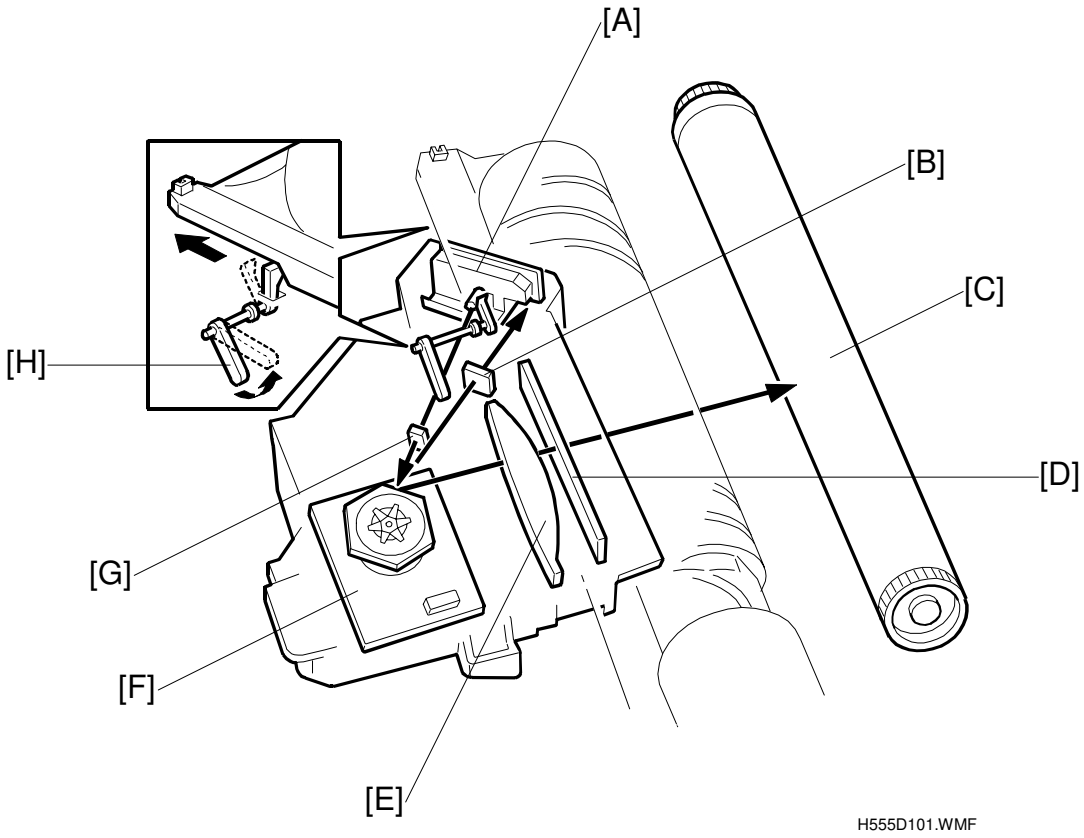
The exposure glass and area around the scanning line should be inspected and cleaned as soon as possible after the “Scanner Needs Cleaning” warning appears.

In regard to the operation of vertical black line correction:

- Scanning originals is slightly slower with vertical black line detection switched on.
- Vertical line detection is executed only once, immediately before scanning the first page of the stack.
- The vertical line correction warning is displayed in the LCD only. Neither a lamp indicator nor a sound warning is issued.
- After the original is set, vertical line detection is done by the CIS reading the surface of the white plate above the scan line. The white plate is not read immediately due to the slight delay required for the CIS to illuminate fully.

# 6.12 LASER EXPOSURE

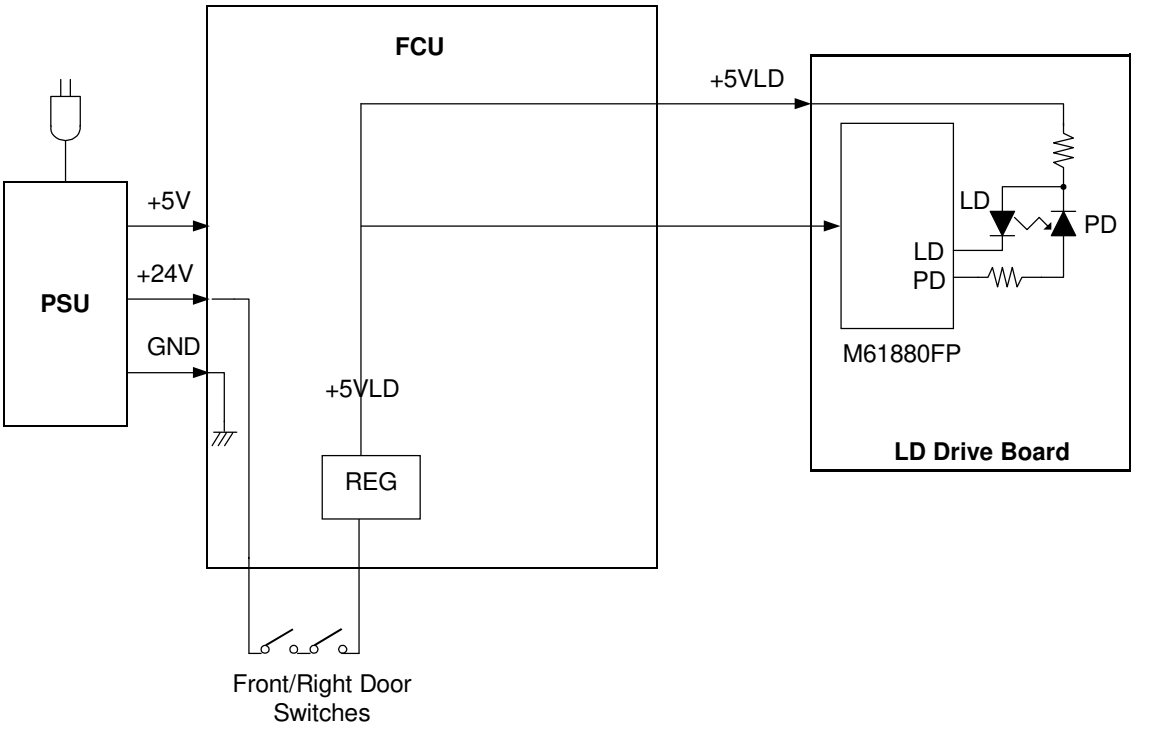
## 6.12.1 OVERVIEW♦




[A]: LD Unit
[B]: Synchronization Detector Lens
[C]: OPC Drum
[D]: Shield Glass
[E]: Toroidal Lens
[F]: Polygon Mirror Motor
[G]: Cylindrical Lens
[H]: LD Shutter

- The LD unit controls both the laser output and the laser synchronization mechanism.
- The machine cuts the power to the LD drive board when the front door or right door is opened.
- The LD shutter blocks the laser-beam path if the THM (toner hopper magazine) is unlatched.

## 6.12.2 LD SAFETY SWITCHES♦



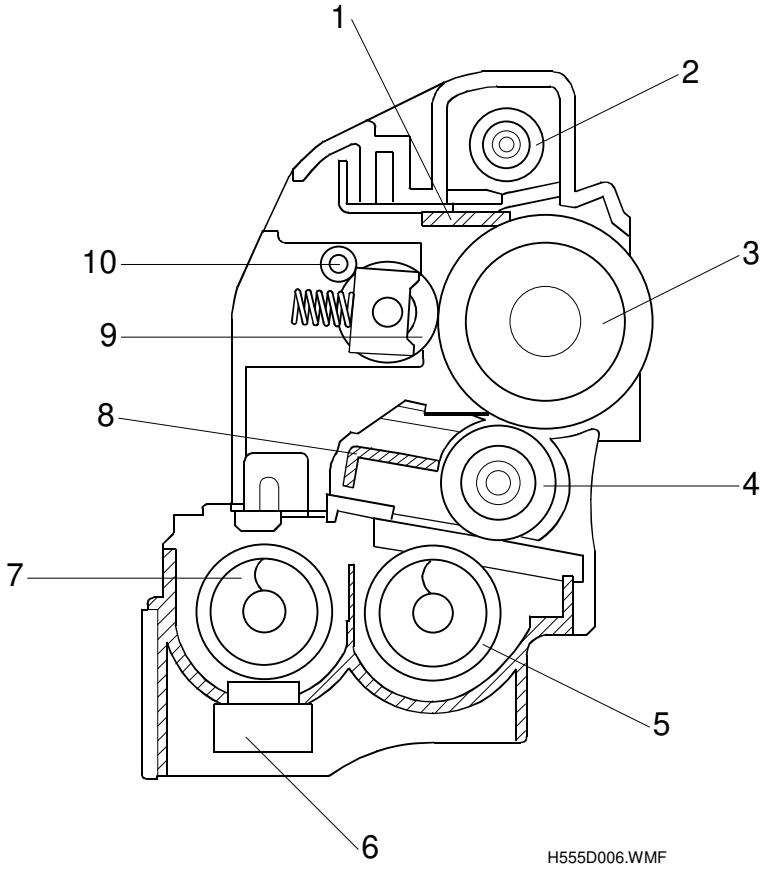

H555D005.WMF

Safety switches are installed at the front and right doors to ensure technician and user safety and to prevent the laser beam from accidentally switching on during servicing. Opening of the front or right door opens the corresponding switch, cutting the power supply (+5VLD) to the laser diode.

The safety switches are installed on the +24V line coming from the power supply unit (PSU). The +24V supply must pass through these switches before converting into the +5VLD power that drives the laser.

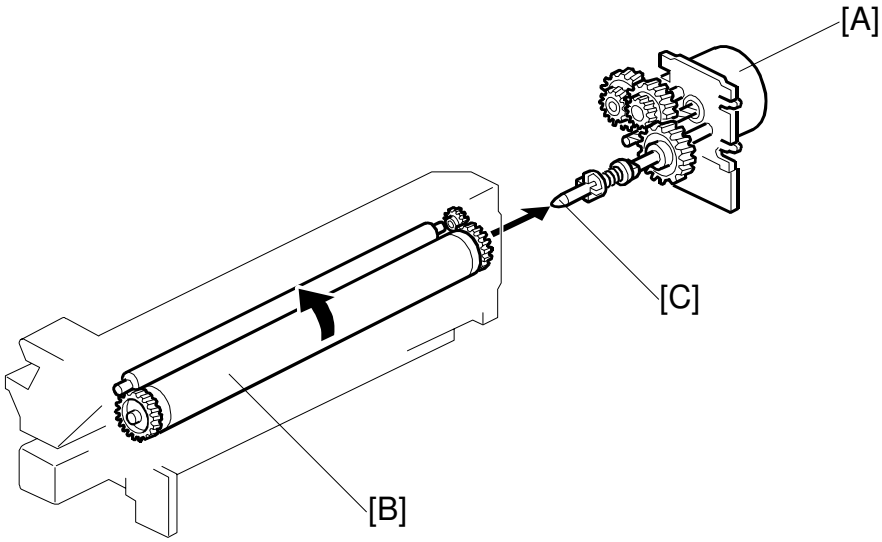
# 6.13 PHOTOCONDUCTOR UNIT (PCU)

## 6.13.1 OVERVIEW♦




1. Cleaning Blade
2. Toner Collection Coil
3. OPC Drum
4. Development roller
5. Mixing Auger 2
6. TD (toner density) Sensor
7. Mixing Auger 1
8. Doctor Blade
9. Charge Roller
10. Cleaning Roller

## 6.13.2 DRUM DRIVE♦

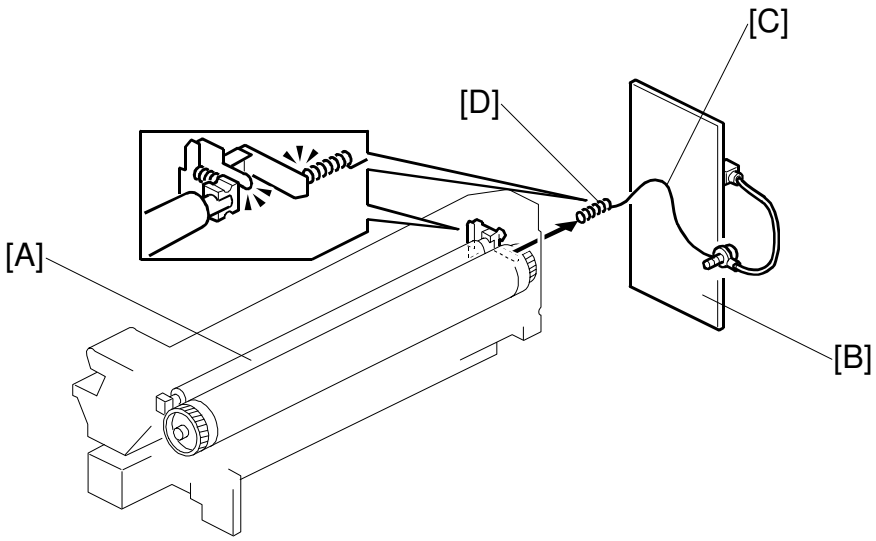



H555D303.WMF

The main motor [A] drives the drum [B] through a series of gears and the drum drive shaft [C].

# 6.14 DRUM CHARGE

## 6.14.1 OVERVIEW♦

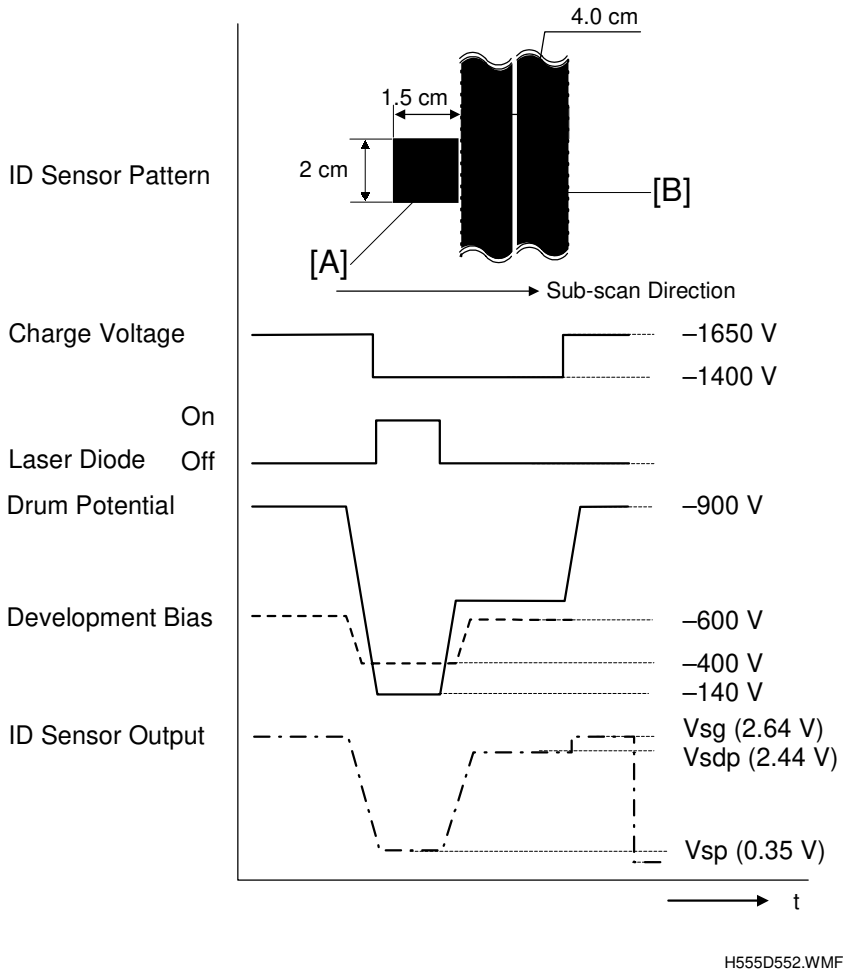



The drum charge roller [A] remains in contact with the drum, producing a charge of –900 V on the drum surface.

The high voltage supply board [B] supplies a negative charge to the charge roller via wire [C] and spring [D]. The default base (uncorrected) charge is –1,650 V. You can adjust this base charge using SP2-001-1. The actual charge is corrected in accordance with the ambient environment, as described in the next section.

## 6.14.2 CHARGE ROLLER VOLTAGE CORRECTION♦

### *Correction for Ambient Environment*




Efficiency of voltage transfer from the charge roller to the drum decreases as ambient temperature and humidity rise. Accordingly, the charge roller voltage must be made more negative at higher temperature and humidity.

### *When Correction is Made*

- At initial warm-up (following power-on by main switch)
- During warm-up on exit from low-power or auto-off mode, if that mode has been in effect for at least 4 hours
  **NOTE:** Correction can be disabled with SP2-927.

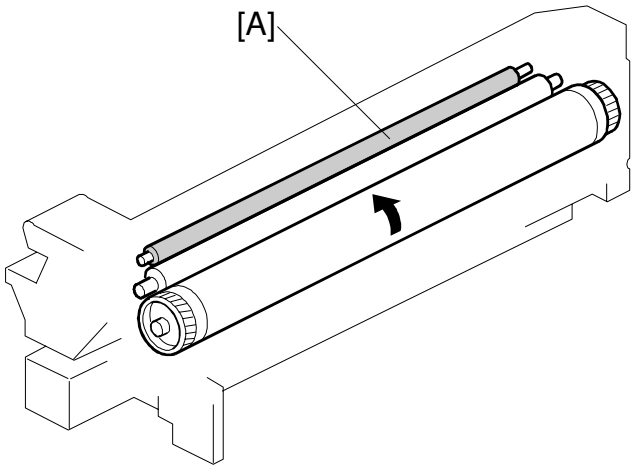
### *How Correction is Made*

Immediately after creating the ID sensor pattern [A] used for toner density control (☛ 6.15.4), the machine generates another pattern [B] for charge voltage correction by intensifying the development bias (☛ 6.15.2) to –600 V. The laser remains off, but a small amount of toner moves to the drum because of the slight charge difference between the drum and development roller. The ID measures the pattern's density (Vsdp) and the bare drum voltage (Vsg); the FCU compares the difference and adjusts the roller voltage accordingly.

- If Vsdp/Vsg > 0.95: Change charge roller voltage by +50 V (less negative).
- If Vsdp/Vsg < 0.90 = Change charge roller voltage by –50 V (more negative).

**NOTE:** The current ID sensor readings can be viewed using SP2-221.

## 6.14.3 CHARGE ROLLER CLEANING♦




H555D304.WMF

A cleaning roller [A] removes toner and debris that the roller picks up from the drum.

## 6.14.4 DETECTION OF A NEW PCU♦

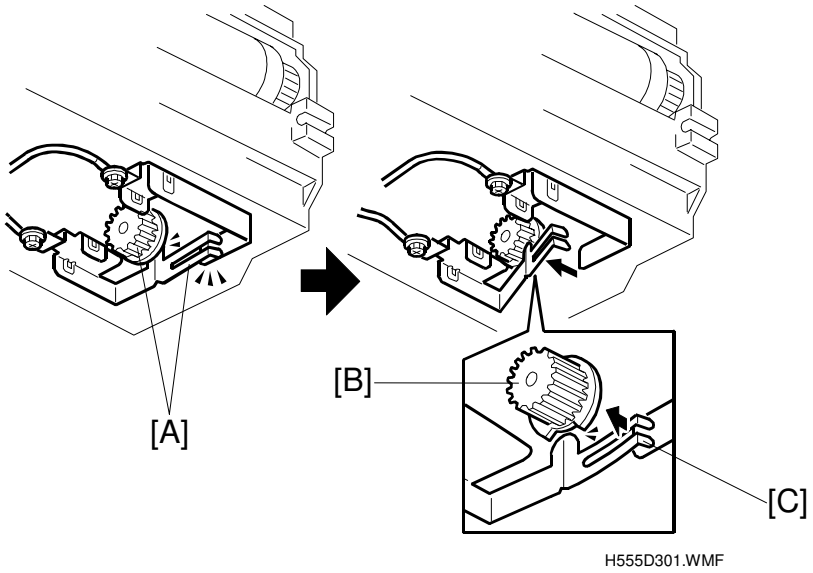
Before starting to use a new PCU, the machine must (a) agitate the toner/developer mix, (b) initialize the TD sensor, and (c) initialize the PCU counter. This machine automatically detects the presence of a new PCU and carries out these operations.

### *At time of copier installation*

The first time the machine is turned on following installation, a factory-set flag informs the machine that the PCU has not yet been initialized. The machine carries out the necessary initialization automatically.

### *When a replacement PCU is installed*

Replacement PCUs have a special mechanism that trips when they first start, informing the machine that a new PCU has been installed. (Preinstalled PCUs do not include this mechanism, and have two empty pins in their connector.)

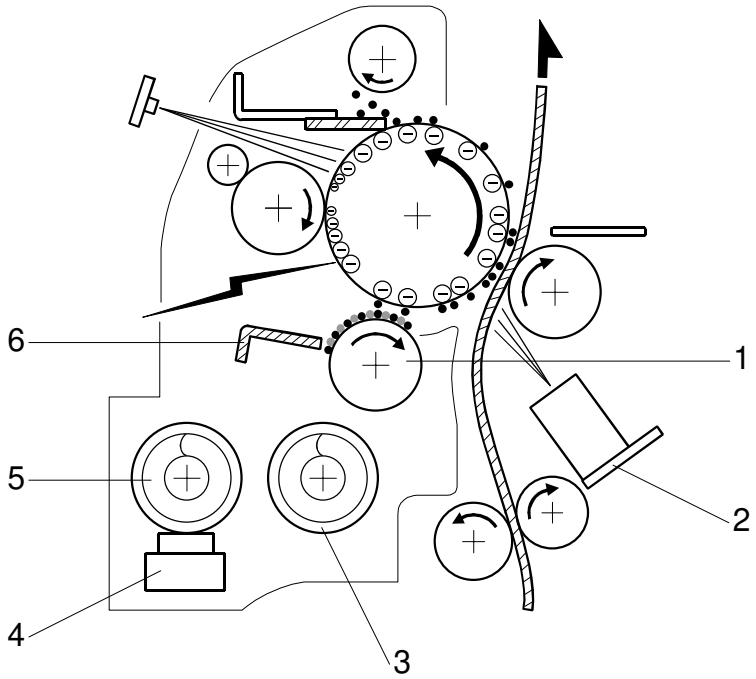



H555D301.WMF

Replacement PCU ships in state [A]. Slight rotation of PCU gear [B] at power-on releases plate [C], breaking the circuit and informing the FCU that the new PCU is a replacement unit.

# 6.15 DEVELOPMENT

## 6.15.1 OVERVIEW♦

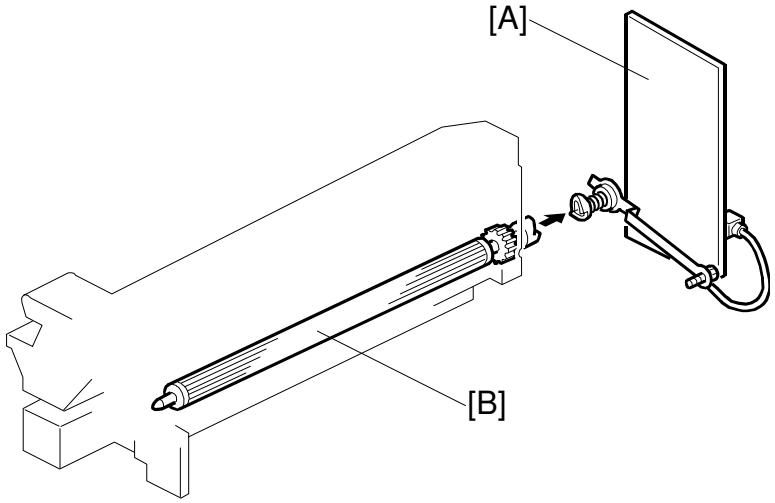



The development section consists of the following parts.

1. Development Roller
2. ID Sensor
3. Mixing Auger 2
4. TD Sensor
5. Mixing Auger 1
6. Doctor Blade

The two mixing augers mix the developer (carrier/toner mix). The TD (toner density) sensor and the ID (image density) sensor are used to control the copy image density.

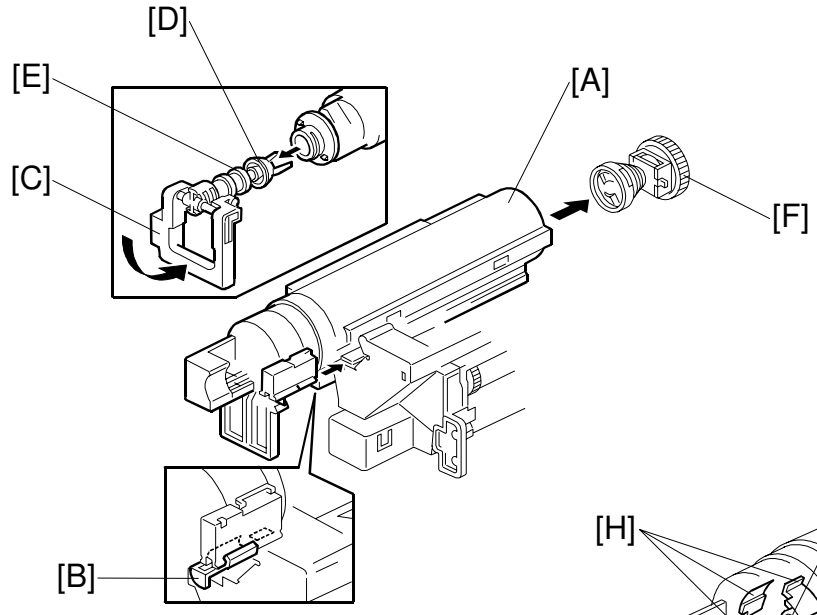
## 6.15.2 DEVELOPMENT BIAS♦



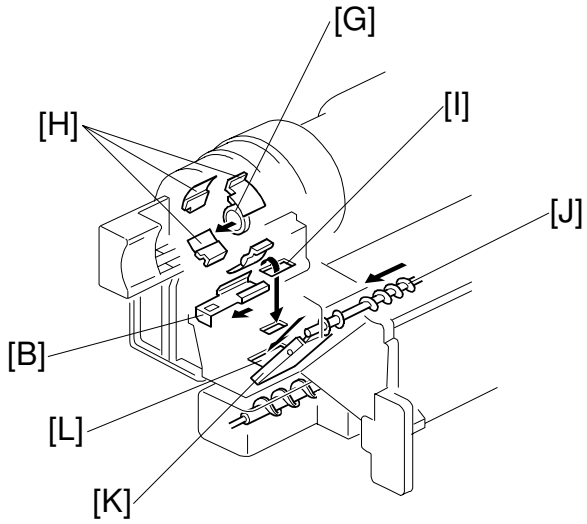

Black areas of the latent image on the drum are at low negative charge (about -140 ± 50 V), with white areas at high negative charge (about –900 V).

To attract negatively charged toner to black areas, the high voltage supply board [A] applies a (default) bias of –600 V to the development roller [B]. The bias voltage can be adjusted with SP2-201-1.

## 6.15.3 TONER SUPPLY♦




H555D844.WMF




H555D310.WMF

When toner bottle [A] is pushed in, shutter [B] is pushed open by the PCU body.

Pressing in lever [C] pulls off toner bottle cap [D], which is held by chuck [E].

When clutch [F] turns the bottle, the spiral grooves push toner out at [G], and the turning Mylar blades [H] push this toner through slit [I] into the developing unit.

Toner collection coil [J] simultaneously recycles toner retrieved from the OPC drum.

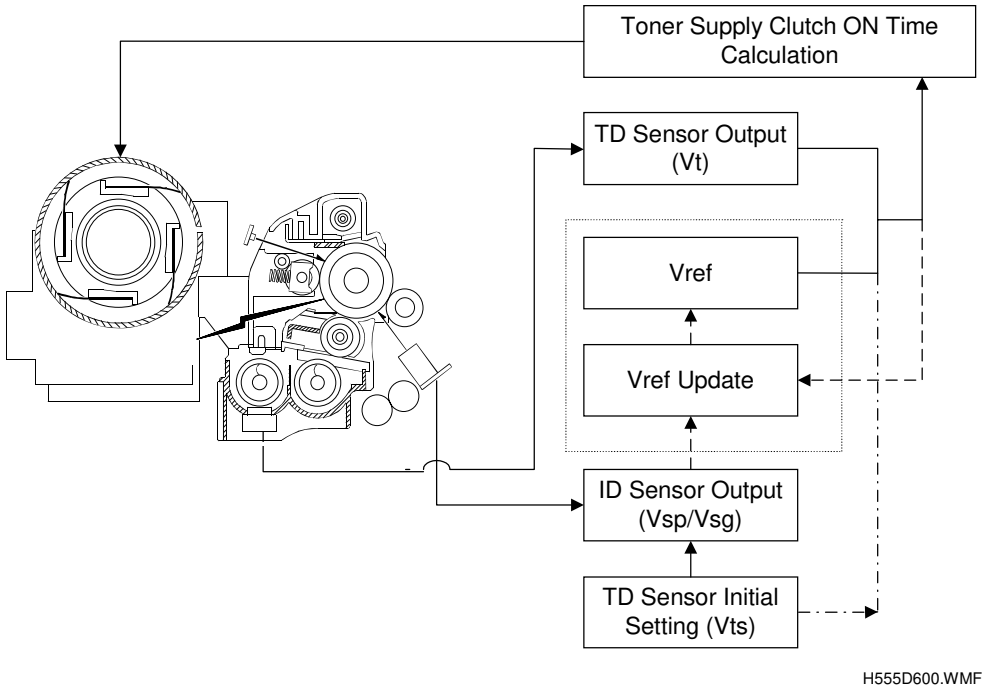
The recycled toner slides down chute [K] and enters the developing unit through slit [L].

## 6.15.4 TONER DENSITY CONTROL♦

### *Overview*

Toner concentration in the developer is controlled using the following values:

- Vts: TD sensor initial setting (1.25 V). (Used as reference voltage when Vref is not available.)
- Vref: Toner supply reference voltage (calculated value; periodically updated)
- Vt: Actual output from TD sensor
- Vsg/Vsp: Values from ID sensor, where Vsp is the voltage of a test pattern (the "ID sensor pattern"), and Vsg is the voltage of the bare drum




Toner is added to the development unit if Vt is higher than the reference voltage.

### *Reference Voltage*

Vts is used as the reference if ID sensor correction has been disabled with SP2-927. In all other cases, Vref is used as the reference.

### *Toner Density Sensor Initial Setting*

The Vts for this machine is 1.25V. During TD sensor initialization (after installation of new PCU), the machine adjusts the sensor so that it reads out 1.25V.

### *Toner Concentration Measurement*

The machines checks concentration every copy cycle, by comparing Vt against the reference voltage.

### *Vsp/Vsg Detection*

An ID sensor pattern is made on the drum by the charge roller and laser diode. The ID sensor detects the pattern density (Vsp) and the density of the bare drum (Vsg).

Detection is carried out at the same time as (and immediately before) charge-roller voltage detection (☛ 6.14.2).

**NOTE:** The ID sensor control can be disabled with SP2-927.

### *Calculation of Vref*

Vref is calculated based on:

- ID sensor output (Vsp/Vsg)
- Existing reference voltage (Vref or Vts) – Vt

### *Toner Supply Determination*

The machine supplies toner if Vt exceeds the reference voltage.

**NOTE:** Current Vt and reference voltage values can be viewed using SP2-220. Other ID sensor values can be viewed using SP2-221.

### *Toner Clutch ON Time*

Calculation is based on:

- Vt
- Reference voltage RV (= Vref or Vts)
- S (TD sensor's sensitivity coefficient)

| Level | Decision | Clutch On Time (seconds) |
|---|---|---|
| 1 | $RV < Vt \leq RV + S/16$ | $t$ |
| 2 | $RV + S/16 < Vt \leq RV + S/8$ | $1.5t$ |
| 3 | $RV + S/8 < Vt \leq RV + S/4$ | $2t$ |
| 4 | $RV + S/4 < Vt \leq RV + S/2$ | $3t$ |
| 5 | $RV + S/2 < Vt \leq RV + 4S/5$ | $4t$ |
| 6 | $RV + S > Vt \geq RV + 4S/5$ | $5t$ |
| 7 | $Vt \geq RV + S$ | $6t$ |

**NOTE:** The default value for *t* is 0.6. The value can be changed using SP2-922.

## 6.15.5 TONER SUPPLY IF SENSOR READING IS ABNORMAL♦

### *ID Sensor*

Any of the following is considered abnormal:

- Vsg ≤ 1.65 (when Vsg is read)
- Vsg < 2.31 (at maximum power)
- Vsp ≥ 1.65
- Vt ≥ 2.64 or Vt < 0.20

Current readings can be viewed using SP2-221.

### *TD Sensor*

The reading is considered abnormal if TD < 0.20 V or TD > 2.64 V. Abnormal readings 10 times in succession will generate SC 390. The current reading can be viewed using SP2-220.

## 6.15.6 DETECTION OF TONER NEAR END AND TONER END

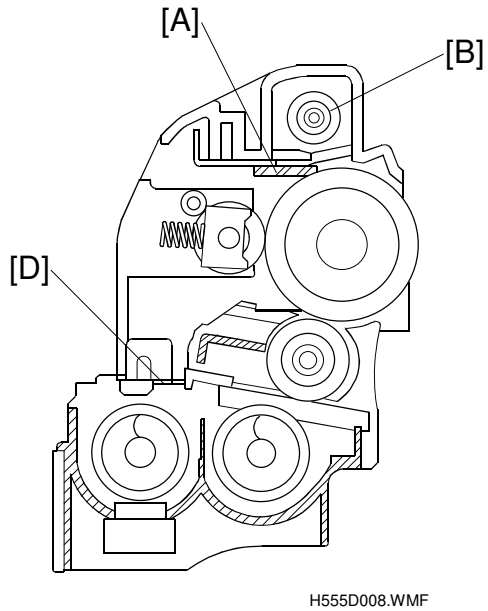
### *Toner Near End detected when either of the following occurs...*

- Vt is at level 6 (see above table) five times in succession
- Vt > 1.85 five times in succession

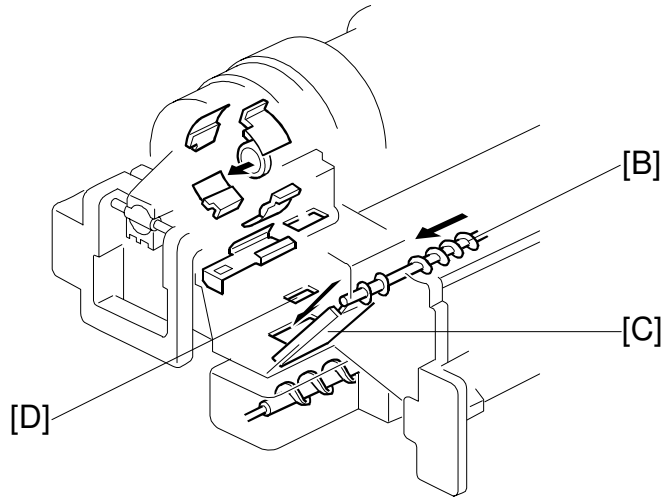
### *Toner End detected when any of the following occurs...*

- (Vt is ≥level 6 *and* Vt > 1.85) *n* time in succession, where *n* is 50 by default but can be changed to 20 using SP2-213. (Note that *n* corresponds to the number of sheets that can be printed before Toner Near End changes to Toner End.)
- Vt is at level 7 three times in succession.
- Vt > 2.00 three times in succession

# 6.16 DRUM CLEANING AND TONER RECYCLING♦




H555D008.WMF

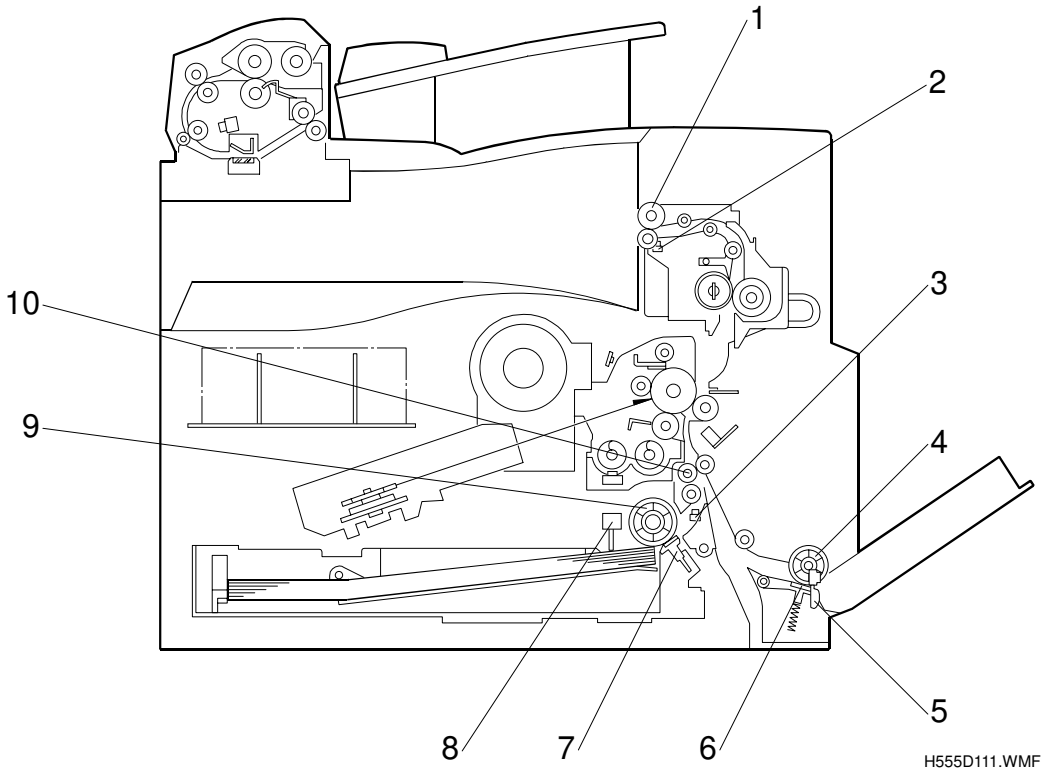



H555D307.WMF

- Cleaning blade [A] scrapes remaining toner from the drum after image transfer. Toner piles up on the blade.
- Toner collect coil [B] transports toner from pile and drops it onto chute [C], where it slides down into the development unit through a slit located at [D].
- At the end of each copy job, the drum turns about 3 mm in reverse to help clear toner and other debris from the edge of the cleaner blade.

# 6.17 PAPER FEED

## 6.17.1 OVERVIEW♦



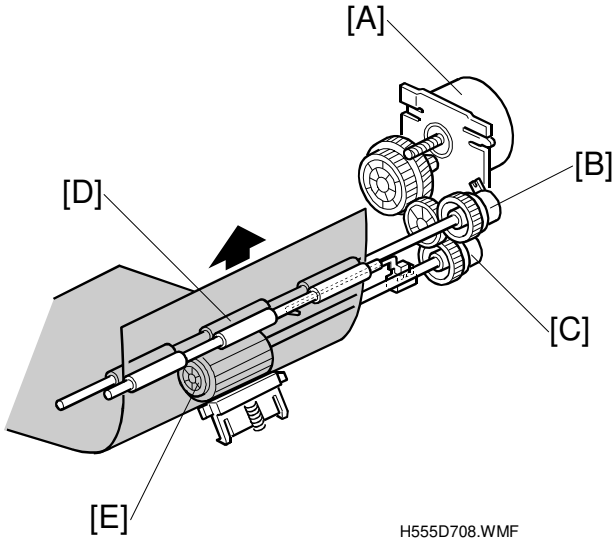

1. Exit Roller
2. Exit Sensor
3. Registration Sensor
4. By-pass Feed Roller*1
5. By-pass Paper End Sensor*1
6. By-pass Friction Pad*1
7. (Main) Friction Pad
8. (Main) Paper End Sensor
9. Paper Feed Roller
10. Registration Roller

*1: Only on machines with the 100-sheet by-pass tray.

## 6.17.2 PAPER FEED DRIVE MECHANISM♦

### *From Paper Tray*

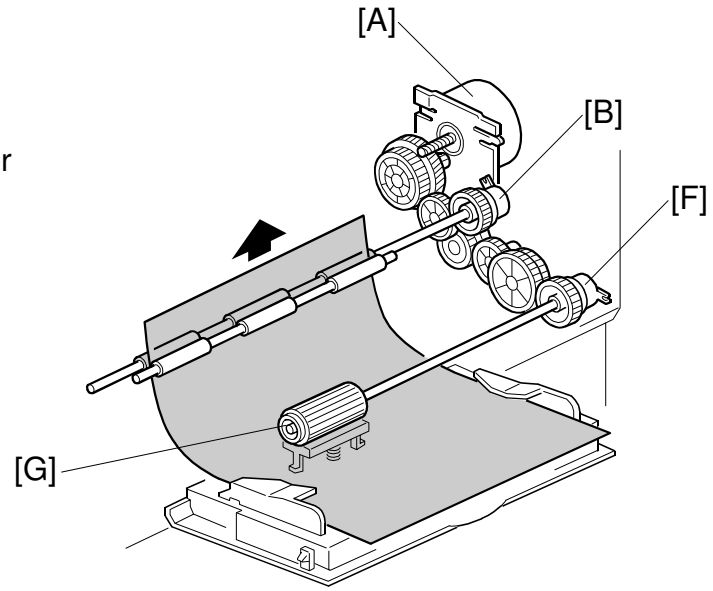
Main motor [A] drives gears on the registration clutch [B] and the paper feed clutch [C]. These clutches transfer drive to the registration roller [D] and paper feed roller [E]. The FCU controls clutch timing based on input from the registration sensor.




H555D708.WMF

### *From 100-Sheet By-pass Tray*

Main motor [A] drives gear on registration clutch [B] and by-pass feed clutch [F]. The by-pass feed clutch drives the by-pass feed roller [G]. Again, the FCU controls clutch timing based on input from the registration sensor.



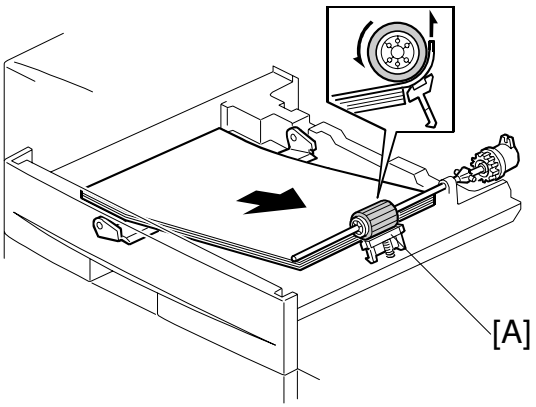

H555D709.WMF

## 6.17.3 PAPER FEED AND SEPARATION♦

The machine uses a friction-pad feed system.

[A]: Friction pad (in paper tray)

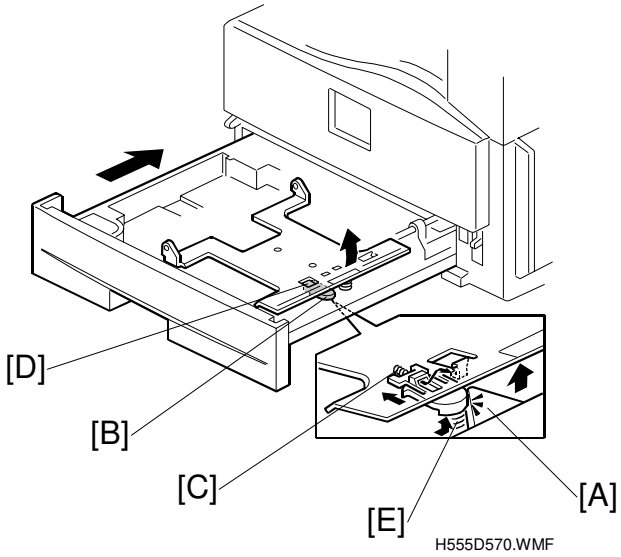
**NOTE:** Friction-pad separation is also provided for the by-pass feed.




H555D569.WMF

## 6.17.4 PAPER LIFT MECHANISM♦

When tray is pushed in: Projection [A] on frame pushes rounded slider [B] in against spring [C], retracting the latch [D]. Spring [E] pushes the plate up.

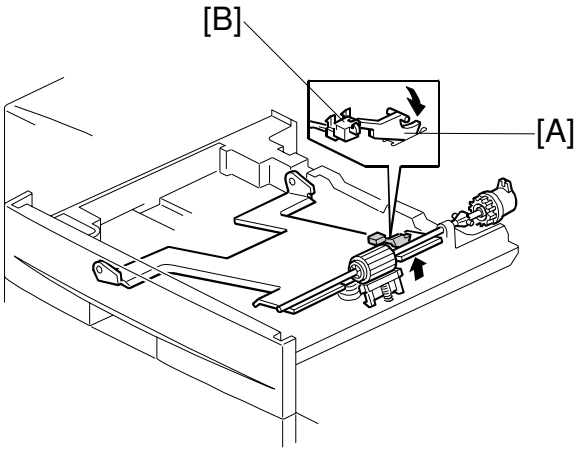



H555D570.WMF

## 6.17.5 PAPER END DETECTION♦

### *Main Tray*

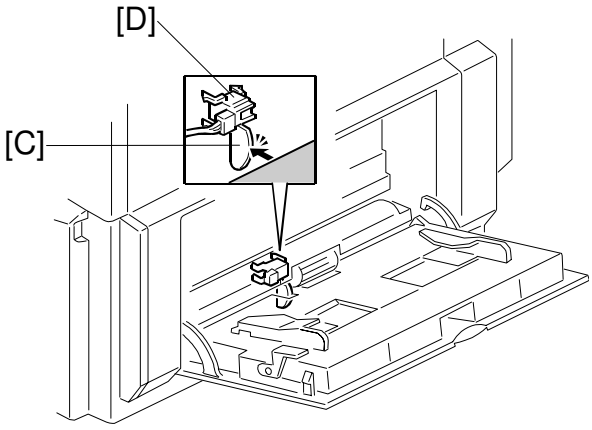
When paper runs out, feeler [A] drops into cutout, activating paper end sensor [B].




H555D571.WMF

### *100-sheet By-pass Tray*

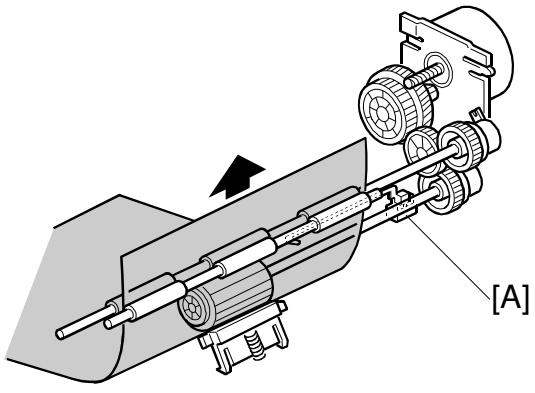
When paper runs out, feeler [C] drops into cutout, activating the by-pass paper end sensor [D].




H555D710.WMF

## 6.17.6 PAPER REGISTRATION♦

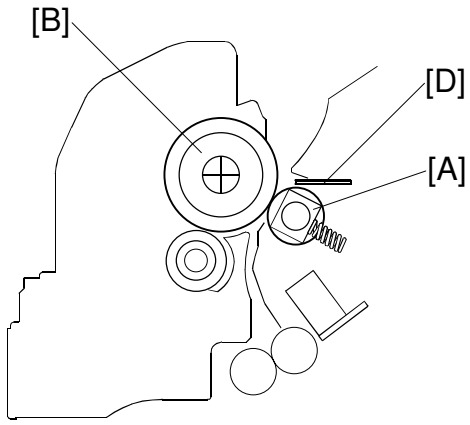
The FCU uses input from registration sensor [A] to control clutch timing and detect misfeeds. Registration clutch timing is controlled to eliminate skew (by stopping the paper briefly as it reaches the roller, so that it buckles). The amount of buckle can be adjusted with SP1-003.



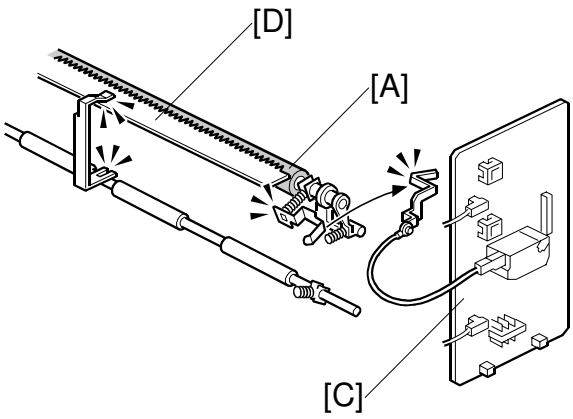

H555D708.WMF

# 6.18 IMAGE TRANSFER AND PAPER SEPARATION

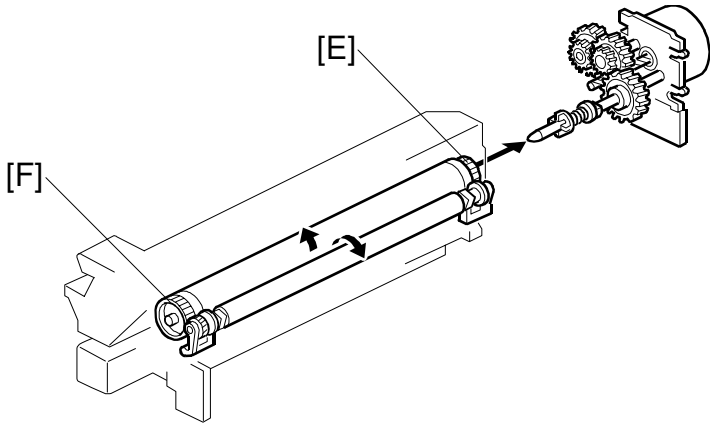
## 6.18.1 OVERVIEW♦




H555D572.WMF




H555D401.WMF




H555D302.WMF



The transfer roller [A] is pressed against the OPC drum [B]. The high-voltage power supply board [C] supplies a positive current to the transfer roller, attracting the toner from the drum onto the paper. The current is set in accordance with the paper's type, size, and feed tray.

Separation of the paper from the drum is aided by the drum's own curvature and by a high AC voltage applied to the discharge plate [D].

The drum drives the transfer roller directly by gears [E], [F].

## 6.18.2 IMAGE TRANSFER CURRENT TIMING♦

There are two current levels used during the transfer sequence: low and high.

1. At time of write-start signal, the high voltage supply board generates low current (5 A) to the roller. This prevents positive toner on the drum from moving to the roller.
2. After a certain time the high voltage supply board generates high current to the roller, causing toner to move from drum to paper. (See table below.)
3. After the sheet has passed the roller, current goes off (if printing is finished) or returns to low (if multicopy job with nonstop feed).

The table below shows the default high current levels. You can adjust these levels with SP2-301. But please note that setting the current too high can cause a ghosting effect (where the image at the top of the sheet repeats as a ghost lower down on the page) and in the worst case may damage the drum.

**"High" Transfer Current (μA)**

| Paper Size | Main Tray/ Optional Tray | By-pass | | |
|---|---|---|---|---|
| | | Normal | Thick | Special (OHP) |
| A4, LT | 6 | 6 | 8 | 8 |
| B5 | — | 8 | 6 | — |
| A5 | — | 10 | 6 | — |

## 6.18.3 TRANSFER ROLLER CLEANING♦

Toner may transfer to the roller surface following a paper jam or if the paper is smaller than the image. Periodic cleaning of the roller is required to prevent this toner from migrating back to the rear of new printouts.

The machine cleans the roller at the following times:

- After initial power on.
- After clearing of a copy jam
- At the end of a job, if at least 10 sheet have been printed since the last cleaning

The high voltage supply unit first supplies a negative cleaning current (about –4 μA) to the transfer roller, causing negatively charged toner on the roller to move back to the drum. It then applies a positive cleaning current (+5 μA) to the roller, causing any positively charged toner to migrate back to the drum.

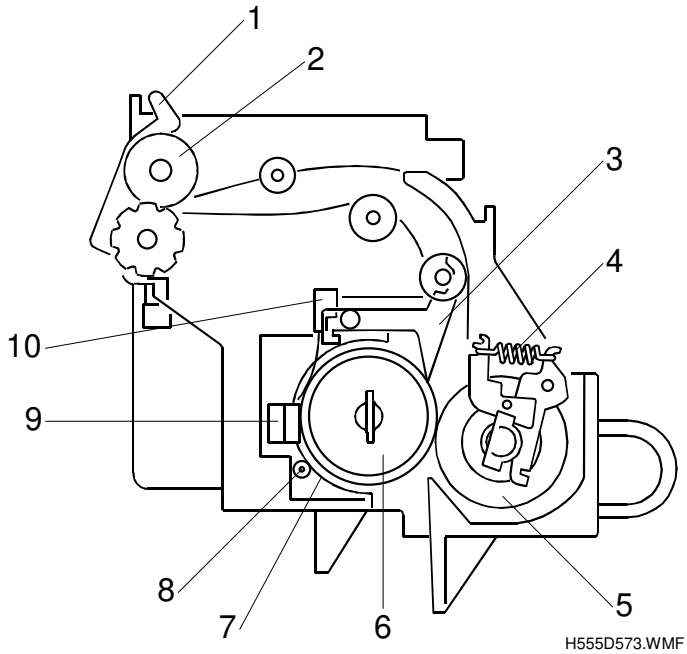
The cleaning current can be adjusted using SP2-301-4.

# 6.19 IMAGE FUSING AND PAPER EXIT

## 6.19.1 OVERVIEW♦

The fusing unit and paper exit area consist of the following parts.

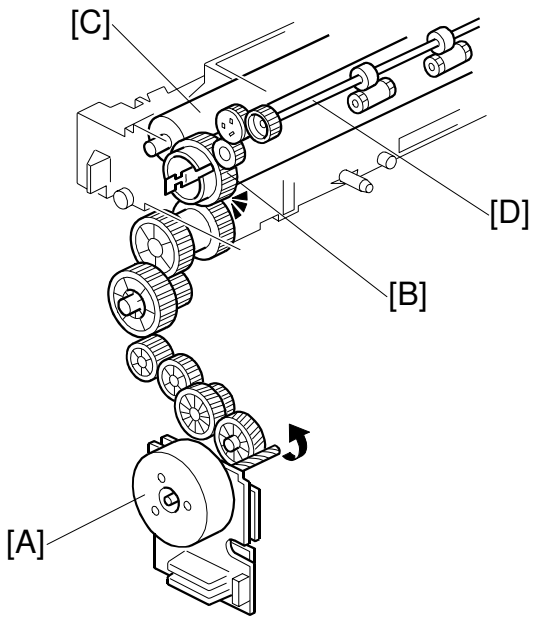
1. Exit sensor
2. Exit roller
3. Hot roller strippers
4. Pressure spring
5. Pressure roller
6. Fusing lamp
7. Hot roller
8. Thermofuse
9. Thermoswitch
10. Thermistor



H555D573.WMF

## 6.19.2 FUSING DRIVE AND RELEASE MECHANISM♦

The main motor [A] drives the hot roller [B], pressure roller [C], and exit roller [D] through a gear train.

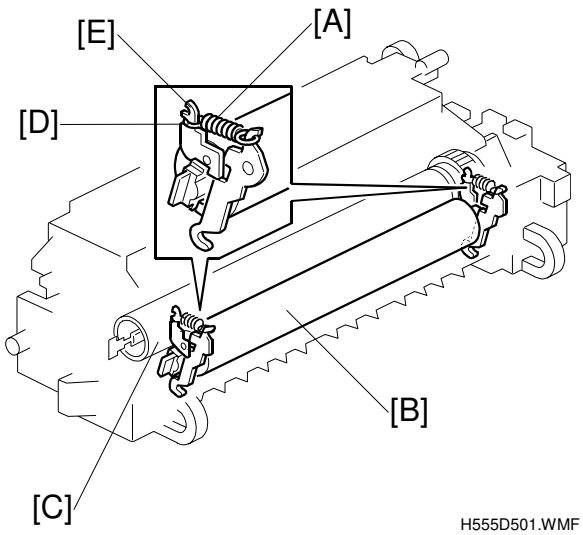


H555D504.WMF

Detailed Descriptions

## 6.19.3 PRESSURE ROLLER♦

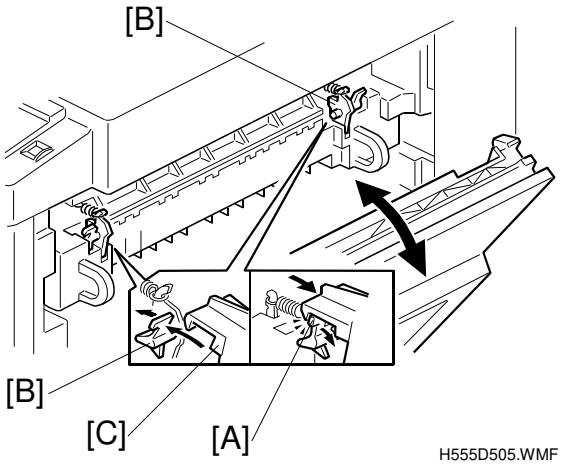
The pressure springs [A] constantly press the pressure roller [B] against the hot roller [C]. As the default, the springs are positioned at the end [D]. If necessary, pressure can be decreased by changing the springs to position [E].




H555D501.WMF

## 6.19.4 PRESSURE RELEASE♦

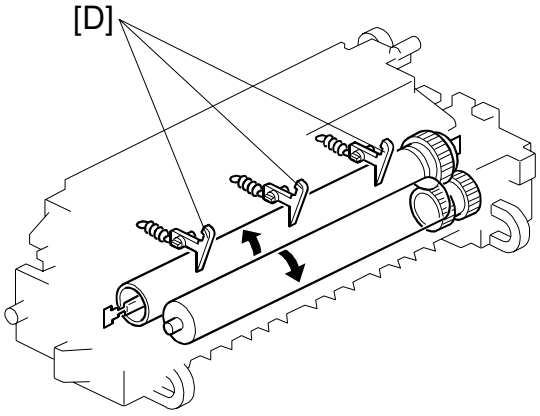
When right door opens, part [A] (on each side) pulls open catch [B] (on each side), releasing pressure on the pressure roller, so that it can turn freely to allow removal of jams. When right door closes, part [C] pushes catch [B] closed, restoring normal pressure.




H555D505.WMF

### *Separation*♦

The hot roller stripper pawls [D] prevent paper from sticking to the hot roller.

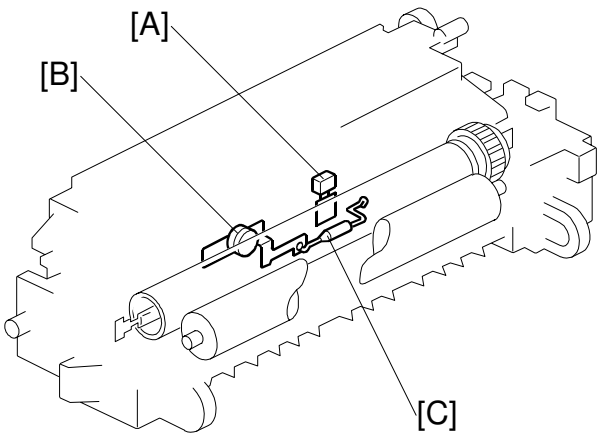



H555D503.WMF

## 6.19.5 FUSING TEMPERATURE CONTROL♦

### *Overview*

[A]: Thermistor
[B]: Thermoswitch
[C]: Thermofuse




H555D502.WMF

The CPU checks the thermistor [A] output once per second, and calculates the power-on ratio for the next second based on (a) current temperature, (b) the temperature 1 second earlier, and (c) the target temperature.

The target fusing temperature drops somewhat over time, as the machine's overall state changes with continued use. For normal copying, the target starts at 180°C, then drops to 170°C after one minute.

### *Fusing Temperature Control for Thick Paper*

Target temperature goes up 10°C if the user selects thick-paper mode.



## 6.19.6 OVERHEAT PROTECTION♦

Primary protection is provided by the thermistor and CPU, with backup by a thermoswitch and secondary backup by a thermofuse. (☛ Illustration above.)

Protection 1: If the CPU determines from the thermistor that the hot roller has stayed above 230°C for more than 1 second, it cuts the power to the fusing lamp and issues SC543.

Protection 2: The thermoswitch (connected in series with the fusing lamp's common ground) opens if it reaches 190°C, cutting power to the lamp. If you restart the machine without correcting the problem, the machine will issue SC541.

Protection 3: The thermofuse (which is farther from the lamp than the thermoswitch) opens at 131°C, cutting power to the lamp.

# 6.20 ENERGY SAVER MODES

## 6.20.1 MODE TRANSITIONS

When the machine is idle, the energy saver function reduces power consumption by lowering the fusing temperature. The machine can be set to transition to two different reduced power states, as shown below:

1) Fax standby
2) Energy saver standby

## 6.20.2 STANDBY MODES

The Energy Saver mode setting (user parameter 05 bit 6) determines which standby mode is used when the machine enters energy saver mode.

The energy saver timer can be set to either 1 min., 3 min., 5 min. or “no limit” using System Switch 0B bit 2 and 3. The default is 5 minutes.

| Mode | Fusing Temp. | Approx. Recovery Time | Power Consumption |
|---|---|---|---|
| Fax standby | 70°C | 10 s | 40 W |
| Energy saver standby | Room Temp. | 20 s | 1.2 W (NA)<br>1.5 W (EU/AA) |

## 6.20.3 TRANSITION OPERATION

***On entry into energy saver modes:***

- Energy Saver LED stays ON and all other indicators OFF.
- System +5V power remains on.

***The machine returns to standby power mode when any of the following “wake-up” actions occurs:***

- Pressing of the Energy Saver key
- Opening of the front door, right door or cassette(s)
- Placing a sheet in ADF
- Receiving a fax communication
- Receiving a telephone call
- Wake-up signal from a PC
- Error or SC condition

# SPECIFICATIONS

## 1. GENERAL SPECIFICATIONS

**Type**♦
Desktop type transceiver

**Circuit**♦
PSTN, PABX

**Connection**♦
Direct couple

**Original Size**
**Length:**
140 - 356 mm (5.5 - 14 in.)
Up to 600 mm (23.6 in.), manually assisted
(Up to 1200 mm (47.2 in.) adjustable with Scanner Switch 00 bit 2,3)
**Width:**
140 - 216 mm (5.5 - 8.5 in.)
To determine whether an A4/Letter width original is detected as A4 or Letter width, change System Switch 0C bit 3.
**Thickness:**
52 - 105 g/m² (14 - 28 lb.)

**ADF Capacity**
**Recommended environment:**
50 sheets with A4 recommended paper (80 g/m²)
**Operating environment**♦**:**
30 sheets using A4 paper and/or over A4-sized paper

**Scanning Method**
CIS (Contact Image Sensor with LED lamp)

**Scan Width**
204 mm (8.0 in.) (A4)
210 mm (8.3 in.) (Letter)

**Scan Resolutions**♦
**Main scan:**
8 dots/mm (200 dpi)
**Sub-scan:**
Standard - 3.85 lines/mm (100 dpi)
Detail - 7.7 lines/mm (200 dpi)
Fine - 15.4 lines/mm (400 dpi)

**Memory Capacity**
**ECM:** 128 Kbytes
**SAF:**
**Standard:**
3 MB (240 pages)
**Maximum:**
Up to 1500 pages using optional 40 MB memory card
Measured using an ITU-T #1 test document (Slerexe letter)

**Compression**
MH, MR, MMR, JBIG
SAF storage for memory tx: MMR and/or raw data

**Protocol**♦
Group 3 with ECM

**Modulation**♦
V.34, V.33, V.17 (TCM), V.29 (QAM), V.27ter (PHM), V.8, V.21 (FM)

**Data Rate**♦
33600/31200/28800/26400/24000/21600/19200/16800/14400/12000/9600/7200/4800/2400 bps, Automatic fallback

**I/O Rate**♦
With ECM: 0 ms/line
Without ECM: 2.5, 5, 10, 20, or 40 ms/line

**Transmission Time**♦
3 seconds at 28800 bps; Measured with G3 ECM, MMR and MTF off using memory for an ITU-T #1 test document (Slerexe letter) at standard resolution

**Printing System**♦
Laser printing; plain paper; dry toner

**Printing Speed**
15 ppm for A4 or letter size paper

**Paper Size**
**NA:** Letter, Legal*
**EU:** A4, A5LEF
**Asia:** A4, A5LEF, F4*/Foolscap
*: Legal and F4 paper can be loaded only in optional paper tray unit and/or by-pass tray.

**Paper Capacity**♦
**Standard cassette:**
250 sheets
**By-pass tray (option for EU/Asia):**
100 sheets
**Optional paper tray unit:**
500 sheets
A4/Letter recommended paper

**Print Resolution**♦
**Fax mode:**
Main Scan: 16 dots/mm
Sub Scan: 15.4 lines/mm
**Copy mode:**
Main Scan: 16 dots/mm
Sub Scan: 15.4 lines/mm
**Printer mode:** 600 dpi

**Power Supply**♦
**NA:** 115 ± 20 Vac, 60 ± 3 Hz
**EU/Asia:** 220 - 240 Vac ± 15%, 50/60 ± 3 Hz

**Power Consumption** (Base Machine Only)
**Energy save mode:**
**NA:** 1.2 W
**EU/Asia:** 1.5 W
**Standby mode:** 15 W
**Fax standby mode:** 40 W
**Transmission:** 25 W
**Reception:** 400 W
**Copying:** 400 W
**Maximum power consumption:** 1,000 W

**Recommended Environment**♦
**Temperature:** 15 - 25°C [59 - 77°F]
**Humidity:** 30 - 70 %Rh

**Operating Environment**♦
**Temperature:** 10 - 32°C [50 - 89.6°F]
**Humidity:** 15 - 80%Rh

**Dimensions (W x D x H)**
448 x 494 x 411 mm
(17.6 x 19.4 x 16.2 in.)
Including tray (max. dimensions)

**Weight**
**NA:** Approx. 18.5 kg (40.7 lb.)
**EU/Asia:** Approx. 18 kg (39.6 lb.)
Including cassette and tray;
Excluding THM

# 2. FEATURES

## 2.1 FEATURES LIST

**KEY:**
**O** = Used, **X** = Not Used
**#** = Not used in some countries
**NA** = Only NA version at default
**Bit** = Bit Switches
**SF** = Fax Service Functions
**RM** = Service RAM Addresses
**SP** = SP Modes

| Video Processing Features | |
|---|---|
| Automatic image density | O♦ |
| Contrast | O♦ |
| Halftone (Basic & Error Diffusion) | O♦ |
| MTF | O♦ |
| Reduction before tx | X♦ |
| Scanning Resolution – Standard | O♦ |
| Scanning Resolution – Detail | O♦ |
| Scanning Resolution – Fine | O♦ |
| Scanning Resolution – Superfine | X♦ |
| Smoothing to 400 x 400 dpi when printing (Rx only) | O♦ |

| Communication Features – Automatic | |
|---|---|
| Automatic fallback | O♦ |
| Automatic redialing (Memory tx only) | O♦ |
| Dual Access | O♦ |
| JBIG compression | O |
| Length Reduction | O♦ |
| Resolutions available for reception<br>Detail<br>Fine<br>Superfine | <br>O♦<br>X♦<br>X♦ |
| Substitute reception | O♦ |
| V34 communication | O♦ |

| Communication Features – User Selectable | |
|---|---|
| 90° Image Rotation before tx | X♦ |
| Action as a transfer broadcaster | X♦ |
| AI Redial (last ten numbers) | O♦ |
| Answering machine interface | X♦ |

| Communication Features – User Selectable | |
|---|---|
| Authorized Reception | O |
| Auto Document | O |
| Automatic Dialing (pulse or DTMF) | O♦ |
| Automatic Voice Message | X♦ |
| Batch Transmission | O♦ |
| Book Original tx | O♦ |
| Broadcasting | O♦ |
| Chain Dialing | O♦ |
| Communication Record Display | X♦ |
| Confidential ID Override | O |
| Confidential Reception | O |
| Confidential Transmission | O |
| Direct Fax Number Entry | O♦ |
| Economy Transmission | X♦ |
| Fax on demand | X♦ |
| Forwarding | O♦ |
| Free Polling | O♦ |
| Groups (Standard: 5 groups) | O♦ |
| Hold | X♦ |
| ID Transmission | X♦ |
| Immediate Redialing | O♦ |
| Immediate Transmission | O♦ |
| ISDN | X♦ |
| Keystroke Programs | X♦ |
| Memory transmission | O♦ |
| Multi-step Transfer | X♦ |
| Non-standard original size transmission | O♦ |
| OMR | X♦ |
| On Hook Dial | O♦ |
| Ordering Toner | X♦ |
| Page Count | O♦ |
| Page separation mark | O♦ |
| Parallel memory transmission | O♦ |
| Partial Image Area Scanning | X♦ |
| Personal Codes | O♦ |
| Personal Codes with Conf. ID | O |
| Polling Reception | O♦ |
| Polling Transmission | X♦ |
| Polling tx file lifetime in the SAF | X♦ |

| Communication Features – User Selectable | |
|---|---|
| Quick Dial (30 stations) | O |
| Reception modes (Fax, Tel, Autol) | O |
| Remote control features | X♦ |
| Remote Transfer | X♦ |
| Restricted Access | O♦ |
| Send Later | O♦ |
| SEP/SUB/PWD/SID | O♦ |
| Silent ringing detection | X♦ |
| Specified Image area | X♦ |
| Speed Dial (50 stations) | O♦ |
| Stamp | X♦ |
| Telephone Directory | O♦ |
| Tonal Signal Transmission | O♦ |
| Transfer Request | X♦ |
| Transmission Deadline (TRD) | X♦ |
| Turnaround Polling | X♦ |
| Two in one | X♦ |
| Voice Request (immed. tx only) | X♦ |

| Communication Features –-Service Selectable | |
|---|---|
| AI Short Protocol | O♦ |
| Auto-reduction Override Option | O♦ |
| Busy Tone Detection | O♦ |
| Cable Equalizer | O♦ |
| Closed Network | O |
| Continuous Polling Reception | O♦ |
| Dedicated Tx Parameters | O♦ |
| ECM | O♦ |
| EFC | X♦ |
| Inch-mm Conversion before tx | O♦ |
| Length Reduction | O♦ |
| Page Retransmission Times | O♦ |
| Protection Against Wrong Connection | O♦ |
| Short Preamble | X♦ |

| Other User Features | |
|---|---|
| Area Code Prefix | X♦ |
| Auto Start Initial Setup | O♦ |
| Center Mark | O♦ |
| Checkered Mark | O♦ |

| Other User Features | |
|---|---|
| Clearing a Memory File | O♦ |
| Clearing a polling file | O♦ |
| Clock | O♦ |
| Confidential ID | O |
| Counters | O♦ |
| Country Code | #♦ |
| Daylight Saving Time | O♦ |
| Destination Check | X♦ |
| Energy Saver | O♦ |
| Fax Reset Timer | O♦ |
| File Retention Time | X♦ |
| File Retransmission | X♦ |
| Function Programs (F1 - F5) | O |
| Hard Disk Filing System | X♦ |
| Help on Demand | O♦ |
| ID Code | O♦ |
| Label Insertion (“To xxx”) | O♦ |
| Language Selection | O♦ |
| LCD Contrast Adjustment | O♦ |
| Margin Adjustment | O♦ |
| Memory File Transfer | O♦ |
| Memory File Printout (all files) | X♦ |
| Memory Lock | O♦ |
| Multi Sort Document Reception | X♦ |
| On Hook Time Out | O♦ |
| Own Telephone Number | O♦ |
| Print Density Control | X♦ |
| RDS on/off | NA♦ |
| Reception Mode Switching Timer | X♦ |
| Reception Time Printing | O♦ |
| Remaining Memory Indicator | O♦ |
| Reverse Order Printing | X♦ |
| RTI, TTI, CSI | O♦ |
| Service Report Transmission | O♦ |
| Speaker volume Control | O♦ |
| Specified Cassette Selection | O |
| Telephone Line Type | #♦ |
| Toner Saving Mode | O♦ |
| TTI 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♦ |
| Communication Result Report | O♦ |
| Confidential File Report | O |
| Error Report | O♦ |
| Fax On Demand Report | X♦ |
| File Clear Report | X♦ |
| File Reserve Report | O♦ |
| Journal | O♦ |
| Polling Result Report | O♦ |
| Power Failure Report | O♦ |
| Transfer Result Report | X♦ |
| Transmission Confirmation Report | O♦ |
| Transmission Result Report | O♦ |

| Reports – User-initiated | |
|---|---|
| Authorized Reception List | O |
| Charge Control Report | X♦ |
| File List | O♦ |
| Forwarding List | O♦ |
| Group Dial List | O♦ |
| Hard Disk File List | X♦ |
| Help List | O♦ |
| Journal | O♦ |
| Personal Code List | O♦ |
| Program List | X♦ |
| Quick Dial Label | O♦ |
| Quick Dial List | O♦ |
| Specified Cassette Selection List | O♦ |
| Specified Sender List | O♦ |
| Speed Dial List | O♦ |
| Transmission Status Report | X♦ |
| User Function List | O♦ |
| User Parameter List | O♦ |

| Service Mode Features | |
|---|---|
| Back-to-Back Test | X♦ |
| Bit Switch Programming | BS♦ |
| Cable Equalizer | BS♦ |
| CIS Auto Adjustment | SF |
| Comm. Parameter Display | BS♦ |
| Counter Read/Write | SF♦ |

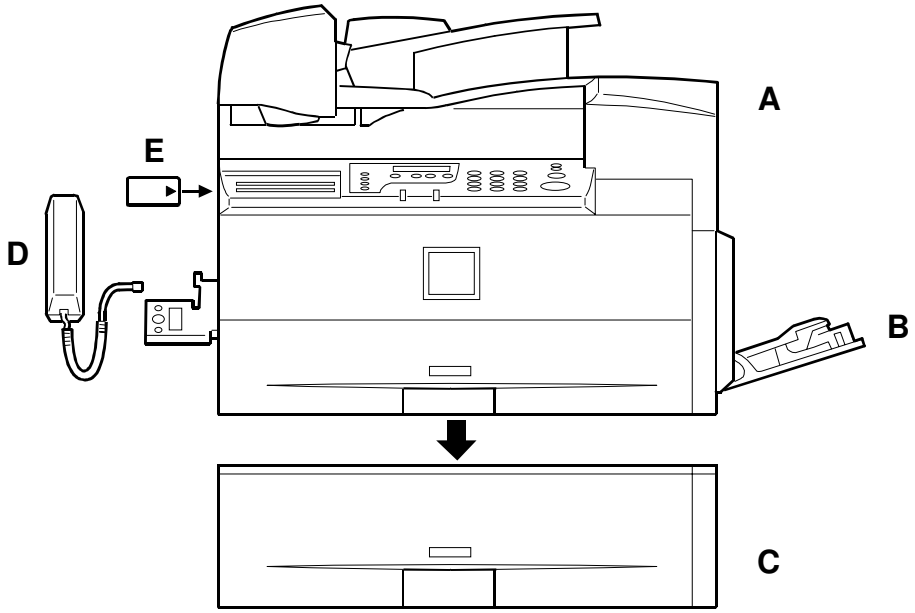
| Service Mode Features | |
|---|---|
| Country Code | BS, SF♦ |
| Auto Adjustment to Daylight Saving Time | NA, BS, RM♦ |
| DTMF Tone Test | SF♦ |
| Echo Countermeasure | BS♦ |
| Effective Term of Service Calls | RM♦ |
| Error Code Display | SF♦ |
| Excessive Jam Alarm | RM♦ |
| File Transfer (all files) | BS♦ |
| Line Error Mark | BS♦ |
| Memory Card Test | SF |
| Modem Software Download | X♦ |
| Modem Test (including V.34/V.8) | SF♦ |
| NCU Parameters | SF♦ |
| Periodic Service Call | RM♦ |
| PM Call | BS, SP♦ |
| Printing All Communication Records Kept in Memory | X♦ |
| Protocol Dump List | SF, BS♦ |
| RAM Display/Rewrite | SP♦ |
| RAM Dump | SP♦ |
| RAM Test | X♦ |
| RDS<br>- RAM Read/Write<br>- Dial Data Transfer (Quick/Speed Dial)<br>- Software Transfer | <br>O♦<br>O♦<br><br>O♦ |
| Ringer Test | X♦ |
| ROM Version Display | SP♦ |
| Serial Number | SP♦ |
| Service Monitor Report | SF♦ |
| Service Station Number | SF♦ |
| SMC Printing | SP♦ |
| Software Download | SP♦ |
| SRAM Data Backup/Restore | SP♦ |
| System Parameter List | SF♦ |
| Technical Data on the Journal | BS♦ |
| Test Pattern Print | SF |
| Wording List | SF♦ |

## 2.2 CAPABILITIES OF PROGRAMMABLE ITEMS

The following table shows the maximum capacity for each programmable item.

| Item | Standard | With optional memory card |
|---|---|---|
| Memory size | 3 MB | 40 MB |
| Number of pages that can be stored in memory (ITU-T #1 test chart at standard resolution) | 240 | 1,500 |
| Maximum number of memory files | 100 | 100 |
| Number of destinations per file | 140 | 140 |
| Maximum total number of destinations | 300♦ | 300 |
| Number of pages per file | 500♦ | 1,500 |
| Maximum number of pages overall | 500♦ | 1,500 |
| Number of Quick Dials | 30 | 30 |
| Number of Speed Dials | 50♦ | 50 |
| Number of Groups | 5♦ | 5 |
| Maximum number of destinations dialed from the ten-key pad overall | 69 | 69 |
| Number of destinations in a group | 140 | 140 |
| Maximum number of destinations for groups | 149 | 149 |
| Maximum number of user function keys | 5 | 5 |
| Maximum number of personal codes | 30 | 30 |
| Number of digits for dialing | 254♦ | 254 |

# 3. MACHINE CONFIGURATION




H555V006.WMF

**Model:** NA = North America, EU = Europe, AA: Asia, All = All models

| Version | Item | Machine Code | Model | Letter |
|---|---|---|---|---|
| Fax | Fax (100-sheet by-pass, ADF) | H555 | NA | A |
| | Fax (no 100-sheet by-pass, ADF) | H555 | EU, AA | A |
| | 100-sheet By-pass Feeder (option) | H104 | EU, AA | B |
| | Paper Tray Unit (option) | B421♦ | All | C |
| | Handset (option) | B433♦ | NA | D |
| | 40MB Memory Card (option) | H105 | All | E |
| Printer | Printer Controller (option) | B441♦ | All | |
| | NIB (option) | B430♦ | All | |
| | PS2 (option) | B431♦ | All | |
| | 32MB Memory (option) | G578♦ | All | |
| | 64MB Memory (option) | G579♦ | All | |
| | 128MB Memory (option) | G580♦ | All | |

# 4. OPTIONAL EQUIPMENT♦

## *PAPER TRAY UNIT*

| | |
|---|---|
| Paper Sizes: | A4 SEF, 8 1/2" x 11" SEF, 8 1/2" x 13" SEF, 8 1/2" x 14" SEF |
| Paper Weight: | 60 – 90 g/m$^2$, 16 – 24 lb. |
| Tray Capacity: | 500 sheets (80 g/m$^2$, 21 lb. ) x 1 tray |
| Paper Feed System: | Feed roller and friction pad |
| Power Source: | 24 Vdc and 5 Vdc, from copier. If optional tray heater is installed, the copier also supplies Vac (120 Vac or 220 – 240 Vac). |
| Power Consumption: | Maximum: 15 W (excluding optional tray heater)<br>Average: 14 W (excluding optional tray heater) |
| Weight: | Not above 6 kg (13.2. lb.) |
| Size (W x D x H): | 430 x 414 x 140 mm (16.9" x 16.3" x 5.5") |