# Gestetner LANIER RICOM SaVIn 



## B121/B122/B123 SERVICE MANUAL

RICOH GROUP COMPANIES

# Gestetner <br> LANIER <br> RICOM <br> 5 5VII 



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## B121/B122/B123 SERVICE MANUAL

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## LEGEND

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## B121/B122/B123

## TABLE OF CONTENTS

## INSTALLATION

1. INSTALLATION. ..... 1-1
1.1 INSTALLATION REQUIREMENTS ..... 1-1
1.1.1 ENVIRONMENT ..... 1-1
1.1.2 MACHINE LEVEL ..... 1-2
1.1.3 MINIMUM SPACE REQUIREMENTS ..... 1-3
1.1.4 POWER REQUIREMENTS ..... 1-3
1.2 COPIER INSTALLATION ..... 1-4
1.2.1 POWER SOCKETS FOR PERIPHERALS ..... 1-4
1.2.2 ACCESSORY CHECK. ..... 1-4
1.2.3 INSTALLATION PROCEDURE ..... 1-5
1.3 PLATEN COVER INSTALLATION ..... 1-8
1.3.1 ACCESSORY CHECK. ..... 1-8
1.3.2 INSTALLATION PROCEDURE ..... 1-8
1.4 ARDF INSTALLATION ..... 1-9
1.4.1 ACCESSORY CHECK ..... 1-9
1.4.2 INSTALLATION PROCEDURE ..... 1-9
1.5 ADF INSTALLATION ..... 1-12
1.5.1 ACCESSORY CHECK. ..... 1-12
1.5.2 INSTALLATION PROCEDURE ..... 1-12
1.6 TWO-TRAY PAPER TRAY UNIT INSTALLATION ..... 1-15
1.6.1 ACCESSORY CHECK. ..... 1-15
1.6.2 INSTALLATION PROCEDURE ..... 1-15
1.7 ONE-TRAY PAPER TRAY UNIT INSTALLATION ..... 1-19
1.7.1 ACCESSORY CHECK. ..... 1-19
1.7.2 INSTALLATION PROCEDURE ..... 1-19
1.8 ONE-BIN TRAY INSTALLATION ..... 1-22
1.8.1 ACCESSORY CHECK. ..... 1-22
1.8.2 INSTALLATION PROCEDURE ..... 1-22
1.9 ANTI-CONDENSATION HEATER INSTALLATION ..... 1-25
1.10 TRAY HEATERS ..... 1-26
1.10.1 UPPER TRAY HEATER ..... 1-26
1.10.2 LOWER TRAY HEATER (TWO-TRAY MODEL ONLY). ..... 1-27
1.10.3 TRAY HEATERS FOR THE OPTIONAL PAPER FEED UNITS ..... 1-28
1.11 KEY COUNTER INSTALLATION ..... 1-31
1.12 MFP EXPANSION ..... 1-33
1.12.1 ACCESSORY CHECK. ..... 1-34
1.12.2 INSTALLING EXPANSION COMPONENT ..... 1-35
Step 1-Controller Box ..... 1-35
Step 2-Printer/Scanner ..... 1-36
Step 3-PostScript ..... 1-36
Step 4-Fax ..... 1-37
Step 5-Reassembling ..... 1-37
1.12.3 INSTALLING PANELS AND KEYS ..... 1-37
Step 6-Panel ..... 1-37
Step 7-Printer/Scanner Keys. ..... 1-38
Step 8-Fax Keys ..... 1-38
Step 9-Printer/Scanner and Fax Keys ..... 1-39
1.12.4 SETTINGS ..... 1-40
Step 10-MFP Settings and Time Settings ..... 1-40
Step 11-Fax Settings ..... 1-40
1.13 IEEE1284/IEEE1394 INTERFACE ..... 1-41
1.13.1 ACCESSORY CHECK ..... 1-42
1.13.2 INSTALLATION PROCEDURE ..... 1-42
UP Mode Settings for Wireless LAN ..... 1-44
SP Mode Settings for IEEE 802.11b Wireless LAN ..... 1-45
1.14 BLUETOOTH ..... 1-46
1.14.1 ACCESSORY CHECK. ..... 1-46
1.14.2 INSTALLATION PROCEDURE ..... 1-46
PREVENTIVE MAINTENANCE
2. PREVENTIVE MAINTENANCE ..... 2-1
2.1 PM TABLES ..... 2-1
Optics ..... 2-1
Drum Area ..... 2-1
Paper Feed ..... 2-1
Fusing Unit ..... 2-2
ADF/ARDF ..... 2-2
Paper Tray Unit ..... 2-2
2.2 HOW TO RESET THE PM COUNTER ..... 2-3
REPLACEMENT AND ADJUSTMENT
3. REPLACEMENT AND ADJUSTMENT ..... 3-1
3.1 GENERAL CAUTIONS ..... 3-1
3.1.1 PCU (PHOTOCONDUCTOR UNIT) ..... 3-1
3.1.2 TRANSFER ROLLER ..... 3-1
3.1.3 SCANNER UNIT ..... 3-1
3.1.4 LASER UNIT ..... 3-2
3.1.5 FUSING UNIT ..... 3-2
3.1.6 PAPER FEED ..... 3-2
3.1.7 IMPORTANT ..... 3-2
3.2 SPECIAL TOOLS AND LUBRICANTS ..... 3-3
3.3 EXTERIOR COVERS \& OPERATION PANEL ..... 3-4
3.3.1 REAR COVER ..... 3-4
3.3.2 REAR LOWER COVER (TWO-TRAY MODELS ONLY) ..... 3-4
3.3.3 COPY TRAY ..... 3-5
3.3.4 UPPER COVERS ..... 3-5
3.3.5 LEFT COVER ..... 3-6
3.3.6 FRONT COVER ..... 3-6
3.3.7 FRONT RIGHT COVER ..... 3-7
3.3.8 RIGHT REAR COVER ..... 3-7
3.3.9 RIGHT DOOR (B121/B122)/DUPLEX UNIT (B123) ..... 3-8
3.3.10 BY-PASS TRAY ..... 3-9
3.3.11 LEFT LOWER COVER (TWO-TRAY MODELS ONLY) ..... 3-10
3.3.12 RIGHT LOWER COVER (TWO-TRAY MODELS ONLY) ..... 3-10
3.3.13 PLATEN COVER SENSOR ..... 3-10
3.4 SCANNER UNIT ..... 3-11
3.4.1 EXPOSURE GLASS/DF EXPOSURE GLASS ..... 3-11
Exposure Glass ..... 3-11
DF Exposure Glass ..... 3-11
3.4.2 LENS BLOCK ..... 3-12
3.4.3 LAMP STABILIZER BOARD AND EXPOSURE LAMP ..... 3-12
3.4.4 ORIGINAL WIDTH/LENGTH SENSOR ..... 3-13
Sensor Positions ..... 3-13
3.4.5 SCANNER MOTOR ..... 3-14
3.4.6 SCANNER HOME POSITION SENSOR ..... 3-14
3.4.7 ADJUSTING SCANNER POSITIONS ..... 3-15
Overview ..... 3-15
Adjusting the First Scanner Contact Points ..... 3-16
Adjusting the Second Scanner Contact Points ..... 3-17
3.5 LASER UNIT ..... 3-18
3.5.1 LOCATION OF CAUTION DECAL ..... 3-18
3.5.2 TONER SHIELD GLASS ..... 3-19
3.5.3 LASER UNIT ..... 3-19
3.5.4 LD UNIT ..... 3-20
3.5.5 POLYGONAL MIRROR MOTOR ..... 3-20
3.5.6 LASER UNIT ALIGNMENT ADJUSTMENT ..... 3-21
3.6 PCU SECTION ..... 3-22
3.6.1 PCU ..... 3-22
3.6.2 PICK-OFF PAWLS AND TONER DENSITY SENSOR ..... 3-22
3.6.3 OPC DRUM ..... 3-23
3.6.4 CHARGE ROLLER AND CLEANING BRUSH ..... 3-24
3.6.5 CLEANING BLADE ..... 3-24
3.6.6 DEVELOPER ..... 3-25
3.6.7 AFTER REPLACEMENT OR ADJUSTMENT ..... 3-26
3.7 TONER SUPPLY MOTOR ..... 3-27
3.8 PAPER FEED SECTION ..... 3-27
3.8.1 PAPER FEED ROLLER ..... 3-27
3.8.2 FRICTION PAD ..... 3-27
3.8.3 PAPER END SENSOR ..... 3-28
3.8.4 EXIT SENSOR ..... 3-28
Non-duplex Models ..... 3-28
Duplex Models ..... 3-28
3.8.5 BY-PASS FEED ROLLER AND PAPER END SENSOR ..... 3-29
3.8.6 REGISTRATION ROLLER ..... 3-30
3.8.7 BY-PASS PAPER SIZE SWITCH ..... 3-31
3.8.8 REGISTRATION CLUTCH ..... 3-31
3.8.9 REGISTRATION SENSOR ..... 3-32
3.8.10 UPPER PAPER FEED CLUTCH AND BY-PASS FEED CLUTCH ..... 3-32
3.8.11 RELAY CLUTCH ..... 3-33
3.8.12 RELAY SENSOR ..... 3-33
3.8.13 LOWER PAPER FEED CLUTCH (TWO-TRAY MODELS ONLY) ..... 3-33
3.8.14 VERTICAL TRANSPORT SENSOR (TWO-TRAY MODELS ONLY) ..... 3-34
3.8.15 PAPER SIZE SWITCH ..... 3-34
3.9 IMAGE TRANSFER ..... 3-35
3.9.1 IMAGE TRANSFER ROLLER ..... 3-35
3.9.2 IMAGE DENSITY SENSOR ..... 3-35
3.10 FUSING ..... 3-36
3.10.1 FUSING UNIT ..... 3-36
3.10.2 THERMISTOR ..... 3-36
3.10.3 FUSING LAMPS ..... 3-37
3.10.4 HOT ROLLER STRIPPER PAWLS ..... 3-37
3.10.5 HOT ROLLER ..... 3-38
3.10.6 THERMOSTAT ..... 3-38
3.10.7 PRESSURE ROLLER AND BUSHINGS ..... 3-39
3.10.8 NIP BAND WIDTH ADJUSTMENT ..... 3-41
3.10.9 CLEANING ROLLER ..... 3-41
3.11 DUPLEX UNIT (DUPLEX MODELS ONLY) ..... 3-42
3.11.1 DUPLEX EXIT SENSOR ..... 3-42
3.11.2 DUPLEX ENTRANCE SENSOR ..... 3-42
3.11.3 DUPLEX INVERTER SENSOR ..... 3-43
3.11.4 DUPLEX TRANSPORT MOTOR ..... 3-44
3.11.5 DUPLEX INVERTER MOTOR ..... 3-44
3.11.6 DUPLEX CONTROL BOARD ..... 3-44
3.12 OTHER REPLACEMENTS ..... 3-45
3.12.1 QUENCHING LAMP ..... 3-45
3.12.2 HIGH-VOLTAGE POWER SUPPLY BOARD ..... 3-45
3.12.3 BICU (BASE-ENGINE IMAGE CONTROL UNIT) ..... 3-46
3.12.4 MAIN MOTOR ..... 3-46
3.12.5 REAR EXHAUST FAN (B123 ONLY) ..... 3-47
3.12.6 LEFT EXHAUST FAN ..... 3-47
3.12.7 PSU (POWER SUPPLY UNIT) ..... 3-47
3.12.8 GEARBOX ..... 3-48
Replacement Procedure ..... 3-48
Gear Arrangement in the Gearbox ..... 3-50
3.13 COPY ADJUSTMENTS: PRINTING/SCANNING ..... 3-51
3.13.1 PRINTING ..... 3-51
Registration - Leading Edge/Side-to-Side ..... 3-51
Blank Margin ..... 3-52
Main Scan Magnification ..... 3-52
3.13.2 SCANNING ..... 3-53
Registration: Platen Mode ..... 3-53
Magnification ..... 3-53
Standard White Density Adjustment ..... 3-53
3.13.3 ADF IMAGE ADJUSTMENT ..... 3-54
Registration and Blank Margin ..... 3-55
Sub-scan Magnification ..... 3-55
TROUBLESHOOTING
4. TROUBLESHOOTING ..... 4-1
4.1 SERVICE CALL CONDITIONS ..... 4-1
4.1.1 SUMMARY ..... 4-1
4.1.2 SC CODE DESCRIPTIONS ..... 4-2
4.2 ELECTRICAL COMPONENT DEFECTS ..... 4-12
4.2.1 SENSORS ..... 4-12
4.2.2 SWITCHES ..... 4-14
4.3 BLOWN FUSE CONDITIONS ..... 4-14
4.4 LED DISPLAY ..... 4-15
4.4.1 BICU ..... 4-15
SERVICE TABLES
5. SERVICE TABLES ..... 5-1
5.1 SERVICE PROGRAM MODE ..... 5-1
5.1.1 USING SP MODE ..... 5-1
Starting SP Mode ..... 5-1
Starting SSP Mode ..... 5-2
Selecting Programs ..... 5-2
Specifying Values ..... 5-2
Activating Copy Mode ..... 5-2
Quitting Programs/Ending (S)SP Mode ..... 5-2
5.1.2 SP MODE TABLES-BASIC ..... 5-3
SP1-XXX (Feed) ..... 5-3
SP2-XXX (Drum) ..... 5-6
SP4-XXX (Scanner) ..... 5-11
SP5-XXX (Mode) ..... 5-16
SP6-XXX (Peripherals) ..... 5-19
SP7-XXX (Data Log) ..... 5-20
SP8-XXX (History) ..... 5-24
5.1.3 SP MODE TABLES-MFP ..... 5-27
SP1-XXX (Feed) ..... 5-27
SP2-XXX (Drum) ..... 5-30
SP4-XXX (Scanner) ..... 5-34
SP5-XXX (Mode) ..... 5-41
SP6-XXX (Peripherals) ..... 5-54
SP7-XXX (Data Log) ..... 5-55
SP8-XXX (History) ..... 5-60
SP9-XXX (Etc.) ..... 5-71
5.1.4 ADJUSTING REGISTRATION AND MAGNIFICATION ..... 5-73
5.1.5 ID SENSOR ERROR ANALYSIS (SP2-221) ..... 5-74
5.1.6 DISPLAY APS DATA (SP4-301-1) ..... 5-75
Sensor Positions ..... 5-75
Reading the Data ..... 5-75
5.1.7 MEMORY CLEAR ..... 5-76
Basic Machine and MFP Machine ..... 5-76
Exceptions ..... 5-76
With Flash Memory Card (Basic Machine Only) ..... 5-77
Without Flash Memory Card ..... 5-77
5.1.8 INPUT CHECK (SP5-803) ..... 5-78
Conducting an Input Check ..... 5-78
Input Check Table ..... 5-78
5.1.9 OUTPUT CHECK (SP5-804) ..... 5-80
Conducting an Output Check ..... 5-80
Output Check Table ..... 5-80
5.1.10 SERIAL NUMBER INPUT (SP5-811) ..... 5-81
Specifying Characters ..... 5-81
Serial Number and NVRAM ..... 5-81
5.1.11 NVRAM DATA UPLOAD/DOWNLOAD (SP5-824/825) ..... 5-82
Overview ..... 5-82
NVRAM Upload (SP5-824-1) ..... 5-82
NVRAM Download (SP5-825-1) ..... 5-83
5.1.12 FIRMWARE UPDATE PROCEDURE FOR BASIC MACHINES ..... 5-84
5.1.13 TEST PATTERN PRINT (SP5-902-1) ..... 5-85
Executing Test Pattern Printing ..... 5-85
Test Patterns ..... 5-85
5.1.14 COUNTER-EACH PAPER JAM (SP7-504) ..... 5-86
5.1.15 SMC PRINT (SP5-990) ..... 5-87
5.1.16 ORIGINAL JAM HISTORY DISPLAY (SP7-508) ..... 5-88
Viewing the Copy Jam History ..... 5-88
Jam History Code ..... 5-88
5.1.17 ADF APS SENSOR OUTPUT DISPLAY (SP6-901) ..... 5-89
Sensor Positions ..... 5-89
Reading Data ..... 5-89
5.2 FIRMWARE UPDATE PROCEDURE FOR MFP MACHINES ..... 5-90
5.2.1 BEFORE YOU BEGIN ..... 5-90
5.2.2. SD CARD PREPARATION ..... 5-91
5.2.3 FIRMWARE UPDATE PROCEDURE FOR MFP MACHINES ..... 5-92
5.2.4 NVRAM DATA UPLOAD/DOWNLOAD ..... 5-96
Uploading Content of NVRAM to an SD card ..... 5-96
Downloading an SD Card to NVRAM ..... 5-96
DETAILED DESCRIPTIONS
6. DETAILED SECTION DESCRIPTIONS ..... 6-1
6.1 OVERVIEW ..... 6-1
6.1.1 COMPONENT LAYOUT ..... 6-1
6.1.2 PAPER PATH ..... 6-3
6.2 BOARD STRUCTURE ..... 6-5
6.2.1 BLOCK DIAGRAM ..... 6-5
7. BICU (Base Engine and Image Control Unit) ..... 6-6
8. SBU (Sensor Board Unit) ..... 6-6
6.3 COPY PROCESS OVERVIEW ..... 6-7
6.4 SCANNING ..... 6-9
6.4.1 OVERVIEW ..... 6-9
Lamp Stabilizer Fuse ..... 6-9
6.4.2 SCANNER DRIVE ..... 6-10
6.4.3 ORIGINAL SIZE DETECTION IN PLATEN MODE ..... 6-11
6.5 IMAGE PROCESSING ..... 6-13
6.5.1 OVERVIEW ..... 6-13
6.5.2 SBU (SENSOR BOARD UNIT) ..... 6-14
6.5.3 IPU (IMAGE PROCESSING UNIT) ..... 6-15
Overview ..... 6-15
Image Processing Modes ..... 6-16
Image Processing Path ..... 6-17
Original Modes ..... 6-18
SP Modes for Each Image Processing Step ..... 6-18
Auto Shading ..... 6-20
White Line Erase ..... 6-21
Black Line Erase ..... 6-21
Auto image density (ADS) ..... 6-22
Scanner Gamma ( $\gamma$ ) Correction ..... 6-23
Main Scan Magnification ..... 6-24
Mirroring for ADF Mode ..... 6-24
Filtering ..... 6-25
ID Gamma ( $\gamma$ ) Correction ..... 6-26
Gradation Processing ..... 6-27
6.5.4 VIDEO CONTROL UNIT (VCU) ..... 6-28
Fine Character and Image (FCI) ..... 6-28
Printer Gamma Correction ..... 6-28
6.6 LASER EXPOSURE ..... 6-29
6.6.1 OVERVIEW ..... 6-29
6.6.2 AUTO POWER CONTROL (APC) ..... 6-30
6.6.3 LD SAFETY SWITCH ..... 6-31
6.7 PHOTOCONDUCTOR UNIT (PCU) ..... 6-32
6.7.1 OVERVIEW ..... 6-32
6.7.2 DRIVE ..... 6-33
6.8 DRUM CHARGE ..... 6-34
6.8.1 OVERVIEW ..... 6-34
6.8.2 CHARGE ROLLER VOLTAGE CORRECTION ..... 6-35
Correction for Environmental Conditions ..... 6-35
6.8.3 ID SENSOR PATTERN PRODUCTION TIMING ..... 6-36
6.8.4 DRUM CHARGE ROLLER CLEANING ..... 6-37
6.9 DEVELOPMENT ..... 6-38
6.9.1 OVERVIEW ..... 6-38
6.9.2 DRIVE ..... 6-39
6.9.3 DEVELOPER MIXING ..... 6-39
6.9.4 DEVELOPMENT BIAS ..... 6-40
6.9.5 TONER SUPPLY ..... 6-41
Toner Bottle Replenishment Mechanism ..... 6-41
Toner Supply Mechanism ..... 6-42
6.9.6 TONER DENSITY CONTROL ..... 6-43
Overview. ..... 6-43
Toner Density Sensor Initial Setting ..... 6-45
Toner Concentration Measurement ..... 6-45
Vsp/Vsg Detection ..... 6-45
Toner Supply Reference Voltage (Vref) Determination ..... 6-45
Toner Supply Determination ..... 6-45
Toner Supply Motor On Time Determinations ..... 6-46
6.9.7 TONER SUPPLY IN ABNORMAL SENSOR CONDITIONS ..... 6-47
ID Sensor ..... 6-47
TD Sensor ..... 6-47
6.9.8 TONER NEAR END/END DETECTION AND RECOVERY ..... 6-48
Toner Near End Detection ..... 6-48
Toner Near End Recovery ..... 6-48
Toner End Detection ..... 6-48
Toner End Recovery ..... 6-48
6.10 DRUM CLEANING AND TONER RECYCLING ..... 6-49
6.10.1 DRUM CLEANING ..... 6-49
6.10.2 TONER RECYCLING ..... 6-49
6.11 PAPER FEED ..... 6-50
6.11.1 OVERVIEW ..... 6-50
6.11.2 PAPER FEED DRIVE MECHANISM ..... 6-51
6.11.3 PAPER FEED AND SEPARATION MECHANISM ..... 6-51
6.11.4 PAPER LIFT MECHANISM ..... 6-52
6.11.5 PAPER END DETECTION ..... 6-52
6.11.6 PAPER SIZE DETECTION ..... 6-53
Paper Tray ..... 6-53
By-pass Tray ..... 6-54
6.11.7 SIDE FENCES ..... 6-55
6.11.8 PAPER REGISTRATION ..... 6-55
6.12 IMAGE TRANSFER AND PAPER SEPARATION ..... 6-56
6.12.1 OVERVIEW ..... 6-56
6.12.2 IMAGE TRANSFER CURRENT TIMING ..... 6-57
6.12.3 TRANSFER ROLLER CLEANING ..... 6-58
6.12.4 PAPER SEPARATION MECHANISM ..... 6-58
6.13 IMAGE FUSING AND PAPER EXIT ..... 6-59
6.13.1 OVERVIEW ..... 6-59
6.13.2 FUSING UNIT DRIVE AND RELEASE MECHANISM ..... 6-60
Fusing Unit Drive ..... 6-60
Drive Release Mechanism ..... 6-60
Contact/Release Control ..... 6-60
Drive Release Solenoid ..... 6-61
6.13.3 FUSING ENTRANCE GUIDE SHIFT ..... 6-62
6.13.4 PRESSURE ROLLER ..... 6-62
6.13.5 FUSING TEMPERATURE CONTROL ..... 6-63
Overview ..... 6-63
Temperature Control ..... 6-64
6.13.6 OVERHEAT PROTECTION ..... 6-66
6.14 DUPLEX UNIT ..... 6-67
6.14.1 OVERALL ..... 6-67
6.14.2 DRIVE MECHANISM ..... 6-68
6.14.3 BASIC OPERATION ..... 6-69
Larger than A4 Short-edge/LT Short-edge ..... 6-69
Up to A4 Short-edge/LT Short-edge ..... 6-70
6.14.4 FEED IN AND EXIT MECHANISM ..... 6-71
6.15 ENERGY SAVER MODES OF BASIC MACHINES ..... 6-72
Overview ..... 6-72
AOF ..... 6-72
Timers ..... 6-73
Recovery ..... 6-73
6.16 ENERGY SAVER MODES OF MFP MACHINES ..... 6-74
Overview ..... 6-74
AOF ..... 6-74
Timers ..... 6-75
Recovery ..... 6-75
SPECIFICATIONS
SPECIFICATIONS ..... 7-1
9. GENERAL SPECIFICATIONS ..... 7-1
Duplex Unit (B123 only) ..... 7-5
10. SUPPORTED PAPER SIZES ..... 7-6
2.1 ORIGINAL SIZE DETECTION ..... 7-6
North America, Europe, Asia, Taiwan ..... 7-6
China, Korea ..... 7-7
2.2 PAPER FEED AND EXIT ..... 7-8
Main Frame, Duplex ..... 7-8
Optional Paper Tray, One-Bin Tray, By-pass Tray ..... 7-10
11. MACHINE CONFIGURATION ..... 7-12
12. OPTIONAL EQUIPMENT ..... 7-15
ARDF ..... 7-15
ADF ..... 7-16
ONE-TRAY PAPER TRAY UNIT ..... 7-17
TWO-TRAY PAPER TRAY UNIT ..... 7-18
One-Bin Tray ..... 7-18
ONE-BIN TRAY B621
SEE SECTION B621 FOR DETAILED TABLE OF CONTENTS
ADF B616 and ARDF B617
SEE SECTION B616/B617 FOR DETAILED TABLE OF CONTENTS

FAX OPTION B620
SEE SECTION B620 FOR DETAILED TABLE OF CONTENTS

## INTERNET FAX (IFAX)

SEE SECTION IFAX FOR DETAILED TABLE OF CONTENTS

## PRINTER/SCANNER B622

SEE SECTION B622 FOR DETAILED TABLE OF CONTENTS

## ©IMPORTANT SAFETY NOTICES

## PREVENTION OF PHYSICAL INJURY

1. Before disassembling or assembling parts of the copier and peripherals, make sure that the power cord is unplugged.
2. The wall outlet should be near the copier and easily accessible.
3. Note that some components of the copier and the paper tray unit are supplied with electrical voltage even if the main power switch is turned off.
4. If a job has started before the copier completes the warm-up or initializing period, keep hands away from the mechanical and electrical components because the starts making copies as soon as the warm-up period is completed.
5. The inside and the metal parts of the fusing unit become extremely hot while the copier is operating. Be careful to avoid touching those components with your bare hands.

## HEALTH SAFETY CONDITIONS

Toner and developer are non-toxic, but if you get either of them in your eyes by accident, it may cause temporary eye discomfort. Try to remove with eye drops or flush with water as first aid. If unsuccessful, get medical attention.

## OBSERVANCE OF ELECTRICAL SAFETY STANDARDS

The copier and its peripherals must be installed and maintained by a customer service representative who has completed the training course on those models.

SAFETY AND ECOLOGICAL NOTES FOR DISPOSAL

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

## 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.

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WARNING
Use of controls, or adjustment, or performance of procedures other than
those 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 seriously damage your eyes.

CAUTION MARKING:


## Symbols and Abbreviations

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

|  | See or Refer to |
| :---: | :--- |
| (3) | Clip ring |
| ${ }^{2}$ | Screw |
| EIV | Connector |
| SEF | Short Edge Feed |
| LEF | Long Edge Feed |



INSTALLATION

## 1. INSTALLATION

## $\triangle$ CAUTION

Before installing options, please do the following:

1. If there is a fax unit in the machine, print out all messages stored in the memory, the lists of user-programmed items, and the system parameter list.
2. If there is a printer option in the machine, print out all data in the printer buffer.
3. Turn off the main switch and disconnect the power cord, the telephone line, and the network cable.

### 1.1 INSTALLATION REQUIREMENTS

### 1.1.1 ENVIRONMENT

-Temperature and Humidity Chart-


1. Temperature Range: $10^{\circ} \mathrm{C}$ to $32^{\circ} \mathrm{C}\left(50^{\circ} \mathrm{F}\right.$ to $\left.89.6^{\circ} \mathrm{F}\right)$
2. Humidity Range: $15 \%$ to $80 \%$ RH
3. Ambient Less than 1,500 lux (do not expose to direct sunlight) Illumination:
4. Ventilation: $\quad 3$ times/hr/person or more
5. Ambient Dust: Less than $0.075 \mathrm{mg} / \mathrm{m}^{3}\left(2.0 \times 10^{-6} \mathrm{oz} / \mathrm{yd}^{3}\right)$
6. Avoid areas exposed to sudden temperature changes:
1) Areas directly exposed to cool air from an air conditioner.
2) Areas directly exposed to heat from a heater.
7. Do not place the machine where it is exposed to corrosive gases.
8. Do not install the machine at any location over $2,000 \mathrm{~m}(6,500 \mathrm{ft}$.) above sea level.
9. Place the copier on a strong and level base. (Inclination on any side should be no more than 5 mm .)
10. Do not place the machine where it is subjected to strong vibrations.

### 1.1.2 MACHINE LEVEL

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

### 1.1.3 MINIMUM SPACE REQUIREMENTS

Place the copier near the power source, providing clearance as shown:


A (front): 750 mm (30")
B (left): 150 mm (6")
C (rear): 50 mm (2")
D (right): 250 mm (10")

NOTE: The recommended 750 mm front space is sufficient to allow the paper tray to be pulled out. Additional front space is required to allow operators to stand at the front of the machine.

### 1.1.4 POWER REQUIREMENTS

## $\triangle$ CAUTION

1. Make sure that the wall outlet is near the machine and easily accessible. After completing installation, make sure the plug fits firmly into the outlet.
2. Avoid multi-wiring.
3. Be sure to ground the machine.
4. Input voltage:

North and South America, Taiwan: $110-120 \mathrm{~V}, 60 \mathrm{~Hz}, 12 \mathrm{~A}$
Europe, Asia: $220-240 \mathrm{~V}, 50 / 60 \mathrm{~Hz}, 7 \mathrm{~A}$

### 1.2 COPIER INSTALLATION

### 1.2.1 POWER SOCKETS FOR PERIPHERALS



### 1.2.2 ACCESSORY CHECK

Check that you have the accessories indicated below.

| No. | Description | Q'ty |
| :---: | :--- | :---: |
| 1 | Operation Instructions-General Settings (-17, -29) | 1 |
| 2 | Operation Instructions-Copy Reference (-17, -29) | 1 |
| 3 | NECR-English (-17) | 1 |
| 4 | NECR-Multi Language (-27, -29) | 1 |
| 5 | Model Nameplate (-22, -29) | 1 |
| 6 | Model Name Decal (-22) | 1 |
| 7 | EU Safety Sheet (-22, -24, -26, -27) | 1 |

### 1.2.3 INSTALLATION PROCEDURE

## $\triangle$ CAUTION

Unplug the machine power cord before starting the following procedure.

1. Remove filament tape and other padding.

2. Open the front door and remove the toner bottle holder [A].
3. Open the right door $[B]$, and remove the PCU (photoconductor unit) [C].
NOTE: The PCU is locked when the right door is closed.

4. Separate the PCU into the upper part and the lower part (
5. Put a sheet of paper on a level surface and place the upper part on it.

NOTE: This prevents foreign material from getting on the sleeve rollers.

6. Distribute a pack of developer [A] to all openings equally.
NOTE: 1) Do not spill the developer on the gears [B]. If you have spilled it, remove the developer by using a magnet or magnetized screwdriver.
2) Do not turn the gear $[B]$ too much. The developer may spill.
7. Reassemble the PCU and reinstall it.
8. Shake the toner bottle [C] several times.

NOTE: Do not remove the bottle cap [D] before you shake the bottle.
9. Remove the bottle cap [D] and install the bottle on the holder.

NOTE: Do not touch the inner cap [E].
10. Set the holder (with the toner bottle) in the machine.

[C]

11. Pull out the paper tray [ $A$ ] and turn the paper size dial to the appropriate size. Adjust the positions of the end and side guides.

NOTE: To move the side guides, release the green lock on the rear side guide.

12. Install the optional ARDF, ADF, or platen cover (1.3/1.4/1.5).
13. Plug in the main power cord and turn on the main switch.
14. Activate the SP mode and execute "Devlpr Initialize" (SP2-214-001).
15. Wait until the message "Completed" is displayed (about 45 seconds).
16. Activate the User Tools and select the menu "Language."
17. Specify a language. This language is used for the operation panel.
18. Load the paper in the paper tray and make a full size copy, and check if the side-to-side and leading edge registrations are correct. If they are not, adjust the registrations ( -3.13 ).

### 1.3 PLATEN COVER INSTALLATION

### 1.3.1 ACCESSORY CHECK

Check that you have the accessories indicated below.

| No. | Description | Q'ty |
| :---: | :--- | :---: |
| 1 | Stepped Screw | 2 |

### 1.3.2 INSTALLATION PROCEDURE

| $\triangle$ CAUTION |
| :--- | :--- |
| Unplug the machine power cord before starting the following procedure. |

1. Install the platen cover $[A]\left(\begin{array}{l}\text { 舟 } \times 2) \text {. }\end{array}\right.$


### 1.4 ARDF INSTALLATION

### 1.4.1 ACCESSORY CHECK

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

| No. | Description | Q'ty |
| :---: | :--- | :---: |
| 1 | Scale Guide | 1 |
| 2 | DF Exposure Glass | 1 |
| 3 | Stud Screw | 2 |
| 4 | Knob Screw | 2 |
| 5 | Original Size Decal | 2 |
| 6 | Screwdriver Tool | 1 |
| 7 | Attention Decal-Top Cover | 1 |



### 1.4.2 INSTALLATION PROCEDURE

\section*{| $\triangle$ CAUTION |
| :--- | :--- |
| Unplug the copier power cord before starting the following procedure. |}

1. Remove the strips of tape.

2. Remove the left scale $[A]$ (笋 $\times 2$ ).
3. Place the DF exposure glass [B] on the glass holder. Make sure that the white mark [C] is on the bottom at the front end.
4. Peel off the backing [D] of the double-sided tape attached to the rear side of the scale guide
 [E], then install the scale guide ( ${ }^{2} \times 2$ [removed in step 2]).
5. Install the two stud screws [F].
6. Mount the ARDF on the copier, then slide it to the front.
7. Secure the ARDF unit with the knob screws [G].
8. Connect the cable $[\mathrm{H}]$ to the copier.

9. Attach the appropriate original size decal [I] as shown.

10. Attach an attention decal $[A]$ to the top cover.
NOTE: The attention decals in the package are written in different languages.
11. Turn the main power switch on.
12. Check that the document feeder works properly.

13. Make a full size copy, and check that the side-to-side and leading edge registrations are correct. If they are not, adjust the side-to-side and leading edge registrations. ( -13.3 )

### 1.5 ADF INSTALLATION

### 1.5.1 ACCESSORY CHECK

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

| No. | Description | Q'ty |
| :---: | :--- | :---: |
| 1 | Scale Guide | 1 |
| 2 | DF Exposure Glass | 1 |
| 3 | Stud Screw | 2 |
| 4 | Fixing Screw | 2 |
| 5 | Original Size Decal | 2 |
| 6 | Screwdriver Tool | 1 |
| 7 | Attention Decal-Top Cover |  |



### 1.5.2 INSTALLATION PROCEDURE

\section*{| $\triangle$ CAUTION |
| :--- |
| Unplug the machine power cord before starting the following procedure. |}

1. Remove the strips of tape.

2. Remove the left scale [A] (帠 $\times 2$ ).
3. Place the DF exposure glass [B] on the glass holder. Make sure that the white mark [C] is on the bottom at the front end.
4. Peel off the backing [D] of the double-sided tape attached to the rear side of the scale guide
 [E], then install the scale guide (解 $\times 2$ [removed in step 2]).
5. Install the two stud screws [F].
6. Mount the ADF on the copier, then slide it to the front.
7. Secure the ADF unit with the fixing screws [G].
8. Connect the cable $[\mathrm{H}]$ to the copier.
9. Attach the appropriate scale decal [I] as shown.

10. Attach an attention decal [A] to the top cover.

NOTE: The attention decals in the package are written in different languages.
11. Turn the main power switch on. Then check if the document feeder works properly.

12. Make a full size copy, and check that the side-to-side and leading edge registrations are correct. If they are not, adjust the side-to-side and leading edge registrations. ( 3.13.3).

### 1.6 TWO-TRAY PAPER TRAY UNIT INSTALLATION

### 1.6.1 ACCESSORY CHECK

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

| No. | Description | Q'ty |
| :---: | :--- | :---: |
| 1 | Screw - M4x10 | 10 |
| 2 | Unit Holder | 4 |
| 3 | Adjuster | 1 |
| 4 | Unit Holder | 2 |



2


3


4


### 1.6.2 INSTALLATION PROCEDURE

## $\triangle$ CAUTION

1. If the optional fax unit is installed:

- Print out all messages stored in the memory.
- Print out the lists of user-programmed items.
- Print out the system parameter list.
- Disconnect the telephone line.

2. If the optional printer unit is installed:

- Print out all data in the printer buffer.
- Disconnect the network cable.

3. Unplug the machine power cord before starting the following procedure.
4. Remove the strips of tape. Make sure that you have removed all the strips of tape and all the pieces of cardboard.

5. Attach the adjuster [A] to the base plate as shown.
NOTE: If a cabinet is installed, this step is unnecessary. However, you must: Remove the casters and the bracket around the casters before attaching to a stand.
[A]

6. Remove the cover $[B]$ (1 screw).


CAUTION: Before placing the copier on the paper tray unit, make sure that the harness [C] is safe. The paper tray unit does not function properly if the harness is damaged.
4. Set the copier on the paper tray unit.

5. One-tray copier model (B121):

Remove the 1st tray cassette [A].
Two-tray copier models (B122/B123):
Remove the 2nd tray cassette [A].
6. Install the two screws [B].
7. Reinstall the tray cassette.

8. Install the two brackets [C] (1 screw each).
9. Connect the connecting harness [D] to the copier.

NOTE: There are cutouts in the plug on both sides. The left side has one cutout, and the right side has two.
10. Reinstall the cover removed in step 3 (1 rivet).

11. Install the four brackets [E] (2 screws each).

NOTE: If a cabinet is installed, this step is unnecessary.

12. Rotate the adjuster [A] to fix the machine in place.

NOTE: If a cabinet is installed, this step is unnecessary.

13. Load the paper in the paper trays and make full size copies from each tray. Check if the side-to-side and leading edge registrations are correct. If they are not, adjust the registrations ( -3.13 ).

### 1.7 ONE-TRAY PAPER TRAY UNIT INSTALLATION

### 1.7.1 ACCESSORY CHECK

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

| No. | Description | Q'ty |
| :--- | :--- | :---: |
| 1 | Screw $-\mathrm{M} 4 \times 10$ | 2 |
| 2 | Stepped Screw $-\mathrm{M} 4 \times 10$ | 2 |
| 3 | Unit Holder | 2 |

### 1.7.2 INSTALLATION PROCEDURE

## $\triangle$ CAUTION

1. If the optional fax unit is installed:

- Print out all messages stored in the memory.
- Print out the lists of user-programmed items.
- Print out the system parameter list.
- Disconnect the telephone line.

2. If the optional printer unit is installed:

- Print out all data in the printer buffer.
- Disconnect the network cable.

3. Unplug the machine power cord before starting the following procedure.
4. Remove the strips of tape. Make sure that you have removed all the strips of tape and all the pieces of cardboard.

5. Remove the cover [A] (1 rivet).


CAUTION: Before placing the copier on the paper tray unit, make sure that the harness $[B]$ is safe. The paper tray unit does not function properly if the harness is damaged.
3. Set the copier on the paper tray unit.

4. One-tray copier model (B121): Remove the 1st tray cassette [C].
Two-tray copier models (B122/B123):
Remove the 2nd tray cassette [C].

5. Install the two screws [A].
6. Reinstall the tray cassette.

7. Install the two brackets [B]. (1 stepped screw each).
8. Connect the connecting harness [C] to the copier.

NOTE: There are cutouts in the plug on both sides. The left side has one cutout, and the right side has two.
9. Reinstall the cover removed in step 2.

10. Load the paper in the paper tray and make full size copies from tray. Check if the side-to-side and leading edge registrations are correct. If they are not, adjust the registrations ( -13 ).

### 1.8 ONE-BIN TRAY INSTALLATION

### 1.8.1 ACCESSORY CHECK

Check the quantity and condition of the accessories.

| No. | Description | Q'ty |
| :---: | :--- | :---: |
| 1 | Installation procedure | 1 |
| 2 | One-bin sorter | 1 |
| 3 | Exit tray | 1 |
| 4 | Tapping screw M3 $\times 6$ | 1 |

### 1.8.2 INSTALLATION PROCEDURE

| $\triangle$ CAUTION |
| :--- | :--- |
| Unplug the machine power cord before starting the following procedure. |

The One -Bin Tray cannot be installed on the B121

For B123 only (For B122, go to step 3.)

1. Remove the inverter tray [A].
2. Remove the rail [B] (2 knob screws).
3. Remove the cover [C] (1 screw).

4. Open the front cover $[\mathrm{A}]$.
5. Remove the front right cover [B] (筐 $\times 1$ ).
6. Disconnect the connector [C].
7. Cut the front cover as shown, to make an opening [D] for the 1-bin tray.

[G]
8. Install the 1-bin tray [E].
9. Make sure the connectors [F] are connected firmly.
10. Fasten the screw.
11. Connect the connector [G] that you removed in step 6.
NOTE: Make sure that the connector is connected.


12. Reattach the front right cover [A].
13. Close the front cover $[B]$.
14. Install the exit tray [C] as follows:
(1) Keep the front end higher than the rear end.
(2) Push the left hook into the opening in the copier.
(3) Push the right hook into the opening in the copier.
15. Pull the support [D] out of the left end of the exit tray.
16. Insert the support into the left end of the paper exit tray [E] (of the copier).
17. Turn the main switch on.
18. Check the operation.

### 1.9 ANTI-CONDENSATION HEATER INSTALLATION

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



1. Remove the exposure glass ( -3.4 .1 ).
2. Remove the left cover ( -3.3 .8 ).
3. Pass the connector $[A]$ through the opening $[B]$.
4. Install the anti-condensation heater [C], as shown.
5. Join the connectors $[A, D]$.
6. Clamp the harness with the clamp [E].
7. Reinstall the left cover and exposure glass.

### 1.10 TRAY HEATERS

| $\triangle$ CAUTION |
| :--- | :--- |
| Unplug the machine power cord before starting the following procedure. |

### 1.10.1 UPPER TRAY HEATER

1. Remove the 1st tray cassette [A].
2. Remove the rear cover (1.12).

3. Pass the connector $[B]$ through the opening [C] and install the tray heater [D] (気 x 1).

4. Install the relay cable [E].
5. Fix the cable with the clamp [F].
6. Reinstall the 1st tray cassette and the rear cover.


### 1.10.2 LOWER TRAY HEATER (TWO-TRAY MODEL ONLY)



1. Remove the 2nd tray cassette $[A]$.
2. Remove the rear lower cover ( -3.3 .2 ).
3. B123 only:

Remove the DCB [B] with bracket ( ${ }^{(1)} \times 4$, $\xi^{\| l l} \times 3$ ).
4. Pass the connector [C] through the opening [D] and install the tray heater [E] (昷 $\times 1$ ).
5. Join the connectors $[\mathrm{F}, \mathrm{G}]$.
6. Reinstall the 2nd tray cassette, DCB, and rear lower cover.

### 1.10.3 TRAY HEATERS FOR THE OPTIONAL PAPER FEED UNITS

1. Remove the rear cover for the paper tray unit [A] (会 $\times 2$ ).

2. Two-tray unit only: Remove the cable guide $[B]$ ( $\mathcal{E}^{2} \times 1$ ).
3. Install the clamps [C].

- One-tray paper feed unit -

- Two-tray paper feed unit -
[B]


4. Pass the connector $[A]$ through the opening $[B]$.
5. Install the tray heater $[C]\left({ }^{3} \times 1\right)$.


- Two-tray paper feed unit -
[B]


6. Clamp the cables $[A]$, as shown.
7. Join the connectors $[B]$.
8. Two-tray unit only: Reinstall the cable guide.
9. One-tray copier model (B121): Remove the 1st tray cassette.
Two-tray copier models (B122/B123):
Remove the 2nd tray cassette.

- One-tray paper feed unit -

[B]
- Two-tray paper feed unit -

[A]

10. Remove the two screws [C] and install the two hexagonal socket screws [D].
11. Reinstall the 1st tray and rear cover.


### 1.11 KEY COUNTER INSTALLATION

## $\triangle$ CAUTION

Unplug the machine power cord before starting the following procedure.

[F]

1. Remove the left cover (-3.3.8).
2. Remove the rear cover ( 3.3.1).
3. Remove the cap $[A]$ with nippers.
4. Punch out the small hole [B] using a screwdriver.
5. Hold the key counter plate nuts [C] on the inside of the key counter bracket [D] and insert the key counter holder [ E ].
6. Secure the key counter holder to the bracket ( ${ }^{(1)} \times 2$ ).
7. Install the key counter cover $[F](\hat{\xi} \times 2)$.

8. Connect the connector [A] to CN126 on the BICU.
9. Install the clamps [B].
10. Hold the cable with the clamps $[B][C][D]$. NOTE: The relay cable is not included in the key counter bracket accessories.
11. Join the relay cable [E] with the connector [F].
12. Reinstall the rear cover.
13. Pass the relay cable through the opening [G] and reinstall the left cover.

14. Install the stepped screw $[H]$.
15. Join the connectors [I][J].
16. Pass the joined connectors through the opening of the key counter holder assembly $[\mathrm{K}]$, and put the connectors inside the assembly.
17. Hook the key counter holder assembly onto the stepped screw $[\mathrm{H}]$. Check that the cable is not caught between the left cover and the key counter holder assembly.
18. Secure the key counter holder assembly with the screw [L].
19. Go to SP5-113. Change setting to 11.
20. Enter User Tools. Go to Systems Settings> Key Operator Tools> Extended Charge Unit Management. Change to 1 .

### 1.12 MFP EXPANSION

The controller box and the fax unit contain lithium batteries. 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 batteries in accordance with the manufacturer's instructions and local regulations.

This section (1.12) includes the installation procedures for the optional controller box, optional printer scanner, and optional fax. See each step as necessary.

| Machine Configuration | Reference |  |  |
| :--- | :--- | :--- | :--- |
|  | Component | Panel and Key | Settings |
| Printer/scanner | Steps $1 \rightarrow 2 \rightarrow 5$ | Steps $6 \rightarrow 7$ | Steps 10 |
| Printer/scanner + PostScript 3 | Steps $1 \rightarrow 2 \rightarrow 3 \rightarrow 5$ | Steps $6 \rightarrow 7$ | Steps 10 |
| Fax | Steps $1 \rightarrow 4 \rightarrow 5$ | Steps $6 \rightarrow 8$ | Steps $10 \rightarrow 11$ |
| Printer/scanner + Fax | Steps $1 \rightarrow 2 \rightarrow 4 \rightarrow 5$ | Steps $6 \rightarrow 9$ | Steps $10 \rightarrow 11$ |
| Printer/scanner + PostScript $3+$ Fax | Steps $1 \rightarrow 2 \rightarrow 3 \rightarrow 4 \rightarrow 5$ | Steps $6 \rightarrow 9$ | Steps $10 \rightarrow 11$ |

### 1.12.1 ACCESSORY CHECK

|  | No. | Description | Q'ty |
| :---: | :---: | :---: | :---: |
| Controller Box | 1 | Installation procedure | 1 |
|  | 2 | Controller box | 1 |
|  | 3 | Operation panel | 1 |
|  | 4 | Key top-copier | 2 |
|  | 5 | Expansion decal | 1 |
|  | 6 | Screw M3 x 8 | 1 |
|  | 7 | Tapping screw M3 x 6 | 6 |
| Printer Scanner | 1 | Installation procedure | 1 |
|  | 2 | Dummy cover-fax | 1 |
|  | 3 | Key top-printer | 2 |
|  | 4 | Key top-scanner | 2 |
|  | 5 | Cover-printer | 1 |
|  | 6 | USB board | 1 |
|  | 7 | SD card | 1 |
|  | 8 | RAM DIMM | 1 |
|  | 9 | Ferrite core | 1 |
|  | 10 | Operating instructions | 1 |
|  | 11 | FCC label | 1 |
| Fax | 1 | Installation procedure | 1 |
|  | 2 | Dummy cover | 1 |
|  | 3 | Key top-fax | 2 |
|  | 4 | Cover-fax | 1 |
|  | 5 | Right cover-fax | 1 |
|  | 6 | FCU | 1 |
|  | 7 | Stamp | 1 |
|  | 8 | SG3 label | 1 |
|  | 9 | Handset bracket (-17) | 1 |
|  | 10 | Modular code (-17) | 1 |
|  | 11 | User function key decal (-17, -29) | 1 |
|  | 12 | Operating Instructions (-17, -29) | 1 |
|  | 13 | Ferrite core (except -17) | 1 |
|  | 14 | Connector cover | 1 |
| PostScript 3 | 1 | PS3 card | 1 |
|  | 2 | PS3 label | 1 |

### 1.12.2 INSTALLING EXPANSION COMPONENT

| $\triangle$ CAUTION |
| :--- | :--- |
| Unplug the machine power cord before starting the following procedure. |

## Step 1-Controller Box

1. Remove the rear cover $[A](\hat{\xi} \times 6)$.
2. Remove the slot cover $[B](\hat{\xi} \times 1)$.
3. Remove one screw [C] from the BICU.

4. Connect the controller box [D] to the BICU. Make sure that the BICU is not damaged [E] and that the three openings [F][G][H] hold the controller box.
5. Fasten the screws ( screw [C]]).
6. Remove the FCU cover [I] (


## Step 2-Printer/Scanner

1. Remove the controller-box cover [A] ( ${ }^{(1)} \times 7$ )
2. Install the RAM DIMM [B].
3. Remove the SD-card cover [C] (笋 $\times 1$ ).
4. Install the SD card [D] in the upper slot.

NOTE: The lower slot is for service work.
5. Install the SD-card cover.
6. Remove the slot cover [E] ( $\hat{\xi} \times 2$ )
7. Install the USB board $[F]\left(\mathcal{S}^{2} \times 2\right)$.
8. Attach the ferrite core [G] to the network cable $[\mathrm{H}]$. The end of the ferrite core must be about 15 cm ( $6 "$ ) from the end of the cable [I].
9. USA model only: Attach the FCC label [J] at the right-hand side of the USB connector on the controller box.


## Step 3-PostScript

Install the PS3 card [A] in the DIMM socket [B].


## Step 4-Fax

1. Install the FCU $[\mathrm{A}]$ into the slot $\left({ }^{(1)} \times 3\right.$ [including the screw [B] removed in Step 1]).
2. Short the jumper [C].

NOTE: This jumper is the battery switch.
3. Attach the connector cover [D] if you do not connect a LAN able.
4. Attach the ferrite core [E] to the telephone cable $[\mathrm{F}]$. The end of the ferrite core must be about 5 cm (2") from the end of the cable [G].

## Initializing the Fax Unit



When you press the Fax key for the first time after installation, an error occurs. This is not a functional problem. Press OK. The fax starts its initialization program.

NOTE: If another error occurs after initialization, this can be a functional problem.

## Step 5-Reassembling



1. Reassemble the controller box.
2. Install the rear cover.

### 1.12.3 INSTALLING PANELS AND KEYS

## Step 6-Panel

1. Remove the front upper left cover [A] (会 $\times 3$ ).
2. Install the optional operational panel [B] (테ll $\times 1$, ${ }^{(1)} \times 4$ [including three screws removed in step 1]).
If installing the printer/scanner only, do ${ }^{[B]}$ step 7.

If installing the fax only, do step 8.
If installing both the printer/scanner and the fax, do step 9.

## Step 7-Printer/Scanner Keys



1. Remove the dummy cover (from the basic operation panel) and install the copy key [A] or [a].
2. Remove the dummy panel (from the basic operation panel) and install the printer panel $[\mathrm{B}]$.
3. Install the scanner key [C] or [c] on the optional operation panel.
4. Install the dummy panel [D] on the optional operation panel.
5. Install the printer key $[\mathrm{E}]$ or [e] on the basic operation panel.

## Step 8-Fax Keys



1. Remove the dummy cover (from the basic operation panel) and install the copy key [A] or [a].
2. Remove the dummy panel (from the basic operation panel) and install the fax panel [B].
3. Install the dummy cover [C] on the optional operation panel.
4. Install the fax panel [D] on the optional operation panel.
5. Install the fax key [E] or [e] on the optional operation panel.

## Step 9-Printer/Scanner and Fax Keys



1. Remove the dummy cover (from the basic operation panel) and install the copy key [A] or [a].
2. Remove the dummy panel (from the basic operation panel) and install the fax panel [B].
3. Install the scanner key [C] or [C] on the optional operation panel.
4. Install the fax panel [D] on the optional operation panel.
5. Install the fax key [E] or [e] on the optional operation panel.
6. Remove the dummy panel (from the basic panel) and install the printer panel [F].
7. Install the printer key [G] or [g] on the basic operation panel.

### 1.12.4 SETTINGS

## Step 10-MFP Settings and Time Settings

1. Turn the main switch on.
2. Start the SP mode.
3. Select SP5-801-001 and execute the initialization.
4. Turn the main switch off and on.
5. Start the SP mode.
$\Rightarrow 6$. Select SP5-302-002 and specify the time zone. For example, EST $=-300$, CST $=-360$, MST $=-420$ or PST $=-480$.
6. Select SP5-307-001, 003, and 004 and specify the daylight-saving-time settings. (5.1.18)
$\Rightarrow$ NOTE: 5.1.7. When installing to MFP Expansion, the BICU (Engine) NVRAM settings are moved from SP5-801 to SP5-998-001. After adding the MFP Expansion performing SP5-801-001 will not RAM CLEAR the BICU settings.

## Step 11-Fax Settings

1. Select fax SP1-101-016 and specify the system switch.
2. Select fax SP3-101-001 and specify the service station.

### 1.13 IEEE1284/IEEE1394 INTERFACE

| $\triangle$ CAUTION |
| :--- | :--- |
| Unplug the machine power cord before starting the following procedure. |

NOTE: 1) Before installing the IEEE1284 interface, install the optional printer scanner.
2) One slot is available. You can install ONLY one of the following options at one time: IEEE1284 interface, IEEE1394 interface, wireless LAN interface, or Bluetooth interface.

1. Remove the slot cover $[A]\left(\mathcal{E}^{2} \times 2\right)$.
2. Install the interface board $[B]\left(\mathcal{B}^{2} \times 2\right)$.


### 1.13.1 ACCESSORY CHECK

Check the quantity and condition of the accessories.

| No. | Description | Q'ty |
| :---: | :--- | :---: |
| 1 | Wireless LAN card | 1 |
| 2 | Wireless LAN card cover | 1 |
| 3 | Wireless LAN board | 1 |

### 1.13.2 INSTALLATION PROCEDURE

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

NOTE: 1) Before installing the optional wireless LAN (IEEE 802.11b), install the optional printer scanner.
2) One slot is available. You can install ONLY one of the following options at one time: IEEE1284 interface, IEEE1394 interface, wireless LAN interface, or Bluetooth interface..

1. Remove the slot cover $[A](\mathbb{E} \times 2)$.
2. Install the wireless LAN (IEEE 802.11b) board $[B]$ (会 $\times 2$ ).
3. Reattach the rear cover.

4. With the card label facing the front of the machine, insert the card $[\mathrm{A}]$ into the PCI slot.
5. Attach the cover [B].

6. If reception is poor, you may need to move the machine:

- Make sure that the machine is not located near an appliance or any type of equipment that can generate a strong magnetic field.
- Position the machine as close as possible to the access point.


## UP Mode Settings for Wireless LAN

Enter the UP mode and follow the procedure below to perform the initial interface settings for IEEE 802.11b. These settings take effect every time the machine is powered on.
NOTE: The wireless LAN cannot be used if Ethernet is being used.

1. Press the User Tools/Counter key.
2. On the touch panel, press System Settings.

NOTE: The Network I/F (default: Ethernet) must be set for either Ethernet or wireless LAN.
3. Select Interface Settings $\rightarrow$ Network (tab) $\rightarrow$ LAN Type
4. Select either "Ethernet" or "IEEE 802.11b".
5. Press IEEE 802.11b. Only the wireless LAN options are displayed.
6. Transmission Mode. Select either "Ad Hoc Mode" or "Infrastructure Mode".
7. SSID Setting. Enter the SSID setting. (The setting is case sensitive.)
8. Channel. This setting is required when Ad Hoc Mode is selected.

Range: 1 ~ 14 (default: 11)
NOTE: The allowed range for the channel settings may vary for different countries.
9. WEP (Privacy) Setting. The WEP (Wired Equivalent Privacy) setting is designed to protect wireless data transmission. In order to unlock encoded data, the same WEP key is required on the receiving side. There are 64 bit and 128 bit WEP keys.

Range of Allowed Settings:
64 bit 10 characters
128 bit 26 characters
10. Bandwidth Status. This setting is enabled only for the Infrastructure Mode. Press here to display the current status of the bandwidth. One of the following is displayed to reflect the reception status of the wireless LAN:

Good

$$
76 \text { ~ 100\% }
$$

Gair
Fair
Poor
41 ~ 75\%
Unavailable $0 \sim 20 \%$
11. Transmission Speed. Press the Next button to display more settings, then select the transmission speed for the mode: Auto, 11 Mbps , 5.5 Mbps , 2 Mbps , 1 Mbps (default: Auto). This setting should match the distance between the closest machine or access point, depending on which mode is selected.
NOTE: For the Ad Hoc Mode, this is the distance between the machine and the closest PC in the network. For the Infrastructure Mode, this is the distance between the machine and the closest access point.

| 11 Mbps | $140 \mathrm{~m}(153 \mathrm{yd})$. |
| :--- | :--- |
| 5.5 Mbps | $200 \mathrm{~m}(219 \mathrm{yd})$. |
| 2 Mbps | $270 \mathrm{~m}(295 \mathrm{yd})$. |
| 1 Mbps | $400 \mathrm{~m}(437 \mathrm{yd})$. |

12. To initialize the wireless LAN settings, use page 2/2. Press Execute to initialize the following settings:

- Transmission mode
- Channel
- Transmission Speed
- WEP
- SSID
- WEP Key


## SP Mode Settings for IEEE 802.11b Wireless LAN

The following SP commands can be set for IEEE 802.11b

| SP No. | Name | Function |
| :---: | :--- | :--- |
| 5840004 | SSID | Used to confirm the current SSID setting. |
| 5840006 | Channel MAX | Sets the maximum range of the channel settings for the <br> country. |
| 5840007 | Channel MIN | Sets the minimum range of the channels settings allowed <br> for your country. |
| 5840011 | WEP Key Select | Used to select the WEP key (Default: 00). |
| 5840018 | SSID Check | Used to check the SSID. |
| 5840020 | WEP Mode | Used to display the maximum length of the string that can <br> be used for the WEP Key entry. |

### 1.14 BLUETOOTH

### 1.14.1 ACCESSORY CHECK

Check the quantity and condition of the accessories.

| No. | Description | Q'ty |
| :---: | :--- | :---: |
| 1 | Bluetooth card | 1 |
| 2 | Bluetooth card cover | 1 |
| 3 | Bluetooth board | 1 |

### 1.14.2 INSTALLATION PROCEDURE

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

NOTE: 1) Before installing the optional Bluetooth, install the optional printer scanner.
2) One slot is available. You can install ONLY one of the following options at one time: IEEE1284 interface, IEEE1394 interface, wireless LAN interface, or Bluetooth interface.

1. Remove the slot cover $[A]\left(\mathcal{S}^{2} \times 2\right)$.
2. Install the Bluetooth board $[B]$ on the controller board (
3. Reattach the rear cover.

$\Rightarrow 4$. With the Bluetooth card label facing the front of the machine, insert the card $[\mathrm{A}]$ into the PCl slot.
4. Press the antenna $[B]$ to extend it.
5. Attach the antenna cap [C].


## PREVENTIVE MAINTENAMCE

## 2. PREVENTIVE MAINTENANCE

### 2.1 PM TABLES

NOTE: 1) After preventive maintenance work, reset the PM counter (SP7-804001).
2) PM intervals $(60 \mathrm{k}, 80 \mathrm{k}$, and 120 K$)$ indicate the number of prints.

Key: AN: As necessary
C: Clean
R: Replace
L: Lubricate
I: Inspect
Optics

|  | EM | $\mathbf{6 0 k}$ | $\mathbf{1 2 0 k}$ | AN | NOTE |
| :--- | :---: | :---: | :---: | :---: | :--- |
| Reflector | C |  |  |  | Optics cloth |
| 1st mirror | C |  |  | C | Optics cloth |
| 2nd mirror | C |  |  | C | Optics cloth |
| 3rd mirror | C |  |  | C | Optics cloth |
| Scanner guide rails | C |  |  |  | Do not use alcohol. |
| Platen cover | I |  |  | C | Replace the platen sheet if necessary. <br> Blower brush or alcohol |
| Exposure glass | C |  |  | C | Blower brush or alcohol |
| Toner shield glass | C |  |  |  | Blower brush |
| APS sensors | C |  |  |  | Blower brush |

## Drum Area

|  | EM | 60k | 120k | AN |  |
| :--- | :---: | :---: | :---: | :---: | :---: |
| PCU |  | I |  |  |  |
| Drum |  | $R$ |  |  |  |
| Developer |  | $R$ |  |  |  |
| Charge roller |  | R |  |  |  |
| Cleaning brush (charge roller) |  | R |  |  |  |
| Cleaning blade (OPC drum) |  | R |  |  |  |
| Pick-off pawls |  | R |  |  |  |
| Transfer roller |  |  | R |  |  |
| ID sensor | C |  |  | C | Blower brush |

## Paper Feed

|  | EM | $\mathbf{6 0 k}$ | $\mathbf{1 2 0 k}$ | AN | NOTE |
| :--- | :---: | :---: | :---: | :---: | :--- |
| Paper feed roller (each tray) |  | C | R | C | Clean with water or alcohol. |
| Friction pad (each tray) |  | C | R | C | Clean with water or alcohol. |
| Bottom-plate pad (each tray) |  | C |  | C | Clean with water or alcohol. |
| Paper feed roller (bypass tray) |  | C |  | C | Clean with water or alcohol. |
| Friction pad (bypass tray) |  | C |  | C | Clean with water or alcohol. |
| Bottom-plate pad (by-pass tray) |  | C |  | C | Clean with water or alcohol. |
| Registration rollers |  | C |  | C | Clean with water or alcohol. |
| Relay rollers |  | C |  | C | Clean with water or alcohol. |
| Paper feed guides |  | C |  | C | Clean with water or alcohol. |
| Paper-dust Mylar |  | C |  | C | Clean with water or alcohol. |

PM TABLES

## Fusing Unit

|  | EM | $\mathbf{6 0 k}$ | $\mathbf{1 2 0 k}$ | AN |  |
| :--- | :---: | :---: | :---: | :---: | :--- |
| Hot roller |  |  | R |  |  |
| Pressure roller |  |  | R |  |  |
| Pressure roller cleaning roller |  |  | R |  |  |
| Hot roller bushings |  |  | l |  |  |
| Pressure-roller bushing |  |  | R |  |  |
| Hot roller stripper pawls |  |  | R | C | Dry cloth |
| Thermistor |  | C |  | C | Dry cloth |

ADF/ARDF

|  | $\mathbf{8 0 k}$ | AN | NOTE |
| :--- | :---: | :---: | :--- |
| Feed belt | R | C | Clean with water or alcohol. |
| Separation roller | R | C | Clean with water or alcohol. |
| Pick-up roller | R | C | Clean with water or alcohol. |
| Stamp |  | R | Replace when necessary. |
| White plate |  | C | Clean with water or alcohol. |
| DF exposure glass |  | C | Clean with water or alcohol. |
| Platen cover | C | Clean with water or alcohol. |  |

## Paper Tray Unit

|  | $\mathbf{6 0 k}$ | $\mathbf{1 2 0 k}$ | AN | NOTE |
| :--- | :---: | :---: | :---: | :--- |
| Paper feed rollers |  | R | C | Dry or damp cloth |
| Bottom-plate pads | C |  | C | Dry cloth |
| Paper-feed guides | C |  | C | Clean with water or alcohol. |
| Friction pads |  | R | C | Dry or damp cloth |
| Relay clutch (B384 only) |  | I |  |  |
| Feed clutches (B384 only) |  | I |  |  |
| Relay roller (B384 only) |  | C | C | Dry cloth |

### 2.2 HOW TO RESET THE PM COUNTER

After preventive maintenance work, reset the PM counter (SP7-804-001) as follows.

1. Activate the SP mode (see section 5.1).
2. Select SP 7-804-001 ("Reset-PM Counter").
3. Press the OK key [A]. The message "Execute" is displayed.

4. Press the button $[B]$ below the message "Execute." The messages "Execute?" followed by "Cancel" and "Execute" are displayed.

5. To reset the PM counter, press the button [C] below the message "Execute."

6. Wait until the message "Completed" is displayed.
7. Quit the SP mode.


## REPLACEMENT AND ADJUSTMENT

## 3. REPLACEMENT AND ADJUSTMENT

### 3.1 GENERAL CAUTIONS

Do not turn off the main switch while any of the electrical components are active. Doing so may result in damage to units (such as the PCU) as they are pulled out or replaced.

### 3.1.1 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.

### 3.1.2 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.

### 3.1.3 SCANNER UNIT

1. Use alcohol or glass cleaner to clean the exposure and scanning glass. This will reduce the static charge on the glass.
2. Use a blower brush or a water-moistened cotton pad to clean the mirrors and lenses.
3. Take care not to bend or crease the exposure lamp's ribbon cable.
4. Do not disassemble the lens unit. Doing so will throw the lens and copy image out of focus.
5. Do not turn any of the CCD positioning screws. Doing so will throw the CCD out of position.

### 3.1.4 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. These are adjusted at the factory.
3. The polygonal mirror and F-theta lens are very sensitive to dust.
4. Do not touch the toner shield glass or the surface of the polygonal mirror with bare hands.

### 3.1.5 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.

### 3.1.6 PAPER FEED

1. Do not touch the surface of the 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 the actual paper size.

### 3.1.7 IMPORTANT

1. After installing a new PCU, you must run SP2-214 to initialize the TD sensor. After starting initialization, be sure to wait for it to reach completion (wait for the motor to stop) before re-opening the front cover or turning off the main switch.
2. If the optional tray heater or optics anti-condensation heater is installed, keep the copier's power cord plugged in even while the main switch is off, so that the heater(s) remain energized.

### 3.2 SPECIAL TOOLS AND LUBRICANTS

| Part Number | Description | Q'ty |
| :--- | :--- | :---: |
| A0069104 | Scanner Positioning Pins (4 pins/set) | 1 set |
| A2929500 | Test Chart S5S (10 pcs/set) | 1 set |
| A0299387 | FLUKE 87 Digital Multimeter | 1 |
| A2309352 | 4MB Flash Memory Card | 1 |
| A2579300 | Grease Barrierta S552R | 1 |
| 52039502 | Grease G-501 | 1 |
| B0399099 | NVRAM - Minus Counter | 1 |
| G0219350 | Loop-back Connector | 1 |
| B6455010 | SD-Card: Ass'y | 1 |
| B6456700 | SD-Card: Adapter: BN-SDAA2 | 1 |
| B6456800 | AD-Card: USB: Writer: BN-SDCE2 | 1 |

## EXTERIOR COVERS \& OPERATION PANEL

### 3.3 EXTERIOR COVERS \& OPERATION PANEL

### 3.3.1 REAR COVER

1. Unplug the DF cable $[A]$ (if installed).
2. Rear cover $[\mathrm{B}]\left(\hat{\xi}^{3} \times 6\right)$


### 3.3.2 REAR LOWER COVER (TWO-TRAY MODELS ONLY)

1. Rear cover (-3.3.1) or tray harness cover [A] (1 rivet).
2. Rear lower cover $[B]\left(\begin{array}{l}\text { 舟 }\end{array} \times 2\right)$


### 3.3.3 COPY TRAY

1. Copy tray $[A]\left(\mathcal{B}^{-} \times 2\right)$


### 3.3.4 UPPER COVERS



1. Platen cover, ARDF, or ADF (if installed)
2. Rear cover ( 3.3.1)
3. Left upper cover $[A]\left(\begin{array}{c}\text { 隹 }\end{array} \times 2\right.$ )
4. Front upper left cover $[B]\left(\begin{array}{ll}(1)\end{array} \times 3\right)$
5. Operation panel [C] (
6. Right upper cover [D] ( $\hat{\xi}^{3} \times 1,3$ hooks)

NOTE: Push the cover to the rear side to release the hooks.
7. Top rear cover $[E]\left(\mathcal{E}^{2} \times 1\right)$

## EXTERIOR COVERS \& OPERATION PANEL

### 3.3.5 LEFT COVER

1. Left cover $[A](\hat{\xi} \times 3)$


### 3.3.6 FRONT COVER

1. Pull out the (top) paper tray.
2. Open the front door $[A]$.
3. Front cover $[B]\left(\begin{array}{l}\text { 佥 } \times 4)\end{array}\right.$


### 3.3.7 FRONT RIGHT COVER

1. Open the front door $[\mathrm{A}]$.
2. Front right cover $[B]\left(\hat{\beta}^{3} \times 1\right)$


### 3.3.8 RIGHT REAR COVER

1. Right upper cover (-3.3.4)
2. Open the duplex unit (B123 only).
3. Right rear cover $[A]\left(\begin{array}{l}\text { 雨 }\end{array}\right.$ )


## EXTERIOR COVERS \& OPERATION PANEL

### 3.3.9 RIGHT DOOR (B121/B122)/DUPLEX UNIT (B123)



1. Right rear cover (-3.3.8)
2. Open the right door $[A]$.
3. Open the clamps [B] and disconnect the two connectors (B121/B122) [C] or three connectors (B123).
4. Right Door.

### 3.3.10 BY-PASS TRAY



1. Right rear cover ( -3.3 .8 )
2. Open the right door ( -3.3 .9 ).
3. Release the by-pass tray cable from the clamps (see [C] on the preceding page) and disconnect the connector (5-pin connector with colored wires).
4. Cable holder [A] (B123 only)
5. Front-side clip ring $[\mathrm{B}]$
6. Front-side pin [C]

NOTE: You can push the pin from behind the right door.
7. Front-side tray holder arm [D]
8. Remove the rear-side clip ring, pin, and tray holder arm in the same manner.
9. By-pass tray [E]

### 3.3.11 LEFT LOWER COVER (TWO-TRAY MODELS ONLY)

1. Left lower cover $[A]\left(\hat{\xi}^{( } \times 2\right)$


### 3.3.12 RIGHT LOWER COVER (TWO-TRAY MODELS ONLY)

1. Open the right lower cover [A].
2. Right lower cover (1 rivet)


### 3.3.13 PLATEN COVER SENSOR

1. Top rear cover (-3.3.4)
2. Platen cover sensor $[A]\left(⿷_{\mathbb{\#}}^{\mathbb{E}} \times 1\right)$


### 3.4 SCANNER UNIT

### 3.4.1 EXPOSURE GLASS/DF EXPOSURE GLASS



## Exposure Glass

1. Front upper left cover (-3.3.4)
2. Left scale $[A](\hat{\xi} \times 2)$
3. Rear scale $[B]\left(\hat{S}^{2} \times 3\right)$
4. Exposure glass [C]

NOTE: When reinstalling, make sure that the mark is at the rear left corner, and that the left edge is aligned to the support on the frame.

## DF Exposure Glass

1. Front upper left cover (-3.3.4)
2. Left scale [A]
3. DF exposure glass [D]

NOTE: When reinstalling, make sure that the mark $[E]$ is on the bottom.

### 3.4.2 LENS BLOCK

CAUTION: 1) Do not touch the paint-locked screws on the lens block. The position of the lens assembly (black part) is adjusted before shipment.
2) Do not grasp the PCB or the lens assembly when handling the lens block. The lens assembly may slide out of position.

1. Exposure glass (-3.4.1)
2. Lens cover $[A](\hat{E} \times 5)$
3. Disconnect the flat cable $[B]$.
4. Lens block [C] (

After installing a new lens block, adjust the image quality ( 3.13 ).


### 3.4.3 LAMP STABILIZER BOARD AND EXPOSURE LAMP

1. Operation panel ( -3.3 .4 )
2. Exposure glass $(-3.4 .1)$
3. Slide the first scanner to a position where the front end of the lamp is visible.
4. Place one hand under the lamp stabilizer board [A] and release the hook [B].
5. Lamp stabilizer board (

6. Press the plastic latch [C] and push the front end of the lamp toward the rear.
7. Lamp [D] (with the cable)

### 3.4.4 ORIGINAL WIDTH/LENGTH SENSOR



## Sensor Positions

Sensor positions vary according to regions as shown below.

1. Exposure glass ( 3.4.1)
2. Original width sensor [A]

3. Lens block (-3.4.2)
4. Original length sensor $[B]$


- Asia (including Taiwan; excluding China),

- America

- China ( Error! Reference source not found.)



### 3.4.5 SCANNER MOTOR

1. Left upper cover, front upper left cover, operation panel, top rear cover ( -3.3 .4 )
2. Exposure glass ( -3.4 .1 )
3. Rear exhaust fan $[\mathrm{A}]$ (B123 only)
4. Scanner motor [B]
( ${ }^{(1)} \times 3$, 氟 $=1$, 1 spring, 1 belt)
NOTE: When reassembling, install the belt first, and set the spring next. Fasten the leftmost screw (viewed from
 the rear), and fasten the other two screws.

After installing the motor, adjust the image quality ( 3.13 ).

### 3.4.6 SCANNER HOME POSITION SENSOR

1. Left upper cover, top rear cover (-3.3.4)
2. Exposure glass, DF exposure glass (if installed) ( 3.4.1)
3. Disconnect the connector [C].
4. Scanner left lid [D] ( $\hat{\xi}^{(2)} \times 7$ )
5. Sensor tape [E].
6. Scanner home position sensor [F]


### 3.4.7 ADJUSTING SCANNER POSITIONS

## $\triangle$ CAUTION <br> Grasp the front and rear ends (not the middle) of the first scanner when you manually move it. The first scanner may be damaged if you press, push, or pull its middle part.

## Overview

Adjust the scanner positions when the first scanner [C] and second scanner [B] are not parallel with the side frames [A] or when you have replaced one or more of the scanner belts.

To adjust the scanner positions, do
 either of the following:

- To adjust the belt contact points on the first scanner (Adjusting the First Scanner Contact Points)
- To adjust the belt contact points on the scanner bracket ( Adjusting the Second Scanner Contact Points)


The two actions above have the same objectives-to align the following holes and marks:

- The adjustment holes [H][J] in the first scanner
- The adjustment holes $[\mathrm{H}][\mathrm{J}]$ in the second scanner
- The alignment marks [G][I] on the frames

The scanner positions are correct when these holes and marks are aligned.

## Adjusting the First Scanner Contact Points



1. $A(R) D F$ or platen cover
2. Operation panel, top rear cover ( 3.3.4).
3. Exposure glass ( 3.4.1)
4. Loosen the 2 screws $[A][F]$.
5. Slide the 1st and 2nd scanners, or one of them, to align the following holes and marks ( Overview):

- The adjustment holes in the first scanner
- The adjustment holes in the second scanner
- The alignment marks on the frames

6. Insert the positioning tools [D][E] through the holes and marks.
7. Check that the scanner belts $[\mathrm{B}][\mathrm{C}][\mathrm{G}][\mathrm{H}]$ are properly set between the bracket and the 1st scanner.
8. Tighten the screws $[A][F]$.
9. Remove the positioning tools.
10. Reassemble the machine and check the operation.

## Adjusting the Second Scanner Contact Points

1. $A(R) D F$ or platen cover
2. Operation panel, top rear cover ( 3.3.4).
3. Exposure glass ( -3.4 .1 )
4. Rear exhaust fan $[A](\hat{\xi} \times 2)$
5. Controller bracket $[B](\hat{\xi} \times 3)$
6. Disconnect the platen-coversensor connector [C].
7. Rear frame [D] (
[A]
[D]
[E]

[B]
[C]
8. Scale bracket $[E](\hat{\xi} \times 2)$

9. Loosen the 2 screws [F].
10. Slide the 2nd scanner to align the following holes and marks ( Overview):

- The adjustment holes in the first scanner
- The adjustment holes in the second scanner
- The alignment marks on the frames

11. Insert the positioning tools $[\mathrm{G}][\mathrm{H}]$ through the holes and marks.
12. Check that the scanner belts are properly set in the brackets.
13. Remove the positioning tools.
14. Reassemble the machine and check the operation.

### 3.5 LASER UNIT

| $\triangle$ WARNING |
| :--- |
| Laser beam can seriously damage your eyes. Be absolutely sure that the <br> main power switch is off and that the machine is unplugged before <br> accessing the laser unit. |

### 3.5.1 LOCATION OF CAUTION DECAL



### 3.5.2 TONER SHIELD GLASS

1. Open the front door.
2. Lift the toner cartridge latch $[\mathrm{A}]$.
3. Press the toner shield glass cover [B] to the left and pull it out.
4. Pull out the toner shield glass [C].

## [B]



### 3.5.3 LASER UNIT

1. Toner shield glass. (-3.5.2)
2. Copy tray (-3.3.3)
3. Pull out the (upper) paper tray.
4. Front cover ( -3.3 .6 )
5. Laser unit [D] (

NOTE: The screw at the left front position [E] is longer than the other three.


### 3.5.4 LD UNIT

CAUTION: Do not touch the paint-locked screw [A]. The LD position is adjusted before shipment.

1. Laser unit $(-3.5 .3)$
2. LD unit $[A]\left(\mathcal{R}^{2} \times 1\right)$

NOTE: Do not screw the LD unit in too tightly when installing it.


### 3.5.5 POLYGONAL MIRROR MOTOR

1. Laser unit (-3.5.3)
2. Two rubber bushings [A]
3. Laser unit cover $[B](\mathcal{E} \times 1)$
4. Polygonal mirror motor $[C]\left(\begin{array}{l}(1)\end{array}\right)$
5. After reassembling, adjust the image quality ( -3.13 ).
[C]


### 3.5.6 LASER UNIT ALIGNMENT ADJUSTMENT

## $\triangle$ WARNING <br> Reinstall the copy exit tray before turning the main switch on. The laser beam may exit the copier chassis when the copy exit tray is not installed. The laser beam can seriously damage your eyes.

1. Start the SP mode.
2. Select SP5-902-1 and output the "Trimming Area" pattern (pattern 10).
3. Check that the four corners of the pattern make right angles:

- If they make right angles, you do not need to adjust the laser unit alignment.
- If they do not make right angles, go on to the next step.

4. Check the screw position on the lever [A].

- If the screw is in the hole [C], go on to the next step.
- If the screw is in the slot [D], loosen the screw on the lever, loosen the four screws on the laser unit, and go on to step 9.

NOTE: The initial position of the screw is in hole [C].
5. Four screws in the laser unit ( -3.5 .3 )
6. Remove the lever ( $\hat{\xi}^{2} \times 1$ ), confirm the

[C] position of the hole beneath the slot [D], and reinstall the lever.
7. Install the screw (through the slot [D]) loosely into the hole beneath the slot (do not tighten the screw).
8. Install the four screws for the laser unit loosely (do not tighten the screws).
9. When you rotate the lever clockwise or counterclockwise by one notch of the lever, the corners of the pattern shift by $\pm 0.4 \mathrm{~mm}$ (from the leading and trailing edges). See the trim pattern made in step 2, and find how much the corners should be shifted.
10. Tighten the screw $[\mathrm{A}]$.


11. Tighten the screws on the laser unit.
12. Reinstall the copy tray.
13. Print the trim pattern and check the result. If further adjustment is required, repeat this procedure.

### 3.6 PCU SECTION

### 3.6.1 PCU

1. Toner bottle with the holder [A]
2. Open the right door.

[B]
3. Press the latch $[B]$ and pull out the PCU [C]. NOTE: Do not touch the OPC drum surface with bare hands.
4. Load new developer ( 3.6.6).
5. When reassembling, execute SP2-214 to reinitialize the TD sensor.


### 3.6.2 PICK-OFF PAWLS AND TONER DENSITY SENSOR

CAUTION: Do not turn the PCU upside down. This causes toner and developer to spill out of the PCU housing.

1. $\mathrm{PCU}(-3.6 .1)$
2. Pawl [A]

NOTE: Pull down the pawl and release the bottom end.
3. Toner density sensor $[B](\hat{\xi} \times 1)$

NOTE: The toner density sensor is taped to the bottom of the PCU. Pry it off with a screwdriver.
4. After reinstalling the pick-off pawls or
 toner density sensor, adjust the image quality (3.6.7).

### 3.6.3 OPC DRUM



1. $\mathrm{PCU}(-3.6 .1)$
2. Front side piece $[A](\hat{E} \times 1)$
3. Rear side piece $[B]$ ( $\hat{\xi}^{3} \times 2,1$ coupling)
4. Separate the drum section [C] from the developer section [D].

NOTE: To ensure that the left-side gears line up, keep the drum cover [E] closed when reinserting the front side piece.
5. Pry out the drum retaining clip [F].

NOTE: When reassembling, install the clip in the same orientation (with the lip facing away from the drum shaft).
6. OPC drum [G]
7. When reassembling, adjust the image quality (3.6.7).

### 3.6.4 CHARGE ROLLER AND CLEANING BRUSH



1. OPC Drum ( 3.6.3)
2. Holding pin $[\mathrm{A}]$
3. Stepped screw [B]
4. Charge roller [C] and cleaning brush [D] (with the holders and springs)

NOTE: Turn the gear [E] (as necessary) so that the rear holder [F] comes out.
5. When reassembling, adjust the image quality (3.6.7).

### 3.6.5 CLEANING BLADE

1. Drum charge roller ( -3.6 .4 )
2. Cleaning blade $[\mathrm{A}]\left(\hat{\mathcal{P}^{2}} \times 2\right)$
3. When reassembling, adjust the image quality ( 3.6.7).


## Reassembling

When replacing the cleaning blade, apply toner to the edge of the new cleaning blade. This prevents possible damage to the OPC drum and blade.

1. After installing the cleaning blade, remove some of the toner from the old bottle with your finger.

2. Apply the toner to the edge $[B]$ of the new cleaning blade. Make sure to apply the toner evenly along full length of the new cleaning blade.

### 3.6.6 DEVELOPER



1. $\mathrm{PCU}(-3.6 .1)$
2. To let the toner fall to the development section, gently tap about eight different spots on the top of the PCU housing with a screwdriver. Each spot must be approximately at an equal distance from the next spot.
3. Reinstall the PCU in the copier.
4. Turn the main switch on.
5. Open and close the front door and wait for the machine to rotate the development roller for about 10 seconds.
6. Repeat the previous step two more times.
7. PCU (-3.6.1)
8. Separate the developer section from the OPC drum section (3.6.3).
9. Top part $[A]$ of the development unit ( $(\underset{\xi}{\xi} \times 5)$

NOTE: Release the hook [B].
10. Set the coupling [C] back to the shaft.
11. Turn the coupling in the direction of the arrow [D] to remove developer from the roller.
12. Turn the bottom part $[\mathrm{E}]$ over and rotate the gears to remove the developer.
13. Load new developer ( 1.2.3).
14. When reassembling, execute SP2-214 to reinitialize the TD sensor.

NOTE: 1) Check that no toner or developer is stuck on a gear. Clean the gears as necessary with a blower brush, etc.
2) Be sure to replace the Mylar at the rear side in the correct position. (The Mylar protects the gears at the rear side from falling toner).

### 3.6.7 AFTER REPLACEMENT OR ADJUSTMENT

IMPORTANT: After replacing or adjusting any of the PCU components, do the following procedure. This procedure is not necessary when you replaced the whole PCU with a new one.

1. Take 5 sample copies.
2. If black dots (dropped toner) appear on any of the copies, continue as follows. (If all copies are clean, it is not necessary to carry out the following steps.)
3. Remove the PCU from the mainframe.
4. Tap the top of the PCU housing with a screwdriver at eight evenly spaced locations (two or three taps at each spot), to knock the recycled toner down into the development section.
5. Put the PCU back into the mainframe.
6. Turn the main power on. Then open and close the door and wait for the machine to rotate the development roller for 10 seconds. Then open and close the door two more times, so that total rotation time is 30 seconds.
7. Make some sky-shot copies (or solid black prints).

- If using A4/81/2" x $11^{\prime \prime}$ paper, make 4 copies/prints.
- If using $A 3 / 11^{\prime \prime} \times 17$ " paper, make 2 copies/prints.
- To make solid black prints, use SP5-902 pattern 8.

NOTE: Step 7 is required only after parts replacement or adjustment.
There is no need to make sky-shot (or solid black) copies after replacing the developer.

### 3.7 TONER SUPPLY MOTOR

1. Copy tray (-3.3.3)
2. Open the front door.
3. Toner bottle holder ( -3.6 .1 )
4. Toner supply motor $[A]\left(E_{\mathrm{Cl}}^{\mathrm{D}} \mathrm{x} 1\right)$


### 3.8 PAPER FEED SECTION

### 3.8.1 PAPER FEED ROLLER

1. Paper cassette
2. Clip $[A]$
3. Push the shaft back through the opening, and tilt it up.
NOTE: If the black plastic bushing [B] comes off, be sure to remount it when reinstalling the shaft.
4. Paper feed roller [C]

### 3.8.2 FRICTION PAD

1. Paper cassette
2. Clip [D]
3. Push the shaft back through the opening, so that the roller moves clear of the friction pad.

[E]

4. Friction pad [E]

## PAPER FEED SECTION

### 3.8.3 PAPER END SENSOR

1. Paper cassette
2. Paper end sensor $[F]$ ( $\mathrm{E}^{\boldsymbol{N}} \mathrm{l} \times 1$ )


### 3.8.4 EXIT SENSOR

## Non-duplex Models

1. Open the right door.
2. Front right cover (-3.3.7)
3. Guide $[A]\left(\mathcal{E}^{2} \times 2\right)$
4. Exit sensor bracket $[B]\left(\begin{array}{l}\text { 舟 }\end{array}\right)$



## Duplex Models

1. Open the right door.
2. Front right cover ( -3.3 .7 )
3. Upper guide [D] ( $\hat{\xi} \times 2$ )
4. Exit sensor bracket $[E]\left(\begin{array}{l}\text { 舟 }\end{array} \times 1\right)$
5. Exit sensor [F] (


### 3.8.5 BY-PASS FEED ROLLER AND PAPER END SENSOR



1. By-pass tray ( -3.3 .10 )

NOTE: If you have a support to keep the by-pass tray within the reach of the connector cable, you do not need to disconnect the connector. When you do so, use caution not to place too much load on the cable.
2. Sensor holder $[A]$
3. By-pass paper end sensor [B] (玉\#ll $\times 1$ )
4. By-pass feed roller [C]

## PAPER FEED SECTION

### 3.8.6 REGISTRATION ROLLER



1. $\mathrm{PCU}(-3.6 .1)$
2. Front cover (-3.3.6)
3. Right door (-3.3.9)
4. Rear cover (-3.3.1)
5. High-voltage power supply ( -12.2 )
6. Registration clutch ( -3.8 .8 )
7. Unhook the springs $[A]$ and $[B]$ at the rear and front sides.
8. Guide support [C] and guide [D] ( $\mathcal{E}^{2} \times 1, \xi^{[l l} \times 1$ )
9. Bushing $[E]($ ( 3$) \times 1$ )
10. Gear [F] and bushing [G] ((3) $\times 1$ )
11. Registration roller [H] with the image transfer unit [I]

### 3.8.7 BY-PASS PAPER SIZE SWITCH

1. By-pass tray (-3.3.10)
2. Tray lever $[\mathrm{A}](\mathrm{m}) \times 1,1 \mathrm{pin})$
3. Lift the upper tray $[B]$
4. By-pass paper size switch [C] (笋×1)
NOTE: When reinstalling the switch: Move the paper guides to their middle position (about halfway between fully open and fully closed), and install the round gear so that the hole in the gear [D] aligns with the peg [ $E$ ] on the sliding gear.


### 3.8.8 REGISTRATION CLUTCH


[F]


1. Rear cover ( 3.3.1)
2. High-voltage power supply board (with the bracket) $[F]$ ( ${ }^{2} \times 4$, all connectors)
3. Registration clutch [G] (给 $\times 1, \mathrm{E} \mathbb{\#} \times 1$ )

## PAPER FEED SECTION

### 3.8.9 REGISTRATION SENSOR

1. Open the right door.
2. Registration sensor $[A]\left(E_{\|} \times 1\right)$


### 3.8.10 UPPER PAPER FEED CLUTCH AND BY-PASS FEED CLUTCH

1. Rear cover ( 3.3.1)
2. High-voltage power supply board (-3.12.2)
3. Clutch cover $[B]$ ( ( 5 ) $\times 2,2$ bushings, $\mathcal{E}^{2} \times 2$ )
4. Paper feed clutch [C] ( $(5) \times 1)$
5. By-pass feed clutch [D] (亓) $\times 1$ )

NOTE: When reinstalling, be sure that the rotation-prevention tabs [E] on the clutches fit correctly into the corresponding openings on the clutch cover.

## 3．8．11 RELAY CLUTCH

1．Rear cover（－3．3．1）
2．Relay clutch $[\mathrm{A}]\left(\mathrm{E}^{\| l} \times 1\right)$

## 3．8．12 RELAY SENSOR

1．Relay clutch（－3．8．11）
2．Sensor bracket $[B](\hat{\xi} \times 1)$
3．Relay sensor［C］（E』\＃ E 1）


## 3．8．13 LOWER PAPER FEED CLUTCH（TWO－TRAY MODELS ONLY）

1．Rear lower cover（ -3.3 .2 ）
2．Clutch bracket $[\mathrm{D}]\left(\begin{array}{l}\text { 舟 } \times 2)\end{array}\right.$
3．Lower paper feed clutch［E］（3）$x 2$ ， 1 bushing，匪 E 1）


### 3.8.14 VERTICAL TRANSPORT SENSOR (TWO-TRAY MODELS ONLY)

1. Right lower cover (-3.3.12)
2. Metal plate $[A](\hat{\xi} \times 3)$



### 3.8.15 PAPER SIZE SWITCH

1. Paper cassette
2. Switch cover $[C](\mathbb{\xi} \times 1)$
3. Paper size switch [D] ( $⿷^{\mathbb{E}} \mathrm{x} 1$ )


### 3.9 IMAGE TRANSFER

### 3.9.1 IMAGE TRANSFER ROLLER

CAUTION: Do not touch the transfer roller surface with bare hands

1. Open the right door.
2. Lift the plastic holders [A] with the image transfer roller [B].
NOTE: Leave the springs under the holders. When reassembling, ensure that the pegs [C] on the holders [D] engage with the springs.


### 3.9.2 IMAGE DENSITY SENSOR

1. Open the right door.
2. Plastic cover [E]
3. Image transfer roller ( -3.9 .1 )
4. Push down on the notch $[F]$ to free the sensor.
5. Image density sensor [G] (気 Cl 1 )

[E]

### 3.10 FUSING

### 3.10.1 FUSING UNIT

| $\triangle$ CAUTION |
| :--- |
| The fusing unit can become very hot. Be certain that it has cooled down <br> sufficiently before handling it. |

1. Turn off the main switch, and unplug the machine.
2. Front right cover (-3.3.7)
3. Open the right door.



### 3.10.2 THERMISTOR

1. Fusing unit ( -3.10 .1 )
2. Thermistors $[A]\left(\hat{\beta}^{2} \times 1, ~=\mathbb{E} \times 1\right)$


### 3.10.3 FUSING LAMPS



1. Fusing unit (-3.10.1)
2. Separate the hot roller section $[A]$ from the pressure roller section $[B]\left(\begin{array}{l}(\hat{E} \\ \times 4)\end{array}\right.$.
3. Front holding plate $[\mathrm{C}]\left(\begin{array}{l}\text { 会 } \times 1)\end{array}\right.$
4. Rear holding plate $[\mathrm{D}]\left(\begin{array}{l}(\hat{\xi} \times 1)\end{array}\right.$
5. Fusing lamp with the connector (600W) [E] (
6. Fusing lamp with the connector (550W) $[F]\left(\mathcal{N}^{2} \times 2\right)$

When reassembling, check that the front ends of the two lamps fit in the front holding plate. They do not fit in there if you install the two lamps incorrectly.

### 3.10.4 HOT ROLLER STRIPPER PAWLS

1. Hot roller ( -3.10 .5 )
2. Roller guard $[A](\hat{\xi} \times 3)$
3. Metal holders $[B]$ (1 holder for each)
4. Hot roller stripper pawls [C] (1 spring for each)


## FUSING

### 3.10.5 HOT ROLLER

1. Hot roller stripper pawls -3.10 .4 )
2. Hot roller [A] (2 C-rings, 1 gear, 2 bearings)


### 3.10.6 THERMOSTAT

1. Hot roller (-3.10.5)
2. Thermostat $[A]$ ( $\times 2$ for each)


### 3.10.7 PRESSURE ROLLER AND BUSHINGS



1. Separate the hot roller section from the pressure roller section ( 3.10.3).
2. Fusing entrance guide $\left.[A]()^{2} \times 2\right)$
3. 2 springs $[B]$
4. 2 pressure arms [C]
5. 2 Bushings [D]
6. Pressure roller [E]

### 3.10.8 NIP BAND WIDTH ADJUSTMENT

Perform this adjustment when the fusing unit is at its operating temperature. The size of the OHP sheet must be A4/LT LEF. Any other sizes may cause a paper jam.
[A]: Pressure roller
[B]: Hot roller


1. Place an OHP sheet on the by-pass feed table.
2. Enter SP mode, and run SP1-109.
3. Press the "Execute" key.
4. Press (). The machine feeds the OHP sheet into the fusing section, stops it there for 20 seconds, then ejects it to the copy tray.
5. Press the "
6. Quit the SP mode.
7. Check that the nip band (the opaque stripe) across the ejected OHP sheet is symmetrical, with both ends slightly thicker than the center.
NOTE: There is no standard value for the nip band on this machine. Make the adjustment based on the band's appearance.
8. If the band is not as described above, change the position of the spring hooks
[C] (one on each side), and then check the band again.
NOTE: The higher hook position produces greater tension.

### 3.10.9 CLEANING ROLLER

1. Pressure roller and bushings (-3.10.7)
2. Cleaning roller $[A]$


### 3.11 DUPLEX UNIT (DUPLEX MODELS ONLY)

### 3.11.1 DUPLEX EXIT SENSOR

1. Open the right door.
2. Sensor bracket $[A](\hat{\beta} \times 1)$

NOTE: Another bracket [B] comes off with the sensor bracket.
3. Duplex exit sensor [C] ( $⿷_{\mathbb{\#}}^{\mathbb{H}} \mathrm{x}$ 1)


### 3.11.2 DUPLEX ENTRANCE SENSOR

1. Open the right door.
2. Lift the duplex guide [D].
3. Entrance sensor bracket [E] and bracket cover [F] (雨 x 2)
4. Duplex entrance sensor [G]


### 3.11.3 DUPLEX INVERTER SENSOR



1. Copy tray $[\mathrm{A}]\left(\mathrm{C}^{2} \times 2\right)$
2. Exit cover $[B](\hat{\xi} \times 1)$
3. Sensor bracket [C] (
4. Duplex inverter sensor $[D](\hat{\xi} \times 1)$

### 3.11.4 DUPLEX TRANSPORT MOTOR

1. Open the right door.
2. Detach the chain and spring from the frame, and lower the right door.
3. Cover $[A]\left(\begin{array}{l}\text { E }\end{array}\right.$ )
4. Motor bracket $[B]\left(\hat{\xi} \times 4, \xi^{\#} \times 1\right)$.
5. Duplex transport motor [C] ( $\left.\mathrm{E}^{2} \times 2\right)$


### 3.11.5 DUPLEX INVERTER MOTOR

1. Rear cover
2. Exhaust fan (-3.12.5)
3. Duplex inverter motor [A] (笋 $\times 2$, 気 Cl )


### 3.11.6 DUPLEX CONTROL BOARD

1. Rear lower cover (-3.3.2)
2. Duplex control board [A] ( $\hat{\xi}^{(1)} \times 4$, all connectors)


### 3.12 OTHER REPLACEMENTS

### 3.12.1 QUENCHING LAMP

1. $\mathrm{PCU}(-3.6 .1)$
2. Quenching lamp $[A]\left(⿷^{\|} \times 1\right)$


### 3.12.2 HIGH-VOLTAGE POWER SUPPLY BOARD

4. Rear cover (-3.3.1)
5. High-voltage power supply board $[B]$ ( ${ }^{(1)} \times 2,3$ standoffs, all connectors)


### 3.12.3 BICU (BASE-ENGINE IMAGE CONTROL UNIT)

1. Rear cover (-3.3.1)
2. BICU [A] ( ${ }^{2} \times 7$, all connectors, 2 flat cables)

NOTE: When replacing the BICU, remove the NVRAM $[B]$ from the old BICU and install it on the new BICU. The NVRAM stores machine-specific data.


### 3.12.4 MAIN MOTOR

1. Rear cover (-3.3.1)



### 3.12.5 REAR EXHAUST FAN (B123 ONLY)

1. Rear cover (-3.3.1)


## Reassembling

When reassembling, ensure that the arrow on the fan $[B]$ points the outside of the copier. The arrow indicates the direction of the air current.

### 3.12.6 LEFT EXHAUST FAN

1. Rear cover ( -3.3 .1 )
2. Left cover ( -3.3 .5 )
3. Fan cover $[A](\hat{\beta} \times 3)$


## Reassembling

When reassembling, ensure that the arrow on the fan [C] points the outside of the copier. The arrow indicates the direction of the air current.



### 3.12.7 PSU (POWER SUPPLY UNIT)

1. Left cover (-3.3.5)
2. PSU [A] (all connectors,


## OTHER REPLACEMENTS

### 3.12.8 GEARBOX

## Replacement Procedure

1. Inverter tray [A]
2. Two screws $[B]$ from the middle rear cover

NOTE: This step releases the topmost part of the BICU bracket.
3. High-voltage power supply board (with the bracket) (3.8.8)

4. BICU (with the bracket) [C] (

NOTE: If you have difficulty removing the bracket, remove the screw at the middle of the crosspiece (see step 6).
5. Main motor ( -3.12 .4 )

6. Crosspiece [D] (
7. Registration clutch (-3.8.8)

8. $\mathrm{PCU}(-3.6 .1)$

NOTE: This step releases the gear (on the gearbox) that drives the PCU.
9. Ground plate $[\mathrm{A}]\left(\mathrm{F}^{\mathrm{E}} \times 2\right)$
10. Gearbox $[B]$ (


When reassembling, do not change the position of the spring [C], and check that the bushing [D] on the PCU drive shaft is in the correct position. You can adjust its position by rotating the gear [E] seen from the opening of the gearbox.

## OTHER REPLACEMENTS

## Gear Arrangement in the Gearbox



The gears are numbered 1 to 12 in the order in which they are to be installed in the gearbox. These numbers appear both on the gearbox and on the front (exposed) surface of each gear. If the gears fall out, start by finding gear number 1 and installing it onto location number 1 (setting it into place so that the side with the printed number remains visible). Then install the remaining gears (2 to 12) in the same way.

### 3.13 COPY ADJUSTMENTS: PRINTING/SCANNING

NOTE: 1) You need to perform the adjustment after executing a Memory All Clear, and after replacing or adjusting any of the following parts.

- First or second scanner
- Lens Block
- Scanner Motor
- Polygonal Mirror Motor
- Paper Tray
- Paper Side Fence

2) For detailed explanations about how to access and use the SP modes, see Section 5.

### 3.13.1 PRINTING

NOTE: 1) Ensure the paper is installed correctly in each paper tray before you start these adjustments.
2) Use the Trimming Area Pattern (SP5-902, No.10) to print the test pattern for the printing adjustments below.
3) Set SP 5-902 to 0 again after completing these printing adjustments.

## Registration - Leading Edge/Side-to-Side

1. Check the leading edge registration for each paper feed station, and adjust each of these registrations using SP1-001.
2. Check the side-to-side registration 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, etc.)

| Tray | SP mode | Specification |
| :---: | :---: | :---: |
| Any paper tray | SP1-001-1 | $2 \pm 1.5 \mathrm{~mm}$ |
| By-pass feed | SP1-001-2 |  |
| Duplex | SP1-001-3 |  |
| 1st tray | SP1-002-1 | $2 \pm 1.5 \mathrm{~mm}$ |
| 2nd tray | SP1-002-2 |  |
| 3rd tray (Optional PFU tray 1) | SP1-002-3 |  |
| 4th tray (Optional PFU tray 2) | SP1-002-4 |  |
| By-pass feed | SP1-002-5 |  |
| Duplex | SP1-002-6 |  |



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

## Blank Margin

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

1. Check the trailing edge and right side edge blank margins, and adjust them using the following SP modes.

|  | SP mode | Specification |
| :--- | :---: | :---: |
| Trailing edge | SP2-101-2 | $2+2.5 /-1.5 \mathrm{~mm}$ |
| Right edge | SP2-101-4 | $2+2.5 /-1.5 \mathrm{~mm}$ |
| Leading edge | SP2-101-1 | $2 \pm 1.5 \mathrm{~mm}$ |
| Left edge | SP2-101-3 | $2 \pm 1.5 \mathrm{~mm}$ |

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


## Main Scan Magnification

1. Print the single-dot grid pattern (SP5-902-5).
2. Check the magnification (the grid size should be $2.7 \times 2.7 \mathrm{~mm}$ ), and if necessary use SP2-998 to adjust it. The specification is $100 \pm 1 \%$.

### 3.13.2 SCANNING

NOTE: 1) Before doing the following scanner adjustments, check and adjust the printing leading-edge and side-to-side registrations and the printing blank margins (as described above).
2) Use an A3 test chart to perform the following adjustments.

## Registration: Platen Mode

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

|  | SP mode | Specification |
| :--- | :---: | :---: |
| Leading edge | SP4-010 | $2 \pm 1.5 \mathrm{~mm}$ |
| Side-to-side | SP4-011 | $2 \pm 1.5 \mathrm{~mm}$ |

A: Leading edge registration


## Magnification



A: Main scan magnification
B: Sub-scan magnification

## Main Scan Magnification

1. Place the A3 test chart on the exposure glass and make a copy from one of the feed stations.
2. Check the magnification ratio. If necessary, adjust the magnification using the following SP mode.

|  | SP mode | Specification |
| :--- | :---: | :---: |
| Main Scan Magnification | SP4-009 | $\pm 1.0 \%$ |

## Sub-scan Magnification

1. Place the OS-A3 test chart on the exposure glass and make a copy from one of the feed stations.
2. Check the magnification ratio. If necessary, adjust the magnification using the following SP mode.

|  | SP mode | Specification |
| :--- | :---: | :---: |
| Sub-scan magnification | SP4-008 | $\pm 1.0 \%$ |

## Standard White Density Adjustment

This procedure adjusts the standard white density level. Carry out this adjustment after doing any of the following:

- After replacing the standard white plate.
- After replacing the NVRAM on the BICU. (Note: it is not necessary to carry out this adjustment if you have replaced the BICU itself but retained the previous NVRAM board [by moving it over onto the new BICU].)
- After performing a memory all clear (SP5-801-2 for Basic machine, SP5-998-1 for MFP machine's BICU engine).


## Procedure:

1. Place 10 sheets of new A4/LTR paper (sideways, LEF) or new $A 3 / D L T$ paper on the exposure glass, and close the platen cover or the ADF.
2. Enter SP4-428-001 and select "1: YES". The machine automatically adjusts the standard white density.

### 3.13.3 ADF IMAGE ADJUSTMENT

## Registration and Blank Margin



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

NOTE: Make a temporary test chart as shown above, using A3/11" x 17" paper.

1. Place the temporary test chart on the ADF and make a copy from one of the feed stations.
2. Check the registrations, and adjust as necessary using the appropriate SP modes, as follows.

|  | SP mode |
| :--- | :---: |
| Side-to-side registration | SP6-006-1 |
| Leading edge registration | SP6-006-2 |
| Blank margin for the trailing edge | SP6-006-3 |
| Side-to-side registration (Duplex: rear) | SP6-006-4 |

## Sub-scan Magnification



A: Sub-scan magnification

NOTE: Make a temporary test chart as shown above, using A3/11" x 17" paper.

1. Place the temporary test chart on the ADF and make a copy from one of the feed stations.
2. Check the registration, and if necessary adjust it using SP6-006-005. The specification is $\pm 1.0 \%$.

## TROUBLESHOOTING

## 4. TROUBLESHOOTING

### 4.1 SERVICE CALL CONDITIONS

### 4.1.1 SUMMARY

There are four levels of service call conditions.

| Level | Definition | Reset Procedure |
| :---: | :--- | :--- |
| A | To prevent damage to the machine, the main <br> machine cannot be operated until the SC has <br> been reset by a service representative (see the <br> note below). | Enter SP mode, and then turn <br> the main power switch off and <br> on. |
| B | If the SC was caused by incorrect sensor <br> detection, the SC can be reset by turning the <br> main power switch off and on. | Turn the main power switch off <br> and on. |
| C | The main machine can be operated as usual, <br> excluding the unit related to the service call. | Turn the main power switch off <br> and on. |
| D | The SC history is updated. The machine can be <br> operated as usual. | The SC will not be displayed. <br> Only the SC history is updated. |

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

### 4.1.2 SC CODE DESCRIPTIONS

| No. Definition |  | Symptom | Possible Cause |
| :---: | :---: | :---: | :---: |
| 101 | B | Exposure Lamp Error |  |
|  |  | The standard white level was not detected properly when scanning the white plate. | - Exposure lamp defective <br> - Exposure lamp stabilizer defective <br> - Exposure lamp connector defective <br> - Dirty scanner mirror or scanner mirror out of position <br> - SBU board defective <br> - SBU connector defective <br> - Lens block out of position <br> - Incorrect position or width of white plate scanning ( SP4-015) |
| 120 | B | Scanner home position error 1 |  |
|  |  | The scanner home position sensor does not detect the off condition during initialization or copying. | - Scanner home position sensor defective <br> - Scanner drive motor defective <br> - Scanner home position sensor connector defective <br> - Scanner drive motor connector defective <br> - BICU board defective |
| 121 | B | Scanner home position error 2 |  |
|  |  | The scanner home position sensor does not detect the on condition during initialization or copying. | - Scanner home position sensor defective <br> - Scanner drive motor defective <br> - Scanner home position sensor connector defective <br> - Scanner drive motor connector defective <br> - BICU board defective |
| 143 | D | SBU white/black level correction error |  |
|  |  | The automatic SBU adjustment has failed to correct the black level. <br> The automatic SBU adjustment has failed to correct the white level twenty times consecutively. | - Exposure lamp defective <br> - Dirty white plate <br> - Incorrect position or width of white plate scanning (SP4-015) <br> - BICU board defective <br> - SBU board defective |
| 144 | B | Communication Error between BICU and | SBU |
|  |  | The BICU board cannot detect the SBU connect signal. | - The flat cable between the BICU board and the SBU has a poor connection <br> - The flat cable between the BICU board and the SBU is damaged <br> - BICU board defective <br> - SBU defective |


| $\begin{gathered} \text { No. } \\ \text { Definition } \end{gathered}$ |  | Symptom | Possible Cause |
| :---: | :---: | :---: | :---: |
| 145 | D | Automatic SBU adjustment error |  |
|  |  | During the automatic SBU adjustment, the machine detects that the white level read from the white plate or paper is out of range. (SP4-428) | - Exposure lamp defective <br> - Dirty white plate <br> - Incorrect position or width of white plate scanning ( SP4-015) <br> - BICU board defective <br> - SBU board defective |
| 193 | B | Image transfer error |  |
|  |  | Scanned images are not transferred to the controller memory within 1 minute. | - BICU board defective <br> - Controller board defective |
| 198 | B | Memory address error |  |
|  |  | The BICU board does not receive memory addresses from the controller board. | - The firmware programs of the engine and the controller do not match. <br> - BICU board defective <br> - Controller board defective |
| 302 | B | Charge roller current leak |  |
|  |  | A current leak signal for the charge roller is detected. | - Charge roller damaged <br> - High voltage supply board defective <br> - Poor connection of the PCU |
| 320 | B | Polygonal mirror motor error |  |
|  |  | The polygon mirror motor does not reach operating speed within 10 seconds after the motor ON signal is sent, or does not turn on within one of the 200 ms check intervals during operation. | - Polygon mirror motor defective <br> - Poor connection between the polygonal mirror motor driver and the BICU board <br> - Damaged cable between BICU and polygonal mirror motor driver <br> - BICU board defective |
| 321 | C | No laser writing signal (F-GATE) error |  |
|  |  | The laser writing signal (F-GATE) fails to turn Low after the laser crosses 5 mm on the drum surface from the laser writing start position. | - BICU board defective <br> - The fax controller or printer controller has a poor connection <br> - Fax controller or printer controller defective |
| 322 | B | Laser synchronization error |  |
|  |  | The main scan synchronization detector board cannot detect the laser synchronization signal for more than 5 consecutive 100 ms intervals. | - Poor connection between the LD unit and the BICU board <br> - Damaged cable between BICU and LD unit <br> - LD unit out of position <br> - LD unit defective <br> - BICU board defective |
| 390 | B | TD sensor error |  |
|  |  | The TD sensor outputs less than 0.2 V or more than 4.0 V 10 times consecutively during copying. | - TD sensor abnormal <br> - Poor connection of the PCU |
| 391 | B | Development bias leak |  |
|  |  | A development bias leak signal is detected. | - Poor connection of the PCU <br> - High voltage supply board defective |


| No. Definition |  | Symptom | Possible Cause |
| :---: | :---: | :---: | :---: |
| 392 | B | TD sensor initial setting error |  |
|  |  | TD sensor initial setting is not performed correctly. | - ID sensor defective <br> - No developer <br> - Drum does not turn <br> - Development roller does not turn <br> - Poor connection of the PCU <br> - The voltage is not applied to charge roller |
| 401 | B | Transfer roller leak error 1 |  |
|  |  | A current leak signal for the transfer roller is detected. <br> A current feedback signal for the transfer roller is not detected. | - High voltage supply board defective <br> - Poor connection of the PCU <br> - Transfer/separation unit set incorrectly <br> - Transfer roller damaged |
| 402 | B | Transfer roller leak error 2 |  |
|  |  | A current leak signal for the transfer roller is detected. <br> A current feedback signal for the transfer roller is not detected. | - High voltage supply board defective <br> - Poor connection of the PCU <br> - Transfer/separation unit set incorrectly <br> - Transfer roller damaged |
| 500 | B | Main motor lock |  |
|  |  | A main motor lock signal is not detected for more than 7 consecutive checks ( 700 ms ) after the main motor starts to rotate, or the lock signal is not detected for more than 7 consecutive checks during rotation after the last signal. | - Too much load on the drive mechanism <br> - Main motor defective |
| 502 | C | Tray 2 lift motor malfunction (Optional Paper Tray units) |  |
|  |  | The paper lift sensor fails to activate twice continuously after the tray lift motor has been on for 18 seconds. | - Paper lift sensor defective <br> - Tray lift motor defective <br> - Too much load on the drive mechanism <br> - Poor tray lift motor connection |
| 503 | C | Tray 3 lift motor malfunction (optional paper tray units) |  |
|  |  | The paper lift sensor fails to activate twice continuously after the tray lift motor has been on for 18 seconds. | - Paper lift sensor defective <br> - Tray lift motor defective <br> - Too much load on the drive mechanism <br> - Poor tray lift motor connection |
| 504 | C | Tray 4 lift motor malfunction (optional two-tray paper tray unit) |  |
|  |  | The paper lift sensor fails to activate twice continuously after the tray lift motor has been on for 18 seconds. | - Paper lift sensor defective <br> - Tray lift motor defective <br> - Too much load on the drive mechanism <br> - Poor tray lift motor connection |


| No. Definition |  | Symptom | Possible Cause |
| :---: | :---: | :---: | :---: |
| 506 | C | Paper feed motor lock (optional paper tray units) |  |
|  |  | A motor lock signal is not detected for more than 1.5 s or the lock signal is not detected for more than 1.0 s during rotation. | - Paper feed motor defective <br> - Too much load on the drive mechanism |
| 541 | A | Fusing thermistor open (center) |  |
|  |  | The fusing temperature detected by the thermistor is below $71^{\circ} \mathrm{C}$ and is not corrected after the main power switch is turned on. | - Fusing thermistor defective or out of position <br> - Power supply board defective <br> - Loose connectors |
| 542 | A | Fusing temperature warm-up error (center) |  |
|  |  | The fusing temperature rises less than 7 degrees in 2 seconds, and this continues 5 times consecutively. The fusing temperature is not detected in 25 or 35 seconds. | - Fusing thermistor defective or out of position <br> - Fusing lamp open <br> - Power supply board defective |
| 543 | A | Fusing overheat error (center) |  |
|  |  | The fusing temperature is over $230^{\circ} \mathrm{C}$ for 1 second (detected by the thermistor). | - Fusing thermistor defective <br> - Power supply board defective |
| 544 | A | Fusing overheat error (center) 2 |  |
|  |  | The fusing temperature is over $250^{\circ} \mathrm{C}$ for 1 second (detected by the fusing temperature monitor circuit). | - Fusing thermistor defective <br> - Power supply board defective |
| 545 | A | Fusing lamp overheat error (center) |  |
|  |  | After the fusing temperature reaches the target temperature, the fusing lamp does not turn off for 12 consecutive seconds. | - Fusing thermistor defective or out of position <br> - Power supply board defective |
| 546 | A | Unstable fusing temperature (center) |  |
|  |  | The fusing temperature varies $50^{\circ} \mathrm{C}$ or more within 1 second, and this occurs 2 consecutive times. | - Thermistor defective or out of position <br> - Power supply unit defective |
| 547 | B | Zero cross signal malfunction |  |
|  |  | Zero cross signals are not detected within 5 seconds after the main power switch is turned on, or are not detected within 1 second after operation begins. | - Power supply board defective <br> - BICU defective |
| 551 | A | Fusing thermistor open (rear) |  |
|  |  | The fusing temperature detected by the thermistor is below $71^{\circ} \mathrm{C}$ and is not corrected after the main power switch is turned on. | - Fusing thermistor defective or out of position <br> - Power supply board defective <br> - Loose connectors |
| 552 | A | Fusing temperature warm-up error (rear) |  |
|  |  | The fusing temperature rises less than 7 degrees in 2 seconds, and this continues 5 times consecutively. The fusing temperature is not detected in 25 or 35 seconds. | - Fusing thermistor defective or out of position <br> - Fusing lamp open <br> - Power supply board defective |


| No. Definition |  | Symptom | Possible Cause |
| :---: | :---: | :---: | :---: |
| 553 | A | Fusing overheat error (rear) |  |
|  |  | The fusing temperature is over $230^{\circ} \mathrm{C}$ for 1 second (detected by the thermistor). | - Fusing thermistor defective <br> - Power supply board defective |
| 555 | A | Fusing lamp overheat error (rear) |  |
|  |  | After the fusing temperature reaches the target temperature, the fusing lamp does not turn off for 20 consecutive seconds. | - Fusing thermistor defective or out of position <br> - Power supply board defective |
| 556 | A | Unstable fusing temperature (rear) |  |
|  |  | The fusing temperature varies $50^{\circ} \mathrm{C}$ or more within 1 second, and this occurs 2 consecutive times. | - Thermistor defective or out of position <br> - Power supply unit defective |
| 590 | B | Left exhaust fan motor error |  |
|  |  | The CPU detects an exhaust fan lock signal for more than 5 seconds. | - Loose connection of the exhaust fan motor <br> - Too much load on the motor drive |
| 591 | B | Rear exhaust fan motor error |  |
|  |  | The CPU detects an exhaust fan lock signal for more than 5 seconds. | - Loose connection of the exhaust fan motor <br> - Too much load on the motor drive |
| 620 | B | Communication error between BICU and ADF |  |
|  |  | The BICU does not receive a response from the ADF main board for 4 seconds or more. <br> The BICU receives a break signal from the ADF main board. | - Poor connection between the BICU and ADF main board (DF connector) <br> - ADF main board defective <br> - BICU defective |
| 621 | B | ADF connection error |  |
|  |  | An incorrect ADF (an ADF for some other copier) is detected. (for Basic and MFP machines) <br> An ADF (including the correct ADF) is installed while the copier is in the energy saver mode. (for MFP machine only) | - ADF incorrect (The ADF for B039/B040/B043 is installed on a B121/B122/B123.) <br> - The connector of the ADF is removed while the machine is in the energy saver mode. |
| 632 | C | Accounting error 1 |  |
|  |  | An error is detected during the communication with the MF accounting device. | - Accounting device defective <br> - Loose connection |
| 633 | C | Accounting error 2 |  |
|  |  | After communication is established with the MF accounting device, a brake signal is issued. | - Accounting device defective <br> - Loose connection |
| 634 | C | Accounting RAM error |  |
|  |  | An error is detected in the RAM that saves the information on the MF accounting. | - Accounting device defective |
| 635 | B | Accounting battery error |  |
|  |  | An error is detected in the battery that is in the MF accounting device. | - Accounting device defective |


| No. Definition |  | Symptom | Possible Cause |
| :---: | :---: | :---: | :---: |
| 670 | C | Engine start error |  |
|  |  | The engine-ready signal is not issued within 70 seconds after the switch is turned on. | - Engine board defective <br> - Controller defective <br> - Loose connection |
| 760 | B | ADF gate abnormal 1 |  |
|  |  | The ADF Gate signal line between the ADF main board and the BICU is disconnected. | - ADF main board defective <br> - Input/output board defective <br> - Poor connection (ADF Gate line) between the ADF main board and the BICU . |
| 761 | B | ADF gate abnormal 2 |  |
|  |  | The FGATE signal is not issued from the ADF within 30 seconds after the ADF starts feeding. | - ADF connector defective <br> - SBU board defective |
| 762 | B | ADF gate abnormal 3 |  |
|  |  | The FGATE signal is not terminated by the ADF within 60 seconds after the ADF starts feeding. | - ADF connector defective <br> - SBU board defective |
| 800 | B | Startup without video output end error |  |
|  |  | Video transfer to the engine is started, but the engine did not issue a video transmission end command within the specified time. | - Controller board defective |
| 804 | B | specified time. <br> Startup without video input end |  |
|  |  | A video transmission was requested from the scanner, but the scanner did not issue a video transmission end command within the specified time. | - Controller board defective |
| 818 | B | Watchdog error |  |
|  |  | The CPU does not access the watchdog register within a certain time. | - Controller board defective <br> - Software malfunction - download controller firmware again |
| 819 | B | Kernel mismatch error |  |
|  |  | Software bug | - Download controller firmware again |
| 820 | B | Self-Diagnostic Error: CPU |  |
|  |  | The central processing unit returned an error during the self-diagnostic test. | - Controller board defective <br> - Download controller firmware again |
| 821 | B | Self-Diagnostic Error: ASIC |  |
|  |  | The ASIC returned an error during the self-diagnostic test because the ASIC and CPU timer interrupts were compared and determined to be out of range. | - Controller board defective |
| 823 | C | Self-diagnostic Error: Network Interface |  |
|  |  | The network interface board returned an error during the self-diagnostic test. | - Network interface board defective <br> - Controller board defective |
| 824 | B | Self-diagnostic Error: NVRAM |  |
|  |  | The resident non-volatile RAM returned an error during the self-diagnostic test. | - Replace the NVRAM on the controller board <br> - Replace the controller board |

## SERVICE CALL CONDITIONS

| No. Definition |  | Symptom | Possible Cause |
| :---: | :---: | :---: | :---: |
| 826 | B | Self-diagnostic Error: NVRAM/Optional NVRAM |  |
|  |  | The NVRAM or optional NVRAM returned an error during the selfdiagnostic test. | - Replace the NVRAM on the controller board |
| 827 | B | Self-diagnostic Error: RAM |  |
|  |  | The resident RAM returned a verify error during the self-diagnostic test. | - Download controller firmware again |
| 828 | B | Self-diagnostic Error: ROM |  |
|  |  | The resident read-only memory returned an error during the selfdiagnostic test. | - Controller board defective <br> - Download controller firmware again |
| 829 | C | Self-diagnostic Error: Optional RAM |  |
|  |  | The optional RAM returned an error during the self-diagnostic test. | - Replace the optional memory board <br> - Controller board defective |
| 838 | B | Self-diagnostic Error: Clock Generator |  |
|  |  | A verify error occurred when setting data was read from the clock generator via the I2C bus. | - Replace the controller board |
| 850 | C | Network I/F Abnormal |  |
|  |  | NIB interface error. | - NIB defective <br> - Controller board defective |
| 851 | C | IEEE 1394 I/F Abnormal |  |
|  |  | IEEE1394 interface error. | - IEEE1394 interface board defective <br> - Controller board defective |
| 853 | C | IEEE802.11b error - card not detected (power-on) |  |
|  |  | Wireless LAN card not detected at power-on. | - Poor connection <br> - Defective wireless LAN card <br> - Defective controller |
| 854 | C | IEEE802.11b error - card not detected (during operation) |  |
|  |  | Wireless LAN card not detected during operation. | - Poor connection <br> - Defective wireless LAN card <br> - Defective controller |
| 855 | C | IEEE802.11b error |  |
|  |  | Wireless LAN card error detected. | - Poor connection <br> - Defective wireless LAN card <br> - Defective controller |
| 856 | C | IEEE802.11b interface board error |  |
|  |  | Wireless LAN interface board error detected. | - Poor connection <br> - Defective wireless LAN interface board |
| 857 | C | USB I/F Error |  |
|  |  | USB interface error detected. | - Defective controller |
| 866 | C | SD card authentication error |  |
|  |  | The SD card does not contain a correct license code. | - Data corruption |
| 867 | B | SD card access error 1 |  |
|  |  | After the program saved in the SD card starts running, the SD card is removed from the slot. | - SD card removed |


| No. Definition |  | Symptom | Possible Cause |
| :---: | :---: | :---: | :---: |
| 868 | B | SD card access error 2 |  |
|  |  | Incorrect data is detected in the SD card. | - SD card defective <br> - SD controller defective |
| 870 | C | Address Book Data Error |  |
|  |  | Address book data stored on the hard disk was detected as abnormal when it was accessed from either the operation panel or the network. | - Software defective |
| 871 | C | FCU Flash ROM Error |  |
|  |  | The address book written into the flash ROM mounted on the FCU is detected as defective. | - Flash ROM device defective <br> - Replace flash ROM on the MBU |
| 900 | B | Electrical total counter error |  |
|  |  | The electrical total counter does not work properly. | - NVRAM on the GW controller board defective |
| 901 | B | Mechanical total counter |  |
|  |  | The mechanical total counter does not work properly. | - Mechanical total counter defective <br> - BICU defective <br> - Disconnected mechanical total counter |
| 903 | B | Engine total counter error |  |
|  |  | The checksum of the total counter is not correct. | - NVRAM on the BICU defective |
| 920 | C | Printer error |  |
|  |  | A fatal error is detected in the printer application program | - Printer application program defective <br> - Hardware configuration incorrect (including memory shortage) |
| 921 | C | Printer font error |  |
|  |  | Necessary font files are not found. | - Font file not installed |
| 925 | C | Net file error |  |
|  |  | The net-file management-file contains a fatal error. | - Data corruption |
| 928 | B | Memory error |  |
|  |  | The machine detects a discrepancy in the write/read data during its write/read test (done at power off/on and at recovery from low power or night/off mode). | - Memory defective <br> - BICU defective <br> - Poor connection between BICU and memory |
| 929 | B | IMAC hardware error |  |
|  |  | A memory control job is not completed within a certain period. | - IMAC on the GW controller board defective <br> - BICU defective <br> - Poor connection |
| 954 | B | Printer application program error |  |
|  |  | The printer status does not become ready when the printer application program is necessary for image processing. | - Application program defective |
| 955 | B | Image transfer error |  |
|  |  | The controller is not able to transfer images when the engine needs them. | - Application program defective |


| No. <br> Definition |  | Symptom |  |
| :---: | :--- | :--- | :--- |
| 964 | B | Possible Cause |  |


| No. Definition |  | Symptom | Possible Cause |
| :---: | :---: | :---: | :---: |
| 998 | B | Application start error | - Download controller firmware <br> - Replace the controller board <br> - An option required by the application (RAM, DIMM, board) is not installed |
|  |  | After power on, the application does not start within 60 s . (All applications neither start nor end normally.) |  |
| 999 | B | Program download error | - Board installed incorrectly <br> - BICU board defective <br> - Controller board defective <br> - IC card defective <br> - NVRAM defective <br> - Loss of power during downloading Important Notes About SC999 <br> - Primarily intended for operating in the download mode, logging is not performed with SC999. <br> - If the machine loses power while downloading, or if for some other reason the download does not end normally, this could damage the controller board or the PCB targeted for the download and prevent subsequent downloading. If this problem occurs, the damaged PCB must be replaced. |
|  |  | The download (program, print data, language data) from the IC card does not execute normally. |  |

### 4.2 ELECTRICAL COMPONENT DEFECTS

### 4.2.1 SENSORS

| Component | CN | Condition | Symptom |
| :---: | :---: | :---: | :---: |
| Registration | $\begin{gathered} 111-2 \\ \text { (BICU) } \end{gathered}$ | Open | The Paper Jam message will appear whenever a copy is made (paper hasn't reached the sensor). |
|  |  | Shorted | The Paper Jam message appears even if there is no paper at the sensor. |
| Relay | $\begin{gathered} 111-5 \\ \text { (BICU) } \end{gathered}$ | Open | The Paper Jam message will appear whenever a copy is made except for 1st and by-pass tray feeding. |
|  |  | Shorted | The Paper Jam message appears even if there is no paper at the sensor. |
| Upper Paper End | $\begin{gathered} 114-2 \\ \text { (BICU) } \end{gathered}$ | Open | The Paper End indicator lights when the 1st paper tray is selected, even if there is paper in the tray. |
|  |  | Shorted | The Paper End indicator does not light when the 1st paper tray is selected, even if there is no paper in the tray. The Paper Jam message will appear whenever a copy is made from the 1st paper tray. |
| Vertical Transport | $\begin{aligned} & 110-2 \\ & \text { (BICU) } \end{aligned}$ | Open | The Paper Jam message will appear whenever a copy is made from an optional paper tray unit. |
|  |  | Shorted | The Paper Jam message appears even if there is no paper at the sensor. |
| Lower Paper End | $\begin{aligned} & 113-6 \\ & \text { (BICU) } \end{aligned}$ | Open | The Paper End indicator lights when the 2nd paper tray is selected, even if there is paper in the tray (B122/B123 models only). |
|  |  | Shorted | The Paper End indicator does not light when the 2 nd paper tray is selected, even if there is no paper in the tray. The Paper Jam message will appear whenever a copy is made from the 2nd paper tray (B122/B123 models only). |
|  |  | Shorted |  |
| By-pass Paper End | $\begin{aligned} & 136-7 \\ & \text { (BICU) } \end{aligned}$ | Open | The Paper End indicator lights when the bypass tray is selected, even if there is paper in the tray. |
|  |  | Shorted | The Paper End indicator does not light when the bypass tray is selected, even if there is no paper in the tray. The Paper Jam message will appear whenever a copy is made from the bypass tray. |
| Exit | $\begin{gathered} 124-2 \\ \text { (BICU) } \end{gathered}$ | Open | The Paper Jam message will appear whenever a copy is made (paper hasn't reached the sensor). |
|  |  | Shorted | The Paper Jam message appears even if there is no paper at the sensor. |
| Toner Density | $\begin{gathered} \hline 125-3 \\ \text { (BICU) } \\ \hline \end{gathered}$ | Open | SC390 is displayed. |
|  |  | Shorted |  |
| Image Density | $\begin{gathered} \hline 123-2 \\ \text { (BICU) } \\ \hline \end{gathered}$ | Open | The toner density control process is changed |
|  |  | Shorted | (see the note below the table). |


| Component | CN | Condition | Symptom |
| :--- | :---: | :---: | :--- |
| Scanner H.P. | $102-2$ <br> (BICU) | Open | SC120 is displayed. |

NOTE: SC392 is activated when the CPU detects an ID sensor error during developer initialization (SP2-214). However, SC392 is not displayed on the LCD but simply logged in the SC log (SMC printout), unless the technician exits SP Mode as soon as an error message is displayed.

### 4.2.2 SWITCHES

| Component | CN | Condition | Symptom |
| :---: | :---: | :---: | :---: |
| Upper Paper Size | $\begin{gathered} 115- \\ 1,2,4 \\ \text { (BICU) } \end{gathered}$ | Open | The CPU cannot detect the proper paper size, and misfeeds may occur when a copy is made from the 1st paper tray. |
|  |  | Shorted |  |
| Vertical Transport Door | $\begin{gathered} 110-5 \\ \text { (BICU) } \end{gathered}$ | Open | The Cover Open indicator is lit even if the vertical transport door is closed. |
|  |  | Shorted | The Cover Open indicator is not lit even if the vertical transport door is opened. |
| Lower Paper Size | $\begin{gathered} \hline 113- \\ 1,2,4 \\ \text { (BICU) } \\ \hline \end{gathered}$ | Open | The CPU cannot detect the proper paper size, and misfeeds may occur when a copy is made from the 2nd paper tray. |
|  |  | Shorted |  |
| By-pass Paper Size | $\begin{aligned} & 136- \\ & 1,2,4,5 \\ & \text { (BICU) } \end{aligned}$ | Open | The CPU misdetects or is not able to detect the size of the paper set in the bypass tray, causing possible misfeeds when feeding from this tray. |
| Right Door | $\begin{aligned} & 124-5 \\ & (\mathrm{BICU}) \end{aligned}$ | Open | The Cover Open indicator is lit even if the right door is closed. |
|  |  | Shorted | The Cover Open indicator is not lit even if the right door is open. |
| Front/Right Cover | $\begin{aligned} & 130-1 \\ & (\mathrm{BICU}) \end{aligned}$ | Open | The Cover Open indicator is lit even if doors are closed. |
|  |  | Shorted | The Cover Open indicator is not lit even if doors are open. |
| Main | $\begin{gathered} 281-3,4 \\ \text { (PSU) } \\ \hline \end{gathered}$ | Open | The machine does not turn on. |
|  |  | Shorted | The machine does not turn off. |

### 4.3 BLOWN FUSE CONDITIONS

| Fuse | Rating |  | Symptom when turning on the main switch |
| :---: | :---: | :---: | :--- |
|  | $\mathbf{1 2 0} \mathbf{V}$ | $\mathbf{2 2 0} \mathbf{- 2 4 0} \mathbf{V}$ |  |
| Power Supply Board |  |  |  |
| FU1 | $15 \mathrm{~A} / 125 \mathrm{~V}$ | - | No response. |
| FU2 | $6.3 \mathrm{~A} / 250 \mathrm{~V}$ | $3.15 \mathrm{~A} / 250 \mathrm{~V}$ | No response. |
| FU3 | $1 \mathrm{~A} / 125 \mathrm{~V}$ | $1 \mathrm{~A} / 250 \mathrm{~V}$ | Anti-condensation/Tray Heater does not turn <br> on. |
| FU4 | $4 \mathrm{~A} / 250 \mathrm{~V}$ | $4 \mathrm{~A} / 250 \mathrm{~V}$ | No response. |
| FU5 | $4 \mathrm{~A} / 250 \mathrm{~V}$ | $4 \mathrm{~A} / 250 \mathrm{~V}$ | No response. |
| FU6 | $4 \mathrm{~A} / 250 \mathrm{~V}$ | $4 \mathrm{~A} / 250 \mathrm{~V}$ | SC901 is displayed. |
| FU7 | $4 \mathrm{~A} / 250 \mathrm{~V}$ | $4 \mathrm{~A} / 250 \mathrm{~V}$ | Optional peripherals are detected but do not <br> function. |
| FU8 | $3.15 \mathrm{~A} / 250 \mathrm{~V}$ | $3.15 \mathrm{~A} / 250 \mathrm{~V}$ | No response. |

### 4.4 LED DISPLAY

### 4.4.1 BICU

| Number | Function |
| :---: | :--- |
| LED 1 | Monitors the +5 V line for the CPU and the surrounding <br> circuit. <br> Usually, this LED is blinking. |

## SERVICE TABLES

## 5. SERVICE TABLES

### 5.1 SERVICE PROGRAM MODE

## $\triangle$ IMPORTANT

Do not let the user access the SP mode. Only service representatives but no other persons are allowed to access the SP mode. The machine quality or its operation is NOT guaranteed after any person other than service representatives accesses the SP mode.

### 5.1.1 USING SP MODE

The following two modes are available:

- SP Mode (Service Program Mode): The SP Mode includes the programs that are necessary for standard maintenance work.
- SSP Mode (Special SP Mode): The SSP Mode includes SP-Mode programs and some special programs. You need some extra knowledge to manipulate these special programs. For details, consult your supervisor.



## Starting SP Mode

1. Type the keys as follows: $\widehat{\square} \rightarrow(1) \rightarrow(0) \rightarrow(7)$
2. Press the © ${ }^{\circ}$ key and hold it down until the SP-mode menu is displayed (about 3 seconds).

## Starting SSP Mode

For the basic machine (the machine without the optional controller box), perform as listed in steps 1 through 4. For the MFP machine (the machine with the optional controller box), perform as listed in steps 1 through 5 .

1. Type the keys as follows: $\widehat{\theta} \rightarrow(1) \rightarrow(0) \rightarrow(7)$
2. Press the ( ${ }^{\text {(2) }}$ key and hold it down until the SP-mode menu is displayed (about 3 seconds).
3. Press the \# key and hold it down.
4. While holding down the \# key, press the © key (on the numeric keypad).
5. While holding down the ${ }^{\#}$ key, press the "OK" key.

## Selecting Programs

- When a blinking underscore (or several blinking underscores) is displayed, you can type a number from the numeric keypad [D].
- When the sign " $>/ O K$ " $[A]$ is displayed upper right corner, you can scroll through the menu by pressing the left-arrow key [B] or the right-arrow key [C]. To select a program, press the OK key [F].


## Specifying Values

1. After locating a program, press the OK key. A blinking underscore (or several blinking underscores) indicates which value you can change. The value in parentheses is the default value of the menu.
2. Type a necessary value from the numeric keypad. To switch between positive (plus) and negative (minus) values, press the $\because$ key.
3. To validate the value, press the OK key. To cancel the value, press the cancel key [E].

## Activating Copy Mode

You can activate the copy mode while the SP mode is running. When you do so, the copier outputs images or patterns that help you adjust the SP-mode program.

1. Press the () key. The copy mode is activated.
2. Specify copy settings and press the (©) key.
3. To return to the SP mode, press the

NOTE: You cannot end the SP mode while the copy mode is activated.

## Quitting Programs/Ending (S)SP Mode

Press the 国 key or the cancel key to quit the program. You can end the SP mode by pressing one of these keys several times.

### 5.1.2 SP MODE TABLES-BASIC

The tables in this section (5.1.2) list the service programs (SPs) that are available when the optional controller box (B658) is NOT installed. For the SPs that are available with the optional controller box, see the next section (5.1.3).

The following keys are used:

- Asterisk (*): The settings are saved in the NVRAM. Most of them return to the default values when you execute SP5-801-002 (-5.1.7).
- DFU: The menu is for the design/factory use only. You must not change the settings.
- Brackets ([ ]): The brackets enclose the setting rage, default value, and minimum step (with unit) as follows: [Minimum ~ Maximum / Default / Step].
- SSP: The program is in the SSP Mode only. Consult your supervisor before you use this program.


## SP1-XXX (Feed)

| $1001^{*}$ | Leading Edge Registration |  |
| ---: | :--- | ---: |
|  | Adjusts the printing leading-edge registration from paper trays. |  |
| 10011 | All Trays | $[-9.0 \sim 9.0 / \mathbf{0 . 0} / 0.1 \mathrm{~mm} / \mathrm{step}](-3.13)$ |
| 10012 | By-pass |  |
| 10013 | Duplex |  |


| 1002* | Side-to-Side Registration |  |
| :---: | :---: | :---: |
|  | Adjusts the printing side-to-side registration from each paper feed station, using the Trimming Area Pattern (SP5-902, No.10). Adjustments are supported for all 4 possible feed trays (including optional trays). <br> - The SP1-002-1 setting is applied to all trays, not just the 1st tray. Settings for trays 2 to 4 are offsets relative to the SP1-002-1 setting. <br> - For duplex copies, the value for the front side is determined by SP1-002-1 to -4, and the value for the rear side is determined by SP1-002-6. |  |
| 10021 | 1st tray | [-9.0 ~ 9.0 / 0.0 / $0.1 \mathrm{~mm} / \mathrm{step}]$ ( 3.13) |
| 10022 | 2nd tray |  |
| 10023 | 3rd tray |  |
| 10024 | 4th tray |  |
| 10025 | By-pass |  |
| 10026 | Duplex |  |


| $\mathbf{1 0 0 3}^{*}$ | Paper Feed Timing |  |
| :---: | :--- | :--- |
|  | Adjusts the amount of buckle the paper feed clutch applies to the paper after the <br> registration sensor is activated. A higher setting applies greater buckling. |  |
| 10031 | 1st tray | $[0 \sim 10 / 5 / 1 \mathrm{~mm} / \mathrm{step}]$ |
| 10032 | 2nd tray (B122/B123 only) | $[0 \sim 10 / 5 / 1 \mathrm{~mm} / \mathrm{step}]$ |
| 10033 | Optional tray | $[0 \sim 10 / 5 / 1 \mathrm{~mm} / \mathrm{step}]$ |
| 10034 | By-pass feed | $[0 \sim 10 / 6 / 1 \mathrm{~mm} / \mathrm{ste}]$ |
| 10035 | Duplex | $[0 \sim 20 / 6 / 1 \mathrm{~mm} / \mathrm{step}]$ |


| 1007 | Display By-pass |  |
| :--- | :--- | :--- |
| 10071 | Display By-pass | Displays the by-pass paper width switch output. |


| $\mathbf{1 1 0 3}^{*}$ | Fusing Idling |
| :--- | :--- |
|  | This program decides the action of the Fusing Drive Release Mechanism ( |
|  | 6.13.2). When you select "1," the contact/release control is disabled and the drive <br> power is always transmitted to the fusing unit. As a result, the machine takes a <br> longer time to warm up the fusing unit. Use SP1-103-001 if fusing quality is low <br> even when the room temperature is not very low. |
| 11031 | Fusing Idling |


| 1105* | Fusing Temperature Adjustment |  |
| :---: | :---: | :---: |
|  | Adjusts the target fusing temperature. "Center" indicates the center of the roller; "End" indicates the front and rear ends. |  |
| 11051 | Warm Up-Center | [140 ~ 180 / $160 / 1^{\circ} \mathrm{C} /$ step] |
| 11052 | Warm Up-End |  |
| 11053 | Standby-Center | [140~170 / 155 / $1^{\circ} \mathrm{C} /$ step] |
| 11054 | Standby-End | [ $140 \sim 165 / 150 / 1^{\circ} \mathrm{C} /$ step] |
| 11055 | Copying-Center | [ $140 \sim 185 / 160 / 1^{\circ} \mathrm{C} /$ step] |
| 11056 | Copying-End |  |
| 11057 | Low Level 2-Center | [0~80 / 60 / $1^{\circ} \mathrm{C} /$ step] |
| 11058 | Low Level 2-End |  |
| 11059 | Thick-Center | [140~185 / 175 / $1^{\circ} \mathrm{C} /$ step] |
| 110510 | Thick-End |  |
| 110511 | Warm Up Low-Center | [ $140 \sim 180 / 170 / 1^{\circ} \mathrm{C} /$ step] |
| 110512 | Warm Up Low-End |  |


| 1106 | Display Fusing |
| :--- | :--- |
| 11061 | Displays the fusing temperature. |


| 1107* | Fusing Soft Start |  |
| :---: | :---: | :---: |
|  | Adjusts the number of zero-cross cycles of the fusing lamp AC supply needed to bring the fusing lamp power to $100 \%$ while bringing the lamp up to the standby temperature or while copying. Increase this value if the machine is experiencing sudden power dropouts ( 6.13.5). |  |
| 11071 | Warm Up Soft Start | [ $0=10$ cycles / $1=20$ cycles / $\mathbf{2}=50$ cycles] |
| 11072 | Other Soft Start | [ $0=5$ cycles / $1=10$ cycles / 2 = 20 cycles] |


| $1108^{*}$ | Set-Fusing Start | $[0=1 \mathrm{~s} / 1=1.5 \mathrm{~s} / 2=2 \mathrm{~s}]$ |
| :--- | :--- | :--- |
| 11081 | Specifies the interval for fusing-temperature control $(-6.13 .5)$. |  |


| 1109 | Nip Band Check |
| :--- | :--- |
| 11091 | Checks the fusing nip band $(3.10 .8)$. |


| $1110^{*}$ | Fan Control Timer |
| :---: | :--- |
| 11101 | $[30 \sim 60 / \mathbf{3 0} / 1 \mathrm{~s} /$ step $]$ <br> Inputs the fan control time. The fan maintains normal speed for the specified time <br> after occurrence of an SC or following entry into Warm-up mode, Low Power mode, <br> or Night/Off mode. |


| 1902 | Display-AC Freq. |
| :---: | :--- |
| 19021 | Displays the fusing lamp power control frequency (as detected by the zero cross <br> signal generator). The displayed value is $1 / 5$ the actual frequency: $10=50 \mathrm{~Hz}, 12=$ <br> 60 Hz. |


| 1903* | Feed Clutch Boost |  |
| :---: | :---: | :---: |
|  | Adjusts the amount of extra push that the feed clutch gives to the paper after the skew has been corrected at registration. This feature helps the registration roller feed certain types of paper (such as thick paper). Increase the value if thick paper is jamming after feeding from the registration roller. |  |
| 19031 | By-pass tray | [0 ~ 10 / 6 / 1 mm/step] |
| 19032 | 2nd, 3rd, 4th tray | [0~10 / 3 / 1 mm/step] |


|  | Optional Tray Adj. |
| ---: | :--- |
|  | Adjusts the reverse time for the upper and lower paper lift motors. |
| 1908 1 | 1st optional |
| 1908 2 | 2nd optional |


| 1911* | By-pass Envelope |
| :---: | :---: |
| 19111 | [0 = Disabled / 1= Enabled <br> The program dedicated to envelope printing runs when you enable this program (SP1-911-001) and you select "Thick Paper" as the paper type of the by-pass tray ( 图圆 > System Settings > Tray Paper Settings > Paper Type: Bypass Tray). |

## SP2-XXX (Drum)

| 2001* | Charge Roller Bias Adjustment |
| :---: | :---: |
| 20011 | Printing $\quad[-2100 \sim-1500 / \mathbf{1 7 0 0} / 1 \mathrm{~V} /$ step $]$ |
|  | Adjusts the voltage applied to the charge roller when printing. 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. |
| 20012 | ID sensor pattern $[0 \sim 400 / 300 / 1 \mathrm{~V} /$ step $]$ |
|  | Adjusts the voltage applied to the charge roller when generating the Vsdp ID sensor pattern (as part of charge roller voltage correction). The actual charge-roller voltage is obtained by adding this value to the value of SP2-001-1. |


| 2101* | Erase Margin Adjustment |  |
| :---: | :---: | :---: |
| 21011 | Leading edge | [0.0~9.0 / $2.0 / 0.1 \mathrm{~mm} / \mathrm{step}](-3.13 .1)$ Specification: $2 \pm 1.5 \mathrm{~mm}$ |
|  | Adjusts the leading edge erase margin. |  |
| 21012 | Trailing | [0.0~9.0 / $3.0 / 0.1 \mathrm{~mm} / \mathrm{step}](-3.13 .1)$ <br> Specification: $2+2.5 /-1.5 \mathrm{~mm}$ |
|  | Adjusts the trailing edge erase margin. The rear trailing edge is this value plus 1.2 mm . |  |
| 21013 | Left side | [0.0~9.0 / $2.0 / 0.1 \mathrm{~mm} / \mathrm{step}](-3.13 .1)$ Specification: $2 \pm 1.5 \mathrm{~mm}$ |
|  | Adjusts the left edge erase margin. The rear left edge is this value plus 0.3 mm . |  |
| 21014 | Right side | [ $0.0 \sim 9.0 / 2.0 / 0.1 \mathrm{~mm} / \mathrm{step}](3.13 .1)$ Specification: $2+2.5 /-1.5 \mathrm{~mm}$ |
|  | Adjusts the right edge erase margin. The rear right edge is this value plus 0.3 mm . |  |


| 2201* | Development Bias Adjustmen |  |
| :---: | :---: | :---: |
| 22011 | Printing | [-1500~-200/-650 / $1 \mathrm{~V} /$ step] |
|  | Adjusts the voltage applied to the development roller when printing. This can be adjusted as a temporary measure if faint copies are being produced due to an aging drum. |  |
| 22012 | ID sensor pattern | $\begin{aligned} & {[-2=\mathrm{LL}(220 \mathrm{~V}) /-1=\mathrm{L}(260 \mathrm{~V}) / 0=\mathrm{N}(300 \mathrm{~V}) / 1=} \\ & \mathrm{H}(340 \mathrm{~V}) / 2=\mathrm{HH}(380 \mathrm{~V})] \end{aligned}$ |
|  | Adjusts the voltage applied to the development roller when generating the ID sensor pattern. The actual voltage applied is this setting plus the value of SP2-2011. The setting affects ID sensor pattern density, which in turn affects the toner supply. |  |


| $\mathbf{2 2 1 3} \mathbf{2 n}^{*}$ | Outputs after Near End |
| :---: | :--- |
| 22131 | $[0=50$ pages $/ 1=20$ pages $]$ <br> Sets the number of copy/print/fax pages that can be made after toner near-end has <br> been detected. Reduce the number of pages if the user normally makes copies with <br> a high image ratio. |


| $\mathbf{2 2 1 4}$ | Developer Initialization |
| :---: | :--- |
| 22141 | Initializes both the TD sensor toner supply target voltage and the TD sensor gain <br> value. Carry this out after replacing the developer or the TD sensor. |


| $\mathbf{2 2 2 0}$ | TD Sensor Output Value Display |
| :--- | :--- |
| 22201 | Displays: <br> a) Vt: the current TD sensor output value and <br> b) Vref: the target TD output value Vts (SP2-926) + correction for ID sensor <br> output. |
| The TD sensor output value changes every copy. If $a>b$ b, toner is supplied to the <br> development unit. |  |


| 2221 | ID Sensor Error Analysis (-5.1.5) |  |
| :---: | :---: | :---: |
| 22211 | Vsg | Displays the Vsg value. |
| 22212 | Vsp | Displays the Vsp value. |
| 22213 | PWM | Displays the PWM value. |
| 22214 | Vsdp | Displays the Vsdp value. |
| 22215 | Vt | Displays the Vt value. |
| 22216 | Vts | Displays the Vts value. |


| 2301* | Transfer Current Adjustment |  |
| :---: | :---: | :---: |
| 23011 | Normal paper | $\begin{aligned} & {[-2=-4 \mathrm{~mA} /-1=-2 \mathrm{~mA} / 0=0 \mathrm{~mA} / 1=2 \mathrm{~mA} / 2} \\ & =+4 \mathrm{~mA}] \end{aligned}$ |
|  | Adjusts the current applied to the transfer roller when feeding from a paper tray. Use a high setting if the user normally feeds relatively thick paper (within spec) from a paper tray (-6.12.2). |  |
| 23012 | Thick/Special paper | $\begin{aligned} & {[-2=-4 \mathrm{~mA} /-1=-2 \mathrm{~mA} / 0=0 \mathrm{~mA} / 1=2 \mathrm{~mA} / 2} \\ & =+4 \mathrm{~mA}] \end{aligned}$ |
|  | Adjusts the current applied to the transfer roller when feeding from the by-pass tray. Use a high setting (a) if the user normally feeds relatively thick paper from the bypass tray, or (b) if waste toner is re-attracted from the drum (which can occur when using transparencies). 6.12.2 |  |
| 23013 | Duplex | $\begin{aligned} & {[-2=-4 \mathrm{~mA} /-1=-2 \mathrm{~mA} / 0=0 \mathrm{~mA} / 1=2 \mathrm{~mA} / 2} \\ & =+4 \mathrm{~mA}] \end{aligned}$ |
|  | Adjusts the current applied to the transfer roller when carrying out a duplex job. Use this SP if there is poor image transfer on the rear side of duplex copies ( 6.12.2). |  |
| 23014 | Cleaning | [-10 ~ 0 / -1 / $1 \mathrm{~mA} /$ step] |
|  | Adjusts the current applied to the transfer roller for roller cleaning. Increase the current if toner remains on the roller after cleaning. (Remaining toner may cause dirty background on the rear side.) ( 6.12.2) |  |


| $\mathbf{2 8 0 2}$ | Forced Developer Churning |
| :---: | :--- |
| 28021 | Initializes the developer and checks the TD sensor output (Vt). The machine mixes <br> the developer for 2 minutes while reading and displaying the Vt value. The machine <br> does not initialize the TD sensor output. If the machine has not been used for a long <br> period of time, prints may have a dirty background. In this case, use this SP mode <br> to mix the developer. The message "Completed" is displayed when the program <br> ends normally. |



| 2908 | Forced Toner Supply |
| :--- | :--- |
| 29081 | Forces the toner bottle to supply toner to the toner supply unit. Press "1" to start. <br> The machine continues to supply toner until the toner concentration in the <br> development unit reaches the standard level, or for up to 2 minutes (whichever <br> comes first). |


| 2915* | Polygon Mirror Motor Idling Time |
| :---: | :--- |
| 29151 | [0 = None / 1 = 15 s / 2 = 25 s] <br> Selects the polygon mirror motor idling time. To increase the speed of the first copy, <br> the mirror motor begins idling when the user sets an original, touches a key, or <br> opens the platen cover or DF. If this setting is left at the default (15 s), the motor will <br> stop if the user does nothing for 15s. If the setting is "0", the motor will not switch off <br> during standby. (But note that regardless of the setting, the motor will switch off <br> when the machine enters energy saver mode.) |


| $\mathbf{2 9 2 1 *}^{*}$ | Toner Supply Mode |
| :---: | :--- |
| 29211 | [0 = Sensor $1 / 1$ = Sensor 2 (DFU) / 2 = Fixed 1 (DFU) / 3 = Fixed 2] <br> Selects the toner supply mode. Under normal conditions this should be set to " 0 ". <br> You can temporarily change this to " "" if the TD sensor is defective. Do not set to <br> "1" or "2", as these are for design use only ( 6.9 .6$).$ |


| 2922* | Toner Supply Time |
| :---: | :--- |
| 29221 | $[0.1 \sim 5.0 / 0.4 / 0.1$ s/step] |
|  | Adjusts the toner supply motor ON time for Sensor 1 and Sensor 2 toner supply <br> mode. Accordingly, this setting is effective only if SP2-921 is set to " 0 " or " $1 "$ <br> Raising this value increases the toner supply motor ON time. Set to a high value if <br> the user tends to make many copies having high proportions of solid black image <br> areas ( 6.9.6). |


| $\mathbf{2 9 2 3 *}^{*}$ | Toner Recovery Time |
| :---: | :--- |
| 29231 | $[3 \sim 60 / \mathbf{3 0} / 1$ s/step] |
|  | Adjusts the toner supply motor ON time used during toner recovery from Toner <br> Near End or Toner End. This setting is effective only if SP2-921 is set to "0" Since <br> toner recovery is carried out in 3-second cycles, the input value should be a <br> multiple of 3 (3, 6, 9...). 6.9.6 |


| 2925* | Toner Supply Rate |
| :---: | :---: |
| 29251 | Adjusts the toner supply time for fixed toner supply mode. This setting is effective only if SP2-921 is set to "2" or "3".[0~7/0]t $=200 \mathrm{~ms}$, and settings are as follows $\begin{array}{ll} 0=t & 4=12 t \\ 1=2 \mathrm{t} & 5=16 \mathrm{t} \\ 2=4 \mathrm{t} & 6=0 \mathrm{on} \text { continuously } \\ 3=8 \mathrm{t} & 7=0 \mathrm{~s} \end{array}$ <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 (6.9.6). |


| $2926^{*}$ | Standard Vt |
| :---: | :--- |
| 29261 | $[0.00 \sim 5.00 / \mathbf{2 . 5 0 / 0 . 0 1 ~ V / s t e p ] ~ D F U ~}$ <br> Adjusts Vts (the Vt value for new developer). The TD sensor output is adjusted to <br> this value during the TD sensor initial setting process]. This SP is effective only <br> when SP2-921 is " 0 ", "1", or "2". |


| $2927^{*}$ | ID Sensor Control |
| :---: | :--- |
| 29271 | $[0=$ No $/ \mathbf{1}=$ Yes $]$ <br> Selects whether the ID sensor is or is not used for toner density control. This value <br> should normally be left at "1". If the value is " 0 ", dirty background may occur after <br> long periods of non-use. |


| 2928 | Toner End Clear |
| :--- | :--- |
| 29281 | Clears the toner end condition without adding new toner. The following are cleared: |
|  | - Toner end indicator (goes out). |
|  | - Toner near-end counter |
|  | - Toner near-end level |


|  | Vref Limits |  |
| :--- | :--- | :--- |
|  | Adjust the upper or lower Vref limit. |  |
| 29291 | Upper | $[0.50 \sim 3.50 / \mathbf{3 . 2 0} / 0.01 \mathrm{~V} /$ step $]$ DFU |
| 29292 | Lower | $[0.50 \sim 3.50 / \mathbf{0 . 7 0 / 0 . 0 1 \mathrm { V } / \text { step } ] \text { DFU }}$ |


| $2994^{*}$ | ID Sensor Detection Temperature | $\left[30 \sim 90 / \mathbf{3 0} / 1^{\circ} \mathrm{C} /\right.$ step $]$ |
| :---: | :--- | :--- |
| 29941 | While the machine is recovering from an energy saver mode, or while the machine <br> starts, the controller ignores the ID-sensor signals if the fusing temperature is at the <br> specified value or higher. |  |


| $2996^{*}$ | Transfer Roller Cleaning |
| :---: | :--- |
| 29961 | Selects whether the transfer roller is cleaned before each copy job. Set this to "1" if <br> dirty background is appearing on the reverse side of the first page of copy jobs. <br> Note that this will increase the time required to generate the first copy. If the setting <br> is "0", the transfer roller is never cleaned (-6.12.3). |


| $\mathbf{2 9 9 8}$ | Main Scan Magnification | $[-0.5 \sim+0.5 / \mathbf{0 . 0} / 0.1 \% /$ step $]$ |
| :---: | :--- | :--- |
| 29981 | Adjusts the magnification along the main scan direction, for all print modes (copy, <br> fax, printing). The specification is $100 \pm 1.0 \%(-3.13 .1)$. |  |

## SP4-XXX (Scanner)

| $4008^{*}$ | Sub-Scan Magnification (Scanner) | $[-0.9 \sim+0.9 / 0.0 / 0.1 \% /$ step $]$ |
| :---: | :--- | :--- |
| 40081 | Adjusts the actual sub-scan direction scanning magnification. The higher the <br> setting, the lower the scanner motor speed ( $-3.13 .2)$. |  |


| 4009* | Main Scan Magnification (Scanner) | $[-0.9 \sim+0.9 / 0.0 / 0.1 \% /$ step $]$ |
| :---: | :--- | :--- |
| 40091 | Adjusts the magnification along the main scan direction, for scanning ( $-3.13 .2)$. <br>  <br>  <br>  <br> • The specification is $100 \pm 1.0 \%$ <br> - Main scan magnification is implemented in steps of 0.5. Accordingly, your input <br> value should be a multiple of $0.5(-1.0,-0.5,0,+0.5$, or +1.0$)$ |  |


| 4010* | Leading Edge Registration (Scanner) | $[-5.0 \sim+5.0 / 0.0 / 0.1 \mathrm{~mm} /$ step $]$ |
| :--- | :--- | :--- |
| 40101 | Adjusts the leading edge registration for scanning in platen mode ( $-3.13 .2)$. |  |
|  | • (-): The image moves toward the leading edge. <br> $\bullet(+): ~ T h e ~ i m a g e ~ m o v e s ~ t o w a r d ~ t h e ~ t r a i l i n g ~ e d g e ~$ |  |
|  | The specification is $2 \pm 1.5 \mathrm{~mm}$. |  |


| 4011* $^{4011}$ 1 | Side-to-side Registration (Scanner) | $[-4.2 \sim+4.2 / 0.0 / 0.1 \mathrm{~mm} / \mathrm{step}]$ |
| :---: | :--- | :--- |
|  | - Increasing the value shifts the image to the right <br> - The specification is $2 \pm 1.5 \mathrm{~mm}$. |  |


| 4012* | Scan Erase Margin |  |
| :---: | :---: | :---: |
|  | Adjusts the scanning margin individually for each of the four edges. It is generally best to adjust the scanning margin as little as possible, and use the printing margin for image adjustments. |  |
| 40121 | Leading edge | [0~9.0 / 1.0 / 0.1 mm/step] |
| 40122 | Trailing edge |  |
| 40123 | Left |  |
| 40124 | Right |  |


| 4013 | Scanner Free Run |
| :---: | :--- |
| 40131 | Performs a scanner free run with the exposure lamp on. Press ON or to start. Press <br> OFF to stop. |


| 4015* | White Plate Scanning |
| :---: | :--- |
| 40151 | Start position |
|  | Adjusts the scanning start position on the white plate for auto shading. The base <br> value stored in the machine is 15.2 mm toward the white plate from the scanner <br> H.P. This SP setting specifies the offset from this base value. |
| 40152 | Scanning length |
|  | Adjusts the length of the white plate scan, in the main scan direction. The scan <br> begins at the start position set above [in SP4-015-1] and extends for the specified <br> length. The base value stored in the machine is 4.76 mm. This SP setting specifies <br> the offset from this base value. |


| 4301 | Display-APS Data |
| :--- | :--- |
| 43011 | Displays the status of the APS sensors and platen/DF cover sensor ( 5.1.17). |

4303* $\quad$ APS Small Size Original $\quad[0=$ No (not detected) / $1=$ Yes (A5/HLT LEF) $]$

43031 Selects whether or not the copier will consider the original to be A5/HLT LEF when the APS sensors cannot detect its size. If "Yes" is selected, paper sizes that cannot be detected by the APS sensors are regarded as A5/HLT LEF. If "No" is selected, "Cannot detect original size" will be displayed.

| 4305* | APS Priority $\quad[0=$ Normal / $1=$ A4/LT / $2=8 \mathrm{~K} / 16 \mathrm{~K}]$ |
| :---: | :---: |
| 43051 | 1. A4/LT <br> - North America model: When the ASP detects the LT size, the controller interprets it as the A4 size. <br> - Other models: When the ASP detects the A4 size, the controller interprets it as the LT size. <br> 2. $8 \mathrm{~K} / 16 \mathrm{~K}$ (for the China model only) <br> - When the ASP detects the A3/B4 SEF, the controller interprets it as the 8K SEF. <br> - When the ASP detects the B5/A4 SEF, the controller interprets it as the 16K SEF. <br> - When the ASP detects the B5/A4 LEF, the controller interprets it as the 16K LEF. <br> The Europe model interprets undetected original sizes as A5 LEF under the following conditions: <br> i. SP4-303-001 is "Yes," and <br> ii. SP4-305-001 is "Normal" <br> The Europe model interprets undetected original sizes as LT SEF under the following conditions: <br> i. SP4-303-001 is "Yes," and <br> ii. SP4-305-001 is "A4/LT" |


| 4428 | Scan Auto-Adjustment |
| :---: | :--- |
| 44281 | Performs the automatic scanner adjustment. Use this SP mode after replacing the <br> white plate. |


| 4901 | SBU White Level Adjustment |
| :---: | :---: |
| 49011 | Black Display-Error $\quad[0=$ Normal / 1 = Error $]$ |
|  | Displays the return code of the black-level adjustment. When an error is detected, SC143 or SC145 is generated. |
| 49012 | Black Feedback-EVEN [0~8191] |
|  | Displays the feedback value of the even channels given by the SBU. Normally, the value is $1,2,3, \ldots, 8188,8189$, or 8190 . However, machine may operate normally even when the value is 0 or 8191 . |
| 49013 | Black Feedback-ODD [0~8191] |
|  | Displays the feedback value of the odd channels given by the SBU. Normally, the value is $1,2,3, \ldots, 8188,8189$, or 8190 . However, machine may operate normally even when the value is 0 or 8191 . |
| 49014 | Black Display-Target $[0 \sim 63 / 10 /$ step $]$ |
|  | Displays the target value for the black-level adjustment executed during machine initialization. Normally, the value is 10 . Other values indicate that the adjustment has ended unsuccessfully. |
| $49015^{*}$ | White Target $\quad[0 \sim 511 / 511 / 1 /$ step $]$ |
|  | Displays the target value for the white-level adjustment. |
| 49016 | White Result $\quad[0 \sim 511 / 0 / 1 /$ step $]$ |
|  | Displays the result of the white-level adjustment. |
| 49018 | White Display-Error $\quad[0=$ Normal $/ 1=$ Error $]$ |
|  | Displays the return code of the white-level adjustment. When an error is detected, SC143 is generated. |
| 49019 | White Display-Overflow $\quad[0=$ Normal / 1 = Error] |
|  | Displays a return code of the white-level adjustment. The code "1" (error) is returned if the adjustment result is not in the range of the values in SP4-901-6. |


| 490110 | Number of Attemp | tep |
| :---: | :---: | :---: |
|  | Displays how many times the white-level adjustment is retried. The value does not include the first execution of the white adjustment. For example, if the value is " 2 ", this indicates that the white-level adjustment has been executed three times. The white-level adjustment can be executed 20 times or less. Therefore, if the value is " 20, " this indicates that the white-level adjustment has ended abnormally (as described, the value " 20 " does not include the first execution). If the white-level adjustment is unsuccessful, the machine uses the result of the latest, successful white-level adjustment. |  |
| 4901 11* | Auto Adjustment Setting | [222 ~ 281 / 256 / 1/step] |
|  | Displays the parameter of the white-level adjustment. The value is based on the result of SP4-901-12. |  |
| 490112 | Auto Adjustment-Result | [ $0 \sim 600 / 0$ / 1/step] |
|  | Displays the result of the white-level adjustment. Normally, the value is between 228 and 281 (including the both values). When the value is normal, it is stored as the value of SP4-901-11. |  |
| 490114 | Auto Adjustment-Error | [ 0 = Normal / 1 = Error] |
|  | Displays a return code of the white-level adjustment. The code "1" (error) is returned if the adjustment result value is less than 228 or larger than 281 (SP4-901-12). |  |


| $4902^{*}$ | Exposure Lamp ON |
| :---: | :--- |
| 49021 | Turns the exposure lamp on or off. To turn off the exposure lamp, select "OFF". <br> (The exposure lamp shuts off automatically after 180 seconds.) |


| 4903* $^{*}$ | ADS Level | $[0 \sim 255 / 252 / 1 /$ step $]$ |
| :--- | :--- | :--- |
| 49031 | Adjusts the ADS level. |  |


| $4904^{*}$ | ADS Lower Limit | $[0 \sim 255 / 80 / 1 /$ step $]$ |
| :--- | :--- | :--- |
| 49041 | Adjusts the ADS lower limit. |  |


| $4905^{*}$ | ADS Level | $[0=$ All $/ 1=$ One $]$ |
| :---: | :--- | :--- |
| 49051 | Checks the whole area $(0=$ All $)$ or the area between 15 mm and 90 mm from the <br> left edge $(1=$ One $)$ to adjust the ADS level. |  |


| 4921* | Image Adj Selection (-6.5.4) |  |  |
| :---: | :---: | :---: | :---: |
| 49211 | Image Adj Selection (Copy) [0~10 / 0 / 1] |  |  |
|  | Selects which <br> $0=$ None <br> 4 = Photo 2 <br> 8 = Special 3 | ode the setting <br> $1=$ Text 1 <br> 5 = Photo 3 <br> 9 = Special 4 | $\begin{array}{ll} \text { from SP4-922 to SP4-932 are used for. } \\ 2=\text { Text } 2 & 3=\text { Photo } 1 \\ 6=\text { Special } 1 & 7=\text { Special } 2 \\ 10=\text { Special } 5 \end{array}$ |


| $4922^{*}$ | Scanner Gamma |
| :--- | :--- |
|  | Selects "text" or "photo" as the priority output mode. This setting is applied to all <br> image processing modes of SP4-921.* 6.5.4 IPU |
| 49221 | Scanner Gamma (Copy) $\quad[\mathbf{0 = S y s t e m ~ d e f a u l t / 1 = T e x t / 2 = P h o t o ] ~}$ |


| 4923* | Notch Selection (6.5.4) |
| :---: | :---: |
|  | Selects the value of the center ID adjustment notch for the ID adjustment LEDs. <br> - Normally the center notch is 3 (range 1-5). If -1 is selected, each notch shifts down (becomes lighter). If +1 is selected, each notch shifts up (becomes darker). <br> - This setting is applied to all image processing modes of SP4-921. |
| 49231 | Notch Selection (Copy) $\quad[-1=$ Light / 0 = Normal / +1 = Dark] |


| $\mathbf{4 9 2 6}^{*}$ | Texture Removal ( 6.5.4) |
| :--- | :--- |
|  | Adjusts the texture removal level that is used with error diffusion. 0: The default <br> value for each mode is used. Text 1, Photo 2, Special 2, and Special 5 have a <br> default of 3 and Photo 1, 3 have a default of 1. <br> 1: No removal applied. <br> 2-5: Removal applied at the level specified here. The higher the setting (level), the <br> less clear the image will become (more texture removal). This setting is only applied <br> to the originals in SP4-921. |
| 4926 1 | Texture Removal (Copy) |


| 4927* $^{*}$ | Line Width Correction |  |  |
| :---: | :--- | :---: | :---: |
|  | Adjusts the line width correction algorithm. Positive settings produce thicker lines; <br> negative settings produce thinner lines. This setting is only applied to the originals <br> in SP4-921 (-6.5.4). |  |  |
| 49271 | Line Width Correction (Copy) |  | $[-2 \sim 2 / 0 / 1 /$ step $]$ |


|  | Independent Dot Erase |
| :---: | :--- |
|  | Selects the dot erase level. Higher settings provide greater erasure. This setting is <br> only applied to the originals in SP4-921 ( $-6.5 .4)$. |
| 49281 | Independent Dot Erase (Copy) |


| }{} | Positive/Negative |
| ---: | :--- |
|  | Inverts white and black. This setting is only applied to the originals in SP4-921 (c |
|  | $6.5 .4)$. |


|  | Sharpness-Edge | $[-2 \sim 2 / 0 / 1 /$ step $]$ |
| ---: | :--- | :--- |
|  | Adjust the clarity. This setting is only applied to the originals in SP4-921 ( 6.5.4). |  |
| 49301 | Sharpness-Edge (Copy) |  |


| }{} | Sharpness-Solid |
| ---: | :--- |
|  | Adjust the clarity. This setting is only applied to the originals in SP4-921 ( 6.5.4). |
| 4931 1 | Sharpness-Solid (Copy) |


|  | Sharpness-Low ID |
| :---: | :--- |
|  | Adjust the clarity. This setting is only applied to the originals in SP4-921 ( 6.5.4). |
| 49321 | Sharpness- Low ID (Copy) |


| 4941* | White Line Erase | [0 ~ 2 / 1 / 1/step] |
| :---: | :---: | :---: |
| 49411 | Selects the white line erase level ( 6.5.4). <br> 0 : None 1: Weak 2: Strong <br> - This setting is effective only Photo 1 , Photo 3 , Special 3 or Special 4 mode. <br> - 0 : White line erase is not used, and white level correction is used instead• <br> - This setting is applied regardless of what mode has been selected in SP4-921. |  |


| $4942^{*}$ | Black Line Erase | $[0 \sim 3 / 2 / 1 /$ step $]$ |
| :---: | :--- | :--- |
| 49421 | Selects the black line erase level. This setting is effective only when originals are <br> scanned by the A(R)DF ( 6.5 .4$).$ |  |
| $\left[\begin{array}{l}{[0=\text { No / 1 = Very weak / 2 = Weak / 3 = Strong }]} \\ \text { This setting is applied regardless of what mode has been selected in SP4-921. }\end{array}\right.$ |  |  |

## SP5-XXX (Mode)

| $\mathbf{5 0 0 1}$ | All Indicators On |
| :--- | :--- |
| 50011 | All LEDs turn on. The LCD turns on or off every 3 seconds. Press the reset key to <br> end this program. |


| $5104^{*}$ | A3/DLT Double Count | $[0=$ Enabled / 1 = Disabled / <br> $2=$ Disabled if the size is undetected $]$ |
| :--- | :--- | :--- |
| 51041 | Selects whether the machine counts twice for each sheet of A3/11" $\times 17$ ". If this is <br> set to "Yes" is selected, the total (mechanical) counter and the current user counter <br> will both increment by two for each A3/11" $\times 17$ " sheet. |  |


| $\mathbf{5 1 1 3}^{*}$ | Optional Counter Type | 0: None <br> 11: MF key card (Increment) <br> 12: MF key card (Decrement) |
| :--- | :--- | :--- |
| $5113 \mathbf{1}$ | Selects the corresponding key for installed devices such as coin lock. |  |


| $5120^{*}$ | Clr-OP Count Remv | $[0=$ Yes / 1=Standby only / 2=No] |
| :---: | :--- | :--- |
| 5120 | 1 | Determines under which conditions the copy job settings are reset when the key <br> counter is removed. With 0, the settings are cleared if the counter is removed at the <br> end of a job or midway through a job. With 1, they are only cleared if the counter is <br> removed at the end of a job. With 2, they are not cleared at all, under either <br> condition. With duplex copies, the job settings are always preserved, regardless of <br> the setting of this SP mode. |


| $5121^{*}$ | Count Up Timing | $[0=$ Feed In / $1=$ Exit $]$ |
| :---: | :--- | :--- |
| 51211 | Selects whether the key counter increments at time of paper feed-in or at time of <br> paper exit. |  |


| $512 \mathbf{7}^{*}$ | APS Mode | $[0=$ Enabled $/ 1=$ Disabled $]$ |
| :--- | :--- | :--- |
| 51271 | Enables or disables the APS mode.. |  |


| $5501^{*}$ | PM Alarm Interval (Printout) | $[0 \sim 9999 / 0 / 0 \mathrm{~K}$ copies/step] |
| :--- | :--- | :--- |
| 55011 | Specifies when the PM alarm occurs. |  |


| 5801 | Memory Clear |
| :--- | :--- |
| 58012 | Engine 5.1 .7 |


| 5802 | Machine Free Run |
| :---: | :--- |
| 58021 | Starts a free run of both the scanner and the printer. Press "ON" to start; press <br> "OFF" to stop. |


| 5803 | Input Check |
| :--- | :--- |
|  |  |


| 5804 | Output Check |
| :--- | :--- |
|  | -5.1 .9 |


| $5807^{*}$ | Area Selection |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- |
| 58071 | Selects the display language group. |  |  |  |  |
|  | 1 | Japan | 2 | North America | 3 |
|  | Europe | 4 | Taiwan |  |  |
|  | 5 | Asia | 6 | China | 7 |
|  | Korea |  |  |  |  |
|  | SP5-807-1 is not cleared by SP5-801-2 | $(\sim 5.1 .7)$. |  |  |  |


| 5811* | Serial Num Input |
| :--- | :--- |
| 58111 | 5.1 .10 |


| 5812* | Service TEL |
| :---: | :---: |
| 58121 | Service TEL (Telephone) |
|  | Use this to input the telephone number of the service representative. (The number is displayed when a service call condition occurs.) To input a dash, press $\because^{\circledast}$. To delete the current telephone number, press ( 0 . |
| 58122 | Service TEL (Facsimile) |
|  | Use this to input the fax number printed on user counter reports. To input a dash, press $\odot^{\circ}$. To delete the current fax number, press ${ }^{(0)}$. |


| 5824 | NVRAM Upload |
| :--- | :--- |
| 58241 | 5.1 .11 |


| 5825 | NVRAM Download |
| :--- | :--- |
| 1 | -5.1 .11 |


| 5901 | Printer Free Run |
| :--- | :--- |
| 59011 | Executes the free run. Press "ON" to start; press "OFF" to stop. |


| 5902 | Test Pattern Print |
| :--- | :--- |
| 59021 | -5.1 .13 |


| 5907* | Plug \& Play Setting |
| :---: | :--- |
| 59071 | Selects the brand name and production name for the Plug and Play function. These <br> names are registered in the NVRAM. If the NVRAM becomes defective, these <br> names should be re-registered. Use the right-arrow or left-arrow key to scroll <br> through the list of brand names. To select a brand name, press the OK key. An <br> asterisk (*) indicates which manufacture is currently selected. <br> (5.1.7 |


| $5918^{*}$ | A3/DLT Counter Display | $[0=$ Off $/ 1=$ On $]$ |
| :---: | :--- | :--- |
| 59181 | Sets the key press display for the counter key. This setting has no relation to <br> (SSP) SP5-104 A3/DLT Double Count. |  |


| 5990 | SMC Print |  |
| :--- | :--- | :--- |
| 59901 | All | 5.1 .15 |
| 5990 | 2 |  |
| 59903 | User Program |  |
| 59904 | Logging Data |  |
| 59905 | Big font |  |

## SP6-XXX (Peripherals)

| 6006* | ADF Adjustment (-3.13.3) <br> NOTE: Available menus depend on the machine model and its configuration. |
| :---: | :---: |
| 60061 | ADF Adjustment (StoS/Front Regist) ${ }^{\text {a }}$ [ 5.0 ~ +5.0 / 0.0 / $0.1 \mathrm{~mm} /$ step] |
|  | Adjusts the side-to-side registration for the front side of the original, for ADF mode. Use the $\because$ key to select " + " or " - " before entering the value |
| 60062 | ADF Adjustment (Leading Regist) $\quad[-5.0 \sim+5.0 / 0.0 / 0.1 \mathrm{~mm} / \mathrm{step}]$ |
|  | Adjusts the leading edge registration for ADF mode. Use the $\because^{\circledast}$ key to select "+" or "-" before entering the value. |
| 60063 | ADF Adjustment (Trailing Erase) $\quad[-3.0 \sim+3.0 /-1.0 / 0.1 \mathrm{~mm} /$ step $]$ |
|  | Adjusts the trailing edge erase margin for ADF mode. Use the $\because$ 的 key to select " + " or "-" before entering the value. |
| 60064 | ADF Adjustment (StoS/Rear Regist) $\left.{ }^{[-5.0 ~ \sim ~+5.0 ~ / ~ 0.0 ~ / ~} 0.5 \mathrm{~mm} / \mathrm{step}\right]$ |
|  | Adjusts the side-to-side registration for the rear side of duplex originals, for ADF mode. Use the ${ }^{\circ}$ key to select " + " or " - " before entering the value. |
| 60065 | ADF Adjustment (Sub-scan Magnif) [ [-0.9 ~ +0.9 / 0.0 / 0.1 \%/step] |
|  | Adjust the sub-scan magnification for the ADF. |
| 60066 | ADF Adjustment (Original Curl Adj) $\quad[0$ = No / 1 = Yes] |
|  | Enables or disables the skew adjustment for the reverse sides of originals. When you enable SP6-006-6, adjust the distance of the skew adjustment (SP6-006-7). |
| 60067 | ADF Adjustment (Skew Correction) $\quad[-20 \sim+20 / 0$ / 1 mm/step] |
|  | Specifies the distance of the skew adjustment. SP6-006-7 is effective when you enable SP6-006-6 (ADF Adjustment [Original Curl Adj]). |


| 6009 | ADF Free Run |
| :---: | :--- |
| 60091 | Performs an ADF free run. Press "ON" to start; press "OFF" to stop. |


| 6901 | Display ADF-APS |
| :--- | :--- |
| 69011 | Displays the status of the ADF original size sensors (5.1.17). |

6910* $\quad$ ADF Shading Time $\quad[0 \sim 60 / 10 / 1$ s/step $]$

69101 Adjusts the interval used for the shading processing in the ADF mode. Light and heat in the room may affect the scanner response. Reduce this setting if copy quality indicates that the white level is drifting during ADF copy jobs.

## SP7-XXX (Data Log)

| $7001^{*}$ | Total Operation |
| :--- | :--- |
| 70011 | Displays the total operation time (total drum rotation time). |


| $7401^{*}$ | Counter-SC Total | $[0 \sim 9999 / 0 / 1 /$ step $]$ |
| :--- | :--- | :--- |
| 74011 | Displays how many times SC codes are generated. |  |


| $7403^{*}$ | SC History |
| :--- | :--- |
| 74031 | Displays the histories of the latest 10 SC codes. |


| $7502^{*}$ | Counter-Paper Jam | $[0 \sim 9999 / 0 / 1 /$ step $]$ |
| :---: | :--- | :--- |
| 75021 | Displays the total number of copy paper jams. |  |


| $7503^{*}$ | Counter-Orgn Jam | $[0 \sim 9999 / 0 / 1 /$ step $]$ |
| :---: | :--- | :--- |
| 75031 | Displays the total number of original jams, |  |


| 7504* | Counter-Each P Jam $\quad[0 \sim 9999$ / 0 / 1/step] |
| :---: | :---: |
|  | Displays the total number of the paper jams classified by timing and location. |
| 75041 | Counter-Each P Jam (At power on) |
|  | Paper jam occurs at power on. |
| 750410 | Counter-Each P Jam (Off-Regist NoFeed) |
|  | Paper does not reach the registration sensor (from a paper tray). |
| 750411 | Counter-Each P Jam (Off-1 Vertical SN) |
|  | Paper does not reach the relay sensor. |
| 750412 | Counter-Each P Jam (On-1 Vertical SN) |
|  | Paper is caught at the relay sensor. |
| 750421 | Counter-Each P Jam (Off-2 Vertical SN) |
|  | Paper does not reach the vertical transport sensor. |
| 750422 | Counter-Each P Jam (On-2 Vertical SN) |
|  | Paper is caught at the vertical transport sensor. |
| 750431 | Counter Each P Jam (Off-3 Vertical SN) |
|  | Paper does not reach the vertical transport sensor in the optional paper feed unit. |
| 750432 | Counter Each P Jam (On-3 Vertical SN) |
|  | Paper is caught at the vertical transport sensor in the optional paper feed unit. |
| 750450 | Counter-Each P Jam (Off-Regist Bypass) |
|  | Paper does not reach the registration sensor (from the by-pass tray). |
| 750460 | Counter-Each P Jam (Off-Regist Duplex) |
|  | Paper does not reach the registration sensor during reverse-side printing (for duplex printing). |
| 750470 | Counter-Each P Jam (On-Regist SN) |
|  | Paper is caught at the registration sensor. |
| 7504120 | Counter-Each P Jam (On-Exit SN) |
|  | Paper is caught at the exit sensor (previous page). |
| 7504121 | Counter-Each P Jam (Off-Exit SN) |
|  | Paper does not reach the exit sensor. |
| 7504122 | Counter-Each P Jam (On-Exit SN) |
|  | Paper is caught at the exit sensor. |


| 7504123 | Counter-Each P Jam (Off-Dup Inverter) |
| :--- | :--- |
|  | Paper does not reach the duplex inverter sensor (from the registration roller). |
| 7504125 | Counter-Each P Jam (On-Dup Inverter) |
|  | Paper is caught at the duplex inverter sensor. |
| 7504126 | Counter-Each P Jam (Off-Dup Entrance) |
|  | Paper does not reach the duplex entrance sensor. |
| 7504127 | Counter-Each P Jam (Off-Dup Entrance) |
|  | Paper is caught at the duplex entrance sensor. |
| 7504128 | Counter-Each P Jam (Off-Duplex Exit) |
|  | Paper does not reach the duplex exit sensor. |
| 7504129 | Counter-Each P Jam (On-Duplex Exit) |
|  | Paper is caught at the duplex exit sensor. |


| 7505* | Counter-Each O Jam $\quad[0 \sim 9999$ / 0 / 1/step] |
| :---: | :---: |
|  | Displays the total number of the original jams on the ADF that have occurred at a certain timing or at a certain location. |
| 7505210 | Counter-Each O Jam (Off-Regist SN) |
|  | The original does not reach the registration sensor. |
| 7505211 | Counter-Each O Jam (On-Regist SN) |
|  | The original is caught at the registration sensor. |
| 7505212 | Counter-Each O Jam (Off-Relay SN) |
|  | The original does not reach the exit sensor. |
| 7505213 | Counter-Each O Jam (On-Relay SN) |
|  | The original is caught at the exit sensor. |
| 7505214 | Counter-Each O Jam (Off-Inverter SN) |
|  | The original does not reach the reverse sensor. |
| 7505215 | Counter-Each O Jam (On Inverter SN) |
|  | The original is caught at the reverse sensor. |
| 7505216 | Counter-Each O Jam (Insufficient gap) |
|  | The distance between originals is not sufficient. This jam can occur when the original is not of the standard size. |


| 7507* | Dsply-P Jam Hist |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 75071 | Displays the latest 10 paper-jam history. The list below shows the possible 22 codes: |  |  |  |  |  |  |  |  |  |
|  | 1 | 10 | 11 | 12 | 21 | 22 | 31 | 32 | 50 | 60 |
|  | 70 | 120 | 121 | 122 | 123 | 125 | 126 | 127 | 128 | 129 |
|  | 130 | 131 |  |  |  |  |  |  |  |  |
|  | The codes correspond | $\begin{aligned} & \text { rresp } \\ & \text { to } \mathrm{SP} \\ & \hline \end{aligned}$ | $d \text { to }$ $504-1$ | men | $\begin{aligned} & \text { of SP. } \\ & \text { ode } 1 \end{aligned}$ | $\begin{aligned} & \text { 504. Fs } \\ & \text { corres } \end{aligned}$ | exam nds to | $\begin{aligned} & \text { e, the } \\ & \text { SP7-50 } \\ & \hline \hline \end{aligned}$ | $\begin{aligned} & \text { ode } 1 \\ & -10 . \end{aligned}$ |  |


| 7508* | Dsply-O Jam Hist |
| :---: | :---: |
| 75081 | Displays the total number of the original-jams history. The list below shows the possible seven codes: |
|  | $\begin{array}{lllllll}210 & 211 & 212 & 213 & 214 & 215 & 216\end{array}$ |
|  | The codes correspond to the menus of SP7-505. For example, the code 210 corresponds to SP7-505-210, and the code 211 corresponds to SP7-505-211. |


| 7801 | Memory/Version/PN |
| :--- | :--- |
| 78012 | Memory/Version (BICU) |
|  | Displays the version of the BICU board |
| 78015 | Memory/Version (ADF) |
|  | Displays the P/N and suffix of the ADF ROM. |


| $7803^{*}$ | Display-PM Count |
| :--- | :--- |
| 78031 | Displays the PM counter. |


| 7804 | Reset-PM Counter |
| :--- | :--- |
| 78041 | Resets the PM counter (SP7-803-1). When the program ends normally, the <br> message "Completed" is displayed. |


| 7807 | Reset-SC/Jam Counters |
| :---: | :--- |
| 78071 | Resets the SC, paper, original, and total jam counters. When the program ends <br> normally, the message "Completed" is displayed. SP7-807-1 does not reset the <br> following logs: SP7-507 (Display-Paper Jam History) and SP7-508 (Display-Original <br> Jam History). |


| 7808 | Reset-Counters |
| :---: | :--- |
| 78081 | Resets all counters except for the management counters. The management <br> counters are the counters that are not changed by NVRAM Download (SP5-825-1; <br> - NVRAM Download (SP5-825-1) in section 5.1.11). When the program ends <br> normally, the message the message "Completed" is displayed. |


| 7810 | Reset-Key Op Code |
| :---: | :--- |
| 78101 | Resets the key operator code. Use SP7-810-1 when the customer has forgotten the <br> key-operator code. When the program ends normally, the message "Completed" is <br> displayed, if the program ends abnormally, an error message is displayed. If the <br> customer forgets the key operator code. To specify a new key-operator code, use <br> the User Tools: System Settings $\rightarrow$ Key Operator Tools $\rightarrow$ Key Operator Code $\rightarrow$ <br> On $\rightarrow$ Enter Key Operator Code. |


| $7832^{*}$ | Display-Self-Diag |
| :---: | :--- |
| 78321 | Displays the SC codes and the number of their occurrences. Each number is in the <br> range of 0 to 9999. |


| 7991* | Dsply-Info Count |
| :---: | :---: |
|  | Displays the total operating time or the total number of operations. The time is displayed in the following format: day:hour:minute:second. |
| 79911 | Dsply-Info Count (Dsply-Timer Count) |
|  | The total of the time when the main switch is kept on (excluding the time when the safety switch is off [ 6.6.3]). |
| 79912 | Dsply-Info Count (Dsply-APS Working) |
|  | The total of the time when the APS is working. |
| 79913 | Dsply-Info Count (Dsply-ID S Work) |
|  | The total of the time when the ID sensor is working. |
| 79914 | Dsply-Info Count (Dsply-Dev Counter) |
|  | The total number of paper outputs. |
| 79915 | Dsply-Info Count (Dsply-ID Er Count) |
|  | The total number of ID-sensor errors. |


| $7992^{*}$ | Reset-Info Count |
| :--- | :--- |
| 79921 | Reset-Info Count (Reset-Timer Count) |
|  | Clears the counter of SP7-991-1. |
| 79925 | Reset-Info Count (Reset-ID Er Count) |
|  | Clears the counter of SP7-991-5. |

## SP8-XXX (History)

| $8192^{*}$ | C: Total Scan PGS | $[0 \sim 9999999 / 0 / 1$ sheet/step] |
| :---: | :--- | :--- |
| 81921 | Displays the total number of scanned originals. The both sides are counted when <br> the front and reverse sides of an original (fed from the ADF) are scanned. |  |


| $\mathbf{8 2 2 1}^{*}$ |  |  |
| :---: | :--- | :--- |
| 82211 | ADF Org Feed | ADF Org Feed (Front) |
|  | Displays the total number of scanned front sides of originals fed from the ADF. |  |
| 82212 | ADF Org Feed (Back) |  |
|  | Displays the total number of scanned reverse sides of originals fed from the ADF. |  |


| $8381^{*}$ | T: Total Prt PGS | $[0 \sim 9999999 / 0 / 1$ sheet/step $]$ |
| :---: | :--- | :--- |
| 83811 | Displays the print count of all application programs. |  |


| $8382^{*}$ | C: Total Prt PGS | $[0 \sim 9999999 / 0 / 1$ sheet/step $]$ |
| :---: | :--- | :--- |
| 83821 | Displays the print count of the copier application program. |  |


| $8391^{*}$ | L size Prt PGS (A3/DLT, Larger) | $[0 \sim 9999999$ / 0 / 1 sheet/step $]$ |
| :---: | :--- | :--- |
| 83911 | Displays the print count of the AS/DLT size or larger paper. |  |


| $8411^{*}$ | Prints/Duplex | $[0 \sim 9999999 / 0 / 1$ sheet/step $]$ |
| :---: | :--- | :--- |
| 84111 | Displays the total count of the duplex printing. |  |


| 8422* | C: PrtPGS/Dup Comb $\quad[0 \sim 9999999$ / $0 / 1$ sheet/step] Displays the total print count of copier application classified by combination/duple type. |  |
| :---: | :---: | :---: |
|  |  |  |
| 84221 | C: PrtPGS/Dup Comb (Simplex > Duplex) | Original Print |
| 84222 | C: PrtPGS/Dup Comb (Duplex > Duplex) |  |
| 84224 | C: PrtPGS/Dup Comb (Simplex Combine) |  |
| 84225 | C: PrtPGS/Dup Comb (Duplex Combine) |  |
| 84226 | C: PrtPGS/Dup Comb (2>) | Original |
| 84227 | C: PrtPGS/Dup Comb(4>) |  |


| $8442^{*}$ | C: PrtPGS/Ppr Size | $[0 \sim 9999999 / 0 / 1$ sheet/step] |
| ---: | :--- | :--- |
|  | Displays the total print count classified by paper size. |  |
| 84421 | C: PrtPGS/Ppr Size (A3) |  |
| 84422 | C: PrtPGS/Ppr Size (A4) |  |
| 84423 | C: PrtPGS/Ppr Size (A5) |  |
| 84424 | C: PrtPGS/Ppr Size (B4) |  |
| 84425 | C: PrtPGS/Ppr Size (B5) |  |
| 84426 | C: PrtPGS/Ppr Size (DLT) |  |
| 84427 | C: PrtPGS/Ppr Size (LG) |  |
| 84428 | C: PrtPGS/Ppr Size (LT) |  |
| 84429 | C: PrtPGS/Ppr Size (HLT) |  |
| 8442254 | C: PrtPGS/Ppr Size (Other (Standard)) |  |
| 8442255 | C: PrtPGS/Ppr Size (Other (Custom)) |  |


|  | C: PrtPGS/Ppr Tray | $[0 \sim 9999999 / 0 / 1$ sheet/step] |
| ---: | :--- | :--- |
|  | Displays the total print count classified by paper source. |  |
| 84511 | C: PrtPGS/Ppr Tray (Bypass Tray) |  |
| 84512 | C: PrtPGS/Ppr Size (Tray 1) |  |
| 84513 | C: PrtPGS/Ppr Size (Tray 2) |  |
| 84514 | C: PrtPGS/Ppr Size (Tray 3) |  |
| 84515 | C: PrtPGS/Ppr Size (Tray 4) |  |


|  | C: PrtPGS/Ppr Type | $[0 \sim 9999999 / 0 / 1$ sheet/step $]$ |
| ---: | :--- | :--- |
|  | Displays the total print count classified by paper size. |  |
| 84621 | C: PrtPGS/Ppr Type (Normal) |  |
| 84624 | C: PrtPGS/Ppr Type (Thick) |  |
| 84627 | C: PrtPGS/Ppr Size (OHP) |  |
| 84628 | C: PrtPGS/Ppr Size (Other) |  |


| 8522* | C: PrtPGS/FIN (Sort) | $[0 \sim 9999999 / 0 / 1$ sheet/step $]$ |
| :---: | :--- | :--- |
| 85221 | Displays the total number of printing classified by paper size. |  |

### 5.1.3 SP MODE TABLES-MFP

The tables in this section (5.1.3) list the service programs (SPs) that are available when the optional controller box (B658) is installed. For the SPs that are available without the optional controller box, see the previous section (5.1.2).

The following keys are used:

- Asterisk (*): The settings are saved in the NVRAM. Most of them return to the default values when you execute SP5-998-001 (Engine) and SP5-801-001 (All Clear) (-5.1.7).
- DFU: The menu is for the design/factory use only. You must not change the settings.
- Brackets ([ ]): The brackets enclose the setting rage, default value, and minimum step (with unit) as follows: [Minimum ~ Maximum / Default / Step].


## SP1-XXX (Feed)

| 1001* | Leading Edge Registration |  |
| :---: | :---: | :---: |
|  | Adjusts the printing leading-edge registration from paper trays. |  |
| 10011 | All Trays | [-9.0 ~ 9.0 / 0.0 / $0.1 \mathrm{~mm} / \mathrm{step}](-3.13)$ |
| 10012 | By-pass |  |
| 10013 | Duplex |  |


| 1002* | Side-to-Side Registration |  |
| :---: | :---: | :---: |
|  | Adjusts the printing side-to-side registration from each paper feed station, using the Trimming Area Pattern (SP5-902, No.10). Adjustments are supported for all 4 possible feed trays (including optional trays). <br> - The SP1-002-1 setting is applied to all trays, not just the 1st tray. Settings for trays 2 to 4 are offsets relative to the SP1-002-1 setting. <br> - For duplex copies, the value for the front side is determined by SP1-002-1 to -4, and the value for the rear side is determined by SP1-002-6. |  |
| 10021 | 1st tray | [-9.0 ~ 9.0 / 0.0 / 0.1 mm/step] ( 3.13) |
| 10022 | 2nd tray |  |
| 10023 | 3rd tray |  |
| 10024 | 4th tray |  |
| 10025 | By-pass |  |
| 10026 | Duplex |  |


| 1003* | Paper Feed Timing |  |
| :---: | :---: | :---: |
|  | Adjusts the amount of buckle the paper feed clutch applies to the paper after the registration sensor is activated. A higher setting applies greater buckling. |  |
| 10031 | 1st tray | [0~10/5/1 mm/step] |
| 10032 | 2nd tray (B122/B123 only) | [0~10/5/1 mm/step] |
| 10033 | Optional tray | [0~10 / 5 / 1 mm/step] |
| 10034 | By-pass feed | [ $0 \sim 10$ / $6 / 1 \mathrm{~mm} /$ step] |
| 10035 | Duplex | [ $0 \sim 20 / 6 / 1 \mathrm{~mm} / \mathrm{step}$ ] |


| 1007 | Display By-pass |  |
| :--- | :--- | :--- |
| 10071 | Display By-pass | Displays the by-pass paper width switch output. |


| 1103* | Fusing Idling |  |
| :---: | :---: | :---: |
|  | Selects whether or not fusing idling is performed. Normally disabled in this machine. However, enable this mode if fusing is incomplete on the 1st and 2nd copies, which may occur if the room is cold. |  |
| 11031 | Fusing Idling | [ $0=$ No / $1=\mathrm{Yes}$ ] |


| 1105* | Fusing Temperature Adjustment |  |
| :---: | :---: | :---: |
|  | Adjusts the target fusing temperature. "Center" indicates the center of the roller; "End" indicates the front and rear ends. |  |
| 11051 | Warm Up-Center | [140 ~ 180 / $160 / 1^{\circ} \mathrm{C} /$ step] |
| 11052 | Warm Up-End |  |
| 11053 | Standby-Center | [140 ~ 170 / 155 / $1^{\circ} \mathrm{C} /$ step] |
| 11054 | Standby-End | [140~165/150 / $1^{\circ} \mathrm{C} /$ step] |
| 11055 | Copying-Center | [140~185/160 / $1^{\circ} \mathrm{C} /$ step] |
| 11056 | Copying-End |  |
| 11057 | Low Level 2-Center | [0~80 / 60 / $1^{\circ} \mathrm{C} /$ step] |
| 11058 | Low Level 2-End |  |
| 11059 | Thick-Center | [140 ~ 185 / 175 / $1^{\circ} \mathrm{C} /$ step] |
| 110510 | Thick-End |  |
| 110511 | Warm Up Low-Center | [140~180 / $170 / 1^{\circ} \mathrm{C} /$ step] |
| 110512 | Warm Up Low-End |  |


| 1106 | Display Fusing |  |
| :---: | :--- | :--- |
| 11061 | Display Fusing (Center) | Displays the fusing temperature on the center or on <br> the ends of the hot roller. |
| 11062 | Display Fusing (End) | tha |


|  | Fusing Soft Start |  |
| :--- | :--- | :--- |
|  | Adjusts the number of zero-cross cycles of the fusing lamp AC supply needed to <br> bring the fusing lamp power to $100 \%$ while bringing the lamp up to the standby <br> temperature or while copying. Increase this value if the machine is experiencing <br> sudden power dropouts $(-6.13 .5)$. |  |
|  | Warm Up Soft Start | $[0=10$ cycles $/ 1=20$ cycles $/ \mathbf{2}=50$ cycles $]$ |
|  | Other Soft Start | $[0=5$ cycles $/ 1=10$ cycles $/ \mathbf{2}=20$ cycles $]$ |


| $1108^{*}$ | Set-Fusing Start | $[0=1 \mathrm{~s} / 1=1.5 \mathrm{~s} / 2=2 \mathrm{~s}]$ |
| :---: | :--- | :--- |
| 11081 | Specifies the interval for fusing-temperature control $(-6.13 .5)$. |  |


| 1109 | Nip Band Check |
| :--- | :--- |
| 11091 | Checks the fusing nip band $(-3.10 .8)$. |


| $1110^{*}$ | Fan Control Timer |
| :---: | :--- |
| 11101 | $[30 \sim 60 / \mathbf{3 0} / 1 \mathrm{~s} /$ step $]$ <br> Inputs the fan control time. The fan maintains normal speed for the specified time <br> after occurrence of an SC or following entry into Warm-up mode, Low Power mode, <br> or Night/Off mode. |


| 1902 | Display-AC Freq. |
| :---: | :--- |
| 19021 | Displays the fusing lamp power control frequency (as detected by the zero cross <br> signal generator). The displayed value is $1 / 5$ the actual frequency: $10=50 \mathrm{~Hz}, 12=$ <br> 60 Hz. |


| 1903* | Feed Clutch Boost |  |
| :---: | :---: | :---: |
|  | Adjusts the amount of extra push that the feed clutch gives to the paper after the skew has been corrected at registration. This feature helps the registration roller feed certain types of paper (such as thick paper). Increase the value if thick paper is jamming after feeding from the registration roller. |  |
| 19031 | By-pass tray | [0 ~ 10 / 6 / 1 mm/step] |
| 19032 | 2nd, 3rd, 4th tray | [0~10 / 3 / 1 mm/step] |


|  | Optional Tray Adj. |
| ---: | :--- |
|  | Adjusts the reverse time for the upper and lower paper lift motors. |
| 1908 1 | 1st optional |
| 1908 2 | 2nd optional |


| 1911* | By-pass Envelope |
| :---: | :---: |
| 19111 | [0 = Disabled / 1= Enabled <br> The program dedicated to envelope printing runs when you enable this program (SP1-911-001) and you select "Thick Paper" as the paper type of the by-pass tray ( 图圆 > System Settings > Tray Paper Settings > Paper Type: Bypass Tray). |

## SP2-XXX (Drum)

| 2001* | Charge Roller Bias Adjustment |
| :---: | :---: |
| 20011 | Printing $\quad[-2100 \sim-1500 / \mathbf{1 7 0 0} / 1 \mathrm{~V} /$ step $]$ |
|  | Adjusts the voltage applied to the charge roller when printing. 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. |
| 20012 | ID sensor pattern $[0 \sim 400 / 300 / 1 \mathrm{~V} /$ step $]$ |
|  | Adjusts the voltage applied to the charge roller when generating the Vsdp ID sensor pattern (as part of charge roller voltage correction). The actual charge-roller voltage is obtained by adding this value to the value of SP2-001-1. |


| 2101* | Erase Margin Adjustment |  |
| :---: | :---: | :---: |
| 21011 | Leading edge | [0.0~9.0 / $2.0 / 0.1 \mathrm{~mm} / \mathrm{step}](-3.13 .1)$ Specification: $2 \pm 1.5 \mathrm{~mm}$ |
|  | Adjusts the leading edge erase margin. |  |
| 21012 | Trailing | [0.0~9.0 / $3.0 / 0.1 \mathrm{~mm} / \mathrm{step}](-3.13 .1)$ <br> Specification: $2+2.5 /-1.5 \mathrm{~mm}$ |
|  | Adjusts the trailing edge erase margin. The rear trailing edge is this value plus 1.2 mm . |  |
| 21013 | Left side | [0.0~9.0 / $2.0 / 0.1 \mathrm{~mm} / \mathrm{step}](-3.13 .1)$ Specification: $2 \pm 1.5 \mathrm{~mm}$ |
|  | Adjusts the left edge erase margin. The rear left edge is this value plus 0.3 mm . |  |
| 21014 | Right side | [ $0.0 \sim 9.0 / 2.0 / 0.1 \mathrm{~mm} / \mathrm{step}](3.13 .1)$ Specification: $2+2.5 /-1.5 \mathrm{~mm}$ |
|  | Adjusts the right edge erase margin. The rear right edge is this value plus 0.3 mm . |  |


| 2201* | Development Bias Adjustmen |  |
| :---: | :---: | :---: |
| 22011 | Printing | [-1500~-200/-650 / $1 \mathrm{~V} /$ step] |
|  | Adjusts the voltage applied to the development roller when printing. This can be adjusted as a temporary measure if faint copies are being produced due to an aging drum. |  |
| 22012 | ID sensor pattern | $\begin{aligned} & {[-2=\mathrm{LL}(220 \mathrm{~V}) /-1=\mathrm{L}(260 \mathrm{~V}) / 0=\mathrm{N}(300 \mathrm{~V}) / 1=} \\ & \mathrm{H}(340 \mathrm{~V}) / 2=\mathrm{HH}(380 \mathrm{~V})] \end{aligned}$ |
|  | Adjusts the voltage applied to the development roller when generating the ID sensor pattern. The actual voltage applied is this setting plus the value of SP2-2011. The setting affects ID sensor pattern density, which in turn affects the toner supply. |  |


| $\mathbf{2 2 1 3} \mathbf{2 n}^{*}$ | Outputs after Near End |
| :---: | :--- |
| 22131 | $[0=50$ pages $/ 1=20$ pages $]$ <br> Sets the number of copy/print/fax pages that can be made after toner near-end has <br> been detected. Reduce the number of pages if the user normally makes copies with <br> a high image ratio. |


| $\mathbf{2 2 1 4}$ | Developer Initialization |
| :---: | :--- |
| 22141 | Initializes both the TD sensor toner supply target voltage and the TD sensor gain <br> value. Carry this out after replacing the developer or the TD sensor. |


| 2221 | ID Sensor Error Analysis (5.1.5) |  |
| :---: | :--- | :--- |
| 2221 | Vsg | Displays the Vsg value. |
| 22212 | Vsp | Displays the Vsp value. |
| 22213 | PWM | Displays the PWM value. |
| 22214 | Vsdp | Displays the Vsdp value. |
| 22215 | Vt | Displays the Vt value. |
| 22216 | Vts | Displays the Vts value. |


| 2301* | Transfer Current Adjustment |  |
| :---: | :---: | :---: |
| 23011 | Normal paper | $\begin{aligned} & {[-2=-4 \mathrm{~mA} /-1=-2 \mathrm{~mA} / 0=0 \mathrm{~mA} / 1=2 \mathrm{~mA} / 2} \\ & =+4 \mathrm{~mA}] \end{aligned}$ |
|  | Adjusts the current applied to the transfer roller when feeding from a paper tray. Use a high setting if the user normally feeds relatively thick paper (within spec) from a paper tray (-6.12.2). |  |
| 23012 | Thick/Special paper | $\begin{aligned} & {[-2=-4 \mathrm{~mA} /-1=-2 \mathrm{~mA} / \mathbf{0}=\mathbf{0} \mathrm{mA} / 1=2 \mathrm{~mA} / 2} \\ & =+4 \mathrm{~mA}] \end{aligned}$ |
|  | Adjusts the current applied to the transfer roller when feeding from the by-pass tray. Use a high setting (a) if the user normally feeds relatively thick paper from the bypass tray, or (b) if waste toner is re-attracted from the drum (which can occur when using transparencies). 6.12.2 |  |
| 23013 | Duplex | $\begin{aligned} & {[-2=-4 \mathrm{~mA} /-1=-2 \mathrm{~mA} / 0=0 \mathrm{~mA} / 1=2 \mathrm{~mA} / 2} \\ & =+4 \mathrm{~mA}] \end{aligned}$ |
|  | Adjusts the current applied to the transfer roller when carrying out a duplex job. Use this SP if there is poor image transfer on the rear side of duplex copies (6.12.2). |  |
| 23014 | Cleaning | [-10 ~ 0 / -1/1 mA/step] |
|  | Adjusts the current applied to the transfer roller for roller cleaning. Increase the current if toner remains on the roller after cleaning. (Remaining toner may cause dirty background on the rear side.) ( 6.12.2) |  |


| $\mathbf{2 8 0 2}$ | Forced Developer Churning |
| :---: | :--- |
| 28021 | Initializes the developer and checks the TD sensor output (Vt). The machine mixes <br> the developer for 2 minutes while reading and displaying the Vt value. The machine <br> does not initialize the TD sensor output. 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 mode <br> to mix the developer. The message "Completed" is displayed when the program <br> ends normally. |  |


| 2906* | Tailing Correction |
| :---: | :--- |
|  | Shift value |
|  | Shifts the image writing position in intervals specified by SP2-906-2. When making <br> many copies of an original that contains vertical lines (such as in tables), the paper <br> may not separate correctly. This can cause tailing images (ghosts of the vertical <br> lines continuing past the bottom of the table). This SP can be used to prevent this. |
|  | Interval |
|  | Changes the interval for the image shift specified by SP2-906-1. |


| 2908 | Forced Toner Supply |
| :--- | :--- |
| 29081 | Forces the toner bottle to supply toner to the toner supply unit. Press "1" to start. <br> The machine continues to supply toner until the toner concentration in the <br> development unit reaches the standard level, or for up to 2 minutes (whichever <br> comes first). |


| 2915* | Polygon Mirror Motor Idling Time |
| :---: | :--- |
| 29151 | [0 = None / 1 = 15 s / 2 = 25 s] <br> Selects the polygon mirror motor idling time. To increase the speed of the first copy, <br> the mirror motor begins idling when the user sets an original, touches a key, or <br> opens the platen cover or DF. If this setting is left at the default (15 s), the motor will <br> stop if the user does nothing for 15s. If the setting is " 0 ", the motor will not switch off <br> during standby. (But note that regardless of the setting, the motor will switch off <br> when the machine enters energy saver mode.) |


| $\mathbf{2 9 2 1 *}^{*}$ | Toner Supply Mode |
| :---: | :--- |
| 29211 | $[\mathbf{0}=$ Sensor $1 / 1$ = Sensor 2 (DFU) / 2 = Fixed 1 (DFU) / 3 = Fixed 2] |
| Selects the toner supply mode. Under normal conditions this should be set to " 0 ". |  |
|  | You can temporarily change this to " "" if the TD sensor is defective. Do not set to <br> "1" or "2", as these are for design use only ( 6.9 .6$).$ |


| 2922* $^{29221}$ | Toner Supply Time |
| :---: | :--- |
|  | [0.1 ~5.0 / 0.4 / 0.1 s/step] <br> Adjusts the toner supply motor ON time for Sensor 1 and Sensor 2 toner supply <br> mode. Accordingly, this setting is effective only if SP2-921 is set to "0" or "" <br> Raising this value increases the toner supply motor ON time. Set to a high value if <br> the user tends to make many copies having high proportions of solid black image <br> areas ( 6.9.6). |


| $\mathbf{2 9 2 3 *}^{29231}$ | Toner Recovery Time |
| :---: | :--- |
| [3~60/30/1 s/step] |  |
|  | Adjusts the toner supply motor ON time used during toner recovery from Toner <br> Near End or Toner End. This setting is effective only if SP2-921 is set to "0" Since <br> toner recovery is carried out in 3-second cycles, the input value should be a <br> multiple of 3 (3, 6, 9...). 6.9.6 |


| 2925* | Toner Supply Rate |
| :---: | :---: |
| 29251 | Adjusts the toner supply time for fixed toner supply mode. This setting is effective only if SP2-921 is set to "2" or "3".[0 ~ $7 / 0] \mathrm{t}=200 \mathrm{~ms}$, and settings are as follows $\begin{array}{ll} 0=t & 4=12 t \\ 1=2 t & 5=16 t \\ 2=4 t & 6=0 \mathrm{t} \text { continuously } \\ 3=8 \mathrm{t} & 7=0 \mathrm{~s} \end{array}$ <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 ( 6.9.6). |


| $2926^{*}$ | Standard Vt |
| :---: | :--- |
| 29261 | [0.00~5.00 / 2.50 / 0.01 V/step] DFU <br> Adjusts Vts (the Vt value for new developer). The TD sensor output is adjusted to <br> this value during the TD sensor initial setting process]. This SP is effective only <br> when SP2-921 is "0", "1", or "2". |


| $2927^{*}$ | ID Sensor Control |
| :---: | :--- |
| 29271 | $[0=$ No $/ 1=$ Yes $]$ <br> Selects whether the ID sensor is or is not used for toner density control. This value <br> should normally be left at " 1 ". If the value is " 0 ", dirty background may occur after <br> long periods of non-use. |


| 2928 | Toner End Clear |
| :--- | :--- |
| 2928 1 | Clears the toner end condition without adding new toner. The following are cleared: <br> - Toner end indicator (goes out). <br> - Toner near-end counter <br> - Toner near-end level |
| This function should generally not be used. If you clear the toner end condition <br> without adding new toner, there is a risk that the drum may eventually begin to <br> attract carrier after many more copies are made and toner runs out. This attracted <br> carrier may damage the drum. |  |


|  | Vref Limits |  |
| :--- | :--- | :--- |
|  | Adjust the upper or lower Vref limit. |  |
| 29291 | Upper | $[0.50 \sim 3.50 / \mathbf{3 . 2 0} / 0.01 \mathrm{~V} /$ step $]$ DFU |
| 29292 | Lower | $[0.50 \sim 3.50 / \mathbf{0 . 7 0 / 0 . 0 1 \mathrm { V } / \text { step } ] \text { DFU }}$ |


| $2994^{*}$ | ID Sensor Detection Temperature | $\left[30 \sim 90 / 30 / 1^{\circ} \mathrm{C} /\right.$ step $]$ |
| :---: | :--- | :--- |
| 29941 | While the machine is recovering from an energy saver mode, or while the machine <br> starts, the controller ignores the ID-sensor signals if the fusing temperature is at the <br> specified value or higher. |  |


| $2996^{*}$ | Transfer Roller Cleaning |
| :---: | :--- |
| 29961 | Selects whether the transfer roller is cleaned before each copy job. Set this to "1" if <br> dirty background is appearing on the reverse side of the first page of copy jobs. <br> Note that this will increase the time required to generate the first copy. If the setting <br> is "0", the transfer roller is never cleaned ( -6.12 .3 ). |


| $\mathbf{2 9 9 8}$ | Main Scan Magnification | $[-0.5 \sim+0.5 / \mathbf{0 . 0} / 0.1 \% /$ step $]$ |
| :---: | :--- | :--- |
| 29981 | Adjusts the magnification along the main scan direction, for all print modes (copy, <br> fax, printing). The specification is $100 \pm 1.0 \%$ ( 3.13 .1$).$ |  |

## SP4-XXX (Scanner)

| 4008* | Sub-Scan Magnification (Scanner) | $[-0.9 \sim+0.9 / 0.0 / 0.1 \% /$ step $]$ |
| :---: | :--- | :--- |
| 40081 | Adjusts the actual sub-scan direction scanning magnification. The higher the <br> setting, the lower the scanner motor speed ( |  |


| 4009* | Main Scan Magnification (Scanner) | $[-0.9 \sim+0.9 / 0.0 / 0.1 \% /$ step $]$ |
| :---: | :--- | :--- |
| 40091 | Adjusts the magnification along the main scan direction, for scanning ( $-3.13 .2)$. <br>  <br>  <br>  <br>  <br> - The specification is $100 \pm 1.0 \%$ |  |
| - Main scan magnification is implemented in steps of 0.5. Accordingly, your input <br> value should be a multiple of $0.5(-1.0,-0.5,0,+0.5$, or +1.0$)$ |  |  |


| 4010* | Leading Edge Registration (Scanner) | $[-5.0 \sim+5.0 / 0.0 / 0.1 \mathrm{~mm} /$ step $]$ |
| :--- | :--- | :--- |
| 40101 | Adjusts the leading edge registration for scanning in platen mode $(-3.13 .2)$. |  |
|  | $\bullet(-):$ The image moves toward the leading edge. <br>  <br>  <br> The specification is $2 \pm 1.5 \mathrm{~mm}$. |  |


| 4011* $^{*}$ | Side-to-side Registration (Scanner) | $[-4.2 \sim+4.2 / 0.0 / 0.1 \mathrm{~mm} / \mathrm{step}]$ |
| :--- | :--- | :--- |
| 40111 | Adjusts the side-to-side registration for scanning in platen mode ( $-3.13 .2)$. <br> • Increasing the value shifts the image to the right <br> - The specification is $2 \pm 1.5 \mathrm{~mm}$. |  |


| 4012* | Scan Erase Margin |  |
| :---: | :---: | :---: |
|  | Adjusts the scanning margin individually for each of the four edges. It is generally best to adjust the scanning margin as little as possible, and use the printing margin for image adjustments. |  |
| 40121 | Leading edge | [0~9.0 / 1.0 / 0.1 mm/step] |
| 40122 | Trailing edge |  |
| 40123 | Left |  |
| 40124 | Right |  |


| 4013 | Scanner Free Run |
| :---: | :--- |
| 40131 | Performs a scanner free run with the exposure lamp on. Press ON or to start. Press <br> OFF to stop. |


| 4015* | White Plate Scanning |  |
| :---: | :---: | :---: |
| 40151 | Start position | [-3.0 ~ +6.0 / 0.0 / 0.1 mm/step] |
|  | Adjusts the scanning start position on the white plate for auto shading. The base value stored in the machine is 15.2 mm toward the white plate from the scanner H.P. This SP setting specifies the offset from this base value. |  |
| 40152 | Scanning length | [-3.0 ~ +6.0 / $0.0 / 0.1 \mathrm{~mm} / \mathrm{step}$ ] |
|  | Adjusts the length of the white plate scan, in the main scan direction. The scan begins at the start position set above [in SP4-015-1] and extends for the specified length. The base value stored in the machine is 4.76 mm . This SP setting specifies the offset from this base value. |  |


| 4301 | Display-APS Data |
| :--- | :--- |
| 43011 | Displays the status of the APS sensors and platen/DF cover sensor ( 5.1.17). |


| $4303^{*}$ | APS Small Size Original | $[0=$ No (not detected)/1 = Yes (A5/HLT LEF)] |
| :---: | :--- | :--- |
| 43031 | Selects whether or not the copier will consider the original to be A5/HLT LEF when <br> the APS sensors cannot detect its size. If "Yes" is selected, paper sizes that cannot <br> be detected by the APS sensors are regarded as A5/HLT LEF. If "No" is selected, <br> "Cannot detect original size" will be displayed. |  |


| 4305* | APS Priority $\quad[0=$ Normal $/ 1=$ A4/LT $/ 2=8 \mathrm{~K} / 16 \mathrm{~K}]$ |
| :---: | :---: |
| 43051 | 1. A4/LT <br> - North America model: When the ASP detects the LT size, the controller interprets it as the A4 size. <br> - Other models: When the ASP detects the A4 size, the controller interprets it as the LT size. <br> 2. $8 \mathrm{~K} / 16 \mathrm{~K}$ (for the China model only) <br> - When the ASP detects the A3/B4 SEF, the controller interprets it as the 8K SEF. <br> - When the ASP detects the B5/A4 SEF, the controller interprets it as the 16K SEF. <br> - When the ASP detects the B5/A4 LEF, the controller interprets it as the 16K LEF. <br> The Europe model interprets undetected original sizes as A5 LEF under the following conditions: <br> i. SP4-303-001 is "Yes," and <br> ii. SP4-305-001 is "Normal" <br> The Europe model interprets undetected original sizes as LT SEF under the following conditions: <br> i. SP4-303-001 is "Yes," and <br> ii. SP4-305-001 is "A4/LT" |


| 4428 | Scan Auto-Adjustment |
| :---: | :--- |
| 44281 | Performs the automatic scanner adjustment. Use this SP mode after replacing the <br> white plate. |


| 4901 | SBU White Level Adjustment |
| :---: | :---: |
| 49011 | Black Display-Error $\quad[0=$ Normal / 1 = Error] |
|  | Displays the return code of the black-level adjustment. When an error is detected, SC143 or SC145 is generated. |
| 49012 | Black Feedback-EVEN [0 ~ 8191] |
|  | Displays the feedback value of the even channels given by the SBU. Normally, the value is $1,2,3, \ldots, 8188,8189$, or 8190 . However, machine may operate normally even when the value is 0 or 8191 . |
| 49013 | Black Feedback-ODD [0~8191] |
|  | Displays the feedback value of the odd channels given by the SBU. Normally, the value is $1,2,3, \ldots, 8188,8189$, or 8190 . However, machine may operate normally even when the value is 0 or 8191 . |
| 49014 | Black Display-Target $[0 \sim 63 / 10 /$ step] |
|  | Displays the target value for the black-level adjustment executed during machine initialization. Normally, the value is 10 . Other values indicate that the adjustment has ended unsuccessfully. |
| $49015 *$ | White Target $\quad[0 \sim 511 / 511 / 1 /$ step $]$ |
|  | Displays the target value for the white-level adjustment. |
| 49016 | White Result $\quad[0 \sim 511 / 0 / 1 /$ step $]$ |
|  | Displays the result of the white-level adjustment. |
| 49018 | White Display-Error $\quad[0=$ Normal / $1=$ Error $]$ |
|  | Displays the return code of the white-level adjustment. When an error is detected, SC143 is generated. |
| 49019 | White Display-Overflow $\quad[0=$ Normal / 1 = Error] |
|  | Displays a return code of the white-level adjustment. The code "1" (error) is returned if the adjustment result is not in the range of the values in SP4-901-6. |


| 490110 | White Number of Attempt | [0~20 / 0 / 1/step] |
| :---: | :---: | :---: |
|  | Displays how many times the white-level adjustment is retried. The value does not include the first execution of the white adjustment. For example, if the value is " 2 ", this indicates that the white-level adjustment has been executed three times. The white-level adjustment can be executed 20 times or less. Therefore, if the value is "20," this indicates that the white-level adjustment has ended abnormally (as described, the value " 20 " does not include the first execution). If the white-level adjustment is unsuccessful, the machine uses the result of the latest, successful white-level adjustment. |  |
| 4901 11* | Auto Adjustment Setting | [222 ~ 281 / 256 / 1/step] |
|  | Displays the parameter of the white-level adjustment. The value is based on the result of SP4-901-12. |  |
| 490112 | Auto Adjustment-Result | [0 ~ 600 / 0 / 1/step] |
|  | Displays the result of the white-level adjustment. Normally, the value is between 228 and 281 (including the both values). When the value is normal, it is stored as the value of SP4-901-11. |  |
| 490114 | Auto Adjustment-Error | [0 = Normal / 1 = Error] |
|  | Displays a return code of the white-level adjustment. The code "1" (error) is returned if the adjustment result value is less than 228 or larger than 281 ( SP4-901-12). |  |


| $4902^{*}$ | Exposure Lamp ON |
| :---: | :--- |
| 49021 | Turns the exposure lamp on or off. To turn off the exposure lamp, select "OFF". <br> (The exposure lamp shuts off automatically after 180 seconds.) |


| $4903^{*}$ | ADS Level | $[0 \sim 255 / 252 / 1 /$ step $]$ |
| :---: | :--- | :--- |
| 49031 | Adjusts the ADS level. |  |


| $4904^{*}$ | ADS Lower Limit | $[0 \sim 255 / 80 / 1 /$ step $]$ |
| :---: | :--- | :--- |
| 49041 | Adjusts the ADS lower limit. |  |


| $4905^{*}$ | ADS Level | $[\mathbf{0}=$ All $/ 1=$ One $]$ |
| :---: | :--- | :--- |
| 49051 | Checks the whole area $(0=$ All $)$ or the area between 15 mm and 90 mm from the <br> left edge $(1=$ One $)$ to adjust the ADS level. |  |


| 4921* | Image Adj Selection ( 6.5.4) |
| :---: | :---: |
| 49211 | Image Adj Selection (Copy) [0~10 / 0 / 1] |
|  | Selects which mode the settings from SP4-922 to SP4-932 are used for. $\begin{array}{llll} 0=\text { None } & 1=\text { Text } 1 & 2=\text { Text } 2 & 3=\text { Photo } 1 \\ 4=\text { Photo } 2 & 5=\text { Photo } 3 & 6=\text { Special 1 } & 7=\text { Special } 2 \\ 8=\text { Special } 3 & 9=\text { Special } 4 & 10=\text { Special } 5 & \\ \hline \end{array}$ |
| 49212 | Image Adj Selection (Fax) $\quad[0 \sim 5 / 0 / 1]$ |
|  | Selects which mode the settings from SP4-922 to SP4-932 are used for. $0=$ None $\quad 1=$ Text $1 \quad 2=$ Text $2 \quad 3=$ Photo 1 <br> 4 = Photo $2 \quad 5=$ Special 1 |
| 49213 | Image Adj Selection (Scanner) $[0 \sim 4 / 0 / 1]$ |
|  | Selects which mode the settings from SP4-922 to SP4-932 are used for. $\begin{array}{lllll} 0=\text { None } & 1=\text { Text } 1 & 2=\text { Text } 2 & 3=\text { Photo } 1 \\ 4=\text { Photo } 2 & & \\ \hline \end{array}$ |


| 4922* | Scanner Gamma |  |
| :---: | :---: | :---: |
|  | Selects "text" or "photo" as the priority output mode. This setting is applied to all image processing modes of SP4-921.* 6.5 .4 IPU |  |
| 49221 | Scanner Gamma (Copy) | [ $0=$ System default/1=Text/2=Photo] |
| 49222 | Scanner Gamma (Fax) |  |
| 49223 | Scanner Gamma (Scanner) |  |


| 4923* | Notch Selection (6.5.4) |  |
| :---: | :---: | :---: |
|  | Selects the value of the center ID adjustment notch for the ID adjustment LEDs. <br> - Normally the center notch is 3 (range $1-5$ ). If -1 is selected, each notch shifts down (becomes lighter). If +1 is selected, each notch shifts up (becomes darker). <br> - This setting is applied to all image processing modes of SP4-921. |  |
| 49231 | Notch Selection (Copy) | [-1 = Light / 0 = Normal / +1 = Dark] |
| 49232 | Notch Selection (Fax) |  |
| 49233 | Notch Selection (Scanner) |  |


| 4926* | Texture Removal (6.5.4) |  |
| :---: | :---: | :---: |
|  | Adjusts the texture removal level that is used with error diffusion. 0: The default value for each mode is used. Text 1, Photo 2, Special 2, and Special 5 have a default of 3 and Photo 1-3 have a default of 1 . <br> 1: No removal applied. <br> $2-5$ : Removal applied at the level specified here. The higher the setting (level), the less clear the image will become (more texture removal). This setting is only applied to the originals in SP4-921. |  |
| 49261 | Texture Removal (Copy) | [0~6/0/1/step] |
| 49262 | Texture Removal (Fax) |  |
| 49263 | Texture Removal (Scanner) |  |


| 4927* | Line Width Correction |  |
| :---: | :---: | :---: |
|  | Adjusts the line width correction algorithm. Positive settings produce thicker lines; negative settings produce thinner lines. This setting is only applied to the originals in SP4-921 ( 6.5.4). |  |
| 49271 | Line Width Correction (Copy) | [-2 ~ 2 / 0 / 1/step] |
| 49272 | Line Width Correction (Fax) |  |
| 49273 | Line Width Correction (Scanner) |  |


| 4928* | Independent Dot Erase |
| :--- | :--- |
|  | Selects the dot erase level. Higher settings provide greater erasure. This setting is <br> only applied to the originals in SP4-921 ( $-6.5 .4)$. |
| 49281 | Independent Dot Erase (Copy) |
| 49282 | $[-2 / 0 / 1 /$ step $]$ |
| 49283 | Independent Dot Erase (Fax) |


|  | Positive/Negative |
| ---: | :--- |
|  | Inverts white and black. This setting is only applied to the originals in SP4-921 ( <br>  <br> $6.5 .4)$. |
| 49291 | Positive/Negative (Copy) |
| 49292 | Positive/Negative (Fax) |


| $4930^{*}$ | Sharpness-Edge | $[-2 \sim 2 / 0 / 1 /$ step $]$ |
| ---: | :--- | :--- |
|  | Adjust the clarity. This setting is only applied to the originals in SP4-921 ( 6.5.4). |  |
| 49301 | Sharpness-Edge (Copy) |  |
| 49302 | Sharpness-Edge (Fax) |  |
| 49303 | Sharpness-Edge (Scanner) |  |


| 4931* $^{*}$ | Sharpness-Solid | $[-2 \sim 2 / 0 / 1 /$ step $]$ |
| ---: | :--- | :--- |
|  | Adjust the clarity. This setting is only applied to the originals in SP4-921 ( 6 6.5.4). |  |
| 49311 | Sharpness-Solid (Copy) |  |
| 49312 | Sharpness-Solid (Fax) |  |
| 49313 | Sharpness-Solid (Scanner) |  |


|  | Sharpness-Low ID |
| ---: | :--- |
|  | Adjust the clarity. This setting is only applied to the originals in SP4-921 ( 6 6.5.4). |
| 49321 | Sharpness- Low ID (Copy) |
| 49322 | Sharpness- Low ID (Fax) |
| 49323 | Sharpness- Low ID (Scanner) |


| 4941* | White Line Erase | [0~2 / 1/1/step] |
| :---: | :---: | :---: |
| 49411 | Selects the white line erase level ( 6.5.4). <br> 0 : None 1: Weak 2: Strong <br> - This setting is effective only Photo 1, Photo 3, Special 3 or Special 4 mode. <br> - 0 : White line erase is not used, and white level correction is used instead- <br> - This setting is applied regardless of what mode has been selected in SP4-921. |  |


| 4942* | Black Line Erase | $[0 \sim 3 / 2 / 1 /$ step $]$ |
| :---: | :--- | :--- |
| 49421 | Selects the black line erase level. This setting is effective only when originals are <br> scanned by the A(R)DF ( 6.5 .4$).$ <br> $[0=$ No / 1 = Very weak / 2 = Weak / 3 = Strong $]$ |  |
| This setting is applied regardless of what mode has been selected in SP4-921. |  |  |

## SP5-XXX (Mode)

| $\mathbf{5 0 0 1}$ | All Indicators On |
| :--- | :--- |
| 50011 | All LEDs turn on. The LCD turns on or off every 3 seconds. Press the reset key to <br> end this program. |


| SSP |
| :--- | :--- |
| 5044* |$\quad$ Operation Panel Bit Switch DFU $\quad$


| SSP <br> $5104^{*}$ | A3/DLT Double Count | $[0=$ Enabled $/ 1=$ Disabled $/$ <br> $2=$ Disabled if the size is undetected $]$ |
| :--- | :--- | :--- |
| 51041 | Selects whether the machine counts twice for each sheet of A3/11" $\times$ 17". If this is <br> set to "Yes" is selected, the total (mechanical) counter and the current user counter <br> will both increment by two for each A3/11" $\times$ 17" sheet. |  |


| $\mathbf{5 1 1 3}^{*}$ | Optional Counter Type | 0: None <br> 5: MF key card (Peace) Japan Only <br> 11: MF key card (Increment) <br> 12: MF key card (Decrement) |
| :--- | :--- | :--- |
| 51131 |  | Selects the corresponding key for installed devices such as coin lock. |


| $5118^{*}$ | Disable Copying DFU |
| :--- | :--- |


| $5120^{*}$ | Clr-OP Count Remv | $[0=$ Yes / 1=Standby only / 2=No] |
| :---: | :--- | :--- |
| 51201 | Determines under which conditions the copy job settings are reset when the key <br> counter is removed. With 0, the settings are cleared if the counter is removed at the <br> end of a job or midway through a job. With 1, they are only cleared if the counter is <br> removed at the end of a job. With 2, they are not cleared at all, under either <br> condition. With duplex copies, the job settings are always preserved, regardless of <br> the setting of this SP mode. |  |


| $\mathbf{5 1 2 1}^{*}$ | Count Up Timing | $[0=$ Feed In $/ 1=$ Exit $]$ |
| :--- | :--- | :--- |
| 51211 | Selects whether the key counter increments at time of paper feed-in or at time of <br> paper exit. |  |


| $5127^{*}$ | APS Mode | $[0=$ Enabled $/ 1=$ Disabled $]$ |
| :---: | :--- | :--- |
| 51271 | Enables or disables the APS mode.. |  |


| $5162^{*}$ | Application Switching Method $\quad[\mathbf{0}=$ Soft Key Set $/ 1=$ Hard Key Set $]$ |
| :---: | :--- | :--- |
| 51621 | Determines whether the application screen is switched with the hardware switch or <br> the software switch. |


| $5302^{*}$ | Set Time | $[-1440 \sim+1440 / 0 / 1$ minute/step $]$ |
| :---: | :--- | :--- |
| 53022 | Species the difference between your local time and GMT. |  |


| 5307* | Summer Time |
| :---: | :---: |
| 53071 | Summer Time On/Off |
|  | Enables or disables the daylight saving time settings in SP5-307-3 and 4. OFF $=0, O N=1$ |
| 53073 | Summer Time Start (-5.1.18) |
|  | Specifies the start of the daylight saving time. |
| 53074 | Summer Time End (-5.1.18) |
|  | Specifies the end of the daylight saving time. |


| $5404^{*}$ | User Code Count Clear |
| :--- | :--- |
| 54041 | Initializes the user code counter. |


| 5501* | PM Alarm Interval |
| :---: | :---: |
| 55011 | PM Alarm Interval (Printout) $\quad[0 \sim 9999$ / 0 / OK copies/step] |
|  | Specifies when the PM alarm occurs. |
| 55012 | PM Alarm Original Count Alarm [0 = Off / $1=$ On] |
|  | Enables or disables the original count alarm. |


| $\mathbf{5 5 0 4}^{*}$ | Jam Alarm |
| :---: | :--- |
| 5504 1 | Sets the alarm to sound for the specified jam level (document misfeeds are not |
|  | included). |
|  | [0~3/3/1 step] |
|  | 0: Zero (Off) |
|  | 1: Low (2.5K jams) |
|  | 2: Medium (3K jams) |
| 3: High (6K jams) |  |


| $\mathbf{5 5 0 5}^{*}$ | Error Alarm | $[0 \sim 255 / \mathbf{2 0} / 1$ hundred sheets/step] |
| :---: | :--- | :--- |
| 55051 | Specifies the number of paper (in hundred) used as the error alarm level. The error <br> alarm starts if 5 SC codes (or more) are generated before the copier prints the <br> specified number of paper. When the copier has printed the specified number of <br> paper, the SC code counter (of this SP) is cleared to zero. |  |


| 5507* | Supply Alarm |  |
| :---: | :---: | :---: |
| 55071 | Paper Supply Alarm | 0: Off, 1: On, DFU |
| 55073 | Toner Supply Alarm | 0: Off, 1: On, DFU |
| 5507128 | Interval :Others | [00250 ~ 10000 / 1000 / 1 Step] DFU |
| 5507132 | Interval :A3 |  |
| 5507133 | Interval :A4 |  |
| 5507134 | Interval :A5 |  |
| 5507141 | Interval :B4 |  |
| 5507142 | Interval : B5 |  |
| 5507160 | Interval :DLT |  |
| 5507164 | Interval :LG |  |
| 5507166 | Interval :LT |  |
| 5507172 | Interval :HLT |  |


| 5508* | CC Call |  |
| :---: | :---: | :---: |
| 5508 1* | Jam Remains | 0: Disable, 1: Enable |
|  | Enables/disables initiating a call for an unattended paper jam. |  |
| 5508 2* | Frequent Jams | 0: Disable, 1: Enable |
|  | Enables/disables initiating a call for consecutive paper jams. |  |
| 5508 3* | Continuous Door Open | 0: Disable, 1: Enable |
|  | Enables/disables initiating a call when the front door remains open. |  |
| 5508 4* | Low Call Mode | 0: Normal mode, 1: Reduced mode |
|  | Enables/disables the new call specifications designed to reduce the number of calls. |  |
| 5508 11* | Jam Detection: Time Length | [03~30 / 10 / 1] |
|  | Sets the time a jam must remain before it becomes an "unattended paper jam". This setting is enabled only when SP5508 004 is set to 1 . |  |
| 5508 12* | Jam Detection: Continuous Count | [02~10 / 5/1] |
|  | Sets the number of consecutive paper jams required to initiate a call. This setting is enabled only when SP5508 004 is set to 1. |  |
| 5508 13* | Door Open: Time Length | [03~30 / 10 / 1] |
|  | Sets the length of time the door remains open before the machine initiates a call. This setting is enabled only when SP5508 004 is set to 1. |  |
| 550821 | CC Call: Long Time Jam | [0 = Auto call / 1 = Alarm] |
|  | Selects the machine reaction to long time jams. |  |
| 550822 | CC Call: Continuous Jam | [0 = Auto call / 1 = Alarm] |
|  | Selects the machine reaction to continuous jams. |  |
| 550823 | CC Call: Door Open | [0 = Auto call / 1 = Alarm] |
|  | Selects the machine reaction to door open. |  |


| 5801 | Memory Clear |
| :--- | :--- |
| 58011 | All Clear |
|  | Executes the following memory clears at the same time: SP5-801-2 through 12. |
| 58013 | SCS |
|  | Initializes the system-control-service settings. |
| 58014 | IMH Memory Clear |
|  | Initializes the image-memory-handler settings. |
| 58015 | MCS |
|  | Initializes the memory-control-service settings. |
| 58016 | Copier application |
|  | Initializes the copier-application settings. |
| 58017 | Fax application |
|  | Initializes the fax-application settings. |
| 58018 | Printer application |
|  | Initializes the printer-application settings. |
| 58019 | Scanner application |
|  | Initializes the scanner-application settings. |
| 580110 | Web service/Network application |
|  | Deletes the network file application management files and thumbnails, and <br> initializes the job login ID. |


| 580111 | NCS |
| :---: | :--- |
|  | Initializes the network-control-service settings: the system defaults and interface <br> settings (including IP addresses), Smart Net Monitor for Administrator, Web Status <br> Monitor settings, and the TELNET settings. |
| 580112 | R-Fax <br>  <br>  <br> Initializes the job log in ID, Smart Net Monitor for Administrator, job history, and <br> local storage file numbers. |
| 580114 | Clear DCS Settings |
| 580115 | Clear UCS Settings |


| 5802 | Machine Free Run |
| :---: | :--- |
| 58021 | Starts a free run of both the scanner and the printer. Press "ON" to start; press <br> "OFF" to stop. |


| 5803 | Input Check |
| :--- | :--- |
|  | -5.1 .8 |


|  | Output Check |
| :--- | :--- |
|  | -5.1 .9 |


| $5807^{*}$ | Area Selection |  |  |  |
| :--- | :--- | :--- | :--- | :--- |
| 58071 | Selects the display language group. |  |  |  |
|  | 1 | Japan | 2 | North America |
|  | 5 | Europe | 4 | Taiwan |
|  | 5 | Asia | 6 | China |
|  | SP5-807-001 is not cleared by SP5-801-001 | Knd SP5-998-001 | $(-5.1 .7)$. |  |


| 5811* | Serial Num Input |
| :---: | :--- |
| 58111 | -5.1 .10 |


| 5812* | Service TEL |
| :---: | :---: |
| 58121 | Service TEL (Telephone) |
|  | Use this to input the telephone number of the service representative. (The number is displayed when a service call condition occurs.) To input a dash, press $\because$. To delete the current telephone number, press ( 0 . |
| 58122 | Service TEL (Facsimile) |
|  | Use this to input the fax number printed on user counter reports. To input a dash, press $\odot^{\circ}$. To delete the current fax number, press ( ${ }^{(0)}$. |


| 5816* | Remote Service |
| :---: | :---: |
| 58161 | I/F Setting $[0=$ Remote diagnostics off/1=Serial (CSS or NRS) <br> remote diagnostics on/2=Network remote diagnostics] |
|  | Enables or disables the remote diagnostics function. |
| 58162 | CE Call |
|  | Allows the customer representative to start or end the remote machine check using CSS or NRS by pressing the center report key. |
| 58163 | Function Flag [0 = Disabled / 1 = Enabled] |
|  | Enables or disables remote diagnosis via the NRS network. |
| 58166 | Device Information Call Display [ $\mathbf{0}=$ Disabled / 1 = Enabled] |
|  | Determines whether the device information call (NRS) is displayed. |
| 58167 | SSL Disable $\quad[0=$ Disabled / 1 = Enabled] |
|  | Determines whether the SSL sends the remote-communication-gate confirmation. |
| 58168 | RCG Connect Timeout $[1 \sim 90 / 10 / 1$ second/step] |
|  | Sets the timer for the remote-communication-gate connection (NRS). |
| 58169 | RCG Write to Timeout $\quad$ [0~100/60/1 second/step] |
|  | Sets the timer for writing data to the remote communication gate (NRS). |
| 581610 | RCG Read Timeout $\quad[0 \sim 100 / 60 / 1$ second/step] |
|  | Sets the timer for reading data from the remote communication gate (NRS). |
| 581611 | Port 80 Enable |
|  | Determines whether permission is granted for access to the SOP via Port 80 (NRS). |


| $5881^{*}$ | Remote Service Address | Japan Only. |
| :--- | :--- | :--- |
| $58211^{*}$ | CSS PI Device Code | Sets the PI device code. After changing this setting, <br> you must switch the machine off and on. |
| $58212^{*}$ | RCG IP Address | Sets the IP address of the RCG (Remote <br> Communication Gate) destination for call processing at <br> the remote service center. <br> [000000000h ~ FFFFFFFFh/ 000000000h / |


| 5824 | NVRAM Upload |
| :--- | :--- |
| 58241 | -5.1 .11 |


| 5825 | NVRAM Download |
| ---: | :--- |
| 1 | $\sim 5.1 .11$ |


| 5828* | Network Setting |
| :---: | :---: |
| 5828 74* | Delete Password |
|  | Deletes the NCS (Network Control Service) password. Sets the Telnet, WSM (Web Status Monitor), and remote ROM update passwords to NULL (empty) |
| 5828 84* | Print Settings List |
|  | Prints a list of the NCS parameter settings. |
| 5828 90* | TELNET (0:OFF 1:ON) [0 = Disabled / 1 = Enabled] |
|  | Disables or enables Telnet operation. If this SP is disabled the Telnet port is closed. |
| 5828 91* | Web (0:OFF 1:ON) $\quad$ [0 = Disabled / 1 = Enabled] |
|  | Disables or enables the Web operation. |


| SSP |  |  |
| :---: | :--- | :--- |
| $\mathbf{5 8 3 4}$ | Operation Panel Image Exposure | [0: Off (disabled)/1: On (enabled)] |
| 5834 1 | Enables and disables the operation panel read (dump) feature. After powering on <br> the machine, set this option to 1 to enable this feature. To reset the machine to 0, <br> the machine must be turned off and on again. Selecting 0 for this option without <br> cycling the power off and on does not restore the default setting (0). |  |


| 5839* | IEEE 1394 |
| :---: | :---: |
| 58394 |  |
|  | Enter the name of the device used on the network. Example: RNP0000000000 |
| 5839 7* | Cycle Master OFF / ON |
|  | Enables or disables the cycle master function for the 1394 bus standard. |
| 5839 8* | BCR mode |
|  | Determines how BCR (Broadcast Channel Register) operates on the 1394 standard bus when the independent node is in any mode other than IRM. (NVRAM: 2bits) <br> Always Effective: Writes from the IRM. <br> Standard: <br> Copies BCR of the IRM after no data is written from the IRM after the prescribed time has elapsed. <br> IRM Color Copy: <br> BCR normally enabled. |
| 5839 9* | IRM 1394a Check |
|  | Conducts a 1394a check of IRM when the independent node is in any mode other than IRM. <br> OFF: Checks whether IRM conforms to 1394a. <br> ON: After IRM is checked, if IRM does not conform then independent node switches to IRM. |
| 5839 10* | Unique ID |
|  | Lists the ID (Node_Unique_ID) assigned to the device by the system administrator. OFF: Does not list the Node_Unique_ID assigned by the system administrator. Instead, the Source_ID of the GASP header in the ARP is used. <br> ON: The Node_Unique_ID assigned by the system administrator is used, and the Source_ID of the GASP header in the ARP is ignored. Also, when the serial bus is reset, extra bus transactions are opened for enumeration. |
| 5839 11* | Logout |
|  | Handles the login request of the login initiator for SBP-2. (1 bit) <br> OFF: Disable (refuse login). Initiator retry during login. Login refusal on arrival of login request (standard operation) <br> ON: Enable (force logout). Initiator retry during login. Login refusal on arrival of login request, and the initiator forces the login. |
| 5839 12* | Login |
|  | Enables or disables the exclusive login feature (SBP-2 related). <br> OFF: Disables. The exclusive login (LOGIN ORB exclusive it) is ignored. <br> ON: Enables. Exclusive login is in effect. |
| 5839 13* | Login MAX $\quad$ [0~63/8/1], (0 and 63: Reserved) |
|  | Sets the maximum number of logins from the initiator (6-bits) |



| 5842 | Net File Analysis |
| :--- | :--- |
| $58421^{*}$ | Specifies the output mode for debugging of each net file process. The 8th bit is <br> reserved. The 7th bit is the switch of debugging output for each module. |


| 5843 | Operation Panel Image Exposure $\quad$ [0: Off (disable) / 1: On (enable)] |
| :---: | :--- | :--- |
| $58431^{*}$ | Enables and disables the operation panel read (dump) feature. After powering on <br> the machine, set this option to 1 to enable this feature. To reset the machine to 0, <br> the machine must be turned off and on again. Selecting 0 for this option without <br> cycling the power off and on does not restore the default setting (0). |


| 5844* | USB |  |
| :---: | :---: | :---: |
| 5844 1* | Transfer Rate | Full Speed / Auto Change |
|  | Sets the speed for USB data transmission. Full Speed: (12 Mbps fixed) Auto Change: $480 \mathrm{Mbps} / 12 \mathrm{Mbps}$ auto adjust |  |
| 5844 2* | Vendor ID | [0x0000~0xFFFFF/ 0x05CA /1], DFU |
|  | Sets the vendor ID: Initial Setting: 0x05CA Ricoh Company. |  |
| 5844 3* | Product ID | [0x0000~0xFFFF/ 0x0403 /1], DFU |
|  | Sets the product ID. |  |
| 5844 4* | Device Release Number | [0000~9999/ 0100 /1], DFU |
|  | Sets the device release number of the BCD (binary coded decimal) display. Enter as a decimal number. NCS converts the number to hexadecimal number recognized as the BCD. |  |


| 5845* | Delivery Server Setting |  |  |
| :---: | :---: | :---: | :---: |
|  | Provides items for delivery server settings. |  |  |
| 5845 1* | FTP Port No. $\quad$ [0~65535 / 3670 / 1] |  |  |
|  | Sets the FTP port number used when image files to the Scan Router Server. |  |  |
| 5845 2* | IP Address (Primary) Range: $000.000 .000 .000 \sim 255.255 .255 .255$ <br> Use this SP to set the Scan Router Server address. The IP address under the  <br> transfer tab can be referenced by the initial system setting.  |  |  |
|  |  |  |  |
| 5845 6* | Delivery Error Display Time Netfiles: | [0~999 / 300 / 1] |  |
|  | Use this setting to determine the length of time the prompt message is displayed when a test error occurs during document transfer with the NetFile application and an external device. |  |  |
| 5845 8* | IP Address (Secondary) | Range: 000.000.000.000 ~ 255.25 | 55.255 |
|  | Specifies the IP address assigned to the computer designated to function as the secondary delivery server of Scan Router. This SP allows only the setting of the IP address without reference to the DNS setting. |  |  |
| 5845 9* | Delivery Server Model | [0~4/ 0 / 1] |  |
|  | Allows changing the model of the delivery server registered by the I/O device. <br> 0: Unknown <br> 1: SG1 Provided <br> 2: SG1 Package <br> 3: SG2 Provided <br> 4: SG2 Package |  |  |
| 5845 10* | Delivery Svr Capability |  | $\begin{aligned} & {[0 \sim 255 / 0 /} \\ & 1] \end{aligned}$ |
|  | Bit7 = 1 Comment information exits |  | Changes the capability of the registered that the I/O device registered. |
|  | Bit6 = 1 Direct specification of mail address possible |  |  |
|  | Bit5 = 1 Mail RX confirmation setting possible |  |  |
|  | Bit4 = 1 Address book automatic update function exists |  |  |
|  | Bit3 = 1 Fax RX delivery function exists |  |  |
|  | Bit2 = 1 Sender password function exists |  |  |
|  | Bit1 = 1 Function to link MK-1 user and Sender exists |  |  |
|  | Bit0 = 1 Sender specification required (if set to 1, Bit6 is set to "0") |  |  |


| 5846* | UCS Settings |  |
| :---: | :---: | :---: |
| $58461^{*}$ | Machine ID (For Delivery Server) | ) $\quad$ Displays ID |
|  | Displays the unique device ID in use by the delivery server directory. The value is only displayed and cannot be changed. This ID is created from the NIC MAC or IEEE 1394 EUI. The ID is displayed as either 6 -byle or 8 -byte binary. |  |
| $58462^{*}$ | Machine ID Clear (For Delivery Server) ${ }^{\text {c }}$ Clears ID |  |
|  | Clears the unique ID of the device used as the name in the file transfer directory. Execute this SP if the connection of the device to the delivery server is unstable. After clearing the ID, the ID will be established again automatically by cycling the machine off and on. |  |
| 5846 3* | Maximum Entries $\quad$ [2000~50000/ 2000 /1] |  |
|  | Changes the maximum number of entries that UCS can handle. If a value smaller than the present value is set, the UCS managed data is cleared, and the data (excluding user code information) is displayed. |  |
| $58464^{*}$ | Delivery Server Model 0: Not used, 1:SG1 Provided, <br>  2: SG1 Package, 3: SG2 Provided <br>  4: SG2 Package |  |
|  | Changes the model of the transfer server registered for the I/O device. |  |
| $58465^{*}$ | Delivery Server Capability | Bit $7=1$ Comment information <br> Bit $6=1$ Address direct entry possible <br> Bit $5=1$ Mail Rx confirmation possible <br> Bit $4=1$ Address book auto update <br> Bit $3=1 \quad$ Fax Rx function  <br> $[0 \sim 255 / 0 / 2]$  |
|  | Changes the capability of the server registered for the I/O device. |  |
| 5846 6* | Delivery Server Retry Timer $\quad$ [0~255/0 /1] |  |
|  | Sets the interval for retry attempts when the delivery server fails to acquire the delivery server address book. |  |
| $58467^{*}$ | Delivery Server Retry Times $\quad[0 \sim 255 / 0$ /1] |  |
|  | Sets the number of retry attempts when the delivery server fails to acquire the delivery server address book. |  |
| $58468^{*}$ | Delivery Server Maximum Entries $\quad$ [2000~50000 / 2000 / 1] |  |
|  | Sets the maximum number account entries of the delivery server user information managed by UCS. |  |
| 5846 50* | Initialize All Directory Info. | Clears all directory information managed by UCS, including all user codes. |
| 5846 51* | Upload All Directory Info. | Uploads all directory information to the IC card. |
| 5846 52* | Download All Directory Info. | Downloads all directory information from the IC card. |
| 5846 80* | Backup FCU | Backs up all directory information to the FCU ROM. |
| 5846 90* | Plain Data Forbidden | Allows you to prevent the address from plain data This is a security function that prevents unauthorized access to address book data. <br> 0: No check. Address book data not protected. <br> 1: Check. Allows operation of UCS without data from SC card and without creating address book information with plain data. |
| $\begin{aligned} & \hline \text { SSP } \\ & 584699^{*} \\ & \hline \end{aligned}$ | Bit SW | Sets UCS debug output. DFU |


| 5848* | Web Service |  |  |
| :---: | :---: | :---: | :---: |
|  | 58472 sets the 4-bit switch assignment for the access control setting. Setting of 0001 has no effect on access and delivery from Scan Router. 5847100 sets the maximum size allowed for downloaded images. The default is equal to 1 gigabyte. |  |  |
| 5848 1* | NetFile (Lower 4 Bits Only) | Bit switch settings. |  |
|  | 0000: No access control <br> 0001: Denies access to DeskTop Binder. Access and deliveries from Scan Router have no effect on capture. |  |  |
| 5848 4* | User Directory (Lower 4 Bits) |  | Switches access control on and off. 0000: OFF |
| 5848 5* | Delivery Input (Lower 4 Bits) |  |  |
| 5848 6* | Fax Control (Lower 4 Bits) |  |  |
| 5848 7* | Comm. Log Fax (Lower 4 Bits) |  |  |


| 5849* | Installation Date | DFU |
| :--- | :--- | :--- |
| $58491^{*}$ | Display | DFU |
| $58492^{*}$ | Switch to Print |  |


| 5856 | Remote ROM Update |
| :--- | :--- |
| 58561 | $[0=$ Not allowed / 1 = Allowed] |
|  | When set to "1" allows reception of firmware data via the local port (IEEE 1284) <br> during a remote ROM update. This setting is reset to zero after the machine is <br> cycled off and on. |


| 5857* | Debug Log Save Function |
| :---: | :---: |
| 5857 1* | On/Off (1:ON 0:OFF) $\quad$ 0: ON, 1: OFF |
|  | Switches the debug log feature on and off. The debug log cannot be captured until this feature is switched on. |
| 58576 <br> 585712 | Save to SD Card |
|  | Specifies the decimal key number of the log to be written to the SD Card. |
|  | Erase Debug Data From SD Card |
|  | Erases all debug logs on the SD Card. If the card contains only debugging files generated by an event specified by SP5858, the files are erased when SP5857 010 or 011 is executed. To enable this SP, the machine must be cycled off and on. |
| 585713 | SD Card Space Available |
|  | Displays the amount of space available on the SD card. |
| 585714 | SD to SD Latest |
|  | Copies the latest 4 -MB logs to the SD card. The logs are written under the /log directory (this SP does not copy data from the SD card in one slot to the SD card in the other slot). The SP gives a unique name to the file newly saved file. You can save multiple logs from multiple machines in one SD card. |
| 585715 | SD to SD Any |
|  | Copies the specified log to the SD card. The logs are written under the /log directory (this SP does not copy data from the SD card in one slot to the SD card in the other slot). This SP copies 4-MB data at the maximum, and gives a unique name to the newly saved file. You can save multiple logs from multiple machines in one SD card. |


| 585717 | Make SD Debug File |
| :--- | :--- |
|  | Makes a 4-MB file on the SD to save logs. The file stores the contents of key <br> number 2225 of SCS (for example, the information of NV usage in SCS). A file is <br> made in the SD when the first log is saved in the SD even if you do not execute this <br> mp. This processing, however, takes a long time; the user may turn the main switch |
| SPf and on before completion (the user see no message that indicates the <br> completion of the logging when logs are made on the occurrence of an event). The <br> logging takes a shorter time if you have made a log file beforehand. If you try to <br> make a log file on the SD where another log file has been already made, the <br> contents of key number 2225 is added to the log file in the SD card. In a case like <br> this, a new log file is not made. To make a new log file to supersede an old log file, <br> you must execute SP5-857-012 before executing this SP. |  |


| 5858* | Debug Save When |  |
| :---: | :---: | :---: |
|  | These SPs select the content of the debugging information to be saved to the destination selected by SP5857 002. SP5858 3 stores one SC specified by number. Refer to Section 4 for a list of SC error codes. |  |
| 5858 1* | Engine SC Error | Stores SC codes generated by copier engine errors. |
| 5858 2* | Controller SC Error | Stores SC codes generated by GW controller errors. |
| 5858 3* | Any SC Error | [0~65535 / 0 / 1] |
| 5858 4* | Jam | Stores jam errors. |


| 5859* | Debug Log Save Function | [-9999999~9999999 / 0 / 1] |
| :---: | :---: | :---: |
| 5859 1* | Key 1 | These SPs allow you to set up to 10 keys for log files for functions that use common memory on the controller board. |
| 5859 2* | Key 2 |  |
| 5859 3* | Key 3 |  |
| 5859 4* | Key 4 |  |
| 5859 5* | Key 5 |  |
| 5859 6* | Key 6 |  |
| 5859 7* | Key 7 |  |
| 5859 8* | Key 8 |  |
| 5859 9* | Key 9 |  |
| 5859 10* | Key 10 |  |


| 5860* | SMTP/POP3/IMAP4 |  |
| :---: | :---: | :---: |
| 5860 20* | Partial Mail Receive Timeout | [1~168 / 72 / 1] |
|  | Sets the amount of time to wait before saving a mail that breaks up during reception. The received mail is discarded if the remaining portion of the mail is not received during this prescribed time. |  |
| 5860 21* | MDN Response RFC2298 Compliance | [0 = No / 1 = Yes] |
|  | Determines whether RFC2298 compliance is switched on for MDN reply mail. |  |
| 5860 22* | SMTP Auth. From Field Replacement | [ $\mathbf{0}=\mathrm{No} / 1$ = Yes] |
|  | Determines whether the FROM item of the mail header is switched to the validated account after the SMTP server is validated. |  |


| $\mathbf{5 8 6 9}$ | RAM Disk |
| :--- | :--- |
| 58691 | Enables or disables the use of the RAM disk. |


| 5870 | Common Key Info |
| :---: | :---: |
| 58701 | Common Key Info Writing |
|  | Writes to flash ROM the common proof for validating the device for NRS specifications. |
| SSP | Common Key Info Initialize |
| 58703 | Initializes the area for the key information. |


| $\mathbf{5 8 7 3}$ | SD Card Application |
| :--- | :--- |
| 58731 | SD Card Application Transport |
|  | Transports the application programs. |
| 58732 | SD Card Application Transport Redo |
|  | Nullifies the processing of SP5-873-1. |


| $\mathbf{5 9 0 2}$ | Test Pattern Print |
| :--- | :--- |
| 59021 | -5.1 .13 |


| $5907^{*}$ | Plug \& Play Setting |
| :---: | :--- |
| 59071 | Selects the brand name and production name for the Plug and Play function. These <br> names are registered in the NVRAM. If the NVRAM becomes defective, these <br> names should be re-registered. Use the right-arrow or left-arrow key to scroll <br> through the list of brand names. To select a brand name, press the OK key. An <br> asterisk (*) indicates which manufacture is currently selected. <br> -5.1.7 |


| 5913 | Switchover Permission Time | $[3 \sim 30 / 3 / 1 \mathrm{~s}]$ |
| :---: | :--- | :--- |
| 59132 | Sets the amount of time to elapse while the machine is in standby mode (and the <br> operation panel keys have not been used) before another application can gain <br> control of the display. |  |



| $5918^{*}$ | A3/DLT Counter Display | $[0=$ Off $/ 1=$ On $]$ |
| :---: | :--- | :--- |
| 59181 | Sets the key press display for the counter key. This setting has no relation to (SSP) <br> SP5-104 A3/DLT Double Count. |  |


| SSP <br> $\mathbf{5 9 7 0}$ | Debug Serial Output DFU | $[0=$ Off $/ \mathbf{1}=$ On $]$ |
| :--- | :--- | :--- |
| 59701 | Determines whether the debug information is output by the serial port when the <br> machine is powered on. |  |


| $5974^{*}$ | ScanRouter Server | 0: Lite, 1: Full |
| :---: | :--- | :--- |
| 56741 | Switches writing between the Scan Router Lite application provided and the <br> optional full (Professional) version. |  |


| 5990 | SMC Print | $\checkmark 5.1 .15$ |
| ---: | :--- | :--- |
| 59901 | All (Data List) |  |
| 59902 | SP (Mode Data List) |  |
| 59903 | User Program |  |
| 59904 | Logging Data |  |
| 59905 | Diagnostic Report |  |
| 59906 | Non-Default |  |
| 59907 | NIB Summary |  |
| 599021 | Copier User Program |  |
| 599022 | Scanner SP |  |
| 599023 | Scanner User Program |  |


| 5998 | Memory Clear |
| :--- | :--- |
| 59981 | -5.1 .7 |

## SP6-XXX (Peripherals)

| 6006 | ADF Adjustment ( 3.13.3) <br> NOTE: Available menus depend on the machine model and its configuration. |
| :---: | :---: |
| 60061 | ADF Adjustment (StoS/Front Regist) ${ }^{\text {a }}$ [ 5.0 ~ +5.0 / 0.0 / $0.1 \mathrm{~mm} /$ step] |
|  | Adjusts the side-to-side registration for the front side of the original, for ADF mode. Use the $\because$ key to select " + " or " - " before entering the value |
| 60062 | ADF Adjustment (Leading Regist) $\quad[-5.0 \sim+5.0 / 0.0 / 0.1 \mathrm{~mm} / \mathrm{step}]$ |
|  | Adjusts the leading edge registration for ADF mode. Use the $\because^{\circledast}$ key to select "+" or "-" before entering the value. |
| 60063 | ADF Adjustment (Trailing Erase) $\quad[-3.0 \sim+3.0 /-1.0 / 0.1 \mathrm{~mm} /$ step $]$ |
|  | Adjusts the trailing edge erase margin for ADF mode. Use the $\because$ 的 key to select " + " or "-" before entering the value. |
| 60064 | ADF Adjustment (StoS/Rear Regist) $\left.{ }^{[-5.0 ~ \sim ~+5.0 ~ / ~ 0.0 ~ / ~} 0.5 \mathrm{~mm} / \mathrm{step}\right]$ |
|  | Adjusts the side-to-side registration for the rear side of duplex originals, for ADF mode. Use the ${ }^{\circ}$ key to select " + " or " - " before entering the value. |
| 60065 | ADF Adjustment (Sub-scan Magnif) [ [-0.9 ~ +0.9 / 0.0 / 0.1 \%/step] |
|  | Adjust the sub-scan magnification for the ADF. |
| 60066 | ADF Adjustment (Original Curl Adj) $\quad[0$ = No / 1 = Yes] |
|  | Enables or disables the skew adjustment for the reverse sides of originals. When you enable SP6-006-6, adjust the distance of the skew adjustment (SP6-006-7). |
| 60067 | ADF Adjustment (Skew Correction) $\quad[-20 \sim+20 / 0$ / 1 mm/step] |
|  | Specifies the distance of the skew adjustment. SP6-006-7 is effective when you enable SP6-006-6 (ADF Adjustment [Original Curl Adj]). |


| 6009 | ADF Free Run |
| :---: | :--- |
| 60091 | Performs an ADF free run. Press "ON" to start; press "OFF" to stop. |


| 6010 | Stamp Position Adjustment | $[-10 \sim+10 / 0 / 1 \mathrm{~mm} /$ step $]$ |
| :--- | :--- | :--- |
| 60101 | Adjusts the stamp position in the sub-scan direction. for the fax mode. |  |


| 6901 | Display ADF-APS |
| :---: | :--- |
| 69011 | Displays the status of the ADF original size sensors (5.1.17). |


| $\mathbf{6 9 1 0}$ | ADF Shading Time | $[0 \sim 60 / 10 / 1$ s/step $]$ |
| :---: | :--- | :--- |
| 69101 | Adjusts the interval used for the shading processing in the ADF mode. Light and <br> heat in the room may affect the scanner response. Reduce this setting if copy <br> quality indicates that the white level is drifting during ADF copy jobs. |  |

## SP7-XXX (Data Log)

| 7001 | Total Operation |
| :--- | :--- |
| 70011 | Displays the total operation time (total drum rotation time). |


| $7401^{*}$ | Counter-SC Total | $[0 \sim 9999 / 0 / 1 /$ step $]$ |
| :---: | :--- | :--- |
| 74011 | Displays how many times SC codes are generated. |  |


| $7403^{*}$ | SC History |  |
| ---: | :--- | :--- |
| 74031 | Latest | Displays the histories of the latest 10 SC codes. |
| 74032 | Latest 1 |  |
| 74033 | Latest 2 |  |
| 74034 | Latest 3 |  |
| 74035 | Latest 4 |  |
| 74036 | Latest 5 |  |
| 74037 | Latest 6 |  |
| 74038 | Latest 7 |  |
| 74039 | Latest 8 |  |
| 740310 | Latest 9 |  |


| $7502^{*}$ | Counter-Paper Jam | $[0 \sim 9999 / 0 / 1 /$ step $]$ |
| :--- | :--- | :--- |
| 75021 | Displays the total number of copy paper jams. |  |


| $7503^{*}$ | Counter-Orgn Jam | $[0 \sim 9999 / 0 / 1 /$ step $]$ |
| :---: | :--- | :--- |
| 75031 | Displays the total number of original jams, |  |


| 7504* | Counter-Each P Jam |  |
| :---: | :---: | :---: |
|  | Displays the total number of the paper jams classified by timing and location. | [0~9999 / 0 / 1/step] |
| 75041 | Counter-Each P Jam (At power on) |  |
|  | Paper jam occurs at power on. |  |
| 750410 | Counter-Each P Jam (Off-Regist NoFeed) |  |
|  | Paper does not reach the registration sensor (from a paper tray). |  |
| 750411 | Counter-Each P Jam (Off-1 Vertical SN) |  |
|  | Paper does not reach the relay sensor. |  |
| 750412 | Counter-Each P Jam (On-1 Vertical SN) |  |
|  | Paper is caught at the relay sensor. |  |
| 750421 | Counter-Each P Jam (Off-2 Vertical SN) |  |
|  | Paper does not reach the vertical transport sensor. |  |
| 750422 | Counter-Each P Jam (On-2 Vertical SN) |  |
|  | Paper is caught at the vertical transport sensor. |  |
| 750431 | Counter Each P Jam (Off-3 Vertical SN) |  |
|  | Paper does not reach the vertical transport sensor in the optional paper feed unit. |  |
| 750432 | Counter Each P Jam (On-3 Vertical SN) |  |
|  | Paper is caught at the vertical transport sensor in the optional paper feed unit. |  |
| 750450 | Counter-Each P Jam (Off-Regist Bypass) |  |
|  | Paper does not reach the registration sensor (from the by-pass tray). |  |

## SERVICE PROGRAM MODE

| 750460 | Counter-Each P Jam (Off-Regist Duplex) |
| :---: | :---: |
|  | Paper does not reach the registration sensor during reverse-side printing (for duplex printing). |
| 750470 | Counter-Each P Jam (On-Regist SN) |
|  | Paper is caught at the registration sensor. |
| 7504120 | Counter-Each P Jam (On-Exit SN) |
|  | Paper is caught at the exit sensor (previous page). |
| 7504121 | Counter-Each P Jam (Off-Exit SN) |
|  | Paper does not reach the exit sensor. |
| 7504122 | Counter-Each P Jam (On-Exit SN) |
|  | Paper is caught at the exit sensor. |
| 7504123 | Counter-Each P Jam (Off-Dup Inverter) |
|  | Paper does not reach the duplex inverter sensor (from the registration roller). |
| 7504125 | Counter-Each P Jam (On-Dup Inverter) |
|  | Paper is caught at the duplex inverter sensor. |
| 7504126 | Counter-Each P Jam (Off-Dup Entrance) |
|  | Paper does not reach the duplex entrance sensor. |
| 7504127 | Counter-Each P Jam (Off-Dup Entrance) |
|  | Paper is caught at the duplex entrance sensor. |
| 7504128 | Counter-Each P Jam (Off-Duplex Exit) |
|  | Paper does not reach the duplex exit sensor. |
| 7504129 | Counter-Each P Jam (On-Duplex Exit) |
|  | Paper is caught at the duplex exit sensor. |
| 7504130 | Counter-Each P Jam (Off-1 bin Exit SN) |
|  | Paper does not reach the one-bin tray. |
| 7504131 | Counter-Each P Jam (On-1 bin Exit SN) |
|  | Paper is caught at the one-bin tray. |


| $7505^{*}$ | Counter-Each O Jam |
| :--- | :--- |
|  | Displays the total number of the original jams on the ADF that have occurred at a <br> certain timing or at a certain location. |
|  | Counter-Each O Jam (at Power On) |
|  | The original jam occurs during the standby mode. |
| 7505210 | Counter-Each O Jam (Off-Regist SN) |
|  | The original does not reach the registration sensor. |
| 7505211 | Counter-Each O Jam (On-Regist SN) |
|  | The original is caught at the registration sensor. |
| 7505212 | Counter-Each O Jam (Off-Relay SN) |
|  | The original does not reach the exit sensor. |
| 7505214 | Counter-Each O Jam (On-Relay SN) |
|  | The original is caught at the exit sensor. |
| 7505215 | Counter-Each O Jam (Off-Inverter SN) |
|  | The original does not reach the reverse sensor. |
|  | Counter-Each O Jam (On Inverter SN) |


| 7506* | Counter-Each P Jam |  |
| :---: | :---: | :---: |
|  | Displays the total number of the paper jams classified by the paper sizes. | [0~9999 / 0 / 1/step] |
| 75065 | Counter-Each P Jam (A4 LEF) |  |
| 75066 | Counter-Each P Jam (A5 LEF) |  |
| 750614 | Counter-Each P Jam (B5 LEF) |  |
| 750638 | Counter-Each P Jam (LT LEF) |  |
| 750644 | Counter-Each P Jam (HLT LEF) |  |
| 7506132 | Counter-Each P Jam (A3 SEF) |  |
| 7506133 | Counter-Each P Jam (A4 SEF) |  |
| 7506134 | Counter-Each P Jam (A5 SEF) |  |
| 7506141 | Counter-Each P Jam (B4 SEF) |  |
| 7506142 | Counter-Each P Jam (B5 SEF) |  |
| 7506160 | Counter-Each P Jam (DLT SEF) |  |
| 7506164 | Counter-Each P Jam (LG SEF) |  |
| 7506166 | Counter-Each P Jam (LT SEF) |  |
| 7506172 | Counter-Each P Jam (HLT SEF) |  |
| 7506255 | Counter-Each P Jam (Other) |  |


| 7507* | Dsply-P Jam Hist |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 75071 | Displays the latest 10 paper-jam history. The list below shows the possible 22 codes: |  |  |  |  |  |  |  |  |  |
|  | 1 | 10 | 11 | 12 | 21 | 22 | 31 | 32 | 50 | 60 |
|  | 70 | 120 | 121 | 122 | 123 | 125 | 126 | 127 | 128 | 129 |
|  | 130 | 131 |  |  |  |  |  |  |  |  |
|  | The codes correspond to the menus of SP7-504. For example, the code 1 corresponds to SP7-504-1, and the code 10 corresponds to SP7-504-10. |  |  |  |  |  |  |  |  |  |


| $7508^{*}$ | Dsply-O Jam Hist |
| :---: | :--- |
| 75081 | Displays the total number of the original-jams history. The list below shows the |
|  | possible seven codes: |
|  | $210 \quad 211 \quad 212 \quad 213 \quad 214 \quad 215$ |
|  | The codes correspond to the menus of SP7-505. For example, the code 210 |
| corresponds to SP7-505-210, and the code 211 corresponds to SP7-505-211. |  |


| 7801 | Memory/Version/PN |
| :--- | :--- |
| 7801255 | Memory/Version (ADF ROM) |
|  | Displays the serial number and the version of the BICU and the serial number and <br> version of the ADF software. |


| $7803^{*}$ | Display-PM Count |
| :---: | :--- |
| 78031 | Displays the PM counter. |


| 7804 | Reset-PM Counter |
| :---: | :--- |
| 78041 | Resets the PM counter (SP7-803-1). When the program ends normally, the <br> message "Completed" is displayed. |


| 7807 | Reset-SC/Jam Counters |
| :---: | :--- |
| 78071 | Resets the SC, paper, original, and total jam counters. When the program ends <br> normally, the message "Completed" is displayed. SP7-807-1 does not reset the <br> following logs: SP7-507 (Display-Paper Jam History) and SP7-508 (Display-Original <br> Jam History). |


| 7808 | Reset-Counters |
| :---: | :--- |
| 78081 | Resets all counters except for the management counters. The management <br> counters are the counters that are not changed by NVRAM Download (SP5-825-1; <br> NVRAM Download (SP5-825-1) in section 5.1.11). When the program ends <br> normally, the message the message "Completed" is displayed. |


| 7810 | Reset-Key Op Code |
| :---: | :--- |
| 78101 | Resets the key operator code. Use SP7-810-1 when the customer has forgotten the <br> key-operator code. When the program ends normally, the message "Completed" is <br> displayed, if the program ends abnormally, an error message is displayed. If the <br> customer forgets the key operator code. To specify a new key-operator code, use <br> the User Tools: System Settings $\rightarrow$ Key Operator Tools $\rightarrow$ Key Operator Code $\rightarrow$ <br> On $\rightarrow$ Enter Key Operator Code. |


| $\mathbf{7 8 2 6}^{*}$ | MF Device Error Count | For Japan Only |
| :--- | :--- | :--- |
| $\mathbf{7 8 2 7}$ | MF Device Error Count Clear | For Japan Only |


| $7832^{*}$ | Display-Self-Diag |
| :---: | :--- |
| 78321 | Displays the SC codes found during the self-diagnostics test, and the number of <br> their occurrences. Each number is in the range of 0 to 9999. |


| 7901* | Assert Info. DFU |  |
| :---: | :---: | :---: |
|  | These SP numbers display the results of the occurrence of the most recent SC code generated by the machine. |  |
| 7901 1* | Source File Name | Module name |
| 7901 2* | Line Number | Number of lines |
| 7901 3* | Result | Value |


| 7991 | Dsply-Info Count |
| :--- | :--- |
|  | Displays the total operating time or the total number of operations. The time is <br> displayed in the following format: day:hour:minute:second. |
|  | Dsply-Info Count (Dsply-APS Working) |
|  | The total of the time when the APS is working. |
| 79914 | Dsply-Info Count (Dsply-ID S Work) |
|  | The total of the time when the ID sensor is working. |
|  | Dsply-Info Count (Dsply-Dev Counter) |
| 5 | The total number of paper outputs. |
|  | Dsply-Info Count (Dsply-ID Er Count) |


| 7992 | Reset-Info Count |
| :--- | :--- |
| 79925 | Reset-Info Count (Reset-ID Er Count) |
|  | Clears the counter of SP7-991-5. |

## SP8-XXX (History)

| 8191* | T: Total Scan PGS | $[0 \sim 9999999 / 0 / 1$ sheet/step] |
| :---: | :--- | :--- |
| 81911 | Displays the total number of scanned originals. The both sides are counted when <br> the front and reverse sides of an original (fed from the ADF) are scanned. |  |


| 8192* $^{*}$ | C: Total Scan PGS | $[0 \sim 9999999 / 0 / 1$ sheet/step] |
| :---: | :--- | :--- |
| 81921 | Displays the total number of scanned originals. The both sides are counted when <br> the front and reverse sides of an original (fed from the ADF) are scanned. |  |


| $\mathbf{8 1 9 3}^{*}$ | F: Total Scan PGS | $[0 \sim 9999999 / 0 / 1$ sheet/step] |
| :---: | :--- | :--- |
| 81931 | Displays the total number of scanned originals. The both sides are counted when <br> the front and reverse sides of an original (fed from the ADF) are scanned. |  |


| $8195^{*}$ | S: Total Scan PGS | $[0 \sim 9999999 / 0 / 1$ sheet/step] |
| :---: | :--- | :--- |
| 81951 | Displays the total number of scanned originals. The both sides are counted when <br> the front and reverse sides of an original (fed from the ADF) are scanned. |  |


| 8201* $^{*}$ | T: L Size Scan PGS | $[0 \sim 9999999 / 0 / 1$ sheet/step $]$ |
| :---: | :--- | :--- |
| 82011 | Displays the total number of scanned originals (by copying jobs and scanning jobs) <br> classified by paper size. The following size is counted: A3/DLT and larger. |  |


| 8205* | S: L Size Scan PGS (A3/DLT, Larger) | $[0 \sim 9999999 / 0 / 1$ sheet/step] |
| :---: | :--- | :--- |
| 82051 | Displays the total number of scanned originals (by scanning jobs) classified by <br> paper size. The following size is counted: A3/DLT and larger. |  |


| 8221* | ADF Org Feed | [0 ~ 9999999 / 0 / 1 sheet/step] |
| :---: | :---: | :---: |
| 82211 | ADF Org Feed (Front) |  |
|  | Displays the total number of scanned front sides of originals fed from the ADF. |  |
| 82212 | ADF Org Feed (Back) |  |
|  | Displays the total number of scanned reverse sides of originals fed from the ADF. |  |


| 8291* $^{*}$ | T: Scan PGS/TWAIN | $[0 \sim 9999999 / 0 / 1$ sheet/step] |
| :---: | :--- | :--- |
| 82911 | Displays the total number of sheets stamped by the ADF in fax jobs and scanning <br> jobs. |  |


| $8293^{*}$ | F: Scan PGS/TWAIN | $[0 \sim 9999999 / 0 / 1$ sheet/step $]$ |
| :---: | :--- | :--- |
| 82931 | Displays the total number of sheets stamped by the ADF in fax jobs. |  |

## 8295*

S: Scan PGS/TWAIN
[0 ~ 9999999 / 0 / 1 sheet/step]
82951
Displays the total number of sheets stamped by the ADF in scanning jobs.

| $88301^{*}$ | T: Scan PGS/Size |
| ---: | :--- |
|  | Displays the total number of pages scanned by all application programs. |
| 83011 | A3 |
| 83012 | A4 |
| 83013 | A5 |
| 83014 | B4 |
| 83015 | B5 |
| 83016 | DLT |
| 83017 | LG |
| 83018 | LT |
| 83019 | HLT |
| 830110 | Full Bleed |
| 8301254 | Other (Standard) |
| 8301255 | Other (Custom) |


| $8302^{*}$ | Counter-Paper Size | $[0 \sim 9999999 / 0 / 1$ sheet/step $]$ |
| ---: | :--- | :--- |
|  | Displays the total number of pages scanned by the copier application program. |  |
| 83021 | A3 |  |
| 83022 | A4 |  |
| 83023 | A5 |  |
| 83024 | B4 |  |
| 83025 | B5 |  |
| 83026 | DLT |  |
| 83027 | LG |  |
| 83028 | LT |  |
| 83029 | HLT |  |
| 8301 10 | Full Bleed |  |
| 8302254 | Other (standard size) |  |
| 8302255 | Other (custom size) |  |


| $8303^{*}$ | T: Scan PGS/Size | [0~ 9999999 / $/ 1$ sheet/step] |
| ---: | :--- | :--- |
|  | Displays the total number of pages scanned by the fax application program. |  |
| 83031 | A3 |  |
| 83032 | A4 |  |
| 83033 | A5 |  |
| 83034 | B4 |  |
| 83035 | B5 |  |
| 83036 | DLT |  |
| 83037 | LG |  |
| 83038 | LT |  |
| 83039 | HLT |  |
| 830110 | Full Bleed |  |
| 8303254 | Other (Standard) |  |
| 8303255 | Other (Custom) |  |


| $8305^{*}$ | T: Scan PGS/Size |
| ---: | :--- |
|  | Displays the total number of pages scanned by all application programs. |
| 83051 | A3 |
| 83052 | A4 |
| 83053 | A5 |
| 83054 | B4 |
| 83055 | B5 |
| 83056 | DLT |
| 83057 | LG |
| 83058 | LT |
| 83059 | HLT |
| 830110 | Full Bleed |
| 8305254 | Other (Standard) |
| 8305255 | Other (Custom) |


| $8381^{*}$ | T: Total Prt PGS | $[0 \sim 9999999 / 0 / 1$ sheet/step $]$ |
| :--- | :--- | :--- |
| 83811 | Displays the print count of all application programs. |  |


| $\mathbf{8 3 8 2}$ | C: Total Prt PGS | $[0 \sim 9999999 / 0 / 1$ sheet/step $]$ |
| :---: | :--- | :--- |
| 83821 | Displays the print count of the copier application program. |  |


| $8383^{*}$ | F: Total Prt PGS | $[0 \sim 9999999 / 0 / 1$ sheet/step] |
| :---: | :--- | :--- |
| 83831 | Displays the print count of the fax application program. |  |


| $8384^{*}$ | P: Total Prt PGS | $[0 \sim 9999999 / 0 / 1$ sheet/step $]$ |
| :---: | :--- | :--- |
| 83841 | Displays the print count of the printer application program. |  |


| $8385^{*}$ | S: Total Prt PGS | $[0 \sim 9999999 / 0 / 1$ sheet/step $]$ |
| :---: | :--- | :--- |
| 83851 | Displays the print count of the scanner application program. |  |


| $8387^{*}$ | O: Total Prt PGS | $[0 \sim 9999999 / 0 / 1$ sheet/step] |
| :---: | :--- | :--- |
| 83871 | Displays the print count of application programs other than copier, fax, printer, or <br> scanner programs (such as external application programs). |  |


| $8391^{*}$ | L size Prt PGS (A3/DLT, Larger) | $[0 \sim$ 9999999 / 0 / 1 sheet/step] |
| :---: | :--- | :--- |
| 83911 | Displays the print count of the AS/DLT size and larger paper. |  |


| $8411^{*}$ | Prints/Duplex | $[0 \sim 9999999 / 0 / 1$ sheet/step $]$ |
| :---: | :--- | :--- |
| 84111 | Displays the total count of the duplex printing. |  |


| $\mathbf{8 4 2 1}^{*}$ |  |
| ---: | :--- |
|  | T: PrtPGS/Dup Comb |$[0 \sim 9999999 / 0 / 1$ sheet/step $]$.


| $\mathbf{8 4 2 2}^{*}$ |  | C: PrtPGS/Dup Comb |
| ---: | :--- | ---: |
|  | Displays the total number of pages processed for printing by the copier application <br> program. |  |
| 84221 | Simplex > Duplex |  |
| 8422 2 | Duplex > Duplex |  |
| 84223 | Book > Duplex |  |
| 84224 | Simplex Combine |  |
| 84225 | Duplex Combine |  |
| 84226 | $2>$ |  |
| 84227 | $4>$ |  |
| 84228 | $6>$ |  |
| 84229 | $8>$ |  |
| 842210 | $9>$ |  |
| 842211 | $16>$ |  |
| 842212 | Booklet |  |
| 842213 | Magazine |  |


|  | F: PrtPGS/Dup Comb |
| ---: | :--- |
|  | Displays the total number of pages processed for printing by the fax application <br> program. |
| 84231 | Simplex > Duplex |
| 84232 | Duplex > Duplex |
| 84233 | Book > Duplex |
| 84234 | Simplex Combine |
| 84235 | Duplex Combine |
| 84236 | $2>$ |
| 84237 | $4>$ |
| 84238 | $6>$ |
| 84239 | $8>$ |
| 842310 | $9>$ |
| 842311 | $16>$ |

## SERVICE PROGRAM MODE

| 842312 | Booklet |
| :--- | :--- |
| 842313 | Magazine |


| 8424* | P: PrtPGS/Dup Comb | [0 ~ 9999999 / 0 / 1 sheet/step] |
| :---: | :---: | :---: |
|  | Displays the total number of pages processed for printing by the printer application program. |  |
| 84241 | Simplex > Duplex |  |
| 84242 | Duplex > Duplex |  |
| 84243 | Book > Duplex |  |
| 84244 | Simplex Combine |  |
| 84245 | Duplex Combine |  |
| 84246 | $2>$ |  |
| 84247 | $4>$ |  |
| 84248 | $6>$ |  |
| 84249 | $8>$ |  |
| 842410 | $9>$ |  |
| 842411 | $16>$ |  |
| 842412 | Booklet |  |
| 842413 | Magazine |  |


| $8425^{*}$ | S: PrtPGS/Dup Comb |
| ---: | :--- |
|  | Displays the total number of pages processed for printing by the scanner <br> application program. |
| 84251 | Simplex > Duplex |
| 84252 | Duplex > Duplex |
| 84253 | Book > Duplex |
| 84254 | Simplex Combine |
| 84255 | Duplex Combine |
| 84256 | $2>$ |
| 84257 | $4>$ |
| 84258 | $6>$ |
| 84259 | $8>$ |
| 842510 | $9>$ |
| 842511 | $16>$ |
| 852512 | Booklet |
| 842613 | Magazine |


| 8427* | O: PrtPGS/Dup Comb | [0 ~ 9999999 / 0 / 1 sheet/step] |
| :---: | :---: | :---: |
|  | Displays the total number of pages processed for printing by other application programs. |  |
| 84271 | Simplex > Duplex |  |
| 84272 | Duplex > Duplex |  |
| 84273 | Book > Duplex |  |
| 84274 | Simplex Combine |  |
| 84275 | Duplex Combine |  |
| 84276 | $2>$ |  |
| 84277 | $4>$ |  |
| 84278 | $6>$ |  |
| 84279 | $8>$ |  |


| 842710 | $9>$ |
| :--- | :--- |
| 842711 | $16>$ |
| 842712 | Booklet |
| 842713 | Magazine |


| $8441^{*}$ | T: PrtPGS/Ppr Size |
| ---: | :--- |
|  | Displays the total print count classified by paper size. This is the total for all <br> application programs. |
| 84411 | T: PrtPGS/Ppr Size (A3) |
| 84412 | T: PrtPGS/Ppr Size (A4) |
| 84413 | T: PrtPGS/Ppr Size (A5) |
| 84414 | T: PrtPGS/Ppr Size (B4) |
| 84415 | T: PrtPGS/Ppr Size (B5) |
| 84416 | T: PrtPGS/Ppr Size (DLT) |
| 84417 | T: PrtPGS/Ppr Size (LG) |
| 84418 | T: PrtPGS/Ppr Size (LT) |
| 84419 | T: PrtPGS/Ppr Size (HLT) |
| 844110 | T: PrtPGS/Ppr SIze (Full Bleed) |
| 8441254 | T: PrtPGS/Ppr Size (Other (Standard)) |
| 8441255 | T: PrtPGS/Ppr Size (Other (Custom)) |


| $8442^{*}$ | C: PrtPGS/Ppr Size |
| ---: | :--- |
|  | Displays the number of pages printed by the copier application program. |
| 84421 | C: PrtPGS/Ppr Size (A3) |
| 84422 | C: PrtPGS/Ppr Size (A4) |
| 84423 | C: PrtPGS/Ppr Size (A5) |
| 84424 | C: PrtPGS/Ppr Size (B4) |
| 84425 | C: PrtPGS/Ppr Size (B5) |
| 84426 | C: PrtPGS/Ppr Size (DLT) |
| 84427 | C: PrtPGS/Ppr Size (LG) |
| 84428 | C: PrtPGS/Ppr Size (LT) |
| 84429 | C: PrtPGS/Ppr Size (HLT) |
| 844210 | C: PrtPGS/Ppr Slze (Full Bleed) |
| 8442254 | C: PrtPGS/Ppr Size (Other (Standard)) |
| 8442255 | C: PrtPGS/Ppr Size (Other (Custom)) |


| $8443^{*}$ | F: PrtPGS/Ppr Size |
| ---: | :--- |
|  | Displays the number of pages printed by the fax application program. |
| 84431 | F: PrtPGS/Ppr Size (A3) |
| 84432 | F: PrtPGS/Ppr Size (A4) |
| 84433 | F: PrtPGS/Ppr Size (A5) |
| 84434 | F: PrtPGS/Ppr Size (B4) |
| 84435 | F: PrtPGS/Ppr Size (B5) |
| 84436 | F: PrtPGS/Ppr Size (DLT) |
| 84437 | F: PrtPGS/Ppr Size (LG) |
| 84438 | F: PrtPGS/Ppr Size (LT) |
| 84439 | F: PrtPGS/Ppr Size (HLT) |
| 844310 | F: PrtPGS/Ppr Slze (Full Bleed) |
| 8443254 | F: PrtPGS/Ppr Size (Other (Standard)) |


| $8444^{*}$ | P: PrtPGS/Ppr Size | $[0 \sim 9999999 / 0 / 1$ sheet/step] |
| ---: | :--- | :--- |
|  | Displays the number of pages printed by the printer application program. |  |
| 84441 | P: PrtPGS/Ppr Size (A3) |  |
| 84442 | P: PrtPGS/Ppr Size (A4) |  |
| 84443 | P: PrtPGS/Ppr Size (A5) |  |
| 84444 | P: PrtPGS/Ppr Size (B4) |  |
| 84445 | P: PrtPGS/Ppr Size (B5) |  |
| 84446 | P: PrtPGS/Ppr Size (DLT) |  |
| 84447 | P: PrtPGS/Ppr Size (LG) |  |
| 84448 | P: PrtPGS/Ppr Size (LT) |  |
| 84449 | P: PrtPGS/Ppr Size (HLT) |  |
| 844410 | P: PrtPGS/Ppr SIze (Full Bleed) |  |
| 8444254 | P: PrtPGS/Ppr Size (Other (Standard)) |  |
| 8444255 | P: PrtPGS/Ppr Size (Other (Custom)) |  |


| 8445* | S: PrtPGS/Ppr Size | [0 ~ 9999999 / 0 / 1 sheet/step] |
| :---: | :---: | :---: |
|  | Displays the number of pages printed by the scanner application program. |  |
| 84451 | S: PrtPGS/Ppr Size (A3) |  |
| 84452 | S: PrtPGS/Ppr Size (A4) |  |
| 84453 | S: PrtPGS/Ppr Size (A5) |  |
| 84454 | S: PrtPGS/Ppr Size (B4) |  |
| 84455 | S: PrtPGS/Ppr Size (B5) |  |
| 84456 | S: PrtPGS/Ppr Size (DLT) |  |
| 84457 | S: PrtPGS/Ppr Size (LG) |  |
| 84458 | S: PrtPGS/Ppr Size (LT) |  |
| 84459 | S: PrtPGS/Ppr Size (HLT) |  |
| 844510 | S: PrtPGS/Ppr Slze (Full Bleed) |  |
| 8445254 | S: PrtPGS/Ppr Size (Other (Standard)) |  |
| 8445255 | S: PrtPGS/Ppr Size (Other (Custom)) |  |


| 8447* | O: PrtPGS/Ppr Size | [0 ~ 9999999 / 0 / 1 sheet/step] |
| :---: | :---: | :---: |
|  | Displays the number of pages printed by the scanner application program. |  |
| 84471 | O: PrtPGS/Ppr Size (A3) |  |
| 84472 | O: PrtPGS/Ppr Size (A4) |  |
| 84473 | O: PrtPGS/Ppr Size (A5) |  |
| 84474 | O: PrtPGS/Ppr Size (B4) |  |
| 84475 | O: PrtPGS/Ppr Size (B5) |  |
| 84476 | O: PrtPGS/Ppr Size (DLT) |  |
| 84477 | O: PrtPGS/Ppr Size (LG) |  |
| 84478 | O: PrtPGS/Ppr Size (LT) |  |
| 84479 | O: PrtPGS/Ppr Size (HLT) |  |
| 844710 | O: PrtPGS/Ppr Slze (Full Bleed) |  |
| 8447254 | O: PrtPGS/Ppr Size (Other (Standard)) |  |
| 8447255 | O: PrtPGS/Ppr Size (Other (Custom)) |  |


| $8451^{*}$ | C: PrtPGS/Ppr Tray | $[0 \sim 9999999 / 0 / 1$ sheet/step $]$ |
| ---: | :--- | :--- |
|  | Displays the total print count classified by paper source. |  |
| 84511 | C: PrtPGS/Ppr Tray (Bypass Tray) |  |
| 84512 | C: PrtPGS/Ppr Size (Tray 1) |  |
| 84513 | C: PrtPGS/Ppr Size (Tray 2) |  |
| 84514 | C: PrtPGS/Ppr Size (Tray 3) |  |
| 84515 | C: PrtPGS/Ppr Size (Tray 4) |  |


|  | T: PrtPGS/Ppr Type | $[0 \sim 9999999 / 0 / 1$ sheet/step $]$ |
| ---: | :--- | :--- |
|  | Displays the total print count classified by paper size. This is the total for all <br> application programs. |  |
| 84611 | Normal |  |
| 84612 | Recycled |  |
| 84613 | Special |  |
| 84614 | Thick |  |
| 84615 | Normal (Back) |  |
| 84616 | Thick (Back) |  |
| 84617 | OHP |  |
| 84618 | Other |  |


| $\mathbf{8 4 6 2}^{*}$ | C: PrtPGS/Ppr Type |
| ---: | :--- |
|  | Displays the total number of pages printed by the copier application program. |
| 84621 | Normal |
| 8462 2 | Recycled |
| 84623 | Special |
| 84624 | Thick |
| 84625 | Normal (Back) |
| 84626 | Thick (Back) |
| 84627 | OHP |
| 84628 | Other |


| $8463^{*}$ | F: PrtPGS/Ppr Type | $[0 \sim 9999999 / 0 / 1$ sheet/step $]$ |
| ---: | :--- | :--- |
|  | Displays the total number of pages printed by the fax application program. |  |
| 84631 | Normal |  |
| 84632 | Recycled |  |
| 84633 | Special |  |
| 84634 | Thick |  |
| 84635 | Normal (Back) |  |
| 84636 | Thick (Back) |  |
| 84637 | OHP |  |
| 84638 | Other |  |


|  | P: PrtPGS/Ppr Type | $[0 \sim 9999999 / 0 / 1$ sheet/step $]$ |
| ---: | :--- | :--- |
|  | Displays the total number of pages printed by the fax application program. |  |
| 84641 | Normal |  |
| 84642 | Recycled |  |

## SERVICE PROGRAM MODE

| 84643 | Special |
| :--- | :--- |
| 84644 | Thick |
| 84645 | Normal (Back) |
| 84646 | Thick (Back) |
| 84647 | OHP |
| 84648 | Other |


|  | T:PrtPGS/FIN | $[0 \sim 9999999 / 0 / 1]$ |
| ---: | :--- | :--- |
|  | These SPs count by finishing mode the total number of pages printed by all <br> applications. |  |
| 85211 | Sort |  |
| 85212 | Stack |  |
| 85213 | Staple |  |
| 85214 | Booklet |  |
| 85215 | Z-Fold |  |
| 85216 | Punch |  |
| 85217 | Other |  |


|  | C:PrtPGS/FIN |
| :--- | :--- |
|  | These SPs count by finishing mode the total number of pages printed by the <br> Copy application. |
|  | Sort |
| 85222 | Stack |
| 85223 | Staple |
| 85224 | Booklet |
| 85225 | Z-Fold |
| 85226 | Punch |
| 85227 | Other |


|  | F:PrtPGS/FIN | $[0 \sim 9999999 / 0 / 1]$ |
| ---: | :--- | :--- |
|  | These SPs count by finishing mode the total number of pages printed by the <br> Fax application. <br> Note: <br> $\bullet$ |  |
|  | Sort |  |
| 85232 | Stack finishing options for received faxes are currently not available. |  |
| 85233 | Staple |  |
| 85234 | Booklet |  |
| 85235 | Z-Fold |  |
| 85236 | Punch |  |
| 85237 | Other |  |


| $8524^{*}$ | P:PrtPGS/FIN | [0~9999999/0/1] |
| :--- | :--- | :--- |
|  | These SPs count by finishing mode the total number of pages printed by the <br> Print application. |  |
| 85241 | Sort |  |
| 85242 | Stack |  |


| 85243 | Staple |
| :--- | :--- |
| 85244 | Booklet |
| 85245 | Z-Fold |
| 85246 | Punch |
| 85247 | Other |


|  | S:PrtPGS/FIN | $[0 \sim 9999999 / 0 / 1]$ |
| ---: | :--- | :--- |
|  | These SPs count by finishing mode the total number of pages printed by the <br> Scanner application. |  |
| 85251 | Sort |  |
| 85252 | Stack |  |
| 85253 | Staple |  |
| 85254 | Booklet |  |
| 85255 | Z-Fold |  |
| 85256 | Punch |  |
| 85257 | Other |  |


| 8771 | Dev Counter | $[0 \sim 9999999 / 0 / 1]$ |
| :---: | :--- | :--- |
| 87711 | Counts the frequency of use (number of rotations of the development rollers) <br> for black and other color toners. <br> Note: For machines that do not support color, the Black toner count is the <br> same as the Total count. |  |


| 8801 | Toner Remain | $[0 \sim 100 / 0 / 1]$ |
| :--- | :--- | :--- |
| 88011 | This SP displays the percent of toner remaining for each color. This SP allows |  |
| the user to check the toner supply at any time. |  |  |
|  | Note: <br> $\bullet \quad$ Chis precise method of measuring remaining toner supply (1\% steps) is |  |


| }{} | Machine Status |
| :--- | :--- |
|  | Displays the total operating time classified by machine status. The time is displayed <br> in the following format: day:hour:minute:second. |
|  | Operation Time |
|  | The total time when the engine is operating. |
| 89412 | Standby Time |
|  | The total time when the machine is in the standby mode. |
| 89413 | Energy Save Time |
|  | The total time when the machine is in the energy saver mode. |
| 89415 | Low Power Time |
|  | The total time when the machine is in the low power mode. |
| 89416 | Off Mode Time |
|  | The total time when the machine is executing background printing. |
|  | Down Time/SC |
|  | The total waiting time due to SC occurrences. |

## SERVICE PROGRAM MODE

| 889417 | Down Time/Print Jam |
| :---: | :--- |
|  | The total waiting time due to printing-paper jams. |
| 89418 | Down Time/Original Jam |
|  | The total waiting time due to original jams. |
| 89419 | Down Time/Toner End |
|  | The total waiting time due to toner ends. |

SP9-XXX (Etc.)

| $9801^{*}$ | DCS Debug |  |
| :--- | :--- | :--- |
| 98011 | Common | Specifies the DCS debug output format. <br> bit 0: Time (Time is added on each line of logs) <br> bit 1: Millisecond (Millisecond is added to time.) <br> bit 2: Colored (Text and background is colored.) <br> bit 3: Return code (The return code is added at line ends.) <br> bit 4: Indentation (Text data is indented.) <br> bit 5: Not used <br> bit 6: Not used <br> bit 7: Not used |
| 98012 | IFC | Specifies the DCS IFC module debug output. <br> bit 0: Client event transfer log <br> bit 1: UCS event transfer log <br> bit 2: DCS internal event (inter-module event in DCS) transfer log <br> bit 3: Parameter data <br> bit 4: Process flow log <br> bit 5: Detailed process flow log <br> bit 6: Not used <br> bit 7: Not used |
| 98013 | Specifies the DCS SMM module debug output. <br> bit 0: SCS event transfer log <br> bit 1: DCS internal event (inter-module event in DCS) transfer log <br> bit 2: Parameter data <br> bit 3: Process flow log <br> bit 4: Detailed process flow log <br> bit 5: SP read-/write-related event transfer log <br> bit 6 SP read-/write-related event parameter log <br> bit 7: Not used |  |
| 98014 | Specifies the DCS SJM/RJM module debug output. <br> bit 0: SJM: IFC/DSS event transfer log <br> bit 1: SJM: Parameter data <br> bit 2: SJM: Process flow log <br> bit 3: SJM: Detailed process flow log <br> bit 4: SJM: MCS event (RPC) log <br> bit 5: RJM: Event transfer log <br> bit 6: RJM: Parameter data <br> bit 7: RJM: Process flow check |  |
| 98015 | SSM/RJM | Specifies the DCS DSS module debug output. <br> bit 0: DCS internal event (inter-module event in DCS) transfer log <br> bit 1: MCS/NAS (internal module) event log <br> bit 2: Parameter data <br> bit 3: Time check <br> bit 4: Process flow check log <br> bit 5: Error check <br> bit 6: Initial values <br> bit 7: Temporary check |


| 98016 | MRS | Specifies the DCS MRS module debug output. <br> bit 0: DCS internal event (inter-module event in DCS) transfer log <br> bit 1: NCS library call log <br> bit 2: Event transfer in the internal thread for NCS <br> bit 3: Not used <br> bit 4: Not used <br> bit 5: Process flow check log <br> bit 6: Detailed process flow check log <br> bit 7: Not used |
| :--- | :--- | :--- |
| 98017 |  | Specifies the DCS NAS module debug output. <br> bit 0: Parameter data <br> bit 1: DCS internal event (inter-module event in DCS) transfer log <br> bit 2: NCS (general) library call log <br> bit 3: NCS (SMB client) library call log <br> bit 4: NCS (FTP client) library call log <br> bit 5: NCS (SMTP client) library call log <br> bit 6: Time check <br> bit 7: Not used |

### 5.1.4 ADJUSTING REGISTRATION AND MAGNIFICATION

To adjust the registration and magnification, you need to use several service programs. The chart shows an example of the procedure to adjust the machine in the basic configuration.


## SERVICE PROGRAM MODE

### 5.1.5 ID SENSOR ERROR ANALYSIS (SP2-221)

The image quality may become very bad when the ID sensor does not operate properly. However, there is no such SC code that indicates ID-sensor malfunction; instead, SP2-221 shows you some information on the ID sensor. Check this information when the image quality is not very good.

The table lists the information shown with SP2-221 (ID Sensor Error Analysis).

| SP | Error condition | Possible cause | Remarks |
| :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { SP2-221-1 Vsg } \\ & \text { (VG in the display) } \end{aligned}$ | $\begin{aligned} & \mathrm{Vsg}<2.5 \mathrm{~V} \text { or } \\ & (\mathrm{Vsg}-\mathrm{Vsp})<1.00 \mathrm{~V} \end{aligned}$ | - ID sensor defective <br> - ID sensor dirty <br> - Drum not charged |  |
| SP2-221-2 Vsp (VP in the display) | $\begin{aligned} & \text { Vsp }>2.5 \mathrm{~V} \text { or } \\ & (\mathrm{Vsg}-\mathrm{Vsp})<1.00 \mathrm{~V} \end{aligned}$ | - Toner density very low <br> - ID sensor pattern not created |  |
| SP2-221-3 Power (PW in the display) | Vsg < 3.5 V when maximum power (979) is applied | - ID sensor defective <br> - ID sensor dirty <br> - Drum not get charged | Power source for the IDsensor light |
| SP2-221-4 Vsdp | No Error Conditions |  |  |
| SP2-221-5 Vt | $\begin{aligned} & \mathrm{Vt}>4.5 \mathrm{~V} \text { or } \\ & \mathrm{Vt}<0.2 \mathrm{~V} \\ & \hline \end{aligned}$ | - TD sensor defective |  |
| SP2-221-6 Vts |  |  |  |

### 5.1.6 DISPLAY APS DATA (SP4-301-1)

## Sensor Positions

The APS (auto paper select) sensors are arranged as shown in the diagram.


## Reading the Data

| Paper Size $:$ | $1100000081 / 2 \times 13 \square$ |
| :--- | :--- |
| DF Open $:$ | 1 |

Example 1

Paper Size : 00110000 A4 $\square$
DF Open : 0
Example 2

Example 1 indicates that the paper size and its orientation is " $81 / 2 \times 13$ SEF," and that the document feeder (or platen cover) is open. Example 2 indicates that the paper size and its orientation is "A4 LEF," and that the document feeder (or platen cover) is closed.

The "Paper Size" data starts with eight digits. The first digit indicates the output of L2; the second digit, L1; the third digit, W2; and the fourth digit, W1. The other four digits (from the fifth through the eighth) are always "0000." In Example 1, the APS sensors L2 and L1 detect paper (W2 and W1 do not). In Example 2, APS sensors W2 and W1 detect paper (L2 and L1 do not). The paper size and its orientation is based on the outputs of these four APS sensors.

The "DF Open" data shows "1" or "0," indicating if the document feeder (or platen cover) is open or closed respectively. The data is based on the output of the platen cover sensor [A].


### 5.1.7 MEMORY CLEAR

## Basic Machine and MFP Machine

The basic machine (the machine without the optional controller box) stores all the data in the NVRAM on the BICU. The data is cleared by SP5-801-002 (for exceptions, see "Exceptions").

The MFP machine (the machine with the optional controller box) stores the engine data in the NVRAM on the BICU, and stores the other data in the NVRAM on the optional controller. To distinguish between the engine data and the other data, see SP5-801-003 through 015. This service program (SP5-801) handles the controller data. Any data that is not handled by SP5-801 is the engine data. The data in the BICU NVRAM (engine data) is cleared by SP5-998-001 while the data in the controller NVRAM (controller data) is cleared by SP5-801-xxx (for exceptions, see "Exceptions").

| Machine | Data | NVRAM | Cleared by | Remarks |
| :---: | :---: | :---: | :---: | :--- |
| Basic | All data | BICU | SP5-801-002 |  |
| MFP | Engine data | BICU | SP5-998-001 | Any data other than controller data |
|  | Controller data | Controller | SCS, IMH, MCS, Copier application, <br> Fax application, Printer application, <br> SP5-801-xxx <br> Scanner application, Web <br> service/network application, NCS, R-- <br> Fax, DCS, UCS |  |

## Exceptions

SP5-801-002 (basic machine) and SP5-998-001 (MFP machine) clears most of the settings and counters stored in the NVRAM on the BICU (the values return to their default values). However, the following settings are not cleared:

- SP5-807 (Area Selection)
- SP5-811-001 (Serial Num Input [Code Set])
- SP5-811-003 (Serial Num Input [ID2 Code Display])
- SP5-812-001 (Service TEL [Telephone])
- SP5-812-002 (Service TEL [Facsimile])
- SP5-907 (Plug \& Play)
- SP7 (Data Log)
- SP8 (History)

Use SP5-802-002 (basic machine) or SP5-998-001 (MFP machine) after you have replaced the BICU NVRAM or when the BICU NVRAM data is corrupted. When the program ends normally, the message "Completed" is displayed. When you have replaced the controller NVRAM or when the controller NVRAM data is corrupted, use SP5-801-001. The message is the same as the basic machine.

## With Flash Memory Card (Basic Machine Only)

1. Upload the NVRAM data to a flash memory card (5.1.11).
2. Print out all SMC data lists ( -5.1 .15 ).

NOTE: Be sure to print out all the lists. You have to manually change the SP settings if the NVRAM data upload ends abnormally.
3. Select SP5-801-002.
4. Press the OK key.
5. Select "Execute." The messages "Execute?" followed by "Cancel" and "Execute" are displayed.
6. Select "Execute."
7. When the program has ended normally, the message "Completed" is displayed. If the program has ended abnormally, an error message is displayed.
8. Press the cancel key.
9. Turn the main switch off and on.
10. Download the NVRAM data from a flash memory card (-5.1.11).

## Without Flash Memory Card

1. Print out all SMC data lists ( -5.1 .15 ).
2. Select SP5-801-002 (basic machine) or SP5-998-001 (MFP machine).
3. Press the OK key.
4. Select "Execute." The messages "Execute?" followed by "Cancel" and "Execute" are displayed.
5. Select "Execute."
6. When the program has ended normally, the message "Completed" is displayed. If the program has ended abnormally, an error message is displayed.
7. Turn the main switch off and on.
8. Adjust the printer and scanner registration and magnification (Copy Adjustment" in chapter 3, "Replacement and Adjustment").
9. Refer to the SMC lists, and enter any values that differ from the factory settings. Double-check the values for SP4-901.
10. Adjust the standard white level (SP4-428).
11. Initialize the TD sensor (SP 2-214).
12. Check the copy quality and the paper path.

### 5.1.8 INPUT CHECK (SP5-803)

## Conducting an Input Check

1. Select SP5-803.
2. Select the number (see the table below) corresponding to the component.
3. Select "Execute." The copy mode is activated.
4. The sign " 01 H " or " 00 H " is displayed (see the table below).

Input Check Table

| Num. | Sensor/Switch | 01H | 00H |
| :---: | :---: | :---: | :---: |
| 001 | Safety SW | Open | Closed |
| 002 | Safety SW-LD 5V | Open | Closed |
| 003 | Right Cover SW | Open | Closed |
| 004 | Right Low Cover SW | Open | Closed |
| 005 | Tray Cover SW | Open | Closed |
| 006 | Upper Relay S | Paper detected | Not detected |
| 007 | Lower Relay S | Paper detected | Not detected |
| 008 | Vertical Trans S | Paper detected | Not detected |
| 009 | Registration Sensor | Paper detected | Not detected |
| 010 | Exit Sensor | Paper detected | Not detected |
| 011 | Duplex Inverter S | Paper detected | Not detected |
| 012 | Duplex Entrance S | Paper detected | Not detected |
| 013 | Duplex Exit S | Paper detected | Not detected |
| 014 | By-pass PE S | Paper detected | Not detected |
| 015 | By-pass P Size S | *1 |  |
| 016 | Upper PE S | Paper detected | Not detected |
| 017 | Lower PE S | Paper detected | Not detected |
| 018 | Upper P Size SW | *1 |  |
| 019 | Lower P Size SW | *1 |  |
| 020 | BK-Upper Paper End S | Paper detected | Not detected |
| 021 | BK-Lower Paper End S | Paper detected | Not detected |
| 022 | BK-Up P Size SW | *1 |  |
| 023 | BK-Low P Size SW | *1 |  |
| 024 | BK-Up P Height S | *2 |  |
| 025 | BK-Low P Height S | *2 |  |
| 026 | BK-Upper Lift S | At upper limit | Not at upper limit |
| 028 | BK type | *3 |  |
| 030 | Duplex Installed | Installed | Not installed |
| 031 | Lower Lift S | At upper limit | Not at upper limit |
| 032 | Main M Lock | Locked | Not locked |
| 033 | Polygon M Lock | Locked | Not locked |
| 034 | BK-Lift M Lock | Locked | Not locked |
| 035 | Total CO Install | Installed | Not installed |
| 036 | Key CO Install | Installed | Not installed |
| 037 | L-Synchronization | Detected | Not detected |
| 038 | DF-Position S | Detected | Not detected |
| 039 | DF-Cover Open S | Detected | Not detected |
| 040 | DF-Original Set S | Detected | Not detected |


| Num. | Sensor/Switch | 01H | 00H |
| :---: | :--- | :---: | :---: |
| 041 | DF-Registration S | Detected | Not detected |
| 042 | DF-Exit S | Detected | Not detected |
| 043 | DF-Trailing S | Detected | Not detected |
| 044 | DF-Reverse S | Detected | Not detected |
| 045 | Platen Cover S | Open | Closed |
| 046 | 1 bin Installed | Installed | Not installed |
| 047 | 1 bin Exit S | Paper detected | Not detected |
| 048 | 1 bin Paper S | Paper detected | Not detected |
| 049 | 1 bin Tray S | Open | Closed |
| 050 | Fan Motor Lock | High speed | Not high speed |
| 051 | 2 Tray BK Install | Installed | Not installed |
| 053 | HP Sensor | Detected | Not detected |
| 054 | Duplex Fan M Lock | Locked | Not locked |

*1 Paper Size

| Copier | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Europe | Not set | $\begin{gathered} \mathrm{A} 4 \\ \mathrm{LEF} \end{gathered}$ | $\begin{gathered} 8 \mathrm{Hx} 13 \\ \mathrm{SEF} \end{gathered}$ | $\begin{gathered} \mathrm{A} 4 \\ \text { SEF } \end{gathered}$ | $\begin{gathered} \hline \text { A5 } \\ \text { LEF } \end{gathered}$ | $\begin{gathered} \mathrm{LT} \\ \mathrm{LEF} \end{gathered}$ | - | $\begin{gathered} \hline \text { A3 } \\ \text { SEF } \end{gathered}$ |  |
| North America | Not set | $\begin{gathered} \mathrm{A} 4 \\ \mathrm{LEF} \end{gathered}$ | $\begin{gathered} 8 \mathrm{Hx13} \\ \mathrm{SEF} \end{gathered}$ | $\begin{gathered} \mathrm{LT} \\ \mathrm{SEF} \end{gathered}$ | $\begin{gathered} \mathrm{LG} \\ \mathrm{SEF} \end{gathered}$ | $\begin{gathered} \mathrm{LT} \\ \mathrm{LEF} \end{gathered}$ | - | $\begin{aligned} & \text { DLT } \\ & \text { SEF } \end{aligned}$ |  |
| China | Not set | $\begin{gathered} \mathrm{A} 4 \\ \mathrm{LEF} \end{gathered}$ | $\begin{gathered} \text { B5 } \\ \text { LEF } \end{gathered}$ | $\begin{gathered} \mathrm{A} 4 \\ \mathrm{SEF} \end{gathered}$ | $\begin{gathered} \mathrm{A5} \\ \mathrm{LEF} \end{gathered}$ | $\begin{gathered} \mathrm{B} 4 \\ \mathrm{SEF} \end{gathered}$ | - | $\begin{gathered} \mathrm{A} 3 \\ \mathrm{SEF} \end{gathered}$ |  |
| Paper Feed Unit | 00 | 01 | 03 | 04 | 05 | OA | OC | 0E | OF |
| Europe | Not set | $\begin{gathered} \mathrm{LT} \\ \mathrm{SEF} \end{gathered}$ | $\begin{aligned} & \text { LG } \\ & \text { SEF } \end{aligned}$ | $\begin{gathered} \mathrm{A} 4 \\ \mathrm{LEF} \end{gathered}$ | - | $\begin{aligned} & \text { DLT } \\ & \text { SEF } \end{aligned}$ | $\begin{gathered} \mathrm{A} 4 \\ \mathrm{SEF} \end{gathered}$ | $\begin{gathered} \mathrm{LT} \\ \mathrm{LEF} \end{gathered}$ | $\begin{gathered} \text { A3 } \\ \text { SEF } \end{gathered}$ |
| North America | Not set | $\begin{gathered} \mathrm{LT} \\ \mathrm{SEF} \end{gathered}$ | $\begin{aligned} & \text { LG } \\ & \text { SEF } \end{aligned}$ | $\begin{gathered} \text { A4 } \\ \text { LEF } \end{gathered}$ | - | $\begin{aligned} & \text { DLT } \\ & \text { SEF } \end{aligned}$ | $\begin{gathered} \text { A4 } \\ \text { SEF } \end{gathered}$ | $\begin{gathered} \mathrm{LT} \\ \mathrm{LEF} \end{gathered}$ | $\begin{gathered} \text { A3 } \\ \text { SEF } \end{gathered}$ |
| China | Not set | $\begin{gathered} \mathrm{LT} \\ \mathrm{SEF} \end{gathered}$ | $\begin{aligned} & \text { LG } \\ & \mathrm{SEFF} \end{aligned}$ | $\begin{gathered} \text { A4 } \\ \text { LEF } \end{gathered}$ | - | $\begin{aligned} & \text { DLT } \\ & \text { SEF } \end{aligned}$ | $\begin{gathered} \mathrm{A} 4 \\ \mathrm{SEF} \end{gathered}$ | $\begin{gathered} \mathrm{LT} \\ \mathrm{LEF} \end{gathered}$ | $\begin{gathered} \text { A3 } \\ \text { SEF } \end{gathered}$ |
| $\begin{gathered} \hline \text { By-Pass } \\ \text { Tray } \end{gathered}$ | 04 | OC | 08 | 00 | 01 | 03 | 02 | 06 |  |
| Europe | $\begin{gathered} \text { A5 } \\ \text { SEF } \end{gathered}$ | $\begin{gathered} \text { A5 } \\ \text { SEF } \end{gathered}$ | $\begin{gathered} \text { A5 } \\ \text { SEF } \end{gathered}$ | $\begin{gathered} \text { A5 } \\ \text { SEF } \end{gathered}$ | $\begin{aligned} & 8 \times 13 \\ & \text { SEF } \end{aligned}$ | $\begin{gathered} \mathrm{A} 4 \\ \mathrm{SEF} \end{gathered}$ | $\begin{gathered} \mathrm{A} 3 \\ \mathrm{SEF} \end{gathered}$ | $\begin{gathered} \text { A3 } \\ \text { SEF } \end{gathered}$ |  |
| North America | $\begin{aligned} & \text { HLT } \\ & \text { SEF } \end{aligned}$ | $\begin{aligned} & \text { HLT } \\ & \text { SEF } \end{aligned}$ | $\begin{aligned} & \text { HLT } \\ & \text { SEF } \end{aligned}$ | $\begin{aligned} & \text { HLT } \\ & \text { SEF } \end{aligned}$ | $\begin{aligned} & \text { HLT } \\ & \text { SEF } \end{aligned}$ | $\begin{gathered} \mathrm{LG} \\ \mathrm{SEF} \end{gathered}$ | $\begin{aligned} & \text { DLT } \\ & \text { SEF } \end{aligned}$ | $\begin{aligned} & \text { DLT } \\ & \text { SEF } \end{aligned}$ |  |
| China | $\begin{gathered} \mathrm{B6} \\ \mathrm{SEF} \end{gathered}$ | $\begin{gathered} \mathrm{B6} \\ \mathrm{SEF} \end{gathered}$ | $\begin{gathered} \text { A5 } \\ \text { SEF } \end{gathered}$ | $\begin{gathered} \text { A5 } \\ \text { SEF } \end{gathered}$ | $\begin{gathered} \text { B5 } \\ \text { SEF } \end{gathered}$ | $\begin{gathered} \mathrm{A} 4 \\ \mathrm{SEF} \end{gathered}$ | $\begin{gathered} \mathrm{B4} \\ \mathrm{SEF} \end{gathered}$ | $\begin{gathered} \text { A3 } \\ \text { SEF } \end{gathered}$ |  |

*2 Paper Amount

| 10 | Near end |
| :--- | :--- |
| 11 | About $25 \%$ |
| 00 | About $75 \%$ |
| 00 | About $100 \%$ |

*3 Available Paper Feed Unit

| 00 | None |
| :--- | :--- |
| 20 | 2-tray paper feed unit |
| 30 | 1-tray paper feed unit |

### 5.1.9 OUTPUT CHECK (SP5-804)

## Conducting an Output Check

CAUTION: To prevent mechanical or electrical damage, do not keep an electrical component on for a long time.

1. Select SP5-804.
2. Select the number (see the table below) corresponding to the component.
3. Select "ON."
4. To stop the operation, select "OFF."

## Output Check Table

Number 005, 006, 040, and 041 may not respond when the fusing temperature is high.

| Num. | Main Component |
| :---: | :--- |
| 001 | Main Motor Forward |
| 002 | Main Motor Reverse |
| 003 | Quenching Lamp |
| 004 | Toner Supply Motor Forward |
| 005 | Fan Motor High |
| 006 | Fan Motor Low |
| 007 | Registration Clutch |
| 008 | By-pass Feed Clutch |
| 009 | Upper Feed Clutch |
| 010 | Lower Feed Clutch |
| 011 | BK-Low Lift Motor Up |
| 012 | BK-Low Lift Motor Down |
| 013 | Relay Clutch |
| 014 | BK-Relay Clutch |
| 015 | BK-Upper Feed Clutch |
| 016 | BK-Lower Feed Clutch |
| 017 | BK-Lift Motor |
| 018 | BK-Up Lift Motor Up |
| 019 | BK-Up Lift Motor Down |
| 020 | Duplex Inv Motor Reverse |
| 021 | Duplex Inv Motor Forward |
| 022 | Duplex Trans Motor |
| 023 | Duplex Gate Solenoid |
| 024 | Duplex Inv Motor Hold |
| 025 | Dup Trans Motor Hold |
| 026 | Polygon Motor |
| 027 | Polygon M/LD |
| 028 | LD |
| 029 | DF-Transport Motor |
| 030 | DF-Feed Motor |
| 031 | DF-Feed Clutch |
| 032 | DF-Pickup Solenoid |
| 033 | DF-Stamp Solenoid |


| Num. | Component |
| :---: | :--- |
| 034 | DF-Gate Solenoid |
| 035 | 1 bin Gate Solenoid |
| 036 | 1 bin Tray Motor |
| 037 | 1 bin Tray Motor Hold |
| 038 | Fusing Solenoid |
| 040 | Duplex Fan Motor High |
| 041 | Duplex Fan Motor Low |

### 5.1.10 SERIAL NUMBER INPUT (SP5-811)

## Specifying Characters

SP5-811-001 specifies the serial number. For the basic machine (the machine without the optional controller), you use the numeric keypad. For the MFP machine (the machine with the optional controller), you use the numeric keypad and the optional operation panel.

## Basic Machine

A serial number consists of 11 characters. You can change each character by pressing one of the first 11 keys on the numeric keypad (), © ${ }^{2}, 3^{3}, \ldots{ }^{(9)}, \odot^{\circ}$, (0). For example, when you press the (1) key, the first character of the serial number changes as follows: $0 \rightarrow 1 \rightarrow 2 \rightarrow \ldots \rightarrow 8 \rightarrow 9 \rightarrow \mathrm{~A} \rightarrow \mathrm{~B} \rightarrow \ldots \rightarrow \mathrm{X} \rightarrow \mathrm{Y}$ $\rightarrow$ Z. When you press the ${ }^{2}$ key, the second character changes likewise.

You can specify a digit ("0" to "9") or a capital letter ("A" to "Z") for the first four characters of a serial number, and you can specify a digit in the other seven characters (not capital letters).

## MFP MACHINE

You use the numeric keypad to type numbers. In addition, you use the optional operation panel to type other characters. When you press the "ABC" key, the letter changes as follows: $A \rightarrow B \rightarrow C$. To input the same letter two times, for example "AA," you press the "ABC" key, the "Space" key, and the "ABC" key. To switch between uppercase letters and lowercase letters, press the "Shift" key.

## Serial Number and NVRAM

Serial numbers are stored in the NVRAM before shipment and are not cleared. You must specify a serial number after you replace the NVRAM.

### 5.1.11 NVRAM DATA UPLOAD/DOWNLOAD (SP5-824/825)

This procedure is for the basic machine only.

| $\$$ CAUTION |
| :--- | :--- |
| Make sure that you turn off the main switch before inserting or removing a <br> flash memory card. Installing or removing a flash memory card while the <br> main switch is on may damage the BiCU or memory. |

## Overview

You can copy the data from the NVRAM to a flash memory card (NVRAM Upload), or from a flash memory card to the NVRAM (NVRAM download).

| SP5-824-1 <br> (NVRAM Upload) | From the BICU to a flash <br> memory card |
| :--- | :--- |
| SP5-825-1 <br> (NVRAM Download) | From a flash memory <br> card to the BICU |

You should execute NVRAM Upload before replacing the NVRAM or before executing SP5-801-2 (Memory Clear [Engine]; 5.1.7). You can copy back the data from the flash card to the NVRAM as necessary.

## NVRAM Upload (SP5-824-1)

1. Turn off the main switch.
2. Remove the card cover $[B]$ (1 rivet).
3. Turn the face of the flash memory card [A] ("A" is printed on it) toward your left-hand side, and insert it into the card slot.
4. Turn on the main switch.
5. Start the SP mode and select SP5-824-001.
6. The machine erases the settings on the card (if any), then writes the machine's settings to the flash memory card. This takes about 20
 seconds. If uploading fails, an error message appears. If an error message appears, retry the upload procedure.
7. Turn off the main switch.
8. Remove the memory card.

## NVRAM Download (SP5-825-1)

SP5-825-1 copies the data from the flash memory card to the NVRAM. The following data is NOT copied (the data in the NVRAM remains unchanged):

- SP8-221-001 (ADF Original Feed [Front])
- SP8-221-002 (ADF Original Feed [Back])
- SP8-381-001 (Total: Total Printer Pages)
- SP8-382-001 (Copy Application: Total Print Pages)
- SP8-391-001 (Large Size Print Pages [A3/DLT, Larger])
- SP8-411-001 (Prints Duplex)

1. Turn off the main switch.
2. Remove the card cover [B] (1 rivet).
3. Turn the face of the flash memory card $[A]$ (" $A$ " is printed on it) toward your lefthand side, and insert it into the card slot.
4. Turn on the main switch.
5. Start the SP mode and select SP5-825-001.
6. The machine erases the current settings, then writes the new settings onto the NVRAM on the BiCU board. This takes about 1 second. If downloading fails, an error message appears. If an error message appears, retry the download procedure.
7. Turn off the main switch.
8. Remove the memory card.

### 5.1.12 FIRMWARE UPDATE PROCEDURE FOR BICU

This section (5.1.12) illustrates how to update the firmware of the BICU. To update the firmware of the MFP machine (the machine with the optional controller box), see section 5.2.

1. Turn the main switch off.
2. Remove the card cover [A] (1 rivet).
3. Insert the flash memory card $[B]$.

4. Press down the power switch on the operation panel and hold it, and turn on the main switch (on the front cover).
5. Select "Execute" [C].

6. Do not touch any key while the message "Load Status..." is displayed. This message indicates that the program is running.
7. Check that the message "End Sum..." is displayed. This message indicates
 that the program has ended normally.
8. Turn off the main switch (on the front cover).
9. Remove the flash memory card.
10. Install the card cover.
11. Turn the main switch on.

12. Check the operation.

### 5.1.13 TEST PATTERN PRINT (SP5-902-1)

## Executing Test Pattern Printing

1. Specify the pattern number and press the OK key.
2. Press the copy start key. The copy mode is activated ( "Activating Copy Mode" in section 5.1.1).
3. Specify copy settings and press the () key.
4. To return to the SP mode, press the

## Test Patterns

| Test Patterns Using VCU |  |
| :---: | :--- |
| No. | Pattern |
| 0 | (No print) |
| 1 | Vertical Lines (Single Dot) |
| 2 | Horizontal Lines (Single Dot) |
| 3 | Vertical Lines (Double Dot) |
| 4 | Horizontal Lines (Double Dot) |
| 5 | Grid Pattern (Single Dot) |
| 6 | Grid Pattern (Double Dot) |
| 7 | Alternating Dot Pattern |
| 8 | Isolated one dot |
| 9 | Black Band (Horizontal) |
| 10 | Trimming Area |
| 11 | Argyle Pattern (Single Dot) |
| 12 | Grayscales (Horizontal) |
| 13 | Grayscales (Vertical) |
| 14 | Grayscales (Vertical/Horizontal) |
| 15 | Grayscales (Vertical/Horizontal Overlay) |
| 16 | Grayscales With White Lines (Horizontal) |
| 17 | Grayscales with White Lines (Vertical) |
| 18 | Grayscales with White Lines |
| (Vertical/Horizontal) |  |


| Test Patterns Using IPU |  |
| :--- | :--- |
| No. | Pattern |
| 30 | Vertical Lines (Single Dot) |
| 31 | Horizontal Lines (Single Dot) |
| 32 | Vertical Lines (Double Dot) |
| 33 | Horizontal Lines (Double Dot) |
| 34 | Isolated Four Dots |
| 35 | Grid Pattern (Double Dot) |
| 36 | Black Band (Vertical, 1024 Dots) |
| 37 | Grayscales (Horizontal, 512 Dots) |
| 38 | Grayscales (Vertical, 256 Dots) |
| 39 | ID Patch |
| 40 | Cross |
| 41 | Argyle Pattern (128-Dot Pitch) |
| 42 | Square Gradation (64 Grades) |
| 43 | Square Gradation (256 Grades) |
| 44 | Grayscales (Horizontal, 32-Dot Width) |
| 45 | Grayscales (Vertical, 32-Dot Width) |
| 46 | Trimming Area (A3) |
| 47 | A4 Gradation Patches 1 (128 Grades) |
| 48 | A4 Gradation Patches 2 (128 Grades) |
| 49 | Trimming Area (A4) |


|  | Test Patterns Using SBU |
| :---: | :---: |
| No. | Pattern |
| 51 | Grid Pattern (double dot) |
| 52 | Gray scale 1 (256 grades) |
| 53 | Gray scale 2 (256 grades) |

### 5.1.14 COUNTER-EACH PAPER JAM (SP7-504)

The table lists the menu numbers (the last three digits of SP7-504-XXX) and the paper jam timings and locations.

| Code |  |
| :--- | :--- |
| 001 | Paper jam occurs at power on. |
| 010 | Paper does not reach the registration sensor (from a paper tray). |
| 011 | Paper does not reach the relay sensor. |
| 012 | Paper is caught at the relay sensor. |
| 021 | Paper does not reach the vertical transport sensor. |
| 022 | Paper is caught at the vertical transport sensor. |
| 031 | Paper does not reach the vertical transport sensor in the optional paper feed unit. |
| 032 | Paper is caught at the vertical transport sensor in the optional paper feed unit. |
| 050 | Paper does not reach the registration sensor (from the by-pass tray). |
| 060 | Paper does not reach the registration sensor during reverse-side printing (for <br> duplex printing). |
| 070 | Paper is caught at the registration sensor. |
| 120 | Paper is caught at the exit sensor (previous page). |
| 121 | Paper does not reach the exit sensor. |
| 122 | Paper is caught at the exit sensor. |
| 123 | Paper does not reach the duplex inverter sensor (from the registration roller). |
| 125 | Paper is caught at the duplex inverter sensor. |
| 126 | Paper does not reach the duplex entrance sensor. |
| 127 | Paper is caught at the duplex entrance sensor. |
| 128 | Paper does not reach the duplex exit sensor. |
| 129 | Paper is caught at the duplex exit sensor. |
| 130 | Paper does not reach the one-bin tray. |
| 131 | Paper is caught at the one-bin tray. |

### 5.1.15 SMC PRINT (SP5-990)

SP5-990 outputs machine status lists.

1. Select SP5-990.
2. Select a menu:

- Basic machine: 001 All, 002 SP, 003 UP, 004 Log, or 005 Big Font
- MFP machine: 001 All (Data List), 002 SP (Mode Data List), 003 User Program, 004 Logging Data, 005 Diagnostic Report, 006 Non-Default, 007 NIB Summary, 008 Net File Log, 021 Copier User Program, 022 Scanner SP, 023 Scanner User Program, 040 Parts Alarm Counter Print, 064 Normal Count Print, 065 User Code Counter, 066 Key Operator Counter, 067 Contact List Print, 069 Heading1 print, 071 Heading3 print, 072 Group List Print, 128 ACC Pattern, 129 User Color Pattern, or 160:ACC Pattern Scan

NOTE: The output given by the menu "Big Font" is suitable for faxing.
3. Press the "Execute" key.

- Basic machine: The copy mode is activated ("Activating Copy Mode" in section 5.1.1). Specify copy settings and press the © key. The machine status lists is output.
- MFP machine: The machine status list is output.

4. To return to the SP mode, press the

### 5.1.16 ORIGINAL JAM HISTORY DISPLAY (SP7-508)

## Viewing the Copy Jam History

You can view the information on the most recent 10 events. The information on older events is deleted automatically.

NOTE: The information on jam history is saved in the NVRAM.

1. Select SP7-508.
2. Select one of the menu items ("Latest 1 " through Latest 10 ").
3. Press the OK key. The summary of the jam history is displayed.
4. To view more information, select "Detail."

Jam History Code

| Code | Meaning |
| :---: | :--- |
| 210 | Original does not reach the registration sensor. |
| 211 | Original caught at the registration sensor. |
| 212 | Original does not reach the original exit sensor. |
| 213 | Original caught at the original exit sensor. |
| 214 | Original does not reach the original reverse sensor. |
| 215 | Original caught at the original reverse sensor. |

### 5.1.17 ADF APS SENSOR OUTPUT DISPLAY (SP6-901)

## Sensor Positions

|  | Large <......................> Small |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| W1 | 1 | 0 | 0 | 1 |
| W2 | 0 | 0 | 1 | 1 |



Reading Data

| W1 | W2 | L1 | L2 | Paper Size |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | 0 | NA |
| 0 | 0 | 1 | 1 | - | EU/AA |
| 0 | 0 | 0 | 0 | $81 / 1^{\prime \prime} \times 51 / 2^{\prime \prime} \mathrm{LEF}$ | B5 LEF |
| 0 | 1 | 1 | 0 | $81 / 2^{\prime \prime} \times 11^{\prime \prime} \mathrm{SEF}$ | A5 LEF |
| 0 | 1 | 1 | 1 | $81 / 2^{\prime \prime} \times 14^{\prime \prime}$ | $81 / 2^{\prime \prime} \times 13^{\prime \prime}$ |
| 1 | 1 | 0 | 0 | $11^{\prime \prime} \times 81 / 2^{\prime \prime} \mathrm{LEF}$ | A4 LEF |
| 1 | 0 | 1 | 1 | $11^{\prime \prime} \times 17^{\prime \prime}$ | A3 |
| 1 | 0 | 0 | 0 | $51 / 2^{\prime \prime} \times 81 / 2^{\prime \prime}$ SEF | A5 SEF |
| 1 | 1 | 1 | 0 | - | B5 SEF |
| 1 |  |  |  |  |  |

1: Detected

## $\Rightarrow$ 5.1.18 SETTING DAYLIGHT SAVINGS TIME (SP5307)

| Digit Position |  |  |
| :---: | :---: | :---: |
| 7 | Month: 01 through 12 | Jan. $=01$, Feb. $=02$, etc. |
| 6 |  |  |
| 5 | Week of the Month: 1 through 5 | 1st week $=1$, 2nd week $=2$, 3rd week $=3$, etc. |
| 4 | Day of the Week: 0 through 7 | Sun. $=0$, Mon. $=1$, Tue. $=2$, etc. |
| 3 2 | Hours: | $00=$ Midnight, $01=1$ AM, $02=2$ AM through $23=11$ PM |
| 1 | Start and Stop 1hour 0 minutes | For SP5307-3, this must always be 10. For SP5307-4, this value must always be 00. |

Example- April 4, 2004 DST is turned ON and October 31, 2004 DST is turned OFF:
04/04 2:00 AM DST is turned ON- "4100210" (7digits) There is no leading 0. See 2-1 below.
1- SP5-307-001: Change 0 (=OFF) to $1(=O N)$
2- SP5-307-003(Summer time start):
2-1. Enter 04 as month of April. (4 will be displayed. The leading 0 will not be displayed.)
2-2. Enter 1 (=1 $1^{\text {st }}$ week) and 0 (=Sunday)
2-3. Enter 02 (=2:00 AM)
2-4. Enter 10 (=1 hour 0 minute)
3- SP5-307-004(Summer time end): 10/31 2:00 AM DST is turned OFF: "10500200" (8 digits)
3-1. Enter 10 as month of October. ( 10 will be entered.)
3-2. Enter 5 (=5th) and 0 (=Sunday)
3-3. Enter 02 (=2:00 AM)
3-4. Enter 00.
Remember to turn the main switch OFF and ON when the message is displayed.

### 5.2 FIRMWARE UPDATE PROCEDURE FOR MFP MACHINES

This section (5.2) illustrates how to update the firmware of the MFP machine (the machine with the optional controller box). To update the firmware of the BICU see section 5.1.12.

To update the firmware for the MFP machine, you must have the new version of the firmware downloaded onto an SD (Secure Digital) Card. The SD Card is inserted into the lower slot on the right side of the controller box, viewed from the back of the machine.

Important: This procedure is only for firmware files with the ".fwu" suffix (for the MFP model), and cannot be used for firmware files with a ".bin" suffix, which are only updated on the Basic model via an PCMCIA (Flash Memory) card.

### 5.2.1 BEFORE YOU BEGIN...

An SD card is a precision device, so always observe the following precautions when handling SD cards:

- Always switch the machine off before inserting an SD card. Never insert the SD card into the slot with the power on.
- After the power has been switched on, never remove the SD card from the service slot.
- Never switch the machine off while the firmware is downloading from the SD card.
- Store SD cards in a safe location where they are not exposed high temperature, high humidity, or exposure to direct sunlight.
- Always handle SD cards with care to avoid bending or scratching them. Never drop an SD card or expose it to other shock or vibration.
Keep the following points in mind while you are using the firmware update software:
- "Upload" means to send data from the machine to the SD card, and "download" means to send data from the SD card to the machine.
- To select an item on the LCD, touch the appropriate button on the soft touchscreen of the LCD, or press the appropriate number key on the 10-key pad of the operation panel. For example, "Exit (0)" displayed on the screen means you can touch the Exit button on the screen, or press the © button on the operation panel of the copier.
- Before starting the firmware update procedure, always make sure that the machine is disconnected from the network to prevent a print job for arriving while the firmware update is in progress.


## $\Rightarrow$ 5.2.2. SD CARD PREPARATION

Important Note: Format a pure SD card with, for example, SD Formatter v1.1. . You can download this application program from the following Web site: http://panasonic.jp/support/audio/sd/download/sd formatter.html.

1. You do not have to initialize your SD card as long as the format of the SD card is not corrupted. Your SD card is already formatted when you get it from Ricoh Family Group. Refer to important note above to reformat card if necessary.
2. Create a "romdata" folder on the card.
3. Create the following folders within the "romdata" folder:

B121, B620, B622, B658, B681, B685
4. Download the firmware from the website and store the files in the folder with the corresponding model code on the SD card.
Example:
File B1215540B should be stored in the "B121" folder, whereas files B6585902B, B6585903B, and B6585905B should be stored in the "B658" folder.

Note: It is strongly recommended to store only B121/B122/B123 files on SD cards used for downloading to the B121/B122/B123. With the controller used on this model, firmware update may sometimes be interrupted if there is software for multiple models stored on the same SD card.


## $\Rightarrow$ 5.2.3 FIRMWARE UPDATE PROCEDURE FOR MFP MACHINES

The following is the revised procedure for firmware update on the MFP model using an SD card.

Before beginning the following, first confirm which firmware version(s) are currently installed in the machine with SP7-801-255. Print the firmware list with SP5-990-005, and retain this printout for reference.

1. Turn off the main power switch.
2. Remove the slot cover $[A](\hat{\xi} \times 1)$
3. With the label on the $S D$ card $[B]$ facing as shown in the diagram, insert the SD card into the lower slot $[\mathrm{C}]$ on the controller box [D]. Slowly push the SD card into the slot so it locks in place.
4. Make sure the SD card is locked in place.

NOTE: To remove the SD, push it in to unlock ${ }^{[D]}$ the spring lock and then release it so it pops out of the slot.
5. Disconnect the network cable or wireless option from the copier if it is connected.
6. Disconnect the Fax cable from the copier if it is connected.
7. Switch the main power switch on.

- After about 5 seconds, the LCD will display "Please wait...Then, about 60 seconds later, the LCD will display "Program Update Menu P.01" on the first line and the name of the firmware on the second line (e.g. System/Copy).

NOTE: The following are the display names for each type of firmware.

| Firmware Name | LCD Display Name |
| :--- | :--- |
| BICU | Engine |
| FCU | GWFCU3-1 (WW)-1 |
| ServiceCardCopyEXP | System/Copy |
| ServiceCardNetFile | Network DocBox |
| ServiceCardNIB | Network Support |
| ServiceCardFAX | Fax |
| ServiceCardWebSystem | Web Support |
| Scanner | SD\#1 Scanner |
| Printer | SD\#1 Printer |
| SecurityModule_NRS | Security Module |

8. To Select a module: press the OK key.

- The part numbers for the version currently installed ("ROM") and the version on the SD card that is to be installed ("New") can be displayed by pressing the right scroll key (arrow).
Example: ROM: B6585902B
New: B6585902C
- The firmware versions can be displayed by pressing the right scroll key again.
Example: ROM: 0.40.03
New: 0.40.04

- The display returns to the firmware display name if the right scroll key is pressed a third time.

Example: System/Copy

9. Use the up and down scroll keys to scroll to the firmware you wish to install.

- If you wish to install the following firmware simultaneously, press the START key. The scroll keys can be used to confirm that this firmware has been selected (highlighted with a dark background).
$>$ Engine, FCU, Scanner, Printer, Printer Font, Security Module
- Please note that the following firmware cannot be updated simultaneously. The update procedure must be repeated for each individually.
> System/Copy, ServiceCardNetFile, ServiceCardNIB, ServiceCardFAX, ServiceCardWebSystem.


## 10. Press the OK key.

- "Verify", "UpDate" and "Exit" will be displayed at the bottom of the LCD, and the firmware to be updated will be highlighted (dark background).



## Note: Do NOT press the "Verify" key.

## 11. Press the "UpDate" key.

- The update will begin, which will take a few minutes to complete. The LCD will initially display, "Updating... ***---------". When the update is completed, the LCD display will change to "Update done"
 or "Updated / Power Off On".

12. Remove the SD card from the lower slot on the controller by pushing on the card to release the spring lock.
13. Turn the main power switch off.
14. Repeat Steps 7-13 above until all firmware updates are complete.
15. Reinstall the network and Fax connections.

- If an error occurs, the error code is displayed. For information on the error codes, see the table on next page.



## FIRMWARE ERROR TABLE

| Code | Cause | Necessary Action |
| :---: | :---: | :---: |
| E20 | Physical address mapping error | - Insert the SD card correctly. <br> - Use another SD card |
| E22 | Decompression error | - Store correct data in the SD card. |
| E23 | Update program error | - Update controller program. <br> - Replace the controller. |
| E24 | SD card access error | - Insert the SD card correctly. <br> - Use another SD card. |
| E31 | Download data inconsistency* | - Insert the SD card that was used when the previous update procedure was interrupted. |
| E32 | Download data inconsistency* | - Insert the SD card that stores the correct data. |
| E33 | Version data error | - Store the correct data in the SD card. |
| E34 | Locale data error | - Store the correct data in the SD card. |
| E35 | Machine model data error | - Store the correct data in the SD card. |
| E36 | Module data error | - Store the correct data in the SD card. |
| E40 | Engine program error** | - Store the correct data in the SD card. <br> - Replace BICU. |
| E42 | Operation panel program error* | - Store the correct data in the SD card. <br> - Replace the operation panel board. |
| E44 | Controller program error* | - Store the correct data in the SD card. <br> - Replace the controller board. |
| E50 | Authentication error | - Store the correct data in the SD card. |

* Denotes you need to reinstall the program.
$\Rightarrow$ • Try pressing the " 1 ", " 4 ", " 3 ", keys on the operation panel when the error appears then press the clear key ${ }^{\circ}$ (0) three times.

If the firmware update program is interrupted, for example, by power failure, keep the SD card inserted and turn the main switch off and on. The firmware update program restarts. If you do not do so, the message "Reboot after Card insert" is displayed when you turn the main switch on.

### 5.2.4 NVRAM DATA UPLOAD/DOWNLOAD

## Uploading Content of NVRAM to an SD card

Follow this procedure to upload SP code settings from NVRAM to an SD card.
NOTE: This data should always be uploaded to an SD card before the NVRAM is replaced.

1. Before switching the machine off, execute SP5990 001 (SMC Print). You will need a record of the NVRAM settings if the upload fails.
2. Switch the copier main power switch off.
3. Insert the SD card into service slot C3, then switch the copier on.
4. Execute SP5824 001 (NVRAM Data Upload) then press the "Execute" key When uploading is finished, the following files are coped to an NVRAM folder on the SD card. The fileis saved to the path and filename:

NVRAM1<serial number>.NV
Here is an example with Serial Number "B0700017":
NVRAMMB0700017.NV
5. In order to prevent an error during the download, be sure to mark the SD card that holds the uploaded data with the number of the machine from which the data was uploaded.
NOTE: NVRAM data from more than one machine can be uploaded to the same SD card.

## Downloading an SD Card to NVRAM

Follow this procedure to download SP data from an SD card to the NVRAM in the machine.

- If the SD card with the NVRAM data is damaged, or if the connection between the controller and BICU is defective, the NVRAM data down load may fail.
- If the download fails, repeat the download procedure.
- If the second attempt fails, enter the NVRAM data manually using the SMC print you created before uploading the NVRAM data. (-5.2.3)

1. Switch the copier main power switch off.
2. Insert the SD card with the NVRAM data into service slot C3.
3. Switch the copier main power switch on.
4. Execute SP5825 001 (NVRAM Data Download) and press the "Execute" key.

NOTE: In order for the NVRAM data to download successfully, the serial number of the file on the SD card must match the serial number of the machine. If the serial numbers do not match, the download will fail.
This procedure downloads the following data to the NVRAM:

- Total Count
- C/O, P/O Count


## DETAILED DESCRIPTIONS

## 6. DETAILED SECTION DESCRIPTIONS

### 6.1 OVERVIEW

### 6.1.1 COMPONENT LAYOUT



NOTE: The above illustration is the B123 model.
B121: No duplex unit, one paper tray
B122: No duplex unit, two paper trays

1. 2nd Mirror
2. Exposure Lamp
3. 1st Mirror
4. Exposure Glass
5. Original Width Sensors
6. Original Length Sensors
7. Lens Block
8. SBU
9. Exit Sensor
10. Scanner Motor
11. Inverter Roller
12. Duplex Inverter Sensor
13. Duplex Entrance Sensor
14. Hot Roller
15. Upper Transport Roller
16. Pressure Roller
17. OPC Drum
18. Middle Transport Roller
19. Duplex Exit Sensor
20. Image Density Sensor
21. Registration Roller
22. Registration Sensor
23. By-pass Tray
24. Lower Transport Roller
25. Upper Relay Roller
26. Relay Sensor
27. Lower Relay Roller
28. Vertical Transport Sensor
29. Paper Feed Roller
30. Paper End Sensor
31. Bottom Plate
32. PCU
33. Development Roller
34. WTL
35. Polygon Mirror Motor
36. Laser Unit
37. Toner Supply Bottle Holder
38. Exit Roller
39. 3rd Mirror
40. Scanner H.P. Sensor

### 6.1.2 PAPER PATH



The B123 model has a duplex unit mounted on the right side of the machine. All models have a by-pass tray.

### 6.1.3 DRIVE LAYOUT



1. Scanner Motor
2. Main Motor
3. Hot Roller
4. OPC Drum
5. Development Roller
6. Relay Clutch
7. Lower Paper Feed Clutch
8. By-pass Feed Clutch
9. Upper Paper Feed Clutch
10. Registration Clutch

### 6.2 BOARD STRUCTURE

### 6.2.1 BLOCK DIAGRAM



NOTE: 1) Only B123 models contain the duplex unit.
2) The one-bin tray is for B122/B123 with the optional controller box.

## 1. BICU (Base Engine and Image Control Unit)

The main board controls the following functions:

- Engine sequence
- Timing control for peripherals
- Image processing, video control
- Operation control, system control (Basic machine only)
- Machine control
- Drive control for the sensors, motors, and clutches of the printer and scanner
- High voltage supply board control
- Serial interfaces with peripherals
- Fusing control


## 2. SBU (Sensor Board Unit)

The SBU deals with the analog signals from the CCD and converts them into digital signals.

### 6.3 COPY PROCESS OVERVIEW



## 1. EXPOSURE

A xenon lamp exposes the original. Light reflected from the original passes to the CCD, where it is converted into an analog data signal. This data is converted to a digital signal, processed and stored in the memory. At the time of printing, the data is retrieved and sent to the laser diode.

## 2. DRUM CHARGE

In the dark, the charge roller gives a negative charge to the organic photoconductive (OPC) drum. The charge remains on the surface of the drum because the OPC layer has a high electrical resistance in the dark.

## 3. LASER EXPOSURE

The processed data scanned from the original is retrieved from the memory and transferred to the drum by a laser beam, which forms an electrical latent image on the drum surface. The amount of charge remaining as a latent image on the drum depends on the laser beam intensity, which is controlled by the BICU board.

## 4. DEVELOPMENT

The magnetic developer brush on the development roller comes in contact with the latent image on the drum surface. Toner particles are electrostatically attached to the areas of the drum surface where the laser reduced the negative charge on the drum.

## 5. ID SENSOR

The laser forms a sensor pattern on the drum surface. The ID sensor measures the reflectivity of the pattern. The output signal is one of the factors used for toner supply control. Also, the ID sensor measures the reflectivity of the drum surface. The output signal is used for charge roller voltage control.

## 6. IMAGE TRANSFER

Paper is fed to the area between the drum surface and the transfer roller at the proper time for aligning the copy paper and the developed image on the drum surface. Then, the transfer roller applies a high positive charge to the reverse side of the paper. This positive charge pulls the toner particles from the drum surface onto the paper. At the same time, the paper is electrostatically attracted to the transfer roller.

## 7. PAPER SEPARATION

Paper separates from the drum as a result of the electrostatic attraction between the paper and the transfer roller. The discharge plate (grounded) helps separate the paper from the drum.

## 8. CLEANING

The cleaning blade removes any toner remaining on the drum surface after the image transfers to the paper.

## 9. QUENCHING

The light from the quenching lamp electrically neutralizes the charge on the drum surface.

### 6.4 SCANNING

### 6.4.1 OVERVIEW



1. Exposure Lamp
2. 1st Scanner
3. Exposure Glass
4. Lens Block
5. Scanner Motor
6. Original Length Sensor
7. Original Width Sensors
8. Scanner H.P. Sensor

The original is illuminated by the exposure lamp (a xenon lamp). The image is reflected onto a CCD (charge coupled device) on the lens block via the 1st, 2nd, and 3rd mirrors, and through the lens on the lens block.
The 1st scanner consists of the exposure lamp, a reflector, and the 1st mirror.
A lamp stabilizer energizes the exposure lamp. The light reflected by the reflector is of almost equal intensity, to reduce shadows on pasted originals.

An optics anti-condensation heater is available as an option. It can be installed on the left side of the scanner. It turns on whenever the power cord is plugged in.

## Lamp Stabilizer Fuse



|  | Rating | Manufacturer |
| :---: | :---: | :---: |
| ICP1 | DC50 V/1.5 A | ROHM CO.,LTD |

### 6.4.2 SCANNER DRIVE



A stepper motor drives the 1 st and 2 nd scanners $[A, B]$. The 1 st scanner is driven by the scanner drive motor [C], drive gear through the timing belt [D], scanner drive pulley [E], scanner drive shaft [F], and two timing belts [G]. The 2nd scanner is driven through the 1st scanner and two timing belts [H].

## - Book mode -

The BICU controls and operates the scanner drive motor. In full size mode, the 1st scanner speed is $100 \mathrm{~mm} / \mathrm{s}$ during scanning. The 2 nd scanner speed is half that of the 1st scanner.

In reduction or enlargement mode, the scanning speed depends on the magnification ratio. The returning speed is always the same, whether in full size or magnification mode. The image length change in the sub scan direction is done by changing the scanner drive motor speed, and in the main scan direction it is done by image processing on the BICU board.
Magnification in the sub-scan direction can be adjusted by changing the scanner drive motor speed using SP4-008. Magnification in the main scan direction can be adjusted using SP4-009.

## - ADF mode -

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

Magnification in the sub-scan direction can be adjusted by changing the ADF motor speed using SP6-006-005. In the main scan direction, it can be adjusted with SP4009, like for book mode.

### 6.4.3 ORIGINAL SIZE DETECTION IN PLATEN MODE



In the optics cavity for original size detection, there are four reflective sensors. The original width sensors [A] detect the original width, and the original length sensors [B] detect the original length. These are the APS (Auto Paper Select) sensors. Each APS sensor is a reflective photosensor.

While the main switch is on, these sensors are active and the original size data is always sent to the CPU. However, the CPU checks the data only when the platen cover sensor [C] is activated. This is when the platen is positioned about 15 cm above the exposure glass, for example while it is being closed. The CPU can recognize the original size from the combination of on/off signals from the APS sensors.

If the copy is made with the platen fully open, the CPU decides the original size from the sensor outputs when the Start key is pressed.


| Original Size |  | Length Sensors |  | Width Sensors |  | SP4-301 <br> display |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| L4/A3 <br> version | LT/DLT <br> version | $\mathbf{L 2}$ | L1 | W2 | W1 |  |
| A3 | $111^{\prime \prime} \times 17^{\prime \prime}$ | 1 | 1 | 1 | 1 | 11110000 |
| B4 | $8.5^{\prime \prime} \times 14^{\prime \prime}$ | 1 | 1 | 0 | 1 | 11010000 |
| $8.5^{\prime \prime} \times 13^{\prime \prime}$ | - | 1 | 1 | 0 | 0 | 11000000 |
| A4-SEF | $8.5^{\prime \prime} \times 13^{\prime \prime}$ | 0 | 1 | 0 | 0 | 01000000 |
| A4-LEF | $11^{\prime \prime} \times 8.5^{\prime \prime}$ | 0 | 0 | 1 | 1 | 00110000 |
| B5-LEF | $8.5^{\prime \prime} \times 11^{\prime \prime}$ | 0 | 0 | 0 | 1 | 00010000 |
| A5-LEF | $8.5^{\prime \prime} \times 5.5^{\prime \prime}$ | 0 | 0 | 0 | 0 | 00000000 |
| - | $8.5^{\prime \prime} \times 13^{\prime \prime}$ | 0 | 1 | 0 | 1 | 01010000 |

NOTE: 0: High (no paper), 1: Low (paper present)

The above table shows the outputs of the sensors for each original size. This original size detection method eliminates the necessity for a pre-scan and increases the machine's productivity.
For other combinations, "Cannot Detect Original Size" will be indicated on the operation panel display (if SP4-303 is kept at the default setting).
However, if the by-pass feeder is used, note that the machine assumes that the copy paper is short-edge first. For example, if A4 paper is placed long-edge first on the by-pass tray, the machine assumes it is A3 paper and scans the full A3 area for the first copy of each page of the original, disregarding the original size sensors. However, for each page, the data signal to the laser diode is stopped to match the copy paper length detected by the registration sensor. This means that copy time for the first page may be slower (because of the longer time required for scanning), but it will be normal for the rest of the job.

Original size detection using the ADF is described in the manual for the ADF.

### 6.5 IMAGE PROCESSING

### 6.5.1 OVERVIEW



The CCD generates an analog video signal. The SBU (Sensor Board Unit) converts the analog signal to a 8-bit digital signal, then it sends the digital signal to the BICU board.

The BICU board can be divided into three image-processing blocks: the IPU (Image Processing Unit), FCI (Fine Character Image), and VCU (Video Control Unit).

- IPU: Auto shading, filtering, magnification, scanner $\gamma$ correction, ID $\gamma$ correction
- VCU: Printer $\gamma$ correction, LD print timing control and laser power PWM control
- FCI (inside the VCU): Smoothing

NOTE: The IPU and VCU are contained in the same IC called SCRATCH on the BICU

Finally, the BICU board sends the video data to the LD drive board at the proper time. The DRAM on the BICU provides memory for the copier features. In addition, optional DRAM is added to the GW controller board when the printer/scanner option is installed.

### 6.5.2 SBU (SENSOR BOARD UNIT)



The CCD converts the light reflected from the original into an analog signal. The CCD line has 7,400 pixels and the resolution is 600 dpi ( 23.6 lines $/ \mathrm{mm}$ ).

The CCD has two output lines, for odd and even pixels, to the analog processing circuit. The analog processing circuit performs the following operations on the signals from the CCD:

1. Z/C (Zero Clamp):

Adjusts the black level reference for even pixels to match the odd pixels.
2. Signal Amplification:

The analog signal is amplified by operational amplifiers.
After the above processing, the analog signals are converted to 8-bit signals by the A/D converter. Each pixel will be assigned a value on a scale of 256 grades. Then, the digitized image data goes to the BICU board.

### 6.5.3 IPU (IMAGE PROCESSING UNIT)

## Overview



The image data from the SBU goes to the IPU (Image Processing Unit) on the BICU board, which carries out the following processes on the image data:

1. Auto shading
2. White/black line correction
3. ADS
4. Scanner gamma correction
5. Magnification (main scan)
6. Filtering (MTF and smoothing)
7. ID gamma correction
8. Binary picture processing
9. Error diffusion
10. Dithering
11. Video path control
12. Test pattern generation

The image data then goes to the VCU (basic machine) or to the GW controller (MFP machine).
NOTE: The IPU and VCU are contained in the same IC (called SCRATCH) on the BICU.

## Image Processing Modes

The user can select Text, Photo and Special original types. However, each of these original types has a range of different choices (such as "sharp", "photographs", etc), which are listed in the table below.

- All modes can be customized with a range of SP modes that can be adjusted to meet user requirements.
- The user can select the mode that best suits their original with the following user tool: Original Type: User Tools - Copier Features - Image Adjustment

| Original Type | Mode | Targeted Original Type |
| :---: | :---: | :---: |
| Text | Normal | Normal text originals |
|  | Sharp | Newspapers, originals through which the rear side is moderately visible as faint text. |
| Photo | Photo priority | Text/photo images which contain mainly photo areas |
|  | Text priority | Text/photo images which contain mainly text areas |
|  | Photographs | Actual photographs |
| Special | Unneeded background | Originals through which the rear side is extremely visible (or have a colored background) with faint text. Also for originals with very grainy backgrounds (some newspapers) and faint text. |
|  | Colored text | Originals with colored text and lines. |
|  | Normal Pixel Photo | Photo images created by dither patterns (dots visible), such as newspaper photos - normal resolution. |
|  | Coarse Pixel Photo | Photo images created by dither patterns (dots visible), such as newspaper photos - coarse resolution. |
|  | Preserved Background (Normal Text) | Use instead of Normal Text if, e.g. an embedded white area causes Auto Image Density to initially remove the surrounding (darker) background but leave the rest. Use if the customer wishes to keep this background. |

## Image Processing Path

This diagram shows the various stages of image processing and where they are performed.


## Original Modes

The machine has 10 original modes. There are two text modes, three photo modes, and five "special" modes.
The original mode key on the operation panel has two settings, text and photo. With the default settings, the machine uses "Normal Text (Text 1)" when the Text indicator is lit, and uses "Photo Priority (Photo 1)" when the Photo indicator is lit.
The customer can allocate different modes to the Text and Photo indicators with User Tools - Copier Features - Image Adjustment. Note that the Text indicator does not have to be allocated to a Text mode and the Photo key does not have to be allocated to a Photo mode. For example, the Text indicator can be allocated to Photo 3, and the Photo indicator can be allocated to Special 4.

If the user wishes to customize one of the original modes, the technician can change the settings using SP4-922 to SP4-942. Refer to "SP Modes for Each Image Processing Step". However, only one of the original modes can be customized at any one time.

## SP Modes for Each Image Processing Step

The table on the next page shows which SP modes are used for each step of image processing.

- 4-921: Selects which original mode the settings from SP4-922 to SP4-932 will be applied to.
- 4-922: Selects the scanner $\gamma$ curve. You can select either a curve for textbased originals (brings out text) or a curve for photo originals (better distinctions between shades of dark colors).
- 4-923: Selects the central notch position for the ID adjustment LEDs.
- 4-926: Adjusts the texture removal level (used with error diffusion).
- 4-927: Adjusts the line width.
- 4-928: Selects the dot erase level.
- 4-929: Converts white to black, and black to white
- 4-930: Adjusts the clarity of line images and the edges of solid images.
- 4-931: Adjusts the clarity of solid image areas.
- 4-932: Adjusts the clarity of low ID lines.
- 4-941: Selects the white line erase level.
- 4-942: Selects the black line erase level.

If a fax and/or scanner/printer option is installed, you can make separate settings for copier, fax, and scanner/printer mode with these SPs.
NOTE: The gray area means the setting cannot be changed using SP mode


## Auto Shading

## Overview

There are two auto shading methods: black level correction and white level correction. Auto shading corrects errors in the signal level for each pixel.
Black and white level correction is always done.

## Black Level Correction

The IPU detects the black dummy data from one end of the CCD signal ( 32 pixels at the end are blacked off) and takes the average of the black dummy data. Then, the black level value from each image pixel is detected.

## White Level Correction

Previous machines used 8-bit data (256 gradations), but this machine uses 6-bit data ( 64 gradations). When white level correction is applied to 8-bit data, white lines are more easily generated. This is because the normal variations in CCD pixel response (which are very slight), when rounded off by white level correction, will show up much easier on the copy when the data is divided into 256 gradations.
Before scanning the original, the machine reads a reference waveform from the white plate. The average of the white video level for each pixel is stored as the white shading data in the FIFO memory in the IPU (SCRATCH) chip.
The video signal information for each pixel obtained during image scanning is corrected by the IPU (SCRATCH) chip. If the maximum value of the video level is 64 or less, SC101 (exposure lamp error) is generated.
Auto shading is done before scanning for the first original as well as after scanning each page to prepare for the next page.

If the image density or the original mode is changed during a copy run, auto shading is done before scanning the next original.

## White Line Erase

The white line erase feature is validated (default) when you specify a value other than "0" in SP4-941-001. This feature works as follows:

1) The copier scans the original.
2) The density level of each pixel is compared with its adjacent pixels.
3) If the density level of a pixel is extremely lower then adjacent pixels, the level is corrected. The density levels of the adjacent pixels are considered.
When you validate the white line erase feature, the feature works for all originals. This feature erases the white lines of 1- through 6-pixel width (approximately, up to 0.25 mm ). The white lines that exceed this width are not erased.

When you specify "2," instead of "1," in SP4-941-001, the feature erases darker white lines (namely, less whiter lines). Note that this SP does not affect the width of white lines to be erased.

## Black Line Erase

The black line erase feature is the function that erases black lines made by the dust or dirt on the exposure glass. The feature is validated (default) when you specify a value other than " 0 " in SP4-942-001.
When you specify a larger value in this SP, the feature erases weaker black lines (namely, less blacker lines). This SP also affects the width of black lines to be erased. If you specify "1" or "2," the feature erases the black lines of 1 - through 4pixel width (approximately, up to 0.17 mm ); if you specify " 3 ," the feature erases the black lines of 1 - through 6-pixel width (approximately, up to 0.25 mm ). Note that some black lines on the original may be erased when you specify a larger value in the SP.

## Auto image density (ADS)

## In the $\operatorname{SBU}$

ADS prevents the background of an original from appearing on copies. As the scanner scans down the page, the IPU on the BICU detects the peak white level for each scan line. The IPU determines the reference value for the A/D conversion for a particular scan line using the peak white level for that scan line. Then, the IPU sends the reference value data to the reference controller on the SBU.

When an original with a gray background is scanned, the density of the gray area is the peak white level density. Therefore, the original background will not appear on copies. Because peak level data is taken for each scan line, ADS corrects for any changes in background density down the page.
As with previous digital copiers, the user can select manual image density when selecting ADS, and the machine will use both settings when processing the original.

## By Original Type

ADS mode is only enabled when the user has selected:

- Text mode 1 or 2 (Normal or Sharp), Photo mode 2 (Text/Priority), or Special mode 1 or 2 (Unneeded background or Colored Text).
This can be done using Adjust Original Mode (3) in User Tools (Copier Features).


## Scanner Gamma ( $\gamma$ ) Correction

The CCD output is not proportional to the quantity of light received. Scanner $\gamma$ correction corrects the CCD output so that grayscale data is proportional to the quantity of light received.
The machine has two possible scanner gamma curves: Text and Photo. When selecting Text, the machine does not use scanner $\gamma$ correction. As a result, the output is darker than the image density on the original. The advantage of this is that the machine can bring out gradations in paler areas. The disadvantage is that the machine cannot bring out gradations in darker areas, i.e. differences in shades of dark colors are hard to distinguish.

When selecting Photo, the machine uses scanner $\gamma$ correction. One advantage of this is that the machine can bring out gradations in dark areas of photo image originals. The disadvantage is that it in some cases images come out lighter than the customer desires.


## Main Scan Magnification

Changing the scanner speed enables enlargement and reduction along the sub scan direction. However, enlargement and reduction along the main scan direction is handled by the IPU (SCRATCH) chip. The processing for main scan enlargement/reduction is the same as in previous digital machines.

## Mirroring for ADF Mode



When making copies using the ADF, the magnification circuit creates a mirror image. This is because the scanning start position along the main scan direction in ADF mode is at the opposite corner of platen mode.
In platen mode, the original is placed face down on the exposure glass. The main scan start position is at corner [A], and the scanner moves down the page. In ADF mode, the ADF feeds the leading edge of the original to the DF exposure glass.
Therefore as mentioned above, the main scan start position will be at the opposite corner.

To create the mirror image, the IPU stores each line in LIFO (Last In First Out) memory.

## Filtering

## Overview

There are several software filtering processes for enhancing the desired image qualities of the selected original mode. There are three MTF filters, a smoothing filter, independent dot erase, and line width correction. Each can be used only when certain modes are selected (details below) and are automatically applied.
The strength levels for the MTF are controlled by SP4-932. The levels for line width correction and independent dot erase are controlled by SP4-927 and 4-928, respectively.

The MTF filters bring out sharpness. The three MTF filters are Edge, Solid Image and Low ID Line. Line width correction adjusts the line width. Independent dot erase removes unwanted dots from the image.

## MTF Filter Adjustment - Edge

In order to determine whether a given dot is part of an edge or not, the IPU checks all surrounding dots (vertical, horizontal, and diagonal). If the IPU determines that the dot is part of an edge, the machine applies the MTF filter for edges, using the value set in SP4-930. The higher the setting, the sharper the image. However, this is only used when the customer uses Text 1, Text 2, Photo 1-3, Special 1, Special 2 , or Special 5.
The default value is " 0 " for each mode. However the actual strength of " 0 " differs from mode to mode.

## MTF Filter Adjustment - Solid

If the IPU detects that the dot is not part of an edge, the machine applies the MTF filter for solid areas using the value set in SP4-931. The higher the setting, the sharper the image. However, this is only used when the customer uses Text 2.

The default value is " 0 " for each mode. However the actual strength of " 0 " differs from mode to mode.

## MTF Filter Adjustment - Low ID Line

The IPU also checks the image density of all dots. If a succession of low-density dots is detected, the machine interprets this as a low ID line and applies the MTF filter for low ID lines, using the value set in SP4-932. The higher the setting, the sharper the image. However, this is only used when the customer uses Text 1, Text 2, Photo 2, Special 1, Special 2, or Special 5.
The default value is " 0 " for each mode. However the actual strength of " 0 " differs from mode to mode.

## Independent Dot Erase

When the user selects Text 1 and 2, Photo 2, and Special 1, 2, and 5 modes, independent dots are detected using a matrix and erased from the image. The detection level can be adjusted with SP4-928.
The higher setting, the greater number of dots the machine will erase. The machine erases the dots regardless of their image density. However, note that dots in meshlike images may be mistakenly detected as independent dots.

## Line Width Correction

When the user selects Text 1 and 2, Photo 2 , Special 1, 2, and 5, the thickness of lines is adjusted using the setting of SP4-927. Note that the default for all modes except Special 2 is OFF.
Line width correction is done by the IPU (SCRATCH) chip.

## ID Gamma ( $\gamma$ ) Correction

The machine automatically selects the most appropriate ID gamma correction based on the selected original type and the operation panel ID setting.
In all modes, ID gamma correction can be adjusted with SP4-923.

## Gradation Processing

## Overview

There are three types of gradation processing (listed below). Refer to the "Default Image Processing Mode for Each Original Type" section for more details on which processes are used for each original mode.

- Binary picture processing
- Error diffusion
- Dithering


## Binary Picture Processing

The 8-bit image data is converted into 1-bit data (black and white image data). This is done when the user selects Text 2 or Special 1. The threshold for deciding whether a pixel is black or white cannot be adjusted.

## Error Diffusion

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

Error diffusion is applied when the user selects Text 1, Photo 1-3 and Special 2 and 5.

As the final step in error diffusion, a process called Texture Removal is applied to Text 1, Photo 2, Special 2, and Special 5 by default, but can also be applied to Photo 1 and 3 by changing the value of SP4-926.

Texture removal uses 256 threshold values in an $8 \times 8$ matrix. The value of SP4926 controls the application of Texture Removal for each of the 6 modes listed above. The settings are as follows:
0 : The default value for each mode is used. Text 1, Photo 2, Special 2, and Special 5 have a default of 3 (see below) and Photo 1 and 3 have a default of 1 .
1: No removal applied.
2 - 6: Removal applied at the level specified here. The higher the setting (level), the less clear the image will become (more texture removal).

## Dithering

Each pixel is compared with the threshold in a dither matrix. Several matrices are available to bring out half-tone areas in images such as newspaper-type photographs. Dithering is only used for Special 3 and Special 4.

### 6.5.4 VIDEO CONTROL UNIT (VCU)

## Fine Character and Image (FCI)

The FCl performs image smoothing. This functions only affects binary picture processed images for certain original modes.


Fig. C


Usually, binary picture processing generates jagged edges on characters, as shown in the above illustration. These are reduced using edge smoothing. The FCI changes the laser pulse duration and position for certain pixels.
Fig. A shows the four possible pulse durations, and Fig. B shows how the laser pulse can be in one of three positions within the pixel. Fig. C shows an example of how edge smoothing is used.

FCI smoothing is only effective when Text 2 or Special 1 is selected. There is no SP adjustment for this.

## Printer Gamma Correction

Printer correction corrects the data output from the IPU to the laser diode to account for the characteristics of the engine components (e.g. drum, laser diode, lenses).
The machine chooses the most suitable gamma curve for the original type selected by the user. There is no SP adjustment for this.

### 6.6 LASER EXPOSURE

### 6.6.1 OVERVIEW


[A]: LD unit
[B]: Synchronization detector lens
[C]: Double toroidal lens
[D]: Shield glass
[E]: OPC drum
[F]: 1st mirror
[G]: 2nd mirror
$[\mathrm{H}]$ : F-theta lens
[I]: Polygon mirror
[J]: Cylindrical Iens
[K]: Synchronization detector mirror

- The LD drive board controls both the laser output and laser synchronization mechanism.
- The machine cuts off the power supply to the LD drive board if the front or right cover is opened.


### 6.6.2 AUTO POWER CONTROL (APC)



The LD driver IC drives the laser diode. To prevent the intensity of the laser beam from changing because of the temperature, the machine monitors the current passing through the laser diode (LD). The machine adjusts the current to the laser diode by comparing it with the reference level from the reference circuit.
This auto power control is done just after the machine is turned on and during printing.
The laser diode power is adjusted on the production line.
NOTE: Do not touch the variable resistors on the LD unit in the field.

### 6.6.3 LD SAFETY SWITCH



To ensure technician and user safety and to prevent the laser beam from inadvertently switching on during servicing, there are safety switches at the front and right covers.

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

The switches are installed on the +24 V line coming from the power supply unit, then the +5 VLD is generated from the +24 V supply after it goes through the interlock switches.

### 6.7 PHOTOCONDUCTOR UNIT (PCU)

### 6.7.1 OVERVIEW



The PCU consists of the components shown in the above illustration. An organic photoconductor (OPC) drum (diameter: 30 mm ) is used in this machine.

1. Cleaning Blade
2. Toner Collection Coil
3. Pick-off Pawl
4. OPC Drum
5. ID Sensor (see note)
6. Development Roller
7. Development Unit
8. Charge Roller
9. Charge Roller Cleaning Brush
10. Quenching Lamp (see note)

NOTE: The ID sensor and quenching lamp are not included in the PCU.

### 6.7.2 DRIVE



The main motor $[A]$ drives the drum $[B]$ through a series of gears and the drum drive shaft [C]. The main motor assembly includes a drive controller, which outputs a motor lock signal when the rotation speed is out of the specified range.

### 6.8 DRUM CHARGE

### 6.8.1 OVERVIEW



This copier uses a drum charge roller to charge the drum. The drum charge roller [A] always contacts the surface of the drum [B] to give it a negative charge of -950 V .

The high voltage supply board gives a negative charge of -1700 V to the drum charge roller through the screw [C] and terminal plate [D]. This voltage can be changed using SP2-001-1.

### 6.8.2 CHARGE ROLLER VOLTAGE CORRECTION

## Correction for Environmental Conditions



With a drum charge roller system, the voltage transferred from roller to drum varies with the temperature and humidity around the drum charge roller. The higher the temperature or humidity is the higher the applied voltage required.

To compensate, the machine uses the ID sensor to measure the effects of current environmental conditions. For this measurement, the process control parameters are balanced so that any small change in drum potential caused by environmental effects is reflected in a change in the amount of toner transferred to the drum.

This measurement is made immediately after the ID sensor pattern for toner density control. Immediately after making ID sensor pattern [A], the charge roller voltage stays the same, but the development bias goes up to -600 V ; as a result the drum potential is reduced to -650 V . The laser diode is not switched on, and the drum potential is now slightly higher than the development bias, so a very small amount of toner transfers to the drum. The ID sensor measures the density of this pattern [B], and the output voltage is known as Vsdp. This voltage is compared with Vsg (read from the bare drum at the same time).

If the humidity drops, the drum potential goes up (to a higher -ve voltage) even if the charge roller voltage supply stays the same (efficiency of voltage transfer is higher with lower humidity). As a result, less toner is transferred to ID sensor pattern $[B]$. If the sensor output reaches a certain point, the drum charge voltage will be reduced.

To determine whether to change the drum charge roller voltage, the machine compares Vsdp with Vsg.

- $V s d p / V s g>0.95=$ Make the drum charge voltage less -ve (smaller) by 50 V
- $\mathrm{Vsdp} / \mathrm{Vsg}<0.90=$ Make the drum charge voltage more -ve (larger) by 50 V


### 6.8.3 ID SENSOR PATTERN PRODUCTION TIMING

The ID sensor pattern is not made every page or every job.
It is only made in the following conditions:

- During warm-up at power on
- If the machine starts warming up after a certain time (default: 90 minutes) has passed since entering night/off mode or low power mode. The 90-minute interval can be changed using SP2-994.


### 6.8.4 DRUM CHARGE ROLLER CLEANING



Because the drum charge roller [A] always contacts the drum, it gets dirty easily. So, the cleaning brush $[B]$ also contacts the drum charge roller all the time to clean the surface of the drum charge roller.

### 6.9 DEVELOPMENT

### 6.9.1 OVERVIEW



The development unit consists of the following parts.

1. Development roller
2. Mixing auger 1
3. Mixing auger 2
4. Doctor blade
5. TD sensor

This machine uses a single-roller development system. Two mixing augers mix the developer. The toner density (TD) sensor and image density (ID) sensor (see the illustration in the PCU section) are used to control the image density on the copy.

### 6.9.2 DRIVE

The main motor [A] drives the development roller [B] and mixing augers [C] through a train of gears and the development drive shaft [D]. When the PCU is pushed in, the development drive shaft engages the development roller gear.
The development drive gears (except for the gears in the development unit) are helical gears. These gears are quieter than normal gears.


### 6.9.3 DEVELOPER MIXING

The two mixing augers, [E, F] keep the developer evenly mixed. Mixing auger 2 [E] transports excess developer, scraped off the development roller [G] by the doctor blade [H], towards the front of the machine. Mixing auger 1 [F] returns the excess developer, along with new toner, to the rear of the mixing assembly. Here the developer is reapplied to the development roller.


### 6.9.4 DEVELOPMENT BIAS



This machine uses a negative-positive development system, in which black areas of the latent image are at a low negative charge (about $-154 \pm 50 \mathrm{~V}$ ) and white areas are at a high negative charge (about -950 V).

To attract negatively charged toner to the black areas of the latent image on the drum, the high voltage supply board applies a bias of -650 volts to the development rollers throughout the image development process. The bias is applied to the development roller shaft [A] through the drive shaft [B].

The development bias voltage ( -650 V ) can be adjusted with SP2-201-1.

### 6.9.5 TONER SUPPLY

## Toner Bottle Replenishment Mechanism



When a toner bottle is placed in the bottle holder unit [A] and the unit is pushed in completely, toner shutter [B] moves against the side [C] of the PCU. When the toner bottle holder lever [D] is put back in the original position, the cap [E] on the toner bottle is pulled away and kept in place by the chuck [F].

The toner supply mechanism transports toner from the bottle to the development unit. The toner bottle has a spiral groove [G] that helps move toner to the development unit.

To add a new toner bottle, first lift the toner bottle holder. When this is done, the chuck releases the toner bottle cap into its proper position to prevent toner from scattering.

Then, when the bottle holder unit is pulled out to add a new toner bottle, the toner shutter shuts to block the opening as a result of pressure from a spring.

## Toner Supply Mechanism



The toner supply motor [A] drives the toner bottle [B] and the mylar blades [C]. First, the toner falls down into the toner bottle holder. The toner supply mylar blades transfer the toner to the slit [D]. When the PCU is installed in the machine, the shutter [E] above the PCU is opened by the toner bottle holder. Then the toner falls down into the development unit through the slit and the shutter.

### 6.9.6 TONER DENSITY CONTROL

## Overview

There are four modes for controlling toner supply as shown in the following tables, which can be changed with by SP2-921. The factory setting is sensor control 1 mode.

Basically, the toner concentration in the developer is controlled using the standard TD sensor voltage (Vts), toner supply reference voltage (Vref), actual TD sensor output voltage (Vt), and ID sensor output data (Vsp/Vsg).


The four-toner density control modes are as follows.

| Mode | Sensor control 1 (SP2-921, "0"): Normally use this setting only |
| :--- | :--- |
| Toner supply decision | Compare Vt with a reference voltage (Vts or Vref) |
| Toner control process | Toner is supplied to the development unit when Vt is higher than <br> the reference voltage (Vts or Vref). This mode keeps the Vref value <br> for use with the next toner density control. |
| Vts is used for the first toner density control after a new PCU has <br> been installed, until it has been corrected with the ID sensor output. <br> Vref is used after Vts has been corrected with the ID sensor output <br> voltage (corrected during the first toner density control for a new <br> PCU). |  |
| Toner supply amount | Varies |
| Toner end detection | Performed |


| Mode | Sensor control 2 (SP2-921, "1"): For designer's use only; do not use <br> in the field |
| :--- | :--- |
| Toner supply decision | Compare Vt with a reference voltage (Vts) |
| Toner control process | This toner control process is the same as sensor control 1 mode. <br> However, the reference voltage used is always Vts. |
| Toner supply amount | Varies |
| Toner end detection | Performed |


| Mode | Fixed control 1 (SP2-921, "2"): For designer's use only; do not use <br> in the field |
| :--- | :--- |
| Toner supply decision | Compare Vt with a reference voltage (Vts or Vref) |
| Toner control process | This toner control process is the same as sensor control 1 mode. |
| Toner supply amount | Fixed (SP2-925) |
| Toner end detection | Performed |


| Mode | Fixed control 2 (SP2-921, "3"): Use temporarily if the TD sensor <br> needs to be replaced |
| :--- | :--- |
| Toner supply decision | None |
| Toner control process | Toner is supplied every printed page regardless of Vt. |
| Toner supply amount | Fixed (SP2-925) |
| Toner end detection | Not performed |

## Toner Density Sensor Initial Setting

The TD sensor initial setting (SP2-214: Developer Initialize) procedure must be done after replacing the developer. During TD sensor initial setting, the TD sensor is set so that the TD sensor output is the value of SP2-926 (default: 2.4 V ). This value will be used as the standard reference voltage (Vts) of the TD sensor.

## Toner Concentration Measurement

The toner concentration in the developer is detected once every copy cycle. The sensor output voltage $(\mathrm{Vt})$ during the detection cycle is compared with the standard reference voltage (Vts) or the toner supply reference voltage (Vref).

## Vsp/Vsg Detection

The ID sensor detects the following voltages.

- Vsg: The ID sensor output when checking the drum surface
- Vsp: The ID sensor output when checking the ID sensor pattern

In this way, the reflectivity of both the drum surface and the pattern on the drum are checked, compensating for any variations in the reflectivity of the pattern on the drum or the reflectivity of the drum surface.

The ID sensor pattern is made on the drum by the charge roller and laser diode.
Vsp/Vsg is not detected every page or job; it is detected at the following times to decide Vref.

- During warm-up at power on
- If the machine starts warming up when the fusing temperature is $30^{\circ} \mathrm{C}$ or less (default) after entering night mode or low power mode (SP2-994 specifies the temperature setting).


## Toner Supply Reference Voltage (Vref) Determination

The toner supply reference voltage (Vref) is used for toner supply determination (see below). Vref is determined using the following data:

- ID sensor output (Vsp/Vsg)
- (Vts or the current Vref) - Vt


## Toner Supply Determination

The reference voltage (Vts or Vref) is the threshold voltage for determining whether or not to supply toner. If Vt becomes greater than the reference voltage, the machine supplies additional toner.
This can be checked using SP2-220.

## Toner Supply Motor On Time Determinations

For fixed control mode, the toner supply motor on time is specified by the setting of SP2-925, and does not vary. The default setting is 200 ms for each copy. The toner supply motor on time for each value of SP2-925 is as follows.

| Value of SP2-925 | Motor On Time (t = 200 ms) |
| :---: | :---: |
| 0 | t |
| 1 | 2 t |
| 2 | 4 t |
| 3 | 8 t |
| 4 | 12 t |
| 5 | 16 t |
| 6 | Continuously |
| 7 | Not supplied |

For sensor control modes 1 and 2, the toner supply motor on time is decided by the following factors.

- Vt
- Vref or Vts
- TD sensor sensitivity (coefficient: S , value is 0.4 )

There are seven levels for toner supply motor on time as shown below.

| Level | Decision | Motor On Time (seconds) |
| :---: | :---: | :---: |
| 1 | (Vts or Vref) < Vt $\leq$ (Vts or Vref) $+\mathrm{S} / 16$ | t (0.4) |
| 2 | (Vts or Vref) < Vt $\leq$ (Vts or Vref) $+\mathrm{S} / 8$ | tx 2 (0.8) |
| 3 | (Vts or Vref) < Vt $\leq$ (Vts or Vref) $+\mathrm{S} / 4$ | tx 4 (1.6) |
| 4 | (Vts or Vref) < Vt $\leq$ (Vts or Vref) $+\mathrm{S} / 2$ | t $\times 8$ (3.2) |
| 5 | (Vts or Vref) < Vt $\leq$ (Vts or Vref) $+4 \mathrm{~S} / 5$ | t $\times 16$ (6.4) |
| 6 | $\mathrm{Vt} \geq$ (Vts or Vref) $+4 \mathrm{~S} / 16$ (near-end) | T (30); see note 3 |
| 7 | $\mathrm{Vt} \geq$ (Vts or Vref) + S (toner end) | T (30); see note 3 |

NOTE: 1) The value of " $t$ " can be changed using SP2-922 (default: 0.4 second)
2) The value of "T" can be changed using SP2-923 (default: 30 seconds)
3) T (30) means that toner is supplied intermittently in a $1 / 3$ duty cycle ( 1 s on, 2 s off) for 30 seconds

### 6.9.7 TONER SUPPLY IN ABNORMAL SENSOR CONDITIONS

## ID Sensor

Readings are abnormal if any of the following conditions occur:

- $\mathrm{Vsg} \leq 2.5 \mathrm{~V}$
- V sg $<3.5 \mathrm{~V}$ when maximum power (979) is applied
- $\mathrm{Vsp} \geq 2.5 \mathrm{~V}$
- $(\mathrm{Vsg}-\mathrm{Vsp})<1.0 \mathrm{~V}$
- $\mathrm{Vt} \geq 4.5 \mathrm{~V}$ or $\mathrm{Vt} \leq 0.2 \mathrm{~V}$

The above ID sensor values can be checked using SP2-221.
When this is detected, the machine changes the value of Vref to 2.5 V then does the toner density control process (in a similar way to sensor control mode 2).
No SC code is generated if the ID sensor is defective.

## TD Sensor

The TD sensor output is checked every copy. If the readings from the TD sensor become abnormal, the machine changes the toner density control mode to fixed supply mode 2, and the toner supply amount per page is always 200 ms , regardless of the value of SP2-925. If the machine detects the TD sensor error condition 10 times consecutively, an SC code is generated (SC390) and the machine must be repaired.

### 6.9.8 TONER NEAR END/END DETECTION AND RECOVERY

The toner near end and end conditions are detected using the Vt and Vref values, in a similar way to toner density control.

This is done in all toner supply modes except for fixed mode 2, when toner end is not detected.

## Toner Near End Detection

If Vt is at level 6 (see the table on the previous page) five times consecutively, the machine enters the toner near end condition and the toner end indicator starts blinking. Then the machine supplies toner for a certain time, which depends on the setting of SP2-923 (see the previous page).

## Toner Near End Recovery

If the machine detects "Vt < (Vref or Vts) $+4 \mathrm{~S} / 5$ " twice consecutively in any of the following situations, the machine clears the toner near end condition.

- While in the toner recovery cycle (supplying toner on and off for 30 s-see the previous page) after the machine has detected a toner near end condition.
- During copying in the toner near end condition.
- If the front cover is opened and closed for more than 10 seconds while a toner near end condition exists.


## Toner End Detection

There are two situations for entering the toner end condition.

- When Vt is level 7 three times consecutively, the machine enters the toner end condition.
- When 50 copies have been made since entering the toner near end condition. The number of copies between toner near-end and toner end can be changed using SP2-213.


## Toner End Recovery

While turning on the main switch, if the front cover is opened for 10 seconds or more and then closed while a Toner End condition exists (following toner bottle replacement), the machine clears the Toner End condition. The recovery procedure is the same as for toner near end. It takes about two minutes.

### 6.10 DRUM CLEANING AND TONER RECYCLING

### 6.10.1 DRUM CLEANING

The cleaning blade [A] removes any toner remaining on the drum after the image is transferred to the paper. This model uses a counter blade system.
The cleaning blade scrapes off toner remaining on the drum. When toner builds up in the cleaning unit, toner at the top of the pile is removed by the toner collection coil [B].
To remove the toner and other particles that are accumulated at the edge of the cleaning blade, the drum turns in reverse for about 5 mm at the end of every copy job.


### 6.10.2 TONER RECYCLING

Toner picked up by the toner collection coil [A], is transported to the opening $[B]$ in the side of the PCU. Then, this toner falls into the development unit with new toner coming from the toner bottle and it is all mixed together by mixing auger $1[C]$ and used again.
[B]


### 6.11 PAPER FEED

### 6.11.1 OVERVIEW



There are one or two paper trays, each of which can hold 250 sheets.
The paper tray feed stations use a friction pad system. To prevent paper from getting caught inside the machine when the tray is pulled out, the paper feed roller and shaft do not separate from the tray when the tray is pulled out.
The two relay sensors are used for paper jam detection. The lower one detects jams when paper is fed up from the optional paper feed unit.
The components of the paper feed station are as follows.

1. Paper End Sensor
2. Paper Feed Roller
3. Registration Roller
4. Paper Size Switch
5. Upper Relay Roller
6. Upper Relay Sensor
7. Lower Relay Sensor
8. Friction Pad

### 6.11.2 PAPER FEED DRIVE MECHANISM

The main motor [A] drives the pick-up and feed mechanism of both the first and second paper trays. The paper feed clutches $[B]$ transfer drive from this motor to the paper feed rollers [C].

When the paper feed clutch turns on, the feed roller starts to feed the paper. The paper feed clutch stays on until shortly after the registration sensor has been activated.


### 6.11.3 PAPER FEED AND SEPARATION MECHANISM

The paper feed roller [A] drives the top sheet of paper from the paper tray to the copier. The friction pad [B] allows only one sheet to feed at a time. The friction pad applies pressure to the feed roller with a spring [C].

The friction pad pressure cannot be adjusted.


Detailed
Descriptions

### 6.11.4 PAPER LIFT MECHANISM

When the paper tray $[A]$ is closed, projection [B] on the copier frame pushes slider [C] (on the bottom part of the paper tray) off the bottom plate hook [D]. After the release slide comes off, compressed springs lift the bottom plate.


### 6.11.5 PAPER END DETECTION

If there is any paper in the paper tray, the paper stack lifts the feeler, the paper end sensor $[\mathrm{A}]$ is deactivated.
When the paper tray runs out of paper, the paper end feeler drops into the cutout $[B]$ in the tray bottom plate and the paper end sensor is activated.

When the paper tray is drawn out with no paper in the tray, the shape of the paper end feeler causes it to lift up.


### 6.11.6 PAPER SIZE DETECTION

## Paper Tray

| $\qquad$ | 1 | 2 | 3 |
| :---: | :---: | :---: | :---: |
| A3, 11" x 17" | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |
| A4 LEF | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |
| $\begin{array}{\|l\|l\|} \hline \text { A4 SEF } \\ \text { 81/2" x } 11 \end{array}$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |
| $\begin{array}{\|\|l\|} \hline \text { A5 LEF, } \\ \text { 81/2" x } 14 " \end{array}$ | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |
| 81/2" x 13" | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |
| 11" x 81/2" | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |
| * (Asterisk) | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |

- ON (Not pushed)

O: OFF (Pushed)


There are three paper size microswitches [A] on the front right plate of the paper tray unit. The switches are actuated by a paper size actuator $[B]$ behind the paper size indicator plate, which is on the front right of the tray.
Each paper size has its own actuator, with a unique combination of notches. To determine which size has been installed, the CPU reads which microswitches the actuator has switched off.

The CPU disables paper feed from a tray if the paper size cannot be detected. If the paper size actuator is broken, or if there is no tray installed, the Add Paper indicator will light.
When the paper size actuator is at the "*" mark, the paper tray can be set up to accommodate one of a wider range of paper sizes by using User Tools. If the paper size for this position is changed without changing the User Tool setting, a paper jam will result.

## By-pass Tray



The by-pass feed paper size switch [A] monitors the paper width. The side fence is connected to the terminal plate gear. When the side fences move to match the paper width, the circular terminal plate rotates over the wiring patterns on the rectangular part of the paper size switch. The patterns for each paper width in the paper size switch are unique.

North America

| CN No. (BICU) | 11" $\mathbf{x 1 7 "}$ | $\mathbf{8 1 / 2 "} \mathbf{x ~ 1 4 "}$ | $51 / \mathbf{n}^{\prime \prime} \times \mathbf{8 1 / 2 "}$ |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| CN136-1 | ON/OFF | OFF | OFF | OFF | OFF |
| CN136-2 | OFF | OFF | OFF | ON | OFF |
| CN136-3 (GND) | OFF | OFF | OFF | OFF | OFF |
| CN136-4 | OFF | ON | OFF | OFF | ON |
| CN136-5 | ON | ON | OFF | OFF | OFF |

## Europe/Asia

| CN No. (BICU) | A3 | A4 SEF | $\mathbf{8 " ~}^{\mathbf{x} 13 "}$ | A5 SEF |
| :---: | :---: | :---: | :---: | :---: |
| CN136-1 | ON/OFF | OFF | OFF | OFF |
| CN136-2 | OFF | OFF | OFF | ON/OFF |
| CN136-3 (GND) | OFF | OFF | OFF | OFF |
| CN136-4 | OFF | ON | ON | OFF |
| CN136-5 | ON | ON | OFF | OFF |

### 6.11.7 SIDE FENCES

If the tray is full of paper and it is pushed in strongly, the fences may deform or bend. This may cause the paper to skew or the side-to-side registration to be incorrect. To correct this, each side fence has a stopper [A] attached to it. Each side fence can be secured with a screw, for customers who do not want to change the paper size.


### 6.11.8 PAPER REGISTRATION

The drive from the main motor $[A]$ is transmitted to the registration roller through the registration clutch gear [B].

The registration sensor [C] is used for correcting paper skew and for detecting paper misfeeds.

The cleaning mylar [D] contacts the registration roller. It removes paper dust from the registration roller so that this dust will not transfer into the development unit through the drumcleaning unit.
The amount of paper buckle at the
 registration roller to correct skew can be adjusted with SP1-003.

If jams frequently occur after registration, SP1-903 can be used to activate the relay clutch so that the relay roller assists the registration roller in feeding the paper along. When feeding from the bypass tray, the by-pass feed clutch is activated, turning the by-pass feed roller. This feature may be needed when feeding thick paper, and cannot be used for the first paper feed tray.

### 6.12 IMAGE TRANSFER AND PAPER SEPARATION

### 6.12.1 OVERVIEW



The transfer roller $[A]$ touches the surface of the drum $[B]$. The high voltage supply board supplies a positive current to the transfer roller, which attracts the toner from the drum onto the paper. The current depends on the paper width, paper type, and paper feed tray.
The curvature of the drum and the discharge plate [C] help the paper to separate from the drum. The discharge plate is grounded.

Drive from the drum through a gear [D] turns the transfer roller.

### 6.12.2 IMAGE TRANSFER CURRENT TIMING

There are two transfer current levels: low and high. The image transfer procedure is as follows:

1. When the CPU receives the image writing start signal, the CPU instructs the high voltage supply board to supply $+10 \mu \mathrm{~A}$ (low transfer current level) to the roller. This prevents any positively charged toner on the drum surface from transferring to the transfer roller.
2. At a certain time after the low transfer current has been supplied to the roller, high transfer current is applied to the roller to transfer the toner to the paper (see the table below).
3. After the trailing edge of the paper has passed through the roller, transfer current turns off. In multiple copy mode, the transfer current shifts again to the low transfer current.

The high transfer current levels (default) are as shown in the following table. With SP2-301, the high transfer current level used for the paper feed trays, duplex tray, by-pass tray, and cleaning an be adjusted.

|  | By-pass Tray <br> (Thick/OHP) | Paper Trayl <br> By-pass Tray <br> (Normal) | By-pass Tray <br> (Special/ <br> Envelope) | Duplex <br> (2nd Side) | Duplex <br> (2nd Side) |
| :--- | :---: | :---: | :---: | :---: | :---: |
| A3/A4 LEF | $11 \mu \mathrm{~A}$ | $12 \mu \mathrm{~A}$ | $13 \mu \mathrm{~A}$ | $12 \mu \mathrm{~A}$ | $17 \mu \mathrm{~A}$ |
| DLT | $12 \mu \mathrm{~A}$ | $18 \mu \mathrm{~A}$ | $15 \mu \mathrm{~A}$ | $18 \mu \mathrm{~A}$ | $17 \mu \mathrm{~A}$ |
| B4 SEF | $12 \mu \mathrm{~A}$ | $12 \mu \mathrm{~A}$ | $15 \mu \mathrm{~A}$ | $12 \mu \mathrm{~A}$ | $18 \mu \mathrm{~A}$ |
| LT SEF | $17 \mu \mathrm{~A}$ | $17 \mu \mathrm{~A}$ | $15 \mu \mathrm{~A}$ | $17 \mu \mathrm{~A}$ | $24 \mu \mathrm{~A}$ |
| A4 SEF | $21 \mu \mathrm{~A}$ | $15 \mu \mathrm{~A}$ | $28 \mu \mathrm{~A}$ | $15 \mu \mathrm{~A}$ | $24 \mu \mathrm{~A}$ |
| B5 SEF | $22 \mu \mathrm{~A}$ | $19 \mu \mathrm{~A}$ | $28 \mu \mathrm{~A}$ | $19 \mu \mathrm{~A}$ | $22 \mu \mathrm{~A}$ |
| A5 SEF | $22 \mu \mathrm{~A}$ | $19 \mu \mathrm{~A}$ | $28 \mu \mathrm{~A}$ | $19 \mu \mathrm{~A}$ | $28 \mu \mathrm{~A}$ |
| HLT SEF | $22 \mu \mathrm{~A}$ | $19 \mu \mathrm{~A}$ | $28 \mu \mathrm{~A}$ | - | - |
| B6 SEF | $22 \mu \mathrm{~A}$ | $19 \mu \mathrm{~A}$ | $28 \mu \mathrm{~A}$ | - | - |
| A6 SEF | $22 \mu \mathrm{~A}$ | $19 \mu \mathrm{~A}$ | $34 \mu \mathrm{~A}$ | - | - |
| Post |  |  |  |  |  |
| card/Envelope | $22 \mu \mathrm{~A}$ | $19 \mu \mathrm{~A}$ | $34 \mu \mathrm{~A}$ | - | - |

Be careful when increasing the transfer current. This may cause a ghosting effect, in which part of the image at the top of the page is repeated lower down the page at a lower density. In the worst case, it may also damage the OPC drum.

### 6.12.3 TRANSFER ROLLER CLEANING

If the paper size is smaller than the image, or if a paper jam occurs during printing, toner may be transferred to the roller surface. To prevent the toner from transferring to the back side of the printouts, the transfer roller requires cleaning before the next printing run.

During transfer roller cleaning, the high voltage supply unit supplies a negative cleaning voltage (about -1 kV ) to the transfer roller. Any negatively charged toner on the transfer roller is then transferred back to the drum. Then a positive cleaning current $(+10 \mu \mathrm{~A})$ is applied to the transfer roller to push back to the drum any positively charged toner on the transfer roller.
The machine goes through the cleaning mode in the following conditions:

- Before starting the printing job (only if enabled with SP2-996; note that the default setting is off)
- Just after the power is switched on.
- After a copy jam has been cleared
- After 10 or more sheets of paper have been copied and the copy job has finished.

Also, the transfer roller cleaning current can be adjusted using SP2-301-4.

### 6.12.4 PAPER SEPARATION MECHANISM



The discharge plate $[\mathrm{A}]$ and the drum curvature of the drum help the paper to separate away from the drum. The discharge plate is grounded.

### 6.13 IMAGE FUSING AND PAPER EXIT

### 6.13.1 OVERVIEW



1. Paper exit roller
2. Exit sensor
3. Hot roller strippers
4. Pressure roller
5. Cleaning roller
6. Pressure spring
7. Fusing lamps
8. Thermistor
9. Thermostat
10. Hot roller
11. Thermostat

### 6.13.2 FUSING UNIT DRIVE AND RELEASE MECHANISM



## Fusing Unit Drive

The main motor [C] drives the fusing unit through a gear train, and drives the paper exit rollers $[A]$ through the timing belt $[B]$.

## Drive Release Mechanism

When the right door [I] is open, the spring [G] pushes the top end of the gear holder [F] to the right. The drive gear is released from the fusing-unit drive gear [J]. When you close the right door, the mechanical link [H] pushes the spring [G]. The gear holder turns counterclockwise by the force of another spring [D], and engages with the fusing-unit drive gear.

## Contact/Release Control

The drive power is not transmitted to the fusing unit (Drive Release Solenoid) during warming up when the fusing temperature (at the start) is $18^{\circ} \mathrm{C}$ or higher.
The drive power is transmitted when the fusing temperature is less than $18^{\circ} \mathrm{C}$. This contact/release control is based on the following fact.

The hot roller [L] takes a shorter time to become hot enough if it is not turning during warming up. When, however, the fusing temperature (at the start) is low, the temperature of the hot-roller

| Fusing Temp. | Contact/Release |
| :--- | :---: |
| $18^{\circ} \mathrm{C}$ or higher | Release |
| Less than $18^{\circ} \mathrm{C}$ | Contact | surface may become uneven.

You can disable this control (SP1-103-001).

## Drive Release Solenoid

The fusing drive release solenoid [E] is on the rear end of the gear holder. When the solenoid is off, the spring [D] pulls the gear holder, and the drive gear engages with the fusing unit drive gear. When

| Solenoid | Drive gear |
| :---: | :---: |
| Off | Engaged |
| On | Released | the solenoid is on, it pulls the top end of the gear holder to the right, and the gear holder turns clockwise. As a result, the drive gear is released from the fusing unit drive gear.

The release solenoid comes on when you turn on the main switch if the fusing temperature is $18^{\circ} \mathrm{C}$ or higher (Contact/Release Control). The solenoid releases the drive gear from the fusing unit drive gear. The fusing lamps heat the hot roller [L] more effectively since the heat is not conducted to the pressure roller [K]. When the hot roller becomes hot enough, the release solenoid turns off, letting the drive gear engage with the fusing unit drive gear.

### 6.13.3 FUSING ENTRANCE GUIDE SHIFT

The entrance guide $[\mathrm{A}]$ is adjustable for paper thickness to prevent creasing. The outer screw holes [B] on each side are used as the default setting.
If creasing occurs frequently in the fusing unit, adjust the entrance guide to the right, by securing it with the inner holes [C]. This allows more direct access to the gap between the hot roller and the pressure roller.

[B]


### 6.13.5 FUSING TEMPERATURE CONTROL

## Overview



There are two fusing lamps (not identical), two thermistors, and four thermostats.
The fusing temperature is controlled using the thermistors [A].
The CPU checks the output from the fusing thermistor once every 1.5 seconds. The CPU decides how long the lamps must be switched on during the next 1.5 seconds by comparing the following temperatures:

- The center thermistor temperature and the target center temperature
- The end thermistor temperature and the target end temperature

The fusing lamp works to maintain a target fusing temperature of $160^{\circ} \mathrm{C}$ during copying.

## Temperature Control

According to the operation mode, the fusing temperature is controlled. The diagram illustrates the transition of fusing temperature. After you turn the main switch on, the fusing temperature rises from the room temperature ( $\mathrm{t}_{0}$ ) to one of the specified temperatures. You can adjust some of the temperatures.


## A1 Regular Start Mode/A2 Cold Start Mode (SP1-107-1/2)

Turning the fusing lamp on and off may affect the voltage of the power source in the room, causing the fluorescent lights in the room to flicker. To lighten this problem, you can reduce the checking repetition to 20 times.

When machine initialization ends, the fusing temperature is set to one of the following temperatures:

- The Standby Temperature ( $\mathrm{T}_{2}$ : SP1-105-3/4) when there is no print job
- The First Print Temperature when the copier has received a print request during machine initialization

You cannot directly adjust the First Print Temperature. This temperature is $10^{\circ} \mathrm{C}$ higher (up to $185^{\circ} \mathrm{C}$ ) than the Copying Temperature (Copying Mode).

## C Copying Mode

When the copier is making copies, the fusing temperature is set to one of the following temperatures:

- The Warm Up Temperature (SP1-105-1/2) to output the first print after the Low Power Mode ( Low Power Mode)
- The Copying Temperature ( $\mathrm{T}_{4}$ : SP1-105-5/6) to output the second print (and after the second)

You can raise the Warm Up Temperature to make better the fusing quality of the first print. While the copier is adjusting the fusing temperature to the Warm Up Temperature, the message "Copy starts after warm up" is displayed.

## c Thick Paper Mode

When the machine is making copies on thick paper, the fusing temperature is set to the Thick Paper Temperature (SP1-105-9/10). When thick paper reaches the registration sensor, the copier checks the fusing temperature, and executes one of the following processing:

- Stops feeding the thick paper (and keeps it at the registration sensor) and waits for the fusing temperature to reach the predefined temperature-the temperature $5^{\circ} \mathrm{C}$ lower than the Thick Paper Temperature. (The fusing temperature keeps rising until it reaches the Thick Paper Temperature while the thick paper travels from the registration sensor to the fusing unit.)
- Continues feeding paper and executes the print job if the fusing temperature is high enough.


## b1/b2 Standby Mode

When the copier is not making copies, the fusing temperature is set to the Standby Temperature ( $\mathrm{T}_{2}$ : SP1-105-3/4). You can adjust this temperature. However, if you have raised this temperature, the BICU may be unable to generate an SC code in the event of fusing lamp error.
While in the Standby Mode, the copier checks the fusing temperature every 1.5 seconds (G: SP1-108-1). Turning on and off the fusing lamp may affect the voltage of the power source (in the room), causing the fluorescent lights (in the room) to flicker. To lighten such trouble, you can adjust the control period. However, if you elongate this period (to two seconds or longer), the BICU may be unable to generate an SC code in the event of a fusing lamp error.

## e Low Power Mode

When the Energy Saver Timer (屋葍 > System Settings > Timer Settings $\rightarrow$ Energy Saver Timer) expires, the fusing temperature is set to the Low Power Temperature ( $\mathrm{T}_{1}$ : SP1-105-7/8).

### 6.13.6 OVERHEAT PROTECTION

This machine protects its hardware from overheat by three features. Normally, the first feature can fully protect the hardware. The second feature works as the failsafe feature for the first one. The third feature works as the fail-safe feature for the second one.

FIRst Feature: If the fusing temperature reaches $230^{\circ} \mathrm{C}$ (or higher) and stays so for one second, the controller turns the fusing lamp off. In a case like this, SC543 or SC553 is displayed.

SECOND FEATURE: If the fusing feature reaches $250^{\circ} \mathrm{C}$, the controller cuts off the 24 V line. (The fusing lamps are on the 24 V line.)

Third Feature: Two thermostats are attached on each line of the two fusing lamps. (four thermostats in total). One of the two thermostats cuts the power supply to the fusing lamp at $179^{\circ} \mathrm{C}$, and the other cuts the power supply at $180^{\circ} \mathrm{C}$. (Note that the thermostat temperature is somewhat lower than the fusing temperature.)

### 6.14 DUPLEX UNIT

### 6.14.1 OVERALL



The printed page from the fusing unit goes straight through to the exit tray, or upward to the inverter section, depending on the position of the junction gate.
If the user selects duplex mode, the page is directed to the inverter tray, then reversed through the duplex unit, and back into the machine for printing the second side.

1. Duplex Inverter Roller
2. Duplex Entrance Sensor
3. Upper Transport Roller
4. Middle Transport Roller
5. Duplex Exit Sensor
6. Lower Transport Roller
7. Junction Gate
8. Duplex Inverter Sensor

### 6.14.2 DRIVE MECHANISM



1. Duplex Inverter Roller
2. Duplex Inverter Motor
3. Upper Transport Roller
4. Duplex Transport Motor
5. Lower Transport Roller
6. Middle Transport Roller

### 6.14.3 BASIC OPERATION

To increase the productivity of the duplex unit, copies are printed as follows.

## Larger than A4 Short-edge/LT Short-edge

The paper feed path can hold only one sheet of copy paper at a time.
Example: 8 pages. The number [A] in the illustration shows the order of pages. The number [B] in the illustration shows the order of sheets of copy paper (if black, this indicates the second side).


Detailed
Descriptions


## Up to A4 Short-edge/LT Short-edge

The paper feed path can hold two sheets of copy paper.
Example: 8 pages. The number [A] in the illustration shows the order of pages. The number [ B ] in the illustration shows the order of sheets of copy paper (if black, this indicates the second side).


### 6.14.4 FEED IN AND EXIT MECHANISM



During duplex copying, the inverter gate solenoid [A] switches on and the junction gate $[B]$ switches over to direct the paper to the inverter. When the paper trailing edge reaches the duplex inverter sensor [C], the inverter roller [D] reverses its rotation direction and the paper goes to the duplex unit. The paper is then sent to the mainframe registration rollers to print the reverse side.
If there are two or more copies being made with A4/81/2" x 11" SEF (or smaller), the next sheet waits at the registration sensor for the current sheet to exit the inverter.

### 6.15 ENERGY SAVER MODES OF BASIC MACHINES

This section (6.15) illustrates the energy saver modes of the basic machine (the machine without the optional controller). For the energy saver modes of the MFP machine (the machine with the optional controller), see section 6.16.

## Overview



The machine has two energy-saver modes: the Low Power Mode and the Night/Off Mode. The table lists the status of several components. For the fusing temperature, see section 6.13.5.

|  | Operation panel | Engine | Exhaust fan |
| :--- | :---: | :---: | :---: |
| Operating Mode* | On | On | On |
| Low Power Mode | Off | On | Off |
| Night/Off Mode | Off | Off** | Off |

* The "Operating Mode" here refers to all the modes (and status) other than the Low Power Mode and Night/Off Mode. Actual power consumption (during the Operating Mode) depends on job status and environmental conditions.
** The SRAM is alive and backs up the engine controller.


## AOF

When AOF is off, the engine controller is unable to start the Night/Off Mode. The user should keep AOF on (复圆 > System Settings > Key Operator Tools > AOF).

## Timers

The engine controller references the Energy Saver Timer to start the Low Power Mode, and references the Auto Off Timer to start the Night/Off Mode. The user can set these timers (

The Energy Saver Timer and the Auto Off Timer start at the same time ( $\mathrm{t}_{0}$ ) when the machine ends all jobs or when the user ends all manual operations. Note that the Auto Off Timer does not wait for the Energy Saver Timer. Therefore, if the user specifies a smaller value in the Energy Saver Timer, the Auto Off Timer expires earlier than the Energy Saver Timer. In a case like this, the Low Power Mode is not activated. Instead, the engine controller starts the Night/Off Mode when the Auto Off Timer expires.

| Specified value | Low Power Mode | Night/Off Mode |
| :---: | :---: | :---: |
| Energy Saver Timer > Auto Off Timer | Can start | Can start |
| Energy Saver Timer = Auto Off Timer | Cannot start | Can start |
| Energy Saver Timer < Auto Off Timer | Cannot start | Can start |

## Recovery

Any of the following operations brings the machine back to the Operating Mode:

- The power switch is pressed.
- Originals are set on the document feeder.
- The platen cover (or document feeder) is opened.


### 6.16 ENERGY SAVER MODES OF MFP MACHINES

This section (6.16) illustrates the energy saver modes of the MFP machine (the machine with the optional controller). For the energy saver modes of the basic machine (the machine without the optional controller), see section 6.15.

## Overview



The machine has three energy-saver modes: the Low Power Mode, the Transit Mode, and the Night/Off Mode. The Transit Mode continues for about two seconds (probably, the user does not recognize this mode when it occurs). The table lists the status of several components. For the fusing temperature, see section 6.13.5.

|  | Operation panel | Engine | Exhaust fan |
| :--- | :---: | :---: | :---: |
| Operating Mode* | On | On | On |
| Low Power Mode | Off | On | Off |
| Transit Mode | Off | On | Off |
| Night/Off Mode | Off | Off** | Off |

* The "Operating Mode" here refers to all the modes (or status) other than the Low Power Mode and Night/Off Mode. Actual power consumption (during the Operating Mode) depends on job status and environmental conditions.
** The SRAM is alive and backs up the engine controller.


## AOF

See "AOF" in section 6.15.

## Timers

The Energy Saver Timer and Auto Off Timer start at the same time（ $\mathrm{t}_{0}$ ）when the machine ends all jobs，when the user ends all manual operations，or when the controller starts the default application program（the program specified by the user ［［／葍＞System Settings＞General Features＞Function Priority］）．The default application program starts when the System Auto Reset Timer expires（東國＞ System Settings＞Timer Settings＞System Auto Reset Timer）．

For more information，see＂Timers＂in section 6．15．

## Recovery

Any of the following operations brings the machine back to the Operating Mode：
－The power switch is pressed．
－Originals are set on the document feeder．
－The platen cover（or document feeder）is opened．
－The controller receives a job over the network or the telephone line．
－An SC code is generated．

## SPECIFICATIONS

## SPECIFICATIONS

## 1. GENERAL SPECIFICATIONS

Configuration: Desktop<br>Copy Process:<br>Originals:<br>Original Size:<br>Copy Paper Size:<br>Dry electrostatic transfer system<br>Sheet/Book/Object<br>Maximum A3/11" x 17"<br>Maximum<br>A3/11" x 17"<br>Minimum<br>A5 LEF/81/2" x 51/2" (Paper tray)<br>A6 SEF/51/2" x 81/2" (Bypass)<br>Custom sizes in the bypass tray:<br>Width: 90 - 297 mm (3.55" - 11.69")<br>Length: 148 - 600 mm (5.83" - 23.62")<br>NOTE: Physically, the by-pass tray can handle the following size (but this size is not recognized by the application software):<br>Width: 305 mm Length: $1,260 \mathrm{~mm}$<br>Copy Paper Weight: Paper Tray:<br>$60-90 \mathrm{~g} / \mathrm{m}^{2}, 16-24 \mathrm{lb}$.<br>Bypass:<br>$52-162 \mathrm{~g} / \mathrm{m}^{2}, 14-43 \mathrm{lb}$.<br>Reproduction Ratios: 3 enlargement and 4 reduction

|  | A4/A3 Version | LT/DLT Version |
| :---: | :---: | :---: |
| Enlargement | $200 \%$ | $155 \%$ |
|  | $141 \%$ | $129 \%$ |
|  | $122 \%$ | $121 \%$ |
| Full Size | $100 \%$ | $100 \%$ |
| Reduction | $93 \%$ | $93 \%$ |
|  | $82 \%$ | $78 \%$ |
|  | $71 \%$ | $65 \%$ |
|  | $50 \%$ | $50 \%$ |

Zoom:
$50 \%$ to $200 \%$, in $1 \%$ steps

## SPECIFICATIONS

Power Source: Taiwan $110 \mathrm{~V}, 60 \mathrm{~Hz}$ 12 A
Korea
220 V, 60 Hz
7 A
North and South America $120 \mathrm{~V}, 60 \mathrm{~Hz}$ 12 A
Europe, Asia $220-240 \mathrm{~V}, 50 / 60 \mathrm{~Hz}$ 7 A

Power Consumption:

| Full System | Not above 1.28 kW |
| :--- | :---: |
| Energy Saver | Not above 10 W |
| Off Mode | Not above 1 W |

NOTE: Full system - Maximum possible power consumption (any combination of mainframe and options), excluding optional heaters, key counter, fax unit, and printer controller.

Noise Emission

|  | Sound Power Level |
| :--- | :--- |
| Standby (Mainframe/Full <br> system): | Not above 40 dB(A) |
| Operating (Mainframe only): | Not above $62 \mathrm{~dB}(\mathrm{~A})$ |
| Operating (Full System): | Not above $66 \mathrm{~dB}(\mathrm{~A})$ |

NOTE: The above measurements were made in accordance with ISO 7779. Measurements were taken from the normal position of the operator.

Dimensions (W x D x H)
B121: $550 \times 568 \times 420 \mathrm{~mm}\left(21.7^{\prime \prime} \times 22.4^{\prime \prime} \times 16.5^{\prime \prime}\right)$
B122: $550 \times 568 \times 558 \mathrm{~mm}$ (21.7" x 22.4" x 23.0")
B123: $587 \times 568 \times 558 \mathrm{~mm}$ (23.1" x 22.4" x 23.0")
NOTE: Measurement Conditions

1) With bypass feed table closed
2) Without the $A(R) D F$

Weight
B121: 35 kg (77 lb.)
B122: 43 kg ( 95 lb.$)$
B123: 47 kg ( 103 lb.$)$
(Excluding $A(R) D F$, platen cover, toner, and developer)

Copying Speed in Multicopy Mode (copies/minute):

| Mode |  |  | B121 | B122 | B123 |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | Memory copy | $\begin{aligned} & \hline \text { A3 SEF/ } \\ & 11^{\prime \prime} \times 17 \text { " } \end{aligned}$ | 9 | 10 | 10 |
|  |  | $\begin{gathered} \text { A4 LEF/ } \\ 11^{\prime \prime} \times 81 / 2^{\prime \prime} \end{gathered}$ | 15 | 18 | 18 |
|  | DF 1-to-1 | $\begin{aligned} & \hline \text { A3 SEF/ } \\ & 11^{\prime \prime} \times 17 " \end{aligned}$ | 8 | 9 | 9 |
|  |  | $\begin{gathered} \text { A4 LEF/ } \\ 11^{\prime \prime} \times 81 / 2^{\prime \prime} \end{gathered}$ | 15 | 15 | 15 |
|  | Memory copy | $\begin{aligned} & \hline \text { A3 SEF/ } \\ & 11^{\prime \prime} \times 17 " \end{aligned}$ | - | - | 4 |
|  |  | $\begin{gathered} \text { A4 LEF/ } \\ 11^{\prime \prime} \times 81 / 2^{\prime \prime} \end{gathered}$ | - | - | 18 |

NOTE: Measurement Conditions:

1) Figures are for one-sided original to one-sided copy except where stated otherwise
2) Not APS mode
3) $100 \%$ size

Warm-up Time: $\quad$ Basic model: Less than 15 seconds (at $20^{\circ} \mathrm{C}\left[68^{\circ} \mathrm{F}\right]$ ) MFP model: Less than 35 seconds (at $20^{\circ} \mathrm{C}\left[68^{\circ} \mathrm{F}\right]$ )
First Copy Time: Not more than 6.5 seconds
NOTE: Measurement Conditions

1) From the ready state, with the polygonal mirror motor operating.
2) A4/LT copying
3) Not APS mode
4) $100 \%$ size
5) Paper feed from the upper tray

Copy Number Input: Numeric keypad, 1 to 99 (increment, decrement)
Manual Image Density:
Automatic Reset:

Automatic Shut-off: Default is 1 minute. Can be set from 1 to 240 minutes with user tools.

| Copy Paper Capacity: | Paper Tray: <br> 250 sheets (B121) <br> 250 sheets $\times 2$ (B122/B123) |
| :---: | :---: |
|  | Optional Paper Tray Unit: 500 sheets $\times 1$, or 500 sheets $\times 2$ |
|  | Bypass Tray: <br> 100 sheets (sheets up to 432 mm [17"]) <br> 40 postcards <br> 10 envelopes |
|  | NOTE: Copy weight: $80 \mathrm{~g} / \mathrm{m}^{2}$ (20 lb.) |
| Toner Replenishment: | Cartridge replacement (260 g/cartridge) |
| Optional Equipment: | - Platen cover <br> - Auto document feeder <br> - Auto-reverse document feeder <br> - Paper tray unit (1 tray) <br> - Paper tray unit (2 trays) <br> - 1-bin tray <br> - Tray heater <br> - Optics anti-condensation heater <br> - Fax unit <br> - Handset <br> - Printer/scanner unit <br> - GW board <br> - IEEE 1394 <br> - IEEE 1284 <br> - Wireless LAN <br> - Bluetooth <br> - PostScript 3 <br> - NRS (CSS) kit |
| Toner Yield: | 9 k copies (A4 LEF, 6\% full black, 1 to 2 copying, normal text mode) |
| Copy-Tray Capacity | 250 sheets |
| Memory | Basic Model: 16 MB |
|  | MFP Model: 64 MB + 128 MB DIMM |

## Duplex Unit (B123 only)

Copy Paper Size:
Maximum A3/11" x 17"
Minimum
A5/81/2" x 11"
Copy Paper Weight: $\quad 64-90 \mathrm{~g} / \mathrm{m}^{2}(20-24 \mathrm{lb}$.

## 2. SUPPORTED PAPER SIZES

### 2.1 ORIGINAL SIZE DETECTION

## North America, Europe, Asia, Taiwan

| Paper | Size (W x L) | North America |  | Europe/Asia/Taiwan |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Platen | ADF | Platen | ADF |
| A3 SEF | $297 \times 420 \mathrm{~mm}$ | 0 | O | X | X |
| B4 SEF | $257 \times 364 \mathrm{~mm}$ | 0 | 0 | X | X |
| A4 SEF | $210 \times 297 \mathrm{~mm}$ | A4/LT | A4/LT | X | X |
| A4 LEF | $297 \times 210 \mathrm{~mm}$ | A4/LT | A4/LT | X | X |
| B5 SEF | $182 \times 257 \mathrm{~mm}$ | 0 | 0 | 0 | X |
| B5 LEF | $257 \times 182 \mathrm{~mm}$ | 0 | 0 | X | X |
| A5 SEF | $148 \times 210 \mathrm{~mm}$ | 0 | 0 | 0 | X |
| A5 LEF | $210 \times 148 \mathrm{~mm}$ | 0 | 0 | $\mathrm{S}^{\text {a }}$ | X |
| B6 SEF | $128 \times 182 \mathrm{~mm}$ | 0 | 0 | 0 | 0 |
| B6 LEF | $182 \times 128 \mathrm{~mm}$ | 0 | 0 | 0 | 0 |
| 8K SEF | $267 \times 390 \mathrm{~mm}$ | 0 | 0 | 0 | 0 |
| 16K SEF | $195 \times 267 \mathrm{~mm}$ | 0 | 0 | 0 | 0 |
| 16K LEF | $267 \times 195 \mathrm{~mm}$ | 0 | 0 | 0 | 0 |
| DLT SEF | 11.0 " 17.01 | X | X | 0 | 0 |
| SEF | 11.0 " 15.0 " | 0 | 0 | 0 | 0 |
| LG SEF | 8.5 " x 14.0" | X | X | 0 | 0 |
| LT SEF | 8.5 " x 11.0" | X | X | A4/LT | A4/LT |
| LT LEF | 11.0 " $\times 8.5$ " | X | X | A4/LT | A4/LT |
| HLT SEF | 5.5 " $\times 8.5$ " | 0 | X | 0 | 0 |
| HLT LEF | 8.5 " $\times$ 5.5" | S | X | 0 | 0 |
| F/GL (F4) SEF | 8.0 " x 13.0" | F | 0 | F | F |
| Foolscap SEF | 8.5 " $\times 13.0$ " | F | 0 | F | F |
| Folio SEF | 8.25 " 13.0 " | F | 0 | F | F |
| USB4 SEF | 10.0 " $\times 14.0$ " | 0 | 0 | 0 | 0 |
| Eng Quarto SEF | 8.0 " x 10.0" | 0 | 0 | 0 | 0 |
| Eng Quarto LEF | $10.01 \times 8.0$ | 0 | 0 | 0 | 0 |

## SIGN:

X: $\quad$ Detected
O: Not detected
F: $\quad$ Detected as F (8.5" x 13.0")
S: Detected as specified
A4/LT: Detected as A4 or LT as specified
NOTE:
${ }^{\text {a }}$ When the settings of SP4-305-001 is "1: A4/LT," the settings of SP4-303 is invalidated (A5 LEF is not detected).

China, Korea

| Paper | Size ( $\mathbf{W} \times \mathrm{L}$ ) | China/Korea |  | China/Korea (localized) |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Platen | ADF | Platen ${ }^{\text {b }}$ | ADF $^{\text {c }}$ |
| A3 SEF | $297 \times 420 \mathrm{~mm}$ | X | X | X | 0 |
| B4 SEF | $257 \times 364 \mathrm{~mm}$ | X | X | 0 | 0 |
| A4 SEF | $210 \times 297 \mathrm{~mm}$ | X | X | X | 0 |
| A4 LEF | $297 \times 210 \mathrm{~mm}$ | X | X | X | 0 |
| B5 SEF | $182 \times 257 \mathrm{~mm}$ | X | X | 0 | 0 |
| B5 LEF | $257 \times 182 \mathrm{~mm}$ | X | X | 0 | 0 |
| A5 SEF | $148 \times 210 \mathrm{~mm}$ | 0 | X | 0 | X |
| A5 LEF | $210 \times 148 \mathrm{~mm}$ | S | X | S | X |
| B6 SEF | $128 \times 182 \mathrm{~mm}$ | 0 | 0 | 0 | 0 |
| B6 LEF | $182 \times 128 \mathrm{~mm}$ | 0 | 0 | 0 | 0 |
| 8K SEF | $267 \times 390 \mathrm{~mm}$ | 0 | 0 | X | X |
| 16K SEF | $195 \times 267 \mathrm{~mm}$ | 0 | 0 | X | X |
| 16K LEF | $267 \times 195 \mathrm{~mm}$ | 0 | 0 | X | X |
| DLT SEF | 11.0 " x 17.0" | 0 | 0 | 0 | 0 |
| SEF | 11.0 " x 15.0" | 0 | 0 | 0 | 0 |
| LG SEF | 8.5 " $\times 14.0$ " | 0 | 0 | 0 | 0 |
| LT SEF | 8.5 " $\times 11.0$ " | A4/LT | A4/LT | 0 | 0 |
| LT LEF | 11.0 " x 8.5" | A4/LT | A4/LT | 0 | 0 |
| HLT SEF | 5.5 " $\times 8.5^{\prime \prime}$ | 0 | 0 | 0 | 0 |
| HLT LEF | 8.5 " $\times 5.5$ " | 0 | 0 | 0 | 0 |
| F/GL (F4) SEF | 8.0 " x 13.0" | 0 | F | 0 | F |
| Foolscap SEF | 8.5 " $\times 13.0$ " | 0 | F | 0 | F |
| Folio SEF | 8.25 " x 13.0" | 0 | F | 0 | F |
| USB4 SEF | 10.0 " $\times 14.0$ " | 0 | 0 | 0 | 0 |
| Eng Quarto SEF | 8.0 " $\times 10.0$ " | 0 | 0 | 0 | 0 |
| Eng Quarto LEF | 10.0 " x 8.0" | 0 | 0 | 0 | 0 |

## SIGN:

X: Detected
O: $\quad$ Not detected
F: Detected as F (8.5" x 13.0")
S: Detected as specified
A4/LT: Detected as A4 or LT as specified

## NOTE:

${ }^{\text {b }}$ Change the settings of SP4-305-001. Adjust the positions of the APS sensors.
${ }^{\text {c }}$ Change the settings of SP4-305-001.

### 2.2 PAPER FEED AND EXIT

## Main Frame, Duplex

| Paper | Size (W x L) | Main frame tray |  |  |  | Duplex |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Chinal Korea | North America | Europe | Asia/ Taiwan |  |
| A3 SEF | $297 \times 420 \mathrm{~mm}$ | X | M | X | X | X |
| A3 LEF | $420 \times 297 \mathrm{~mm}$ | 0 | 0 | 0 | 0 | 0 |
| B4 SEF | $257 \times 364 \mathrm{~mm}$ | X | M | M | M | X |
| B4 LEF | $364 \times 257 \mathrm{~mm}$ | 0 | 0 | 0 | 0 | 0 |
| A4 SEF | $210 \times 297 \mathrm{~mm}$ | X | M | X | X | X |
| A4 LEF | $297 \times 210 \mathrm{~mm}$ | X | X | X | X | X |
| B5 SEF | $182 \times 257 \mathrm{~mm}$ | M | M | M | M | X |
| B5 LEF | $257 \times 182 \mathrm{~mm}$ | X | M | M | M | X |
| A5 SEF | $148 \times 210 \mathrm{~mm}$ | 0 | 0 | 0 | 0 | X |
| A5 LEF | $210 \times 148 \mathrm{~mm}$ | X | M | X | X | X |
| B6 SEF | $128 \times 182 \mathrm{~mm}$ | 0 | 0 | 0 | 0 | 0 |
| B6 LEF | $182 \times 128 \mathrm{~mm}$ | 0 | 0 | 0 | 0 | 0 |
| A6 SEF | $105 \times 148 \mathrm{~mm}$ | 0 | 0 | 0 | 0 | 0 |
| A6 LEF | $148 \times 105 \mathrm{~mm}$ | 0 | 0 | 0 | 0 | 0 |
| DLT SEF | $11^{\prime \prime} \times 17^{\prime \prime}$ | M | X | M | M | X |
| DLT LEF | $17{ }^{\prime \prime} \times 11^{\prime \prime}$ | 0 | 0 | 0 | 0 | 0 |
| LG SEF | 81/2" x 14" | M | X | M | M | X |
| LG LEF | $14^{\prime \prime} \times 81 / 2^{\prime \prime}$ | 0 | 0 | 0 | 0 | 0 |
| Gov. LG SEF | 81/4" $\times 14{ }^{\prime \prime}$ | M | M | M | M | X |
| Gov. LG LEF | $14^{\prime \prime} \times 81 / 4{ }^{\prime \prime}$ | 0 | 0 | 0 | 0 | 0 |
| LT SEF | 81/2" x 11" | M | X | M | M | X |
| LT LEF | $11^{\prime \prime} \times 81 / 2^{\prime \prime}$ | M | X | X | X | X |
| HLT SEF | 51/2" $\times 81 / 2^{\prime \prime}$ | 0 | 0 | 0 | 0 | 0 |
| HLT LEF | 81/2" $\times 51 / 2^{\prime \prime}$ | M | M | M | M | 0 |

## SIGN:

X: $\quad$ Detected (Main frame tray)/Processed (Duplex)
O: $\quad$ Not detected (Main frame tray)/Not processed (Duplex)
M: Selected manually
K: Specified from the key pad

## NOTE:

Custom
W: 90 to 297 mm
L: 148 to 600 mm
(Continued)

| Paper | Size (W x L) | Main frame tray |  |  |  | Duplex |
| :--- | :--- | :---: | :---: | :---: | :---: | :---: |
|  | Chinal <br> Korea | North <br> America | Europe | Asial <br> Taiwan |  |  |
| Executive SEF | $71 / 4^{\prime \prime} \times 101 / 2^{\prime \prime}$ | M | M | M | M | X |
| Executive LEF | $101 / 2^{\prime \prime} \times 71 / 4^{\prime \prime}$ | M | M | M | M | X |
| F SEF | $8 " \times 13^{\prime \prime}$ | M | M | M | M | X |
| F LEF | $13^{\prime \prime} \times 8^{\prime \prime}$ | O | O | O | O | O |
| Foolscap SEF | $81 / 2^{\prime \prime} \times 13^{\prime \prime}$ | M | X | X | X | X |
| Foolscap LEF | $13^{\prime \prime} \times 81 / 2^{\prime \prime}$ | O | O | O | O | O |
| Folio SEF | $81 / 4^{\prime \prime} \times 13^{\prime \prime}$ | M | M | M | M | X |
| Folio LEF | $13^{\prime \prime} \times 81 / 4^{\prime \prime}$ | O | O | O | O | O |
| 8K SEF | $267 \times 390 \mathrm{~mm}$ | M | M | M | M | X |
| 8K LEF | $390 \times 267 \mathrm{~mm}$ | O | O | O | O | O |
| 16K SEF | $195 \times 267 \mathrm{~mm}$ | M | M | M | M | X |
| 16K LEF | $267 \times 195 \mathrm{~mm}$ | M | M | M | M | X |
| C5 Env. SEF | $162 \times 229 \mathrm{~mm}$ | O | O | O | O | O |
| C6 Env. SEF | $114 \times 162 \mathrm{~mm}$ | O | O | O | O | O |
| DL Env. SEF | $110 \times 220 \mathrm{~mm}$ | O | O | O | O | O |
| Com10 SEF | $41 / 8^{\prime \prime} \times 91 / 2^{\prime \prime}$ | O | O | O | O | O |
| Monarch SEF | $37 / 8^{\prime \prime} \times 71 / 2^{\prime \prime}$ | O | O | O | O | O |
| Custom |  | O | O | O | O | O |

## SIGN:

X: $\quad$ Detected (Main frame tray)/Processed (Duplex)
O: $\quad$ Not detected (Main frame tray)/Not processed (Duplex)
M: Selected manually
K: Specified from the key pad

## NOTE:

Custom
W: 90 to 297 mm
L: 148 to 600 mm

SPECIFICATIONS

Optional Paper Tray, One-Bin Tray, By-pass Tray

| Paper | Size (W x L) | Opt. paper tray | $\begin{aligned} & \text { One- } \\ & \text { bin } \\ & \text { tray } \end{aligned}$ | By-pass |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | China | North America | Europe | Asia/ <br> Taiwa <br> n |
| A3 SEF | $297 \times 420 \mathrm{~mm}$ | X | X | X | M | X | X |
| A3 LEF | $420 \times 297 \mathrm{~mm}$ | 0 | 0 | 0 | 0 | 0 | 0 |
| B4 SEF | $257 \times 364 \mathrm{~mm}$ | M | X | X | M | M | M |
| B4 LEF | $364 \times 257 \mathrm{~mm}$ | 0 | 0 | 0 | 0 | 0 | 0 |
| A4 SEF | $210 \times 297 \mathrm{~mm}$ | X | X | X | M | X | X |
| A4 LEF | $297 \times 210 \mathrm{~mm}$ | X | X | M | M | M | M |
| B5 SEF | $182 \times 257 \mathrm{~mm}$ | M | X | X | M | M | M |
| B5 LEF | $257 \times 182 \mathrm{~mm}$ | M | X | M | M | M | M |
| A5 SEF | $148 \times 210 \mathrm{~mm}$ | M | X | X | M | X | X |
| A5 LEF | $210 \times 148 \mathrm{~mm}$ | 0 | X | M | M | M | M |
| B6 SEF | $128 \times 182 \mathrm{~mm}$ | 0 | 0 | X | M | M | M |
| B6 LEF | $182 \times 128 \mathrm{~mm}$ | 0 | 0 | 0 | 0 | 0 | 0 |
| A6 SEF | $105 \times 148 \mathrm{~mm}$ | 0 | 0 | K | K | K | K |
| A6 LEF | $148 \times 105 \mathrm{~mm}$ | 0 | 0 | 0 | 0 | 0 | 0 |
| DLT SEF | 11" x 17" | X | X | M | X | M | M |
| DLT LEF | 17 " $\times 11^{\prime \prime}$ | 0 | 0 | 0 | 0 | 0 | 0 |
| LG SEF | 81/2" x 14" | X | X | M | X | M | M |
| LG LEF | $14^{\prime \prime} \times 81 / 2^{\prime \prime}$ | 0 | 0 | 0 | 0 | 0 | 0 |
| Gov. LG SEF | 81/4" x 14" | M | X | K | K | K | K |
| Gov. LG LEF | $14^{\prime \prime} \times 81 / 4^{\prime \prime}$ | 0 | 0 | 0 | 0 | 0 | 0 |
| LT SEF | 81/2" x 11" | X | X | M | X | M | M |
| LT LEF | $11^{\prime \prime} \times 81 / 2^{\prime \prime}$ | X | X | M | M | M | M |
| HLT SEF | 51/2" x 81/2" | M | X | M | X | M | M |
| HLT LEF | 81/2" $\times 51 / 2^{\prime \prime}$ | 0 | X | 0 | 0 | 0 | 0 |

## SIGN:

X: Detected (Opt. paper tray and By-pass)/Processed (One-bin tray)
O: Not detected (Opt. paper tray and By-pass)/Not processed (One-bin tray)

M: Selected manually
K: Specified from the key pad

## NOTE:

Custom W: 90 to 297 mm L: 148 to 600 mm
(Continued)

| Paper | Size (W x L) | Opt. paper tray | Onebin tray | By-pass |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | China | $\begin{aligned} & \text { North } \\ & \text { America } \end{aligned}$ | Europe | Asial Taiwa n |
| Executive SEF | $71 / 4{ }^{\prime \prime} \times 101 / 2^{\prime \prime}$ | M | X | M | M | M | M |
| Executive LEF | 101/2" x 71/4" | M | X | M | M | M | M |
| F SEF | 8" $\times 13^{\prime \prime}$ | M | X | M | M | X | X |
| F LEF | $13^{\prime \prime} \times 8$ " | 0 | 0 | 0 | 0 | 0 | 0 |
| Foolscap SEF | 81/2" $\times 13^{\prime \prime}$ | X | X | M | M | M | M |
| Foolscap LEF | $13^{\prime \prime} \times 81 / 2^{\prime \prime}$ | 0 | 0 | 0 | 0 | 0 | 0 |
| Folio SEF | 81/4" x 13" | M | X | M | M | M | M |
| Folio LEF | 13 " x 81/4" | 0 | 0 | 0 | 0 | 0 | 0 |
| 8K SEF | $267 \times 390 \mathrm{~mm}$ | M | X | M | M | M | M |
| 8K LEF | $390 \times 267 \mathrm{~mm}$ | 0 | 0 | 0 | 0 | 0 | 0 |
| 16K SEF | $195 \times 267 \mathrm{~mm}$ | M | X | M | M | M | M |
| 16K LEF | $267 \times 195 \mathrm{~mm}$ | M | X | M | M | M | M |
| C5 Env. SEF | $162 \times 229 \mathrm{~mm}$ | 0 | 0 | M | M | M | M |
| C6 Env. SEF | $114 \times 162 \mathrm{~mm}$ | 0 | 0 | M | M | M | M |
| DL Env. SEF | $110 \times 220 \mathrm{~mm}$ | 0 | 0 | M | M | M | M |
| Com10 SEF | $41 / 8^{\prime \prime} \times 91 / 2^{\prime \prime}$ | 0 | 0 | M | M | M | M |
| Monarch SEF | 3778" $\times 71 / 2^{\prime \prime}$ | 0 | 0 | M | M | M | M |
| Custom |  | 0 | 0 | X | X | X | X |

## SIGN:

X: Detected (Opt. paper tray and By-pass)/Processed (One-bin tray)
O: $\quad$ Not detected (Opt. paper tray and By-pass)/Not processed (One-bin tray)

M: Selected manually
K: Specified from the key pad

## NOTE:

Custom W: 90 to 297 mm L: 148 to 600 mm

## SPECIFICATIONS

## 3. MACHINE CONFIGURATION



| Unit/Component |  | Machine Code | Diagram |
| :---: | :---: | :---: | :---: |
| Copier | Copier (1-tray non-duplex model) | B121 | [H] |
|  | Copier (2-tray non-duplex model) | B122 | [D] |
|  | Copier (2-tray with duplex) | B123 | [G] |
|  | Platen cover (optional) | B406 | [F] |
|  | ADF (optional) | B616 | [A] |
|  | ARDF (optional) | B617 | [A] |
|  | Paper tray unit-1 tray (optional) | B385 | [E] |
|  | Paper tray unit-2 trays (optional) | B384 | [I] |
|  | 1-bin tray (optional) | B621 | [C] |
|  | Tray heater (optional) | - | - |
|  | Optics anti-condensation heater (optional) | - | - |
| GW | GW controller (optional) | B658 | [J] |
| Fax | Fax controller (optional) | B620 | [L] |
|  | Handset (optional) | B433 | [B] |
| Printer/ scanner | Printer scanner controller (optional) | B622 | [M] |
|  | PostScript 3 (optional) | B681 | [K] |
| Network | IEEE 1394 | B581 | [ N ] |
|  | IEEE 1284 | B679 | [ N ] |
|  | Wireless LAN | B682 | [ N ] |
|  | Bluetooth | G377 | [ N ] |

NOTE: The GW controller is supplied with the dedicated controller box and operation panel.

## 4. OPTIONAL EQUIPMENT

## ARDF

| Original Size: | Standard sizes <br> Single-sided mode: A3 to A5, 11" x 17" to 51/2" x 81/2" <br> Double-sided mode: A3 to A5, 11" x 17" to 51/2" x 81/2" <br> Non-standard sizes (Single-sided mode only) <br> Max. width 297 mm <br> Min. width 105 mm <br> Max. length 1260 mm <br> Min. length 128 mm |
| :---: | :---: |
| Original Weight: | Single-sided mode: $40-128 \mathrm{~g} / \mathrm{m}^{2}, 10-34 \mathrm{lb}$. Double-sided mode: $52-105 \mathrm{~g} / \mathrm{m}^{2}, 14-28 \mathrm{lb}$. |
| Table Capacity: | 50 sheets ( $80 \mathrm{~g} / \mathrm{m}^{2}, 70 \mathrm{~kg}$ ) |
| Original Standard Position: | Center |
| Separation: | FRR |
| Original Transport: | Roller transport |
| Original Feed Order: | From the top original |
| Reproduction Range: | 50 to 200\% (Sub scan direction only) |
| Power Source: | 24 and 5 Vdc from the copier |
| Power Consumption: | 50 W |
| Dimensions (W x D $\times$ H): | $550 \times 470 \times 130 \mathrm{~mm}$ |
| Weight: | 10 kg |


| ADF |  |
| :---: | :---: |
| Original Size: | Standard sizes (Single-sided mode only): <br> A3 to A5, 11" x 17" to 51/2" x 81/2" <br> Non-standard sizes (Single-sided mode only): <br> Max. width 297 mm <br> Min. width 105 mm <br> Max. length $1,260 \mathrm{~mm}$ <br> Min. length 128 mm |
| Original Weight: | $52-105 \mathrm{~g} / \mathrm{m}^{2}(14-28 \mathrm{lb}$. |
| Table Capacity: | 30 sheets (80 g/m ${ }^{2}$, 22 lb .) |
| Original Standard Position: | Center |
| Separation: | FRR |
| Original Transport: | Roller transport |
| Original Feed Order: | From the top original |
| Reproduction Range: | 50-200\% |
| Power Source: | 24 and 5 Vdc (from the main frame) |
| Power Consumption: | 25 W |
| Dimensions (W x D $\times$ H): | $550 \mathrm{~mm} \times 470 \mathrm{~mm} \times 90 \mathrm{~mm}$ |
| Weight: | Not above 7 kg |

## ONE-TRAY PAPER TRAY UNIT

| Paper Size: | $\begin{aligned} & \text { A5 to A3 } \\ & 51 / 2^{\prime \prime} \times 81 / 2^{\prime \prime} \text { SEF to } 11^{\prime \prime} \times 17 \text { " } \end{aligned}$ |
| :---: | :---: |
| Paper Weight: | $60-105 \mathrm{~g} / \mathrm{m}^{2}, 16-28 \mathrm{lb}$. |
| Tray Capacity: | 500 sheets (80 g/m ${ }^{2}$, 20 lb . ) x 1 tray |
| Paper Feed System: | Feed roller and friction pad |
| Paper Height Detection: | 4 steps (100\%, 70\%, 30\%, Near end) |
| Power Source: | 24 Vdc and 5 Vdc (from the copier/printer): <br> 120 Vac: <br> 120 V version, from the copier/printer when the optional tray heater is installed $220-240 \mathrm{Vac}:$ <br> 230 V version, from the copier/printer when the optional tray heater is installed |
| Power Consumption: | Max: 20 W (Copying/printing) 23 W (Optional Tray Heater On) <br> Average: 13 W (Copying/printing) 15 W (Optional Tray Heater On) |
| Weight: | 12 kg ( 26.4 lb.$)$ |
| Size (W x D x H) : | $550 \mathrm{~mm} \times 520 \mathrm{~mm} \times 134 \mathrm{~mm}$ |

TWO-TRAY PAPER TRAY UNIT

| Paper Size: | A5 to A3 <br> 51/2" x 81/2" SEF to 11 " x 17" |
| :---: | :---: |
| Paper Weight: | $60-105 \mathrm{~g} / \mathrm{m}^{2}, 16-28 \mathrm{lb}$. |
| Tray Capacity: | 500 sheets ( $\left.80 \mathrm{~g} / \mathrm{m}^{2}, 20 \mathrm{lb}.\right) \times 2$ trays |
| Paper Feed System: | Feed roller and friction pad |
| Paper Height Detection: | 4 steps (100\%, 70\%, 30\%, Near end) |
| Power Source: | $24 \mathrm{Vdc}, 5 \mathrm{Vdc}$ (from the copier/printer) <br> 120 Vac: <br> 120 V version, from the copier/printer when the optional tray heater is installed $220-240 \mathrm{Vac}:$ <br> 230 V version, from the copier/printer when the optional tray heater is installed |
| Power Consumption: | Max: 30 W (Copying/printing) 23 W (Optional Tray Heater On) <br> Average: 17 W (Copying/printing) 15 W (Optional Tray Heater On) |
| Weight: | 25 kg ( 55 lb.$)$ |
| Size (W x D x H) : | $550 \mathrm{~mm} \times 520 \mathrm{~mm} \times 271 \mathrm{~mm}$ |

## One-Bin Tray

Paper Size: Width: $140 \sim 297 \mathrm{~mm}$
Length: $140 \sim 432 \mathrm{~mm}$
Output Standard Position: Center
Paper Weight: $\quad 60 \sim 105 \mathrm{~g} / \mathrm{m}^{2}, 16 \sim 28 \mathrm{lbs}$.
Tray Capacity:
Power Source:
Power Consumption:
Weight:
Size (W x D x H):
100 sheets (A4 LEF $80 \mathrm{~g} / \mathrm{m}^{2}, 20 \mathrm{lb}$ )
5 VDC, 24 VDC (from the copier)
Max. 20 W
1.55 kg (Base unit: 1.1 kg , Tray: 0.45 kg )
$461 \mathrm{~mm} \times 478 \mathrm{~mm} \times 104 \mathrm{~mm}$
( $508 \mathrm{~mm} \times 478 \mathrm{~mm} \times 104 \mathrm{~mm}$ when tray extended)

## ONE-BIN TRAY B621

## B621

## TABLE OF CONTENTS

1. REPLACEMENT AND ADJUSTMENT ..... 1
1.1 TRAY OPEN SWITCH ..... 1
1.2 PAPER SENSOR ..... 3
1.3 EXIT SENSOR ..... 3
2. DETAILED DESCRIPTION ..... 4
2.1 COMPONENTS ..... 4
2.2 SETTINGS ..... 5
2.3 PAPER TRANSPORT ..... 6
2.3.1 PAPER HANDLING ..... 6
2.3.2 JUNCTION GATE ..... 6
2.3.3 PAPER-SIZE LIMITATION ..... 6
2.4 EXIT TRAY LED ..... 7
2.5 TRAY OPEN SWITCH ..... 8
3. TROUBLESHOOTING ..... 9
3.1 PAPER JAM ..... 9
3.2 PAPER-JAM HANDLING ..... 10
3.2.1 RESETTING THE COPIER ..... 10
3.2.2 COMPONENT-RELATED PAPER JAM ..... 11

## 1. REPLACEMENT AND ADJUSTMENT

| $\triangle$ CAUTION |
| :--- |
| Turn off the main power switch and unplug the machine before beginning |
| any of the procedures in this section. |

NOTE: This manual uses the following symbols.

- : See or Refer to
令: Screws
気 : Connector
(3) : Clip ring
(6) E-ring


### 1.1 TRAY OPEN SWITCH



1. Remove the tray $[A]$ as follows:
(1) Lift the front end of the tray.
(2) Pull the right hook off the copier.
(3) Pull the whole tray off the copier.
2. Open the front cover $[A]$.
3. Front right cover $[B](\hat{\xi} \times 1)$
4. Disconnect the connector [C].

5. Base unit [D] (

6. Top cover $[E](\hat{\xi} \times 2)$

7. Open switch [A]

### 1.2 PAPER SENSOR

1. Base unit ( -1.1 )
2. Sensor cover [A]


NOTE: When reassembling, place the sensor cable inside the sensor cover.


### 1.3 EXIT SENSOR

1. Top cover (-1.1)
2. Exit sensor $[A]$


## 2. DETAILED DESCRIPTION

### 2.1 COMPONENTS



1. Exit rollers
2. Tray open switch
3. Paper sensor
4. Exit sensor
5. Tray motor
6. 1-bin tray board
7. Junction gate solenoid
8. Exit tray LED
9. Tray open switch
10. Exit sensor
11. Junction gate
12. Junction gate solenoid
13. Paper sensor

### 2.2 SETTINGS

## Settings

Use the User Tools to specify which application program (the copy, printer, or fax application program) uses the 1-bin tray. Locate the user tool as follows: 图圆 > System Settings > General Features > Output: Copier, Output: Facsimile, Output: Printer.

## Limitation

The machine can output to the 1-bin tray if the paper is fed from a regular tray or from an optional tray. Paper fed from the by-pass tray is not output to the 1-bin tray.

The paper source setting takes precedence over the paper exit setting. As a result, paper fed from the by-pass tray is output to the copier exit tray even if you have specified the 1-bin tray as the exit. In a

| Setting | Paper source | Actual output |
| :---: | :---: | :---: |
| 1-bin tray | Regular tray | 1-bin tray |
| 1-bin tray | Optional tray | 1-bin tray |
| 1-bin tray | By-pass tray | Copier tray | case like this, no warning or message is displayed.

### 2.3 PAPER TRANSPORT

### 2.3.1 PAPER HANDLING



When the paper has passed the registration sensor (of the copier) and a predefined time (not adjustable) has elapsed, the tray motor [A] starts and the junction gate solenoid [F] turns on. The tray motor drives the exit rollers [C] and the junction gate solenoid opens the junction gate [E].

The junction gate feeds the leading edge of the paper upwards [D]. The paper, transported by the exit rollers of the copier, travels up to the exit rollers of the 1-bin tray base unit. The exit rollers transport the paper to the one-bin tray [B]. When the last sheet of paper has been output, the tray motor stops and the junction gate solenoid turns off.

### 2.3.2 JUNCTION GATE

The junction gate is kept open (the junction gate solenoid remains on) under either of the following conditions:

- Condition 1
a) The copier is executing single-sided printing.
b) The copier is outputting two sheets of paper or more.
- Condition 2
a) The copier is executing duplex printing.
b) The copier is outputting the last two sheets of paper.


### 2.3.3 PAPER-SIZE LIMITATION

The 1-bin tray unit does not have any limitation on paper size. The 1-bin tray unit can handle all paper sizes that the copier outputs. However, it cannot handle very thick paper, so the bypass tray cannot feed to the one-bin tray.

### 2.4 EXIT TRAY LED



The exit tray LED $[A]$ lights whenever the paper sensor $[B]$ detects paper.
When you open the base unit to remove jammed paper, the exit tray LED may light. This is because the paper sensor [C] detects the tray [D].

### 2.5 TRAY OPEN SWITCH



The tray open switch [A] detects the mechanical link [B] at the front end. When you open the base unit, the message "Cover Open" is displayed with a diagram indicating the location.

The message "Cover Open" is also displayed when the connector of the one-bin tray base unit [C] disconnects from the connector of the copier [B]. In this case, the message is not cleared until you install the base unit correctly.

## 3. TROUBLESHOOTING

### 3.1 PAPER JAM



The paper-jam sign is displayed under either of the following conditions:

- Condition 1
a) The paper has passed the registration sensor (of the copier), and
b) The exit sensor [A] does not detect the paper in (1) the predefined time (not adjustable).
- Condition 2
a) The paper has passed the registration sensor (of the copier), and
b) The exit sensor detects the paper in (2) the predefined time (not adjustable), and
c) The exit sensor keeps detecting the paper for a longer time than (3) the predefined time (not adjustable).

Note that (1) and (2) are the same predefined time and that (3) is different from the other two.

### 3.2 PAPER-JAM HANDLING

### 3.2.1 RESETTING THE COPIER



The paper-jam sign is displayed when one of the two conditions (3.1) is met. To get the copier ready for normal operation, you must:

1) Remove the paper.
2) Open and close the right cover $[\mathrm{A}]$ of the copier.
3) Open and close the base unit $[B]$.

Note that you must open and close the right cover of the copier to reset the copier when the 1-bin tray unit has caused a paper jam.

### 3.2.2 COMPONENT-RELATED PAPER JAM

## Motor-Related Paper Jam



The 1-bin tray unit does not know if the tray motor [C] is working properly. No error message is displayed even when, for example, the tray-motor cable comes off the 1-bin tray board [B].

When the tray motor does not work properly, the leading edge of the paper is caught by the exit rollers [A]. The paper stays between the exit rollers (of the 1-bin tray unit) and the fusing unit. In this case, the copier controller detects that the paper jam has occurred in the copier (not in the 1-bin tray unit). To get the copier ready for normal operation, you must:

1) Remove the paper.
2) Open and close the right cover of the copier.

## Solenoid-Related Paper Jam

The 1-bin base unit does not know if the junction gate solenoid $[E]$ is working properly. No error message is displayed even when, for example, the solenoid cable comes off the 1-bin tray board.

When the junction gate solenoid does not work properly, the junction gate [F] does not lead the paper to the paper path [D]. The
 paper stays between the paper exit rollers of the copier. In this case, the copier controller detects that the paper jam has occurred in the 1-bin base unit. To get the copier ready for normal operation, you must:

1) Remove the paper.
2) Open and close the right cover of the copier.
3) Open and close the base unit.

## AUTO DOCUMENT FEEDER/ <br> AUTO REVERSE DOCUMENT FEEDER B616/B617

## B616/B617 <br> TABLE OF CONTENTS

ADF 616 AND ARDF B617 ................................................................. 1

## ADF B616 AND ARDF B617

ADF B616 and ARDF B617 are both applicable to the B121/B122/B123 models and the B039/B040/B043 models. When the copier starts, the controller of the document feeder communicates with the controller of the copier. The documentfeeder controller checks the line speed of the copier, and decides the line speed of the document feeder. The table lists the line speeds of ADF B616 and ARDF B617.

|  | When installed on B121/B122/B123 | When installed on B039/B040/B043 |
| :---: | :---: | :---: |
| ADF B616 | $100 \mathrm{~mm} / \mathrm{sec}$ | $89 \mathrm{~mm} / \mathrm{sec}$ |
| ARDF B617 | $100 \mathrm{~mm} / \mathrm{sec}$ | $89 \mathrm{~mm} / \mathrm{sec}$ |

NOTE: The line speed of B121/B122/B123 is $100 \mathrm{~mm} / \mathrm{sec}$; the line speed of B039/B040/B043 is $89 \mathrm{~mm} / \mathrm{sec}$.

The document feeders for the B039/B040/B043 (ADF B387, ARDF B379) are not applicable to B121/B122/B123. If those feeders are installed on the B121/B122/B123, SC621 appears. To re-set the SC621, turn the mainswitch off and on.

ADF B616/ARDF B617


ADF B387/ARDF B379


B121/B122/B123


B039/B040/B043

For Overall Machine Information, Detailed Section Descriptions and Replacement and Adjustment procedures on the B616 ADF and B617 ARDF, please refer to the B039/B040/B043 Service Manual, "Auto Reverse Document Feeder B379" and "Document Feeder B387." A copy of this manual is provided on the CD-ROM in the front cover of this manual.

## B620

FAX OPTION TYPE 2018

## Conventions in this Manual

This manual uses several symbols.

| Symbol | What it means |
| :---: | :---: |
| $\checkmark$ | Refer to section number |
| GTT | See Core Tech Manual for details |
| $\widehat{\beta}^{\text {® }}$ | Screw |
| E\#l | Connector |
| 6 | E-ring |
| (3) | Clip ring |



Short Edge Feed (SEF)


Long Edge Feed (LEF)

## FAX OPTION B620

## TABLE OF CONTENTS

1. INSTALLATION ..... 1
1.1 CAUTIONS AND WARNINGS ..... 1
1.2 INSTALLATION ..... 2
2. TROUBLESHOOTING ..... 6
2.1 ERROR CODES .....
2.2 FAX SC CODES ..... 13
2.2.1 OVERVIEW ..... 13
2.2.2 SC1201 ..... 13
2.2.3 FAX SC CODE TABLE ..... 13
3. SERVICE TABLES ..... 14
3.1 SERVICE PROGRAM MODE ..... 14
3.1.1 SERVICE PROGRAM MODE OPERATION ..... 14
Entering and Exiting SP mode ..... 14
SP2-XXX (RAM) ..... 15
SP3-XXX (Machine Set) ..... 16
SP4-XXX (ROM Versions) ..... 16
SP5-XXX (RAM Clear) ..... 17
SP6-XXX (Reports) ..... 17
SP7-XXX (Tests) ..... 18
3.2 BIT SWITCHES ..... 19
3.2.1 SYSTEM SWITCHES ..... 19
3.2.2 IFAX SWITCHES ..... 30
3.2.3 PRINTER SWITCHES ..... 30
3.2.4 COMMUNICATION SWITCHES ..... 35
3.2.5 G3-1 SWITCHES ..... 40
3.2.6 FAX SWITCHES ..... 48
3.3 NCU PARAMETERS ..... 50
3.4 DEDICATED TRANSMISSION PARAMETERS ..... 60
3.4.1 PROGRAMMING PROCEDURE ..... 60
3.4.2 PARAMETERS ..... 61
3.5 SERVICE RAM ADDRESSES ..... 64
4. DETAILED SECTION DESCRIPTIONS ..... 72
4.1 OVERVIEW ..... 72
4.2 BOARDS ..... 73
4.2.1 FCU ..... 73
4.2.2 MBU ..... 74
SPECIFICATIONS ..... 75
1 GENERAL SPECIFICATIONS ..... 75
2 CAPABILITIES OF PROGRAMMABLE ITEMS ..... 76
3 MACHINE CONFIGURATION ..... 76

## 1. INSTALLATION

### 1.1 CAUTIONS AND WARNINGS

## WARNING

1. Never install telephone writing during a lightning storm.
2. Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
3. Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
4. Use caution when installing or modifying telephone lines.
5. Avoid using a telephone (other than a cordless type) during an electrical storm. There may be remote risk of electric shock from lightning.
6. Do not use a telephone or cellular phone to report a gas leak in the vicinity of the leak.

## $\triangle$ CAUTION

1. Before installing the fax unit, switch off the main switch, and disconnect the power cord.
2. The fax unit contains a lithium battery. The danger of explosion exists if a battery of this type is incorrectly replaced. Replace only with the same or an equivalent type recommended by the manufacture. Discard batteries in accordance with the manufacture's instructions and local regulations.

## NOTE FOR AUSTRALIA

Unit must be connected to Telecommunication Network through a line cord which meets the requirements of ACA Technical Standard TS008.

### 1.2 INSTALLATION

## .CAUTION <br> Before installing the fax option: <br> 1. Print out all data in the printer buffer (if the printer option is installed). <br> 2. Turn the main switch off and disconnect the power cord and the network cable.

Before installing the optional fax, install the optional controller box and optional operation panel.

1. Unplug the DF cable [A] (if installed).
2. Remove the rear cover $[B](\hat{\xi} \times 6)$.

3. Remove the slot cover [C].
4. Install the FCU $[\mathrm{D}](\hat{\beta} \times 3)$.
5. Short the jumper [E].

NOTE: The jumper works as the battery switch.

6. Attach the ferrite core $[\mathrm{D}]$ to the telephone cable [G]. The end of the ferrite core must be about $5 \mathrm{~cm}\left(2^{\prime \prime}\right)$ from the end of the cable [H].
7. Reassemble the controller box.
8. Install the rear cover.

9. When installing the optional fax only (not with the optional printer/scanner), install the keys as follows:

NOTE: See step 10 when installing the optional fax with the optional printer/scanner.


1) Remove the dummy cover (from the basic operation panel) and install the copy key [A] or [a].
2) Remove the dummy panel (from the basic operation panel) and install the fax panel [B].
3) Install the dummy cover [C] on the optional operation panel.
4) Install the fax panel [D] on the optional operation panel.
5) Install the fax key [E] or [e] on the optional operation panel.
10. When installing the optional fax with the optional printer/scanner, install the keys as follows:

NOTE: See step 9 when installing the optional fax without the optional printer/scanner.


1) Remove the dummy cover (from the basic operation panel) and install the copy key [A] or [a].
2) Remove the dummy panel (from the basic operation panel) and install the fax panel [B].
3) Install the scanner key [C] or [c] on the optional operation panel.
4) Install the fax panel [D] on the optional operation panel.
5) Install the fax key [E] or [e] on the optional operation panel.
6) Remove the dummy panel (from the basic panel) and install the printer panel [F].
7) Install the printer key [G] or [g] on the basic operation panel.
11. Attach the super $G 3$ decal $[A]$ as shown.

12. Install the stamp cartridge $[B]$ into the ADF as shown (if the ADF is installed).
13. Connect the telephone line to the "LINE" jack.
14. Plug in the machine and turn on the main switch.

NOTE: The copier must be connected to a properly grounded socket outlet.
15. Make sure that the clock (date and time) is set.

16. Start the SP mode and input the serial number into the fax unit (SP-3-102-000). The serial number can be found on the serial number label.

## Initializing the Fax Unit

When you press the Fax key for the first time after installation, an error occurs. This is not a functional problem. Press OK. The fax starts its initialization program.

NOTE: If another error occurs after initialization, this can be a functional problem.

## 2. TROUBLESHOOTING

### 2.1 ERROR CODES

If an error code occurs, retry the communication. If the same problem occurs, try to fix the problem as suggested below. Note that some error codes appear only in the error code display and on the service report.

| Code | Meaning | Suggested Cause/Action |
| :---: | :---: | :---: |
| 0-00 | DIS/NSF not detected within 40 s of Start being pressed | - Check the line connection. <br> - The machine at the other end may be incompatible. <br> - Replace the 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> - Try changing the tx level and/or cable equalizer settings. <br> - Replace the FCU. <br> - The other terminal may be faulty; try sending to another machine. <br> - If the rx signal is weak or defective, there may be a bad line. <br> Cross reference <br> - Tx level - NCU Parameter 01 (PSTN) <br> - Cable equalizer - G3 Switch 07 (PSTN) <br> - Dedicated Tx parameters - Section 4 |
| 0-05 | Unsuccessful after modem training at 2400 bps | - Check the line connection. <br> - Try adjusting the tx level and/or cable equalizer. <br> - Replace the FCU. <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> - Try adjusting the tx level and/or cable equalizer settings. <br> - Replace the 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> - Replace the 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> - Replace the 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 - Section 4 |
| 0-14 | Non-standard post message response code received | - 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 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> - Replace the FCU. <br> - Try adjusting the $t x$ level and/or cable equalizer settings. <br> - The other end may have disconnected, or it may be defective; try calling another machine. <br> - If the rx signal level is too low, there may be a line problem. <br> Cross reference <br> - See error code 0-08. |


| 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> - Replace the 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 \& line. <br> - Check for line noise or other line problems. <br> - Replace the 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 Bit 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> - Replace the 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 0 A , bits 0 and 1 |
| 0-23 | Too many errors during reception | - Check the line connection. <br> - Replace the FCU. <br> - Defective remote terminal. <br> - Check for line noise or other line problems. <br> - Try asking the other end to adjust their tx level. <br> - Try adjusting the rx cable equalizer setting and/or rx error criteria. <br> Cross reference <br> - Rx cable equalizer - G3 Switch 07 (PSTN) <br> - Rx error criteria - Communication Switch 02, bits 0 and 1 |
| 0-30 | The other terminal did not reply to NSS(A) in Al short protocol mode | - Check the line connection. <br> - Try adjusting the $t x$ level and/or cable equalizer settings. <br> - The other terminal may not be compatible. <br> Cross reference <br> - Dedicated tx parameters - Section 4 |


| Code | Meaning | Suggested Cause/Action |
| :---: | :---: | :---: |
| 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. |
| 0-52 | Polarity changed during communication | - Check the line connection. Retry communication. |
| 0-70 | The communication mode specified in CM/JM was not available (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 Cl . | - The calling terminal could not detect ANSam due to noise, etc. <br> - ANSam was too short to detect. <br> - Check the line connection and condition. <br> - Try making a call to another V.8/V. 34 fax. |
| 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 (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 (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. |
| 0-79 | The called terminal detected Cl while waiting for a V. 21 signal. | Check for line noise or other line problems. 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. |
| 0-81 | The line was disconnected due to a timeout in V. 34 phase 3 - equalizer training. | 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 |
| 0-82 | The line was disconnected due to a timeout in the V. 34 phase 4 - control channel start-up. | dedicated tx parameters. <br> - Try increasing the tx level. <br> - Try adjusting the $t x$ cable equalizer setting. |


| Code | Meaning | Suggested Cause/Action |
| :---: | :---: | :---: |
| 0-83 | The line was disconnected due to a timeout in the V. 34 control channel restart sequence. | 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. |
| 0-84 | 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. |
| 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> - Replace the FCU. |
| 2-23 | JBIG compression or reconstruction error | - Turn off the machine, then turn it back on. |
| 2-24 | JBIG ASIC error | - Turn off the machine, then turn it back on. |
| 2-25 | JBIG data reconstruction error (BIH error) | - JBIG data error <br> - Check the sender's JBIG function. |
| 2-26 | JBIG data reconstruction error (Float marker error) | - Update the MBU ROM. |
| 2-27 | JBIG data reconstruction error (End marker error) |  |
| 2-28 | JBIG data reconstruction error (Timeout) |  |
| 2-50 | The machine resets itself for a fatal FCU system error | - If this is frequent, update the ROM, or replace the FCU. |


| Code | Meaning | Suggested Cause/Action |
| :---: | :---: | :---: |
| 2-51 | The machine resets itself because of a fatal communication error | - If this is frequent, update the ROM, or replace the FCU. |
| 4-01 | Line current was cut | - Check the line connector. <br> - Check for line problems. <br> - Replace the FCU. |
| 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. |
| 5-10 | 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 or optional EXMEM board |
| 5-21 | Memory overflow |  |
| 5-23 | Print data error when printing a substitute rx or confidential rx message | - Test the SAF memory. <br> - Ask the other end to resend the message. <br> - Replace the FCU. |
| 5-25 | SAF file access error | - Replace the FCU. |
| 6-00 | G3 ECM - T1 time out during reception of facsimile data | - Try adjusting the rx cable equalizer. <br> - Replace the FCU. |
| 6-01 | G3 ECM - no V. 21 signal was received |  |
| 6-02 | G3 ECM - EOR was received |  |
| 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. |
| 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 for a bad line or defective remote terminal. <br> - Replace the FCU. <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. |

## ERROR CODES

| Code | Meaning | Suggested Cause/Action |
| :---: | :---: | :---: |
| 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. |
| 6-21 | V. 21 flag detected during high speed modem communication | - The other terminal may be defective or incompatible. |
| 6-22 | The machine resets the sequence because of an abnormal handshake in the V. 34 control channel | - Check for line noise. <br> - If the same error occurs frequently, replace the FCU. <br> - Defective remote terminal. |
| 6-99 | V. 21 signal not stopped within 6 s | - Replace the FCU. |
| 22-00 | Original length exceeded the maximum scan length | - Divide the original into more than one page. <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> - Add an optional SAF memory card or hard disk. |
| 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. |
| 22-04 | The machine cannot store received data in the SAF | - Update the ROM <br> - Replace the FCU. |
| 23-00 | Data read timeout during construction | - Restart the machine. <br> - Replace the FCU |
| 25-00 | The machine software resets itself after a fatal transmission error occurred | - Update the ROM <br> - Replace the FCU. |
| F0-xx | V. 34 modem error | - Replace the FCU. |

### 2.2 FAX SC CODES

### 2.2.1 OVERVIEW

When the FCU detects a Fax SC Code condition other than SC1201, it resets itself automatically (default setting). This initializes the FCU without erasing files in the SAF memory or resetting the switches.
NOTE: For details on Fax SC Codes 1201, refer to the following sections. If bit 7 of System Switch 1F is changed to " 1 ", when the FCU detects a Fax SC Code condition, it displays the code on the display and stops working until the fax unit is initialized using one of the following methods:

- Hold down the " 7 " and " 9 " keys for more than 10 s .
- Turn off the main power switch and turn it back on.


### 2.2.2 SC1201

When the FCU detects an unrecoverable error in the SRAM, which requires a complete SRAM initialization, the fax unit displays this SC Code and stops. There is no way to recover from this error condition without a complete SRAM initialization (all the user and service programmed data will be erased).

The possible causes are:

- SRAM backup battery defect, or CN1 on the MBU is at the "OFF" position
- SRAM on the MBU has a physical defect


### 2.2.3 FAX SC CODE TABLE

| SC Code | Description | Suggested Action | Sys Switch <br> 1F bit $7=0$ | Sys Switch 1F bit $7=1$ |
| :---: | :---: | :---: | :---: | :---: |
| 1101 | FCU error | Initialize the fax unit. (See section 2.2.1.for the initialization procedure) | Automatic reset | SC Code display |
| 1201 | Unrecoverable FCU SRAM error | Refer to section 2.2.2. | "Service Call" display |  |
| 1299 | Software error | Initialize the fax unit. | Automatic reset |  |
| 1305 |  |  |  |  |
| 1310 |  |  |  |  |
| 1311 |  |  |  |  |
| 1312 |  |  |  |  |
| 1401 |  |  |  |  |
| 1405 |  |  |  |  |

## 3. SERVICE TABLES

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

NOTE: The main power LED lights or flashes while the platen cover or ARDF is open, while the main machine is communicating with a facsimile or the network server, or while the machine is accessing the hard disk or memory for reading or writing data.

### 3.1 SERVICE PROGRAM MODE

### 3.1.1 SERVICE PROGRAM MODE OPERATION

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

## Entering and Exiting SP mode

$\square 1 \quad 1 \quad$ Press the Clear Mode key.


2 Use the keypad to enter "107".


3 Hold down Clear/Stop for at least 3 seconds.
2 Fax SP 4 Press the "2" key on the numeric keypad.
Exit 5 Press the Cancel key twice to return to the copy window.

SP1-XXX (BIT SW) Section 3.2 Bit Switches

| 1 | Mode No. |  | Function |
| :---: | :---: | :---: | :---: |
| 101 | System Switch |  |  |
|  | 001-032 | 00-1F | Change the bit switches for system settings for the fax option <br> Section 3.2 Bit Switches |
| 102 | Ifax Switch |  |  |
|  | 001-016 | O0-0F | Change the bit switches for IFAX settings <br> - Section 3.2 Bit Switches |
| 103 | Printer Switch |  |  |
|  | 001-016 | 00-0F | Change the bit switches for printer settings for the fax option <br> - Section 3.2 Bit Switches |
| 104 | Communication Switch |  |  |
|  | 001-032 | 00-1F | Change the bit switches for communication settings for the fax option <br> - Section 3.2 Bit Switches |
| 105 | G3-1 Switch |  |  |
|  | 001-016 | 00-0F | Change the bit switches for the protocol settings of the standard G3 board Section 3.2 Bit Switches |

## SP2-XXX (RAM)

| 2 | Mode No. |  | Function |
| :---: | :---: | :---: | :---: |
| 101 | RAM Read/Write |  |  |
|  | 001 |  | Change RAM data for the fax board directly. Section 3.5 Service RAM Addresses |
| 102 | Memory Dump |  |  |
|  | 001 | G3-1 Memory Dump | Print out RAM data for the fax board. Section 3.5 Service RAM Addresses |
| 103 | G3-1 NCU Parameters |  |  |
|  | 001-023 | CC, 01-22 | NCU parameter settings for the standard G3 board. Section 3.3 NCU Parameters |

## SP3-XXX (Machine Set)

| 3 | Mode No. |  | Function |
| :---: | :---: | :---: | :---: |
| 101 | Service Station |  |  |
|  | 001 | Fax Number | Enter the fax number of the service station. |
| 102 | Serial Number |  |  |
|  | 001 |  | Enter the fax unit's serial number. |
| 103 | PSTN-1 Port Settings |  |  |
|  | 001 | Select Line | Select the line type setting for the G3-1 line. If the machine is installed on a PABX line, select "PABX", "PABX(GND)" or "PABX(FLASH)". |
|  | 002 | PSTN Access Number | Enter the PSTN access number for the G3-1 line. |
|  | 003 | Memory Lock Disabled | If the customer does not want to receive transmissions using Memory Lock on this line, turn this SP on. |
| 201 | FAX Switches |  |  |
|  | 001-032 | - $00-1 \mathrm{~F}$ | Change the bit switches for scanner settings for the fax option <br> - Section 3.2 Bit Switches |

SP4-XXX (ROM Versions)

| 4 | Mode No. |  | Function |
| :---: | :---: | :---: | :---: |
| 101 | 001 | FCU ROM Version | Displays the FCU ROM version. |
|  | 002 | FCU ROM Version P/N |  |
|  | 003 | FCU ROM Version Ver. |  |
|  | 004 | FCU ROM Version Area |  |
|  | 005 | FCU ROM Version Date |  |
|  | 006 | FCU ROM Version Drer. |  |
|  | 007 | FCU ROM Version sum. |  |
| 102 | 001 | Error Codes | Displays the latest 64 fax error codes. |
| 103 | 001 | G3-1 ROM Version | Displays the G3-1 modem version. |
|  | 002 | G3-1 ROM Version Parts No. |  |
|  | 003 | G3-1 ROM Version Control |  |
|  | 004 | G3-1 ROM Version DSP |  |

## SP5-XXX (RAM Clear)

| 5 | Mode No. |  | Function |
| :---: | :---: | :---: | :---: |
| 101 | Initialize SRAM |  |  |
|  | 001 |  | Initializes the bit switches and user parameters, user data in the SRAM, files in the SAF memory, and clock. |
| 102 | Erase All Files |  |  |
|  | 001 |  | Erases all files stored in the SAF memory. |
| 103 | Reset Bit Switches |  |  |
|  | 001 |  | Resets the bit switches and user parameters. |
| 104 | Factory setting |  |  |
|  | 001 |  | Resets the bit switches and user parameters, user data in the SRAM and files in the SAF memory. |

## SP6-XXX (Reports)

| 6 | Mode No. |  | Function |
| :---: | :---: | :---: | :---: |
| 101 | System Parameter List |  |  |
|  | 001 |  | Press the "ON" button to print the system parameter list. |
| 102 | Service Monitor Report |  |  |
|  | 001 |  | Press the "ON" button to print the service monitor report. |
| 103 | G3 Protocol Dump List |  |  |
|  | 001 | $\begin{aligned} & \text { G3-1 (All } \\ & \text { Communications) } \end{aligned}$ | Prints the protocol dump list of all communications for the G3-1 line. |
|  | 002 | $\begin{array}{\|l\|} \hline \text { G3-1 (1 } \\ \text { Communication) } \\ \hline \end{array}$ | Prints the protocol dump list of the last communication for the G3-1 line. |
| 105 | All Files print out |  |  |
|  | 001 |  | Prints out all the user files in the SAF memory, including confidential messages. NOTE: Do not use this function, unless the customer is having trouble printing confidential messages or recovering files stored using the memory lock feature. |
| 106 | Journal Print out |  |  |
|  | 001 | All Journals | The machine prints all the communication records on the report. |
|  | 002 | Specified Date | The machine prints all communication records after the specified date. |


| 6 | Mode No. |  | Function |
| :---: | :---: | :---: | :---: |
| 107 | Log List Print out |  |  |
|  | 001 | All log files | These log print out functions are for designer use only. |
|  | 002 | Printer |  |
|  | 003 | SC/TRAP Stored |  |
|  | 004 | Decompression |  |
|  | 005 | Scanner |  |
|  | 006 | JOB/SAF |  |
|  | 007 | Reconstruction |  |
|  | 008 | JBIG |  |
|  | 009 | G3 CCU |  |
|  | 010 | Fax Job |  |
|  | 011 | CCU |  |
|  | 012 | Scanner Condition |  |

## SP7-XXX (Tests)

These are the test modes for PTT approval.

| $\mathbf{7}$ | Function |
| :---: | :--- |
| 101 | G3-1 Modem Tests |
| 102 | G3-1 DTMF Tests |
| 103 | Ringer |
| 104 | G3-1 V34 (S2400baud) |
| 105 | G3-1 V34 (S2800baud) |
| 106 | G3-1 V34 (S3000baud) |
| 107 | G3-1 V34 (S3200baud) |
| 108 | G3-1 V34 (S3429baud) |
| 109 | Message Test |

### 3.2 BIT SWITCHES

## 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 that is not accepted by local regulations. Such bits are for use only in other areas, such as Japan.

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

### 3.2.1 SYSTEM SWITCHES

| System Switch 00 |  | SP No. 1-101-001 |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| 0 | Dedicated transmission parameter programming <br> 0 : Disabled 1: Enabled | Set this bit to 1 before changing any dedicated transmission parameters. <br> Reset this bit to 0 after programming dedicated transmission parameters. |
| 1 | Not used | Do not change the setting. |
| 2 | Technical data printout on the Journal <br> 0: Disabled <br> 1: Enabled | 1: Instead of the personal name, the following data are listed on the Journal for each G3 communication. |
|  | e.g. $0000 \quad 32 \mathrm{~V} 34 \quad$ 288/264 $\quad$ O0100 0304 <br> (1) (2)(3) (4) (5) (6) (7) (8) <br> (1): EQM value (Line quality data). A larger number means more errors. <br> (2): Symbol rate (V. 34 only) <br> (3): Final modem type used <br> (4): Starting data rate (for example, 288 means 28.8 kbps ) <br> (5): Final data rate <br> (6): Rx revel (refer to the note after this table for how to read the rx level) <br> (7): Total number of error lines that occurred during non-ECM reception. <br> (8): Total number of burst error lines that occurred during non-ECM reception. <br> Note: <br> EQM and rx level are fixed at "FFFF" in tx mode. <br> The seventh and eighth numbers are fixed at " 00 " for transmission records and ECM reception records. |  |


| System Switch 00 |  | SP No. 1-101-001 |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| 2 | Rx level calculation <br> Example: 000032 V34 288/264 L $\underline{\mathbf{0 1}} \underline{\mathbf{0 0}} 0304$ <br> The four-digit hexadecimal value $(\mathrm{N})$ after "L" indicates the rx level. <br> The high byte is given first, followed by the low byte. Divide the decimal value of N by -16 to get the rx level. <br> In the above example, the decimal value of $\mathrm{N}(=0100[\mathrm{H}])$ is 256 . So, the actual $r x$ level is $256 /-16=-16 \mathrm{~dB}$ |  |
| 3 | Not used | Do not change the setting. |
| 4 | Line error mark on the received page <br> 0: Disabled <br> 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. Such errors are caused by a noisy line for example. |
| 5 | ```G3 communication parameter display 0: Disabled 1: Enabled``` | This is a fault-finding aid. The LCD shows the key parameters (see below). This is normally disabled because it cancels the CSI display for the user. Be sure to reset this bit to 0 after testing. |
| 6 | Protocol dump list output after each communication <br> 0 : Off <br> 1: On | This is only used for communication troubleshooting. It shows the content of the transmitted facsimile protocol signals. Always reset this bit to 0 after finishing testing. If system switch 09 bit 6 is at " 1 ", the list is only printed if there was an error during the communication. |
| 7 | Not used | Do not change the setting. |

G3 Communication Parameters

| Modem rate | 336: 33600 bps 168: 16800 bps <br> 312: 31200 bps $144: 14400 \mathrm{bps}$ <br> 288: 28800 bps $120: 12000 \mathrm{bps}$ <br> 264: 26400 bps $96: 9600 \mathrm{bps}$ <br> 240: 24000 bps $72: 7200 \mathrm{bps}$ <br> 216: 21600 bps $48: 4800 \mathrm{bps}$ <br> 192: 19200 bps 24: 2400 bps |
| :---: | :---: |
| Resolution | S: Standard ( $8 \times 3.85$ dots $/ \mathrm{mm}$ ) <br> D: Detail $(8 \times 7.7$ dots $/ \mathrm{mm})$ <br> F: Fine ( $8 \times 15.4$ dots $/ \mathrm{mm}$ ) <br> SF: Superfine ( $16 \times 15.4$ dots $/ \mathrm{mm}$ ) <br> 21: Standard ( $200 \times 100$ dpi) <br> 22: Detail ( $200 \times 200 \mathrm{dpi}$ ) <br> 44: Superfine ( $400 \times 400 \mathrm{dpi}$ ) |
| Compression mode | MMR: MMR compression <br> MR: MR compression <br> MH: MH compression <br> JBO: JBIG compression (Optional mode) <br> JBB: JBIG compression (Basic mode) |
| Communication mode | ECM: With ECM NML: With no ECM |
| Width and reduction | A4: A4 (8.3"), no reduction B4: B4 (10.1"), no reduction A3: A3 (11.7"), no reduction |
| 1/O rate | 0: $0 \mathrm{~ms} / \mathrm{line}$ $10: 10 \mathrm{~ms} /$ line <br> 25: $2.5 \mathrm{~ms} /$ line 20: $20 \mathrm{~ms} / \mathrm{line}$ <br> 5: $5 \mathrm{~ms} /$ line $40: 40 \mathrm{~ms} /$ line <br> Note:  <br> " 40 " is displayed while receiving a fax message using Al short  <br> protocol.  |

System Switch 01 - Not used (Do not change the factory settings.)

| System Switch 02 |  | SP No. 1-101-003 |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| 0-1 | Not used | Do not change the settings. |
| 2 | Communication stall fail safe. <br> 0: Disabled <br> 1: Enabled | If enabled, the machine cuts communication within one hour of a communication error but the connection remains established. |
| 3-4 | Not used. | Do not change the settings. |
| 5 | Not used | Do not change the setting. |
| $\begin{gathered} 6 \\ \text { to } \\ 7 \end{gathered}$ | 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. $(0,1),(1,0)$ : 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. 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 No. 1-101-004 |
| $\mathbf{0}$ | Length of time that RDS is | $00-99$ hours (BCD). |
| to | temporarily switched on when |  |
| $\mathbf{7}$ | bits 6 and 7 of System Switch <br> 02 are set to "User selectable" | This setting is only valid if bits 6 and 7 of System <br> Switch 02 are set to "User selectable". <br> The default setting is 24 hours. |


| System Switch 04 |  |  |
| :---: | :--- | :--- |
| No | FUNCTION | COMMENTS No. 1-101-005 |
| $\mathbf{0 - 2}$ | Not used | Do not change the settings. |
| $\mathbf{3}$ | Printing dedicated tx <br> parameters on Quick Dial Lists <br> 0: Disabled <br> 1: Enabled | 1: Each Quick dial number on the list is printed with <br> the dedicated tx parameters (10 bytes each). <br> The first 10 bytes of data are the programmed <br> dedicated tx parameters; 34 bytes of data are <br> printed (the other 24 bytes have no use for service <br> technicians). |
| 4-7 | Not used | Do not change the settings. |

```
System Switch 05 - Not used (Do not change the factory settings.)
System Switch 06 - Not used (Do not change the factory settings.)
System Switch 07 - Not used (Do not change the factory settings.)
System Switch 08 - Not used (Do not change the factory settings.)
```

| System Switch 09 |  | SP No. 1-101-010 |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| 0 | Not used | Do not change the setting. |
| 1 | Inclusion of communications on the Journal when no image data was exchanged. <br> 0: Disabled 1: Enabled | 0: Communications that reached phase C (message $\mathrm{tx} / \mathrm{rx}$ ) of the $T .30$ protocol are listed on the Journal. 1: Communications that reached phase A (call setup) of T. 30 protocol are listed on the Journal. This will include telephone calls. |
| 2 | Automatic error report printout 0: Disabled 1: Enabled | 0: Error reports will not be printed. <br> 1: Error reports will be printed automatically after failed communications. |
| 3 | Printing of the error code on the error report <br> 0: No 1: Yes | 1: Error codes are printed on the error reports. |
| 4 | Not used | Do not change the setting. |
| 5 | Power failure report 0: Disabled 1: Enabled | 1: A power failure report will be automatically printed after the power is switched on if a fax message disappeared from the memory when the power was turned off last. |
| 6 | 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, by the user, for the Quick/Speed Dial number. |


| System Switch 0A |  |  |
| :---: | :--- | :--- |
| No | FUNCTION | COMMENTS No. 1-101-011 |
| $0 \mathbf{0 - 3}$ | Not used | Do not change the settings. |
| $\mathbf{4}$ | Dialing on the ten-key pad <br> when the external telephone is <br> off-hook <br> 0: Disabled 1: Enabled | 0: Prevents dialing from the ten-key pad while the <br> external telephone is off-hook. Use this setting when <br> the external telephone is not by the machine, or if a <br> wireless telephone is connected as an external <br> telephone. <br> 1: The user can dial on the machine's ten-key pad <br> when the handset is off-hook. |
| $\mathbf{5}$ | On hook dial <br> 0: Disabled 1: Enabled | 0: On hook dial is disabled. |
| $6 \mathbf{6 - 7}$ | Not used | Do not change the settings. |


| System Switch 0B - Not used (Do not change the factory settings.) |
| :--- | :--- |
| System Switch 0C - Not used (Do not change the factory settings.) |
| System Switch 0D - Not used (Do not change the factory settings.) |


| System Switch 0E |  |  |
| :--- | :--- | :--- |
| No | FUNCTION | COMMENTS No. 1-101-015 |
| 0-2 | Not used | Do not change the settings. |
| $\mathbf{3}$ | Action when the external <br> handset goes off-hook <br> 0: Manual tx and rx operation <br> 1: Memory tx and rx operation <br> (the display remains the same) | 0: Manual tx and rx are possible while the external <br> handset is off-hook. However, memory tx is not <br> possible. <br> 1: The display stays in standby mode even when <br> the external handset is used, so that other people <br> can use the machine for memory tx operation. <br> Note that manual tx and rx are not possible with this <br> setting. |
| 4-7 | Not used | Do not change the settings. |



| System Switch 10 |  |  |
| :---: | :--- | :--- |
| No | FUNCTION | COMMENTS |
| $\mathbf{0}$ | Threshold memory level for | Threshold = is $\mathrm{N} \times 128$ kbytes + 256 kbytes |
| to | parallel memory transmission | N can be between $00-\mathrm{FF}(\mathrm{H})$ |
| $\mathbf{7}$ |  | Default setting: $02(\mathrm{H})=512 \mathrm{kbytes}$ |


| System Switch 11 |  |  |
| :---: | :--- | :--- |
| No | FUNCTION | COMMENTS No. 1-101-018 |
| $\mathbf{0}$ | TTI printing position <br> 0: Superimposed on the page <br> data <br> 1: Printed before the data <br> leading edge | Change this bit to 1 if the TTI overprints information <br> that the customer considers to be important (G3 <br> transmissions). |
| 1-7 | Not used | Do not change the factory settings. |


| System Switch 12 |  | SP No. 1-101-019 |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| $\begin{gathered} 0 \\ \text { to } \\ 7 \end{gathered}$ | TTI printing position in the main scan direction | TTI: 08 to 92 (BCD) mm Input even numbers only. <br> This setting determines the print start position for the TTI and CIL from the left edge of the paper. If the TTI is moved too far to the right, it may overwrite the file number which is on the top right of the page. |

[^0]| System Switch 15 |  |  |
| :---: | :--- | :--- |
| No | FUNCTION | COMMENTS |
| $\mathbf{0}$ | Not used | Do not change the setting. |


| System Switch 16 - Not used (Do not change the settings.) |
| :--- |
| System Switch 17 - Not used (Do not change the settings.) |
| System Switch 18 - Not used (Do not change the settings.) |


| System Switch 19 |  |  |
| :--- | :--- | :--- |
| No | FUNCTION | COMMENTS No. 1-101-026 |
| $\mathbf{0 - 2}$ | Not used | Do not change the settings. |
| $\mathbf{3}$ | Selects a temporary address <br> for the number PC-FAX \#. | 0: When prefixed by \#, handled only as a stored <br> address. <br> 1: When prefixed by \#, when a digit exists that <br> prevents handling the transaction as a Quick, <br> Speed, or Group dialing, handles temporarily. |
| $\mathbf{4}$ | Number of jobs controlled for <br> PC-FAX TX <br> 0: 64 Jobs <br> 1: No limitations (but <br> conforms to device <br> limitations) | Sets the number of jobs controlled for PC-FAX <br> transactions. If "1" is selected (no limitations), control <br> is relinquished to the device (standard 400, <br> expandable to 800). |
| $\mathbf{5 - 6}$ | Not used | Special original mode <br> 0: Disabled <br> 1: Enabled |

System Switch 1A - Not used (Do not change the settings.)

| System Switch 1B |  | SP No. 1-101-030 |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| 0-1 | Image mode when Text is selected <br> 00: Text 1 <br> 01: Text 2 | 00: Text 1 is the regular mode. <br> 01: Text 2 is the sharp mode. |
| 2-3 | Image mode when Photo is selected <br> 00: Photo 1 <br> 01: Photo 2 | 00: Photo 1 is the error diffusion mode. 01 : Photo 2 is the dithering mode. |
| 4-6 | Image mode when Special original is selected <br> 000: Text 1 <br> 001: Text 2 <br> 010: Photo 1 <br> 011: Photo 2 <br> 100: Special | 000: Text 1 is the regular mode. 001: Text 2 is the sharp mode. 010: Photo 1 is the error diffusion mode. 011: Photo 2 is the dithering mode. 100: Special is the dropout color mode. |
| 7 | Not used | Do not change the setting. |

System Switch 1C - Not used (Do not change the settings.)

| System Switch 1D |  |  |
| :---: | :--- | :--- |
| No | FUNCTION | COMMENTS |
| $\mathbf{0}$ | RTI/CSI display <br> 0: Disabled <br> $1:$ Enabled | 1: RTI/CSI is displayed on the top line of the LCD <br> panel during communication. |
| $1-7$ | Not used | Do not change the settings. |


| System Switch 1E |  | SP No. 1-101-031 |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| 0 | Communication after the Journal data storage area has become full <br> 0: Impossible <br> 1: Possible | This setting is effective only when Automatic Journal printout is enabled but the machine cannot print the report (e.g., no paper). <br> $\mathbf{0}$ : If the buffer memory of the communication records for the Journal has become full, fax communications will become impossible, to prevent overwriting the communication records before the machine prints them out. <br> 1: If the buffer memory of the communication records for the Journal is full, fax communications are still possible. But the machine will overwrite the oldest communication records. <br> Cross Reference <br> - Automatic Journal output - User switch 03 bit 7 <br> - Number of communication records for the Journal: <br> 200 records (standard) <br> 1000 records (with the Function Upgrade unit installed) |
| 1 | Action when the SAF memory has become full during scanning <br> 0 : The current page is erased. <br> 1: The entire file is erased. | 0: If the SAF memory becomes full during scanning, the successfully scanned pages are transmitted. <br> 1: If the SAF memory becomes full during scanning, the file is erased and no pages are transmitted. This bit switch is ignored for parallel memory transmission. |
| 2 | RTI/CSI display priority 0: RTI 1: CSI | This bit determines which identifier, RTI or CSI, is displayed on the LCD while the machine is communicating in G3 non-standard mode. |
| 3 | File No. printing 0 : Enabled <br> 1: Disabled | 1: File numbers are not printed on any reports. |
| 4 | Action when authorized reception is enabled but authorized RTIs/CSIs are not yet programmed <br> 0 : All fax reception is disabled <br> 1: Faxes can be received if the sender has an RTI or CSI | If authorized reception is enabled but the user has stored no acceptable sender RTIs or CSIs, the machine will not be able to receive any fax messages. <br> If the customer wishes to receive messages from any sender that includes an RTI or CSI, and to block messages from senders that do not include an RTI or CSI, change this bit to " 1 ", then enable Authorized Reception. Otherwise, keep this bit at " 0 (default setting)". |
| 5-7 | Not used | Do not change the setting. |


| System Switch 1F |  |  |
| :---: | :--- | :--- |
| No | FUNCTION | COMMENTS No. 1-101-032 |
| $\mathbf{0}$ | Not used | Do not change the setting. |

### 3.2.2 .IFAX SWITCHES

Please refer to the IFAX Service Manual.

### 3.2.3 PRINTER SWITCHES

| Printer Switch 00 |  |  |
| :---: | :--- | :--- |
| No | FUNCTION | COMMENTS No. 1-103-001 |
| $\mathbf{0}$ | Page separation mark <br> 0: Disabled <br> 1: Enabled | 0: No marks are printed. <br> 1: If a received page has to be printed out on two <br> sheets, an asterisk inside square brackets is printed <br> at the bottom right hand corner of the first sheet, <br> and a "2" inside a small box is printed at the top right <br> hand corner of the second sheet. This helps the <br> user to identify pages that have been split. |
| $\mathbf{1}$ | Repetition of data when the <br> received page is longer than <br> the printer paper <br> 0: Disabled <br> 1: Enabled | 0: The next page continues from where the previous <br> page left off. <br> 1: The final few mm of the previous page are <br> repeated at the top of the next page. The amount of <br> repeated data depends on printer switch 04, bits 5 <br> and 6. |
| $\mathbf{2}$ | Prints the date and time on <br> received fax messages <br> 0: Disabled <br> 1: Enabled | This switch is only effective when user parameter 02 <br> - bit 2 (printing the received date and time on <br> received fax messages) is enabled. <br> 1: The machine prints the received and printed date <br> and time at the bottom of each received page. |
| 3-7 | Not used | Do not change the settings. |


| Printer Switch 01 |  | SP No. 1-103-002 |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| 0-2 | Not used | Do not change the settings. |
| 3-4 | Maximum print width used in the setup protocol <br> Bit 43 Setting <br> 0 0 Not used <br> 01 A3 <br> 1 0 B4 <br> 1 A4 | These bits are only effective when bit 7 of printer switch 01 is " 1 ". |
| 5-6 | Not used | Do not change the settings. |
| 7 | Received message width restriction in the protocol signal to the sender <br> 0: Disabled <br> 1: Enabled | 0 : The machine informs the transmitting machine of the print width depending on the paper size available from the paper feed stations. <br> Refer to the table on the next page for how the machine chooses the paper width used in the setup protocol (NSF/DIS). <br> 1: The machine informs the transmitting machine of the fixed paper width which is specified by bits 3 and 4 above. |

Relationship between available paper sizes and printer width used in the setup protocol

| Available Paper Size | Printer width used in the Protocol (NSF/DIS) |
| :---: | :---: |
| A4 or $8.5^{\prime \prime} \times 11^{\prime \prime}$ | 297 mm width |
| B5 | 256 mm width |
| A5 or $8.5^{\prime \prime} \times 5.5^{\prime \prime}$ | 216 mm width |
| No paper available (Paper end) | 216 mm width |


| Printer Switch 02 |  | SP No. 1-103-003 |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| 0 | 1st paper feed station usage for fax printing <br> 0 : Enabled <br> 1: Disabled | 0 : The paper feed station can be used to print fax messages and reports. <br> 1: The specified paper feed station will not be used for printing fax messages and reports. <br> Note: Do not disable usage for a paper feed station which has been specified by User Parameter Switch OF (15), or which is used for the Specified Cassette Selection feature. |
| 1 | 2nd paper feed station usage for fax printing <br> 0: Enabled <br> 1: Disabled |  |
| 2 | 3rd paper feed station usage for fax printing <br> 0 : Enabled <br> 1: Disabled |  |
| 3 | 4th paper feed station usage for fax printing <br> 0 : Enabled <br> 1: Disabled |  |
| 4-7 | Not used | Do not change the settings. |


| Printer Switch 03 |  |  |
| :--- | :--- | :--- |
| No | FUNCTION | SP No. 1-103-004 |
| $\mathbf{0}$ | Length reduction of received <br> data <br> 0: Disabled <br> 1: Enabled | 0: Incoming pages are printed without length <br> reduction. <br> (Page separation threshold: Printer Switch 03, bits 4 <br> to 7) <br> 1: Incoming page length is reduced when printing. <br> (Maximum reducible length: Printer Switches 04, <br> bits 0 to 4) |
| 1-3 | Not used | Do not change the settings |


| Prin | er Switch 03 SP No. 1-103-004 |
| :---: | :---: |
| No | FUNCTION COMMENTS |
| $\begin{gathered} 4 \\ \text { to } \\ 7 \end{gathered}$ | Page separation threshold (with reduction disabled with switch 03-0 above) <br> If the incoming page is up to $\times \mathrm{mm}$ 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> Default setting: 6 mm <br> Cross reference <br> Length reduction On/Off: Printer Switch 03, Bit 0 |


|  | witch 04 | SP No. 1-103-005 |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| 0 to 4 | Maximum reducible le <Maximum reducible " N " is the decimal valu <br> $\begin{array}{lllll}\text { Bit } 4 & 3 & 2 & 1 & 0 \\ \text { Set }\end{array}$ $\begin{array}{lllllll}0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 & 5\end{array}$ 0010020 11111155 <br> For A5 sideways and <Maximum reducible | length reduction is enabled with switch 03-0 above. Paper length> + ( $\times 5 \mathrm{~mm}$ ) ary setting of bits 0 to 4 . <br> setting) <br> s paper <br> Paper length> $+0.75 \times(\mathrm{N} \times 5 \mathrm{~mm})$ |
|  <br> 5 <br> to <br> 6 | $\binom{0}{0}=4 \mathrm{~mm}\binom{1}{0}=10 \mathrm{~mm}\binom{0}{1}=15 \mathrm{~mm}\binom{1}{1}=\operatorname{Not} \text { used }$ |  |
| 7 | Not used. | Do not change the setting. |

Printer Switch 05 - Not used (Do not change the settings.)

| Printer Switch 06 |  | SP No. 1-103-007 |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| 0 | Printing while a paper cassette is pulled out, when the Just Size Printing feature is enabled. <br> 0: Printing will not start <br> 1: Printing will start if another cassette has a suitable size of paper, based on the paper size selection priority tables. | Cross reference <br> Just size printing on/off - User switch 05, bit 5 |
| 1-7 | Not used. | Do not change the settings. |


| Printer Switch 07 |  |  |
| :---: | :--- | :--- |
| No | FUNCTION | COMMENTS No. 1-103-008 |
| $\mathbf{0 - 3}$ | Not used. | Do not change the settings. |
| $\mathbf{4}$ | List of destinations in the <br> Communication Failure Report <br> for broadcasting <br> 0: All destinations <br> 1: Only destinations where <br> communication failure occurred | 1: Only destinations where communication failure <br> occurred are printed on the Communication Failure <br> Report. |
| $\mathbf{5 - 7}$ | Not used. | Do not change the settings. |


| Printer Switch 08 - Not used (Do not change the settings.) |
| :--- |
| Printer Switch 09 - Not used (Do not change the settings.) |
| Printer Switch 0A - Not used (Do not change the settings.) |
| Printer Switch 0B - Not used (Do not change the settings.) |
| Printer Switch 0C - Not used (Do not change the settings.) |
| Printer Switch 0D - Not used (Do not change the settings.) |


| Printer Switch 0E |  | SP No. 1-103-015 |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| 0 | Paper size selection priority <br> 0 : Width <br> 1: Length | 0: A paper size that has the same width as the received data is selected first. <br> 1: A paper size which has enough length to print all the received lines without reduction is selected first. |
| 1 | Paper size selected for printing A4 width fax data 0: 8.5" x $11^{\prime \prime}$ size <br> 1: A4 size | This switch determines which paper size is selected for printing A4 width fax data, when the machine has both A4 and $8.5^{\prime \prime} \times 11^{\prime \prime}$ size paper. |
| 2 | Page separation <br> 0 : Enabled <br> 1: Disabled | 1: If all paper sizes in the machine require page separation to print a received fax message, the machine does not print the message (Substitute Reception is used). <br> After a larger size of paper is set in a cassette, the machine automatically prints the fax message. |
| $\begin{array}{\|c\|} \hline 3 \\ \text { to } \\ 4 \end{array}$ | Printing the sample image on   <br> reports   <br> Bit 4it 3 Setting  <br> 0 0 The upper half <br> 0 1 only <br> $50 \%$ reduction <br> in sub-scan only <br> 1 0 Same size <br> 1 1 Not used | "Same size" means the sample image is printed at $100 \%$, even if page separation occurs. <br> User Parameter Switch 19 (13H) bit 4 must be set to " 0 " to enable this switch. <br> Refer to Detailed Section Descriptions for more on this feature. |
| 5-6 | Not used | Do not change the settings. |
| 7 | Equalizing the reduction ratio among separated pages <br> (Page Separation) <br> 0: Enabled <br> 1: Disabled | $\mathbf{0}$ : When page separation has taken place, all the pages are reduced with the same reduction ratio. <br> 1: Only the last page is reduced to fit the selected paper size when page separation has taken place. Other pages are printed without reduction. |


| Printer Switch 0F |  | SP No. 1-103-016 |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| $\begin{gathered} 0 \\ \text { to } \\ 1 \end{gathered}$ | Smoothing feature    <br> Bit 1 Bit 0 Setting   <br> 0 0 Disabled  <br> 0 1 Disabled  <br> 1 0 Enabled  <br> 1 1 Not used  | $(\mathbf{0}, \mathbf{0})(\mathbf{0}, \mathbf{1})$ : Disable smoothing if the machine receives halftone images from other manufacturers fax machines frequently. |
| 2-3 | Not used | Do not change the settings. |
| 4 | Printing fax messages in user code mode <br> 0: Enabled <br> 1: Disabled | 1: The machine holds the received fax messages until the machine exits the restricted access mode (user code or key counter). <br> If the machine enters the restricted access mode again while printing fax messages, the machine stops printing the machine exits the mode again. |
| 5-7 | Not used | Do not change the settings. |

### 3.2.4 COMMUNICATION SWITCHES

| Communication Switch 00 |  | SP No. 1-104-001 |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| $\begin{gathered} 0 \\ \text { to } \\ 1 \end{gathered}$ |  | These bits determine the compression capabilities to be declared in phase $B$ (handshaking) of the T. 30 protocol. |
| $\begin{gathered} 2 \\ \text { to } \\ 3 \end{gathered}$ | Compression modes available   <br> in transmit   <br> Bode   <br> Bit $\mathbf{3}$ $\mathbf{2}$ Modes <br> 0 0 MH only <br> 0 1 MH/MR <br> 1 0 MH/MR/MMR <br> 1 1 MH/MR/MMR/ <br>    <br>    <br>   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 | Not used | Do not change the setting. |
| 5 | JBIG compression method: Reception <br> 0 : Only basic supported <br> 1: Basic and optional both supported | Change the setting when communication problems occur using JBIG compression. |
| 6 | JBIG compression method: Transmission 0: Basic mode priority <br> 1: Optional mode priority | Change the setting when communication problems occur using JBIG compression. |
| 7 | Not used | Do not change the settings. |


| Communication Switch 01 |  | SP No. 1-104-002 |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| 0 | $\begin{aligned} & \text { ECM } \\ & \text { 0: Off 1: On } \end{aligned}$ | If this bit is set to 0 , ECM is switched off for all communications. <br> In addition, V. 8 protocol and JBIG compression are switched off automatically. |
| 1-5 | Not used | Do not change the settings. |
| $\begin{aligned} & 6 \\ & \text { to } \\ & 7 \end{aligned}$ | Maximum printable page length available $\begin{array}{cll} \text { Bit 7 } & 6 & \text { Setting } \\ 0 & 0 & \text { No limit } \\ 0 & 1 & \text { B4 }(364 \mathrm{~mm}) \\ 1 & 0 & \text { A4 }(297 \mathrm{~mm}) \\ 1 & 1 & \text { Not used } \\ \hline \end{array}$ | 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 |  | SP No. 1-104-003 |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| 0 | Burst error threshold 0: Low 1: High | If there are more consecutive error lines in the received page than the threshold, the machine will send a negative response. <br> The Low and High threshold values depend on the sub-scan resolution, and are as follows. |
| 1 | Acceptable total error line ratio 0: 5\% 1: 10\% | If the error line ratio for a page exceeds the acceptable ratio, RTN will be sent to the other end. |
| 2 | Treatment of pages received with errors during G3 reception <br> 0 : Deleted from memory without printing <br> 1: Printed | 0: Pages received with errors are not printed. |
| 3 | Hang-up decision when a negative code (RTN or PIN) is received during G3 immediate transmission <br> 0: No hang-up, 1: Hang-up | $\mathbf{0}$ : 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. |
| 4-7 | Not used | Do not change the settings. |


| Communication Switch 03 |  |  |
| :---: | :--- | :--- |
| No | FUNCTION | COMMENTS No. 1-104-004 |
| $\mathbf{0}$ | Maximum number of page | CO-FF (Hex) times. |
| to | retransmissions in a G3 | This setting is not used if ECM is switched on. |
| 7 | memory transmission | Default setting $-03(\mathrm{H})$ |


| Communication Switch $04-$ Not used (Do not change the settings.) |
| :--- | :--- |
| Communication Switch $05-$ Not used (Do not change the settings.) |
| Communication Switch $06-$ Not used (Do not change the settings.) |
| Communication Switch $07-$ Not used (Do not change the settings.) |
| Communication Switch $08-$ Not used (Do not change the settings.) |
| Communication Switch $09-$ Not used (Do not change the settings.) |


| Communication Switch 0A |  |  |
| :---: | :--- | :--- |
| No | FUNCTION | SP No. 1-104-011 |
| $\mathbf{0}$ | Point of resumption of memory <br> transmission upon redialing <br> 0: From the error page <br> 1: From page 1 | 0: The transmission begins from the page where <br> transmission failed the previous time. <br> 1: Transmission begins from the first page, using <br> normal memory transmission. |
| 1-7 | Not used | Do not change the settings. |

Communication Switch 0B - Not used (Do not change the settings.)
Communication Switch OC - Not used (Do not change the settings.)

| Communication Switch OD SP No. 1-104-014 |  |  |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| $\begin{gathered} 0 \\ \text { to } \\ 7 \end{gathered}$ | The available memory threshold, below which ringing detection (and therefore reception into memory) is disabled | $\begin{aligned} & 00 \text { to FF }(\text { Hex }) \text {, unit }=4 \text { kbytes } \\ & \text { (e.g., } 06(\mathrm{H})=24 \text { kbytes) } \end{aligned}$ <br> One page is about 24 kbytes. <br> The machine refers to this setting before each fax reception. If the amount of remaining memory is below this threshold, the machine cannot receive any fax messages. <br> If this setting is kept at 0 , the machine will detect ringing signals and go into receive mode even if there is no memory available. This will result in communication failure. |


| Communication Switch 0E |  |  |
| :---: | :--- | :--- |
| No | FUNCTION | COMMENTS No. 1-104-015 |
| $\mathbf{0}$ | Minimum interval between | 06 to $\mathrm{FF}(\mathrm{Hex})$, unit $=2 \mathrm{~s}$ |
| to | automatic dialing attempts | (e.g., $06(\mathrm{H})=12 \mathrm{~s})$ |
| $\mathbf{7}$ |  | This value is the minimum time that the machine |
|  |  | waits before it dials the next destination. |

Communication Switch 0F - Not used (Do not change the settings.)

| Communication Switch 10 |  |  |
| :---: | :--- | :--- |
| No | FUNCTION | COMMENTS No. 1-104-017 |
| $\mathbf{0}$ | Memory transmission: | 01 - FE (Hex) times |
| to | Maximum number of dialing |  |
| 7 | attempts to the same |  |

Communication Switch 11 - Not used (Do not change the settings.)

| Communication Switch 12 |  |  |
| :---: | :---: | :---: |
| No | FUNCTION | CP No. 1-104-019 |
| $\mathbf{0}$ | Memory transmission: Interval | 01 -FF (Hex) minutes |
| to | between dialing attempts to the |  |
| 7 | same destination |  |

Communication Switch 13 - Not used (Do not change the settings.)

| Communication Switch 14 |  | SP No. 1-104-021 |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| 0 | Inch-to-mm conversion during transmission <br> 0: Disabled 1: Enabled | 0: In immediate transmission, data scanned in inch format are transmitted without conversion. <br> In memory transmission, data stored in the SAF memory in mm format are transmitted without conversion. <br> Note: When storing the scanned data into SAF memory, the fax unit always converts the data into mm format. <br> 1: The machine converts the scanned data or stored data in the SAF memory to the format which was specified in the set-up protocol (DIS/NSF) before transmission. |
| 1-5 | Not used | Do not change the factory settings. |
| $\begin{gathered} 6 \\ \text { to } \\ 7 \end{gathered}$ | Available unit of resolution inwhich fax messages arereceivedBit 7Bit $\mathbf{6}$ UnitUnm   <br> 0 0 mm <br> 0 1 inch <br> 1 0 mm and inch <br> 1  (default) <br> 1 1 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). |


| Communication Switch 15 - Not used (Do not change the settings.) |
| :--- |
| Communication Switch 16 - Not used (Do not change the settings.) |
| Communication Switch 17 - Not used (Do not change the settings.) |
| Communication Switch 18 - Not used (Do not change the settings.) |
| Communication Switch 19 - Not used (Do not change the settings.) |
| Communication Switch 1 A - Not used (Do not change the settings.) |


| Communication Switch 1B |  |  |
| :---: | :--- | :--- |
| No | FUNCTION | SP No. 1-104-028 |
| $\mathbf{0}$ | Extension access code (0 to 7) | If the PABX does not support V.8/V.34 protocol |
| to | to turn V.8 protocol On/Off | procedure, set this bit to "1" to disable V.8. |
| $\mathbf{7}$ | 0: On | Example: If "0" is the PSTN access code, set bit 0 |
|  | 1: Off | 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 |
|  |  |  |
|  |  |  |


| Communication Switch 1C |  | SP No. 1-104-029 |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| $\begin{gathered} 0 \\ \text { to } \\ 1 \end{gathered}$ | Extension access code (8 and 9) to turn V. 8 protocol On/Off <br> 0 : On <br> 1: Off | Refer to communication switch 1E. <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 the settings. |

[^1]
### 3.2.5 G3-1 SWITCHES

| G3-1 Switch 00 |  | SP No. 1-105-001 |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| $\begin{gathered} 0 \\ \text { to } \\ 1 \end{gathered}$ | Monitor speaker during   <br> communication (tx and rx)   <br> Bit Bit 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 0 : Disabled 1: Enabled | 1: The monitor speaker is enabled during memory transmission. |
| 3-7 | Not used | Do not change the settings. |


| G3-1 Switch 01 |  |  |
| :---: | :--- | :--- |
| No | FUNCTION | COMMENTS No. 1-105-002 |
| $\mathbf{0 - 3}$ | Not used | Do not change the settings. |
| $\mathbf{4}$ | DIS frame length <br> $0: 10$ bytes 1: 4 bytes | 1: The bytes in the DIS frame after the 4th byte will <br> not be transmitted (set to 1 if there are <br> communication problems with PC-based faxes <br> which cannot receive the extended DIS frames). |
| $\mathbf{5}$ | Not used | Do not change the setting. |
| $\mathbf{6}$ | CED/ANSam transmission <br> 0: Disabled <br> 1: Enabled | Do not change this setting, unless the <br> communication problem is caused by the <br> CED/ANSam transmission. |
| $\mathbf{7}$ | Not used | Do not change the setting. |


| G3-1 Switch 02 |  |  |
| :---: | :--- | :--- |
| No | FUNCTION | COMMENTS No. 1-105-003 |
| $\mathbf{0}$ | 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 <br> only communicate with machines that send T.30- <br> standard frames only. <br> 1: Disables NSF/NSS signals (these are used in <br> non-standard mode communication) |
| 1-4 | Not used | Do not change the settings. |
| $\mathbf{5}$ | Use of modem rate history for <br> transmission using <br> Quick/Speed Dials <br> 0: Disabled <br> 1: Enabled | 0: Communications using Quick/Speed Dials always <br> start from the highest modem rate. <br> 1: The machine refers to the modem rate history for <br> communications with the same machine when <br> determining the most suitable rate for the current <br> communication. |
| $\mathbf{6}$ | Al short protocol (transmission <br> and reception) <br> 0: Disabled 1: Enabled | Refer to Appendix B in the Group 3 Facsimile <br> Manual for details about Al Short Protocol. |
| $\mathbf{7}$ | Short preamble <br> 0: Disabled 1: Enabled | Refer to Appendix B in the Group 3 Facsimile <br> Manual for details about Short Preamble. |


| G3-1 Switch 03 |  | SP No. 1-105-004 |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| 0 | DIS detection number (Echo countermeasure) 0: 1 1:2 | 0 : The machine will hang up if it receives the same DIS frame twice. <br> 1: Before sending DCS, the machine will wait for the second DIS which is caused by echo on the line. |
| 1 | V. 8 protocol in manual reception <br> 0: Disabled <br> 1: Enabled | 0 : The machine sends CED instead of ANSam when starting a manual reception. <br> 1: The machine sends ANSam during manual reception. |
| 2 | V. 8 protocol <br> 0 : Disabled <br> 1: Enabled | 0: V.8/V. 34 communications will not be possible. <br> Note: <br> 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 : After one PPR signal received <br> 1: After four PPR signals received (ITU-T standard) | 0: When using ECM in non-standard (NSF/NSS) mode, the machine sends a CTC to drop back the modem rate after receiving a PPR, if the following condition is met in communications at 14.4, 12.0, 9.6, and 7.2 kbps . <br> $\sqrt{\text { NTransmit } \leq N R e s e n d ~}$ <br> NTransmit- Number of transmitted frames NResend- Number of frames to be retransmitted <br> 1: When using ECM, the machine sends a CTC to drop back the modem rate after receiving four PPRs. <br> PPR, CTC: These are ECM protocol signals. <br> This bit is not effective in V. 34 communications. |
| 5 | Modem rate used for the next page after receiving a negative code (RTN or PIN) <br> 0: No change 1: Fallback | 1: The machine's tx modem rate will fall back before sending the next page if a negative code is received. This bit is ignored if ECM is being used. |
| 6 | V .8 protocol in manual transmission <br> 0 : Disabled <br> 1: Enabled | 1: The machine detects either ANSam or CED during manual transmission. |
| 7 | Not used | Do not change the setting. |


| G3-1 Switch 04 |  |  |
| :---: | :--- | :--- |
| No | FUNCTION | COMMENTS |
| $\mathbf{0}$ | Training error detection | $0-\mathrm{F}($ Hex $) ; 0-15$ bits |
| to | threshold | If the number of error bits in the received TCF is |
| $\mathbf{3}$ |  | below this threshold, the machine informs the |
|  |  | sender that training has succeeded. |
| $4-7$ | Not used | Do not change the settings. |


| G3-1 Switch 05 |  | SP No. 1-105-006 |
| :---: | :---: | :---: |
| No | FUNCTION |  |
| $\begin{gathered} 0 \\ \text { to } \\ 3 \end{gathered}$ |  | These bits set the initial starting modem rate for transmission. <br> Use the dedicated transmission parameters if you need to change this for specific receivers. <br> If a modem rate 14.4 kbps or slower is selected, V. 8 protocol should be disabled manually. <br> Cross reference <br> V. 8 protocol on/off - G3 switch 03, bit2 |
| $\begin{array}{c\|} \hline 4 \\ \text { to } \\ 5 \end{array}$ | Initial modem type for 9.6 k or 7.2 kbps . | 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 the settings. |


| G3-1 Switch 06 |  | SP No. 1-105-007 |
| :---: | :---: | :---: |
| No | FUNCTION |  |
| $\begin{gathered} 0 \\ \text { to } \\ 3 \end{gathered}$ |  | These bits set the initial starting modem rate for reception. <br> Use a lower setting if high speeds pose problems during reception. <br> If a modem rate 14.4 kbps or slower is selected, V. 8 protocol should be disabled manually. <br> Cross reference <br> V. 8 protocol on/off - G3 switch 03, bit2 |
| $\begin{gathered} 4 \\ \text { to } \\ 7 \end{gathered}$ | Modem types available for reception <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> If V .34 is not selected, V .8 protocol must be disabled manually. <br> Cross reference <br> V. 8 protocol on/off - G3 switch 03, bit2 |


| G3-1 Switch 07 |  | SP No. 1-105-008 |
| :---: | :---: | :---: |
| No | FUNCTION |  |
| $\begin{gathered} 0 \\ \text { to } \\ 1 \end{gathered}$ | PSTN cable equalizer (tx mode: Internal) Bit 1 Bit 0 Setting 00 None 01 Low $\begin{array}{lll}1 & 0 & \text { Medium } \\ 1 & 1 & \text { High }\end{array}$ | Use a higher setting if there is signal loss at higher frequencies because of the length of wire between the modem and the telephone exchange. <br> Use the dedicated transmission parameters for specific receivers. <br> Also, try using the cable equalizer if one or more of the following symptoms occurs. <br> - Communication error <br> - Modem rate fallback occurs frequently. <br> Note: This setting is not effective in V. 34 communications. |
| $\begin{gathered} 2 \\ \text { to } \\ 3 \end{gathered}$ | PSTN cable equalizer (rx mode: Internal) Bit 3 Bit 2 Setting 00 None 01 Low $\begin{array}{lll}1 & 0 & \text { Medium } \\ 1 & 1 & \text { High }\end{array}$ | Use a higher setting if there is signal loss at higher frequencies because of the length of wire between the modem and the telephone exchange. <br> Also, try using the cable equalizer if one or more of the following symptoms occurs. <br> - Communication error with error codes such as $0-20,0-23$, etc. <br> - Modem rate fallback occurs frequently. <br> Note: This setting is not effective in V. 34 communications. |
| 4-7 | Not used | Do not change the settings. |

G3-1 Switch 08 - Not used (Do not change the settings.)
G3-1 Switch 09 - Not used (Do not change the settings.)

| G3-1 Switch 0A |  | SP No. 1-105-011 |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| $\begin{gathered} 0 \\ \text { to } \\ 1 \end{gathered}$ | Maximum allowable carrier drop during image data reception | These bits set the acceptable modem carrier drop time. <br> Try using a longer setting if error code $0-22$ is frequent. |
| 2 | Non-ECM Carrier Drop <br> 0 : Maintain connection <br> 1: Disconnect | Determines how the machine will respond when it detects a drop in the carrier signal during non-ECM communication. |
| 3 | Not used | Do not change the settings. |
| 4 | Maximum allowable frame interval during image data reception. $0: 5 \mathrm{~s} 1: 13 \mathrm{~s}$ | This bit set the maximum interval between EOL (end-of-line) signals and the maximum interval between ECM frames from the other end. Try using a longer setting if error code 0-21 is frequent. |
| 5 | Not used | Do not change the setting. |
| 6 | Reconstruction time for the first line in receive mode $0: 6 \mathrm{~s} 1: 12 \mathrm{~s}$ | When the sending terminal is controlled by a computer, there may be a delay in receiving page data after the local machine accepts set-up data and sends CFR. This is outside the T. 30 recommendation. But, if this delay occurs, set this bit to 1 to give the sending machine more time to send data. <br> Refer to error code 0-20. <br> ITU-T T. 30 recommendation: The first line should come within 5 s of CFR. |
| 7 | Not used | Do not change the setting. |


| G3-1 Switch 0B |  |  |
| :---: | :--- | :--- |
| No | FUNCTION | COMMENTS No. 1-105-012 |
| $\mathbf{0}$ | Protocol requirements: Europe <br> 0: Disabled 1: Enabled | The machine does not automatically reset these bits <br> for each country after a country code (System <br> Switch OF) is programmed. <br> Change the required bits manually at installation. |
| $\mathbf{1}$ | Protocol requirements: Spain <br> 0: Disabled 1: Enabled | Do not change the setting. |
| $\mathbf{2}$ | Not used | The machine does not automatically reset these bits <br> for each country after a country code (System <br> Switch 0F) is programmed. <br> Change the required bits manually at installation. |
| $\mathbf{3}$ | Protocol requirements: France <br> 0: Disabled 1: Enabled | DTT requirements: Germany <br> 0: Disabled 1: Enabled |


| G3-1 Switch 0C |  |  | SP No. 1-105-013 |
| :---: | :---: | :---: | :---: |
| No | FUNCTION |  | COMMENTS |
| 0 | Pulse dialing method |  | $\mathrm{P}=$ Number of pulses sent out, $\mathrm{N}=$ Number dialed. |
| to | Bit 1 Bit 0 | Setting |  |
| 1 | 00 | Normal(P=N) |  |
|  | 01 | Oslo ( $\mathrm{P}=10-\mathrm{N}$ ) |  |
|  | $10$ | Sweden $(\mathrm{N}+1)$ |  |
|  | 11 | Not used |  |
| 2-7 | Not used |  | Do not change the settings. |

G3-1 Switch 0D - Not used (Do not change the settings.)

| G3-1 Switch 0E |  | SP No. 1-105-015 |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| 0 | CNG transmission OFF interval. | Examples: |
| to | To input a value more than 3 s , use | 3100 ms : $50 \times 2=100$ |
| 7 | bits 3 to 0 , and keep bits 4 to 7 at 0 . | Bits 4 to 7 must be 0 |
|  | $3000+50 \times \mathrm{N} \mathrm{ms}$ | Bits 0 to 3 must be 2(H) |
|  | To inpu a value less than 3 s , use bits | So, enter 02H. |
|  | 4 to 7, and keep bits 0 to 3 at 1 . | 2800 ms : $50 \times 4=200$ |
|  | $3000-50 \times \mathrm{N} \mathrm{ms}$ | Bits 0 to 3 must be F(H) |
|  |  | Bits 4 to 7 must be 4(H) |
|  |  | So, enter 4FH |


| G3-1 Switch 0F |  | SP No. 1-105-016 |
| :---: | :--- | :--- |
| No | FUNCTION | COMMENTS |$|$| $\mathbf{0}$ | Alarm when an error occurred <br> in Phase C or later <br> 0: Disabled <br> 1: Enabled | If the customer wants to hear an alarm after each <br> error communication, change this bit to "1". |
| :--- | :--- | :--- |
| $\mathbf{1}$ | Alarm when the handset is off- <br> hook at the end of <br> communication <br> 0: Disabled <br> 1: Enabled | If the customer wants to hear an alarm if the <br> handset is off-hook at the end of fax communication, <br> change this bit to "1". |
| $\mathbf{2 - 7}$ | Not used | Do not change the settings. |

### 3.2.6 FAX SWITCHES

| FAX Switch $00-$ Not used (Do not change the settings.) |
| :--- |
| $:$ |
| FAX Switch 0A - Not used (Do not change the settings.) |


| FAX Switch OB |  |  |
| :---: | :--- | :--- |
| No | FUNCTION | SP No. 3-201-012 |
| $\mathbf{0}$ | Scan margin setting (right and left margin in book scan ADF mode) |  |
| to | The setting can be between 0 and $\mathrm{F}(\mathrm{H})$ (unit 0.5 mm ). |  |
| $\mathbf{3}$ | Default setting: 2 mm |  |
| $\mathbf{4}$ | Scan margin setting (top and bottom margin in book scan and ADF mode) |  |
| to | The setting can be between 0 and $7(\mathrm{H})$ (unit 0.5 mm$).$ |  |
| $\mathbf{7}$ | Default setting: 3 mm |  |


| FAX Switch 0C |  | SP No. 3-201-013 |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| 0 | Action when an original jam has occurred while scanning the original into memory for memory tx <br> 0 : Continues scanning after recovery <br> 1: Stops scanning and erases all scanned pages for that job | This bit is only effective when parallel memory tx is disabled (user parameter 07 - bit 2). <br> If parallel memory $t x$ is enabled, the machine always erases the scanned pages when an original jam occurs. The machine then asks the user to retry from the first page, even if the parallel memory tx is not actually used. <br> 0 : The machine displays a message asking the user to put the jammed page back into the original stack, and continues scanning. <br> The message is displayed for the time period specified by scanner switch $O E$, bit 2 . <br> 1: The machine erases all the scanned pages and asks the user to retry from the first page. |
| $\begin{gathered} 1 \\ \text { to } \\ 2 \end{gathered}$ | Setting when an original size cannot be recognized <br> Bit 21 Setting <br> 0 No original <br> 01 A5 <br> 10 A5 口 <br> 11 No original |  |
| 3-7 | Not used | Do not change the settings. |

FAX Switch 0D
SP No. 3-201-014

| No | FUNCTION | COMMENTS |
| :---: | :--- | :--- |
| $\mathbf{0 - 6}$ | Not used | Do not change the settings. |
| $\mathbf{7}$ | Scan width for A5 lengthwise or | 0: The machine scans the original as $210 \mathrm{~mm}\left(8.5^{\prime \prime}\right)$ |
|  | B5 lengthwise originals | width. The transmitted image has a blank area on |
|  | 0: 210 mm (8.5") | the right. |
|  | 1: Original width | 1: The machine scans 148 mm (A5) or 182 mm |
|  |  | (B5) and centers the scanned data on a 216 mm |
| width transmitted image. |  |  |


| FAX Switch 0E |  |  |
| :---: | :--- | :--- |
| No | FUNCTION | COMMENTS No. 3-201-015 |
| $\mathbf{0}$ | Not used | Do not change the settings. |
| $\mathbf{1}$ | Scan resolution unit <br> $\mathbf{0}: \mathrm{mm}$ <br> $1:$ inches | This bit determines which resolution unit will be <br> used for scanning a fax message. <br> Default setting: mm |
| 2-7 | Not used | Do not change the settings. |


| Scanner Switch 0F |  |  |
| :---: | :--- | :--- |
| No | FUNCTION | COMMENTS No. 3-201-016 |
| $\mathbf{0}$ | Image rotation before <br> transmission (A4/LT sideways) <br> 0. Disabled <br> 1: Enabled | This bit determines whether the machine rotates the <br> scanned image by 90 degrees before transmission. <br> If this bit is set at 1, A4 (LT) sideways images (297 <br> mm width in the protocol) will be transmitted as A4 <br> (LT) lengthwise images (216 mm width in the <br> protocol). |
| $\mathbf{1}$ | Not used | Do not change the settings |
| $\mathbf{2}$ | Image rotation before <br> transmission (A5/HLT <br> lengthwise) <br> 0. Disabled <br> 1: Enabled | This bit determines whether the machine rotates the <br> scanned image by 90 degrees before transmission. <br> If this bit is set at "1", A5 (HLT) lengthwise images <br> will be transmitted as A4 (LT) width images (216 <br> mm width in the protocol). |
| 3-7 | Not used | Do not change the settings. |

### 3.3 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 (SP2-101), but some can be changed using NCU Parameter programming (SP2-103); if SP2-103 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 |  | marks |
| :---: | :---: | :---: | :---: | :---: |
| 680500 | Country/Area code for NCU parameters | Use the Hex value to program the country/area code directly into this address, or use the decimal value to program it using SP2-103-001 |  |  |
|  |  | Country/Area | Decimal | Hex |
|  |  | France | 00 |  |
|  |  | Germany | 01 | 01 |
|  |  | UK | 02 | 02 |
|  |  | Italy | 03 | 03 |
|  |  | Austria | 04 | 04 |
|  |  | Belgium | 05 | 05 |
|  |  | Denmark | 06 | 06 |
|  |  | Finland | 07 | 07 |
|  |  | Ireland | 08 | 08 |
|  |  | Norway | 09 | 09 |
|  |  | Sweden | 10 | 0A |
|  |  | Switzerland | 11 | OB |
|  |  | Portugal | 12 | 0 C |
|  |  | Holland | 13 | OD |
|  |  | Spain | 14 | OE |
|  |  | Israel | 15 | OF |
|  |  | USA | 17 | 11 |
|  |  | Asia | 18 | 12 |
|  |  | Hong Kong | 20 | 14 |
|  |  | South Africa | 21 | 15 |
|  |  | Australia | 22 | 16 |
|  |  | New Zealand | 23 | 17 |
|  |  | Singapore | 24 | 18 |
|  |  | Malaysia | 25 | 19 |
|  |  | China | 26 | 1A |
|  |  | Taiwan | 27 | 1B |
|  |  | Korea | 28 | 1 C |
|  |  | Greece | 33 | 21 |
|  |  | Hungary | 34 | 22 |
|  |  | Czech | 35 | 23 |
|  |  | Poland | 36 | 24 |
| 680501 | Line current detection time | 20 ms | Line current detection is disabled. |  |
| 680502 | Line current wait time |  |  |  |
| 680503 | Line current drop detect time |  | Line current is not |  |
| 680504 | PSTN dial tone frequency upper limit (high byte) | Hz (BCD) | If both addresses contain $\mathrm{FF}(\mathrm{H})$, tone detection is disabled. |  |
| 680505 | PSTN dial tone frequency upper limit (low byte) |  |  |  |
| 680506 | PSTN dial tone frequency lower limit (high byte) | Hz (BCD) | If both addresses contain $\mathrm{FF}(\mathrm{H})$, tone detection is disabled. |  |
| 680507 | PSTN dial tone frequency lower limit (low byte) |  |  |  |


| Address | Function | Unit | Remarks |
| :---: | :---: | :---: | :---: |
| 680508 | PSTN dial tone detection time | 20 ms | If 680508 contains FF(H), the machine pauses for the pause time (address 68050D / 68050E). <br> Italy: See Note 2. |
| 680509 | PSTN dial tone reset time (LOW) |  |  |
| 68050A | PSTN dial tone reset time (HIGH) |  |  |
| 68050B | PSTN dial tone continuous tone time |  |  |
| 68050C | PSTN dial tone permissible drop time |  |  |
| 68050D | PSTN wait interval (LOW) |  |  |
| 68050E | PSTN wait interval (HIGH) |  |  |
| 68050F | PSTN ring-back tone detection time | 20 ms | Detection is disabled if this contains FF. |
| 680510 | PSTN ring-back tone off detection time | 20 ms |  |
| 680511 | PSTN detection time for silent period after ring-back tone detected (LOW) | 20 ms |  |
| 680512 | PSTN detection time for silent period after ring-back tone detected (HIGH) | 20 ms |  |
| 680513 | PSTN busy tone frequency upper limit (high byte) | Hz (BCD) | If both addresses contain $\mathrm{FF}(\mathrm{H})$, tone detection is disabled. |
| 680514 | PSTN busy tone frequency upper limit (low byte) |  |  |
| 680515 | PSTN busy tone frequency lower limit (high byte) | Hz (BCD) | If both addresses contain $\mathrm{FF}(\mathrm{H})$, tone detection is disabled. |
| 680516 | PSTN busy tone frequency lower limit (low byte) |  |  |
| 680517 | PABX dial tone frequency upper limit (high byte) | Hz (BCD) | If both addresses contain $\mathrm{FF}(\mathrm{H})$, tone detection is disabled. |
| 680518 | PABX dial tone frequency upper limit (low byte) |  |  |
| 680519 | PABX dial tone frequency lower limit (high byte) | Hz (BCD) | If both addresses contain $\mathrm{FF}(\mathrm{H})$, tone detection is disabled. |
| 68051A | PABX dial tone frequency lower limit (low byte) |  |  |
| 68051B | PABX dial tone detection time | 20 ms | If 68051B contains FF, the machine pauses for the pause time (680520 / 680521). |
| 68051C | PABX dial tone reset time (LOW) |  |  |
| 68051D | PABX dial tone reset time (HIGH) |  |  |
| 68051E | PABX dial tone continuous tone time |  |  |
| 68051F | PABX dial tone permissible drop time |  |  |
| 680520 | PABX wait interval (LOW) |  |  |
| 680521 | PABX wait interval (HIGH) |  |  |
| 680522 | PABX ringback tone detection time | 20 ms | If both addresses contain $\mathrm{FF}(\mathrm{H})$, tone detection is disabled. |
| 680523 | PABX ringback tone off detection time | 20 ms |  |
| 680524 | PABX detection time for silent period after ringback tone detected (LOW) | 20 ms | If both addresses contain $\mathrm{FF}(\mathrm{H})$, tone detection is disabled. |
| 680525 | PABX detection time for silent period after ringback tone detected (HIGH) | 20 ms |  |


| Address | Function | Unit | Remarks |
| :---: | :---: | :---: | :---: |
| 680526 | PABX busy tone frequency upper limit (high byte) | Hz (BCD) | If both addresses contain $\mathrm{FF}(\mathrm{H})$, tone detection is disabled. |
| 680527 | PABX busy tone frequency upper limit (low byte) |  |  |
| 680528 | PABX busy tone frequency lower limit (high byte) | Hz (BCD) | If both addresses contain $\mathrm{FF}(\mathrm{H})$, tone detection is disabled. |
| 680529 | PABX busy tone frequency lower limit (low byte) |  |  |
| 68052A | Busy tone ON time: range 1 | 20 ms |  |
| 68052B | Busy tone OFF time: range 1 |  |  |
| 68052C | Busy tone ON time: range 2 |  |  |
| 68052D | Busy tone OFF time: range 2 |  |  |
| 68052E | Busy tone ON time: range 3 |  |  |
| 68052F | Busy tone OFF time: range 3 |  |  |
| 680530 | Busy tone ON time: range 4 |  |  |
| 680531 | Busy tone OFF time: range 4 |  |  |
| 680532 | Busy tone continuous tone detection time |  |  |
| 680533 | 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-ONOFF must be detected twice). <br> Bits 7, 6,5,4-number of cycles required for cadence detection |  |  |
| 680534 | International dial tone frequency upper limit (high byte) | Hz (BCD) | If both addresses contain $\mathrm{FF}(\mathrm{H})$, tone detection is disabled. |
| 680535 | International dial tone frequency upper limit (low byte) |  |  |
| 680536 | International dial tone frequency lower limit (high byte) | Hz (BCD) | If both addresses contain $\mathrm{FF}(\mathrm{H})$, tone detection is disabled. |
| 680537 | International dial tone frequency lower limit (low byte) |  |  |
| 680538 | International dial tone detection time | 20 ms | If 680538 contains FF, the machine pauses for the pause time (68053D / 68053E). <br> Belgium: See Note 2. |
| 680539 | International dial tone reset time (LOW) |  |  |
| 68053A | International dial tone reset time (HIGH) |  |  |
| 68053B | International dial tone continuous tone time |  |  |
| 68053C | International dial tone permissible drop time |  |  |
| 68053D | International dial wait interval (LOW) |  |  |
| 68053E | International dial wait interval (HIGH) |  |  |


| Address | Function | Unit | Remarks |
| :---: | :---: | :---: | :---: |
| 68053F | Country dial tone upper frequency limit (HIGH) | Hz (BCD) | If both addresses contain $\mathrm{FF}(\mathrm{H})$, tone detection is disabled. |
| 680540 | Country dial tone upper frequency limit (LOW) |  |  |
| 680541 | Country dial tone lower frequency limit (HIGH) |  | If both addresses contain $\mathrm{FF}(\mathrm{H})$, tone detection is disabled. |
| 680542 | Country dial tone lower frequency limit (LOW) |  |  |
| 680543 | Country dial tone detection time | 20 ms | If 680543 contains FF, the machine pauses for the pause time (680548 / 680549). |
| 680544 | Country dial tone reset time (LOW) |  |  |
| 680545 | Country dial tone reset time (HIGH) |  |  |
| 680546 | Country dial tone continuous tone time |  |  |
| 680547 | Country dial tone permissible drop time |  |  |
| 680548 | Country dial wait interval (LOW) |  |  |
| 680549 | Country dial wait interval (HIGH) |  |  |
| 68054A | Time between opening or closing the DO relay and opening the OHDI relay | 1 ms | See Notes 3, 6 and 8. SP2-103-11 |
| 68054B | Break time for pulse dialing | 1 ms | $\begin{aligned} & \text { See Note } 3 . \\ & \text { SP2-103-12 } \end{aligned}$ |
| 68054C | Make time for pulse dialing | 1 ms | $\begin{aligned} & \hline \text { See Note } 3 . \\ & \text { SP2-103-13 } \end{aligned}$ |
| 68054D | Time between final OHDI relay closure and DO relay opening or closing | 1 ms | See Notes 3, 6 and 8. SP2-103-14 <br> This parameter is only valid in Europe. |
| 68054E | Minimum pause between dialed digits (pulse dial mode) | 20 ms | See Note 3 and 8. SP2-103-15 |
| 68054F | Time waited when a pause is entered at the operation panel |  | SP2-103-16 <br> See Note 3. |
| 680550 | DTMF tone on time | 1 ms | SP2-103-17 |
| 680551 | DTMF tone off time |  | SP2-103-18 |
| 680552 | Tone attenuation level of DTMF signals while dialing | $\begin{aligned} & -\mathrm{N} \times 0.5-3.5 \\ & \mathrm{dBm} \end{aligned}$ | $\begin{aligned} & \text { SP2-103-19 } \\ & \text { See Note } 5 . \end{aligned}$ |
| 680553 | Tone attenuation value difference between high frequency tone and low frequency tone in DTMF signals | -dBm $\times 0.5$ | SP2-103-20 <br> The setting must be less than -5 dBm , and should not exceed the setting at 680552h above. See Note 5. |
| 680554 | PSTN: DTMF tone attenuation level after dialling | $\begin{aligned} & -\mathrm{N} \times 0.5-3.5 \\ & \mathrm{dBm} \end{aligned}$ | $\begin{aligned} & \text { SP2-103-21 } \\ & \text { See Note } 5 . \\ & \hline \end{aligned}$ |
| 680555 | ISDN: DTMF tone attenuation level after dialling | -dBm $\times 0.5$ | See Note 5 |
| 680556 | Not used |  | Do not change the settings. |


| Address | Function | Unit | Remarks |
| :---: | :---: | :---: | :---: |
| 680557 | Time between 68054Dh (NCU parameter 14) and 68054Eh (NCU parameter 15) | 1 ms | This parameter takes effect when the country code is set to France. |
| 680558 | Not used |  | Do not change the setting. |
| 680559 | Grounding time (ground start mode) | 20 ms | The Gs relay is closed for this interval. |
| 68055A | Break time (flash start mode) | 1 ms | The OHDI relay is open for this interval. |
| 68055B | International dial access code (High) | BCD | $\begin{aligned} & \text { For a code of 100: } \\ & 68055 \mathrm{~B}-\mathrm{F} 1 \\ & 68055 \mathrm{C}-00 \end{aligned}$ |
| 68055C | International dial access code (Low) |  |  |
| 68055D | PSTN access pause time | 20 ms | This time is waited for each pause input after the PSTN access code. If this address contains $\mathrm{FF}[\mathrm{H}]$, the pause time stored in address 68054F is used. <br> Do not set a number more than 7 in the UK. |
| 68055E | Progress tone detection level, and cadence detection enable flags | Bit 7 Bit <br> $\begin{array}{ll}0 & 0 \\ 0 & 1 \\ 1 & 0 \\ 1 & 1\end{array}$ <br> Bits 2, | $\begin{array}{r} \hline \text { dBm } \\ -25.0 \\ -35.0 \\ -30.0 \\ -40.0 \\ -49.0 \end{array}$ <br> Note 2. |
| $\begin{aligned} & 68055 \mathrm{~F} \\ & \text { to } \\ & 680564 \end{aligned}$ | Not used |  | Do not change the settings. |
| 680565 | Long distance call prefix (HIGH) | BCD | $\begin{aligned} & \text { For a code of } 0 \text { : } \\ & 680565-\mathrm{FF} \\ & 680566-\mathrm{FO} \\ & \hline \end{aligned}$ |
| 680566 | Long distance call prefix (LOW) | BCD |  |
| $\begin{gathered} 680567 \\ \text { to } \\ 680571 \end{gathered}$ | Not used |  | Do not change the settings. |
| 680572 | Acceptable ringing signal frequency: range 1, upper limit | $\begin{aligned} & 1000 / \mathrm{N} \\ & (\mathrm{~Hz}) . \end{aligned}$ | SP2-103-2 |
| 680573 | Acceptable ringing signal frequency: range 1, lower limit |  | SP2-103-3 |
| 680574 | Acceptable ringing signal frequency: range 2, upper limit |  | SP2-103-4 |
| 680575 | Acceptable ringing signal frequency: range 2, lower limit |  | SP2-103-5 |


| Address | Function | Unit | Remarks |
| :---: | :---: | :---: | :---: |
| 680576 | Number of rings until a call is detected | 1 | SP2-103-6 <br> The setting must not be zero. |
| 680577 | Minimum required length of the first ring | 20 ms | $\begin{aligned} & \text { See Note } 4 . \\ & \text { SP2-103-7 } \end{aligned}$ |
| 680578 | Minimum required length of the second and subsequent rings | 20 ms | SP2-103-8 |
| 680579 | Ringing signal detection reset time (LOW) | 20 ms | SP2-103-9 |
| 68057A | Ringing signal detection reset time (HIGH) |  | SP2-103-10 |
| $\begin{gathered} 68057 \mathrm{~B} \\ \text { to } \\ 680580 \end{gathered}$ | Not used |  | Do not change the settings. |
| 680581 | 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 |
| 680582 | Bits 0 and 1 - Handset off-hook detection time <br> Bit 10 Setting <br> 00200 ms <br> 01800 ms <br> Other Not used <br> Bits 2 and 3 - Handset on-hook detection time <br> Bit 32 Setting <br> 00200 ms <br> 01800 ms <br> Other Not used <br> Bits 4 to 7 - Not used |  |  |
| $\begin{aligned} & 680583 \\ & \text { to } \\ & 6805 \mathrm{AO} \end{aligned}$ | Not used |  | Do not change the settings. |
| 6805A1 | Acceptable CED detection frequency upper limit (high byte) | BCD (Hz) | If both addresses contain $\mathrm{FF}(\mathrm{H})$, tone detection is disabled. |
| 6805A2 | Acceptable CED detection frequency upper limit (low byte) |  |  |
| 6805A3 | Acceptable CED detection frequency lower limit (high byte) | BCD (Hz) | If both addresses contain $\mathrm{FF}(\mathrm{H})$, tone detection is disabled. |
| 6805A4 | Acceptable CED detection frequency lower limit (low byte) |  |  |
| 6805A5 | CED detection time | $\begin{aligned} & 20 \mathrm{~ms} \\ & \pm 20 \mathrm{~ms} \end{aligned}$ | Factory setting: 200 ms |
| 6805A6 | Acceptable CNG detection frequency upper limit (high byte) | BCD (Hz) | If both addresses contain $\mathrm{FF}(\mathrm{H})$, tone detection is disabled. |
| 6805A7 | Acceptable CNG detection frequency upper limit (low byte) |  |  |
| 6805A8 | Acceptable CNG detection frequency lower limit (high byte) | BCD (Hz) | If both addresses contain $\operatorname{FF}(\mathrm{H})$, tone |


| Address | Function | Unit | Remarks |
| :---: | :---: | :---: | :---: |
| 6805A9 | Acceptable CNG detection frequency lower limit (low byte) |  | detection is disabled. |
| 6805AA | Not used |  | Do not change the setting. |
| 6805AB | CNG on time | 20 ms | Factory setting: 500 ms |
| 6805AC | CNG off time | 20 ms | Factory setting: 200 ms |
| 6805AD | Number of CNG cycles required for detection |  | The data is coded in the same way as address 680533. |
| 6805AE | Not used |  | Do not change the settings. |
| 6805AF | Acceptable AI short protocol tone ( 800 Hz ) detection frequency upper limit (high byte) | Hz (BCD) | If both addresses contain $\mathrm{FF}(\mathrm{H})$, tone detection is disabled. |
| 6805B0 | Acceptable AI short protocol tone ( 800 Hz ) detection frequency upper limit (low byte) |  |  |
| 6805B1 | Acceptable AI short protocol tone ( 800 Hz ) detection frequency lower limit (high byte) | $\mathrm{Hz}(\mathrm{BCD})$ | If both addresses contain $\mathrm{FF}(\mathrm{H})$, tone detection is disabled. |
| 6805B2 | Acceptable AI short protocol tone $(800 \mathrm{~Hz})$ detection frequency lower limit (low byte) |  |  |
| 6805B3 | Detection time for 800 Hz Al short protocol tone | 20 ms | Factory setting: 360 ms |
| 6805B4 | PSTN: Tx level from the modem | -N - 3 dBm | SP2-103-1 |
| 6805B5 | PSTN: 1100 Hz tone transmission level | - N 6805B4-0.5N 6805B5-3.5 (dB) See Note 7. |  |
| 6805B6 | PSTN: 2100 Hz tone transmission level | - N6805B4-0.5N 6805B6-3 (dB) See Note 7. |  |
| 6805B7 | PABX: Tx level from the modem | -dBm |  |
| 6805B8 | PABX: 1100 Hz tone transmission level | - N 6805B7-0.5N 6805B8 (dB) |  |
| 6805B9 | PABX: 2100 Hz tone transmission level | - N 6805B7-0.5N 6805B9 (dB) |  |
| 6805BA | ISDN: Tx level from the modem | -dBm | The setting must be between -12dBm and 15 dBm . |
| 6805BB | ISDN: 1100 Hz tone transmission level | - N 6805BA - 0.5N 6805BB (dB) |  |
| 6805BC | ISDN: 2100 Hz tone transmission level | - N 6805BA - 0.5N 6805BC (dB) |  |


| Address | Function | Unit | Remarks |
| :---: | :---: | :---: | :---: |
| 6805BD | Modem turn-on level (incoming signal detection level) | $\begin{array}{\|l} \hline-37-0.5 \mathrm{~N} \\ (\mathrm{dBm}) \end{array}$ |  |
| $\begin{gathered} \text { 6805BE } \\ \text { to } \\ 6805 \mathrm{C} 6 \end{gathered}$ | Not used |  | Do not change the settings. |
| 6805C7 | Bits 0 to 3 - Not used. <br> Bit 4 - V. 34 protocol dump 0: Simple, 1: Detailed (default) Bits 5 to 7 - Not used. |  |  |
| $\begin{gathered} \text { 6805C8 } \\ \text { to } \\ 6805 \mathrm{D} 9 \end{gathered}$ | Not used |  | Do not change the settings. |
| 6805DA | T. 30 T1 timer | 1 s |  |
| $\begin{gathered} \text { 6805E0 } \\ \text { bit } 3 \end{gathered}$ | Maximum wait time for post message | $\begin{aligned} & 0: 12 \mathrm{~s} \\ & 1: 30 \mathrm{~s} \end{aligned}$ | 1: Maximum wait time for post message (EOP/EOM/MPS) can be changed to 30 s . 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 68055E: 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.
680508 (if bit $0=1$ ) or 680538 (if bit $2=1$ ): tolerance for on or off state duration (\%), and number of cycles required for detection, coded as in address 680533.

68050B (if bit $0=1$ ) or 68053B (if bit $2=1$ ): on time, hex code (unit $=20 \mathrm{~ms}$ )
68050C (if bit $0=1$ ) or 68053C (if bit $2=1$ ): off time, hex code (unit $=20 \mathrm{~ms}$ )
3. Pulse dial parameters (addresses 68054A to 68054F) 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 calculated level must be between 0 and 10 .

The attenuation levels calculated from RAM data are:
High frequency tone: $-0.5 \times$ N680552/680554- 3.5 dBm

$$
-0.5 \times \mathrm{N} 680555 \mathrm{dBm}
$$

Low frequency tone: $-0.5 \times(\mathrm{N} 680552 / 680554+\mathrm{N} 680553)-3.5 \mathrm{dBm}$
$-0.5 \times(\mathrm{N} 680555+\mathrm{N} 680553) \mathrm{dBm}$
NOTE: $\mathrm{N}_{680552}$, for example, means the value stored in address 680552(H)
6. 68054A: Europe - Between Ds opening and Di opening, France - Between Ds closing and Di opening
68054D: Europe - Between Ds closing and Di closing, France - Between Ds opening and Di closing
7. Tone signals which frequency is lower than 1500 Hz (e.g., 800 Hz tone for Al short protocol) refer to the setting at 6805B5h. Tones which frequency is higher than 1500 Hz refer to the setting at 6805B6h.
8. $68054 \mathrm{~A}, 68054 \mathrm{D}, 68054 \mathrm{E}$ : The actual inter-digit pause (pulse dial mode) is the sum of the period specified by the RAM addresses 68054A, 68054D, and 68054E.

### 3.4 DEDICATED TRANSMISSION PARAMETERS

Each Quick Dial Key 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 and adjust the parameters allocated to that number.

The programming procedure will be explained first. Then, the eight bytes will be described.

### 3.4.1 PROGRAMMING PROCEDURE

1. Set bit 0 of System Bit Switch 00 to 1 .
2. Select the menus as follows: User Tools $\rightarrow$ System Settings $\rightarrow$ Key Operator Tools $\rightarrow$ Address Book Management $\rightarrow$ Program/Change
3. Select the destination key you want to program, then press "OK" two times.
4. Press "Dest." key, then select "Fax Settings."
5. When the programmed dial number is displayed, press "Start." Make sure that the LED of the Start button is lit as green.
6. The Switch numbers are displayed $(00 \sim 09)$. Select the switch number, then Press "OK."
7. The settings for specified switch are displayed. Press the bit number that you wish to change, then press "OK."
8. To select the parameter switches, use the arrow key.
9. To exit, press the "Cancel" key.
10. After finishing, reset bit 0 of System Bit Switch 00 to 0 .

### 3.4.2 PARAMETERS

The initial settings of the following parameters are all $\mathrm{FF}(\mathrm{H})$ - all the parameters are disabled.

## Switch 00 <br> FUNCTION AND COMMENTS

ITU-T T1 time (for PSTN G3 mode)
If the connection time to a particular terminal is longer than the NCU parameter setting, adjust this byte. The T1 time is the value stored in this byte (in hex code), multiplied by 1 second.
Range:
0 to 120 s ( 00 h to 78 h )
FFh - The local NCU parameter factory setting is used.
Do not program a value between 79 h and FEh.

| Switch 01 |  |  |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| $\begin{gathered} 0 \\ \text { to } \\ 4 \end{gathered}$ | Tx level <br> Bit 4321100 Setting $\begin{array}{llllll} 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 & -1 \\ 0 & 0 & 0 & 1 & 0 & -2 \\ 0 & 0 & 0 & 1 & 1 & -3 \\ 0 & 0 & 1 & 0 & 0 & -4 \\ & : & & & & \\ & \vdots & & & & \\ 0 & 1 & 1 & 1 & 1 & -15 \\ 1 & 1 & 1 & 1 & 1 & \text { Disabled } \end{array}$ | 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. |
| $\begin{gathered} 5 \\ \text { to } \\ 7 \end{gathered}$ | Cable equalizer <br> Bit 765 Setting <br> 000 None <br> 001 Low <br> 010 Medium <br> 011 High <br> 111 Disabled | Use a higher setting if there is signal loss at higher frequencies because of the length of wire between the modem and the telephone exchange when calling the number stored in this Quick/Speed Dial. <br> Also, try using the cable equalizer if one or more of the following symptoms occurs. <br> - Communication error with error codes such as $0-20,0-23$, etc. <br> - Modem rate fallback occurs frequently. <br> Note: Do not use settings other than listed on the left. <br> If the setting is "Disabled", the bit switch setting is used. |


| Switch 02 |  |  |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| $\begin{gathered} 0 \\ \text { to } \\ 3 \end{gathered}$ |  <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> For the settings 14.4 or kbps slower, Switch 04 bit 4 must be changed to 0 . <br> Note: Do not use settings other than listed on the left. <br> If the setting is "Disabled", the bit switch setting is used. |
| 4-5 | Not used | Do not change the settings. |
| 6 | Al short protocol <br> 0 : Off <br> 1: Disabled | Refer to Appendix B in the Group 3 Facsimile Manual for details about AI Short Protocol. If the setting is "Disabled", the bit switch setting is used. |
| 7 | Not used | Do not change the settings. |


| Switch 03 |  |  |
| :---: | :---: | :---: |
| No | FUNCTION | COMMENTS |
| $\begin{gathered} 0 \\ \text { to } \\ 1 \end{gathered}$ | Inch-mm conversion before tx    <br> Bit 1 Bit 0 Setting  <br> 0 0 Inch-mm  <br>   conversion  <br> 0 1 available  <br> 1 0 Inch only  <br> 1 1 Not used  <br> 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> If the setting is "Disabled", the bit switch setting is used. |
| $\begin{gathered} 2 \\ \text { to } \\ 3 \end{gathered}$ | DIS/NSF detection method   <br> Bit 3 Bit 2 2 Setting <br> 0 0 First DIS or <br> 0 1 NSF <br>   Second DIS or <br> 1 0 NSF <br> 1 1 Not used <br> Disabled   | ( $\mathbf{0}, \mathbf{1}$ ): Use this setting if echoes on the line are interfering with the set-up protocol at the start of transmission. The machine will then wait for the second DIS or NSF before sending DCS or NSS. <br> If the setting is "Disabled", the bit switch setting is used. |
| 4 | V. 8 protocol <br> 0 : Off <br> 1: Disabled | If transmissions to a specific destination always end at a lower modem rate ( $14,400 \mathrm{bps}$ or lower), disable V. 8 protocol so as not to use V. 34 protocol. $0: \mathrm{V} .34$ communication will not be possible. 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. If the setting is "Disabled", the bit switch setting is used. |
| $\begin{array}{c\|} \hline 6 \\ \text { to } \\ 7 \end{array}$ | ECM during transmission  <br> Bit 7 Bit 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. If the setting is "Disabled", the bit switch setting is used. |


| Switch 04 - Not used (Do not change the settings.) |
| :--- |
| Switch 05 - Not used (Do not change the settings.) |
| Switch 06 - Not used (Do not change the settings.) |
| Switch 07 - Not used (Do not change the settings.) |
| Switch 08 - Not used (Do not change the settings.) |
| Switch 09 - Not used (Do not change the settings.) |

### 3.5 SERVICE RAM ADDRESSES

| ¢ CAUTION |  |
| :---: | :---: |
| Do not change the settings which are marked as "Not used" or "Read only." |  |
| $6800$ | 680004(H) - ROM version (Read only) <br> 1(H) - Revision number (BCD) <br> 2(H) - Year (BCD) <br> 3(H) - Month (BCD) <br> 4(H) - Day (BCD) |
| 6800 | 680015(H) - Machine's serial number (16 digits - ASCII) |
| $\begin{aligned} & 6800 \\ & 6800 \end{aligned}$ | - Total program checksum (low) <br> - Total program checksum (high) |
| 6800 <br> 6800 <br> 6800 <br> 6800 <br> 6800 <br> 6800 | 68003F(H) - System bit switches <br> 68005F(H) - Printer bit switches <br> 68007F(H) - Communication bit switches <br> 68008F(H) - G3 bit switches <br> - User parameter switch 00 (SWUER_00) : Not used <br> - User parameter switch 01 (SWUSR_01) : Not used |
| 680 | - User parameter switch 02 (SWUSR_02) |
| Bit 0: | Forwarding mark printing on forwarded messages <br> 0 : Disabled <br> 1: Enabled |
| Bit 1: | Center mark printing on received copies. (This switch is not printed on the user parameter list.) <br> 0 : Disabled <br> 1: Enabled |
| Bit 2: | Reception time printing. (This switch is not printed on the user parameter list.) <br> 0 : Disabled <br> 1: Enabled |
| Bit 3: | TSI print on received messages <br> 0 : Disabled <br> 1: Enabled |
| Bit 4: | Checkered mark printing. (This switch is not printed on the user parameter list.) <br> 0 : Disabled <br> 1: Enabled |

## 6800D3(H) - User parameter switch 03 (SWUSR_03: Automatic report printout)

Bit 0: Transmission result report (memory transmissions) 0: Off, 1: On
Bit 1: Not used
Bit 2: Memory storage report 0: Off, 1: On
Bit 3: Not used
Bit 4: Not used
Bit 5: Transmission result report (immediate transmissions) 0: Off, 1: On
Bit 6: Not used
Bit 7: Journal 0: Off, 1: On

## 6800D4(H) - User parameter switch 04 (SWUSR_04: Automatic report printout)

Bits 0 to 6: Not used
Bit 7: Inclusion of a sample image on reports 0: Off, 1: On

## 6800D5(H) - User parameter switch 05 (SWUSR_05)

Bit 0: Substitute reception when the base copier is in an SC condition
0: Enabled, 1: Disabled
Bits 1 and 2: Condition for substitute $r x$ when the machine cannot print messages
(Paper end, toner end, jam, and during night mode)
Bit 21 Setting
$0 \quad 0$ The machine receives all the fax messages.
01 The machine receives the fax messages with RTI or CSI.
10 The machine receives the fax messages with the same ID code.
11 The machine does not receive anything.
Bit 3 and 4: Not used
Bit 5: Just size printing 0 : Off, 1: On
Bit 6: Not used
Bit 7: Add paper display when a cassette is empty 0 : Off, 1 : On
6800D6(H) - User parameter switch 06 (SWUSR_06): Not used
6800D7(H) - User parameter switch 07 (SWUSR_07)
Bits 0 and 1: Not used
Bit 2: Parallel memory transmission 0: Off, 1: On
Bits 3 to 7: Not used

## 6800D8(H) - User parameter switch 08 (SWUSR_08)

Bits 0 and 1: Not used.
Bit 2: Authorized reception
0 : Only faxes from senders whose RTIs/CSIs are specified for this feature are accepted
1: Only faxes from senders whose RTIs/CSIs are not specified for this feature are accepted.
Bits 3 to 7: Not used.
6800D9(H) - User parameter switch 09 (SWUSR_09) : Not used
6800DA(H) - User parameter switch 10 (SWUSR_0A)
Bit 0: Not used
Bit 1: 2 into 1 0: Off, 1: On
Bit 2: Not used
Bit 3: Page reduction 0: Off, 1: On
Bits 4 to 7: Not used
6800DB(H) - User parameter switch 11 (SWUSR_0B)
Bit 0: Not used
Bit 1: Not used
Bit 2: Blank sheet detection
0: On (Blank sheets are not detected.)
1: Off (The LCD indication alarms the user when a blank sheet is detected.)
Bit 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
6800DC(H) - User parameter switch 12 (SWUSR_0C): Not used
6800DD(H) - User parameter switch 13 (SWUSR_OD): Not used 6800DE(H) - User parameter switch 14 (SWUSR_0E)
Bit 0: Message printout while the machine is in Night Printing mode 0: On, 1: Off
Bit 1: Maximum document length detection
0: Double letter, 1: Longer than double-letter (well log) - up to $1,200 \mathrm{~mm}$
Bit 2: Batch transmission 0: Off, 1: On
Bit 3: Fax mode settings, such as resolution, before a mode key (Copy/Fax/Printer/
Scanner) is pressed
0 : Not cleared, 1: Cleared
Bits 4 to 6: Not used
Bit 7: Manual service call (sends the system parameter list to the service station)
0 : Off, 1: On

## 6800DF(H) - User parameter switch 15 (SWUSR_0F)

Bits 0, 1 and 2: Cassette for fax printout
Bit 2100 Setting
$\begin{array}{llll}0 & 0 & 1 & 1 \text { st paper feed station }\end{array}$
$0 \quad 1 \quad 0 \quad$ 2nd paper feed station
$\begin{array}{llll}0 & 1 & 1 & 3 r d \\ \text { paper feed station }\end{array}$
1000 4th paper feed station
$1 \quad 0 \quad 1 \quad 5$ th paper feed station
Other settings Not used
Bits 3 and 4: Not used
Bit 5: Using the cassette specified by bits 0,1 and 2 above only 0 : On, 1: Off Bits 6 and 7: Not used

## 6800E0(H) - User parameter switch 16 (SWUSR_10)

(This switch is not printed on the user parameter list.)
Bits 0 and 1: Not used
Bit 2: Paper size selection priority for an A4 size fax message when A4/LT size paper is not available.
0 : A3 has priority, 1: B4 has priority
Bits 3 to 7: Not used
6800E1(H) - User parameter switch 17 (SWUSR_11)
Bit 0: Specifies the mode to select the group address for the IFAX function.
0: Priority Select Mode
1: All Select Mode
Bit 1: Not used
Bit 2: Inclusion of the "Add" button when a sequence of Quick/Speed dials is selected for broadcasting
$0:$ Not needed, 1: Needed
Bits 3 to 6: Not used
Bit 7: Press "Start" key without an original when using the on hook dial or the external telephone,

0: displays "Cannot detect original size".
1: Receives fax messages.
6800E2(H) - User parameter switch 18 (SWUSR_12)
Bit 0: TTI date
0: Off, 1: On
Bit 1: TTI sender
0: Off, 1: On
Bit 2: TTI file number 0: Off, 1: On
Bit 3: TTI page number 0: Off, 1: On
Bits 4 and 5: TTI selection
Bit 54
$0 \quad 0 \quad$ TTI 1
01 TTI 2
10 TTI off
11 Not used
Bit 6 to 7: Not used

## 6800E3(H) - User parameter switch 19 (SWUSR_13)

Bits 0-2: Not used
Bit 3: $90^{\circ}$ image rotation during B5 portrait Tx
(This switch is not printed on the user parameter list.)
0: Off, 1: On
Bit 4: Reduction of sample images on reports to $50 \%$ in the main scan and subscan directions. (This switch is not printed on the user parameter list.)

0: Technician adjustment (printer switch 0E bits 3 and 4), 1: 50\% reduction
Bit 5: Use of A5 size paper for reports
(This switch is not printed on the user parameter list.)
0 : Off, 1: On
Bits 6 and 7: Not used

## 6800E4(H) - User parameter switch 20 (SWUSR_14)

Bit 0: Automatic printing of the PC FAX error report
0 : Off, 1: On
Bit 1: Reprint the documents fail to print from PC Fax driver
0 : Off, 1: On
Bits 2 to 5: Store documents in memory which could not be printed from PC Fax driver

Bit 543132 Setting
$\begin{array}{lllll}0 & 0 & 0 & 0 & 0\end{array} \mathrm{~min}$.
$\begin{array}{lllll}0 & 0 & 0 & 1 & 1\end{array} \mathrm{~min}$.
ת ת
$\begin{array}{lllll}1 & 1 & 1 & 0 & 14 \mathrm{~min} .\end{array}$
$\begin{array}{llll}1 & 1 & 1 & 15 \mathrm{~min} \text {. }\end{array}$
Bits 6: Not used.
Bit 7: PC fax result notification mail, 0: Off, 1: On
6800E5(H) - User parameter switch 21 (SWUSR_15)
Bit 0: Print E-mail Reception Notice, 0: Off, 1: On
Bit 1: Respond to E-mail Reception Acknowledgement Request, 0: Off, 1: On
Bit 2 and 3: Not used.
Bit 4: Transmit Journal by E-Mail, 0: Off, 1: On
Bit 5: Not used.
Bit 6: Network error display, 0: On (Displayed), 1: Off (Not displayed)
Bit 7: Transmit Error Mail Notification, 0: Off, 1: On

6800E6(H) - User parameter switch 22 (SWUSR_16): Not used
6800E7(H) - User Parameter switch 23 (SWUSR_17) : Not used 6800E8(H) - User parameter switch 24 (SWUSR_18)
Bits 0 and 1: File retention time (Cross reference: System switch 02 bit 4)
Bit 10 Setting
0 File retention impossible
0124 hours
10 File retention impossible
1172 hours
Bits 2 to 7: Not used
6800E9(H) - User parameter switch 25 (SWUSR_19)
Bits 0 to 3: Not used
Bit 4: RDS operation
0 : Not acceptable
1: Acceptable for the limit specified by system switch 03
Note: This bit is only effective when RDS operation can be selected by the user (see system switch 02).
Bits 5 to 7: Not used
6800EA to 6800EF(H) - User parameter switch 26 to 31 (SWUSR_1A to 1F), Not used

## 6800F0 - User Parameter Switch 32 (SWUSR_20)

Bit 0: Priority destination for transfer, 0: Fax number, 1: E-mail address
Bits 2 to 7: Not used
680180 to $68019 \mathrm{~F}(\mathrm{H})$ - Service station's fax number (SP3-101)
See 68036C(H) for the type of network used for this number.
6801A0 to 6801A3(H) - Own fax PABX extension number
6801AA to 6801B3(H) - Own fax number (PSTN)
6801F8 to 68020B(H) - PSTN-1 RTI (Max. 20 characters - ASCII) - See the following note.
680237 to $680276(\mathrm{H})$ - TTI 1 (Max. 64 characters - ASCII) - See the following note.
680277 to 6802B6(H) - TTI 2 (Max. 64 characters - ASCII) - See the following note.
6802F7 to 68030A(H) - PSTN-1 CSI (Max. 20 characters - ASCII) 680333(H) - Number of PSTN-1 CSI characters (Hex)
If the number of characters is less than the maximum ( 20 for RTI, 64 for TTI), add a stop code ( $\mathrm{FF}[\mathrm{H}]$ ) after the last character.

680340 to $680342(H)$ - PSTN-1 line settings
680340
Bits 0 and 1: PSTN access method from behind a PABX.
Bit 10 Setting
00 Loop start
01 Ground start
10 Flash start
11 Not used
Bit 2: Telephone line type.
0: PSTN, 1: PABX
Bits 3 and 4: Dialing type.
Bit 43 Setting
$0 \quad 0 \quad$ Pulse dialing
01 Not used
10 Tone dialing
$1 \quad 1$ Not used
Bits 4 to 7: Not used
680341: PSTN access number for loop start
Access number Hex value to program (BCD)
0 F0

| , |  |
| :---: | :---: |

$9 \quad$ F9
0000
ת , 刁
$99 \quad 99$
680342
Bit 0: Transmission disabled
0 : Tx and Rx, 1: Rx only
Bit 1: Memory Lock reception
0: Enabled, 1: Disabled
Bits 2 to 7: Not used

680360(H) - Polling ID Code (Low - Hex)
680361(H) - Polling ID Code (High - Hex)
680362(H) - Confidential ID (low - BCD)
680363(H) - Confidential ID (high - BCD)
680364(H) - Memory Lock ID (low - BCD)
680365(H) - Memory Lock ID (high - BCD)

```
680370 to 680377(H) - Last power off time (Read only)
    680370(H) - 01(H) - 24-hour clock, 00(H) - 12-hour clock (AM),
    02(H) - 12-hour clock (PM)
    680371(H) - Year (BCD)
    680372(H) - Month (BCD)
    680373(H) - Day (BCD)
    680374(H) - Hour
    680375(H) - Minute
    680376(H) - Second
    680377(H) - 00: Monday, 01: Tuesday, 02: Wednesday, ....... , 06: Sunday
680384(H) - Optional equipment (Read only - Do not change the settings)
Bit 0 to 3: Not used
Bit 4: Function Upgrade unit 0: Not installed, 1: Installed
Bit 5 to 7: Not used
680385(H) - Optional equipment (Read only - Do not change the settings)
Bit 0: Function Upgrade unit 0: Not installed, 1: Installed
Bit 1 to 3: Not used
Bit 4: G3-2 0: Not installed, 1: Installed
680406 to 68040B(H) - Modem ROM version (Read only)
    680406(H) - Part number (low)
    680407(H) - Part number (high)
    680408(H) - Control (low)
    680409(H) - Control (high)
    68040A(H) - DSP (low)
    68040B(H) - DSP (high)
680466(H) - Time for economy transmission (hour in 24h clock format - BCD)
680467(H) - Time for economy transmission (minute - BCD)
680482(H) - Transmission monitor volume 00-07(H)
680483(H) - Reception monitor volume 00-07(H)
680484(H) - On-hook monitor volume 00-07(H)
680485(H) - Dialing monitor volume 00-07(H)
680486(H) - Buzzer volume 00-07(H)
69B000 - 6BA1FF(H) - Latest 64 error codes (Read only)
69EEFC - 69FEA3(H) - Latest 20 error communication records
```


## 4. DETAILED SECTION DESCRIPTIONS

### 4.1 OVERVIEW



The basic fax unit consists of two PCBs: an FCU and an MBU.
The FCU controls all the fax communications and fax features, in cooperation with the controller board. The MBU contains the ROM and SRAM.

## Important Notes for Installing the Optional FAX Feature

Please be sure to keep the following in mind when installing the optional FAX

1. After changing the bit SW setting for the country code (system switch OF), do not use the scroll key to go to the next bit setting. Instead, turn the main power On/Off to activate the country code setting, and then go on to the next settings.
$>$ If the scroll key is used just after the country code is set, other bits may be changed.
2. When installing the FCU, slowly and carefully connect the MBU to the FCU to ensure a proper connection.
$>$ If the connection is not properly established, the FAX option may not be detected and/or SC820 may occur.

### 4.2 BOARDS

### 4.2.1 FCU



The FCU (Facsimile Control Unit) controls fax communications, the video interface to the base copier's engine, and all the fax options.

## FACE3 (Fax Application Control Engine)

- CPU
- Data compression and reconstruction (DCR)
- DMA control
- Clock generation
- DRAM backup control
- Ringing signal/tone detection


## FAME (Ricoh Modem)

- V.34, V.33, V.17, V.29, V.27ter, V.21, and V. 8


## LSD (Line Side Device)

- Data transfer
- Line control

BOARDS

## DRAM

- The 8 MB of DRAM is shared as follows.

SAF memory : 2 MB
Working memory : 3 MB
Page memory : 1.5 MB

## Memory back-up

- A rechargeable battery backs up the SAF memory (DRAM) for 1 hour.


### 4.2.2 MBU

On this board, the flash ROM contains the FCU firmware, and the SRAM contains the system data and user parameters. Even if the FCU is changed, the system data and user parameters are kept on the MBU board.

## ROM

- 3MB flash ROMs for system software storage 2MB (16bit x 1MB) +1 MB (16bit x 512K)


## SRAM

- The 128 KB SRAM for system and user parameter storage is backed up by a lithium battery.


## Memory back-up

- A lithium battery backs up the system parameters and programmed items in the SRAM, in case the base copier's main switch is turned off.


## Switches

| Item | Description |
| :---: | :---: |
| CN1 | Switches the SRAM backup battery on/off. |

## SPECIFICATIONS

## 1. GENERAL SPECIFICATIONS

| Type: | Desktop type transceiver |
| :---: | :---: |
| Circuit: | $\begin{aligned} & \text { PSTN } \\ & \text { PABX } \end{aligned}$ |
| Connection: | Direct couple |
| Original Size: | Book (Face down) <br> Maximum Length: 432 mm [17 ins] <br> Maximum Width: 297 mm [11.7 ins] ARDF (Face up) <br> (single sided document) <br> Length: 128-1200 mm [5.0-47.2 ins] <br> Width: 105-297 mm [4.1-11.7 inch] <br> (double sided document) <br> Length: 128-432 mm [5.0-17 inch] <br> Width: 105-297mm [4.1-11.7 inch] |
| Scanning Method: | Flat bed, with CCD |
| Resolution: | G3 <br> $8 \times 3.85$ lines $/ m m$ (Standard) <br> $8 \times 7.7$ lines $/ \mathrm{mm}$ (Detail) <br> $8 \times 15.4$ line $/ \mathrm{mm}$ (Fine) |
|  | $200 \times 100$ dpi (Standard) $200 \times 200$ dpi (Detail) |
| Transmission Time: | G3: 3 s at 28800 bps; Measured with G3 ECM using memory for an ITU-T \#1 test document (Slerexe letter) at standard resolution |
| Data Compression: | MH, MR, MMR, JBIG |
| Protocol: | Group 3 with ECM |
| Modulation: | V.34, V.33, V. 17 (TCM), V. 29 (QAM), <br> V.27ter (PHM), V.8, V. 21 (FM) |
| Data Rate: | G3: 33600/31200/28800/26400/24000/21600/ 19200/16800/14400/12000/9600/7200/4800/2400 bps Automatic fallback |
| I/O Rate: | With ECM: $0 \mathrm{~ms} /$ line Without ECM: 2.5, 5, 10, 20, or $40 \mathrm{~ms} / \mathrm{line}$ |

Memory Capacity: ECM: 128 KB
SAF
Standard: 2 MB
Page Memory
Standard: 4 MB (Print: 2 MB + Scanner: 2 MB)

## 2. CAPABILITIES OF PROGRAMMABLE ITEMS

The following table shows how the capabilities of each programmable item will change after the optional Fax Function Upgrade Unit is installed.

| Item |  |
| :--- | :---: |
| Quick Dial | 32 |
| Groups | 10 |
| Destination per Group | 150 |
| Destinations dialed from the ten-key pad overall | 100 |
| Communication records for Journal stored in the memory | 200 |
|  |  |

## 3. MACHINE CONFIGURATION

| Item | Machine Code | Remarks |
| :--- | :---: | :--- |
| Fax Option Type 2018 | B620 |  |
| Handset Type 1018 | B433 | USA only |
| Marker Type 30 | H903 | Refill ink for stamp |

## INTERNET FAX (IFAX)

## IFAX

## TABLE OF CONTENTS

1. INSTALLATION ..... 1
1.1 IFAX INSTALLATION ..... 1
1.2 INITIAL SETTINGS ..... 1
2. TROUBLESHOOTING ..... 2
2.1 ERROR CODES FOR LAN COMMUNICATION ..... 2
2.2 TROUBLESHOOTING PROCEDURES ..... 7
3. SERVICE TABLES AND PROCEDURES ..... 9
3.1 ACCESSING IFAX BIT SWITCHES ..... 9
3.2 SP1102 IFAX SWITCH ..... 10
3.3 FIRMWARE UPDATE PROCEDURE ..... 15
3.4 IFAX RAM ADDRESSES ..... 15
4. DETAILED SECTION DESCRIPTIONS ..... 16
4.1 INTERNET FAX ..... 16
4.1.1 INTERNET FAX FEATURES ..... 16
4.1.2 DNS SERVICE ..... 17
4.2 INTERNET MAIL COMMUNICATION ..... 18
4.2.1 MAIL TRANSMISSION ..... 18
Procedure ..... 18
Data Formats ..... 18
Errors ..... 19
Results ..... 19
Selectable Options ..... 19
Secure Internet Transmission ..... 19
4.2.2 MAIL RECEPTION ..... 20
POP3/IMAP4 Mail Reception Procedure ..... 20
Characteristics of POP3/IMAP4 Reception ..... 21
SMTP Reception ..... 21
SMTP Reception Characteristics ..... 22
Delivery: Transferring Mail Received With SMTP (Off Ramp Gateway) ..... 23
Handling Mail Reception Errors ..... 26
Printing Received Mail ..... 27
Multi-part Messages ..... 27
Manual e-mail reception ..... 27
Secure Internet Reception ..... 27
4.2.3 MAIL BROADCASTING (E-MAIL AND G3 FAX ARE COMBINED) ..... 28
4.3 E-MAIL OPTIONS (SUB TX MODE) ..... 29
4.3.1 SUBJECT AND LEVEL OF IMPORTANCE ..... 29
How the Subject Differs According to Mail Type ..... 29
Subjects Displayed on the PC ..... 29
4.3.2 SELECT/PROGRAM SUBJECT ..... 30
Program/Change Menu ..... 30
Manual Input Menu ..... 30
4.3.3 MESSAGE DISPOSITION NOTIFICATION (MDN) ..... 31
Handling Mail ..... 32
Setting up the Receiving Party. ..... 33
Handling Reports ..... 33
4.4 T.37 FULL MODE ..... 35
4.4.1 OVERVIEW ..... 35
4.4.2 REGISTERING REMOTE MACHINE FEATURE ..... 35
4.4.3 SENDING DATA AND REQUEST ..... 35
4.4.4 SENDING RECEIPT NOTIFICATION AND FEATURE REPORT ..... 36
4.4.5 INTERPRETING FEATURE REPORT ..... 37
Error Handling ..... 37
Exception Handling ..... 37
SPECIFICATIONS ..... 38
5. IFAX SPECIFICATIONS ..... 38

## 1. INSTALLATION

### 1.1 IFAX INSTALLATION

IFAX requires the installation of the Fax Unit and the Printer/Scanner Controllers. For details about installation, please refer to the Fax Unit and the Printer/Scanner option manuals for the machine.

### 1.2 INITIAL SETTINGS

Users can set the IFAX initial settings. Please refer to the Network Guide Operating Instructions.

Make sure that the following items are registered in the mail server before machine installation.

- IP address
- Host name
- Mail account and the password

CAUTION: The initial settings include items related to user security, such as the login password and IP addresses. So, please ask the user to input the initial settings of the IFAX. If the user asks you to input the initial settings, be sure to keep the settings confidential.

To enable IFAX functions, do the following procedure in the User Tools mode:
User Tools>Fax Features> E-Mail Settings> Internet Fax Settings> Internet Fax> OFF $\rightarrow$ ON

## 2. TROUBLESHOOTING

### 2.1 ERROR CODES FOR LAN COMMUNICATION

If an error code occurs, retry the communication. If the same problem occurs, try to solve the problem as suggested below.

| Code | Meaning | Cause | Action |
| :---: | :---: | :---: | :---: |
| 14-00 | SMTP Send Error | Error occurred during sending to the SMTP server. Occurs for any error other than 14-01 to 16 . For example, the mail address of the system administrator is not registered. | - Register the address of the system administrator. <br> - Set the User Parameter Switch 21 (15[H]) Bit 4 to "Off". |
| 14-01 | SMTP Connection Failed | Failed to connect to the SMTP server (timeout) because the server could not be found. <br> - The IP address for the SMTP server is not stored in the machine. <br> - The DNS IP address is not registered. <br> - Network not operating correctly. | - Check the IP address of the SMTP/DNS server. <br> - Check the traffic on the LAN. <br> - Check the machine settings such as the SMTP port setting, DNS server setting, and so on. |
| 14-02 | No Service by SMTP Service (421) | SMTP server operating incorrectly. | Contact the network administrator. Confirm correct SMTP server settings and operation. |
| 14-03 | Access to SMTP Server Denied (450) | SMTP server operating incorrectly | Contact the network administrator. Confirm correct SMTP server settings and operation. |
| 14-04 | Access to SMTP Server Denied (550) | SMTP server operating incorrectly | Contact the network administrator. Confirm correct SMTP server settings and operation. |
| 14-05 | $\begin{aligned} & \text { SMTP Server HDD Full } \\ & \text { (452) } \end{aligned}$ | SMTP Server hard disk full. | Contact the network administrator. Free space on the HDD of the SMTP server. |
| 14-06 | User Not Found on SMTP Server (551) | The user does not exist locally. | - Check that the mail address is correct. <br> - Contact the network administrator. Check that the e-mail the user intended to send exists on the SMTP server. |
| 14-07 | Data Send to SMTP Server Failed (4XX) | SMTP server operating incorrectly | Contact the network administrator. Confirm correct SMTP server settings and operation. |
| 14-08 | Data Send to SMTP Server Failed (5XX) | SMTP server operating incorrectly | Contact the network administrator. Confirm correct SMTP server settings and operation. |


| Code | Meaning | Cause | Action |
| :---: | :---: | :---: | :---: |
| 14-09 | Authorization Failed for Sending to SMTP Server | POP-Before-SMTP or SMTP authorization failed. | POP-Before-SMTP: <br> - Check the IFAX user name and password. <br> - Check that POP server is set correctly. <br> - Check the SMTP server settings. <br> SMTP Authorization: <br> - Check the SMTP server user name and password. <br> - Check the encryption settings. <br> - Check the SMTP server settings. |
| 14-10 | Addresses Exceeded | Number of broadcast addresses exceeded the limit for the SMTP server. | The maximum number of addresses depends on the SMTP server. |
| 14-11 | Buffer Full | The send buffer is full so the transmission could not be completed. Buffer is full due to using Scan-toEmail while the buffer is being used send mail at the same time. | No action required. The transmission will be recalled and sent as soon as buffer space is available. |
| 14-12 | Data Size Too Large | Transmission was cancelled because the detected size of the file was too large. | - Divide the original into sections and send as separate files. <br> - Use G3 to send the original. <br> - Reduce the TX mail size. |
| 14-13 | Send Cancelled | Processing is interrupted because the user pressed Stop. | No action required. |
| 14-30 | MCS File Creation Failed | Failed to create the MCS file because: <br> - The number of files created with other applications on the Document Server has exceeded the limit. <br> - HDD is full or not operating correctly. <br> - Software error. | - Delete unneeded files from the Document Server. <br> - Initialize the HDD. <br> - If initialization fails to correct the problem, replace the HDD. <br> - Update the software. |
| 14-31 | UFS File Creation Failed | UFS file could not be created: <br> - Not enough space in UFS area to handle both Scan-to-Email and IFAX transmission. <br> - HDD full or not operating correctly. <br> - Software error. | No action required. Once the job currently using the UFS area is finished sufficient space will become available. If this does not solve the problem: <br> - Initialize the HDD. <br> - If initialization fails to correct the problem, replace the HDD. <br> - Update the software. |
| 14-32 | Cancelled the Mail Due to Error Detected by NFAX | Error detected with NFAX and send was cancelled due to a software error. | Update the software. |
| 14-33 | No Mail Address For the Machine | Neither the mail address of the machine nor the mail address of the network administrator is registered. | Contact the network administrator. Check that these email addresses are registered correctly. |
| 14-50 | Mail Job Task Error | Due to an FCU mail job task error, the send was cancelled: <br> - Address book was being edited during creation of the notification mail. <br> - Software error. | No action required. If the problem persists, update the firmware. |

## ERROR CODES FOR LAN COMMUNICATION

| Code | Meaning | Cause | Action |
| :--- | :--- | :--- | :--- |
| $14-51$ | UCS Destination <br> Download Error | Not even one return notification can <br> be downloaded: <br> - The address book was being <br> edited. <br> - The number for the specified <br> destination does not exist (it was <br> deleted or edited after the job was <br> created). | Check the address in the address <br> book. |
| $14-60$ | Send Cancel Failed | The cancel operation by the user <br> failed to cancel the send operation. | No action required. |


| Code | Meaning | Cause | Action |
| :---: | :---: | :---: | :---: |
| 15-16 | Mail Size Receive Error | The mail cannot be received because it is too large. | - Increase the setting that limits the size of e-mail that can be received (in the User Tools> System Settings> File Transfer menu). <br> - Ask the sender to break the email into smaller parts and send them separately. |
| 15-17 | Receive Timeout | May occur during manual receiving only because the network is not operating correctly. | Contact the network administrator and check that the network is operating correctly. |
| 15-18 | Incomplete Mail Received | Only one portion of the mail was received. | Ask the sender to send as one transmission. |
| 15-31 | Final Destination for Transfer Request Reception Format Error | The format of the final destination for the transfer request was incorrect. | Ask the sender to check the final destination. |
| 15-39 | Send/Delivery Destination Error | The transmission cannot be delivered to the final destination: <br> - Destination file format is incorrect. <br> - Could not create the destination for the file transmission. | - Delete the destination file to enable receiving. <br> - Ask the sender to check the transfer destination and final destination. |
| 15-41 | SMTP Receive Error | Reception rejected because the transaction exceeded the limit for the "Auth. E-mail RX" setting. | - Check the content of the "From" entry in the mail header. <br> - Check the "Auth. E-mail RX" setting. |
| 15-42 | Off Ramp Gateway Error | The delivery destination address was specified with Off Ramp Gateway OFF. | - Enable the Off Ramp Gateway function. <br> - Ask the sender not to specify the Off Ramp Gateway address. |
| 15-43 | Address Format Error | Format error in the address of the Off Ramp Gateway. | Ask the sender to check the mail destination. |
| 15-44 | Addresses Over | The number of addresses for the Off Ramp Gateway exceeded the limit of 30. | Ask the sender to check the mail destination. |
| 15-61 | Attachment File Format Error | The attached file is not TIFF format. | Try to check the format of the sent mail, then ask the user to use TIFF format. |
| 15-62 | TIFF File Compatibility Error | Could not receive transmission due to: <br> Resolution error <br> - Image of resolution greater than 200 dpi without extended memory. <br> - Resolution is not supported. <br> Page size error <br> - The page size was larger than A3. Compression error <br> - File was compressed with other than MH, MR, or MMR. | Ask the sender to check the following: <br> - File was sent in TIFF format. <br> - Compatibility of the resolution setting. <br> - Size of the page. <br> - Method used to compress the file. |
| 15-63 | TIFF Parameter Error | The TIFF file sent as the attachment could not be received because the TIFF header is incorrect: <br> - The TIFF file attachment is a type not supported. <br> - The TIFF file attachment is corrupted. <br> - Software error. | - Ask the sender to check that the attachment was sent in correctTIFF format. <br> - If the problem persists, update the software. |

## ERROR CODES FOR LAN COMMUNICATION

| Code | Meaning | Cause | Action |
| :---: | :---: | :---: | :---: |
| 15-64 | TIFF Decompression Error | The file received as an attachment caused the TIFF decompression error: <br> - The TIFF format of the attachment is corrupted. <br> - Software error. | - Ask the sender to check that the attachment was sent in correct TIFF format. <br> - If the problem persists, update the software. |
| 15-71 | Not Binary Image Data | The file could not be received because the attachment was not binary image data. | Ask the sender to check the content of the attachment. |
| 15-73 | MDN Status Error | Could not find the Disposition line in the header of the Return Receipt, or there is a problem with the firmware. | Ask the sender to resend the mail. If the problem persists, update the firmware. |
| 15-74 | MSDN Message ID Error | Could not find the Original Message ID line in the header of the Return Receipt, or there is a problem with the firmware. | Ask the sender to resend the mail. If the problem persists, update the firmware. |
| 15-80 | Mail Job Task Read Error | Could not receive the transmission because the destination buffer is full and the destination could not be created (this error may occur when receiving a transfer request or a request for notification of reception). | No action required. When destinations are used and a space opens in the buffer, the transmission will be received. |
| 15-81 | Repeated Destination Registration Error | Could not repeat receive the transmission because the destination buffer is full and the destination could not be created (this error may occur when receiving a transfer request or a request for notification of reception). | No action required. When destinations are used and a space opens in the buffer, the transmission will be received. |
| 15-91 | Send Registration Error | Could not receive the file for transfer to the final destination: <br> - The format of the final destination or the transfer destination is incorrect. <br> - Destinations are full so the final and transfer destinations could not be created. | - As the send to check both the transfer destination and the final destination. <br> - When destinations open, the transmission will be received. |
| 15-92 | Memory Overflow | Transmission could not be received because memory overflowed during the transaction. | - Expand SAF memory. <br> - Ask the sender to break up the file and send the parts separately. |
| 15-93 | Memory Access Error | Transaction could not complete due to a malfunction of SAF memory. | Initialize memory. If the problem persists, replace the MBU. |
| 15-94 | Incorrect ID Code | The machine rejected an incoming email for transfer request, because the ID code in the incoming e-mail did not match the ID code registered in the machine. | - Ask the sender to correct the ID code. <br> - Set IFAX SW03 Bit 3 to " 1 ". |
| 15-95 | Transfer Station Function | The machine rejected an incoming email for transfer because the transfer function was unavailable. | Inform the transfer requester that this machine does not support the transfer station function. |

### 2.2 TROUBLESHOOTING PROCEDURES

Use the following procedures to determine whether the machine or another part of the network is causing the problem.

| Communication Route | Item | Action | Remarks |
| :---: | :---: | :---: | :---: |
| General LAN | 1. Connection with the LAN | - Check that the LAN cable is connected to the machine. <br> - Check that the LEDs on the hub are lit. |  |
|  | 2. LAN activity | - Check that other devices connected to the LAN can communicate through the LAN. |  |
| Between IFAX and PC | 1. Network settings on the PC | - Check the network settings on the PC. | - Is the IP address registered in the TCP/IP properties in the network setup correct? Check the IP address with the administrator of the network. |
|  | 2. Check that PC can connect with the machine | - Use the "ping" command on the PC to contact the machine. | - At the MS-DOS prompt, type ping then the IP address of the machine, then press Enter. |
|  | 3. LAN settings in the machine | - Check the LAN parameters <br> - Check if there is an IP address conflict with other PCs. | - Use the "Network" function in the User Tools. <br> - If there is an IP address conflict, inform the administrator. |
| Between machine and e-mail server | 1. LAN settings in the machine | - Check the LAN parameters <br> - Check if there is an IP address conflict with other PCs. | - Use the "Network" function in the User Tools. <br> - If there is an IP address conflict, inform the administrator. |
|  | 2. E-mail account on the server | - Make sure that the machine can log into the e-mail server. <br> - Check that the account and password stored in the server are the same as in the machine. | - Ask the administrator to check. |
| Between machine and e-mail server | 3. E-mail server | - Make sure that the client devices which have an account in the server can send/receive e-mail. | - Ask the administrator to check. <br> - Send a test e-mail with the machine's own number as the destination. The machine receives the returned e mail if the communication is performed successfully. |
| Between e-mail server and internet | 1. E-mail account on the Server | - Make sure that the PC can log into the e-mail server. <br> - Check that the account and password stored in the server are the same as in the machine. | - Ask the administrator to check. |


| Communication Route | Item | Action | Remarks |
| :---: | :---: | :---: | :---: |
|  | 2. E-mail server | - Make sure that the client devices which have an account in the server can send/receive e-mail. | - Ask the administrator to check. <br> - Send a test e-mail with the machine's own number as the destination. The machine receives the returned e mail if the communication is performed successfully. |
|  | 3. Destination e-mail address | Make sure that the e-mail address is actually used. Check that the e-mail address contains no incorrect characters such as spaces. |  |
|  | 4. Router settings | Use the "ping" command to contact the router. Check that other devices connected to the router can sent data over the router. | - Ask the administrator of the server to check. |
| Between e-mail server and internet | 1. Error message by email from the network of the destination. | - Check whether e-mail can be sent to another address on the same network, using the application e-mail software. <br> - Check the error e-mail message. | - Inform the administrator of the LAN. |

## 3. SERVICE TABLES AND PROCEDURES

### 3.1 ACCESSING IFAX BIT SWITCHES

1. Ensure that the machine is in standby mode.
2. Press $\widehat{\Omega}$, enter (1) (0) (7) with the 10-key pad, then hold down © for more than 3 seconds. The SP mode main menu opens.
3. Press the ${ }^{(2)}$ key on the numeric keypad to start the fax service mode.
4. Use SP1102 1~16 to set the bit switches for IFAX. For details, refer to the Service Tables on the following pages.
> §WARNING
> Never adjust a bit switched marked "DFU" or "Japan Only," as this may cause the machine to malfunction or to operate in a manner that is not accepted by local regulations. Such bits are for use only in other areas, such as Japan.

NOTE: Default settings for bit switches are not listed in this manual. Refer to the System Parameter List print out.

### 3.2 SP1102 IFAX SWITCH

Only one SP number is used to access IFAX bit switches. These bit switches are described in the tables below.

| SP | IFAX SW |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 11021 | 00 |  |  |  |  |  |  |
|  | Bits 0~6: Original Width of TX Attachment File |  |  |  |  |  |  |
|  | This setting sets the maximum size of the original that the destination can receive. (Bits 3~7 are reserved for future use or not used.) <br> 0 : On <br> 1: Off <br> Note: If more than one of these three bits is set to " 1 ", the larger size has priority. Fo example, if both Bit 2 and Bit 1 are set to " 1 " then the maximum size is "A3" (Bit 2 ). |  |  |  |  |  |  |
|  | Bit 6 | Bit 5 | Bit 4 | Bit 3 | Bit 2 | Bit 1 | Bit 0 |
|  | Reserved | Reserved | Reserved | Reserved | A3 | B4 | A4 |
|  | When mail is sent, there is no negotiation with the receiving machine at the destination, so the sending machine cannot make a selection for the receiving capabilities (original width setting) of the receiving machine. The original width selected with this switch is used as the RX machine's original width setting, and the original is reduced to this size before sending. The default is A4. If the width selected with this switch is higher than the receiving machine can accept, the machine detects this and this causes an error. |  |  |  |  |  |  |
|  | Bit 7: Not Used. |  |  |  |  |  |  |


| SP | IFAX SW |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 11022 | 01 |  |  |  |  |  |  |
|  | Bits 0~ 6: Original Line Resolution of TX Attachment File |  |  |  |  |  |  |
|  | This setting sets the maximum resolution of the original that the destination can receive. <br> 0: Not selected <br> 1: Selected <br> Note: If more than one of these three bits is set to " 1 ", the higher resolution has priority. For example, if both Bit 3 and Bit 2 are set to " 1 " then the resolution is set for " 300 x 300" (Bit 3). |  |  |  |  |  |  |
|  | Bit 6 | Bit 5 | Bit 4 | Bit 3 | Bit 2 | Bit 1 | Bit 0 |
|  | Reserved | Reserved | $\begin{aligned} & \hline 400 \times 400 \\ & \text { Super Fine } \end{aligned}$ | Reserved | $\begin{gathered} 200 \times 400 \\ \text { Fine } \end{gathered}$ | $\begin{gathered} 200 \times 200 \\ \text { Detail } \\ \hline \end{gathered}$ | $\begin{aligned} & \hline 200 \times 100 \\ & \text { Standard } \end{aligned}$ |

When mail is sent, there is no negotiation with the receiving machine at the destination, so the sending machine cannot make a selection for the receiving capabilities (resolution setting) of the receiving machine.
The resolution selected with this switch is used as the $R X$ machine's resolution setting, and the original resolution is converted before sending.
The default is both $200 \times 100$ and $200 \times 200$ are selected.
If the resolution set with this switch is higher than the receiving fax can accept, the machine detects this and this causes an error.

## Bit 7: mm/inch

This setting selects mm/inch conversion for mail transmission.
0: Off (No conversion)
1: On (Conversion)
When on (set to " 1 "), the machine converts millimeters to inches for sending mail.
There is no switch for converting inches to millimeters.
Note: Unlike G3 fax transmissions which can negotiate between sender and receiver to determine the setting, mail cannot negotiate between terminals; the mm/inch selection is determined by the sender fax.
Only two choices are available for transmission: inch statements and inch images, or inch statements and mm images.
When this switch is Off (0):

- Images scanned in inches are sent in inches.
- Images scanned in mm are sent in mm .
- Images received in inches are transmitted in inches.
- Images received in mm are transmitted in mm .

When this switch is On (1):

- Images scanned in inches are sent in inches.
- Images scanned in mm are converted to inches.
- Images received in inches are transmitted in inches.
- Images received in mm are converted to inches.

| SP | IFAX SW |
| :---: | :---: |
| 11023 | 02 |
|  | Bit 0: RX Text Mail Header Processing |
|  | This setting determines whether the header information is printed with text e-mails when they are received. <br> 0 : Prints only text mail. <br> 1: Prints mail header information attached to text mail. <br> - When a text mail is received with this switch On (1), the "From" address and "Subject" address are printed as header information. <br> - When a mail with only binary data is received (a TIFF-F file, for example), this setting is ignored and no header is printed. |

## Bit 1: Output from Attached Document at E-mail TX Error

This setting determines whether only the first page or all pages of an e-mail attachment are printed at the sending station when a transmission error occurs. This allows the customer to see which documents have not reached their intended destinations if sent to the wrong e-mail addresses, for example.
0 : Prints 1st page only.
1: Prints all pages.
Bits 2~3: Text String for Return Receipt
This setting determines the text string output for the Return Receipt that confirms the transmission was received normally at the destination.
00: "Dispatched" Sends from PC mail a request for a Return Receipt. Receives the Return Receipt with "dispatched" in the 2nd part:
Disposition: Automatic-action/MDN-send automatically; dispatched The "dispatched" string is included in the Subject string.
01: "Displayed" Sends from PC mail a request for a Return Receipt. Receives the Return Receipt with "displayed" in the 2nd part:
Disposition: Automatic-action/MDN-send automatically; displayed The "displayed" string is included in the Subject string.
10: Reserved
11: Reserved
Note: A mail requesting a Return Receipt sent from an IFAX with this switch set to "00" (for "dispatched") received by Microsoft Outlook 2000 may cause an error. If any setting other than "displayed" (01) causes a problem, change the setting to "01" to enable normal sending of the Return Receipt.
Bits 4~6: Not Used.
Bit 7: Image Resolution of RX Text Mail
This setting determines the image resolution of the received mail.
0: $200 \times 200$
1: $400 \times 400$
Note: The "1" setting requires installation of the Function Upgrade Card in order to have enough SAF (Store and Forward) memory to receive images at $400 \times 400$ resolution.

| SP | IFAX SW |
| :--- | :--- |
| 11024 | 03 |
|  | Not Used |


| SP | IFAX SW |
| :---: | :---: |
| 11025 | 04 |
|  | Bit 0: Subject for Delivery TX/Memory Transfer |
|  | This setting determines whether the RTI/CSI registered on this machine or the RTI/CSI of the originator is used in the subject lines of transferred documents. <br> 0 : Puts the RTI/CSI of the originator in the Subject line. If this is used, either the RTI or CSI is used. Only one of these can be received for use in the subject line. <br> 1: Puts the RTI/CSI registered on this machine in the Subject line. <br> When this switch is used to transfer and deliver mail to a PC, the information in the Subject line that indicates where the transmission originated can be used to determine automatically the destination folder for each e-mail. |
|  | Bits 1~7: Not Used |


| SP | IFAX SW |
| :---: | :---: |
| 11026 | 05 |
|  | Bit 0: Mail Addresses of SMTP Broadcast Recipients |
|  | Determines whether the e-mail addresses of the destinations that receive transmissions broadcasted using SMTP protocol are recorded in the Journal. <br> For example: <br> '1st destination + Total number of destinations: 9' <br> in the Journal indicates a broadcast to 9 destinations. <br> 0: Not recorded <br> 1: Recorded |
|  | Bits 1~7: Not Used |


| SP | IFAX SW |
| :--- | :--- |
| 11027 | 06 |
|  | Not Used |


| SP | IFAX SW |
| :--- | :--- |
| 11028 | 07 |
|  | Not Used |


| SP | IFAX SW |
| :--- | :--- |
| 11029 | 08 |
|  | Bits 0~7: Memory Threshold for POP Mail Reception |
|  | This setting determines the amount of SAF (Store and Forward) memory. (SAF stores <br> fax messages to send later for transmission to more than one location, and also holds <br> incoming messages if they cannot be printed.) When the amount of SAF memory <br> available falls below this setting, mail can no longer be received; received mail is then <br> stored on the mail server. <br> 00-FF (0 to 1024 KB: HEX) <br> Note: The hexadecimal number you enter is multiplied by 4 KB to determine the <br> amount of memory. |


| SP | IFAX SW |
| :--- | :--- |
| 110210 | 09 |
|  | Bits 0~3: Not Used |
|  | Bits 4~7: Restrict TX Retries |
|  | This setting determines the number of retries when connection and transmission fails <br> due to errors. <br> $01-\mathrm{F} \mathrm{(1-15} \mathrm{Hex)}$ |


| SP | IFAX SW |
| :--- | :--- |
| 110211 | 0 A |
|  | Not Used. |


| $\mathbf{S P}$ | IFAX SW |
| :--- | :--- |
| 110212 | OB |
|  | Not Used. |


| SP | IFAX SW |
| :--- | :--- |
| 110213 | 0 C |
|  | Not Used. |


| SP | IFAX SW |
| :--- | :--- |
| 110214 | OD |
|  | Not Used |


| SP | IFAX SW |
| :--- | :--- |
| 110215 | OE |
|  | Not Used |


| SP | IFAX SW |
| :--- | :--- |
| 110216 | OF |
|  | Bit 0: Delivery Method for SMTP RX Files |
|  | This setting determines whether files received with SMTP protocol are delivered or <br> output immediately. <br> O: Off. Files received via SMTP are output immediately without delivery. <br> 1: On. Files received via SMTP are delivered immediately to their destinations. |
|  | Bits 1~7: Not Used |

### 3.3 FIRMWARE UPDATE PROCEDURE

When you need to update the firmware for IFAX, follow the firmware update procedures described in the main machine Service Manual.

### 3.4 IFAX RAM ADDRESSES

| Parameter | Function | Data Format | Address | Comments |
| :---: | :---: | :---: | :---: | :---: |
| Mail Address | Mail address of the fax account. | ASC: 128 bytes | 69FEAE | $128 \times 3$ area provided, but only the first is used. |
| User Name | User name of the fax account. | ASC: 64 bytes | 6A002E | $64 \times 3$ area provided, but only the first is used. |
| Password | Password of the fax account. | ASC: 64 bytes | 6A00EE | $64 \times 3$ area provided, but only the first is used. |
| RX Mail Capacity | --- | 4 Bytes | 6A01AE | 64-1024 Kbytes |
| SMTP RX <br> Permission Address | Address or partial address that is used to limit access to mail delivery (see pg. 411, "Auth E-Mail Rx"). | ASC: 128 bytes | 6A01B2 |  |
| Doc. Svr. RX Notification No | Number of RX Notification Mails that have been sent in order to notify receipt of a fax message on the document server. | 2 bytes | 6A0232 |  |

## 4. DETAILED SECTION DESCRIPTIONS

### 4.1 INTERNET FAX

### 4.1.1 INTERNET FAX FEATURES

The Internet fax produced by Ricoh is also known as IFAX.
An Internet fax converts fax hard copy document data to e-mail format and transmits the data over the Internet. Another IFAX or a PC can receive the e-mail sent by an IFAX. Rather than inputting the telephone number of the destination, the user inputs the applicable e-mail address.
Documents are sent as e-mail messages with an attached TIFF-F image (the scanned original), so a MIME-compatible e-mail reader is required in order to view documents received on a PC. To view an attached image, software capable of displaying TIFF-F formatted images is required.
NOTE: The IFAX must be connected to a LAN and set up correctly in order to use its Internet fax functions.

The main IFAX features are:

- TCP/IP communication protocols that support connection to a LAN with e-mail.
- Easy-to-master operations that are identical to those of a standard fax machine.
- Fax transmission and reception over a telephone line.
- Using a browser (such as Netscape or Internet Explorer) to check the settings and status of an IFAX from a PC This uses the Web Status Monitor application built into the machine.
- Transferring or mailing received faxes directly to a PC.
- Using the Internet to reduce communication costs.
- Reducing paper expenses by eliminating the use of paper for fax transmission and reception.
- The IFAX communicates with a server over a LAN (it does not communicate directly with another party).
- If an error occurs, a mail error report is sent back to the sender.


## Some minor restrictions of IFAX are:

- If an Internet related error occurs, the sender might not receive an error report.
- The level of security for Internet communications is low. The use of standard subscriber lines is recommended for confidential communication.
- Voice communications are not supported over a LAN.
- Internet fax delivery might be delayed due to network congestion. Use standard fax communication whenever time is a crucial factor.

The following functions are supported with standard fax transmission, but not with Internet faxing.

These functions are not supported by e-mail transmission:

- Immediate Transmission
- Chain Dial
- On Hook Dial
- Manual Dial
- JBIG Transmission
- Batch Transmission
- ECM (Error Correction Mode)

These functions are not supported by e-mail reception:

- Memory Lock Reception
- Preventing nuisance faxes by destination


### 4.1.2 DNS SERVICE

IFAX supports DNS (Domain Name System). See the Core Technology Manual for more details (Facsimile Processes - Faxing From a PC - Internet/LAN Fax Boards - E-mail Basics).

The IFAX can use the Domain Names for the SMTP and POP3/IMAP4 server instead of the actual IP addresses, if there is a DNS server on the same LAN as the SMTP server, POP3/IMAP4 server, and the IFAX.
With models that do not support DNS, the user has to input the actual IP addresses of the SMTP server and the POP3/IMAP4 server.

### 4.2 INTERNET MAIL COMMUNICATION

### 4.2.1 MAIL TRANSMISSION



## Procedure

Scanned documents are sent as electronic mail (e-mail).
All messages are sent using memory transmission.
All e-mail transmissions are controlled using Simple Mail Transfer Protocol (SMTP) procedures. There must be an SMTP server on the same LAN as the sending machine, or the machine will not be able to send e-mail (it is not necessary to set up an SMTP account).

## Data Formats

The scanned data is converted into a TIFF-F formatted file (only MH compression can be used).

The fields of the e-mail and their contents are as follows:

|  | Field |
| :--- | :--- |
| From | Mail address of the sender |$|$ Destination requested for reply

## Errors

An error report is generated if an error occurs during communication between the machine and the SMTP server. However, it is possible that the sender will not receive reports of errors that occurred between the SMTP server and the receiving terminal.

The interval between attempts to resend mail to the same destination when an SMTP error occurs is the same as for G3 fax transmission.

To view what happens when an error occurs when the machine is receiving, refer to the Mail Reception section.

## Results

The transmission result is listed in the Journal. The file list for e-mail transmissions is created in the same way as for G3 memory transmissions. The TTI for the mail message includes the word "Mail" at the head of the information in the TTI column.

## Selectable Options

These options are available for selection:

- With the default settings, the scan resolution can be either standard or detail. Inch-mm conversion before TX depends on IFAX SW01 Bit 7. Detail resolution will be used if Super Fine resolution is selected, unless Fine resolution is enabled with IFAX SW01.
- The requirements for originals (document size, scan width, and memory capacity) are the same as for G3 fax memory tx.
- The default compression is TIFF-F format.
- IFAX SWOO: Acceptable paper widths for sending
- IFAX SW09: Maximum number of attempts to the same destination


## Secure Internet Transmission

To transmit e-mail via the Internet more securely, use SMTP authentication, and POP before SMTP for IFAX.

- SMTP Authentication:

SMTP Authentication requires user authentication before they can access the server. This prevents unauthorized access to the server. To use SMTP authentication, your server must support CRAM-MD5, PLAIN, or LOGIN. The account name and password specified in the "Mail Server" settings are used for SMTP authentication. Other account names and passwords cannot be specified. To set up SMTP Authentication:

User Tools> System Settings> File Transfer> SMTP Authentication

- POP Before SMTP:

Prevents unauthorized access to the SMTP server and requires users to access and log onto the POP3 server before sending e-mail.
To set up POP Before SMTP:
User Tools> System Settings> File Transfer> POP Before SMTP

### 4.2.2 MAIL RECEPTION



This machine supports three types of e-mail reception:

- POP3 (Post Office Protocol Ver. 3.)
- IMAP4 (Internet Messaging Access Protocol)
- SMTP (Simple Mail Transfer Protocol)


## POP3/IMAP4 Mail Reception Procedure

In order for the fax machine to receive e-mail, 1) there must be a POP3/IMAP4 server on the same LAN as the IFAX, and 2) an account must be set up for the fax machine.

The machine automatically picks up e-mail from the server at an interval which is adjustable in the range 2 to 1440 min. in 1-minute steps:
User Tools> System Settings> File Transfer> E-mail Reception Interval
When the arrival of new e-mail is detected, the IFAX receives the mail.
If the POP3/IMAP4 server is holding several e-mails for the IFAX, the machine picks up the e-mails one at a time, in the order of arrival at the server.
After POP3 has picked up the mail from a POP3 server, it deletes it from the server. IMAP4 also picks up the mail from a server, but it does not delete the mail from the server.

- However, the server setting is given higher priority than the machine setting.

E-mail reception conforms to POP3 (Post Office Protocol version 3.0) procedures or IMAP4 (Internet Message Access Protocol).

## Characteristics of POP3/IMAP4 Reception

Here are some general characteristics of POP3/IMAP4 receiving:

## - No MX record registration:

There is no need to register the machine in the MX record of the DNS server.

- Power can be switched off:

As long as the machine is not receiving mail, mail stored in the mail server is not lost when the power is switched off. With SMTP reception, if the machine is switched off, the SMTP server sends an error report back to the sender, and the machine will not receive the mail unless the sender sends it again after the machine is switched on.

- Dial-up compliance:

POP3/IMAP4 can be accessed spontaneously, making it ideal for dial-up operation.

## SMTP Reception

## SMTP Mail Reception Procedure

By registering the IFAX as an SMTP server in the MX record of the DNS server, you can enable direct receiving of mail from the SMTP server.

When mail is sent to the mail address specified for the IFAX, it is received immediately without checking the server for the arrival of new mail (as is done in the POP/IMAP protocol). Also, with SMTP, the received mail can be routed to another fax (this is known as "delivery").

## Setting Method

The following settings are required for SMTP receiving:

- The IFAX must be registered as an SMTP server in the MX record of the DNS server, and the address of the received mail must specify the IFAX.
- Enable SMTP reception:

User Tools> System Settings> File Transfer> Reception Protocol
Even if the MX record on the DNS server includes the IFAX, mail cannot be received with SMTP until SMTP reception is enabled:

However, if SMTP reception is selected and the machine is not registered in the MX record of the DNS server, then either IMAP4 or POP3 is used, depending on the setting:

User Tools> System Settings> File Transfer> Reception Protocol

## SMTP Reception Characteristics

## - Expanded RX mail delivery:

The Off Ramp Gateway feature allows expansion for RX mail delivery to a G3 fax. The machine transfers incoming mail is sent to the G3 fax specified by the local part. For example, in a destination address specified as:
fax=0454778907@cl01.dom1.ricoh.co.jp
the "local part" is 0454778907.

- A POP3/IMAP4 server is not required:

For example, in an environment where there is only a UNIX server or in an intranet environment where Notes is used for mail, mail received from outside is handled via the SMTP gateway.

- Immediacy of response is slightly better:

There is no interval in the acquisition of mail as with POP3/IMAP4, thus slightly improving the response time.

- Easier error handling:

When an error occurs with POP3/IMAP4, the receiving terminal sends an error mail back to the sender in order to inform them that an error has occurred. With SMTP mail reception, however, in almost all cases the SMTP server sends the error mail to the sender.

## Delivery: Transferring Mail Received With SMTP (Off Ramp Gateway)

## Overview

If the address of the mail received with SMTP contains the following information, it can be delivered to another G3 fax:

Fax = " Delivery Number"@"IFAX Host Name.Domain"


## How to Set Up Mail Delivery

The sender must set the mail address in the following format:

1) When dialing using a fax number
fax=<Delivery Destination Fax Number>@<IFAX Host Name>.<Domain Name>
Example:
fax=0454771459@cl01.dom1g.ricoh. $\rightarrow$ Delivers to fax number 0454771459
co.jp
2) When dialing using a Quick dial destination
fax=<\# Quick Dial Number>@<IFAX Host Name>.<Domain Name>
Example:
fax=\#001@cl01.dom1g.ricoh.co.jp $\rightarrow$ Delivers to the number registered for Quick Dial key 001.
3) When dialing using a Group destination
fax=<\#**Group Dial Number>@<IFAX Host Name>.<Domain Name>
Example:
fax $=\#^{\star *} 05 @$ cl01.dom1g.ricoh.co.jp $\quad \rightarrow$ Delivers to numbers registered for Group dial key 05.

## Mail Delivery Conditions

1) The machine must be set up for SMTP mail delivery:

User Tools> Facsimile Features> E-mail Settings> SMTP RX File Delivery Settings
2) If the user wishes to limit this feature so that the machine will only deliver mail from designated senders, the machine's "Auth. E-mail RX" feature must be selected (User Tools> Facsimile Features> E-mail Settings> SMTP RX File Delivery Settings).
3) If the "SMTP RX File Delivery Setting" is set to 0 to prohibit SMTP receiving, and if there is mail designated for delivery, then the machine responds with an error. (User Tools> Facsimile Features> E-mail Settings> SMTP RX File Delivery Settings)
4) The "fax=" setting does not distinguish between upper and lower case letters.
5) More than one destination cannot be specified in the mail address. A Group counts as 1 destination.
6) If the quick dial, speed dial, or group dial entry is incorrect, the mail transmission is lost, and the IFAX issues an error to the SMTP server and outputs an error report.

## Auth. E-mail RX

In order to limit access to mail delivery with IFAX, the addresses of senders must be limited using the Access Limit Entry. Only one entry can be registered.

1) Access Limit Entry

For example, to limit access to @IFAX.ricoh.co.jp:
gts@IFAX.ricoh.co.jp Matches and is delivered.
gts@IFAX.abcde.co.jp
IFAX@ricoh.co.jp

Does not match and is not delivered.
Does not match and is not delivered.
2) Conditions

- The length of the Access Limit Entry is limited to 127 characters.
- If the Access Limit Entry address and the mail address of the incoming mail do not match, the incoming mail is discarded and not delivered, and the SMTP server responds with an error. However, in this case an error report is not output.
- If the Access Limit Entry address is not registered, and if the incoming mail specifies a delivery destination, then the mail is delivered unconditionally.


## Handling Mail Reception Errors

## Errors during POP3/IMAP4 procedures

When an error of this type occurs, the machine stops receiving and the message stays in the server. An error report is output. After a prescribed interval, the machine calls the server and starts to receive, starting with the interrupted message. If there is an incomplete received message in memory, it will be erased.

## Abnormal files

When an error of this type occurs, the machine stops receiving and commands the server to erase the message. Then the machine prints an error report and sends information about the error by e-mail to the sender address (specified in the "From" or "Reply-to" field of the message). If there is an incomplete received message in the machine memory, it will be erased.

The machine prints an error message when it fails to send the receive error notification after a certain number of attempts.
The following types of files are judged to be abnormal if one or more of the following are detected:

1. Unsupported MIME headers.

Supported types of MIME header

| Header | Supported Types |
| :--- | :--- |
| Content-Type | Multipart/mixed, text/plain, message/ffc822 Image/tiff |
| Charset | US-ASCII, ISO 8859 X. Other types cannot be handled, <br> and some garbage may appear in the data. |
| Content-Transfer-Encoding | Base 64, 7-bit, 8-bit, Quoted Printable |

2. MIME decoding errors
3. File format not recognized as TIFF-F format
4. Resolution, document size, or compression type cannot be accepted

## Remaining SAF capacity error

The machine calls the server but does not receive e-mail if the remaining SAF capacity is less than a certain value (the value depends on IFAX Switch 08. The email will be received when the SAF capacity increases (for example, after substitute reception files have been printed). The error handling method for this type of error is the same as for "Abnormal files".
If the capacity of the SAF memory drops to zero during reception, the machine operates in the same way as when receiving an abnormal file (refer to "Abnormal files" above).

## Printing Received Mail

To print received e-mail:

- The machine detects whether it has received a TIFF-F format image, then prints it.
- Text in US ASCII or ISO 8859 X format can also be printed. When a line of text is longer than the paper width, the excess data will be truncated and lost.


## Multi-part Messages

When a multi-part e-mail message contains several text parts and binary files, the message will be divided by boundaries, and each portion will be printed separately. If the machine cannot determine where the boundary is, it will print an error report, and then send error information e-mail back to the sender.

## Manual e-mail reception

The manual e-mail reception function can be stored in a Quick Operation Key. When the key is pressed, the machine calls the POP3/IMAP4 server immediately.

The timer for automatic e-mail reception is not reset when the machine calls the POP3/IMAP4 server manually.

## Here is an example of the sequence

- Automatic e-mail reception interval: 30 minutes.
- The machine calls the POP3 server (automatic e-mail reception)
- 10 minutes later, the user calls the POP3 server (manual e-mail reception)
- The machine will call the POP3 server again automatically after 20 minutes.


## Secure Internet Reception

APOP. Passwords are encrypted when e-mail is received, making it safer than POP3 authentication (clear text), which is not encrypted. APOP requires a POP server that supports APOP.

IMAP-AUTH (Mail Reception). If the IMAP Server supports the AUTHENTICATE command (CRAM-MD5, PLAIN, or LOGIN confirmation), then higher-level security confirmation can be implemented for users logging in.

To enable password encryption and higher level security:
User Tools> System Settings> File Transfer> POP3/IMAP4 Settings> Encryption (set to "On")

### 4.2.3 MAIL BROADCASTING (E-MAIL AND G3 FAX ARE COMBINED)



The machine can send the same message to several destinations in one operation. Some destinations can be G3 faxes and others can be e-mail. For the G3 fax transmissions, each address has to be dialed separately. However, all e-mail addresses can be sent with the message to the SMTP server in one transmission. The SMTP server then sends the message to each destination.
The following example for broadcasting to three e-mail destinations and two G3 fax destinations shows how G3 fax messages are each sent individually. However, the e-mail destinations are all sent to the server at the same time.

- Order of inputting the addresses at the operation panel G3 fax (1) - mail (1) - G3 fax (2) - mail (2) - mail (3)
- Order of transmission G3 fax (1) - mail (1), (2), (3) - G3 fax (2)

The SMTP server cannot broadcast the message if the message contents included individual information for each terminal in the transmitted data (such as a label insertion). If this type of feature is used, the machine sends the e-mails to the server one by one.
With the default settings, up to 500 destinations (including both e-mail and G3 fax) can be dialed for one broadcast. The maximum number of e-mail destinations in a broadcast depends on the limitations of the mail server.

### 4.3 E-MAIL OPTIONS (SUB TX MODE)

The following features are available as options for mail sending: entering a subject, designating the level of importance, confirming reception of the mail.

### 4.3.1 SUBJECT AND LEVEL OF IMPORTANCE

You can enter a subject message with: TX Mode> E-mail Options (see next page)
The Subject entry for the mail being sent is limited to 64 characters. The subject can also be prefixed with an "Urgent" or "High" notation.
How the Subject Differs According to Mail Type

| Mail Type | (1) | (2) |  | (3) |
| :---: | :---: | :---: | :---: | :---: |
| Subject Entry | --- | Entry Condition |  | Fax Message No. $+$ File No. |
| No Subject Entry |  | 1. "CSI" ("RTI") |  |  |
|  |  | 2. "RTI" | CSI not registered |  |
|  |  | 3. "CSI" | RTI not registered |  |
|  |  | 4. None | CSI, RTI not registered |  |
| Confirmation of Reception | From | 1. "CSI" ("RTI") |  | Normal: <br> Return Receipt (dispatched). You can select "displayed" with IFAX SW02 Bits 2 and 3. |
|  |  | 2. "RTI" | CSI not registered |  |
|  |  | 3. "CSI" | RTI not registered | Error: Return Receipt (processed/error) |
|  |  | 4. None | CSI, RTI not registered |  |
| Mail delivery, memory transfer, SMTP receiving and delivery | From | RTI or CSI of the station designated for delivery | Mail delivery | Fax Message No. + File Number |
|  |  | RTI or CSI of sender | Mail sending from G3 memory |  |
|  |  | Mail address of sender | Memory sending |  |
|  |  | Mail address of sender | SMTP receiving and delivery (Off Ramp Gateway) |  |
| Mail error notification | --- | Error Message No. xxxx From CSI (RTI) |  |  |

Items (1) (2) (3) of the table above are in the Subject.

## Subjects Displayed on the PC



### 4.3.2 SELECT/PROGRAM SUBJECT

## Program/Change Menu

You can specify the subject. Select the Program/Change menu as follows:
User Tools> System Settings> File Transfer> Prog./Chane/Del. Subject> Program/Change


The asterisk (*) $[\mathrm{A}]$ indicates that the entry is not specified.

## Manual Input Menu

You can create the subject. Select the Manual Input menu as follows:
User Tools> Tx Mode> E-mail Options> Attach Subject> Manual Input


### 4.3.3 MESSAGE DISPOSITION NOTIFICATION (MDN)

The network system administrator can confirm whether a sent mail has been received correctly or not. This confirmation is done in four steps.

1. Send request for confirmation of mail reception. To enable or disable this request (known as MDN):

TX Mode> E-mail Options> Return Receipt (Set "On.")
2. Mail reception (receive confirmation request)
3. Send confirmation of mail reception
4. Receive confirmation of mail reception

The other party's machine will not respond to the request unless the two conditions below are met:

- The other party's machine must be set up to respond to the confirmation request.
- The other party's machine must support MDN (Message Disposition Notification).



## E-MAIL OPTIONS (SUB TX MODE)

## Handling Mail

## Handling Mail on the Send Side

When mail is sent, a "Disposition Notification To" notation is included in the header as a request for confirmation that the mail was received.

| X-Mozilla Status | : 0001 |
| :---: | :---: |
| X-Mozilla Status2 | : 00000000 |
| Message-ID | : [3A23379A.81BE0ABD@dom1g.ricoh.co.jp](mailto:3A23379A.81BE0ABD@dom1g.ricoh.co.jp) |
| Disposition-Notification-To | : T.Suzuki [s_tadashi@domlg.ricoh.co.jp](mailto:s_tadashi@domlg.ricoh.co.jp) |
| Date | : Tue, 28 Nov 2000 13:4203 +0900 |
| From | : T.Suzuki [s_tadashi@domlg.ricoh.co.jp](mailto:s_tadashi@domlg.ricoh.co.jp) |
| X-Mailer | : Mozilla 4.73 [ja]C-CCK-MCD BDP jm-Sony 3 (Win95: U) |
| X-Accept-Language | : ja |
| MIME-Version | : 1.0 |
| To | : fuser_01@dom1g.ricoh.co.jp |
| Subject | : Mail Request for Reception Confirmation |
| Content-Type | : text/plain: charset=iso-2022-jp |
| Content-Transfer-Encoding | : 7bit |

## Handling Mail on the Receive Side

| Return Path: <> Received |  | From fuser_01 ([133.139.157.20]) by dom1g.ricoh.co.jp (post office MTA V1.9.3 ID\# 0100110-37392) with SMTP id AAA163 for[S_tadasi@dom1g.ricoh.co.jp](mailto:S_tadasi@dom1g.ricoh.co.jp) |
| :---: | :---: | :---: |
| Date | : | 28 Nov 2000 13:4236 +0900 |
| X-Mailer |  | ICFAX Version 1.0 |
| MIME-Version | : | 1.0 |
| Content-Type |  | ```multipart/report: report-type=disposition-notification: boundary="-ICFAX_000000EF48-"``` |
| To | : | T.Suzuki [s_tadashi@dom1g.ricoh.co.jp](mailto:s_tadashi@dom1g.ricoh.co.jp) |
| Message-ID | : | <20001128133423664.ICFAX-XFC9BE-X26986@133.139.157.20]> |
| From | : | fuser_01@domlg.ricoh.co.jp |
| Subject |  | From @81454771459"("RICOH GTS) (Return Receipt) (dispatched) |
| X-Mozilla-status | : | 8001 |
| X-Mozilla-Status2 | : | 00000000 |
| X-UIDL | : | 20001128044713447.AAA163@fuser_01 |
| This is a Return Receipt for the mail that you sent to "fuser_01@dom1g.ricoh.co.jp" <br> Final Receipt: rfc822:fuser_01\#dom1g.ricoh.co.jp <br> Original Message ID: <3A23379A.81BEOABD@dom1g.ricoh.co.jp <br> Disposition: automatic action/MDN-send-automatically: dispatched Respond Mail Text |  |  |

## Setting up the Receiving Party

The receiving party will respond to the confirmation request if:

1) The "Disposition Notification To" field is in the received mail header (automatically inserted in the 4th line in the upper table on the previous page, if MDN is enabled), and
2) Sending the disposition notification must be enabled (User Parameter Setting SW21 ( $15[\mathrm{H}]$ ) Bit 1 for this model). The content of the response is as follows:

| Normal reception: | "Return Receipt (dispatched)" in the Subject line |
| :--- | :--- |
| IFAX SW02 (Bit 2, 3) | "Return Receipt (displayed)" in the Subject line |
| Error: | "Return Receipt (processed/error)" in the Subject line |

## Handling Reports

1. Sending a Request for a Return Receipt by Mail

After the mail sender transmits a request for a return receipt, the mail sender's journal is annotated with two hyphens (--) in the Result column and a "Q" in the Mode column.
2. Mail Receipt (Request for Receipt Confirmation) and Sending Mail Receipt Response
After the mail receiver sends a response to the request for a return receipt, the mail receiver's journal is annotated with two hyphens (--) in the Result column and an " $A$ " in the Mode column.
3. Receiving the Return Receipt Mail

- After the mail sender receives a return receipt, the information in the mail sender's journal about the receipt request is replaced, i.e. the journal is annotated with "OK" in the Result column.
- When the return receipt reports an error, the journal is annotated with an " $E$ " in the Result column.
- The arrival of the return receipt is not recorded in the journal as a separate communication. Its arrival is only reported by the presence of "OK" or "E" in the Result column.
- If the mail address used by the sender specifies a mailing list (i.e., a Group destination; the machine sends the mail to more than one location. See "How to set up Mail Delivery"), the Result column of the Journal is updated every time a return receipt is received. For example, if the mailing list was to 5 destinations, the Result column indicates the result of the communication with the $5^{\text {th }}$ destination only. The results of the communications to the first 4 destinations are not shown.
Exceptions:
If one of the communications had an error, the Result column will indicate E , even if subsequent communications were OK.
If two of the communications had an error, the Journal will indicate the destination for the first error only.

E-MAIL OPTIONS (SUB TX MODE)
Report Sample

| DATE | TIME | ADDRESS | MODE |  | TIME | PAGE | RESULT |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| MAY. | 10:15 | fuser_0 | Mail | SM | 0'09" | 2 | -- |
|  | 10:16 | fuser_0 | Mail | SMQ | 0'05" | 1 | -- |
|  | 10:17 | s_tadas | Mail | SMQ | 0'09" | 2 | OK |
|  | 10:19 | m_masat | Mail | SMA | 0'05" | 1 | -- |

### 4.4 T. 37 FULL MODE

### 4.4.1 OVERVIEW

Model K-C2 supports the T. 37 Full Mode. The T. 37 Full Mode provides the following functions:

- The local machine registers the features of remote machines to the address book. (-4.4.2)
- The local machine, referencing the registered features, sends appropriate data to remote machines. The "appropriate data" here includes the request for receipt notification. (4.4.3)
- The local machine sends the receipt notification that includes the feature report of the local machine. (4.4.4)
- The local machine receives receipt notifications (from remote machines) that include the feature reports of the remote machines. The local machine interprets the feature reports and registers the features to the address book.
( 4.4.5)


### 4.4.2 REGISTERING REMOTE MACHINE FEATURE

The local machine registers the following features of remote machines:

- Paper width: A4/B4/A3
- Resolution: $200 \times 100 / 200 \times 200 / 200 \times 400$
- Data compression: MH/MR/MMR

As default, the features of remote machines are registered as follows: A4, 200 x $100 / 200 \times 200, \mathrm{MH}$. You cannot manually register any feature that is inconsistent with the default ( "Error Handling" in section 4.4.5).

### 4.4.3 SENDING DATA AND REQUEST

The local machine, before sending data, references the registered feature of the remote machine and converts the data into an appropriate format. The local machine sends the request for receipt notification with the data.

### 4.4.4 SENDING RECEIPT NOTIFICATION AND FEATURE REPORT

Remote machines can send (to the local machine) data with the request for receipt notification. When receiving a request, the local machine sends receipt notification. The receipt notification includes the Status Part that contains the Media Accept Features field. The Media Accept Features field describes the feature of the local machine as follows:

1. Color: Black-and-white data is supported. Color data is not supported.
2. Mixed Raster Content (MRC): MRC is not supported.
3. Image File Structure: TIFF-minimal data is supported. Other structures are not supported.
4. Image Coding: The MH (Modified Huffman), MR (Modified Read), and MMR (Modified MR) methods are supported. The JBIG
 (Joint Bi-Level Image Expert Group) method is not supported.
5. Resolution: $200 \times 100$, 200, $200 \times 400$, and 400 dpi are supported. ( $200 \times 400$ and 400 dpi can be restricted by environment.)
6. Paper Size: A4, B4, A3, Letter, and Legal are supported. (Paper size can be affected by status of paper trays.)
7. User Agent Media: Availability of cut paper is indicated.

Shown below is an example of the Media Accept Features field.

```
(&(image-file-structure=TIFF-minimal)
    (MRC-mode=0)
    (color=Binary)
    (image-coding=[MH,MR,MMR])
    (| (& (dpi=200) (dpi-xyratio=[200/100,1,200/400]) )
        (& (dpi=400) (dpi-xyratio=1) ) )
    (size-x<==2970/254)
    (paper-size=[A4,B4,A3,letter,legal])
    (ua-media=stationery)
)
```


### 4.4.5 INTERPRETING FEATURE REPORT

## Error Handling

When receiving a feature report, the local machine interprets the seven entries of the Media Accept Features field (-4.4.4). The local machine, if having detected an error in an entry, registers the error code. The data in this entry is ignored. Some examples of errors are as follows:

- A syntax error is detected.
- An unknown parameter (including typographic errors) is detected.
- Image Coding, Resolution, and Paper Size are not defined.
- The entries inconsistent with the default (4.4.2) are regarded as errors.


## Exception Handling

If one or two of Image Coding, Resolution, and Paper Size are not defined (if only one or two of them are defined), the local machine registers the defined parameters. Undefined parameters are set to the default (4.4.2).

If multiple combinations are defined for Image Coding, Resolution, and Paper Size (for example, "200/400 dpi for A4" and "200 dpi for A3"), the local machine interprets them in the following order:

1) Paper Size: The local machine regards all paper sizes as supported.
2) Resolution: The local machine regards the common parameters as supported. In the case of the above example ("200/400 dpi for A4" and "200 dpi for A3"), "200 dpi" is regarded as supported.
3) Image Coding: The local machine regards the common parameters as supported.

## SPECIFICATIONS

## 1. IFAX SPECIFICATIONS

## Type

Fax Unit and Printer/Scanner Unit

## Connectivity

Local area network
Ethernet 100base-Tx/10base-T

## Connection

100base-Tx/10base-T direct connection

## Resolution

Main scan: 200 dpi
Sub scan: 400 dpi, 200 dpi, 100 dpi
NOTE: To use $200 \times 400$ dpi, IFAX SW01 Bit 2 must be set to "1."

Transmission Time
1 s (through a LAN to the server)
Condition: ITU-T \#1 test document
(Selerexe Letter)
MTF correction: OFF
TTI: None
Resolution: $200 \times 100 \mathrm{dpi}$
Communication speed: 10 Mbps
Correspondent device: E-mail server Line conditions: No terminal access

## Document Size

Maximum message width is A4/LT.
Note: To use B4 and A3 width, IFAX
SW00 Bit 1 (B4) and/or Bit 2 (A3)
must be set to " 1 ".

## E-mail File Format

Single/multi-part
MIME conversion
Image: TIFF-F (MH) format only

## Protocol

(Supported by TCP/IP protocol)
Transmission:
IETF RFC821 SMTP procedure
Reception:
IETF RFC1725 POP3 procedure
IETF RFC2026 IMAP4 procedure

## Data rate

$100 \mathrm{Mbps}(100 \mathrm{base}-\mathrm{Tx})$
10 Mbps (10base-T)

## PRINTER/SCANNER UNIT B622

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## PRINTER/SCANNER B622

## TABLE OF CONTENTS

1. INSTALLATION ..... 1
2. TROUBLESHOOTING ..... 2
2.1 CONTROLLER ERRORS ..... 2
2.2 LEDS AND TEST POINTS ..... 2
3. SERVICE TABLES ..... 3
3.1 SERVICE PROGRAM MODE ..... 3
3.1.1 ENABLING AND DISABLING SERVICE PROGRAM MODE ..... 3
Entering the SP mode ..... 3
Exiting the Service Mode ..... 3
3.2 PRINTER SERVICE MODE ..... 4
3.2.1 SERVICE MODE TABLE ..... 4
3.2.2 BIT SWITCH PROGRAMMING ..... 4
3.2.3 SP MODES RELATED TO PRINTER CONTROLLER ..... 5
3.3 SCANNER SERVICE MODE ..... 6
3.3.1 SCANNER PROGRAM MODE TABLE ..... 6
3.4 FIRMWARE UPDATE PROCEDURE ..... 7
3.5 POWER-ON SELF TEST ..... 7
3.6 SELF DIAGNOSTIC TEST ..... 7
3.7 USER PROGRAM MODE ..... 7
4. DETAILED SECTION DESCRIPTIONS ..... 8
4.1 OVERVIEW .....  8
4.2 CONTROLLER FUNCTIONS ..... 9
4.2.1 PAPER SOURCE SELECTION ..... 9
Tray Priority (Auto Tray Select) ..... 9
Tray Lock ..... 9
Manual Tray Select ..... 9
4.2.2 AUTO CONTINUE ..... 10
4.2.3 PAPER OUTPUT TRAY ..... 11
Output Tray Selected ..... 11
Sequential Stacking ..... 11
4.2.4 DUPLEX PRINTING ..... 11
4.3 SCANNER FUNCTIONS ..... 12
4.3.1 IMAGE PROCESSING FOR SCANNER MODE ..... 12
Image Data Path ..... 12
4.4 NETWORK INTERFACE ..... 13
4.4.1 LED INDICATORS ..... 13
4.5 IEEE1394 INTERFACE ..... 14
4.5.1 SPECIFICATIONS ..... 14
Hardware Specification ..... 14
System Requirements ..... 14
4.5.2 IEEE1394 ..... 14
4.5.3 BLOCK DIAGRAM ..... 15
4.5.4 PIN ASSIGNMENT ..... 15
4.5.5 REMARKS ABOUT THIS INTERFACE KIT ..... 16
4.5.6 TROUBLESHOOTING NOTES ..... 16
4.6 IEEE 802.11B (WIRELESS LAN) ..... 17
4.6.1 SPECIFICATIONS ..... 17
LED Indicators ..... 17
4.6.2 TRANSMISSION MODES ..... 18
Ad Hoc Mode ..... 18
Infrastructure Mode ..... 18
4.6.3 SECURITY FEATURES ..... 19
Using the SSID in Ad hoc mode ..... 19
4.6.4 WIRELESS LAN TROUBLESHOOTING NOTES ..... 20
Communication Status ..... 20
Channel Settings ..... 20
Troubleshooting Procedure ..... 21
4.7 BLUETOOTH ..... 22
4.7.1 SPECIFICATIONS ..... 22
4.7.2 BLUETOOTH PROFILES ..... 23
4.7.3 BLUETOOTH SECURITY FEATURES ..... 23
4.8 USB ..... 24
4.8.1 SPECIFICATIONS ..... 24
4.8.2 USB 1.1/2.0 ..... 24
4.8.3 USB CONNECTORS ..... 25
4.8.4 PIN ASSIGNMENT ..... 25
4.8.5 REMARKS ABOUT USB ..... 26
Related SP Mode ..... 26
SPECIFICATIONS ..... 27
1 GENERAL SPECIFICATIONS ..... 27
1.1 PRINTER ..... 27
1.2 SCANNER ..... 27
2 SOFTWARE ACCESSORIES ..... 28
2.1 PRINTER ..... 28
PRINTER DRIVERS ..... 28
UTILITY SOFTWARE ..... 28
2.2 SCANNER ..... 29
SCANNER DRIVER ..... 29
SCANNER UTILITIES ..... 29
3 MACHINE CONFIGURATION ..... 30
3.1 SYSTEM COMPONENTS ..... 30

## 1. INSTALLATION

Please refer to section 1 of the main unit service manual.

## 2. TROUBLESHOOTING

### 2.1 CONTROLLER ERRORS

Refer to section 4. of the main unit service manual for descriptions on SC code information because the GW architecture includes controller SC codes in the main unit SC code table.

### 2.2 LEDS AND TEST POINTS

LEDs and test points are not used for this option except for the GW controller.

## 3. SERVICE TABLES

### 3.1 SERVICE PROGRAM MODE

## $\triangle$ CAUTION <br> Before accessing the service menu, do the following: <br> Confirm that there is no print data in the printer buffer (the Data In LED must not be lit or blinking). <br> If there is data in the buffer, wait until all data has been printed.

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

The main power LED (*) lights or flashes while the platen cover or ARDF is open, while the main unit is communicating with a facsimile or the network server, or while the machine is accessing the memory for reading or writing data.

### 3.1.1 ENABLING AND DISABLING SERVICE PROGRAM MODE

## Entering the SP mode



1. Press the Clear Mode key.
2. Use the keypad to enter "107".
3. Hold down Clear/Stop for at least 3 seconds.
4. Enter the Service Mode.

Printer SP
Scanner SP

Select "Printer SP" to enter printer SP mode.
Select "Scanner SP" to enter scanner SP mode.

## Exiting the Service Mode

Press the cancel key to exit from the service mode.

### 3.2 PRINTER SERVICE MODE

### 3.2.1 SERVICE MODE TABLE

| SP No. | Description | Function and Setting |
| :---: | :--- | :--- |
| 1001 | BitSw\#1 Set | Adjusts bit switch settings. <br> Note: Currently the bit switches are not being used. |
| 1003 | Clear Setting | Not used |
| 1004 | Print Summary | Prints the service summary sheet <br> (An error log is printed in addition to the configuration <br> page). |
| 1005 | Display Version | Displays the version of the controller firmware. |

### 3.2.2 BIT SWITCH PROGRAMMING

1. Enter the SP mode, select "Service Menu", then press [Enter] twice.
```
Service Menu
BitSW
```

2. Select \#1, \#2, \#3, or \#4 for the desired bit switch, then press [Enter].

- $[\mathbf{A}][\mathbf{V}]$ : Move to the next switch.

3. Adjust the bit switch using the following keys.

- [ $\mathbf{\Delta}][\mathbf{\nabla}]$ : Move to the next bit.

```
BitSW
<BitSW#1>
```

Sw\#1 00000000
Bit0

- [Escape]: Exit without saving changes.
- [Enter]: Exit and save changes.

The left digit on the display is bit 7 and the right digit is bit 0 .
4. Press [Enter] to save changes and exit.

## Bit Switch 1

```
Bit Switch 01 - Not used (do not change any of these settings)
```


## Bit Switch 2

| Bit Switch 02 |  |  |
| :---: | :--- | :--- |
| No | Description | Function |
| $\mathbf{0 - 2}$ | Not used | Do not change the setting. |
| 3 | PDL Sniffing | PDL Sniffing with Multiple PDLs |
|  |  | 0: Enabled (default) |
|  |  | 1: Disabled |
| $4-7$ | Not used | Do not change the setting. |

## Bit Switch 3

Bit Switch 03 - Not used (do not change any of these settings)

## Bit Switch 4

Bit Switch 04 - Not used (do not change any of these settings)

## Bit Switch 5

Bit Switch 05 - Not used (do not change any of these settings)

## Bit Switch 6

Bit Switch 06 - Not used (do not change any of these settings)

## Bit Switch 7

Bit Switch 07 - Not used (do not change any of these settings)

## Bit Switch 8

Bit Switch 08 - Not used (do not change any of these settings)

### 3.2.3 SP MODES RELATED TO PRINTER CONTROLLER

The following SP modes are located in the copier SP mode. Refer to section 5.1 of the main unit service manual.

| SP No. | Description | Function and Setting |
| :---: | :--- | :--- |
| 5104 | A3/DLT Double <br> Count | Specifies whether the counter is doubled for A3/DLT. <br> $0:$ No, 1: Yes <br> If $(1)$ is selected, the total counter and the current user <br> code counter count up twice when A3 or DLT paper is <br> used. |
| 5801 | Memory All Clear | Resets data for process control and all software counters, <br> and returns all modes and adjustments to their defaults <br> values. <br> section 5.1.8 of the main unit manual for details. |
| 5907 | Plug \& Play | Selects the brand name and the production name for <br> Windows Plug \& Play. This information is stored in <br> NVRAM. |
| 7832 | Detailed Display of <br> Self-Diagnostics | Displays the controller self-diagnostic result. <br> section 3.6 of this manual for details. |

### 3.3 SCANNER SERVICE MODE

### 3.3.1 SCANNER PROGRAM MODE TABLE

## Service Table Key

| Notation | What it means |
| :--- | :--- |
| [range $/$ default $/$ <br> step $]$ | Example: $[-9 \sim+9 /+3.0 / 0.1 \mathrm{~mm}$ step]. The setting can be adjusted <br> in the range $\pm 9$, value reset to +3.0 after an NVRAM reset, and the <br> value can be changed in 0.1 mm steps with each key press. |
| italics | Comments added for your reference. |
| $*$ | This value is stored in NVRAM. After a RAM reset, the default value <br> (factory setting) is restored. |
| DFU | Denotes "Design or Factory Use". Do not change this value. |


| SP1 | Mode Number |  | Function and [Setting] |
| :---: | :---: | :---: | :--- |
| $1004^{*}$ | 1 | Compression Type | Selects the compression type for binary picture <br> processing. <br> [1: MH, 2: MR, 3: MMR] |
| $1005^{*}$ | 1 | Erase Margin | Creates an erase margin for all edges of the <br> scanned image. <br> If the machine has scanned the edge of the <br> original, create a margin. <br> $[0-5 / 0 \mathrm{~mm} / 1 \mathrm{~mm}$ step] |

For the settings of the image quality, see the copier SP-mode table.

### 3.4 FIRMWARE UPDATE PROCEDURE

Firmware updating procedure is described in the copier service manual.

### 3.5 POWER-ON SELF TEST

The controller tests the following devices at power-on. If an error is detected, an error code is stored in the controller board.

- CPU, ASIC and clock
- Flash ROM
- Resident and optional SDRAM
- IEEE1394 interface (if installed)
- NVRAM
- PS fonts (if installed)


### 3.6 SELF DIAGNOSTIC TEST

In addition to the power-on self test, you can set the machine in a more detailed diagnostic mode to test other components and conditions.
It requires a loop-back connector (P/N: G0219350).

1. Turn off the machine and attach the loop-back connector to the parallel interface.
2. Turn on the machine while pressing the $\because$ key and the $\#$ key together.
3. The machine prints the diagnostic report automatically.

- Refer to the copier service manual for how to check the error codes (SP 7832).


### 3.7 USER PROGRAM MODE

See the copier service manual.

## 4. DETAILED SECTION DESCRIPTIONS

### 4.1 OVERVIEW



This machine uses the RA2K architecture. To enable the printer features, install the printer option SD Card on the controller.

## Main components:

- CPU: TOSHIBA TMPR4955BFG-300
- PICCOLO: RA2K architecture ASIC. It controls all the functions of the controller board.
- Flash ROM: 16 MB Flash ROM for the system program
- SDRAM: On board 64 MB, DIMM 128 MB (resident)
- NVRAM: Stores the controller settings
- LAN interface
- USB 2.0 interface
- SD Card: Printer/Scanner program


## Optional components:

- PostScript3 DIMM
- IEEE1394 interface
- Bluetooth interface
- Wireless LAN interface
- IEEE1284 interface


### 4.2 CONTROLLER FUNCTIONS

### 4.2.1 PAPER SOURCE SELECTION

## Tray Priority (Auto Tray Select)

The Tray Priority setting determines the start of the tray search when the user selects "Auto Tray Select" with the driver. The machine searches for a paper tray with the specified paper size and type.
When no tray contains paper that matches the paper size and type specified by the driver, the controller stops printing until the user loads the correct paper.

The Tray Priority setting can be specified using the Paper Size Setting in the user tools.
(User Tools/ System Settings/ Paper Size
 Settings)

The by-pass tray is not part of the tray search.

## Tray Lock

If Tray Lock is enabled for a tray, the controller skips the "locked" tray in the tray search process.
The Tray Lock setting can be specified by selecting "No" for the "Apply Auto Paper Select" setting in the Paper Size Setting screen in the user tools. (User Tools/ System Settings/ Paper Size Settings)
The by-pass feeder cannot be locked.

## Manual Tray Select

If the selected tray does not have the paper size and type specified by the driver, the controller stops printing until the user loads the correct paper.

### 4.2.2 AUTO CONTINUE

When this function is enabled, the machine stops printing and cancels the print job if there is no paper tray which matches the paper size and paper type specified by the driver.

If Auto Continue is enabled, the machine waits for a specified period ( $0,1,5,10,15$ minutes) for the correct size paper to be set in the tray, then cancels the print job if the interval expires.

- The interval can set with the Printer Settings in the user tools. (User Tools/ Printer Settings/ System/ Auto Continue)
If Auto Continue is disabled, the machine will not print the job, but will not cancel it, so the job stays in the print queue.

If no paper tray matches the paper size and paper type specified by the driver:


The default setting for Auto Continue is "Off."

### 4.2.3 PAPER OUTPUT TRAY

The default paper output tray for each application (copy/fax/printer) can be selected using the System Settings menu in the user tools.
(User Tools/ System Settings/ General Features)
If a print job does not specify an output tray or if the driver specifies the default tray, the default paper output tray is used.

## Output Tray Selected

- If an output tray is specified by the driver, it overrides the default tray setting in the user tools.
- If the machine cannot print to the selected output tray, it prints to the default paper output tray.
- If the mailbox unit is installed, paper larger than B4 cannot be printed to the standard (internal) tray.
- If paper overflow is detected at the selected output tray, the controller stops printing until the overflow detector goes off.


## Sequential Stacking

When the nine-tray mailbox is selected as the output tray and "Printer Default" is specified as the output tray in the driver, the machine automatically sends the output to the top tray (1st tray). When that tray fills up, the machine sends the output to the next tray.
This feature is called "Sequential Stacking."

- If a tray becomes full and paper is detected in the next tray, the machine displays an error and stops printing.
When paper in the next tray is removed, the machine automatically resumes printing to the next tray.
- If all trays become full (overflow detected in all trays), the machine displays an error and stops printing. This time, all paper in all trays must be removed.



### 4.2.4 DUPLEX PRINTING

Duplex printing is available with all output bin options but not all paper sizes. If a job specifies duplex printing but the paper size to be used cannot be used by the duplex unit, the job will be printed single-sided.

- When the by-pass feeder is selected as the paper source, duplex printing is automatically disabled.


### 4.3 SCANNER FUNCTIONS

### 4.3.1 IMAGE PROCESSING FOR SCANNER MODE

The image processing for scanner mode is done in the IPU chip on the BICU board. The IPU chip chooses the most suitable image processing methods (gamma tables, dither patterns, etc) depending on the settings made in the driver.
The image compression method can be selected with SP mode (MR/MH/MMR for binary picture processing).
Whether the user selects the image mode using the driver (TWAIN mode) or from the operation panel (Delivery mode), the IPU chip does the image processing using the appropriate image processing methods mentioned above.

## Image Data Path

## 1. Image Store/Image Delivery Mode



The user can select the following modes from the LCD.

1) Delivery only

After image processing and image compression, all image data for the job are stored in the printer controller RAM using TIFF file or PDF file format (binary picture processing). The type of TIFF or PDF format used depends on the user's scanner settings.
When delivery mode is selected, the controller creates a file which contains the destination and page information, then the controller sends the file to a server.

## 2. Twain Mode

After image processing and image compression, the data (TIFF or PDF) is sent

to the scanner Twain driver directory on the computer.

### 4.4 NETWORK INTERFACE

### 4.4.1 LED INDICATORS

The LED is on the optional controller box.


| Description | On | Off |
| :---: | :---: | :---: |
| LED1 (Green): Link status | Link success | Link failure |
| LED2 (Yellow): Data rate | 100 Mbps | 10 Mbps |

### 4.5 IEEE1394 INTERFACE

### 4.5.1 SPECIFICATIONS

## Hardware Specification

Interface: IEEE1394 (6 pins)
(no power supply, cable power repeated, IEEE1394a-2000 compliant)
Ports: 2 ports
Data rates: 400Mbps/200Mbps/100Mbps

## System Requirements

PC: Windows PC with IEEE1394 port
OS: Microsoft Windows 2000 upgraded with service pack 1
Cable length: 4.5 m (15ft)

### 4.5.2 IEEE1394

IEEE1394, also known as FireWire (a name patented by Apple), is an easy-to-use peer-to-peer networking technology allowing speeds of up to 400 Mbps .
The current standard contains the following features, which are supported in most devices:

- Hot swapping (cables can be connected and disconnected while the computer and other devices are switched on)
- Peer-to-peer networking (no hub required)
- No terminator or device ID is required, unlike SCSI
- Automatic configuration of devices upon start-up, or "plug and play."
- Real-time data transfer at 100, 200, and 400 Mbps
- Common connectors for different devices


The cable length is limited to 4.5 m (15ft). However, up to 16 cables and 63 devices can be connected to an IEEE1394 network.

IEEE1394 cables can be either 4-pin (data only) or 6-pin (data and power). IEEE1394 allows either 6-pin or 4-pin connectors. However, this machine only uses the 6-pin connectors. The machine has two 6-pin ports.

### 4.5.3 BLOCK DIAGRAM



- PHY: Physical layer control device
- Link: Link layer control device
- EEPROM: 256-byte ROM


### 4.5.4 PIN ASSIGNMENT



| Pin assignment |  |
| :---: | :---: |
| Pin 1 | Pin 4 |
| Pin 2 | Pin 3 |
| Pin 5 | Pin 6 |


| Pin <br> No. | Signal Description |
| :---: | :--- |
| 1 | Cable Power |
| 2 | GND |
| 3 | Receive strobe |
| 4 | Transmit data |
| 5 | Receive data |
| 6 | Transmit strobe |

### 4.5.5 REMARKS ABOUT THIS INTERFACE KIT

Note the following points about this unit.

- The machine does not print reports specifically for IEEE1394. Just print the Configuration Page at installation to check that the machine recognizes the card.
- There is no spooler or print queue. If a computer tries to print over the IEEE1394 while the printer is busy, the IEEE1394 interface card inside the printer will return a busy signal.
- After starting a job using IEEE1394, do not switch the printer off until the job has been completed. Even though the printer may appear to be dead, it may be in the middle of an IEEE1394 protocol exchange with the computer.
- When using IEEE1394, it is not possible to check the printer status from the computer with a utility such as Printer Manager for Client.


### 4.5.6 TROUBLESHOOTING NOTES

If there are problems printing using the IEEE1394 interface, check the following.

- Is the computer using Windows 2000 with service pack 1 ?
- Has the interface card been replaced recently? Each card has an individual address, similar to the MAC address in an Ethernet card. If the card was changed, the driver cannot find the old card. The new card is another device and a new printer appears in Windows Control panel, and this must be configured in the same way as the printer that was replaced (the old printer icon in Windows Control Panel should be deleted) has to be reconfigured.
- Is there a loop somewhere in the network? An IEEE1394 network must be a chain or a branched chain. There can be no loops.
- Try to find out where in the chain the problem is occurring. Test the machine one-to-one with the computer to determine if the printer is defective (when the printer's interface cable is plugged in, the computer should see 'Printer Ready'; when the cable is disconnected, the computer should see 'Offline').


### 4.6 IEEE 802.11B (WIRELESS LAN)

### 4.6.1 SPECIFICATIONS

The IEEE 802.11b wireless LAN interface card is available as an option for this machine.

A wireless LAN is a flexible data communication system used to extend or replace a wired LAN. Wireless LAN employs radio frequency technology to transmit and receive data over the air and minimize the need for wired connections.

- With wireless LANs, users can access information on a network without looking for a place to plug into the network.
- Network managers can set up or expand networks without installing or moving wires.
- Most wireless LANs can be integrated into existing wired networks. Once installed, the network treats wireless nodes like any other physically wired network component.
- Flexibility and mobility make wireless LANs both effective extensions of and attractive alternatives to wired networks.

| Standard applied: | IEEE802.11b |  |
| :--- | :--- | :--- |
| Data transmission rates: | Speed | Distance |
|  | 11 Mbps | $140 \mathrm{~m}(153 \mathrm{yd})$. |
|  | 5.5 Mbps | $200 \mathrm{~m}(219 \mathrm{yd})$. |
|  | 2 Mbps | $270 \mathrm{~m}(295 \mathrm{yd})$. |
|  | 1 Mbps | $400 \mathrm{~m}(437 \mathrm{yd})$. |
| Network protocols: | TCP/IP, Apple Talk, NetBEUI, IPX/SPX |  |
| Bandwidth: | 2.4 GHz |  |
|  | (divided over 14 channels, 2400 to 2497 MHz for each channel) |  |

The wireless LAN cannot be active at the same time as the Ethernet LAN. The following user tool setting determines which LAN is active: System Settings - Interface Settings - Network - LAN Type.

## LED Indicators

| LED | Description | ON | OFF |
| :--- | :--- | :--- | :--- |
| LED 1 (Green) | Link Status | Linked | No Link |
| LED 2 (Orange) | Power Distribution | Power On | Power Off |

### 4.6.2 TRANSMISSION MODES

Wireless communication has two modes: 1) ad hoc mode, and 2) infrastructure mode.

## Ad Hoc Mode

The ad hoc mode allows communication between each device (station) in a simple peer-to-peer network. In this mode, all devices must use the same channel to communicate. In this machine, the default transmission mode is ad hoc mode and the default channel is 11 . First, set up the machine in ad hoc mode and program the necessary settings, even if the machine will be used in the infrastructure mode.
To switch between ad hoc and infrastructure modes, use the following user tool: Host Interface Menu - IEEE802.11b - Comm Mode

## Infrastructure Mode

The infrastructure mode allows communication between each computer and the printer via an access point equipped with an antenna and wired into the network. This arrangement is used in more complex topologies. The wireless LAN client must use the same SSID (Service Set ID) as the access point in order to communicate.


### 4.6.3 SECURITY FEATURES

## SSID (Service Set ID)

The SSID is used by the access point to recognize the client and allow access to the network. Only clients that share the same SSID with the access point can access the network.

NOTE: 1) If the SSID is not set, clients connect to the nearest access point.
2) The SSID can be set using the web status monitor or telnet.

## Using the SSID in Ad hoc mode

When the SSID is used in ad hoc mode and nothing is set, the machine automatically uses "ASSID" as the SSID. In such a case, "ASSID" must also be set at the client.
SSID in ad hoc mode is sometimes called "Network Name."
Some devices automatically change from ad hoc mode to infrastructure mode when the same SSID is used in ad hoc mode and infrastructure mode. In such a case, to use the device in ad hoc mode, use a specified SSID in infrastructure mode and use "ASSID" in the ad hoc mode.

## WEP (Wired Equivalent Privacy):

WEP is a coding system designed to protect wireless data transmission. In order to unlock encoded data, the same WEP key is required on the receiving side. There are 64 bit and 128 bit WEP keys. However, this machine supports only 64 bit WEP. The WEP key can be set using the Web Status Monitor or Telnet.

## MAC Address:

When the infrastructure mode is used, access to the network can also be limited at the access points using the MAC address. This setting may not be available with some types of access points.

### 4.6.4 WIRELESS LAN TROUBLESHOOTING NOTES

## Communication Status

Wireless LAN communication status can be checked with the UP mode "W.LAN Signal" in the Maintenance menu. This can also be checked using the Web Status Monitor or Telnet.
The status is described on a simple number scale.

| Status Display | Communication Status |
| :---: | :---: |
| Good | $76 \sim 100$ |
| Fair | $41 \sim 75$ |
| Poor | $21 \sim 40$ |
| Unavailable | $0 \sim 20$ |

Communication status can be measured only when the infrastructure mode is being used.

## Channel Settings

If a communication error occurs because of electrical noise, interference with other electrical devices, etc., you may have to change the channel settings.

To avoid interference with neighboring channels, it is recommended to change by 3 channels. For example, if there are problems using channel 11 (default), try using channel 8.


## Troubleshooting Procedure

If there are problems using the wireless LAN, check the following.

1) Check the LED indicator on the wireless LAN card.
2) Check if "IEEE802.11b" is selected in the following user tool: Host Interface menu - Network Setup - LAN Type.
3) Check if the channel settings are correct.
4) Check if the SSID and WEP are correctly set.

If infrastructure mode is being used,

1) Check if the MAC address is properly set.
2) Check the communication status.

If the communication status is poor, bring the machine closer to the access point, or check for any obstructions between the machine and the access point.
If the problem cannot be solved, try changing the channel setting.

### 4.7 BLUETOOTH

### 4.7.1 SPECIFICATIONS

Bluetooth wireless provides radio links between mobile computers, mobile phones and other portable handheld devices.

Bluetooth contains the following features:

- Cheaper compared to the IEEE802.11b wireless LAN.
- Many protocols for infrared transmission (IrDA) can be used with Bluetooth.
- A Bluetooth device can connect to other Bluetooth devices without any settings.

Standard applied: Bluetooth 1.1 (Bluetooth Special Interest Group)
Data transfer rates: 1 Mbps
Bandwidth: $\quad 2.4 \mathrm{GHz}$ Frequency Hopping Spread Spectrum (FHSS)

## Piconet:

Bluetooth devices communicate with each other device in the ad hoc mode. This network is called a "Piconet". A Piconet may contain a maximum of 8 Bluetooth devices.
There is one master device and seven slave devices in a Piconet. The master device controls the hopping frequency and timing, as well as storing the ID codes of the slave devices. The master and slave devices can be swapped. Once the master device leaves the Piconet, a slave device becomes the new master.
Machines with the Bluetooth option become potential slave devices to connect to the PC.

## FHSS (Frequency Hopping Spread Spectrum):

The Bluetooth device divides 2402 to 2480 MHz into 79 channels of 1 MHz width, and changes the channel 1600 times per second. If other devices in the LAN are using the same radio band, Bluetooth can avoid interference from the other devices.

### 4.7.2 BLUETOOTH PROFILES

A Bluetooth device will not operate if it is located to close another Bluetooth device. However, the Bluetooth device should support the protocols to communicate with each other. There are many types of Bluetooth and service protocols. These are listed below.

Here are 14 profiles for Bluetooth as follows.

- Generic Access Profile
- Service Discovery Profile
- Cordless Telephony Profile
- Intercom Profile
- Serial Port Profile
- Headset Profile
- Dial-up Networking Profile
- Fax Profile
- LAN Access Profile
- Generic Object Exchange Profile
- Object Push Profile
- File Transfer Profile
- Synchronization Profile
- Hardcopy Cable Replacement Profile

Serial Port Profile (SPP) and Hardcopy Cable Replacement Profile (HCRP) are used for the printer products.
SPP is used is place of the serial port, while HCRP is used in place of the parallel port.

### 4.7.3 BLUETOOTH SECURITY FEATURES

Public and Private Mode. The PC can browse Bluetooth devices. The machine's default is public mode. The PC cannot browse the machine if it has been changed to private mode.
PIN Code (Personal Identification Number). When the PIN code is used, the PC connects to the device that sent the PIN code. The PIN code is a 4 digit number. This machine uses the last four digits of the machine's serial number. It cannot be changed.

### 4.8 USB

### 4.8.1 SPECIFICATIONS

USB connectivity is provided as an option for this machine.
Interface: USB 1.1, USB 2.0
Data rates: 480 Mbps (high speed), 12 Mbps (full speed), 1.5 Mbps (low speed)
High speed mode is only supported by USB 2.0.

### 4.8.2 USB 1.1/2.0

USB (Universal Serial Bus) offers simple connectivity for computers, printers, keyboards, and other peripherals. In a USB environment, terminators, device IDs (like SCSI), and DIP switch settings are not necessary.
USB 1.1 provides the following features:

- Plug \& Play. As soon as a new device is connected via USB, the operating system recognizes it, and the appropriate driver is installed for it automatically if the driver is available. If the driver is not available, a message prompts the user for the driver disk for immediate installation.
- Hot swapping (cables can be connected and disconnected while the computer and other devices are switched on)
- No terminator or device ID required
- Data rates of 12 Mbps (full speed), and 1.5 Mbps (low speed)
- Common connectors for different devices
- Bi-directional data communication between device and host computer via a 4byte header and DEVICE ID.

USB 2.0 is an evolution of the USB 1.1 specification. It uses the same cables, connectors, and software interfaces so the user will see no change. It provides an easy-to-use connection to a wide range of products with a maximum data rate of 480 Mbps (high speed).
Up to 127 devices can be connected and 6 cascade connections are allowed. Power is supplied from the computer and the maximum cable length is 5 m .

### 4.8.3 USB CONNECTORS

USB is a serial protocol and a physical link, which transmits all data on a single pair of wires. Another pair provides power to downstream peripherals. The USB standard specifies two types of connectors, type "A" connectors for upstream connection to the host system, and type " $B$ " connectors for downstream connection to the USB device.

Type "A" connector


Type " $A$ " connector


### 4.8.4 PIN ASSIGNMENT

The controller has a type "B" receptacle.

| Pin No. | Signal Description | Wiring Assignment |
| :---: | :---: | :---: |
| 1 | Power | Red |
| 2 | Data - | White |
| 3 | Data + | Green |
| 4 | Power GND | White |



### 4.8.5 REMARKS ABOUT USB

- The machine does not print reports specifically for USB.
- Only one host computer is allowed for the USB connection.
- After starting a job using USB, do not switch the printer off until the job has been completed. When a user cancels a print job, if data transmitted to the printer has not been printed at the time of cancellation, the job will continue to print up to the page where the print job was cancelled.
- When the controller board is replaced, the host computer will recognize the machine as a different device.


## Related SP Mode

"USB Settings" in the printer engine service mode. Data rates can be adjusted to full speed fixed ( 12 Mbps ). This switch may be used for troubleshooting if there is a data transfer error using the high speed mode ( 480 Mbps ).
Data rates can also be adjusted using the UP mode "USB Setting" in the Host Interface in the System menu. This mode can be accessed only when the "Enter", "Escape", then "Menu" keys are pressed to enter the UP mode.

## SPECIFICATIONS

## 1. GENERAL SPECIFICATIONS

### 1.1 PRINTER

| Printing Speed: | Maximum 18 ppm (A4/LT LEF): B122/B123 model Maximum 15 ppm (A4/LT LEF): B121 model |
| :---: | :---: |
| Printer Languages: | PCL6/PCL5e <br> PostScript 3 (option) <br> RPCS (Refined Printing Command Stream) - an original Ricoh PDL) |
| Resolution: | 600 dpi (PCL 6/PCL5e/PS3/RPCS) 300 dpi (PCL6 PCL5e/PS3) 200 dpi (RPCS) |
| Resident Fonts: | ```PCL: 35 Intellifonts 10 True Type fonts PS3: 136 fonts (24 Type 2 fonts, 112 Type 14 fonts)``` |
| Host Interfaces: | Ethernet (100 Base-TX/10 Base-T) (standard) Bi-directional IEEE1284 parallel x 1 (option) IEEE1394 (option) |
| Network Protocols: | TCP/IP |
| Memory: | 128 MB |
| Supported Paper Size | See the copier service manual. |
| 1.2 SCANNER |  |
| Standard Scanner Resolution: | Main scan/Sub scan 600 dpi |
| Available scanning Resolution Range: | ```Twain Mode: \(100 \sim 600\) dpi E-mail/Network Delivery Scanner: 100 dpi, 200 dpi, \(300 \mathrm{dpi}, 400 \mathrm{dpi}, 600 \mathrm{dpi}\)``` |
| Scanning | 25 spm for TWAIN |
| Throughput: | 43 spm for Delivery mode (A4L, ADF mode) |
| Interface: | Ethernet (100 Base-TX/10 Base-T for TCP/IP), IEEE 1394, IEEE 802.11b (Wireless LAN) |
| Compression Method: | Binary: TIFF (MH, MR, MMR) |

## SPECIFICATIONS

## 2. SOFTWARE ACCESSORIES

### 2.1 PRINTER

The printer drivers and utility software are provided on one CD-ROM. An auto-run installer allows you to select which components to install.

## PRINTER DRIVERS

| Printer Language | Windows <br> 95/98/ME | Windows NT4.0 | Windows 2000 | Macintosh |
| :---: | :---: | :---: | :---: | :---: |
| PCL 6 | Yes | Yes | Yes | No |
| PCL 5e | Yes | Yes | Yes | No |
| PS3 | Yes | Yes | Yes | Yes |
| RPCS | Yes | Yes | Yes | No |

NOTE: 1) The printer drivers for Windows NT 4.0 are only for the Intel x86 platform. There is no Windows NT 4.0 printer driver for the PowerPC, Alpha, or MIPS platforms.
2) The PS3 drivers are all genuine AdobePS drivers, except for Windows 2000, which uses Microsoft PS. A PPD file for each operating system is provided with the driver.

## UTILITY SOFTWARE

| Software | Description |
| :--- | :--- |
| Agfa Font Manager <br> (Win 95/98/ME, NT4, 2000) | A font management utility with screen fonts for the printer. |
| SmartNetMonitor for Admin <br> (Win 95/98/ME, NT4, 2000) | A printer management utility for network administrators. NIB <br> setup utilities are also available. |
| SmartNetMonitor for Client <br> (Win 95/98/ME, NT4, 2000) | A printer management utility for client users. Peer-to-peer <br> printing utility and parallel/recovery printing functions are <br> included. |
| 1394 Utility (Win 2000) | A utility for removal IEEE 1394 printers. |
| DeskTopBinder V2 Lite <br> (Win 95/98/ME, NT4, 2000) | A utility for document management |
| LAN-Fax M1 <br> (Win 95/98/ME, NT4, 2000) | PC LAN FAX driver |
| Address Book <br> (Win 95/98/ME, NT4, 2000) | A utility for PC LAN FAX. |
| Printer Utility for Mac | This software provides several convenient functions for <br> printing from Macintosh clients. |

### 2.2 SCANNER

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

- Network Twain Driver for Win95/98/ME/NT3.51/NT4.0/2000


## SCANNER UTILITIES

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


## 3. MACHINE CONFIGURATION

### 3.1 SYSTEM COMPONENTS



| Item | Machine Code |  | Remarks |
| :--- | :---: | :---: | :--- |
| Controller Box | B658 | $[\mathrm{B}]$ | Required to install the printer/scanner unit |
| Printer/Scanner unit | B622 | $[\mathrm{C}]$ |  |
| RAM DIMM | - | $[\mathrm{E}]$ | Distributed with the printer/scanner unit |
| PostScript 3 | B681 | $[\mathrm{A}]$ |  |
| IEEE 1394 | B581 | $[D]$ |  |
| IEEE 1284 | B679 | [D] | One from the four |
| Wireless LAN | B682 | [D] |  |
| Bluetooth | G377 | [D] |  |

## TECHNICAL SERVICE BULLETINS

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B121/B122/B123-001
04/15/2004

## APPLICABLE MODEL:

GESTETNER - DSm615/DSm618/DSm618d
LANIER - LD115/LD118/LD118d
RICOH - AFICIO 2015/2018/2018D
SAVIN - 4015/4018/4018d

## SUBJECT: SERVICE MANUAL - INSERT

The Service Manual pages listed below must be replaced with the pages supplied.

PAGES:

Updated Information (Settings)
Updated Information (Service Program Mode - 5307)
New Information (Setting Daylight Savings Time)

### 1.12.4 SETTINGS

## Step 10-MFP Settings and Time Settings

1. Turn the main switch on.
2. Start the SP mode.
3. Select SP5-801-001 and execute the initialization.
4. Turn the main switch off and on.
5. Start the SP mode.
$\Rightarrow 6$. Select SP5-302-002 and specify the time zone. For example, EST $=-300$, CST $=-360$, MST $=-420$ or PST $=-480$.
6. Select SP5-307-001, 003, and 004 and specify the daylight-saving-time settings. (5.1.18)
$\Rightarrow$ NOTE: 5.1.7. When installing to MFP Expansion, the BICU (Engine) NVRAM settings are moved from SP5-801 to SP5-998-001. After adding the MFP Expansion performing SP5-801-001 will not RAM CLEAR the BICU settings.

## Step 11-Fax Settings

1. Select fax SP1-101-016 and specify the system switch.
2. Select fax SP3-101-001 and specify the service station.

| 5307* | Summer Time |
| :---: | :---: |
| 53071 | Summer Time On/Off |
|  | Enables or disables the daylight saving time settings in SP5-307-3 and 4. OFF $=0, O N=1$ |
| 53073 | Summer Time Start (-5.1.18) |
|  | Specifies the start of the daylight saving time. |
| 53074 | Summer Time End (-5.1.18) |
|  | Specifies the end of the daylight saving time. |


| $5404^{*}$ | User Code Count Clear |
| :--- | :--- |
| 54041 | Initializes the user code counter. |


| 5501* | PM Alarm Interval |
| :---: | :---: |
| 55011 | PM Alarm Interval (Printout) [0~9999 / 0 / OK copies/step] |
|  | Specifies when the PM alarm occurs. |
| 55012 | PM Alarm Original Count Alarm [0= Off / 1 = On] |
|  | Enables or disables the original count alarm. |


| $\mathbf{5 5 0 4}^{*}$ | Jam Alarm |
| :---: | :--- |
| 5504 1 | Sets the alarm to sound for the specified jam level (document misfeeds are not |
|  | included). |
|  | [0~3/3/1 step] |
|  | 0: Zero (Off) |
|  | 1: Low (2.5K jams) |
|  | 2: Medium (3K jams) |
| 3: High (6K jams) |  |


| $\mathbf{5 5 0 5}^{*}$ | Error Alarm | $[0 \sim 255 / \mathbf{2 0} / 1$ hundred sheets/step] |
| :---: | :--- | :--- |
| 55051 | Specifies the number of paper (in hundred) used as the error alarm level. The error <br> alarm starts if 5 SC codes (or more) are generated before the copier prints the <br> specified number of paper. When the copier has printed the specified number of <br> paper, the SC code counter (of this SP) is cleared to zero. |  |


| 5507* | Supply Alarm |  |
| :---: | :---: | :---: |
| 55071 | Paper Supply Alarm | 0: Off, 1: On, DFU |
| 55073 | Toner Supply Alarm | 0: Off, 1: On, DFU |
| 5507128 | Interval :Others | [00250 ~ 10000 / 1000 / 1 Step] DFU |
| 5507132 | Interval :A3 |  |
| 5507133 | Interval :A4 |  |
| 5507134 | Interval :A5 |  |
| 5507141 | Interval :B4 |  |
| 5507142 | Interval : B 5 |  |
| 5507160 | Interval :DLT |  |
| 5507164 | Interval :LG |  |
| 5507166 | Interval :LT |  |
| 5507172 | Interval :HLT |  |

### 5.1.17 ADF APS SENSOR OUTPUT DISPLAY (SP6-901)

## Sensor Positions

|  | Large <......................> Small |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| W1 | 1 | 0 | 0 | 1 |
| W2 | 0 | 0 | 1 | 1 |



Reading Data

| W1 | W2 | L1 | L2 | Paper Size |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | 0 | NA |
| 0 | 0 | 1 | 1 | - | EU/AA |
| 0 | 0 | 0 | 0 | $81 / 1^{\prime \prime} \times 51 / 2^{\prime \prime} \mathrm{LEF}$ | B5 LEF |
| 0 | 1 | 1 | 0 | $81 / 2^{\prime \prime} \times 11^{\prime \prime} \mathrm{SEF}$ | A5 LEF |
| 0 | 1 | 1 | 1 | $81 / 2^{\prime \prime} \times 14^{\prime \prime}$ | $81 / 2 " \times 13^{\prime \prime}$ |
| 1 | 1 | 0 | 0 | $11^{\prime \prime} \times 81 / 2^{\prime \prime} \mathrm{LEF}$ | A4 LEF |
| 1 | 0 | 1 | 1 | $11^{\prime \prime} \times 17^{\prime \prime}$ | A3 |
| 1 | 0 | 0 | 0 | $51 / 2^{\prime \prime} \times 81 / 2^{\prime \prime}$ SEF | A5 SEF |
| 1 | 1 | 1 | 0 | - | B5 SEF |
| 1 |  |  |  |  |  |

1: Detected

## $\Rightarrow$ 5.1.18 SETTING DAYLIGHT SAVINGS TIME (SP5307)

| Digit Position |  |  |
| :---: | :---: | :---: |
| 7 | Month: 01 through 12 | Jan. $=01$, Feb. $=02$, etc. |
| 6 |  |  |
| 5 | Week of the Month: 1 through 5 | 1st week $=1$, 2nd week $=2$, 3rd week $=3$, etc. |
| 4 | Day of the Week: 0 through 7 | Sun. $=0$, Mon. $=1$, Tue. $=2$, etc. |
| 3 2 | Hours: | $00=$ Midnight, $01=1$ AM, $02=2$ AM through $23=11$ PM |
| 1 | Start and Stop 1hour 0 minutes | For SP5307-3, this must always be 10. For SP5307-4, this value must always be 00. |

Example- April 4, 2004 DST is turned ON and October 31, 2004 DST is turned OFF:
04/04 2:00 AM DST is turned ON- "4100210" (7digits) There is no leading 0. See 2-1 below.
1- SP5-307-001: Change 0 (=OFF) to $1(=O N)$
2- SP5-307-003(Summer time start):
2-1. Enter 04 as month of April. (4 will be displayed. The leading 0 will not be displayed.)
2-2. Enter 1 (=1 $1^{\text {st }}$ week) and 0 (=Sunday)
2-3. Enter 02 (=2:00 AM)
2-4. Enter 10 (=1 hour 0 minute)
3- SP5-307-004(Summer time end): 10/31 2:00 AM DST is turned OFF: "10500200" (8 digits)
3-1. Enter 10 as month of October. ( 10 will be entered.)
3-2. Enter 5 (=5th) and 0 (=Sunday)
3-3. Enter 02 (=2:00 AM)
3-4. Enter 00.
Remember to turn the main switch OFF and ON when the message is displayed.

## BULLETIN NUMBER：B121／B122／B123－002

04／22／2004

## APPLICABLE MODEL：

GESTETNER－DSm 615／DSm 618／DSm 618d
LANIER－LD115／LD118／LD118d
RICOH－AFICIO 2015／2018／2018d
SAVIN－4015／4018／4018d

## SUBJECT：BACKUP OF DIRECTORY INFORMATION

## GENERAL：

The following is an explanation of the SD card directory information backup feature．Please use this as a guide when backing up the customer＇s directory information．

## BACKUP OF DIRECTORY INFORMATION

CAUTION：
1．Do not show the user how to copy the directory information．The normal machine operations are not guaranteed if the user has access to the SP mode．
2．Use the SD card provided by a proper supplier．The normal machine operations are not guaranteed if you use the SD card provided by a third party．Part Number B6455010

3．Turn off the main power switch before inserting an SD card into an SD card slot or removing an SD card from an SD card slot．The data in the SD card and／or in the machine memory may be corrupted if the main power switch is on．
4．Use extreme caution when handling the directory information．The directory information may include confidential data．

## 1．Overview

SP Mode
The machine can store directory information．You can copy the directory information from machine memory to an SD card；and you can copy the information from the SD card to machine memory．For this maintenance work，you use SP5－846－050 through 052．The table illustrates an overview of the functions of these SPs．

| SP | Function | Remarks |
| :--- | :--- | :--- |
| SP5－846－050（Clear <br> Directory Information） | Initializes the directory <br> information in the machine <br> memory． | Use this SP before copying the <br> information from the SD card to <br> the machine memory． |
| SP5－846－051（Upload <br> Directory Information） | Copies the directory information <br> from machine memory to the SD <br> card． | Refer to 1（Overview） |
| SP5－846－052（Download <br> Directory Information） | Copies the directory information <br> from the SD card to machine <br> memory． | Refer to 1（Overview） |
| SP5－846－053（Clear <br> Upload Information） | Initializes the directory <br> information in the SD card． | Use this SP to delete the <br> information from your SD card． |

NOTE: The SP name displayed on the operation panel may be abbreviated.

## Folder and File Format

SP5-846-051 makes the folder "usrdb" in the SD card. The SP saves the directory information in this folder. This folder contains another folder that saves the directory information. The directory information is converted into the CSV format. This machine needs 150 KB free space in an SD card.

NOTE: For initializing SD cards, 2. Requirements.

## 2. Requirements

1. SD card: You need an SD card provided by a proper supplier.
2. SD card drive: Your need a computer with an SD card drive.
3. Windows: You need a computer running Windows to see the free space of your SD card or to copy the data from your SD card to the hard disk of a computer.
4. Application program supporting the CSV format: You need an application program that supports the CSV format to view the directory information on a computer.

## 3. Limitation

## Overview

SP5-846-051 and 052 may not be able to copy some or all of the directory information. This limitation is caused by the following settings:

- SP5-846-003 (Maximum Entries): This is one of the SPs related to the management of the directory information. This SP increases the maximum entry number of the information.
- Group: This is supplemental information on recipients. The user can register this information to simplify their manual operation (Operating Instructions).

SP5-846-003 (Maximum Entries)
The table below illustrates how SP5-846-003 affects SP5-846-051 and 052.

| SP5-846-003 <br> (Maximum Entries) | Smaller than default | Default (150) | Greater than default |
| :---: | :---: | :---: | :---: |
| SP5-846-051 (Upload <br> Directory Information) | Can copy all | Can copy all | Can copy none* |
| SP5-846-052 <br> (Download Directory <br> Information) | Can copy all | Can copy all | Can copy all |

* An error message is displayed when you try to copy the directory information from machine memory to an SD card.


## Group

The table below illustrates how Group affects SP5-846-051 and 052. Note that SP5-846-051 cannot copy any data when SP5-846-003 has increased the maximum number of entries (see the table above).

|  | Group not registered | Group registered |
| :---: | :---: | :---: |
| SP5-846-051 (Upload <br> Directory Information) | Can copy 150 entries | Can copy 149 entries |
| SP5-846-052 (Download <br> Directory Information) | Can copy 150 entries | Can copy 149 entries |

## 4. Uploading Directory Information

1. Check that the SD card has enough free space. The SD card needs to have 150 KB free space to store the directory information of this machine.
2. Inform the user that:

You are going to copy the directory information to the SD card.
You will delete this data from the SD card after the maintenance work.
3. Start the SP mode.
4. Select SP5-846-003 (Maximum Entries).
5. Check that the maximum entries are not increased ( Refer to 3 ) If the maximum number of entries is increased, return it to the default.
6. Exit the SP mode.
7. Press the power key on the operation panel.
8. Wait until the power LED turns off.
9. Turn off the main power switch.
10. Insert the SD card in the service slot. (lower slot)
11. Turn on the main power switch.
12. Start the SP mode.
13. Select SP5-846-051 (Upload Directory Information).
14. Follow the instructions on the operation panel.
15. Exit the SP mode.
16. Press the power key on the operation panel.
17. Wait until the power LED turns off.
18. Turn off the main power switch.
19. Remove the SD card.

## 5. Copying Directory Information to a Computer

CAUTION: Use extreme caution when handling the directory information. The directory information may include confidential data.
You can copy the directory information from the SD card to a computer hard disk. You need a computer that runs Windows to copy the information. You need an application program that supports the CSV format to view the information on a computer.

1. Load the SD card into the SD card drive.
2. Start Explorer on Windows.
3. Navigate to the SD card.
4. Find the directory information file. The directory information file is in the folder "usrdb" ( Refer to 1).
5. Drag the directory information file to a folder. Or use the Copy command and the Paste command in the Edit menu of Explorer.
6. Open the copied file by an application program that supports the CSV format.
7. Check that the data is not corrupted.
8. Remove the SD card from the SD card drive.
9. Delete the directory information from the SD card ( Refer to 6).

## . 6 Downloading Directory Information

When the user is going to keep the SD card, you do not need to delete the directory information from the SD card (SP5-846-053). When you are going to copy the directory information to the hard disk of the user's computer, see 5.

1. Start the SP mode.
2. Select SP5-846-050 (Clear Directory Information).

NOTE: SP5-846-050 initializes the directory information in machine memory. Normal operations are not guaranteed if you copy the directory information from the SD card to machine memory without initializing the directory information in machine memory.
3. Follow the instructions on the operation panel.
4. Exitt the SP mode.
5. View the address book to check that the directory information is normally initialized.

NOTE: You can view the address book by the following menu: > System Settings > Key Operator Tools > Address Book: Print List. For details, see Operating Instructions.
6. Press the power key on the operation panel.
7. Wait until the power LED turns off.
8. Turn off the main power switch.
9. Insert the SD card in to service slot. (lower slot)
10. Turn on the main power switch.
11. Start the SP mode.
12. Select SP5-846-052 (Download Directory Information).
13. Follow the instructions on the operation panel.
14. Exit the SP mode.
15. View the address book to check that the directory information is normally copied.
16. Start the SP mode.
17. Select SP5-846-053 (Clear Upload Information). (This will clear the file from the SD Card.)
18. Follow the instructions on the operation panel.
19. Exit the SP mode.
20. Press the power key on the operation panel.
21. Turn off the main power switch.
22. Remove the SD card.

## 7. Possible Errors

## Some Examples

An error message is displayed under any of the following conditions:

- SP5-846-003 has increased the maximum entry number of the directory information ( Refer to 3).
- The SD card has insufficient free space (Refer to 4).
- The directory information contains extraordinarily long data such as extraordinarily long mail addresses and fax numbers.
- The SD card is write-protected.
- Correct data is not found in the SD card.


## Incomplete Download

An error message is displayed when SP5-846-052 (Download Directory Information) fails to copy some of the entries from the SD card to machine memory. In a case like this, other entries may be successfully copied to machine memory. The data of such entries can make machine operations unstable. Use SP5-846050 (Clear Directory Information) to initialize machine memory, and copy the directory information from the SD card to machine memory once again.

SC Code
The table lists the SC codes related to this maintenance work.

|  | Possible Cause | Remarks |
| :---: | :---: | :---: |
| SC866 | The format in the SD card is corrupted. | Use SD Formatter ( Refer to 2) to initialize the SD card. |
| SC867 | The SD card is removed from the card slot, or the card is not correctly inserted. | Before inserting the SD card, (1) press the power key, (2) wait until the power LED turns off, and (3) turn off the main power switch. |
| SC868 | The format in the SD card is corrupted. | Use SD Formatter ( Refer to 2) to initialize the SD card. |
| SC870 | SP5-846-052 has copied too many entries to machine memory. | This SC code is displayed when the user tries to register a new destination. |
| SC991 | SP5-846-052 has copied too many entries to machine memory. | This SC code is displayed when the user tries to register a new destination. |

## TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B121/B122/B123-003
04/22/2004

## APPLICABLE MODEL:

GESTETNER - DSm 615/DSm 618/DSm 618d
LANIER - LD115/LD118/LD118d
RICOH - AFICIO 2015/2018/2018d
SAVIN - 4015/4018/4018d

## SUBJECT: SERVICE MANUAL - INSERT

The Service Manual pages listed below must be replaced with the pages supplied.

An arrow has highlighted the revised areas $\Rightarrow$.

PAGES:


SERVICE
MANUAL

- 1-16
- 1-23

Updated Information (Additional information about the casters)
Updated Information ( One Bin Tray not used on B121)
2. Attach the adjuster [A] to the base plate as shown.

NOTE: If a cabinet is installed, this step is unnecessary. However, you must: Remove the casters and bracket around the casters before attaching to a stand.

3. Remove the cover [B] (1 screw).


### 1.8 ONE-BIN TRAY INSTALLATION

### 1.8.1 ACCESSORY CHECK

Check the quantity and condition of the accessories.

| No. | Description | Q'ty |
| :---: | :--- | :---: |
| 1 | Installation procedure | 1 |
| 2 | One-bin sorter | 1 |
| 3 | Exit tray | 1 |
| 4 | Tapping screw M3 $\times 6$ | 1 |

### 1.8.2 INSTALLATION PROCEDURE

| \. CAUTION |
| :---: |
| Unplug the machine power cord before starting the following procedure. |

The One-Bin Tray cannot be installed on the B121.

For B123 only (For B122, go to step
3.)

1. Remove the inverter tray $[A]$.
2. Remove the rail [B] (2 knob screws).
3. Remove the cover [C] (1 screw).


## TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B121/B122/B123 - 003 REISSUE $\star$
04/27/2004

## APPLICABLE MODEL:

GESTETNER - DSm 615/DSm 618/DSm 618d
LANIER - LD115/LD118/LD118d
RICOH - AFICIO 2015/2018/2018d
SAVIN - 4015/4018/4018d

## SUBJECT: SERVICE MANUAL - INSERT

The Service Manual pages listed below must be replaced with the pages supplied.

An arrow has highlighted the revised areas $\Rightarrow$.

PAGES:

Updated Information (Additional information about the casters)
Updated Information (One Bin Tray not used on B121)
2. Attach the adjuster [A] to the base plate as shown.
NOTE: If a cabinet is installed, this step is unnecessary. . However, you must: Remove the casters and the bracket around the casters before attaching to a stand.

3. Remove the cover [B] (1 screw).


CAUTION: Before placing the copier on the paper tray unit, make sure that the harness [C] is safe. The paper tray unit does not function properly if the harness is damaged.
4. Set the copier on the paper tray unit.


### 1.8 ONE-BIN TRAY INSTALLATION

### 1.8.1 ACCESSORY CHECK

Check the quantity and condition of the accessories.

| No. | Description | Q'ty |
| :---: | :--- | :---: |
| 1 | Installation procedure | 1 |
| 2 | One-bin sorter | 1 |
| 3 | Exit tray | 1 |
| 4 | Tapping screw M3 $\times 6$ | 1 |

### 1.8.2 INSTALLATION PROCEDURE

| $\triangle$ CAUTION |
| :--- | :--- |
| Unplug the machine power cord before starting the following procedure. |

$\Rightarrow$ The One -Bin Tray cannot be installed on the B121

For B123 only (For B122, go to step 3.)

1. Remove the inverter tray $[A]$.
2. Remove the rail [B] (2 knob screws).
3. Remove the cover [C] (1 screw).
[B]


## BULLETIN NUMBER: B121/B122/B123-004

06/03/2004

## APPLICABLE MODEL:

GESTETNER - DSm615/DSm618/DSm618d
LANIER - DL115/DL118/DL118d
RICOH - AFICIO 2015/2018/2018d
SAVIN - 4015/4018/4018d

## SUBJECT: PRESSURE ROLLER

## GENERAL:

The Pressure Roller was incorrectly listed in the B121/B122/B123 Parts Catalog. Please correct you parts catalog with the following information. The following part correction is being issued for all B121/B122/B123 Parts Catalogs.


|  |  |  |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| INCORRECT PART NO. | CORRECT PART NO. | DESCRIPTION | QTY | INT | PAGE | ITEM |
| AE020150 | AE020137 | Pressure Roller | 1 | - | 41 | 22 |

## TECHNICAL SERVICE BULLETIN

## BULLETIN NUMBER：B121／B122／B123－005

06／14／2004

## APPLICABLE MODEL：

GESTETNER－DSm615／DSm618／DSm618d
LANIER－DL115／DL118／DL118d
RICOH－AFICIO 2015／2018／2018d
SAVIN－4015／4018／4018d

## SUBJECT：PARTS CATALOG CORRECTIONS

## GENERAL：

The following parts corrections are being issued for all B121／B122／B123 Parts Catalogs．
－UPDATE 1：IC Card Cap－The IC Card Cap was omitted from the parts listing． Please correct your parts catalog with the following information．


|  |  |  |  |  |  |  |  |  | REFERENCE |  |
| :---: | :--- | :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| NEW PART NUMBER |  | DESCRIPTION | QTY | PAGE | ITEM |  |  |  |  |  |
| B1211313 | IC Card Cap |  | 1 | 9 | 7 |  |  |  |  |  |

- UPDATE 2: Fusing Exit Door - The part number for the Fusing Exit Door was incorrect in the parts listing. Please correct your parts catalog with the following information.


|  |  |  |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| INCORRECT PART NO. | CORRECT <br> PART NO. | DESCRIPTION | QTY | INT | PAGE | ITEM |
| B0394106 | B0394107 | Fusing Exit Door | 1 |  | 41 | 23 |

- UPDATE 3:

Tapping Screw - M3x12 - The part number and the description for the Tapping Screw was incorrect in the parts listing. Please correct your parts catalog with the following information.

|  |  |  |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| INCORRECT PART NO. | CORRECT <br> PART NO. | DESCRIPTION | QTY | INT | PAGE | ITEM |
| $04503010 \mathrm{~B} \square 04503012 \mathrm{~B}$ |  | Tapping Screw - M $3 \times 10$ | - | - | 43 | 104 |
|  |  | Tapping Screw - M $3 \times 12$ |  |  |  |  |

- UPDATE 4: $\quad \begin{aligned} & \text { PCB BICU - The illustration for the PCB BICU incorrectly used Item } 12 \\ & \text { and should be Item 9. Please correct the illustration on page } 52 \text { as }\end{aligned}$ and should be Item 9. Please correct the illustration on page 52 as shown below.

- UPDATE 5: PCB BICU Ass'y - The PCB BICU Ass'y (B121) has been deleted and the BPC BICU Ass'y (B122) is now also for the B121. Please correct your parts catalog with the following information.

|  |  |  |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OLD PART NO. | NEW PART NO. | DESCRIPTION | QTY | INT | PAGE | ITEM |
| B1215093 | - | PCB BICU ASIA Ass'y (B121) | $1 \rightarrow 0$ | - | 63 | * |


|  |  |  |  |  |  |  |  |  | REFERENCE |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| PART NO. | OLD DESCRIPTION | NEW DESCRIPTION | QTY | PAGE | ITEM |  |  |  |  |
| B1215103 | PCB BICU ASIA Ass'y (B121) | PCB BICU ASIA Ass'y (B121/B122) | 1 | 63 | $*$ |  |  |  |  |

- UPDATE 6: PM Parts Index - Several part numbers listed in the PM Parts Index have been corrected. Please correct your parts catalog with the following information. Also, please delete any references to (B039/B040/B043).

|  |  |  |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| INCORRECT PART NO. | CORRECT PART NO. | DESCRIPTION | QTY | INT | PAGE | ITEM |
| B0392289 | AD042059 | Cleaning Blade | 1 | - | 37 | 15 |
| G0602326 | AD042058 | Cleaning Brush | 1 | - | 37 | 22 |
| AE011065 | AE011080 | Hot Roller | 1 | - | 41 | 20 |
| AE020100 | AE020137 | Pressure Roller | 1 | - | 41 | 22 |

## INTERCHANGEABILITY CHART:

| 0 | OLD and NEW parts can be used in both OLD and <br> NEW machines. | 2 | NEW parts CAN NOT be used in OLD machines. <br> OLD parts can be used in OLD and NEW machines. |
| :---: | :--- | :---: | :--- |
| 1 | NEW parts can be used in OLD and NEW machines. <br> OLD parts CAN NOT be used in NEW machines. | 3 | OLD parts CAN NOT be used in NEW machines. <br> NEW parts CAN NOT be used in OLD machines. |
| $3 / S$ | Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or <br> previously modified, use the new part numbers individually. |  |  |

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B121/B122/B123-006
06/16/2004
APPLICABLE MODEL:
GESTETNER - DSm615/DSm618/DSm618d
LANIER - DL115/DL118/DL118d
RICOH - AFICIO 2015/2018/2018d
SAVIN - 4015/4018/4018d

## SUBJECT: SERVICE MANUAL - INSERT

The Service Manual pages listed below must be replaced with the pages supplied.

PAGES:

Updated Information

- 1-43

Updated Information
4. With the card label facing the front of the machine, insert the card $[\mathrm{A}]$ into the PCl slot.
5. Attach the cover [B].

6. If reception is poor, you may need to move the machine:

- Make sure that the machine is not located near an appliance or any type of equipment that can generate a strong magnetic field.
- Position the machine as close as possible to the access point.
$\Rightarrow 4$. With the Bluetooth card label facing the front of the machine, insert the card $[\mathrm{A}]$ into the PCl slot.

5. Press the antenna $[B]$ to extend it.
6. Attach the antenna cap [C].


BULLETIN NUMBER: B121/B122/B123-007
06/17/2004
APPLICABLE MODEL:
GESTETNER - DSm615/DSm618/DSm618d
LANIER - DL115/DL118/DL118d
RICOH - AFICIO 2015/2018/2018d
SAVIN - 4015/4018/4018d

## SUBJECT: MACHINE DOES NOT WARM UP/SC998

## SYMPTOMS:

1) Machine does not warm up to Ready status after installing the 128 MB RAM DIMM on the GW controller board.
2) A SC998 occurs after installing the Printer option.

## CAUSES:

1) The RAM DIMM (Type B, PC 133128 Mb ) has not been set in the controller board socket properly.
2) The RAM DIMM (Type B, PC 133128 Mb ) is defective.

## SOLUTIONS:

1) Remove the RAM DIMM and insert it in the socket again. Try repeating this a few times.
2) If this is unsuccessful, replace the RAMM DIMM.


TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B121/B122/B123-008
07/02/2004

## APPLICABLE MODEL:

GESTETNER - DSm615/DSm618/DSm618d
LANIER - DL115/DL118/DL118d
RICOH - AFICIO 2015/2018/2018d
SAVIN - 4015/4018/4018d

## SUBJECT: SERVICE MANUAL - INSERT

The Service Manual page listed below must be replaced with the pages supplied.

PAGES:

- 5-44

Service Program Mode - MFP 5810 has been deleted.

| 580111 | NCS |
| :---: | :--- |
|  | Initializes the network-control-service settings: the system defaults and interface <br> settings (including IP addresses), Smart Net Monitor for Administrator, Web Status <br> Monitor settings, and the TELNET settings. |
| 580112 | R-Fax <br>  <br>  <br> Initializes the job log in ID, Smart Net Monitor for Administrator, job history, and <br> local storage file numbers. |
| 580114 | Clear DCS Settings |
| 580115 | Clear UCS Settings |


| 5802 | Machine Free Run |
| :---: | :--- |
| 58021 | Starts a free run of both the scanner and the printer. Press "ON" to start; press <br> "OFF" to stop. |


| 5803 | Input Check |
| :--- | :--- |
|  | -5.1 .8 |


|  | Output Check |
| :--- | :--- |
|  | -5.1 .9 |


| $5807^{*}$ | Area Selection |  |  |  |
| :--- | :--- | :--- | :--- | :--- |
| 58071 | Selects the display language group. |  |  |  |
|  | 1 | Japan | 2 | North America |
|  | 5 | Europe | 4 | Taiwan |
|  | 5 | Asia | 6 | China |
|  | SP5-807-001 is not cleared by SP5-801-001 | Knd SP5-998-001 | $(-5.1 .7)$. |  |


| 5811* | Serial Num Input |
| :---: | :--- |
| 58111 | -5.1 .10 |


| 5812* | Service TEL |
| :---: | :---: |
| 58121 | Service TEL (Telephone) |
|  | Use this to input the telephone number of the service representative. (The number is displayed when a service call condition occurs.) To input a dash, press $\because$. To delete the current telephone number, press ( 0 . |
| 58122 | Service TEL (Facsimile) |
|  | Use this to input the fax number printed on user counter reports. To input a dash, press $\odot^{\circ}$. To delete the current fax number, press ( ${ }^{(0)}$. |

BULLETIN NUMBER: B121/B122/B123-009
08/04/2004

## APPLICABLE MODEL:

GESTETNER - DSm615/DSm618/DSm618d
LANIER - DL115/DL118/DL118d
RICOH - AFICIO 2015/2018/2018d
SAVIN - 4015/4018/4018d

## SUBJECT: UPPER COVER - OPERATION PANEL

## GENERAL:

The part numbers for the Operation Panel Upper Cover were omitted from the B121/B122/B123 Parts Catalog. The following parts updates are being issued for all B121/B122/B123 Parts Catalogs. Please update your parts catalog with the following information.


|  | REFERENCE |  |  |  |
| :---: | :--- | :---: | :---: | :---: |
| NEW PART NUMBER | DESCRIPTION | QTY | PAGE | ITEM |
| B1211451 | Upper Cover-Operation Panel (NA/ASIA) | 1 | 13 | $7^{*}$ |
| B1211471 | Upper Cover-Operation Panel (EU) | 1 | 13 | $7^{*}$ |

* DENOTES NEW ITEM NUMBER


## TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER：B121／B122／B123－010
08／10／2004

## APPLICABLE MODEL：

GESTETNER－DSm615／DSm618／DSm618d
LANIER－DL115／DL118／DL118d
RICOH－AFICIO 2015／2018／2018d
SAVIN－4015／4018／4018d

## SUBJECT：SERVICE MANUAL－INSERT

The Service Manual pages listed below must be replaced with the pages supplied．

An arrow has highlighted the revised areas $\Rightarrow$ ．

PAGES：
－vi
－5－90
－5－91
－5－92 through 5－95
－5－96

Updated Information（TOC）
Updated Information（Before you Begin）
Updated Information（SD Card Preparation）
Updated Information（Firmware Procedure for MFP Machines）
Updated Information（Page Number only）
5.1.5 ID SENSOR ERROR ANALYSIS (SP2-221) ..... 5-74
5.1.6 DISPLAY APS DATA (SP4-301-1) ..... 5-75
Sensor Positions ..... 5-75
Reading the Data ..... 5-75
5.1.7 MEMORY CLEAR ..... 5-76
Basic Machine and MFP Machine ..... 5-76
Exceptions ..... 5-76
With Flash Memory Card (Basic Machine Only) ..... 5-77
Without Flash Memory Card ..... 5-77
5.1.8 INPUT CHECK (SP5-803) ..... 5-78
Conducting an Input Check ..... 5-78
Input Check Table ..... 5-78
5.1.9 OUTPUT CHECK (SP5-804) ..... 5-80
Conducting an Output Check ..... 5-80
Output Check Table ..... 5-80
5.1.10 SERIAL NUMBER INPUT (SP5-811) ..... 5-81
Specifying Characters ..... 5-81
Serial Number and NVRAM ..... 5-81
5.1.11 NVRAM DATA UPLOAD/DOWNLOAD (SP5-824/825) ..... 5-82
Overview ..... 5-82
NVRAM Upload (SP5-824-1) ..... 5-82
NVRAM Download (SP5-825-1) ..... 5-83
5.1.12 FIRMWARE UPDATE PROCEDURE FOR BASIC MACHINES ..... 5-84
5.1.13 TEST PATTERN PRINT (SP5-902-1) ..... 5-85
Executing Test Pattern Printing ..... 5-85
Test Patterns ..... 5-85
5.1.14 COUNTER-EACH PAPER JAM (SP7-504) ..... 5-86
5.1.15 SMC PRINT (SP5-990) ..... 5-87
5.1.16 ORIGINAL JAM HISTORY DISPLAY (SP7-508) ..... 5-88
Viewing the Copy Jam History ..... 5-88
Jam History Code ..... 5-88
5.1.17 ADF APS SENSOR OUTPUT DISPLAY (SP6-901) ..... 5-89
Sensor Positions ..... 5-89
Reading Data ..... 5-89
5.2 FIRMWARE UPDATE PROCEDURE FOR MFP MACHINES ..... 5-90
5.2.1 BEFORE YOU BEGIN ..... 5-90
5.2.2. SD CARD PREPARATION ..... 5-91
5.2.3 FIRMWARE UPDATE PROCEDURE FOR MFP MACHINES ..... 5-92
5.2.4 NVRAM DATA UPLOAD/DOWNLOAD ..... 5-96
Uploading Content of NVRAM to an SD card ..... 5-96
Downloading an SD Card to NVRAM ..... 5-96
DETAILED DESCRIPTIONS
6. DETAILED SECTION DESCRIPTIONS ..... 6-1
6.1 OVERVIEW ..... 6-1
6.1.1 COMPONENT LAYOUT ..... 6-1
6.1.2 PAPER PATH ..... 6-3

## $\Rightarrow 5.2$ FIRMWARE UPDATE PROCEDURE FOR MFP MACHINES

This section (5.2) illustrates how to update the firmware of the MFP machine (the machine with the optional controller box). To update the firmware of the BICU see section 5.1.12.

To update the firmware for the MFP machine, you must have the new version of the firmware downloaded onto an SD (Secure Digital) Card. The SD Card is inserted into the lower slot on the right side of the controller box, viewed from the back of the machine.

### 5.2.1 BEFORE YOU BEGIN...

An SD card is a precision device, so always observe the following precautions when handling SD cards:

- Always switch the machine off before inserting an SD card. Never insert the SD card into the slot with the power on.
- After the power has been switched on, never remove the SD card from the service slot.
- Never switch the machine off while the firmware is downloading from the SD card.
- Store SD cards in a safe location where they are not exposed high temperature, high humidity, or exposure to direct sunlight.
- Always handle SD cards with care to avoid bending or scratching them. Never drop an SD card or expose it to other shock or vibration.
Keep the following points in mind while you are using the firmware update software:
- "Upload" means to send data from the machine to the SD card, and "download" means to send data from the SD card to the machine.
- To select an item on the LCD, touch the appropriate button on the soft touchscreen of the LCD, or press the appropriate number key on the 10-key pad of the operation panel. For example, "Exit (0)" displayed on the screen means you can touch the Exit button on the screen, or press the (0) button on the operation panel of the copier.
- Before starting the firmware update procedure, always make sure that the machine is disconnected from the network to prevent a print job for arriving while the firmware update is in progress.
$\Rightarrow$ The following is the revised procedure for firmware updates on the MFP model using an SD card.

Important: This procedure is only for firmware files with the ".fwu" suffix (for the MFP model), and cannot be used for firmware files with a ".bin" suffix, which are only updated on the Basic model via an IC (Flash Memory) card.

### 5.2.2. SD CARD PREPARATION

NOTE: Format a pure SD card with, for example, SD Formatter v1.1. . You can download this application program from the following Web site: http://panasonic.jp/support/audio/sd/download/sd_formatter.html.

1. You do not have to initialize your SD card as long as the format of the SD card is not corrupted. Your SD card is already formatted when you get it from Ricoh Family Group.
2. Create a "romdata" folder on the card.
3. Create the following folders within the "romdata" folder:
B121, B620, B622, B658, B681, B685
4. Download the firmware from the website and store the files in the folder with the corresponding model code on the SD card.
Example:
File B1215540B should be stored in the "B121" folder, whereas files B6585902B, B6585903B, and B6585905B should be stored in the "B658" folder.

Note: It is strongly recommended to store only B121/B122/B123 files on SD cards used for downloading to the B121/B122/B123. With the controller used on this model, firmware update may sometimes be interrupted if there is software for multiple models stored on the same SD card.


## $\Rightarrow$ 5.2.3 FIRMWARE UPDATE PROCEDURE FOR MFP MACHINES

1. Turn off the main power switch.
2. Remove the slot cover $[A](\hat{\xi} \times 1)$
3. With the label on the $S D$ card $[B]$ facing as shown in the diagram, insert the SD card into the lower slot [C] on the controller box [D]. Slowly push the SD card into the slot so it locks in place.
4. Make sure the SD card is locked in place.

NOTE: To remove the SD, push it in to unlock the spring lock and then release it so it pops out of the slot.
[D]

5. Disconnect the network cable or wireless option from the copier if it is connected.
6. Disconnect the Fax cable from the copier if it is connected.
7. Switch the main power switch on.

- After about 5 seconds, the LCD will display "Please wait... Then, about 60 seconds later, the LCD will display "Program Update Menu P.01" on the first line and the name of the firmware on the second line (e.g. System/Copy).

NOTE: $\quad$ The following are the display names for each type of firmware.

| Firmware Name | LCD Display Name |
| :--- | :--- |
| BICU | Engine |
| FCU | GWFCU3-1 (WW)-1 |
| ServiceCardCopyEXP | System/Copy |
| ServiceCardNetFile | Network DocBox |
| ServiceCardNIB | Network Support |
| ServiceCardFAX | Fax |
| ServiceCardWebSystem | Web Support |
| Scanner | SD\#1 Scanner |
| Printer | SD\#1 Printer |
| SecurityModule_NRS | Security Module |

8. Select a module.

- To scroll through the menus, press the $\Delta$ or $\nabla$ key.

- To view the firmware version, press the $\triangleright$ key. "ROM" is the information on the current firmware. "NEW" is the information on the firmware in the SD card.

- To return to the menu, press the $\triangleleft$ key.

- To select the module, press the OK key.
- To quit the firmware-update program, press the F3 key.
- To cancel the selection, press the key.
- To scroll through the module name, the serial number, and the version, press the $\triangleleft$ key or $\triangleright$ key.
- When you have selected a module, the text lines are highlighted, and the "Verify" key and the "Update" key are displayed.

9. Use the up and down scroll keys to scroll to the firmware you wish to install.

- If you wish to install the following firmware simultaneously, press the START key.
- The scroll keys can be used to confirm that the firmware has been selected and highlighted with a dark background.
> Engine, FCU, Scanner, Printer,

> Security Module, , Printer Font Please note that the following firmware cannot be updated simultaneously. The update procedure must be repeated for each item individually.


## System/Copy, ServiceCardNetFile,

 ServiceCardNIB, ServiceCardFAX10. Press the OK key.

- "Verify", "Update" and "Exit" will be displayed at the bottom of the LCD, and the firmware to be updated will be highlighted (dark background).

11. Press the "Update" key.

The update will be begin, which will take a few minutes to complete. The LCD will initially display, "Updating
***---------".
12. When the update is completed, the LCD display will change to "Update done" or Updated / Power Off On".
13. Repeat Steps 1-8 above until all firmware updates are complete.

14. Turn the main power switch off.
15. Remove the SD card from the lower slot on the controller by pushing on the card to release the spring lock.
16. Reinstall the network and Fax connections.
17. If an error occurs, the error code is displayed. For the information on the
 error codes, see the table on next page.

| Code | Cause | Necessary Action |
| :--- | :--- | :--- |
| E20 | Physical address mapping error | $\bullet$ Insert the SD card correctly. <br> $\bullet$ Use another SD card |
| E22 | Decompression error | $\bullet$ •Store correct data in the SD card. |
| E23 | Update program error | $\bullet$ Update controller program. <br> $\bullet$ Replace the controller. |
| E24 | SD card access error | $\bullet$ Insert the SD card correctly. <br> $\bullet$ Use another SD card. |
| E31 | Download data inconsistency* | $\bullet$ Insert the SD card that is used when the <br> previous update procedure is interrupted. |
| E32 | Download data inconsistency* | $\bullet$ • Insert the SD card that stores the correct data. |
| E33 | Version data error | $\bullet$ Store the correct data in the SD card. |
| E34 | Locale data error | $\bullet$ Store the correct data in the SD card. |
| E35 | Machine model data error | $\bullet$ Store the correct data in the SD card. |
| E36 | Module data error | $\bullet$ Store the correct data in the SD card. |
| E40 | Engine program error** | $\bullet$ Store the correct data in the SD card. <br> $\bullet$ Replace BICU. |
| E42 | Operation panel program error* | $\bullet$ Store the correct data in the SD card. <br> $\bullet$ Replace the operation panel board. |
| E44 | Controller program error* | $\bullet$ Store the correct data in the SD card. <br> $\bullet$ Replace the controller board. |
| E50 | Authentication error | $\bullet$ Store the correct data in the SD card. |

* You need to reinstall the program. Try pressing the " 1 ", " 4 ", " 3 ", keys on the operation panel when the error appears then press the clear key (2) three times.

If the firmware update program is interrupted, for example, by power failure, keep the SD card inserted and turn the main switch off and on. The firmware update program restarts. If you do not do so, the message "Reboot after Card insert" is displayed when you turn the main switch on.

NOTE: As mentioned above, it is possible to confirm which firmware version is presently installed in the machine by accessing SP7-801-255 or printing out SP 5-990-005.If the "Please Wait..".display does not change over to "Program Update Menu P.01," it is possible the firmware has not been saved to the card correctly (e.g. files saved to the wrong folder). Please refer to Step 1 (SD card preparation) to verify if the firmware was saved to the card correctly

### 5.2.4 NVRAM DATA UPLOAD/DOWNLOAD

## Uploading Content of NVRAM to an SD card

Follow this procedure to upload SP code settings from NVRAM to an SD card.
NOTE: This data should always be uploaded to an SD card before the NVRAM is replaced.

1. Before switching the machine off, execute SP5990 001 (SMC Print). You will need a record of the NVRAM settings if the upload fails.
2. Switch the copier main power switch off.
3. Insert the SD card into service slot C3, then switch the copier on.
4. Execute SP5824 001 (NVRAM Data Upload) then press the "Execute" key When uploading is finished, the following files are coped to an NVRAM folder on the SD card. The fileis saved to the path and filename:

## NVRAM1<serial number>.NV

Here is an example with Serial Number "B0700017":
NVRAM \B0700017.NV
5. In order to prevent an error during the download, be sure to mark the SD card that holds the uploaded data with the number of the machine from which the data was uploaded.
NOTE: NVRAM data from more than one machine can be uploaded to the same SD card.

## Downloading an SD Card to NVRAM

Follow this procedure to download SP data from an SD card to the NVRAM in the machine.

- If the SD card with the NVRAM data is damaged, or if the connection between the controller and BICU is defective, the NVRAM data down load may fail.
- If the download fails, repeat the download procedure.
- If the second attempt fails, enter the NVRAM data manually using the SMC print you created before uploading the NVRAM data. ( -5.2 .3 )

1. Switch the copier main power switch off.
2. Insert the SD card with the NVRAM data into service slot C3.
3. Switch the copier main power switch on.
4. Execute SP5825 001 (NVRAM Data Download) and press the "Execute" key. NOTE: In order for the NVRAM data to download successfully, the serial number of the file on the SD card must match the serial number of the machine. If the serial numbers do not match, the download will fail.
This procedure downloads the following data to the NVRAM:

- Total Count
- C/O, P/O Count


## TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER：B121／B122／B123－011
09／27／2004

## APPLICABLE MODEL：

GESTETNER－DSm615／DSm618／DSm618d
LANIER－DL115／DL118／DL118d
RICOH－AFICIO 2015／2018／2018d
SAVIN－4015／4018／4018d

## SUBJECT：SERVICE MANUAL－INSERT

The Service Manual pages listed below must be replaced with the pages supplied．

An arrow has highlighted the revised areas $\Rightarrow$ ．

PAGES：
－5－90
－5－91
－5－92
－5－95

Updated Information（5．2 Firmware update procedure）
Updated Information（5．2．2 SD Card Preparation）
Updated Information（5．2．3 Firmware Update Procedure）
Updated Information（Firmware Error Table）

### 5.2 FIRMWARE UPDATE PROCEDURE FOR MFP MACHINES

This section (5.2) illustrates how to update the firmware of the MFP machine (the machine with the optional controller box). To update the firmware of the BICU see section 5.1.12.

To update the firmware for the MFP machine, you must have the new version of the firmware downloaded onto an SD (Secure Digital) Card. The SD Card is inserted into the lower slot on the right side of the controller box, viewed from the back of the machine.

Important: This procedure is only for firmware files with the ".fwu" suffix (for the MFP model), and cannot be used for firmware files with a ".bin" suffix, which are only updated on the Basic model via an PCMCIA (Flash Memory) card.

### 5.2.1 BEFORE YOU BEGIN...

An SD card is a precision device, so always observe the following precautions when handling SD cards:

- Always switch the machine off before inserting an SD card. Never insert the SD card into the slot with the power on.
- After the power has been switched on, never remove the SD card from the service slot.
- Never switch the machine off while the firmware is downloading from the SD card.
- Store SD cards in a safe location where they are not exposed high temperature, high humidity, or exposure to direct sunlight.
- Always handle SD cards with care to avoid bending or scratching them. Never drop an SD card or expose it to other shock or vibration.
Keep the following points in mind while you are using the firmware update software:
- "Upload" means to send data from the machine to the SD card, and "download" means to send data from the SD card to the machine.
- To select an item on the LCD, touch the appropriate button on the soft touchscreen of the LCD, or press the appropriate number key on the 10-key pad of the operation panel. For example, "Exit (0)" displayed on the screen means you can touch the Exit button on the screen, or press the © button on the operation panel of the copier.
- Before starting the firmware update procedure, always make sure that the machine is disconnected from the network to prevent a print job for arriving while the firmware update is in progress.


## $\Longrightarrow$

The following is the revised procedure for firmware updates on the MFP model using an SD card.

### 5.2.2. SD CARD PREPARATION

NOTE: Format a pure SD card with, for example, SD Formatter v1.1. . You can download this application program from the following Web site: http://panasonic.jp/support/audio/sd/download/sd_formatter.html.

1. You do not have to initialize your SD card as long as the format of the SD card is not corrupted. Your SD card is already formatted when you get it from Ricoh Family Group. Refer to important note above to reformat card if necessary.
2. Create a "romdata" folder on the card.
3. Create the following folders within the "romdata" folder:

B121, B620, B622, B658, B681, B685
4. Download the firmware from the website and store the files in the folder with the corresponding model code on the SD card.
Example:
File B1215540B should be stored in the "B121" folder, whereas files B6585902B, B6585903B, and B6585905B should be stored in the "B658" folder.

Note: It is strongly recommended to store only B121/B122/B123 files on SD cards used for downloading to the B121/B122/B123. With the controller used on this model, firmware update may sometimes be interrupted if there is firmware for multiple models stored on the same SD card.


## $\Rightarrow$ 5.2.3 FIRMWARE UPDATE PROCEDURE FOR MFP MACHINES

The following is the revised procedure for firmware update on the MFP model using an SD card.

Before beginning the following, first confirm which firmware version(s) are currently installed in the machine with SP7-801-255. Print the firmware list with SP5-990-005, and retain this printout for reference.

1. Turn off the main power switch.
2. Remove the slot cover $[A](\hat{\xi} \times 1)$
3. With the label on the $S D$ card $[B]$ facing as shown in the diagram, insert the SD card into the lower slot $[\mathrm{C}]$ on the controller box [D]. Slowly push the SD card into the slot so it locks in place.
4. Make sure the SD card is locked in place.

NOTE: To remove the SD, push it in to unlock ${ }^{[D]}$ the spring lock and then release it so it pops out of the slot.
5. Disconnect the network cable or wireless option from the copier if it is connected.
6. Disconnect the Fax cable from the copier if it is connected.
7. Switch the main power switch on.

- After about 5 seconds, the LCD will display "Please wait....Then, about 60 seconds later, the LCD will display "Program Update Menu P.01" on the first line and the name of the firmware on the second line (e.g. System/Copy).

NOTE: $\quad$ The following are the display names for each type of firmware.

| Firmware Name | LCD Display Name |
| :--- | :--- |
| BICU | Engine |
| FCU | GWFCU3-1 (WW)-1 |
| ServiceCardCopyEXP | System/Copy |
| ServiceCardNetFile | Network DocBox |
| ServiceCardNIB | Network Support |
| ServiceCardFAX | Fax |
| ServiceCardWebSystem | Web Support |
| Scanner | SD\#1 Scanner |
| Printer | SD\#1 Printer |
| SecurityModule_NRS | Security Module |

8. To Select a module: press the OK key.

- The part numbers for the version currently installed ("ROM") and the version on the SD card that is to be installed ("New") can be displayed by pressing the right scroll key (arrow).
Example: ROM: B6585902B
New: B6585902C

- The firmware versions can be displayed by pressing the right scroll key again.
Example: ROM: 0.40.03
New: 0.40.04

- The display returns to the firmware display name if the right scroll key is pressed a third time.

Example: System/Copy

9. Use the up and down scroll keys to scroll to the firmware you wish to install.

- If you wish to install the following firmware simultaneously, press the START key. The scroll keys can be used to confirm that this firmware has been selected (highlighted with a dark background).
$>$ Engine, FCU, Scanner, Printer, Printer Font, Security Module
- Please note that the following firmware cannot be updated simultaneously. The update procedure must be repeated for each individually.
> System/Copy, ServiceCardNetFile, ServiceCardNIB, ServiceCardFAX, ServiceCardWebSystem.


## 10. Press the OK key.

- "Verify", "UpDate" and "Exit" will be displayed at the bottom of the LCD, and the firmware to be updated will be highlighted (dark background).



## Note: Do NOT press the "Verify" key.

## 11. Press the "UpDate" key.

- The update will begin, which will take a few minutes to complete. The LCD will initially display, "Updating... ***---------". When the update is completed, the LCD display will change to "Update done"
 or "Updated / Power Off On".

12. Remove the SD card from the lower slot on the controller by pushing on the card to release the spring lock.
13. Turn the main power switch off.
14. Repeat Steps 7-13 above until all firmware updates are complete.
15. Reinstall the network and Fax connections.

- If an error occurs, the error code is displayed. For information on the error codes, see the table on next page.

- To quit the firmware-update program, press the F3 key.

Note: As mentioned above, it is possible to confirm which firmware version is presently installed in the machine by accessing SP7-801-255. Print the firmware list with SP5-990-005, and compare to the previous list to verify changes.

- See section 5.2.4 Firmware Error Table (pg. 5-95) for details on any update failures that occur during the procedure.
- If the "Please Wait....display does not change over to "Program Update Menu P.01," it is possible the firmware has not been saved to the card correctly (e.g. files saved to the wrong folder). Please refer to 5.2.2 SD Card Preparation to verify if the firmware was saved to the card correctly.


## FIRMWARE ERROR TABLE

| Code | Cause | Necessary Action |
| :---: | :---: | :---: |
| E20 | Physical address mapping error | - Insert the SD card correctly. <br> - Use another SD card |
| E22 | Decompression error | - Store correct data in the SD card. |
| E23 | Update program error | - Update controller program. <br> - Replace the controller. |
| E24 | SD card access error | - Insert the SD card correctly. <br> - Use another SD card. |
| E31 | Download data inconsistency* | - Insert the SD card that was used when the previous update procedure was interrupted. |
| E32 | Download data inconsistency* | - Insert the SD card that stores the correct data. |
| E33 | Version data error | - Store the correct data in the SD card. |
| E34 | Locale data error | - Store the correct data in the SD card. |
| E35 | Machine model data error | - Store the correct data in the SD card. |
| E36 | Module data error | - Store the correct data in the SD card. |
| E40 | Engine program error** | - Store the correct data in the SD card. <br> - Replace BICU. |
| E42 | Operation panel program error* | - Store the correct data in the SD card. <br> - Replace the operation panel board. |
| E44 | Controller program error* | - Store the correct data in the SD card. <br> - Replace the controller board. |
| E50 | Authentication error | - Store the correct data in the SD card. |

* Denotes you need to reinstall the program.
$\Rightarrow$ • Try pressing the " 1 ", " 4 ", " 3 ", keys on the operation panel when the error appears then press the clear key ${ }^{\circ}$ ) three times.

If the firmware update program is interrupted, for example, by power failure, keep the SD card inserted and turn the main switch off and on. The firmware update program restarts. If you do not do so, the message "Reboot after Card insert" is displayed when you turn the main switch on.


[^0]:    System Switch 13 - Not used (Do not change the settings.)
    System Switch 14 - Not used (Do not change the settings.)

[^1]:    Communication Switch 1D - Not used (Do not change the settings.)
    Communication Switch 1E - Not used (Do not change the settings.)
    Communication Switch 1F - Not used (Do not change the settings.)

